HEBER CITY CORPORATION
75 North Main Street
Heber City, UT 84032
Heber City Council Meeting AMENDED Agenda

March 4, 2025

4:00 p.m. Work Meeting
6:00 p.m. Regular Meeting

TIME AND ORDER OF ITEMS ARE APPROXIMATE AND MAY BE CHANGED AS TIME PERMITS

I. WORK MEETING - 4:00 P.M.

1. Utah Valley University Students Affordable Housing Campaign (Farah Sanders, UVU Students) - *20 min*
2. The Views on Main MDA Term Sheet (Tony Kohler, Community Development Director) - *45 min*
3. Red Rock Annexation Term Sheet (Jamie Baron, Planning Manager) - *45 min*
4. Review of Ordinance 2025-02 Amending the Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat (Kyle Turnbow, Engineer) - *time permitting*

II. BREAK - 10 MIN

III. REGULAR MEETING - 6:00 P.M.

1. Call to Order
2. Pledge of Allegiance (Heidi Franco, Mayor)
3. Prayer/Thought by Invitation (Sid Ostergaard, Council Member)

IV. CONFLICT OF INTEREST DISCLOSURE:

V. AWARDS, RECOGNITION, and PROCLAMATIONS:

1. Proclamation for the Observation and Celebration of Arbor Day (Heidi Franco, Mayor)

VI. CONSENT AGENDA:

1. Approval of January 21, 2025, City Council Meeting Minutes, and February 18, 2025, City Council Meeting Minutes (Trina Cooke, City Recorder, Robin Raines, Deputy Recorder)

VII. PUBLIC COMMENTS: (3 min per person/20 min max)

VIII. GENERAL BUSINESS ITEMS:

1. Ranked Choice Voting (RCV) presentation by the Wasatch County Taxpayers Association (Tracy Taylor, Wasatch County Taxpayers Association) - *20 min*

IX. ACTION ITEMS: (Council can discuss; table; continue; or approve items)

1. Resolution 2025-03 Adopting Ranked Choice Voting (RCV) for the 2025 Heber City Municipal Election (Trina Cooke, City Recorder) - *20 min*
2. Heber City Annexation Policy Plan Amendment for Wasatch Highlands (SITLA Lands) (Tony Kohler, Community Development Director) - *30 min*
3. Memorandum of Understanding (MOU) Wasatch County and Heber City 2025 Annexation Issues (Matt Brower, City Manager) - *15 min*
4. Memorandum of Understanding (MOU) Wasatch County and Heber City Property Sale Intent (Matt Brower, City Manager) - *10 min*
5. Contract Award to Perco Rock Co for Construction of the Coyote Springs Park Project (Russ Funk, City Engineer)
6. Pro-Forma and Term Sheet for Operations and Programming of Sunset Ridge Amphitheater (Phil Jordan) - *30 min*
7. Ordinance 2025-02 Amending the Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat (Kyle Turnbow, Engineer) - *30 min*

X. COMMUNICATION:

XI. CLOSED MEETING:

1. Strategy Discussion for the Purchase, Exchange, or Lease of Real Property (Council)

XII. ADJOURNMENT:

Ordinance 2006-05 allows Heber City Council Members to participate in meetings via telecommunications media.
In accordance with the Americans with Disabilities Act, those needing special accommodations during this meeting or who are non-English speaking should contact Trina Cooke at the Heber City Offices 435.657.7886 at least eight hours prior to the meeting.

Posted on February 27, 2025, in the Heber City Municipal Building located at 75 North Main, the Heber City Website at www.heberut.gov, and on the Utah Public Notice Website at http://pmn.utah.gov. Notice provided to the Wasatch Wave.



Affordable 4 All

Avri Mathie, Chloe Johnson, Joseph Logan, Keila Herrmann, Rylee Guile

Utah Valley University

Who We Are



We are The Press Room, a team of Public Relations seniors at Utah Valley University, dedicated to addressing the housing opportunity in Heber City. Our campaign, *Housing Affordable 4 All*, focuses on increasing access to affordable housing while preserving the environment and improving residents' quality of life.

Core Opportunity

Currently in Hobart City, a lack of affordable housing exists, including single-family homes, due to an increase in population, economic challenges, and limited resources, if not resolved or realized, water, resources, environmental concerns, housing limitations, and overall quality of life could lead to negative effects.

Goals and Objective

Goal

Increase access to affordable housing options, including single-family affordable homes, while improving infrastructure and addressing environmental concerns, including protection of wildlife and water, leading to a better quality of life for residents of Heber City.

Objective

Create a 5% increase in affordable housing options in Wasatch County by building more single-family affordable housing and the needed infrastructure to support it, by April 15, 2025, using no more than 35% of the allotted case budget.



Key Public and Primary Message

Key Public:

Current Residents

Primary Message:

Learn about current city policies and advocate for the ones that you desire to see in your community to support affordable housing options, environmental regulations, and quality of life standards.

Strategy

Convince current residents to learn about current city policies and advocate for those they desire to see in their community to support affordable housing options, environmental regulations, and quality of life standards.



Tactics

1. Create both a 30 and 60 second informational video on current affordable housing policies, highlighting Heber City housing programs.

Include video footage of:
- **Heber residents**
- **Construction workers**
- **Wildlife in the area**

To showcase everyday life within the community, helping people understand the importance of keeping Heber City Affordable for All. As well as providing a link to a FAQ page at the end.

Everyone wears an “#Affordable4All” shirt to emphasize that affordability extends beyond housing prices and into the quality of life.

Tactics

2. Publish the video to websites and social media and provide at city council meetings, as well as various Google ads in the area to achieve high exposure.

Budget & Calendar

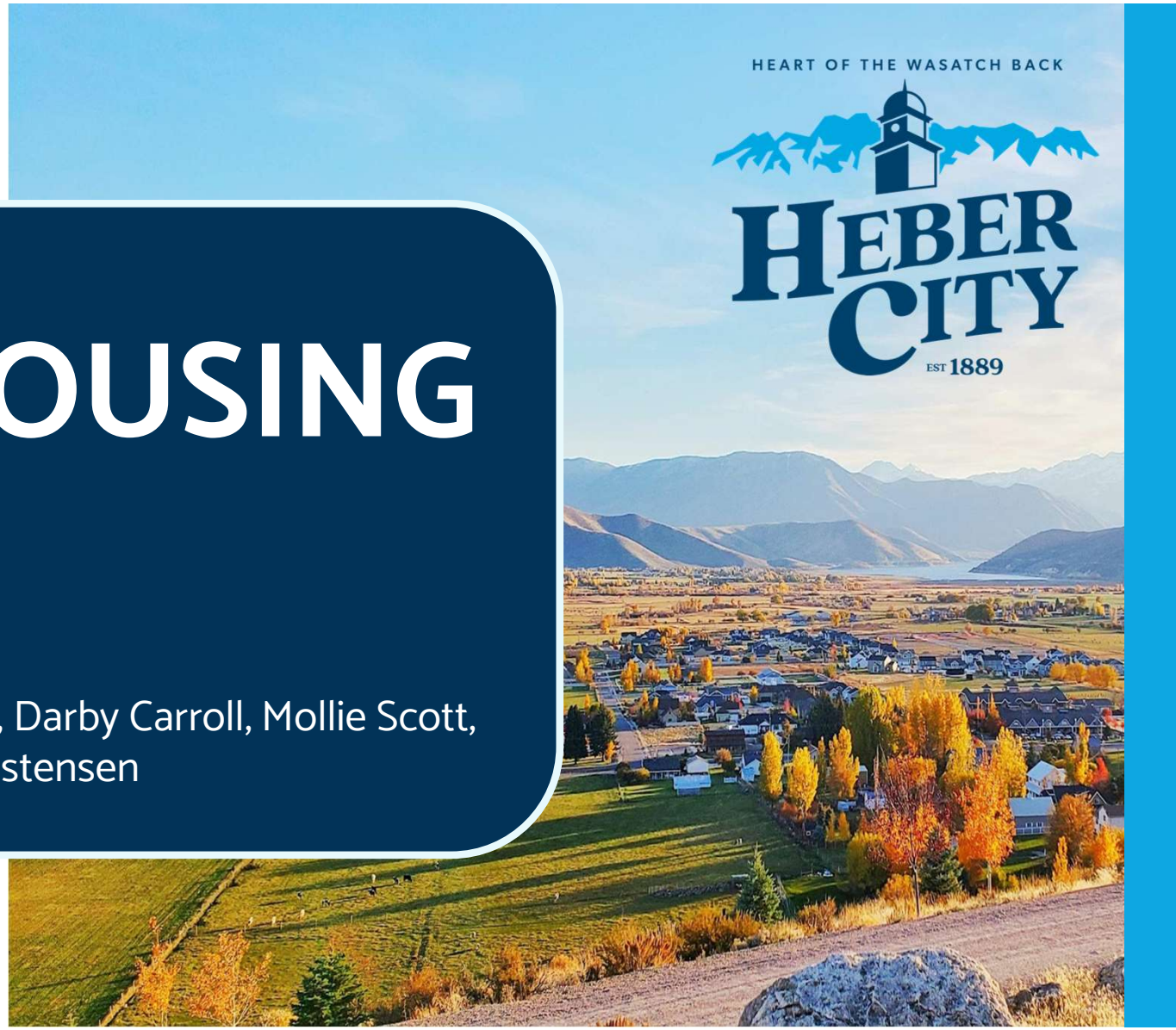
Action	Start Date	End Date	Anticipated Price Points	Anticipated Total
Dispersing slideshow to council members unable to attend.	March 4th, 2025	March 4th, 2025	1. Emailing to those unable to attend ~**$0.00**	**$0.00**
Filming and producing #Affordable4All video.	March 15th, 2025	April 1st, 2025	1. T-shirts ~ **$50.00** 2. Iron-on Materials ~ **$20.00** 3. Student filming and editing ~ **$0.00**	**$70.00**
Create an FAQ Page for viewers to visit at the end of the video addressing common housing FAQs.	March 15th, 2025	April 1st, 2025	1. Student creating FAQ page ~ **$0.00**	**$0.00**
Run advertisements of #Affordable4All video on platforms such as Google, Youtube, etc.	April 2nd, 2025	April 15th, 2025	1. Running ads on Google, Youtube, Facebook for 2 weeks ~ **$100.00** 2. Posting video on government websites, informational websites, etc ~ **$0.00**	**$100.00**

Let's help residents know that Heber is **#Affordable4All**



HEBER HOUSING HELPERS

Mckenzie Mangum, Jon Kwong, Darby Carroll, Mollie Scott, Brontë Brenier, & Brandon Christensen



01 CORE OPPORTUNITY & RESEARCH SUMMARY

02 GOAL & OBJECTIVES

03 KEY PUBLIC & PRIMARY MESSAGE

04 STRATEGIES & TACTICS

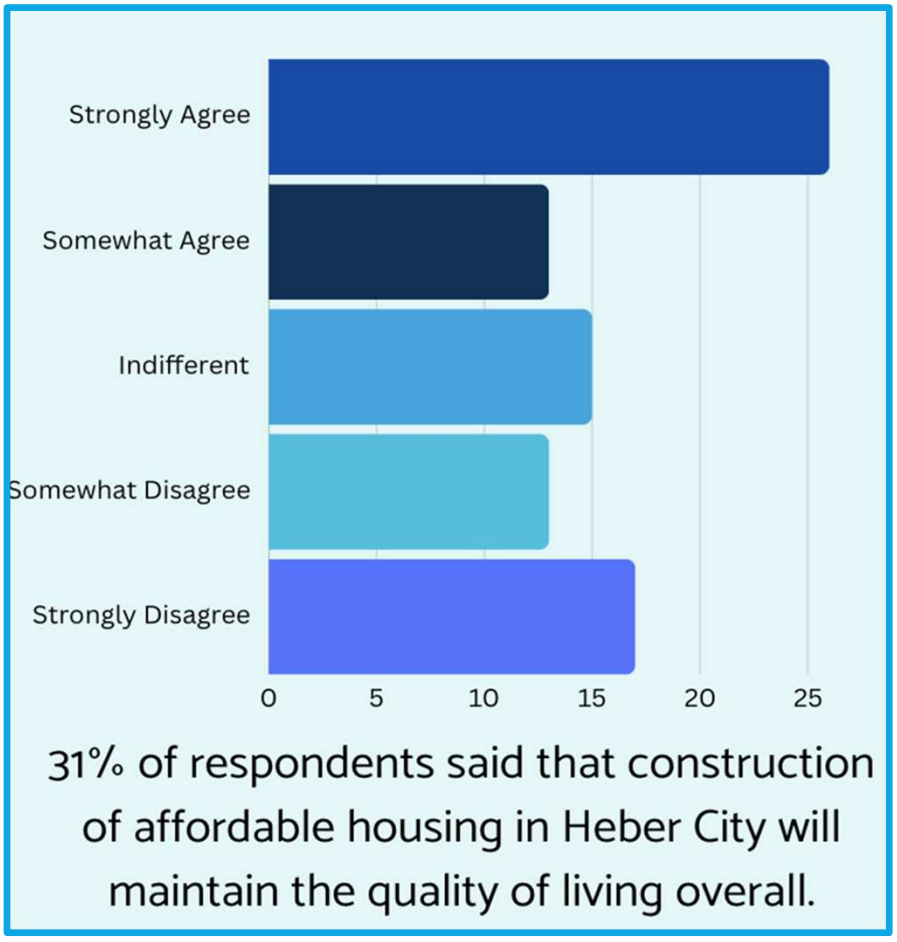
05 PROPOSED CALENDAR & BUDGET

RESEARCH SUMMARY

75%

of the respondents want Affordable Single Family Homes

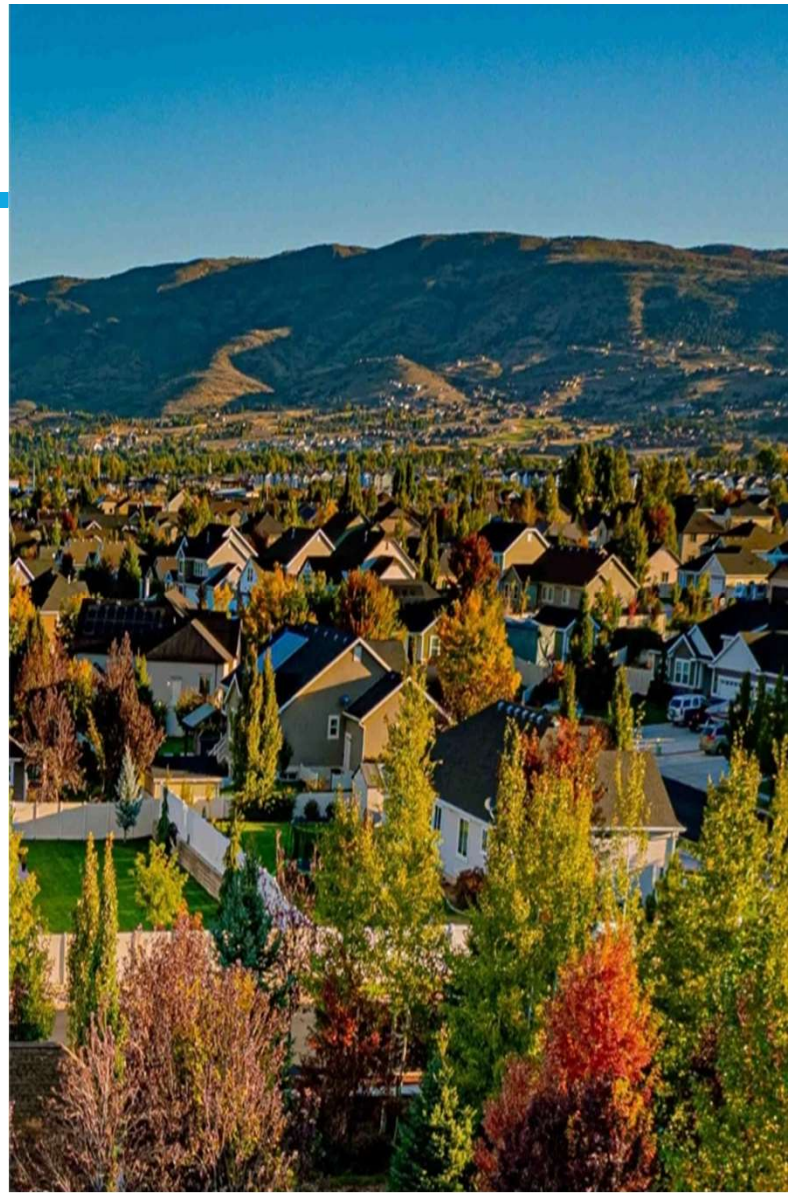
From 2021-2023, 42% of respondents said they were "somewhat disatisfied" with the current quality of life in Wasatch County.



31% of respondents said that construction of affordable housing in Heber City will maintain the quality of living overall.

CORE OPPORTUNITY

Heber City is currently experiencing an increased need for affordable housing and preservation of small-town living for residents while balancing infrastructure needs that come with the desire to own a single-family home, which if not addressed could result in residents being priced out, the destruction of wildlife due to new development, and exhausted infrastructure demands.



GOAL

Generate affordable housing options, including single-family homes with improved infrastructure while maintaining small-town living in new and existing housing developments, protecting wildlife habitats and water resources.

OBJECTIVE

Improve Heber City's affordable housing needs by updating city policies and codes by designating 1.5% of new housing developments to include single-family homes by January 1, 2026 (with UVU discussions through April 17, 2025) using 100% of the budget.



KEY PUBLIC: The Heber City Council

This audience includes members of the Heber City Council and the City Planning Commission, who oversee the development and revision of the city's zoning and building regulations.

PRIMARY MESSAGES

- Advocate for policy changes to increase access to affordable housing options, including single-family homes.

STRATEGY

Encourage the Heber City Council to continue working on Wasatch County's future by increasing the development of affordable single-family homes while limiting high-density buildings and preserving small-town living.

TACTIC

Amend the Moderate Income Housing Plan, section of the Heber City General Plan (Ordinance NO. 2023-08)

- Meet with city manager to get approval for proposed amendments.
- Meet with Sid Ostergaard to get information on the Moderate Income Housing Plan and the potential success of proposed amendments.
- Meet with Mayor Heidi Franco about proposed ideas/plan.
- Meet with City Council to present proposed amendments for Moderate Income Housing Plan.
- Write a feature story for a local Wasatch County broadcast news channel detailing the amendments to the Moderate Income Housing Plan and how Heber City is adjusting their approach based on Heber City residents' needs.

PROPOSED CALENDAR & BUDGET

TACTIC: Amend the Moderate Income Housing Plan, section of the Heber City General Plan (Ordinance NO. 2023-08)

Timeline: March 17th - April 17th

- **Week 1:** Conduct Zoom meetings with the City Manager and Sid Ostergaard about the Moderate Housing Income Plan and get approval for potential amendments.
- **Week 2:** Incorporate feedback from the City Manager and Sid Ostergaard to revise amendments and then conduct a Zoom meeting with the Heber City Mayor to present the adjusted proposal.
- **Week 3:** Present the finished proposal to the Heber City Council.
- **Week 4**: Write and publish a feature story that outlines the new amendments and the work the Heber City Council is doing to address affordable housing concerns.

Budget: $200 (Publishing a feature story and travel to follow-up to present final plan to Heber City Council).



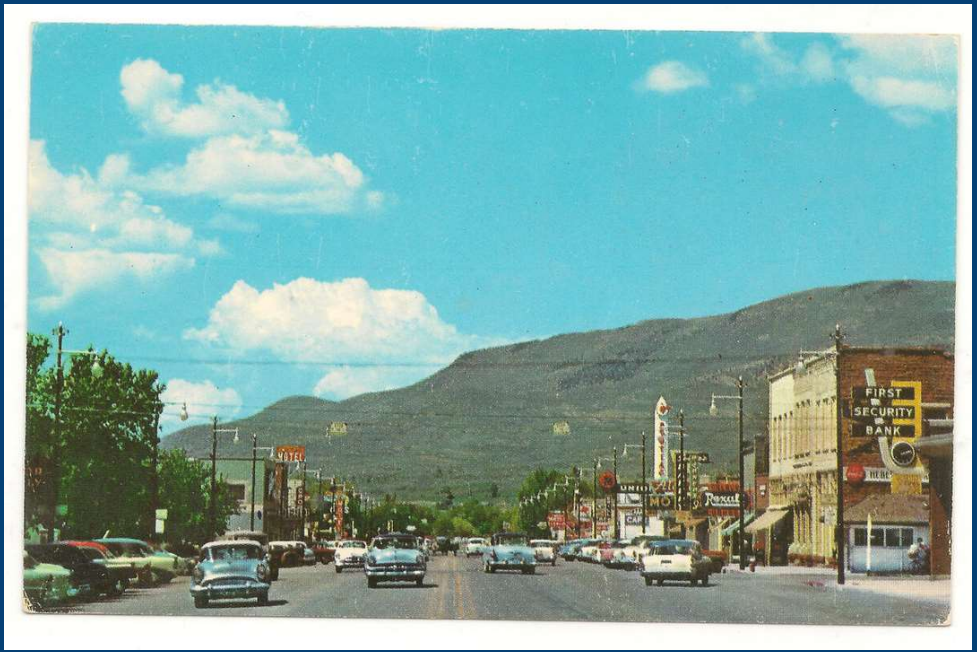
Expanding Heber City's Affordable Housing Opportunities

Summit Strategies PR

Lauren Howe, Ximena Vega, Ashley Walker, Hallee Hodges, Nickolas Carter, Hadley Sanders

Core Problem

Heber City is experiencing rapid population growth, lack of affordable housing, strain on local infrastructure, high prices of homes and rent, and a need to preserve the small-town character of Heber City, if not resolved or realized, this could result in a lower quality of life, a decline in wildlife preservation, reduced water resources, and housing prices will continue to rise, decreasing options for residents.



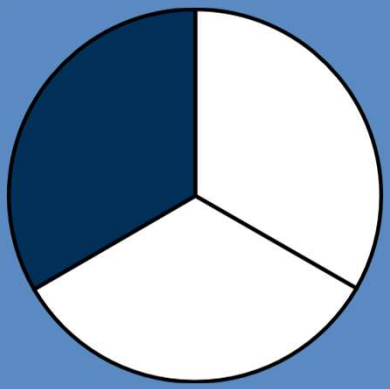


47%

of respondents want more single family homes

Over 1/3

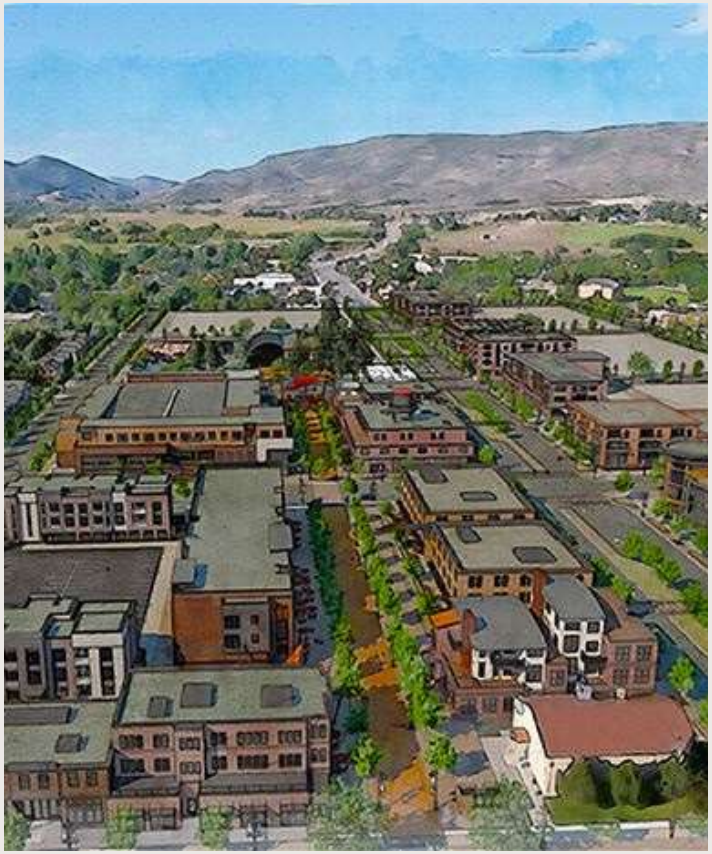
of respondents are dissatisfied with life in Heber City





78%

of respondents know someone in Heber City who is struggling with housing insecurity



Goal

Enhance access to multiple affordable housing options, including single-family homes, while providing a high quality of life for residents, protecting local wildlife, and managing environmental impacts of rapid population growth.

Objective

Increase awareness of the CRA and proposed affordable housing by 20% to enhance quality of life in Heber City by April 15, 2025, using 100% of the budget.

Key Public	**Renters/First Time Home Buyers within Heber City**
Primary Message	**Make your voice heard! Scan the QR to learn about the CRA (Community Reinvestment Agency) and help shape local housing decisions by attending a city council meeting!**



Strategy

Educate residents on affordable housing opportunities for single-family homes and empower them to advocate effectively.

Tactics

1

Create informative flyers with QR codes linking to the CRA video on the Heber City website

- Add a call to action that urges residents to attend city council meetings and include the dates on the flyer
- Distribute flyers door-to-door & in public spaces in Heber City to increase awareness

2

Create and distribute posters to main street businesses that inform about the CRA

3

Assess residents' understanding of CRA with a post-survey in the monthly newsletter, accessible via QR code

Budget

Item	Quantity	Cost Per Item	Sponsored	Cost
Flyers	125 pages, 4 flyers per page (500 flyers in total)	$0.25	$0	$32
Posters	20	$0.65	$0	$13
Time spent planning and executing	30 hours	$15 per person/hour	$2,700	0
Total Cost				$45

Calendar

Week 1- March 17-23

- Contact the mayor about getting a spot in the monthly newsletter

Week 2- March 24-30

- Create a survey for newsletter

Week 3- March 31-April 6

- Design and print flyers and posters

Week 4- April 7-13

- Pass out flyers and posters around Heber City

Week 5- April 14 & 15

- Put out survey in Heber City newsletter

HEART OF THE WASATCH BACK

HEBER CITY

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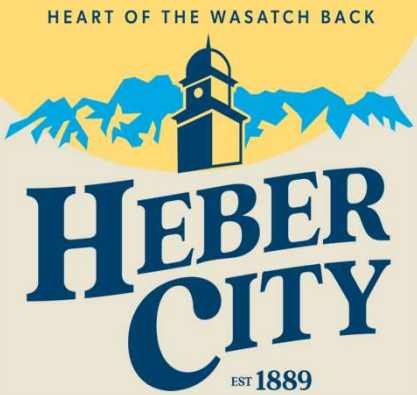


Conclusion

Educating and empowering citizens on affordable housing is the key to preserving Heber City's small-town character while building a thriving future for all.

URBAN VISION COLLECTIVE: HEBER BETTER

Elmer Colon Muniz, Jake Togisala, Kassidy Rindlisbacher, Bre Briceno, Easton Stauffer



RESIDENT TESTIMONIALS

"Provide more affordable single family homes - stop building over priced apartments"

"The new affordable housing options are still not affordable. I also worry about our lack of natural resources and growth sustainability"

RESEARCH SUMMARY

2021 – 2023 survey data completed by Heber City residents on the condition of affordable housing in their community was reviewed.

TOP THEMES:

- Citizens want single-family affordable homes
- Most citizens are skeptical of fast growth
- Protection of wildlife is important to residents
- Water protection is important to the community

Data Results

36.67% of residents are somewhat dissatisfied with the current quality of life in Heber City

35.4 % of residents are spending 20 - 30% of their income on Housing

46.31% participants want single-family homes in their neighborhoods, out of the 149 participants

Core Opportunity

Currently affordable housing options are needed to meet the needs of Heber City residents, including single family affordable homes; if not resolved or realized, protection of wildlife and water resources, housing options will decline and impede on the quality of life for current and future residents of Heber City.

Goal

Promote affordable housing solutions, including single-family affordable homes, while ensuring long-term access to essential resources and maintained quality of life for current and future residents.

OBJECTIVE

Increase 10% of Heber City social media reach on platforms such as Facebook and Instagram to inform city residents of the CRA and additional affordable housing plans using the designated budget by April 15th, 2025.



KEY PUBLICS

Current and future residents of Heber City.

PRIMARY MESSAGE

Advocate for your community by learning about the Community Reinvestment Agency and engaging with your local government.

STRATEGIES & TACTICS

Strategy

Educate residents about the Community Reinvestment Agency (CRA) to increase civic engagement and understanding of affordable housing opportunities.

Tactics

•Create a multi-platform social media campaign that explains what the CRA is and how it works:

- Collaborate with Heber City social media to post content such as infographics, feed posts, and informative short videos of city officials explaining the CRA
- Implement email marketing service to promote expo table

•Host Table at Ask Heber Valley Community Expo:

- Table at the Ask Heber Valley Community Expo that explains the CRA to citizens
- Make promotional materials to encourage expo attendees to visit the table
- Make flyers to promote our table and set them around city

CALENDAR

Month	Week	Date	Activity
March	16th – 22nd	Wednesday, March 19th	Launch Social Media Campaign
		Thursday, March 20th	Begin Content Creation (Videos & Graphics)
		Friday, March 21st	Continue Content Creation
	23rd – 29th	Tuesday, March 25th	Start Social Media Ads/Email Marketing
		Thursday, March 27th	Create Flyers and other promotional materials for Heber Valley Expo
		Friday, March 28th	Monitor & Boost Social Media Engagement
April	30th – 5th	Monday, March 31st	Post about our involvement in Heber Valley Community Expo
		Friday, April 4th	Start Online Promotions for Heber Valley Community Expo
	6th – 12th	Saturday, April 12th	Attend Ask Heber Valley Community Expo
	13th – 19th	Tuesday, April 15th	Follow-up Social Media Engagement & Report

WHY WILL THIS CAMPAIGN IMPROVE AFFORDABLE HOUSING?

HEART OF THE WASATCH BACK

HEBER CITY

EST 1889

The existing research clarifies the wants and needs of Heber City residents. This campaign will help citizens understand the benefits of the CRA and continue to motivate them to communicate with the council, and make Heber City better.

Heber City Council Staff Report

MEETING DATE: 3/4/2025
SUBJECT: The Views on Main MDA Term Sheet
RESPONSIBLE: Tony Kohler
DEPARTMENT: Planning
STRATEGIC RELEVANCE: Community Development

SUMMARY

This item is a continuation of the discussion of a development agreement term sheet from February 18, 2025. The developer and staff are seeking to inform Council about the proposed development and obtain feedback on the proposed development agreement term sheet, returning to Council at a future meeting for formal consideration.
Policy questions include:
• What feedback does Council have on the proposed development agreement term sheet?

RECOMMENDATION

Staff recommends Council hear and discuss the proposed development agreement term sheet and provide feedback to staff and the developer. It is intended that a development agreement will be drafted for consideration by Council at a future meeting based on feedback received by Council.

BACKGROUND

The petitioner has modifed the term sheet to address comments of the last meeting; a redline strikeout version is attached for reference.
The Views on Main consists of a proposed five story condo-hotel with commercial, retail and meeting space in the vicinity of 825 South Main Street, south and east of Auto Zone, and North of Utah Community Federal Credit Union. The project received approval by the Planning Commission beginning in 2021, including commercial final approval and subdivision approval.
The project involves two future critical public streets that traverse through the development and four surrounding properties. These future streets are designated on the City's Street Transportation Master Plan and include 100 East, connecting from 1200 South northward to 790 South, and 860 South, connecting from 100 East to Main Street. 860 South will eventually change to a stop light intersection, being centered between and a quarter-mile from 600 South and 1200 South. The City's Street Master Plan also shows a future road connecting westward to 100 West.

The development was approved prior to the Transportation Master Plan being adopted that designates 100 East and 860 South as future streets. As such, staff has been negotiating with the developer to incorporate these future critical streets within the development, whilst maintaining development entitlements. The proposed development agreement would provide the developer assurances that the development maintains entitlements; for the City, the development agreement provides the methodology for assuring the future public streets are planned for and accommodated within the development.

DISCUSSION

Important issues for the City include:

1. Construction and dedication of 100 East. This isn't entirely possible until or unless the school district property is ready to participate.
2. Construction and dedication of 860 South.
3. Construction of a stop light at 860 South.
4. Dedication of 790 South. This isn't possible until or unless the school district property is ready to participate.
5. Phasing of improvements associated with the public streets.
6. Length of time of the development agreement.
7. Fencing. The Planning Commission asked for screening from the school.
8. Off-site utility connections for water.
9. Landscaping, architecture, lighting and streetscapes improved as per City Code.

Important issues for the developer include:

1. Length of time of the development agreement.
2. Vesting of development as per codes in place when approved in 2021.
3. Flexibility in the road placement and improvement levels to accommodate various needs of nearby property owners.

FISCAL IMPACT

N/A

CONCLUSION

N/A

ALTERNATIVES

N/A

POTENTIAL MOTIONS

N/A

ACCOUNTABILITY

Department: Planning
Staff member: Tony Kohler, Community Development Director

EXHIBITS

1. Exhibit B - 860 S Sidewalk and Fire Lane for P2 (1)
2. Exhibit D - Possible 860 S with fire lane
3. 2025-02-20 Draft Term Sheet for Development Agreement for The View on Main and Heber City
4. RedLine 2-25-25 Termsheet

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	BY	DATE	REVISIONS
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DESIGN ENGINEER DATE

PROJECT MANAGER: BMB
PROJECT ENGINEER: BMB
DRAWN BY: SFS
ISSUE DATE 2/5/2025

PROJECT: VIEWS ON MAIN

SHEET TITLE: OPTIONAL ROAD LAYOUT EXHIBIT USING PROPOSED ROAD ALIGNMENT

PROJECT: C21-029

SHEET: EXH-2

ATWELL
888.850.4200 www.atwell.com
55 WEST CENTER • P.O. BOX 176 HEBER CITY, UTAH 84032
P: 435-654-9229 • F: 435-654-9231

Z:\SLC PROJECTS\CURRENT PROJECTS\C21-029 ROCKPOINT MNTG - VIEWS ON MAIN\WORKING FILES\SHARED DATA FILES\XREFS\C21-029 HZL PRVT DRV-MAX MPRV.DWG

1 INCH = 40 FT
(SCALE IN FEET)

WASATCH HIGH SCHOOL
EXISTING SCHOOL ACCESS ROAD
ONE WAY
FIRE ACCESS ROAD
RAMP
ACE HARDWARE
790 SOUTH
PHASE 2 BUILDING
PHASE 1 BUILDING
AUTOZONE
CONZIO
LOFTY PEAKS
HWY 40 / MAIN ST

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REVISIONS		
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DESIGN ENGINEER | DATE

PROJECT ENGINEER: BMB
PROJECT MANAGER: BMB

DRAWN BY: SFS
ISSUE DATE: 1/13/2025

PROJECT: VIEWS ON MAIN

SHEET TITLE: OPTIONAL ROAD LAYOUT EXHIBIT USING PROPOSED ROAD ALIGNMENT

PROJECT: C21-029

SHEET: EXH-2

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Term Sheet Development Agreement for The View on Main and Heber City

Prepared by Luke Kennard - February 14th 2025 Draft

Preamble:

This development agreement is to formalize an agreement between Heber City and The View on Main project with the application date of August 5th, 2021. Retaining 5 stories, zoning and density requirements that were met with code requirements at the time of application. The intent of this development agreement is to address road agreements and keep in place previous approvals at the time of application from zoning and code that have since changed.

1. Project Scope and Phases

- **Project Name:** The View on Main
- **Project Location:** 825 S Main St, Heber City
- **Project Description:** Multi-Unit-Condo-Hotel 5 Story with commercial/retail/meeting space on the ground floor. 196 Suites/units - 255 keys with lock off units.
- **Phasing:**
    - **Phase 1:**
        - 116 total suites/units
        - Ground floor commercial uses
        - Construction and permitting
        - Emergency fire access on 790 S Street
    - **Phase 2:**
        - 80 total suites/units
        - Ground floor commercial units
        - Construction and permitting
        - Additional site improvements for 860 S Street
    - **Timing:**
        - The Developer retains full discretion in determining the sequence and initiation of Phase 1 and Phase 2 development for this condo hotel project. Each phase is intended to be a complete, fully constructed component of the overall development. Construction and permitting may be:
            - Completed simultaneously for both phases
            - Initiated and completed for Phase 1 independently
            - Initiated and completed for Phase 2 independently
        - The Developer may commence and complete each phase based on market demand, financial considerations, and project requirements. Any phasing approach must ensure that:

- Each phase represents a fully realized and functional segment of the condo hotel
- Public infrastructure improvements are coordinated with and approved by City Engineering
- The overall development meets all municipal requirements and approved site plans

---

2. Zoning and Land Use

- **Zoning Designations:**
  - Compliance with the C2 zoning area standards as of the application date 08.05.2021 unless otherwise agreed to here by the parties.
- **Fencing:**
  - The View shall install fencing along its boundaries of 790 South and 100 East that will be durable and conform to Heber City design and/or fencing standards in the C2 zoning area. Said fencing will be maintained in good working order and appearance. Fencing shall not be vinyl.

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3. Vesting Rights

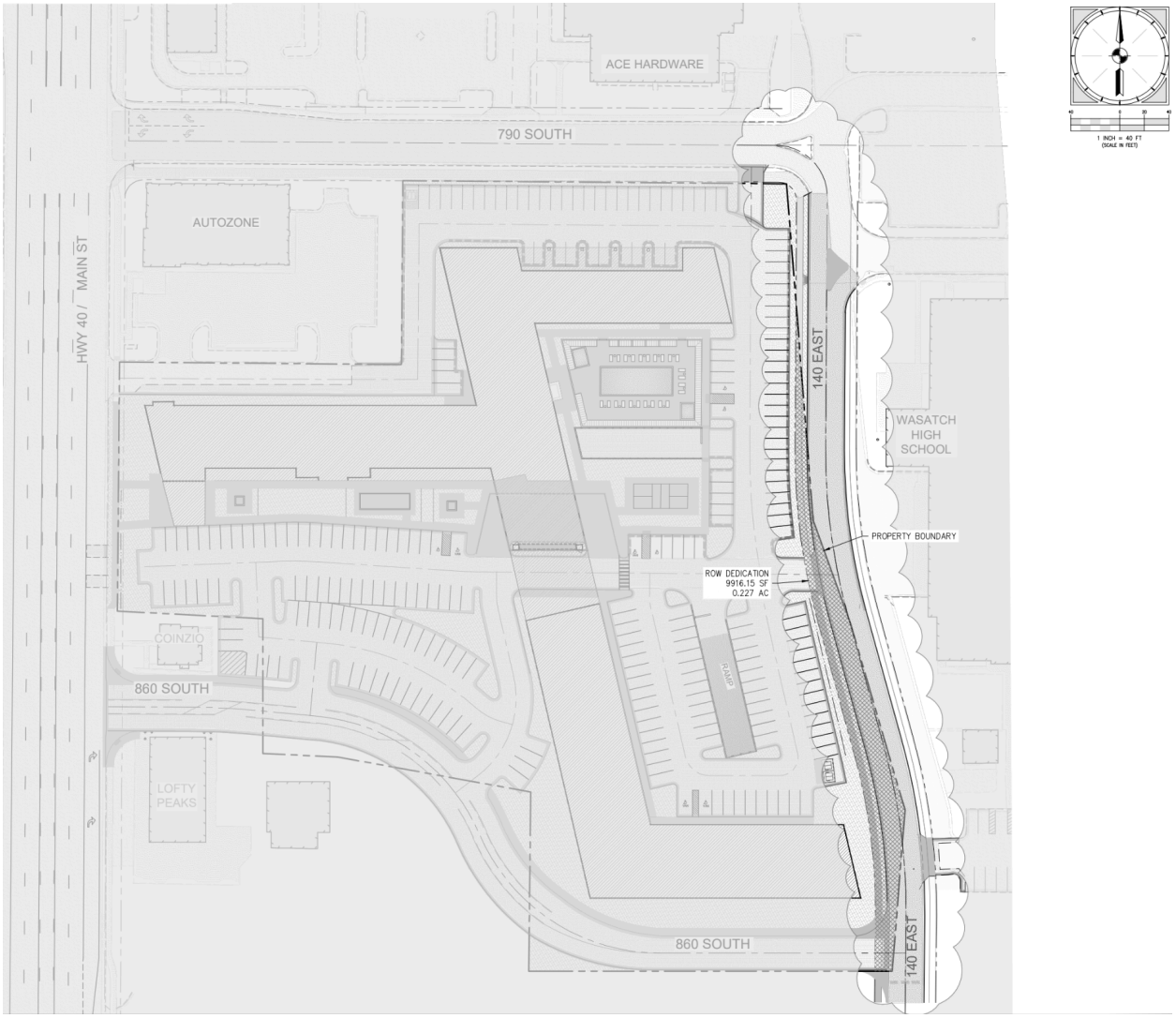
- **Vested Rights:**
  - Upon commencement, The View is entitled to construct phases in compliance with this **MDA**.
  - 5 stories
  - No less than Unit counts indicated above - 196 suites/units, ground floor commercial space
- **Duration of Vesting:**
  - Rights vested through the duration of the use.
- **Impact of Changes in Laws:**
  - Any changes in local, state, or federal laws after execution will not affect vested rights, except as agreed upon by both parties.
  - Agreement Length of 10 years.

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4. Public Infrastructure Contributions

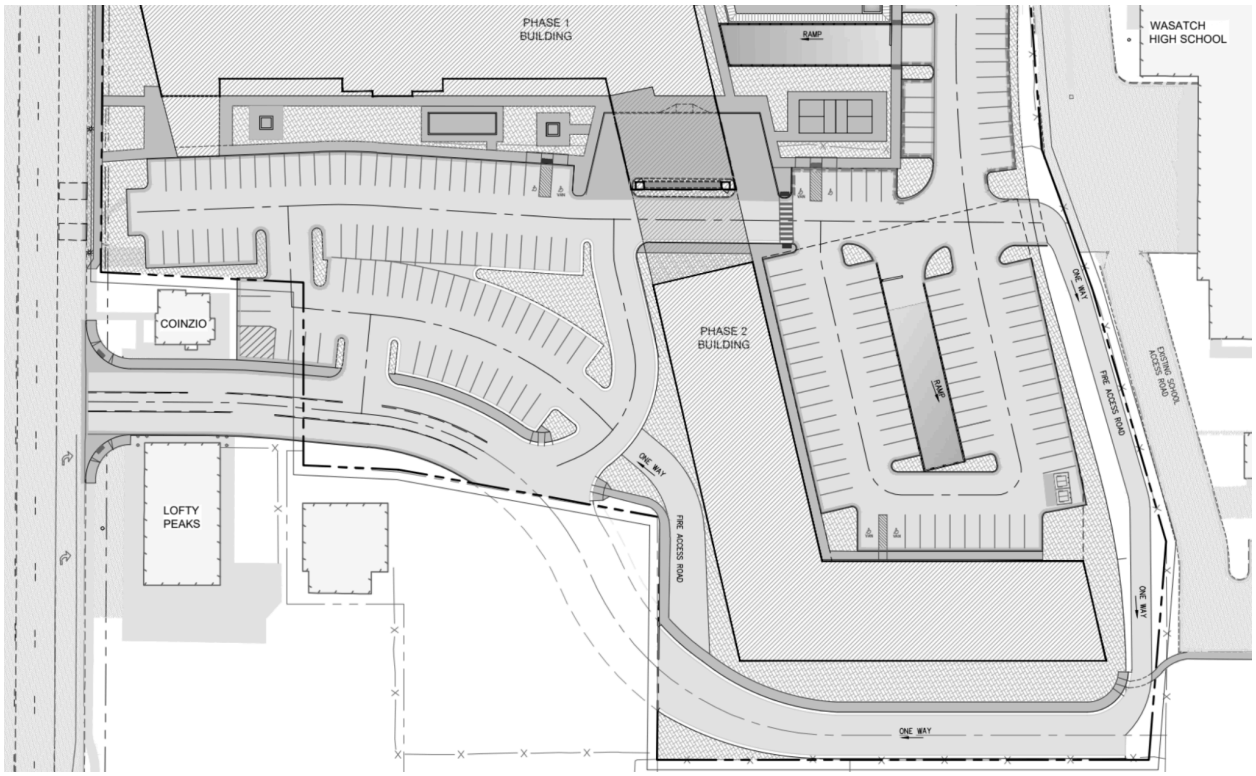
- **Roads and Transportation:**
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        - Upon request of the City, the Developer will participate in dedicating its portion of the right-of-way needed for the future 100 East Street at the time said 100 East is to be constructed.
        - Exhibit of portion being dedicated - Exhibit A

Exhibit A



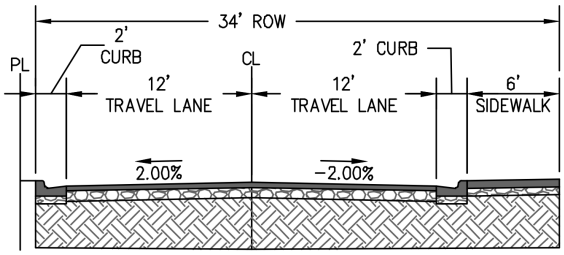
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Exhibit - B

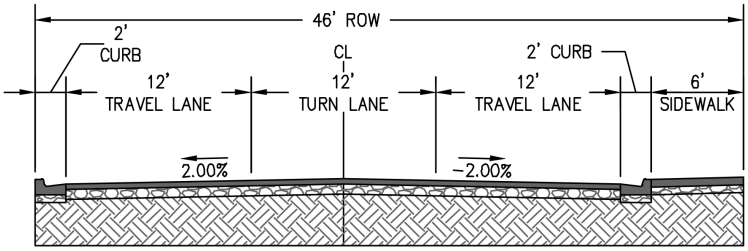


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  - If the city decides to build it first, dedication will happen at the time of city construction of the road.
  - Alternatively, dedication may happen upon agreement of both parties.
  - Western portion constructed at the start of the project with either phase.
  - Eastern portion constructed dedicated in tandem with Phase 2.
- The width varies from 46 on the west end tapering to 34 feet on the east end
- No park strip/sidewalk on the south side
- See elevation exhibit - Exhibit C

Exhibit C



34' ROW - 2 LANE CROSS-SECTION



46' ROW - 3 LANE CROSS-SECTION

        - The Construction of 860 South Street may be completed in phases.
            - Phase 1 of the project shall construct the road up to the second entrance into the property.
            - When Phase 2 is constructed, the whole western portion of the road will be completed.
    - **Traffic light on 860 South Street:**
        - UDOT will determine the timing and construction of the traffic light.

- **Utilities:**
    - Developer will install all necessary utility connections for the project per city code.
    - Future utility extensions for adjacent developments will be paid for and constructed by the developer and reimbursed by the City based on actual costs including associated financing costs.
    - Utilities outside of the development's perimeter will not be improved (e.g. irrigation line. The developer has no legal write to obtain access to this utility and will use culinary water from its own supply to service landscaped spaces)

Discussion point - Irrigation line extension. Currently the irrigation line is on private property and outside of the reach of the project. If it is brought to the site, then the question is city irrigation extension vs no extension through the site. The ideal scenario for the developer is to not use the irrigation line at all. The ideal scenario for the city is to run the irrigation line through the property. If it runs through the property, the more ideal situation is to bring it through 790 South

and then down the future 100 E instead of through the site. It may be brought through the site, but this will be determined through a planning process with city staff.

---

5. Fees and Exactions

- **Impact Fees:**
  - Developer to pay impact fees related to infrastructure, water, sewer, and other public utilities as part of building permit applications.
- **Exactions:**
  - Dedication of 860 South Street and developer owned portions of 100 East streets for public right-of-way.

---

6. Development Standards and Design Guidelines per Application Date

- **Vested architectural standards, landscaping requirements, lighting, signage and streetscape:**
  - Buildings, landscaping, lighting, signage and streetscapes must adhere to Heber City's C2 design standards as of the application date 08.05.2021

---

7. Timing and Completion

- **Development Timeline:**
  - Phase 1 and/or Phase 2 construction will commence sometime after execution of this **MDA** and after final site plan approval. Approvals to be vested for the duration of the use.

---

10. Maintenance and Operations

- **Common Areas:**
  - Developer is responsible for maintaining roads, sidewalks, and any installed safety features during construction.
- **Ongoing Maintenance:**
  - After dedication to and acceptance by Heber City, the City will assume responsibility for long-term maintenance of 860 South and future 100 East.

---

11. Dispute Resolution

- **Mediation and Arbitration:**
    - Any disputes will first be referred to mediation. If unresolved, binding arbitration may follow before litigation is considered.
- **Jurisdiction and Venue:**
    - Legal actions will be handled in Wasatch County, Utah.

---

12. Amendments and Modifications

- **Process for Amendments:**
    - Amendments to this **MDA** must be approved by both parties in writing.
- **Minor vs. Major Changes:**
    - Minor modifications (e.g., materials, minor design alterations) can be approved administratively, while major changes require City Council approval.

---

13. Default

- **Default Provisions:**
    - Remedies for default include suspension of construction permits or legal action to compel performance.

---

14. Indemnification and Insurance

- **Developer Indemnification:**
    - Developer agrees to indemnify Heber City against any claims or damages arising from construction activities.
- **Insurance Requirements:**
    - Developer must maintain adequate insurance coverage during construction and post-completion to protect against property damage and liability claims.

---

15. Miscellaneous Provisions

- **Force Majeure:**

    - In the event of unforeseen circumstances (natural disasters, etc.), the deadlines in this **MDA** may be extended or waived.
- **Assignment and Transfer:**
    - The Developer may assign its rights under this **MDA** to another entity without the City's written consent.
- **Severability:**
    - If any provision of this **MDA** is found to be invalid, the remainder of the agreement will remain in full force and effect.

Scan to view all Exhibits

Term Sheet Development Agreement for The View on Main and Heber City

Prepared by Luke Kennard - February 14th 2025 Draft

Preamble:

This development agreement is to formalize an agreement between Heber City and The View on Main project with the application date of August 5th, 2021. Retaining 5 stories, zoning and density requirements that were met with code requirements at the time of application. The intent of this development agreement is to address road agreements and keep in place previous approvals at the time of application from zoning and code that have since changed.

1. Project Scope and Phases

- **Project Name:** The View on Main
- **Project Location:** 825 S Main St, Heber City
- **Project Description:** Multi-Unit-Condo-Hotel 5 Story with commercial/retail/meeting space on the ground floor. 196 Suites/units - 255 keys with lock off units.
- **Phasing:**
    - **Phase 1:**
        - 116 total suites/units
        - Ground floor commercial uses
        - Construction and permitting
        - Emergency fire access on 790 S Street
    - **Phase 2:**
        - 80 total suites/units
        - Ground floor commercial units
        - Construction and permitting
        - Additional site improvements for 860 S Street
    - **Timing:**
        - The Developer retains full discretion in determining the sequence and initiation of Phase 1 and Phase 2 development for this condo hotel project. Each phase is intended to be a complete, fully constructed component of the overall development. Construction and permitting may be:
            - Completed simultaneously for both phases
            - Initiated and completed for Phase 1 independently
            - Initiated and completed for Phase 2 independently
        - The Developer may commence and complete each phase based on market demand, financial considerations, and project requirements. Any phasing approach must ensure that:

- Each phase represents a fully realized and functional segment of the condo hotel
- Public infrastructure improvements are coordinated with and approved by City Engineering
- The overall development meets all municipal requirements and approved site plans

---

2. Zoning and Land Use

- **Zoning Designations:**
  - Compliance with the C2 zoning area standards as of the application date 08.05.2021 unless otherwise agreed to here by the parties.
- **Fencing:**
  - The View shall install fencing along its boundaries of 790 South and 100 East that will be durable and conform to Heber City design and/or fencing standards in the C2 zoning area. Said fencing will be maintained in good working order and appearance. Fencing shall not be vinyl.

---

3. Vesting Rights

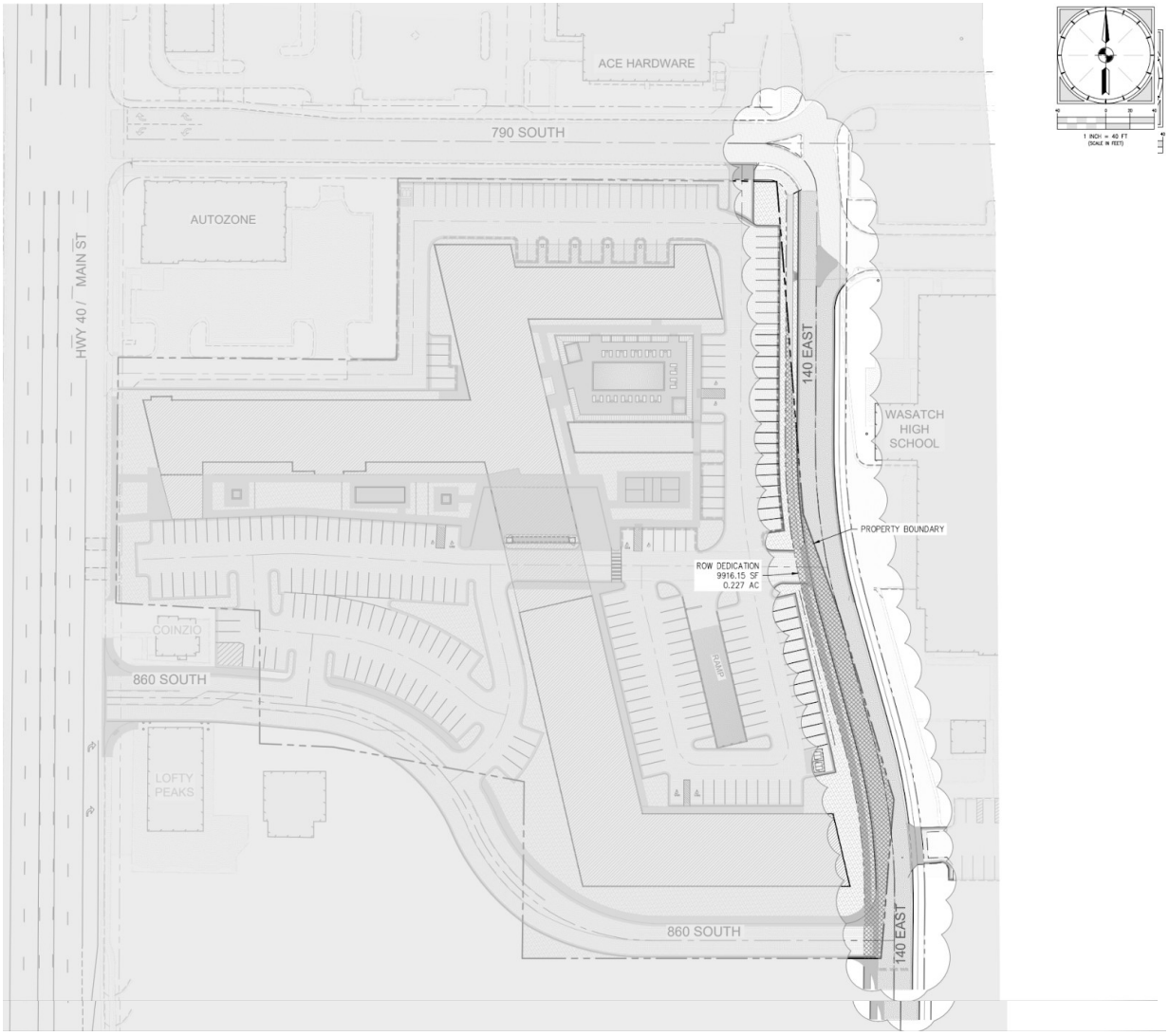
- **Vested Rights:**
  - Upon commencement, The View is entitled to construct phases in compliance with this **MDA**.
  - 5 stories
  - No less than Unit counts indicated above - 196 suites/units, ground floor commercial space
- **Duration of Vesting:**
  - Rights vested through the duration of the use.
- **Impact of Changes in Laws:**
  - Any changes in local, state, or federal laws after execution will not affect vested rights, except as agreed upon by both parties.
  - Agreement Length of 10 years.

---

4. Public Infrastructure Contributions

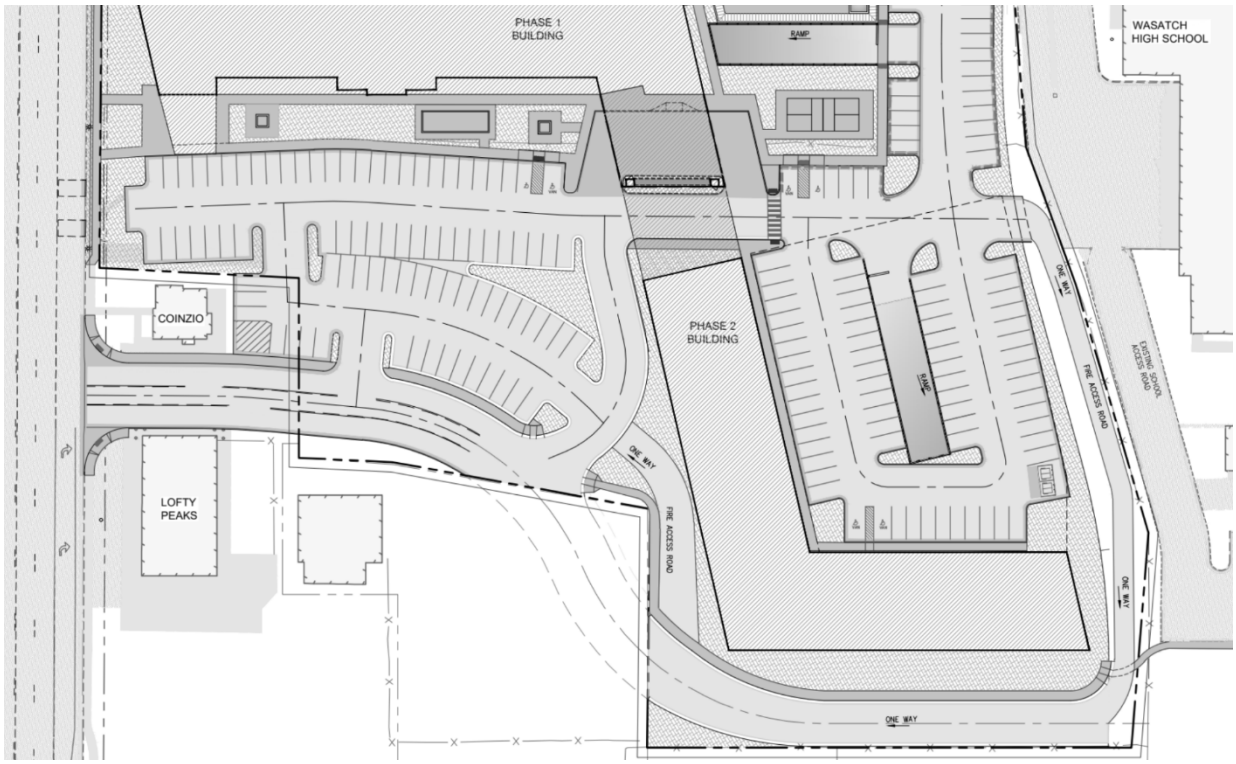
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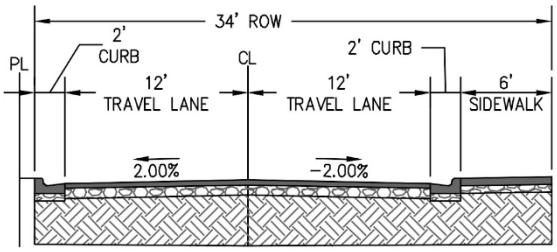
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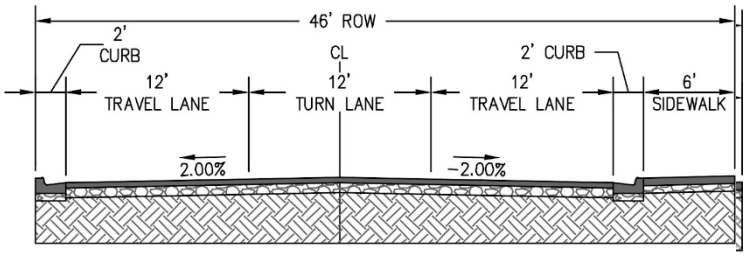


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    ~~Discussion Point - If Phase 1 is constructed first, can we have the road built up to the first entrance only?~~
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Heber City Council Staff Report

MEETING DATE: 3/4/2025
SUBJECT: Red Rock Annexation Term Sheet
RESPONSIBLE: Jamie Baron
DEPARTMENT: Planning
STRATEGIC RELEVANCE: Community and Economic Development

SUMMARY

Red Rock Holdings is requesting to Annex 31 acres of Industrial land into the City. The property is occupied by Delta Stone.

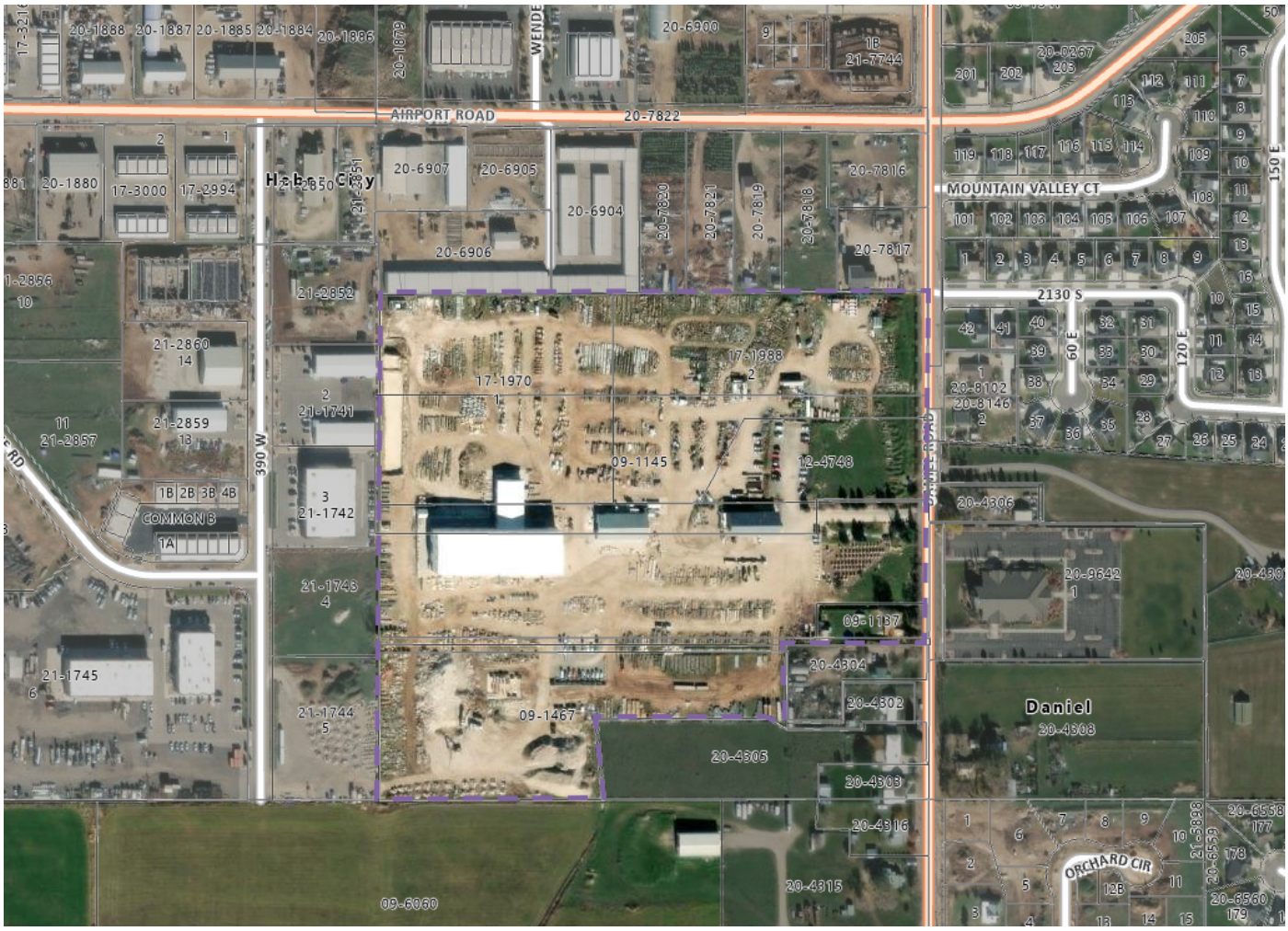
Policy Question:
1. Should the City approve the Red Rock Annexation?

RECOMMENDATION

Staff and the applicant are requesting the Council address the terms of the annexation agreement in preparation of a public hearing.

BACKGROUND

The Red Rock Holdings is requesting to annex 31 acres of industrial land into Heber City. This property is currently occupied by Delta Stone. The property is bordered by Heber City and the Town of Daniel. Delta Stone is considering building a new office/admin building for their existing business near Daniels road.



DISCUSSION

Process

The process is as follows:

- 30 day certification process - **Completed**
- 30 day protest period - **Completed**
- Review and recommendation by Planning Commission - **Completed**
- Public hearing at City Council - **Preparing**
- Decision by City Council

General Plan

The General Plan does include this area and designates it as industrial. This area is within the Annexation Policy Plan boundary. It is anticipated that the zoning for the property would be I-2 Industrial.

Planning Commission Recommendation

The Planning Commission forwarded a positive recommendation on January 14, 2025 with the

following findings and conditions:

Findings

1. The Annexation is within the Annexation Policy Boundary.
2. The Annexation meets the requirements of Utah State Code.
3. The Annexation is consistent with the General Plan.

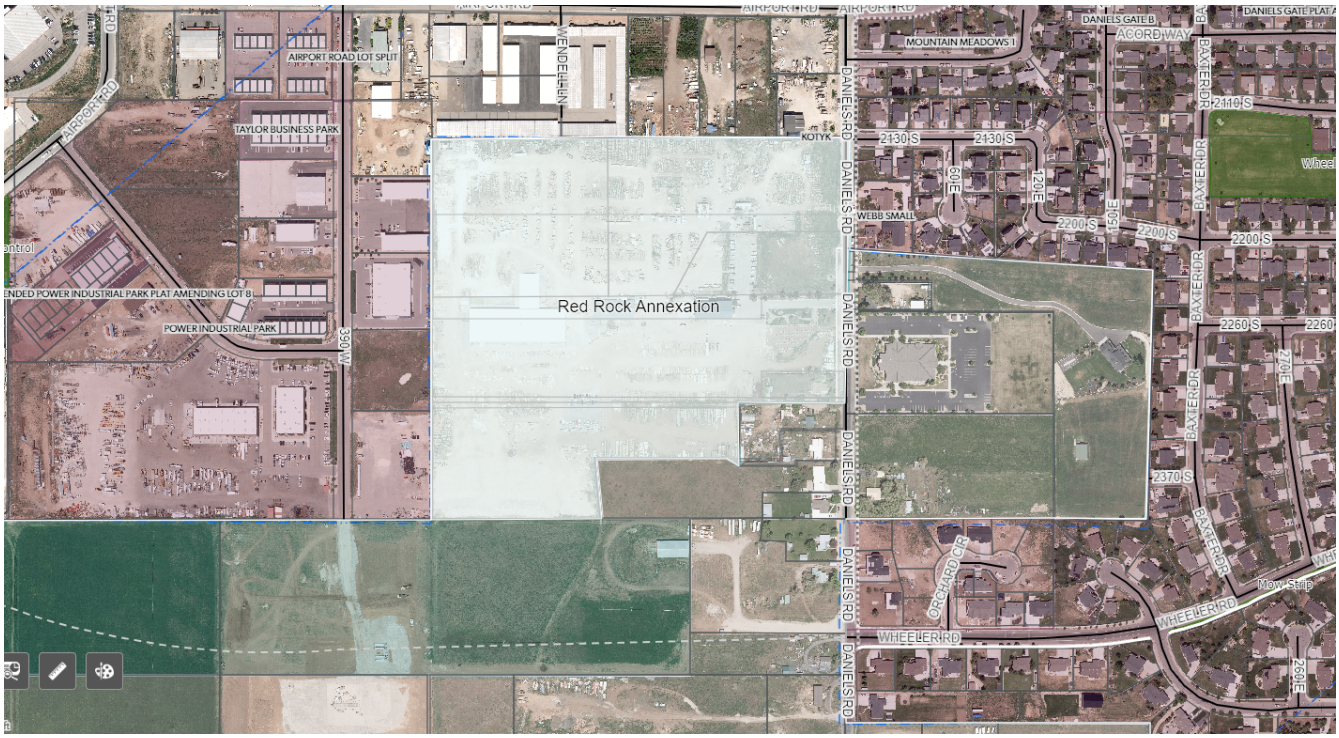
Conditions

1. Zoning to be I-2 Industrial.
2. Upon development, a road connecting 390 W to Daniels Road
3. Dedicate the Daniels Road Right of Way
4. Upgrade Daniels Road to a Major Collector
5. Applicant(s) and any successors shall comply with all City policies, processes, ordinances, standards, and specifications.
6. All Master Planned infrastructure elements on or adjoining the property shall be designed and installed by the applicant.
7. All City Engineer Requirements shall be met prior to any final development plans being approved.
8. All comments from the Comment Summary (attached) shall be met.
9. Wording on the road (390 W to Daniels Road) be worked out between the City and Property Owner.

Issues to discuss

Road from 390 W to Daniel Road.

City Staff is recommending a future road be built from 390 W to Daniel Road. This road would be required upon development of at request of the City. This will impact lot 4 of the Power Industrial Park, which was sold with some requirements for a 20,000 square foot building. The City currently owns a 16.5 foot strip of land, approximately .50 acres, running east to west. The applicant is requesting that the road be at the applicant's request or need.



Daniel Road Improvements
Staff is recommending the agreement include the required widening and improvements on Daniels Road, with development. The applicant is proposing that the improvements be done conditioned upon or in exchange for the City giving the .50 acre piece of land to the applicant. Please see the applicant's proposed language in the exhibits.

Petitioner to Initiate Discussion with Heber City and Town of Daniels
Staff is requesting that the applicant begin the discussion between Heber City and Daniels Town to address the improvements and maintenance of Daniels Road.

FISCAL IMPACT

N/A

CONCLUSION

Red Rock Holdings is seeking the annexation of 31 acres of industrial land. Staff and the applicant are seeking input from the City Council on the following items, in preparation of an annexation agreement and public hearing.

Discussion items
1. Road from 390 W to Daniels Road, including how to address the 16.5 foot strip of land (.50 acres) within the annexation and the purchase agreement of lot 4 of Power Industrial Park.
2. Daniels Road improvements
3. Initiation of discussions between Heber City and the Town of Daniel.

ALTERNATIVES

Not an Action Item

POTENTIAL MOTIONS

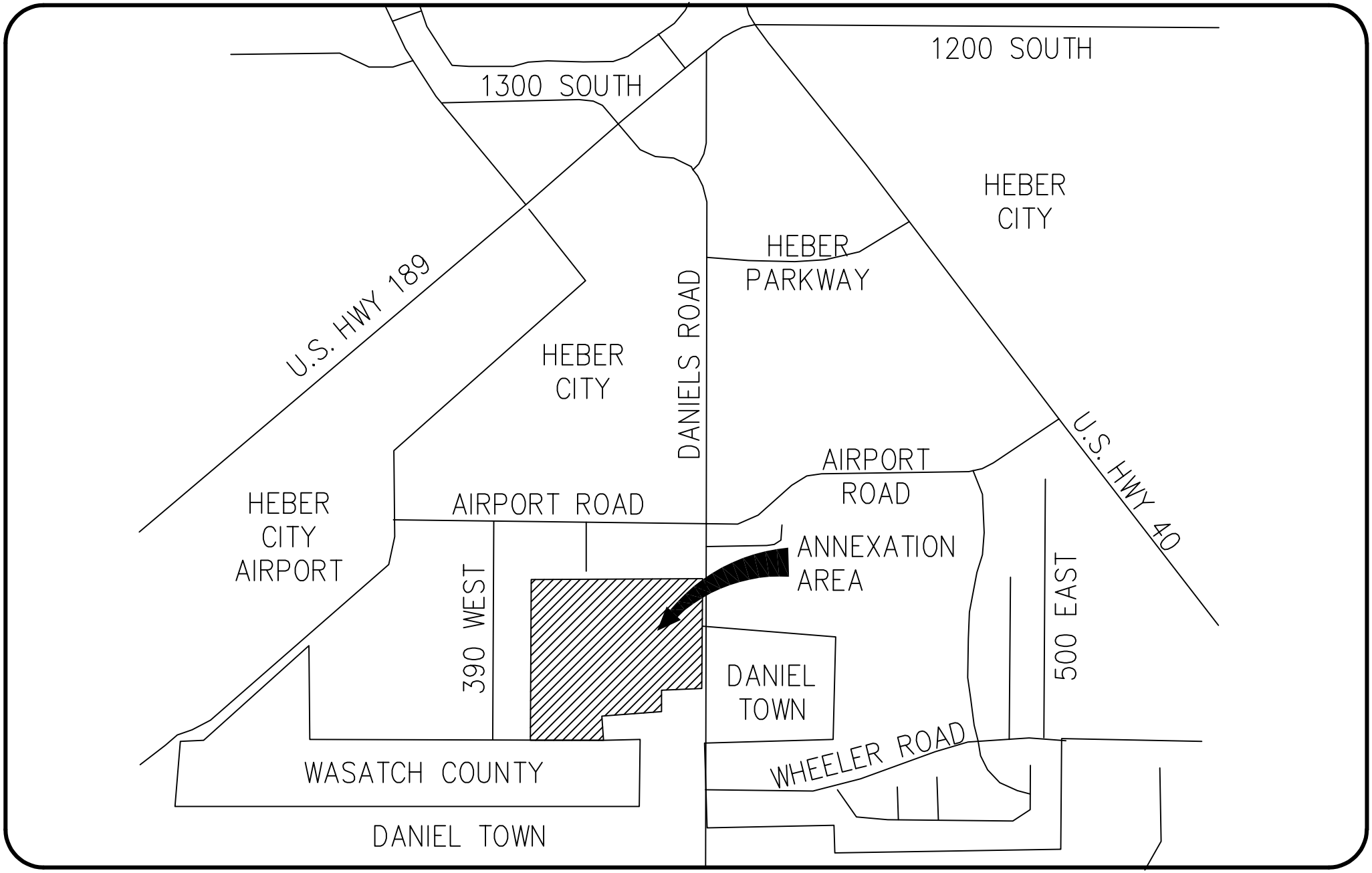
Not an Action Item

ACCOUNTABILITY

Department: Planning
Staff member: Jamie Baron, Planning Manager

EXHIBITS

1. Red Rock Annexation
2. Applicant Proposed Text
3. Staff Comments - Red Rock Annexation Comments Summary
4. RED ROCK ANNEXATION PLAT
5. Annexation Petition - Red Rock


1200 SOUTH
1300 SOUTH
HEBER
CITY
HEBER
PARKWAY
U.S. HWY 189
DANIELS ROAD
HEBER
CITY
U.S. HWY 40
AIRPORT
ROAD
HEBER
CITY
AIRPORT
AIRPORT ROAD
ANNEXATION
AREA
390 WEST
500 EAST
DANIEL
TOWN
WHEELER ROAD
WASATCH COUNTY
DANIEL TOWN

Draft text for Annexation Agreement for
RED ROCK ANNEXATION

1. Within 90 days of this annexation being approved by Heber City Council, property owner agrees to deed the required land to Heber City and Daniel Town for road right-of-way along Daniel Road per the City and Town master transportation plans and adopted road standards for a Major Collector road (approximately 0.77 acres.) In exchange for the immediate dedication of the right-of-way, Heber City agrees to record a Quit Claim Deed to the Petitioner for the 16-ft x 1320-ft strip of land that currently divides the Petitioner's properties, being Parcel 00-0021-0999 (approx. 0.485 acres.)

2. Development or subdivision of parcels fronting on Daniel Road will require curb, gutter, and asphalt widening, and also utility extensions per Heber City standards and specifications. This is anticipated to be the Major Collector standard, and construction shall match the grade and width of the already-constructed road. This also may include a public trail or sidewalk along the south side of Daniel Road, as determined by the City Council.

3. Upon development of parcels fronting on Daniel Road, property owner agrees to honor any pioneering agreements for installed utilities along that section of road that the City is obligated to enforce.

4. Daniel Road improvements lying with the jurisdiction of The Town of Daniel shall be coordinated and approved by the Town.

5. Future development and subdivision of the subject parcels shall be according to Heber City ordinances and regulations at the time of development or subdivision, including future driveways, private roads or public roads connecting to Daniel Road and 390 West, as desired or needed by the developer.

Red Rock Annexation Comments Summary

1/14/25 PC Meeting

Wasatch County Fire

Access and Fire Flow to be approved by Wasatch Fire.

Planning

Approved with Conditions

- Zoned I-2
- Access road from 390 West to Daniels Road

Engineering

Applicant and any successors of this project shall comply with all City policies, processes, ordinances, standards, and specifications. Additionally, all Master Planned infrastructure elements on or adjoining the subject property need to be designed and installed by applicant. All City Engineer requirements will need to be satisfied prior to any final development plans being approved. The following are site and infrastructure concerns known at this time that need to be addressed and finalized through the development process: (Please note that the following list is not to be considered all inclusive and additional concerns may arise as design plans are submitted for review.)

Boundary lines of existing parcels extend into Daniels Road. Conveyance to Heber City of property in roadway needs to occur.

Daniels Road is on the Master Plan as a Major Collector. Upon development, proper width to accommodate a Major Collector road will need to be dedicated to the City.

Part of the Daniels road is under the Daniel Township jurisdiction. As part of the annexation, owner needs to engage Daniel Town into discussion and possibly into operation and maintenance agreement depending on Daniel Town administration plan.

Transportation plan calls for a connection between Daniels Road and 390 West. There already exists a strip of land in the name of Heber City through the property. Owner will need to work with Heber City to possibly swap land, realign, provide ROW and construct a city standard road.

Design, construct, and pay for widening of Daniels Road to major collector road standards and match grade and width of already constructed adjoining road cross section.

As property is improved, extend all utility lines including curb and gutter and asphalt widening along Daniels Road frontage per Heber City standards and specifications.

Master Planned paved trail along Daniels Road will need to be designed and constructed with improvements.

Comply with any pioneering agreements in place for any infrastructure reimbursements that City is obligated to enforce and collect.

Heber Light and Power

Please show Heber Light & Power's existing underground power lines on the plat.

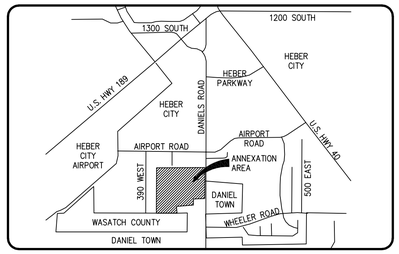
RED ROCK ANNEXATION
HEBER CITY, UTAH

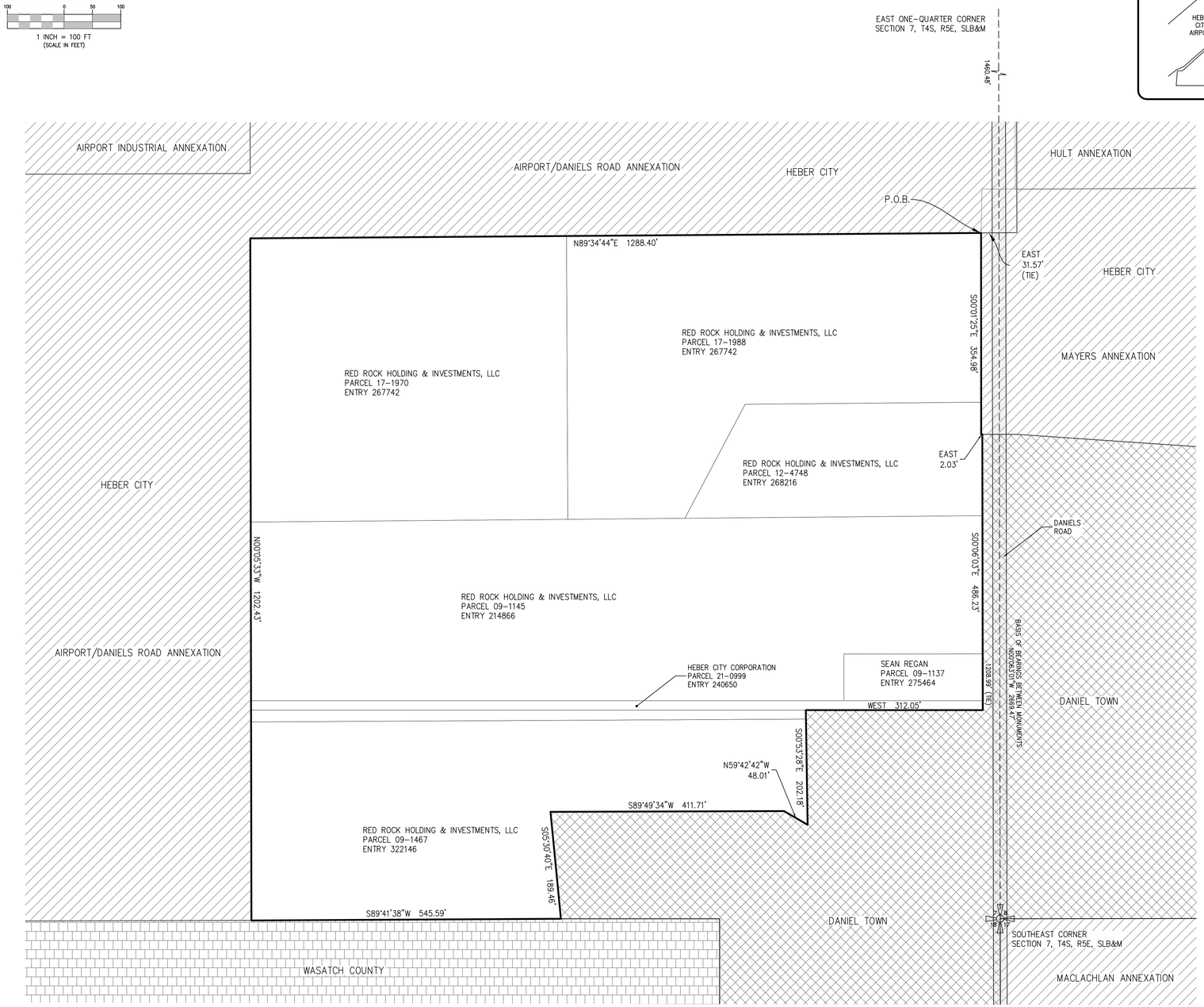
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN

100 0 50 100

1 INCH = 100 FT
(SCALE IN FEET)

VICINITY MAP





SURVEYOR'S CERTIFICATE

I, BRIAN BALLS, CERTIFY THAT I AM LICENSED AS A PROFESSIONAL LAND SURVEYOR IN THE STATE OF UTAH (REF. NO. 334532-2201) IN ACCORDANCE WITH TITLE 58, CHAPTER 22, PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS LICENSING ACT. I FURTHER CERTIFY THAT:

1. THIS PLAT REPRESENTS THE RESULTS OF A BOUNDARY SURVEY CONDUCTED UNDER MY SUPERVISION AT THE REQUEST OF RJ ENTERPRISES.

2. THE LAND SURVEYED LIES WITHIN SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, WASATCH COUNTY, UTAH, AND THE SURVEY WAS COMPLETED DURING JUNE 2024.

3. THIS PLAT COMPLIES WITH APPLICABLE STATUTES OF THIS STATE AND ANY LOCAL ORDINANCES IN EFFECT ON THE DATE THAT THE SURVEY WAS COMPLETED, AND THE SURVEY WAS CONDUCTED IN ACCORDANCE WITH TITLE 17, CHAPTER 23, PARAGRAPH 20, OF THE UTAH CODE.

4. THE MONUMENTS DEPICTED AS FOUND AND/OR SET ON THE PLAT ARE OF THE CHARACTER SHOWN, OCCUPY THE POSITIONS INDICATED, AND ARE OF SUFFICIENT DURABILITY.

BRIAN BALLS
PROFESSIONAL LAND SURVEYOR

SURVEYOR'S SEAL

BOUNDARY LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE SOUTHEAST ONE-QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, WASATCH COUNTY, UTAH, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT THAT LIES NORTH 00°06'01" WEST 1208.99 FEET AND WEST 31.57 FEET FROM THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, SAID POINT BEING AT THE CURRENT HEBER CITY BOUNDARY ACCORDING TO THE MAYERS ANNEXATION (ENTRY NO. 320526) (BASIS OF BEARINGS OF THIS DESCRIPTION BEING NORTH 00°06'01" WEST BETWEEN THE SOUTHEAST CORNER AND THE EAST ONE-QUARTER CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN);

THENCE ALONG THE BOUNDARY OF SAID MAYERS ANNEXATION THE FOLLOWING TWO (2) COURSES: (1) S00°01'25"E 354.98 FEET, (2) EAST 2.03 FEET TO THE WESTERLY BOUNDARY OF DANIEL TOWN ACCORDING TO THE TOWN OF DANIEL INCORPORATION PLAT (ENTRY NO. 298178); THENCE ALONG SAID DANIEL TOWN BOUNDARY THE FOLLOWING SIX (6) COURSES: (1) S00°06'03"E 486.23 FEET, (2) WEST 312.05 FEET, (3) S00°53'28"E 202.18 FEET, (4) N59°42'42"W 48.01 FEET, (5) S89°49'34"W 411.71 FEET, (6) S05°30'40"E 189.46 FEET; THENCE LEAVING SAID DANIEL TOWN BOUNDARY S89°41'38"W 545.59 FEET TO THE EASTERLY BOUNDARY OF THE DANIEL/AIRPORT ROAD ANNEXATION (ENTRY NO. 324808); THENCE ALONG SAID DANIEL/AIRPORT ROAD ANNEXATION BOUNDARY (ROTATED 00°00'07" COUNTER-CLOCKWISE ABOUT THE EAST QUARTER CORNER MONUMENT TO THIS BASIS OF BEARINGS) THE FOLLOWING TWO (2) COURSES; (1) N00°05'33"W 1202.43 FEET, (2) N89°34'44"E 1288.40 FEET TO THE POINT OF BEGINNING.
PARCELS (7) CONTAIN 31.13 ACRES.

PARCELS (7) CONTAIN 31.13 ACRES.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY WAS ESTABLISHED AS NORTH 00°06'01" WEST BETWEEN THE SOUTHEAST CORNER AND THE EAST ONE-QUARTER CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN IN CONFORMANCE WITH UTAH STATE PLANE COORDINATES, 1983 CENTRAL ZONE BEARINGS.

ACCEPTANCE BY LEGISLATIVE BODY

THE CITY COUNCIL OF HEBER CITY, WASATCH COUNTY, UTAH, APPROVES THIS ANNEXATION SUBJECT TO THE CONDITIONS AND RESTRICTIONS STATED HEREON THIS____DAY OF_____, 20____.

MAYOR

CLERK-RECORDER

PLANNING COMMISSION APPROVAL

APPROVED THIS_____DAY OF_____, 20____, BY THE PLANNING COMMISSION OF HEBER CITY.

CHAIRMAN, PLANNING COMMISSION

WASATCH COUNTY SURVEYOR

APPROVED AS TO FORM THIS____DAY OF_____, 20____.

ROS # _____

COUNTY SURVEYOR

WASATCH COUNTY RECORDER

ENTRY #:_____, DATE:_____, TIME:_____.

FEE:_____, BOOK:_____, PAGE:_____, FOR:_____.

BY:___WASATCH COUNTY RECORDER MARCY M. MURRAY

Z:\SEG PROJECTS\CURRENT PROJECTS\ATWELL CURRENT PROJECTS\24005437 RJ ENTERPRISES RED ROCK HC ANNEXATION\WORKING FILES\SURVEY\DWG\OLD\24005437 RED ROCK ANNEXATION PLAT-2.DWG

PROJECT 24005437 SHEET 1 OF 1	RED ROCK ANNEXATION HEBER CITY, UTAH LOCATED IN THE SOUTHEAST ONE-QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN	LOCATED IN THE SOUTHEAST 1/4 OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SLB&M WASATCH COUNTY, UTAH	DRAWN BY: SMT REVIEWED BY: MPJ/BMB ISSUE DATE 08/07/2024	ATWELL 866.850.4200 www.atwell-group.com 55 WEST CENTER • P.O. BOX 176 HEBER CITY, UTAH 84032 P: 435-654-9229 • F: 435-654-9231

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ATWELL GROUP

DRAWING ALTERATION
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF THE PROFESSIONAL LAND SURVEYOR TO ALTER ANY ITEM ON THIS DOCUMENT IN ANY WAY. ANY LICENSEE WHO ALTERS THIS DOCUMENT IS REQUIRED BY LAW TO AFFIX THEIR SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE AND SPECIFIC DESCRIPTION OF THE ALTERATIONS.

PETITION FOR ANNEXATION INTO HEBER CITY
Annexation Name: Red Rock Annexation

We, the undersigned owners of certain real property lying contiguous to the present municipal limits of Heber City hereby submit this Petition for Annexation and respectfully represent the following:

1. This petition is made pursuant to the requirements of Section 10-2-403, Utah Code Annotated:

2. The property subject to this petition is an unincorporated area contiguous to the boundaries of Heber City and the annexation thereof will not leave or create an unincorporated island or peninsula;

3. The signatures affixed hereto are those of the owners of private real property that:

    a. is located within the area proposed for annexation;
    b. covers a majority of the private land area within the area proposed for annexation;
    c. is equal in value to at least 1/3 of the value of all private real property within the area proposed for annexation; and
    d. lies contiguous to the present boundary of Heber City's corporate limits, located at the approximate address: 2276 S Daniels Road, Heber City, UT 84032-4017

4. The petitioners have caused an accurate plat or map of the above-described property to be prepared by a licensed surveyor, which plat or map is filed herewith in Exhibit A;

5. Title to the property by those signing this petition is as shown in the deeds or title report attached hereto as Exhibit B.

6. The manner in which it was established that at least 1/3 of the value of all the private property sought to be annexed and at least a majority of the acreage is owned by the signers of this petition is shown in the attached Exhibit C (value and acreage spreadsheet) and Exhibit D (copies of all tax notices).

7. Land values and acreage within the annexation are as follows:

a. Total acreage within annexation:	31.132 AC.	
b. Total private property acreage within annexation:	30.643 AC.	
c. Petitioner's acreage within annexation:	30.178 AC.	96.9% % of Total Private Area
d. Total Assessed Land Value within annexation:	$13,570,100	
e. Petitioner's Assessed Land Value within annexation	$12,987,600	95.7% % of Total Value

8. This petition does not propose annexation of all or a part of an area proposed for annexation in a previously filed petition that has not been denied, rejected, or granted;

9. This petition does not propose annexation of all or a part of an area proposed to be incorporated in a request for a feasibility study under Section 10-2-103 U.C.A. or a petition under Section 10-2-125, U.C.A. if:

    a. the request or petition was filed before the filing of the annexation petition, and
    b. the request, a petition under Section 10-2-109 based on that request, or a petition under Section 10-2-125 is still pending on the date the annexation petition is filed;

10. The names and mailing addresses of all the owners of the parcels of land located within 300 feet of the area proposed to be annexed as shown in Exhibit E.

11. A vicinity map showing the City's current boundaries in relation to the proposed annexation in Exhibit F.

12. Per the Heber City Annexation Policy Plan, a Concept Plan is attached as Exhibit G. This Concept Plan is a very preliminary plan -- the petitioner is not strictly bound by it. However, it is the hope of the Heber City Council that the Concept Plan submitted is the primary intention of the developer at the time annexation is being requested.

PETITION SIGNATURE PAGE 1

WHEREFORE, the Petitioners hereby request that this Petition be considered by the Heber City Council at its next regular meeting, or as soon thereafter as possible; that a resolution or motion be adopted or passed as required by law accepting this Petition for Annexation for further consideration; and that the governing body take such steps as required by law to complete the annexation herein petitioned.

Name of Annexation: Red Rock Annexation

Petitioner 1

Petitioner Name	Phone Number
Red Rock Holdings & Investments, L.L.C.	(435) 640-3688
Mailing Address	Email Address
2276 S Daniels Road, Heber City, Utah 84032-4017	robert@utahstone.com
Parcel Numbers	
17-1970, 17-1988, 12-4748, 09-1145, 09-1137, 21-0999, 09-14678	
Signature	Date
	8/14/24

NOTICE

There will be no public election on the annexation proposed by this petition because Utah law does not provide for an annexation to be approved by voters at a public election. If you sign this petition and later decide that you do not support the petition, you may withdraw your signature by submitting a signed, written withdrawal with the recorder or clerk of Heber City. If you choose to withdraw your signature, you shall do so no later than 30 days after Heber City receives notice that the petition has been certified.

PETITION CONTACT SPONSOR

Designate at least one but not more than five of the signers of this petition as "Sponsors", one of whom must be designated as the Contact Sponsor. Any person signing in behalf of a corporation or LLC must show and provide verification that they are authorized to sign for said corporation or LLC and sign as designated on such authorization. Each signature of a Petition Sponsor must be notarized.

Petitioner Name	Phone Number
Red Rock Holdings & Investments, LLC	(435) 640-5872
Mailing Address	**Email Address**
2276 S Daniels Road, Heber City, Utah 84032-4017	robert@utahstone.com
Parcel Numbers	
17-1970, 17-1988, 12-4748, 09-1145, 09-1137, 21-0999, 09-14678	

ENTITY:

By: Robert Joseph Hudson
Name/Title:

STATE OF Utah)
: ss.
COUNTY OF Wasatch)

On this 14 day of August, 2024, personally appeared before me the above named:

X who is personally known to me,
_____ whose identity I verified on the basis of _____
_____ who is authorized to sign on behalf of the entity/(ies) that own the property

to be the signer of the foregoing document, and he/she acknowledged that he/she signed it.

LAURA MARSH
Notary Public - State of Utah
Comm. No. 719467
My Commission Expires on
Jul 29, 2025

Laura Marsh
NOTARY PUBLIC

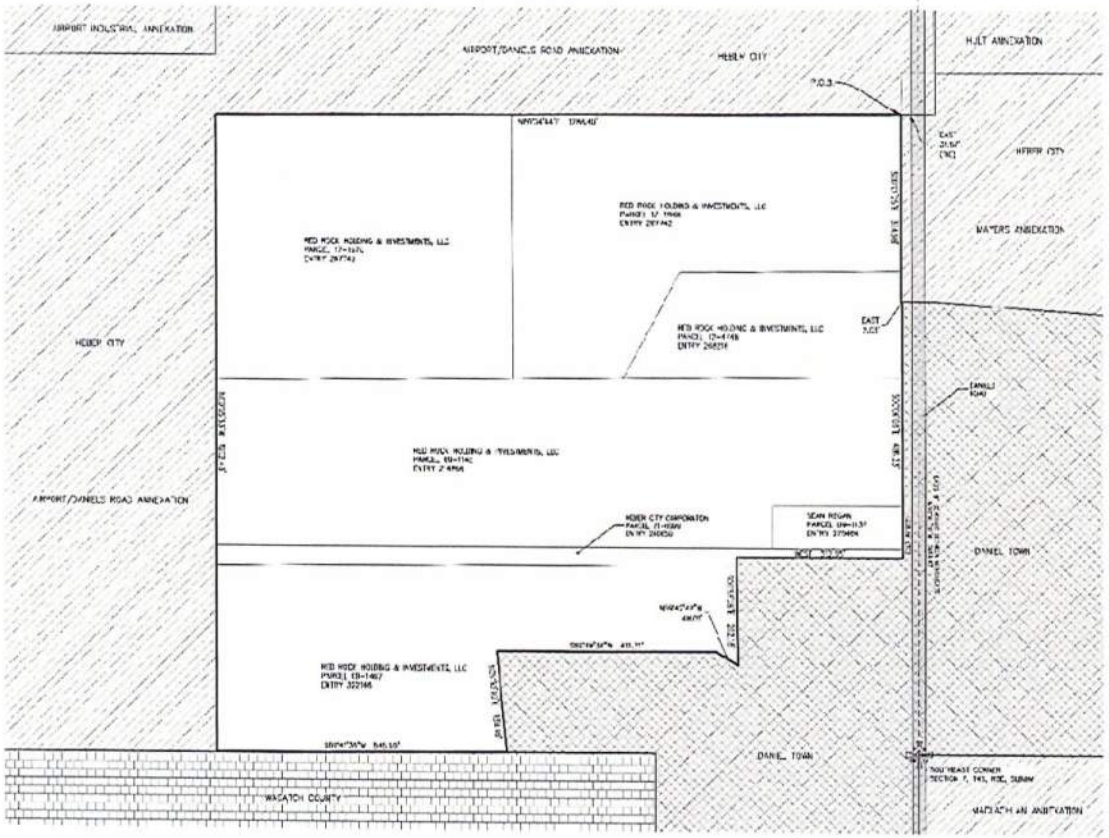
My Commission Expires: July 29, 2025

NOTICE

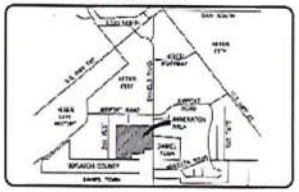
There will be no public election on the annexation proposed by this petition because Utah law does not provide for an annexation to be approved by voters at a public election. If you sign this petition and later decide that you do not support the petition, you may withdraw your signature by submitting a signed, written withdrawal with the recorder or clerk of Heber City. If you choose to withdraw your signature, you shall do so no later than 30 days after Heber City receives notice that the petition has been certified.

EXHIBIT A: ANNEXATION MAP

RED ROCK ANNEXATION
HEBER CITY, UTAH
LOCATED IN THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN



VICINITY MAP



SURVEYOR'S CERTIFICATE

I, [illegible], CERTIFY THAT I AM EMPLOYED AS A PROFESSIONAL LAND SURVEYOR IN THE STATE OF UTAH [illegible] IN ACCORDANCE WITH TITLE 58, CHAPTER 22, PROFESSIONAL ENGINEERS AND PROFESSIONAL LAND SURVEYORS LICENSING ACT. I FURTHER CERTIFY THAT:

1. THIS PLAT REPRESENTS THE RESULTS OF A BOUNDARY SURVEY PERFORMED UNDER MY SUPERVISION AT THE REQUEST OF ALL ENTITIES.

2. THE LAND SURVEYED LIES WITHIN SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, WASATCH COUNTY, UTAH, AND THE SURVEY WAS COMPLETED DURING JUNE 2024.

3. THIS PLAT COMPLIES WITH APPLICABLE STATUTORY OF THIS STATE AND ANY LOCAL ORDINANCES IN EFFECT ON THE DATE THAT THE SURVEY WAS COMPLETED, AND AS SURVEY WAS CONDUCTED IN ACCORDANCE WITH R.U.L.E. 17 CHAPTER 23, OF THE U.A.C. RULE.

4. THE MONUMENTS DEPICTED AS FOUND AND/OR SET ON THE PLAT ARE OF THE CHARACTER SHOWN, EXCEPT THE PERMANENT MONUMENTS ARE NOT OF SUFFICIENT DURABILITY.

[illegible]
PROFESSIONAL LAND SURVEYOR

SURVEYOR'S SEAL

BOUNDARY LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT EAST 1321 NORTH 0°00'40" WEST EQUALS FEET AND NORTH 33.00 FEET FROM THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, SAID POINT BEING AT THE CURRENT HEBER CITY BOUNDARY ACCORDING TO THE WATERS ANNEXATION (ENTRY NO. 395393) (MAPS OF RECORD OF THE DESCRIPTION BEING NORTH [illegible] AND RUNNING THENCE SOUTH 89°59'20" WEST 1321.40 FEET ALONG SAID BOUNDARY AND THE EAST-WEST QUARTER SECTION LINE OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN; THENCE ALONG THE EASTERLY BOUNDARY OF DANIEL TOWN ACCORDING TO THE BOOK OF DANIEL INCORPORATION PLAT (ENTRY NO. [illegible]) THE FOLLOWING SIX (6) COURSES: (1) SOUTH 0°00'40" EAST 1321.40 FEET TO THE WESTERLY BOUNDARY OF DANIEL TOWN ACCORDING TO THE BOOK OF DANIEL INCORPORATED PLAT (ENTRY NO. [illegible]); THENCE ALONG SAID BOUNDARY THE FOLLOWING SIX (6) COURSES: (1) SOUTH 0°00'40" EAST 1321.40 FEET; (2) WEST 1320.85 FEET; (3) SOUTH 0°00'40" EAST 1321.40 FEET; (4) SOUTH 89°59'20" WEST 1321.40 FEET; (5) SOUTH 0°00'40" EAST 1321.40 FEET; (6) SOUTH 89°59'20" WEST 1321.40 FEET; THENCE LEAVING SAID DANIEL TOWN BOUNDARY SOUTH 36°14'39" EAST 1321.40 FEET TO THE EASTERLY BOUNDARY OF THE DANIELS/AIRPORT ROAD ANNEXATION (ENTRY NO. [illegible]); THENCE ALONG SAID DANIELS/AIRPORT ROAD ANNEXATION BOUNDARY THE FOLLOWING TWO (2) COURSES: (1) NORTH 0°00'40" WEST 1321.40 FEET TO THE EAST-WEST QUARTER SECTION LINE OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN; (2) NORTH 89°59'20" EAST 1321.40 FEET; (3) NORTH 0°00'40" WEST 1321.40 FEET TO THE POINT OF BEGINNING.

PARCEL A (?) CONTAINS [illegible] ACRES.

PARCEL B (?) CONTAINS [illegible] ACRES.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY WAS ESTABLISHED AS NORTH 0°00'40" WEST BETWEEN THE SOUTHEAST CORNER AND THE EAST ONE-QUARTER CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN IN CONFORMANCE WITH [illegible].

ACCEPTANCE BY LEGISLATIVE BODY

THE CITY COUNCIL OF HEBER CITY, WASATCH COUNTY, UTAH, APPROVED THIS ANNEXATION AREA TO BE KNOWN AS AND RESTRICTIONS STATED HEREON THIS ___ DAY OF _____, 20___.

MAYOR

CITY RECORDER

PLANNING COMMISSION APPROVAL

APPROVED THIS ___ DAY OF _____, 20___, BY THE PLANNING COMMISSION OF HEBER CITY.

CHAIRMAN, PLANNING COMMISSION

WASATCH COUNTY SURVEYOR

APPROVED AS TO FORM THIS ___ DAY OF _____, 20___.

WASATCH COUNTY SURVEYOR

WASATCH COUNTY RECORDER

ENTRY #: _____ DATE: _____ TIME: _____

FEE: _____ BOOK: _____ PAGE: _____ FOR: _____

BY: _____ WASATCH COUNTY RECORDER, DEPUTY

PROJECT: 24005437	RED ROCK ANNEXATION HEBER CITY, UTAH LOCATED IN THE SOUTHEAST ONE-QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN	LOCATED IN THE SOUTHEAST 1/4 OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SLB&M WASATCH COUNTY, UTAH	DRAWN BY: TAT REVIEWED BY: MPJ, DPS ISSUE DATE: 08/07/2024	ATWELL 801.901.4200 www.atwell-group.com
SHEET: 1 OF 1				

EXHIBIT B: PROPERTY DEEDS

HEBER CITY

Ent 267742 Bk 0675 Pg 0088-0090
ELIZABETH M PALMIER, Recorder
WASATCH COUNTY CORPORATION
2004 JAN 30 12:27pm Fee 18.00 MWC
FOR MOUNTAIN VIEW TITLE & ESCROW

AFTER RECORDING MAIL TAX NOTICE TO:
GRANTEE
3776 S. DANIELS ROAD
HEBER CITY, UT 84032

QUIT-CLAIM DEED

RED ROCK HOLDINGS & INVESTMENTS, L.L.C. aka RED ROCK HOLDINGS & INVESTMENTS, L.L.C., a Utah Limited Liability Company, RED ROCK HOLDINGS, INC. and ROBERT JOHN HICKEN, PAUL R. BALLIF grantor,
of Heber City, Wasatch County, Utah
hereby

QUIT-CLAIM to

RED ROCK HOLDINGS & INVESTMENTS, LLC

grantee
Of
for the sum of Ten and 00/100 **********DOLLARS
and other valuable consideration.

The following described tract of land in Wasatch County, State of Utah:

SEE ATTACHED EXHIBIT "A"

Tax I.D.: OWC-1587-0-007-045
OWC-1587-1-007-045
OKT-0001-0-007-045
OKT-0002-0-007-045

Subject to easements, restrictions and rights of way.

WITNESS the hand of said grantor(s), this 12th day of January 2004, A.D.

RED ROCK HOLDINGS & INVESTMENTS, L.L.C. aka RED ROCK HOLDINGS & INVESTMENTS, L.L.C., a Utah Limited Liability Company

By: _____
Manager

RED ROCK HOLDINGS, INC.

_____
ROBERT JOHN HICKEN, President and individually

_____
PAUL R. BALLIF

STATE OF UTAH)
)
COUNTY OF SALT LAKE)

On the ~~12th~~ 30TH day of January, A.D. 2004, personally appeared before me the above signed, Managers/Members, known to me to be a member or designated agent of the limited liability company that executed the instrument and acknowledged the instrument to be the free and voluntary act and deed of the limited liability company, by authority of statute, its articles of organization or its operating agreement, for the uses and purposes therein mentioned, and on oath state that he or she is authorized to execute this instrument and in fact executed the instrument on behalf of the limited liability company.

NOTARY PUBLIC
JON VANDERSTEK
9539 So. Providence Way
So. Jordan, UT 84095
COMMISSION EXPIRES
FEB 6, 2005
STATE OF UTAH

NOTARY PUBLIC

STATE OF UTAH)
)
COUNTY OF SALT LAKE)

On the ~~12th~~ 30TH day of January, 2004, personally appeared before me Robert John Hicken, as President of Red Rock Holdings, Inc and Individually being the signer of the foregoing instrument, who duly acknowledged to me that he executed the same. PAUL R. BALLIF, INDIVIDUALLY

NOTARY PUBLIC
JON VANDERSTEK
9539 So. Providence Way
So. Jordan, UT 84095
COMMISSION EXPIRES
FEB. 6, 2005
STATE OF UTAH

NOTARY PUBLIC

EXHIBIT "A"

PARCEL 1: BEGINNING 1955.25 FEET SOUTH FROM THE EAST QUARTER CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE WEST 264 FEET; THENCE SOUTH 82.50 FEET; THENCE WEST 1056 FEET; THENCE NORTH 350 FEET; THENCE EAST 1320 FEET; THENCE SOUTH 247.5 FEET TO THE POINT OF BEGINNING.

PARCEL 2: BEGINNING AT A POINT WHICH IS SOUTH 00 D 06'01" EAST 1760.13 FEET ALONG THE SECTION LINE FROM THE EAST ¼ CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN AND RUNNING THENCE SOUTH 89 D 33'37" WEST 440.50 FEET TO THE EASTERLY BANK OF THE IRRIGATION COMPANY CANAL, THENCE SOUTH 27 D 57'34" WEST 227.36 FEET ALONG SAID CANAL TO AN EXISTING FENCE LINE; THENCE NORTH 89 D 33'37" EAST 547.45 FEET ALONG SAID FENCE LINE; THENCE NORTH 00 D 06'01" WEST 200.00 FEET TO THE POINT OF BEGINNING.

EXCEPTING THE FOLLOWING DESCRIBED PROPERTY:

A TRACT OF LAND TO BE USED FOR AN IRRIGATION CANAL, DESCRIBED AS FOLLOWS: A STRIP OF LAND 1 ROD IN WIDTH, EXTENDING FROM A POINT 1 FOOT EASTERLY FROM THE EASTERLY BANK OF THE CANAL OF THE SAID GRANTEE, AS NOW CONSTRUCTED THROUGH THE GRANTORS LAND, AND EXTENDING THENCE AT RIGHT ANGLES 1 ROD IN WIDTH ALONG THE COURSE OF SAID CANAL, THE CENTER LINE OF WHICH CANAL AS NOW CONSTRUCTED BEING LOCATED AS FOLLOWS:

BEGINNING AT A POINT 88 ½ RODS SOUTH AND 17 RODS WEST FROM THE NORTHEAST CORNER OF THE SOUTHEAST QUARTER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN, AND RUNNING THENCE ALONG SAID CENTER LINE OF A CANAL SOUTH 26 D 35' WEST 33.54 RODS TO THE SOUTHERN LINE OF LANDS NOW STANDING UPON THE RECORDS OF THE WASATCH, UTAH

PARCEL 3: LOT 1, KOTYK SUBDIVISION, ACCORDING TO THE OFFICIAL PLAT THEREOF ON FILE AND OF RECORD IN THE WASATCH COUNTY RECORDER'S OFFICE.

LESS ANY PORTION LYING WITHIN PUBLIC ROADWAY.

PARCEL 4: LOT 2, KOTYK SUBDIVISION, ACCORDING TO THE OFFICIAL PLAT THEREOF ON FILE AND OF RECORD IN THE WASATCH COUNTY RECORDER'S

TOGETHER WITH PRIVATE 60 FOOT WIDE ROAD EASEMENT

First American Title Insurance Agency, Inc.

MAIL TAX NOTICE TO
RED ROCK HOLDINGS INVESTMENT LLC
2276 So Daniels Rd
Heber, UT 84032

Ent 258216 Bk 0626 Pg 0058-0059
ELIZABETH M PALMIER, Recorder
WASATCH COUNTY CORPORATION
2003 MAY 23 11:30am Fee 13.00 NWC
FOR FIRST AMERICAN TITLE COMPANY

Warranty Deed

RONALD S. MCARTHUR, Grantor(s)

of Heber city, County of WASATCH, State of UTAH, hereby CONVEY and WARRANT to

RED ROCK HOLDINGS INVESTMENT L.L.C. a Utah Limited Liability Company, Grantee(s)

Of Heber City , UT for the sum of Ten Dollars and other good and valuable consideration the following described tract(s) of land in WASATCH County, State of UTAH:

EXHIBIT "A"

Subject to easements, restrictions and rights of way appearing of record or enforceable in law and equity and general property taxes for the year 2003 and thereafter.

Tax ID Number: OWC-1587-1

WITNESS, the hand(s) of said Grantor(s), this 19th of May, A.D.,2003.

Signed in the Presence of:

Ronald S McC
Ronald S. McArthur

STATE OF UTAH)
SS.
COUNTY OF)

On the 19th day of May, 2003, personally appeared before me Ronald S. McArthur the signer(s) of the within and foregoing instrument, who having been by me duly sworn, acknowledged that he executed the same.

Patricia Hall
Notary Public

Residing at: Salt Lake County

Commission Expires: 6/11/06

NOTARY PUBLIC
PATRICIA HALL
9948 SOUTH REDWOOD ROAD
SOUTH JORDAN, UT 84095
MY COMMISSION EXPIRES
JUNE 11, 2006
STATE OF UTAH

EXHIBIT "A "

Escrow No. **380-4098769 (nh)**
A.P.N.: **OWC-1587-1**

BEGINNING at a point which is South 00°06'01" East 1760.13 feet along the Section line from the East 1/4 corner of Section 7, Township 4 South, Range 5 East, Salt Lake Base and Meridian and running thence South 89°33'37" West 440.50 feet to the easterly bank of the irrigation company canal, thence South 27°57'34" West 227.36 feet along said canal to an existing fence line; thence North 89°33'37" East 547.45 feet along said fence line; thence North 00°06'01" West 200.00 feet to the point of beginning.

EXCEPTING the following described property:

A tract of land to be used for an irrigation canal, described as follows: A strip of land 1 rod in width, extending from a point 1 foot easterly from the easterly bank of the canal of the said grantee, as now constructed through the grantors land, and extending thence at right angles 1 rod in width along the course of said canal, the center line of which canal as now constructed being located as follows:

BEGINNING at a point 88 1/2 rods South and 17 rods West from the Northeast corner of the southeast quarter of Section 7, Township 4 South, Range 5 East, Salt Lake Base and Meridian, and running thence along said center line of a canal South 26°35' West 33.54 rods to the southern line of lands now standing upon the records of the Wasatch, Utah.

E 258216 B 0626 P 0059

646

WHEN RECORDED, MAIL TO:

Red Rock Holdings & Investments, LLC
PO Box 796
Heber, Ut 84032

Order No.: W-40616

Space Above This Line for Recorder's Use

WARRANTY DEED

Jay L. Smith, Trustee of THE JAY L. SMITH FAMILY TRUST grantor of State of Utah, hereby

of Heber City

CONVEY S and WARRANT S to

RED ROCK HOLDINGS & INVESTMENTS, LLC grantee

of Heber City County Wasatch, State of Utah

for the sum of TEN DOLLARS and other good and valuable consideration, the following described tract of land in

Wasatch County, State of Utah, to-wit:

SEE ATTACHED EXHIBIT "A"

00214666 Bk 00426 Pg 00646-00647
WASATCH CO RECORDER-ELIZABETH A PARCELL
1999 JUN 07 14:56 PM FEE $12.00 BY RRR
REQUEST: FIRST AMERICAN TITLE COMPANY

PAGE (•) INDEX ( ) ABSTRACT ( ) PLAT (X) CHECK ( )

WITNESS the hand of said grantor, this 4th day of ~~May~~ June A.D. 19 99.

Signed in the presence of

Jay L. Smith, Trustee

STATE OF UTAH }
} ss.
COUNTY OF Wasatch }

On the 4th day of June. A.D. 1999 personally appeared before me Jay L. Smith, Trustee

the signer of the within instrument who duly acknowledged to me that he executed the same.

Notary Public

My Commission Expires: ~~December 15, 2000~~

Notary Public
[illegible] Company
[illegible]
Heber City, Utah 84032
My Commission Expires
July 22, 1999
State of Utah

EXHIBIT "A"

DESCRIPTION

BEGINNING 1955.25 feet South from the East quarter corner of Section 7, Township 4 South, Range 5 East, Salt Lake base and Meridian, and running thence West 264 feet; thence South 82.50 feet; thence West 1056 feet; thence North 350 feet; thence East 1320 feet; thence South 247.5 feet to the point of beginning.

00214866 Bk 00426 Pg 00647

647

Ent 275464 Bk 0714 Pg 0251-0252
ELIZABETH M PALMIER, Recorder
WASATCH COUNTY CORPORATION
2004 SEP 22 4:23pm Fee 12.00 MWC
FOR EMPIRE LAND TITLE INC

REO/UTAH

REO CASE#D043147

SPECIAL WARRANTY DEED

Grantor's Name/Address: Fannie Mae A/K/A Federal National Mortgage Association, 13455 Noel Road, #600, Dallas, Texas 75240-5003

Grantee's Name/Address: **SEAN REGAN, AN UNMARRIED MAN**
OF 2312 S. Daniels Road, Heber, UT 84032

THIS DEED made this the 20TH day of September, 2004, between FEDERAL NATIONAL MORTGAGE ASSOCIATION, A/K/A FANNIE MAE, a corporation organized and existing under the laws of the United States, by its duly authorized Vice President, hereinafter called "Grantor," and **SEAN REGAN, AN UNMARRIED MAN,** hereinafter referred to as Grantee(s)."

WITNESSETH, that the said Grantor, for and in consideration of the sum of **TEN DOLLARS ($10.00)** and other good and valuable consideration, the receipt hereof is hereby acknowledged, has granted, bargained, sold, and conveyed and by these presents does grant, bargain, sell, convey and confirm unto the said Grantee(s), and his or their heirs, executors, administrators, and assigns forever, all of the following, described property in the County of **WASATCH** and State of Utah, to-wit: SEE EXHIBIT "A," ATTACHED HERETO AND MADE APART HEREOF FOR ALL PURPOSES.

COMMONLY KNOWN AS: 2312 SOUTH DANIELS ROAD, HEBER, UT 84032

TOGETHER with all and singular the hereditaments and appurtenances thereunto belonging, or in anywise appertaining; and all the estate, right, title, interest, claim, and demand whatsoever of the said Grantor, in and to the said property with the hereditaments and appurtenances.

TO HAVE AND TO HOLD the above described property, together with all and singular, the tenements, hereditaments, rights and appurtenances thereto in anywise belonging unto the said Grantee(s) and their heirs and assigns, against every person whomsoever lawfully claiming, under or through the Grantor, but not otherwise.

27450

IN WITNESS THEREOF, the said Grantor has caused these presents to be signed by its undersigned and duly authorized Vice President.

(Corporate Seal)

FEDERAL NATIONAL MORTGAGE ASSOCIATION

By: _____
Teresa Foley, Vice President

ATTEST

By: _____
Sheryl Martin, Assistant Secretary

STATE OF TEXAS)
SS
COUNTY OF DALLAS)

BEFORE ME, a Notary Public, on this day personally appeared the undersigned, duly commissioned, qualified, and acting within and for said county and state, appeared in person the within named **Teresa Foley** and **Sheryl Martin** stated that they were Vice President and Assistant Secretary of the FEDERAL NATIONAL MORTGAGE ASSOCIATION, a corporation, and were duly authorized in their respective capacities to execute the foregoing instrument for and acknowledged that they had so signed, executed and delivered said foregoing instrument for the consideration, uses and purposes therein mentioned and set forth.

GIVEN UNDER MY HAND AND SEAL OF OFFICE the 20ND day of September, 2004.

PATRICIA MANSON
Notary Public, State of Texas
My Commission Expires 06-06-05

Notary Public in and for the State of Texas

E 275464 B 0714 P 0252

Exhibit "A"

Beginning at a point 133.50 rods South of the Northeast corner of the Southeast quarter of Section 7, Township 4 South, Range 5 East, of the Salt Lake Base and Meridian; thence South 5.00 rods; thence West 16 rods; thence North 5 rods; thence East 16 rods to the point of beginning.

TAX ID # OCW-1586-0-007-004

When recorded mail to

Heber City Corp

This Side For Recorders Use Only

Ent 240650 Bk 0540 Pg 0719-0719
ELIZABETH PARCELL, Recorder
WASATCH COUNTY CORPORATION
2002 JAN 11 3:15pm Fee No Fee MMM
FOR HEBER CITY

WARRANTY DEED

ERROL MAHONEY and DONA A. MAHONEY, husband and wife, as joint tenants

of Heber County of Wasatch State of Utah, hereby

CONVEY and WARRANT to

HEBER CITY CORPORATION

of Heber County of of Wasatch ,State of Utah

for the sum of TEN DOLLARS and other good and valuable consideration//////

the following described tract of land in Wasatch County

State of Utah. to-wit: DWC-1588-0

BEGINNING at a point 81 rods South and 80 rods West of the Northeast corner of the Southeast quarter of Section 7, in Township 4 South, Range 5 East, Salt Lake Base and Meridian; and running thence West 80 rods to the West line of the Southeast quarter of said Section; thence South 79 rods to the South line of said Section; thence East 80 rods; thence North 5.375 chains, more or less, to a point which is 139 1/2 rods South of the North line of said Southeast quarter of said Section; thence East 20 chains to the East line of said Section ; thence North 1 rods; thence West 20 chains; thence North 57.50 rods to the place of beginning.

LESS and EXCEPTING

BEGINNING at a point 1336.50 feet South and 2239.58 feet West of the Northeast Corner of the Southeast quarter of Section 7, Township 4 South, Range 5 East, Salt Lake Base and Meridian; and running thence West 400.42 feet; thence South 339.78 feet; thence North 49°41'00" East 339.78 feet to the point of beginning.

TOGETHER with all improvements thereof and appurtenances thereunto belonging.

SUBJECT TO easements, restriction, reservations and rights of way appearing of record.

WITNESS the hand of said grantor ,this 8 day of January A.D. 2002

Signed in the presence of

Errol Mahoney
Errol Mahoney

Dona A. Mahoney
Dona A. Mahoney

STATE OF UTAH {
{ SS.
COUNTY OF Wasatch {

On the 8 day of January A.D. 2002 personally appeared before me Errol Mahoney and Dona A. Mahoney the signers of the within instrument who duly acknowledged to me that they executed the same.

L Lara Thacker
Notary Public

Notary Public
LARAE THACKER
81 South Main
Heber City, Utah 84032
My Commission Expires
January 6, 2003
State of Utah

Ent 322146 Bk 0943 Pg 1194-1195
ELIZABETH M PALMIER, Recorder
WASATCH COUNTY CORPORATION
2007 JUN 25 2:27pm Fee 12.00 MWC
FOR FIRST AMERICAN TITLE - HEBER C
ELECTRONICALLY RECORDED

Recording Requested by:
First American Title Insurance Agency, LLC
81 South Main Street
Heber, UT 84032
(435)654-1414

AFTER RECORDING RETURN TO:
Red Rock Holding & Investments, LLC
2276 South Daniels Rd.
Heber City, UT 84032

SPACE ABOVE THIS LINE (3 ½" X 5") FOR RECORDER'S USE

WARRANTY DEED

Escrow No. **380-4880464 (mle)**
A.P.N.: **OWC-1605**

Ryan C. Fenton, Grantor, of **Heber City, Wasatch** County, State of **UT**, hereby CONVEY AND WARRANT to

Red Rock Holding & Investments, LLC, a Utah Limited Liability Company, Grantee, of **Heber City, Wasatch** County, State of **UT**, for the sum of Ten Dollars and other good and valuable considerations the following described tract(s) of land in **Wasatch** County, State of **Utah:**

BEGINNING AT A POINT 164.47 FEET NORTH 0°06'01" WEST ALONG THE EAST LINE OF SECTION AND 337.65 FEET WEST OF THE SOUTHEAST CORNER OF SECTION 7, TOWNSHIP 4 SOUTH, RANGE 5 EAST, SALT LAKE BASE AND MERIDIAN; THENCE NORTH 59°30'36" WEST 50 FEET; THENCE SOUTH 89°49'34" WEST 411.708 FEET; THENCE SOUTH 05°30'40" EAST 191.82 FEET TO AN EXISTING FENCE ON THE SOUTH LINE OF SECTION 7; THENCE SOUTH 89°49'34" WEST 539.23 FEET ALONG AN EXISTING FENCE AND SAID SECTION LINE; THENCE NORTH 0°11'03" WEST 350.89 FEET ALONG AN EXISTING FENCE; THENCE NORTH 89°46'51" EAST 977.02 FEET ALONG AN EXISTING FENCE; THENCE SOUTH 0°06'04" WEST 169.68 FEET ALONG AN EXISTING FENCE; THENCE SOUTH 00°02'28" EAST 16.50 FEET TO THE POINT OF BEGINNING.

Subject to easements, restrictions and rights of way appearing of record or enforceable in law and equity and general property taxes for the year **2007** and thereafter.

Witness, the hand(s) of said Grantor(s), this **June 25th, 2007.**

Ryan C. Fenton

A.P.N.: **OWC-1605** Warranty Deed - continued File No.: **380-4880464 (mle)**

Ent 322146 Bk 0943 Pg 1195

STATE OF **UTAH**)
)Ss.
COUNTY OF **WASATCH**)

On June 25, 2007, personally appeared before me, **Ryan C. Fenton** the signer of the within instrument, who duly acknowledged to me that he executed the same.

Notary Public

Darwin Johnson
(Printed Name)

My Commission expires: 7-22-07

Notary Public
DARWIN L. JOHNSON
81 South Main Street, P.O. Box 160
Heber City, Utah 84032
My Commission Expires
July 22, 2007
State of Utah

EXHIBIT C: VALUE & ACREAGE

a.	Total acreage within annexation:	31.132 AC.	
b.	Total private property acreage within annexation:	30.643 AC.	
c.	Petitioner's acreage within annexation:	30.178 AC.	96.9%
			% of Total Private Area
d.	Total Assessed Land Value within annexation:	$13,570,100	
e.	Petitioner's Assessed Land Value within annexation	$12,987,600	95.7%
			% of Total Value

Property Value & Acreage Within Annexation Area				
Name	**Parcel ID**	**Acres**	**Value**	**Petitioner (yes/no)**
Red Rock Holdings & Investments, L.L.C.	17-1970	6.405	$1,920,000	Yes
Red Rock Holdings & Investments, L.L.C.	17-1988	6.205	$1,917,000	Yes
Red Rock Holdings & Investments, L.L.C.	12-4748	2.162	$681,000	Yes
Red Rock Holdings & Investments, L.L.C.	09-1145	9.443	$6,690,000	Yes
Heber City Corporation	21-0999	0.489	$37,500	No
Sean Regan	09-1137	0.465	$545,600	No
Red Rock Holdings & Investments, L.L.C.	09-1467	5.963	$1,779,000	Yes
Totals		31.132 acres	$13,570,100	
Private Property Total		30.643 acres	$13,532,600	
Petitioner Totals		30.178 acres	$12,987,600	
Petitioner Percent of Private Total		51% min **Actual: 96.9%**	1/3 min **Actual: 95.7%**	

EXHIBIT D: PROPERTY TAX RECORDS

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:02:00PM

Parcel: 00-0017-1970 Serial #:0KT-0001-0-007-045 Entry: 267742
Name: RED ROCK HOLDINGS & INVESTMENT
c/o Name:
Address 1: 2276 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4017
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address
2276 S DANIEL RD
DANIEL
Acres: 6.40

Owners	Interest	Entry	Date of Filing	Comment
RED ROCK HOLDINGS & INVESTMENT		267742	01/30/2004	(0675/0088)

Property Information	2024 Values & Taxes Units/Acres	Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
LC02 COMMERCIAL UNIMPROVED	6.39	1,917,000	1,917,000	16,173.73	1,114,595	1,114,595	9,626.76
LC05 CELL TOWER SITE	0.01	3,000	3,000	25.31	160,000	160,000	1,381.92
Totals:	6.40	1,920,000	1,920,000	16,199.04	1,274,595	1,274,595	11,008.68

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	16,199.04	2023 Taxes:	11,008.68
Special Fees:	0.00		
Penalty:	0.00	Review Date	
Abatements:	(0.00)	06/07/2024	
Payments:	(6,000.00)		
Amount Due:	10,199.04	NO BACK TAXES!	

02/12/2024	02:12PM	00319200	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	lpendleton
03/13/2024	04:19PM	00320374	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	lpendleton
03/29/2024	11:41AM	00320856	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	agibbs
04/22/2024	04:22PM	00321745	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	lpendleton
05/29/2024	02:20PM	00322879	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	lpendleton
06/24/2024	02:06PM	00323599	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	1,000.00	lpendleton
					Total Payments:	6,000.00	

Back Tax Summary

Year	Principal	Specials Total	Penalty	Interest Due	Interest Rate	Total Payments	Total Due
2001	0.00	0.00	0.00	0.00	7.25%	5,677.82	0.00
Totals:	0.00	0.00	0.00	0.00		5,677.82	0.00

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

LOT 1, KOTYK SUBDIVISION AREA: 6.40 ACRES

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:06:30PM

Parcel: 00-0017-1988 Serial #:0KT-0002-0-007-045 Entry: 267742
Name: RED ROCK HOLDINGS & INVESTMENT
c/o Name:
Address 1: 2276 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4017
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address

Acres: 6.39

Owners	Interest	Entry	Date of Filing	Comment
RED ROCK HOLDINGS & INVESTMENT		267742	01/30/2004	(0675/0088)

Property Information	2024 Values & Taxes Units/Acres	Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
LC01 COMMERCIAL IMPROVED	6.39	1,917,000	1,917,000	16,173.73	1,112,852	1,112,852	9,611.70
Totals:	6.39	1,917,000	1,917,000	16,173.73	1,112,852	1,112,852	9,611.70

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	16,173.73	2023 Taxes: 9,611.70
Special Fees:	0.00	Review Date
Penalty:	0.00	06/07/2024
Abatements:	(0.00)	
Payments:	(5,700.00)	
Amount Due:	10,473.73	NO BACK TAXES!

02/12/2024	02:15PM	00319202	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	lpendleton
03/13/2024	04:19PM	00320375	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	lpendleton
03/29/2024	11:40AM	00320855	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	agibbs
04/22/2024	04:23PM	00321746	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	lpendleton
05/29/2024	02:17PM	00322878	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	lpendleton
06/24/2024	02:05PM	00323598	2024	RED ROCK HOLDINGS & INVESTMENT	Current - Check	950.00	lpendleton
					Total Payments:	5,700.00	

Back Tax Summary

Year	Principal	Specials Total	Penalty	Interest Due	Interest Rate	Total Payments	Total Due
2001	0.00	0.00	0.00	0.00	7.25%	5,633.44	0.00
Totals:	0.00	0.00	0.00	0.00		5,633.44	0.00

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

LOT 2, KOTYK SUBDIVISION AREA: 6.39 ACRES

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:07:19PM

Parcel: 00-0012-4748 Serial #:OWC-1587-1-007-045 Entry: 258216
Name: RED ROCK HOLDINGS INVESTMENT L
c/o Name:
Address 1: 2276 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4017
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address
2150 S DANIELS RD
DANIEL
Acres: 2.27

Owners	Interest	Entry	Date of Filing	Comment
RED ROCK HOLDINGS INVESTMENT L		258216	05/23/2003	(0626/0058)

Property Information	2024 Values & Taxes Units/Acres	Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
LC02 COMMERCIAL UNIMPROVED	2.27	681,000	681,000	5,745.60	395,332	395,332	3,414.48
Totals:	2.27	681,000	681,000	5,745.60	395,332	395,332	3,414.48

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	5,745.60	2023 Taxes: 3,414.48
Special Fees:	0.00	
Penalty:	0.00	Review Date
Abatements:	(0.00)	06/07/2024
Payments:	(1,800.00)	
Amount Due:	3,945.60	NO BACK TAXES!

02/12/2024	02:11PM	00319199	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	lpendleton
03/13/2024	04:19PM	00320373	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	lpendleton
03/29/2024	11:41AM	00320857	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	agibbs
04/22/2024	04:21PM	00321743	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	lpendleton
05/29/2024	02:21PM	00322880	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	lpendleton
06/24/2024	02:08PM	00323600	2024	RED ROCK HOLDINGS INVESTMENT L	Current - Check	300.00	lpendleton
					Total Payments:	1,800.00	

Back Tax Summary

Year	Principal	Specials Total	Penalty	Interest Due	Interest Rate	Total Payments	Total Due
2002	0.00	0.00	0.00	0.00	6.75%	536.01	0.00
Totals:	0.00	0.00	0.00	0.00		536.01	0.00

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

BEG S.00 DEG 06'01"E.1760.13FT FROM E1/4 CORNER SECTION 7, T.4S, R.5E, SLM: S.89 DEG 33'37"W.440.50FT; S.27 DEG 57'34"W.227.36FT; N.89 DEG 33'37"E.547.45FT; N.00 DEG 06'01"W.200FT TO THE BEGINNING. AREA 2.27 ACRES

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:06:53PM

Parcel: 00-0009-1145 Serial #:OWC-1587-0-007-045 Entry: 214866
Name: RED ROCK HOLDINGS & INVESTMENTS LLC
c/o Name:
Address 1: 2276 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4017
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address
2276 S DANIELS RD
HEBER
Acres: 9.50

Owners	Interest	Entry	Date of Filing	Comment
RED ROCK HOLDINGS & INVESTMENTS LLC		214866	06/07/1999	(00426/0646)

Property Information	Units/Acres	2024 Values & Taxes Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
BC02 MANUFACTURING/INDUSTRIAL	0.00	3,840,000	3,840,000	32,398.08	3,840,000	3,840,000	33,166.08
LC01 COMMERCIAL IMPROVED	4.50	1,350,000	1,350,000	11,389.95	783,700	783,700	6,768.82
LC02 COMMERCIAL UNIMPROVED	5.00	1,500,000	1,500,000	12,655.50	870,777	870,777	7,520.90
Totals:	9.50	6,690,000	6,690,000	56,443.53	5,494,477	5,494,477	47,455.80

Property Type	Year Built	Square Footage	Basement Size	Building Type
BC02 MANUFACTURING/INDUSTRIAL	1999	39,566		COMMERCIAL BUILDING

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	56,443.53	2023 Taxes: 47,455.80
Special Fees:	0.00	
Penalty:	0.00	Review Date 06/07/2024
Abatements:	(0.00)	
Payments:	(27,000.00)	
Amount Due:	29,443.53	NO BACK TAXES!

02/12/2024	02:09PM	00319198	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	lpendleton
03/13/2024	04:17PM	00320372	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	lpendleton
03/29/2024	12:06PM	00320858	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	agibbs
04/22/2024	04:20PM	00321742	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	lpendleton
05/29/2024	02:22PM	00322881	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	lpendleton
06/24/2024	02:09PM	00323601	2024	RED ROCK HOLDINGS & INVESTMENTS LL	Current - Check	4,500.00	lpendleton
					Total Payments:	27,000.00	

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

BEGINNING S.1955.25FT FROM E1/4 CORNER SECTION 7, T.4S, R.5E, SLM: W.264FT; S.82.50FT; W.1056FT; N.330FT; E.1320FT; S.247.50FT TO THE BEGINNING AREA: 9.50 ACRES

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:07:41PM

Parcel: 00-0009-1137 Serial #:OWC-1586-0-007-045 Entry: 275464
Name: REGAN SEAN
c/o Name:
Address 1: 2312 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4015
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address
2312 S DANIELS RD
DANIEL
Acres: 0.50

Owners	Interest	Entry	Date of Filing	Comment
REGAN SEAN		275464	09/22/2004	(0714/0251)

Property Information	Units/Acres	2024 Values & Taxes Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
BR01 PRIMARY HOME	0.00	245,600	135,080	1,139.67	245,600	135,080	1,166.69
LR01 PRIMARY LAND	0.50	300,000	165,000	1,392.11	200,000	110,000	950.07
Totals:	0.50	545,600	300,080	2,531.78	445,600	245,080	2,116.76

Property Type	Year Built	Square Footage	Basement Size	Building Type
BR01 PRIMARY HOME	1948	1,114		ONE STORY

****** ATTENTION !! ******
Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	2,531.78
Special Fees:	0.00
Penalty:	0.00
Abatements:	(0.00)
Payments:	(0.00)
Amount Due:	2,531.78

2023 Taxes: 2,116.76

Review Date
06/07/2024

NO BACK TAXES!

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

BEG 133.50 RD S OF NE COR SE1/4 SEC 7, T4S, R5E, SLM; S 5 RD; W 16 RD; N 5 RD; E 16 RD TO BEG. AREA: 0.50 ACRE

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:08:40PM

Parcel: 00-0021-0999 Serial #:OHE-1758-2-007-045 Entry: 240650

Name: HEBER CITY CORPORATION

c/o Name:

Address 1: 75 N MAIN

Address 2:

City State Zip: HEBER CITY UT 84032-1827

Mortgage Co

Grid Address

Acres: 0.50

Status: **Exempt** Year: **2024** District: **003 HEBER CITY DISTRICT** **0.009142**

Owners	Interest	Entry	Date of Filing	Comment
HEBER CITY CORPORATION		240650	01/11/2002	(0540/0719)

Property Information	2024 Values & Taxes Units/Acres	Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
LX02 HEBER CITY PROPERTY	0.50	37,500	0	0.00	37,500	0	0.00
Totals:	0.50	0	0	0.00	0	0	0.00

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

		2023 Taxes: 0.00
2024 Taxes:	0.00	
Special Fees:	0.00	
Penalty:	0.00	
Abatements: (	0.00)	
Payments: (	0.00)	
Amount Due:	0.00	NO BACK TAXES!

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

BEGINNING AT A POINT EAST 1325.9 FEET AND NORTH 370.95 FROM THE S ¼ CORNER OF SEC 7 T4S R5E SLM: S90-0-0E 1320; S0-0-0W 16.5; N90-0-0W 1320; N0-0-0E 16.5 TO THE BEGINNING. AREA: 0.5 ACRES +/-

History

THIS PARCEL WAS SPLIT FROM OHE-1758-0 FOR 2016 TAX ROLL.

WASATCH COUNTY CORPORATION

August 6, 2024

Tax Roll Master Record

5:08:59PM

Parcel: 00-0009-1467 Serial #:OWC-1605-0-007-045 Entry: 322146
Name: RED ROCK HOLDING & INVESTMENTS LLC
c/o Name:
Address 1: 2276 S DANIELS RD
Address 2:
City State Zip: HEBER CITY UT 84032-4017
Mortgage Co
Status: **Active** Year: **2024** District: **012 COUNTY OUTSIDE DISTRICT 0.008437**

Grid Address

Acres: 5.93

Owners	Interest	Entry	Date of Filing	Comment
RED ROCK HOLDING & INVESTMENTS LLC		322146	06/25/2007	(0943/1194)

Property Information	2024 Values & Taxes Units/Acres	Market	Taxable	Taxes	2023 Values & Taxes Market	Taxable	Taxes
LC01 COMMERCIAL IMPROVED	1.00	300,000	300,000	2,531.10	174,156	174,156	1,504.19
LC02 COMMERCIAL UNIMPROVED	4.93	1,479,000	1,479,000	12,478.32	858,587	858,587	7,415.62
Totals:	5.93	1,779,000	1,779,000	15,009.42	1,032,743	1,032,743	8,919.81

****** ATTENTION !! ******

Tax Rates for 2024 have been set and approved. All levied taxes and values shown on this printout for the year 2024 should be correct.

2024 Taxes:	15,009.42	2023 Taxes:	8,919.81
Special Fees:	0.00		
Penalty:	0.00	Review Date	
Abatements:	(0.00)	06/07/2024	
Payments:	(4,500.00)		
Amount Due:	10,509.42	NO BACK TAXES!	

02/12/2024	02:14PM	00319201	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	lpendleton
03/13/2024	04:20PM	00320376	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	lpendleton
03/29/2024	11:40AM	00320854	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	agibbs
04/22/2024	04:24PM	00321747	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	lpendleton
05/29/2024	02:15PM	00322877	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	lpendleton
06/24/2024	01:57PM	00323597	2024	RED ROCK HOLDING & INVESTMENTS LLC	Current - Check	750.00	lpendleton
					Total Payments:	4,500.00	

DO NOT USE THIS TAXING DESCRIPTION FOR LEGAL PURPOSES OR OFFICIAL DOCUMENTS. For taxing purposes only. Consult property deeds for full legal description.

Taxing Description

BEGINNING N.89°49'44"E.774.28FT FROM SE CORNER SEC 7 T4S R5E SLM: S.89°49'33"W.539.24FT; N.0°11'15"W.350.89FT; N.89°46'50"E.977.04FT; S.0°05'59"W.169.68FT; S.16.5FT; N.59°30'49"W.50FT; S.89°49'35"W.411.71FT; S.05°30'59"E.191.8FT TO THE BEGINNING. AREA: 5.93 ACRES+-

History

ODN-0001-0 WAS SPLIT FROM THIS PARCEL FOR 2007 TAX ROLL PER DANIEL INCORPORATION.

Property owners within annexation and within 300 FEET

NAME	ADDRESS	CITY	STATE	ZIP CODE
360 WEST AIRPORT ROAD LLC	1245 S 1200 W	HEBER CITY	UT	84032-3711
3M PROPERTIES LLC	27955 MISSION BLVD	HAYWARD	CA	94544-4859
400 WEST AIRPORT ROAD LLC	1245 S 1200 W	HEBER CITY	UT	84032-3711
AIRPORT BUSINESS COMMONS LLC	115 W 970 S	MIDWAY	UT	84049-6279
ALLISON PAIGE MICHELLE	22 E 2130 S	HEBER CITY	UT	84032-1289
ARNOLD CORY LANCE	2174 S 60 E	HEBER CITY	UT	84032-1290
BARNEY MITCHELL F TR	9446 S MORYWOOD CIR	SOUTH JORDAN	UT	84095-2410
BAUTISTA ENRIQUE DANIEL	2146 S 60 E	HEBER CITY	UT	84032-1290
BELL ALLAN	79 E 2130 S	HEBER CITY	UT	84032-1289
BOYER JEREMY	1799 E CHALK CREEK RD	COALVILLE	UT	84017-9708
BROWN MICHAEL H	490 W 100 S	HEBER CITY	UT	84032-1838
BRUDERER CLARK	905 S FARRELL FARM CIR	MIDWAY	UT	84049-6639
BURBIDGE HAISLEY	6326 S OLES LN	HOLLADAY	UT	84121-2377
BURGENER ROBBY	PO BOX 935	MIDWAY	UT	84049-0935
BURNS ANGELA MARIE	2147 S 60 E	HEBER CITY	UT	84032-1290
BUSH JEFFREY W	2166 S 120 E	HEBER CITY	UT	84032-1286
CARLEY HOPE LLC	PO BOX 935	MIDWAY	UT	84049-0935
CLYDE LYNDA M TR	1995 S DANIEL RD	HEBER CITY	UT	84032-1026
COLEMAN KEITH SCOTT TR	3225 S MILL RD	HEBER CITY	UT	84032-3520
COOKE RYAN WILLIAM	2179 S 60 E	HEBER CITY	UT	84032-1290
CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS	50 E NORTH TEMPLE FL 22	SALT LAKE CITY	UT	84150-0022
COWDEN WALTER SCOTT	32 E 2130 S	HEBER CITY	UT	84032-1289
CUILLARD LEONARD R TR	PO BOX 422	HEBER CITY	UT	84032-0422
DANIEL TOWN	260 E TEANCUM RD	HEBER CITY	UT	84032-4074
EARNSHAW AUSTIN M	2917 S 1040 E	HEBER CITY	UT	84032-5645
EASTWOOD DRIVE LLC	PO BOX 346	HEBER CITY	UT	84032-0346
EXCEL BUSINESS SOLUTIONS LLC	1890 TOBIANO CIR	HEBER CITY	UT	84032-4296
FARLEY SHANE &	74 MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4059
GILLETTE FORREST BRETT	19 E 2130 S	HEBER CITY	UT	84032-1289
GILLILAND HOLDINGS LLC	1435 S 1040 E	HEBER CITY	UT	84032-1696
GIRARDIN JEAN MARC TR	477 OCEAN BLVD	GOLDEN BEACH	FL	33160-2213
HEBER CITY CORPORATION	75 N MAIN STREET	HEBER CITY	UT	84032-1827
HIGHLANDER SKI LIFT SERVICES AND CONSTRUCTION	PO BOX 7	PARK CITY	UT	84060-0001
HISLER JEFF	1240 E 1050 N	HEBER CITY	UT	84032-3468
JAZABRA CONSTRUCTION LLC	PO BOX 1107	MIDWAY	UT	84049-1107
JENSEN KEITH	24725 E GUNNISON DR	AURORA	CO	80018-6055
JIMENEZ IRINEO AHUELICAN	19 E MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4057
KEELE SCOTT	PO BOX 757	HEBER CITY	UT	84032-0757
KELLNHOFER JOSEPH C	65 E 2130 S	HEBER CITY	UT	84032-1289
KING DEVIN	2198 S 120 E	HEBER CITY	UT	84032-4412
KIPPER MATTHEW AARON	120 E 2200 S	HEBER CITY	UT	84032-4556
LIMIT PROPERTIES LLC	2237 S 390 W	HEBER CITY	UT	84032-1377
LOTT MISHELLE	2144 S 120 E	HEBER CITY	UT	84032-1286
LUKE GLADE BERNELL TR	2370 S DANIEL RD	HEBER CITY	UT	84032-4015
LUKE KEVIN GLADE TR	2390 S DANIELS RD	HEBER CITY	UT	84032-4015
MAYNES DAVID PURRINGTON	2175 S 60 E	HEBER CITY	UT	84032-1290
MCCLOSKEY MARJORIE DIANE TR	PO BOX 684048	PARK CITY	UT	84068-0448
MCDERMOTT STEPHANIE	2188 S 120 E	HEBER CITY	UT	84032-1286
MCPARK PROPERTIES LLC	PO BOX 86	MCCALL	ID	83638-0086
MEEGAN KYLE PETER	51 E 2130 S	HEBER CITY	UT	84032-1289
MELENDEZ KAREN	95 E 2130 S	HEBER CITY	UT	84032-1289
MENDOZA JUAN C	38 MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4059
MILLSTREAM SELF STORAGE LLC	380 E MAIN ST STE B 2ND FL	MIDWAY	UT	84049-6802
MVC CONST CO	2908 S 1200 W	HEBER CITY	UT	84032-3712
NOYES BERKLEY	2158 S 60 E	HEBER CITY	UT	84032-1290
OAK WOOD STRATEGIES GRANBY LLC	6300 N SAGEWOOD DR STE H402	PARK CITY	UT	84098-7502
PARKER DAVID ALLAN TR	2169 S DANIELS RD	HEBER CITY	UT	84032-4014
PETERSON KAREN & JEFFREY (JT)	1931 WALL ST	HEBER CITY	UT	84032-5570
PRIEST BRENNA	57 E MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4057
RED ROCK HOLDING & INVESTMENTS LLC	2276 S DANIELS RD	HEBER CITY	UT	84032-4017
REGAN SEAN	2312 S DANIELS RD	HEBER CITY	UT	84032-4015
REYES JEFFREY S	2433 S DANIEL RD	HEBER CITY	UT	84032-0000

Property owners within annexation and within 300 FEET

NAME	ADDRESS	CITY	STATE	ZIP CODE
ROSE TYLER	2237 S DANIELS RD	HEBER CITY	UT	84032-4017
RUSS AND CATHY WITT FAMILY LLC	1245 S 1200 W	HEBER CITY	UT	84032-3711
RUTHLESS PERFORMANCE INC	291 E ACORD WAY	HEBER CITY	UT	84032-3816
SHADOW MOUNTAIN IV LTD	207 N PAINTED HILLS DR	IVINS	UT	84738-6081
SHOPAY BRANDON D	2159 S 60 E	HEBER CITY	UT	84032-1290
SIMPSON STEVE	92 MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4059
SNYDER KIM E	18 MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4059
STONELY ALAN	3061 S 3400 W	HEBER CITY	UT	84032-4060
SWENSON KEEGAN	1235 SWISS ALPINE RD	MIDWAY	UT	84049-6003
THREE STRING HOLDINGS LLC	2825 MT HIGHWAY 278	DILLON	MT	59725-9672
THUNELL SPENCER M	2177 S DANIELS RD	HEBER CITY	UT	84032-4014
TOWNLEY MONTE K	2328 S DANIELS RD	HEBER CITY	UT	84032-4015
TUFT ROBERT A	27 E AIRPORT RD	HEBER CITY	UT	84032-4069
UTAH PEAKS LLC	2237 S 390 W UNIT #A	HEBER CITY	UT	84032-1378
VERNON DARRELL K TR	2500 S DANIELS RD	HEBER CITY	UT	84032-4065
WALTON RONALD D	2418 S DANIELS RD	HEBER CITY	UT	84032-4016
WASATCH 12 HOLDINGS LLC	10610 S JORDAN GTWY STE 200	SALT LAKE CITY	UT	84095-3948
WASATCH COUNTY	25 N MAIN ST	HEBER CITY	UT	84032-1827
WEBB STEVEN B TR	2189 S DANIELS RD	HEBER CITY	UT	84032-4014
WHISENANT BRAD TR	2177 S 390 W	HEBER CITY	UT	84032-1340
WHISTLER LORI WIKERT	56 MOUNTAIN VALLEY CT	HEBER CITY	UT	84032-4059
WILCOX CYNTHIA STATES	41 E 2130 S	HEBER CITY	UT	84032-1289

Map of properties within 300 feet of the proposed annexation



EXHIBIT F: VICINITY MAP

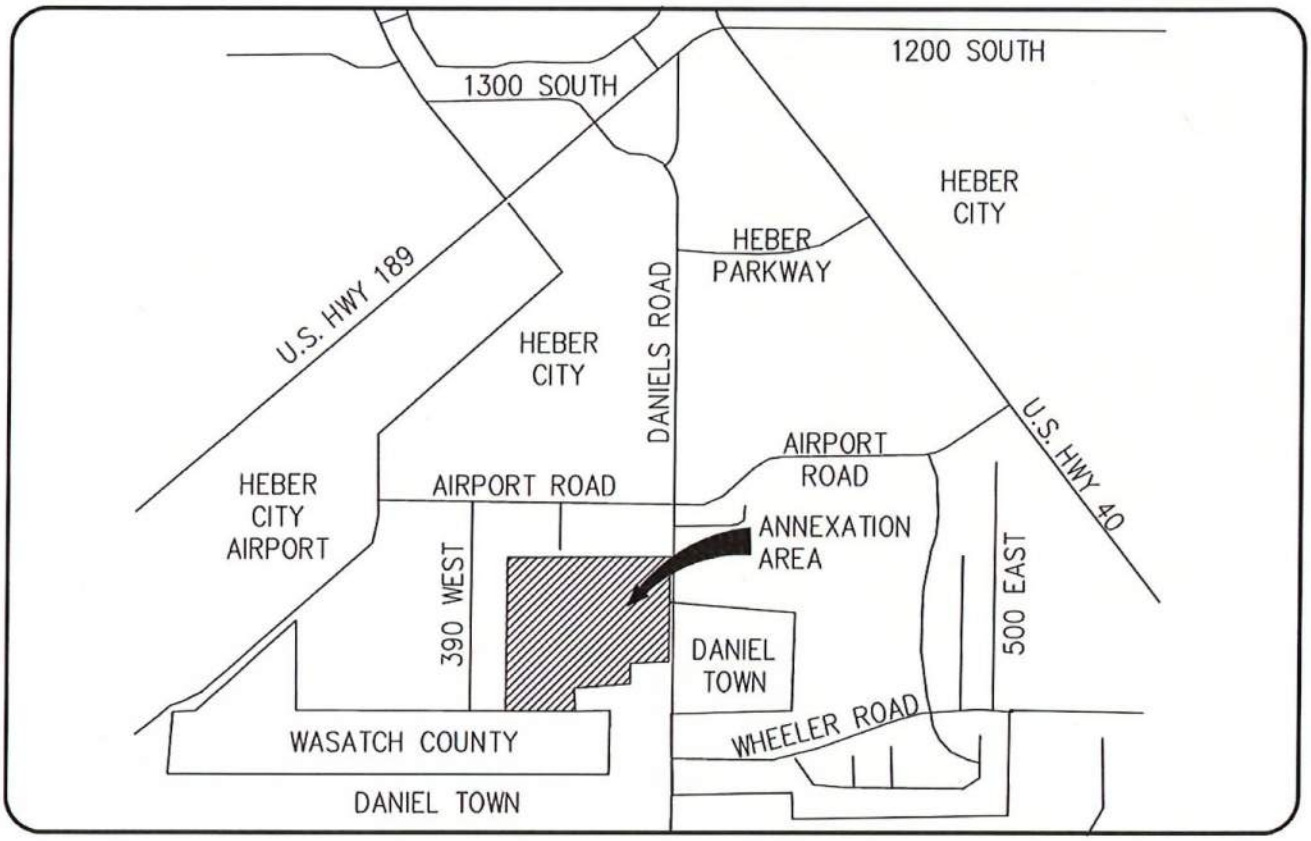


EXHIBIT G: CONCEPT PLAN

Heber City Council Staff Report

MEETING DATE:	3/4/2025
SUBJECT:	Review of Ordinance 2025-02 Amending the Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat
RESPONSIBLE:	Kyle Turnbow
DEPARTMENT:	Engineering
STRATEGIC RELEVANCE:	Nescessary Administrative Action, Infrastructure Sustainabiity

SUMMARY

The policy questions include the following:

1. Should the City Council adopt Staff's proposed updates to:
a. Engineering Standard Specifications and Drawings
b. Storm Water Design Manual
c. Standard Plat

RECOMMENDATION

Staff recommends that the City Council adopt Staff's proposed updates to the Engineering Standards Specifications and
Drawings, Storm Water Design Manual, and Standard Plat.

BACKGROUND

The subject documents have already been adopted by the City. From time to time, updates are necessary to stay abreast of current industry practices, State regulations, and to make clarifications.

DISCUSSION

Many of the changes to the Standard Specifications and Drawings were to address review comments from the Utah Division of Drinking Water. Heber City has the Division of Drinking Water review our Standards to ensure they are up to State code so that we can review our own plans for water system improvements and do not have to submit plans to them for review. This allows Heber City to more efficiently review plans and perform necessary engineering projects. Other changes to the

Specifications and Drawings were primarily clarifications, part number updates, and formatting.

The Storm Water Design Manual required design criteria adjusted to allow for a wider variety of hydrodynamic separators allowed. The initial criteria was too strict and eliminated too many manufacturers from being able to provide an equivalent product. The distance to groundwater in infiltration basins was also increased from 2 ft to 4 ft to insure proper filtration of storm water prior to entering groundwater.

The Standard Plat Template had a couple of signature boxes modified so that plats can be approved and recorded in a more streamlined manner.

FISCAL IMPACT

Necessary Administrative Action, No direct Fiscal Impact to the City

CONCLUSION

Staff recommends these updates for the previously described reasons.

ALTERNATIVES

1. Approve as proposed
2. Approve as amended
3. Continue
4. Deny

POTENTIAL MOTIONS

Alternative 1 - Approval - Staff Recommended Option

I move to **approve** the item as presented, with the findings and conditions as presented in the conclusion above.

Alternative 2 - Approve as Amended

I move to **approve** the item as amended, as follows.

Alternative 3 - Continue
I move to **continue** the item to another meeting on , with direction to the applicant and/or Staff on information and / or changes needed to render a decision, as follows:
Alternative 4 - Denial
I move to **deny** the item with the following findings.

ACCOUNTABILITY

Department: Engineering
Staff member: Kyle Turnbow, Engineer

EXHIBITS

1. Standard Specifications Changes 2025
2. Complete Standard Drawings updates 250224
3. Heber City Storm Water Design Manual 2025 Update 250224
4. Standard Plat Template Changes 2025
5. AG Standard Spec Ord 2025-02 250224

HEBER CITY STANDARD SPECIFICATIONS AND DRAWINGS

HEBER CITY

HEART OF THE WASATCH BACK

January 2025~~September 2023~~

Prepared by:

HEBER CITY CORPORTATION
75 North Main Street
Heber City, UT 84032

STANDARD SPECIFICATIONS
TABLE OF CONTENTS

Spec. No.	Last Rev.	Specification Name	
00200	06/21	Permit Requirements	Addressed DDW Comments, Formating and grammar issues
00700	01/25~~09/23~~	General Improvement Requirements	
00900	06/21	Procedural Policy for the Water and Sewer	
01450	06/21	Testing and Process Control	
02150	02/19	Shoring and Underpinning	
02205	02/19	Common Fill	
02206	01/25~~02/19~~	Select Fill	Formatting issues
02225	01/25~~06/21~~	Excavation and Backfill Operations	Addressed DDW Comments
02245	02/19	Low Density Concrete Backfill (Flowable Fill)	
02250	02/19	Soil Compaction	
02504	01/25~~06/20~~	Asphalt Concrete	Clarified Asphalt Spec
02505	02/19	Emulsified Asphalt Slurry Seal	
02510	01/25~~06/21~~	Asphalt Paving	Changed roughness Spec to include more roads in requirement and added Pay Reduction Table to Asphalt Compaction Specs
02512	02/19	Restoration of Surface Improvements	
02513	06/21	Utility Pothole Repair – Keyhole Method	
02607	09/23	Manholes and Covers	
02609	09/23	Grease and Sand Interceptor	
02660	01/25~~02/19~~	Pipeline Testing	Sewer Lateral camera update,
02668	01/25~~09/23~~	Water Transmission and Distribution Systems	Added single & dual bolt fittings, Addressed DDW Comments
02675	06/21	Disinfection	
02720	09/23	Sanitary Sewer and Storm Drain Systems	
02772	09/23	Ponds & Sumps	
02832	02/19	Fences	
03200	02/19	Concrete Reinforcement	
03216	06/21	Concrete Structures, Driveway, Sidewalk, Curb and Gutter	
03304	02/19	Portland Cement Concrete	
03310	06/21	Concrete Work	
03345	02/19	Concrete Finishing	
16530	09/23	Street Lighting	
16532	09/23	Commercial Business Street Lighting (Historic)	
16533	09/23	North Village Zone Street Lighting	
APPENDIX A	01/25~~09/23~~	Approved Equivalents	Part # updates, removed the Nycor lid due to manufacturing issues

STANDARD DRAWINGS FOLLOW SPECIFICATIONS

SECTION 00200

PERMIT REQUIREMENTS

PART 1 GENERAL

1.01 PURPOSE OF INTENT

A. The purpose of this section is to describe Heber City's Department of Public Work's policies for issuing permits and to control any excavation and construction operations in the public way in Heber City. All contractors and utility companies proposing to construct, repair or replace any facility within the public way, shall contact the Heber City Department of Public Works and complete all permit requirements prior to commencing proposed work as outlined in this section.

B. Utility companies and contractors constructing approved facilities in new subdivision streets shall not be required to obtain a "Street cut and/or Excavation Permit", but will still be subject to City inspection and compliance with subdivision requirements.

1.02 POLICIES

A. Permittee must be licensed with the State of Utah. It is the Policy of Heber City that contractors desiring to perform work in the City's public way shall be properly licensed in the State of Utah. The acceptable licenses include:

TYPE OF WORK	LICENSE
Any type of concrete work	E100 or S260
Paving	E100 or S260
Landscaping	E100 or S330
Buried gas, telephone, water, irrigation and power lines	E100 or S410
Sanitary sewer and storm drains	E100 or S410
Asphalt patching	E100, or S260
Trenching	E100
Highway sign installation	E100 or S440
Manhole covers	E100
Paint striping highways	E100, S260, or S270

Exceptions: A license shall not be required when the Permittee is a public utility company.

B. Policy for determining when "permit waivers" can be granted. Working within the public way without a permit violates Heber City ordinances unless the permit is waived by the Public Works Department. Waivers can be granted by the Public Works Department when any of the following conditions occur:

1. When routine maintenance work which is being done by the City, State and utility personnel does not involve excavations in the City's public way, i.e., crack sealing, street

resurfacing and repair, snow plowing, sanding, sweeping, garbage collection, storm drain cleaning, leaves pickup, above grade work, etc.

2. When a Permittee allows other contractors or utility companies to perform work in the permitted trench limits.

3. When utilities must be relocated or adjusted in conjunction with a City Public Works Department sponsored project provided the utility work is being accomplished within one week of the time the City or its Contractor is scheduled to begin construction at that location and provided the work is coordinated and approved by the City's Public Works Department.

C. Policy for issuing no fee permits. The Public Works Department reserves the right to issue "no fee permits" for work in the public way when the following conditions are met:

1. When utility companies are doing excavation work and such work is required in conjunction with a City Public Works Department project, and the work is required to be accomplished prior to the execution of the Public Works Department contract.

2. When the City Public Works Department is repairing or maintaining public way facilities such as curbs, gutters, cross drains, storm drains, traffic facilities, driveway, sidewalk, etc, and such work requires excavation.

3. When frames and lids in paved surfaces are raised or lowered providing the work does not disturb the underlying roadbase material.

4. When the work is otherwise covered under a separate bond in favor of Heber City and approval for a "No Fee Permit" is authorized by the Heber City Engineer.

D. Policy for revoking "Permit Waivers" and "No Fee Permits". "Permits Waivers" and "No Fee Permits" will be revoked by the Public Works Department if the work is defective or requires action or supplemental inspection by the Public Works Department. In the revocation proceedings, the Public Works Department shall serve written notice which defines the problems encountered and the time (at least one day) the Permittee has to correct the problem. If the work is not satisfactorily completed within the time specified, the "Permit Waiver" or the "No Fee Permit" shall be revoked. The Permittee will be required to secure a Fee Permit before proceeding to complete the work.

E. Policy for extending permit construction time limits. Subject to the Public Works Department's approval, permits which expire may be extended but may also be subject to payment of a permit extension fee as shown in the current Heber City Consolidated Fee Schedule. The length of the extension determined by the Permittee shall be subject to the approval of the Public Works Department.

1.03 GENERAL CONDITIONS

A. Permit: When the work is in progress, the Permittee shall have at the work site a copy of the permit and the Contractor's License Number under which the work is being performed.

B. Emergency work: Maintenance of pipelines or facilities in the public way may proceed without a permit when emergency circumstances demand the work be done immediately, provided a permit could not reasonably and practicably have been obtained beforehand.

In the event that emergency work is commenced on or within any public way of the City, the Public Works Department shall be notified within one-half hour when the work commences or as soon as possible from the time the work is commenced. If emergency work is commenced during

off business hours, the Public Works Department will be notified within one (1) hour of the start of work on the first regular business day on which City offices are open after such work commences, and, at the discretion of the Public Works Department, a permit may be issued which shall be retroactive to the date when the work was begun. Before commencing and while conducting emergency work, all necessary safety precautions for the protection of the public and the direction and control of traffic shall be taken. None of the provisions of these regulations are waived for emergency situations except the prior permit requirements.

C. Private access: Temporary, all weather roadways, driveway, walks, and right-of-ways for vehicles and pedestrians shall be constructed and continuously maintained where required.

D. Existing utilities: The Contractor shall use extreme caution to avoid a conflict, contact or damage to existing utilities, such as power lines, sewer lines, storm drains, street lights, telephone lines, television lines water lines, gas lines, poles or other appurtenances during the course of construction of this project. Any such conflict, contact or damage shall be immediately communicated to the Public Works Department.

E. Preconstruction pictures of existing public way improvements: The Permittee may secure pictures of the conditions of the existing public way improvements such as curbing, sidewalk, landscaping, asphalt surfaces, etc. In the event that public way improvements are damaged and no pictures are taken, the Public Works Department will assume the correction of the damage is the responsibility of the Permittee.

PART 2 REQUIREMENTS

2.01 STREET CUT AND/OR EXCAVATION PERMIT REQUIREMENTS

A. No excavations or street cuts shall be performed within the public right of way without first obtaining a permit from the City. Cut permits shall be valid for a period of 30 calendar days from the date of issuance. Such permits shall be issued by the Public Works Department upon the applicant meeting the conditions and making the commitments outlined below:

1. Show proof that a competent, responsible, and licensed contractor will do the work.

2. Present evidence of public liability insurance in an amount of not less than $200,000.

3. Post a $3,000 cash bond, an adequate performance bond, or a $10,000 blanket license and permit bond. The cash bond or performance bond will be held by the City to guarantee that the required improvements, restoration work, surface and every part thereof, will remain in good condition for a period of 2 years after final acceptance.

4. Agree, at no cost to the City, to make all repairs and to maintain the improvements, the trench, the surface, and every part thereof in good condition during the two (2) year warranty period.

5. Provide proper traffic signage in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and provide for and maintain through traffic in a form approved by the City Engineer at all times throughout the duration of the work.

6. Obtain approval from the City Engineer for any required road closures and provide 48 hours notice to those responsible for emergency services: e.g. school authority, law enforcement and fire protection officials.

7. Properly backfill or plate all cuts and excavations at the end of each working day.

8. Obtain City inspection of the work. Calls for inspection need to be made 24 hours in advance.

9. Repair roadway surfaces with temporary “cold mix” asphalt surfacing, two (2) inches thick, if permanent “hot mix” asphalt paving cannot be completed within 2 days of backfilling the trench. Temporary surfaces must remain smooth and flush with the road surface, and repaired as necessary by the contractor to maintain this condition, until permanent paving is complete.

10. Backfill with untreated base course material compacted to 95 percent of the maximum dry density, starting from the pipe bedding and continuing up to the bottom of the pavement. Excavated material is not to be used for backfill unless contractor can provide density testing, and material is in compliance with Section 02225.3.09 of the City Standard Specifications.

11. Permanent resurfacing shall be per Heber City Standard Specifications and a minimum of 4 inches thick. Paving width shall extend 12 inches beyond each side of the re-compacted width of the trench. Existing pavement edges shall be saw cut to form a clean line. Asphalt edges shall be tacked and rolled with a steel drum roller to achieve a smooth level surface.

12. Fees: The application for a permit authorizing excavation and street cuts shall be accompanied by the fee established by the most current Heber City fee schedule that has been approved and adopted by the Heber City Council.

13. Temperatures must be warm enough to avoid the risk of frost damage to existing utilities and assure proper compaction. Road cut permits will be allowed between April 1st and October 15th. Road Cuts outside of these dates will be prohibited by the City once the temperature drops below 32° night or day, ground is frozen, or compaction cannot be obtained. This does not apply to borings, emergencies and excavations beyond 5 feet from edge of asphalt.

2.02 EXCAVATION OPERATIONS

A. Blue stakes: Before commencing excavation operations, the Permittee shall call “Blue Stakes” and Heber City Public Works Department.

B. Traffic control devices: Traffic control devices such as barricades, signs and cones must be in place before excavation begins.

C. Protection of paved surfaces outside of excavation area: In order to avoid unnecessary damage to paved surfaces, backhoes, outriggers, track equipment or any other construction equipment that may prove damaging to asphalt shall use rubber cleats or paving pads when operating on or crossing said surfaces.

2.03 ENVIRONMENTAL CONTROL

A. Dust and debris: The Permittee or Contractor shall keep dust and debris controlled at the work site at all times. If necessary, wet down dusty areas with water and provide containers for debris. The City Engineer reserves the right to shut down the work or issue a citation if dust is not controlled.

B. Noise: The Permittee or Contractor shall keep neighborhood free of noise nuisance in accordance with the Noise Ordinance.

C. Cleanup: The Permittee or Contractor shall remove all equipment, material, barricades and similar items from the right-of-way. Areas used for storage of excavated material will be smoothed and returned to their original contour.

D. Vacuum sweeping or hand sweeping shall be required when the Public Works Department determines cleaning equipment is ineffective.

2.04 ENFORCEMENT

A. Violators of these regulations of working within the Public Way shall be subject to the provisions of Heber City Ordinances.

END OF SECTION

SECTION 00700

IMPROVEMENT REQUIREMENTS

PART 1 GENERAL

This section defines the general requirements for improvements to be built by the Developer. The Developer is responsible to comply with these Standard Specifications. Alterations, substitutions, or changes from these Standard Specifications shall not be allowed unless prior authorization is obtained from the City Engineer. The developer is responsible for providing all documentation and research supporting requests for changes to these Standards, and the associated costs.

1.01 Street and utility improvements are required along the entire frontage of property being developed, extending to property lines to accommodate future development.

1.02 Public pipelines through private property shall typically be in dedicated home-owner-association or business-owner-association open space centered in a 20-feet-wide easement in favor of the City. Easements must extend 10 feet beyond the end of the utility. Show easements on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City Office prior to acceptance being granted. Easements in the name of the City shall not be recorded by anyone except the City.

1.03 All parcels receiving water, sewer, or irrigation service shall have their own independent services and laterals. These laterals or services shall be contained within the parcel or along the frontage of the property for which the service is intended to eliminate special utility easements crossing adjacent properties.

1.04 For residential subdivisions, public utility easements, of not less than ten feet in width, are required on front lot lines. Public utility and/or drainage easements, of not less than 10 feet, are required on side lot lines and on rear lot lines where needed, when requested by public utility companies, or as otherwise required or approved by the City Engineer. City utilities shall normally be placed in City rights-of-way. When approved by the City Engineer, City utilities may be placed beneath private streets, private parking areas, or in other common open space in an exclusive City utility easement of not less than 20 feet in width. Easements shall be provided to the City using the City's standard utility easement language in use at the time such easements are provided. Easements for commercial or industrial development shall generally follow the same requirements.

~~1.04~~1.05 All utilities passing under permanent structures such as retaining walls, canals, and other similar features shall be installed in a casing extending a reasonable distance from the feature to allow excavation of the casing ends without disturbing the structure.

1.0~~6~~5 DEFINITIONS

ACCESS: Any driveway or other point of entry or exit, such as a street, road, or highway that connects to the general street system. Where two public streets intersect, the secondary street is considered the access.

ACKNOWLEDGEMENT (Acceptance of Plans): Recognition by the City that the Engineer of Record, has certified his or her construction plans and supporting information to be in compliance with the Heber City Code and Standard Specifications and Drawings.

APPLICANT: Any person, corporation, entity, designee, or agency applying for a permit.

APPROVED EQUAL: Equipment or material which, in the opinion of the City's Representative, is equal in quality, durability, appearance, strength, design, performance, physical dimensions, and arrangement to the equipment or material specified, and will function adequately in accordance with the general design.

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AS-BUILT DRAWINGS: Drawings which show the Project as actually-constructed, and which include any and all changes made to the construction plans before and during construction.

BEST MANAGEMENT PRACTICE (BMP): Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the State.

CITY INSPECTOR: The authorized representative of the City or Engineer assigned to observe the Work performed, or materials furnished by the Contractor in an effort to ensure compliance with City requirements.

CITY/OWNER: Wherever the word "City" or "Owner" appears, it shall be interpreted to mean "Heber City", unless otherwise denoted.

CONSTRUCTION ACTIVITIES: Clearing, dredging, excavating, and grading of land and other activities associated with buildings, structures or other types of real property such as utilities, bridges, dams, and roads. Includes mobilization/demobilization and any other activity that occurs on site.

DRIVEWAY: A grade-separated access constructed within the right-of-way connecting the public street with adjacent property.

EASEMENT: An interest in real property that conveys use, but not ownership, of a portion of an owner's property.

ENGINEER: The City Engineer, or his or her representative.

ENGINEER-OF-RECORD: The professional engineer, licensed in the State of Utah, who prepared, or directly supervised the preparation of the engineering drawings and documents presented to the City for acknowledgement, and who shall accept sole responsibility for the completeness and accuracy of the drawings and documents presented to the City.

ESSENTIAL INFRASTRUCTURE: Essential infrastructure includes: water, sewer, irrigation, storm drain, curb, pavement, and street signs for emergency wayfinding. The access requirements of IFC Chapter 5 and Appendix D must be installedand approved prior to final inspection and the issuance of a Certificate of Occupancy. Temporary roads, where approved, are required to be capable of supporting vehicle loading under all weather conditions, and must meet the following criteria:

A. The surface of the road should be capable of carrying the load of the anticipated emergency response vehicles and be drivable in all kinds of weather.
B. Asphalt pavement.
C. Access roads shall be maintained for emergency and fire access throughout the duration of the project.
D. Fire hydrants must be installed and functional prior to combustible materials arrival on the site.

FINAL ACCEPTANCE OF PUBLIC INFRASTRUCTURE: The date specified in writing by the Engineer when all work, including all punch list work designated by the Engineer, is complete and accepted by the City after the completion of the warranty period.

INSPECTED AND ACCEPTED or ACCEPTANCE: City recognition of infrastructure conformance to all applicable City Standards.

INSPECTION: A review of the project, including but not limited to a visual review of the work completed to date. It does not include or imply an exhaustive or detailed review of the Work nor does it create a duty on the part of the Engineer or Owner to detect latent defects.

INTERSECTION: The general area where two or more streets join or cross at grade.

LAW: Any applicable City, County, State, or federal statutes or regulations governing anything relating to the Work embodied in the Agreement.

LOW-IMPACT DEVELOPMENT (LID): An approach to land development, or redevelopment, that works with nature to more closely mimic pre-development hydrologic functions.

PARTIAL STREET: A street that has full frontage improvements on the near side, the full width of pavement, and curb on the opposite side.

PAVEMENT: The uppermost layer of bituminous or Portland-cement concrete material placed on the traveled way or shoulders for a riding surface, whether rigid or flexible in composition. This term is used interchangeably with "surfacing."

PROFESSIONAL ENGINEER: An engineer who is licensed to practice in the State of Utah.

PROFESSIONAL LAND SURVEYOR: A land surveyor who is licensed to practice in the State of Utah.

PUBLIC UTILITY EASEMENT (PUE): A property right provided for "dry" utilities (gas, power, telecom) that are regulated by the Public Service Commission. City utilities are not public utilities.

RECOGNIZED-AND-GENERALLY-ACCEPTED GOOD ENGINEERING PRACTICES (RAGAGEPs): Practices that are based on established codes, standards, published technical reports or recommended practices or similar documents. RAGAGEPs are not practices from other cities or practices promoted by individuals based on their individual professional judgement.

RIGHT-OF-WAY (ROW): All public rights-of-way and easements, public footpaths, walkways and sidewalks, streets, roads, highways, alleys, and water or drainage ways. It does not, however, include Public Utility easements not within Public Ways of the City.

STANDARD SPECIFICATIONS: The Standard Specifications and Drawings for Heber City.

STREET: A general term for denoting a public way or private way for the purpose of transporting people, materials, and goods.

SUBGRADE: That portion of the roadbed surface which has been prepared, as specified, and upon which a layer of specified roadbed material or base, or sub-surfacing, or pavement is to be placed.

SUBSTANTIVE REVIEW: A general evaluation of the overall design and general compliance with the City Code and engineering standards. It is not an exhaustive review for compliance with each specific provision of the City Code, other applicable standards or regulations, or RAGAGEPs. Substantive review shall not shift the responsibility and liability for the completeness and accuracy of the plans and related designs from the Engineer-of-Record to the City.

SURFACE OR SURFACING: The uppermost layer of material placed on the traveled way or shoulders, and is usually of asphalt or concrete. This term is used interchangeably with "pavement."

WORK: The construction services performed including materials on City infrastructure and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations to construct a project. The term also includes the supervision, inspection, and other on-site functions incidental to the actual construction.

1.0~~6~~7 ADOPTION OF HEBER CITY STANDARD SPECIFICATIONS AND PLANS MANUAL

Heber City has adopted the following as the basis for the Heber City Standard Specifications and

Drawings:

A. Heber City Standard Specifications and Drawings Manual, as included herein.
~~B.~~ Heber City Storm Water Design Manual. All storm-drainage-related work not specifically

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B. described in said Manual shall conform to Mile High Flood District Urban Storm Drainage Manual, current edition (MHFD Manual).
C. International Fire Code (IFC), current edition, Appendix D.
D. All transportation-related work not specifically described in these Standards shall conform to the latest editions of: policies and practices published by the American Association of State Highway Transportation Officials (AASHTO), or the Institute of Transportation Engineers (ITE), or the Utah Department of Transportation (UDOT) Roadway Design Manual, the selection of which shall be at the sole discretion of the City Engineer.
E. FHWA and Utah Manual on Uniform Traffic Control Devices for Highways and Streets (MUTCD).
F. All work not specifically described in these Standards, MHFD Manual, AASHTO, ITE, IFC Appendix D, and MUTCD shall conform to RAGAGEPs. When none of the above-referenced standards apply or are otherwise determined as acceptable by the City. The City Engineer will be allowed two weeks to provide an adequate specification to control and provide guidelines for construction.

The Heber City Standard Specifications and Drawings Manual is available for download at www.heberut.gov.

1.087 CITY ENGINEER'S AUTHORITY

A. The City Engineer has the authority to provide Substantive Review of submitted Construction Drawings, studies, and supporting documentation.
B. The City Engineer shall provide feedback pursuant to his/her Substantive Review of the Construction Drawings, studies, and supporting documentation.
C. Changes to address the City Engineer's feedback shall be made to the Construction Drawings and returned to the City Engineer for City acknowledgement of the Construction Drawings.
D. The City Engineer has authority to issue Stop Work Orders when construction is progressing contrary to the City Code, the City's Standard Specifications and Drawings, or an acknowledged set of construction drawings.
E. The City Engineer will make the decision relating to all questions which may arise as to the quality and acceptability of alterations, substitutions, or changes proposed. In case any question should arise, relative to these Standards, the final determination or decision of the City Engineer shall be complied with as a condition of the Developer receiving final acceptance ~~approval~~ of the work in question.
F. The City Engineer has additional authority such as is stated in these Standards and the City Code.

1.098 CONSTRUCTION NOTES

The following are the Standard City Construction Notes. Additional notes may be required for specific projects at the discretion of the City Engineer.

A. TYPICAL

1. Contractor assumes all responsibility for job site conditions during construction of this project, including the safety and well-being of all persons and property. This responsibility shall apply continuously and not be limited to normal working hours.
2. Contractor shall obtain all applicable permits and/or written agreements necessary to complete the work.
3. City owned water valves may be operated only by City staff. Opening, closing or tampering with a City water valve without permission of the City public works department is a Class B misdemeanor punishable by up to six months in jail and a $1,000 fine.
4. Contractor shall schedule a pre-construction meeting with the City's Engineering Department at least 5 business days prior to the start of construction. Contractor must attend and bring one set of the Acknowledged construction drawings and a copy of the

current Heber City Standard Specifications and Drawings Manual (available at heberut.gov).

5. Contractor shall have in possession and on-site at all times one copy of the current acknowledged construction plans stamped, signed, and dated by the Engineer of Record, the Applicant, and the City.
6. Developer's Engineers (Civil and Geotechnical) shall perform sufficient inspections and surveys during grading and construction to render an opinion in writing as to adherence to the accepted plans and compliance with Heber City Standard Specifications and Drawings Manual.
7. Any work done in the absence of an inspector's approval shall be subject to rejection. All underground GPS data must be collected by a City representative prior to backfill. Inspectors may request the contractor to expose work that has been backfilled without prior inspection or collection of GPS data. All such rework shall be completed at the Developer's or Owner's expense.
8. Survey monuments must be installed in accordance with the current Heber City and Wasatch County Surveyor's Office requirements.
9. All disturbed property survey markers shall be reset in their original locations upon completion of all construction activities.
10. Contractor shall provide all traffic control which must conform to the current MUTCD. Provide site-specific Traffic Control Plans [prepared by an American Traffic Safety Services Association (ATSSA) or AGC-Certified Individual] prior to installation of any traffic control device. Traffic Control Plans must be ~~Accepted~~accepted by the City prior to implementation and before any shoulder, lane, or street closure.

B. TRENCHES AND UTILITIES

1. Trenches shall be completed and restored per City Standard Drawing UTIL-1.
2. Pothole existing utilities in accordance with City Standard Drawing UTIL-5.
3. Contractor is responsible to locate, avoid, protect, and repair all utilities encountered during construction, whether or not they are shown on the plans. Locations of underground utilities shown on plans are approximate and require field verification by Contractor.
4. All trenches within public right-of-way must be backfilled or securely plated during non-working hours. Trenches outside these areas shall be back-filled or protected by approved temporary fencing and/or barricades during non-working hours. Trenches in the roadway must be backfilled, compacted, and paved within 48 hours of road-cut. Paint striping shall be replaced in accordance to City Standards within 48-hours of restoration of pavement.

C. ROADWAY CONSTRUCTION AND RESTORATION

1. Subgrade must be approved prior to construction of untreated base course and pavement sections. Subgrade approval requires that a proof-roll be completed and verified by a City inspector, and that all utilities be installed, inspected with connections to main lines completed, and accepted by the City.
2. Asphalt patching to roads between October 15 and April 15 will be considered temporary only, and must be replaced according to City Standards and Specifications between the following April 15 and July 1.
3. Material Submittals are required for all items placed within the City right-of-way. All submittals must be dated within 90 days of the Construction Start Date (unless specified otherwise) and be submitted prior to the start of construction activities.
4. Moratorium Standard (New, Reconstructed, and Overlaid Streets): No cuts permitted for two (2) years from the time of construction/ reconstruction/overlay)

5. Special Restoration Standard: This standard applies to new, reconstructed, overlaid, and chip/slurry-sealed streets:
    a. New, Reconstructed, and Overlaid Streets (for 5 years after end of moratorium): The asphalt surface shall be milled a minimum depth of two (2) inches, and fifteen (15) feet each way from the edge of the cut. Milling shall be done in widths equivalent to existing striped traffic lanes. The City Engineer reserves the right to require additional area and/or depth if deemed appropriate to restore roadway to original condition. Approved fabric is required when existing pavement included a fabric prior to the permitted cut.
    b. Chip/Slurry-Sealed Streets (for one year after chip/slurry application): The asphalt surface shall be re-chipped/slurried a minimum of fifteen (15) feet each way from the edge of the cut, in widths equivalent to existing striped traffic lanes.
6. Roads shall be opened for traffic during peak hours. Lane closures may only be in effect from 9am-2pm, and 7pm-7am when night work is approved. Contractors shall accommodate all special school or local government schedules and events. Paint striping shall be replaced in accordance with City Standards within 48-hours of restoration of pavement.
7. All road closures must be approved by the City Engineer. All requests for road closures shall be made in writing and include a site-specific Traffic Control Plan for the proposed closure. When approved, closures of Collector Streets will require a 2-week advance notice to the public informing them of the upcoming closure. The notice shall be provided using on-site Variable Message Sign (VMS) boards indicating the anticipated start date and duration of the closure. VMS boards shall remain on site for the full two-week advance-notice period. If the duration of the closure is extended beyond the approved period, the extension shall be coordinated with the City Engineer and shall require additional VMS board notification to the public.

1.10~~09~~ SUBMITTALS REQUIRED FOR DEVELOPMENT ACKNOWLEDGEMENT

A. ENGINEERING PLAN REVIEW CHECKLIST – The City provides Engineering Plan Review Checklists to assist developers and their professionals in the preparation of the engineering submittals for the acceptance of a development project. The Engineering Checklist does not replace the City Code or Engineering Standards and Specifications. The Engineering Checklist must be completed and signed by the Applicant and the Engineer-of-Record at the time of application submittal.

B. SUPPLEMENTAL ENGINEERING REPORTS – All engineering reports submitted for final acknowledgment shall be stamped, signed, and dated by a professional engineer ON THE FIRST SUBMITTAL.

1. Drainage Report – Drainage reports must be prepared in accordance with the design criteria and methodologies specified in the Heber City Storm Water Design Manual. Drainage reports shall include an LID Evaluation to identify feasible BMPs, and an Infiltration Feasibility Determination. In addition to the required engineer's stamp, signature, and date, drainage reports must include a certification from the engineer stating:

    By affixing hereto my Professional Engineering stamp and signature, I hereby ~~certify~~represent that this report/design for the management of storm water of this development was prepared by me, or under my direct supervision in accordance with the provisions of Heber City's Storm Water Design Manual and Standard Specifications and Drawings, and was designed to comply with the provisions thereof. I understand that the City assumes no responsibility or liability for this report.

2. Geotechnical Report – Geotechnical reports shall include:
    a. Summary of Proposed Construction

b. Pavement designs that comply with City Standards.

c. Double-Ring Infiltrometer Tests that are performed pursuant to ASTM D 3385 and the City Storm Water Design Manual.
d. Evaluation of Geologic Hazards and Proposed Mitigation Measures
e. Subsurface Soil Profiles
f. Groundwater Considerations and Proposed Mitigation Measures
g. Soil Classifications
h. Soil Properties, including Corrosivity and Proposed Mitigation Measures
i. Design Recommendations
j. Construction Recommendations

3. Traffic Impact Study (TIS) – A traffic study is necessary to identify, review, and make recommendations for mitigation of the potential impacts a development may have on the roadway system. Identification of impacts and appropriate mitigation measures allows the City to assess the existing and future system safety, performance, maintenance, and capacity needs. TISs shall follow the Utah Department of Transportation's TIS Requirements, including the Levels of Study and associated thresholds. Additional requirements and investigation may be imposed upon the applicant as necessary. Likely information presented in a TIS may include, but is not limited to, site location and proposed access point(s), phased and/or full development trip generation, connection point design elements, adjacent and relevant development, existing and future traffic volumes, assessment of the system impacts, AND mitigation measures as appropriate.
4. Engineer's Estimate of Probable Costs – An Engineer's Estimate of Probable Costs shall be submitted to the City AFTER, not before, the engineering drawings have been accepted by the City. It shall include quantities, unit prices, and total prices of each landscaping and infrastructure improvement required as a condition precedent to recording a subdivision plat or the development of a commercial, industrial, mixed use, or multi-family project. When determining the assurance and warranty bond amounts, the City Engineer may change the unit prices in the estimate according to the City's research of market pricing.
5. Reimbursement Agreement Exhibits – Reimbursement requests for all infrastructure upsizing (system improvements) beyond the project improvement needs must be presented to the City at the Preliminary Plat or Commercial Initial Site Plan step to allow City staff advance time to work on a reimbursement agreement with the applicant. Reimbursement agreements must be accepted by the City and be executed by both parties before construction can begin on the project. All reimbursements that have not already been approved by the City Council in the City's approved and adopted budget require specific approval by the City Council.

   If the applicant wishes to begin construction before there is an agreement in place with the City, they must sign a waiver stating they accept the risk that they may not be reimbursed for any improvements installed, even if they are system improvements.

   The following exhibits are required to initiate a reimbursement agreement:

   a. Exhibit A -- Itemized Schedule of Values – Include quantities and unit prices of reimbursable items. Correlate it with an accompanying map. It shall be stamped, signed, and dated by the Engineer-of-Record.
   b. Exhibit B – Contractor bids or engineer estimates that support the prices shown in the Itemized Schedule of Values.
   c. Exhibit C -- Map of Reimbursable Items – Show the locations of all of the reimbursable items. Correlate it with the accompanying Itemized Schedule of Values.

C. BOUNDARY SURVEY – Boundary surveys, also known as record of survey, shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL. The survey shall be filed in the Office of the County Surveyor and, according to State Law, include evidence of filing.

D. EASEMENT AGREEMENT – All easement agreements shall be submitted to the City Engineer on the

City's Standard Easement templates (available upon request from the City Engineer) for City acceptance. Easements in the name of the City shall not be recorded by anyone except the City. After City acceptance and the recordation at the County Recorder's Office, the recordation shall be referenced on the subject plat. Right-of-Discharge easements (available upon request from the City Engineer) shall be granted to and indemnify the City whenever storm water drainage from City ROW discharges onto private property.

E. WATER RIGHT ACTION REPORT – Water rights to be used in development shall be summarized on a Water Right Action Report that is prepared by the Developer and approved by the City Engineer. A standard template for this the Report is available from the City Engineer upon request.

F. SUBDIVISION PLAT – Subdivision plats submitted for final acceptance shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.

G. DRY UTILITIES CONCEPTUAL PLAN

H. LEGAL DESCRIPTION – Legal descriptions submitted for final acceptance shall be accompanied by an illustration of the legal description, both of which shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.

I. NOTICE OF INTENT (NOI) – An NOI to the Utah Division of Water Quality for Storm Water Discharges Associated with Construction Activity shall be required prior to starting any construction activity.

J. FLOODPLAIN DEVELOPMENT PERMIT – The Floodplain Development Permit is the mechanism by which the City evaluates any and all impacts of activities proposed within regulated floodplains in the City. Contact the City Engineer for the Permit application when proposing activities within a regulated floodplain.

K. ENGINEERING DESIGN DRAWINGS –Accepted Engineering Design Drawings shall be valid for one year from the date of legislative approval. If construction has not begun within one year from the date of legislative approval, the Engineering Design Drawings shall become null and void unless an extension is granted by the City. Expired drawings must be re-checked by the City as part of a new application under the current ordinances in order to be Accepted again. Engineering Design Drawings must include, but are not limited to:

1. Reference to the City's Construction Notes (Section 1.04)
2. Boundary Survey
3. Topographical (existing conditions) Survey
4. Subdivision Plat
5. Demolition Plan (as necessary)
6. Impact-to-Private-Irrigation Plan (as necessary)
7. Site Plan
8. Grading and Drainage Plan
9. Utility Plan
10. Signing and Striping Plan, including a Safe Routes to School Plan (Coordinate with WCSD.)
11. Plan/Profile Sheets
12. Detail Sheets (not including copies of City Standard Drawings). City Standard Drawings shall be referenced in ONE place for all applicable infrastructure.

    The Impact-to-Private-Irrigation Plan shall include a certification, signed by the Applicant stating:

    As the developer of this property, I hereby ~~certify~~represent that I understand: (1) how the existing gravity irrigation system works in the vicinity of this property, (2) how my development of this property will affect this system and associated stakeholders, (3) that I have coordinated with and have approval from the subject irrigation company(ies), (4) that I take full responsibility for the

changes

I am making to this system, (5) Heber City does not assume responsibility or liability for changes I make to this system.

The Grading and Drainage Plan shall include a certification from the Engineer-of-Record stating:

By affixing hereto my Professional Engineering stamp and signature, I hereby ~~certify~~represent that this design for the management of storm water of this development was prepared by me, or under my direct supervision in accordance with the provisions of Heber City's Storm Water Design Manual and Standard Specifications and Drawings, and was designed to comply with the provisions thereof. I understand that the City assumes no responsibility or liability for this design.

Engineering Design Drawings submitted for Final Acceptance shall be certified on the cover sheet by the Engineer-of-Record, ON THE FIRST SUBMITTAL with the following language:

Engineer's Certification

By affixing hereto my Professional Engineering stamp and signature, I hereby represent ~~A~~as the Engineer-of-Record, ~~I hereby certify~~ that these construction drawings and supporting information ("Plans") comply with the Heber City Code and Standard Specifications and Drawings ("Standards"). I understand and agree that the City's Acknowledgement (Acceptance) of these plans:

1. ~~The City's Acknowledgment of these plans s~~Shall not be construed to be a permit for, or an approval of, any variance from any of the provisions of the Standards, unless a separate written approval authorizing a specific deviation has been provided by the City Engineer.
~~2. The City's Acknowledgement of these Plans, or feedback from the City on whether the Plans meet the Standards, shall not prevent the City from requiring the correction of errors in the Plans at any time, including after construction of improvements.~~
~~3.~~2. ~~The City's Acknowledgement of these Plans d~~Does not constitute a permit from the ~~F~~federal or ~~S~~state ~~G~~government or permission to deviate from Federal or State Laws or Regulations.
~~4.~~3. ~~The City's Acknowledgement of these Plans d~~Does not grant permission to work on the properties of others.

1.1~~0~~ STORM DRAIN SYSTEM

A. SEE THE HEBER CITY STORM WATER DESIGN MANUAL.

B. IRRIGATION DITCHES

1. Private irrigation ditches within developments shall remain open, or be piped, pursuant to the affected stakeholders' specifications. Such changes to existing irrigation systems shall be included in the engineering plans.
2. Provide irrigation easements on the subject plat "for the benefit of the upstream and downstream users" to formalize prescriptive easements.
3. City-operated-and-maintained irrigation ditches shall remain open, unless otherwise approved by the City Engineer. Any City irrigation ditches that are piped shall follow the applicable City standards.

1.1~~2~~1 SANITARY SEWER SYSTEM

A. The impact of any proposed sewer system, on the existing sewer system, will be reviewed by the City Engineer. The developer may be required to add additional off-site sewer improvements in order to provide adequate sewer service for the proposed development.

1. Areas that will be serviced through the proposed development will be considered and the method of service to those areas will be determined by the City Engineer. Increased system size may be required by the City Engineer for future development.
2. City-owned sewer lift stations are prohibited.

B. Sewer mains shall be as shown in the City's current Capital Facilities Plan or Master Plan.

C. The minimum size of any sewer main line shall be 8-inch diameter.

D. All sewer pipe between manholes shall be of the same SDR and classification, and shall be the highest SDR and classification required along the section.

E. The minimum size of sewer laterals shall be 4 inches.

F. All sewer pipes shall be sized to a maximum of 75 percent of their capacity.

G. Sewer lines shall be designed according to the minimum slopes below. The design flow shall be calculated based on equivalent residential connections in addition to a peaking factor depending on the size of sewer pipe. For 8-inch pipe, the peaking factor shall be 4.0. For pipe larger than 8-inches the peaking factor shall be 2.5. The minimum sewer slopes shall be as follows (foot/foot):

1. 8-inch – 0.004
2. 10-inch – 0.0028
3. 12-inch – 0.0022
4. 15-inch – 0.0015
5. 18-inch – 0.0012
6. >/= 21-inch – 0.001

H. The minimum sewer depth shall be 13.0 feet under normal conditions. In areas of shallower sewer, the following note shall be added to the development plat:

~~H.~~ "Shallow Sewer Depths! Contractor shall verify sewer depths before excavating for basement. Home(s) with basement may not have sewer service available for basement."

I. A minimum of 5 feet of cover shall be required over all sewer lines.

J. Sewer shall be located at 10-foot minimum horizontal distance from drinking water lines.

K. Manholes must be constructed at the end of all sewer lines. Cleanouts shall not be substituted for manholes nor installed at the ends of lines. Stubs for future sewer extension may be installed without a manhole or cleanout. But, no sewer services shall be connected to the sewer stub until the line is extended and a manhole has been installed at the end of the line.

L. The minimum size manhole shall be 4-foot diameter. 5-foot diameter manholes shall be used in the following situations:

1. At all intersections of four or more 8-inch or larger pipelines.
2. Where any connecting pipe size is 14 inches in diameter or larger.
3. Where the deflection angle of the pipeline exceeds 90 degrees.
4. When both items "1" and "2" occur in the same manhole, a 6-feet manhole is required.

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M. A 12-feet access road shall be constructed to all manholes and shall be capable of supporting H-20 loading.

N. Where new sewer lines are connected to existing sewer lines, a 5-feet-diameter manhole shall be constructed over the existing sewer line.

O. Manhole Spacing: The maximum span between manholes shall be 400 feet.

P. Six-inch and larger laterals shall connect to the main line through sewer manholes.

Q. The minimum drops through manholes shall be as follows:

1. Deflection Greater than 90° - 0.3 foot drop
2. Deflection of 75° - 90° – 0.2 foot drop
3. Deflection of 0° - 74° – 0.1 foot drop, not exceeding 0.20 feet across the manhole.

R. Drop manholes are required when the inverts differ by 24 inches or more.

S. Deflections in manholes on steep grades:

1. Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than or equal to 45 degrees but less than 90 degrees, a 5~~five~~-fooet manhole with an extra deep trough is required.
2. Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than 90 degrees, a 6~~six~~-fooet manhole with an extra deep trough is required.
3. The benching of the extra-deep trough shall be located 25 percent higher than the diameter of the incoming pipe.

T. Each non-single-family building or unit of separate ownership shall require a separate sanitary sewer lateral.

U. Grease interceptors, pursuant to the City Code and City Standard Specifications, shall be required on all commercial development where food service uses are anticipated.

1. Sampling manholes shall be installed downstream of all grease traps.
2. Sampling manholes and grease interceptors shall be inspected and maintained per the Utah Health Code, the City's Kitchen Best Management Practices Ordinance, and Wasatch County Health Department Regulations.

1.13~~2~~ DRINKING WATER SYSTEM

Private systems shall be designed and inspected the same as public systems.

A. PIPELINES

1. Pipelines shall be as shown in the City's current Capital Facilities Plan or Master Plan, and be at least 8 inches in diameter, unless approved otherwise by the City Engineer for water quality purposes in dead-end lines. Pipelines that supply fire hy~~r~~drants shall be at least 8 inches in diameter.
2. Fire hydrants shall be located on the same side of the street as the drinking water main line. The horizontal distance between the drinking water lines and pressurized irrigation lines shall be at least 5 feet.
3. Pipelines in private streets shall be on the same sides as in public streets unless approved otherwise by the City Engineer.
4. The horizontal distance between drinking water lines and sanitary sewer lines, including laterals,

shall be at least 10 feet. Where a water main and sewer line must cross, the water main shall be at least 18 inches above the sewer line. Separation distances shall be measured from pipe edge to pipe edge. Adherence to all separation requirements included in ~~Utah Administrative Code~~ Sections R309-550-7 and R309-550-12 of the Utah Administrative Code shall be required unless a written variance is requested and granted from the Utah Division of Drinking Water and Heber City.

5. Special design and construction considerations in accordance with Section R309-550-5(6) of the Utah Administrative Code shall be required for water mains located in areas of geologic hazard (e.g., slide zones, fault zones, river crossings, etc.)
6. Surface water crossings are generally prohibited and will only be allowed when no other practical alternatives exist and when specifically approved in writing by the City Engineer. If allowed, surface water crossings shall be designed and constructed in accordance with Section R309-550-8(8) of the Utah Administrative Code.
7. The minimum fire flow and pressure requirements shall be pursuant to State Standards, or more if determined by the Fire Marshall.
8. The minimum operating pressure in all parts of the system shall be 30 pounds per square inch during peak instantaneous demand.
9. The maximum static pressure in all parts of the system shall be 130 pounds per square inch.
10. Systems shall be designed so that pressures conform to the pressure zones shown in the City's Capital Facilities Plan.
11. The maximum flow velocity shall be 5 feet per second.
12. The impact of any proposed system on the existing system will be reviewed by the City Engineer. The developer may be required to add offsite infrastructure to mitigate impacts to the existing system and provide adequate water supply to their development.
13. If required by the City Engineer, the Engineer-of-Record shall provide a computer network model, for the City Engineer's review, of the proposed system showing compliance with this Standard. The City will provide boundary conditions, based on the system, for the model.
14. Individual booster pumps are not allowed, except in buildings with more than two stories above ground.
15. To provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins and "looping" of the drinking water system ~~whenever practical~~. Where dead-end mains do occur (permanent or temporary), a fire hydrant or approved blow-off assembly shall be installed for flushing purposes as directed by the City Engineer. Flushing devices must have the minimum sizes shown on Heber City Standard Drawing "Water-8", but must also be sized to provide a minimum velocity of 2.5 fps in the water main.
16. Permanent dead-ends shall not be longer than 600 feet.
17. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

B. VALVES

1. Valves smaller than 14 inches shall be gate valves. Valves 14 inches and larger shall be horizontal gate valves or butterfly valves.
2. Valves shall be placed at intervals not exceeding 800 feet in non-commercial districts and not exceeding 500 feet in commercial districts. All valve spacing shall conform to Section R309-550-5 (8) of the Utah Administrative Code.
3. At junctions, valves shall be placed on all legs.
4. Valves shall be placed within 5 feet to 10 feet of the ends of casings.
5. Valves shall be placed at connections to the existing system.
6. When approved by the City, tapping sleeves may be used for fire lines or other branch connections. Tapping sleeves shall not be used for size-on-size applications. Branch lines must be at least one nominal pipe size smaller than the line being connected to.
7. Blow-offs shall be placed at the ends of and low points in pipelines. Fire hydrants may be used as blow-offs.
8. Air releases shall be installed at all peaks and sharp changes in gradient with a difference in elevation greater than 15 feet. If the water line has service connections within the location of the

peak or change in gradient, the air release may be eliminated at the City Engineer's discretion.

~~8.~~9. Pressure reducing valves (PRVs) shall be installed at connections between water pressure zones as shown in the City's Capital Facilities Plan or as required by the City Engineer. Isolation valves shall be installed on both sides of the PRV. Where variable flow conditions will be encountered, consideration shall be given to providing parallel PRV lines to accommodate low and high flow conditions. PRVs shall include power and data drops for SCADA capabilities.

C. FIRE HYDRANTS

1. Fire hydrants shall be placed at the ends of cul-de-sacs, the ends of dead-end streets, and at least every 1000 feet of off-site pipelines.
2. Fire hydrants shall be placed not more than 500 feet apart, or as directed by the Fire Marshall.

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3. The minimum fire flow shall be pursuant to State Standards, or more if required by the Fire Marshall.
4. Fire hydrants shall be placed on the same side of the street a~~s~~t the water main pipeline.

1.1~~4~~3 PRESSURIZED IRRIGATION SYSTEM

A. PIPELINES

1. Pipelines shall be as shown in the Capital Facilities Plan or Master Plan, and be at least 6 inches in diameter.
2. Pipelines in private streets shall be on the same sides as in public streets.
3. The minimum operating pressure in all parts of the system shall be 30 pounds per square inch during peak instantaneous demand.
4. The maximum static pressure in all parts of the system shall be 120 pounds per square inch.
5. Systems shall be designed so that pressures conform to the pressure zones shown in the City's Capital Facilities Plan.
6. The maximum peak day flow velocity shall be 5 feet per second.
7. The impact of any proposed system on the existing system will be reviewed by the City Engineer. The developer may be required to add offsite infrastructure to mitigate impacts to the existing system and provide adequate water supply to their development.
8. If required by the City Engineer, the Engineer-of-Record shall provide a computer network model, for the City Engineer's review, of the proposed system showing compliance with this Standard. The City will provide boundary conditions, based on the system, for the model.
9. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.
10. Public pipelines through private property, if approved, shall be in dedicated home-owner-association or business-owner-association open space centered in a 20-feet-wide easement in favor of the City.
11. All pipelines shall be designed such that the system can be easily drained to surface ditches or storm drain systems.

B. VALVES

1. Valves smaller than 14 inches shall be gate valves. Valves 14 inches and larger shall be butterfly valves.
2. Valves shall be placed at intervals not exceeding 800 feet.
3. At junctions, valves shall be placed on all legs.
4. Valves shall be placed within 5 feet to 10 feet of the ends of casings.
5. Valves shall be placed at connections to the existing system.
6. When approved by the City, tapping sleeves may be used for branch connections. Tapping sleeves shall not be used for size-on-size applications. Branch lines must be at least one nominal pipe size smaller than the line being connected to.
7. Blow-offs shall be placed at the ends of and low points in pipelines.
8. Air releases shall be installed at all peaks and sharp changes in gradient with a difference in elevation greater than 15 feet. If the water line has service connections within the location of the peak or change in gradient, the air release may be eliminated at the City Engineer's discretion.
9. Drains shall be installed at low points in the system.

1.1~~5~~4 STREET SYSTEM

Private streets shall be privately-owned-and-maintained.

A. DESIGN REQUIREMENTS

1. The pavement design (subbase, roadbase, and asphalt) for private streets shall be at least the same as public streets.

2. The pavement width of private streets shall be at least as wide as required by the latest edition of Appendix D of the International Fire Code.
3. Normally, sidewalk, park strip, curb, and strip paving are required along redeveloping properties. In the event that the requirement for such is delayed by deed restriction, the shoulder of the road shall be improved with 3 inches of roadbase for a distance of 4 feet from the edge of asphalt. The surface of the roadbase shall tie in with the surface of the asphalt. Beyond the roadbase, the surface of the soil shall be graded to a swale and then slope up to the edge of the right-of-way.
4. Roundabouts, following Federal Highway Administration Design Guidelines, are required where feasible and practical, pursuant to the following criteria:
    a. Minimum inscribed diameter of 110 feet, using a WB-62 design vehicle for City roads of lower classification than major collector.
    b. Minimum inscribed diameter of 120 feet, using a WB-67 design vehicle for single-lane major collectors.
    c. Islands shall include mountable curb and decorative (stamped, colored, etc.) concrete aprons approved by Heber City.
    d. Minimum inscribed diameter of 150 feet for double-lane applications.
    e. Refuge areas shall be incorporated into intersection leg islands with crosswalks and ADA panels.
    f. Raised landscaped center islands with an additional feature/sculpture approved by Heber City.
5. Because preference is given to pedestrians, a driveway approach is required for all private accesses unless recommended otherwise by the City Engineer, based on site-specific considerations, such as:
    a. speed, slope, and functional classification of the adjacent street
    b. width of the proposed access
    c. volume of the proposed access
    d. drainage
6. Curb returns adjacent to ADA ramps shall have a maximum slope of 2 percent where possible. Where the base of the curb ramp, or the edge of the flush landing must join an intersection of two streets with running grades greater than 2 percent, the base of the curb ramp or the edge of the flush landing may be warped to meet the street running grade. Every effort shall be made to minimize this grade by warping the street cross slope plus or minus 4 percent on both legs of the intersection.
7. The following Table 1 serves as a guide to design professionals by providing a summary of the City's Street Design Standards.
8. A Level 2 traffic calming measure, as defined in the most recent Traffic Calming Policy. is required on local street segments longer than 1000 feet without at least a 45-degree turn.
9. School crosswalks and associated STOP bars and signage shall be placed along Safe-Routes-to-School routes. Other crosswalks shall be placed as directed by the City Engineer.
10. Access management of public streets shall follow Table 2.
11. The developer is required to complete a type II slurry seal on all street improvements one year after final inspection and prior to the expiration of the warranty period.
12. Temporary paved ~~hard-surfaced~~ turnarounds ~~cul-de-sacs~~ are required on all dead end public streets that will be extended and are greater than one-and-a-half lots in length. The cost of installing the future curb, gutter, sidewalk, driveway extension etc., when the temporary cul-de-sac is removed, shall be escrowed with the City.
13. The top back of curb shall be stamped, showing locations of water, sewer, and secondary irrigation lateral service pipes:
    a. "W" for drinking water.
    b. "S" for sewer.
    c. "I" for pressurized irrigation.
14. A brass pin shall be imbedded in the curb marking the location of each property line.

TABLE 1 – GEOMETRIC DESIGN OF STREETS

DESIGN ELEMENT	MINOR LOCAL	LOCAL	MINOR COLLECTOR	MAJOR COLLECTOR	MOUNTAIN COLLECTOR	HISTORIC BUSINESS CORE
Posted/Design Speed	25		30	35	35	25
Typical Section Elements						
ROW Width	56'	62'	68'	80' or 85'[a]	58'	92'[b]
Pavement Width	26'	32'	38'	38'-50'[c]	36'	48'/58'
Number of Lanes	2[g]			3	3	2
Side Cut/Fill Slopes	3:1 up to 5 feet high and 2:1 above 5 feet high					
20 Year ESAL Requirement	60,000	60,000	250,000			
VERTICAL DESIGN ELEMENTS						
Vehicle Design	Passenger, School Buses, Delivery trucks, dump Trucks	Passenger, School Buses, Delivery trucks, dump Trucks	Passenger, School Buses, Delivery trucks, Dump/Concrete Trucks	Passenger, School Buses, Delivery trucks, Dump/Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump / Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump/Concrete Trucks, Semi Loads
Minimum Centerline Grade	0.5%					
Maximum Centerline Grade	10%	8%[d]				5%
Maximum Centerline Grade Across Designated Crosswalks	2% with stop or yield control 5% without stop or yield control[h]		2% with stop or yield control 5% without stop or yield control[h]			
Max. Grade in Cul-de-Sacs	5%	Not Allowed				
Maximum Centerline Grade Break w/o Vertical Curve	1%		0.5%			0.5%
Maximum TBC Grade Break w/o a Vertical Curve[e]	2%					
Minimum Crest Vertical Curve "K" Value	12		19	29		
Minimum Sag Vertical Curve "K" Value	26		37	49		
Minimum Length of a Vertical Curve	60'		90'			
HORIZONTAL DESIGN ELEMENTS						
Minimum Mid-Block Centerline Curve Radius	198'		333'	510'		198'
Superelevation	Not Allowed					
INTERSECTIONS						
Intersection Sight Distance	Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition					
Corner Curb Radius	25'		40'			40'
Minimum Angle of Intersection	60° for at least 100'		80° for at least 100'			
Maximum Centerline Offset	5'		2'			
Maximum Centerline Grade[f]	5%		4%			
Vertical Tie-In	Lower streets shall match the centerline crowns in an intersection. Higher streets shall tie in 12' off the centerline of local streets or at the edge of the outside travel lane of other streets.					

a. If a 10-feet trail is used, 5 feet more is required.
b. An 82.5-feet right-of-way may be used with City approval.
c. Depending on whether a landscaped median is used, and whether on-street parking is allowed.
d. Under special circumstances, grades up to 10 percent may be approved, if grades would exceed 8 percent in order to maintain 4 percent through the intersections, and conditioned upon providing individual designs to construct ADA-compliant ramps.
e. Maximum grade break of 2% along TBC with Minimum length of 25 feet between breaks.
f. Grade must extend at least 50 feet beyond the side of the lane of the intersecting street.
g. Turn lanes with appropriate stacking lengths may be required (per the TIS).
h. In some instances, the cross slope of pedestrian crossings may be increased to match the slope of the road in accordance with PROWAG R304.5.3.

Heber City Access Management Standards

Functional Classification	Minimum Driveway Spacing (feet)[1,2,3,4]			Cross Street Unsignalized Intersection Spacing (feet)	Geometric Design of Driveway Access[6]					Minimum Signal Spacing (feet)
					Single-Family Residential Driveways			Other Driveways		
	Upstream and Downstream (feet)	Opposing Upstream (feet)	Opposing Downstream (feet)		Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)	Approach Width (feet)[6]	Edge Clearance (feet)[7]	
Major Arterial w/o Median Barrier	350	175	160	660	12 min – 30 max	5 min	10 min – 15 max	Two Way: 25 min – 40 max One Way: 16 min – 30 max	20 min	2640
Major Arterial w/ Median Barrier	200	130	160	400						2640
Minor Arterial w/o Median Barrier	200	115	105	660						1320
Minor Arterial w/ Median Barrier	150	65	105	400						1320
Collector w/o Median Barrier	150	105	90	250						1320
Collector w/ Median Barrier	85	50	70	150						1320
Minor Collector w/o Median Barrier	85	105	90	250						1320
Minor Collector w/ Median Barrier	50	50	70	150						1320
Local w/ or w/o Median Barrier	10	-	-	150						N/A

1. Driveway spacing is measured as shown in Figure 1. For Local streets, the spacing is measured from edge-to-edge.
2. Corner clearance requirements for access points should meet or exceed the minimum driveway spacing requirements. Curb cuts on major arterials should be spaced at distances greater than 230 feet apart, measured from face-of-curb to face-of-curb, with the preferred distance being 300 feet.
3. For corner properties, access to public streets should be provided from the lesser (lowest functional classification) street.
4. Driveways in right-turn lane transition areas are discouraged.
5. For the benefit of traffic safety and flow, access points may be required to be designed to prohibit certain types of turning movements.
6. Wider driveway widths may be permitted to accommodate additional turning and/or acceptance lanes.
7. Distance between side property line and edge nearest drive as measured along traveled way.

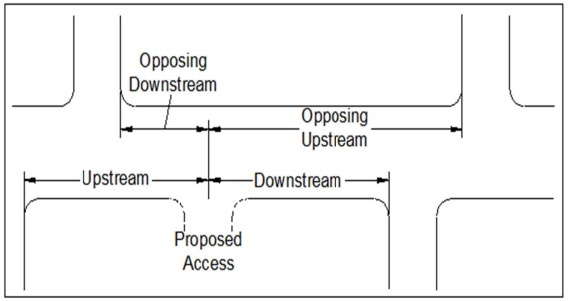


Figure 1: Measurements for Minimum Access Spacing Standards

B. MORATORIUM STANDARD (New, Reconstructed, and Overlaid Streets) -- No cuts permitted for two years from the time of the construction/restoration/overlay.

C. SPECIAL RESTORATION STANDARD (New, Reconstructed, Overlaid, and Chip/Slurry-Sealed Streets)

1. New, Reconstructed, and Overlaid Streets (for 5 years after end of moratorium): The asphalt surface shall be milled a minimum depth of two (2) inches, and fifteen (15) feet each way from the edge of the cut. Milling shall be done in widths equivalent to existing striped traffic lanes. The City Engineer reserves the right to require additional area and/or depth if deemed appropriate to restore roadway to original condition. Approved fabric is required when existing pavement included a fabric prior to the permitted cut.
2. Chip/Slurry-Sealed Streets (for one year after chip/slurry application)*:* The asphalt surface shall be re-chipped/slurried a minimum of 15 feet each way from the edge of the cut, in widths equivalent to existing striped traffic lanes.

1.1~~6~~5 STREET AND TRAILS LIGHTING SYSTEMS

A. Street lights shall be located at cul-de-sac ends, street intersections ~~with collector streets or larger~~, and critical points as determined by the City Engineer. On collector and larger street intersections, there shall be two lights located kitty-corner on the through street around the corners from the STOP signs.

B. Commercial Historic street lights shall be installed on Main Street between 400 South and 300 North, spaced four per block on both sides.

C. Trail lights shall be installed along all master-planned trail systems at 200-feet maximum intervals and at entrances to parks, trail intersections, bridges, and road crossings.

PART 2 EXECUTION

2.01 GENERAL

A. All construction work involving the installation of improvements in subdivisions shall be subject to inspection by the City.

B. Certain types of construction require approval prior to proceeding with the work while other types only require periodic inspection while the work is occurring.

1. Approval is required prior to proceeding with the following types of work:
   a. Placing concrete for curb, gutter, sidewalks, thrust blocks, collars and other structures.
   b. Connections or tie-in's to existing water, sewer, storm drain, and irrigation systems
   c. Pipe line flushing, pressure testing, and videoing of water, sewer, storm drain, and irrigation lines.
   d. Street subgrade proof roll, placing subbase, and laying street asphalt.

2. Periodic inspections shall be required on the following:
   a. Street grading and gravel base.
   b. Excavations for curb and gutter and sidewalks.
   c. Excavations for structures.
   d. Trenches for laying pipe.
   e. Forms for curb and gutter, sidewalks and structures.
   f. Laying of street surfacing.

C. On construction requiring approval prior to proceeding with the work, any work done in the absence of an inspector's approval shall be subject to rejection. All underground GPS data must be collected prior to backfill. Inspector may request contractor to expose work that has been backfilled without prior inspection or to collect GPS data.

2.02 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held before any excavation or other work is begun in the subdivision or project. The meeting will be held at a location specified by the City Engineer and will include: (a) City Engineer; (b) Developer or Project Manager; (c) Subdivision or Project Engineer; (d) all Contractors and Subcontractors involved with installing the subdivision or project improvements; (e) a representative of Heber City Inspection Department; (f) representatives of local utility companies as may be required by Heber City. Items pertaining to the construction and inspection of the subdivision or Project Improvements will be discussed. Upon request, one (1) copy of the Heber City Standard Specification and Drawings will be issued to the contractor during this meeting. Additional copies may be obtained for $20.00 each.

2.03 REQUESTS FOR INSPECTION

A. Requests for inspections shall be made to the City, in writing or by personal contact with the inspector assigned to the project, by the person responsible for construction.

B. Requests for inspection on work requiring continuous inspection shall be made at least three (3) days prior to the commencing of the work.

C. Notice for all other inspections shall be given one (1) working day in advance of the required inspection (subsequent inspections and re-inspection shall require the same notification period.

D. After hour and/or weekend inspections are available under extreme conditions, but are subject to payment of after hour inspection fees as shown in the Heber City Consolidated Fee Schedule. .

E. The Contractor/Developer shall GPS surface features (i.e. valves, meter cans, hydrants, cleanouts, manholes, irrigation boxes, etc.) for the Record Drawings. The Contractor/Developer shall coordinate with the Heber City Public Works Department to expose and GPS all underground features and connections to mains (i.e. corp. stops, sewer lateral connections to main, cleanouts, transitions and/or fittings, etc.) for City Mapping of the utilities.

2.04 REQUESTS FOR WATER SHUT DOWN

A. Request for water shut down shall be made a minimum of 48 hours prior to the desired shut down.

B. Requests shall be made to the Public Works Superintendent and include, date, time and location.

C. Valves are to be opened and closed by City personnel only.

D. Contractor is to provide a minimum of 24 hour notification to all customers affected by the shutdown including but not limited to door to door contact and a flyer or handout describing the estimated date, time, location of the shut down, and emergency phone number. Contractor shall also notify the City 48 hours in advance so that a ~~Parlant~~ public notification can be sent to affected customers.

2.05 CONSTRUCTION COMPLETION INSPECTION

A. An inspection shall be made by the City Engineer after all construction work is completed.

B. Any faulty or defective work shall be corrected by the persons responsible for the work within a

period of thirty (30) days of the date of City Engineers Inspection Report defining the faulty or defective work.

C. The Developer shall furnish "Record" drawings of all improvements prior to subdivision final approval. Record drawings shall be submitted via electronic PDF. AutoCAD files and/or a printed mylar shall also be submitted when requested. Record drawings shall be the original drawings, signed by the City and engineer of record, with corrections of minor changes that occurred during construction noted. Major changes that significantly change a drawing sheet will have a new design sheet created during construction and resigned by the City Engineer. All changes made to the design during construction shall be recorded and include, but not be limited to changes to alignments, elevations, utility main line locations, service lateral locations, and any other changes made during construction.

2.06 GUARANTEE OF WORK

A. The Developer shall warrant and guarantee the improvements by executing Heber City's Standard Performance Agreement and posting a bond, acceptable to the City, for 100 percent of the estimated cost of the improvements to be constructed. The City will add 10 percent to the estimated cost to cover administrative costs incurred by the City to complete the improvements, if necessary. The improvements provided for hereunder, and every part thereof, will be guaranteed to remain in good condition for a period of one year, after the date of Final Acceptance by the City Engineer. Developer agrees to make all repairs to the improvements during the guarantee period at no cost to the City. At the end of the Warranty Period, Developer shall request a final inspection of the Improvements, which inspection shall be made by the City, unless the City is unable to complete the final inspection due to snow, weather, or other conditions, in which case the inspection shall be completed as soon as the City is reasonably able to complete the inspection based on weather and the City's scheduling demands. All Improvements found defective of which the City provides written notice of after the final inspection shall be repaired or replaced by the Developer, at no cost to the City, prior to final acceptance of the Improvements out of warranty. The improvement warranty period may be extended by the City if the City determines for good cause that the one-year period would be inadequate to protect the public health, safety, and welfare; and if the City has substantial evidence on record of prior poor performance by the applicant, or that the area upon which the infrastructure will be constructed contains suspect soil that the City has not required the applicant to mitigate.

B. Final Acceptance shall not be granted and the guarantee period shall not commence until all of the items noted on the project punch list have been completed.

C. The determination for necessity of repairs and maintenance of the work rests with the City Engineer. His decision upon the matter shall be final and binding upon the Developer, and the guarantee hereby stipulated shall extend to and include, but shall not be limited to the entire street base, and all pipe, joints, valves, backfill, and compaction as well as the working surface, curbs, gutter, sidewalks, and other accessories that are, or may be affected by the construction operations, and whenever, in the judgment of the City Engineer, said work shall be in need of repair or rebuilding.

D. If the Developer fails to begin making repairs within ten (10) days from the date of the service of such notice, the City Engineer shall have such repairs made and the cost of such repairs shall be paid by the Developer together with an additional 25 percent for stipulated damages for failure on the part of the Developer to make the repairs.

2.07 SUBDIVISION ORDINANCES

A. The Developer and his Engineer must familiarize themselves with the existing subdivision ordinances, requirements of which may not be included in these Standards.

2.08 ROADWAY PERMITS

A. For construction material and procedures not addressed by the specifications, the most recent revision of the standard specification of the following agencies shall apply:

1. American Association of State Highway & Transportation Officials. (AASHTO).
2. American Society for Testing & Material (ASTM).
3. American Waterworks Association (AWWA).
4. Uniform Building Code of the International Conference of Building Officials (UBC).
5. Utah Department of Transportation (UDOT) Standard Specifications and Standard Plans.
6. Manual on Uniform Traffic Control Devices (MUTCD).

2.09 BUILDING PERMIT AND OCCUPANCY

A. Subdivisions and other large scale development shall be nearly complete with essential facilities (as defined in Heber City ordinances) being constructed pursuant to the accepted drawings and operational before a building permit will be issued. Such completion shall be ~~-~~verified by the City Engineer or their designee.

B. Occupancy will be allowed within any subdivision or development only upon compliance with Heber City Ordinances.

2.10 UNUSUAL LOADINGS

A. In unusual circumstances of structural loading, the City Engineer shall have the authority to require measures to strengthen structure and/or foundations as needed to protect the City's interests.

2.11 SNOW REMOVAL FOR ROADS AND FIRE HYDRANTS

A. The owner of the subdivision or other large scale development shall be responsible to keep the roads and the fire hydrants cleared of snow until the roads are accepted by the City Engineer.

B. The fire hydrants shall be cleared for at least three (3) feet in all directions.

END OF SECTION

SECTION 00900

PROCEDURAL POLICY FOR WATER & SEWER

PART 1 HOOKUP FEES

1.01 SECTION INCLUDES

A. This section defines water and sewer hookup fees, billing procedures and policies.

1.02 WATER HOOKUP FEES

A.

LINE SIZE	HOOKUP FEE	IMPACT FEE**	MAX RATE *
3/4" Water Hookup	See Heber City Consolidated Fee Schedule	See Heber City Consolidated Fee Schedule	30 GPM
1" Water Hookup			50 GPM
1 1/2" Water Hookup			100 GPM
2" Water Hookup			160 GPM
3" Water Hookup			350 GPM
4" Water Hookup			1000 GPM

* Estimated at 80% of manufacturer's maximum rating. Meters 3-inches and above are compound meters which are determined separately.

** Impact Fees are adjusted annually based on the ENR index.

B. Apartment Complexes and other Multiple Dwelling units are responsible to pay a hookup fee for each separate meter servicing said units.

1.03 SEWER HOOKUP FEES

A.

TYPE	IMPACT FEE*
Residential	See Heber City Consolidated Fee Schedule
Non-Residential	Commercial development charges are based on Equivalent Residential Units (ERU's) calculated from average water usage and the number of fixture units.

* These are adjusted annually based on the ENR index.

PART 2 BILLING PROCEDURES

After completion of hookup, billing for Water and Sewer service will begin. Sewer will be billed at the base rate until the home is occupied. When the home becomes occupied, the Sewer will be billed using the State averages of usage based on the number of persons occupying the home until a history is obtained.

2.01 WATER BILLING PROCEDURES

A. Water fees will be set by resolution and may change as the City Council deems necessary. Water billings are billed in arrears. Current base fees based on line size are per Heber City Consolidated Fee Schedule.

B. County Residents who are permitted to hook onto Heber City's Water System will be billed 1 ½ times the normal rates.

C. The base fee will entitle each user to the number of gallons of water included in the base fee as shown in the current Heber City Consolidated Fee Schedule. Additional usage over the base amount will be billed at a higher rate per thousand gallons as indicated in the Heber City Consolidated Fee Schedule.

2.02 TEMPORARY/CONSTRUCTION WATER

A. Temporary water for construction or other similar purposes will be served from the local irrigation company when available. Culinary water may be obtained if the City determines that irrigation water is unavailable. Temporary water may be discontinued at any time if deemed necessary by the City. Persons wishing to obtain temporary water may apply for a construction meter at the City Public Works Office and submit a deposit identified in the Heber City Consolidated Fee Schedule. The City Public Works Department will install a meter at the fire hydrant location requested (unless installation by the Contractor is approved by Public Works) and periodically bill the applicant for water used at a rate identified in the Heber City Consolidated Fee Schedule per thousand gallons. Upon notification to discontinue service the City Public Works Department will remove the construction meter (unless removal by the Contractor is approved by Public Works) and, if in good condition refund the applicants deposit. Applicant is responsible for all water usage registered on the meter.

B. The City may issue one time water permits to users requiring minimal quantities of water. Water for these permits will only be provided from the hydrant located at the City's Public Works Yard. Users must have a permit in their possession and available for inspection at all times when transporting water.

C. If access to construction water through the meter service box is wanted during construction of new buildings, the contractor or owner will need to sign up for water service through the City and have the meter set by Public Works. Occupancy will not be granted until a water meter has been properly set by the City.

Upon receiving a request for final inspection, the Building Department personnel will check the water meter vault and determine if a meter has been set. If the meter is in place then the inspector will proceed with the inspection, if not then the inspection will cease until the meter has been installed. It is the responsibility of the individual(s) requesting occupancy to set up the water service account and request the meter be set.

2.03 POLICY REGARDING LEAKS

A. When a leak is discovered by the owner or the City, adjustments to billings will be given when proof of repair is provided. Repairs must take place within 10 days of the leak discovery or no adjustment will be made. Adjustments will be given to approximate the previous history of a similar period.

2.04 WINTER FREEZE UP POLICY

A. In certain circumstances the Public Works Director may authorize individuals to leave water running in their homes during the winter months to prevent water lines from freezing. If an individual is thus authorized, their water billing will be adjusted to the base rate. If individuals

leave water running without permission from the Public Works Director, no adjustment will be made to the billing.

2.05 SEWER BILLING PROCEDURES

A. Sewer fees will be set by resolution and may be changed as the City Council deems necessary. Sewer billings are billed one month in advance. Current base monthly fees are identified in the Heber City Consolidated Fee Schedule:

B. Sewer flow charges are based on the winter water usage from approximately October 10th to April 10th, of each year. Flow charges over the base rate are calculated as follows:

Water Usage / 6 months = Average Monthly Use

Average Monthly Use x $ Rate per Thousand Gallons = Flow Charge

C. Flow charges are then added to the base fee to equal your monthly bill.

D. If no sewer history exists, the City will use the formula below for the first year.

Base Rate + (Per Person Charge x #of People)

2.06 POLICY REGARDING WINTER WATER LEAKS

A. When a water leak is discovered during the winter months by the owner or a City employee, Heber City will use the State average usage for the number of persons living in the home for determining the flow charges for the April billing.

2.07 LIVESTOCK METERS

A. Persons who water livestock will be required to install a separate meter in order for Heber City to deduct water used for watering livestock before calculating flow charges for the Sewer billing.

2.08 SPRINKLER SYSTEMS

A. Persons wishing to install sprinkler systems attached to the culinary water system will be required to connect onto their water line between the home and the water meter, unless a hardship exists. The Public Works Director will determine if a hardship exists. The City Manager will give final approval. If a hardship exists, a separate meter can be installed and will be billed as a normal connection. Those who receive permission to have a separate connection will be required to pay the appropriate hook up fee as determined in section 1.02 A. These connections are not transferable to another property if they are abandoned.

All necessary backflow prevention devices are to be installed per the International Uniform Plumbing Code and City Ordinance. Backflow devices for sprinkler systems shall be Reduced Pressure Zone Backflow Prevention Assemblies (RP Devices). RP Devices will need to be accompanied by a certification from a licensed tester that the device is functioning properly prior to city acceptance.

2.09 ABANDONMENT OF SERVICES AND LATERALS

A. Existing water services shall be abandoned to the city's main line. The "corp" valve shall be removed and the tap plugged. All abandonments shall be coordinated with the Public Works Director.

B. Existing sewer laterals shall be abandoned by capping the lateral with a water tight plug at the main line. If the lateral ties into a manhole, the water tight plug may be placed inside the manhole.

2.10 WATER METER LOCATIONS

A. Water meters shall be installed in the public right-of-way perpendicular to the water main. The meters will normally be located in the park strip, or in cases where no park strip exists, may be installed on the city side of the property line. In the case of services tapped off water mains in easements, the meter shall be within the easement and adjacent to the main.

B. Water meters located within the driveway or driveway approach shall be flush with the concrete surface and shall be inspected and approved by the Public Works Department.

PART 3 CUTOFF POLICY

3.01 Heber City's policy regarding disconnection of services for delinquent payment is as follows:

A. When an account become 30 days past due, billings will be marked as past due with payment required in 10 days or service will be disconnected.

B. If no response is received within the first ten day period, a Notice of Disconnection will be mailed. This notice will allow ten additional days before disconnection will take place.

C. If no response is received within the 10 day period the water will be disconnected.

D. Before water services are restored, the bill must be paid in full and payment for a reconnect fee must be paid as identified in the Heber City Consolidated Fee Schedule.

END OF SECTION

SECTION 01450

TESTING AND PROCESS CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section defines the responsibility of the Developer or Contractor to adequately test native materials and construction materials, and to furnish the City with manufacturer's certifications of material quality.

1.02 QUALITY ASSURANCE

A. The developer or Contractor shall be responsible for all sampling, delivery of samples to a qualified testing agency, testing, and delivery of test results or materials certifications to City at no charge to the City. Testing and certifications reports shall be approved by the City as to conformance to City construction specifications prior to final inspection and/or acceptance by the City of any materials or workmanship.

1.03 SUBMITTALS

A. Field Test Report: When possible submit original reports immediately to Engineer or inspector, but in no case later than end of following day.

B. Laboratory Test Report: Submit original report to Engineer within 48 hours after test results are determined.

PART 2 EXECUTION

2.01 SAMPLING

A. Sampling of materials shall be as specified in each test.

B. The City Engineer or City Inspector may require that sampling be performed in their presence, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the preconstruction meeting, or when construction drawings are released by the City for construction, as applicable.

C. The presence of a City Inspector shall not relieve the Developer/Contractor of any requirement in this Section.

D. Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:

1. Name of Project.

2. Name of Developer/Contractor.

3. Project Street Address.

4. Appropriate Test Name.

5. Date of Sampling.

6. Sample Number (if more than one sample per day).

7. Name of technician who performed the testing.

8. Location of sample.

2.02 TESTING AGENCY

A. All materials testing, whether in a laboratory or in the field, shall be conducted by a certified independent testing agency approved by the City.

2.03 SOIL CLASSIFICATION TEST

A. The soil classification test shall be conducted to determine the suitability of native soils for road subbase and building foundations.

B. The soil classification test shall conform to AASHTO M-146 of latest revision.

C. The soil shall be classified according to AASHTO soil classifications.

D. One soil classification test shall be required for each test area. A test area shall be limited to one parcel of one soil type, a maximum 1,000 feet long and maximum 5 acres.

E. In test areas of less than 2 acres, the City Engineer may waive this requirement.

F. The soil sample shall be taken from a test area at a minimum depth of 24 inches below the future design grades, of native soil, and shall be free from foreign material, asphalt, concrete, ice or manmade materials.

G. Where deep footings or pile foundations are proposed, soil classification tests at several depths may be required in each test area.

H. The results of all determinations shall be reported in writing to City Engineer.

2.04 COMPACTION TEST OF SOIL AND UNTREATED BASE COURSE

A. Laboratory tests to establish maximum laboratory density shall be determined in accordance with AASHTO T-180, Method D for A-1 classification soils and AASHTO T-99, Method D for all other soils.

B. Samples to determine laboratory density shall be taken from the stockpiled backfill or from the uncompacted base course in place.

The acceptance of soil and base course with respect to compaction shall be based upon all density tests made in a lot meeting the density required.

ROADS

1. Field density tests shall be as specified by AASHTO T-191 or by use of a portable nuclear density testing device. Field density tests shall be taken at a depth equal to ½ the maximum depth of the lift tested.

2. A lot shall equal the amount of soil or untreated base course compacted in each production day.

3. A test lot shall be divided into sublots and one density test shall be taken within each sublot.

4. The location of sampling sites within the sublot shall be chosen on a random basis by use of a suitable random number table.

5. Each test lot shall have a minimum of two (2) sublots. A sublot shall be no larger than 1,000 cubic yards for embankment, no larger than 200 cubic yards for backfill over pipe or against structures and no larger 1,000 tons for untreated road base.

UTLITY PIPE

1. Main line utility trenches shall have a passing compaction test every 200 feet at each lift.

2. Lateral line utility trenches shall have a minimum of one passing compaction test.

3. Each manhole, inlet, water valve cluster, or any other utility which is raised to grade shall have a minimum of one passing compaction test.

4. All tests, whether they are pass or fail, shall be recorded and submitted by testing company each day.

5. If two sequential tests fail, the frequency of the tests may be increased at the City Engineer's discretion.

C. The test results of all samples tested shall be reported to the City Engineer. A test lot shall be accepted when the average of the density determinations is not less than the density required for that improvement in these specifications and when no one density determination is less than 95% of the density required by these specifications.

D. Compaction tests not conforming to required specifications may be rejected and re-compaction or related construction efforts to obtain compaction shall be at the Developer's expense.

2.05 TEST ROLL OF ROADWAY SUBGRADE

A. Roll Test shall be performed when required by City Engineer to determine the structural integrity of the subgrade and street section.

B. The Roll Test shall be performed as follows:

1. The contractor shall provide a loaded 10 wheel dump truck or water truck to drive over the subgrade material within the roadway.

2. The loaded truck shall be driven slowly over the subgrade to locate soft spots in the subgrade surface.

3. Soft spots in the subgrade shall be identified and marked by the City Engineer or Inspector.

4. It shall be the developer's responsibility to remove the rejected subgrade material to depth determined by City Engineer. The rejected material shall be replaced with A-1 granular backfill approved by City Engineer.

2.06 GRADATION TEST OF UNTREATED BASE COURSE

A. The gradation of untreated base course shall be determined in accordance with AASHTO T-27.

B. The total amount of material passing the No. 200 sieve shall be determined by washing in water in accordance with AASHTO T-11.

C. The acceptance of road base with respect to gradation shall be based upon the average of all determinations in a lot. A lot shall be limited to one source of borrow and limited to one subdivision plat or one development. One sample shall be required for each 1,000 tons of untreated base course in a test lot. When the test lot is less than 100 tons, the requirement for the gradation test may be waived by the City Engineer.

D. The location of sampling sites within a test lot shall be chosen on a random basis by a suitable random number table.

E. All material not conforming to the specified gradations may be rejected at the Developer's expense.

2.07 EXTRACTION - GRADATION TESTING OF BITUMINOUS SURFACE COURSE

A. Samples of the bituminous surface course or asphalt concrete shall be tested with respect to asphalt binder, sieve analysis, theoretical maximum specific gravity, and VMA in accordance with Utah Department of Highways Test Procedures.

B. Mix design shall be submitted to the City Engineer for approval a minimum of 5 working days before work is to begin.

C. Acceptance of bituminous surface course with respect to gradation and bitumen content shall be based upon the average of the determinations made in a lot.

1. A lot shall equal the amount of bituminous surface course placed in each production day.

2. When a lot exceeds 1,000 tons, a minimum of three (3) samples shall be taken in each lot.

3. When a lot is 1,000 tons or less, a minimum of two (2) samples shall be taken.

4. Samples shall be taken at the time of lay-down of bituminous surface course and before compaction. Samples shall be taken from the mat behind the lay-down machine.

5. Sampling shall be timed to represent the entire production day. The time of day, date of sample, station and offset location shall be clearly marked with the sample.

6. If the average asphalt is less than 2.5% of optimal content, the Contractor may be required to lay an additional lift or slurry seal, based on the City Engineer's recommendation.

2.08 COMPACTION TESTING OF BITUMINOUS SURFACE COURSE

A. Laboratory tests to establish the Theoretical Maximum Specific Gravity of the bituminous surface course shall be determined in accordance with ASTM D2041 and ASTM D1559.

B. Samples to determine maximum laboratory density shall be taken at the time of lay-down of bituminous surface course and before compaction.

C. Acceptance of bituminous surface course with respect to compaction shall be based upon the average determination of field density tests made in a lot.

1. Field density tests shall be by a portable nuclear density testing device and by laboratory density analysis of core samples. At a minimum, one core sample shall be taken every 2,000 tons or at each change in mix design to calibrate the portable nuclear density testing device(s). The location of the core shall be at a location also tested with the portable nuclear testing device. Each portable nuclear testing device shall be calibrated to the density of a core test at the same location as the core was taken. Additional core tests shall be completed per the direction of the City Engineer.

2. A test lot shall be the quantity of surface course placed and compacted in each construction day.

3. The test lot shall be subdivided into sublot(s) of approximately equal size and no larger than 1,600 square yards in area.

4. One field density test shall be taken in each sublot, randomly located in the test lot by use of a suitable random number table.

D. Test lots shall be accepted with respect to density when the average in place density meets the requirements of Section 02510. Entire test lots or individual areas not meeting these requirements are subject to removal and replacement at the discretion of the City Engineer.

E. Core Tests

1. Acceptance of the completed bituminous surface course with respect to thickness shall be based on the average thickness of a test lot.
   a. A test lot shall equal approximately 4,000 square yards of completed roadway.
   b. A lot shall be divided into sublots of approximately 2,000 square yards.

2. One thickness test, randomly selected by use of a random number table, shall be taken within each sublot. A minimum of three core tests will be taken.

3. A lot shall be accepted when the average thickness of all sublots is not less than 3/8 inch the total designated bituminous surface course thickness and when no individual sublot shows a deficient thickness of more than ½ inch.

4. Lots or sublots that are not acceptable because of deficient thickness shall be brought into compliance by placing additional surface course as directed by the Engineer.

5. The removed core will be replaced with low strength concrete.

2.09 COMPRESSIVE STRENGTH TESTING OF CONCRETE CYLINDERS

A. Samples of concrete shall be taken at the construction site, molded in standard cylinder shapes, allowed to cure, and tested with respect to comprehensive strength when required by the City Engineer.

B. All samples of concrete shall be taken in conformance to AASHTO T-141 of the latest revision.

C. Acceptance of concrete with respect to compressive strength shall be based upon the average determination of all "strength tests" made in a lot.

1. A test lot shall be the quantity of concrete placed at one job in a construction day.

2. For each 50 cubic yards of concrete in a test lot, a minimum of three (3) compressive "strength tests" shall be run, except that for lots of less than 5 cubic yards, the number of "strength tests" per lot shall be the average strength of three standard cylinders.

3. The making, curing and compressive strength testing of concrete cylinders shall conform to AASHTO T-22 and AASHTO T-23.

D. Concrete may be rejected if desired strengths are not obtained at the Developer's expense.

2.10 ADDITIONAL CONCRETE TESTING

A. Slump Test: Determine slump in accordance with AASHTO T-152. One slump test is required for every 50 yards with a minimum of one test per day.

B. Air Test: Determine normal weight concrete air content; AASHTO T-152 and light weight concrete air content; AASHTO T-196.

C. When requested by Engineer, test concrete in place by impact hammer, sonoscope, or other nondestructive device:

1. To determine relative strengths in various locations in Work.

2. To aid in evaluating concrete strength.

3. To select areas to be cored.

2.11 CERTIFICATIONS FOR WATER SYSTEM VALVES

A. In certain water system equipment, steel items and pipe listed below, a manufacturer's certificate shall be furnished with each unit of equipment, certifying conformance to the applicable requirements of City Standard Specifications:

1. Gate Valves.

2. Butterfly Valves.

3. Steel Reinforcing Bars.

4. Structural Steel.

5. Corrugated Metal Pipe.

6. Polyvinyl Chloride Pipe.

7. ABS Composite (Truss) and Solid Wall Pipe.

2.12 SUMMARY TABLE OF TESTS AND CERTIFICATIONS

A. The following is a summary of the tests, number of samples per test and certificates that are required for construction work and developments in Heber City. This summary is provided as a reference guide. For details governing each item, refer to the appropriate test specification herein.

TEST SUBJECT	SPECIFIC TEST	NUMBER OF TESTS
Soil Classification	AASHTO M-145	1 test per test area of uniform soil type and 5 acres maximum.
Compaction of Soil & Base Course	Lab Density- AASHTO T-99 Method D or AASHTO T-180 Method D Embankment & Base Course Field Density- Portable Nuclear	As needed to establish laboratory density 1 test plus minimum one test per 1,000 cu.yds.

TEST SUBJECT	SPECIFIC TEST	NUMBER OF TESTS
	Equipment or AASHTO T-191 Backfill Field Density- Portable Nuclear Equipment or AASHTO T-191	1 test plus minimum one test per 200 cu.yds.
Base Course Gradation	Sieve Analysis- AASHTO T-27 Passing No. 200 Sieve- AASHTO T-11 Utility Pipe	1 test per 1,000 tons Every 200 linear feet of main line trench at each lift. One test per lateral trench and at each utility (MH, Valve, box, etc.)
Extraction-Gradation Test of Bituminous Surface Course	UDOT Test Procedure 8-946 & 8-947	3 tests per pavement construction day
Compaction of Bituminous Surface Course	Lab Density- Marshall Test, ASTM D-1559 Field Density- Portable Nuclear Equipment	1 test per pavement construction day 1 test per 1600 square yards sublot
Core Tests	4" Core Sample	1 thickness test per 2,000 square yards or 3 test minimum
Concrete Test Cylinders Air & Slump Test	AASHTO T-23	3 cylinders per 50 cubic yards or minimum of 3 cylinders on placements less than 50 cubic yards
Pressure Reducing & Regulating Valves	Manufacturer's Certificate	1 for each valve
Gate Valves	Manufacturer's Certificate	1 for each valve over 12" diameter
Back Flow Reduced Pressure Zone Assembly (RP)	Field Test Certificate by licensed technician	
Butterfly Valves	Manufacturer's Certificate	1 for each valve
Steel Re-Bar	Manufacturer's Certificate	1 for each 1,000 pounds of one grade
Structural Steel	Manufacturer's Certificate	1 for each lot of one shape, one grade
Corrugated Metal Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class
Polyvinyl Chloride Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class
A.B.S. Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class

END OF SECTION

SECTION 02150

SHORING AND UNDERPINNING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shoring for open excavations requiring a protective system.

1.02 REFERENCES

A. OSHA Construction Standards Chapter P: Excavations, Trenching, and Shoring.

1.03 RESPONSIBILITY

A. Contractor/Developer is solely responsible for safety. It is the Contractor/Developer's responsibility to adhere to all of OSHA's current regulations.

1.04 DEFINITIONS

A. Accepted Engineering Practices: Those requirements or practices which are compatible with standards required by a duly licensed or recognized authority.

B. Benching: A method of protecting persons and property against cave-ins by excavation the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

C. Excavation: Any man-made cut, cavity, or depression in an earth surface, including trenches, formed by earth removal and producing unsupported earth conditions (sides). If installed forms or similar structures reduce the depth-to-width relationship, and excavation may become a trench.

D. Failure: The permanent deformation or breakage of a structural member or connection; or the collapse of all or part of an excavation.

E. Protective System: Any recognized method of protecting persons and property against cave-ins, the collapse of adjacent structures, or material that may fall or roll from an excavation side or into and excavation. Protective systems include support systems, sloping and benching systems and shield systems.

F. Shield/Trenchbox : A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect persons and property within the structure without preventing a cave-in. Shields may be permanent structures or may be designed to be portable and moved along as work progresses. Portable shields used in trenches are usually referred to as "trench boxes" or "trench shields".

G. Shoring: A structure that supports the sides of an excavation and thereby protects persons and property by preventing cave-ins.

H. Sides: A vertical or inclined earth surfaces formed at the outer edges of an excavation.

I. Sloping: A method of protecting persons and property against cave-ins by excavation to form sides that are inclined away from the excavation, the angle on incline being of such a degree for the conditions of exposure that a cave-in will not occur.

J. Support System: A structure which protects persons and property by providing support to an adjacent structure, underground installation, or the sides of an excavation.

K. Trench: A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

1.05 DESIGN OF PROTECTIVE SYSTEMS

A. Use professional engineer to design support systems, shield systems, and the structural components of these systems, and sloping and benching systems to resist without failure all loads that are intended to be imposed or transmitted to them.

B. Fully compensate in design procedures for hydrostatic pressure in the excavation sides.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials shall be as per 1.05 of this section.

PART 3 EXECUTION

3.01 STABILITY OF ADJACENT STRUCTURES

A. Use support systems such as shoring, bracing, or underpinning where stability of adjoining buildings, walls, sidewalks, pavements, or other structures is endangered by excavation operations.

3.02 INSPECTIONS

A. Contractor/Developer shall employ and have on site at all times a competent person, as defined be OSHA, who is responsible for excavation inspection.

B. Inspect excavations daily for evidence of possible cave-ins, indications of failure of protective systems, or other hazardous conditions.

C. Upon discovery of hazardous conditions, cease all work in the excavations until additional precautions have been taken to ensure persons and property safety.

3.03 ADDITIONAL REQUIREMENT FOR TRENCH EXCAVATION

A. Do not excavate material to a level greater than 2 feet below the bottom of the members of a support system if the system is designed to resist the forces calculated for the full depth of the trench, and indications of a possible cave-in below the bottom of the support system are not evident while the trench is open.

END OF SECTION

SECTION 02205

COMMON FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Common fill material requirements.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.

B. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

1.03 DEFINITIONS

A. Common Fill: Backfill material which is not mechanically graded.

1.04 ACCEPTANCE

A. Acceptance of common fill shall be determined by Engineer and will be based upon sublots of 500 tons.

B. Engineer reserves the right to select and test backfill on a random basis from any location in the Work, on the site or from the backfill source.

PART 2 PRODUCTS

2.01 GRANULAR FILL

A. Classification A-1-a. Refer to AASHTO M145

B. Non-Plastic and well graded.

C. Bank run material: free of shale, clay, slag, friable material and debris.

D. The material must be within the following limits:

SIEVE SIZE	PERCENT BY WEIGHT PASSING SIEVE
4 inches	99
No. 4 (4.75 mm)	30 to 70
No. 200 (75 micro m)	3 to 15

2.02 BORROW

A. Sound, earthen material with 95% passing the 4 inch sieve.

B. Classifications A-1-a through A-4. Refer to AASHTO M145.

2.03 SAND

A. Clean, coarse, natural sand.

B. Nonplastic when tested in accordance with ASTM D 4318.

C. 100 percent shall pass a ½ inch screen.

D. No more than 20 percent shall pass a number 200 screen.

2.04 SOURCE QUALITY CONTROL

A. Verify gradation compliance in accordance with AASHTO T-27. Select samples uniformly in time on a random basis.

PART 3 EXECUTION

3.01 INSTALLATION

A. Excavation and Backfill Operations: In accordance with Section 02225.

END OF SECTION

SECTION 02206

SELECT FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Select fill material requirements.

1.02 REFERENCES

A. AASHTO T-96: Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

B. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

1.03 DEFINITIONS

A. Select Fill: Backfill material which is mechanically graded.

1.04 SUBMITTALS

A. Material analyses of each select fill material to be used.

1.05 ACCEPTANCE

A. Engineer reserves the right to select, reject, and test backfill on a random basis from any location in the Work or from the backfill source.

PART 2 PRODUCTS

2.01 AGGREGATES – UNTREATED BASE COURSE

A. Clean, hard, tough, durable and sound mineral aggregates that consists of 95% crushed stone, crushed gravel or crushed slag; free of deleterious and organic matter; and complies with the following:

1. Aggregate Wear Under AASHTO T-96: Less than 50 percent.

2. Material shall be classified as A-1-A material.

3. Two fractured faces Under AASHTO T-335: A minimum of 50 percent.

4. Dry Rodded Weight Under AASHTO T-19: Not be less than 75 lb/ft^3.

5. Gradation Limits: Establish the job mix target gradation for each sieve. Target grading curve must lie within the gradation limits of the Master Grading Band Limits. The Job Mix Gradation Tolerance is the allowable deviation from the job mix target gradation on the applicable sieves. The following limits are based on fine and course aggregate having approximately the same bulk specific gravities. Sieve gradations are based upon percent of aggregate passing by weight in accordance with AASHTO T-27 and T-11.

MASTER GRADING BAND LIMITS – UNTREATED BASE COURSE

SIEVE SIZE	Type 1-1/2 Min	Max	Type 1 Min	Max	Type 3/4 Min	Max	JOB MIX GRADATION TOLERANCE
1-1/2"	100	--	--	--	--	--	
1"	90	100	100	--	--	--	±9.0 (1-1/2")
3/4"	70	85	--	--	100	--	±9.0 (1-1/2 &1")
½"	65	80	79	91	--	--	±9.0
3/8"	55	75	--	--	78	92	±9.0
No. 4	40	65	49	61	55	67	±7.0
No. 16	25	40	27	35	28	38	±5.0
No. 200	7	11	7	11	7	11	±3.0

6. Source quality control shall be in accordance with AASHTO T-27. Verify job-mix grading band material compliance by selecting samples uniformly in time on a random basis.

2.02 DRAIN ROCK

A. Consist of hard, durable particles of stone or gravel, screened or crushed to specified size and gradation.

B. Free from vegetable matter, lumps or balls of clay, or other deleterious matter.

C. Crush or waste coarse material and waste fine material as required to meet gradation requirements.

D. Aggregate Wear: Percentage of wear not greater than 50 percent when tested in accordance with AASHTO T-96.

E. Conform to size and grade within the limits as follows when tested in accordance with AASHTO T-27.

	¾ " Drain Rock	1-1/2" Drain Rock	3" Drain Rock
SIEVE SIZE (Square Openings)	PERCENT BY WEIGHT PASSING SIEVE	PERCENT BY WEIGHT PASSING SIEVE	PERCENT BY WEIGHT PASSING SIEVE
4 inch	100	100	100
3 inch	100	100	95-100
2 inch	100	100	50-100
1-1/2 inch	100	95-100	15-55
3/4 inch	95-100	50-100	0-20
3/8 inch	15-55	15-55	0-15
Number 4	0-10	0-25	0-10
Number 8	0-5	0-5	0-5
Number 200	0-2	0-2	0-2

2.03 GRAVEL

A. Consist of hard, durable particles or fragments of stone or gravel, screened or crushed to specified sizes and gradations.

B. Free from vegetable matter, lumps or balls of clay, alkali, adobe, or other deleterious matter.

C. When sampled and tested in accordance with specified test methods, material shall comply with the following requirements:

1. Durability index: Percentage of wear not greater than 40 percent after 500 revolutions when tested in accordance with ASTM C 131.

2. Plasticity Index: Not greater than 5 when tested in accordance with ASTM D 4318.

3. Liquid limit: Not greater than 25 percent when tested in accordance with ASTM D 4318.

D. Conform to sizes and grade within the limits as follows when tested in accordance with ASTM C 136 and ASTM C 117:

SIEVE SIZE (Square Openings)	PERCENT BY WEIGHT PASSING SIEVE
3 inch	--
1-1/2 inch	100
Number 4	30-70
Number 8	20-60
Number 30	10-40
Number 200	0-12

2.04 PEA GRAVEL

A. Consists of hard, durable particles or fragments of stone or gravel, screen or crushed to specified sizes and gradations. Pea gravel shall only be used with Engineer's approval.

SIEVE	PERCENT PASSING BY WEIGHT
1/2 inch	100
3/8 inch	95-100
Number 4	0-3
Number 16	0-2
Number 200	0-1

2.05 COARSE SAND

A. Consists of hard, durable particles or fragments of stone or gravel, screen or crushed to specified sizes and gradations. Coarse sand shall only be used with Engineer's approval.

SIEVE	PERCENT PASSING BY WEIGHT
3/8 inch	100
Number 4	50-95~~95-50~~
Number 16	0-5
Number 200	0-3

2.06 BEDDING SAND

A. Friable river or bank aggregate, free of loam and organic matter. Graded as follows.

SIEVE	PERCENT PASSING BY WEIGHT
3/8 inch	100
Number 4	95-100
Number 50	0-70
Number 100	0-30
Number 200	0-20

PART 3 EXECUTION

3.01 INSTALLATION

A. Excavation and Backfill Operations: In accordance with Section 02225.

END OF SECTION

SECTION 02225

EXCAVATION AND BACKFILL OPERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for trenching and backfilling for underground pipelines.

B. Excavating and backfilling operations adjacent to and under structures including boxes, headwalls, or other structures as required by City Engineer.

C. Backfilling and compacting operation for construction and reconstruction of roadways, embankments, streets, parking lots, and other paved surface areas.

D. Excavation permit requirements.

1.02 DEFINITIONS

A. Pipe Zone: That zone in an excavation which supports, surrounds, and extends to 1 foot above the top of the pipe barrel.

B. Bedding: Process of preparing the trench bottom to receive the pipe and the backfilling on each side of the pipe to 12 inches over the top of the pipe.

C. Roadway: Area within the street right-of-way, including the area under the street, curb, gutter, and one (1) foot behind curb.

1.03 SUBMITTALS

A. Cut Sheets: In accordance with Section 00700.

B. Material Analysis Reports: In accordance with Sections 02205 or 02206 as applicable.

C. Density Test Reports: In accordance with Section 02250.

D. Depth of backfill lift. This information shall be contingent upon type of equipment used in compaction operation. Engineer may order lesser thickness if compaction is not achieved.

1.04 STORAGE AND HANDLING

A. Stockpile excavated material in a manner as to cause a minimum of inconvenience to public travel and provide for emergency traffic as necessary.

B. Maintain free access to all existing fire hydrants, water valves, irrigation valves, gas valves, manholes, cleanouts, and meters.

C. Maintain clearance for free flow of storm water in all gutters, conduits, and natural water courses.

D. Utilize appropriate traffic signs, markers, and procedures in all product storage and handling activities.

E. Promptly remove all other material from site.

1.05 SITE CONDITIONS

A. Unsuitable Weather Limitations: Do not place, spread, or roll any fill material during unsuitable weather conditions. Do not resume operations until moisture content of material is satisfactory.

B. Protection of Graded Areas: Protect graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or unsuitable weather, scarify surface, reshape, and compact to required density prior to further construction.

D. Prior to excavation operations, photograph existing surfaces along which Work may take place in order to determine, after construction is completed, whether any damage of existing improvements occurred prior to construction operations.

E. Grading: In compaction operations, do not vary the surface of finished aggregate base course more than 1/4" above or below grade.

PART 2 PRODUCTS

2.01 WATER

A. Make arrangements for source of water during construction and make arrangements for delivery of water to site. Comply with all local laws and regulations when securing water from water utility company at no additional cost to City.

2.02 SOIL MATERIALS

A. Over-excavation Fill: Select Fill: in accordance with Section 02206.

B. Common Fill: in accordance with Section 02205.

C. Select Fill: in accordance with Section 02206.

D. Native Backfill:

1. When approved by City Engineer, native backfill material obtained from project excavations may be used as backfill, provided organic material, rubbish, debris, rocks larger than 8 inches, and other objectionable materials are removed.

2. Bituminous pavement obtained from project excavations will not be permitted as backfill except for the following:
   a. May be mixed with road sub-base if material meets section 02205.2.01 gradation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify areas to be backfilled are free of debris, snow, ice, or water and ground surfaces are not frozen.

B. Verify foundation of basement walls are braced to support surcharge forces imposed by backfilling operations and that required concrete compressive strengths have been achieved.

C. Immediately prior to suspension of construction operations for any reason, provide proper and necessary drainage of work area.

3.02 PREPARATION

A. For pipelines, use means necessary to avoid displacement, and injury to, pipe and structures while compacting soil or operating equipment next to pipeline.

B. Movement of construction machinery over a pipeline at any stage is solely at Contractor's risk.

C. When excavation is required in jurisdictions other than City, satisfy all conditions of the appropriate agencies.

D. Identify required lines, grades, contours, and benchmarks.

E. Notify all affected utility companies and Blue Stakes prior to commencing excavation operation.

F. Support and protect from damage, until completion of the Work, any existing facilities and structures which exist in, pass through, or pass under the site.

3.03 CONTROL OF GROUNDWATER

A. All trenches shall be kept free from water during excavation, fine grading, pipe laying, jointing, and embedment operations.

B. Where the trench bottom is mucky or otherwise unstable because of the presence of groundwater, and in cases where the static groundwater elevation is above the bottom of any trench or bell holed excavation, such groundwater shall be lowered to the extent necessary to keep the trench free from water and the trench bottom stable when the work within the trench is in progress.

3.04 SHORING

A. Comply with Section 02150 when required by field condition.

3.05 GENERAL EXCAVATION OPERATIONS

A. If topsoil is on site, remove and store it for later use on site.

B. Excavate site to required grade for Work. Use all means necessary to control dust on or near Work and on or near all off-site borrow and disposal areas.

C. Notify Engineer of unexpected subsurface conditions.

D. Underpin adjacent structure which may be damaged by excavation work, including service utilities and pipe chases.

E. If unstable material is encountered at the bottom or face of excavation, suspend excavation and consult with Engineer. Obtain written approval from Engineer before proceeding. Correct unauthorized excavation at no cost to City.

F. Provide necessary protection to excavation walls as required. If conditions permit, slope excavation side to maintain a safe and clean working area. Remove loose materials.

G. Correct excavation beyond the specified lines and grades by filling the resulting voids with approved compacted fill. If the fill is to become the subgrade for other fill, use material approved by Engineer. Do not proceed until Engineer has approved the material and the proposed method of backfilling for over excavation errors.

3.06 EXCAVATION FOR PIPELINES

A. Trenches shall be excavated to the depths and widths required to accommodate the construction of the pipelines, as follows:

1. Except in ledge rock, cobble rock, stones or water saturated earth, mechanical excavation of trenches shall not extend below an elevation of 4 inches below the bottom of the pipe after placement in its final position.

2. All additional excavation necessary for preparation of the trench bottom shall be made manually.

3. Excavation for trenches in ledge rock, cobble rock, stones, mud or other material unsatisfactory for pipe foundation, shall extend to a depth of at least 4 inches below the bottom of the pipe.

4. A bedding of special material shall be placed and thoroughly compacted with pneumatic tampers in 4-inch lifts to provide a smooth, stable foundation.

5. Special foundation material shall consist of suitable earth material free from roots, sod, vegetation, or other organic matter.

6. Trench bottoms shall be hand shaped as specified in paragraph (2) above.

7. The maximum width of trench, measured at the top of the pipe, shall be as narrow as possible but a minimum of 6 inches on each side of the pipe.

8. Where ground water is encountered, clay dikes and/or filter fabric may be required at minimum100 foot intervals or as directed by the City Engineer.

B. Grade bottom of trenches to provide uniform bearing surface.

C. If necessary, make bell holes and depressions required to complete joining of pipe or box.

D. In public thoroughfares and regardless of trench depth, safely barricade and limit open trenches to a maximum of 200 lineal feet in the daytime, except in traveled roadways where a maximum of 80 lineal feet of open trench will be allowed.

E. Close trenches during nighttime conditions.

3.07 GRAVEL FOUNDATION FOR PIPE

A. Wherever the subgrade material does not afford a sufficiently solid foundation to support the pipe and superimposed load; where water must be drained to maintain a dry bottom for pipe installation and at other locations as previously defined, the subgrade shall be excavated to a minimum of 12 inches and replaced with crushed rock or gravel.

B. Gravel for pipe foundations shall conform to the requirements of Drain Rock in Section 02206.

C. Drain Rock material shall be deposited over the entire trench width in 18-inch maximum layers, each layer shall be compacted by tamping, rolling, or vibrating.

D. The material shall be graded to produce a uniform and continuous support for the installed pipe.

3.08 BEDDING & PIPE ZONE

A. Excavate pipe trench in accordance with this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Form and place concrete for pipe thrust restraints at any change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on native subsoil according to standard drawings.

C. Place bedding material at trench bottom in one continuous layer not exceeding 8 inches compacted depth; compact to 95 percent. Compacted bedding material shall normally consist of bedding sand in accordance of Section 02206.2.06.

D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent.

E. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

F. Maintain optimum moisture content of bedding material to attain required compaction density.

3. 09 BACKFILLING FOR PIPELINES

A. Lift thickness for trench backfill shall not exceed 8 inches compacted depth.

B. Trench backfilling above the level of the pipe bedding shall normally be accomplished with A-1 material. Native excavated materials may be used when approved by Heber City and shall be free from rocks larger than 8-inches in diameter.

C. Compaction Requirements

1. Under pavements, shoulders, or other surface improvements the in-place density shall be a minimum of 95% of laboratory maximum dry density as determined by AASHTO T-180 (ASTM D1557) for A-1 soils and AASHTO T-99 (ASTM D698) for all other soils.

2. In other areas the in-place density shall be a minimum of 92% of the maximum dry density as determined by the same laboratory method.

3. See Section 01450.2.04.C.6.

D. Clay cut off dikes shall be constructed as required by City Engineer.

3.10 STRUCTURAL EXCAVATION

A. Provide all required shoring, cribs, cofferdams, and caissons including all pumping, bailing, draining, sheathing, bracing, and related items.

B. Slope excavation sides as excavation progress to maintain a safe and clean working area as required by OSHA.

C. Support excavation. Do not interfere with the bearing of adjacent foundations, pipelines, etc.

D. All unauthorized excavation below the specified structure subgrade shall be replaced with concrete, monolithic with that of the slab above or with coarse gravel thoroughly compacted into place.

E. Subgrade soil for all concrete structures shall be firm, dense, thoroughly compacted, and consolidated.

F. Subgrade soil shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete.

G. Coarse gravel or crushed stone may be used for subsoil reinforcement if results satisfactory to the City Engineer can be obtained thereby.

1. Material shall be applied in lifts of 6" or less.

2. Each lift shall be embedded in the subsoil by thorough tamping.

3. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner shall not be above the specified subgrade.

3. 11 BACKFILLING FOR STRUCTURES

A. Do not fill adjacent to structures until approval is obtained from Engineer.

B. All forms shall be removed and the excavation shall be cleaned of all trash and debris.

C. Backfill areas to contours and elevations indicated. Do not use frozen materials.

D. Do not use compaction equipment adjacent to walls or retaining walls that may cause wall to become overstressed or moved from final alignment.

E. Place select fill a minimum of 3 feet around the outside of structures.

F. Place and compact select fill materials in continuous lifts not exceeding 12" loose depth.

G. Place and compact common fill material in continuous lifts not exceeding 8" loose depth.

H. Do not disturb or damage foundation perimeter drainage, foundation, damp proofing, foundation waterproofing and protective cover, or utilities in trenches.

I. Backfill against foundation walls simultaneously on each side. Do not backfill against walls until concrete has obtained required 7 day strength.

J. Make smooth changes in grade. Blend slopes into level areas.

K. Remove surplus backfill materials from site.

L. Leave stockpile areas completely free of excess fill materials.

M. Slope grade away from structure at a minimum of 3" in 10 feet unless otherwise indicated.

N. Compaction: Each layer of material shall be compacted by hand or machines tampers or by other suitable equipment to a density equal to 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557) for A-1 soils and AASHTO T-99 (ASTM D698) for all other soils.

O. Restore any damaged structure to its original strength and condition and re-backfill to specifications.

3. 12 ROADWAY EXCAVATIONS

A. In advance of setting line and grade stakes, clean subgrade area of brush, weeds, vegetation, grass, and debris. Drain all depressions or ruts which contain water.

B. A soils classification, as determined by AASHTO T-27, shall be made on the proposed subgrade, and the following shall be required based on that classification:

SOIL CLASSIFICATIONS	REQUIREMENT
A-1	The subgrade shall be scarified to a depth of 12" and the loosened material shall be moistened and compacted to the equivalent of 95% of maximum dry density as measured by AASHTO T-180.
A-2, A-3, A-4 or A-5	The subgrade shall be over-excavated a minimum of 12" subgrade scarified and compacted, replaced with A-1 granular material, and be moistened and compacted as above.
A-6 or A-7	The subgrade shall be over-excavated a minimum of 18" subgrade scarified and compacted, replaced with A-1 granular material, and be moistened and compacted as above.

C. No organic material, soft clay, spongy material, or other deleterious material will be permitted in the scarified or imported subgrade layer.

D. Rough sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade and drainage shall be maintained at all times.

E. Moisture content of the subgrade layer shall be maintained at not less than 95% or more than 105% of optimum moisture content, during the compaction process. The entire roadbed, to one foot behind the back of curb, must be compacted to the specified density to a minimum depth of 8 inches.

F. If removal of boulders, rubble, or existing improvements, found within the excavated area results in a lower excavation elevation than indicated, backfill over excavation in a manner approved by Engineer.

G. Remove all deposits susceptible to frost heave.

H. Excavations through or under City streets, sidewalks, street shoulders, driveways, etc. shall comply with the following requirements:

1. Material removed by excavation is not to be used as backfill or placed back into the trench under any paved portion of the street. However, sand may be used for backfill up to one foot above top of pipe.

2. The remaining trench shall be filled with select fill as per section 02206.

3. The trench shall be filled to the existing asphalt level and guarded from traffic until set.

4. Within 10 days of the fill, sufficient fill material shall be removed and replaced with material comparable to the adjacent surface material shall meet the requirements of Section 02504 of these specifications.

5. The City Engineer shall inspect all work.

3. 13 SUBGRADE PREPARATION

A. Compact subgrade surfaces to density specified for overlying backfills. Refer to Section 02250.

B. If areas of subgrade are not readily capable of in-situ compaction, secure City Engineer's authorization for extra excavation and backfill.

C. Maintain minimum overburden cover of 2 feet over pipelines or conduits during subgrade preparation.

3. 14 BACKFILLING FOR PAVEMENT

A. Before beginning backfilling operations obtain Engineer's approval of excavation operation.

B. Do not damage subsurface structures, utility mains, or service lines.

C. Process backfill and avoid segregation. Keep base course free from pockets of coarse or fine material.

D. Deposit base course on the roadbed in a uniform manner which will provide the required compacted thickness. Maintain moisture content.

E. Shoulders are an integral part of the embankment. Do not build shoulders to a grade higher than that of the adjacent granular base course. Maintain efficient surface runoff at all times.

F. Compaction: in accordance with Section 02250.

G. Prior to placing pavements, proof roll in accordance with Section 01450.

3. 15 BLASTING

A. Blasting will not be allowed except by permission from the City Engineer.

B. The Contractor shall comply with all laws, ordinances, and applicable safety code requirements and regulations relative to the handling, storage, and use of explosives and protection of life and property.

C. If allowed, Contractor shall be fully responsible for all damage attributable to his blasting operations.

D. Excessive blasting or overshooting will not be permitted and any material outside the authorized cross-section which may be shattered or loosened by blasting shall be removed by the Contractor.

3. 16 COMPACTION OF BACKFILL

A. In accordance with Section 02250.

3. 17 IMPORTED BACKFILL MATERIAL

A. In the event the native excavated material is not satisfactory for backfilling as determined by the City Engineer, the Contractor shall provide imported granular fill in accordance with Section 02205.

3. 18 DISPOSAL OF EXCESS MATERIALS

A. All excess material shall be hauled away from the construction site and disposed of by the Contractor.

END OF SECTION

SECTION 02245

LOW DENSITY CONCRETE BACKFILL (FLOWABLE FILL)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Low density concrete backfill.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C 150 - Specification for Portland Cement.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements

1. Low Density Concrete Backfill:
   a. 28 day compressive strength shall be between 100 psi and 150 psi. (1 bag mix)

1.04 SUBMITTALS

A. Proposed mix design.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pregenerated foam: One of the following or equal:

1. Mearl Corporation, Roselle Park, N.J., Mearl Geofoam Liquid.

2.02 MATERIALS

A. Low Density Concrete Backfill Components:

1. Type II low alkali Portland cement.

2. Water.

3. Aggregate: Pregenerated foam, vermiculite, or other low weight aggregate material which will conform to the strength and density requirements specified herein.

PART 3 EXECUTION

3.01 INSTALLATION

A. General

1. Low density concrete (flowable fill) may only be used for backfill when approved by the City Engineer.

2. Install low density concrete backfill as a nonstructural backfill material as indicated on the submitted Drawings.

3. Place low density concrete backfill in a manner so that minimal consolidation of the material occurs during and after placement.

B. Metal plates shall be placed over trench for 48 hours to protect concrete.

END OF SECTION

SECTION 02250

SOIL COMPACTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Compaction control of native and imported backfill material.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.

B. AASHTO T-99: Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Hammer and 12-In. (305-mm) Drop.

C. AASHTO T-180: Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using a 10-lb (4.54-kg) Hammer and an 18-In. (457-mm) Drop.

D. AASHTO T-238: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.03 DEFINITIONS

A. A-1 Soils: AASHTO M 145 describes the nature of these soils.

B. Modified Proctor: The test method used for moisture-density relationship of soils as determined by the ASTM D 1557 test method.

C. Percent Compaction or Percent Density: The ratio of the field dry density to the laboratory maximum dry density expressed as a percentage.

D. Standard Proctor: The test method used for moisture-density relationship of soils as determined by the ASTM D 698 test method.

1.04 WARRANTY

A. Correct deficient conditions. Replace or repair surfacing materials and damaged facilities.

B. The method of construction repair shall be proposed in writing by Contractor for approval by Engineer prior to correcting the failed condition.

C. Failure to detect any defective work or material does not prevent later rejection of the work nor obligate Engineer for final acceptance when such defective work or material is discovered.

PART 2 EXECUTION

2.01 COMPACTION REQUIREMENTS

A. The Developer\Contractor shall be responsible to perform and pay for all testing of earth materials.

B. Moisten or de-water backfill material to obtain optimum moisture for compaction compliance.

C. The material shall be deposited in horizontal layers having a compacted thickness of no more than 12 inches for roadway and 6 inches for trenches.

D. The distribution of materials shall be such that the compacted material will be homogeneous and free from lenses, pockets, or other imperfections.

E. The material shall have the optimum moisture content required for the purpose of compaction and the moisture content shall be uniform throughout the layer, insofar as practicable.

F. Backfill shall be compacted by means of sheepsfoot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers of a size and type approved by the City Engineer.

G. If the required relative density is not attained, test sections will be required to determine any adjustments in compacting equipment, thickness of layers, moisture content and compactive effort necessary to attain the specified minimum relative density.

H. Approval of equipment, thickness of layers, moisture content and compactive effort shall not be deemed to relieve the Contractor of the responsibility for attaining the specified minimum relative densities.

I. The Contractor in planning his work shall allow sufficient time to perform the work connected with test sections and to permit the City Engineer to make tests for relative densities.

J. The Contractor shall take care not to overwork soils and exceed maximum compaction percentages when such percentages are defined. Contractor shall be responsible to adjust work methods and equipment necessary to meet compaction requirements without additional costs to the City.

2.02 FIELD QUALITY CONTROL

A. Optimum Soil Density: Unless indicated otherwise.

1. In accordance with AASHTO T-180 Method D test (Modified Proctor).

2.03 COMPACTION UNDER ROADWAYS

A. Fill or embankment material shall normally consist of A-1 materials and be compacted to not less than 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557).

B. Compaction shall extend one foot beyond proposed back of curb line.

2.04 COMPACTION UNDER SIDEWALKS, CURB AND GUTTER, AND DRIVEWAYS

A. Fill or embankment material shall normally consist of A-1 materials and be compacted to not less than 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557).

B. Compaction of material shall extend to at least one foot each side of the edge of the slab.

2.05 COMPACTION OF OTHER FILLS AND EMBANKMENTS

A. Fill or embankment materials other than those mentioned above shall be compacted to not less than 92% of maximum dry density as measured by AASHTO T-180 (ASTM D1557) for A-1 soils and by AASHTO T-99 (ASTM D698) for all other soils.

END OF SECTION

SECTION 02504

ASPHALT CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This is a material specification for hot mix and cold mix bituminous paving mixtures.

1.02 REFERENCES

A. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

B. AASHTO M-17: Standard Specification for Mineral Filler for Bituminous Paving Mixtures.

C. AASHTO T-165: Standard Test Method for Effect of Water on Cohesion of Compacted Bituminous Mixtures.

D. AASHTO T-245: Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.

E. AASHTO T-246: Standard Test Methods for Resistance to Deformation and Cohesion of Bituminous Mixtures by Means of Hveem Apparatus.

F. AASHTO T-182: Standard Test Method for Coating and Stripping of Bitumen-Aggregate Mixtures.

G. AASHTO M-156: Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.

H. ASTM D 4215: Standard Specification for Cold-Mixed, Cold-Laid Bituminous Paving Mixture.

1.03 DEFINITIONS

A. Traffic Classifications:

1. Class I: Parking lots, driveways, light traffic residential streets, light traffic farm roads.

2. Class II: Residential streets, rural farm and residential roads.

3. Class III: Urban minor collector streets, rural minor collector roads.

4. Class IV: Urban minor arterial and light industrial and light industrial streets, rural major collector and minor arterial highways.

5. Class V: Urban freeways, expressways and principal arterial highways, rural interstate and other principal arterial highways.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 14 days prior to use in the Work. Include in the report the following information:

1. Mix design method: A Marshal Mix Design or Superpave Mix Design shall be used for Class I and Class II roads. Superpave Mix Design shall be used for Class III, Class IV, and Class V roads.
   a. For Marshall: use a five (5) point design using a four (4) point binder series with a one (1) point verification at the optimum binder content.
   b. For Superpave Mix Design: follow the 2017 Utah Department of Transportation (UDOT) Standard Specification section 02741 Hot Mix Asphalt (HMA) requirements for aggregates and volumetric mix design. All designs gyrations and compaction parameters shall meet the 20 year design ESALS 0.3 to < 3 Million. (N_{design}/% of G_{mm} = 75/97)~~, 3% Air Voids~~. Super Pave Mix shall be ½" Fine Mix (95% or more passing the ½" sieve) with 15% maximum Reclaimed Asphalt Pavement (RAP) content.
   ~~b.~~c. Air voids shall be 3.0% on all Class III, IV, and V roads.

2. Job control target data for aggregate ideal grading.

3. Permissible range limits of bitumen content in mixture.

4. Mixture's index of retained strength, AASHTO T-165

5. Additives. If none, state none are required.

6. Percent voids.

B. Source Aggregate Sample Report. Indicate rodded weight of aggregate, percentage of wear, weight loss, sand equivalent value, percent of fractured faces, amount of organic matter, plasticity of fines, and percentage of fines retained on the aggregate.

C. Pre-Approved Mix Design Data: If supplier has on record, a City approved mix design, submit name and address of supplier for each mix design 3 days prior to using asphalt concrete mix.

1.05 QUALITY ASSURANCE

A. Bitumen weights shall be determined by the mix design.

B. Use asphalt cement when recycled asphalt mixtures are indicated.

C. Do not change source of supply of paving asphalt or aggregate without Engineer's written approval.

D. Each shipment of bituminous material shall be uniform in appearance and consistency with no foaming when heated to the specified mixing temperature.

E. Do not use storage containers contaminated with other asphalt types or grades.

F. Gradation, density, and maximum density shall be determined by extraction tests, ASTM D 5444. Asphalt binder content shall be determined by using a burn-off oven, ASTM D 6307.

G. Validate binder grade received from the supplier.

PART 2 PRODUCTS

2.01 ASPHALT BINDER

A. Class I and II Streets, Trails and patches: Performance Grade (PG) of virgin asphalt binder shall be PG 58-28.
B. Class III, IV, & V Streets: Performance Grade (PG) of virgin asphalt binder shall be PG 64-34.

2.02 AGGREGATES - MATERIALS

A. Clean, hard, tough, durable and sound mineral aggregates that consist of crushed stone, crushed gravel, crushed RAP or RAP blend, or crushed slag conforming to the following requirements:

1. Rodded Weight density; not less than 75 pounds per cubic foot.

2. Percentage of wear of coarse aggregate retained on the No. 8 sieve; not exceeding 40 unless specific aggregates having higher values are known to be satisfactory.

3. Weight loss; not exceeding 16 percent by weight when subject to 5 cycles of sodium sulfate.

4. The combined aggregate after going through the dryer shall have a sand equivalent value of not less than 60 percent.

B. Coarse Aggregate: Use an aggregate that the portion retained on the No. 4 sieve has not less than 50 percent of particles by weight with at least two mechanically fractured faces or clean angular faces.

C. Fine Aggregate: Fine Aggregate Angularity per AASHTO T304 shall be 40% minimum.

D. Fine aggregate passing the No. 4 sieve may be either a natural or manufactured product containing not more than 2 percent by weight of organic matter or other deleterious substances.

1. Aggregate passing the No. 40 sieve is nonplastic.

2. Natural sand shall be a maximum of 15%.

3. Mineral Filler: When mix design indicates need, add as separate ingredient; AASHTO M-17.

2.03 AGGREGATES - MASTER GRADING BAND LIMITS FOR MARSHAL MIX DESIGN

A. Maximum particle size of ½ compacted lift thickness. DM-1/2" mix shall be used unless otherwise specified on the plans and/or standard drawings.

B. The following gradations describe the total percent passing by weight, AASHTO T-27, and is based on fine and coarse aggregate having approximately the same bulk specific gravities.

C. Target Grading Curve must lie within one of the Master Grading Bands in the following table.

MASTER GRADING BAND LIMITS FOR MARSHALL MIX DESIGN				
Sieve Size	DENSE MIXTURES			
	Type DM-3/4		Type DM-1/2	
	Min	Max	Min	Max
1"				
3/4"	100	-----		
½"	-----	-----	100	-----
3/8"	75	91	-----	-----
# 4	46	62	60	80
# 8	-----	-----	-----	-----
# 16	22	34	28	42
# 50	11	23	11	23
# 200	5	7	5	7

2.04 AGGREGATES - JOB-CONTROL GRADING BAND LIMITS

A. The job control formula shall produce a smooth curve approximately paralleling the master grading band limits for the designated mix. If application of the tolerances results in a job control grading band outside the master grading band, the full job control tolerances shall apply. The following describes the job control grading bands.

JOB-CONTROL GRADING BAND LIMITS					
Sieve Size	Amount Passing Sieve, weight %				
	1 Test	2 Tests	3 Tests	4 Tests	5 Tests
≥ ½	± 10	± 7.3	± 6.3	± 5.6	± 5.2
3/8	± 9	± 6.9	± 5.9	± 5.3	± 4.9
No. 4	± 9	± 6.7	± 5.7	± 5.2	± 4.8
No. 8	± 7	± 5.6	± 4.8	± 4.3	± 4.0
No. 16	± 7	± 5.2	± 4.6	± 4.2	± 3.9
No. 50	± 6	± 4.3	± 3.8	± 3.4	± 3.2
No. 200	± 3	± 2.4	± 2.0	± 1.8	± 1.7

2.05 MARSHALL MIX DESIGN

A. The Marshall mix design shall be based upon AASHTO T-245, traffic classifications, and the following:

MARSHALL MIX DESIGN REQUIREMENTS						
	CLASS I		CLASS II		CLASS III to V	
	Min	Max	Min	Max	Min	Max
Number of Compaction Blows (each end of specimen)	35	34	50	50	NA	NA
Stability, lb (ASTM D 6927)	1500	-----	1500	-----	NA	-----
Flow, in 0.01 in. units	8	20	8	18	NA	NA
% Voids in Mineral Aggregate (VMA), (ASTM D 3203)						
½" nominal maximum particle size	15		15		NA	
¾" nominal maximum particle size	14		14		NA	
% Air Voids,	3	3.5	3	3.5	NA	NA
Unconfined Compression Strength Retention, % (AASHTO T-165)	80	-----	80	-----	NA	-----

B. Compensate for specific gravity and absorption of aggregate to determine bitumen content by laboratory testing.

C. Recycled Asphalt Pavement (RAP) for Marshall Mix and Superpave Mixes: A maximum 15% Reclaimed Asphalt Pavement (RAP) by total weight of the mix is allowed in asphalt concrete mix, and a maximum 15% of the total binder content of the mix may be RAP asphalt binder.

D. Dust to Binder ratio should not be more than 1.4.

E. The mix design air voids shall be between 3% and 3.5%, where mix shall not exceed 3.5% air voids per ASTM D 3203. However, the percent asphalt or fines may need to be adjusted to achieve optimal strength.

F. If mix design is older than 365 days from date of submission, mix shall be recertified.

G. Voids in the Mineral Aggregate (VMA) shall be calculated using Gsb dry for both virgin and rap aggregates.

2.06 MIXING PLANT

A. Hot-mixed, hot-laid paving mixtures; AASHTO M-156.

2.07 SOURCE QUALITY CONTROL

A. Unconfined Compression Strength Retention: When crushed mineral aggregate which is thoroughly coated with bitumen has an index of retained strength less than 80 percent bring the strength into compliance by adding any of the following additives to the mix.

1. Anti-stripping agent.

2. Hydrated lime.

3. Portland cement.

B. Coating and Stripping of Bitumen-Aggregate Mixture: Immediately after mixing, the mixing shall meet the requirements of AASHTO T-182, whereby not more than 5 percent of the aggregate particles shall remain uncoated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Plant Mix Bituminous Paving: In accordance with Section 02510.

END OF SECTION

SECTION 02505

EMULSIFIED ASPHALT SLURRY SEAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This is a material specification and application specification for emulsified asphalt slurry seal.

1.02 REFERENCES

A. ASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

B. AASHTO T-2: Sampling Mineral Aggregates.

C. AASHTO T-11: Materials Finer than No. 200 in Mineral Aggregate.

D. AASHTO 176: Sand Equivalent Value of Soils and Fine Aggregate.

E. AASHTO T-84: Specific Gravity and Absorption of Fine.

F. AASHTO T-19: Unit Weight Aggregate.

G. AASHTO T-96: Resistance to Abrasion of Small Size Coarse Aggregate by use of the Los Angeles Machine.

H. AASHTO T-37: Sieve Analysis of Mineral Filler.

I. AASHTO T-40: Sampling Bituminous Materials.

J. AASHTO T-59: Testing Emulsified Asphalt.

K. AASHTO M-140: Specification for Emulsified Asphalt.

L. AASHTO T-49: Penetration 100 gm at 5 sec. 77°F(25°C).

M. ASTM D242: Mineral Filler for Bituminous Paving Mixtures.

1.03 DEFINITIONS

A. The slurry seal shall consist of a mixture of an approved emulsified asphalt, mineral aggregate, water and specified additives, proportioned, mixed and uniformly spread over a properly prepared surface. The completed slurry seal shall leave a homogeneous mat, adhere firmly to the prepared surface, and have a friction resistant surface texture throughout its service life.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 14 days prior to use in the Work.

PART 2 PRODUCTS

2.01 EMULSIFIED ASPHALT

A. POLYMER MODIFIED EMULSION The emulsified asphalt shall be CQS-1HL, CQS-1HP, QS-1HL, or QS-1HP as specified in AASHTO M-140. The polymer modifier shall be either a solid synthetic rubber or latex material. The polymer modifier shall be combined with the base asphalt or asphalt emulsion at a minimum rate of 3% solids by weight of asphalt prior to loading at the manufacturing plant. The polymer modified emulsion shall be compatible with the mix design developed for the conventional slurry seal. Each shipment of emulsified asphalt shall be accompanied by a certificate of analysis / compliance from the manufacturer.

2.02 AGGREGATES - MATERIALS

A. The mineral aggregate shall be manufactured (100% crushed) stone such as granite, slag, limestone, chat, or other high quality aggregate that is free from dirt, organic matter, clay balls, adherent films of clay, dust, or other objectionable matter.

B. The Contractor shall insure that all oversize aggregate and other objectionable matter are removed from the mineral aggregate utilized in the slurry seal mixture. Screening shall be required at the stockpile if there are problems created by oversize materials in the mixture.

2.03 AGGREGATES - GRADING BAND LIMITS

A. Gradation Type II will be used unless otherwise specified.

B. The following gradations describe the total percent passing by weight, AASHTO T-27, and is based on fine and coarse aggregate having approximately the same bulk specific gravities.

GRADING BAND LIMITS						
Sieve Size	DENSE MIXTURES					Stockpile Tolerance
	Type I Min	Type I Max	Type II Min	Type II Max	Type III Min	Type III Max
3/8"	100	-----	100	-----	100	-----
# 4	100	-----	90	100	70	90
# 8	90	100	65	90	45	70
# 16	65	90	45	70	28	50
# 30	40	65	30	50	19	34
# 50	25	42	18	30	12	28
# 100	15	30	10	21	7	18
# 200	10	20	6	15	5	15
						+ or - 5%
						+ or - 5%
						+ or - 5%
						+ or - 5%
						+ or - 4%
						+ or - 3%
						+ or - 2%

2.04 AGGREGATES - JOB-CONTROL GRADING BAND LIMITS

A. The job mix gradation shall be within the gradation band for the desired type. After the target gradation has been submitted, then the percent passing each sieve shall not vary by more than the stockpile tolerance and still remain within the gradation band.

2.05 MINERAL FILLER

A. Portland Cement, hydrated lime, limestone dust, flyash, Aluminum sulfate, or other approved filler meeting the requirements of ASTM D242 shall be used if required by the mix design. They shall

be considered as part of the dry aggregate. The quantity and type of filler, if required, shall be determined by the job mix design. It shall be used for one or more of the following reasons only: to improve the gradation of the aggregate to provide improved stability and workability of the slurry, or the increase the durability of the cured slurry.

2.06 WATER

A. Water for the slurry mixture shall be clear, potable, free from harmful soluble salts, and compatible with the slurry mixture. If the water is obtained from a source other than sanitary systems, such as a river, stream, or pond, a sample of the water must be tested and approved by the laboratory performing the mix design.

2.07 MIX DESIGN

A. The mix design shall be made with the same aggregate gradation that the Contractor will provide on the project. Sources of all materials shall be selected prior to the time when the mix design is prepared and the materials are required to be used in the work. Slurry seal mixture shall not be placed until a mix design, submitted by the Contractor, has been approved by the Project Manager. The exact proportions of asphalt emulsion, aggregate, mineral filler, additives, and water to be used in the preparation of the slurry seal shall be determined by an approved testing laboratory experienced in slurry seal mix design procedures.

The approved slurry mix shall be a homogeneous mixture, sufficiently stable during the entire mixing/spreading period so that the emulsion does not break, there are no segregation of the fines from the coarse aggregate, and the liquid portion of the mix does not float to the surface. The amount and type of asphalt emulsion to be blended with aggregate shall be determined by the laboratory mix design. The set control additive shall be introduced into the slurry seal mixture by an approved method that will assure uniform distribution and proper control. The exact amount shall be determined by conditions in the field and indicated in the mix design. A minimum amount of water shall be used as necessary to obtain a workable and homogeneous mixture. The slurry seal mixture shall show no signs of uncoated aggregate or premature breaking of emulsion when applied to the pavement surface.

B. The mix design and all slurry seal materials shall be approved by the City Engineer prior to use. The component materials shall be within the following limits:

1.	Residual Asphalt	Type I: 10% - 16% Type II: 7.5% - 13.5% Type III: 6.5% - 12% Based on dry weight of aggregate
2.	Mineral Filler	0.5% - 2.0% Based on dry weight of aggregate
3.	Additives	As needed
4.	Water	As needed to achieve proper mix consistency

2.06 ADDITIVES

A. Additives may be used to accelerate or retard the break-set of the slurry seal, or improve the resulting finished surface. The quantity and type of set control additive, if required, shall be determined by the job mix design and conform to the applicable sections of ASTM D3910 and ISSA T102. The use of additives in the slurry mix shall be made initially in quantities predetermined by the mix design with field adjustments if required, after approval by the City Engineer.

PART 3 EXECUTION

3.01 EQUIPMENT - GENERAL

A. All equipment, tools, and machines used in performance of this work shall be maintained in satisfactory working condition.

3.02 MIXING EQUIPMENT

A. Mixing Unit. The slurry seal shall be mixed and applied with a machine designed and manufactured to lay slurry seal with a minimum aggregate capacity of eight (8) cubic yards to reduce the number of transverse joints. The slurry seal mixing machine shall be a continuous flow mixing unit, capable of delivering accurately predetermined proportions of aggregate, asphalt emulsion, and mineral filler (if required) to a revolving spiraled multi-blade mixer and of discharging the thoroughly mixed product on a continuous basis. The mixing unit shall be capable of thoroughly blending all ingredients together without violent action. The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method of introducing a predetermined proportion of mineral filler to the aggregate. The fines feeder shall be used only when mineral filler is part of the mix design. The mixing machine shall be equipped with a water pressure system and fog type spray bar. The machine shall be capable of mixing materials at preset proportions regardless of the speed of the machine and without changing machine settings.

Each mixing unit to be used in performance of the work shall be calibrated prior to construction. Previous calibration documentation covering the exact materials to be used may be accepted, provided it was made during the current calendar year. The documentation shall include an individual calibration of each material at various settings which can be related to the machine metering device(s).

Attached to the mixing machine shall be a mechanical squeegee distributor (spreader box) having a rubber-like material in contact with the surface to prevent unwanted egress of slurry. It shall prevent loss of slurry on varying grades and crown by adjustments to assure uniform spread. An appropriate mechanical device for lateral distribution of the slurry shall be operated within the spreader box. There shall be a steering device, a flexible strike-off, and a burlap or other approved drag. The spreader box shall be adjustable to widths from eight (8) to fifteen (15) feet to minimize the number of longitudinal joints. Broken slurry seal mixture shall not be allowed to collect in the spreader box or on the flexible strike-off.

3.03 SPREADING EQUIPMENT

A. The mixture shall be spread uniformly by means of a conventional surfacing spreader box attached to the mixer and equipped to agitate and spread the material evenly throughout the box. A front seal shall be provided to insure no loss of the mixture at the road contact point.

3.04 WEATHER LIMITATIONS

A. The slurry seal shall not be applied if either the pavement or air temperature is below 50°F(10°C) and falling, but may be applied when both pavement and air temperature are above 45°F(7°C) and rising. No slurry seal shall be applied when there is danger that the finished product will freeze before 24 hours. The mixture shall not be applied when weather conditions prolong opening to traffic beyond a reasonable time.

3.05 NOTIFICATION AND TRAFFIC CONTROL

A. All homeowners and business affected by the paving shall be notified one day in advance of the surfacing. Should work not occur on the specified day, a new notification will be distributed.

B. Suitable methods shall be used by the contractor to protect the slurry seal from all types of vehicular traffic without damage. Opening to traffic does not constitute acceptance of the work. Traffic control shall in accordance with the MUTCD manual.

3.06 SURFACE PREPARATION

A. Immediately prior to applying the slurry seal the surface shall be cleared of all loose material, oil spots, vegetation, and other objectionable material. Any standard cleaning method will be acceptable. If water is used, cracks shall be allowed to dry thoroughly before slurry surfacing. Manholes, valve boxes, drop inlets and other service entrances shall be protected from the slurry seal by a suitable method. The City Engineer shall approve the surface preparation prior to surfacing.

B. It is advisable to pre-treat cracks in the pavement surface with an acceptable crack sealer prior to application of the slurry seal. Crack sealing shall be completed a minimum of 3 months prior to slurry seal.

3.07 APPLICATION

A. When required by local conditions, the surface shall be pre-wetted by fogging ahead of the spreader box.

B. The slurry seal shall be of the desired consistency upon leaving the mixer. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained.

C. No streaks, such as those caused by oversized aggregate shall be left in the finished surface.

D. No excess buildup, uncovered areas, or unsightly appearance shall be permitted on longitudinal or transverse joints. The Contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved area. A maximum of six inches (6") shall be allowed for overlap of longitudinal lane line joints.

E. Areas which cannot be reached with slurry seal machines shall be surfaced using hand squeegees to provide complete and uniform coverage. The area to be handworked shall be lightly dampened prior to mix placement and the slurry worked immediately. Care shall be exercised to leave no unsightly appearance from handwork. The same type finish as applied by the spreader box shall be required. Handwork shall be completed during machine applying process.

F. Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide good appearance.

G. All areas, such as manways, gutters and intersections, shall have the slurry seal removed as specified by the City Engineer. The Contractor shall remove any debris associated with the performance of the work on a daily basis.

H. Rate of Application measured in pounds of dry aggregate per square yard:

APPLICATION RATE	
Type I	8-12#/SY
Type II	12-20#/SY
Type III	18-30#/SY

I. The longitudinal joint between adjacent lanes shall have no visible lap, pinholes, or uncovered areas. Thick application caused by overlapping shall be smoothed immediately with hand squeegees before the slurry seal mixture breaks. When possible, longitudinal joints shall be placed on lane lines. The Contractor shall provide suitable spreading equipment to minimize the number of longitudinal joints. Overlays that occur at transverse joints shall be smoothed before the slurry seal mixture breaks, so that a uniform surface is obtained.

J. Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections shall be kept straight to provide a good appearance.

3.08 SAMPLING AND TESTING

A. Suitable sized samples of aggregate, asphalt emulsion, and mineral filler (if required) shall be submitted, when requested by the Project Manager, for approval not less than ten (10) days before the work starts. All samples of materials shall be supplied by the Contractor at his expense, and all tests necessary to determine conformance with requirements specified shall be performed without cost to the Contractor. Additional samples of materials shall be furnished as directed by the Project Manager during progress of the work. The owner will notify the Contractor immediately if any test fails to meet the specifications.

If it is established that a satisfactory slurry seal mixture meeting the requirements specified herein cannot be produced from the materials furnished, the materials shall be rejected and the Contractor shall submit new samples.

END OF SECTION

SECTION 02510

ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the requirements for bituminous surface paving on roads and trails.

PART 2 SUBMITTALS

A. Contractor shall establish a mix gradation and the amount of bituminous material shall be submitted fourteen (14) working days prior to surfacing for the approval by the City Engineer and shall meet the requirements of the gradation selected.

B. Test Reports: Submit test reports as requested by City Engineer verifying compliance with specified standards.

PART 3 EXECUTION

3.01 ALL STREETS AND TRAILS SHALL BE SURFACED IN ACCORDANCE WITH THE FOLLOWING:

A. Streets:
1. 8-inch minimum untreated base course over prepared and approved subgrade.
2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all local streets.
3. 4-inch minimum compacted thickness plant mix asphalt surfacing on all collector and arterial streets.
4. 2-lift minimum for plant mix asphalt surfacing when final compacted pavement thickness is greater than 3 inches unless otherwise approved by the City Engineer.

B. Trails:
1. 6-inch minimum untreated base course over prepared and approved subgrade and weed barrier geotextile.
2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all trails.
3. Weed barrier geotextile according to the following:

Table 7 – Weed Barrier Geotextile

Property	ASTM	MARV Standard
Grab tensile strength, lbs.	D 4632	315
Grab elongation, percent, minimum	D 4632	50
Puncture strength, lbs.	D 4833	900
Trapezoid tear, lbs.	D 4533	100
Apparent opening size (AOS), US sieve, minimum	D 4751	40
Ultraviolet degradation, percent	D 4355	70
NOTES (a) Percent of grab elongation retained determined after ultraviolet weathering, ASTM D 4355 for 500 hours.		

3.02 BASE COURSE

A. Base for all streets shall consist of select material, as specified in Section 02206.

B. Base shall be laid in accordance with Section 02225.

C. Surfaces shall be true to the established grade with thickness being not less than 1/4 inch from the required layer thickness and with the surface elevation varying not more than 3/8 inch in ten feet from the true profile and cross section.

3.03 BITUMINOUS SURFACE COURSE

A. Base course shall be free of any contamination prior to laying surface course.

B. The surface course shall consist of a mixture of mineral aggregate and binder conforming to Section 02504.

C. Gradation of aggregate shall conform to Section 02504.

D. The Contractor shall apply a tack coat to all new or existing asphalt or concrete edges and surfaces that will be in contact with the new bituminous surface course. This includes all longitudinal and transverse joints regardless of the joint temperature.

1. Tack coat shall be SS-1 or 1-H.

E. The bituminous surface course shall be mixed at a mixing plant and spread and compacted on the prepared base in conformance with the lines and dimensions shown on the plans and in accordance with these Specifications.

F. All existing asphalt shall be saw cut to remove fractures, cracked or damaged asphalt.

1. Asphalt shall be saw cut in straight lines.

3.04 CONSTRUCTION METHODS AND EQUIPMENT

A. All asphalt will be laid using a lay down machine unless written approval is granted by City Engineer.

B. The methods employed in performing the work, all equipment, tools and machinery and other appliances used in handling the materials and executing the work shall be the responsibility of the Contractor.

C. At no cost to the City, the Contractor shall make such changes in the methods employed and in the equipment used as are necessary whenever the bituminous being produced does not meet the specification herein established.

D. Provide necessary survey stakes for horizontal control and vertical control on roads and trails. Furnish, place, and maintain supports, wire devices, and materials as required to provide continuous line and grade reference control for placing pavement and matching existing pavement surfaces on roads and trails.

3.05 SPREADING

A. The bituminous mixtures shall be spread with self-propelled mechanical spreading and conditioning equipment capable of distributing at least a 12-foot width.

B. The City Engineer shall determine whether or not the bituminous surface course shall be spread in one or more courses.

C. No surface course shall be placed less than 1 inch in thickness.

D. The mixture shall be spread and struck off in such a manner that the finished surface shall result in a uniform smooth surface.

E. The longitudinal joints in any succeeding courses shall be offset at least 6 inches transversely to avoid a vertical joint through more than one course.

F. The temperature of the bituminous mix shall be between 250° F and 325° F when placing.

G. Asphalt joints and seams shall be placed at lane lines when possible, and shall not be placed in wheel lines without written approval from the City Engineer.

3.06 COMPACTION

A. After the mixture has been spread, the surface shall be rolled in longitudinal direction commencing at the outside edge or lower side and preceding to the higher side.

B. Each pass of the roller shall overlap the preceding pass at least one-half the width of the roller.

C. The average in place density shall be in the range of 94% to 96% of the Theoretical Maximum Specific Gravity determined by the testing methods outlined in Section 01450 with no individual areas falling below 92% or above 97.5% of the Theoretical Specific Gravity. At the Engineers discretion, any density averages that does not meet the average in place density requirement above may be accepted with a pay factor in accordance with Table 1.

~~C.~~

Table 1 - Compaction Pay Factors	
Mat Density in Percent	**Pay Factor**
98-100	0.7
97-97.9	0.85
96.1-96.9	0.9
94-96	1
93-93.9	0.85
92-92.9	0.7
91.9 & Under	Fail

D. Rolling operations shall be conducted in such a manner that shoving or distortion will not develop beneath the roller.

E. Do not over compact the asphalt pavement nor under compact. Complete compaction before the following temperatures are reached: 180 degrees F for hot mixes, and 140 degrees F for warm mixes.

F. Quality Control

1. The surface of the pavement, after compaction, shall be uniform and true to the established crown and grade.
2. The Developer/Contractor shall be responsible to test bituminous mixtures for compaction in accordance with Section 01450, TESTING AND PROCESS CONTROL.

3. Traffic shall not be allowed to travel on new asphalt surface until pavement temperature has reached 120º F or lower.

3.07 WEATHER LIMITATIONS

A. No bituminous surface shall be placed when the temperature of the air or road bed is 50° F or below, during rainy weather, when the base is wet or during other unfavorable weather conditions as determined by the City Engineer.

B. The air temperature shall be measured in the shade.

3.08 FLAGGING

A. Flaggers shall be required as directed to facilitate the safe control of traffic over highways and streets under construction at such locations as required and directed by the City Engineer.

B. Flagging shall be performed by certified, trained, and properly equipped flaggers.

C. All flagging shall be done as described in the Safety Orders covering flaggers of the Industrial Commission of Utah and in accordance with the MUTCD manual.

3.09 ROUGHNESS TOLERANCE

A. When tested with a ten (10) foot straight edge placed parallel to the center line of the pavement, the surface of the pavement at any point shall not deviate from the lower edge of the straight edge by more than one-quarter of an inch. If any part of the pavement fails the 10 foot straight edge test, roughness shall be determined using a certified profilograph or profiler.

B. The following table shall be used to verify roughness tolerances.

ROUGHNESS TOLERANCE						
Speed MPH	Traffic Class	Profile Roughness Index (PRI), Inches / Mile				Profile Deviation Inches/25 feet Maximum
		IRI		PI		
		Min	Max	Min	Max	
25 to 30	II	--	--	--	110	0.4
	III or IV	129	177	46	66	0.4
31 to 45	I or II	90	155	35	50	0.4
	III or IV	70	90	21	35	0.4
45 +	All Classes	--	70	--	21	0.30.4

Notes:
a) IRI (International Roughness Index), ASTM E 950. Use a ¼ car.
b) PI (Profile Index), ASTM E 1274. Use a zero blanking band.
c) Profile deviation applies to bump and depression measurements.
d) As a minimum, trace right wheel path in direction of travel.

C. Profile Roughness Index (PRI): Verify bumps and depressions are removed so profile index in each lot meets tolerance: Lot is 0.1 lane mile (528 feet long one lane wide). Add segments shorter than 250 feet to preceding lot. Treat partial segments longer than 250 feet as a lot. Excluded from the lot are turn lanes, parking lanes, medians, street fixtures, crowns of intersecting streets, bridge decks, ~~grades greater than eight (8) percent,~~ and vertical curves less than 1,000 feet radius.

D. Profile Deviation: Verify "must grind" bumps and depressions are removed from the lot surface where lot is the total pavement area placed, no area excluded. Begin traces 50 feet before edge of new pavement and end traces 50 feet after edge of new pavement. Areas (including the 50 feet end of traces) exceeding the profile deviation tolerance are "must grind" areas.

E. Mark all “must grind” areas on pavement to identify locations to be corrected.

F. Repair: Grinding is an acceptable method for correcting “must grind” areas. Skin patching with feather edge for depressions is NOT acceptable. Raise depressions by milling and inlay or remove and replace repair. Re-profile corrected segments to verify index meets tolerance. Apply GSB-88 or other approved emulsion to grind areas at a rate of 0.11± 0.01 gal/yd^2, using approximately 40% residual asphalt.

G. Notify the Engineer in writing when corrective work will be performed and at least two working days before re-profile will be completed.

H. When thickness is deficient, place additional material over deficient areas. Do not skin patch. Mill for inlay as necessary.

END OF SECTION

SECTION 02512

RESTORATION OF SURFACE IMPROVEMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Restoration of surface improvement requirements.

1.02 GENERAL IMPROVEMENT REQUIREMENTS

A. The Contractor shall be responsible for the protection and the restoration or replacement of any improvements existing on public or private property at the start of work or placed there during the progress of work.

B. Existing improvements shall include but are not limited to landscaping, permanent surfacing, curbs, ditches, driveways, culverts, fences and walls. All improvements shall be reconstructed to equal or better, in all respects, to the existing improvements removed.

PART 2 PRODUCTS

A. Select Fill: In accordance with Section 02206.

B. Asphalt Concrete: In accordance with Section 02510.

C. Concrete: In accordance with Section 03304.

PART 3 EXECUTION

3.01 ROAD BASE REPAIR

A. Where trenches are excavated through gravel surfaced areas such as roads and driveways, etc., the gravel surface shall be restored and maintained as follows:

1. The gravel shall be placed deep enough to provide a minimum of 6-inches of material.

2. The gravel shall be placed in the trench at the time it is backfilled. The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the Engineer. Excess material shall be removed from the premises immediately.

3. Material for use on gravel surfaces shall be obtained from sound tough durable gravel or rock meeting the requirements of Section 02206.

3.02 BITUMINOUS SURFACE REPAIR

A. Where trenches are excavated through bituminous surfaced roads, driveways or parking areas, the surface shall be restored and maintained as follows:

1. Trenches shall be backfilled with untreated base course from the pipe bedding to 3 inches from the top of existing asphalt.

2. Asphalt shall be saw cut back 12 inches from existing trench wall's and the exposed road base surface shall be compacted as shown on standard drawing.

3. Pavement restoration shall include priming of pavement edges with bituminous material and placing and rolling plant mix bituminous material to the level of the adjacent pavement surfaces. Proper compaction of the bituminous material shall be verified per the requirements of Section 02510.

3.03 CONCRETE REPAIR

See Section 03310 Concrete Work

END OF SECTION

SECTION 02513

UTILITY POTHOLE REPAIR-KEYHOLE METHOD

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification covers the requirements for keyhole coring, vacuum excavation, backfilling, and reinstatement of the keyhole core in asphalt or concrete pavements to allow for underground utility repairs and underground exploratory potholing. Keyhole coring shall be defined as follows: The operation of coring a circular hole through the roadway pavement using diamond tipped core drilling equipment.

1.02 Pothole Excavation:

A. The vertical alignment of the keyhole coring shall be perpendicular to the horizon, and the cutting shall extend to the full depth of the existing pavement section.

B. Unless otherwise approved by the Engineer, keyhole cores shall be no less than 6 –inches and no greater than 18- inches in diameter. Adjacent cores shall not be closer than 3 feet from each other (edge to edge), shall not contain a joint or any pavement cracks greater than 1/8-inch wide, and shall not be performed in pavements where the section is less than 3-inches thick. Coring shall be performed with a keyhole coring saw with high strength steel diamond tipped core drill bits.

C. The Contractor shall place a temporary mark on the keyhole core prior to cutting to insure that the removed section is replaced in the same orientation as originally found in the pavement.

D. Soils within potholes shall be removed by air/vacuum extraction methods to expose utilities. The zone of soil removal shall remain essentially within a vertical plane extending below the edges of the removed pavement. The Contractor shall remove all excess materials excavated from the site.

PART 2 PRODUCTS

A. Bonding Agent: The bonding agent is material required to bond asphalt pavement cores to the asphalt concrete pavement from which it was originally removed. Bonding material shall be a single component cementitious, rapid hardening, high strength, waterproof bonding agent conforming to the physical properties shown in Table-1 below, and Section 3.01 B.

TABLE 1 – BONDING MATERIAL PROPERTIES

Property	ASTM Test method	Requirements
Bond Strength (Slant Shear), psi (70° F., 30 minute cure)	C882	200 minimum
Strength, psi (70° F., 60 minute cure)	C109	1500 minimum

1) Bonding material shall be impervious to water penetration at the joint after curing.
2) Bonding material shall, within 30 minutes at minimum ambient temperature of 70 degrees F., allow an 18" diameter core to support a traffic load equivalent to at least three (3) times the AASHTO H-25 standard wheel load.
3) The bonding material is required to securely bond the asphalt concrete core to asphalt concrete pavement and to fill all voids between the core and pavement and within the core.
4) Specifications and test results for the bonding material shall be submitted to the City for review and approval before use.

PART 3 EXECUTION

3.01 Pavement Restoration

A. Pothole Backfill: The Contractor shall place 1 ft of compacted bedding sand over utility. The remainder of the hole shall be filled with flowable fill in accordance with Section 02245 – Flowable Fill, to the bottom of the pavement surface

B. The surface cut by keyhole coring restored to its original condition with the reinstated core flush with and in the original orientation as the existing surface, matching existing pavement surface appearance.

C. A bonding agent shall be a single component cementitious, rapid hardening, high strength, water proofed application such as Utilibond, manufactured by Utilicor Technologies, Inc., or an Engineer approved equal shall be used for pavement core reinstatement. Excess bonding material shall be removed from the restored surface. A patched appearance shall be avoided in surface restoration wherever possible.

D. Unless otherwise approved by the Engineer, the Contractor shall reinstate the bonded keyhole core within 24 hours of cutting the pavement. Openings allowed to be left open greater than 24 hours shall be covered with an approved steel road plate capable of supporting traffic loads.

3.02 Surface Tolerances

A. The reinstated core shall be flush and level with the adjacent pavement. Gaps attributable to the positioning of the core shall be less than 1/16-inch between the bottom of a minimum 3- foot long straightedge and the surface of the pavement in any direction on the surface of the keyhole core, except across the pavement crown or drainage gutters.

B. Deficiencies

1. Where the pavement core is found to be fractured or defective upon removal, or becomes damaged after removal and prior to reinstating, the defective or damaged core shall not be used to reinstate the pavement. Pavement repair shall be performed in accordance with Section 02512.
2. A pavement core is considered unacceptable when one of the following conditions exist:
   1) The core contains any vertical cracks wider than 1/8-inch extending full depth or partial depth through the core; or
   2) Any deteriorated piece of the core is larger than 10 percent of the overall area of the core.
   3) Two or more successive layers of asphalt concrete in the core become horizontally delaminated and cannot be rebounded to each other with the bonding compound.
3. All unacceptable pavement cores shall be removed from the job site.
4. If another equivalent core of sound condition and matching existing pavement of the same diameter, depth and composition as the defective core is available, it may be reinstated in substitution of the defective core.

END OF SECTION

SECTION 02607

MANHOLES AND COVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular precast concrete manhole sections with tongue-and-groove joints, covers, anchorage, and accessories.

1.02 RELATED SECTIONS

1.03 REFERENCES

A. AASHTO M-105: Gray Iron Castings.

B. ASTM C478: Precast Reinforced Concrete Manhole Sections.

C. ASTM C923: Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.

1.04 SUBMITTALS FOR REVIEW

A. Shop Drawings: Indicate manhole locations, elevations, piping, and sizes and elevations of penetrations.

B. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 GENERAL REQUIREMENTS

A. The Contractor shall furnish and install watertight cast-in-place or precast concrete manholes at the locations shown on the Drawings approved by the City Engineer. All new manholes shall be precast unless the manhole is being installed on an existing line, unless otherwise approved in writing by the City Engineer. All precast manholes shall have flexible watertight pipe-to-manhole boot connectors. All cast-in-place manholes shall have a hydrophilic water stop at pipe-to-manhole connections.

B. Manholes shall be furnished complete with cast iron rings and covers.

C. Cleanouts on sewer laterals shall be placed every 100 feet and at all bends.

D. Flow Channels:

1. The flow channel through manholes shall conform to the inlet and outlet pipe.
2. The depth of flow channels should be one-half to three-quarters of the diameter of the pipe.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturers:

1. Materials and Equipment: Product options and substitutions. Substitutions: Permitted.
2. Materials shall be manufactured by a Concrete Precast Association (CPA) approved facility.

B. Manhole Sections: Reinforced precast concrete in accordance with AASHTO M-199 and ASTM C923. Mortar and Grout: Type S.

2.02 COMPONENTS

A. Wall and Cone Sections:

1. Manhole walls shall be constructed of 48" I.D. precast sectional, reinforced concrete pipe.
2. For pipelines of 14" diameter or larger, the manholes shall be 60" minimum I.D.
   a. The throat section of the manhole shall be adjustable by use of pipe sections up to 18 inches in height.
   b. The taper section shall be a maximum of 3 feet in height, shall be of eccentric conical design, and shall taper uniformly from 48 inches to 30 inches inside diameter.
   c. The 48-inch inside diameter pipe used in the base section shall be furnished in section lengths of 1, 2, 3 and 4 feet as required.
   d. Reinforcing steel shall consist of a circular cage with a minimum cross sectional area of three-tenths (0.3) of a square inch of steel per foot in both directions.
   e. 18" space maximum between cone and lid.
3. All joint surfaces of precast sections and the face of the manhole base shall be thoroughly cleaned and wet prior to setting precast sections.
4. All manhole joints, including grade rings, shall be sealed with a butyl rubber sealant (mastic) that is permanently flexible and non-shrinking, similar to Brandt No. 95 Cold Weather Vault Sealant.
5. Mortar can be used for repairs and additional sealing of joints including grade rings and manhole rings. The mortar shall consist of 1 part cement and 1-1/2 parts sand with sufficient water added to bring mixture to workable consistency.

B. Manhole Steps:

1. 12" Copolymer Polypropylene Plastic Steps.
2. Reinforcement: ½" grade 60 steel reinforcement.
3. Steps must meet requirements outlined in ASTM C478 and ASTM C497.

C. Concrete Base Pad:

1. Except as noted below, manhole bases shall be pre-cast concrete conforming to the requirements of Section 03310 of these Specifications.
2. Where sewer lines pass through or enter manholes the invert channels shall be smooth and semi-circular in cross section.
3. Changes of direction of flow within the manholes shall be made with a smooth curve with as long a radius as possible and a minimum of 0.2 feet of fall.
4. The floor of the manhole outside the flow channels shall be smooth and slope toward the channel at not less than ½ inch per foot.

5. For high ground water areas, precast manholes and bases shall be required.

D. Lid and Frame:

1. All iron castings shall conform to the requirements of AASHTO M-105 for grey iron castings.
2. Rings and covers shall have machined bearing surfaces and a minimum cover weight of 150 pounds and minimum ring weight of 233 pounds.
3. The foundry name, year of manufacture, and “WATER”, “SEWER”, “STORM DRAIN”, or “IRRIGATION” shall be marked on the cover.
4. All manhole rings shall be carefully set to the grade shown on the approved drawings or as directed by the City Engineer.
5. The manhole covers shall be so installed to be within 1/4” from the asphalt surface.
6. A concrete ring 12" wide, but no greater than 18” wide, and 8" thick will be poured around lid in accordance with Section 03304. Asphalt concrete collars are prohibited.
7. All manhole lids should be vented unless directed otherwise by the City Engineer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify that built-in items are in proper location and ready for roughing into Work.

C. Verify excavation for manholes is correct.

3.02 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 PLACING MANHOLE SECTIONS

A. Place base pad, with top surface level.

B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.

C. Cut and fit for pipe as required.

D. Grout vase of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

E. Set cover frames and covers level without tipping, to correct elevations.

3.04 DROP TYPE MANHOLES

A. Where the difference in elevation between the incoming sewer and manhole invert is less than 24 inches, the invert shall be filleted to prevent solids deposition.

B. Drop manholes should be constructed with an outside wye drop connection. If an inside drop connection is necessary, it shall be secured to the interior wall of the manhole and provide access for cleaning. Inside drop connections will not be allowed without written approval from the Heber City Engineer.

C. Due to the unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in low density concrete.

3.05 SCHEDULES

A. Storm Sewer Manholes: Precast concrete sections, copolymer polypropylene plastic steps, 48 inch inside dimension, to depth indicated, with bolted lid.

END OF SECTION

SECTION 02609

GREASE AND SAND INTERCEPTOR

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular precast concrete grease interceptor sections with joint covers, access holes, anchorage, cast iron ring, grate, and accessories.

B. Modular precast concrete sand interceptor sections with joint covers, access holes anchorage, cast iron ring, grate, and accessories.

C. Injection molded thermoplastic hydromechanical grease interceptors with covers, access holes, and accessories.

1.02 RELATED SECTIONS

1.03 REFERENCES

A. AASHTO M-105: Gray Iron Castings.

B. AASHTO M-199: Precast Reinforced Concrete.

C. ASTM C-923: Resilient Connectors between Reinforced Concrete Structures and Pipes.

1.04 SUBMITTALS FOR REVIEW

A. Product Data: Provide ring & covers, component construction, features, configuration, and dimensions.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 GENERAL REQUIREMENTS

A. Grease and sand interceptors are required as pre-treatment before discharging into the sanitary sewer system from car washes, automobile service stations, any non-residential facility with a floor drain, and all non-residential food preparation facilities. Follow Chapter 10 of the International Plumbing Code. Grease interceptors, indoor and outdoor, shall be sized by the applicant, and a sizing certification from a professional engineer shall be provided to the City upon request.

1. Standard Grease Interceptors (outdoor, gravity):
   a. Grease interceptors are required on all new non-residential building construction or retrofits which include food preparation and serving areas
   b. A sampling manhole shall be located below the downstream outlet.
2. Hydromechanical Grease Interceptors (HGIs) (outdoor)

a. When approved by the City Engineer, approved HGIs may be used in low-grease/fat food service applications with less than 8 total fixture unit equivalents.
b. HGIs shall be properly sized EnduraXL models by Canplas Industries or approved equivalent.
c. Must include a separate sampling manhole or built in port that can be used for sampling.

3. Indoor Grease Interceptors
a. For retrofit or remodel commercial construction, when approved by the City, an indoor Big Dipper Grease Interceptor system (or approved equivalent) may be installed inside the building.
b. Indoor grease interceptors will only be approved when, in the opinion of the City, space constraints make outdoor interceptors impractical or infeasible.
c. Access shall be provided upon request to City personnel for system inspection.

B. The Contractor shall furnish and install watertight cast-in-place or precast concrete grease interceptors and sand interceptors as required by the City Engineer or City Officials.

C. Grease interceptors and sand interceptors shall be furnished complete with cast iron rings and covers.

D. Design of grease/sand interceptors and grease traps need to be approved by City Engineer.

E. Flow Channels

1. The flow channel through Grease interceptors shall conform with the slope of the sewer.
2. Adjacent floor area should drain to the channel with the minimum slope of 1 inch per foot.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturers:

1. Amcor
2. Geneva Pipe
3. Dura-crete

B. Grease interceptor Sections and sand interceptor: Reinforced precast concrete in accordance with AASHTO M-199 with gaskets in accordance with ASTM C923.

C. Mortar and Grout: Type S.

2.02 COMPONENTS

A. Standard Grease Interceptors

1. Outdoor gravity grease interceptors shall have a minimum of two compartments.
2. The minimum size for grease interceptors shall be 750 gallons, unless otherwise approved.
3. Wall Sections to be designed to meet ASTM C913 with AASHTO HS-20 loading:
a. Interceptors shall be constructed of 6" thick precast reinforced concrete. Box size to be 3-foot by 3-foot and the height as shown on plans. Provide grade rings as needed.

b. Grease interceptor shall be designed to meet ASTM C-857 “minimum structural design loading for underground precast concrete utility structures. Provide grade rings as needed.
c. All joint surfaces of precast sections and the face of the walls, base, and grade rings shall be thoroughly cleaned and wet prior to setting precast sections.
d. All joints including grade rings shall be set in mortar consisting of 1 part cement and 1 ½ parts sand with sufficient water added to bring the mixture to workable consistency, or the joints shall be sealed with butyl rubber gasket that is permanently flexible and non-shrinking, similar to Brandt No. 95 Cold Weather Vault Sealant.

4. Lid and Frame
a. All iron castings shall conform to the requirements of H-20 loading for grey iron castings.
b. Rings and grates shall have machined bearing surfaces and a minimum cover weight of 150 pounds and minimum ring weight of 233 pounds.
c. The foundry name, year of manufacture, and “SEWER”shall be marked on the cover.
d. All Grease interceptor and clean-out box rings shall be carefully set to the grade as shown on the approved drawings or as directed by the Engineer.
e. Grate covers shall be so installed to be within 1/4" below the finished surface.
f. A concrete ring 12" wide and 8" thick will be poured around lid in accordance with Section 03304.

2.03 CONFIGURATION

A. Shape: rectangular.

B. Design Size: design criteria to be submitted to the City Engineer for review.

C. Clear Grate and Lid Opening: 24 inches diameter.

D. Pipe Inlet and Outlet: Pipe inlet and outlet to be grouted to eliminate infiltration and leakage.

PART 3 EXECUTION

3.01 PLACING CONCRETE SECTIONS

A. Place base pad, trowel top surface level.

B. Place Grease interceptor or sand interceptor plumb and level, trim to correct elevations, anchor to base pad.

C. Cut and fit for pipe as required.

D. Grout base of shaft sections to achieve slope to exit piping.

E. Provide grade rings and Trowel smooth. Contour as required.

F. Set cover frames and covers level without tipping, and to correct elevations.

3.02 SCHEDULES

A. Grease interceptors and sand interceptors: Precast concrete sections, copolymer polypropylene plastic steps, to depth indicated, with tamper proof lid.

END OF SECTION

SECTION 02660

PIPELINE TESTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing requirements for potable and non-potable water piping systems and sanitary sewers.

1.02 DEFINITIONS

A. Leakage: The quantity of water required to maintain the specified hydrostatic test pressure after the pipeline has been filled with water and the air expelled.

B. Non-rigid Pipe: Any pipe which requires bedding and backfill material for structural support.

1.03 SUBMITTALS

A. Pipeline Test Report: Include the following items:

1. Type of test
2. Identification of pipe system
3. Size, type, location and length of pipe in test section
4. Test pressure and time
5. Amount of leakage versus allowable
6. Date of test approval
7. Signature of test supervisor
8. Signature of the City Engineer, Inspector, or City Water Superintendent witnessing and approving the test
9. One copy of video tape

1.04 PROJECT CONDITIONS

A. After construction of sanitary or storm sewer lines, they shall be thoroughly cleaned, tested for leakage and alignment, and closed circuit television inspected in the presence of the City Engineer or the City Inspector before acceptance by the City. If directional drilling or underground boring takes place after sewer and/or storm drain lines have been installed, inspected, and tested, the sewer and/or storm drain lines near the drilling/boring shall be inspected a second time with a closed circuit television inspection per Section 2660 - 3.09.

B. Repair pipeline system at no additional cost to City until it passes subsequent retesting.

C. Recording Equipment:

1. Supply all necessary equipment to perform pressure testing.
2. Secure City's approval of pressure gages.
3. Locate all gages and recording equipment away from affects of sunshine or other weather conditions.
4. Place, vents, pressure taps and drains for the test. Repair pipeline at the completion of the test at no cost to City.

PART 2 PRODUCTS

2.01 TESTING MATERIALS

A. Medium: Water or air, as required by test.

B. Equipment: Temporary motors, pumps, pumping apparatus, pressure gages, connections, power, etc. for making the tests.

PART 3 EXECUTION

3.01 PREPARATION

A. Notify City Engineer or City Water Superintendent 48 hours in advance of test.

B. Carry out tests as pipeline construction progresses to ensure construction methods are producing satisfactory results.

C. Disinfect potable water pipelines per Section 2675 prior to pressure testing if connected to an existing system.

3.02 PRESSURE TESTING FOR PRESSURIZED WATER PIPELINES

A. Test shall be performed only after the pipeline has been properly filled, flushed, and purged of air. Provide air release taps at points of highest elevations as needed before testing. Insert permanent plugs after test has been completed. The test pressure shall be applied by means of an approved and disinfected pumping assembly connected to the pipe in a manner satisfactory to the City.

B. The test pressure shall not exceed the thrust restraint design pressure or 50 psi in excess of the pressure class of the pipe, fittings, or valves, whichever is less (as specified by the manufacturer). During the tests, the system and any exposed pipe, fittings, valves, and hydrants shall be carefully examined for leakage.

C. Test pressure and duration: The duration of the hydrostatic test shall be 2 hr. The hydrostatic test pressure shall be set to 50 psi in excess of the lowest class rating of any pipe, saddle, fitting, or valve within the section being tested at the highest pressure along the test section. The test pressure shall not vary by more than 5 psi (plus or minus) for the duration of the test. If necessary, the test pressure shall be maintained by additional pumping during the 2 hr test duration. The pressure reading shall be noted every 10 minutes during the test.

D. The testing allowance: The testing allowance shall be defined as the quantity of water that must be supplied to the pipe section being tested to maintain a pressure within 5 psi of the specified hydrostatic test pressure. The quantity of water shall be accurately measured in gallons by suitable methods. No installation will be accepted if the quantity of makeup water is greater than that determined by the formula:

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

Where:
Q = quantity of makeup water in gallons per hour
L = length of pipe section being tested, in feet
D = nominal diameter of pipe, in inches
P = average test pressure during the hydrostatic test, in pounds per square inch (gauge)

E. Provide suitable means for determining water lost by leakage under the test pressure.

F. Locate and repair the defective elements and retest until the leakage is within the specified allowance.

G. Repair any noticeable leakage even if total leakage is less than allowable.

H. Service Lines:

1. Potable water service lines shall be connected to a potable water line before disinfection and bacteriological testing of the line is completed in accordance with Section 2675 Part 3.06, unless the service line needs to remain active during a replacement project, or as otherwise approved by the City Engineer. Service lines must be flushed in accordance with Section 2675 Part 3.06.
2. All service lines shall be pressure tested up to the curb stop in accordance with this section.
3. The connection between the water meter box and curb stop shall be either pressure tested in accordance with the guidelines in this section or visually inspected for leaks once the working water pressure is turned into the service line.

3.03 ALIGNMENT AND GRADE TEST

A. No variance will be allowed from line and grade in excess of 1/32" per inch of pipe diameter or ½" maximum provided that such variation shall not result in a level or reverse sloping invert.

B. Variations in invert elevations between adjoining ends of pipe due to eccentricity of joining surface and pipe interior surface shall not exceed 1/64" per inch of pipe diameter, or ½" maximum.

3.04 OBSTRUCTION TEST

A. Visually examine pipe internally for obstructions by use high power light or mirror.

B. When required by the City Engineer, a round incompressible mandrel 1" less in diameter than the internal pipeline diameter and 2 times the diameter in length will be passed through the pipeline.

3.05 NON-RIGID PIPE DEFLECTION TEST

A. When required by the City Engineer, test installed sections of non-rigid pipeline to ensure that circumferential deflection does not exceed 5 percent of the average inside diameter using a rigid mandrel with a circular cross section pulled through the pipe by hand.

3.06 INFILTRATION TEST

A. No pipe section will be accepted if the infiltration rate exceeds 100 gallons per inch diameter per mile per 24 hours.

3.07 FLUSHING OF SANITARY SEWERS

A. All sanitary sewer lines shall be flushed and cleared prior to acceptance by the City.

B. Flushing:

1. Laterals and trunk lines shall be flushed by water with a high pressure sewer jet to remove all foreign material. Flushing shall be completed prior to television inspection.

2. All debris located at the bottom of each manhole shall be removed. Dirt grease, sand, and gravel shall be removed so that the walls of the sewer pipe can be inspected.
3. Wastewater and debris shall not be permitted to enter sewer lines in service, but shall be removed at the lowest manhole of the extension.
4. Other methods of cleaning may be used upon approval of the City Engineer.
5. After the lines have been thoroughly cleaned, they shall be tested between all manholes for displacement.

3.08 LEAKAGE TESTS FOR SANITARY SEWERS

A. General Requirements:

1. The contractor shall test all sanitary sewers by means of an exfiltration test.
2. Length of line tested at one time shall be limited to the length between adjacent manholes.

B. Testing with Water:

1. Each section of the sewer shall be tested between successive manholes by closing the lower end of the sewer to be tested and the inlet of the upper manhole with stoppers.
2. The pipe and manhole shall be filled with water to a point approximately 4-feet above the invert of the sewer at the center of the upper manhole.
3. The allowable leakage will be computed by the formula:

$$E = 0.25\ D\ H$$

Where: E = Allowable leakage in gallons per minute per 1000 feet of sewer tested.
D = Internal diameter of the pipe in inches.
H = Difference in elevation in the water surface in the upper manhole and the invert of the pipe at the lower manhole (feet).

4. Leakage from the sewer, as shown by the test, which exceeds that allowed by the formula will be corrected by the Contractor to reduce the exfiltration to within permissible limits.
5. Where the difference in elevation between inverts of adjacent manholes exceeds 10-feet, the exfiltration leakage test will be modified as directed by the City Engineer.
6. House surface laterals shall be considered part of the main sewer to which they are connected and shall be tested with the main line sewer.

C. Testing with air:

1. Air pressure may be used in lieu of the water exfiltration test subject to the approval of the City Engineer.
2. The low pressure air test shall be conducted by the following method under the direction of the City Engineer or City Inspector with equipment equal to Cherne Industrial, Inc.
3. All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral extensions.
4. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs. One of the plugs shall have three hose connections. Air for inflation of the triple connection pneumatic plug shall be supplied through a factory-equipped control panel. There shall be three hose connections from the control panel to the pneumatic plug. One hose shall be used for inflation of the plug. The second hose shall be used for continuously reading the air pressure in the sealed line. The third hose shall be used for introducing low pressure air into the sealed line.
5. There shall be a 3-1/2" or larger diameter, 0.30 psig gauge mounted on the control panel for reading of the internal pressure in the line being tested. Calibrations from the 0-10 psig range shall be in tenths of pounds and the 0-10 psig portion shall cover 90% of the complete dial range.

6. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any ground water that may be over the pipe.
7. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psig minimum pressure in the pipe), the third hose shall be disconnected from the control panel.
8. The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following tables:

PIPE DIAMETER (Inches)	MINUTES
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

9. If the installation fails to meet this requirement, the Contractor shall determine at his own expense the source of leakage.
10. The Contractor shall repair or replace all defective materials and/or workmanship.
11. Pressure test concrete sewer manholes by the negative air pressure (vacuum) test as per ASTM C1244.

3.09 CLOSED CIRCUIT TELEVISION INSPECTION

A. Contractor shall inspect the sewer and storm drain lines with a color television camera. The camera test shall be supervised and witnessed by the City Engineer or the City Inspector and shall be done as follows:

1. The lines, ~~and~~ lateral connections, and sewer laterals from the main line to the City sewer cleanout will be televised at the cost of the Developer until the lines are accepted by the City.
2. The camera shall have “PAN and TILT” capability for detailed wall, joint, and service inspection. The camera shall be pulled through the sewer line or propelled with a tractor.
3. The light intensity and camera focus shall be adjusted to obtain a good clear picture at all times.
4. The operator shall control the travel speed of the camera so that the walls of the pipe can be clearly viewed. The speed shall not be greater than 20 feet per minute. The operator shall stop and inspect each service, obstruction, or pipe deformation. Locations of each shall be noted and included in the final Inspection Report.
5. Defects such as high and low spots, joint separations, offset joints, chipped ends, cracked or damaged pipe, infiltration points and debris in lines shall be corrected . The maximum acceptable limits for 8 to 10 inch pipes are: 0.25 inches for joint separations, 0.5 inches for low spots, and 0.25 inches for chipped ends.
6. A flat or reverse grade will not be acceptable.
7. If the pipeline is found unacceptable, the problem shall be corrected by the contractor and re-televised.
8. The television inspection process shall be done immediately after running water in the pipe and no visible discharge occurs at the downstream manhole.
9. Television inspection must be scheduled with the City at least one (1) week in advance of inspection.

10. A typed log of the closed circuit television inspection with a digital ~~CD/DVD~~ video on a USB drive shall be turned over and become the property of the City. The Inspection Report shall contain the following:
    a. Location of sewer line and direction of flows
    b. Connecting manhole numbers with starting and ending manhole
    c. Manhole condition, flowline condition, and cover conditions
    d. Pipeline size, material, and condition, with defect locations noted from center of manhole
    e. Location of services located as to distance from center of manhole
    f. Date of inspection, name of contractor, and signature of operator/logger
11. After cleaning and inspection have been completed and any defects are corrected and accepted, the lines shall be tested for leakage by methods discussed in Section 3.08.

3.10 PIPE TESTING SCHEDULE

A. Irrigation:

1. Alignment and grade test
2. Pressure test
3. Operational Testing:
    a. Perform operational testing after hydrostatic test is complete, backfill is in place and sprinkler heads adjusted to final position.
    b. Demonstrate system meets coverage requirements and automatic controls function properly.
    c. Coverage requirements are based on operation of 1 circuit at a time.

B. Sanitary Sewers:

1. Displacement test
2. Pressure test for gravity pipeline systems
3. Pressure test for pressure pipeline systems
4. Video test for sanitary sewers
5. Pressure test manholes

C. Subdrains:

1. Alignment and grade test
2. Obstruction test
3. Non-rigid pipe deflection test (if applicable)

D. Storm Drains:

1. Alignment and grade test
2. Obstruction test
3. Non-rigid pipe deflection test (if applicable)
4. Pressure test for pressure pipeline systems
5. Video test for storm drain per 1.04 Project Conditions paragraph A

E. Potable Water System:

1. Obstruction test
2. Bacteria test
3. Pressure test
4. If pressure test fails and line is repaired, the bacteria test shall be repeated.

END OF SECTION

SECTION 02668

WATER TRANSMISSION AND DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings for culinary water line.

B. Valves, fire hydrants and water meters.

1.02 RELATED SECTIONS

A. Section 02205: Common Fill.

B. Section 02206: Select Fill.

C. Section 02225: Excavating and Backfill Operations.

D. Section 02250: Soil Compaction.

E. Section 02660: Pipeline Testing.

F. Section 02675: Disinfection.

G. Section 03300: Cast-in-Place Concrete: Concrete for thrust restraints.

1.03 REFERENCES

A. ASME B16.18: Cast Copper Alloy Solder Joint Pressure Fittings.

B. ASME B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

C. ASTM B88: Seamless Copper Water Tube.

D. ASTM D2241: Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).

E. ASTM D2855: Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and fittings.

F. AWWA C104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

G. AWWA C105: Polyethylene Encasement for Ductile Iron Piping for Water and Other liquids.

H. AWWA C110: American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids.

I. AWWA C111: Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings.

J. AWWA C151: Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.

K. AWWA C500: Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems.

L. AWWA C502: Dry Barrel Fire Hydrants.

M. AWWA C504: Rubber Seated Butterfly Valves.

N. AWWA C600: Installation of Ductile-Iron Water Mains and Appurtenances.

O. AWWA C900: Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water.

P. AWWA C906: Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In. for Water Distribution and Transmission

Q. UL 246: Hydrants for Fire - Protection Service.

1.04 SUBMITTALS

A. Prior to construction, submit 6 copies of the manufacturers specification for all products to the engineer for approval.

1.05 SUBMITTALS AT PROJECT CLOSEOUT

A. Record and submit actual locations of piping, valves, connections, thrust restraints, and invert elevations.

B. Identify and describe unexpected variations in subsoil conditions or utilities.

1.06 SPECIAL REQUIREMENTS & CONSIDERATIONS

A. All materials which may contact drinking water, including pipes, gaskets, lubricants, and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components – Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

B. Pipe, joints, fittings, valves, and fire hydrants shall conform to applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

C. All pipe materials and fittings shall be “lead free” in accordance with Section 1417 of the Federal Safe Drinking Water Act. They shall be certified as meeting ANSI/NSF 372 or Annex G of ANSI/SNF 61.

PART 2 PRODUCTS

2.01 DUCTILE IRON WATER PIPE

A. Ductile Iron Water pipe shall be Class 50 for slip-on joint piping (Class 51 for 4-inch size) and Class 53 for mechanical joint and flanged joint piping.

B. All piping shall conform to AWWA Specification C151 of the latest revision.

C. Pipe joints shall be the push-on rubber gasket type of mechanical joint type with rubber gaskets conforming to AWWA C111 of latest revision or flanged connections conforming to AWWA C115 of latest revision.

D. All Ductile Iron Pipe wall thickness shall conform to AWWA C150.

E. Fittings: Fittings shall conform to AWWA Specification C110, or C153 and shall have mechanical, flanged or push-on rubber gasket joints.

F. Coatings and Linings for Ductile Iron Pipe:

1. All exterior surfaces of pipe and fittings shall be coated with hot coal tar approximately 1 mil thick or polyethylene encasement (AWWA C105) when soils conditions require additional protection.
2. All interior surfaces of pipe and fittings shall be coated with the standard thickness cement mortar lining in conformity with the requirements of AWWA C104

G. Markings:

1. Pipe markings shall include the following, marked continuously down the length:
   a. Manufacturer's Name
   b. Nominal Size
   c. Class Pressure Rating
   d. NSF Logo
   e. Identification Code

2.02 POLYVINYL CHLORIDE PIPE (PVC)

A. All PVC pipe used for transmission lines shall be AWWA C900, DR-18 or as determined by the City Engineer. All PVC pipe used for secondary irrigation lines shall be AWWA C900, DR-18 Purple pipe or as determined by the City Engineer.

B. Conformance: All PVC pipe shall conform to the latest revisions of the following specifications:

1. AWWA Spec. C900 (PVC pressure pipe for water)
2. ASTM Spec. D-2241 (Dimensions, Class, SDR, and tolerances)
3. National Sanitation Foundation Testing Laboratories (NFS)
4. Rubber Gasketing shall conform to ASTM F477
5. Joints in compliance with ASTM D3139

C. Pipe Dimensions:

1. Standard lengths shall be 20 feet.
2. Wall thickness shall be in accordance with ASTM d-2241.
3. Pipe ends shall be beveled to accept the gasketed coupling (4" and larger).

D. Couplings and Fittings:

1. For pipelines over 2 inches in diameter, ductile iron fittings in conformance with AWWA C110 or C153 shall be used on PVC pipelines and shall have mechanical, flanged or push-on rubber gasket joints.
~~1.~~ 2. Under certain design conditions with prior approval from City Engineer, single or dual bolt mechanical joint restrained fittings may be used. Fittings must be an integral, full circumferential, stab-fit, mechanical restraint system to provide a fully restrained and pressure rated connection on plain end pipe. Connection shall maintain a restrained, tight seal under applied operating pressures. Center Ring, End Ring(s), Bolt Guide(s) and Grippers are cast ductile iron, meeting or exceeding ASTM A536, Grade 65-45-12. Center Ring is fusion bonded epoxy certified and listed to ANSI/NSF 61 & 372. Gaskets are compounded for water and sewer service to ASTM D2000, certified & listed ANSI/NSF 61 & 372. Draw Hooks, Bolt(s) and Nut(s) are Type 304 stainless steel with epoxy or anti-galling coatings. All Couplings and Flange Coupling Adapters shall be Romac ALPHA Restraint or approved equal.
~~2.~~3. Where PVC fittings or couplings are used, they shall be furnished by the pipe manufacturer and shall accommodate the pipe for which they are to be used.
~~3.~~4. They shall have a minimum pressure rating of 200 psi.

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4.5. Insertion depth of the pipe in the coupling shall be controlled by a gauge mark or mechanical stop in the coupling which will allow for a thermal expansion and contraction.

E. Lubrication: Lubrication shall be water soluble, non-toxic, be non-objectionable in taste and odor imparted to the fluid, be non-supporting of bacteria growth, and have no deteriorating effect on the PVC or rubber gaskets.

F. Concrete Blocking:

1. All fittings at bends and branches in water pipe lines shall be provided with concrete thrust blocking as shown on the Standard Drawings in addition to mechanical restraints.
2. All bolts shall be greased and bends will be wrapped with 8 mil plastic.
3. Blocking shall be of concrete specified in Section 03300, poured in place and shall bear against solid undisturbed earth at the sides and bottom of the trench excavation and shall be shaped in order to not obstruct access to the joints of the pipe or fitting.
4. Blocking is required under all fittings on pipelines of 4 inches in diameter and greater.

2.03 HIGH-DENSITY POLYETHYLENE (HDPE)

A. HDPE pipe shall only be used under certain design conditions with prior approval from City Engineer. All HDPE pipe used for culinary water transmission lines shall be AWWA C906, DR-11 with blue stripe or as determined by the City Engineer. All HDPE pipe used for secondary irrigation lines shall be AWWA C906, DR-11 with purple pipe or as determined by the City Engineer.

B. Conformance: All HDPE pipe shall conform to the latest revisions of the following specifications.

1. AWWA Spec. C906 (Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission).
2. A ASTM D-2239 (Standard Spec for Polyethylene (PE) Plastic Pipe), ASTM D2737, ASTM D3035, and F714 (PVC plastic pipe SDR-PR and Class T).

G. Pipe Dimensions:

1. D.I.P.S shall be used unless otherwise stated.
2. Standard lengths shall be 40 or 50 feet.

2.04 GATE VALVES

A. Gate valves shall be used for all applications. In cases where there is limited vertical clearance or when the operating nut of the gate valve would be less than three (3) feet from the surface, horizontal gate valves shall be used.

B. Furnish gate valves that conform to the requirements of AWWA C509.

C. Operating Direction: Open counterclockwise.

D. Buried Valves: Unless otherwise shown or specified, in line valves shall be of Mechanical Joint connection design for buried service. Flange connections shall be used connecting valves to tees or crosses for buried service.

E. Buried Valves shall have 2" operation nuts.

F. Horizontal gate valves shall have 2:1 beveled gear reduction, unless otherwise approved by the City Engineer.

2.05 BUTTERFLY VALVES

A. Material, in accordance with AWWA C504.

B. Body Type:

1. Valves shall be high strength cast iron ASTM A-126, Class B with 18-8 Type 304 stainless steel body seat.
2. Valve vane shall be mechanically secured with an integral 18-8 stainless steel clamp ring and 18-8 stainless steel nylon locked screws.
3. If mechanical joints are used, the installation shall be per AWWA Specification C111 and accessories (bolts, glands, and gaskets) shall be included.
4. All butterfly valves shall be of the rubber-seated tight-closing type. The rubber seat shall be a full circle 360° seat not penetrated by the valve shaft.

C. Valve Shafts:

1. The valve shaft shall be one piece extending full size through the entire valve and operator with no neckdown, keyways, or holes to weaken it.
2. The valve shaft shall have 304 stainless steel journals rotating in reinforced Teflon bearings.
3. Valves shall have permanently set two-way thrust bearing.
4. Packing shall be “triple-seal” rubber designed for permanent duty in underground service.

D. All valves shall have stainless bolts and zinc coated stainless steel nuts.

E. Flange connections shall be used connecting valves to tees or crosses for buried service.

2.06 VALVE BOXES

A. All buried valves shall be installed with cast iron, 2 piece, sleeve type, with an expanded bell base, 5 1/4 inch shaft valve boxes.

B. All valve nut extensions shall be pinned or otherwise locked to the valve nut.

2.07 TAPPING SADDLES / SLEEVES

A. For tapping saddles used for service connections to plastic pipe, provide full circle saddles. For all other pipe provide double strap bronze alloy, ductile iron, or stainless steel saddles.

B. Provide tapping saddles that have a minimum rated working pressure of 300 psi, neoprene Buna N gaskets, and bronze tapered threads.

C. When approved by Heber City, tapping sleeves may be used for fire lines or other branch branch connections. Tapping sleeves shall be ROMAC Industries SST (or approved equivalent). Tapping sleeves shall not be used for size-on-size applications. The branch line must be at least one nominal pipe size less than the line being connected to. Bricks shall be used for support, not wood shims or any other material.

2.08 SERVICE CONNECTIONS

A. Provide and install according to standard drawings.

B. Service Pipe:

1. Provide single length Polyethylene pipe (copper tube size) with compression fittings. Copper services are not allowed.
2. Locate service taps in the upper quadrant of the main line, approximately at 45 degrees. The minimum distance between taps is 24", with a 5 degree stager. Do not make service taps within 24" of the end of the main line.
3. Service saddles are required on all taps unless indicated otherwise. All water main saddles must be installed with a torque wrench to the torque setting found on the informational tags attached to the saddle body.
4. In subdivision developments, the contractor shall be responsible to furnish and install the corporation type stop and laterals to a point on private property 10 feet past the street right-of-way line.

5. No splices in water services for new service and relocation unless approved by City Engineer.

~~5.~~6. Service lines shall be capped until connected for service.

C. New Meter Boxes: Thermal-Coil Meter Assembly. See the Appendix for alternatives. Existing Meter Box Repairs: Double walled plastic can with ring and cover of sufficient strength to withstand H-20 loadings without damage.Meter Boxes are allowed within the driveway "zone" with prior approval from the Public Works Department. The driveway "zone" shall include the flared driveway approach including five feet either side from the top of the flare. All retrofit of meter boxes within the driveway "zone" shall include shear support at the bottom of the meter box and shall be flush with the concrete surface.

D. Meter Setters: Series 70 manufactured by Ford or Mueller.

E. Service connections greater in size than 2" shall follow the Compound Meter with 2" Bypass details in the latest version of the APWA Standard Plans & Specifications published under the direction of the Utah Chapter of the American Public Works Association. For details on specific meter requirements, contact the Heber City Public Works Department.

F. All materials to be supplied by the Contractor, except for the meter.

2.09 HYDRANT

A. In accordance with AWWA C502 and pattern approved by Owner.

B. 6-inch cast iron hydrant as manufactured by Mueller Centurion 250, Waterous – Model # WB-67-250, or Clow Medallion.

C. Cast-Iron Body Fire Hydrant: Compression type, opening against pressure and closing with pressure, base valve design, 150 psi working pressure, with 1/4" diameter minimum tapping and bronze plug in standpipe.

1. Size: Minimum 5 1/4" valve opening
2. Direction to Open Hydrant: Left
3. Size and Shape of Operating and Cap Nuts: Pentagon 1-1/2" point to flat
4. Hose Nozzles: Two 2-1/2" National Standard Thread, cap, gasket and chain
5. Pumper Nozzles: One 4-1/2" National Standard Thread, cap, gasket and chain
6. Depth of Cover: 5'-0" to top of pipe unless indicated otherwise
7. Connection to Main: O-ring seals and a 6" ASA 125 pound flanged inlet
8. Pressure: Designed for a working pressure of 175 psi and a hydrostatic pressure of 350 psi.
9. Bottom connection: 6" flanged. Designed to allow the flanges at the sidewalk level to separate when hydrant is sheared off.
10. Automatic drain: Opens as the hydrant is closed.

11. Hydrants shall be provided by the manufacturer with a factory applied red coating. Field painting of hydrants shall not be allowed.

D. Mechanical joint or flanged in accordance with AWWA C110 and AWWA C111.

2.10 FIRE SERVICE

A. All fire service shall be a minimum 3" ductile iron pipe.

B. All fire services are required to install a gate valve at the main line connection and a RP double check backflow valve immediately inside the building. Tracer wire shall be installed along entire length of fire service.

2.11 BACKFLOW PREVENTORS

A. All irrigation lines connected to culinary system shall have RP backflow devices with 3 chambers, and above ground air release with an air gap.

B. All backflow preventers shall be tested by a certified backflow technician, and a passing test report will need to be provided to the City.

2.13 HARDWARE, ACCESSORIES & BOLT PACKS

A. All hardware, bolt packs, etc. to be buried shall be greased with food grade FM grease and wrapped in 8 mil (min) plastic secured in place using heavy duty adhesive tape.

A. All hardware, piloting, bolt packs, etc. to be exposed (including in manholes and vaults) shall be Stainless Steel unless otherwise approved by the City Engineer.

PART 3 EXECUTION

3.01 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.02 BEDDING

Refer to Section 02225

3.03 INSTALLATION – PIPE & FITTINGS

A. The bottom of the trench shall be cut flat, true and even to provide uniform bearing for the full length of the pipe barrel.

B. Under no circumstances shall pipe or accessories be dropped into the trench.

C. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with adjoining pipe to prevent sudden offsets.

D. Pipe bedding and trench backfill shall be as defined in the previous sections.

E. Install fittings, valves, etc., without the use of repair sleeves unless otherwise approved by the Public Works Director. Cut-in fittings, valves, etc., shall be installed with the use of Mechanical Joint by Flange adapters (or other means as necessary) to eliminate the need for repair sleeves.

F. As work progresses, interior of pipe shall be cleared of dirt and other superfluous materials.

G. Trenches shall be kept free from water until pipe jointing has been completed. Pipe shall not be laid when condition or trench or weather is unsuitable for such work.

H. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed so that no water, earth, or other substance will enter pipe or fittings.

I. Maintain separation of water main and services from sewer piping in accordance with Utah State Code.

J. Install pipe to indicated elevation to within tolerance of 5/8 inches.

K. Install ductile iron piping and fittings to AWWA C600.

L. Route pipe in straight line.

M. Install pipe to allow for expansion and contraction without stressing pipe or joints.

N. Install access fittings to permit disinfection of water system performed under Section 02675.

O. Slope secondary irrigation water pipe and position drains at low points. Drains shall discharge into storm drain system or other stream course that will not adversely impact adjacent properties.

P. Form and place concrete for thrust restraints at each elbow, change of direction, or dead end of pipe main.

Q. Install mechanical joint restraints approved by Heber City at all bends, branches, or dead ends.

R. Establish elevations of buried culinary piping to ensure not less than 5 feet of cover.

S. Establish elevations of buried irrigation piping to ensure not less than 2 feet of cover. Elevation of buried irrigation piping shall be set to match the design elevations and slopes identified in the plans. Survey cut stakes shall be utilized and followed when installing irrigation piping.

T. Install metallic tape continuous over top of pipe buried 12 inches above pipe line.

U. Backfill trench in accordance with Section 02250.

V. Handling Ductile Iron Pipe

1. Pipe and fittings shall be handled in such a manner as to insure installations in sound, undamaged condition.
2. Particular care shall be taken not to injure the pipe coating and lining. Cement lining in pipe or fittings which is broken or loosened shall be cause for rejection of pipe or fittings.
3. All damaged pipe coating shall be repaired, prior to laying pipe or placing backfill.
4. Repair shall be accomplished by removing all damaged coating, wire-brushing to exposed metal, and applying two coats of coal tar coating of a type and quality to that originally in coating the pipe.

W. Cutting, Cleaning and Inspection

1. Cutting of pipe for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method which will not damage the pipe.
2. Before installation, each pipe shall be inspected for defects.
3. All defective, damaged or unsound pipe shall be rejected.

X. Location of Stub Pipes

1. The location of each stub shall be marked by placing a 2 x 4 marker at the end of the pipe and extending vertically from the end of the pipe to approximately 15 inches above the ground surface.
2. The portion of the 2 x 4 extending above ground, shall be painted as follows:
   a. Green - indicating sewer stub
   b. Blue - indicating water

3.04 INSTALLATION - VALVES AND HYDRANTS

A. Set valves on solid bearing.

B. Locate valves on property lines, at each intersection, and not more than 500 feet between.

C. Center and plumb valve box over valve. Set box cover flush with finished grade with concrete collar as per standard drawings.

D. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.

E. Valves located next to fittings shall be connected via flange x flange joints.

F. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

G. On private building fire services, a gate valve must be installed at the property line to isolate the fire service and a detector check valve must be installed where the fire line first enters the building.

3.05 INSTALLATION - SERVICE CONNECTIONS

A. The contractor or home owner must provide and install all parts according to the standard drawings.

B. The Engineer or Public Works Department must inspect the installation before burying or backfilling. The Contractor shall conform to the following requirements before a water meter shall be installed by Heber City:

1. Notify the Water Department at least five working days prior to the time the meter is to be installed and before backfilling.
2. The water lateral should be exposed in the street right-of-way one foot outside the property line, even if the lateral extends onto the property.
3. The end of the house lateral should be within 2 feet of the service lateral.
4. Both laterals should be exposed freely in the center of the excavation.
5. To prevent damage from possible freezing, the water lateral may be covered with materials such as sand, light gravel, straw, insulation, or similar light materials.
6. To establish the correct street right-of-way line, the property line pins or the sidewalk must be in place.

C. All of the above requirements must be complied with to the satisfaction of the City before the water meter will be installed.

D. A service charge will be assessed for crew time when prerequisites are not met before setting a meter. This fee must be paid before the meter installation will be rescheduled.

E. Any required re-setting of the water meter following initial installation shall be done by the City at the expense of the Developer or Contractor.

F. Place meter can in park strip or 1 foot behind sidewalk or on city side of property line, as directed by City Engineer.

G. Install setter no closer than 24" of ground surface.

H. Lids shall be flush with top of sidewalk elevation.

3.06 DISINFECTION OF CULINARY WATER PIPING SYSTEM

A. Flush and disinfect system in accordance with Section 02675.

3.07 TESTING OF WATER PIPING SYSTEMS

A. Test pipeline system in accordance with Section 02660.

3.08 TRACER WIRE INSTALLATION

A. Copper tracer wire to be installed the total length of pipeline with a branch to each tee, cross, and fire hydrant. (See Standard Drawing):

1. Copper wire should be #12 gauge single strand jacketed wire, manufactured for underground service.
2. Wire shall be continuous without breaks. Splices shall be made with petroleum filled wire nut caps.
3. Tracer Wire to be secured to top of pipe at a minimum of every Ten feet, by means other than metallic.
4. Tracer Wire should be brought up in all fire hydrants in culinary water lines, and in the first lateral of each street for pressurized irrigation (not to exceed 500 feet).

B. Perform a continuity test in the presence of the City Inspector prior to paving.

3.09 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with section 02250.

B. If tests indicate Work does not meet specified requirements, remove work, replace, and retest.

END OF SECTION

SECTION 02675

DISINFECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disinfection of potable water system.

B. Test and report results.

1.02 REFERENCES

A. AWWA A100: AWWA Standard for Water Wells.

B. AWWA B300: AWWA Standard for Hypochlorites.

C. AWWA B301: AWWA Standard for Liquid Chlorine.

D. AWWA C651: AWWA Standard for Disinfecting Water Mains.

E. AWWA C652: AWWA Standard for Disinfection of Water-Storage Facilities.

F. State of Utah: Public Drinking Water Regulations, Part 2, Section 12.

1.03 DEFINITIONS

A. Disinfectant Residual: The quantity of disinfectant in treated water.

B. ppm: Parts per million.

1.04 SUBMITTALS

A. Contractor's evidence of experience in disinfection.

B. Bacteriological laboratory's evidence of certification.

C. Disinfection Report: 3 copies including:

1. Date issued
2. Project name and location
3. Treatment contractor's name, address and phone number
4. Type and form of disinfectant used
5. Time and date of disinfectant injection started
6. Time and date of disinfectant injection completed
7. Test locations
8. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
9. Time and date of flushing start
10. Time and date of flushing completion
11. Disinfectant residual after flushing in ppm for each outlet tested

D. Bacteriological Report: 3 copies including:

1. Date issued
2. Project name and location
3. Laboratory's name, certification number, address, and phone number
4. Time and date of water sample collection
5. Name of person collecting samples
6. Test locations
7. Time and date of laboratory test start
8. Coliform bacteria test results for each outlet tested
9. Certification that water conforms or fails to conform to bacterial standards of State of Utah public drinking water regulations
10. Bacteriologist's signature

1.05 QUALITY ASSURANCE

A. Affidavit by manufacturer that disinfectant conforms to AWWA and NSF standards.

B. Bacteriological Laboratory: Certified by State of Utah.

1.06 PRODUCT HANDLING

A. Store and protect disinfectant in accordance with manufacturer's recommendations to protect against damage or contamination. Do not use unsuitable disinfectant.

B. Follow all instruction labeling for safe handling and storage of disinfectant materials.

1.07 REGULATORY REQUIREMENTS

A. Conform to State of Utah public drinking water regulations.

PART 2 PRODUCTS

2.01 DISINFECTANT

A. Liquid Chlorine: AWWA B301 with chlorine 99.5 percent pure by volume.

B. Sodium Hypochlorite: AWWA B300 with not less than 100 grams per liter available chlorine.

C. Calcium Hypochlorite: AWWA B300 with 65 to 70 percent available chlorine by weight in granular form.

D. Powder, tablet, or gas according to manufacturer's specification.

PART 3 EXECUTION

3.01 PREPARATION

A. Disinfect the potable water pipelines prior to pressure testing if connected to an existing system.

B. Unless waived by the City Engineer for retrofit/reconstruction projects, all water system components (including service connections) within the section of pipeline being tested must be complete before the testing is performed.

C. Ensure that the pipeline to be disinfected is isolated from the existing system.

D. Follow all guidelines set forth in AWWA C651.

3.02 DISINFECTION OF WATER LINES

A. Use one of the approved chlorination methods in AWWA C651.

B. Chlorination shall provide a minimum of 25 ppm residual after 24-hours contact in the pipeline. In general, this residual may be expected with an application of 50 ppm although some conditions may require more.

C. If calcium hypochlorite granules are used, granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500 foot intervals. The quantity of granules shall be shown in table below, where D is the inside diameter in feet.

PIPE SIZE (inches)	CALCIUM HYPOCHLORITE GRANULES (oz)	CALCIUM HYPOCHLORITE GRANULES (g)
4	1.7	48
6	3.8	108
8	6.7	190
10	10.5	298
12	15.1	428
14 and larger	D^2 x 15.1	D^2 x 428

D. During the process of chlorinating the pipeline all valves and other pipeline appurtenances shall be operated several times to provide sufficient contact with the chlorinating agent.

E. See Section 02660 3.02 H for requirements of potable service lines.

3.03 DISINFECTION OF CULINARY WELLS

A. Use one method defined under AWWA A100 as approved by City Engineer.

B. Do not start disinfection until well is thoroughly cleaned.

C. Use a disinfecting solution containing a minimum of 50 ppm residual chlorine.

3.04 DISINFECTION OF WATER STORAGE RESERVOIRS

A. Use one method defined under AWWA C652, as approved by City Engineer.

B. Do not start disinfection until water storage tank is thoroughly cleaned.

C. Provide and use necessary safety equipment for workers in contact with disinfectant or gasses they may produce.

3.05 QUALITY CONTROL - BACTERIOLOGICAL TEST

A. No samples for testing shall be taken sooner than 24 hours after system flushing.

B. At least one set of samples shall be collected from every 1,200 feet of new water main, plus one set from the end of the line and at least one set from each branch. Sample water at each of the following locations, as applicable:

1. Where water enters system, including each source
2. Ends of piping runs
3. Remote outlets

C. Analyze water samples in accordance with State of Utah requirements. Two (2) samples, 24 hours apart, will be taken at each location.

D. If bacteriological test proves water quality to be unacceptable, repeat system treatment.

E. Water systems shall not be accepted or placed into service until a negative bacteriological test is made on water taken. Repeat dosing as necessary until a negative test is obtained. Provide a copy of the negative bacteriological test to City Engineer.

F. The Public Works Department will perform bacteriological sampling on all new water distribution system infrastructure intended to become part of the community's water system. All locations for sampling will be determined by water department personnel. The cost for each sample will be billed to Developer / Contractor. Payment for testing shall be made before results will be released by the City.

3.06 FLUSHING AND DISPOSAL OF DISINFECTANT

A. After the 24 hour retention period, flush the chlorinated water from the main until chlorine measurements show the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

B. Legally dispose of disinfecting water and ensure no chlorine buildup or damage to the environment. Unless otherwise approved by the Public Works Director, disinfecting water shall not be discharged onto the ground. Disinfecting water shall normally be discharged into a holding container or water truck where the chlorine concentration level shall be brought down to an acceptable level prior to discharge per the direction of the Public Works Director through the use of de-chlorination tablets or other acceptable reducing agents.

C. Failing to flush the line may require Contractor to replace all gaskets and valves within the system at Contractor's expense.

D. Flushing shall be accomplished through hydrants or, if a hydrant does not exist at the end of the line, the Contractor shall install a tap of sufficient size to provide for a 2.5 foot per second flushing velocity in the line. When flushing water service lines, all water meter vault inlets and/or ball valves shall be flushed of all disinfectant.

E. The following flow quantity required to provide a 2.5 foot per second flushing velocity:

PIPE SIZE (In.)	FLOW (gpm)
4	100
6	220
8	390
10	610
12	880
16	1567

END OF SECTION

SECTION 02720

SANITARY SEWER AND STORM DRAIN SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The requirements for pipe material and installation in sewer and drainage collection systems. All materials and workmanship shall strictly comply with the Utah State Plumbing Code.

1.02 REFERENCES

A. Section 02660: Pipeline Testing.

B. AASHTO-291: Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

C. ASTM D 1248: Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

D. ASTM D 2239: Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter.

E. ASTM D 2321: Standard Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

F. ASTM D 2657: Standard Recommended Practice for Heat Joining of Thermoplastic Pipe and Fittings.

G. ASTM D 2774: Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.

H. ASTM D 3261: Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

I. ASTM D 3350: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

J. ASTM F 405: Standard Specification for Corrugated High Density Polyethylene (PE) Tubing and Fittings.

K. ASTM F 667: Standard Specification for Large Diameter Corrugated High Density Polyethylene Tubing and Fittings.

L. ASTM F 1055: Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.

M. ASTM C 1479: Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations.

1.03 DEFINITIONS

A. Standard Dimension Ratio (SDR): Average diameter of pipe divided by the minimum wall thickness. The diameter may be either inside or outside measurement depending upon which standard is referenced.

B. Code Designation: A rating of polyethylene pipe materials by the Plastic Pipe Institute. The designation PE 3408 designates the type of plastic pipe (PE), the grade (34), and the hydrostatic design stress measured in units of 100 psi (08).

1.04 SUBMITTALS

A. Manufacturer's affidavit certifying product was manufactured, tested and supplied in accordance with applicable references in this section together with a report of the test results and the date each test was completed.

PART 2 MATERIALS

2.01 REINFORCED CONCRETE SEWER AND STORM DRAIN PIPE

A. Reinforced concrete pipe shall be used for all sanitary sewers and storm drains where installation does not provide a cover of at least 2 feet over the top of the pipe.

B. Reinforced concrete pipe shall comply with the requirements of ASTM C76-109 with bell and spigot rubber gasket type joints for sanitary sewers and the alternate option of tongue and groove mortar joints for storm drain lines.

2.02 SUBSURFACE DRAIN PIPE

A. Pipe

1. Perforated PVC (ASTM D-1784).

2. Perforated Concrete Sewer Pipe (AASHTO M-86 & M-170).
3. Corrugated polyethylene piping (ASTM F-405-77a).

B. Bedding shall be drain rock.

2.03 PLASTIC SEWER PIPE

A. This specification covers rigid polyvinyl chloride pipe and fittings, hereinafter called PVC pipe and PVC fittings. The pipe and fittings shall meet or exceed all of the requirements of ASTM Specification D3034 and ASTM F679.

B. Samples of pipe, physical and chemical data sheets shall be submitted to the City Engineer for approval and his approval shall be obtained before pipe is purchased.

C. This pipe shall be homogeneous throughout and free form cracks, holes, foreign inclusions or other defects. The pipe shall be as uniform as commercially practical in color.

D. Physical Requirements

1. All PVC sewer pipe and fittings shall be made from clean, virgin, Type 1, Grade 1, PVC and minimum SDR-35 (PS46), conforming to ASTM resin specification D-1784. SDR-26 (PS115) or thicker (including fittings) shall be used for depths exceeding 12 ft measured from the top of the pipe, unless otherwise approved by the City Engineer.

2. All pipe joints shall be bell and spigot type with rubber ring gasket to permit expansion and contraction.

3. Pipe and fittings must be assembled with a nontoxic lubricant.

4. All pipe shall be less than 20 feet in length.

5. Spigot ends will have 15° tapered end with a memory mark around the diameter of the pipe to indicate proper insertion depth.

6. Wyes shall be of the same material as the pipe and in no case shall have thinner walls than that of the pipe furnished.

7. Sample wyes must be submitted for the City Engineer's approval and his approval must be obtained before purchase of the wyes.

2.04 HIGH DENSITY POLYETHYLENE STORM DRAIN PIPE (HDPE)

A. Smooth pipe systems

1. Material: Polyethylene code designation PE 3408 as rated in ASTM D 2239 with a minimum ASTM D 3350 cell classification of 345434C, and an SDR or pressure class rating as indicated.

2. Fittings: Manufactured of same resin as the pipe.

3. Joints:
   a. Thermally welded butt fusion in accordance with ASTM D 3261.
   b. Flanged in accordance with ASTM D 2657.
   c. Ultra high molecular weight electrofusion tape with a polyethylene coupler meeting ASTM F1055 requirements.
4. Nuts and Bolts: Carbon steel machined heavy hex heads, Class 2 fit in accordance with ASTM A 307; Grade B, threads in accordance with ASME B1.1 Tape wrap steel materials for protection against corrosion after piping installation.

B. Corrugated Pipe Systems

1. Material: "High density polyethylene pipe shall be smooth lined and meet the requirements of AASHTO M294 Type S."
2. Material: Polyethylene, in accordance with ASTM F 405 or ASTM F 667, Type III, Category 4 or 5, Grade P33, Class C, or Grade P34, Class C as defined by ASTM D 1248.
3. Material: Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1
4. Fittings: Manufactured of same resin as the pipe
   a. Polypropylene fittings shall conform to ASTM F2881 or AASHTO M330. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.
5. Joints: Bell and Spigot Type
   a. Polypropylene joints shall be joined using bell & spigot joints meeting the requirements of ASTM F2881 or AASHTO M330. The joint shall be watertight

according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477.

C. Pipe Markings

1. Mark pipes continuously to identify:
   a. Manufacturer's name (or trade mark) and code.
   b. Nominal size.
   c. Polyethylene code designation.
   d. SDR rating. (Not applicable to corrugated polyethylene.)
   e. Date of manufacture.
   f. Pressure class. (Not applicable to corrugated polyethylene.)
   g. ASTM or AWWA designation number.

2.05 SEWER LATERAL CONNECTIONS

A. All sewer lateral connections to new sewers shall be through preformed wyes.

B. Connections to existing sewers will be done with a sewer tapping machine as shown in Standard Drawings and use a Romac CB sewer saddle. “Inserta Tee” may be used only with prior approval from the Public Works Director and only on sewer laterals 10” and larger. All installations of “Inserta Tee” must be witnessed, inspected, and certified by authorized City agents.

C. Sewer laterals and fittings shall be constructed of a minimum of SDR 35 PVC. When SDR 35 PVC is used, a poured-concrete support, at least 4-inches thick and at least 4-inches beyond the sides of the fitting, shall be placed under the wyes. SDR-26 PVC shall be used for depths exceeding 12 ft, measured from the top of pipe, unless otherwise approved by the City Engineer. All laterals shall have a minimum size of 4-inches.

PART 3 EXECUTION

3.01 PIPE LAYING

A. All sewer pipe installation shall proceed up grade on a stable foundation with joints closely and accurately fitted.

B. Gaskets shall be fitted properly in place and care shall be taken in joining the pipe units to avoid twisting of gaskets.

C. Joints shall be clean and dry and a joint lubricant, as recommended by the pipe supplier, shall be applied uniformly to the mating joint surfaces to facilitate easy positive joint closure.

D. If adjustment of position of a pipe length is required after being laid, it shall be removed and rejointed as for a new pipe.

E. When laying is not in progress, the ends of the pipe shall be closed with tight fitting stopper to prevent the entrance of foreign material.

F. In addition to the above requirements all pipe installation shall comply to the specific requirements of the pipe manufacturer.

G. HDPE shall be installed as per manufacturer’s instructions, ASTM D 2321 or ASTM D 2774 as applicable.

1. A minimum of 2 ft bury depth under paved areas for HDPE and PP pipe is required. Installation under non-paved areas, shall be installed per manufactures recommendations

H. Pipe shall be air tested per state regulations.

I. Concrete collars are required at all storm drain pipe connections to manholes or inlets. The concrete collar shall seal the storm drain pipe to the manhole or inlet.

J. All sewer repairs or joints that abut without a bell and spigot or mechanical joint shall use an approved gasketed solid sleeve, a“Fernco Stainless Steel Shear Ring”, or a “Shear Guard” with concrete support saddle.

3.02 GRAVEL FOUNDATION FOR PIPE

A. Refer to Section 02225.

3.03 BEDDING

A. Refer to section 02225.

3.04 COMPACTION

A. Refer to Section 02250.

END OF SECTION

SECTION 02772

PONDS & SUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clear pond site and dispose of debris and unsuitable material.

B. Materials for dike.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures of Highway Construction Purposes.

1.03 SUBMITTALS

B. Laboratory analysis report of fill to be used in dikes in accordance with the sections referenced in this section and AASHTO M 145.

1.04 PERFORMANCE REQUIREMENTS

A. Protection: Do not contaminate embankment materials with debris or unsuitable material. Protect existing improvements, trees, structures or other items from damage during construction.

B. Dust Control: Thoroughly moisten all surfaces to prevent dust being a nuisance to the public, neighborhood, and concurrent performance of separate work on site.

C. Testing: 1 density test for each 100 square yard lift of backfill compacted in the Work.

1.05 JOB CONDITIONS

A. Do not interrupt surface drainage systems at site without City Engineer's approval.

B. Correct any damage caused by runoff or erosion during construction.

PART 2 PRODUCTS

2.01 BACKFILL SOILS

A. Native Fill: In accordance with Section 02205.

B. Common Fill: In accordance with Section 02205.

C. Select Fill: In accordance with Section 02206.

D. Impermeable Embankment: A-6 (CL) or A-4 (CL) material as defined in AASHTO M 145 with a plasticity index of at least 10, and a coefficient of permeability of less than 7 x 10-6 cm/sec.

E. Obtain City Engineer's approval of the material to be supplied prior to beginning construction.

2.02 GEOTEXTILE MATERIALS

A. Nonbiodegradable sheet material that is inert to soil chemicals, resistant to molds, mildew, acids and alkalies, and within a pH range of 3 to 12.

B. Sumps and Drain Fields: Geotextiles used as a separation layer between angular stone and fill or between stone and sump manhole/perforated pipe to prevent fines intrusion shall be AASHTO M288 Class 2 Non-Woven material (i.e. Mirafi 180 N, Contech C-70NW, etc.)

PART 3 EXECUTION

3.01 EXCAVATION AND PREPARATION

A. In accordance with Section 02225.

B. Remove and stockpile all topsoil material for later placement on the outer dike surfaces.

C. Level areas where dikes are to be constructed. Unless indicated otherwise scarify the top 12" of the base material and compact to a minimum Standard Proctor of 92 percent in accordance with Section 02250.

3.02 EMBANKMENT CONSTRUCTION

A. Compact backfills to an average Standard Proctor density of 96 percent in accordance with Section 02250 with no single density reading less than 92 percent.

B. Place embankment materials in lifts consistent with the compaction equipment used.

C. Do not construct embankment with frozen or unapproved material.

D. Top of bank shall not be less than 10' wide with a 2% slope toward pond.

E. Overflow shall be provided by safety weir or a 5 fps max overflow outlet.

3.03 TOLERANCES

A. Dike Surface: Plus or minus 1" from true line and grade.

B. Dike Width: Plus or minus 6" from true line and grade.

3.04 FINISHING

A. After pond and slopes have been constructed to the lines and grades indicated, spread topsoil 6" deep on pond surfaces and grade to uniform slope.

B. Pond shall be landscaped and irrigated as approved by the City Engineer.

C. Dispose of excess or unsuitable materials and level all affected areas.

D. Leave site free of excess fill material and debris.

END OF SECTION

SECTION 02832

FENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chain Link Fence.

B. Wood Fence.

C. Construction Fence.

1.02 RELATED SECTIONS

A. Section 03304: Concrete anchorage for posts.

1.03 REFERENCES

A. ASTM A116: Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.

B. ASTM A123: Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A392: Zinc-Coated Steel Chain-Link Fence Fabric.

D. ASTM F567: Installation of Chain-Link Fence.

E. ASTM F573: Residential Zinc-Coated Steel Chain Link Fence Fabric.

F. ASTM F1083: Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence structures.

G. ASTM F1234: Protective Coating on Steel Framework for Fences.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM F567.

PART 2 PRODUCTS

2.01 CHAIN LINK FENCE MATERIAL AND COMPONENTS

A. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, coating conforming to ASTM F1234 Type A on pipe exterior and interior.

B. Fabric Wire (Steel): ASTM A392 zinc coated wire fabric.

C. Concrete: Type specified in Section 03304.

D. Line Posts: 1.9 inch O. D. galvanized pipe at 2.72 lbs per foot.

E. Corner, Gate, Pull, and Terminal Posts: 2.4 inch O.D. galvanized pipe at 2.65 lbs. per foot.

F. Top Rail: 1.4 inch diameter, plain end, sleeve coupled.

G. Brace Rail: Minimum 1.6 inch O.D. galvanized pipe and adjustable 3/8 inch truss

H. Tension Wire: 7 gage, Bottom only.

2.02 WOOD FENCE MATERIAL AND COMPONENTS

A. Slats: Redwood, cedar, combed spruce or other wood covering acceptable to the City Engineer or his representative.

B. Bottom and top rail: Minimum 2x4x8 cedar stud.

C. Corner, Gate, End, or Line Posts: Minimum size 4x4 cedar wood post.

D. Concrete: Type specified in Section 03304.

2.03 CONSTRUCTION FENCE MATERIAL AND COMPONENTS

A. Material:

1. Fabric to be wire mesh which shall conform to AASHTO Designation M-279, nominal 0.9999-inch Farm Grade with standard six (6) inch graduated spacing. The wire mesh shall have a Class 1 zinc coating.
2. Corner, gate, end or line posts shall be painted metal tee, U or Y channel, angular, or other approved shapes 6'6" in length.

PART 3 EXECUTION

3.01 CHAIN LINK FENCE INSTALLATION

A. Line Pole Spacing, Straight run, tangents or curves:

1. Uniform spacing. Maximum 10 feet.
2. 100-foot radius or less, maximum 5 feet.
3. 100 to 200 foot radius, maximum 6 feet.
4. 200 to 500 foot radius, maximum 8 feet.

B. Set posts plumb, in concrete footings with top of footing 2 inches above finished grade. Slope top of concrete for water runoff.

C. Line Post Footing: Minimum 6 inches of concrete below bottom of post, 8 inches in diameter.

D. Corner, Gate, Pull, and Terminal Post Footing: Minimum 6 inches of concrete below bottom of post, 10 inches in diameter. Changes in line of more than 30 degrees shall be considered as corners.

E. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

F. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

G. Do not stretch fabric until concrete foundation has cured 7 days.

H. Stretch fabric between terminal posts or at intervals of 500 feet maximum, whichever is less.

I. Position bottom of fabric 2 inches above finished grade and on a straight grade between posts. Excavate if necessary, fill only with approval of City Engineer.

J. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

K. Fence fabric shall be placed on road side of posts unless otherwise indicated.

3.02 WOOD FENCE INSTALLATION

A. Construction Methods: The cedar posts shall be set true to line and grade in concrete bases at least two (2) feet in depth. All posts shall be sound and free from all decay, splits, multiple cracks, or any other defect which would weaken the posts or otherwise cause them to be structurally unsuitable for the purpose intended.

B. The maximum distance between posts in any section shall not exceed eight (8) feet. The top and bottom railing shall be securely fastened to the posts with galvanized nails or other acceptable means. Changes in line of 30 degrees or more shall be considered as corners. A minimum of six (6) inches of concrete shall be provided below the bottom of each post. End posts, corner posts, and gate posts shall have a concrete base at least twelve (12) inches in diameter. Bases for line posts shall also be twelve (12) inches in diameter.

C. Fence slats shall be placed on the roadway side of posts unless otherwise specified. The slats shall be placed approximately one (1) inch above the ground, and on a straight grade between posts by excavating high points of the ground. Filling depressions will be permitted only upon approval of the City Engineer. The slats shall be sound and free from all major decay or defects which would weaken or otherwise cause them to be unsuitable for fence slats. Fastening to top and bottom railing shall be done with two (2) galvanized nails and screw at both the top and bottom rail.

3.03 CONSTRUCTION FENCE INSTALLATION

A. Construction Methods:

1. Metal fence posts shall be a spaced a maximum interval of sixteen (16) feet. Posts spacing measurements shall be made parallel to the ground slope. All posts shall be placed in a vertical position. Metal posts may be installed by driving, if this can be done without damage to the post. Otherwise, they shall be installed to the specified depth (2'6") in larger drilled or dug holes and backfilled and compacted.
2. Corner posts shall be braced in two directions. End and gate posts shall be braced in one direction.
3. Wire mesh fabric shall be drawn tight enough to eliminate all sag without causing the “tension crimps” to fail to function.
4. Any high points along the ground surface which interfere with the placing of wire mesh shall be excavated to provide at least two (2) inches of ground clearance.
5. Every alternate lateral wire in the mesh fabric shall be fastened to each post by means of a clamp.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel bars, wire fabric or rod mats for cast-in -place concrete.

B. Support chairs, bolsters, bar supports, and spacers for supporting reinforcement.

1.02 REFERENCES

A. AASHTO M 254: Standard Specification for Corrosion Resistant Coated Dowel Bars.

B. ACI 301: Specifications for Structural Concrete for Buildings.

C. ACI 315: Details and Detailing of Concrete Reinforcement.

D. AASHTO M-32: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

E. AASHTO M-55: Standard Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.

F. AASHTO M-55: Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

G. ASTM A 706: Standard Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.

H. AWS D1.1: Structural Welding Code Steel.

I. AWS D1.4: Structural Welding Code Reinforcing Steel.

J. CRSI Document: Manual of Standard Practice.

1.03 SUBMITTALS

A. Shop drawings.

1. Indicate sizes, spacing, locations, and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting, and spacing devices.
2. When required by Engineer, prepare shop drawings by an engineer who complies with Utah licensing law and is acceptable to Engineer.

1.04 QUALITY ASSURANCE

A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice.

B. Comply with ACI 301.

C. Welders: AWS D1.1 or AWS D1.4 as applicable.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing Steel: In accordance with AASHTO M-31 or ASTM A 706 deformed bars, grade and type as indicated, including supplementary requirements S1, either uncoated or as indicated. When no grade is indicated use 60 grade steel. Use ASTM A 706 steel if welding is indicated or allowed.

B. Welded Steel Wire Fabric: In accordance with AASHTO M-55 plain type; in flat sheets or coiled rolls either uncoated or as indicated.

C. Stirrup Steel: In accordance with AASHTO M-32.

D. Plain Dowel Bars for Expansion Joints: In accordance with AASHTO M-31, Grade 60.

1. Provide metal dowel cap at one end of dowel to permit longitudinal movement of dowel within concrete section. Design caps with 1 end closed.
2. Provide for movement equal to joint width plus ½".
3. For load transfer bars, paint with 1 coat of lead or tar paint conforming to AASHTO M 254 and coat ½ with grease.

2.02 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type or a patented system accepted by Engineer.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.03 FABRICATION

A. Fabricate reinforcement in accordance with ACI, providing for the concrete cover specified in Section 03304.

B. Locate reinforcing splices not indicated on drawings at points of minimum stress. Indicate location of splices on shop drawings.

C. Weld reinforcing bars in accordance with AWS D1.4.

PART 3 EXECUTION

3.01 PLACING

A. All reinforcement to be free of loose mill scale, loose or thick rust, dirt, paint, oil or grease.

B. Place all reinforcement in the exact position indicated. With tie wire tie bars together at alternate intersections.

C. Maintain the distance from vertical forms and between layers of reinforcement by means of prefabricated chairs, ties, hangers, or other approved devices. Placing and fastening of reinforcement in each section of the Work must be approved by Engineer before concrete is placed.

D. Overlap sheets of metal mesh one square plus 6" to maintain a uniform strength. Securely fasten

at the ends, edges, and support to maintain clearances.

E. Support reinforcing steel of formed flat slabs with metal chairs, precast concrete blocks or other slab bolsters. Size chairs or bolsters to position the steel in the exact location indicated. Space chairs for supporting the top steel and bolsters for supporting the bottom steel not more than 5 feet on centers in each direction. Plastic or epoxy coat that portion of the metal support in contact with the forms to prevent rust. Tie down deck steel to beams or forms at regular intervals of not more than 5 feet on centers along the beams or forms to prevent movement of the steel during placement of the concrete.

3.02 SPLICING

A. Furnish all reinforcement in the full lengths indicated unless otherwise permitted. Splicing of bars, except where indicated is not permitted without written approval from Engineer. Stagger splices where possible.

B. Unless indicated otherwise, overlap reinforcing bars a minimum of 30 diameters to make the splice. In lapped splices, place the bars and wire in such a manner as to maintain the minimum distance for clear spacing to the surface of the concrete.

C. Do not use lap splices on bars greater in diameter than No. 11 unless approved by Engineer.

D. Weld reinforcing steel only if indicated or if authorization is made by Engineer in writing. Weld in conformance to AWS D1.4.

E. Do not bend reinforcement after embedding in hardened concrete, unless permitted by Engineer.

F. Do not permit reinforcement or other embedded metal items bonded to the concrete, to extend continuously through any expansion joint, except dowels in floors bonded on only one side of joints.

3.03 PLACING EMBEDDED ITEMS

A. Place all sleeves, inserts, anchors and embedded items prior to concrete placement. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.

B. Give all trades whose work is related to the concrete section ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.

END OF SECTION

SECTION 03216

CONCRETE STRUCTURES, DRIVEWAY, SIDEWALK, TRAILS, CURB AND GUTTER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Materials, installation and tolerances for Portland cement concrete ramps, sidewalk, curbs, gutters, and driveway approaches.

1.02 SUBMITTALS

A. Concrete mix design must be submitted 48 hours before placement and physical-chemical analysis of aggregates, in accordance with Section 03304.
B. Test reports: Submit test reports as requested by Engineer verifying compliance with standards.

PART 2 PRODUCTS

2.01 BACKFILL MATERIALS

A. Common fill, in accordance with Section 02205.

B. Select fill, in accordance with Section 02206.

2.02 MATERIALS: Materials used in Portland cement concrete and reinforcing of Portland cement concrete shall meet the following requirements:

A. In accordance with Section 03304.

B. Reinforcing Steel: All bar material used for reinforcement of concrete shall be intermediate grade steel conforming to the requirements of ASTM Designation A-15 and shall be deformed in accordance with ASTM Designation A-305.

C. Welded Wire Fabric: Welded wire fabric for concrete reinforcement shall conform to the requirements of AASHTO M-55.

2.03 FORMS

A. Forms shall be substantially built and adequately braced so as to withstand the liquid weight of concrete. All linings, studding, walling and bracing shall be such as to prevent bulging, spreading, or loss of true alignment while pouring and displacement of concrete while setting.

B. Metal forms shall be used for curb and gutter work except at curves and on winding roads, unless continuous lay down machine is used, or as directed by city engineer.

C. Continuous curb lay down machine shall be used on all winding roads over 100 feet long, unless otherwise approved by City Engineer.

D. All edge forms for sidewalk pavements, trail pavements, curbs and gutters shall be of sufficient rigidity and adequately braced to accurately maintain line and grade.

E. Forms for curved sections shall be so constructed and placed that the finish surface of walls, edge of sidewalks, or curbs and gutters will not deviate appreciably from the arc of the curve.

F. Exposed vertical and horizontal edges of the concrete in structures shall be chamfered by the placing of moldings in the forms.

2.04 PORTLAND CEMENT CONCRETE

A. In accordance with Section 03304.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces scheduled to receive concrete form work for defects that will adversely affect the quality of the work and be out of compliance with tolerances for installation of concrete material.

B. Do not start work until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. A minimum slope of 0.5 % shall be maintained on all concrete used for drainage purposes unless discussed with and approved by the City Engineer.

B. Joining to Existing Concrete: Cut existing concrete to provide a straight line. Make all cuts at score lines or expansion joints. If existing adjacent concrete slabs not scheduled for replacement are damaged by Contractor's operation, replace concrete at no additional cost to City. When connecting to existing curb and gutter or waterways, the existing concrete shall be drilled and dowels inserted to make the connection.

C. Subgrade: A soils classification, as determined by AASHTO T-27 shall be made on the proposed subgrade and the following preparation schedule shall be followed based on that classification:

Sidewalk, Curb and Gutter, and Driveway Subgrade Preparation Schedule

SOIL CLASSIFICATION	REQUIREMENT
A-1 or A-2	The subgrade shall be moistened and compacted in accordance with Section 02250.
A-3 or A-4	The subgrade shall be over excavated a minimum of 12inches and replaced with select granular material and be moistened and compacted in accordance with Section 02250.
A-5, A-6, or A-7	The subgrade shall be over excavated a minimum of 18 inches, replaced with select granular material, and be moistened and compacted in accordance with Section 02250.

1. No organic material, soft clay, spongy material, or other deleterious material will be permitted in the scarified or imported subgrade layer.
2. Rough subgrade shall be shaped and graded at least 6 inches beyond the back of the sidewalk to within a tolerance of 0.10 feet of design grade and drainage shall be maintained at all times.

D. Compaction: As indicated, in accordance with Section 02250.

E. Select Backfill: Unless indicated otherwise, provide 6" minimum of select fill below curbs, gutter, driveway approaches, alley intersections, ~~and~~ sidewalks, and trails.

F. Reinforcement and Embedded Items

1. Reinforcing steel shall be clean and free from rust, scale, paint, grease, or other foreign matter which might impair the bond. It shall be accurately bent and shall be tied to prevent displacement when concrete is poured. Reinforcing steel shall be held in place by only metal or concrete ties, braces and supports. No steel shall extend from or be visible on any finished surface.
2. The Contractor shall use concrete chairs for holding the steel away from the subgrade and spreader or other type bars for securing the steel in place. The spreader bars shall be not less than 3/8 inch in diameter.

G. Site Preparation

1. Before batching and placing concrete, all equipment for mixing and transporting the concrete shall be cleaned.
2. All debris and ice shall be removed from the places occupied by the concrete.
3. Forms shall be thoroughly wetted (except in freezing weather), or oiled.
4. Masonry filler units that will be in contact with concrete shall be well drenched (except in freezing weather).
5. Reinforcement shall be thoroughly cleaned of ice or other coatings.
6. Water shall be removed from spaces to receive concrete.

3.03 CONCRETE PLACEMENT

A. Place in accordance with Section 03310.

B. No concrete shall be placed until the surfaces have been approved by the City Inspector.

C. When placing concrete on earth surfaces, the surfaces shall be free from frost, ice, mud, and water.

D. When the subgrade surface is dry soil or pervious material, it shall be sprayed with water immediately before placing of concrete or shall be covered with a plastic membrane.

E. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to re-handling or flowing.

F. The concrete placing shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the corners of forms and reinforcing bars.

G. No concrete that is partially hardened or been contaminated by foreign material shall be deposited in the work, nor shall retempered concrete be used.

H. All concrete in structures shall be vibrator compacted during the operation of placing and shall be thoroughly worked around reinforcement and embedded fixtures and into the corners of forms.

I. Placing concrete in cold weather:

1. No concrete shall be placed where the air temperature is lower than 40 degrees Fahrenheit, at a location where the concrete cannot be covered or protected from the surrounding air.
2. When concrete is placed below a temperature of 35 degrees Fahrenheit the ingredients of the concrete shall be heated so that the temperature of the mixture shall not be less than 50 degrees or more than 100 degrees Fahrenheit.
3. Before mixing, the heated aggregates shall not exceed 175 degrees Fahrenheit.
4. Cement shall not be added while the temperature of the mixed aggregates and water is greater than 100 degrees Fahrenheit.

5. When there is likelihood of freezing during the curing period, the concrete shall be protected by means of an insulated covering to prevent freezing of the concrete for a period of not less than 7 days after placing.
6. Equipment for protecting concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing.
7. In the event heating is employed, care shall be taken to insure that no part of the concrete becomes dried out or is heated to temperatures above 100 degrees Fahrenheit.
8. The housing, covering, or other protection used shall remain in place and intact at least 24 hours after the artificial heating is discontinued.
9. For a period of five days concrete shall be kept between 40 degrees and 100 degrees F.

3.04 CONCRETE MIXING

A. Concrete mix design must be submitted 48 hours before placement.

B. The concrete shall be mixed until there is a uniform distribution of the materials.

C. Sufficient water shall be used in mixing concrete to produce a mixture which will flatten and quake when deposited in place, but not enough to cause it to flow or exceed the water - cement ratio.

D. In no case shall the quantity of water used cause the collection of a surplus in the forms.

E. Ready-mixed concrete shall be mixed and delivered in accordance with the requirements set forth in AASHTO M-157.

F. Concrete shall be delivered and deposited in its final position within 90 minutes after adding the cement and water to the mixture.

G. Washing out of mixer trucks shall not be permitted within City rights-of-way.

3.05 CONTRACTION JOINTS

A. Sidewalks shall have contraction joints with the following requirements:

1. Spacing shall match sidewalk width.
2. Approximately 3/16 inch wide.
3. Approximately one-fourth of slab thickness.

B. Curb and Gutter shall have contraction joints with the following requirements:

1. Ten (10) foot intervals.
2. Approximately 3/16 inch wide.
3. Approximately one-half of slab thickness.

C. Trails shall have contraction joints with the following requirements

1. Spacing shall match trail width, not to exceed 10 foot intervals.
2. Approximately 3/16 inch wide.
3. Approximately one-fourth of slab thickness.

3.06 EXPANSION JOINTS

A. One-half (½) inch expansion joints, extending the full thickness of the slab shall be provided at minimum 60 foot intervals in all sidewalks in addition to locations where sidewalks adjoin

existing sidewalks, or driveways. One-half (½) inch expansion joints shall be provided at minimum 100 ft intervals in curb and gutter.

B. Material for one-half (½) inch expansion joints shall be as defined in AASHTO M-33. Rubber Expansion Joint Filler is also acceptable as long as it meets or exceeds ASTM D1751-04 and AASHTO M-213-95

C. Expansion joints shall be installed with the top approximately one-quarter (1/4) inch below the concrete surface and extend to the bottom of the concrete.

3.07 SEALING OF EXPANSION AND CONTRACTION JOINTS

A. The sealant shall be one of the following or approved equal:

1. Polysulfide polymer by Thiokol Chemical Corporation.
2. Sonolastic one-part sealant by Sonneborn-Contech Corporation.

B. As an alternative to the above sealant a continuous film of 4 mil thickness water-proof plastic may be placed under all concrete sidewalks, curbs and gutters on the low sides of streets.

C. Other erosion prevention measures may be used as an alternate if the developer first obtains written approval from the City Engineer concerning material types and installation procedure.

3.08 FINISHING

A. Refer to Section 03345 for finishing requirements.

B. Slabs:

1. The concrete shall be brought to established grade and screened, and then worked with a magnesium float.
2. The concrete shall be given a light broom finish.
3. Dry cement or a mixture of dry cement and sand should in no case be sprinkled on the surface to absorb moisture or hasten hardening.
4. Do not spray water on the surface of concrete to aid in finishing.
5. Surface edges of all slabs shall be rounded to a radius of one-half (½) inch.

C. Curb and Gutter:

1. Curb and gutter shall be slipped with a continuous curb machine where possible.
2. Where concrete must be poured in curb and gutter forms it shall be tamped and spaded to insure a thorough mixture, eliminate air pockets, and create uniform and smooth sides.
3. While the concrete is still green and not thoroughly set, the forms shall be removed and the front and top sides shall be finished with a float or steel trowel to make a uniform finished surface.
4. The top and face of the curb and also the top of the apron on combined curb and gutter must be finished true to line and grade and without any irregularities of surface noticeable to the eye.
5. The gutter shall not hold water to a depth of more than one-fourth (1/4) of an inch nor shall any portion of the surface or face of the curb or gutter depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the curb parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.

D. Sidewalk:

1. The sidewalk shall not hold water ~~to a depth of more than one-fourth (1/4) of an inch~~ nor shall any portion of the surface or face depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the side-walk parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.
2. The concrete shall be given a light broom finish.

E. Trail:
1. The trail shall not hold water nor shall any portion of the surface or face depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the trail parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.
~~1.~~2. The concrete shall be given a light broom finish.

3.09 CURING

A. Apply curing compound in accordance with Section 03310 unless water cure is indicated. Water cure is required if concrete surface sealing compound is to be applied.

B. A chemical curing agent may be used, provided it is applied in accordance with the manufacturers specifications.

C. As soon as the concrete has hardened sufficiently to prevent damage, the finished surface shall be sprinkled with water and kept wet for at least three (3) days.

3.10 PROTECTION AND REPAIRS

A. See Section 03310 Concrete Work

END OF SECTION

SECTION 03304

PORTLAND CEMENT CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portland cement concrete material requirements.

B. Mix design requirements.

1.02 REFERENCES

A. AASHTO T- 26: Standard Method of Test for Quality of Water to be Used in Concrete.

B. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

C. ACI 211.3: Standard Practice for Selecting Proportions for No-Slump Concrete.

D. ACI 214: Recommended Practice for Evaluation of Strength Test Results of Concrete.

E. ACI 306: Cold Weather Concreting.

F. AASHTO M-157: Standard Specification for Ready-Mix Concrete.

G. AASHTO M-85: Standard Specification for Portland Cement.

H. AASHTO M-154: Standard Specification for Air-Entraining Admixtures for Concrete.

I. AASHTO M-194: Standard Specification for Chemical Admixtures for Concrete.

J. AASHTO M-295: Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

1.03 DEFINITIONS

A. Average Strength (f_{cr}): The required average strength for 3 consecutive strength tests which statistically assures no more than the permissible proportions of tests will fall below specified strength.

B. Specified Strength (f_c'): The indicated strength.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 48 hours prior to use in the Work. Indicate whether mixes have been designed for pumping. Include the report the following information.

1. Water-cement ratio
2. Proportion of materials in the mix
3. Source and type of cement
4. Analysis of water to be used

5. Type and name of admixtures applied. Indicate when accelerating or retarding admixtures are to be used.
6. Slump, air content and temperature of samples.
7. Unit weight of fresh and dry light weight concrete.

1.05 QUALITY ASSURANCE

A. Use the same source and type of cement, air-entraining agent, water reducing agent, other admixtures, and aggregate.

B. In proportioning materials for mixing, use scales certified by the State of Utah. Do not use volume measurement except for water and liquid admixtures.

C. Do not change the quantity of cement per cubic yard.

D. Use of admixtures will not relax hot or cold weather placement requirements.

E. Ready-mixed concrete, in accordance with AASHTO M-157 and requirements in this Section.

F. Testing Concrete: In accordance with Section 01450.

PART 2 PRODUCTS

2.01 CEMENT

A. Type II (moderate sulfate resistance) or Type V (high sulfate resistance), in accordance with ASTM M-185.

2.02 WATER

A. Water used in mixing concrete shall be clean and free from oil, acid, salt, injurious amounts of alkali, organic matter or other deleterious substances. Clean, non-staining and not detrimental. Comply with AASHTO T 26.

2.03 AGGREGATES - GENERAL

A. Gravel, crushed slag, crushed stone, or other inert material, composed of hard, strong, durable particles free of injurious coatings.

B. The materials passing the No. 200 sieve shall not exceed 1.75 percent by weight in the combined coarse and fine aggregate.

2.04 ADMIXTURES

A. Air Entrainment: pH 2.0 maximum type in accordance with AASHTO M-152.

B. Water Reducing and Water Retarding Agents: In accordance with AASHTO M-194.

1. Type A: Water reducing
2. Type B: Retarding
3. Type C: Accelerating
4. Type D: Water reducing and water retarding
5. Type E: Water reducing and accelerating
6. Type F: High range water reducing (super plasticizer)*
7. Type G: High range water reducing and retarding*

*The relative durability factor of water reducing admixtures shall not be less than 90 and the chlorides content (as Cl-) shall not exceed 1 percent by weight of the admixtures.

C. Calcium Chloride: None allowed.

D. Pozzolan: Pozzolan conforming to the requirements of ASTM C 618, Class F, is allowed as Portland cement replacing agent under the following conditions:

1. If a blended aggregate passes an unmodified ASTM C 1293 test, use of a pozzolan is allowed. If aggregate does not pass ASTM C 1293, select a pozzolan (or blended cement, or both) and determine the effective dosage to meet one of the following tests:
   a. ASTM C 1567. The expansion of the cement-pozzolan-aggregate job-mix mortar bar is less than or equal to 0.10 percent at 16 days. Do not use the test if a lithium admixture is used in the job-mix.
   b. ASTM C 441. The expansion of a test mixture at 56 days is less than or equal to a control mixture prepared with cement with equivalent alkalis between 0.5 and 0.6 percent.
2. Do not replace more than 10 percent of the Portland Cement.
3. The ratio of replacement by weight of Pozzolan to cement shall be 1.25 to 1.0.
4. The minimum cement content shall be used in the design formulas before replacement is made.
5. Loss of ignition of pozzolan is less than 3 percent and the water requirement shall not exceed 100 percent.
6. All other requirements of this section still apply.
7. Mix designs including trial batches are required for each aggregate source and for each concrete class.

E. Fly Ash: Class F fly ash allowed as a cement replacement under the following conditions:

1. Before replacement is made, use the minimum cement content in the design formula to establish the water/cement ratio.
2. Replace up to 20 percent of the cement by weight on a one (1) part fly ash to one (1) part cement basis.
3. Submit to Engineer a quality history of the fly ash identifying a minimum of 20 of the most current ASTM C 618 analysis.

2.05 ENTRAINING AGENT

A. An air-entraining agent shall be used in all concrete exposed to the weather. The agent shall conform to AASHTO Designations M-152.

2.06 ACI MIX DESIGN

A. The amount by which the average strength of a concrete mix exceeds the specified strength shall be based upon no more than 1 in 100 random individual strength tests falling below the specific strength.

B. Proportion the materials in accordance with ACI 211.1, 211.2 or 211.3 as applicable to produce concrete having the following properties or limitations:

CONCRETE MIX PROPERTIES			
Properties	Concrete Class		
	4000	3000	2500
Specified Compressive Strength f_c' at 28 days, psi	4000	3000	2500
Compressive Strength at 7 days, psi[(a)]	2680	2010	1675
Water-cement ratio (by weight), max	0.44	(c)	
Cement content (94 lb. sacks of cement per cubic yard of concrete)	6.5	5.5	5
Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size
2"	4.0 to 7.0	4.5 to 7.5	3.0 to 6.0
1-1/2"	4.5 to 7.5	4.5 to 7.5	3.0 to 6.0
1"	5.0 to 7.5	4.5 to 7.5	3.0 to 6.0
¾"	5.0 to 7.5	4.5 to 7.5	3.0 to 6.0
Slump Range, in. [(b)]	2 to 4	2 to 4	2 to 4

(a) Used for monitoring purposes only.
(b) Not more than 8" after adding high range water reducer admixture (super-plasticizer) to verified 2" to 3" slump concrete.
(c) Specific to exposure conditions and finishing need

C. The use for each class of concrete is as follows:

1. 4000 psi: Reinforced structural concrete
2. 4000 psi: Sidewalks, curb and gutter, cross gutters, concrete collars, pavements and unreinforced footings and foundations.
3. 3000 psi: Thrust blocks, anchors and mass concrete.

D. Water:

1. Sufficient water shall be added to produce concrete with the minimum practicable slump.
2. The slump of mechanically vibrated concrete shall not exceed 4 inches.
3. No concrete shall be placed with a slump in excess of 5 inches.
4. The maximum permissible water cement ratio (including free moisture of aggregates shall be 5 and 5 3/4 gallons per bag of cement respectively for 4000 and 3000 psi air entrained concrete.

2.07 HAND MIXING

A. Do not hand mix batches exceeding 0.5 cubic yards.

2.08 HEATING, WATER AND AGGREGATE

A. Do not allow products of fuel combustion to contact the aggregate.

B. Heat aggregate and mixing water to 150 degrees F. maximum. Heat aggregates uniformly.

C. Maintain mixed concrete temperature at time of placement between 60 and 90 degrees F.

D. Do not mix cement with water or with mixtures of water and aggregate greater than 90 degrees.

PART 3 EXECUTION

3.01 DELIVERY

A. Slump: Do not transport concrete to the work location if concrete is greater than permissible slump.

B. Discharge: After the introduction of mixing water to the cement and aggregates at the batch plant, discharge concrete from truck mixer within 90 minutes.

3.02 RE-TEMPERING

A. Adding Water: When concrete arrives at site with slump below specified, water may be added once if neither the maximum approved water/cement ratio nor the maximum slump is exceeded provided that the drum turns a minimum of 90 revolutions.

B. Super-plasticizer: Premeasure and add high range water reducers (super-plasticizer) in accordance with manufacturer's instructions. Add super-plasticizer at site using truck-mounted power injection equipment capable of rapidly and uniformly distributing the admixture to the concrete. Mix for a minimum of 3 minutes prior to discharge.

C. Re-tempering after delivery time with super-plasticizer is prohibited.

3.03 CONCRETE PLACEMENT

A. In accordance with Section 03310.

END OF SECTION

SECTION 03310

CONCRETE WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete placement operations for slabs on grade, slabs on fill, structural building frame, and other concrete components.

1.02 REFERENCES

A. AASHTO M-182: Standard Specification for Burlap Cloth Made from Jute or Kenaf.

B. ACI 301: Specifications for Structural Concrete for Buildings.

C. ACI 305: Hot Weather Concreting.

D. ACI 306: Cold Weather Concreting.

E. ACI 309: Standard Practice for Consolidation of Concrete.

F. ACI 315: Details and Detailing of Concrete Reinforcement.

G. AASHTO M-148: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

H. ASTM C-642: Standard Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete.

1.03 RELATED WORK

A. Manufacture of Portland cement concrete and delivery to site, in accordance with Section 03304.

1.04 SUBMITTALS

A. Record of Placed Concrete: Record date, location of pour, quantity, air temperature, and test samples taken.

B. Product name, type, and chemical analysis of the following as applicable:

1. Curing compound.

2. Sealing compound.

3. Chemical hardener.

1.05 QUALITY ASSURANCE

A. Rejection: Concrete work which fails to meet one or more of the following requirements, and which cannot be brought into compliance shall be rejected. Engineer shall determine appropriate modifications or payment adjustments to be made.

1. Appearance: Concrete exposed to view with defects which adversely affect appearance of specified finish.

2. Strength: Strength of concrete fails to comply with any of the following requirements:
   a. Low compressive or flexural strength.
   b. Reinforcing steel size, quantity, strength, position, damage, or arrangement at variance with requirements.
   c. Concrete which differs from required dimensions or location in such a manner as to reduce its strength or load carrying capacity.
   d. Inadequate protection of concrete from extremes of temperature during the early stages of hardening and strength development.
   e. Mechanical injury, construction fires, accidents, or premature removal of formwork likely to result in deficient strength development.
   f. Workmanship likely to result in deficient strength.

3. Slab Tolerance: Field quality control as specified herein.

4. Material Sources: In accordance with Section 03305.

1.06 WARRANTY

A. Repair or replace defective or damaged work at no additional cost to City.

PART 2 PRODUCTS

2.01 ACCESSORIES

A. Bonding Compound: Polyvinyl acetate or acrylic base, rewettable type.

B. Vapor Retarder: 10 mil thick clear polyethylene sheet. Type recommended for below grade application.

C. Forms: In accordance with Section 03216 and ACI 315.

D. Reinforcement: In accordance with section 03200.

E. Covering: Waterproof paper, polyethylene sheet or burlap cloth complying with AASHTO M 182, Class two.

2.02 CONCRETE SURFACE CURING COMPOUND

A. Liquid membrane, in accordance with AASHTO M-148

B. Type of Compound: Engineer to select.

1. Type 1, clear or translucent without dye.

2. Type 1-D, clear or translucent with red fugitive dye.

3. Type 2, white pigmented.

C. Class of Vehicle: Class A, no restrictions.

D. Performance Criteria of Compound: Compatible with sealing compound, if sealing compound is to be applied over concrete curing compound.

PART 3 EXECUTION

3.01 PREPARATION

A. All exposed corners shall be chamfered (3/4" x 3/4").

B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not impede placing concrete.

C. Do not allow construction loads to exceed member capacity.

D. Prepare previously placed concrete by cleaning with steel brush and applying bonding compound. Apply bonding compound in accordance with manufacturer's instructions.

E. At locations where new concrete is dowelled to existing work, drill holes in existing concrete work placed at ambient temperatures above 40 degrees F. Use of admixtures will not relax cold weather placement requirements.

F. Do not disturb reinforcement, inserts, embedded parts, and formed joints.

G. Do not break or interrupt successive pours such that cold joints occur.

H. Honeycomb or embedded debris in concrete is not acceptable.

3.02 JOINTS

A. Saw cut patterns where indicated. Saw cut control joints without raveling of the concrete. A maximum of 24 hours after pouring the concrete and prior to occurrence of any surface cracking.

3.03 CONSOLIDATION

A. In accordance with ACI 309.

B. Keep spare vibrator available during concrete placement operations.

3.04 FINISHING

A. Do not add water or retemper concrete unless Engineer's approval is secured.

B. Slab Finishing Tolerances: When tolerance is not indicated, use Straightedge Tolerance.

1. Very Flat Tolerance: True plane with maximum variation of 1/8-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

2. Flat Tolerance: True plane with maximum variation of 3/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

3. Straightedge Tolerance: True plane with maximum variation of 5/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

4. Bullfloated Tolerance: True plane with maximum variation of 1/2-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

C. Finishes: In accordance with Section 03345. When type of finish is not indicated, use following finishes as applicable:

1. Sidewalks, garage floors, and ramps: Broom or belt finish.

2. Exterior concrete pavement: Broom or belt finish.

3. Exterior platforms, steps, and landings, exterior and interior pedestrian ramps, not covered by other finish materials: Nonslip finish.

4. Surfaces intended to receive bonded applied cementitious applications: Scratched finish.

5. Surfaces intended to receive roofing, except future floors, waterproofing membranes, and roof surfaces which are future floors or sand bed terrazzo: Floated finish.

6. Floors and roof surfaces which are floors intended as walking surfaces or to receive floor coverings: Troweled finish.

7. Unpainted concrete surfaces not exposed to public view: Smooth as-cast form finish.

8. Unpainted concrete surfaces exposed to public view: Rubbed finish.

9. Concrete surfaces to receive paint or plaster: Grout cleaned finish.

D. Chemical Hardener: After completion of curing, apply chemical hardener in accordance with manufacturer's instructions to all interior floor slabs which are exposed in finished work and elsewhere as indicated. After final coat of chemical hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water. Do not place liquid floor hardener on floor areas scheduled to receive synthetic matrice terrazzo, or setting beds for tile, terrazzo, vinyl flooring, or like items.

3.05 CURING

A. General: Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete. Cure concrete by applying curing compound, by moisture curing, by moisture-retaining cover curing, or by combinations thereof.

B. Curing Compounds:

1. Apply curing compound to concrete slabs within 2 hours of completing final finishing operations. Apply uniformly in continuous operation. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period. Should side forms be removed before expiration of 7 days from start of curing, coat exposed surfaces with curing compound.

2. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, damproofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Engineer.

C. Moisture Curing: Provide either of the following methods.

1. Keep concrete surface continuously wet by covering with water or continuous water-fog spray.

2. Cover concrete surface with absorptive cover, thoroughly saturated with water and kept continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

3.06 SEALING

A. Seal concrete by applying a sealing compound as required by Engineer.

B. Surface Preparation: If necessary to remove curing compound, sandblast concrete surface. Clean surface free of dirt, oil, grease and other contaminants. If necessary use proprietary cleaning compounds (not raw acids) followed by thorough water rinsing. Use high pressure water equipment providing 1,200-2,000 psi to remove detergent residues. Do not attempt application when condensation is present.

C. Application: Spray with low pressure (20 psi) airless spray equipment. Saturate the surface to the point of rejection. On vertical surfaces apply 2 coats.

D. Coverage Rates: In accordance with manufacturer's recommendation.

E. Paint Adhesion: Always test to verify compatibility between sealant and other proposed surface treatments.

F. Warning: Remove inadvertent splashes before the solution has dried on the surface. If sealant is a hazardous material, allow use only by professional applicator. Three (3)- 4-inch cylinders shall be taken and a slump and air test shall be done at the beginning of concrete placement and every 50 cubic yards thereafter.

3.07 TESTS

A. Arrange for and perform all testing required for qualification of proposed materials and the establishment of mix designs, in determining strengths for early form removal, for cylinder tests after the addition of water, and other needs of Contractor.

B. Two slump tests, one before and one after the addition of super-plasticizer.

C. Three (3) standard 4-inch cylinder samples of concrete from trucks receiving water after addition of water.

3.08 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required levels, lines, details, and elevations.

B. Structural analysis and additional testing may be required at no additional cost to Owner when the strength of a structure is considered potentially deficient.

C. Where allowed, patch imperfections. Refer to Section 03345 for finish requirements.

3.09 PROTECTION AND REPAIRS

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. All concrete curbs, gutter, sidewalks, and driveways requiring removal and replacement, shall be removed and replaced to the next joint or scoring lining beyond the actually damaged or broken sections.

D. In the event that joints or scoring lines do not exist or are five or more feet from the removed or damaged section, the damaged portions shall be saw cut, removed, and reconstructed to neat, plane faces.

E. When saw cut sections are allowed for removal and replacement, use epoxied dowels in all cut planes.

F. All new concrete shall match, as nearly as possible, the appearance of adjacent concrete improvements.

G. Where necessary, lampblack or other pigments shall be added to the new concrete to obtain the desired results.

H. The concrete surface must not be damaged or pitted by rain.

I. The Contractor shall provide and use, when necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours.

J. The Contractor shall erect and maintain suitable barriers to protect the finished surface.

K. Any section damaged from traffic or other causes occurring prior to its official final acceptance shall be repaired or replaced by the Contractor at his own expense in a manner satisfactory to the City Engineer.

L. Spalling: Concrete shall not spall or show signs of spalling before the warranty expiration. All concrete with spalling shall be removed and replaced by the Contractor or Owner at his own expense. When approved by City Engineer, concrete with spalling may be repaired by an approved method. The approved method must be a five step process which includes a muriatic acid wash, pressure wash with orbital nozzle, application of approved grout & cement modifier, and application of an approved sealer. The following products are approved for use to repair spalling concrete:

1. Planicrete AC Acrylic Latex Admixture for Mortar and Concrete mixed with Planitop X One-Component Fast Setting Vertical and Overhead Repair Mortar with Planiseal WR 40 Water Based 40%-Silane Penetrating Water Repellant.
2. Duraset 1000 Modified Acrylic Resin mixed with G100 Pro-Series Grout Mix and Liquid Colorant.
3. SuperSeal 2000 Solvent Based Acrylic Sealer.

M. Damaged Sidewalk and/or Curb & Gutter shall be repaired or replaced according to the following criteria.

1. Cracks in Concrete Infrastructure
    a. Cracks in Concrete Sidewalk
        i. Single “hairline” cracks running perpendicular to the length of the sidewalk, and which do not show evidence of vertical offset or movement, do not require repair or replacement.
        ii. All other cracks in sidewalk require removal and replacement of the entire concrete section*.
    b. Cracks in Concrete Curb & Gutter

i. Single “hairline” cracks running perpendicular to the length of the curb & gutter, and which do not show evidence of vertical offset or movement, do not require repair or replacement.
ii. Single cracks running perpendicular to the length of the curb & gutter which are greater in width than a “hairline” crack, but which are less than 1/8 inch in width, shall be repaired by sealing the crack with an approved sealant following preparation including routing and cleaning.
iii. All other cracks in curb & gutter require removal and replacement of the entire concrete section*.

2. Gouges in Concrete Infrastructure (Damage to Planar Surfaces, excludes Edges/Corners)
   a. Gouges in Concrete Sidewalk or Concrete Curb & Gutter
      i. Single (or minimal) gouges up to 3 inches in length and less than ½ inch in depth, and which do not represent a safety hazard in the opinion of the inspector, do not require repair or replacement.
      ii. Single (or minimal) gouges up to 3 inches in length and less than 3 inches in depth, shall be repaired using an approved two-part epoxy patching compound.
      iii. All other gouges in sidewalk require removal and replacement of the entire concrete section*.

3. Chips to Concrete Infrastructure (Damage to Edges & Corners)
   a. Chips in Concrete Sidewalk
      i. Single (or minimal) chips up to 3 inches in length and less than 1 ½ inches in width, and which do not represent a safety hazard in the opinion of the inspector, do not require repair or replacement.
      ii. All other chips in sidewalk require removal and replacement of the entire concrete section*.
   b. Chips in Concrete Curb & Gutter
      i. Single (or minimal) chips up to 3 inches in length and less than 1 ½ inches in width, shall be repaired using an approved two-part epoxy patching compound.
      ii. All other chips in curb & gutter require removal and replacement of the entire concrete section*.

4. In addition to the information provided above, removal and replacement of the entire concrete section* is required for the following types of damage:
   a. Multiple cracks, where the cracks are less than a sidewalk width apart.
   b. Cracks that converge creating small isolated pieces of concrete.
   c. Cracks that generally run parallel to the length of the infrastructure.
   d. Cracks that circle back to the original side creating “half moon” pieces of concrete.
   e. Cracks that allow the concrete to move vertically from the adjoining piece.
   f. Excessive scaring, spalling, or scraping of the finished concrete surface.
   g. Cracks with chipping along the edge at the surface indicating settlement or movement along the crack.
   h. Any damage, which in the inspectors’ opinion, was clearly the result of negligence on the part of the builder, or damage which appears will result in failure of the sidewalk or gutter and its intended function.

   *Sections may be cut and the damaged portions removed, provided no remaining or new section(s) are less than 5 feet in length. (Cut lines are considered as section lines.)

N. Approved Products for Concrete Damage Repair:
   1. Concrete Sealant: Sikaflex® 1a or 1cSL (or approved equal)
   2. Epoxy Repair: Rezi-weld 2-Part Gel Paste (or approved equal)

3. Epoxy Repair: Quikcrete Concrete Repair No. 8620-49 (or approved equal)

Note: As an alternate to the two-part epoxy patching compound, and when approved by the City Engineer, the 5 step process and products listed for spalling repair may be used for chip and gouge repair.

O. Concrete sidewalk and curb & gutter which is defective due to settlement, uneven joints, or tripping hazards may be corrected by "Concrete Lifting" as approved by City Engineer. Concrete lifting shall conform to the following:

1. Concrete repair by lifting shall only be performed by a licensed contractor specializing in concrete lifting.

2. Concrete lifting shall be completed by drilling strategically placed holes in concrete. A grout, sand, Portland cement, and water mixture shall be used proportioned to harden without settlement and to sufficiently fill voids beneath the concrete. Foam products may also be used when approved by City Engineer. Holes shall be placed to allow for pumping the mixture under the concrete to lift the settled areas. Additional holes shall also be drilled to allow for filling voids created by the lifting procedure.

3. The proportion of Portland cement shall be a minimum of 5 percent by weight of dry mixture.

4. The use of the concrete lifting technique may be attempted to correct uneven adjoining sections of concrete or correct areas of defective drainage. If concrete lifting does not correct the defective concrete to the Engineers satisfaction, the concrete shall be removed and replaced.

3.10 PLACING CONCRETE IN COLD WEATHER

A. No concrete shall be placed where the air temperature is lower than 40 degrees Fahrenheit, at a location where the concrete cannot be covered or protected from the surrounding air.

B. When concrete is placed below a temperature of 35 degrees Fahrenheit the ingredients of the concrete shall be heated so that the temperature of the mixture shall not be less than 50 degrees or more than 100 degrees Fahrenheit.

C. Before mixing, the heated aggregates shall not exceed 175 degrees Fahrenheit.

D. Cement shall not be added while the temperature of the mixed aggregates and water is greater than 100 degrees Fahrenheit.

E. When there is likelihood of freezing during the curing period, the concrete shall be protected by means of an insulated covering to prevent freezing of the concrete for a period of not less than 7 days after placing.

F. Equipment for protecting concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing.

G. In the event heating is employed, care shall be taken to insure that no part of the concrete becomes dried out or is heated to temperatures above 100 degrees Fahrenheit.

H. The housing, covering, or other protection used shall remain in place and intact at least 24 hours after the artificial heating is discontinued.

I. For a period of five days the concrete shall be kept above 40 degrees F and below 100 degrees F.

END OF SECTION

SECTION 03345

CONCRETE FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Application procedure for concrete surface finishes.

1.02 PROJECT CONDITIONS

A. Allow concrete to cure not more than 72 hours before commencing surface finish operations, unless otherwise acceptable to Engineer.

B. Protect adjacent materials and finishes from dust, dirt and other surface or physical damage during finishing operations. Provide protections as required and remove from site at completion of Work.

C. For surfaces to be blast finished, perform abrasive blasting within 24 to 72 hours after casting. Coordinate with form work construction, concrete placement schedule, and form work removal to ensure that surfaces are blasted at same age for uniform results.

PART 2 EXECUTION

2.01 PATCH FINISHING

A. Repair surface defects immediately after form removal.

B. Make any patches in concrete to closely match color and texture of surrounding surfaces. Determine mix formula for patching mortar by trial and obtain a good color match with concrete when both patch and concrete are cured and dry.

1. Mix white and gray Portland cement as required to match surrounding concrete to produce grout having consistency of thick paint.
2. Use a minimum amount of mixing water.
3. Mix patching mortar in advance and allow to stand without frequent manipulation, without addition of water, until it has reached stiffest place able consistency.
4. After initial set, dress surfaces of patches manually to obtain same texture as surrounding surfaces.

C. Repair defective areas.

1. Remove honeycomb and defective concrete down to sound concrete.
2. Make edges perpendicular to surface or slightly undercut.
3. Featheredges are not permitted.
4. Dampen area to be patched and at least 6" surrounding it to prevent absorption of patching mortar water.
5. Prepare bonding grout.
6. Mix to consistency of thick cream.
7. Brush into surface.

D. After surface water has evaporated from patch area, brush bond coat into surface.

1. When bond coat begins to lose water sheen, apply patching mortar.

2. Thoroughly consolidate mortar into place and strike-off to leave patch slightly higher than surrounding surface.
3. Leave undisturbed for at least 1 hour before final finish.
4. Keep patched area damp for 72 hours or apply curing compound.
5. Do not use metal tools in finishing an exposed patch.

E. Tie Holes: Unless indicated otherwise, after being cleaned and thoroughly dampened, fill the hole solid with patching mortar.

F. Where as-cast finishes are indicated, total patched area my not exceed 1 in 500 of as-cast surface. This is in addition to form tie patches, if ties are permitted to fall within as-cast areas.

G. In any finishing process which is intended to expose aggregate on surface, patched areas must show aggregate.

1. Outer 1" of patch shall contain same aggregates as surrounding concrete.
2. For aggregate transfer finish, patching mixture shall contain same selected colored aggregates.
3. After curing, expose aggregates together with aggregates of adjoining surfaces by same process.

2.02 SLAB FINISHING

A. Broom or Belt Finish: After concrete has been placed, consolidated, struck-off, and leveled to the required tolerance, roughen surface transversely with stiff brushes, rakes, or burlap belt before final set.

B. Float Finish: After concrete has been placed, consolidated, struck-off, and leveled, do not work further until ready for floating.

1. Begin floating when water sheen has disappeared and surface has stiffness sufficient to permit operation.
2. During or after first floating, check planeness of entire surface with a 10 feet long straightedge applied at 2 or more different angles.
3. Cut down high spots and fill low spots to the required tolerance.
4. Refloat slab immediately to a uniform sandy texture.

C. Trowel Finish:

1. Float finish surface
2. Power trowel
3. Hand trowel as required to provide surface. Do not apply water to retemper concrete in finishing operations.
4. First troweling after power floating shall produce smooth surface relatively free of defects but which may still show some trowel marks.
5. Second trowel by hand after surface has hardened.
6. Leave finished surface essentially free of trowel marks, uniform in texture and appearance.
7. On surfaces intended to support floor coverings, grind off defects which would show through floor covering.

2.03 AS-CAST FORMED FINISHING

A. Rough: Patch defects, chip or rub off fins exceeding 1/4" height.

B. Smooth: Patch tie holes and defects and remove fins completely:

1. When surface texture is impaired and form joints misaligned, grind, bushhammer, or correct affected concrete as directed by Engineer.
2. Slurry grout areas evidencing minor mortar leakage to match adjacent concrete.
3. Repair major mortar leakage as a defective area.
4. When in opinion of Engineer, workmanship is less than acceptable standard, provide one of rubbed finishes at no additional cost to Owner.

2.04 RUBBED FINISHING

A. Produce following finishes on concrete with a smooth form finish.

1. Smooth Rubbed: Remove forms and perform necessary patching as soon after placement as possible.
2. Finish newly hardened concrete no later than 24 hours following form removal.
3. Wet surfaces and rub with carborundum brick or other abrasive until uniform color and texture are produced.

B. Grout Cleaned: Undertake no cleaning operations until all contiguous surfaces are completed and accessible.

1. Wet surface of concrete sufficiently to prevent absorption of water from grout.
2. Apply grout uniformly.
3. Immediately after grouting, scrub surface with cork float or stone to coat surface and fill voids.
4. While grout is still plastic, remove excess grout by working surface with rubber float or sack.
5. After-surface whitens from drying, rub vigorously with clean burlap.
6. Keep damp for at least 36 hours after final rubbing.
7. Cork Floated: Remove forms within 2 to 3 days of placement where possible.
8. Remove ties.
9. Remove all burrs and fins.
10. Dampen wall surface.
11. Apply mortar with firm rubber float or with trowel, filling all surface voids.
12. Compress mortar into voids.
13. If mortar surface dries too rapidly to permit proper compaction and finishing, apply a small amount of water with fog sprayer.
14. Produce final texture with cork float using a swirling motion.

2.05 UNFORMED FINISHING

A. After concrete is placed, strike smooth, tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces.

B. Float to texture which is reasonably consistent with formed surfaces.

C. Continue final treatment on formed surfaces uniformly across uniformed surfaces.

END OF SECTION

SECTION 16530

STREET LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior lighting and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 03310 – Concrete work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURERS

A. Holophane
B. Philips Lumec

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – Post Top Full Cutoff LED Series
Verify exact model number with City before ordering
Philips Lumec – Metroscape Full Cutoff LED Post Top
Verify exact model number with City before ordering

B. LED Performance Package: 80W to 100W Dimmable

C. Color Temperature: 3000 K CCT

D. Voltage: Auto-Sensing Voltage (120-227)

E. Housing/Trim/Covers: Modern Style – Swing Open Design, No Trim, Full Cover

F. Finish, Trim and/or Final Finish: Black

G. Optics: Asymmetric Lunar Optic - IES Type III

H. Finial: Standard

I. Prewired Leads: 25 feet prewired leads

J. Photocontrol: Long Life DTL Twistlock Photocontrol For Solid-State

K. Receptacle: Dimming Receptacle – 7 PIN

L. Mounting Condition: Concrete base with J bolts.

M. Pole: As required in this schedule.

2.03 POLES

A. Pole: Salem Aluminum Pole (SMA 14 F4J 13 P07 ABG BK)

B. Height: 14 feet

C. Shaft Style: F4J 4 inch diameter Fluted, 0.25 wall

D. Material: Aluminum or Concrete, non-direct burial type

E. Color/Finish: Powder Coat Paint Finish, Black

F. Shape: Fluted or smooth with 3’-8.5” high decorative bottom piece

G. Base: 13 inch Square Base, Base Weight 60, Base EPA 3.7880625

H. Anchor Bolt: AB-26-4

I. Loading Capacity Ratings:
1. 100 Pounds.
2. Steady Wind: 90 MPH minimum.

2.04 CONDUIT

A. One inch PVC scheduled 90 electrical (gray) conduit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide concrete bases for lighting poles at intersections and cul-de-sac's or as shown on the plans. All concrete shall be a minimum of 4 foot below finished grade.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each light after installation and connection. Inspect for proper connections and operation.

B. Test photo-electric for cell operation.

3.03 ADJUSTING

A. Adjust light to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISHED WORK

A. Re-lamp lights which have failed Final Completion.

END OF SECTION

SECTION 16532

COMMERCIAL BUSINESS STREET LIGHTING (HISTORIC)

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior luminaries and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 003310 – Concrete Work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. IES RP 20-Lighting for Parking Facilities.

D. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURERS

A. Holophane
B. Mountain States Lighting

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – Utility Washington Series Luminaire Full Cutoff LED2 (WFCL2). Verify exact model number with the City before ordering.

B. L.E.D. Performance Package: 11,500 Nominal Lumens

C. Color Temperature: 3000 K CCT

D. Voltage: Auto-Sensing Voltage (120-227)

E. Optics: Type 3 Distribution – Full Cutoff

F. Housing Color: Black

G. Finial: None

H. Pre-Wired Leads: 25 feet pre-wired leads.

I. Photo Control: NEMA Twistlock Photocontrol Receptacle – 7 PIN. Externally mounted.

J. Other Required Options: Field Adjustable Output, Shorting Cap

K. Mounting Condition: Concrete base with J-bolts.

L. Pole: As required in this schedule.

2.03 POLE REQUIREMENTS

A. Pole: Mountain States Lighting (#14.5TFS-6.5/4.5-11GA-16S-TT3.5X4
Steven Sales Company (FL210-D672A146-TENON-FP-AB) with Twin Arm Assembly

B. Height: 14.6 feet to Banner Arm (See Standard Drawing STREETS-13)

C. Shaft Style: Round Fluted, Tapered Diameter 6.5-inch to 4.5-inch.

D. Material: Aluminum or Steel, non-direct burial type.

E. Color/Finish: Powder Coat Paint Finish, Black.

F. Shape: Fluted with decorative base and double-banner arm.

G. Decorative Base: 20-inch Washington-Style High-Density Elastomer, or Aluminum Clam Shell Base (black).

H. Loading Capacity Ratings:
1. 100 pounds.
2. Steady Wind: 90 mph min.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pole to be direct burial at locations indicated. Auger hole without disrupting the soil below butt of the pole. Do not dig pole hole with a backhoe, to minimize disruption of firm soil. Fill with sand around pole, tamped regularly while backfilling.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for proper connections and operation.

B. Test for photo-electric cell operation.

3.03 ADJUSTING

A. Adjust luminaries to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISH WORK

A. Relamp luminaries which have failed work at substantial completion.

3.06 LIGHTING LOCATION

A. Install at locations as indicated on the plans or as otherwise approved by the City Engineer.

END OF SECTION

SECTION 16533

NORTH VILLAGE ZONE LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior lighting and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 03310 – Concrete work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURES

A. Holophane
B. Luminis

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – GlasWerks Luminescent LED Hallbrook (GSLF3)
Verify exact model number with City before ordering

B. LED Lumen Package: P40 Performance Package

C. Color Temperature: 3000 K, 70 CRI

D. Voltage: MVOLT 120-227V

E. Optics: Asymmetric

F. Mounting Style: Quick Stem Mount

G. Finish Color: Black

H. Prewired Leads: 25 feet prewired leads

I. Photocontrol: 7 PIN NEMA Photocontrol Receptacle

J. Arm: Holophane HCA 36IN 1A BO SSA QSM BK RFD331152

K. Pole: As required in this schedule.

2.03 POLES

A. Pole: Luminis – BVP616XM6554

B. Height: 16 feet (Cap to Base)

C. Shaft Style: Square 6” x 6”

D. Material: Aluminum, non-direct burial type

E. Color/Finish: Polyester Powder-Baked Coating
5-Stage Bath Preparation Process
Luminis Heber City Faux Wood Finish
UV-Stabilized Durable Scratch & Fade Resistant Finish

F. Base: Aluminum Decorative Cover Plates & Base (Match Holophane Support Arm)

G. Cap: Decorative Top Cover Plates & Base (Match Holophane Support Arm)

H. Receptacle: NEMA C136.41 &-PIN Receptacle with Shorting Cap Pre-Installed in pole cap

2.04 CONDUIT

A. One inch PVC scheduled 90 electrical (gray) conduit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide concrete bases for lighting poles at intersections and cul-de-sac’s or as shown on the plans. All concrete shall be a minimum of 4 foot below finished grade.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each light after installation and connection. Inspect for proper connections and operation.

B. Test photo-electric for cell operation.

3.03 ADJUSTING

A. Adjust light to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISHED WORK

A. Re-lamp lights which have failed Final Completion.

END OF SECTION

STANDARD DRAWINGS
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Note: In some instances, alternative products are accepted. See the Appendix for alternative products.

Drawing No.	Last Rev.	Drawing Name
IRR-1A	09/23	Irrigation Service – Two Lots
IRR-1B	09/23	Irrigation Service – One Lot
SEWER-1	09/23	Sewer Lateral & Details
SEWER-2	01/25~~03/17~~	Manhole Ring and Cover
SEWER-3	09/23	Junction & Drop Manholes
SEWER-4	03/17	Fabricated Sewer Lateral
SEWER-5	09/23	Pre-cast Concrete Sewer Manhole
SEWER-6	02/19	Grease Interceptor
DRAIN-1	08/23	Curb Drop Inlet Standard Box
DRAIN-2	03/17	Grate & Frame
DRAIN-3	09/23	Sump Disposal & Oil Separator
DRAIN-4	03/17	Curb Inlet Box – Open Face
STREETS-1	09/23	Major & Minor Residential Local
STREETS-2A	01/25~~06/20~~	Minor Collector
STREETS-2B	09/23	No Access Mountain Collector
STREETS-3A	01/25~~06/20~~	Historic Business Core
STREETS-3B	01/25~~06/20~~	Historic Business Core Major Intersection
STREETS-4	01/25~~09/23~~	Sidewalk, High Back Curb & Cross Gutter
STREETS-5A	01/25~~09/23~~	Perpendicular Curb Ramps~~Corner Pedestrian Ramps~~
STREETS-5B	01/25	Perpendicular Curb Ramps
STREETS-5C	01/25	Corner Pedestrian Ramps
STREETS-6	01/25~~06/21~~	Mid-Block Pedestrian Ramps
STREETS-7	01/25~~09/23~~	Residential Driveway Approach
STREETS-8	01/25~~09/23~~	Commercial Driveway Approach
STREETS-9	03/18	Cul-De-Sac
STREETS-10	02/19	Signs
STREETS-11	03/17	Survey Monuments
STREETS-12	06/21	Street Lighting
STREETS-13	06/21	Commercial Historic Street Lighting
STREETS-14	01/25~~09/23~~	Trail Lighting
STREETS-15	09/23	North Village Lighting
STREETS-16	09/23	Residential Road Shoulder without Curb and Gutter
STREETS-17	01/25	Concrete Trail
UTIL-1	01/25~~09/23~~	Utility Installation Trench Detail
UTIL-2	09/23	Standard Street Intersection & Utility Location
UTIL-3	03/17	Laterals & Utility Location
UTIL-4	03/17	Utility Concrete Collar
UTIL-5	09/23	Utility Pothole Repair
UTIL-6	09/23	Telecommunications & Power Shared Trench
WATER-1	01/25~~04/22~~	Fire Hydrants

WATER-2	06/21	Typical Pipe Thrust Blocking
WATER-3	04/22	Valve Boxes & Collars
WATER-4	03/17	1" Service Trench
WATER-5	03/17	Tracer Wire Installation
WATER-6A	09/23	Water Service – Two Lots
WATER-6B	09/23	Water Service – Single Lot
WATER-7	01/25~~03/17~~	Air Vac Release Station
WATER-8	04/22	Temporary & Permanent Blowoff Flush Valve

APPENDIX A

HEBER CITY APPROVED EQUIVALENTS

The following is a list of pre-approved equivalents to be used in conjunction with the Heber City Standard Specifications and Drawings. These items may be used without prior approval from the City Engineer or Public Works Director. Any other requests for consideration as equivalents which differ from the Heber City Standard Specifications and Drawing will need to be submitted to and approved by the City Engineer and/or Public Works Director.

IRRIGATION

Irrigation Service – One Lot 1" Service:

McDonald:

- 1" McDonald 18" Pit Part # E-5-12940
- Insulation Pad Part # 90-C1 18x4

Mueller:

- 1" Single-Service Irrigation Box Part # 330IS1818FABS000296N

Ford:

- 1" Ford 18" Pit Part # PK488-18-~~C16819-002-NL~~95059-024-NL
- Insulation Pad Part # CCID-18-4 Closed-Cell Foam Disc

Lids:

- ~~—~~DFW Part #DFW18MUE-1~~I~~MBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

Irrigation Service – Two Lots

Ford:

- 1 ½ x (2) 1" Ford Dual Meter Pit Part # PKD411-24C-C16050-004-NL
- Insulation Pad Part # CCID-24 Closed Cell Foam Disc
- Lid Adapter Ring Ford Drawing #C17109-001

Mueller:

- 1" Single-Service Irrigation Box Part # 330ID2718FAB000650/700098-1

Lids:

- DFW Part #DFW18MUE-IMBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

CULINARY WATER

1” Culinary Water Service

Ford:

- Meter Pit Part # PFCBHC-488-18-60-R-NL~~PFCBHH60-C16819-001-NL~~ 1” x 60” Ford 18” coil meter pit with reduced port valves
- Insulation Disc Ford Part # CCID-18-4 Closed Cell Foam Disc
- Adjustable Curb Box Ford Part # EM2-50-46-42R with inner rod

Mueller:

- 1” Single-Service Box Part # 330CS1860RSBS000390N

Lids:

- DFW Part # 18MUE-1~~I~~MBF_Small_Water Lid
- ~~Nicor Part # 18.75 LLBLKWATthDLTE~~

Fire Hydrants:

- 6” Waterous WB-67-250
- Clow Medallion
- Mueller Super Centurion 250 cast-iron
- Mueller Super Centurion 350 cast-iron

BRASS PARTS AND SADDLES

Corporation Stops

Both Iron Pipe thread and CC thread will be accepted.

Ford:

- Corp Stop Valve Part # FB1100-4-Q-NL

Mueller:

- Corp Stop Valve Part # B-25028-N

Curb Box and Stops

Ford:

- Curb Stop Valve Part # B84-444M-Q-NL
- Curb Box Part # EM2-50-46-42R

Saddles

These alternatives are for 10” or larger pipe size and/or if higher pressure ratings are needed than the standard Romac 305 and 306 stainless saddles can accommodate.

Ford:

- Saddle Part # 202BS

Mueller:

- Saddle Part # B2RS

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SEWER-4	03/17	Fabricated Sewer Lateral
SEWER-5	09/23	Pre-cast Concrete Sewer Manhole
SEWER-6	02/19	Grease Interceptor
DRAIN-1	08/23	Curb Drop Inlet Standard Box
DRAIN-2	03/17	Grate & Frame
DRAIN-3	09/23	Sump Disposal & Oil Separator
DRAIN-4	03/17	Curb Inlet Box – Open Face
STREETS-1	09/23	Major & Minor Residential Local
STREETS-2A	01/25~~06/20~~	Minor Collector
STREETS-2B	09/23	No Access Mountain Collector
STREETS-3A	01/25~~06/20~~	Historic Business Core
STREETS-3B	01/25~~06/20~~	Historic Business Core Major Intersection
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STREETS-16	09/23	Residential Road Shoulder without Curb and Gutter
STREETS-17	01/25	Concrete Trail
UTIL-1	01/25~~09/23~~	Utility Installation Trench Detail
UTIL-2	09/23	Standard Street Intersection & Utility Location
UTIL-3	03/17	Laterals & Utility Location
UTIL-4	03/17	Utility Concrete Collar
UTIL-5	09/23	Utility Pothole Repair
UTIL-6	09/23	Telecommunications & Power Shared Trench
WATER-1	01/25~~04/22~~	Fire Hydrants

WATER-2	06/21	Typical Pipe Thrust Blocking
WATER-3	04/22	Valve Boxes & Collars
WATER-4	03/17	1" Service Trench
WATER-5	03/17	Tracer Wire Installation
WATER-6A	09/23	Water Service – Two Lots
WATER-6B	09/23	Water Service – Single Lot
WATER-7	01/25~~03/17~~	Air Vac Release Station
WATER-8	04/22	Temporary & Permanent Blowoff Flush Valve

APPENDIX A

HEBER CITY APPROVED EQUIVALENTS

The following is a list of pre-approved equivalents to be used in conjunction with the Heber City Standard Specifications and Drawings. These items may be used without prior approval from the City Engineer or Public Works Director. Any other requests for consideration as equivalents which differ from the Heber City Standard Specifications and Drawing will need to be submitted to and approved by the City Engineer and/or Public Works Director.

IRRIGATION

Irrigation Service – One Lot 1" Service:

McDonald:

- 1" McDonald 18" Pit Part # E-5-12940
- Insulation Pad Part # 90-C1 18x4

Mueller:

- 1" Single-Service Irrigation Box Part # 330IS1818FABS000296N

Ford:

- 1" Ford 18" Pit Part # PK488-18-~~C16819-002-NL~~95059-024-NL
- Insulation Pad Part # CCID-18-4 Closed-Cell Foam Disc

Lids:

- ~~—~~DFW Part #DFW18MUE-1~~I~~MBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

Irrigation Service – Two Lots

Ford:

- 1 ½ x (2) 1" Ford Dual Meter Pit Part # PKD411-24C-C16050-004-NL
- Insulation Pad Part # CCID-24 Closed Cell Foam Disc
- Lid Adapter Ring Ford Drawing #C17109-001

Mueller:

- 1" Single-Service Irrigation Box Part # 330ID2718FAB000650/700098-1

Lids:

- DFW Part #DFW18MUE-IMBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

CULINARY WATER

1” Culinary Water Service

Ford:

- Meter Pit Part # PFCBHC-488-18-60-R-NL~~PFCBHH60-C16819-001-NL~~ 1” x 60” Ford 18” coil meter pit with reduced port valves
- Insulation Disc Ford Part # CCID-18-4 Closed Cell Foam Disc
- Adjustable Curb Box Ford Part # EM2-50-46-42R with inner rod

Mueller:

- 1” Single-Service Box Part # 330CS1860RSBS000390N

Lids:

- DFW Part # 18MUE-1~~I~~MBF_Small_Water Lid
- ~~Nicor Part # 18.75 LLBLKWATthDLTE~~

Fire Hydrants:

- 6” Waterous WB-67-250
- Clow Medallion
- Mueller Super Centurion 250 cast-iron
- Mueller Super Centurion 350 cast-iron

BRASS PARTS AND SADDLES

Corporation Stops

Both Iron Pipe thread and CC thread will be accepted.

Ford:

- Corp Stop Valve Part # FB1100-4-Q-NL

Mueller:

- Corp Stop Valve Part # B-25028-N

Curb Box and Stops

Ford:

- Curb Stop Valve Part # B84-444M-Q-NL
- Curb Box Part # EM2-50-46-42R

Saddles

These alternatives are for 10” or larger pipe size and/or if higher pressure ratings are needed than the standard Romac 305 and 306 stainless saddles can accommodate.

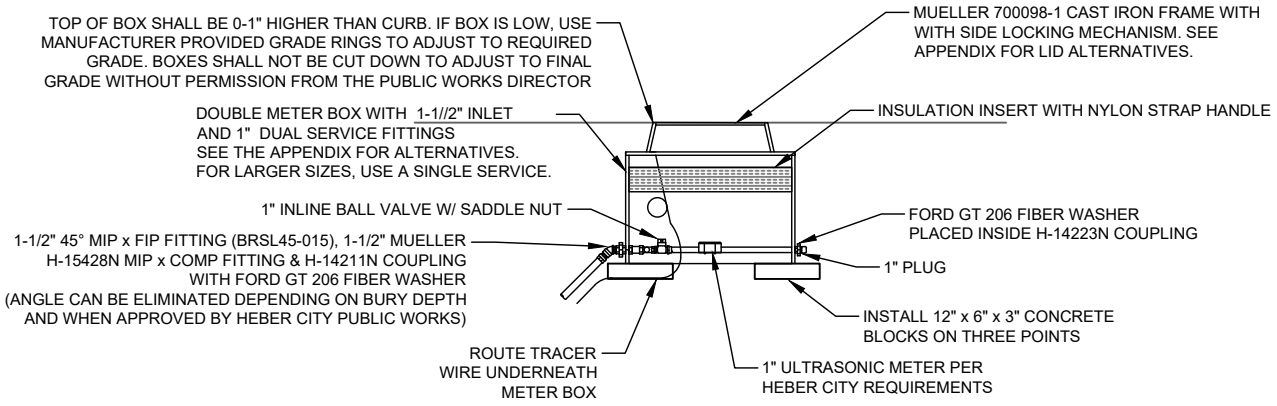
Ford:

- Saddle Part # 202BS

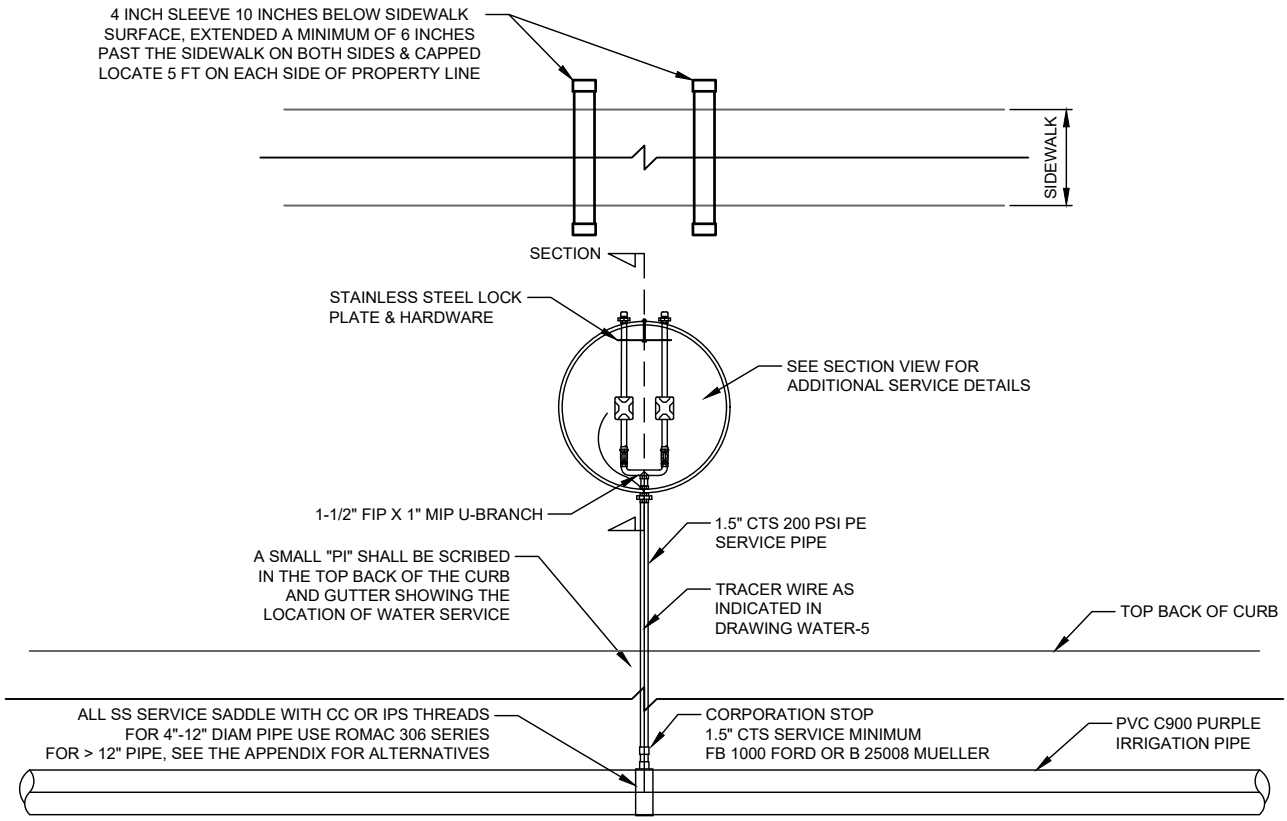
Mueller:

- Saddle Part # B2RS

END OF SECTION



SECTION VIEW



NOTES:

1. ALL COMPONENTS SHOWN TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. ALL BOXES SHALL BE EQUIPPED WITH UNIONS.
3. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
4. METER BOXES ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
5. WHEN METER BOXES ARE INSTALLED WITHIN DRIVEWAY ZONES OR WITHIN OTHER PAVED SURFACES, DIFFERENT TRAFFIC RATED LIDS & FRAMES MAY BE REQUIRED PER THE DIRECTION OF THE PUBLIC WORKS DIRECTOR.
6. IRRIGATION METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER. 4" SLEEVE REQUIRED ON ALL INSTALLATIONS INCLUDING EXISTING SIDEWALK.
7. IRRIGATION SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF OF SERVICE LINES.
8. METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. BEDDING OF ALL PIPE SHALL CONFORM TO HEBER CITY BEDDING STANDARDS FOR CULINARY WATER.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.

HEBER CITY
HEART OF THE WASATCH BACK
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

DATE: 09/23
SCALE: N.T.S.

IRRIGATION SERVICE - TWO LOTS

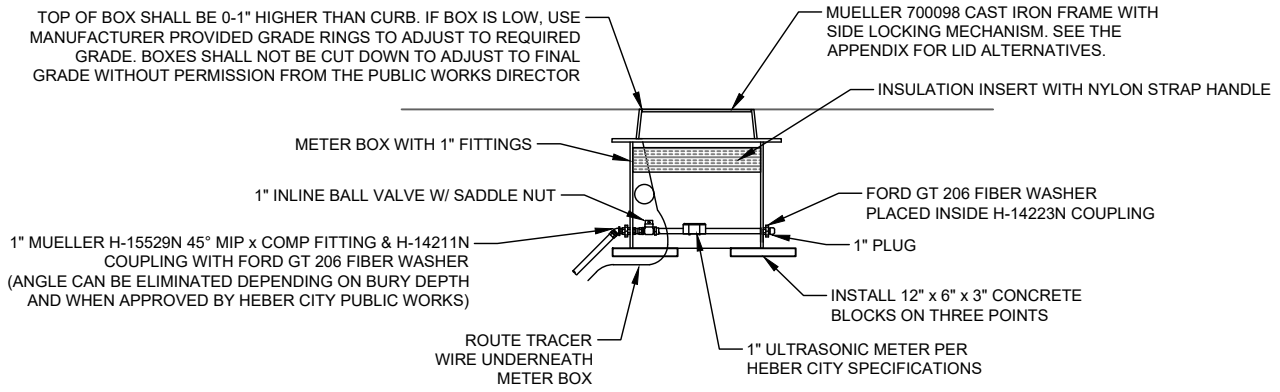
IRR-1A

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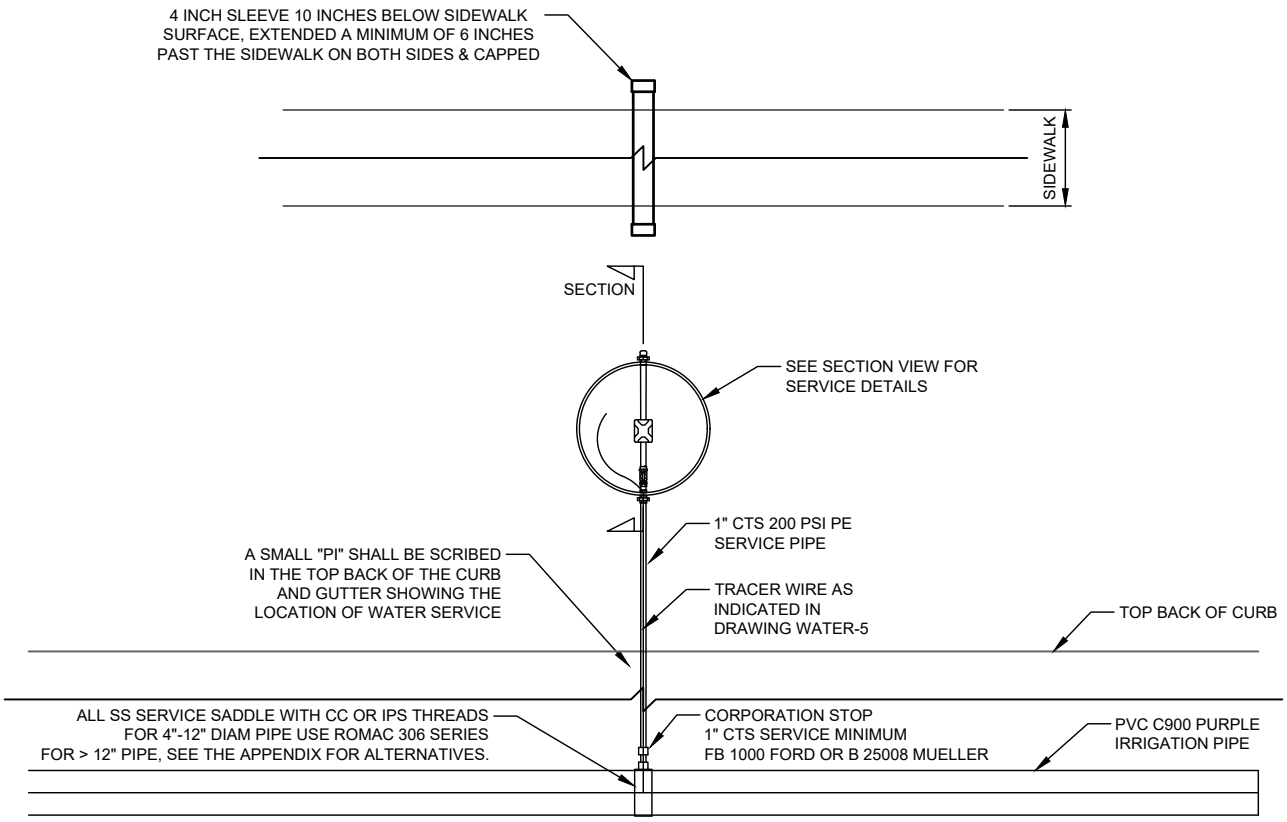
TABLE 1			
SERVICE LINE SIZE	MIN. BOX SIZE	BOX MODEL	LID / FRAME MODEL
1" MINIMUM	18" x 18"	SEE APPENDIX FOR ALTERNTIVES	SEE APPENDIX FOR ALTERNATIVES
1.5"	27" x 24"	500IS2724FAB000666N	DFW18MR-1BF1 SML IRR / 700098-1
2"	36" x 36"	550IS3636FAB000666N	SAME AS ABOVE w/ 790138 EXP RING

NOTE 1: FOR LARGER SIZES CONTACT PUBLIC WORKS FOR REQUIREMENTS.

NOTE 2: SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.



SECTION VIEW



NOTES:

1. ALL COMPONENTS SHOWN TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. ALL BOXES SHALL BE EQUIPPED WITH UNIONS.
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6. IRRIGATION METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER. 4" SLEEVE REQUIRED ON ALL INSTALLATIONS INCLUDING EXISTING SIDEWALK.
7. IRRIGATION SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF OF SERVICE LINES.
8. METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. BEDDING OF ALL PIPE SHALL CONFORM TO HEBER CITY BEDDING STANDARDS FOR CULINARY WATER.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23

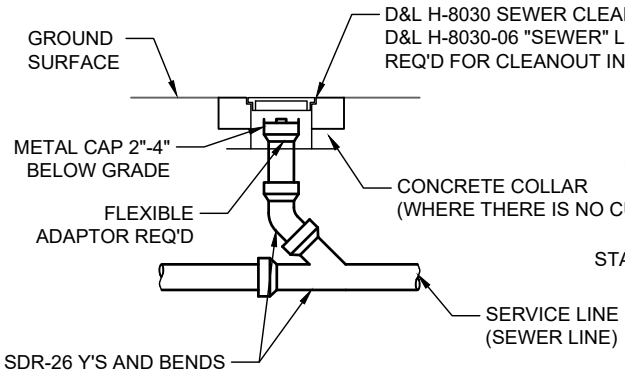
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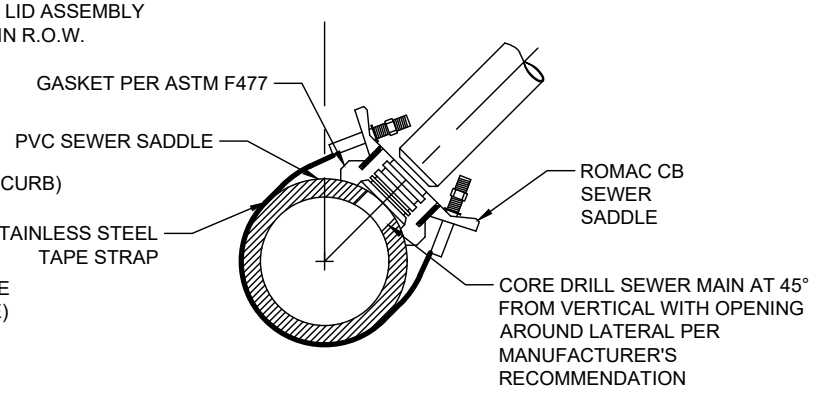
IRRIGATON SERVICE - ONE LOT

IRR-1B

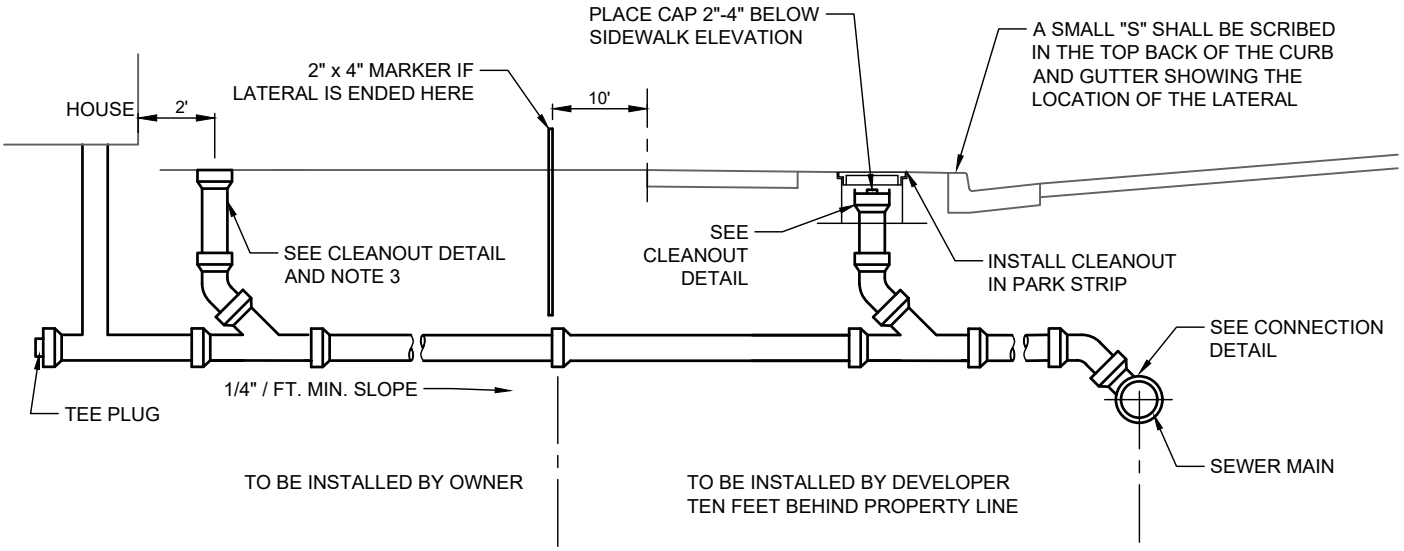
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CLEANOUT DETAIL



CONNECTION DETAIL
ON EXISTING MAIN LINES
(SEE NOTE 6)



NOTES:

1. PIPE GRAPHICS DO NOT NECESSARILY INDICATE TYPE OF PIPE TO BE USED.
2. ALL PVC SEWER LATERAL PIPE AND FITTINGS WITHIN THE R.O.W. SHALL BE A MINIMUM OF SDR-26.
3. MAXIMUM SPACING BETWEEN CLEANOUTS IS 100' AND AT ALL BENDS.
4. MAXIMUM ALLOWED BEND IN LATERAL IS 22 1/2 DEGREES.
5. SEWER & WATER LATERALS ARE PROHIBITED IN COMMON TRENCH PER STATE CODE R 309-550-7.
6. "INSERTA TEE" MAY BE USED FOR CERTAIN CONDITIONS WITH PRIOR CITY ENGINEER APPROVAL.
7. WHEN APPROVED, "INSERTA TEE" INSTALLATION MUST BE WITNESSED, INSPECTED AND CERTIFIED BY AUTHORIZED CITY AGENTS
8. IN CERTAIN AREAS WHERE CONCERN FOR SEWER BACKUP EXISTS, A SEWER BACKFLOW PREVENTER (RECTORSEAL 97034) SHALL BE REQUIRED.
9. PIPE SLOPE SHALL BE 1/4" / FT MIN.

HEBER CITY
HEART OF THE WASATCH BACK

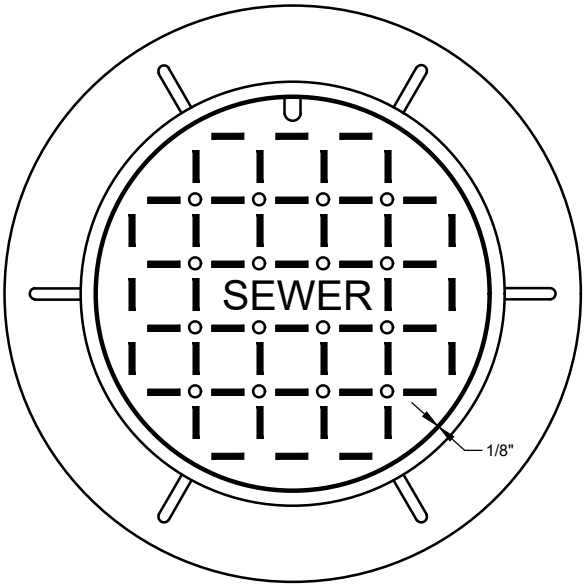
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SCALE: N.T.S.

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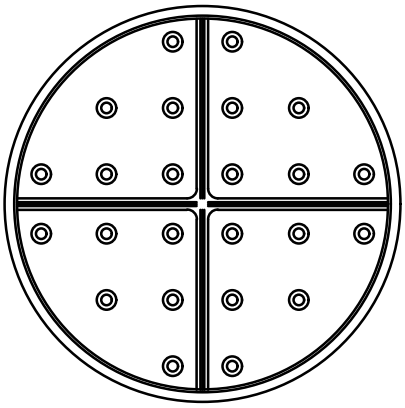
SEWER LATERAL & DETAILS

SEWER-1

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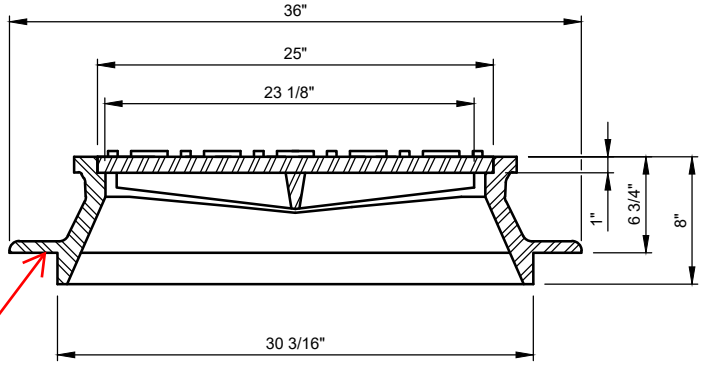


PLAN OF COVER AND RING



BOTTOM VIEW OF COVER

D&L SUPPLY #A-1180 HEAVY DUTY, 400 LB. MINIMUM



SECTION

Added Additional Dimensions to match called out ring and lid.

HEBER CITY
HEART OF THE WASATCH BACK

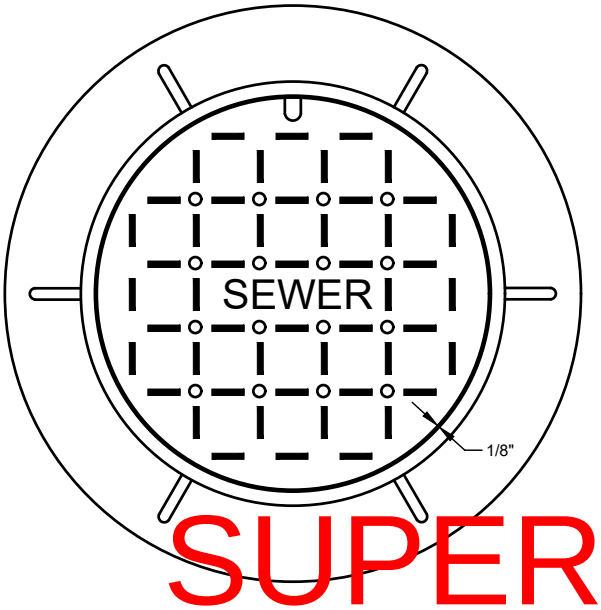
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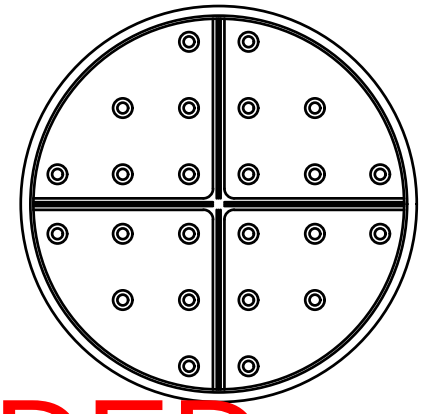
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MANHOLE RING & COVER

SEWER-2

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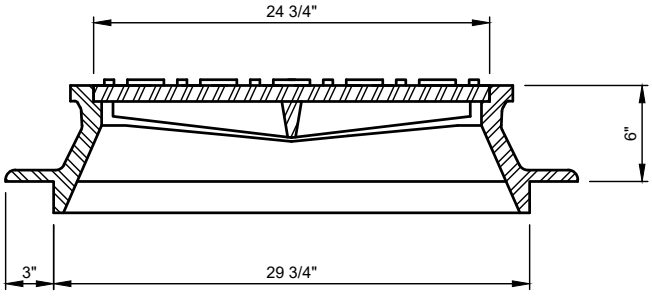


SUPERSEDED

PLAN OF COVER AND RING

BOTTOM VIEW OF COVER

D&L SUPPLY #A-1180 HEAVY DUTY, 400 LB. MINIMUM



SECTION

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

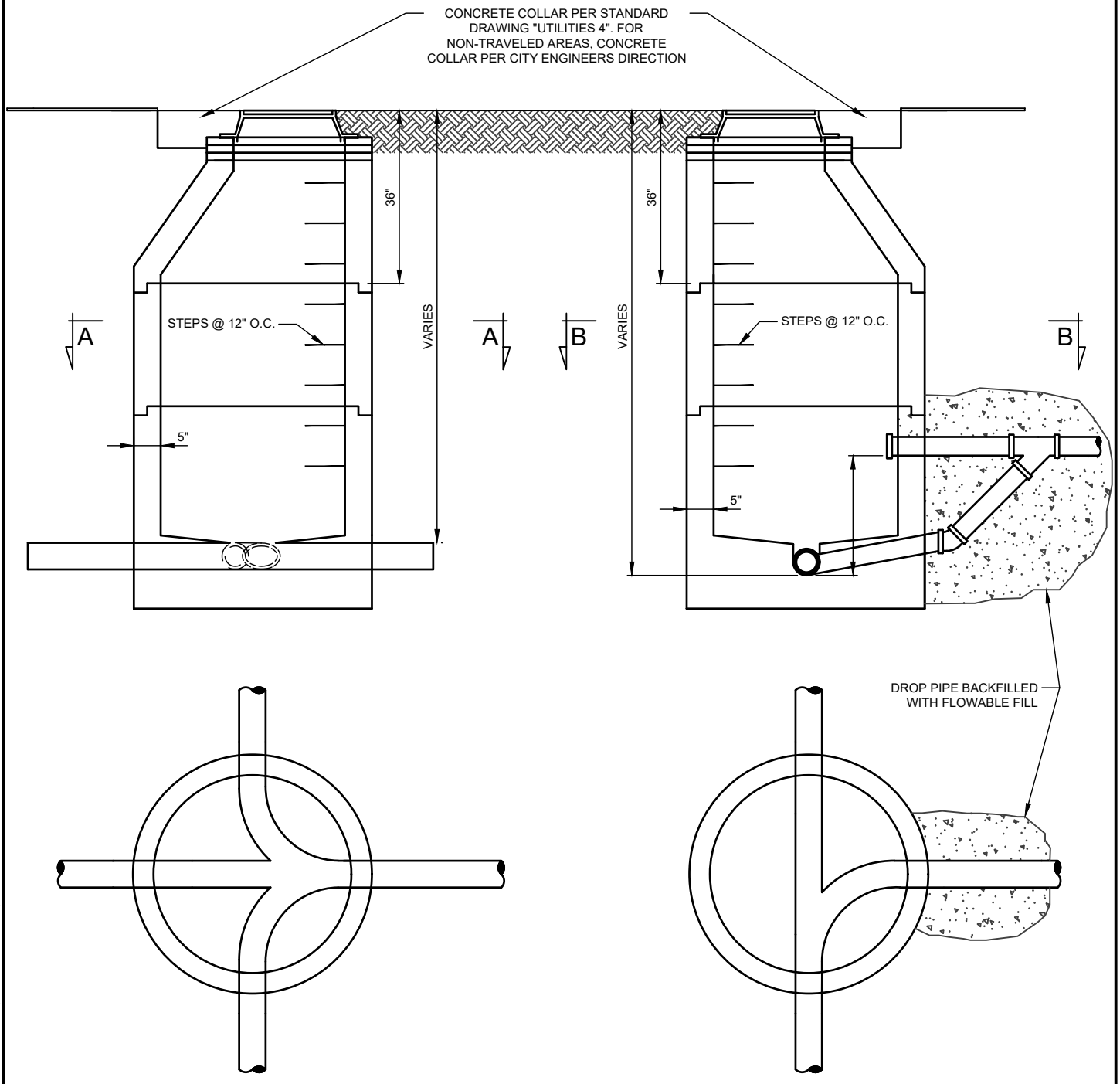
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MANHOLE RING & COVER

SEWER-2

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SECTION A-A

SECTION B-B

JUNCTION MANHOLE

DROP MANHOLE

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HEBER CITY
HEART OF THE WASATCH BACK

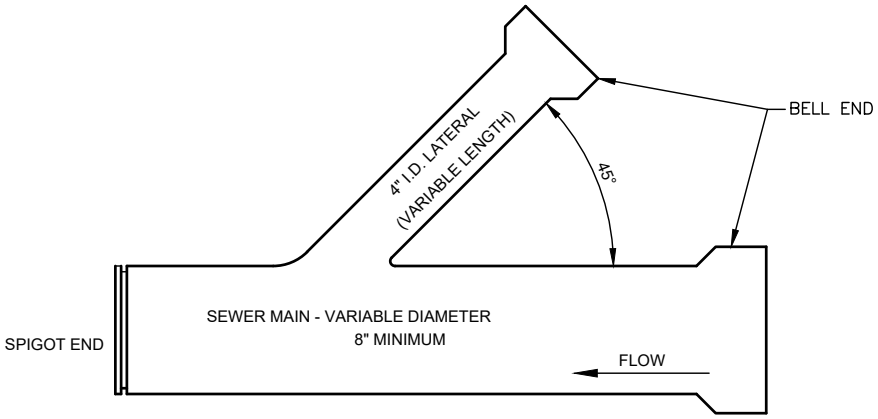
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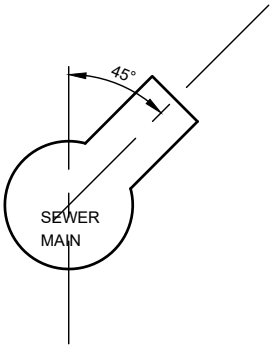
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JUNCTION & DROP MANHOLES

SEWER-3





INSTALLATION END VIEW

REQUIRED ON ALL NEW SEWER MAIN CONSTRUCTION

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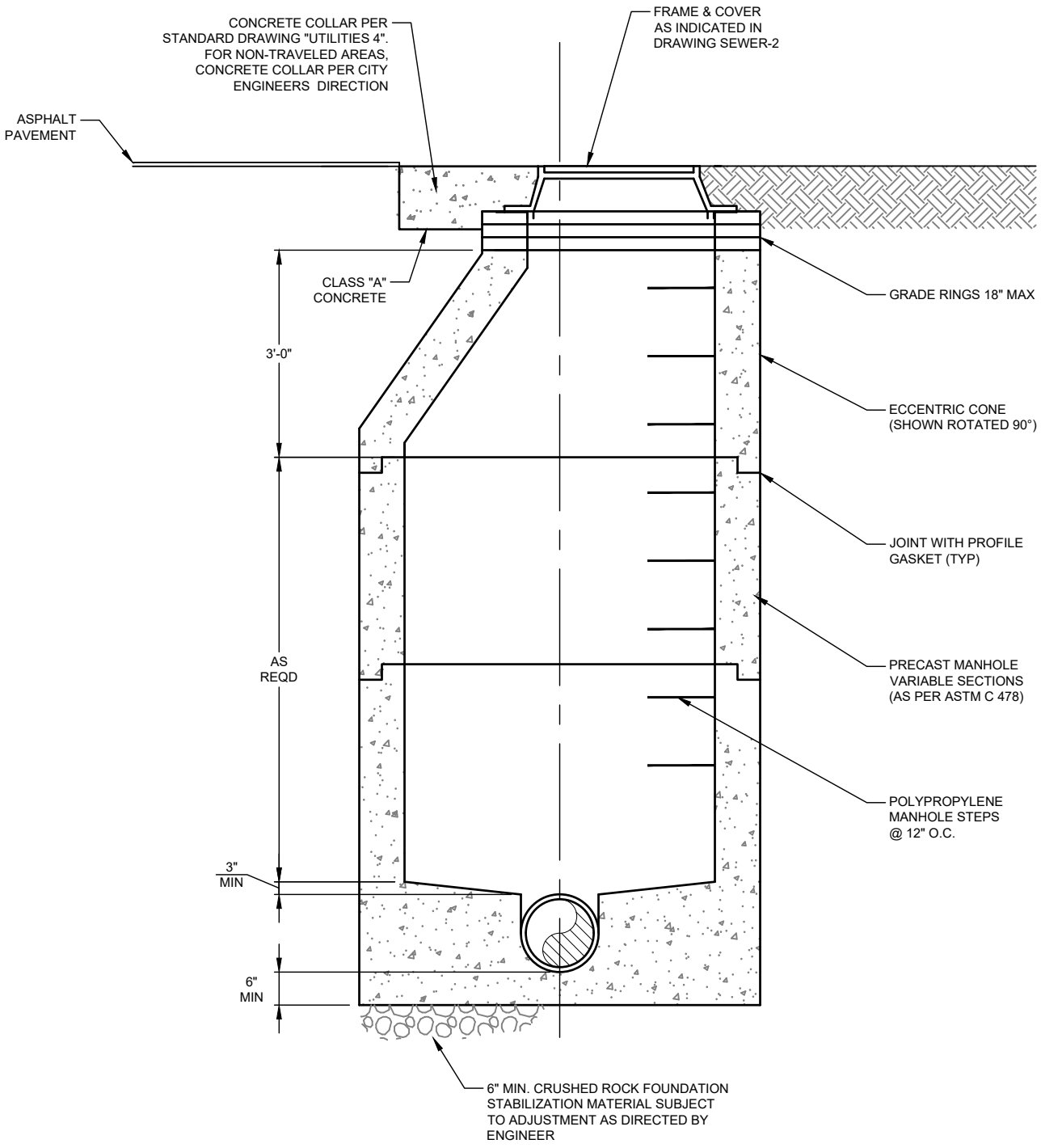
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SCALE: N.T.S.

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FABRICATED SEWER LATERAL

SEWER-4



NOTES:

1. LOCATE MANHOLE COVER ON SIDE OF MANHOLE AS SHOWN ABOVE. SET MANHOLE FRAME IN GROUT.
2. ALL MANHOLES TO BE WATER TIGHT AND TESTED AS PER STD. SPEC. 02660.
3. MANHOLE BASE AND 1ST SECTION OF MANHOLE TO BE FABRICATED AS AN INTEGRAL UNIT.

HEBER CITY
HEART OF THE WASATCH BACK

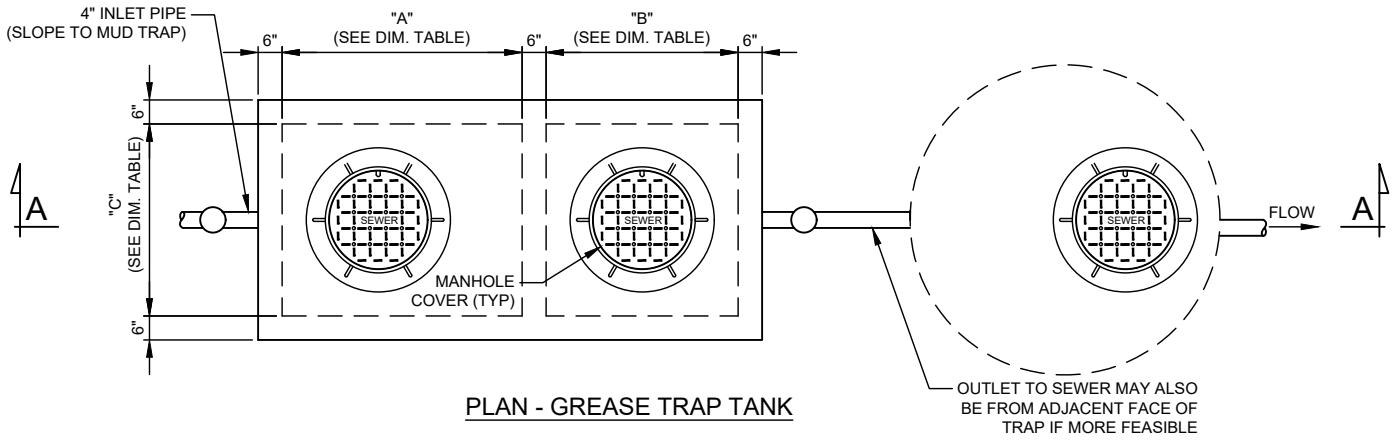
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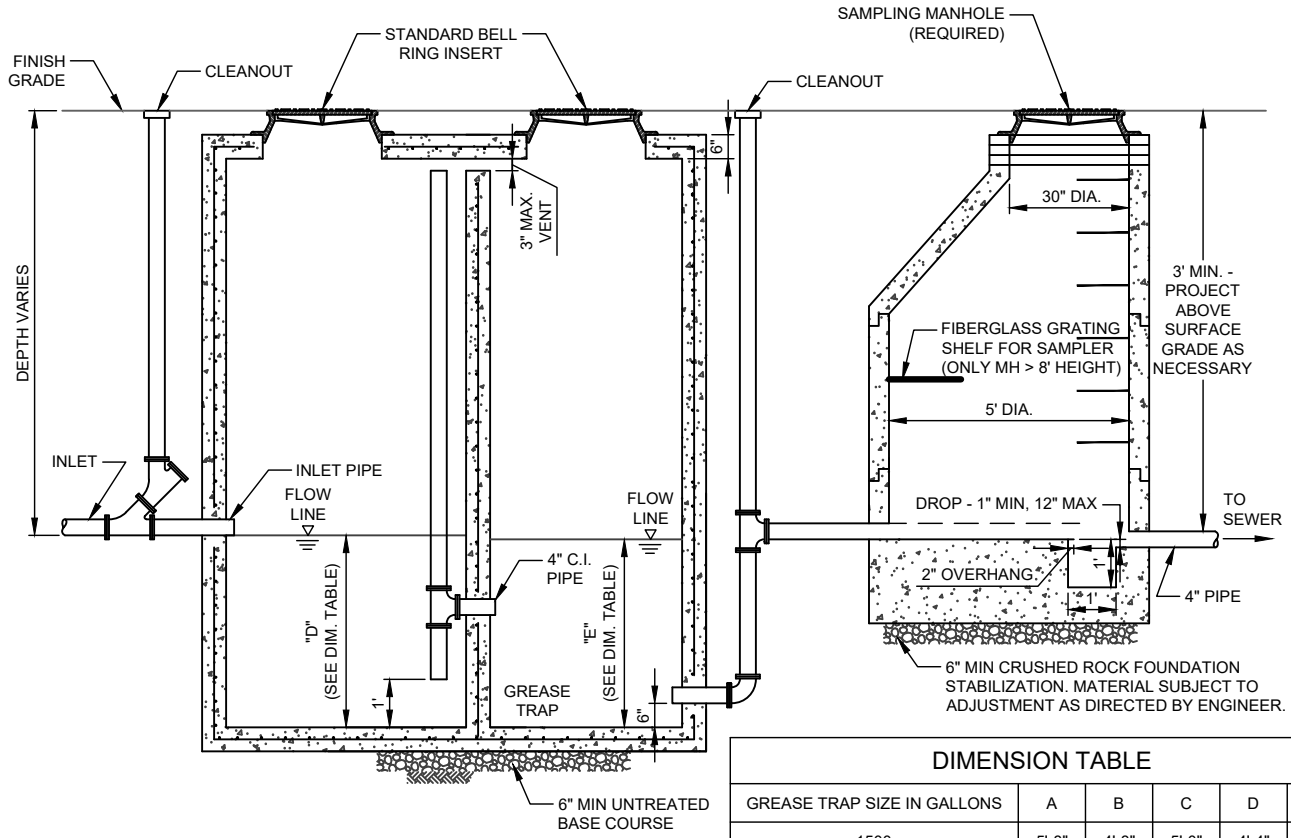
PRE-CAST CONCRETE SEWER MANHOLE

SEWER-5

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PLAN - GREASE TRAP TANK



SECTION A-A
GREASE TRAP TANK

DIMENSION TABLE					
GREASE TRAP SIZE IN GALLONS	A	B	C	D	E
1500	5'-8"	4'-8"	5'-0"	4'-4"	4'-0"
1000	5'-0"	4'-0"	4'-0"	4'-0"	3'-11"
750	3'-1"	3'-1"	4'-0"	4'-2"	3'-10"

NOTES:
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
2. REINFORCING STEEL SHALL BE ASTW A615 GRADE 60.
3. THE CONCRETE COVER OVER THE REINFORCING STEEL SHALL BE A MINIMUM OF 1½ INCHES.
4. THE STRUCTURE SHALL BE DESIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF UTAH.
5. THE STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LOADING CRITERIA:
   A. WALLS DESIGNED FOR A SATURATED EQUIVALENT FLUID AT-REST SOIL PRESSURE OF 120 PCF PLUS TRUCK SURCHARGE.
   B. TRUCK LOADING USING AN AASHTO H-20 TRUCK LOAD.
6. THE MANWAY FRAME AND COVER SHALL BE A TRAFFIC TYPE CASTING FOR H-20 TRUCK LOAD.
7. WHERE THE SEWER LINE ALREADY EXISTS, THE SEWER INVERT INTO AND OUT OF THE TANK SHALL BE 4'-0" ABOVE THE TANK FLOOR.
8. PLUMBING OUTSIDE OF THE GREASE INTERCEPTOR WILL BE IN ACCORDANCE TO LOCAL REGULATIONS.
9. THE BAFFLE INSIDE THE INTERCEPTOR SHALL BE WITHIN 3 INCHES OF THE CEILING.
10. COVERS SHALL BE CIRCULAR AND SHALL BE SOLID WITH PICK HOLES FOR REMOVAL.
11. THE INLET PIPE SHALL BE AT AN ELEVATION OF 1 INCH OR HIGHER THAN THE OUTLET PIPE.
12. SANITARY WASTES FROM TOILETS SHALL NOT BE PLUMBED TO GREASE INTERCEPTORS.
13. PIPING AS PER CITY OR SANITARY DISTRICT REQUIREMENTS.
14. PROVIDE A SEPARATE VENT LINE AS REQUIRED BY THE INTERNATIONAL PLUMBING CODE.

HEBER CITY
HEART OF THE WASATCH BACK

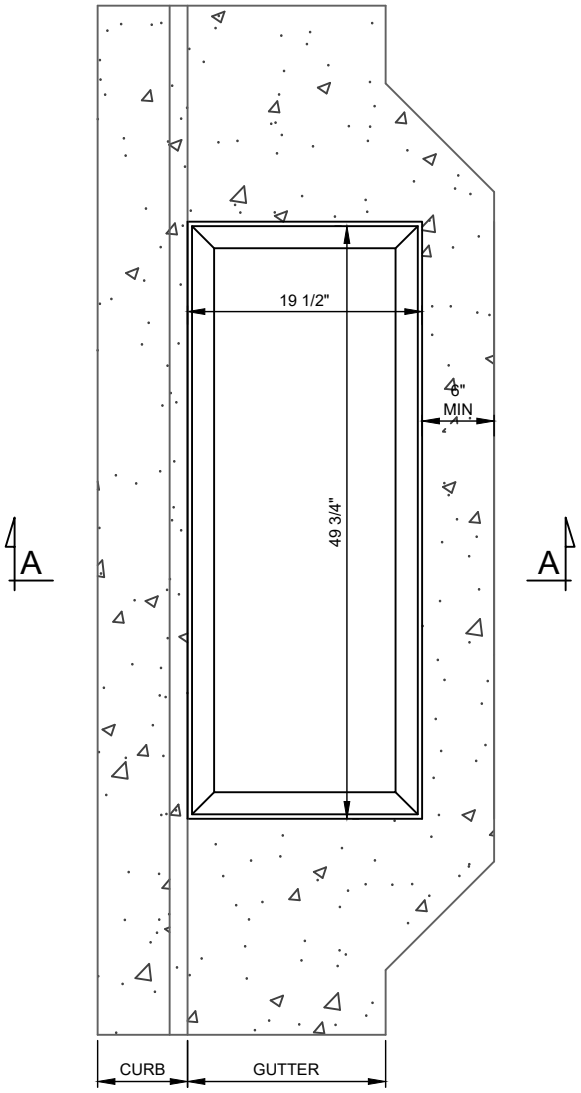
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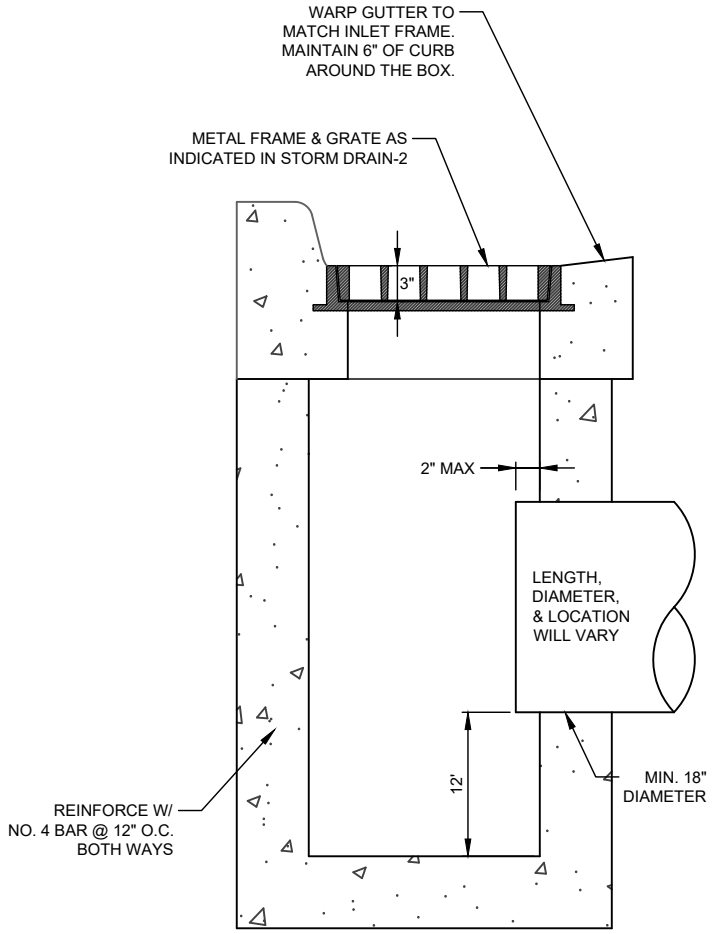
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(435) 654-0757

GREASE INTERCEPTOR

SEWER-6

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SECTION A-A

NOTES:

1. ALL FRAMES & GRATES TO BE CAST IRON.
2. CONSTRUCT BOX (WALL THICKNESS) TO MATCH EXISTING OR NEW TYPE OF CURB AS SHOWN.
3. A SNOUT OR APPROVED EQUAL SHALL BE USED WHERE THE STORM WATER IS LEAVING THE BOX OR STORM WATER SYSTEM AND ENTERING A SUMP, RETENTION / DETENTION POND, OR DISCHARGE POINT.

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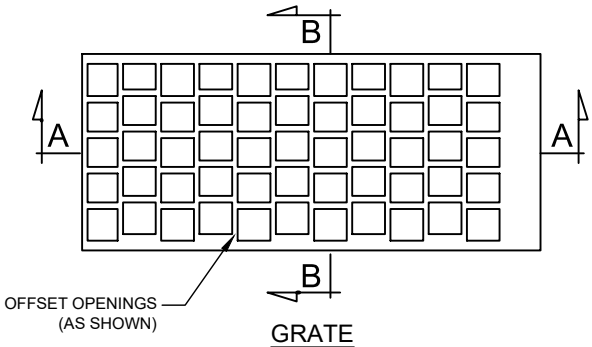
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
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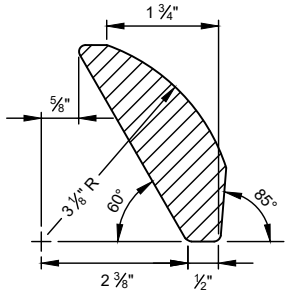
CURB-DROP INLET STANDARD BOX

DRAIN-1

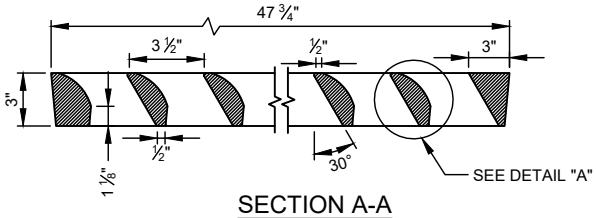


GRATE

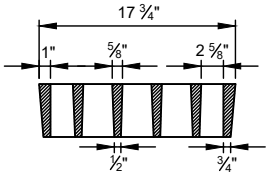
WEIGHT: 266 LBS.



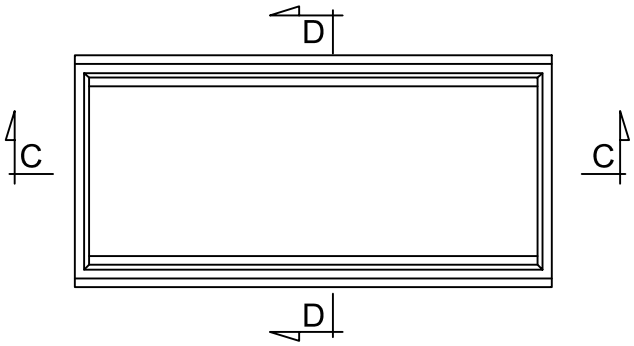
DETAIL "A"



SECTION A-A

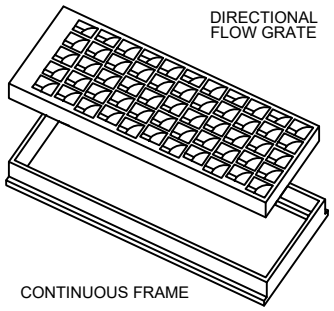


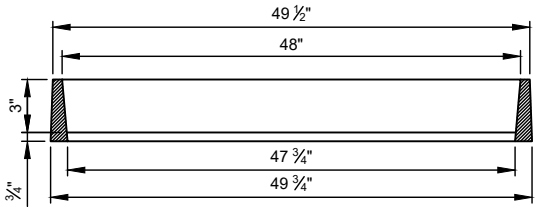
SECTION B-B



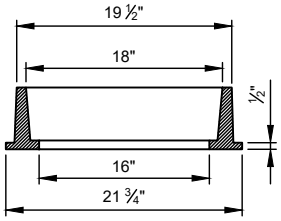
FRAME

WEIGHT: 160 LBS.





SECTION C-C



SECTION D-D

NOTES:

1. ALL DIMENSIONS ARE INCHES (in) UNLESS OTHERWISE NOTED.
2. GRATE AND FRAME MAY BE FURNISHED IN EITHER DUCTILE IRON (ASTM A-536 GRADE 60) OR CAST GRAY IRON: AASHTO M-105, CLASS 30 B (ASTM A-48).
3. INSTALLATION REQUIRES SUPPORT UNDER LONGITUDINAL AXIS OF FRAME. ORIENT GRATE WITH DIRECTION OF FLOW.
4. GRATE & FRAME SHALL BE D&L I-1803 OR APPROVED EQUAL.

DESIGN DATA:

MS 18 (HS-20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

DUCTILE IRON AND STRUCTURAL STEEL: fs=138 MPa

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

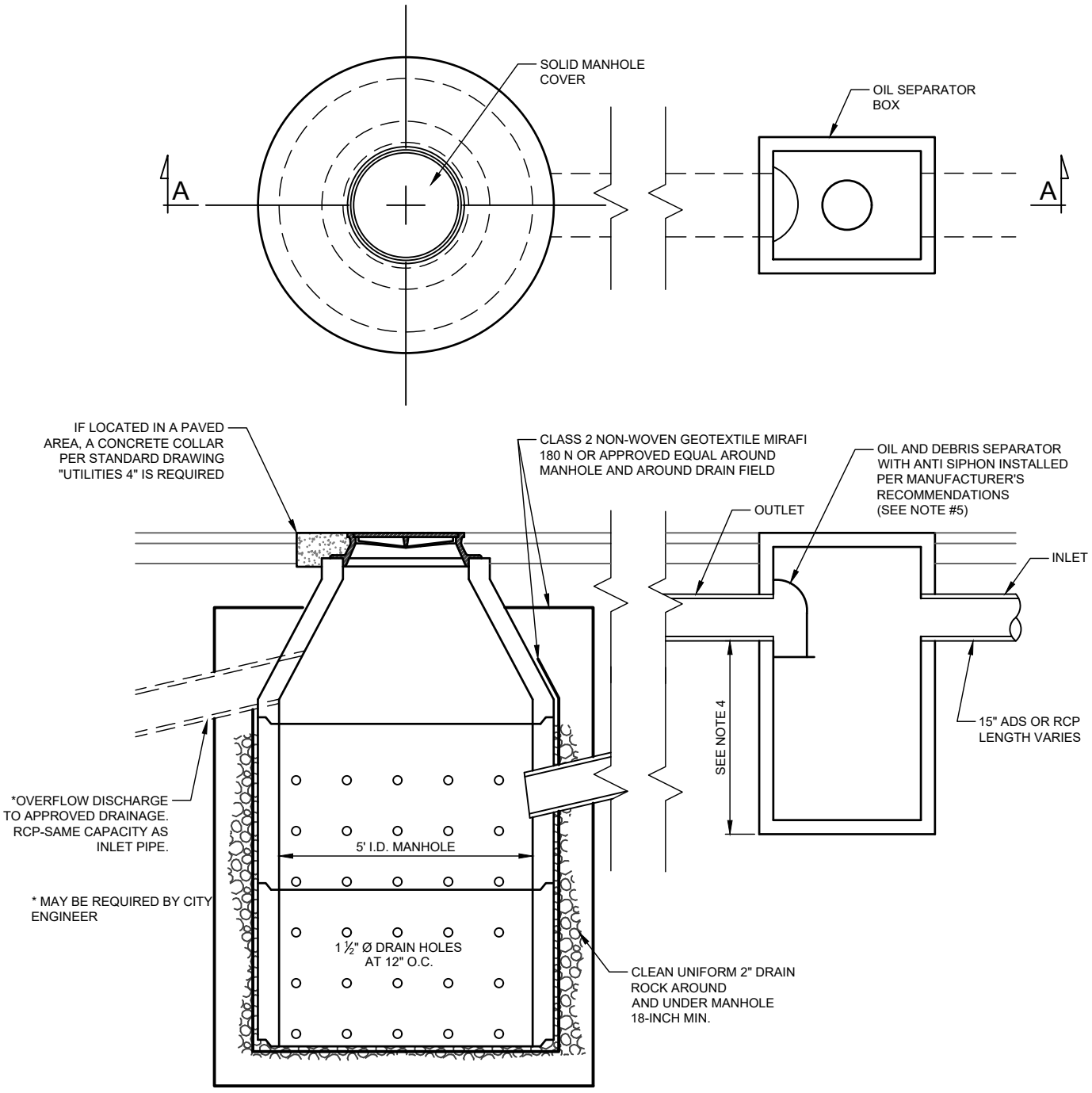
SCALE: N.T.S.

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GRATE & FRAME

DRAIN-2

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\STORM DRAIN-2.dwg - Grate Frame - 9/07/2023 03:41pm, nataller



SECTION A-A

NOTES:

1. CONSTRUCT DROP INLET BOX TO MATCH WIDTH OF CURB & GUTTER. MATCH INSIDE LENGTH OF BOX TO INSIDE LENGTH OF FRAME.
2. D & L I-3516 WITH ADJUSTABLE CURB BOX.
3. STANDARD CAST IRON MANHOLE RING & LID.
4. SUMP DEPTH = 36" MIN. FOR 12" DIAMETER OUTLET AND SMALLER, FOR OUTLET DIAMETER 15" AND LARGER, DEPTH = 2.5 TO 3 TIMES THE DIAMETER.
5. SEE STANDARD SPECIFICATION 02772 PONDS.

HEBER CITY
HEART OF THE WASATCH BACK

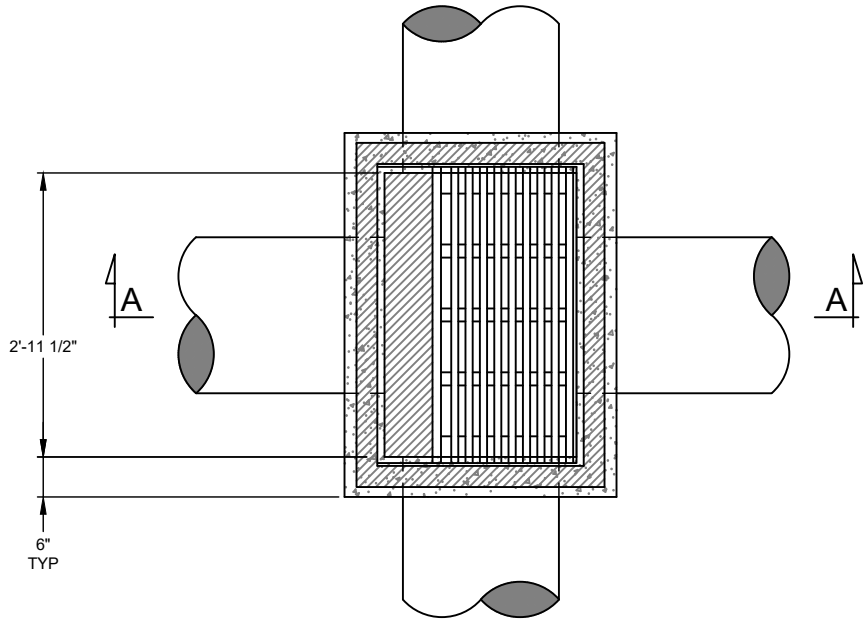
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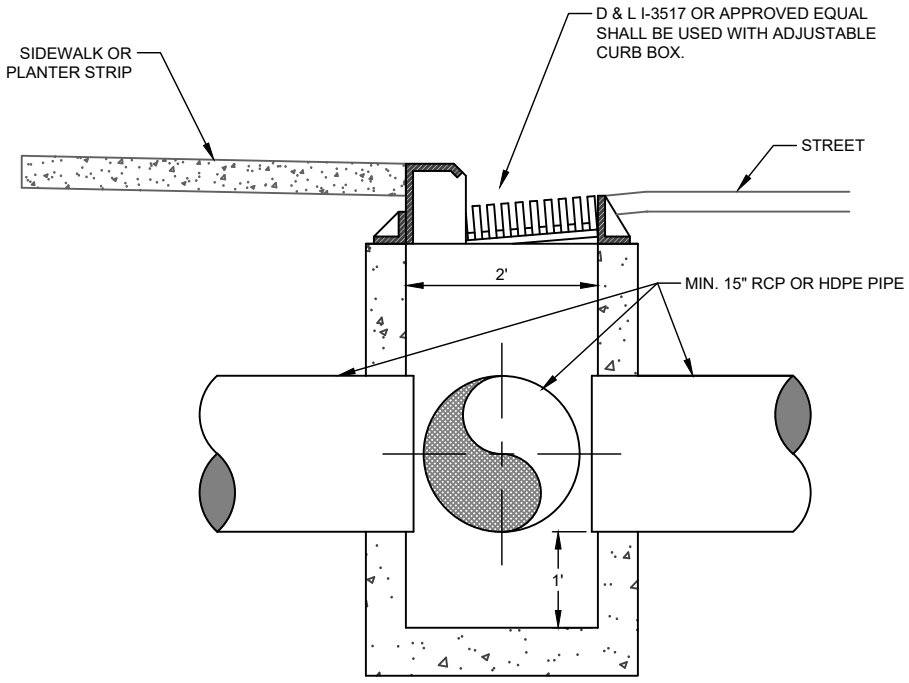
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SUMP DISPOSAL & OIL SEPARATOR

DRAIN-3

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SECTION A-A

NOTES:

1. #4 REBAR SPACED NO GREATER THAN 12" O.C. HORIZ. AND 8" O.C. VERTICAL. 14" OVERLAP OF REBAR REQUIRED.
2. OPEN FACE CATCH BASIN TO BE USED ONLY AT THE CITY ENGINEER'S DISCRETION.
3. D & L I-3517 GRATE AND FRAME WITHOUT HOOD MAY BE USED AT CITY ENGINEER'S DISCRETION.

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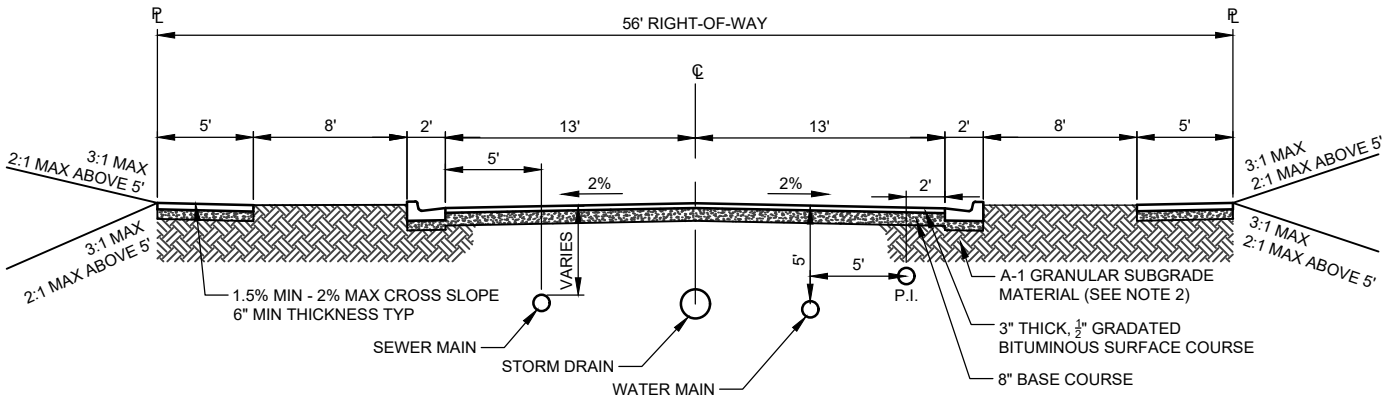
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17
SCALE: N.T.S.

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CURB INLET BOX - OPEN FACE

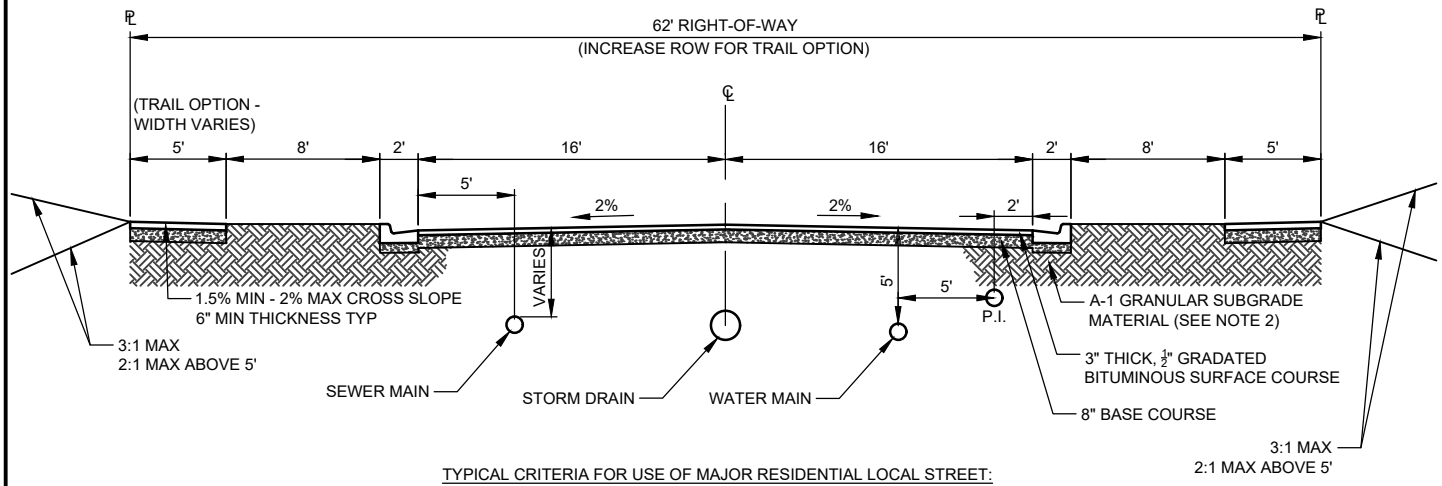
DRAIN-4



TYPICAL CRITERIA FOR USE OF MINOR RESIDENTIAL LOCAL STREET:

1. THE MAXIMUM AVERAGE DAILY TRIPS SHALL NOT EXCEED 500.
2. THE TOTAL NUMBER OF UNITS MUST BE LESS THAN 100.
3. PARKING TO BE RESTRICTED AS DIRECTED BY THE CITY ENGINEER.

MINOR RESIDENTIAL LOCAL



TYPICAL CRITERIA FOR USE OF MAJOR RESIDENTIAL LOCAL STREET:

1. THE MAXIMUM AVERAGE DAILY TRIPS SHALL NOT EXCEED 2000.
2. THE TOTAL NUMBER OF UNITS MUST BE LESS THAN 200.

MAJOR RESIDENTIAL LOCAL

NOTES FOR RESIDENTIAL STREETS:

1. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
2. MAXIMUM ROAD GRADE IS 8% WITHOUT CITY ENGINEER'S APPROVAL.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
5. TRAIL OPTION AND WIDTH IS DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.

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HEBER CITY
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DATE: 01/25
SCALE: N.T.S.

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MAJOR & MINOR RESIDENTIAL LOCAL

STREETS-1

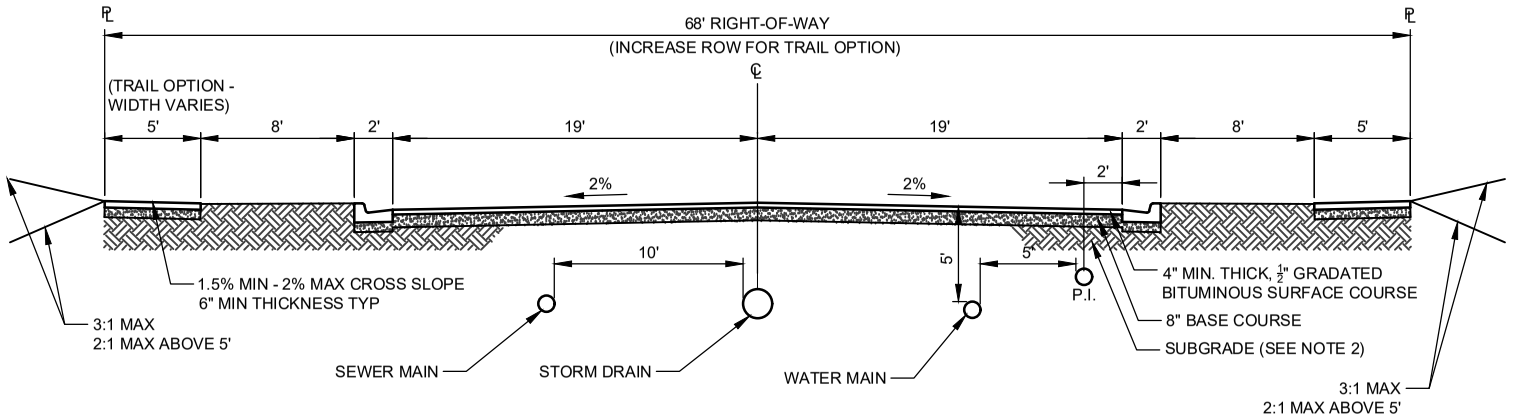
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SCALE: N.T.S.

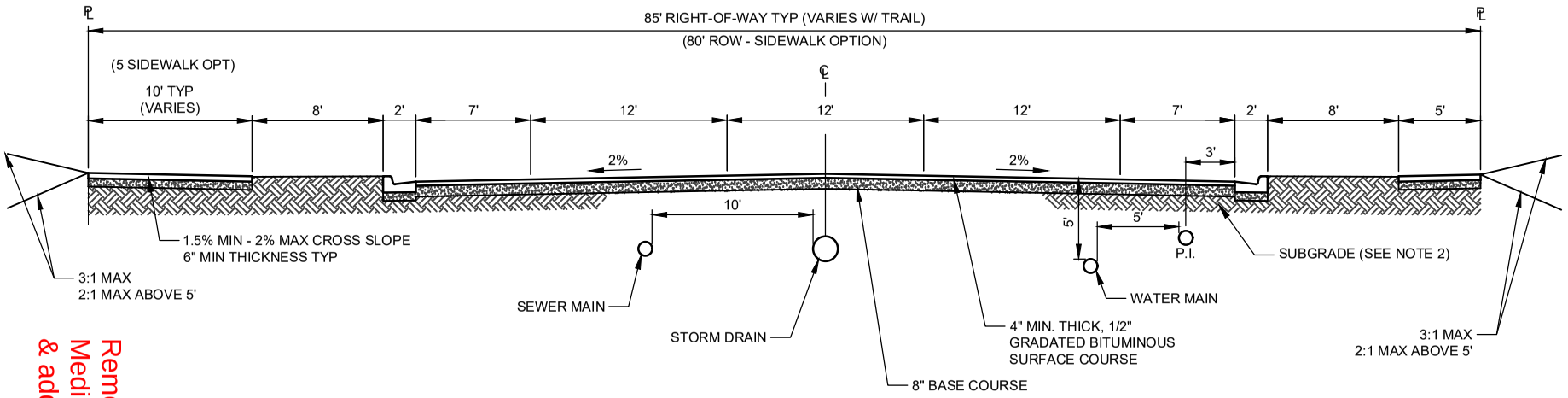
DATE: 01/25

STREETS-2A

MINOR COLLECTOR



MINOR COLLECTOR



MAJOR COLLECTOR

Removed Landscaped Median on Major Collector & added Note 7.

NOTES FOR COLLECTOR STREETS:

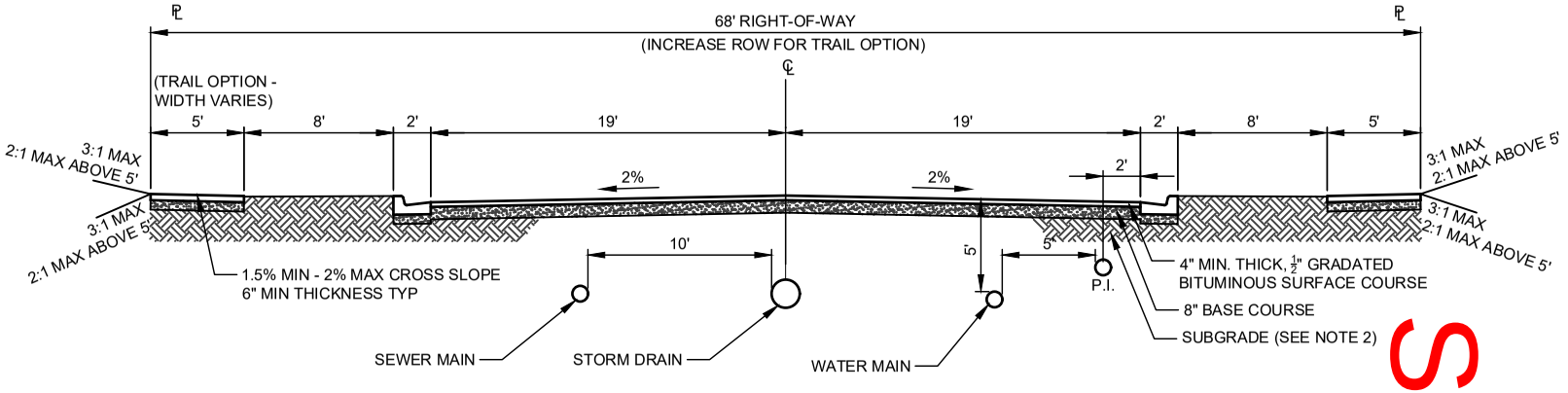
1. SINGLE FAMILY RESIDENTIAL DRIVEWAYS ARE PROHIBITED ON COLLECTOR ROADS.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. SIDEWALK TO BE FIVE FEET WIDE MINIMUM.
4. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
5. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
6. TRAIL AND SIDEWALK OPTIONS ARE DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.
7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

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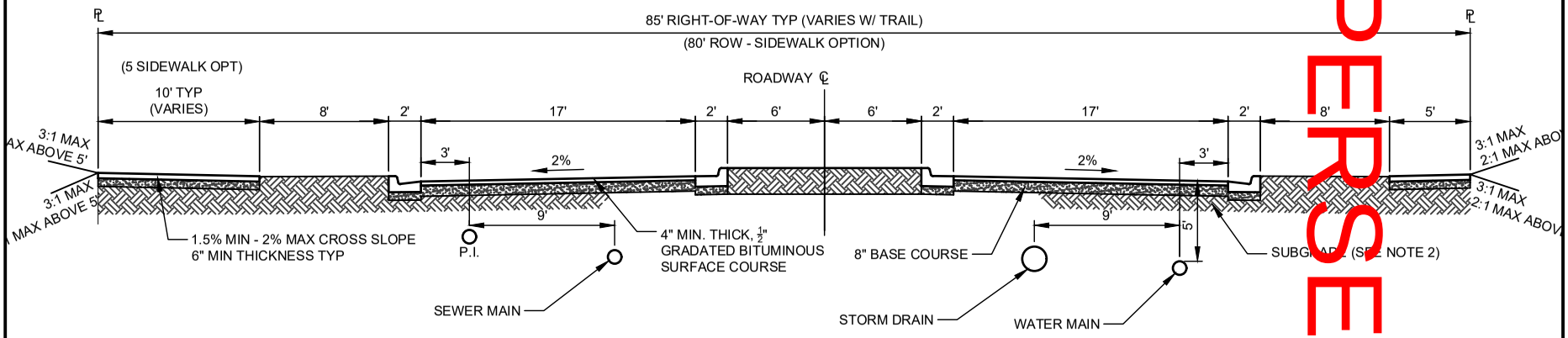
SCALE: N.T.S.
DATE: 6/20

MINOR COLLECTOR

STREETS-2A



MINOR COLLECTOR



MAJOR COLLECTOR

NOTES FOR COLLECTOR STREETS:

1. MAJOR COLLECTOR ROADS INCLUDE EITHER LANDSCAPED MEDIANS OR CENTER TURN LANES. RESIDENTIAL DRIVEWAYS ARE PROHIBITED. LANDSCAPED MEDIANS ASSUME NO PARKING. ASPHALT WIDTHS MAY BE REDUCED TO 48' WITH PARKING OR 38' WITHOUT PARKING WHEN LANDSCAPED MEDIANS ARE OMITTED.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. COMMERCIAL SIDEWALK TO BE FIVE FEET WIDE MINIMUM.
4. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
5. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
6. TRAIL AND SIDEWALK OPTIONS ARE DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.

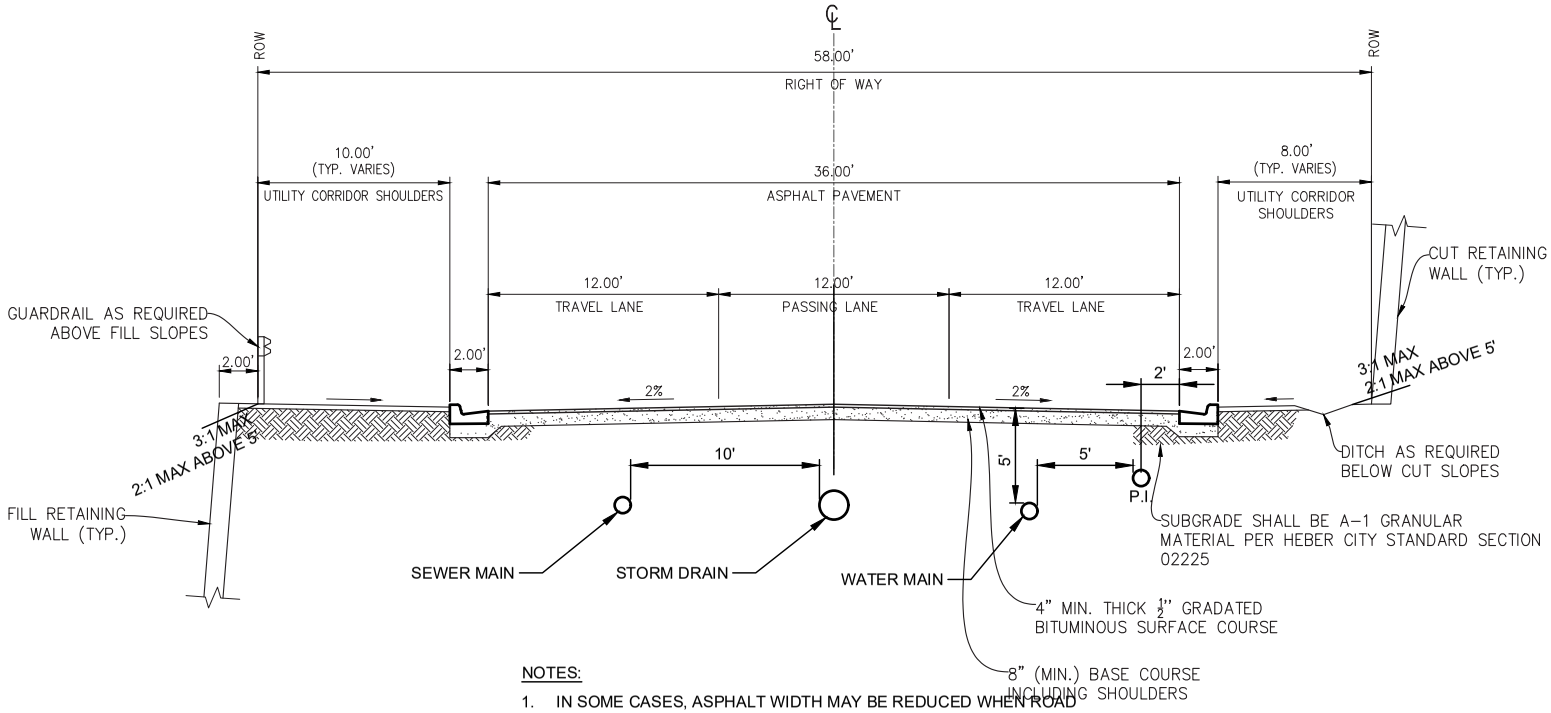
SUPERSEDED

HEBER CITY
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(435) 654-0757

SCALE: N.T.S.
DATE: 09/23

STREETS-2B

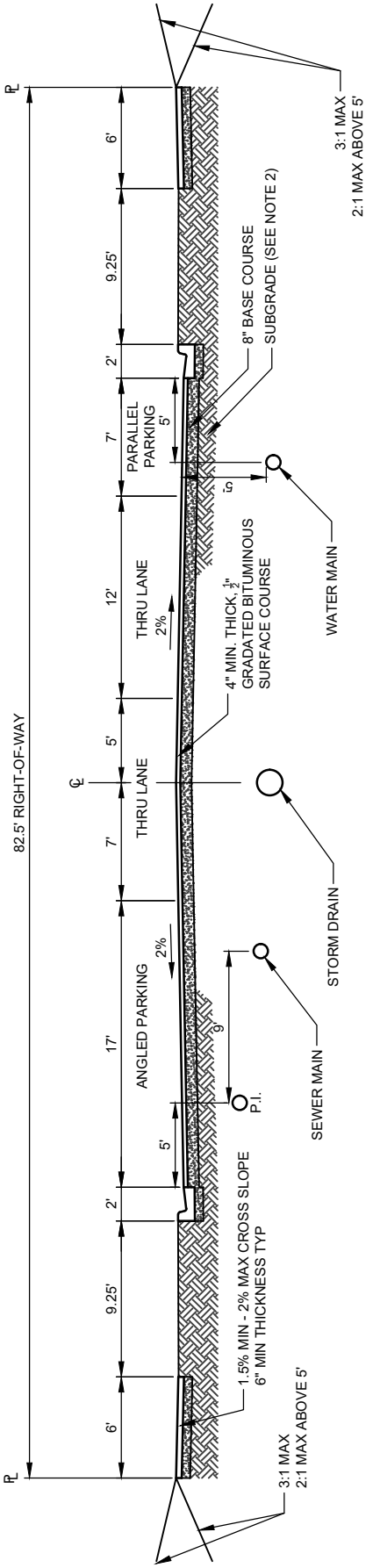
NO-ACCESS MOUNTAIN COLLECTOR



NOTES:

1. IN SOME CASES, ASPHALT WIDTH MAY BE REDUCED WHEN ROAD GRADE IS LESS THAN 4% WITH PRIOR CITY ENGINEER APPROVAL.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. SHOULDERS TO BE FILLED TO WITHIN ONE INCH OF T.B.C.
4. NO PARKING.
5. NO RESIDENTIAL DRIVEWAYS.
6. TRAVERSES NON-DEVELOPABLE TERRAIN.
7. ENCROACHMENT EASEMENTS REQUIRED FOR WALLS/SLOPES OUTSIDE OF ROW.
8. TRAILS SHALL BE LOCATED OUTSIDE OF THE ROW.

NO ACCESS MOUNTAIN COLLECTOR



HISTORIC BUSINESS CORE

NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.
7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

Removed the additional ROW Option, Added Note 7

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

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HISTORIC BUSINESS CORE

STREETS-3A

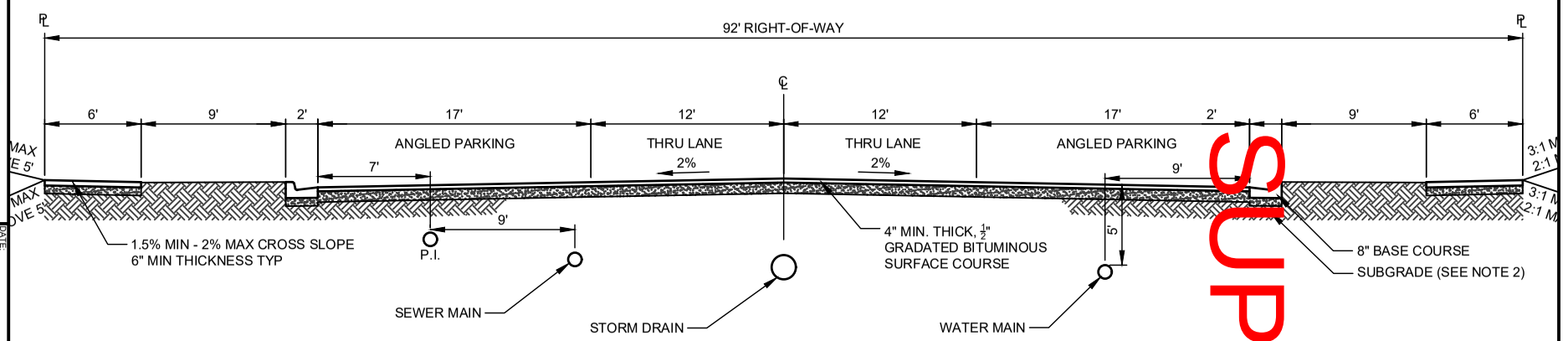
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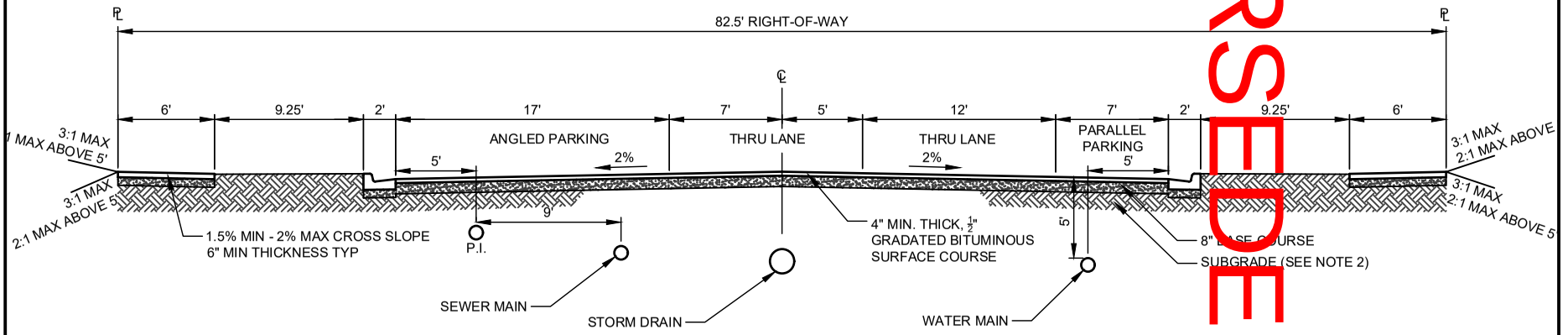
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DATE: 06/20

STREETS-3A

HISTORIC BUSINESS CORE



HISTORIC BUSINESS CORE



HISTORIC BUSINESS CORE - OPTION

SUPERSEDED

NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

HEBER CITY
HEART OF THE WASATCH BACK

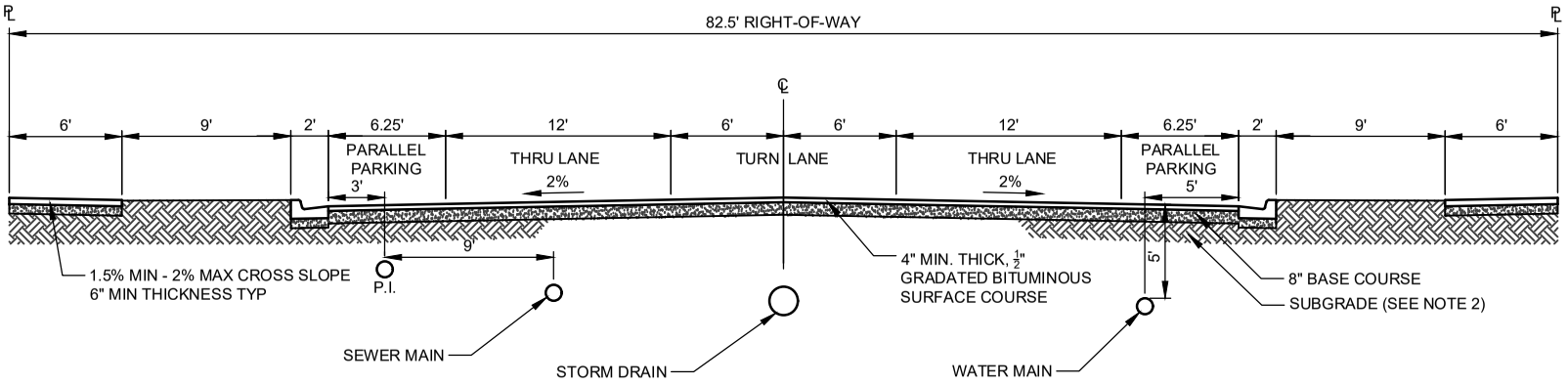
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SCALE: N.T.S.

DATE: 01/25

HISTORIC BUSINESS CORE MAJOR INTERSECTION

STREETS-3B



HISTORIC BUSINESS CORE - MAJOR INTERSECTION

Removed the additional ROW Option, Added Note 7

NOTES FOR HISTORIC BUSINESS CORE ROADS:

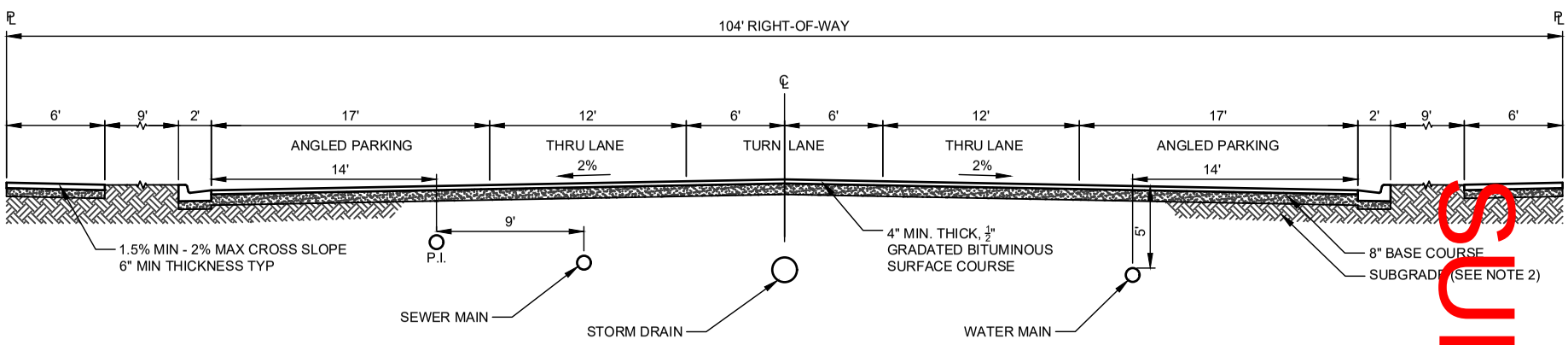
1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN THE LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.
7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

HEBER CITY
HEART OF THE WASATCH BACK
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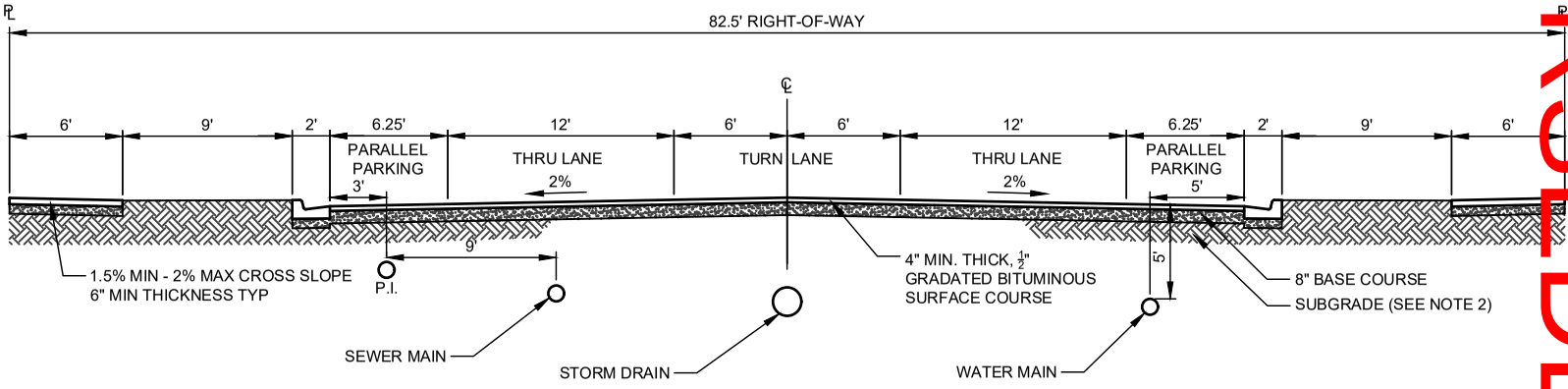
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DATE: 06/20

STREETS-3B

HISTORIC BUSINESS CORE MAJOR INTERSECTION



HISTORIC BUSINESS CORE - MAJOR INTERSECTION

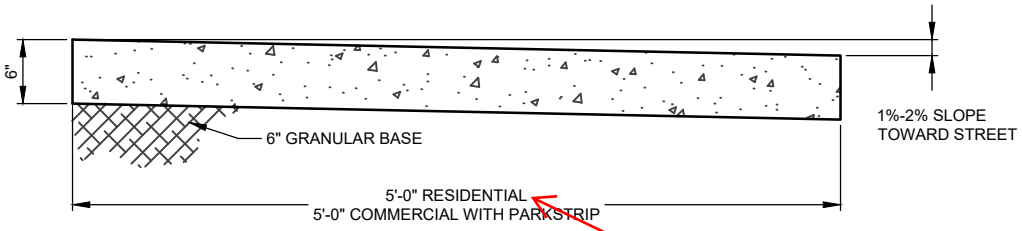


HISTORIC BUSINESS CORE - MAJOR INTERSECTION - OPTION

NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN THE LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

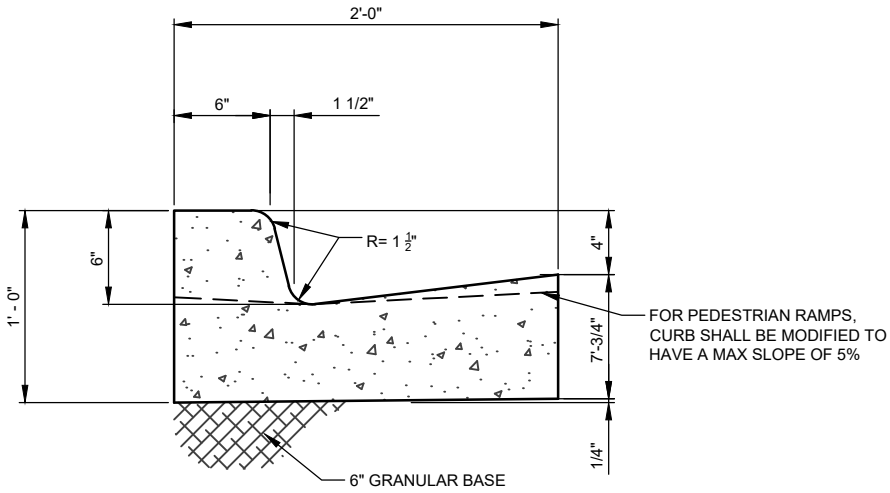
SUPERSEDED



Matched sidewalk width to current City Standard.

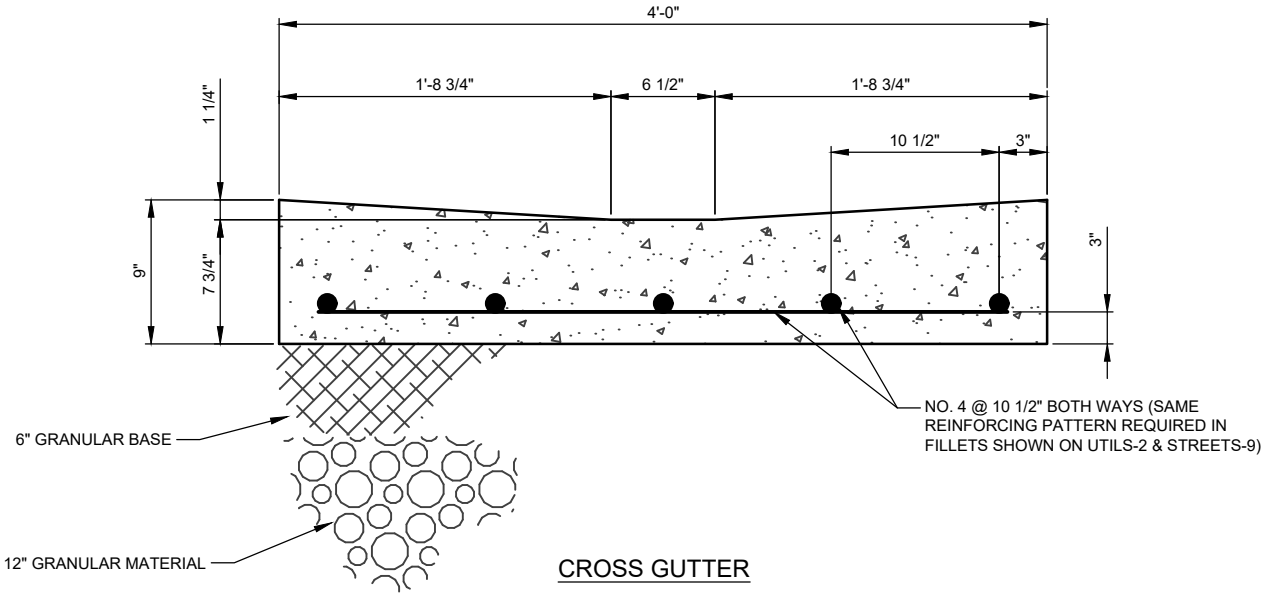
NOTE:
WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

SIDEWALK



NOTES:
THE TOP BACK OF CURB SHALL BE STAMPED ACCORDING TO SECTION 700-1.14-A-13

HIGH BACK CURB & GUTTER



CROSS GUTTER

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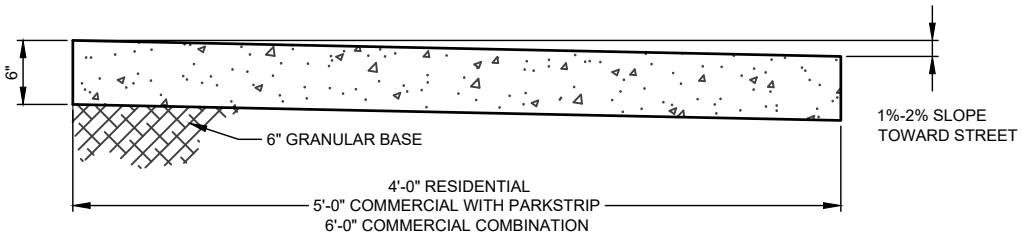
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

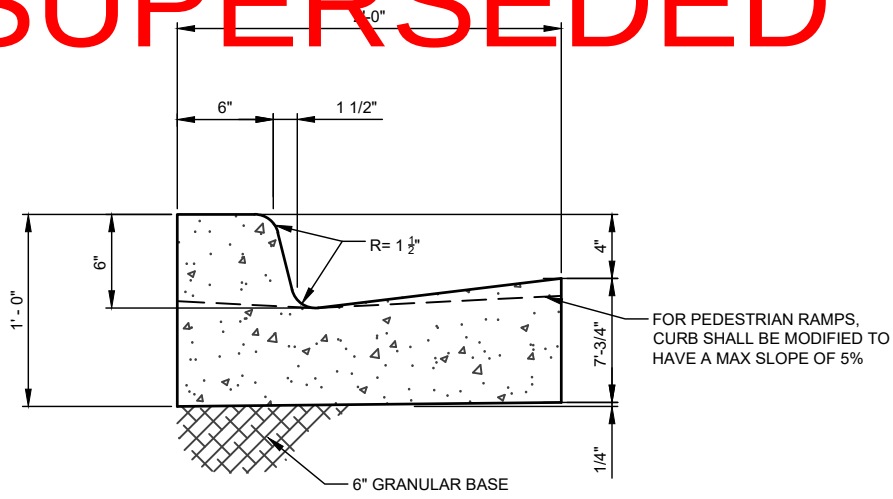
STREETS-4



NOTE: WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

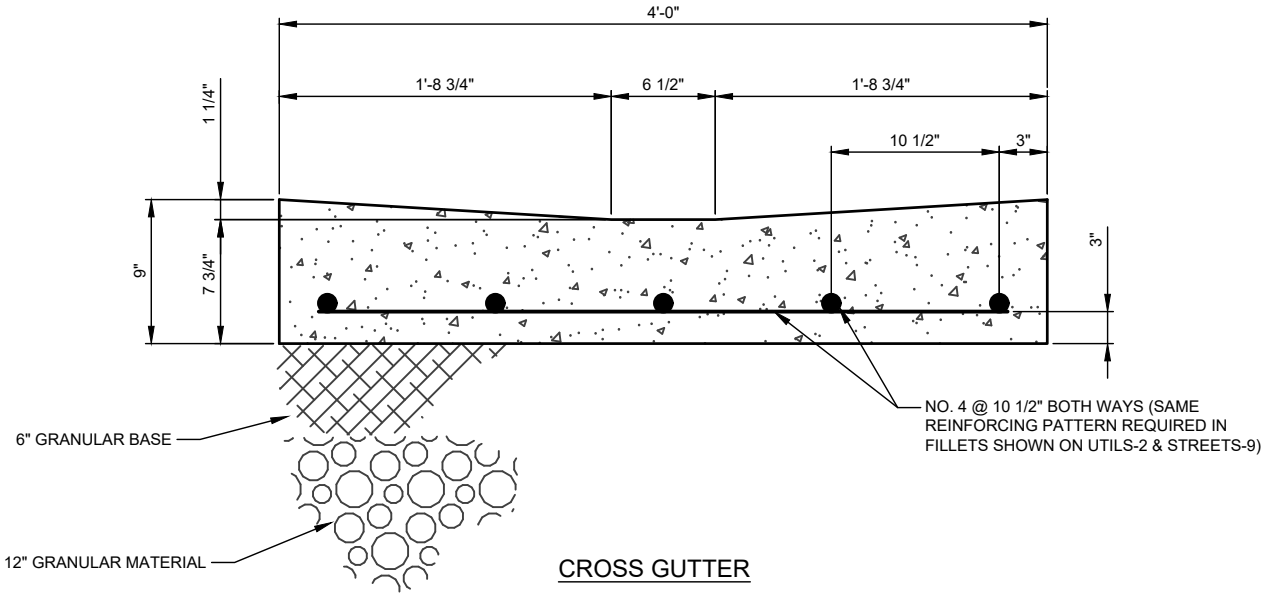
SIDEWALK

SUPERSEDED



NOTES:THE TOP BACK OF CURB SHALL BE STAMPED ACCORDING TO SECTION 700 - 1.02 - L.

HIGH BACK CURB & GUTTER



CROSS GUTTER

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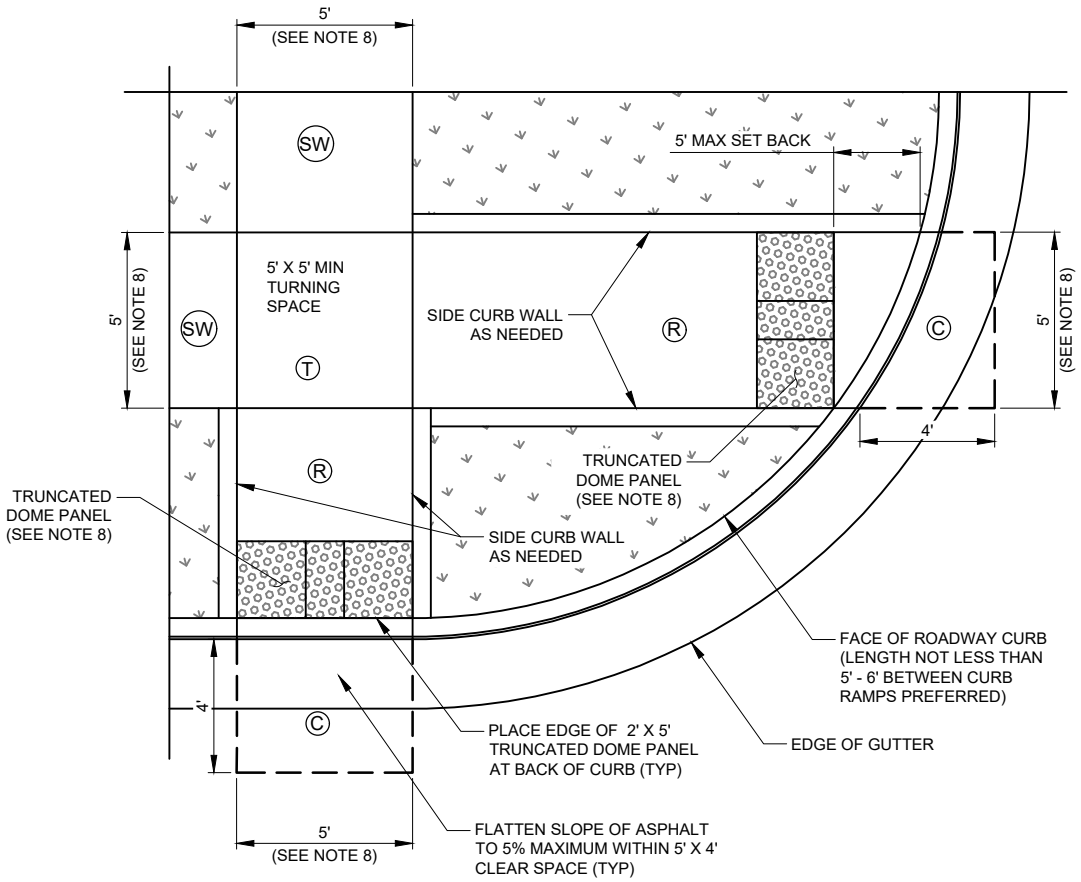
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

STREETS-4



Added to meet current ADA standards. Combined corner ramps are only allowed in retrofit applications.

REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX*
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX*
T	2% MAX	2% MAX*
SW	-	2% MAX*

*DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSSING SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
2. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
3. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
4. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
5. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
6. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
7. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
8. ADA RAMP TO MATCH THE WIDTH OF THE SIDEWALK (5') OR TRAIL (8' - 10').

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HEBER CITY
HEART OF THE WASATCH BACK

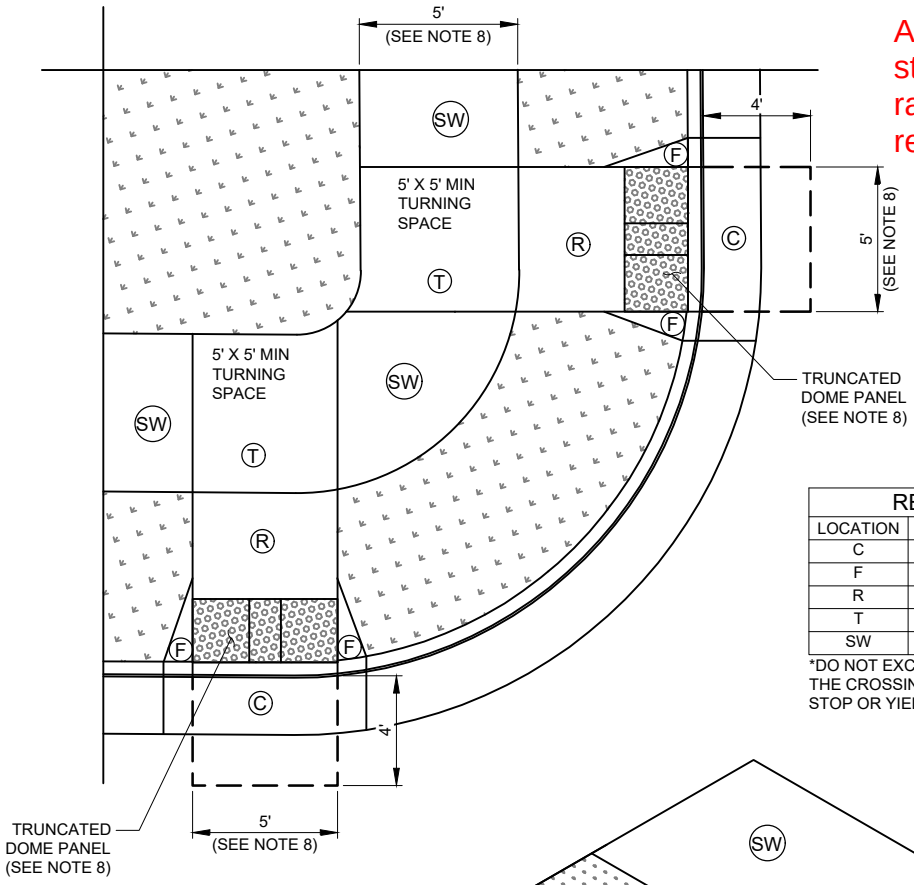
DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

PERPENDICULAR CURB RAMPS

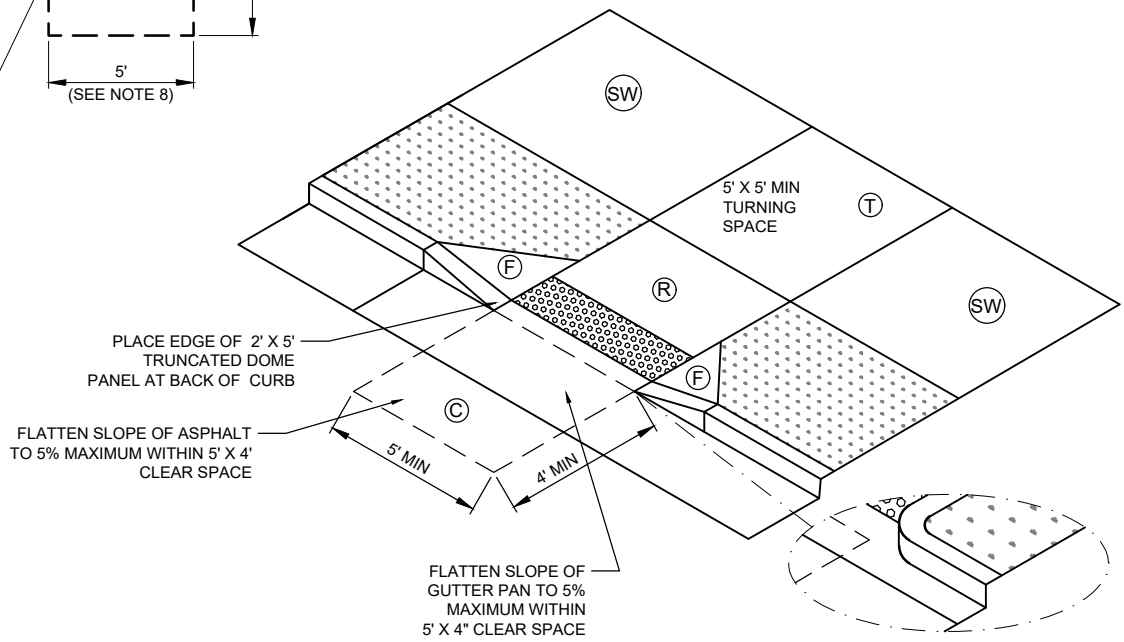
STREETS-5A

Added to meet current ADA standards. Combined corner ramps are only allowed in retrofit applications.



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX*
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX*
T	2% MAX	2% MAX*
SW	-	2% MAX*

*DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSSING SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.



CURB RETURN ALTERNATIVE WITH PRIOR APPROVAL FROM CITY ENGINEER

NOTES:

1. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
2. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
3. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
4. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
5. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
6. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
7. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
8. ADA RAMP TO MATCH THE WIDTH OF THE SIDEWALK (5') OR TRAIL (8' - 10').

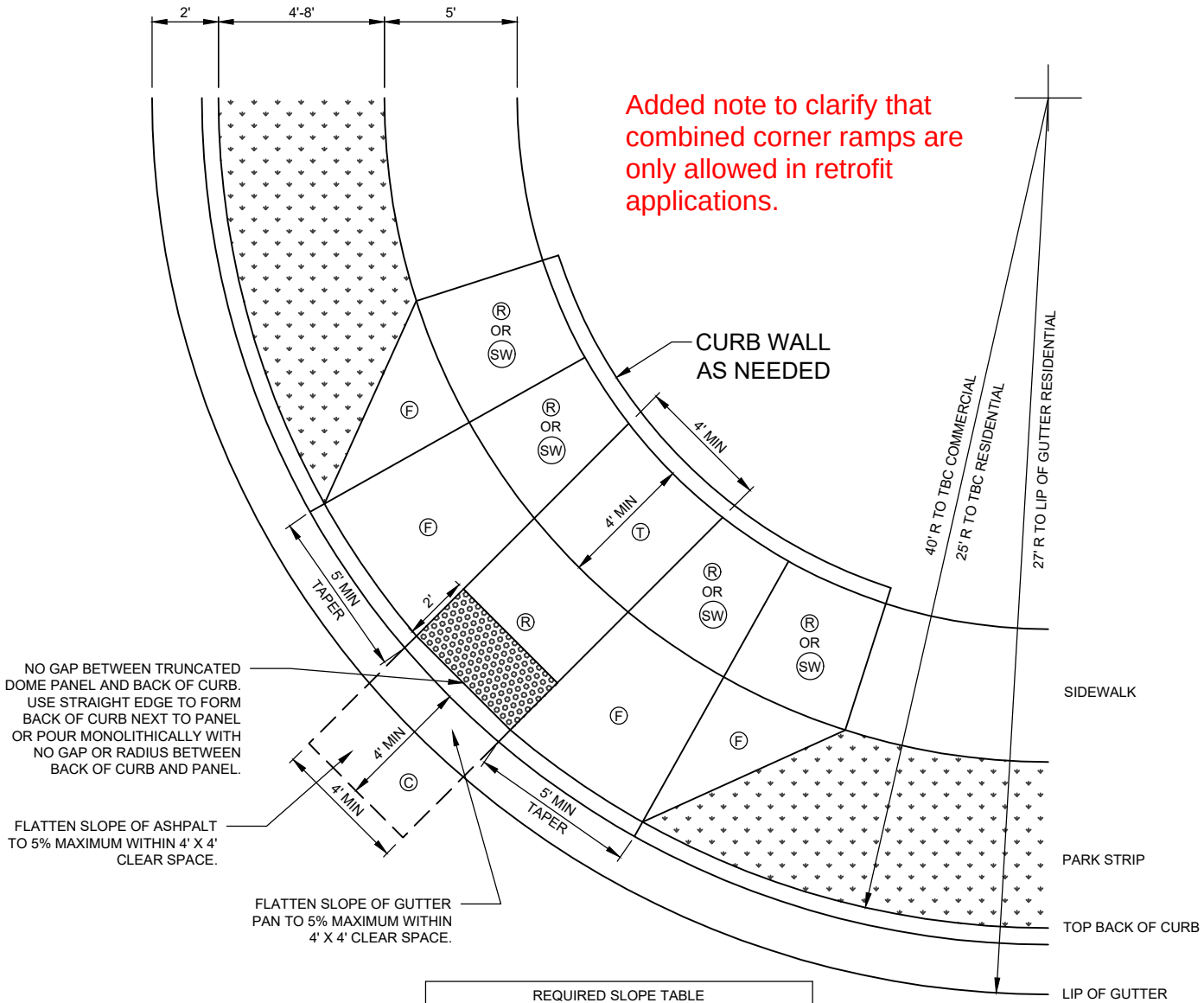
HEBER CITY
HEART OF THE WASATCH BACK
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

DATE: 01/25
SCALE: N.T.S.

PERPENDICULAR CURB RAMPS

STREETS-5B

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REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. ONLY APPROVED FOR RETROFITS WHEN APPROVED BY CITY ENGINEER, OTHERWISE USE STREETS-5A OR 5B.
2. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
3. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
4. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
5. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
6. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
7. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
8. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
9. COMBINED CORNER RAMPS ONLY ALLOWED IF EXISTING SITE RESTRICTIONS DO NOT ALLOW PERPENDICULAR CURB RAMPS.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

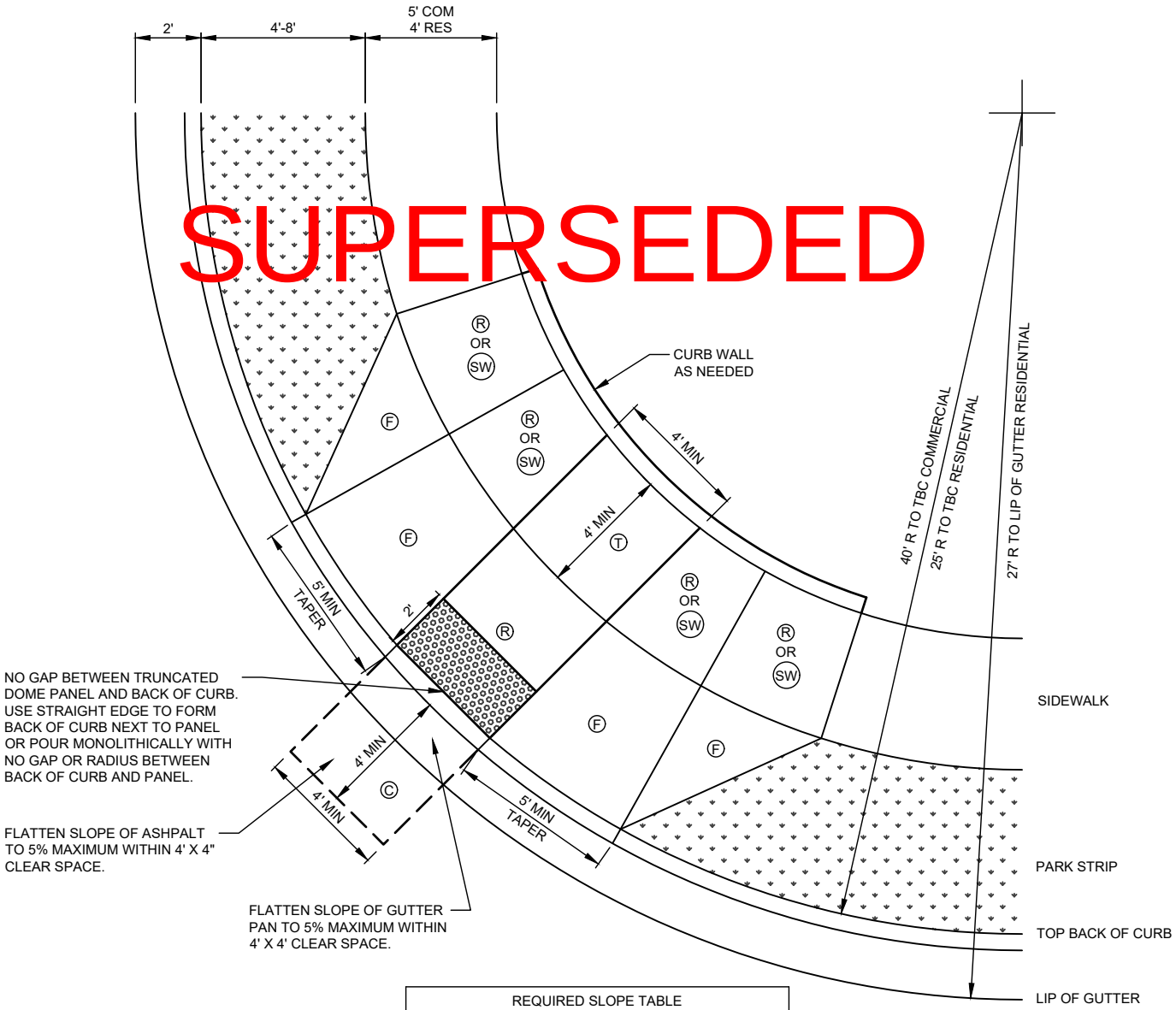
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CORNER PEDESTRIAN RAMPS

STREETS-5C

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SUPERSEDED



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
5. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
6. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE UDOT PEDESTRIAN ACCESS STANDARD DRAWINGS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

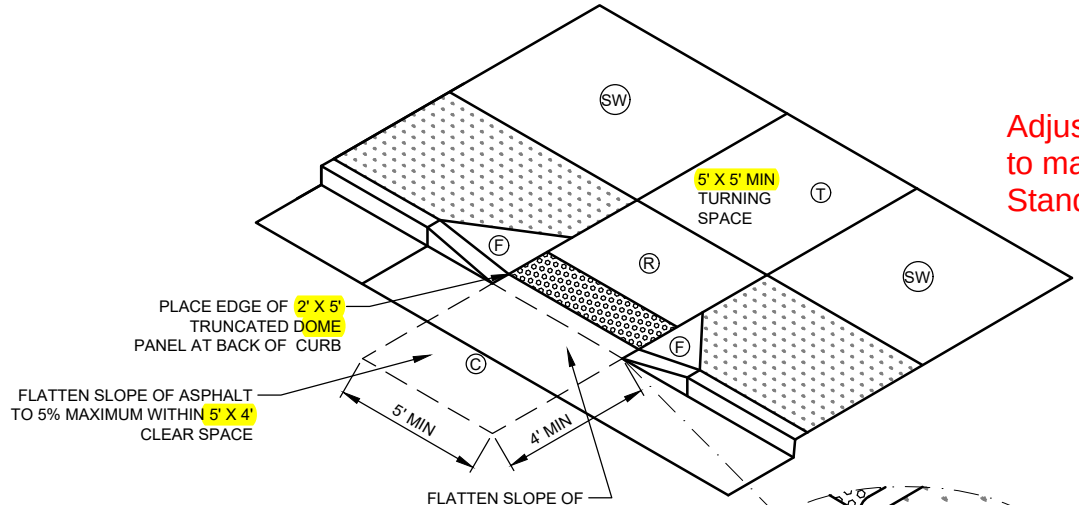
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

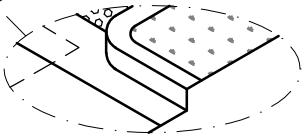
CORNER PEDESTRIAN RAMPS

STREETS-5

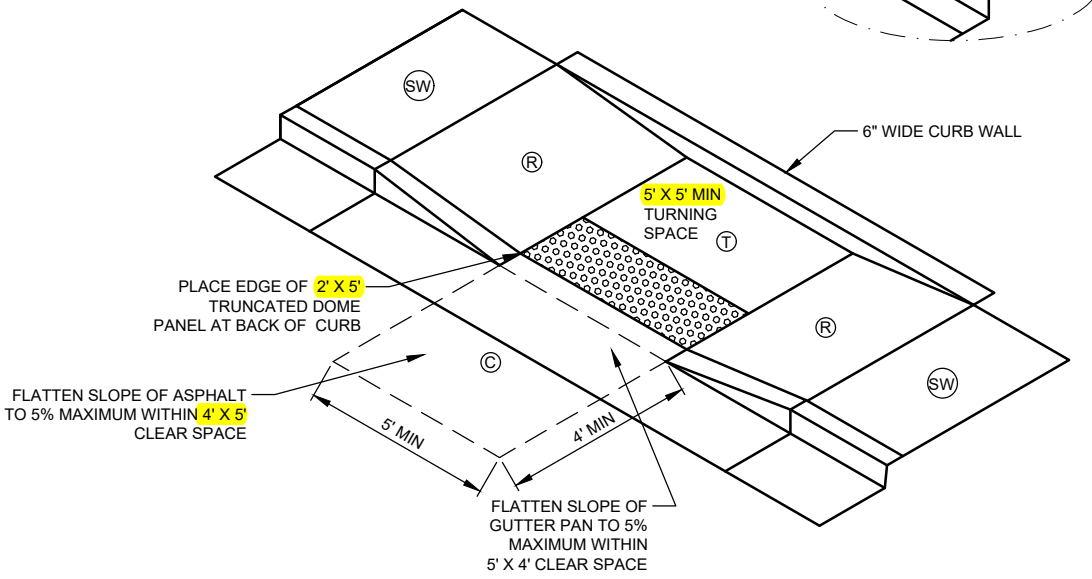
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Adjusted dimensions to match City Standards





CURB RETURN ALTERNATIVE WITH PRIOR APPROVAL FROM CITY ENGINEER



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
5. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

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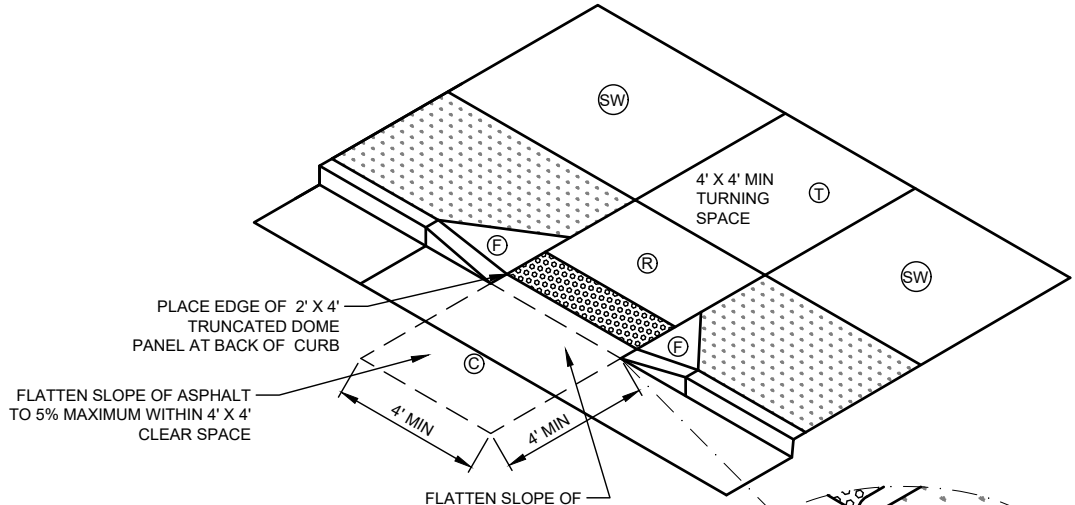
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

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MID-BLOCK PEDESTRIAN RAMPS

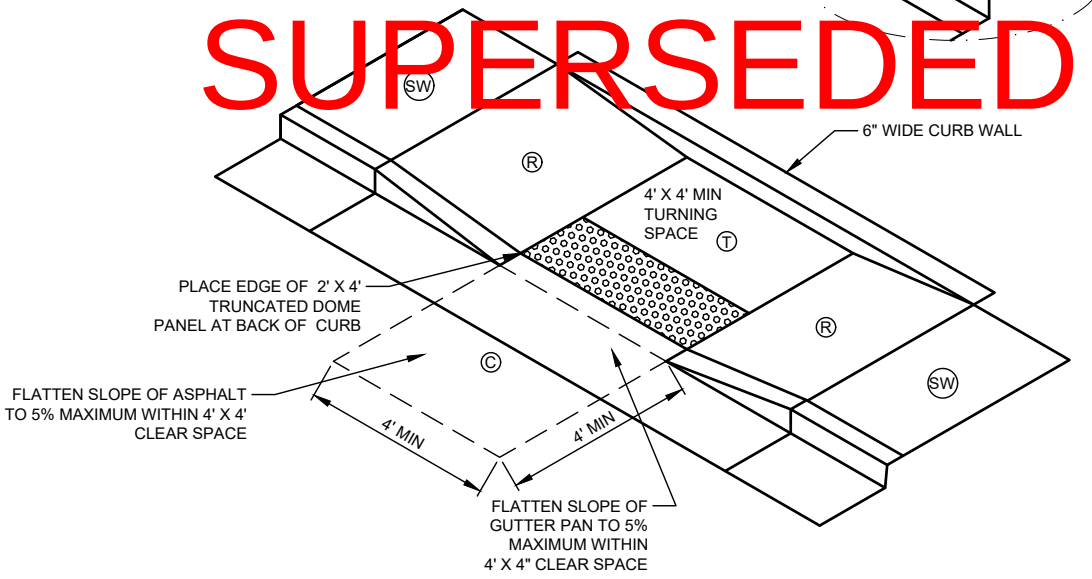
STREETS-6





CURB RETURN ALTERNATIVE
WITH PRIOR APPROVAL FROM
CITY ENGINEER

SUPERSEDED



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	25% MAX (SEE NOTE 4)	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. CURB TAPER SLOPE FOR FLARES SHALL BE 10% MAXIMUM IF IT FALLS WITHIN THE PEDESTRIAN ACCESS ROUTE AS DEFINED BY UDOT.
5. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
6. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE UDOT PEDESTRIAN ACCESS STANDARD DRAWINGS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

HEBER CITY
HEART OF THE WASATCH BACK

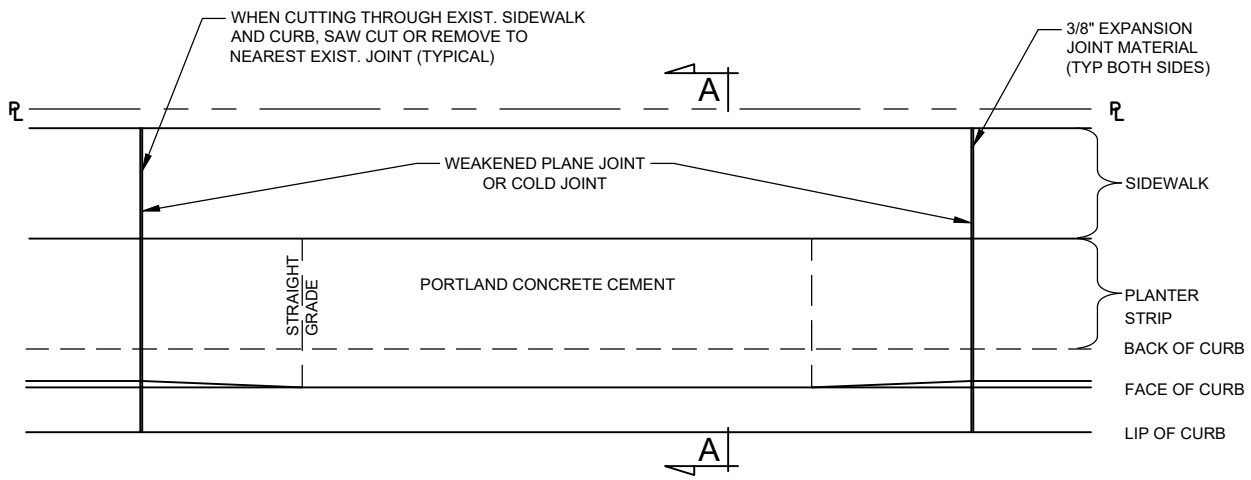
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SCALE: N.T.S.

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(435) 654-0757

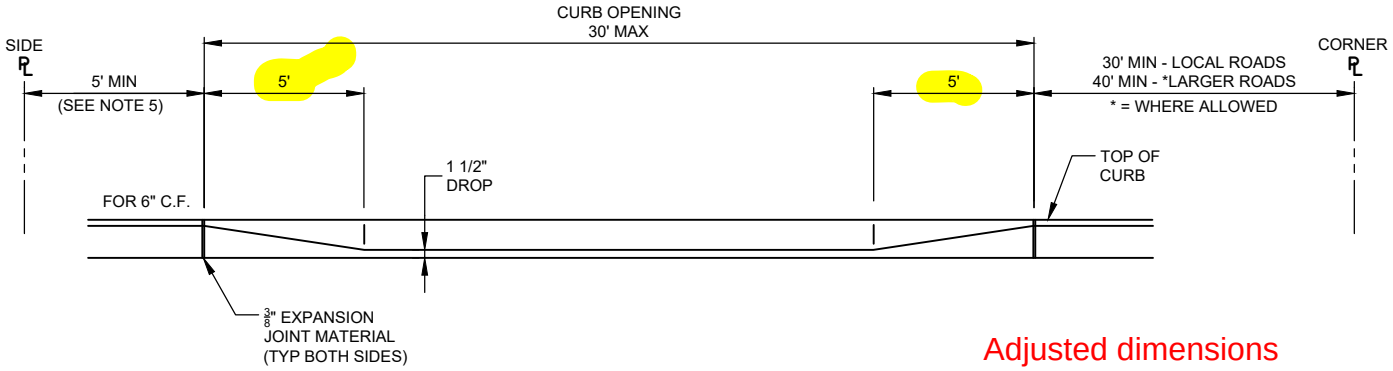
MID-BLOCK PEDESTRIAN RAMPS

STREETS-6

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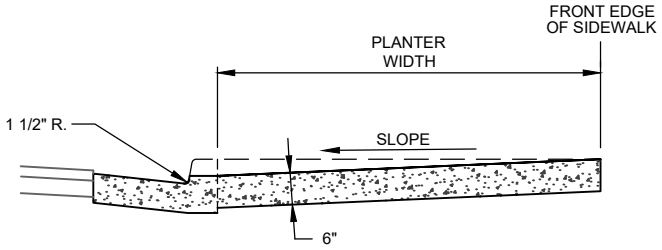


PLAN



ELEVATION

Adjusted dimensions to match City Standards



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE
3. INSTALL 4" PVC SLEEVE UNDER DRIVEWAY AND 10" BELOW SIDEWALK FOR PI SERVICE.
4. WHEN PERMITTED ON ROADS WITH HIGHER CLASSIFICATIONS, APPROACHES SHALL NOT BE CLOSER THAN 50' TO ANOTHER DRIVEWAY APPROACH.

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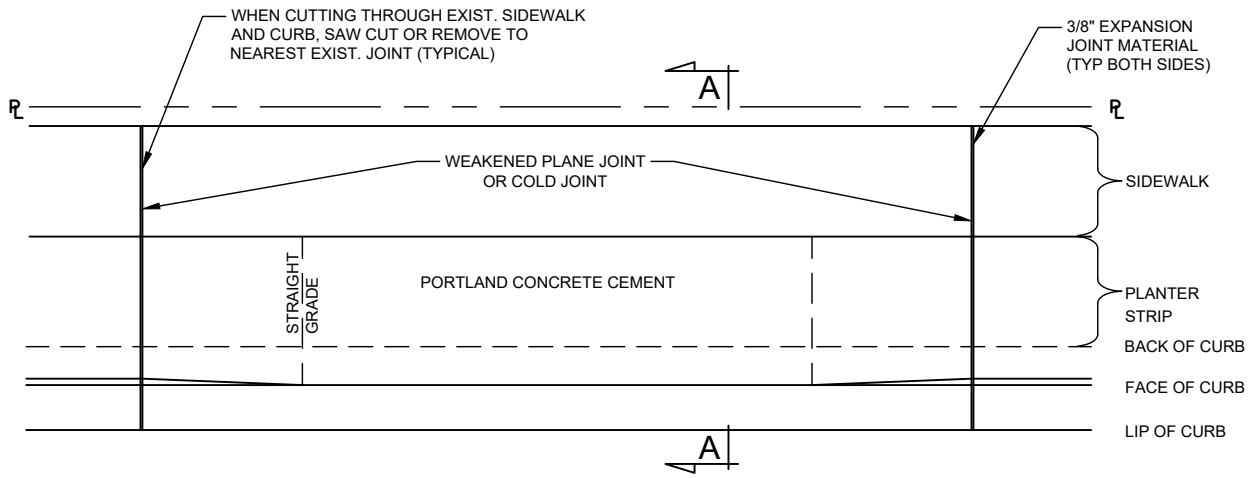
HEBER CITY
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DATE: 01/25
SCALE: N.T.S.

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HEBER CITY, UTAH 84032
(435) 654-0757

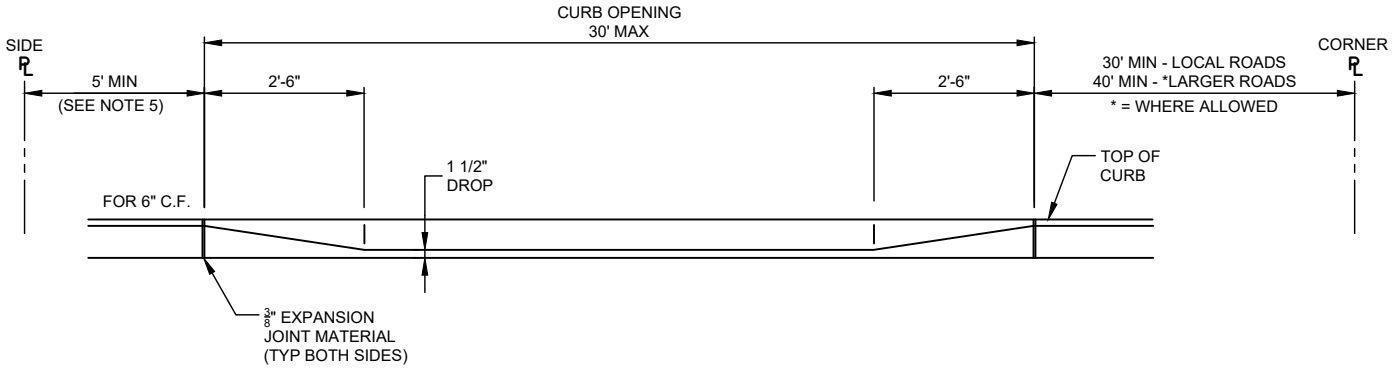
RESIDENTIAL DRIVEWAY APPROACH

STREETS-7

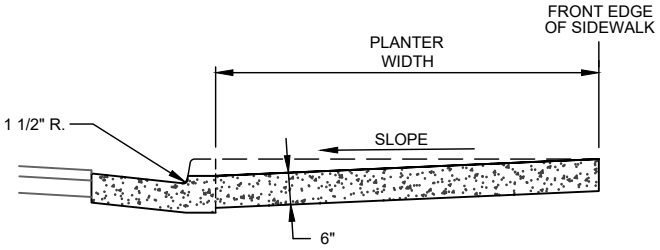


PLAN

SUPERSEDED



ELEVATION



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE
3. INSTALL 4" PVC SLEEVE UNDER DRIVEWAY AND 10" BELOW SIDEWALK FOR PI SERVICE.
4. WHEN PERMITTED ON ROADS WITH HIGHER CLASSIFICATIONS, APPROACHES SHALL NOT BE CLOSER THAN 50' TO ANOTHER DRIVEWAY APPROACH.

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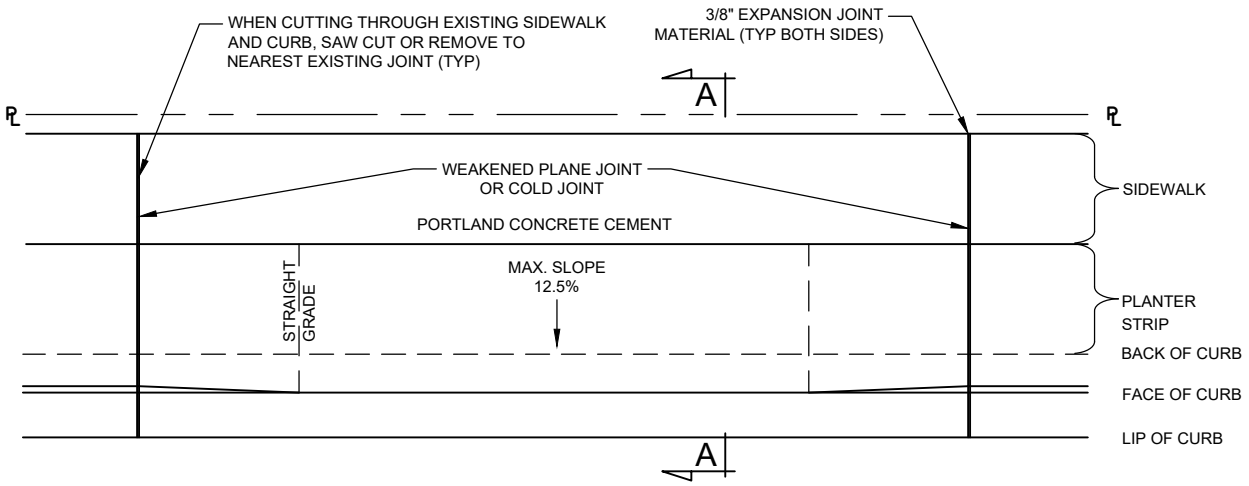
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
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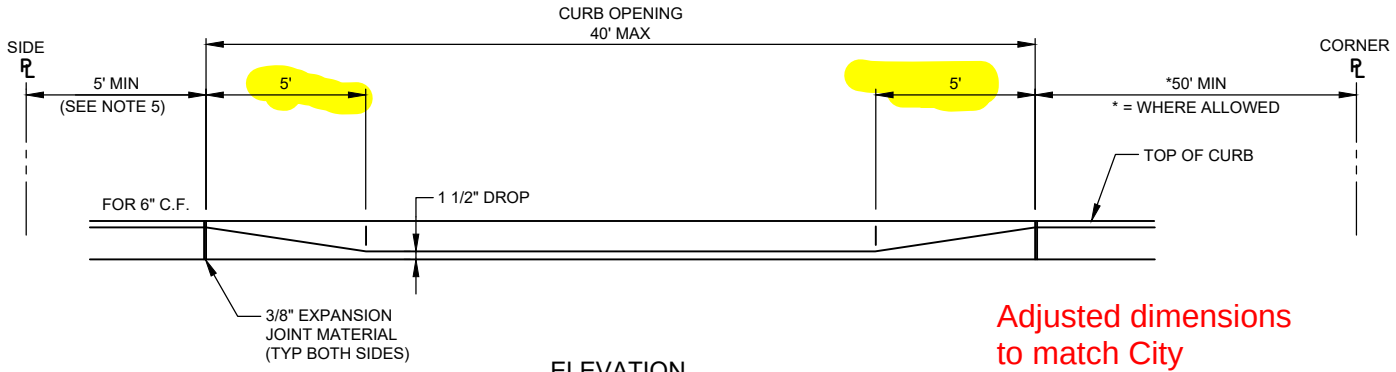
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HEBER CITY, UTAH 84032
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RESIDENTIAL DRIVEWAY APPROACH

STREETS-7

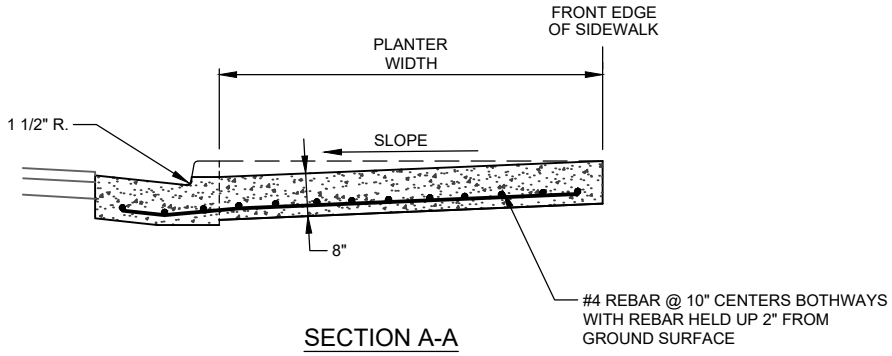


PLAN



ELEVATION

Adjusted dimensions to match City Standards



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE.

HEBER CITY
HEART OF THE WASATCH BACK

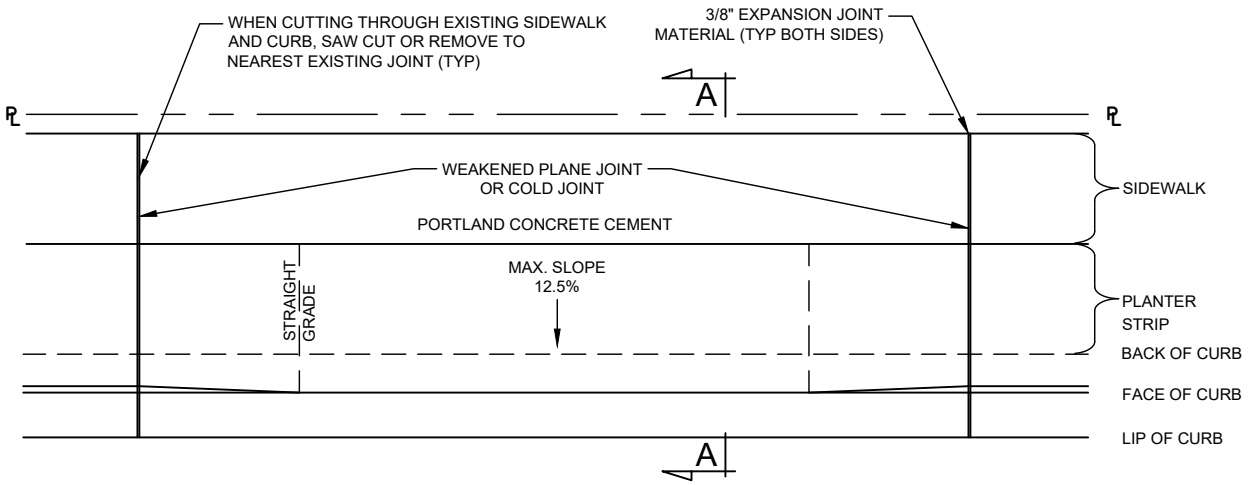
DATE: 01/25
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COMMERCIAL DRIVEWAY APPROACH

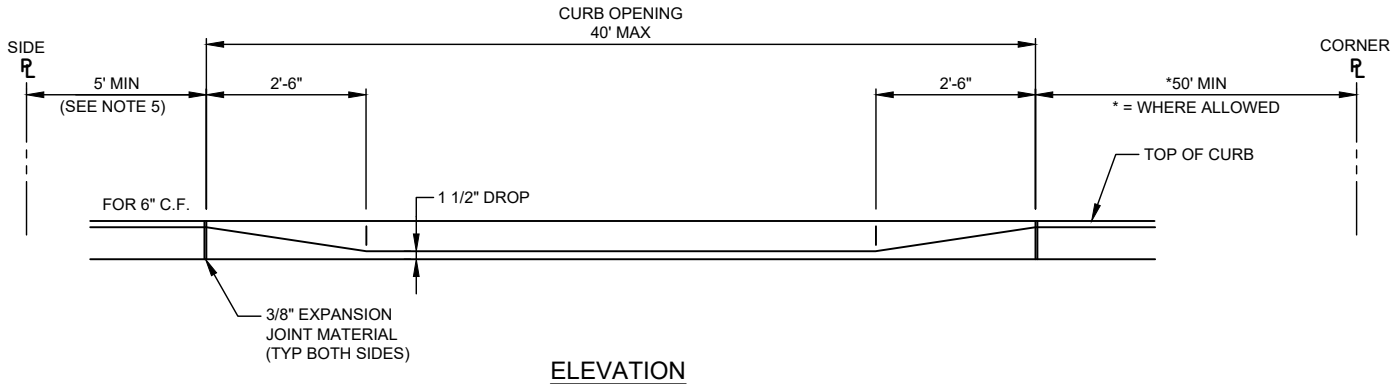
STREETS-8

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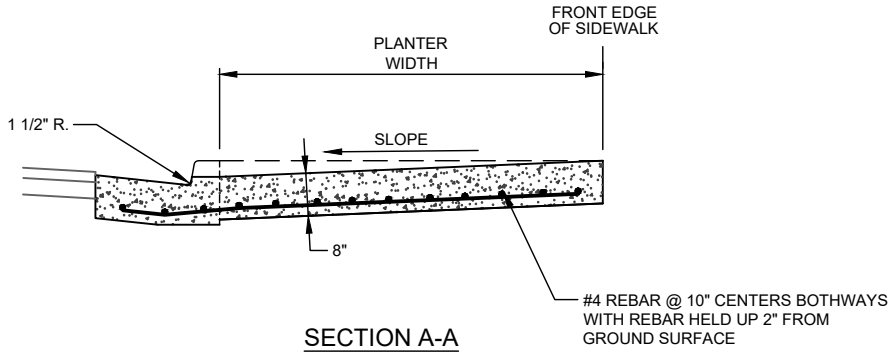


SUPERSEDED

PLAN



ELEVATION



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE.

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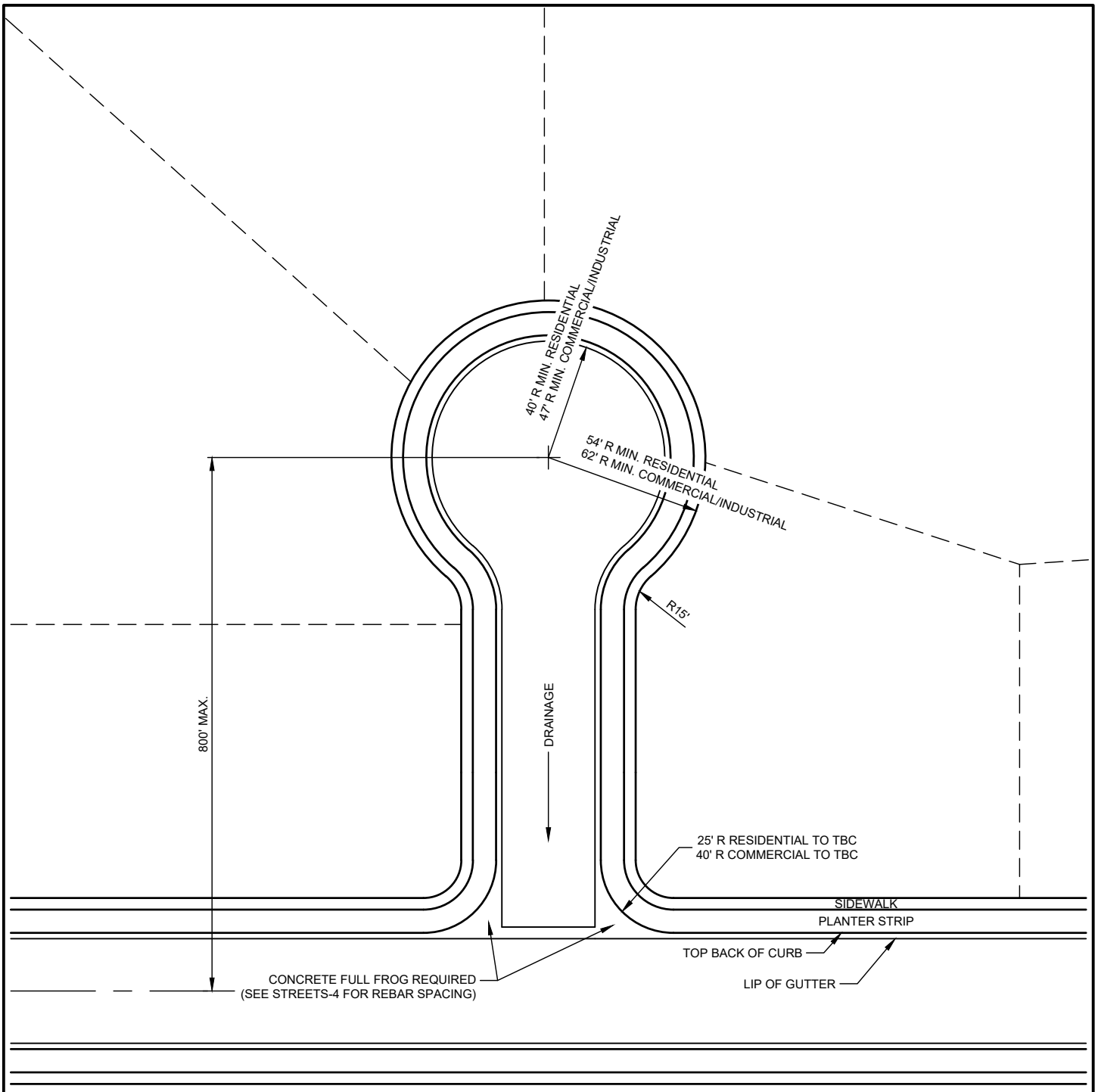
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

COMMERCIAL DRIVEWAY APPROACH

STREETS-8



NOTES:

1. WHEN REQUIRED BY CITY ENGINEER, PARK STRIP MAY BE INCREASED TO 10' IN WIDTH TO ADDRESS CONCERNS WITH SNOW STORAGE AND/OR LOT FRONTAGE IN THE CUL-DE-SAC.
2. THE CUL-DE-SAC RADIUSES SHOWN ABOVE ARE TO BE CONSIDERED AS MINIMUMS AND MAY NEED TO BE INCREASED IN CERTAIN SITUATIONS BASED ON FIRE DISTRICT REVIEW.

HEBER CITY
HEART OF THE WASATCH BACK

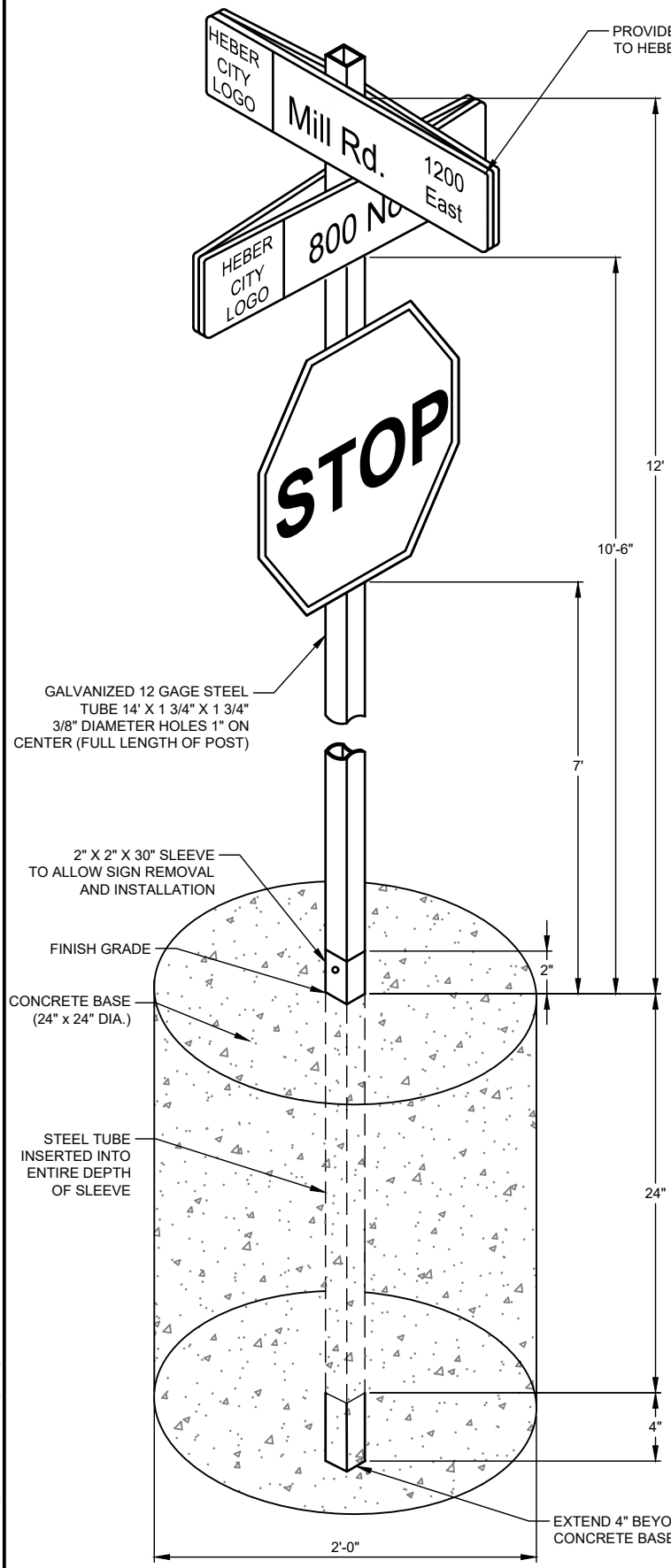
DATE: 03/18
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

CUL-DE-SAC

STREETS-9

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NOTES:

1. FORMAT: SECURE ENGINEER'S APPROVAL OF SIGN FORMAT AND INSTALLATION.
2. INSTALLATION:
   A. INSTALL SIGNS ON THE SAME SIGN POST AS THE STOP SIGN AS APPROPRIATE.
   B. INSTALL THE EDGE OF THE SIGN 2 FEET FROM THE VERTICAL EXTENSION OF THE BACK OF CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB P.C. (POINT OF CURVATURE).
3. NAMED STREETS SHOULD ALSO INCLUDE NUMERIC LOCATION ON RIGHT SIDE OF SIGN.

STREET NAME SIGNS:

1. SIZE 38" X 8".
2. DOUBLE BLADED .080 ALUMINUM WITH RIVETED ENDS AND BACK WASHERS.
3. THE LETTERING FOR NAMES OF STREETS AND HIGHWAYS ON STREET NAME SIGNS SHALL BE COMPOSED OF A COMBINATION OF LOWER-CASE LETTERS WITH INITIAL UPPER-CASE LETTERS (SERIES C).
4. LETTERING ON POST-MOUNTED STREET NAME SIGNS SHOULD BE COMPOSED OF INITIAL UPPER-CASE LETTERS AT LEAST 6 INCHES IN HEIGHT AND LOWER-CASE LETTERS AT LEAST 4.5 INCHES IN HEIGHT (SEE MUTCD FOR SPEEDS GREATER THAN 40 MPH).
5. 3" SERIES C LETTERS IF COORDINATE IS REQUIRED.
6. PRISMATIC GRADE LETTERING ON PRISMATIC GRADE BACKGROUND.
7. 8" X 8" LOGO LEFT HAND PORTION OF SIGN.
8. COLOR: GREEN AND WHITE (PRIVATE ROADS: BLUE AND WHITE).
9. LOGO: APPROVED HEBER CITY LOGO. ALL LOGOS AND SIGNS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.

REGULATORY SIGNS:

1. ALL STOP (R1-1-30), YIELD (R1-2-36) & SPEED LIMIT (R2-1-24) SIGNS ARE .080 ALUMINUM WITH PRISMATIC REFLECTIVE SHEETING.
2. ALL OTHER SIGNS .080 W/ PRISMATIC GRADE SHEETING.
3. ALL STOP, YIELD, AND SPEED LIMIT SIGNS SHALL BE 7 FEET MINIMUM FROM BOTTOM OF SIGN TO T.B.C. OR ASPHALT SURFACE.
4. THE OUTER EDGE OF ALL SIGNS SHALL BE A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB.

TRAIL SIGNS:

1. COORDINATE WITH ENGINEER ON SIGN PLACEMENT.
2. TRAIL SIGNS SHALL BE INSTALLED WITH BOTTOM OF SIGN 5' FROM GROUND LEVEL.

HEBER CITY
HEART OF THE WASATCH BACK

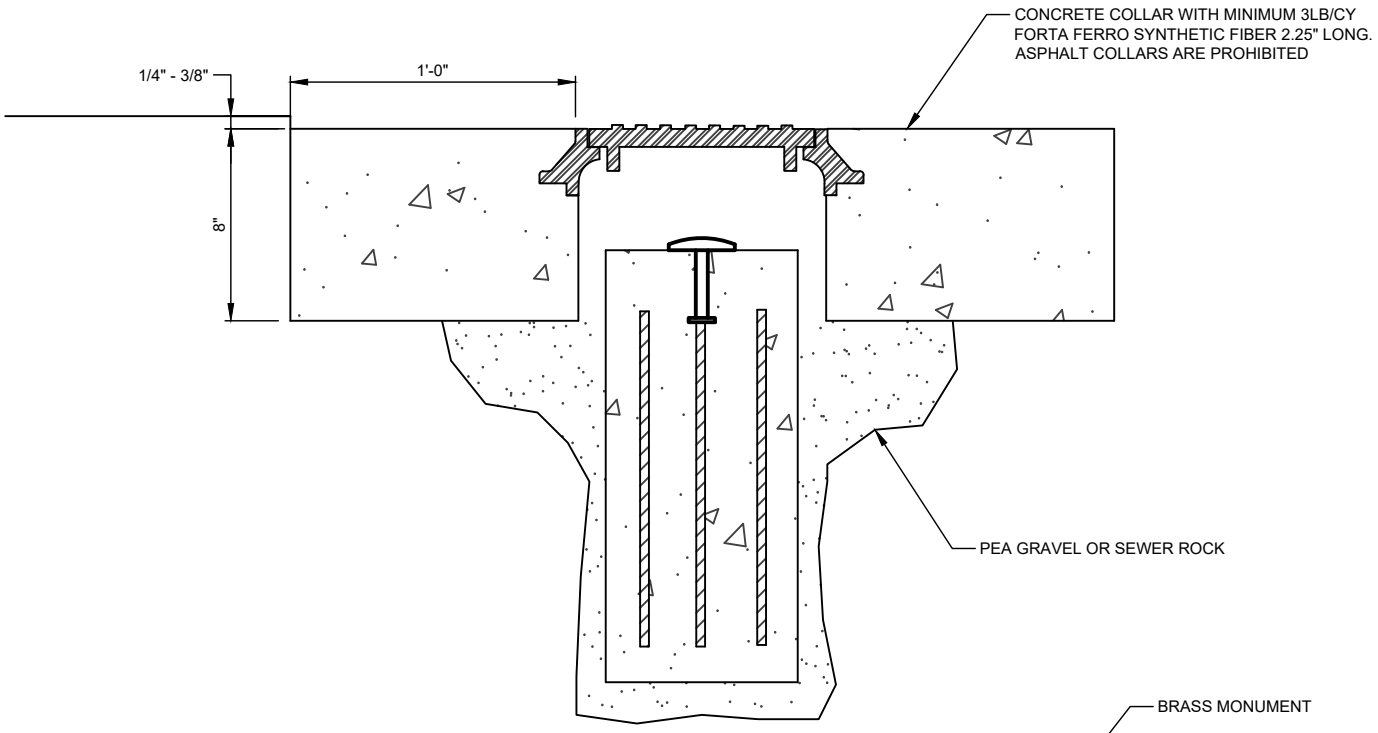
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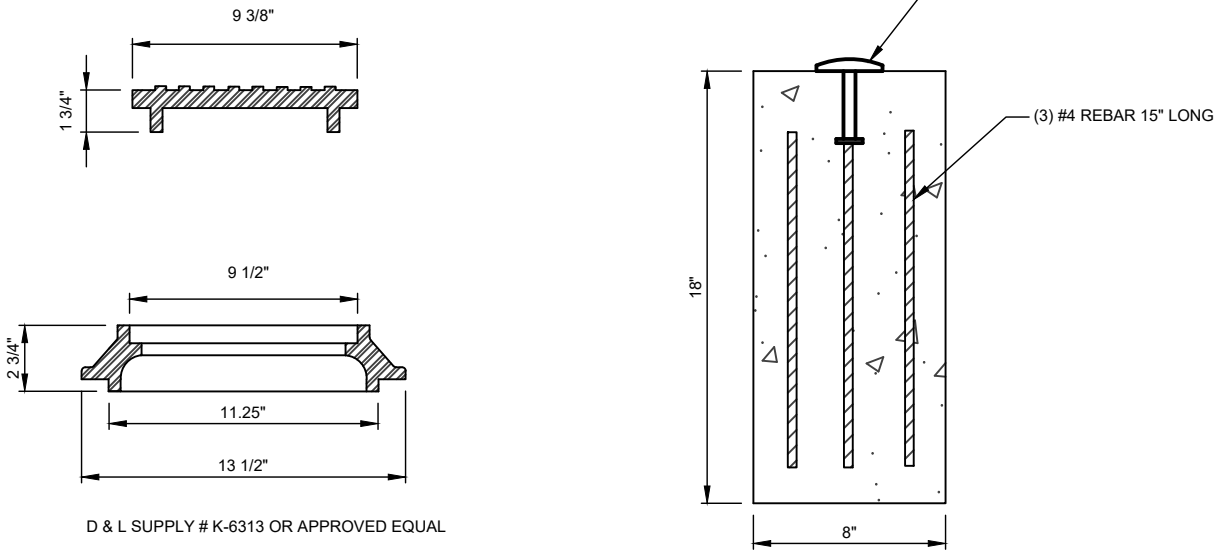
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIGNS

STREETS-10

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\STREETS-10.dwg - Signs - 9/07/2023 03:42pm, natalier





D & L SUPPLY # K-6313 OR APPROVED EQUAL

NOTES:

1. CAP SHOULD BE MARKED WITH CROSS ON WHICH LOCATION CORRESPONDS WITH RECORD OF SURVEY FILED WITH THE COUNTY.
2. CONCRETE BASE FOR THE SURVEY MONUMENT SHOULD BE INDEPENDENT OF CONCRETE COLLAR OF LID TO MINIMIZE VIBRATIONS TO MONUMENT.
3. CONCRETE BASE SHOULD BE INSTALLED USING PEA GRAVEL OR SEWER ROCK.
4. CONCRETE COLLAR TO HAVE TWO #4 BAR CONTINUOUS AROUND COLLAR WITH 12" OVERLAP.
5. CONCRETE COLLAR SHOULD BE 1/4" LOWER THAN SURROUNDING PAVEMENT.
6. LOCATE AT CENTERLINE OF INTERSECTIONS AND CUL-DE-SACS

HEBER CITY
HEART OF THE WASATCH BACK

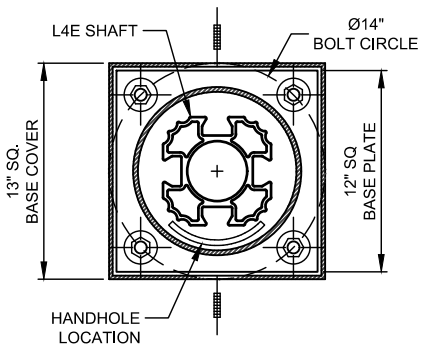
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HEBER CITY, UTAH 84032
(435) 654-0757

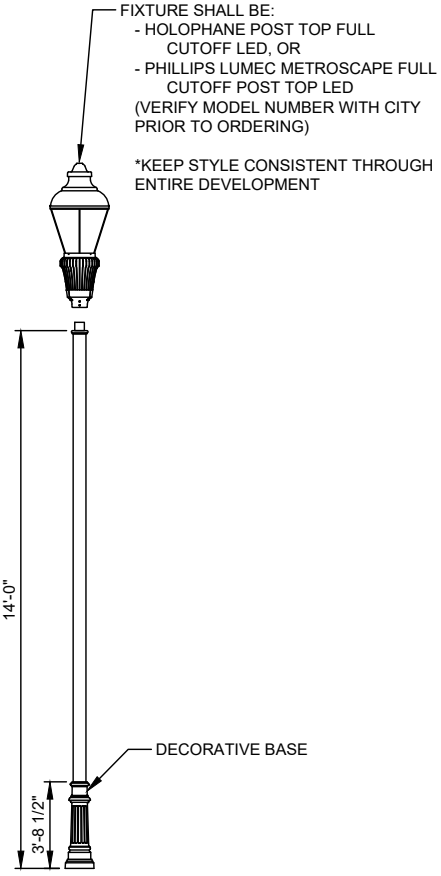
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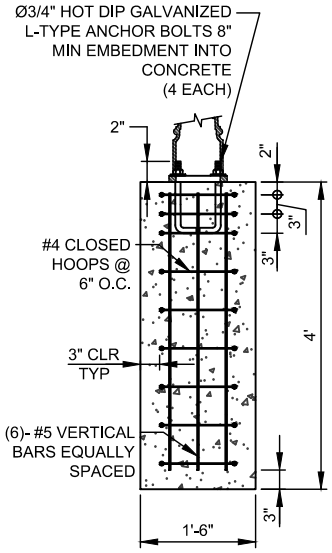
STREETS-11

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BASE PLATE DETAIL





CONCRETE BASE

NOTES:
1. RESIDENTIAL POLES SHALL BE FLUTED OR SMOOTH ALUMINUM WITH BLACK FINISH.
2. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 90 MPH MINIMUM.
3. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
4. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
5. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
6. THE TOP OF CONCRETE BASES SHALL BE BETWEEN 1 AND 3 INCHES ABOVE GRADE.

HEBER CITY
HEART OF THE WASATCH BACK

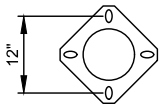
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SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

STREET LIGHTING

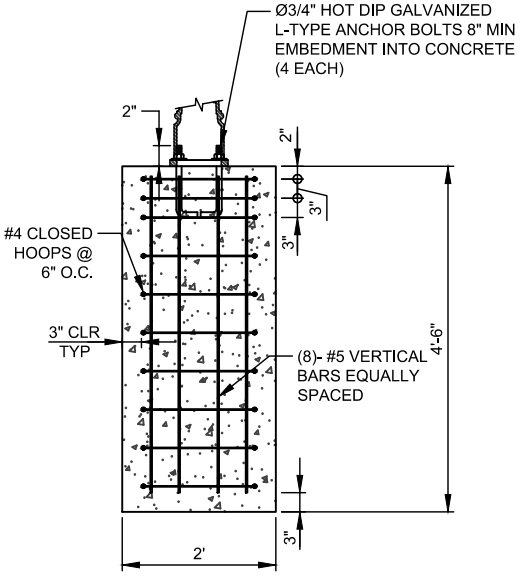
STREETS-12

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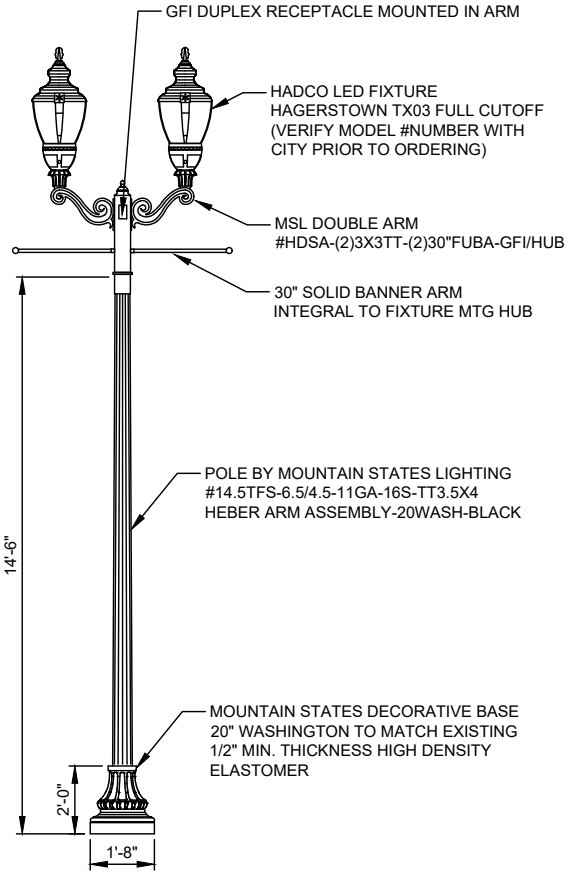


Ø3/4" X 18" min
HOT DIP GALVANIZED
L-TYPE ANCHOR BOLTS

BASE PLATE DETAIL



CONCRETE BASE



NOTES:
1. POLE SHALL BE FLUTED OR SMOOTH ALUMINUM WITH BLACK FINISH.
2. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 115 MPH MINIMUM.
3. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
4. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
5. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
6. THE BOTTOM OF THE DECORATIVE BASE SHALL BE FLUSH WITH THE ADJACENT GRADE.

HEBER CITY
HEART OF THE WASATCH BACK

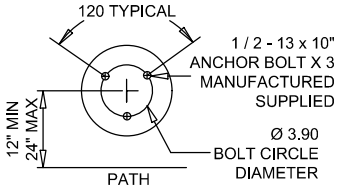
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HEBER CITY, UTAH 84032
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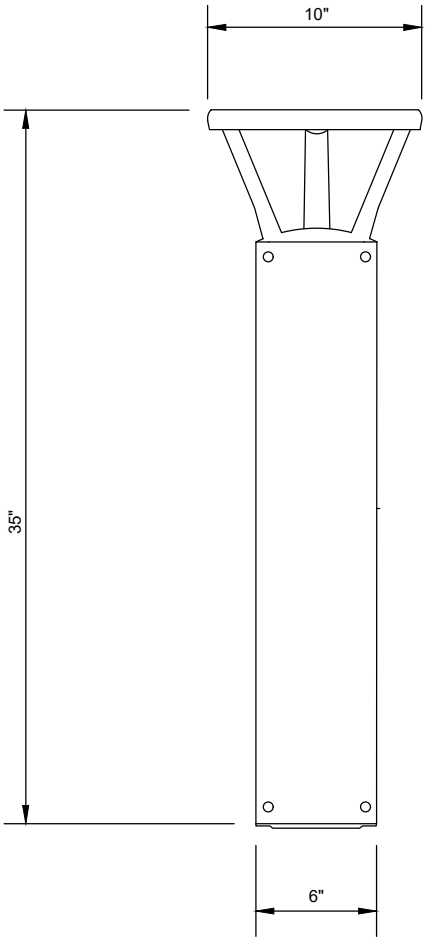
COMMERCIAL HISTORIC STREET LIGHTING

STREETS-13

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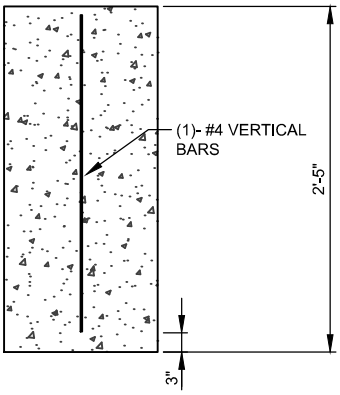


ANCHOR BOLT DETAIL



PLB - 102

NOTES:
1. TRAIL BOLLARD SHALL BE PLB SERIES SOLAR POWERED LED BOLLARD MODEL PLB 102 BK ASM WW 00 SEC BY FIRSTLIGHT TECHNOLOGIES



CONCRETE BASE

NOTES:
1. CONCRETE SHALL BE CLASS 3000 MIN PER SECTION 033014
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT
3. THE TOP OF THE CONCRETE BASE SHALL BE 1 TO 2 INCHES ABOVE THE ADJACENT GRADE.
4. BOLLARDS SHALL BE PLACED WITHIN 2 FEET OF EDGE OF TRAIL.

Added Note 4 to clarify location of bollard.

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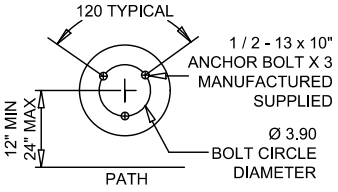
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

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HEBER CITY, UTAH 84032
(435) 654-0757

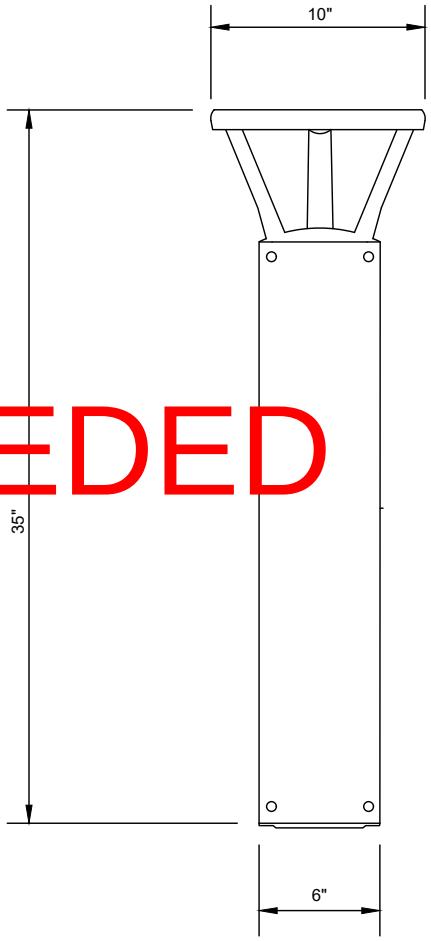
TRAIL LIGHTING

STREETS-14



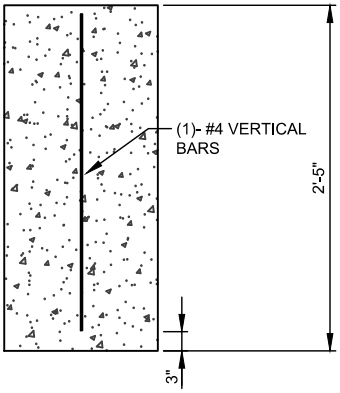
ANCHOR BOLT DETAIL

SUPERSEDED



PLB - 102

NOTES:
1. TRAIL BOLLARD SHALL BE PLB SERIES SOLAR POWERED LED BOLLARD MODEL PLB 102 BK ASM WW 00 SEC BY FIRSTLIGHT TECHNOLOGIES



CONCRETE BASE

NOTES:
1. CONCRETE SAHLL BE CLASS 3000 MIN PER SECTION 033014
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT
3. THE TOP OF THE CONCRETE BASE SHALL BE 1 TO 2 INCHES ABOVE THE ADJACENT GRADE.

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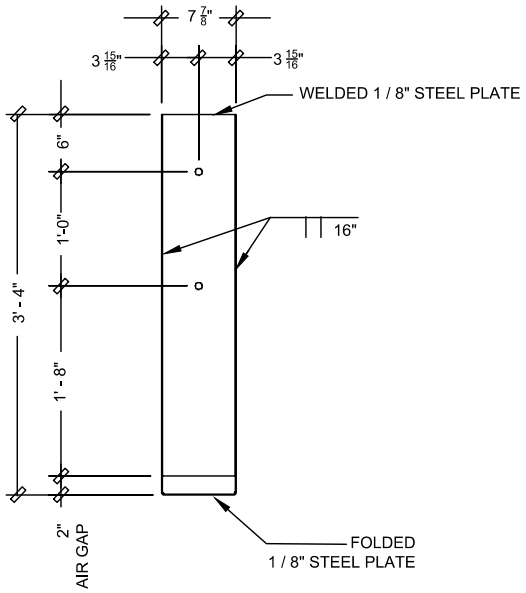
HEBER CITY
HEART OF THE WASATCH BACK

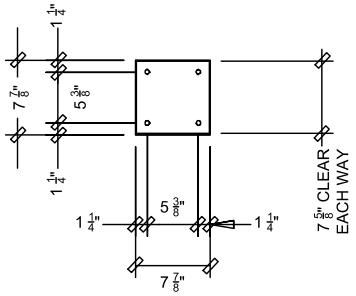
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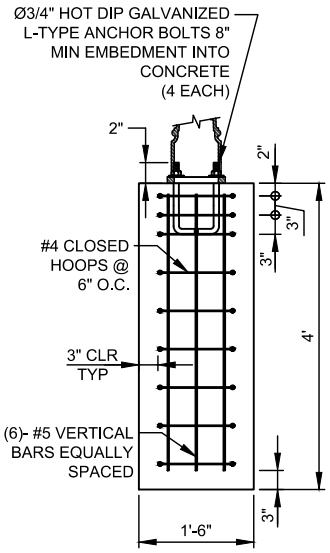
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HEBER CITY, UTAH 84032
(435) 654-0757

TRAIL LIGHTING

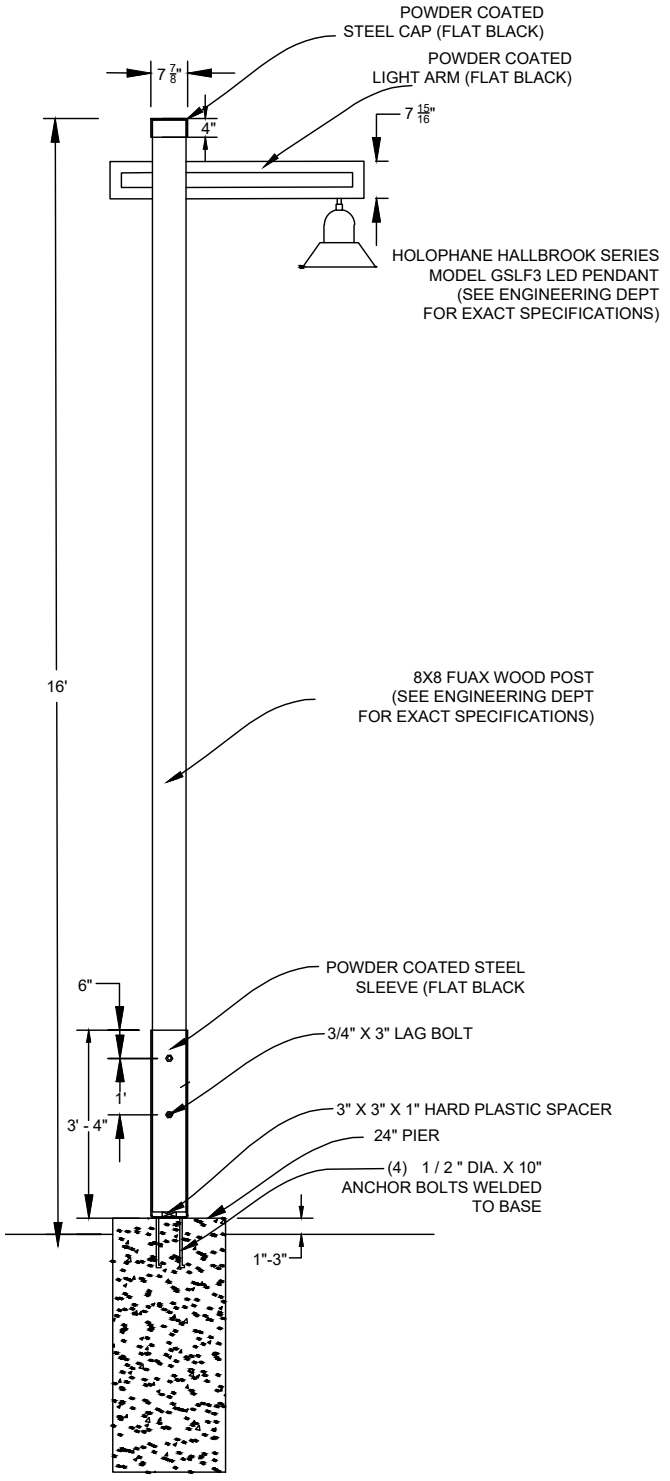
STREETS-14







CONCRETE BASE



NOTES:

1. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 90 MPH MINIMUM.
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
3. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
4. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
5. THE TOP OF CONCRETE BASES SHALL BE BETWEEN 1 AND 3 INCHES ABOVE GRADE.

HEBER CITY
HEART OF THE WASATCH BACK

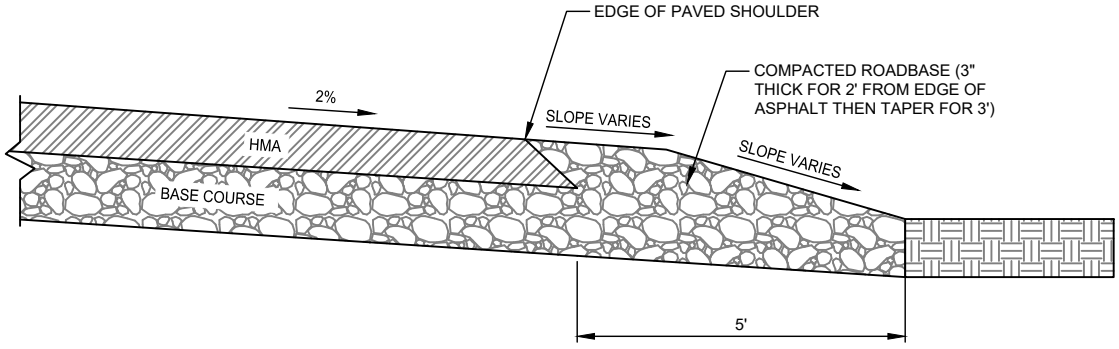
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SCALE: N.T.S.

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NORTH VILLAGE LIGHTING

STREETS-15

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NOTES:

1. MAINTAIN POSITIVE DRAINAGE AWAY FROM ROAD AT THE SHOULDER.
2. ROADBASE MATERIAL REQUIREMENTS - FOLLOW HEBER CITY STANDARD SPECIFICATIONS SECTION 02206 (SELECT FILL) FOR UNTREATED BASE COARSE.
3. COMPACTION REQUIREMENTS:
   A. MAINTAIN OPTIMUM MOISTURE CONTENT +/- 2%.
   B. USE A MINIMUM OF TWO PASSES WITH A ROLLER OR AS DIRECTED BY THE ENGINEER.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23

SCALE: N.T.S.

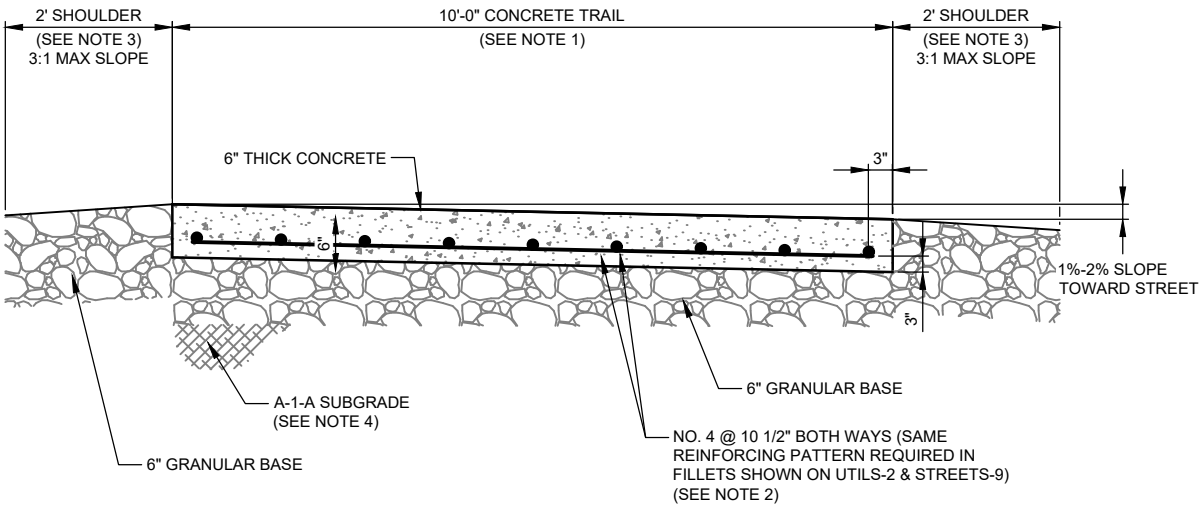
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RESIDENTIAL ROAD SHOULDER WITHOUT CURB & GUTTER

STREETS-16

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New detail added to show how we expect concrete trails to be built.



10' WIDE CONCRETE TRAIL SECTION

NOTES:

1. ALL TRAILS TO BE CONCRETE UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
2. REBAR REQUIRED AT ALL COMMERCIAL DRIVE APPROACHES AND OTHER VEHICULAR CROSSINGS.
3. ADD 2' ROAD BASE SHOULDER TO EACH SIDE (EXCEPTION: ADD GRASS OR OTHER LANDSCAPING TO EITHER SIDE OF TRAIL, REFERENCE LANDSCAPE PLANS).
4. SUBGRADE SHALL BE A-1-A GRANULAR MATERIAL PER SECTION 02225.

HEBER CITY
HEART OF THE WASATCH BACK

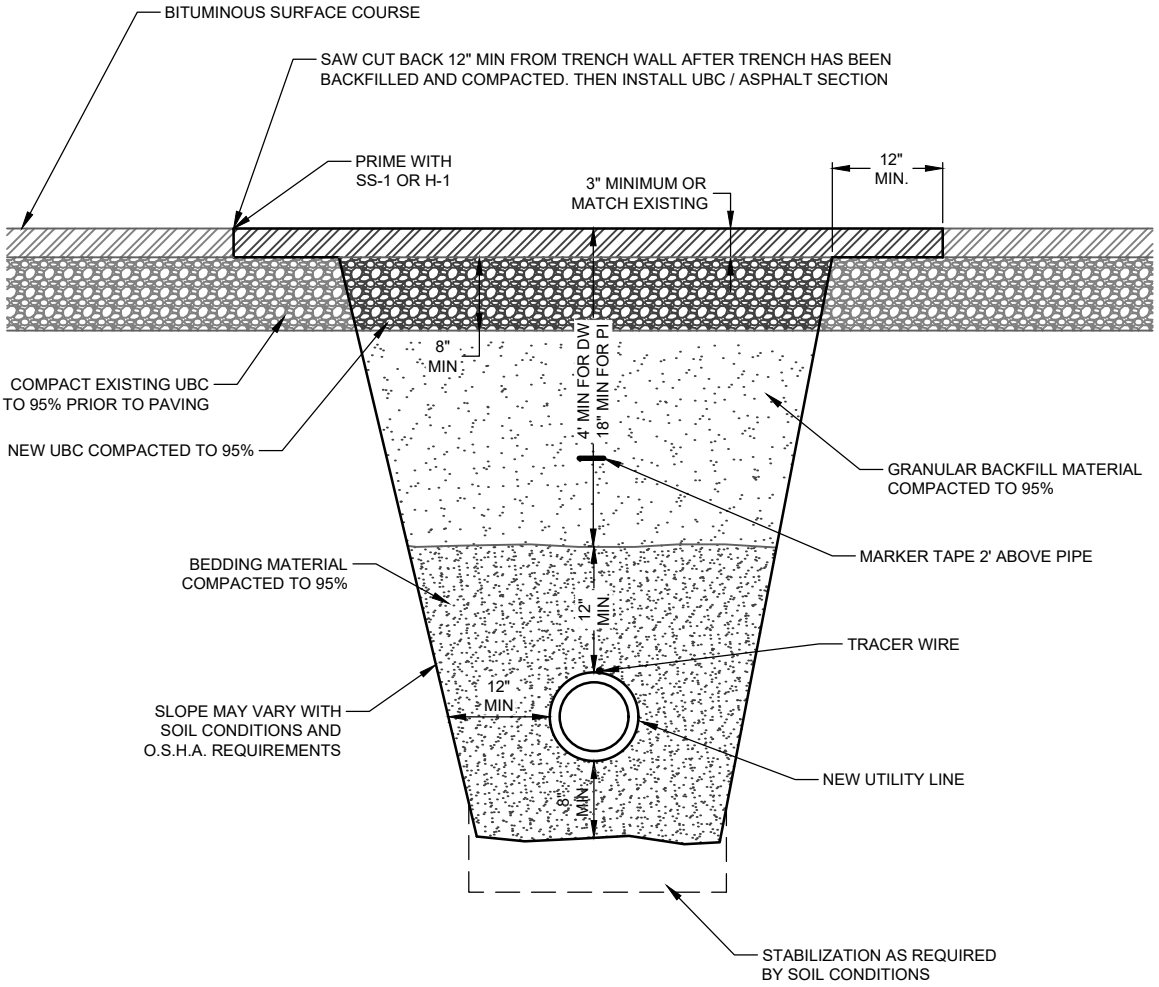
DATE: 01/25
SCALE: N.T.S.

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10' CONCRETRE TRAIL

STREETS-17

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NOTES:

1. COMPACTED BEDDING MATERIAL SHALL NORMALLY CONSIST OF BEDDING SAND (SEE SECTION 02206.2.06 OF THE HEBER CITY STANDARD SPECIFICATIONS).
2. IF APPROVED BY CITY ENGINEER, 3/4" DRAIN ROCK MAY BE USED FOR BEDDING MATERIAL AND SHALL BE WRAPPED IN APPROVED FILTER FABRIC (SEE SECTION 02772.2.02 OF THE HEBER CITY SPECIFICATIONS), UNLESS OTHERWISE APPROVED.
3. MATERIALS, METHOD & COMPACTION SHALL BE APPROVED BY ENGINEER.
4. USE OF PEA GRAVEL OR COURSE SAND FOR BEDDING MATERIAL IS PROHIBITED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. USE OF NATIVE MATERIAL FOR BACKFILL IS PROHIBITED (EXCEPT AS APPROVED BY THE CITY ENGINEER WITH FULL TIME TESTING AND INSPECTION).
6. USE PROPER MARKER TAPE AS APPROVED BY CITY ENGINEER.
7. INSTALL TRACER WIRE (SEE DETAIL WATER-5 OF THE HEBER CITY STANDARD DETAIL DRAWINGS).
8. FLOWABLE FILL IS PROHIBITED AS BACKFILL MATERIAL UNLESS OTHERWISE APPROVED BY CITY ENGINEER. WHEN APPROVED, SURFACE FINISHES MUST STILL BE MATCHED.
9. ALL EXCAVATION AND BACKFILL OPERATIONS SHALL CONFORM TO THE HEBER CITY SPECIFICATIONS (SEE SECTION 02225 OF THE HEBER CITY STANDARD SPECIFICATIONS).

Added to the notes to tie back detail to Specification Sections.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

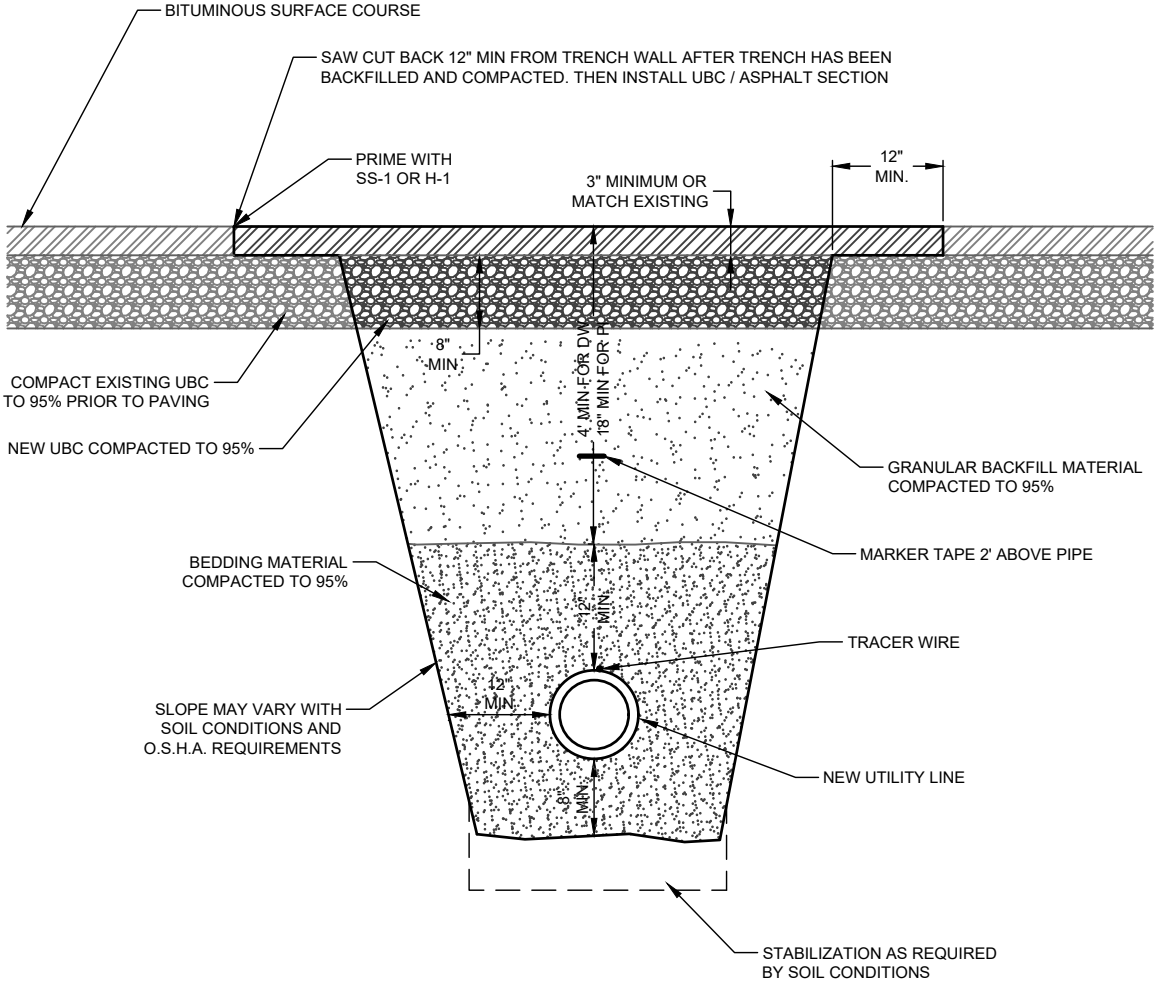
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UTILITY INSTALLATION TRENCH DETAIL

UTIL-1

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SUPERSEDED



NOTES:

1. COMPACTED BEDDING MATERIAL SHALL NORMALLY CONSIST OF BEDDING SAND.
2. IF APPROVED BY CITY ENGINEER, 3/4" DRAIN ROCK MAY BE USED FOR BEDDING MATERIAL AND SHALL BE WRAPPED IN APPROVED FILTER FABRIC (SEE HEBER CITY SPECIFICATION 02772.2.02), UNLESS OTHERWISE APPROVED.
3. MATERIALS, METHOD & COMPACTION SHALL BE APPROVED BY ENGINEER.
4. USE OF PEA GRAVEL OR COURSE SAND FOR BEDDING MATERIAL IS PROHIBITED UNLESS OTHERWISE APPROVED BY THE CITY ENGINGEER.
5. USE OF NATIVE MATERIAL FOR BACKFILL IS PROHIBITED (EXCEPT AS APPROVED BY THE CITY ENGINEER WITH FULL TIME TESTING AND INSPECTION).
6. USE PROPER MARKER TAPE AS APPROVED BY CITY ENGINEER.
7. INSTALL TRACER WIRE AS PER WATER-5.
8. FLOWABLE FILL IS PROHIBITED AS BACKFILL MATERIAL UNLESS OTHERWISE APPROVED BY CITY ENGINEER. WHEN APPROVED, SURFACE FINISHES MUST STILL BE MATCHED.

HEBER CITY
HEART OF THE WASATCH BACK

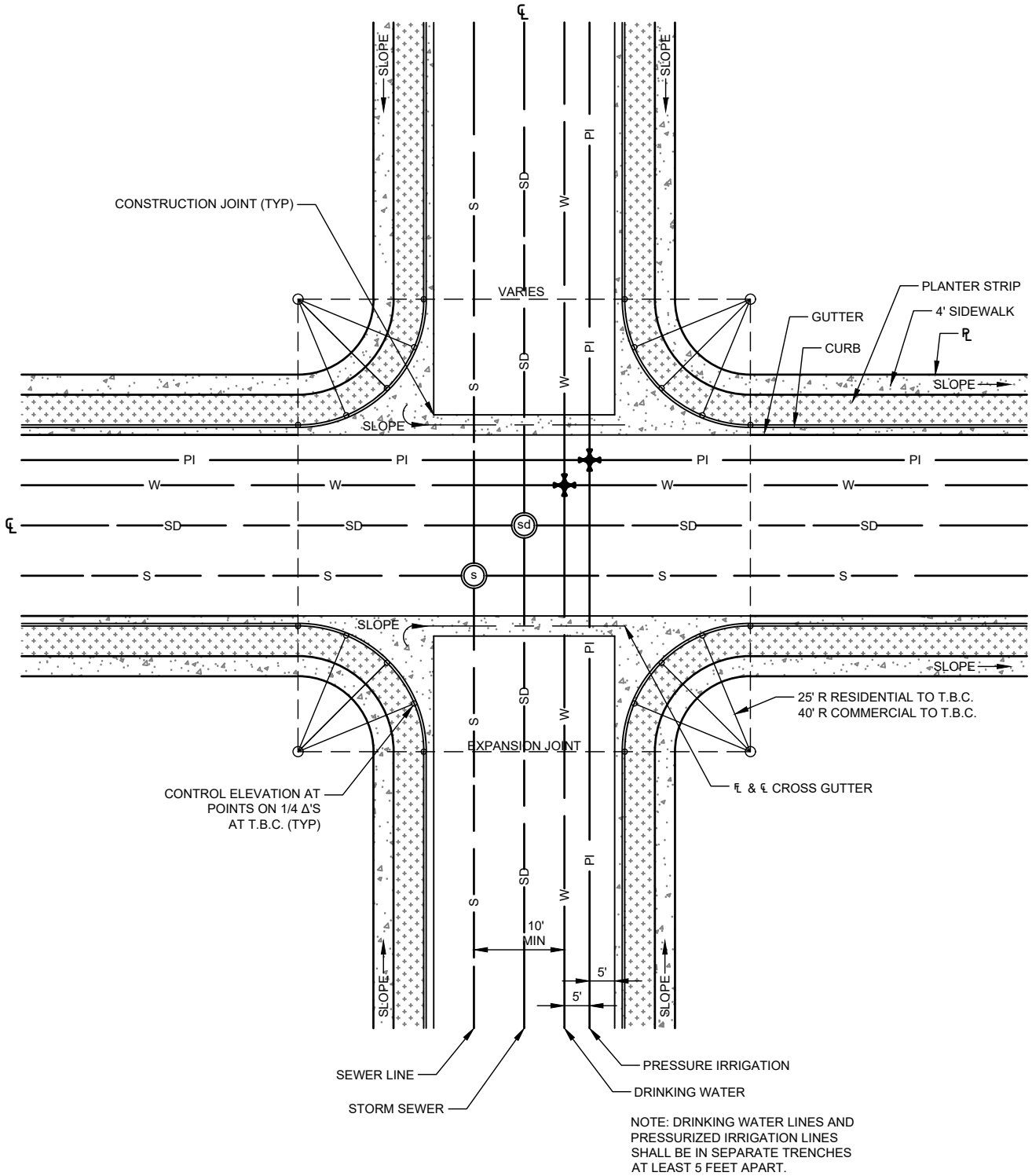
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HEBER CITY, UTAH 84032
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UTILITY INSTALLATION TRENCH DETAIL

UTIL-1

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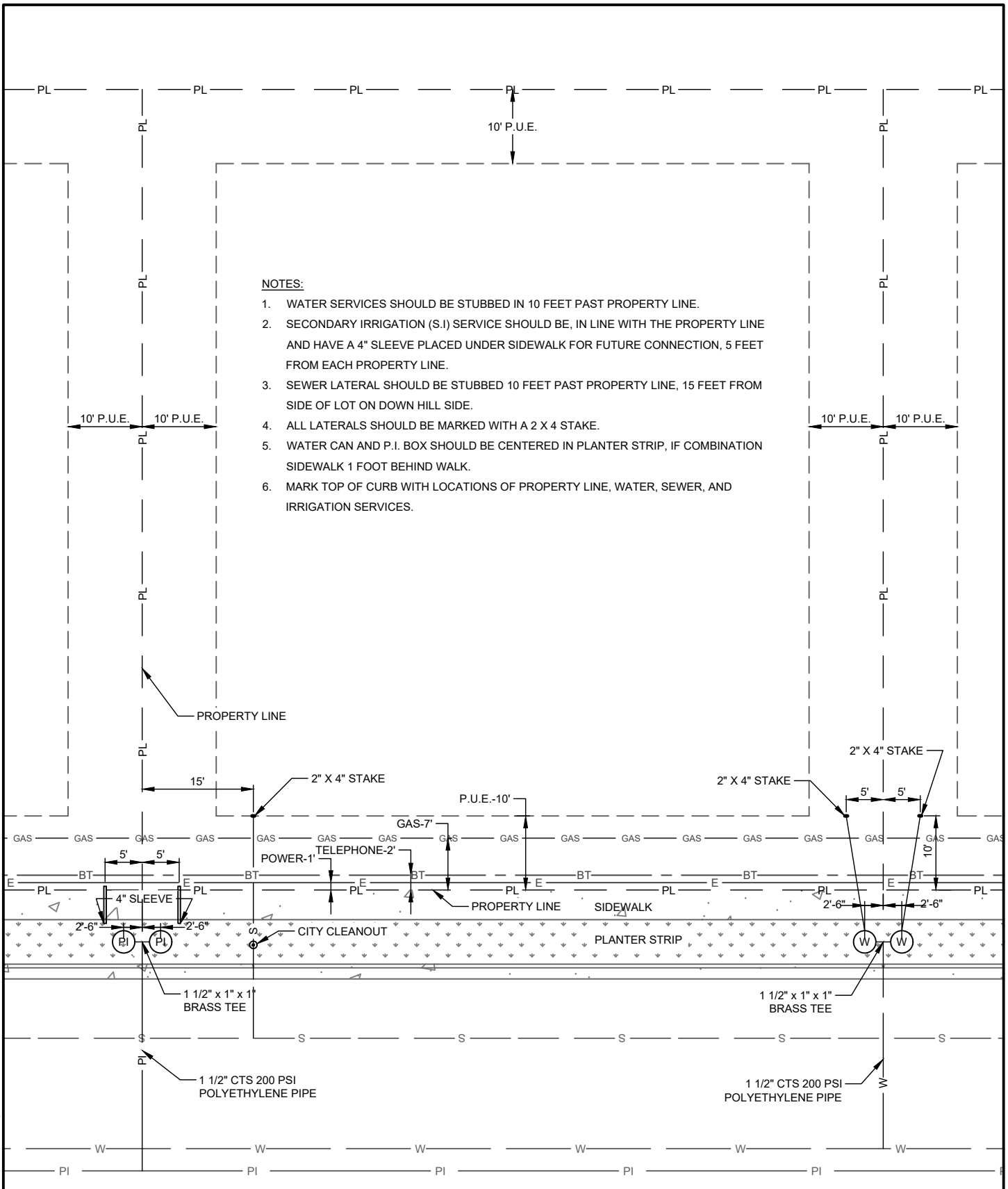
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

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STANDARD STREET INTERSECTION & UTILITY LOCATION

UTIL-2



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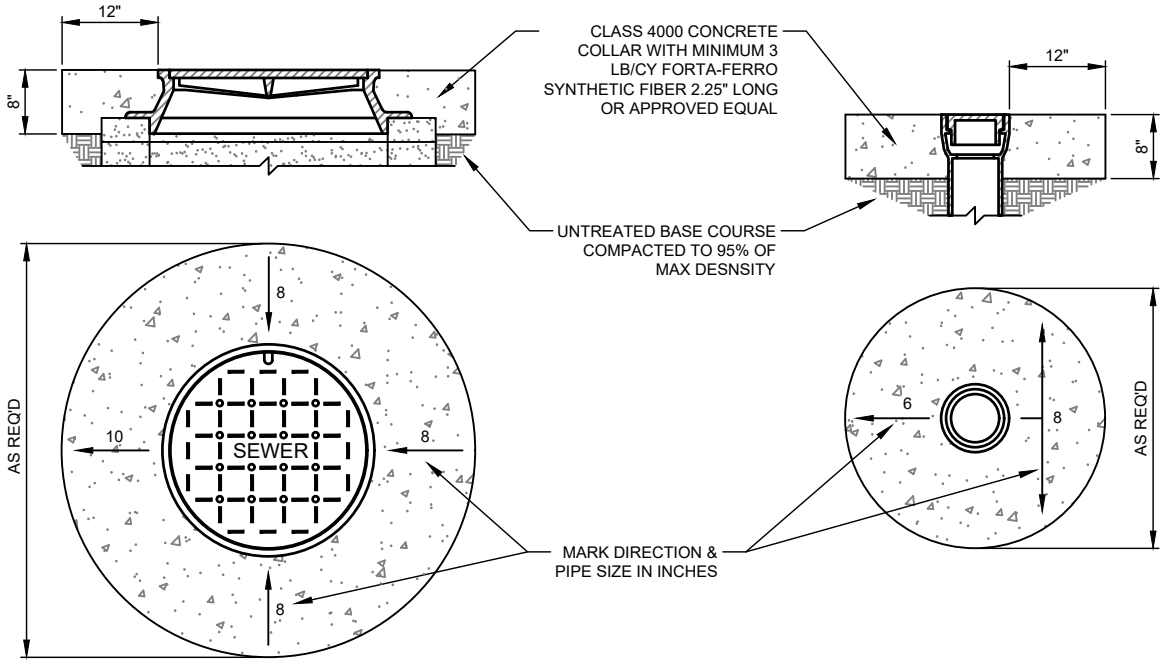
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17
SCALE: N.T.S.

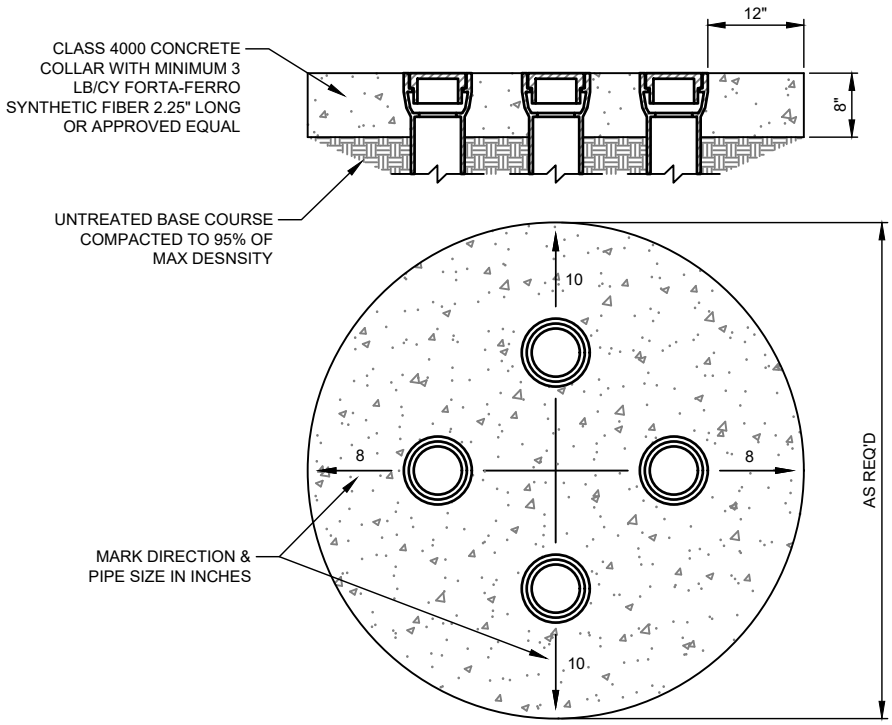
75 NORTH MAIN STREET
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(435) 654-0757

LATERALS & UTILITY LOCATION

UTIL-3



SINGLE ITEM CONCRETE COLLAR



MULTIPLE ITEM CONCRETE COLLAR

NOTES:

1. NEW AND EXISTING VALVE BOXES AND OTHER SIMILAR ITEMS SHALL BE ADJUSTED TO GRADE AFTER PAVING IS COMPLETE.
2. THE SURFACE OF THE ADJUSTED RING SHALL MATCH THE GRADE OF THE CONCRETE COLLAR. THE CONCRETE COLLAR SHALL BE 1/4" to 3/8" BELOW THE ADJACENT PAVED SURFACE.
3. ASPHALT SHALL BE CUT IN STRAIGHT VERTICAL LINES AT COLLAR EDGES.
4. MARK CONCRETE COLLAR WITH DIRECTION ARROW AND PIPE SIZE IN INCHES.
5. SIZES AND CONFIGURATIONS FOR EXAMPLE ONLY. SHOW ACTUAL CONFIGURATION FOR EACH SITUATION.
6. WHERE WHIRLYGIG SYSTEMS (OR EQUAL) ARE USED TO BRING MANHOLE COLLARS TO GRADE IN PLACE OF CONCRETE GRADE RINGS, THE CONCRETE COLLAR SHALL EXTEND ALL THE WAY TO THE CONE OR HIGHEST MANHOLE SECTION.

HEBER CITY
HEART OF THE WASATCH BACK

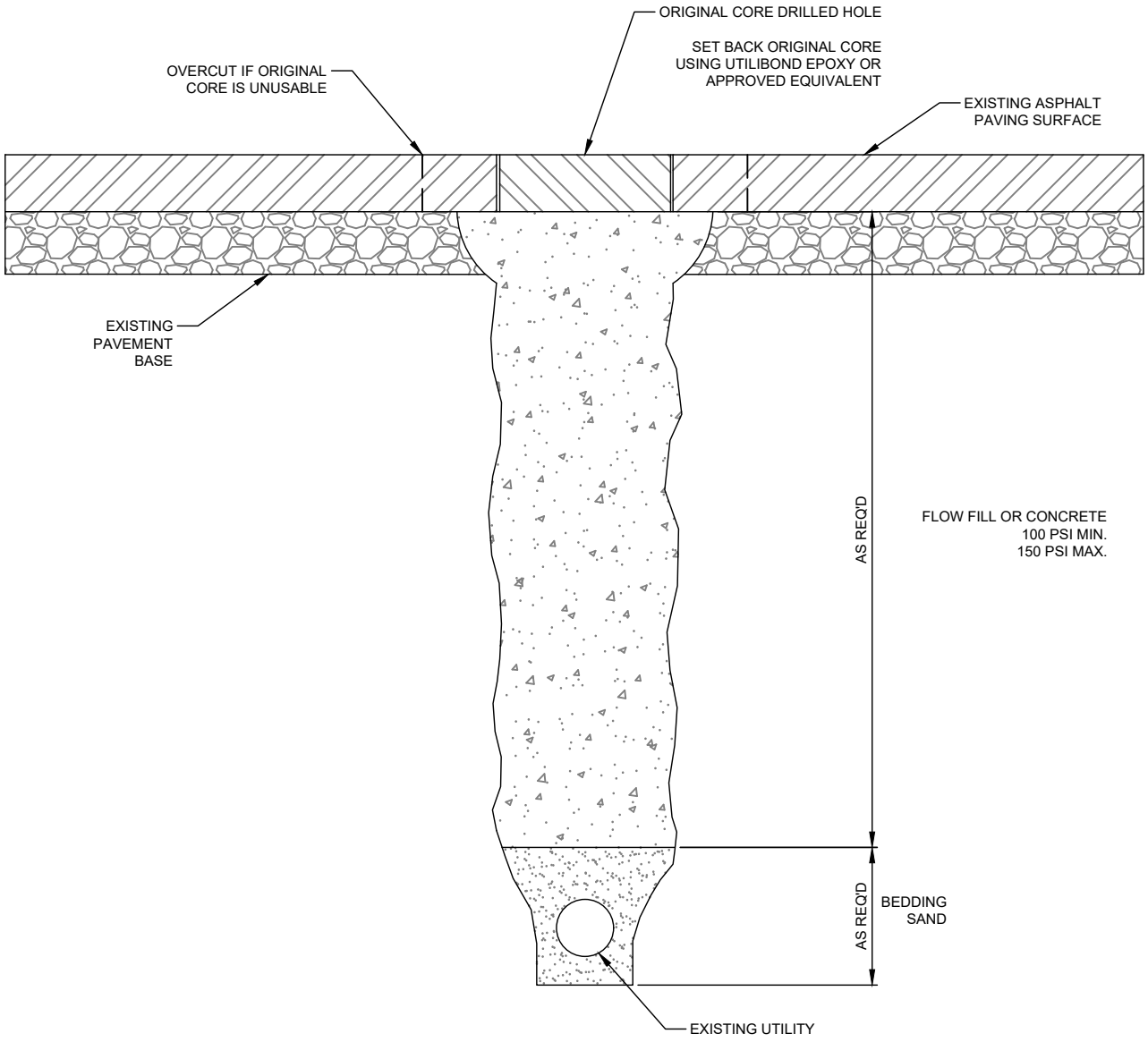
DATE: 03/17
SCALE: N.T.S.

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UTILITY CONCRETE COLLAR

UTILITIES-4

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NOTES:

1. IF ORIGINAL CORE CANNOT BE USED, THEN CORE MUST BE OVERCUT 12" MIN. AND THEN FILLED WITH HOT MIX ASPHALT.

HEBER CITY
HEART OF THE WASATCH BACK

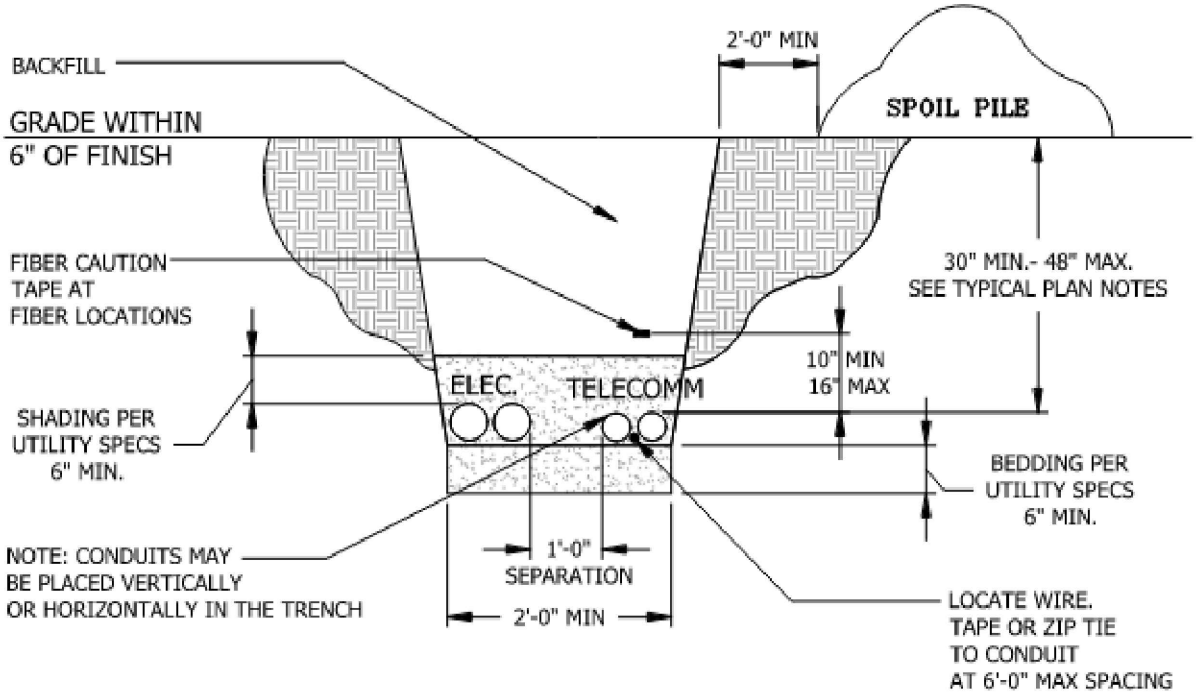
DATE: 09/23
SCALE: N.T.S.

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UTILITY POTHOLE REPAIR

UTIL-5

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\UTILITIES-5 Updated.dwg - Pothole Rpr - 9/07/2023 03:43pm, natalier



NOTES

1. SEE THE TYPICAL DETAILS FOR MORE INFORMATION.
2. TYPICAL TRENCH DEPTHS:
   - 2.1. ALL TRENCH DEPTHS ARE THE MINIMUM REQUIRED FROM FINAL FINISH GRADE TO TOP OF CONDUIT.
     - 2.1.1. RESIDENTIAL RIGHT-OF-WAY: 30"
     - 2.1.2. OTHER RIGHT-OF-WAY: 36"
3. ALL PEDESTALS AND VAULTS SHALL BE PLACED NEXT TO GROUND TRANSFORMERS, SWITCHES, AND OTHER GROUND-INSTALLED POWER FACILITIES, AND SHALL MEET MINIMUM CLEARANCE REQUIREMENTS REQUIRED BY HEBER LIGHT & POWER COMPANY.
4. ALL PEDESTALS AND VAULTS SHALL BE PLACED A MINIMUM OF 4'-0" CLEAR OF POWER POLES.
5. CONDUIT AND RUNS TO MAINTAIN 4'-0" MINIMUM FROM POWER POLE RUNNING LINE.
6. NOTIFY THE INSPECTOR IF MINIMUM CLEARANCES TO POWER POLES OR POWER RUNNING LINES ARE NOT ABLE TO BE MET.
7. ALL CONDUITS PLACED IN AN OPEN TRENCH SHALL BE LOCATED SUCH THAT THEY MINIMIZE SNAKING AND MAINTAIN AS STRAIGHT A PROFILE AS POSSIBLE.
8. ALL CONDUIT PATHWAYS SHALL BE PROOFED FOR FUTURE CABLE INSTALLATION PRIOR TO THE COMPLETION OF CONSTRUCTION.

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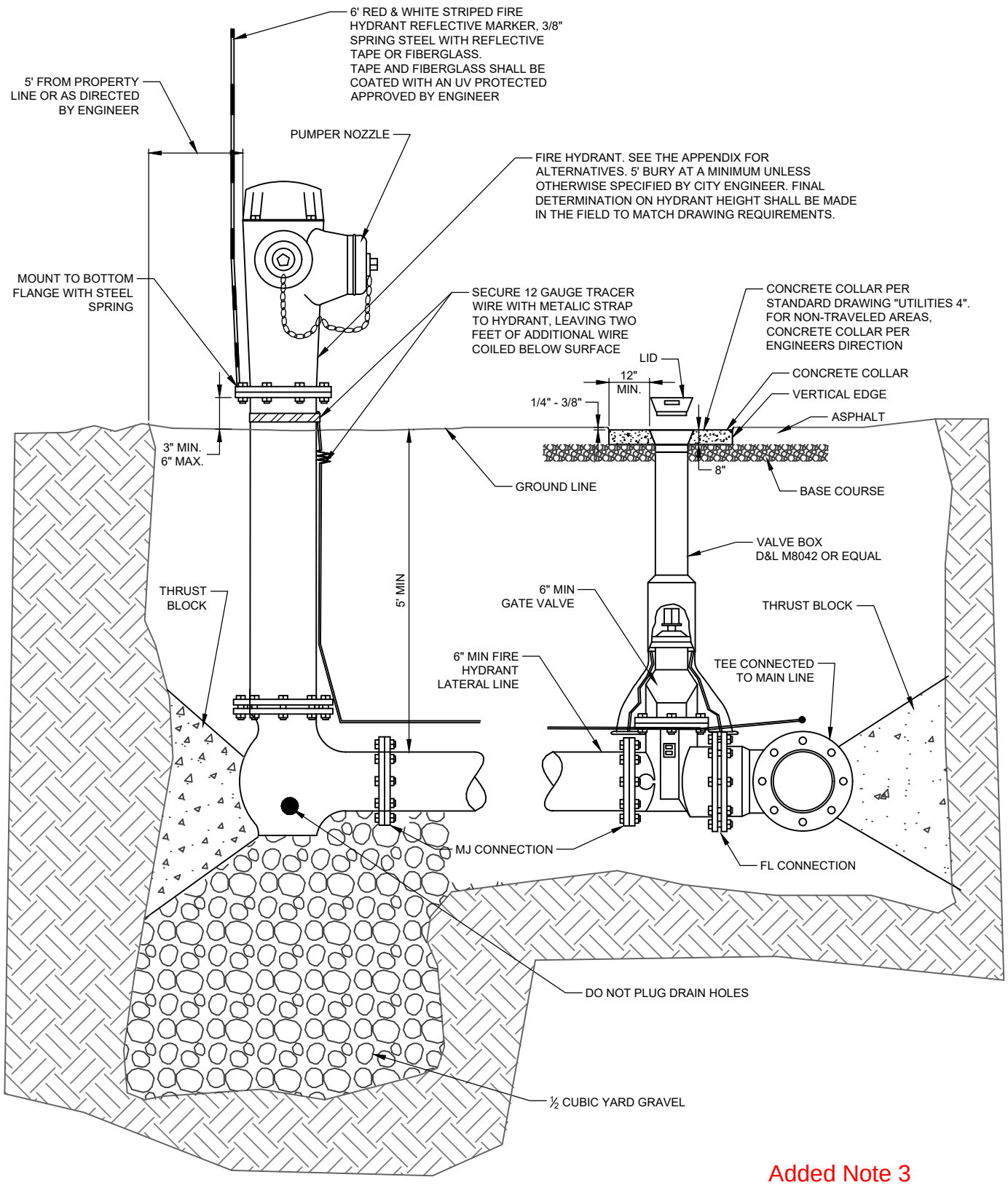
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

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TELECOMMUNICATIONS & POWER SHARED TRENCH

UTIL-6



Added Note 3

NOTES:

1. FIRE HYDRANT DRAINS SHALL NOT BE CONNECTED TO, OR LOCATED WITHIN, 10 FEET OF SANITARY SEWERS. WHERE POSSIBLE, HYDRANT DRAINS SHALL NOT BE LOCATED WITHIN 10 FEET OF STORM DRAINS.
2. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.
3. NO MORE THAN ONE STEM EXTENSION/ RISER ON A FIRE HYDRANT.

HEBER CITY
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DATE: 01/25
SCALE: N.T.S.

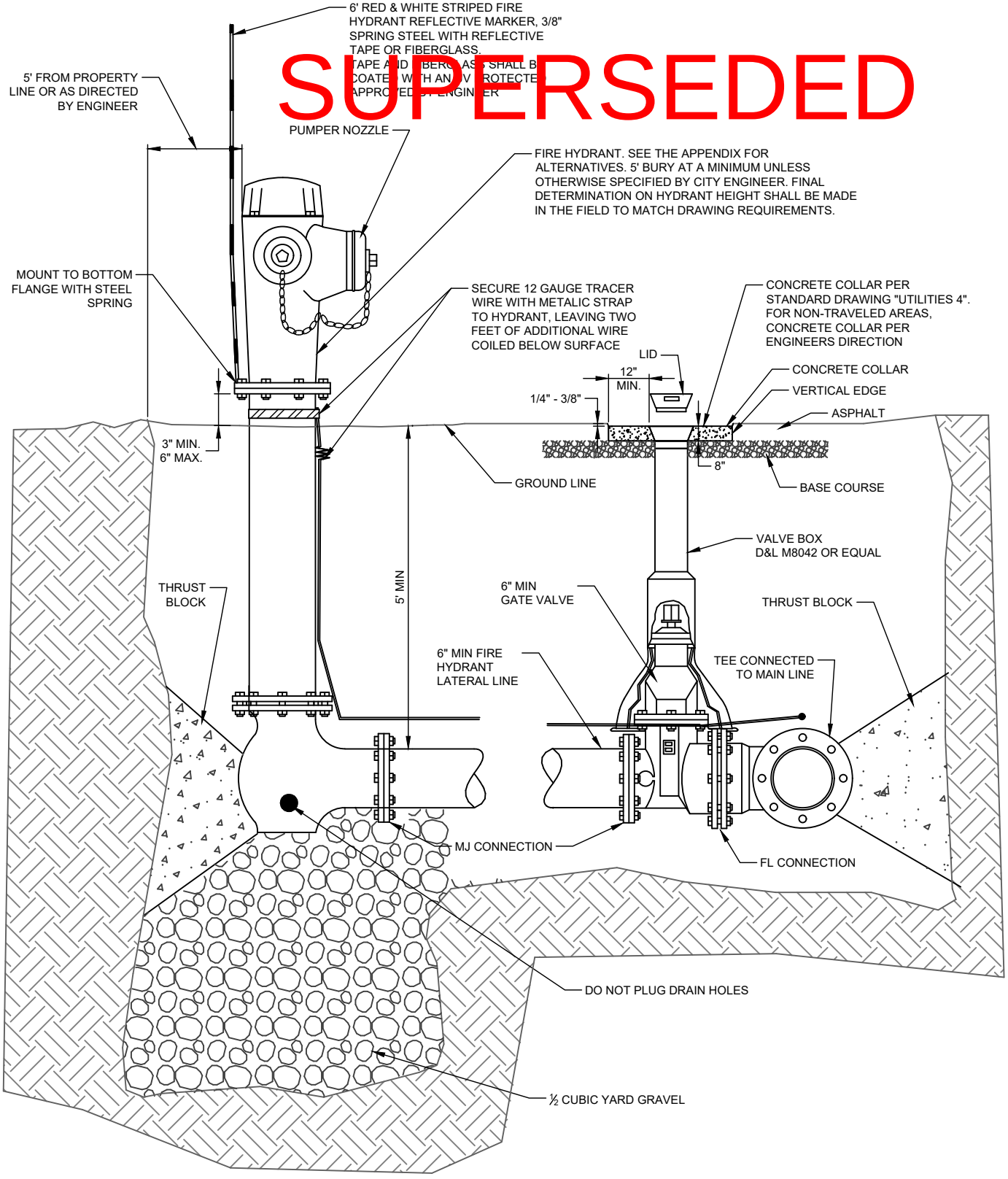
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FIRE HYDRANTS

WATER-1

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SUPERSEDED



NOTES:

1. FIRE HYDRANT DRAINS SHALL NOT BE CONNECTED TO, OR LOCATED WITHIN, 10 FEET OF SANITARY SEWERS. WHERE POSSIBLE, HYDRANT DRAINS SHALL NOT BE LOCATED WITHIN 10 FEET OF STORM DRAINS.
2. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 04/22

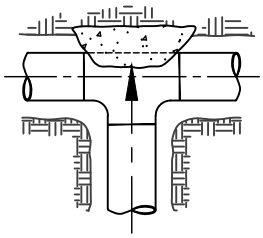
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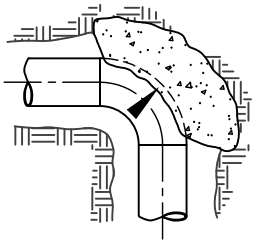
FIRE HYDRANTS

WATER-1

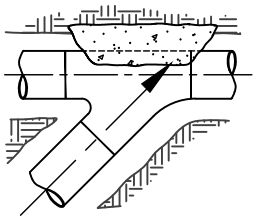
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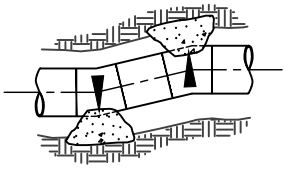
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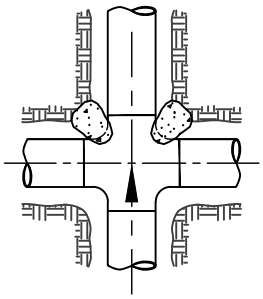
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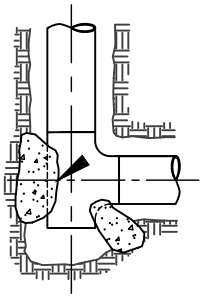
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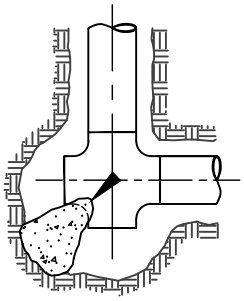
CONDITION 4



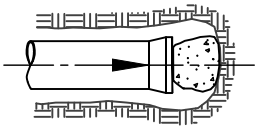
CONDITION 5
(@ ENGINEERS DISC)



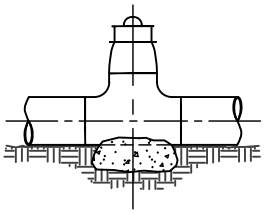
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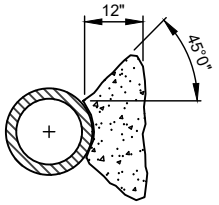
CONDITION 7



CONDITION 8



ANCHOR REQ'D. FOR
VALVES 12" OR LARGER



TYPICAL SECTION
THRU THRUST BLOCK

THRUST BLOCK BEARING AREA IN SQ. FT.

PIPE SIZE	CONDITION							
	1	2	3	4	5	6	7	8
4	2.6	3.3	2.6	1.3	1.3	2.0	3.3	2.6
6	4.6	6.5	3.9	2.0	2.6	3.3	6.5	4.6
8	7.8	11.0	5.9	3.3	3.9	5.9	11.0	7.8
10	12.4	17.5	9.8	5.2	6.5	9.1	17.5	12.4
12	17.5	24.8	13.6	7.8	9.1	12.3	24.8	17.5
14	24.0	33.8	18.2	9.7	12.3	16.9	33.8	24.0
16	31.1	44.0	23.8	12.7	15.5	23.2	44.0	31.1
20	48.6	68.8	37.2	19.8	24.2	36.3	68.8	48.6
24	89.8	90.1	48.8	24.9				

NOTES:

1. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL
2. CONCRETE SHALL BE CLASS 6.0-B-3000.
3. ALL THRUST BLOCK SIDES SHALL BE WOOD FORMED UNLESS OTHERWISE APPROVED.
4. CALCULATED ON 225 LB. TEST PRESSURE AND ALLOWABLE BEARING PRESSURE OF 200 LBS. PER SQUARE FEET.
5. IN POORER SOILS SPECIAL DESIGN IS REQUIRED.
6. VALVE BOLTS, WEEP-HOLES, AND OTHER FITTING APPARATUSES SHALL NOT BE COVERED WITH CONCRETE AND SHALL HAVE A MINIMUM 3" CLEARANCE FROM CONCRETE.
7. ALL THRUST BLOCKS SHALL BE INSPECTED BY AUTHORIZED CITY INSPECTOR PRIOR TO POUR AND PRIOR TO BACKFILL.

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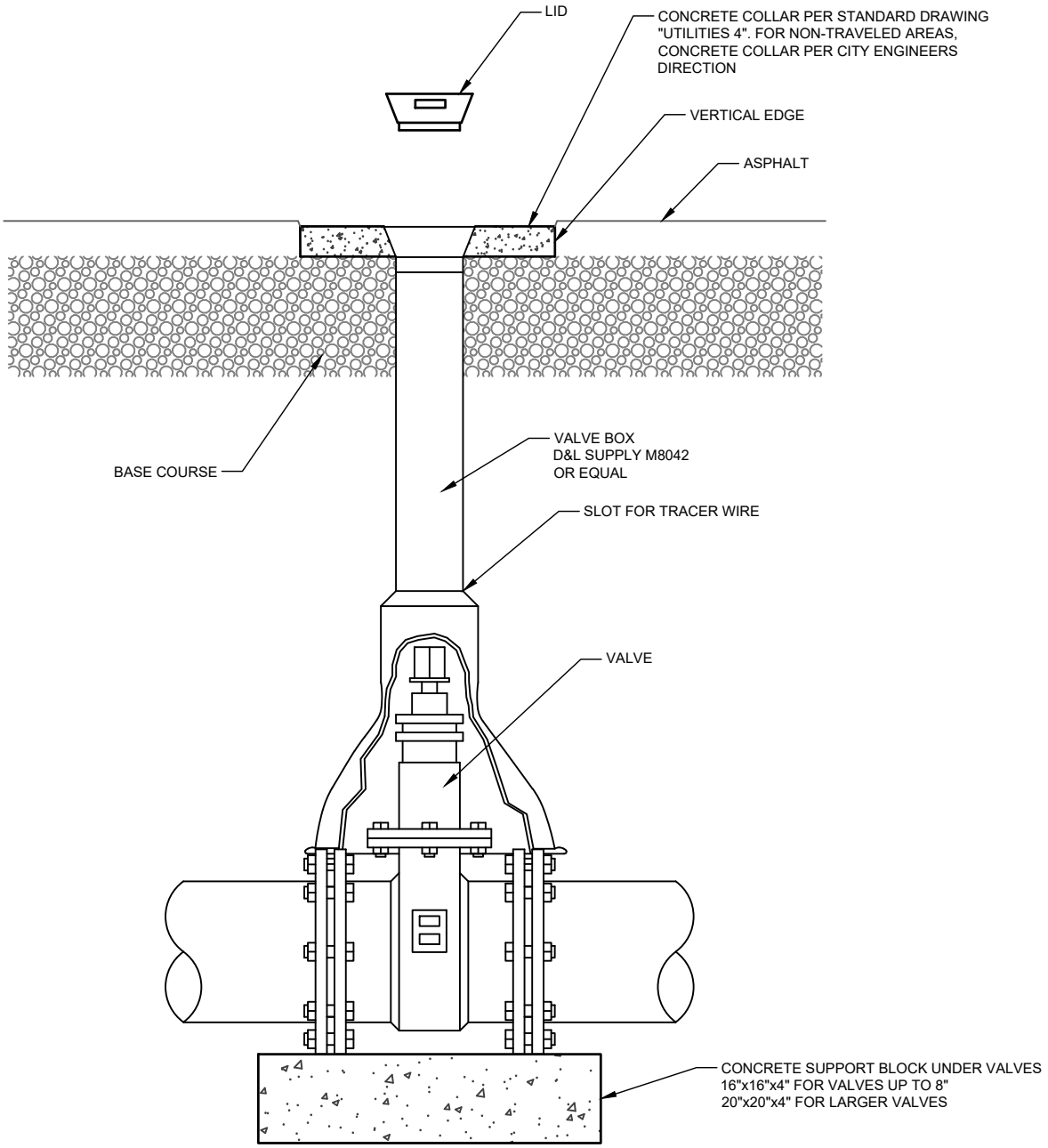
HEBER CITY
HEART OF THE WASATCH BACK

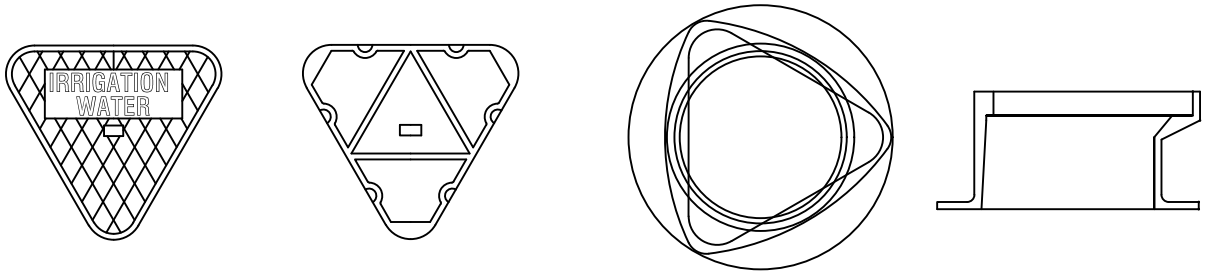
DATE: 06/21
SCALE: N.T.S.

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(435) 654-0757

TYPICAL PIPE THRUST BLOCKING

WATER-2





NOTES:

1. ALL IRRIGATION BOXES TO BE INSTALLED USING THE ABOVE LID. REF# M-9009
2. RAISE VALVE BOX TO GRADE AFTER PAVING OPERATIONS ARE COMPLETED.
3. GRIND SMALL SLOT FOR TRACER WIRE TO PASS THROUGH AT FLARE IN VALVE BOX.
4. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 04/22

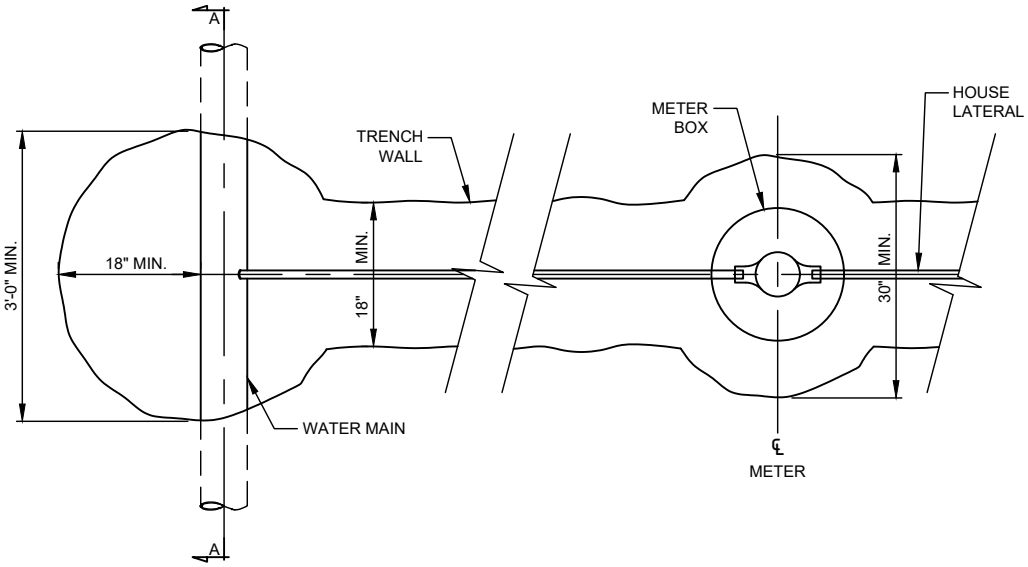
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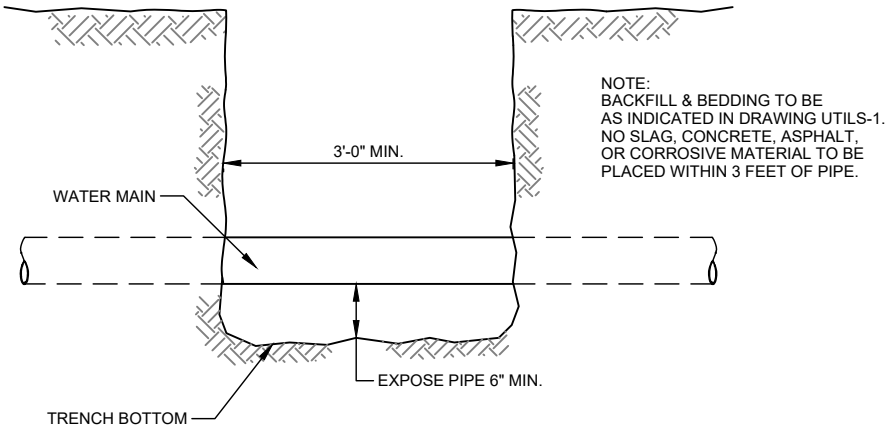
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VALVE BOX & COLLARS

WATER-3

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SECTION A-A

HEBER CITY
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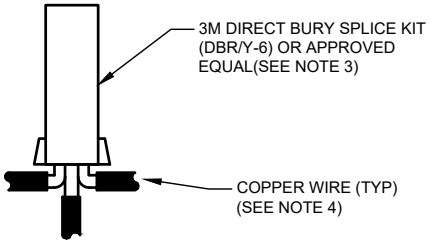
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SCALE: N.T.S.

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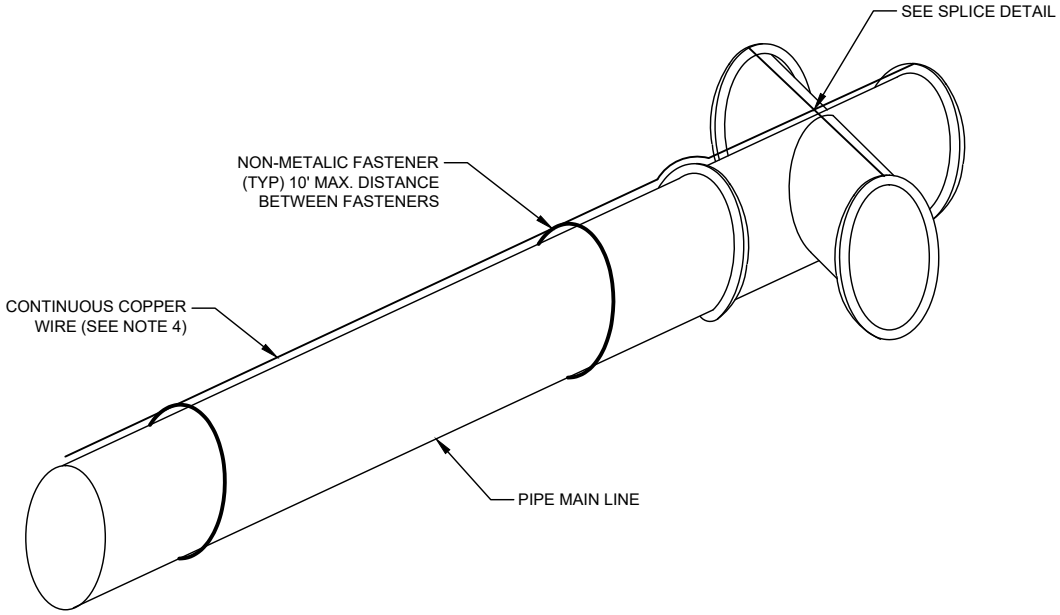
1" SERVICE TRENCH

WATER-4

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SPLICE DETAIL



NOTES:

1. COPPER TRACER WIRE TO BE INSTALLED THE LENGTH OF PIPELINE AND EACH CULINARY SERVICE, AND SECONDARY SERVICE, ALONG EACH PRESSURIZED IRRIGATION PIPELINE AND SERVICE. TRACER WIRE TO BE BROUGHT UP IN AT LEAST ONE VALVE IN EACH INTERSECTION. TRACER WIRE TO BE BROUGHT TO THE END OF EACH FIRE HYDRANT ON CULINARY LINES. (NOT TO EXCEED 500 FEET).
2. TRACER WIRE TO BE INSTALLED AND MAINTAINED ON TOP OF PIPE CENTERLINE DURING BACKFILL.
3. SPLICE KIT USED TO ELECTRICALLY CONNECT TWO OR MORE PRESTRIPPED COPPER WIRES AND MOISTURE SEAL THE CONNECTION FOR DIRECT BURIAL. THE KIT SHALL INCLUDE A 3M (OR APPROVED EQUAL) PERFORMANCE PLUS WIRE CONNECTOR AND A HIGH IMPACT, UV RESISTANT POLYPROPYLENE TUBE PREFILLED WITH MOISTURE-RESITANT GREASE.
4. COPPER WIRE SHALL BE #12 AWG SOLID UF TYPE WITH CROSS-LINKED POLYETHYLENE INSULATION RATED TO 600 VOLTS.
5. CONTRACTOR SHALL TEST TRACER WIRE FOR CONTINUITY PRIOR TO PAVING IN THE PRESENCE OF THE ENGINEER.
6. THE TEE/CROSS IS SHOWN WITHOUT VALVES AND IS INTENDED TO SHOW TRACER WIRE ROUTING ONLY.

HEBER CITY
HEART OF THE WASATCH BACK

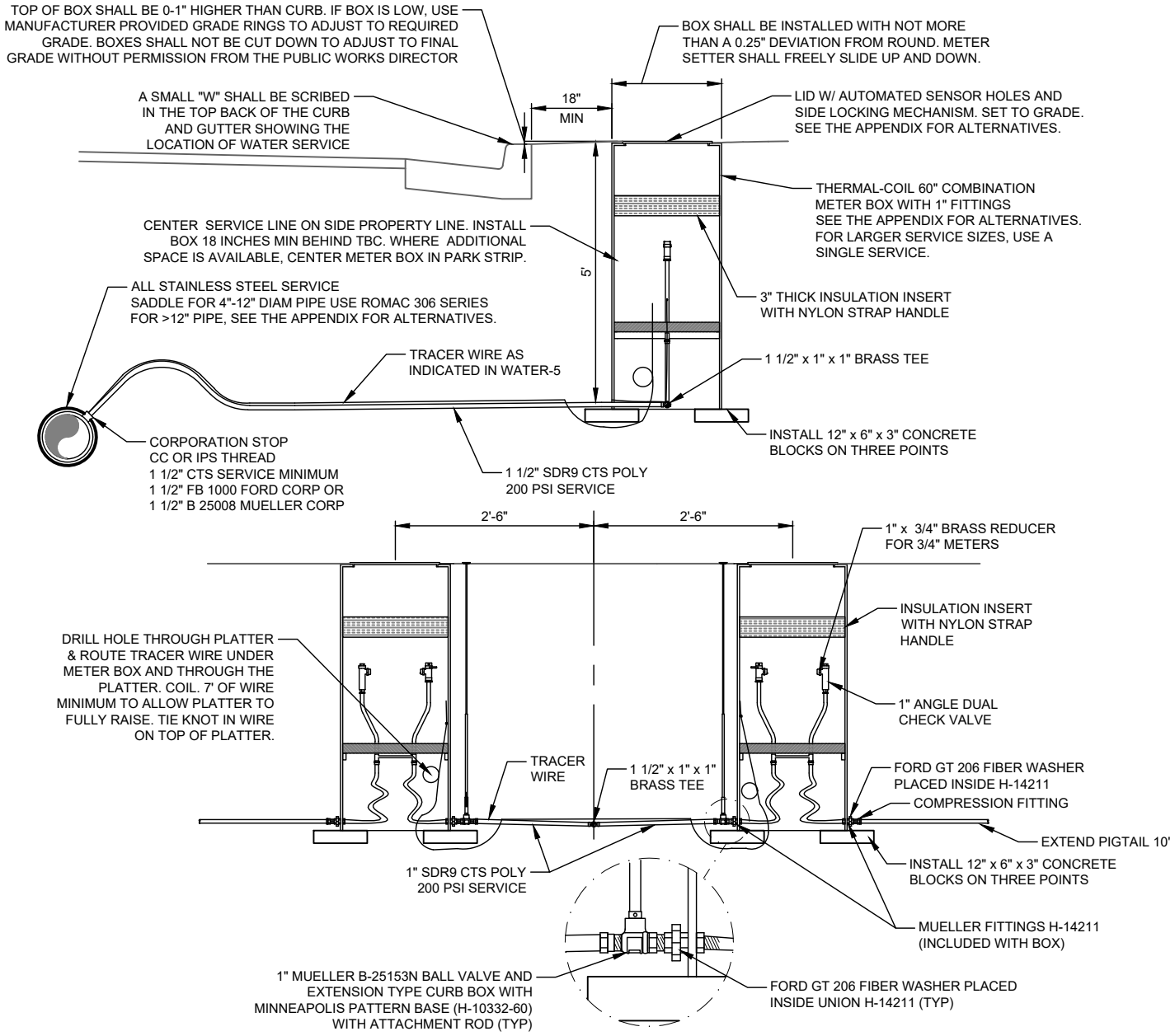
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SCALE: N.T.S.

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TRACER WIRE INSTALLATION

WATER-5

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\WATER-5.dwg - Tracer Wire - 9/07/2023 03:44pm, natalier



NOTES:

1. METER BOX, COVER, COPPER SETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
3. METER BOXES ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
4. WATER METER WILL BE INSTALLED BY HEBER CITY.
5. SEE UTILS-3 FOR PLAN VIEW.
6. WATER METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER.
7. WATER SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF FIRE HYDRANT LINE OR SERVICE LINES.
8. WATER METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. ANY NIPPLES USED IN SERVICE SHALL BE STAINLESS STEEL.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.
11. SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.

HEBER CITY
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DATE: 09/23
SCALE: N.T.S.

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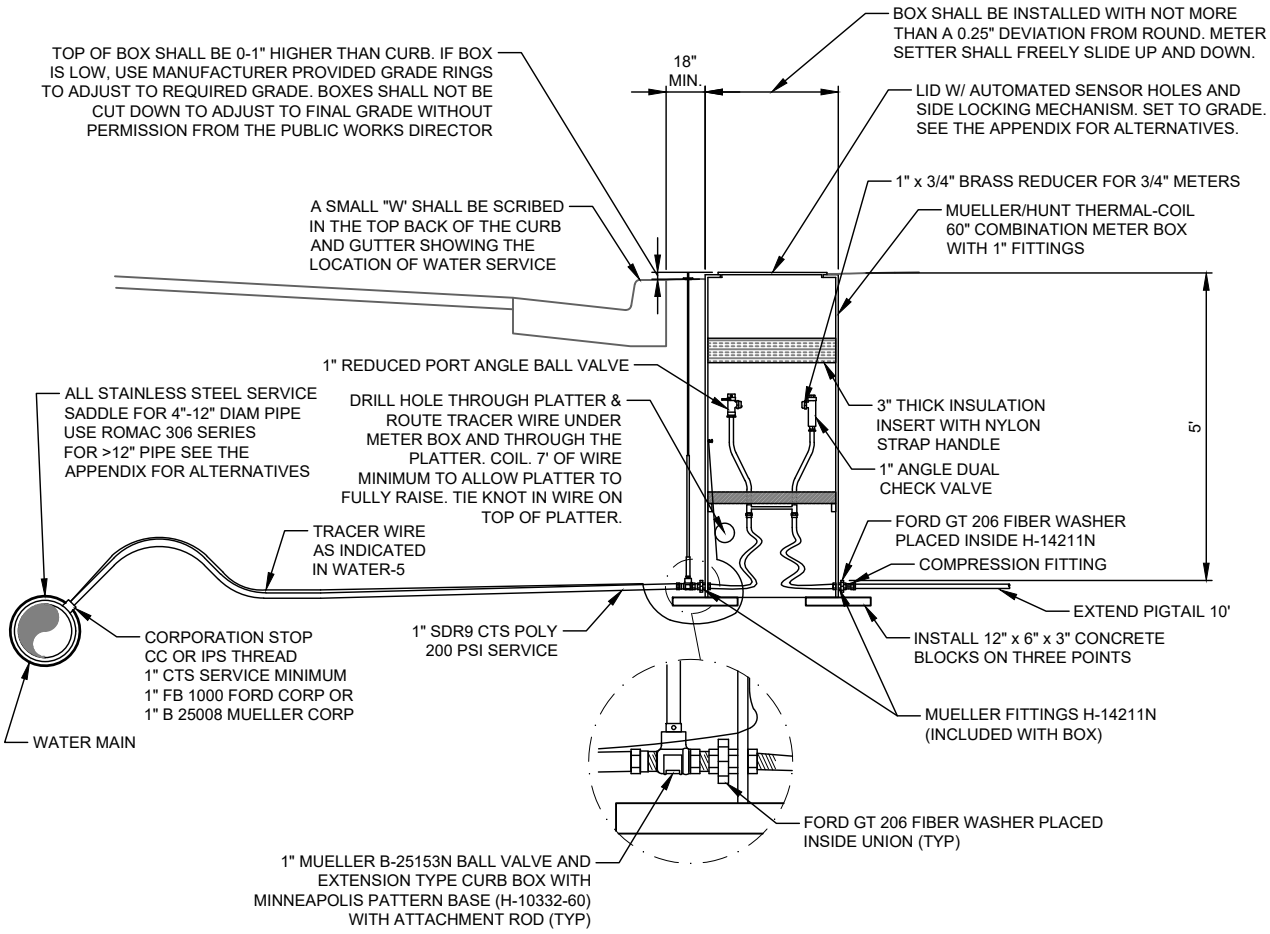
WATER SERVICE - TWO LOTS

WATER-6A

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TABLE 1					
SERVICE LINE SIZE	MINIMUM METER BOX SIZE	BOX MODEL	FRAME MODEL	COMMENTS	INSULATION INSERTS
1" MINIMUM		SEE THE APPENDIX FOR ALTERNATIVES			790153
1 1/2"	24" x 60"	500VS2460RVB000520N	700098-1	" "	790325
2"	27" x 60"	550VS2760RVB000520N	700098-1	" "	790327

NOTE 1: FOR LARGER SIZES CONTACT PUBLIC WORKS FOR REQUIREMENTS



NOTES:

1. METER BOX, COVER, COPPER SETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
3. METER BOXES ARE ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
4. WATER METER WILL BE INSTALLED BY HEBER CITY.
5. SEE UTILS-3 FOR PLAN VIEW.
6. WATER METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER.
7. WATER SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF FIRE HYDRANT LINE OR SERVICE LINES.
8. WATER METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. ANY NIPPLES USED FOR SERVICE SHALL BE STAINLESS STEEL.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.
11. SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.

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DATE: 09/23
SCALE: N.T.S.

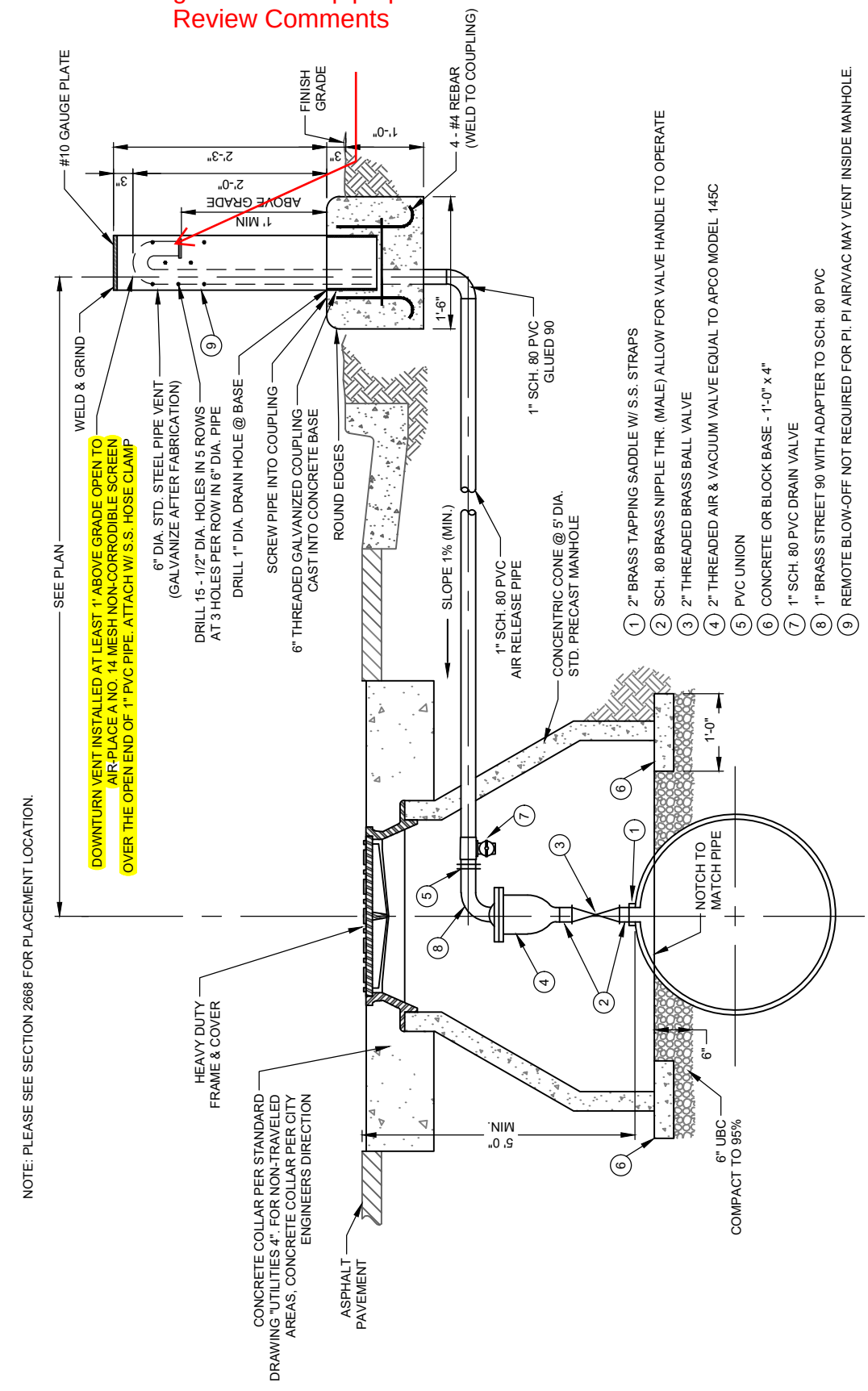
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WATER SERVICE - SINGLE LOT

WATER-6B

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Changed note and added gooseneck in pipe per DDW Review Comments



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HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

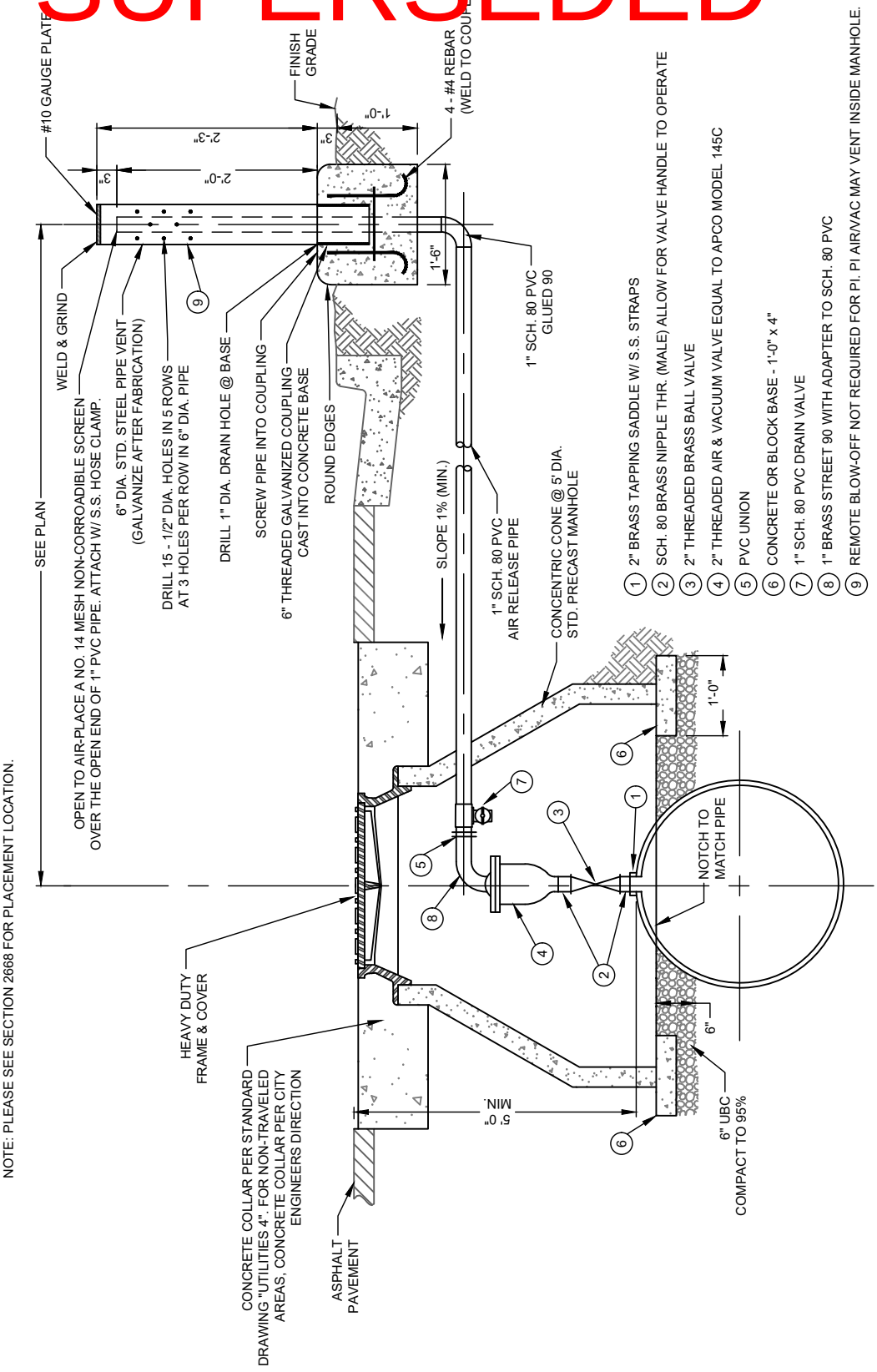
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

AIR VAC RELEASE STATION

WATER-7

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SUPERSEDED



NOTE: PLEASE SEE SECTION 2668 FOR PLACEMENT LOCATION.

HEBER CITY
HEART OF THE WASATCH BACK

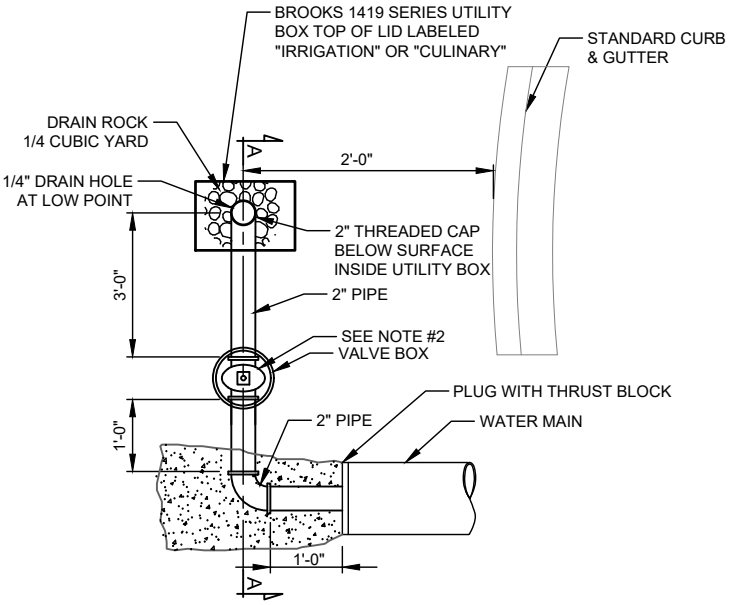
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75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

AIR VAC RELEASE STATION

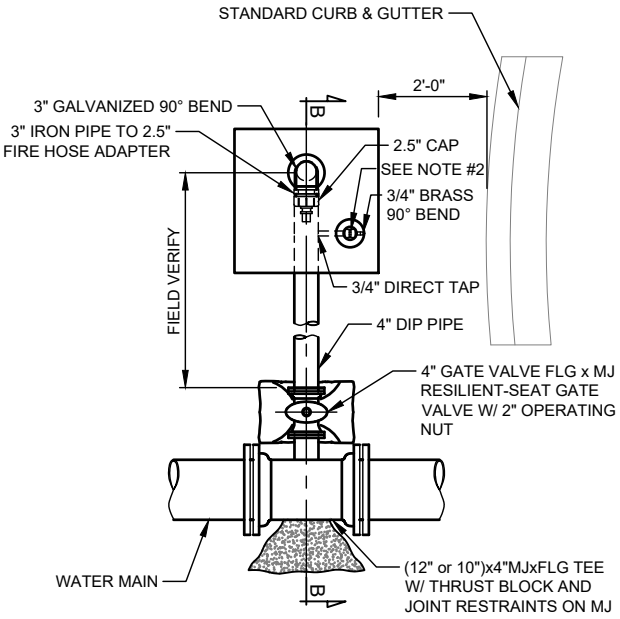
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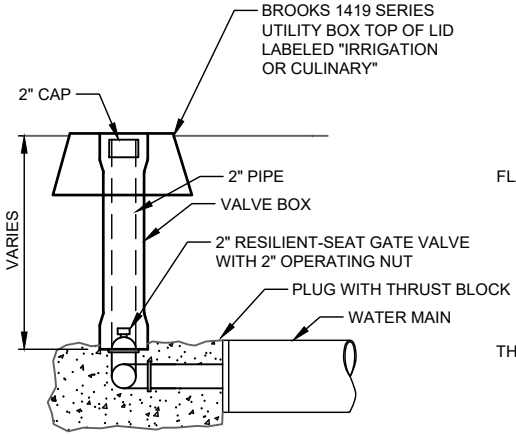
NOTES:
1. ALL PIPE TO BE GALVANIZED AFTER FABRICATION.
2. 2" RESILIENT-SEAT GATE VALVE WITH 2" OPERATING NUT.

PLAN

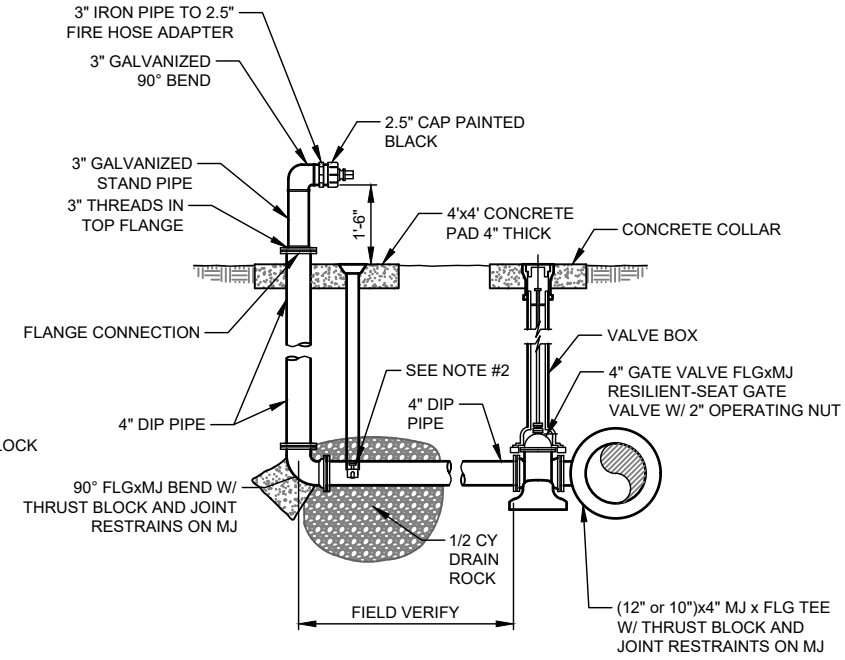


NOTES:
1. CONTRACTOR SHALL INSTALL WATER SAMPLING SPIGOT AS NEEDED DURING CONSTRUCTION FOR BACTERIA TESTING AND CHLORINE RESIDUAL TESTING.
2. 3/4" MUELLER BALL VALVE W/ EXTENSION TYPE CURB BOX W/ MINNEAPOLIS PUTTORN BASE (H-10332-60) OR 3/4" (FORD B41-333QM) BALL VALVE W/ ATTACHMENT ROD (EM2-60-4654R
3. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

PLAN



SECTION A-A



SECTION B-B

TEMPORARY BLOWOFF FLUSH VALVE

PERMANENT BLOWOFF FLUSH VALVE

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 04/22
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

TEMPORARY & PERMANENT BLOWOFF FLUSH VALVE

WATER-8

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Page 13 of the manual was updated by removing a design requirement that was overly restrictive for available hydrodynamic separators on the market.

Pages 9 & 10 of the manual updated the minimum groundwater depth to infiltration basin from 2 ft to 4 ft.

HEBER CITY

HEART OF THE WASATCH BACK

HEBER CITY STORM WATER DESIGN MANUAL

Heber City Engineering

~~SEPTEMBER 5, 2023~~MARCH 4, 2025

HEBER CITY
75 N Main Street
Heber City, UT 84032

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Introduction

Purpose of document

The purpose of this document is to establish design standards and guidelines for storm drainage infrastructure within Heber City. This document also promotes uniformity among development design submittals and drainage reports.

The design criteria in this document are for use on public and private projects within the city. There are other adopted City documents that also reference requirements related to storm drain systems within the city. These documents include the Heber City Standard Specifications and Drawings, the Heber City Master Plans, and the Heber City Municipal Code. This document is designed to work in collaboration with these other stated references, however, in the case of discrepancies the more stringent standard will apply. All requirements and the intent of design requirements in this document shall be met unless otherwise approved by the City Engineer.

Definitions

cfs	*Cubic feet per second (449 gallons per minute)*
Ac-Ft	*Acre-foot (volume of water required to cover an acre of land to a depth of one foot)*
Detention	*Short term storage of runoff provided by a pond or similar facility. An outlet is provided that allows water to be released from the facility at a predetermined rate.*
LID	*Low Impact Development is an approach to improving water quality by reducing the amount of storm runoff generated by a project and relying on infiltration or evaporation to handle runoff where it is generated.*
Retention	*Long term storage of storm water provided by a pond or similar facility that does not allow water to be discharged. Water will stay in a retention pond after a storm event until it either evaporates or infiltrates into the bottom of the pond.*

Approval Procedure

Preliminary Drainage Plan and Report

i. A preliminary drainage plan and report are required for all site plan and subdivision developments within the city. The preliminary drainage plan must include the following as applicable:
    1. Existing topography (2-foot contours or finer) extending at least 100 feet beyond the site
    2. Existing drainage infrastructure and features
    3. Existing drainage and gravity irrigation channel/canal features
    4. Watershed delineations and existing drainage patterns/flow paths
    5. Proposed drainage infrastructure and features (onsite and offsite)
    6. Proposed drainage patterns/flow paths

ii. The preliminary drainage report must include the following as applicable:
    1. Introduction
    2. Project Scope
    3. Project Location
    4. Description of Existing Conditions
    5. Drainage Design Criteria
    6. Off-Site Watershed Drainage and Hydrology
        a. Preliminary Upstream/Downstream Flood Analysis
        b. Preliminary Hazards & Debris-Flow Analysis
    7. On-Site Area Drainage and Hydrology and Hydraulics
    8. LID features
    9. Detention and/or Retention Facilities
    10. Water Quality Features (e.g., LID, HDS, pretreatment etc.)
    11. Major Stream Crossings
    12. Non-pressurized Irrigation Systems

Final Drainage Plan and Report

iii. Final drainage plans and report are required for all site plan and subdivision developments within the City shall be submitted after acceptance/approval of the preliminary submittal. The final drainage report shall be submitted for review prior to final site plan or subdivision approval.

iv. Final Drainage Plans must include the following as applicable:
    1. Existing and proposed topography (2-foot contours or finer) extending at least 100 feet beyond the site
    2. Existing drainage infrastructure and features
        a. Onsite features (channels, flow control, etc.)
        b. Offsite features (debris basins, etc.)
    3. Existing drainage and gravity irrigation channel/canal features
    4. Watershed delineations and existing drainage patterns/flow paths
    5. Location of all proposed drainage features
        a. Onsite features (channels, flow control, etc.)
        b. Offsite features (debris basins, etc.)

6. Proposed drainage patterns/flow paths
7. Proposed drainage details
8. Improvements to city facilities
9. LID, water quality and retention features

v. Final Drainage Report must include as applicable:
1. Introduction
2. Project Scope
3. Project Location
4. Detailed Description of Existing Conditions
5. Drainage Design Criteria
6. Off-Site Drainage and Hydrology with Final Calculations
    a. Final Upstream/Downstream Flood Analysis
    b. Final Hazards & Debris-Flow Analysis
    c. Recommended Mitigation
7. On-Site Drainage Hydrology and Hydraulics with Final Calculations
8. Description of LID Measures
    a. Justification for products selected and why they are most appropriate
    b. Compliance with on-site retention rules
9. Detailed Description of Detention and/or Retention Facilities
10. Major Stream Crossing
11. Non-pressured Irrigation Systems
12. Permanent Erosion Control Features
13. Water Quality Features (e.g., LID, HDS, pretreatment etc.)
14. Storm Drain System Calculations

All plans and reports are subject to review and approved by Provo River Watershed Council. See Appendix A for list of resources for drainage design in Heber City.

Design Standards and Analysis Methods

These standards apply to all developments within Heber City including the North Village area or other areas that may annex into the City in the future. Heber City may establish additional storm drain design criteria for certain development areas through a new Storm Drain Master Plan and/or Master Plan update. All developments shall comply with the City Storm Drain Master Plan that is applicable for the respective development.

Design Storms for Conveyance

New developments within Heber City must have an initial and a major storm drain system for storm water conveyance. The initial system's purpose is to reduce the frequency of street flooding, reduce maintenance costs, and provide protection against regularly recurring damage from storm runoff. The initial conveyance system must handle the 10-year storm event at a duration equal to or less than the time of concentration (T_c), and typically consists of pipe, storm drain inlets, curb and gutter, or drainage swales that convey the storm water.

The purpose of the major conveyance system is to avoid major property damage or loss of life during flood level runoff conditions. The major system is comprised of the initial conveyance system elements but also includes the entire roadway cross section, including park strip and sidewalk, or other safe surface routes. The major system must protect against flooding during the 100-year storm event at a duration equal to or less than the T_c.

Every effort shall be made to keep the major system above ground. But, where that is impractical, the City Engineer may approve the major system to be underground if it is designed for it from the top of the catchment. "Funneling" at the bottom of a catchment is not allowed. The following figure details how the initial and major systems must function.

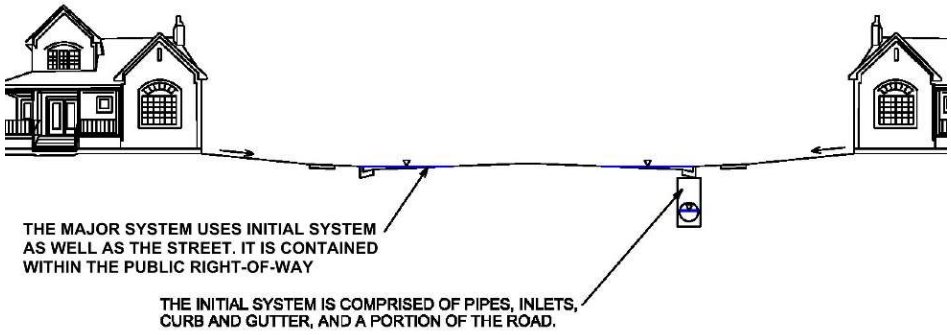


Figure 1. Initial and Major Drainage Systems

Directly connected impervious areas should be independent watershed basins and should not be combined and averaged with pervious areas.

Storage Facilities

Storm drain storage facilities are required for flood control and water quality purposes. Storage facilities may be above ground basins/ponds or below ground storage systems. Detention storage facilities require an approved suitable discharge location approved by the City Engineer. Retention facilities are required when no suitable discharge location is available. Detention facilities must be designed to store and detain the 100-year event with a maximum release rate of 0.1 cfs/acre. If downstream conveyance capacities are limited, storm water runoff peak flow rates shall be further reduced to offset the impacts to the downstream system capacity. See the Post Construction Peak Discharge section for more detailed requirements. Retention storage facilities must provide retention volume for the 100-year, 24-

hour event. Infiltration may be considered as outflow when sizing retention facilities. See the section on Infiltration in this document for details regarding infiltration requirements. However, if infiltration is utilized for facility sizing design, shorter storm durations with higher intensities must be checked (i.e., rational spreadsheet), and the controlling or largest volume, minus the infiltration, shall be used to size the storage facility. Therefore, the 24-hour storm may not result in the largest storage volume. When utilizing the SCS Type II 24-hour storm for sizing storage facilities with infiltration, the storm distribution must provide a peak intensity where the majority of the rainfall occurs during a shorter period of time.

Storm Drain System Hydraulic Requirements

Pipe systems used for conveyance must be designed such that they flow unpressurized during the required design event. Minimum pipe diameter for public storm drain pipes within City right-of-way is 18 inches but may be reduced to 15 inches for pipes from a single inlet box. Private storm drain pipe may be reduced to 10 inches but must still adhere to conveyance design storm requirements. Pipe material must adhere to Heber City Standard Specifications and Drawings. Junction boxes or manholes should be placed such that the maximum pipe length between two structures does not exceed 400 feet.

Apply an inlet clogging factor of 30% for inlets on grade and 50% for inlets in sags.

The minimum pipe slopes shall be pursuant to HEC 22 Table 7-7. The n-values shall be 0.012 for plastic pipe and 0.013 for concrete pipe.

On steeper slopes, provide a sufficient number of inlets to reduce inlet bypass to less than 0.2 cfs and to reduce risk of water sweeping pedestrians off their feet.

Design storm drain system per HEC-22.

Channel Hydraulic Requirements

Open channels that are part of the initial conveyance system shall be designed to convey the 10-year flow while maintaining one-foot of freeboard. Channels that are located within a FEMA Special Flood Hazard Area, open channels that are the major conveyance system, and natural drainage channels shall be designed to convey the 100-year flow with one foot of freeboard. All channel sections must be adequately designed, detailed, and constructed, pursuant to the latest edition of HEC 15, to prevent erosion of the channel bed and banks for the 10-year event.

Above Ground Storage Basins (Ponds)

Above ground storage basins (ponds) shall be designed as attractive and usable spaces. Water depth should be five feet or less where feasible, appropriate landscaping shall be incorporated, and include elements that eliminate standing water and low flow impacts. Detention ponds shall include a low-flow surface channel, or underdrain that is sized for the 2-year storm event.

The required freeboard for detention basins is two feet in areas where any portion of the pond is constructed above existing ground and one foot when the pond is excavated in existing ground.

Basins that are not acting as a biofilter, or which have natural flow only, shall include at least one sump manhole to help facilitate infiltration of storm water, and the inlet into the basin shall be connected directly to the sump manhole.

Side slopes on City owned and maintained basins shall be 5H:1V or flatter on two or more sides, 4H:1V or flatter slopes on remaining sides, with a minimum 1% bottom slope. If the natural existing slope is greater than 8% then basin side slopes may be increased to 3H:1V. A suitable location for ingress and egress shall be incorporated for ponds deeper than three feet, and this must include an access at least 15-feet wide at less than 15% grade. A minimum five-foot buffer between any pond grading and the property lines shall be provided.

Landscaping: Grass or other suitable landscaping materials should be used, and turf irrigation systems shall be installed for ponds that will be maintained by City personnel, unless a low-maintenance landscaping alternative is approved. Irrigating methods and practices must be accounted for in the hydrologic and infiltration calculations when designing and sizing ponds. Developers will be required to escrow funds to landscape ponds when located on private lots for future reimbursement to the owner who completes the landscaping at a future time. Developers will not use landscaping that may hinder infiltration if it is used in the sizing of the pond or required for Municipal Separate Storm Sewer (MS4) compliance. See infiltration section for more information on infiltration and landscaping requirements.

Easements: If basins are placed on private property, a minimum 20-foot easement for all underground lineal pipeline facilities and access to maintain ponds must be provided. Additionally, an easement must be provided over the pond area and a minimum of five feet beyond the pond top of slope perimeter. The easement shall be ten feet beyond the pond perimeter when an access along the pond edge is required. Pond easements shown on subdivision plats shall have restrictive language labeled with dimensions to facilitate locating in the field.

Basins shall be designed with provisions for an emergency overflow that will avoid flood damage to surrounding properties in the event of a storm exceeding the design capacity of the basin.

Retention basins shall be designed with mechanisms to ensure that the basin will completely drain within 48 hours after the 24-hour event with additional precipitation. (Verify a 72-hour storm will not overtop the basin). See the section on Infiltration in this document for details regarding infiltration requirements.

Basin inlets and outlets shall have trash racks or grates installed. A storm water pretreatment device, approved by the City, shall be installed upstream of the pond or sump inlets. See the Water Quality section of this report for requirements.

Culverts

Culverts that convey off-site flows through a project or beneath a road shall be designed for the 100-year event. Culverts shall be designed so the headwater elevation does not exceed 1.5 times the culvert diameter, or one foot below the elevation where water spills over the road or out of the channel. Concrete box culverts shall have a minimum 5-feet height from floor to ceiling, and multi-barrel culverts may not be used where high amounts of debris is expected. If multi-barrel culverts are used in other locations, designers must consider elevations of roads, buildings, driveways, and other features to prevent adverse impacts. Normal depth equations (Manning's Equations) cannot be used for culvert analysis. Inlet and outlet control shall be checked, and culvert hydraulic calculations provided.

Roadway Drainage

Inlets within roadways should be placed to control spread, or the amount of water flowing along the side of the road and in the gutter. Allowable spread is determined by the roadway classification as follows:

Table 1. Design Spread for Roadways

Design Frequency and Spread		
Roadway Classification	**Design Frequency**	**Design Spread**
Highway or Major Collector > 35 MPH	10-Year @ T_c	Shoulder (Outside of travel lane)
Highway or Major Collector ≤ 35 MPH	10-Year @ T_c	Shoulder + three feet
Local Street	10-Year @ T_c	½ Driving Lane

Inlets should also be placed upstream of intersections and pedestrian ramps to reduce bypass flows. Spread calculations shall be checked using HEC 22, Appendix A, Chart 1B.

Rainfall Runoff Computation Methods

Precipitation data obtained from the NOAA ATLAS 14 Point Precipitation Frequency website including intensity and depth data for Heber City is contained in Appendix B. This information shall be used for all development within Heber City.

Several hydrologic methods may be applicable depending on what type of analysis is required. The Rational Method is the most common method and may be used for sizing pipes, checking inlet spread and estimating peak flow rates for areas up to 100 acres.

Rational Method runoff coefficients are shown in Table 2. The runoff coefficients listed in Table 2 are the minimum values to be used in Heber City. Any runoff coefficients for other characteristics should be adjusted to account for the 100-year rainfall.

Table 2. Rational Runoff Coefficients

Surface or Cover Type *	**Runoff Coefficient (C)**
Asphalt or Concrete Pavement	0.90 (asphalt) 0.95 (concrete)
Roofs of Buildings (type dependent)	0.90 (asphalt shingles) 0.95 (steel)
Grass-covered Sandy Soils, Slopes 2% or less	0.13
Grass-covered Sandy Soils, Slopes > 2%	0.20
Grass-covered Clay Soils, Slopes 2% or less	0.22
Grass-covered Clay Soils, Slopes > 2%	0.49

***** Surfaces not addressed in this table shall be approved by the City Engineer.

For storm analyses that require developing a volume or routing a volume of runoff, a dynamic hydrograph simulation model is required using AutoDesk SSA, HEC-HMS, or SWMM. Within dynamic hydrograph simulation models, the transform method shall be the NRCS Unit Hydrograph Method, and the routing method for runoff hydrographs shall be the Muskinghum-Cunge Method. Multiple

hydrographs were developed by the Soil Conservation Service (SCS), now known as Natural Resources Conservation Service (NRCS). The SCS Type II 24-hour storm distribution should be used for estimating the precipitation for developments within Heber City.

The SCS method uses the Curve Number Method for determining rainfall runoff. Curve Numbers are determined by using a land cover type in conjunction with a hydrologic soil group. Land cover information can be obtained by means of aerial topography or GIS data. Hydrologic soil group information may be obtained from NRCS's Web Soil Survey website. The land cover and hydrologic soil group information are used to select an appropriate curve number using the manual titled *TR-55 Urban Hydrology for Small Watersheds*. TR-55 worksheets and calculation methods are provided in Appendix G and shall be utilized for developments that use the SCS method to estimate run-off. Typical CN values are included in Appendix C. Engineering judgement should be used when selecting curve numbers. Part 630 of the National Engineering Handbook says, "As a result of construction and other disturbances, the soil profile can be altered from its natural state and the listed group assignments generally no longer apply, nor can any supposition based on the natural soil be made that will accurately describe the hydrologic properties of the disturbed soil. In these circumstances, an onsite investigation should be made to determine the hydrologic soil group." Site specific factors such as terrain, potential precipitation on frozen ground, future conditions and other factors should be considered when selecting curve numbers. The SCS method shall only be used for estimating the run-off for development which are greater than 10 acres.

The Federal Aviation Administration (FAA) Method for estimating detention or retention volumes is outdated because it does not model the release rate correctly. But, it still may be used if the Guo Averaging Parameter is included. The FAA Method is not applicable to in-series (cascading) ponds. This method is applicable for developments less than 100 acres, and the SCS method is required for developments larger than 100 acres. The FAA Method uses a spreadsheet to evaluate several storm durations for a given return period for the 100-year storm. The total inflow volume for a storm duration is developed by multiplying the peak flow rate by the storm duration. The volume out is developed by utilizing a controlled discharge amount (discharge with detention only), and/or exfiltration from the detention pond when conditions permit. The required volume is equal to the inflow volume minus the outflow volume. This is evaluated for all storm durations to determine which storm duration provides the maximum required volume. Developments that use the FAA Method for estimating storage facility volumes shall use the spreadsheets provided by the City including the Guo Averaging Parameter when off-site discharge is utilized. An example is shown in Appendix I, or other approved spreadsheet formats.

Several methods for estimating time of concentration exist. They were each developed for specific parameters such as watershed size, slope, etc. Time of concentration methods used should be applicable to the areas in which they are being analyzed. The minimum time of concentration value should be 5 minutes.

For all software models, input and output data shall be provided so that it can be reviewed by the City. A copy of the model file shall also be provided to the City for review. Models must be provided to the City in Civil 3D Storm and Sanitary Analysis. City may consider other software models based on prior approval from the City Engineer.

Post Construction Peak Discharge

Heber City has adopted a 0.10 cfs/acre maximum release standard for undeveloped areas, i.e., areas outside Central Heber. This rate is assumed to be the historical undeveloped flow. For example, a 10-

acre housing development would be able to have a post-development discharge rate of 1.0 cfs (10 acres x 0.10 cfs/acre) provided there is a suitable point to discharge to. If the historic flow is found to be less than the 0.1 cfs/acre, this shall be used as the maximum allowed post-development discharge. Moreover, if the downstream system does not have capacity for the 0.1 cfs/acre discharge rate, the available capacity will become the controlling factor. To ensure that flow from new developments do not exceed 0.10 cfs/acre, detention facilities with controlled discharge are required. In cases where there is no suitable point to discharge to, retention facilities are required. See storage facilities section for more information.

Infiltration

Infiltration of treated storm water into the ground is encouraged. Detention and retention basin volumes may be sized by considering infiltration as an outflow component. Prior to assuming infiltration is a viable option, infiltration tests shall be conducted by a professional geotechnical engineer, geologist, or soil scientist licensed in Utah that determines the infiltration rate and demonstrates that the proposed soil profile is suitable for infiltration and will readily accept the water. Infiltration tests shall be performed using the double ring infiltrometer test in accordance with ASTM D 3385, and shall be performed at the location of where the result will be applied and at the elevation of the bottom of the facility where infiltration will occur. A minimum of two tests shall be performed with a minimum of one test per 10,000 square feet of the infiltration area. The slower or average of the infiltration rates shall be used for design purposes.

Groundwater elevations shall be determined. Potential ground water level fluctuations shall be considered, and the lowest elevation of any detention basin should be at least four~~two~~ feet higher than the highest seasonal groundwater elevation. All design infiltration rates shall have a safety factor of two (2) or higher applied to the actual rate measured by the official infiltration test.

Only the wetted area when the storage volume, excluding freeboard, is at half depth may be used as an infiltration surface in infiltration calculations unless stage-volume-discharge curves are created and used. Infiltration must not be considered as an outflow prior to the storm water entering the pond, as this could create negative storage volume. Where infiltration galleries are located beneath surface ponds, the infiltration surface shall be the surface pond only.

Infiltration rates shall only be applied to the same soil that has been tested. If topsoil or other less permeable soil is added to a storage facility where percolation is being applied, the infiltration rate used in the design shall match rate of the less permeable soil. Alternatively, a permeable layer of gravel shall be used in the entire infiltration area.

An infiltration rate map is included in Appendix D. It is included to provide general infiltration information but shall not replace actual field tests.

Comply with all State groundwater protection regulations, guidelines and permits such as those associated with infiltration, infiltration wells, Class V injection wells and any others applicable to the site.

Long-Term Storm Drain Facility Maintenance

All public storm drain facilities will be maintained by Heber City unless otherwise specified in the development agreements. Developers, property owners, or their representatives such as a Homeowners Association, shall enter into a post-construction storm water management agreement with the City for

all privately owned storm drain facilities, and/or publicly owned storm drain facilities that convey storm water from private roads and facilities. See Appendix J for template agreements.

Low Impact Development

Low Impact Development (LID) is a method of reducing storm runoff by capturing, treating, and retaining it on a very local level within each individual development. Although Heber City is not currently on the Utah MS4 list, it is anticipated to become an MS4 community in the future. LID is required by the Utah Department of Environmental Quality as part of an MS4 Program. To prepare for future compliance with the MS4 storm water discharge program and to reduce post-development storm water run-off in general, developments within Heber City must retain and treat the 80th percentile rainfall event as part of LID requirements. LID measures can also help achieve the onsite retention and treatment requirements. The 80th percentile depth for Heber City has been determined to be 0.47 inches. See Appendix E for this calculation. The Reese method, as shown in Appendix E, shall be used to calculate the volumetric runoff coefficient used for determining the 80th percentile volume. For developments larger than 10 acres use SCS Method to determine 80th percentile volume.

Localized LID methods are encouraged, however, the 80th percentile volume may be incorporated into larger detention or retention storage facilities if those facilities are located on site within the development area, or adjacent to, and if approved by the City Engineer.

Several typical LID measures are described in the following paragraphs. Portions of the LID descriptions have been taken from the Utah City Engineers Association (UCEA) and Utah DEQ LID Manual. See Appendix F for LID general details. The following LID descriptions are the approved LID measures to be used in Heber City. Any other proposed LID measures shall be approved by the City Engineer on a case-by-case basis. Please see the DEQ "Guide to Low Impact Development with Utah" for additional LID design guidelines and design flow-chart requirements.

Vegetated Swales

Vegetated swales may be considered dry or wet swales, and serve as a vegetative buffer between paved areas and storm drain facilities. The main advantages of vegetated swales are the degree of velocity reduction, detention, infiltration, and reduction of hard surface runoff. Storm runoff flows through the swale, where sediment and pollutants may settle out prior to entering downstream drainage facilities. A curb cut is one means of directing flow into swales where changes in elevation are limited.

Swales are often an attractive BMP solution because they can take advantage of already planned park strips. It should be noted that studies have shown that vegetated swales have a moderate ability to remove pollutants from storm water.

Dry Swales

A dry swale is a shallow, gently sloping drainage channel with broad, vegetated, side slopes. Dry swales provide temporary storage, filtration, and infiltration of storm runoff. A dry swale is versatile because it requires a relatively small area. Reduced channel velocities increase infiltration and water quality treatment and may reduce peak runoff. Channel vegetation can include turf, meadow grass, shrubs, and in limited quantities, small trees. Dry swales must be located above the water table to provide drainage. Dry swales are only allowed when groundwater is equal to or greater than four~~2~~ ~~-~~feet below the swale bottom elevation. When infiltrations rates are greater than 6.0 in/hour, dry swales shall either be

designed as a biofilter for treatment of storm water or be preceded by an approved pre-treatment system. See the Water Quality section in this report for requirements. Retention LIDs shall provide treatment through settling, decreased flow rate, and bioretention with a designed release time.

Wet Swales

Wet swales are a type of filtration BMP and occur when the water table is located close to the surface. Wet swales act as a long and linear shallow treatment system. Like dry swales, check dams can be used as needed to create cells and contain the entire water quality treatment volume. Cells may be planted with emergent wetland plant species to improve pollutant removal. Wet swales, at a minimum, shall be preceded by a pre-treatment device to capture and remove pollutants and coarse sediment particles, see the Water Quality section below.

Infiltration Basin/Galleries

An infiltration basin is essentially a detention basin that is constructed such that storm water can exit the basin by means of infiltration into the surrounding ground. These include underground pipe and chamber systems. These systems can reduce pollutants by settling out or filtering materials and any pollutants that may be bound to those materials. They are also effective at reducing nutrients, metals and other pollutants.

Basins with no outlet or highly restricted outlets can be effective at eliminating pollutants, but there is some risk of concentrating pollutants or introduction of pollutants to groundwater that must be considered. One way to address this is by the utilization of a biofilter, hydrodynamic separator (HDS), or other pollutant removal measures within or upstream of a basin that is sized to handle the water quality design storm. All infiltration basins shall be preceded by a pre-treatment or treatment system to capture and remove pollutants and coarse sediment particles, see requirements in the Water Quality section below.

Basins and galleries must be sized to drain within 48 hours after the end of the design storm and to not overtop in the 72-hour storm.

Underground injection wells are included in this category, but water quality and applicable regulations must be considered and utilized.

Rain Gardens

A rain garden is a planted depression or similar feature that allows storm runoff from impervious urban areas like roofs, driveways, walkways, parking lots, and compacted lawn areas the opportunity to infiltrate into the soil.

Rain gardens are an LID tool that can be used in new or established developments. Rain gardens can be constructed in commercial and residential sites. The garden may be located near a street or parking lot in a shallow depression where runoff can be diverted into it. Native perennial plants are recommended in rain gardens with a barrier to reduce weeds. Nutrients in the storm runoff are reduced as plants or other growing media make use of them to grow.

Rain gardens can be constructed to allow infiltration. Where complete infiltration is not desired or is not feasible due to existing soil conditions, an underdrain may be installed to convey excess water to a storm drain retention system.

Studies underway at Utah State University have identified common reed and sedges are the optimal plant for use in northern Utah to remove nutrients, metals, and other pollutants (Dupont and McLean), but it must be harvested and disposed of elsewhere at regular intervals to prevent concentration of pollutants in the soil or in the biofilters. Mulching and leaving in place does not address this. Whether such concentrations are critical depends on the contact with groundwater, and is still under study.

Root zone soil media must be shallow and water must pool or move slowly through the system or the pollutant removal is ineffective.

Rain garden filtration media shall meet the specification for biofilters (see Water Quality section below), are only allowed in private areas, and shall be maintained by the property owner.

Water Quality

Water quality is of utmost importance to Heber City. There are a variety of mechanisms to protect water quality from storm drain discharge systems. All storm water must pass through a pre-treatment or treatment system prior to discharging to a storage facility (above or below ground) that captures the 25-year to 100-year storm events. LID measures are intended to reduce storm runoff and to improve overall water quality. However, as most LID measures rely on infiltration, water quality must also be considered during design and implementation. Unless the native soil infiltration rate is less than 6.0 in/hr and/or the LID facility is designed and determined to treat the storm water (biofilter treatment), an approved hydrodynamic separator (HDS) pre-treatment device shall be used prior discharging to LID systems. All storm water that flows over an impervious surface must be treated.

Pre-treatment and Treatment Systems

Pre-treatment and treatment systems shall be sized, at a minimum, to treat the 2-year storm event at the duration that produces the highest flow rate while also being able to by-pass the peak conveyance storm at the time of concentration (T_c) without disrupting the treatment system. The peak conveyance storm represents the actual capacity of the initial conveyance system and may be larger than the 10-year event. Note, treatment systems that also serve as LID retention areas may be sized for the 80th percentile storm event but shall adhere to the by-pass requirements stated above. Requirements for pre-treatment and treatment are listed below.

Oil-Water and Hydrodynamic Separators (HDS) Pre-Treatment Devices:

All developments are required to install an appropriately sized hydrodynamic separator (HDS) prior to discharging to the retention/detention storage facility that captures the 25-year to 100-year storm events unless the LID methods utilized in the development incorporate a sized biofilter per the specification listed below and the storm water is not re-introduced to a source of pollution after it flows through the localized LID methods. Pre-treatment devices shall be maintained at least twice per year and per the guidelines provided by the manufacturer. All HDS devices must achieve, at a minimum, the following treatment levels:

- The HDS system shall be required to have a General Use Level Designation (GULD) performance verification through the TAPE program (Emerging stormwater treatment technologies (TAPE) - Washington State Department of Ecology). The device shall be sized to treat the peak runoff flow rate generated by the 2-year storm event at the Tc, when using Rational Method. Use the storm duration and distribution that creates the highest flow rate during a 2-year storm event

when using other run-off computation methods. The proposed hydraulic loading rate (HLR) must not exceed the design HLR of the proposed device to be used. TAPE approval letters can be found on the website and provide the design HLR and/or the maximum treatment flow rate for each model.

- The HDS system shall be concrete unless otherwise approved by the City Engineer.
- The HDS system shall provide 90% removal of trash and other particles larger than 5mm at the design treatment flow rate. Adding a screen to the tested system is not allowed to meet this spec, as modifying a TAPE verified system with a screen can significantly affect hydraulics, and thus water quality performance.
- ~~The HDS system shall be designed to remove 80 percent of the total suspended solids (TSS) 110 microns or larger from the storm water.~~
- The HDS system shall be designed to by-pass the peak conveyance storm event and prevent these larger storm events from washing out the oil, debris, and sediment that has been previously captured (off-line storage).
- The HDS system shall provide a minimum sump and oil storage capacity as follows:

Treatment Capacity Range (cfs)	Minimum Sump Storage Capacity (yd^3)	Minimum Oil Capacity (gal)
0-4	> 0.4	> 60
4-9	> 2	> 200
9-20	> 4	> 500
> 20	> 8	> 1000

Biofilter Treatment Systems: Biofilter is a generic description for bioswales, vegetated filter strips, rain gardens, or other structures that use a filtration media to capture storm water pollutants. The pollutants are decomposed by a biomass such as plants, a tree, or a specially designed biofilter media. These systems are typically connected to a storm drain system and if used shall be combined with detention/retention facilities.

All biofilters shall be sized to treat the 2-year T_c storm event flow rate while also be sized to by-pass larger flows without disrupting the treatment system. Biofilters shall treat the storm water prior to infiltrating into the native soils with infiltration rates greater than 6.0 in/hr and/or prior to discharging to a detention/retention facility unless a sized HDS system is properly incorporated as pre-treatment.

The growing media of the biofilter and shall be designed and certified to meet the following specifications.

RAIN GARDEN AND BIOFILTER GROWING MEDIA (Soil + Organics)

Assume a saturated hydraulic conductivity rate of 2.0 in/hr. Then, divide it by a safety factor of 2.0. So, the net rate is 1.0 in/hr.

RAIN GARDEN AND BIOFILTER SOIL

Particle Size Distribution

sand: 70-80%

silt: 0-30%

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clay: 0-15%

Chemical Attribute and Nutrient Analysis

pH: 6.8-7.5

organic matter: < 1.5%

nitrogen: < 15 ppm

phosphorous: < 15 ppm

salinity: < 6 mmhos/cm

RAIN GARDEN AND BIOFILTER ORGANICS

shredded mulch: 3-5% (by weight of growing media)

VEGETATION

The filter area shall be vegetated with drought tolerant species that thrive in sandy soils. Table 3 provides a suggested seed mix for sites that will not need to be irrigated after the grass has been established.

Table 3. Suggested Seed Mix

Common Name	Scientific Name	Variety	PLS[2] lbs per Acre	Ounces per Acre
Sand bluestem	Andropogon hallii	Garden	3.5	
Sideoats grama	Bouteloua curtipendula	Butte	3	
Prairie sandreed	Calamovilfa longifolia	Goshen	3	
Indian ricegrass	Oryzopsis hymenoides	Paloma	3	
Switchgrass	Panicum virgatum	Blackwell	4	
Western wheatgrass	Pascopyrum smithii	Ariba	3	
Little bluestem	Schizachyrium scoparium	Patura	3	
Alkali sacaton	Sporobolus airoides		3	
Sand dropseed	Sporobolus cryptandrus		3	
Pasture sage[1]	Artemisia frigida			2
Blue aster[1]	Aster laevis			4
Blanket flower[1]	Gaillardia aristata			8
Prairie coneflower[1]	Ratibida columnifera			4
Purple prairieclover[1]	Dalea (Petalostemum) purpurea			4
Sub-Totals:			27.5	22
Total lbs per acre:			**28.9**	

[1] Wildflower seed (optional) for a more diverse and natural look.
[2] PLS = Pure Live Seed.

EXECUTION

thickness: >/= 18 inches

compaction: 80-85% of maximum dry density as measured by AASHTO T-99 (ASTM D698)

vegetation: Mix seed well and broadcast, followed by hand raking to cover seed and then mulched. Hydromulching can be effective for large areas. Do not place seed when standing water or snow is present or if the ground is frozen. Weed control is critical in the first two to three years, especially when starting with seed. When using sod, specify sand–grown sod. Do not use conventional sod. Conventional sod is grown in clay soil that will seal the filter area, greatly reducing overall function of the BMP.

Irrigation: Provide spray irrigation at or above the WQCV elevation or place temporary irrigation on top of the rain garden surface. Do not place sprinkler heads on the flat surface. Remove temporary irrigation when vegetation is established. If left in place this will become buried over time and will be damaged during maintenance operations. Adjust irrigation schedules during the growing season to provide the minimum water necessary to maintain plant health and to maintain the available pore space for infiltration.

Water Quality Control Measures

Other water quality control requirements are listed below.

Detention/Retention Facilities (Pollutant Control, LID): Detention basins are used to attenuate peak flow rates of a runoff hydrograph. They also can be designed to allow sediment, debris, and other contaminants to settle out by reducing water velocity or holding the water until it infiltrates or evaporates.

Retention facilities have no outlet and water is removed by infiltration or evaporation. Retention basins still function as a BMP the same way a detention basin does. Detention and retention facilities shall be used in combination with hydrodynamic separators or biofiltration systems.

These facilities require regular maintenance to remove debris, contaminants, and sediment build-up.

Outlet Protection/Energy Dissipation Devices: Outlet protection reduces or eliminates soil erosion thereby preventing the migration of soil to downstream channels. Outlet protection, pursuant to HEC 14, is required at all open discharge points.

Slope Protection: Slope protection ensures slopes will be stable during and after construction. The primary means of stabilization of a slope is establishing permanent vegetation, but may also consist of temporary or permanent rock, mulch, erosion control blankets, check dams, diversion dikes, or other means of protection. All slopes shall be stabilized after disturbance. Slopes of 3H:1V and steeper require permanent slope stabilization.

Source Protection

The Utah Division of Drinking Water requires that each well and spring serving a public drinking water system must have a source protection plan. Part of that plan includes the protection of groundwater from point and non-point sources. Developers within Heber must certify that all private and public source protection zones are protected from storm water pollutants. Source protection zones for Heber City culinary water sources are shown on the source protection maps in Appendix H.

Storm water infiltration, drainage wells, or storm water injection wells are prohibited within 100 feet of Zone 1 of any source protection area. All storm drain storage facilities within 100 feet of a Zone 1 area shall be lined with an approved waterproof liner to prevent all storm water infiltration.

Natural Channels

All major natural channels in newly developed areas must maintain a buffer of open space and offset from development. This buffer is intended to help maintain water quality, prevent damage from flooding events, and maintain habitat and aesthetics. A minimum buffer width of 100-ft generally centered on the major natural drainage channel should be maintained. When natural topography or existing conditions favor a shift of the overall buffer area in one direction or another from the channel centerline, the City may approve a buffer zone shift with adequate justification. Development (including individual lots and buildings) is not allowed in the buffer zone. The drainage channel shall be protected and remain undisturbed where possible and with the exception of road or other crossings. Crossings of the natural channels shall be a minimum distance of 200-feet measured along the channel. Exceptions may be granted where proposed road crossings are adjacent to canal crossings or collector roads. Additional landscaping, green space, trails, or other amenities may be allowed if it is shown they will not negatively affect water quality or compromise the other goals of the buffer area. All improvements proposed in the natural drainages shall be approved by the City.

When existing developed areas are redeveloped and prior encroachment along or piping of historic channels has already taken place, a minimum buffer width of 50-ft generally centered on the major natural drainage channel shall be provided. No structures are allowed in the buffer area. Other improvements such as fencing, landscaping, hardscape, etc. may be allowed with written City approval and if adequate access along the channel is not compromised.

All development along natural channels, including proposals to relocate, alter, or pipe existing natural channels shall follow the National Flood Insurance Policy (NFIP) requirements and related City policies.

Where major historic channels are being re-established below the existing irrigation canals due to changes in the upstream drainage patterns (specifically as required in the North Village area), the buffer required along the re-established portion of the historic channel may be reduced by up to 40 ft, conditioned upon the following criteria:

- The re-established channel must be designed to convey the historic 100-year storm event considering no upstream retention/detention with a free board of 2 ft independent of the buffer area.
- Buffer area outside of the defined channel (on both sides) shall be a minimum of 20 feet wide, be designed to slope toward the channel, and allow for maintenance access along each side.

- Unless otherwise approved by the City, the re-established channels shall be constructed in a manner to appear as natural as possible with side slopes no steeper than 3H:1V.
- All provisions of this manual regarding natural channels and buffer areas with the exception of buffer area width shall still apply.

All buffer areas for natural channels shall have an easement dedicated to Heber City for emergency use.

Flood and Debris Flow Hazards

FEMA Flood Analysis

Ensure all pertinent FEMA flood mapping data is incorporated into plans and plats maps. Ensure all FEMA guidelines from https://www.fema.gov are followed including the sections on Floods & Maps, Floodplain Management, and Flood Insurance. FEMA uses the most accurate flood hazard information available and applies rigorous standards in developing Flood Insurance Rate Maps (FIRMs). All areas within Flood Hazard Areas shall be shown on plans and plats, and all Base Flood Elevation (BFE) data pertinent to the development must be provided.

To change the FIRM designation of a property, a Letter of Map Amendment (LOMA) and/or the Letter of Map Revision-Based on Fill (LOMR-F) processes must be strictly followed.

Debris-Flow Flood Hazard Analysis

The Western Unities states is beginning to see increased precipitation intensity and increasing fire size and frequency (Kean and Staley et al, 2021). Generally, there is not adequate time to prevent or mitigate a debris flow hazard *after* a wildfire has taken place. The USGS has found that 1-year storm events will typically trigger a post-wildfire debris flow event. Therefore, if a wildfire takes place, some type of debris flow is likely to happen within 1-year of the fire. These types of hazards should be prevented or controlled as deemed feasible. New development with undeveloped land upstream or downstream of the property containing natural slopes 30% and greater and/or where the City Engineer determines there could be a potential debris-flow risk, requires a specialized post wild-fire debris-flow analysis of the site including an estimated post-fire hazard assessment with mitigation measures.

Flood and Debris-flow hazard analysis reports shall include but shall not be limited to the following information for the areas to be developed:

- FEMA Flood Mapping Data including 100-year flood hazard zones
- Include and label the drainageways susceptible to periodic flooding associated with storm events or rapid snowmelt that are outside the FEMA designated flood zones
- U.S. Geological Survey Map
- Aerial Map
- Contour map with slopes labeled
- Geotechnical Test pit data
- Geologic Mapping Data to include historic upstream and downstream alluvial fan deposits and historic upstream or pass-through debris/mud flows as data is available.
- Vegetative cover type and percentage analysis
- Utah Division of Water Rights – Dam Safety requirements

- Post-fire debris-flow volume calculations with flood and post-fire debris-flow hazard assessment and mitigation

Flood and post-fire debris-flow hazard assessment and mitigation recommendations shall adhere to the following guidelines:

The storage volume fordebris and sediment shall be calculated using model equation (2) from the 2010 Cannon study (Cannon et al,, 2010) using a minimum 80% burn of slopes 30% and greater. The entire drainage basin shall be modeled. Methods from the Gartner 2014 study and equation (3) may also be used until another model paper is published and adopted by USGS. (Gartner et al., 2014).

The minimum storm event interval shall be a 10-year occurrence with a T_c peak rainfall depth, unless otherwise approved by the City Engineer. Intensity is used for the Gartner method.

When the Gartner method is used, the watershed area burned at moderate to high severity shall be calculated based on a vegetation type assessment of the entire drainage basin. Vegetation type and coverage area data shall be obtained and summarized under the direction of a licensed Professional Engineer or other approved licensed professional. Forested areas and other areas with small or large tree species (deciduous or evergreen) and/or thick brush, such as Gambel Oak shall be assumed to burn at moderate to high severity. Staley et al. (2018) spells out further guidance on vegetation types and burn severity per vegetation type.

Debris flow is difficult to accurately model due to the nature of the material being carried by the storm water, especially if the natural channel that the debris flow will enter and travel through is altered by road crossings, culverts, or other diversions/obstructions over and through the natural channel. Unless the natural channel is undisturbed and can be accurately modeled to safely convey the debris flow without having to travel through any obstructions, culverts, roads, etc. that would otherwise plug or divert the flow off-course, the estimated debris volume needs to be contained in a debris-basin upstream from development. Road or other crossings shall be designed to allow and divert debris flow and/or flood water over the crossing using depression or other mechanism to allow the flow to pass the crossing continue down the natural channel. Other measures to contain and/or divert the debris volume may be considered, as approved by the City Engineer.

References

Cannon, S.H., Gartner, J.E., Rupert, M.G., Michael, J.A., Rea, A.H., & Parrett, C. (2010). Predicting the probability and volume of postwildfire debris flows in the intermountain western United States. *GSA Bulletin*, *v. 122*(1-2), 127-144. https://doi.org/10.1130/B26459.1

Gartner, J.E., Cannon, S.H., & Santi, P.M. (2014). Empirical models for predicting volumes of sediment deposited by debris flows and sediment-laden floods in the transverse ranges of southern California. *Engineering Geology*, *176*, 45-56. https://doi.org/10.1016/j.enggeo.2014.04.008

Kean, J.W., & Staley, D.M. (2021). Forecasting the frequency and magnitude of postfire debris flows across southern California. *Earth's Future*, *9*(3), e2020EF001735. https://doi.org/10.1029/2020EF001735

Staley, D.M., Tillery, A.C., Kean, J.W., McGuire, L.A., Pauling, H.E., Rengers, F.K., & Smith, J.B. (2018). Estimating post-fire debris-flow hazards prior to wildfire using a statistical analysis of historical

distributions of fire severity from remote sensing data. *International Journal of Wildland Fire*, *27*(9), 595-608. https://doi.org/10.1071/WF17122

Appendices

Appendix A

Drainage Design Resources

Standard Drawings | Heber City, UT (heberut.gov)

Standard Specifications | Heber City, UT (heberut.gov)

Storm-Intensity-Curves-PDF (heberut.gov)

Low Impact Development - Utah Department of Environmental Quality

DWQ-2019-000161.pdf (utah.gov)

Microsoft PowerPoint - A Guide to Low Impact Development within Utah (Training)

Emerging stormwater treatment technologies (TAPE) - Washington State Department of Ecology

Nonpoint Source: Urban Areas | US EPA

Appendix B

(IDF Data)

Appendix C

(CN Tables)

Appendix D

(Infiltration & Groundwater Maps)

Appendix E

(80th Percentile Calculations)

Appendix F

(UCEA LID Details)

Appendix G

(TR-55 Worksheets)

Appendix H

(Source Protection Maps)

Appendix I

(FAA Method Storage Facility Volume)

Obtain Excel file from City

Appendix J

(Storm Water Maintenance Agreement and Management Plan)

STANDARD PLAT FORMAT

PLAT REQUIREMENTS

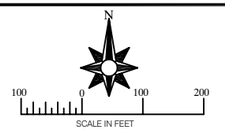
-FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET IS EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
-ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES AND CURVES USED TO DESCRIBE BOUNDARIES, BLOCKS, LOTS, STREETS, ALLEYS, EASEMENTS, AREAS TO BE RESERVED FOR PUBLIC USE AND OTHER IMPORTANT FEATURES.
-BOUNDARY LINES SHALL BE DRAWN HEAVIER THAN STREET AND LOT LINES.
-MONUMENTS SHALL BE INSTALLED BY THE SUBDIVIDER'S ENGINEER OR LAND SURVEYOR AT SUCH POINTS DESIGNATED ON THE FINAL PLAT AS ARE APPROVED BY THE PLANNING DEPARTMENT.
-MONUMENTS MUST BE PLACED PRIOR TO FINAL BOND RELEASE.
-THE WASATCH COUNTY RECORDER'S OFFICE MAY HAVE ADDITIONAL REQUIREMENTS FOR THIS PLAT

ITEMS REQUIRED FOR PRELIMINARY PLAT:

-SECTION INFORMATION - TWO OR MORE CORNERS IF POSSIBLE
-BASIS OF BEARING CLEARLY LABELED
-BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
-POINT OF BEGINNING CLEARLY LABELED
-BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
-BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED LAND
-THE 100-YR FLOOD LEVEL OF ALL WATERCOURSES INDICATED WITH VERTICAL DATUM
-SURROUNDING PROPERTY OWNERSHIP
-LOCATION OF AND DIMENSIONS TO THE NEAREST BENCH MARK OR MONUMENT ON TWO OPPOSITE SIDES OF THE PLAT
-PROPERTIES LOCATED IN THE SENSITIVE LANDS OVERLAY ZONE
-LOT SIZE CLEARLY LABELED IN SQ. FT. & ACRES WITH LENGTH & WIDTH
-NORTH ARROW
-DRAWING SCALE CLEARLY MARKED AND NOT LESS THAN 1" = 100'
-AREAS WITH SLOPES LESS THAN 30%, 30-40%, 40-50% AND > 50%
-IDENTIFIED NATURAL HAZARDS AND MITIGATION MEASURES FOR AREAS, SUBJECT TO AVALANCHE, LANDSLIDE, ROCK FALL, LIQUEFACTION, DEBRIS FLOWS, SURFACE FAULT RUPTURE, COLLAPSIBLE SOILS, SHRINK-SWELL SOILS, SHALLOW GROUNDWATER (WITHIN 3 FEET OF THE SURFACE), SURFACE WATER, STREAM BEDS (INCLUDING INTERMITTENT), SPRINGS, 100-YEAR FLOOD ZONES, AND DRINKING WATER SOURCE PROTECTION ZONES.

ITEMS REQUIRED FOR FINAL PLAT:

-INCLUDE ALL ITEMS REQUIRED ON PRELIMINARY PLAT (EXCEPT CONTOURS)
-STREET MONUMENTS
-BUILDING SETBACKS
-PUBLIC UTILITY EASEMENTS, ACCESS EASEMENTS, EXISTING EASEMENTS
-PROPOSED STREET NAMES
-INTERSECTION ADDRESSES
-LOT ADDRESSES
-TYPICAL LOT DETAILS SHOWING BOTH CORNER AND INTERIOR LOTS
-VICINITY MAP
-PLAT NOTES
-PHYSICAL MARKERS SHALL BE PLACED AT EACH LOT CORNER
-IF PROPERTY CONTROLLED BY PUBLIC AGENT OR UTILITY COMPANY, APPROVAL FOR LOCATION, IMPROVEMENT, AND MAINTENANCE MUST BE SHOWN
-ELECTRONIC COPY THAT IS COMPATIBLE WITH CITY'S AUTOCAD MAPPING SYSTEM SHALL BE SUBMITTED
-OPEN SPACE AREAS ARE COVNEYED TO (INSERT NAME OF ENTITY).



LEGEND DATE OF PREPARATION

- EXISTING SECTION CORNER (FOUND) (AS DESCRIBED)
- PHASE 1 BOUNDARY LINE
- STREET CENTERLINE
- PROPOSED STREET MONUMENT
- MONUMENT TO MONUMENT TIE
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- PARCEL DEDICATION TO HEBER CITY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK LINE
- PUBLIC UTILITY EASEMENTS

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____QUARTER OF SECTION__,
TOWNSHIP __ SOUTH, RANGE __EAST,
SALT LAKE BASE AND MERIDIAN
HEBER CITY, WASATCH COUNTY, UTAH

STANDARD PLAT NOTES

1-PRIOR TO BUILDING PERMITS BEING ISSUED, SOIL AND/OR GEOTECHNICAL TESTING STUDIES MAY BE REQUIRED ON EACH LOT AS DETERMINED BY THE CITY BUILDING OFFICIAL.
2-BUILDING PERMITS WILL NOT BE ISSUED UNTIL ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED PER CITY STANDARDS AND ALL FEES INCLUDING IMPACT AND CONNECTION FEES ARE PAID.
3-NO CITY MAINTENANCE SHALL BE PROVIDED FOR STREETS AND IMPROVEMENTS DESIGNATED AS "PRIVATE" ON THIS PLAT.
4-ALL COMMON AND PARKING AREAS, AS APPLICABLE, AND PRIVATE STREETS, ARE DEDICATED AS CITY UTILITY EASEMENTS. HEBER CITY HAS THE RIGHT OF ACCESS THROUGH THESE EASEMENTS TO ACCESS, MAINTAIN, AND REPAIR CITY UTILITIES. NO CHANGES TO TOPOGRAPHY, STRUCTURES, ABOVE OR BELOW GROUND ARE ALLOWED IN EASEMENTS WITHIN 10 FEET OF CITY UTILITIES WITHOUT WRITTEN PERMISSION FROM THE HEBER CITY ENGINEER. ANY OBSTACLES ERECTED WITHIN THESE EASEMENTS WITHOUT WRITTEN PERMISSION WILL BE REMOVED AT THE CURRENT PROPERTY OWNER'S EXPENSE. ALL STORM DRAIN UTILITIES AND THEIR MAINTENANCE WITHIN PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF PROPERTY OWNER. ALL SEWER LATERALS AND THEIR MAINTENANCE TO THE PUBLIC RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. ALL DRINKING WATER AND PRESSURIZED IRRIGATION SERVICES AND THEIR MAINTENANCE FROM THE WATER METER OR SERVICE VAULT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
5-INFRASTRUCTURE OF THIRD-PARTY PUBLIC UTILITIES IS TO BE INSTALLED WITHIN DEDICATED PUBLIC UTILITY EASEMENTS (PUE) AND AT PERPENDICULAR CROSSINGS WITH A HEBER CITY UTILITY EASEMENT OR RIGHT OF WAY (ROW). BESIDES CROSSINGS, THIRD-PARTY PUBLIC UTILITY INFRASTRUCTURE IS NOT ALLOWED IN HEBER CITY UTILITY EASEMENTS OR ROWs UNLESS SPECIFICALLY IDENTIFIED AND LOCATED ON THIS PLAT OR WITH SUBSEQUENT WRITTEN PERMISSION FROM THE CITY ENGINEER.
6-A GEOTECHNICAL REPORT HAS BEEN COMPLETED BY [GEOTECHNICAL ENGINEER], WHICH ADDRESSES SOIL AND GROUNDWATER CONDITIONS, PROVIDES ENGINEERING DESIGN CRITERIA, AND RECOMMENDS MITIGATION MEASURES IF PROBLEMATIC CONDITIONS WERE ENCOUNTERED. THE CITY ASSUMES NO LIABILITY OR RESPONSIBILITY FOR ANY RELIANCE ON THE INFORMATION OR LACK THEREOF IN THE REPORT.
7- AGRICULTURAL USES, OPERATIONS, AND RIGHTS ARE ADJACENT TO OR NEAR THE PLAT AND LOTS. THE LOTS IN THIS PLAT ARE SUBJECT TO THE SIGHTS, SOUNDS, ODORS, NUISANCES, AND ASPECTS ASSOCIATED WITH AGRICULTURAL OPERATIONS, USES, AND RIGHTS. THESE USES AND OPERATIONS MAY OCCUR AT ALL TIMES OF THE DAY AND NIGHT INCLUDING WEEKENDS AND HOLIDAYS. THE CITY IS NOT RESPONSIBLE OR LIABLE FOR THESE USES AND IMPACTS AND WILL NOT RESTRICT ANY GRANDFATHERED AGRICULTURAL USE FROM CONTINUING TO OCCUR LAWFULLY.
8- DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS, ACCORDING TO THE BUILDING CODE.

NOTES FOR PLATS WITH COMMON AREA

9-ALL OPEN SPACE, COMMON SPACE, AND TRAIL IMPROVEMENTS LOCATED HEREIN ARE TO BE INSTALLED BY OWNER AND MAINTAINED BY A HOMEOWNERS ASSOCIATION UNLESS SPECIFIED OTHERWISE ON EACH IMPROVEMENT.
10-LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'S."

Added Note 5 to address PUE's in ROW's

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
CL1	200.00	202.48	57°59'57"	110.86	193.92	N29°16'01"E
CL2	200.00	111.64	31°58'58"	57.32	110.20	S15°43'26"E
CL3	345.00	191.93	31°52'30"	98.52	189.47	S15°47'45"E

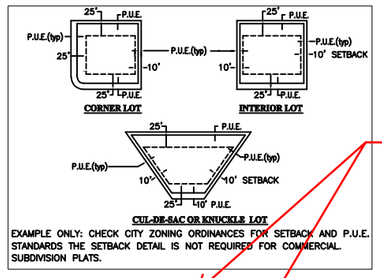
CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C6	225.00	59.81	15°13'53"	30.08	59.64	N50°39'03"E
C7	15.00	13.62	52°01'12"	7.32	13.16	S32°15'24"W
C8	50.00	5.12	05°51'42"	2.56	5.11	N09°10'38"E

DATA TABLE

INFORMATION	AC	SQ. FT.	%TOTAL	#	NOTES
TOTAL PROJECT AREA	13.9	607182	100%		
SENSITIVE LANDS	0.2	7503	1%		7% OF OPEN SPACE
OPEN SPACE	2.3	101750	17%		
BUILDABLE LAND	8.1	354478	58%		
ROW AREA	3.5	150954	25%		
LANDSCAPING AREA	4.5	197518	33%		
LOTS				61	
NET DENSITY DWELLINGS BY ACRE				4.4	

TYPICAL SETBACK & P.U.E. DETAILS



EXAMPLE ONLY: CHECK CITY ZONING ORDINANCES FOR SETBACK AND P.U.E. STANDARDS THE SETBACK DETAIL IS NOT REQUIRED FOR COMMERCIAL SUBDIVISION PLATS.

Changed Planning Signature box to allow for authorized employees to sign instead of just Manager

Added SSD signature block for when applicable

VICINITY MAP

VICINITY MAP

SURVEYOR'S CERTIFICATE

I, the undersigned surveyor, do hereby certify that I am a professional Land Surveyor and that I hold a license (number shown below) in accordance with Utah Code Title 58, Chapter 22 of the Professional Engineers and Land Surveyors Licensing Act. I further certify that, by authority of the owners, I have completed a survey of the property described on this subdivision plat in accordance with Section 17-23-17, have verified all measurements, have subdivided said tract of land into lots, streets, together with easements, and have placed monuments on the ground as represented on the plat. I also certify that I have filed with the Wasatch County Surveyor, pursuant to State Law, a map of the survey I completed.

BOUNDARY DESCRIPTION

A parcel of land situated in the _____Quarter of Section ___, Township ___ South, Range East, Salt Lake Base and Meridian, said parcel being more particularly described as follows:

Beginning at a point....

Acres: _____, # of lots ___, # of parcels _____.

SURVEYOR'S SEAL

OWNER'S DEDICATION

The undersigned owner(s) of the above-described tract of land has/have caused the same to be subdivided into lots, parcels, and streets, together with easements and rights-of-way, to be hereafter known as:

XXXXX

and do hereby dedicate for the perpetual use of the public and City all parcels, lots, streets, easements, rights-of-way, and public amenities shown on this plat as intended for public or City use. The undersigned owner(s), agents, successors, and assigns shall voluntarily defend, indemnify, and save harmless the City against any easements or other encumbrance on a dedicated street, easement, or right-of-way that will interfere with the City's use, maintenance, and operation of the street or utilities. The undersigned owner(s), agents, successors, and assigns also hereby convey any other easements, as shown and/or noted on this plat, to the parties indicated and for the purposes shown and/or noted hereon. The City assumes no liability with respect to the creation of this subdivision, the alteration of the ground surface, vegetation, drainage, or surface or sub-surface water flows within this subdivision, and the development activity within this subdivision.

In witness whereof I have set forth my hand this___ day of ____, 20__.

Signature _____ Print Name _____ Title & Entity _____

Signature _____ Print Name _____ Title & Entity _____

OWNER'S ACKNOWLEDGMENT

STATE OF UTAH) S.S.
County of Utah)

On this___day of ____, 20__, personally appeared before me _____, who being by me duly sworn, did prove to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies).

WITNESS my hand and official seal.

Notary Public Full Name: _____

Each owner's signature must be notarized separately if multiple owners sign in front of different notaries. Please add an owner's acknowledgment signature block for each owner who signs the plat.

APPROVAL BY LEGISLATIVE BODY

The City Council of Heber City, County of Wasatch, approves this subdivision subject to the conditions and restrictions stated hereon, and hereby accepts the dedication of all streets, easements, and other parcels of land intended for the public purpose of the perpetual use of the public.

Mayor _____ Date _____

RECORDER'S SEAL

ENGINEERING FIRM NAME: _____
ENGINEERING FIRM ADDRESS: _____
SURVEYING FIRM NAME: _____
SURVEYING FIRM ADDRESS: _____

PLANNING DEPARTMENT	CITY ENGINEER	WASATCH CO. FIRE DISTRICT	SPECIAL SERVICE DISTRICT	COUNTY SURVEYOR	COUNTY RECORDER
Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	
TITLE:	CITY ENGINEER	FIRE CHIEF	TITLE:	COUNTY SURVEYOR	

STANDARD PLAT FORMAT

PLAT REQUIREMENTS

- FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET FACES EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
- ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES AND CURVES USED TO DESCRIBE BOUNDARIES, BLOCKS, LOTS, STREETS, ALLEYS, EASEMENTS, AREAS TO BE RESERVED FOR PUBLIC USE AND OTHER IMPORTANT FEATURES.
- BOUNDARY LINES SHALL BE DRAWN HEAVIER THAN STREET AND LOT LINES.
- MONUMENTS SHALL BE INSTALLED BY THE SUBDIVIDER'S ENGINEER OR LAND SURVEYOR AT SUCH POINTS DESIGNATED ON THE FINAL PLAT AS ARE APPROVED BY THE PLANNING DEPARTMENT.
- MONUMENTS MUST BE PLACED PRIOR TO FINAL BOND RELEASE.
- THE WASATCH COUNTY RECORDER'S OFFICE MAY HAVE ADDITIONAL REQUIREMENTS FOR THIS PLAT

ITEMS REQUIRED FOR PRELIMINARY PLAT:

- SECTION INFORMATION – TWO OR MORE CORNERS IF POSSIBLE
- BASIS OF BEARING CLEARLY LABELED
- BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
- POINT OF BEGINNING CLEARLY LABELED
- BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
- BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED LAND
- THE 100-YR FLOOD LEVEL OF ALL WATERCOURSES INDICATED WITH VERTICAL DATUM
- SURROUNDING PROPERTY OWNERSHIP
- LOCATION OF AND DIMENSIONS TO THE NEAREST BENCH MARK OR MONUMENT ON TWO OPPOSITE SIDES OF THE PLAT
- PROPERTIES LOCATED IN THE SENSITIVE LANDS OVERLAY ZONE
- LOT SIZE CLEARLY LABELED IN SQ. FT. & ACRES WITH LENGTH & WIDTH
- NORTH ARROW
- DRAWING SCALE CLEARLY MARKED AND NOT LESS THAN 1" = 100'
- AREAS WITH SLOPES LESS THAN 30%, 30-40%, 40-50% AND > 50%
- IDENTIFIED NATURAL HAZARDS AND MITIGATION MEASURES FOR AREAS, SUBJECT TO AVALANCHE, LANDSLIDE, ROCK FALL, LIQUEFACTION, DEBRIS FLOWS, SURFACE FAULT RUPTURE, COLLAPSIBLE SOILS, SHRINK-SWELL SOILS, SHALLOW GROUNDWATER (WITHIN 3 FEET OF THE SURFACE), SURFACE WATER, STREAM BEDS (INCLUDING INTERMITTENT), SPRINGS, 100-YEAR FLOOD ZONES, AND DRINKING WATER SOURCE PROTECTION ZONES.

ITEMS REQUIRED FOR FINAL PLAT:

- INCLUDE ALL ITEMS REQUIRED ON PRELIMINARY PLAT (EXCEPT CONTOURS)
- STREET MONUMENTS
- BUILDING SETBACKS
- PUBLIC UTILITY EASEMENTS, ACCESS EASEMENTS, EXISTING EASEMENTS
- PROPOSED STREET NAMES
- INTERSECTION ADDRESSES
- LOT ADDRESSES
- TYPICAL LOT DETAILS SHOWING BOTH CORNER AND INTERIOR LOTS
- VICINITY MAP
- PLAT NOTES
- PHYSICAL MARKERS SHALL BE PLACED AT EACH LOT CORNER
- IF PROPERTY CONTROLLED BY PUBLIC AGENT OR UTILITY COMPANY, APPROVAL FOR LOCATION, IMPROVEMENT, AND MAINTENANCE MUST BE SHOWN
- ELECTRONIC COPY THAT IS COMPATIBLE WITH CITY'S AUTOCAD MAPPING SYSTEM SHALL BE SUBMITTED
- OPEN SPACE AREAS ARE COVNEYED TO (INSERT NAME OF ENTITY).

N

100 0 100 200

SCALE IN FEET

TYPICAL:1" = 30' MAX:1" = 100'

LEGEND DATE OF PREPARATION

- EXISTING SECTION CORNER (FOUND) (AS DESCRIBED)
- PHASE 1 BOUNDARY LINE
- STREET CENTERLINE
- PROPOSED STREET MONUMENT
- MONUMENT TO MONUMENT TIE
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- PARCEL DEDICATION TO HEBER CITY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK LINE
- PUBLIC UTILITY EASEMENTS

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____ QUARTER OF SECTION__,
TOWNSHIP __ SOUTH, RANGE __ EAST,
SALT LAKE BASE AND MERIDIAN
HEBER CITY, WASATCH COUNTY, UTAH

STANDARD PLAT NOTES

1- PRIOR TO BUILDING PERMITS BEING ISSUED, SOIL AND/OR GEOTECHNICAL TESTING STUDIES MAY BE REQUIRED ON EACH LOT AS DETERMINED BY THE CITY BUILDING OFFICIAL.
2- BUILDING PERMITS WILL NOT BE ISSUED UNTIL ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED PER CITY STANDARDS AND ALL FEES INCLUDING IMPACT AND CONNECTION FEES ARE PAID.
3- NO CITY MAINTENANCE SHALL BE PROVIDED FOR STREETS AND IMPROVEMENTS DESIGNATED AS "PRIVATE" ON THIS PLAT.
4- ALL COMMON AND PARKING AREAS, AS APPLICABLE, AND PRIVATE STREETS, ARE DEDICATED AS CITY UTILITY EASEMENTS. HEBER CITY HAS THE RIGHT OF ACCESS THROUGH THESE EASEMENTS TO ACCESS, MAINTAIN, AND REPAIR CITY UTILITIES. NO CHANGES TO TOPOGRAPHY, STRUCTURES, ABOVE OR BELOW GROUND ARE ALLOWED IN EASEMENTS WITHIN 10 FEET OF CITY UTILITIES WITHOUT WRITTEN PERMISSION FROM THE HEBER CITY ENGINEER. ANY OBSTACLES ERECTED WITHIN THESE EASEMENTS WITHOUT WRITTEN PERMISSION WILL BE REMOVED AT THE CURRENT PROPERTY OWNER'S EXPENSE. ALL STORM DRAIN UTILITIES AND THEIR MAINTENANCE WITHIN PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF PROPERTY OWNER. ALL SEWER LATERALS AND THEIR MAINTENANCE TO THE PUBLIC RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. ALL DRINKING WATER AND PRESSURIZED IRRIGATION SERVICES AND THEIR MAINTENANCE FROM THE WATER METER OR SERVICE VAULT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
5- A GEOTECHNICAL REPORT HAS BEEN COMPLETED BY [GEOTECHNICAL ENGINEER], WHICH ADDRESSES SOIL AND GROUNDWATER CONDITIONS, PROVIDES ENGINEERING DESIGN CRITERIA, AND RECOMMENDS MITIGATION MEASURES IF PROBLEMATIC CONDITIONS WERE ENCOUNTERED. THE CITY ASSUMES NO LIABILITY OR RESPONSIBILITY FOR ANY RELIANCE ON THE INFORMATION OR LACK THEREOF IN THE REPORT.
6- AGRICULTURAL USES, OPERATIONS, AND RIGHTS ARE ADJACENT TO OR NEAR THE PLAT AND LOTS. THE LOTS IN THIS PLAT ARE SUBJECT TO THE SIGHTS, SOUNDS, ODORS, NUISANCES, AND ASPECTS ASSOCIATED WITH AGRICULTURAL OPERATIONS, USES, AND RIGHTS. THESE USES AND OPERATIONS MAY OCCUR AT ALL TIMES OF THE DAY AND NIGHT INCLUDING WEEKENDS AND HOLIDAYS. THE CITY IS NOT RESPONSIBLE OR LIABLE FOR THESE USES AND IMPACTS AND WILL NOT RESTRICT ANY GRANDFATHERED AGRICULTURAL USE FROM CONTINUING TO OCCUR LAWFULLY.
7- DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS, ACCORDING TO THE BUILDING CODE.

NOTES FOR PLATS WITH COMMON AREA

8- ALL OPEN SPACE, COMMON SPACE, AND TRAIL IMPROVEMENTS LOCATED HEREIN ARE TO BE INSTALLED BY OWNER AND MAINTAINED BY A HOMEOWNERS ASSOCIATION UNLESS SPECIFIED OTHERWISE ON EACH IMPROVEMENT.
9- LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'S."

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
CL1	200.00	202.46	57°59'57"	110.86	193.92	N29°16'01"E
CL2	200.00	111.64	31°58'58"	57.32	110.20	S15°43'26"E
CL3	345.00	191.93	31°52'30"	98.52	189.47	S15°47'45"E

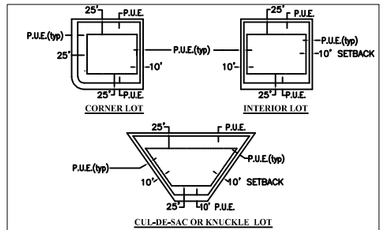
CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
C6	225.00	59.81	15°13'53"	30.08	59.64	N50°39'03"E
C7	15.00	13.62	52°01'12"	7.32	13.16	S32°15'24"W
C8	50.00	5.12	05°51'42"	2.56	5.11	N09°10'38"E

DATA TABLE

INFORMATION	AC	SQ FT.	%TOTAL	#	NOTES
TOTAL PROJECT AREA	13.9	607182	100%		
SENSITIVE LANDS	0.2	7503	1%		7% OF OPEN SPACE
OPEN SPACE	2.3	101750	17%		
BUILDABLE LAND	8.1	354478	58%		
ROW AREA	3.5	150954	25%		
LANDSCAPING AREA	4.5	197518	33%		
LOTS				61	
NET DENSITY DWELLINGS BY ACRE				4.4	

TYPICAL SETBACK & P.U.E. DETAILS



EXAMPLE ONLY: CHECK CITY ZONING ORDINANCES FOR SETBACK AND P.U.E. STANDARDS THE SETBACK DETAIL IS NOT REQUIRED FOR COMMERCIAL. SUBDIVISION PLATS.

EXAMPLE

SUPERSEDED

VICINITY MAP

VICINITY MAP

SURVEYOR'S CERTIFICATE

I, the undersigned surveyor, do hereby certify that I am a professional Land Surveyor and that I hold a license (number shown below) in accordance with Utah Code Title 58, Chapter 22 of the Professional Engineers and Land Surveyors Licensing Act. I further certify that, by authority of the owners, I have completed a survey of the property described on this subdivision plat in accordance with Section 17-23-17, have verified all measurements, have subdivided said tract of land into lots, streets, together with easements, and have placed monuments on the ground as represented on the plat. I also certify that I have filed with the Wasatch County Surveyor, pursuant to State Law, a map of the survey I completed.

BOUNDARY DESCRIPTION

A parcel of land situated in the ____ Quarter of Section __, Township __ South, Range East, Salt Lake Base and Meridian, said parcel being more particularly described as follows:

Beginning at a point....

Acres: _____ , # of lots ____ , # of parcels _____.

SURVEYOR'S SEAL

OWNER'S DEDICATION

The undersigned owner(s) of the above-described tract of land has/have caused the same to be subdivided into lots, parcels, and streets, together with easements and rights-of-way, to be hereafter known as:

XXXXX

and do hereby dedicate for the perpetual use of the public and City all parcels, lots, streets, easements, rights-of-way, and public amenities shown on this plat as intended for public or City use. The undersigned owner(s), agents, successors, and assigns shall voluntarily defend, indemnify, and save harmless the City against any easements or other encumbrance on a dedicated street, easement, or right-of-way that will interfere with the City's use, maintenance, and operation of the street or utilities. The undersigned owner(s), agents, successors, and assigns also hereby convey any other easements, as shown and/or noted on this plat, to the parties indicated and for the purposes shown and/or noted hereon. The City assumes no liability with respect to the creation of this subdivision, the alteration of the ground surface, vegetation, drainage, or surface or sub-surface water flows within this subdivision, and the development activity within this subdivision.

In witness whereof I have set forth my hand this___ day of _____ , 20__.

Signature Print Name Title & Entity

Signature Print Name Title & Entity

OWNER'S ACKNOWLEDGMENT

STATE OF UTAH } S.S.
County of Utah

On this___day of _____, 20__, personally appeared before me _____ who being by me duly sworn, did prove to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies).

WITNESS my hand and official seal.

Notary Public Full Name:_____

Each owner's signature must be notarized separately if multiple owners sign in front of different notaries. Please add an owner's acknowledgment signature block for each owner who signs the plat.

ENGINEERING FIRM NAME:_____
ENGINEERING FIRM ADDRESS:_____
SURVEYING FIRM NAME:_____
SURVEYING FIRM ADDRESS:_____

APPROVAL BY LEGISLATIVE BODY

The City Council of Heber City, County of Wasatch, approves this subdivision subject to the conditions and restrictions stated hereon, and hereby accepts the dedication of all streets, easements, and other parcels of land intended for the public purpose of the perpetual use of the public.

Mayor Date

RECORDER'S SEAL

PLANNING MANAGER	CITY ENGINEER	WASATCH CO. FIRE DISTRICT	CITY ATTORNEY	COUNTY SURVEYOR	COUNTY RECORDER
Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	
_____ PLANNING MANAGER	_____ CITY ENGINEER	_____ FIRE CHIEF	_____ CITY ATTORNEY	_____ COUNTY SURVEYOR	

ORDINANCE 2025-02

AN ORDINANCE AMENDING THE HEBER CITY
STANDARD SPECIFICATIONS AND DRAWINGS, STORM WATER DESIGN MANUAL,
AND STANDARD PLAT

BE IT ORDAINED by the City Council of Heber City, Utah as follows:

The Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat are amended by the Heber City Council in the form and language attached hereto as:

Exhibit A - Heber City Standard Specifications and Drawings
Exhibit B - Heber City Storm Water Design Manual
Exhibit C - Heber City Standard Plat

This Ordinance shall take effect immediately upon passage.

PASSED, APPROVED and ORDERED TO BE PUBLISHED BY THE HEBER CITY COUNCIL this _____ day of _____ 2022.

	AYE	NAY	ABSENT	ABSTAIN
Aaron Cheatwood	_____	_____	_____	_____
Scott Phillips	_____	_____	_____	_____
Sid Ostergaard	_____	_____	_____	_____
Yvonne Barney	_____	_____	_____	_____
Mike Johnston	_____	_____	_____	_____

APPROVED:

_____
Mayor Heidi Franco

ATTEST:

_____ Date: _____
RECORDER

EXHIBIT A



Whereas, In 1872, J. Sterling Morton proposed to the Nebraska Board of Agriculture that a special day be set aside for the planting of trees, and

Whereas, this holiday, called Arbor Day, was first observed with the planting of more than a million trees in Nebraska, and

Whereas, Arbor Day is now observed throughout the nation and the world, and

Whereas, trees can reduce the erosion of our precious topsoil by wind and water, cut heating and cooling costs, moderate the temperature, clean the air, produce life-giving oxygen, and provide habitat for wildlife, and

Whereas, trees are a renewable resource giving us paper, wood for our homes, fuel for our fires and countless other wood products, and

Whereas, trees in our city increase property values, enhance the economic vitality of business areas, and beautify our community, and

Whereas, trees, wherever they are planted, are a source of joy and spiritual renewal.

Now, Therefore, I, Heidi Franco, Mayor of the City of Heber, do hereby proclaim Thursday, May 15, 2025 as

Arbor Day

In the City of Heber, and I urge all citizens to celebrate Arbor Day and to support efforts to protect our trees and woodlands, and

Further, I urge all citizens to plant trees to gladden the heart and promote the well-being of this and future generations.

Dated this 4th day of March 2025

Mayor _____

HEBER CITY CORPORATION
75 North Main Street
Heber City, UT 84032
Heber City Council Meeting AMENDED Agenda
January 21, 2025

DRAFT Minutes

4:00 p.m. Work Meeting
6:00 p.m. Regular Meeting

I. WORK MEETING - 4:00 P.M.

Mayor Heidi Franco called the meeting to order at 4:02 p.m. and welcomed everyone present.

City Council Present:	Mayor Heidi Franco Council Member Yvonne Barney Council Member Aaron Cheatwood Council Member Mike Johnston Council Member Sid Ostergaard Council Member Scott Phillips
Staff Present:	City Manager Matt Brower Assistant City Manager Mark Smedley Community Development Director Tony Kohler City Engineer Russ Funk City Attorney Jeremy Cook IT Director Anthon Beales City Recorder Trina Cooke

Staff Participating Remotely: Assistant City Manager Mark Smedley, Human Resources Manager Cherie Ashe, IT Director Anthon Beales, Engineering Technician Desiree Muheim, Planner Jacob Roberts, Public Works Director Matthew Kennard, City Engineer Russ Funk, and Finance Director Sara Jane Nagel.

Also Present: Katie Wilking, Travis Rico, Bob McKinley, Lindy Reioux, Missy Luke, Laren Gertsch, Mark Wilson, Paul Watson, Del Barney, Tori Broughton, Oscar Covarrubias, Kendall Crittenden, and others who did not sign in or whose handwriting was illegible.

Also Attending Remotely: (names are shown as signed in online) B, Clara Hatcher, Dave, Grace Doerfler KPCW, Ileana A, Maxx Cohen, Richard, Marian Crosby, Jill Snyder, Jonhaderlie, S, TMT, Tracy Stratton, and Z.

1. Review and Approval of Development Agreements for North Village Crossing and Harvest Village (Tony Kohler, Community Development Director, Jeremy Cook, City Attorney) - *110 min*

City Attorney Jeremy Cook described the status of the ongoing negotiations for the two Development Agreements (DAs) between the City and the two developments, Harvest Village and the Crossings, located within the North Village Crossings Annexation. He reviewed the developer's requirement to meet the City's storm-water management standards. City Engineer Russ Funk asked that all references to storm-water "detention" ponds be edited to read "retention" ponds for storm-water runoff as they were not the same. He further clarified "detention" versus "retention" requirements as outlined in the City's Storm-water Master Plan. Harvest Village representative Justin Keyes explained that the development was asking for an additional floor level in a proposed hotel structure (five stories instead of four). The building height would still comply with the City's max height of 70 feet and all other requirements outlined in the City's North Village Overlay Zone (NVOZ). Mr. Cook reviewed the proposed changes to the Harvest Village MDA as listed and described in the attached Staff Report. Council discussion followed.

Mayor Franco asked for the language in section 8.1 to require a 100-foot buffer, with parking allowed in west 25 feet, then 35 feet designated for the retention bond and/or trail, then the next 40 feet would be landscaping with six to eight-foot undulating berming. Mr. Cook indicated that he would draft the updated language.

Mr. Cook next reviewed the updates made to the North Village Crossings Development Agreement as found in the attached meeting materials. He noted the parking would be underground, but the building height would not exceed the 70-foot maximum allowed in the City Code. They reviewed the planned retaining walls layout, height, and design. Additional Council discussion followed.

II. BREAK - 10 MIN

III. REGULAR MEETING - 6:00 P.M.

1. Call to Order

The start of the meeting was delayed due to technical difficulties. Mayor Heidi Franco called the meeting to order at 6:38 p.m. and welcomed everyone present. She read a Public Notice informing everyone that a Public Hearing originally scheduled for that night had been postponed to February 4, 2025.

2. Pledge of Allegiance (Aaron Cheatwood, Council Member)

Council Member Cheatwood led the recitation of the Pledge of Allegiance.

3. Prayer/Thought by Invitation (Scott Phillips, Council Member)

Council Member Phillips shared the following thought: He said to always put your neighbor first. He recognized that the Council might not always agree, but felt it was in the spirit of respect and collaboration that a solution the community deserved would be found. He shared the following quote by Margaret Mead: “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has”. He felt the Council's strength lay not in their uniformity of thought but in their ability to listen, understand, and work together despite their differences. He asked the Council to commit to putting the best interest of Heber first and approach every challenge with open minds and a shared sense of purpose. By embracing their roles as neighbors, they could model the kind of civil discourse that would carry them through the difficult times and carry the City forward.

IV. AWARDS, RECOGNITION, and PROCLAMATIONS:

1. Mayor's Award Nomination of Kyle Mair

Mayor Franco read the Mayor's Award nomination for Kyle Mair as included in the meeting materials and presented him with a Heber City Challenge Coin.

V. CONFLICT OF INTEREST DISCLOSURE:

There were no conflicts disclosed.

VI. CONSENT AGENDA:

Motion: Council Member Phillips moved to approve the Consent Agenda.
Second: Council Member Cheatwood made the second.
Discussion: Mayor Franco asked who paid the park reservation or gathering fees. Assistant City Manager Mark Smedley stated the person or group reserving the park was required to pay their own fees. The Mayor was concerned about multiple day bookings. Mr. Smedley clarified that there were instances when a park would be reserved for multiple days, such as was the case for the annual car show.
Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, Barney, and Johnston.
Voting No: None.
The **Motion Passed Unanimously, 5-0.**

1. Resolution 2024-20 to Update the Parks Policy (J. Mark Smedley, Asst. City Manager)

2. Contract Award to Garrett Parks and Play for Provision of Park Equipment for the Coyote Springs Park in Heber City (Russ Funk, City Engineer)

VII. PUBLIC COMMENTS: (3 min per person/20 min max)

Mark Wilson, President of the North Fields Irrigation Company, had met with Matt Brower, Russ Funk, and some of the engineers from the proposed North Village Crossings developments. The group held a long discussion that had covered many issues but had yet to be concluded. He felt a decision by Council that night would be premature and wanted the developers to meet with the irrigation board to further discuss the many potential impacts to the North Fields and possibly Provo River. He recalled the agreement that stated there would be no storm water drainage into the North Fields. He noted the ground water would flow west into the river, and it was used as culinary water. He asked to be careful to protect the people who drank the water. He did not feel they fully understood all the potential problems

Charles Wall, member of the North Fields Irrigation Company Board, shared their policy to not accept any gray or storm water. The board had walked the lands with engineers and discussed how to modify the system to accept storm water but there were many farmers raising livestock and calving in the spring. He said they did not intend to change their policy.

Lindy Reioux, Heber City Resident, stated that she, and quite a few other people in attendance, were opposed to the Harvest Village Development project. She understood that a lot of work had gone into the project and felt she must be missing something. She wanted to know how the project benefited the residents of Heber City. She asked Council Member Phillips to explain the benefits for her. Council Member Phillips stated that the Council had discussed the project at length and he would be happy to have a conversation after the meeting but it would not be an appropriate discussion for the public comment portion of the meeting. Ms. Reioux asked if the retention ponds were included in the open space calculation. The answer was yes.

Council Member Barney read an email from Don Taylor, Wasatch County Trails Coordinator, regarding the lack of compliance for the trail width and connections shown in the North Village Crossings design plan. City Engineer Russ Funk shared that he had mentioned the same concern at a previous meeting and the developer had confirmed they would comply with the City Trails Master Plan requirements.

Jamie Hewlett said that Council Member Phillips had indicated the reason he supported the proposed annexation was that the property owners had been paying taxes on the land. She had pulled up tax records and found one of the landowners had paid only $16 in property tax in 2023. He responded that it was not the amount of property taxes the developments paid but the infrastructure expense. The land had been granted the density 20 years prior by the County and the landowners had to pay for the infrastructure to support the density granted.

VIII. GENERAL BUSINESS ITEMS:

1. Fiscal Year 2024 Financial Statement Audit Presentation (Jon Haderlie, CPA Larson & Company, PC) - *15 min*

Finance Director Sara Jane Nagel stated she would email Council the Audit report. She named the members of the Audit Committee and thanked them for their work. She thanked the auditors as well. Audit Contractor Jon Haderlie described the details of the audit report as included in the attached meeting materials. The audit showed the City was a low-risk auditee based on the lack of significant findings from the previous two-year audits. There were no compliance issues found.

City Manager Matt Brower commended Ms. Nagel and her team for having no findings in the audit. Audit Committee Chair Dell Barney echoed Mr. Brower's commendation. He noted the good work of Ms. Nagel and her team. Mr. Barney and the Audit Committee wished to forward a recommendation for internal controls to comply with the appropriate separation of duties to prevent fraud or mistakes. The Committee recommended the cash handling be handled separately from the utility billing. Both were currently handled by the same employee. The solution would be to hire another part-time employee or designate a different employee to pick up additional duties.

2. Monthly Development Report (Jamie Baron, Planning Manager) - *10 min*

Community Development Director Tony Kohler shared a chart reflecting 2024 applications in review compared to 2023. He shared the current applications being reviewed by the City as shown in the meeting attachments.

3. The Views on Main Development Agreement Term Sheet (Luke Kennard) - *45 min*

This agenda item was bypassed to be returned to a future meeting.

4. Wasatch Highlands Discussion (Matt Brower, City Manager) - 10 mins

City Manager Matt Brower stated that he had been asked to place this discussion item on the agenda for Council consideration. City Attorney Jeremy Cook informed Council that the applicant had the right to continue with the annexation process but felt that Council's feedback might give the applicant a better line of direction for how they wished to proceed. Council Members recalled the previous week's Interlocal meeting with the County and expressed a desire to work with the County towards an amicable solution for the proposed development. County Council Member Kendall Crittenden echoed the City Council's desire to work together. He reviewed potential concerns for the proposed developments. Council discussion continued regarding how to best keep the lines of communication open between the City and the County and continue to proceed amicably. City Manager Matt Brower summarized the applicant's right to proceed through the City's annexation process.

The next step in the process was scheduled for the upcoming Planning Commission Meeting for consideration to recommend an adjustment to the City's Annexation Policy Plan on January 28, 2025.

IX. ACTION ITEMS: (Council can discuss; table; continue; or approve items)

1. City Council Strategic Planning Priorities 2026 (Matt Brower, City Manager) - *30 min*

Mayor Franco moved forward on the agenda to discuss item two first.

2. Review and Approval of Development Agreements for North Village Crossing and Harvest Village (Tony Kohler, Community Development Director, Jeremy Cook, City Attorney) - *90 min*

City Attorney Jeremy Cook continued the review of the proposed Crossings development MDA as had begun during the preceding Work Meeting discussion. Mayor Franco requested that the scenic buffer trail be installed in conjunction with the construction of the roads. City Engineer Russ Funk clarified his suggestion to change the language from "the City will" to "the City may require additional groundwater modeling". He said the purpose for the requested language change was that he did not see a need for additional groundwater modeling. A Crossings representatives noted the requested requirement had not been imposed on any previous developers. Discussion continued regarding groundwater modeling; storm water treatment requirements; protecting downstream landowners; site-plan and density restrictions; the permission of short-term rentals in the development; the proposed gas station design; and the fee-in-lieu for the affordable housing requirement.

The Mayor, Council, and Staff reviewed the requested revisions to be included in the Development Agreement as follows:

- 4.3: Gas Station Design - the canopy shall be designed and built and utilize materials similar to the canopy design attached in the exhibit
- 4.4.3: Scenic Buffer - should read "on the location specifically shown on the site plan"
- 4.4.5: Retention Walls - planting trees to reduce visual impact of walls
- 5.3: Timing - 50% of construction for affordable housing or the alternative fee-in-lieu completed with each phase before the next phase building permit was issued

Motion: Council Member Barney moved to extend the meeting until 10:10 p.m.
Discussion: Council Member Ostergaard asked what remained on the meeting agenda to be discussed, including the Closed Meeting.
Second: The motion failed for lack of a second.

Motion: Council Member Cheatwood moved to extend the meeting to 10:30 p.m.
Second: Council Member Johnston made the second.
Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, and Johnston.
Voting No: Council Member Barney.
The **Motion Passed 4-1.**

- 5.4.3: Fee-in-Lieu - $40,000
- 9.4 Storm Water - to include storm water quality standards
- 10: Short-Term Rentals: allowed in all units subject to compliance with the CC&Rs (Covenants, Conditions, and Restrictions)
- the Trail Plan would be updated to meet the City's Trail Master Plan Standards

Harvest Village representatives returned to review the updated changes to the Development Agreement as requested by Council during the Work Meeting.

- 4.4.1: Building Heights - addressed affordable housing with market-rate housing mixed in and similar architecture on all sides, compliant with the North Village Overlay Zone (NVOZ)
- 8.1: Highway 40 Landscape Buffer - outlining the setbacks, buffers, undulating landscaping, trail, and permitted locations of retention/detention ponds
- 5.3: Timing - 100% affordable housing construction required before hotel construction

Mayor Franco opened the public comment period at 10:13. p.m.

Ileana Anderson asked about the setback requirement in the Crossings. She thought the requirement had been changed from 30 feet to 15 feet from residential properties. It was clarified the smaller setback was eligible only along the road. The 30-foot setback from residences remained.

With no one further coming forward for public comment, the comment period was closed at 10:16 p.m.

Council Member Johnston wished to point out that the City would not be considering the annexation before them if the land had been zoned agriculturally, but due to the County granting high-density zoning that was grandfathered to the property, the City was trying to guide a responsible development. He felt the benefit to the City was substantial. The City had no intent to annex any land that was zoned agriculturally.

Motion: Council Member Johnston moved to adopt the two development agreements as amended that night, that Council had been working on for eighteen months, the development agreement for North Village Crossings and the development agreement for Harvest Village mixed-use development, per all the changes discussed and reviewed again at the end.
Second: Council Member Ostergaard made the second.
Discussion: Council Member Barney stated that she respectfully disagreed with Council Member Johnston. She felt there were options and the City did not have to approve the annexation. She felt the County had changed its zoning and would have held the developers to new requirements. She did not feel the annexation would benefit the community and felt there were many other ways for the Council to look at it and the Council should have taken more time. She said the Council was not forced to comply with County decisions and she felt it would add density where the Community did not want density. She felt the decisions would create more problems down the road, including increased traffic pressure. She felt the Council could have waited and eased the pressure on the community.

Mayor Franco felt the people would be disappointed with the view-shed. She noted that she did not get to vote but stated she was not comfortable with the annexation. She said the location was on sensitive lands and noted the Provo River project was keeping a sharp eye on the process. Mayor Franco stated she was more concerned with everyone else's property rights than the rights of the developers. She indicated she would not have felt comfortable with the annexation even if the developers had been required to build all the public roads. She was concerned about the density the developments would bring.

Council Member Cheatwood expressed gratitude for the developers' willingness to negotiate with the City, the many meetings held, and extensive staff time that had been committed to the process. He respectfully disagreed on many aspects and noted he had not voted for the annexation to be approved but recognized the vote that evening was for the development agreements within the annexation. The annexation had already been approved. He acknowledged the vested rights that had been granted in the County. He appreciated the applicant's patience and respectful conversations.

Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, and Johnston.
Voting No: Council Member Barney.
The **Motion Passed 4-1**

Motion: Council Member Barney moved to extend the meeting until 10:40 p.m.
Second: Council Member Cheatwood made the second.
Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, Barney, and Johnston.
Voting No: None.
The **Motion Passed Unanimously, 5-0.**

X. COMMUNICATION:

XI. CLOSED MEETING:

Motion: Council Member Barney moved to enter a Closed Meeting session for the purpose of discussing the purchase, exchange, or lease of real property.
Second: Council Member Cheatwood made the second.
Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, Barney, and Johnston.
Voting No: None.
The **Motion Passed Unanimously, 5-0.**
The Heber City Council entered a Closed Meeting at 10:28 p.m.

City Council Present:	Mayor Heidi Franco Council Member Yvonne Barney Council Member Aaron Cheatwood Council Member Mike Johnston Council Member Sid Ostergaard Council Member Scott Phillips
Staff Present:	City Manager Matt Brower City Attorney Jeremy Cook City Recorder Trina Cooke

1. To Discuss the Purchase, Exchange, or Lease of Real Property (Matt Brower, City Manager)

Motion: Council Member Barney moved to end the Closed Meeting and adjourn the Regular Meeting.
Second: Council Member Ostergaard made the second.
Voting Yes: Council Members Phillips, Ostergaard, Cheatwood, Barney, and Johnston.
Voting No: None.
The **Motion Passed 5-0.**
The meeting adjourned at 10:50 p.m.

XII. ADJOURNMENT:

_____
Trina Cooke, City Recorder

HEBER CITY CORPORATION
75 North Main Street
Heber City, UT 84032
Heber City Council Meeting
February 18, 2025

DRAFT Minutes

4:30 p.m. Work Meeting
6:00 p.m. Regular Meeting

I. WORK MEETING - 4:30 P.M.

Mayor Franco called the meeting to order at 4:30 pm.

City Council Present:
Mayor Heidi Franco
Council Member Yvonne Barney
Council Member Aaron Cheatwood
Council Member Mike Johnston
Council Member Sid Ostergaard
Council Member Scott Phillips (Attended remotely from 6:30 pm to 7:10 pm)

Staff Present:
City Manager Matt Brower
Assistant City Manager Mark Smedley
Chief of Police Parker Sever
City Attorney Jeremy Cook
City Engineer Russ Funk
Community Development Director Tony Kohler
Deputy City Recorder Robin Raines-Bond
Finance Director Sara Jane Nagel
GIS Specialist Shiona Howard
IT Director Anthon Beales
Parks and Cemetery Director Mark Rounds
Planning Manager Jamie Baron
Public Works Director Matt Kennard
Public Works Administrator Candace Bufton

Staff Participating Remotely: Assistant City Manager Mark Smedley, Planning Manager Jamie Baron, Public Works Director Matthew Kennard, City Engineer Russ Funk, Finance Director Sara Jane Nagel, IT Director Anthon Beales, City Treasurer Mindy Kohler, Engineer Ross Hansen, Engineering Tech Desiree Muheim, and Human Resources Manager Cherie Ashe.

Also Present: Brian Bales**,** Luke Kennard, Kris Parker, Richard Breitenbeker, Dustin Grabau, Adam Killpack, Tori Broughton, Rachel Kahler, Phil Jordan, Emma Zevallos, Kristin Anderson, Andrea Clayton, Naomi Kison, Craig Hancock, Grace Doerfler -

DRAFT

KPCW, Jessica Broadhead, Joshua Jewkes, Howard Saldarini, Amanda Sorensen, and others who did not sign in or whose handwriting was illegible.

Also Present Remotely: Missy Maughan, Andrew Dudik, Chris Pedersen, Dave Driggs Heber Valley Arts, Howard Saldarini, Jen, Luke s, John, morgen, Phil Jordan, and Yarasen Garcia.

1. The Views on Main Development Agreement Term Sheet
(Luke Kennard, Tony Kohler, Community Development Director) - 45 min

Mr. Kohler introduced the Views on Main project and its representatives, Luke Kennard and Kris Parker. Council Member Johnston disclosed his employment with ATWELL but stated he had no involvement with the Views on Main project.

Mr. Kohler noted that 860 South might be closed for the project and that fencing and architecture issues were under review by the Planning Commission. Mr. Funk presented updates on the Master Plan, explaining that one landowner had withdrawn from the road plans. He requested direction from the Council on how to proceed.

Council Member Ostergaard inquired about the landowner's reasons for withdrawing. Mr. Luke Kennard (Views on Main Representative) responded that it rendered the land unusable and inaccessible.

The Mayor asked about project phasing. Mr. Kennard explained that the project was initially a single phase but was split into two phases to facilitate approval.

Council Member Barney asked about hotel access, and Mr. Funk demonstrated the two access points from Main Street.

Discussion continued regarding road maintenance, pedestrian signals, traffic patterns, and construction logistics. Mr. Funk indicated that UDOT was in agreement regarding a new full intersection signal, with the development contributing 25% of the cost.

Council Member Cheatwood sought legal clarification regarding project phasing. Attorney Cook confirmed that Phase I was vested while Phase II was not. The Council agreed to revisit the discussion on March 4, 2025.

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2. Wasatch County Admin Building Annexation MDA
(Jamie Baron, Planning Manager) - 35 min

Mr. Baron introduced the project and provided updates from the Planning Commission. County officials, including County Manager Dustin Grabau and Project Manager Richard Breitenbeker shared their perspectives.

The Mayor asked if UDOT's involvement would delay construction. The County indicated that they could proceed immediately. Discussion continued regarding land purchases, shared parking

DRAFT

potential, and the timeline for vacating buildings. The County estimated three years for completing the new Administration Building, with the Fire Department moving in April.

Council agreed to proceed with the MDA process, aiming for council approval in April.

II. BREAK - 10 MINS

REGULAR MEETING - 6:00 P.M.

1. Call to Order
The Meeting called to order at 6:06 p.m. by Mayor Franco.

2. Pledge of Allegiance
Led by Council Member Ostergaard.

3. Prayer/Thought
Given by Council Member Barney.

IV. CONFLICT OF INTEREST DISCLOSURE
None disclosed. See Website for Conflict of Interest Disclosures Forms that have been filed by Council Members. https://heberut.gov/368/Conflict-of-Interest-Disclosure-Forms

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V. CONSENT AGENDA

1. Approval of Meeting Minutes
Motion: Council Member Cheatwood motioned to approve the January 7, 16, and 18, 2025, meeting minutes.
Second: Council Member Barney seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

VI. PUBLIC COMMENTS No public comments.

VII. GENERAL BUSINESS ITEMS

1. Heber Valley Tourism and Economic Development 2024 Annual Report
(Dallin Koecher, Jessica Broadhead - 30 min)

Presenters discussed strategies for attracting visitors, increasing international marketing, and economic impacts. Council Member Barney inquired about international marketing efforts, which are expected to increase with the approaching Olympics.

2. Heber Valley Corridor EIS Update
(Craig Hancock, UDOT - 20 min)

DRAFT

Mr. Hancock provided updates on the Environmental Impact Study. Council discussed road safety, speed limits, and traffic flow considerations.

VIII. ACTION ITEMS

1. Pro-Forma and Term Sheet for Amphitheater Operations
(Phil Jordan - 30 min)

Mr. Jordan presented an overview of the Heber Valley Arts Center Amphitheater and its phased development. The Council deferred voting and agreed to revisit on March 4.

2. Heber Leadership Academy 2025 Class Project
(Matt Brower, City Manager, Rachel Kahler, CAMS Executive Director - 20 min)

Mrs. Kahler outlined a historical site project and requested city funding. Council discussed accessibility and security concerns.

Motion: Council Member Cheatwood motioned to approve the funding.
Second: Council Member Ostergaard seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

3. Saldarini Annexation Petition
(Jamie Baron, Planning Manager - 15 min)

Mr. Baron introduced the petition for annexation. Mr. Saldarini expressed his desire to join the city. The Council acknowledged the petition and outlined next steps.

Motion: Council Member Johnston motioned to approve the petition for annexation.
Second: Council Member Ostergaard seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

IX. COMMUNICATION

Mr. Funk addressed railroad-crossing improvements, including a quiet zone study. Council debated funding sources, and a majority supported moving forward with the study.

Council discussed inter-local agreements with Wasatch County. Attorney Cook advised that the current Council could not bind a future Council to an MOU. The matter would be revisited on March 4.

X. CLOSED MEETING

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The Council voted to enter a closed session to discuss the purchase, exchange, or lease of real property.

Motion: Council Member Barney motioned to enter a closed session.
Second: Council Member Ostergaard seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

Attendance: City Manager Matt Brower
City Attorney Jeremy Cook
Mayor Heidi Franco
Council Members Barney, Cheatwood, Johnston, and Ostergaard

Motion: Council Member Barney motioned to leave the closed session.
Second: Council Member Ostergaard seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

XI. ADJOURNMENT
Motion: Council Member Barney motioned to adjourn.
Second: Council Member Ostergaard seconded the motion.
Yes: Council Members Barney, Cheatwood, Johnston, and Ostergaard.
No: None
Motion passed unanimously (4-0).

The meeting concluded at 9:45 pm.

DRAFT

Trina Cooke

From: Heidi Franco
Sent: Tuesday, March 4, 2025 3:09 PM
To: Trina Cooke; City Council
Subject: RCV Info - Filing Dates, Definitions

Importance: High

Heber City Council Staff Report

MEETING DATE: 3/4/25

SUBJECT: **2025 Election Information**

With RCV for Nov 2025 Municipal Election:

Filing Dates: August 12th – 19th, 2025

General Election Date: November 4, 2025. Ballots mailed out three weeks prior.

https://www.slc.gov/attorney/information-for-candidates/

https://le.utah.gov/xcode/Title20A/Chapter9/20A-9-S203.html

With NO RCV for 2025 Municipal Election:

Filing Dates: June 2nd thru 6th, & 9th, 2025.

Primary Election: August 12, 2025. Ballots mailed out three weeks prior.

General Election Date: November 4, 2025. Ballots mailed out three weeks prior.

https://www.spanishfork.gov/government/elections/index.php

https://le.utah.gov/xcode/Title20A/Chapter9/20A-9-S203.html

Definition of **Undervote**: "When **no** vote is cast for a single-choice election."

https://ballotpedia.org/Undervote

Definition of **Overvote**: "When a voter casts **more** votes than is allowed. Ballot cannot be counted." https://ballotpedia.org/Overvote

Definition of **Exhausted Ballot**: "When a ballot is no longer countable…as all of the candidates marked on the ballot are no longer in the contest."

https://ballotpedia.org/Ballot_exhaustion

Heidi Franco
Mayor

Heber City
75 North Main Street, Heber City, UT 84032
Phone: 435-671-8244
Email: hfranco@Heberut.gov

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Heber City Ranked Choice Voting 3-4-25

We know that public trust in elections matter.



RANKED CHOICE VOTING

Ranked-Choice Voting makes it harder to vote, harder to count the votes, and much harder to ensure a transparent and accountable democratic process.

RCV elections that require multiple rounds of tabulation rely on computers to make adjustments, or discard ballots in each round. There is no way to quickly confirm the accuracy of the computer processes involved.

Last year, six states banned ranked choice voting, bringing the total number of states where RCV is outlawed to eleven. Now, just weeks into 2025, legislation banning the system has been filed in Iowa, South Carolina, Texas, North Dakota, Wyoming, and Kansas. While it's still too early to tell, 2025 could surpass 2024 as the worst year ever for ranked-choice voting.

These aggressive moves by the states aren't just the result of messaging by opponents like us. They're the direct result of ranked-choice voting's many well-documented failures in places like Maine and Alaska.

HOW RANKED CHOICE VOTING WORKS

In an RCV election, if one candidate receives a majority of first-place votes, it works like any other election (the rankings are irrelevant). If no candidate receives a majority of first-place votes, then the candidate with the fewest first-place votes is eliminated. Ballots that ranked the eliminated candidate first are "adjusted" in one of two ways:

1. **If they ranked other candidates, their next-ranked candidate is moved up to get their first-place vote.**
2. **If they did not rank other candidates, their ballot is eliminated (as if they had not voted at all).**

This process is repeated until one candidate has a majority of the remaining votes. It relies on precise data entry and well-programmed computers—with more than just a few ballots, the RCV process is entirely dependent on computers to run the multiple rounds of adjustments and retabulating. (This is an example of the computer settings instructions for San Francisco.)

Note that the above is a description of the most commonly used RCV process. Laws and even election officials can alter this process, potentially changing the outcomes, such as by eliminating more than one candidate at once or changing how they treat over votes (giving more than one candidate the same ranking) or undervotes (skipping a ranking, for example, ranking candidates first, second, but then fourth).

RANKED CHOICE VOTING RISKS

RCV is harder for voters- and may be Unconstitutional

In an RCV election, rather than identifying one candidate to support, voters must research multiple candidates and form opinions about their relative preferences for as many as five or more. This benefits those who have more time and access to information—in short, RCV gives more power to elites while making it harder for everyone else.

An RCV ballot is also longer and takes more time for voters to complete. This means more delays and longer lines at polling places. It also creates many new opportunities to make a mistake, increasing the chances that a voter's intent is not correctly recorded or that ballots are disqualified and discarded.

* Discriminates against senior citizens who have been consistently voting the same way for 50 years, and now they have to learn a new process. Causes confusion and they may stop trying.

* Discriminates against ADHD-type voters, who have a hard time concentrating when too many choices are given. Creates an overly stressful situation and they may stop trying. Citizen Clip

And those voters likely will NOT vote in the NEXT election.

RANKED CHOICE VOTING- OUTSIDE MONEY-1

Big Money to Fight for Ranked Choice Voting

The Action Now Initiative provided $6.59 million to the statewide ranked-choice voting campaigns in 2020, including $2.93 million in Alaska and $3.66 million in Massachusetts. John and Laura Arnold founded the Action Now Initiative as a 501(c)(4) organization in Huston, Texas, in 2011. Besides ranked-choice voting ballot measures, the Action Now Initiative has supported ballot initiatives related to redistricting commissions and criminal justice changes.

Unite America contributed $3.84 million to the ranked-choice voting campaigns in 2020, $3.40 million of which was donated to Alaskans for Better Actions. While Unite America provided $445,000 to Voters Choice Massachusetts, the organization's board co-chair, Kathryn Murdoch, donated $2.50 million and board member Katherine Gehl contributed $250,000. Unite America, founded in 2014 as the Centrist Project, is based in Denver, Colorado, and has the stated purpose of electing officials and enacting electoral laws that reduce partisanship and achieve better governing outcomes. Unite America has a federal hybrid political action committee (PAC) and a 501(c)(3) nonprofit.

RANKED CHOICE VOTING- OUTSIDE MONEY-2

RIVERTON, Utah – **KSL- May 7, 2023 "A group offered cities money to opt in to ranked choice voting. State elections office warns accepting that is likely illegal."**

It's against state law for Utah cities or counties to take any third-party money for elections. But one group, Utah RCV, offered to cover this year's additional costs for the cities in Salt Lake County to opt into Utah's ranked choice voting pilot program.---- "We caution cities against accepting such funds from any group or organization, as it likely violates state law," Utah's Director of Elections Ryan Cowley told KSL NewsRadio in a statement. The offer to Riverton city council was in public setting, at their meeting on April 4, 2023.

Kelleen Potter, Utah RCV Executive Director, told the city council that in light of the legislature not providing funds for Utah's ranked choice pilot program, Utah RCV is willing to "cover that gap."

Potter tells KSL NewsRadio she didn't know it was illegal when she made the offer.

"At the time, I was not aware of this law. It was passed before I was in this job, and our organization wasn't familiar with it. It was literally after this meeting someone told me that," Potter said.

Source: https://kslnewsradio.com/elections-politics-government/a-group-offered-cities-money-to-opt-in-to-ranked-choice-voting-state-elections-office-warns-accepting-that-is-illegal/2004591/

Utah RCV Address?? Utah Ranked Choice Voting- 104 East 600 South, #113, Heber, Utah, 84032

UTAH STATE LEGISLATURE- RCV STATS



***2024 HB 290 sponsor- Rep. Katy Hall clip -to cancel pilot program before 2026.**

Almost passed until outside money and lobbyists killed bill on 2nd reading of Senate floor.

Utah cities participating- yr 2019- 2 cities / yr 2021- 23 cities / yr 2023- 12 cities

***Senator Daniel Thatcher - 2025 hearing on Ranked Choice Voting pilot extension**

Clip #2 Citizen clip 1 Utah Co Clerk Citizen clip 2 Thatcher Summary

Unanimous vote by Senate Gov't Operations Committee to hold SB 127. Bill never made it out of committee in January. No desire by committee to extend pilot program.

HEBER CITY 2023 ELECTION- RANKED CHOICE VOTING HURT HEBER VOTERS

In the Heber City 2023 Election for 3 City Council Seats, the Total Voter Turnout was 3,089 or 35.3% of registered voters. (Heber's voter turnout in 2021 was 41% and received 3,372 ballots from 8,241 voters.)

IN THE LAST ROUND of voting the amount of 'undervotes' was 1,709 voters, plus 21 'overvotes'. That means 55% of the 3,089 voters, that cast a ballot, did NOT vote at the end.

***Sen. Thatcher- "How many votes can be discarded in the first round, and not counted, and still be an acceptable election system?"**

1st Round when 69 people undervotes - 89 overvotes (chose 2 candidates as #1?)

2nd Round when 206 people undervotes- 23 overvotes

3rd Round when 359 people undervotes.

4th Round when 972 people undervotes.

5th Round had 1330 people undervotes.

6th round had 1591 people undervotes.

7th Round had 1703 people undervotes. Etc….



Go to: https://www.heberut.gov/DocumentCenter/View/2163/Signed-Canvass-Report-for-2023-Heber-City-Municipal-Election



CITIZEN CONCERNS

1. The vote for a certain candidate was transferred to OTHER CANDIDATES. Unconstitutional?
2. Forces a voter to rank ALL candidates. They only want to vote for who they want.
3. Discriminates against elderly and special needs voters, by being too complicated.
4. Voters did not even know if their ballot was disqualified, if they did not fill out ballot correctly.
5. There is no notification by city/county clerk of incorrect ballot, nor option to correct ballot.
6. Confusing process, no clear audit procedure if voters have concerns. No transparency.
7. Too many candidates to learn about, voters do not have time to educate themselves.
8. Statewide and local stats show less participation by voters in subsequent elections.
9. Delays election outcomes, since clerk has to receive every ballot before can they figure out which candidate had the least votes. We want quicker results, not slower.
10. 28 out of 29 county clerks in Utah had concerns about the process.
11. The Lt Governor's office is not a reliable source for info and oversight.

I.

HEBER CITY 2023 ELECTION COMMENTS

"I can tell you this much, my brain can't even begin to wrap around all the rules and procedures for it, the confusion it caused which invalidated several ballots is super sad, and look at the results and how it could have just been the top 3 highest votes received but the process of RCV changed the outcome, additionally I have trust issues with the people behind it, so for me it's a solid NO."

"I definitely do NOT like RC when voting for more than one seat. With RC I can not give my first choice for each seat. I can only give first choice to one, second choice to one and third choice for one. I had three candidates I wanted on the Council. I wanted to give my first choice to each. So, in fact I was only able to vote for one. PLEASE LET US GO BACK TO THE TRADITIONAL VOTING."

"It is a big NO for almost everyone I have talked to about it."

"On the other, it IS hard for most people to understand, which doesn't always seem transparent and can give the appearance of impropriety, even when that isn't the case. And with 12 candidates in the latest city council race, I question whether some of those who were ultimately elected are really representative of the people's choices, and it hasn't provided a clear governing mandate IMO."

"I'm still learning more, but I had a positive opinion of it before this election, and now, my opinion is markedly less positive. It seemed like a very convoluted process that ended with a result that I don't believe the majority of voters favored. But I've got more to learn."

WASATCH TAXPAYERS' ASSOCIATION RECOMMENDATIONS

Heber City Council:

1. Vote NO on the Ranked Choice Voting option for the 2025 Heber City Election. Let's go back to traditional voting, so we can have a primary and general election process. Citizens can have trust again.

2. If undecided, have a Heber City RESIDENT ONLY online survey conducted in March, to get a direct voter poll on issue.

Heber Council RCV vote is not required until May 1, 2025.





Heber City Ranked Choice Voting 3-4-25
We Know That Public Trust In Elections Matter.

How Many Votes Were Actually Counted?

✓ **Total ballots cast: 3,089**

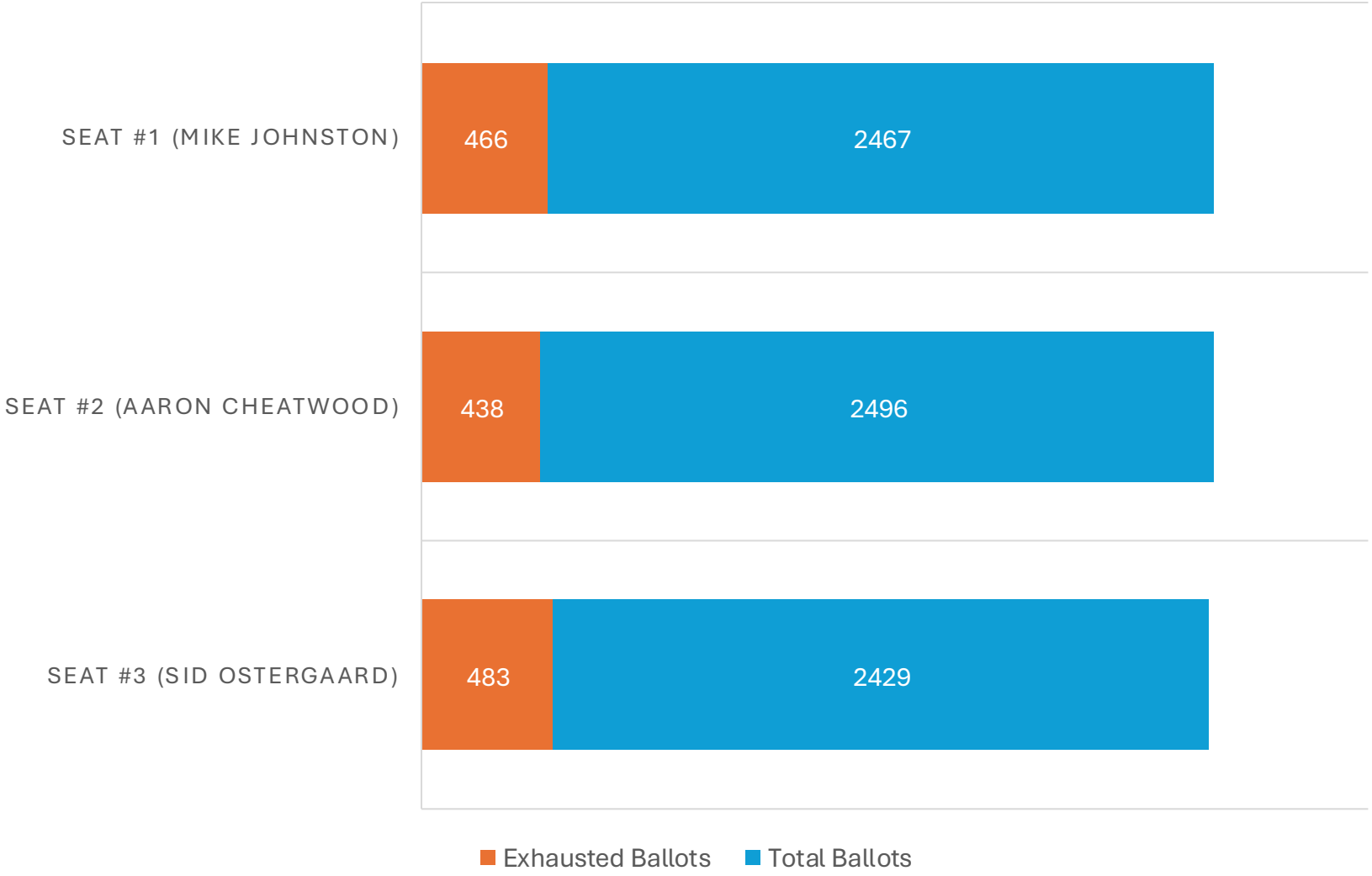
✓ **Exhausted ballots removed before the final round:**

Seat #1: 466 ballots (~16%)

Seat #2: 438 ballots (~15%)

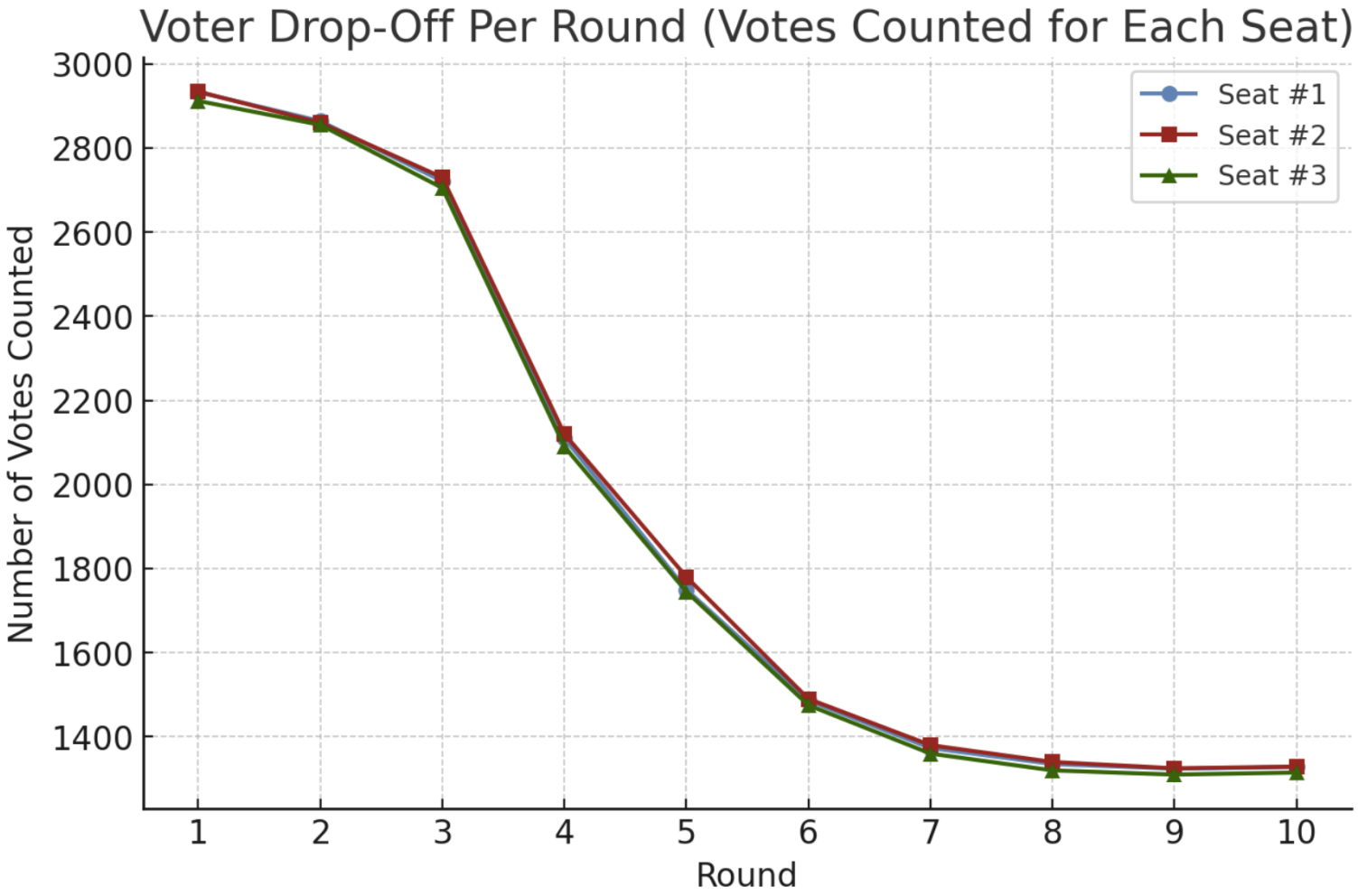
Seat #3: 483 ballots (~17%)

✓ **This means 1 in 6 voters had NO say in the final winner**



Are We Really Electing a Majority Winner?

- **Voter participation dropped each round because many did not rank all candidates.**
- **By the final round, fewer than 50% of voters had an active ballot.**
- **Ballots were not "exhausted" early; many voters simply had no valid ranking left.**
- **This means the final winner was chosen from a reduced voter pool, not all who voted.**
- **RCV requires voters to predict which candidates will last. Many did not, leading to undervotes.**
- ***1 in 6 ballots never reached the final count. Can we call that a fair election?***



What We Need to Consider Before Extending Rank Choice Voting:

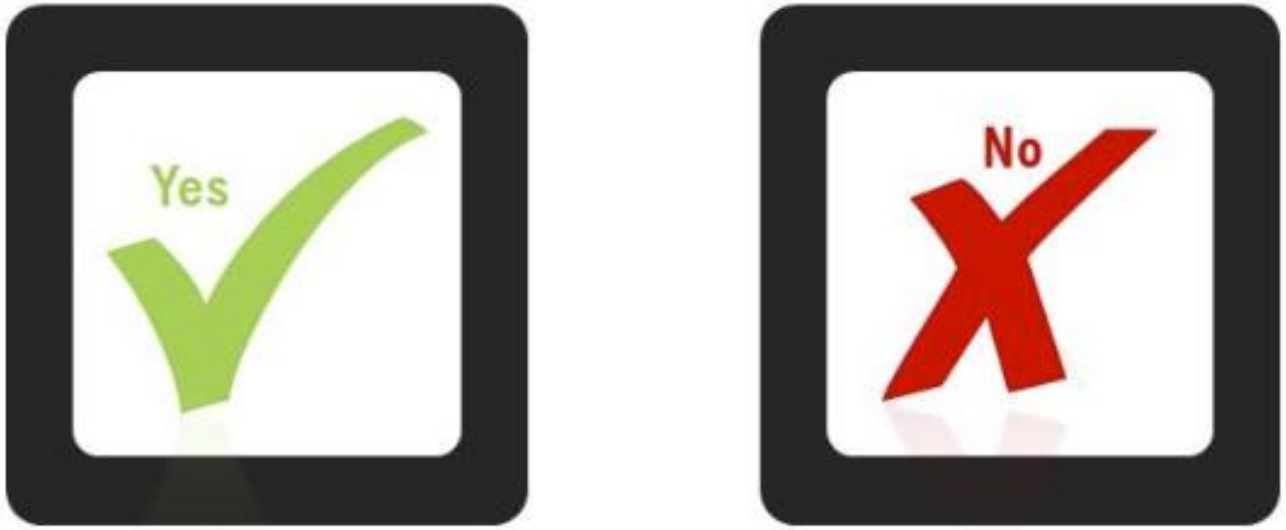
✓ Hundreds of votes were removed before the final decision.

✓ RCV did NOT produce a majority winner based on all voters.

✓ A system that discards ballots is NOT a fair election process.

✓ Before extending RCV, we must ask:

Do we want a system that removes votes from the final count?



- ***Should we continue using a system that discards votes?***
- ***City Council, you have the opportunity to ensure that every vote cast is counted in the final decision. Let's fix the system before extending it.***

Heber City Council Staff Report

MEETING DATE:	3/4/2025
SUBJECT:	Resolution 2025-03 Adopting Ranked Choice Voting (RCV) for the 2025 Heber City Municipal Election
RESPONSIBLE:	Trina Cooke
DEPARTMENT:	Recorder
STRATEGIC RELEVANCE:	Necessary Administrative Item

SUMMARY

Heber City has utilized Rank Choice Voting (RCV) for the past two election cycles ('21 and '23). The state requires local governments, prior to May 1, 2025, to determine whether they will utilize RCV for the forthcoming election cycle. Under RCV, voters rank candidates from first to last place on a ballot. The first-place votes are tabulated and if a candidate gets a majority, they are the winner. If not, the candidate in last place is eliminated and those ballots are redistributed to the second place choice. That process continues until a candidate receives a majority vote.

RECOMMENDATION

Staff recommends that the City Council vote on whether to continue using the Ranked Choice Voting method for the 2025 Municipal Election.

BACKGROUND

Heber City successfully participated in the state's Ranked Choice Voting (RCV) pilot program in the 2021 and 2023 Municipal Elections. The implementation of RCV was intended to improve voter engagement, eliminate the need for primary elections, and ensure majority support for elected candidates.

DISCUSSION

With the 2025 Municipal Election approaching, the Heber City Council must decide whether to continue using the RCV method. Key considerations include:

- **Voter Experience:** Past elections demonstrated that residents adapted well to RCV, with minimal confusion and support for the system.
- **Administrative Efficiency:** The City Recorder's office and election officials have successfully managed RCV elections with no major complications.
- **Cost Savings:** The elimination of primary elections has resulted in financial savings for the city.
- **State Program Participation:** The state's pilot program currently remains available, providing continued support and resources for RCV implementation.

FISCAL IMPACT

The cost to Heber City for the 2023 Municipal Election was $16,287.00. By removing the primary election, the cost is reduced by approximately 50%.

CONCLUSION

If the Council chooses to proceed with RCV, necessary administrative preparations and public education efforts should begin promptly to ensure a smooth election process.

ALTERNATIVES

1. Approve as proposed
2. Approve as amended
3. Continue
4. Deny

POTENTIAL MOTIONS

Alternative 1 - Approval - Staff Recommended Option

I move to **approve** Resolution 2025-03 Adopting Ranked Choice Voting for the 2025 Heber City Municipal Election as presented, with the findings and conditions as presented in the conclusion above.

Alternative 2 - Approve as Amended

I move to **approve** the item as amended, as follows.

Alternative 3 - Continue

I move to **continue** the item to another meeting on , with direction to the applicant and/or Staff on information and / or changes needed to render a decision, as follows:

Alternative 4 - Denial

I move to **deny** the item with the following findings.

ACCOUNTABILITY

Department: Recorder
Staff member: Trina Cooke, City Recorder

EXHIBITS

1. RCV
2. Resolution 2025-03 RCV
3. RCV 2025 Senate Committee Response
4. 2023 Sample Ballot

Ranked Choice Voting is an election method where voters rank candidates in order of preference (first, second, third, etc.). If a candidate secures more than 50% of the first-choice votes, they win outright. If not, the candidate with the fewest votes is eliminated, and those votes are redistributed to each voter's next choice. This elimination and redistribution process continues until one candidate achieves a majority. Look at an example here.

RCV has a long history in Utah. Nearly 20 years ago, it was adopted by both the Republican and Democratic parties for use at caucuses and conventions. This early adoption not only shortened convention days, since delegates and community members only needed to vote once, but also ensured that winning candidates had clear majorities. More recently, on March 13, 2018, Governor Gary Herbert signed legislation that allowed cities in Utah to use RCV in their elections. The overwhelming support for this bill reflects a strong bipartisan belief in its benefits.

RCV directly affects how our community elects leaders and can lead to a more democratic and efficient electoral process. It's a change that empowers voters and encourages candidates to appeal to a broader segment of the electorate.

Utah Ranked Choice Voting

https://utahrcv.nationbuilder.com/

RESOLUTION NO. 2025-03

A RESOLUTION TO IMPLEMENT RANKED CHOICE VOTING

WHEREAS, the City Council has previously discussed and reviewed Ranked Choice Voting (RCV) on multiple occasions, including July 21, 2020, March 2, 2021, and February 21, 2023; and

WHEREAS, Heber City successfully implemented Ranked Choice Voting in the 2021 and the 2023 municipal elections, demonstrating its effectiveness and benefits for voters and candidates alike; and

WHEREAS, the Ranked Choice Voting ensures that winning candidates receive majority support by requiring that winners obtain more than 50% of the vote; and

WHEREAS, RCV prevents vote-splitting and allows voters to rank their preferences without fear of "wasting" their votes; and

WHEREAS, implementation of RCV has resulted in cost savings for municipal elections, streamlined campaign processes, and a more efficient election system;

NOW, THEREFORE, BE IT RESOLVED by the City Council of Heber City, Utah, that the Heber City Council reaffirms its commitment to Ranked Choice Voting.

This Resolution shall take effect immediately upon adoption and passage by the City Council.

ADOPTED AND PASSED by the City Council of Heber City, Utah, this _____ day of _____, 2025.

	AYE	NAY	ABSENT	ABSTAIN
Yvonne M. Barney	_____	_____	_____	_____
Aaron Cheatwood	_____	_____	_____	_____
Mike Johnston	_____	_____	_____	_____
Sid Ostergaard	_____	_____	_____	_____
D. Scott Phillips	_____	_____	_____	_____

HEBER CITY

_____
Heidi Franco, Mayor

ATTEST:

_____
Trina Cooke, City Recorder

The State Senate Committee debate showed strong, statewide objections to compulsory voting in all RCV rounds, high levels of voter disenfranchisement by either not wanting to be forced to vote or being confused on the RCV ballots as shown in high amounts of under and overvotes, as well as ballot fatigue with lengthy ballots in only one election, and voters' being suspicious of RCV outcomes where the initial highest winners in the first rounds were actually ***not*** elected after all rounds were tabulated.

The debate also showed a lack of transparency where the 'ballot exhaustion' statistic is not shown in the City's final vote canvas. Ballot exhaustion is where voter's later round choices were eliminated in earlier rounds so those later round choices are not counted either. I'm not sure why the RCV tabulation software provided to the County does not also break out the 'ballot exhaustion' statistics for voters, but this missing statistic does not provide a clear understanding to voters on how the RCV ballots are counted. It seems the 'ballot exhaustion' statistics are combined into the 'under' and 'overvoting' statistics. This is concerning to voters and hasn't been addressed by the RCV proponents.

On voter understanding and support:

- Everywhere RCV is used, surveys show that voters like it and want to keep it – Utah voters included. According to the Herbert Institute at Utah Valley University's analysis of recent survey data:
    - In 2023, 94% of voters in Utah RCV cities were satisfied with the election method they used, up from 89% in 2021.
    - In 2023, 82% of voters said RCV was easy to use.
    - In 2023, 60% of Utah voters wanted to keep or expand RCV.

On voter error:

- All ballot types result in some voter error. Overall, research indicates that ballot error in RCV elections is very low and follows the same patterns as errors in non-RCV elections.
- RCV elections have comparable ballot error rates to those in non-RCV elections, according to studies from 2016, 2020, and 2021.
- The median rate of valid ballots in RCV elections is 99.8%. A median of 0.2% are not valid.
- According to professors at Utah Valley University, "relatively few ballots in RCV elections contain an error, and even fewer ballots are rejected," but "if RCV and single-choice

voting differ in terms of ballot error, that difference should be weighed against the fact that RCV makes more ballots count meaningfully."

On ballot exhaustion / compulsory rankings:

- Exhausted ballots are any ballots that do not contribute to the outcome between the final two candidates. They constitute a small percentage of all ballots in RCV elections (6.5% in a dataset of 300+ RCV elections), most of which (4.8%) are due to voluntary abstention, meaning the voter chose not to rank a top candidate.
- **RCV puts the voter in control over how their ballot is counted. It respects a voter's desire to rank candidates, or if they wish, to *abstain* from ranking at any point.** Both are legitimate expressions of their assessment of the candidates.
- Most importantly, RCV allows *more* ballots to count in the final outcome, not fewer. In a single-choice system, ballots cast for minor candidates are effectively "thrown out" because they do not contribute to the decision between the frontrunners. Similarly, two-round elections experience near universal turnout disparities, meaning many voters do not have a say in who advances to and/or wins the second round. RCV, on the other hand, allows voters to designate their backup choices, increasing the chance that their vote will count in the tally between finalists. In fact, RCV causes an average of 17% more votes to directly affect the outcome between candidates who actually have a chance at winning – equivalent to millions more voters casting a meaningful vote.
- So long as a system retains choice and requires a majority winner, that majority must be defined as a majority of voters who choose to participate.
- RCV results clearly indicate the number of exhausted (sometimes called "inactive") ballots. See these examples from Utah, Salt Lake, and Wasatch counties. It appears the claim that RCV software does not break out the number of exhausted ballots could be about the canvass report for the 2023 Heber City municipal election. However, the canvass report provides a link to an RCVis that clearly shows the number of exhausted ballots. In other words, RCV tabulation software does in fact provide ballot exhaustion statistics; it is up to local election administrators/clerks to choose a format for publishing the results, and therefore how accessible ballot exhaustion numbers should be. FairVote and the RCV Resource Center have publicly released the best practices for releasing RCV election results.

On come-from-behind winners:

- The candidate that leads in the first round usually wins under RCV. Occasionally, RCV features a "come-from-behind winner." A "come-from-behind" winner is a candidate who did not have the most votes in the first round, but secured enough second, third, or other choice preferences to win in a later round. A "come-from-behind" winner is a natural feature of RCV that means it is working how it is supposed to, that is, rewarding candidates with broad support over those who can only win by small pluralities.
- (Note from Rachel): Not sure if it is worth getting into this level of detail, but I take it the complaint is about sequential RCV elections, where the person with the second most first choice votes sometimes doesn't win the second seat. This is how/why sequential RCV is designed… because legislators at the time wanted the majority faction to decide

each seat, to my understanding. We could say there are other options for multi-winner RCV that the legislature might consider allowing that would make this less likely to happen (bottoms-up in particular, obviously).

On ballot length/style/fatigue:

- Best practices for RCV ballot design (easily accessible through the Center for Civic Design, FairVote, and the RCV Resource Center) are consistent with Election Assistance Commission guidelines. Depending on the ranking limit, multiple RCV contests can fit on the same page and be scanned at the same speed as non-RCV ballots.
- Utah uses RCV only for certain municipal elections, which occur in odd-numbered-years. As a result, when voters participate in an RCV election, it is often the only election on the ballot (except in years when both mayoral and city council elections are held, and voters might vote in two RCV elections).

100 Heber City NW

OFFICIAL BALLOT
FOR WASATCH COUNTY, UTAH
NOVEMBER 21, 2023

CERTIFIED BY THE CLERK OF WASATCH COUNTY

INSTRUCTIONS TO VOTERS: To vote for the candidate of your choice, fill in the oval ⬬ next to the candidate's name. Use a black or blue ballpoint pen. If you tear, deface, or wrongly mark this ballot, contact the County Clerk's office.
Completely fill in the oval. ⬬

County Ballot Questions

Proposition #9 - EMS Sales Tax

Shall Wasatch County, Utah be authorized to impose a 0.5% sales and use tax for the purpose of funding emergency medical services in Wasatch County?

- ⬭ FOR
- ⬭ AGAINST

TURN OVER TO CONTINUE VOTING

100 Heber City NW

OFFICIAL BALLOT
FOR HEBER CITY, UTAH
NOVEMBER 21, 2023

Trina N Cooke

City Recorder

INSTRUCTIONS TO VOTERS: Completely fill in the ovals ● and rank as many or as few candidates as you would like. Do not vote for more than one candidate in each column. Use a black or blue ballpoint pen. If you tear, deface, or wrongly mark this ballot, contact the County Clerk's office.

Heber City Council
Four Year Term
Rank in Order of Preference 1-11
3 Council Seats Will be Filled

	1st Preference	2nd Preference	3rd Preference	4th Preference	5th Preference	6th Preference	7th Preference	8th Preference	9th Preference	10th Preference	11th Preference
CASEY POWERS	○	○	○	○	○	○	○	○	○	○	○
CHRISTEN THOMPSON	○	○	○	○	○	○	○	○	○	○	○
SID OSTERGAARD	○	○	○	○	○	○	○	○	○	○	○
JAMI HEWLETT	○	○	○	○	○	○	○	○	○	○	○
VAUGHN ERIC HOKANSON	○	○	○	○	○	○	○	○	○	○	○
DANNY HILL	○	○	○	○	○	○	○	○	○	○	○
NICK LOPEZ	○	○	○	○	○	○	○	○	○	○	○
PAUL ROYALL III	○	○	○	○	○	○	○	○	○	○	○
AARON CHEATWOOD	○	○	○	○	○	○	○	○	○	○	○
TORI E BROUGHTON	○	○	○	○	○	○	○	○	○	○	○
MIKE JOHNSTON	○	○	○	○	○	○	○	○	○	○	○

TURN OVER TO CONTINUE VOTING

100 Heber City NW

Typ:01 Seq:0001 Spl:01

Heber City Council Staff Report

MEETING DATE:	3/4/2025
SUBJECT:	Heber City Annexation Policy Plan Amendment for Wasatch Highlands (SITLA Lands)
RESPONSIBLE:	Tony Kohler
DEPARTMENT:	Planning
STRATEGIC RELEVANCE:	Community Development

SUMMARY

Heber City has been approached by the SITLA Lands and Christensen properties for updating the City's Annexation Policy plan so the City can consider a future annexation into Heber City. These properties are not part of Heber City's Expansion Area Map and need to be shown on that map in order to be considered for annexation into Heber City. In 2024, the City Council asked the Planning Commission to review the Annexation Policy Plan in relation to the addition of the Christensen and SITLA properties. The Planning Commission held a public meeting to solicit comments from Affected Entities on October 22, 2024, including Wasatch County, Heber Valley Special Service District and the Twin Creeks Special Service District. The Planning Commission held a public hearing on December 10, 2024, and provided a positive recommendation of approval on January 28, 2025. The next step in considering the Annexation Policy Plan Amendment is to hold a public hearing with the City Council, then consider the amendment by ordinance.
Policy Questions for this item include:
• Should Heber City continue with the process of updating the Annexation Policy Plan and proceed to the next step, a City Council Public Hearing?

RECOMMENDATION

On January 28, 2025, the Planning Commission forwarded a positive recommendation to the City Council to update the Annexation Policy Plan to include the SITLA and adjacent properties, conditional upon the City Council establishing an MOU with Affected Entities (Wasatch County, HVSSD, TCSSD).

BACKGROUND

The Planning Commission provided their recommendation to update the Annexation Policy Plan with the attached letter of findings to the City Council. Staff has responded to neighbors with the attached

letter providing additional clarification for the City moving forward with this update.

Wasatch County has expressed their hope that Heber City will not amend its Annexation Policy Plan in the attached letter and at prior meetings with the City.

On December 21, Council expressed doubt in approving the proposed amendment to the Annexation Policy Plan. Representatives of the City, County, SITLA and the State met with SITLA on February 5, 2025 to better understand SITLA's position in promoting SITLA's property to be developed (see attached meeting summary).

DISCUSSION

Ideally, the City should be part of the discussions in considering how this property is developed, as the City will be the primary recipient of additional traffic resulting from this development. One potential option is to have the City enter into an MOU with Wasatch County regarding expectations on development of the properties. Such an agreement could address how multijurisdictional issues such as traffic and services will be dealt with, when or if the property is proposed to be developed. It could also address in generalities the process that will occur between the two entities in the event an annexation occurs or in the event the property is developed in the unincorporated county. If the area is not included within Heber City's Annexation Policy Plan, the area could potentially be developed in the unincorporated area without the City's involvement. Having the property remain unincorporated does not guarantee the property will be developed at low densities or guarantee the property won't be incorporated into a new city.

FISCAL IMPACT

N/A

CONCLUSION

The proposed amendment should be approved to include an MOU between Heber City and Affected Entities with the following findings:

- **Collaboration with the County**. The Planning Commission unanimously agreed that any consideration of increasing the City's Expansion Area should be contingent upon an MOU with Wasatch County to ensure cooperative planning. An MOU forces Heber City and Wasatch County to work cooperatively, which will result in more transparency and better decisions, as each entity will hold the other accountable.
- **Avoid Incorporation of the SITLA Lands**. Without updating the Annexation Policy Plan, developers may pursue incorporation, which could lead to removal of any City and County influence over the project.
- **Preserving the Option for a Land Swap with SITLA**. Including these properties in the Annexation Policy Plan ensures that a potential land swap remains a viable option.
- **Gaining Clarity on Development Plans**. Updating the Annexation Policy Plan allows the City to fully understand what the developers intend to do with the land.

- **Ensuring a Seat at the Planning and Approval Table**. Without considering annexation, the City will have no formal role in negotiations, limiting the City's ability to advocate for the interests of Heber residents.
- **Representing Heber Valley Citizens.** This approach provides the best opportunity for the city to maintain oversight and ensure residents have a voice in the future of the area.

ALTERNATIVES

1. Proceed to Public Hearing to amend the Annexation Policy Plan and proceed with an MOU with Wasatch County.
2. Halt the Annexation Policy Plan Amendment Process and proceed with an MOU with Wasatch County.
3. Continue.

POTENTIAL MOTIONS

Alternative 1: Proceed to a Public Hearing and an MOU with Wasatch County.

I move to have the Annexation Policy Plan amendment process proceed to a public hearing at the next available City Council meeting and proceed simultaneously with entering into an MOU with Wasatch County about development of the SITLA property.

Alternative 2: Halt the Annexation Policy Plan Amendment Process and proceed with an MOU with Wasatch County.

I move to halt all processing of the Annexation Policy Plan Amendment and not hold a public hearing with Council, and have the City proceed with entering into an MOU with Wasatch County about development of the SITLA property.

Alternative 3: Continue
I move to continue the item to a future meeting, with direction to the applicant and Staff on information and / or changes needed to render a decision, as follows:

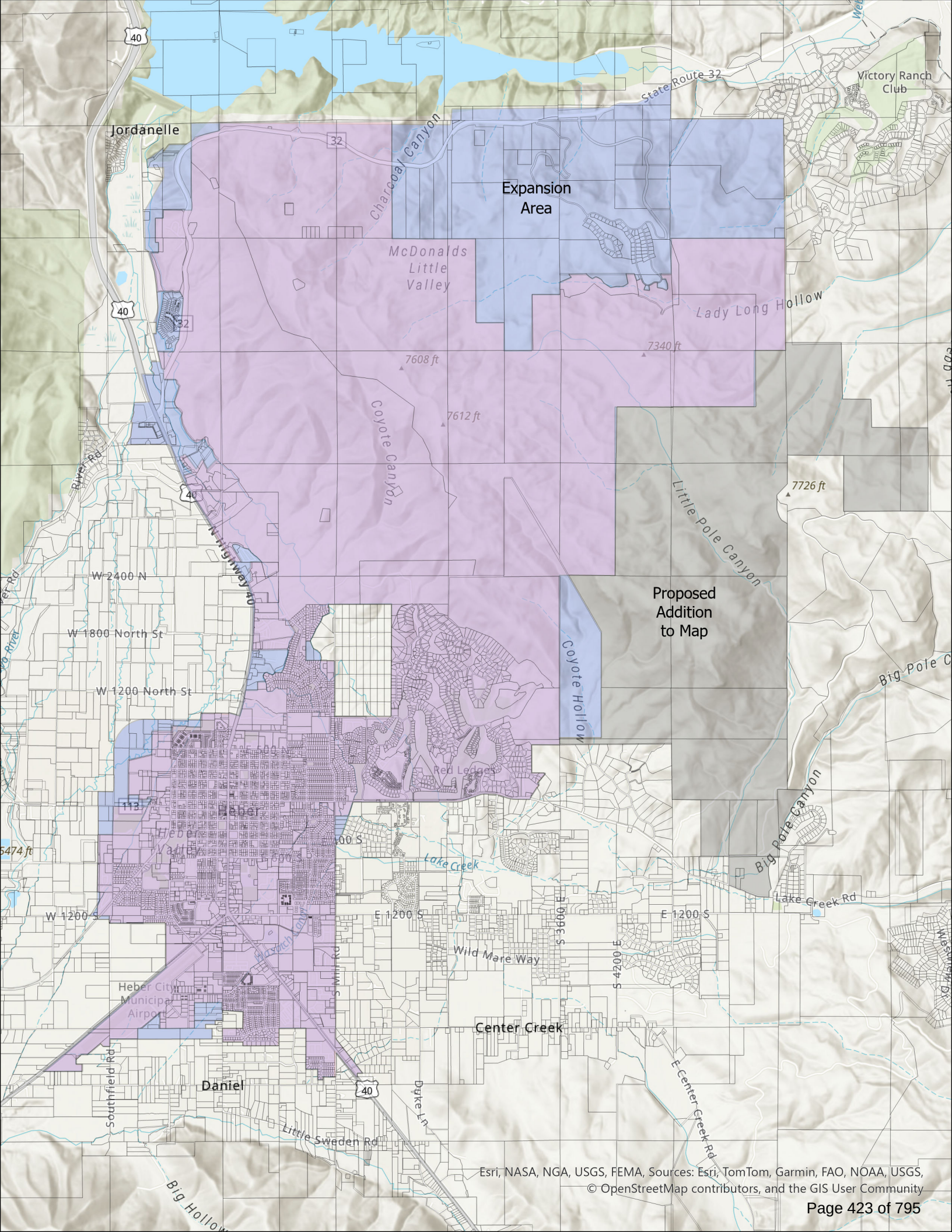
_____
_____
_____
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ACCOUNTABILITY

Department: Planning
Staff member: Tony Kohler, Community Development Director

EXHIBITS

1. Expansion Area Map Modification
2. 10-2 Utah Code Annexation Policy Plan
3. County Comments
4. HPL Letter
5. Property Owner Letter
6. PC Letter
7. Annexation Policy Plan
8. SITLA Meeting


Expansion Area
Proposed Addition to Map
Jordanelle
Victory Ranch Club
State Route 32
Charcoal Canyon
McDonalds Little Valley
Lady Long Hollow
7608 ft
7340 ft
7612 ft
7726 ft
Coyote Canyon
Little Pole Canyon
Coyote Hollow
Big Pole Canyon
Big Pole C
River Rd
N Highway 40
W 2400 N
W 1800 North St
W 1200 North St
Red Ledges
Heber Valley
Lake Creek
Lake Creek Rd
W 1200 S
E 1200 S
S 3600 E
S 4200 E
Wild Mare Way
Heber City Municipal Airport
Center Creek
Daniel
Southfield Rd
Little Sweden Rd
Dyke Ln
E Center Creek Rd
Big Hollow
Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

10-2-401.5. Annexation policy plan.

(1) No municipality may annex an unincorporated area located within a specified county unless the municipality has adopted an annexation policy plan as provided in this section.

(2) To adopt an annexation policy plan:

(a) the planning commission shall:

(i) prepare a proposed annexation policy plan that complies with Subsection (3);

(ii) hold a public meeting to allow affected entities to examine the proposed annexation policy plan and to provide input on it;

(iii) provide notice of the public meeting under Subsection (2)(a)(ii) to each affected entity at least 14 days before the meeting;

(iv) accept and consider any additional written comments from affected entities until 10 days after the public meeting under Subsection (2)(a)(ii);

(v) before holding the public hearing required under Subsection (2)(a)(vi), make any modifications to the proposed annexation policy plan the planning commission considers appropriate, based on input provided at or within 10 days after the public meeting under Subsection (2)(a)(ii);

(vi) hold a public hearing on the proposed annexation policy plan;

(vii) provide reasonable public notice, including notice to each affected entity, of the public hearing required under Subsection (2)(a)(vi) at least 14 days before the date of the hearing;

(viii) make any modifications to the proposed annexation policy plan the planning commission considers appropriate, based on public input provided at the public hearing; and

(ix) submit the planning commission's recommended annexation policy plan to the municipal legislative body; and

(b) the municipal legislative body shall:

(i) hold a public hearing on the annexation policy plan recommended by the planning commission;

(ii) provide reasonable notice, including notice to each affected entity, of the public hearing at least 14 days before the date of the hearing;

(iii) after the public hearing under Subsection (2)(b)(ii), make any modifications to the recommended annexation policy plan that the legislative body considers appropriate; and

(iv) adopt the recommended annexation policy plan, with or without modifications.

(3) Each annexation policy plan shall include:

(a) a map of the expansion area which may include territory located outside the county in which the municipality is located;

(b) a statement of the specific criteria that will guide the municipality's decision whether or not to grant future annexation petitions, addressing matters relevant to those criteria including:

(i) the character of the community;

(ii) the need for municipal services in developed and undeveloped unincorporated areas;

(iii) the municipality's plans for extension of municipal services;

(iv) how the services will be financed;

(v) an estimate of the tax consequences to residents both currently within the municipal boundaries and in the expansion area; and

(vi) the interests of all affected entities;

(c) justification for excluding from the expansion area any area containing urban development within 1/2 mile of the municipality's boundary; and

(d) a statement addressing any comments made by affected entities at or within 10 days after the public meeting under Subsection (2)(a)(ii).
(4) In developing, considering, and adopting an annexation policy plan, the planning commission and municipal legislative body shall:
(a) attempt to avoid gaps between or overlaps with the expansion areas of other municipalities;
(b) consider population growth projections for the municipality and adjoining areas for the next 20 years;
(c) consider current and projected costs of infrastructure, urban services, and public facilities necessary:
(i) to facilitate full development of the area within the municipality; and
(ii) to expand the infrastructure, services, and facilities into the area being considered for inclusion in the expansion area;
(d) consider, in conjunction with the municipality's general plan, the need over the next 20 years for additional land suitable for residential, commercial, and industrial development;
(e) consider the reasons for including agricultural lands, forests, recreational areas, and wildlife management areas in the municipality; and
(f) be guided by the principles set forth in Subsection 10-2-403(5).
(5) Within 30 days after adopting an annexation policy plan, the municipal legislative body shall submit a copy of the plan to the legislative body of each county in which any of the municipality's expansion area is located.
(6) Nothing in this chapter may be construed to prohibit or restrict two or more municipalities in specified counties from negotiating and cooperating with respect to defining each municipality's expansion area under an annexation policy plan.

County Manager
Dustin Grabau
County Council
Spencer Park
Karl McMillan
Kendall Crittenden
Steve Farrell
Mark Nelson
Luke Searle
Erik Rowland

WASATCH COUNTY

October 22, 2024

Heber City Council and Planning Commission,

This letter is regarding a discussion on the October 22nd agenda to change the Annexation Expansion Area Map of Heber City. This annexation area, from our understanding, is to accommodate the SITLA and Christensen properties in and around Little Pole Canyon which totals approximately 4,000 acres.

These properties are currently zoned P-160 which allows one unit for every 160 acres. In this particular situation under current zoning approximately 25 units would be allowed. The properties are bordered by County developments on the west known as Greener Hills with a density of 1 unit for every 8.8 acres and Wolf Creek Ranch on the east with a density of one unit for every 160 acres. We have heard a number of different unit counts ranging from 3,700 – 5,000.

We request that this discussion be continued and only entertained after considerable thought and study is given to the impacts this proposal has on the quality of life of all the residents of the valley.

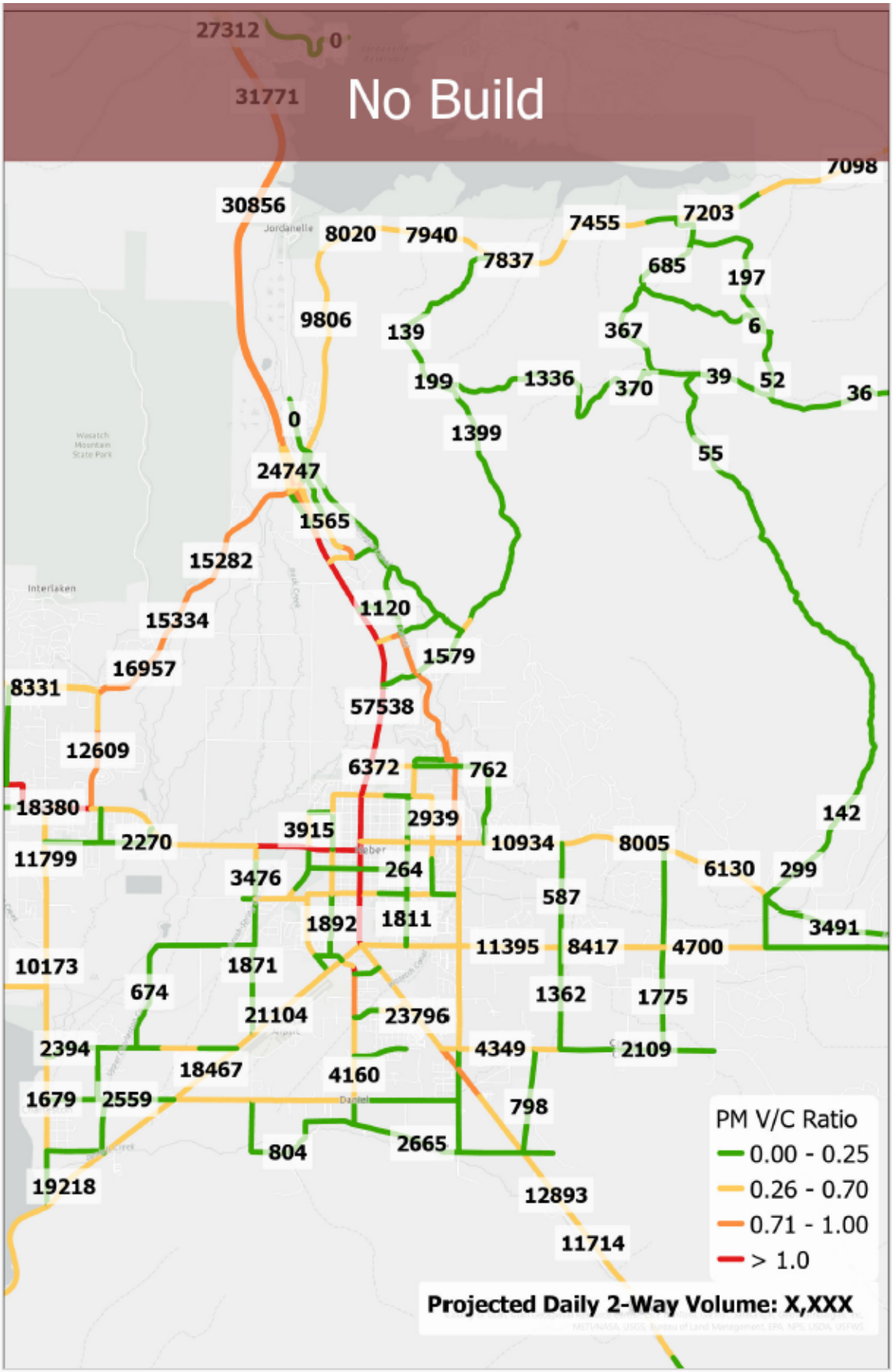
The following issues seem to have no easy solution:

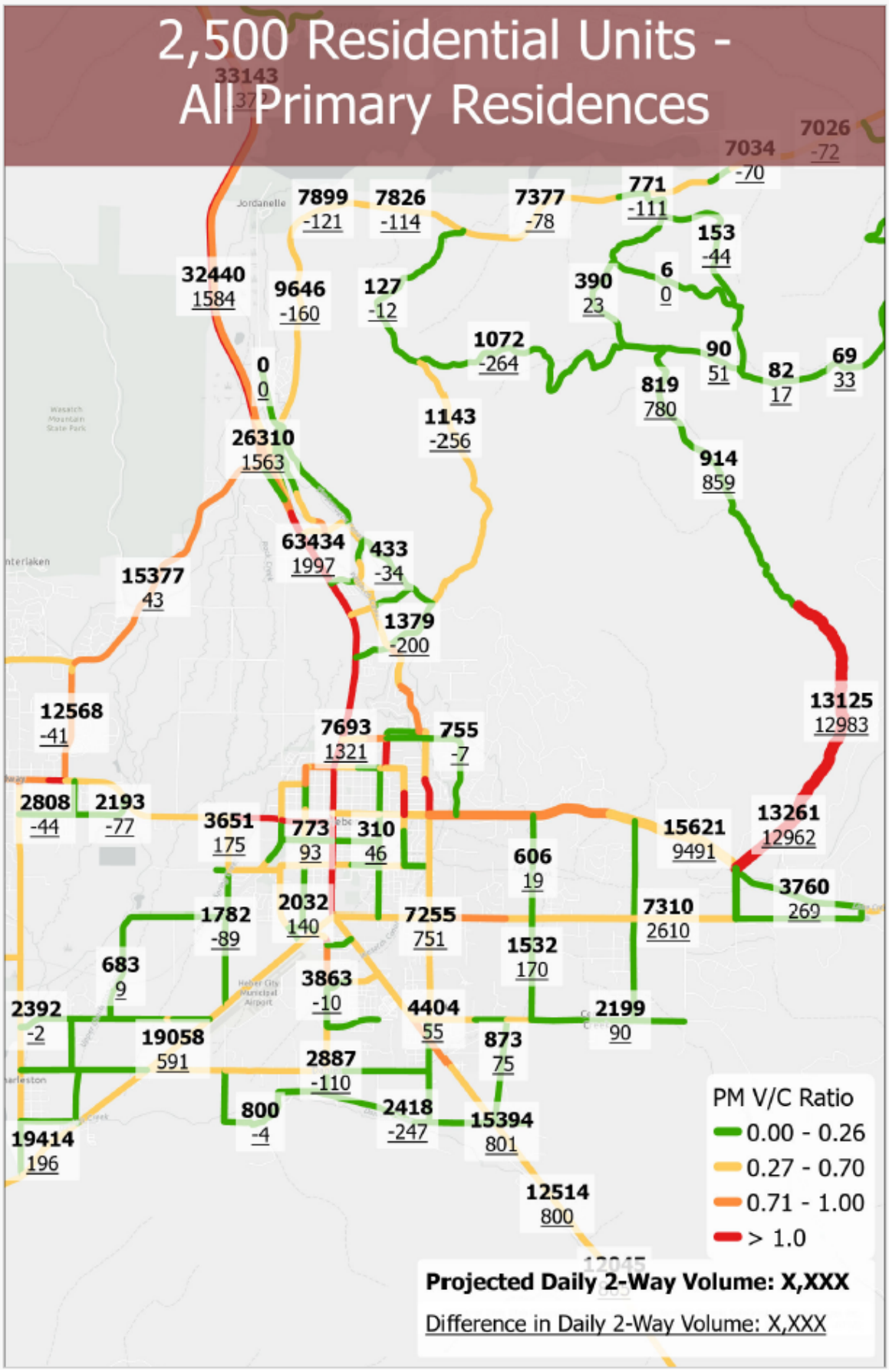
1. Traffic – A typical single-family home creates approximately 10 trips per day. Please see the attached high-level scenarios that were put together by MAG after discussion in the regional planners meeting with one of your staff members. Lake Creek is considered a collector in the County. The County never anticipated needing additional right-of-way for more than two to three lanes. There is no right-of-way to improve this road to what would be needed to maintain an acceptable Level of Service. Traffic scenarios and assumptions need to be looked at further.
2. Sewer – At this time there is no ability to provide sewer for the development.
3. Water – At this time there is no ability to provide water for the development.
4. Density – The County General Plan states that density should decrease as developments move away from the city center. This proposal creates high density 5 miles outside of the city center. Generally accepted planning principles dictate that density should be lower was you move away from services.
5. Location – Little pole is located 5 miles from the city center to the start of Little Pole Canyon with miles of unincorporated County Roads between current Heber City and the proposed annexation area.

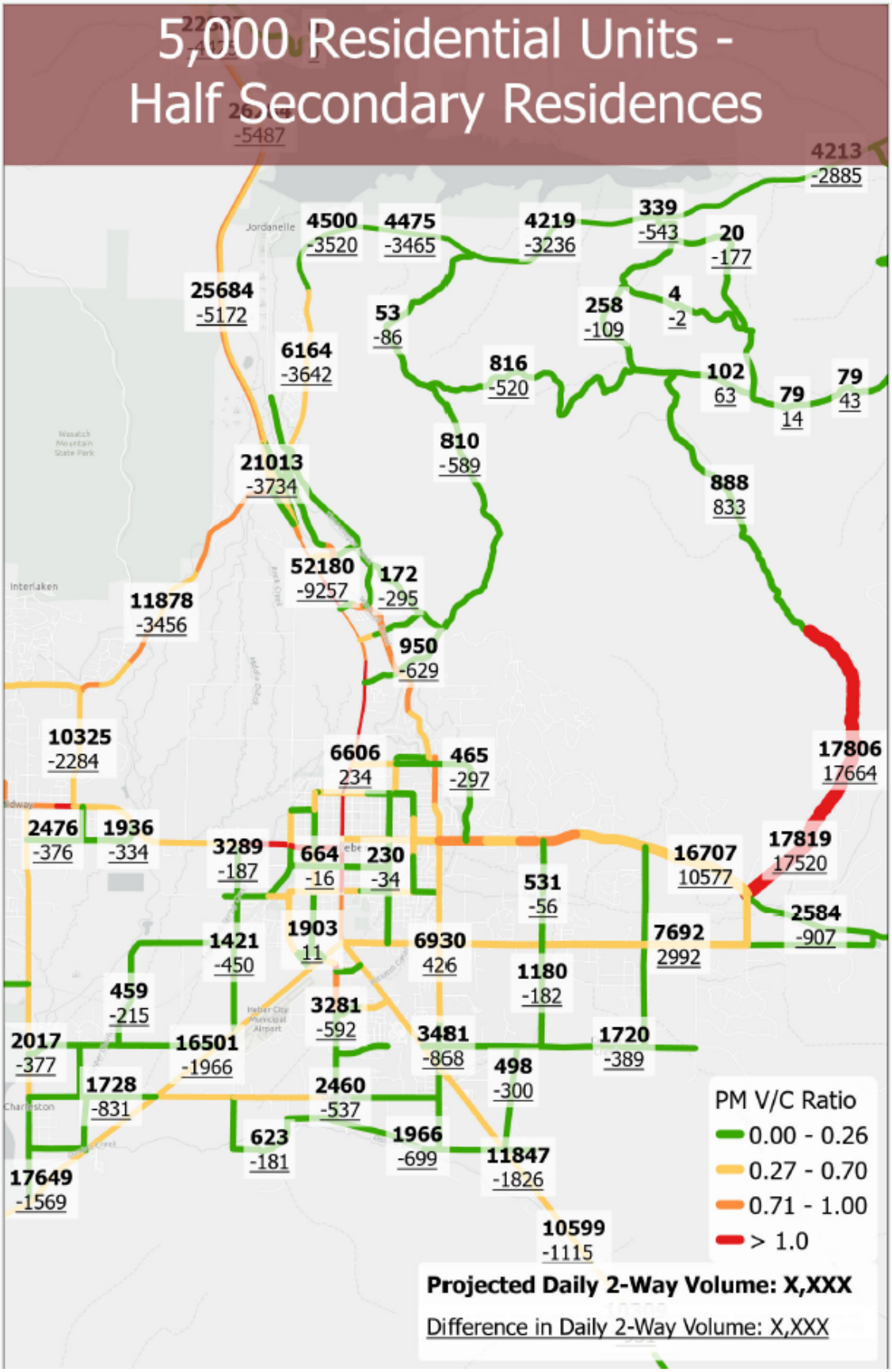
This is not an exhaustive list of issues however because of the above issues the County requests that more time be taken before decisions are made.

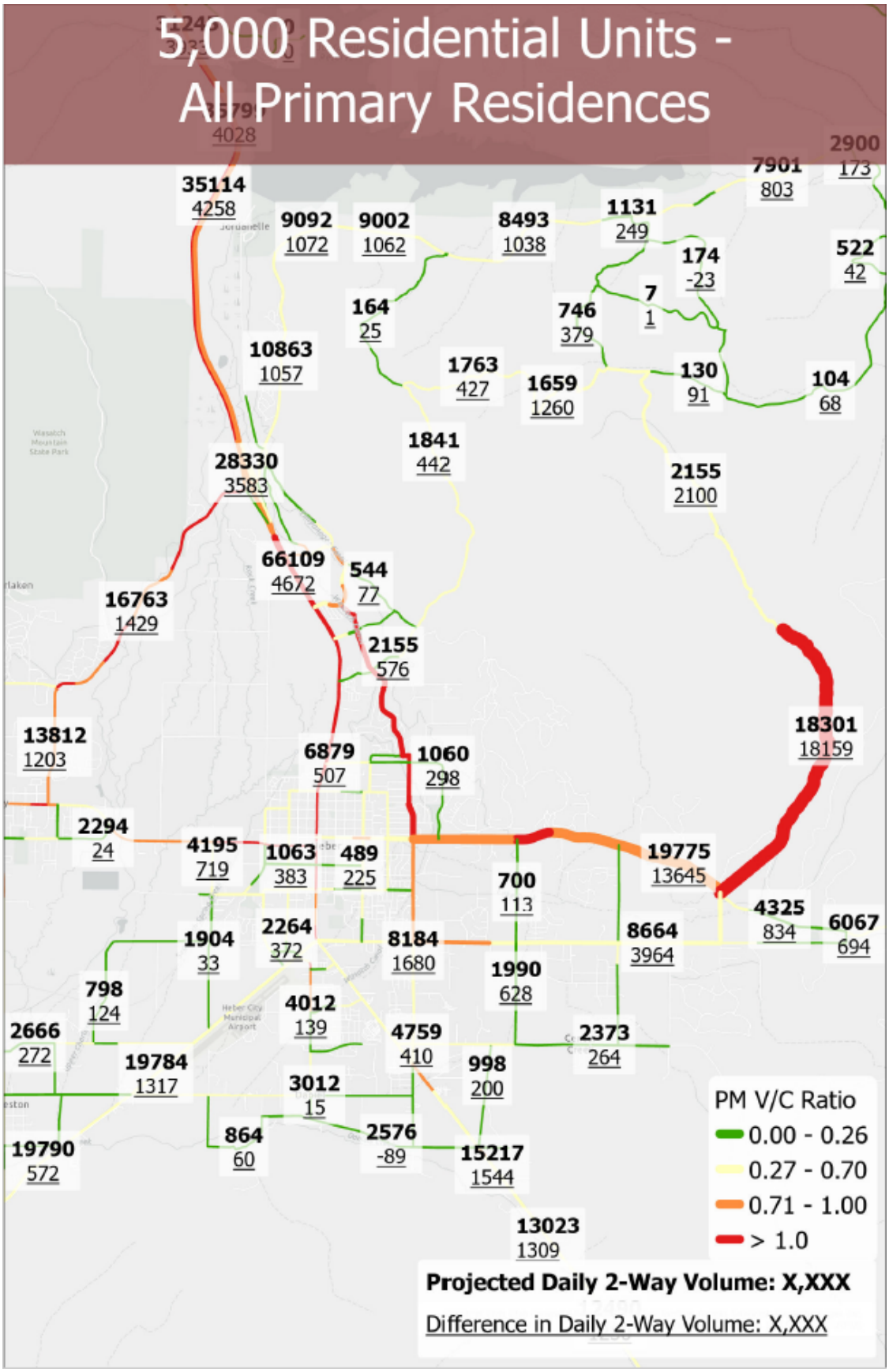
Sincerely,

Wasatch County Council


No Build
27312
0
31771
30856
8020
7940
7837
7455
7203
7098
685
197
6
9806
139
367
199
1336
370
39
52
36
0
1399
55
24747
1565
15282
1120
15334
1579
16957
8331
57538
12609
6372
762
18380
2939
142
3915
2270
10934
8005
11799
6130
299
3476
264
587
1892
1811
3491
11395
8417
4700
10173
1871
674
1362
1775
21104
23796
2394
4349
2109
18467
4160
1679
2559
798
804
2665
19218
12893
11714
PM V/C Ratio
0.00 - 0.25
0.26 - 0.70
0.71 - 1.00
> 1.0
Projected Daily 2-Way Volume: X,XXX


2,500 Residential Units -
All Primary Residences
33143
7026
-72
7034
-70
7899
-121
7826
-114
7377
-78
771
-111
153
-44
32440
1584
9646
-160
127
-12
390
23
6
0
1072
-264
90
51
82
17
69
33
0
0
819
780
1143
-256
26310
1563
914
859
63434
1997
433
-34
15377
43
1379
-200
12568
-41
7693
1321
755
-7
13125
12983
2808
-44
2193
-77
3651
175
773
93
310
46
606
19
15621
9491
13261
12962
3760
269
1782
-89
2032
140
7255
751
7310
2610
683
9
1532
170
3863
-10
2392
-2
4404
55
2199
90
19058
591
873
75
2887
-110
800
-4
2418
-247
15394
801
19414
196
12514
800
PM V/C Ratio
0.00 - 0.26
0.27 - 0.70
0.71 - 1.00
> 1.0
Projected Daily 2-Way Volume: X,XXX
Difference in Daily 2-Way Volume: X,XXX


5,000 Residential Units -
Half Secondary Residences
-5487
4213
-2885
4500
-3520
4475
-3465
4219
-3236
339
-543
20
-177
25684
-5172
53
-86
258
-109
4
-2
6164
-3642
816
-520
102
63
79
14
79
43
810
-589
21013
-3734
888
833
52180
-9257
172
-295
11878
-3456
950
-629
10325
-2284
6606
234
465
-297
17806
17664
2476
-376
1936
-334
3289
-187
664
-16
230
-34
531
-56
16707
10577
17819
17520
1903
11
6930
426
7692
2992
2584
-907
1421
-450
1180
-182
459
-215
3281
-592
3481
-868
1720
-389
2017
-377
16501
-1966
498
-300
1728
-831
2460
-537
623
-181
1966
-699
11847
-1826
17649
-1569
10599
-1115
PM V/C Ratio
0.00 - 0.26
0.27 - 0.70
0.71 - 1.00
> 1.0
Projected Daily 2-Way Volume: X,XXX
Difference in Daily 2-Way Volume: X,XXX


5,000 Residential Units -
All Primary Residences
35114
4258
9092
1072
9002
1062
8493
1038
1131
249
7901
803
2900
173
522
42
174
-23
7
1
746
379
164
25
10863
1057
1763
427
1659
1260
130
91
104
68
1841
442
28330
3583
2155
2100
66109
4672
544
77
16763
1429
2155
576
13812
1203
6879
507
1060
298
18301
18159
2294
24
4195
719
1063
383
489
225
19775
13645
700
113
4325
834
6067
694
1904
33
2264
372
8184
1680
8664
3964
1990
628
798
124
4012
139
4759
410
2373
264
2666
272
19784
1317
998
200
3012
15
19790
572
864
60
2576
-89
15217
1544
13023
1309
PM V/C Ratio
0.00 - 0.26
0.27 - 0.70
0.71 - 1.00
> 1.0
Projected Daily 2-Way Volume: X,XXX
Difference in Daily 2-Way Volume: X,XXX

January 22, 2025

Dear Heber City Elected Officials:

I write this letter on behalf of Heber Light & Power Company in light of the City's ongoing discussions around future annexations to Heber City—in particular the proposed Wasatch Highlands project. HL&P is obligated to provide electrical service to all areas annexed by the City. We ask that the City include HL&P in the planning discussions for these potential annexations throughout the process.

HL&P is obligated to serve all areas within the municipal boundaries of Heber City, including areas added to the City through annexation. An annexation by the City requires Rocky Mountain Power to transfer to HL&P the annexed portion of RMP service territory and requires that HL&P purchase any existing RMP electrical infrastructure within that annexed area. Any significant annexation by Heber City means suddenly planning for a system expansion that has previously not been in HL&P's planning scenarios.

The Wasatch Highlands annexation is proposed to include 3,000 to 5,000 new homes, spread across over almost 4,400 acres, plus a variety of amenities, municipal facilities, and commercial buildings. Such a development represents significant electrical load and HL&P's early involvement in the process is critical. Serving this project would require significant new electrical infrastructure:

- New electrical substation(s). HL&P would require at least 10 acres on which to build a new substation with the necessary transformers, breakers, and other electrical equipment necessary to increase power capacity in the area. This substation will have transmission lines entering and leaving the facility, as well as distribution lines to serve the community. Serving this new development may require additional smaller substations as well. Some of the equipment for this type of substation has lead times of 12-18 months or more.

- Transmission Lines. HL&P would need to install new transmission line, built to a 138kV standard, to connect the development with other substations in the Heber Valley. These lines will require new easements for operation and maintenance access and will require the same land use approvals as other HL&P transmission line projects within Heber City.

- Distribution Lines. Distribution lines (12.5kV) will be installed to deliver power from the substation(s) to customers. These new distribution lines will presumably all be underground.

31 S 100 W, Heber, UT 84032
435-654-1581 | 435-654-2913

- Property and easements. HL&P will need to acquire the necessary property rights to construct and operate this infrastructure. Involving HL&P early in the process will benefit the City, the developers, and HL&P customers through better-planned and more reliable infrastructure.

As a municipal-owned utility, HL&P is particularly committed to meeting the needs of Heber City and its residents. Please keep us involved in the annexation and planning process for the Wasatch Highlands project and other significant projects—even if the proposed project ends up not being annexed into the City. Doing so will allow us to better serve the community and provide electrical service to new developments, including affordable housing that is desperately needed in this valley.

We are committed to serving our existing customers and to providing reliable and cost-effective electrical service to new growth in the Heber Valley. Please let us know how we can help.

Sincerely,

HEBER LIGHT & POWER COMPANY

/s/ Jason Norlen
General Manager

cc: Matt Brower, Heber City Manager

31 S 100 W, Heber, UT 84032
435-654-1581 | 435-654-2913

Dr. James Russel:

Thank you for expressing your concerns below. You bring up valid concerns regarding utilities, infrastructure and traffic, and Heber City shares your concerns. I thought you might be interested in better understanding the process Heber City is exploring; that is, adding lands to the City's Annexation Policy Plan, and why Heber City might be interested in taking such actions.
Heber City is not currently entertaining an annexation. There has been no request for annexation, and annexations only occur upon the request of property owners. Therefore, the feasibility reports you asked for do not exist and do not come into play until or unless an annexation is proposed. Instead, Heber City is considering updating its Annexation "Policy Plan", a policy document that is required by the State of Utah to be adopted by any municipality that may desire to consider the annexation of land in the future (see Utah State Code, Section 10-2-401.5 (1)). Heber City has already adopted such document, and is considering amending that document to add the SITLA (and the Christensen) properties to the map, often referred to as the City's Expansion Area Map. It is only within the area contained within the Expansion Area Map that Heber City can consider annexation. The action being considered by Heber City currently is to expand that map, not annex the SITLA properties.
If the Expansion Area Map is updated by the City to include the SITLA lands, the City would be able to accept and entertain a future annexation request of the SITLA properties. An annexation, once submitted, can take 9 months to 2 years to complete. It is during that lengthy annexation process when the City would negotiate the terms of annexation, and would address in more detail the impacts of the annexation to the city's and county's infrastructure, and terms and conditions for annexation to mitigate those impacts, including density caps, and both on-site and off-site infrastructure improvements, such as water, sewer, roads, irrigation, power and gas, etc.
On January 28, 2025, the Planning Commission recommended Council consider approving the amendment to the Annexation Policy Plan Expansion Area Map, conditional upon the City entering into a Memorandum of Understanding (MOU) with Wasatch County. The Planning Commission is an independent body, that serves in a recommending capacity to the City Council, and can, and should, provide recommendations it sees fit, that may or may not be consistent with the City Council's current direction. To demand the Planning Commission maintain parallel thinking with the City Council at all times is dismissive of the purpose of the Planning Commission, and that is to act as an independent advisory body that makes reasoned recommendations to the Council about the general plan, land use policies and land use ordinances. Reasoned independent recommendations cannot result from the Planning Commission if it is demanded the Planning Commission always align its opinions with the current thinking of the Council.
The City Council serves as the final approving/disapproving body for the potential Annexation Policy Plan update, and Council will likely review this recommendation in the coming month. As you are aware, it is also likely Council will consider voting down the proposed amendment.
The Planning Commission provided a recommendation in support of updating the Annexation Policy Plan for the following reasons.

- **Collaboration with the County**. The Planning Commission unanimously agreed that any consideration of increasing the City's Expansion Area should be contingent upon an MOU with Wasatch County to ensure cooperative planning. An MOU forces Heber City and Wasatch County to work cooperatively, which will result in more transparency and better decisions, as each entity will hold the other accountable.

- **Avoid Incorporation of the SITLA Lands**. Without updating the Annexation Policy Plan, developers may pursue incorporation, which could lead to removal of any city and county influence over the project.
- **Preserving the Option for a Land Swap with SITLA**. Including these properties in the annexation plan ensures that a potential land swap remains a viable option.
- **Gaining Clarity on Development Plans**. Updating the Annexation Policy Plan allows the City to fully understand what the developers intend to do with the land.
- **Ensuring a Seat at the Planning and Approval Table**. Without considering annexation, the City will have no formal role in negotiations, limiting the City's ability to advocate for the interests of Heber residents.
- **Representing Heber Valley Citizens.** This approach provides the best opportunity for the city to maintain oversight and ensure residents have a voice in the future of the area.

You may not be aware that over the past 2 decades, Wasatch County approved substantial density increases on the hills directly north of Heber City, to the tune of nearly 10,000 residential units, in areas that were originally zoned for 1 acre, 5 acre, 20 acre and even 160 acre lots. Urban densities were approved by Wasatch County, in some areas approaching 24 units per acre with bonus densities and multi-story buildings. The chart below summarizes the developments approved by Wasatch County in this area. Heber City has recently entertained annexation of this area (aka North Village and Jordanelle Ridge) in order to mitigate the impacts of that development on Heber City. Heber City undeservedly gets credit for this density increase, when in reality, Wasatch County originally approved the massive density increases of these developments. Given the potential impact of the SITLA properties upon the residents of Heber City, the City deserves to be at the table and can't afford to ignore potential up-zoning by Wasatch County or the potential incorporation of the SITLA properties into a new City.
I hope this helps answer your questions as to why the Planning Commission has provided a positive recommendation for updating the Annexation Policy Plan.
Best,
Tony

SUMMARY OF DEVELOPMENTS APPROVED BY WASATCH COUNTY		
DEVELOPMENT	**RESIDENTIAL UNITS**	**ACRES**
North Village Views	208.00	33
Wingate	114.00	11.62
Commons	315.00	46.14
Benloch Ranch	2046.00	2,345
North Village Crossings	359.93	57
North Village Resort	370.00	39
Commons (Res.)	313.00	114
Sorenson	5298.00	8,942
College Downs	190.00	17
TOTALS	**9,214**	**11,605**

Begin forwarded message:

Good Evening,

Thank you for your work on the Heber City planning board to create a sustainable city. I seek clarification regarding the decision to alter the annexation policy, thereby enabling the School and Institutional Trust Lands Administration (SITLA) and the Christensen's to proceed with their development outside of their existing zone of one home per 160 acres. This move was made despite opposition from the City Council, County Council, and the majority of constituents.

We are all aware that annexing new territories significantly burdens our community's existing resources. The cost of extending services like sewer, power, fire protection, water, and roads to these new areas would not be offset by the revenue they generate. Given that our infrastructure is already at capacity, this decision seems to offer no benefit to our community.

To better understand the rationale behind this decision, I request access to the feasibility report that should accompany any such annexation agreement as per the annexation policy. The report should detail:

Economic Feasibility: Analysis of the financial implications, including cost estimates for infrastructure expansion, expected tax revenue, and the economic multiplier effects.

Infrastructure Impact: An assessment of how the current infrastructure will handle the increased load, what upgrades are necessary, and the timeline for these improvements.

Service Provision: Details on how services like water, sewer, power, and fire protection will be managed, including any agreements for developer contributions or impact fees.

Environmental Considerations: Impacts on local ecosystems, water resources, and any mitigation strategies planned.

Community Benefits: What direct or indirect benefits the community can expect, including any public amenities or spaces.

Long-term Sustainability: How the development aligns with the long-term goals of Heber City in terms of sustainability, and quality of life.

Public Engagement: Summaries of public input, how opposition was addressed, and what steps will be taken to mitigate community concerns.

Please provide this feasibility report promptly. Understanding this document is crucial for me, and presumably for many others in our community, to comprehend how the decision was reached, especially in light of the significant opposition and the clear challenges regarding our infrastructure capacity.

Thank you for your attention to this matter. I look forward to reviewing the report to gain a clearer perspective on this pivotal decision for our community.

Dr James Russel

Dear Mayor Franco and Heber City Council Members ~

This email communication is forwarded to you from the entire Heber City Planning Commission regarding the unanimous vote on **Tuesday, January 28, 2025** in positive recommendation for your consideration of modifying the current Heber City Annexation Policy Plan in order to continue to review the proposed Wasatch Highlands Project.

It is of the utmost importance that you understand the context of our positive recommendation while the Planning Commission is DEEPLY CONCERNED about the overall impacts of this development to our Heber City. Here are the aspects that we discussed and shared in our deliberations:

- **Collaboration with the County:** While not explicitly stated in our motion, the commission unanimously agrees that *any consideration of annexation expansion should be contingent on a Memorandum of Understanding (MOU) with Wasatch County to ensure cooperative planning* It should be noted that at this time of this Planning Commission action, we were not aware of the current 2019 MOU in regards to collaboration-cooperation between the City and County for any such developments.
- **Avoiding Incorporation Risks:** Without amending the annexation map, developers may pursue incorporation, which could lead to removal of any city and county influence over the project.
- **Preserving the Option for a Land Swap with SITLA:** Including these properties in the annexation plan ensures that a potential land swap remains a viable option.
- **Gaining Clarity on Development Plans:** amending the annexation map allows us to fully understand what the developers intend to do with the land.
- **Ensuring a *Seat at the Planning and Approval Table*:** Without annexation, the city would have no formal role in negotiations, limiting our ability to advocate for the interests of Heber residents.
- **Representing Heber Valley Citizens:** This approach provides the best opportunity for the city to maintain oversight and ensure residents have a voice in the future of the area.

This last aspect is the most important to every Planning Commissioner: *"Representing Heber Valley Citizens" is our ultimate responsibility in this matter*. Without adding this development land into our Annexation Policy Plan Map, we forfeit any opportunity to: (a) deny it, (b) modify it, and (c) adapt it in order to integrate with our current adjacent landowner commitments.

Here is the PUBLIC RECORD of our Motion and Vote:

Motion*: Commissioner Richards moves to forward a Positive Recommendation to the Heber City Council for the amendment to the Annexation Policy Plan Map for the Christensen, Utah School and Institutional Trust Lands Administration (SITLA), and all adjoining property owners that are affected by the Wasatch Highlands project. Richards also recommends the Heber City Council establish a strong Memorandum of Understanding (MOU) with the County, Heber Valley Special Service District, and the Twin Creeks Special Service District as they move forward in planning this property. Commissioner Josh Knight made the second.*

Discussion*: Commissioner Richards commented that he hoped it was understood he was attempting to include all of the entities related to this project to be part of all discussions, it was*

concluded that Richard's concern was made clear in the Motion. Commissioner Darek Slagowski added this is the correct course of action to represent the people by ensuring the City will be part of all discussions for the project. Commissioner Slagowski added he hoped that the City Council would vote with their conscience and not worry about the political hot button this has become but vote for what is best for the City. Chairman Jordan commented that Commissioner Robert Wilson stated it best when he said we need to watch out for future generations. Commissioner Richards added that the Staff Report stated Interlocal Agreement and MOU but he wasn't sure of the difference between the two, Commissioner Richards said MOU in his motion because the term was discussed previously. Mr. Kohler responded he wanted to leave that detail to the City Council because an Interlocal Agreement can be binding with repercussions whereas an MOU is more informal. Chairman Jordan stated there would be a distinct difference between an Interlocal Agreement and an MOU. Commissioner Richards concluded he would stay with the language of MOU in his Motion for flexibility. Chairman Jordan asked if all Commissioners understood the difference between the two, and they did. The second to the Motion remained. ***Voting Yes****: Chairman Jordan, Vice Chair Broughton, Commissioners, Richards, Knight, Slagowski, Wilson and Royall* ***Voting No: None****. The Motion Passed 7-0.*

We trust that you understand our deliberations and respectful commitments in this vote / action by the Planning Commission. Please let us know if you have any comments, questions or concerns moving forward.

Sincerely,

Phil Jordan, Chair
Tori Broughton, Vice-chair
Joshua Knight
Dave Richards
Greg Royal
Darek Slagowski
Robert Wilson

Note: Commissioners Dennis Gunn and Robert McKinley were unable to attend this Planning Commission Meeting and this action.

Heber City
Annexation Policy Plan

Adopted: September 4, 2018 by Ordinance 2018-42
Amended: July 6, 2021 by Ordinance 2021-21
Amended: August 6, 2024 by Ordinance 2024-16

Heber City Corporation

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In accordance with the provisions of 10-2-4, Utah Code Annotated, all municipalities within the State are required to adopt an Annexation Policy Plan. In this Annexation Policy Plan, cities are required to develop an expansion area map and plan for the future growth of the community for the next 20 years.

The Annexation Policy Plan is intended to guide decision making regarding future annexations. It also helps the City plan for future expansion in conjunction with neighboring political entities. Open communication between the City and other political entities, particularly the County, is a priority in the process of developing the Annexation Policy Plan.

Heber City adopted its first Annexation Policy Plan over a decade ago. In 2017, several property owners requested Heber City consider amending the expansion area map to include their properties. The process for adopting the amendment in 2017 illustrated the need for the City to dramatically overhaul its Annexation Policy Plan to incorporate informal policy into writing. Additionally, the City identified a need to update relevant portions of the General Plan that are out of date.

EXPANSION AREA MAP

As per Utah Code, Section 10-2-401.5 (4) and10-2-401.5 (3) (c), the City has considered the following six points in developing, considering, and adopting this Annexation Policy Plan as follows:

GAPS AND OVERLAPS

Heber City has attempted to avoid gaps between or overlaps with the expansion areas of other municipalities. However, overlaps do exist between Heber City and Charleston and between Heber City and Daniel Town.

Heber City has the municipal services that are necessary for industrial and retail development that both Charleston and Daniel Town lack. Heber City is desirous to attract industrial and retail development within its expansion area as designated on the General Plan and has therefore included these overlap areas within its Expansion Area Map. Additionally, these overlapping areas are near the Heber City Airport and/or are part of the HVSSD Sewer Fields, both of which Heber City has an interest in how they impact the City..

20 YEAR POPULATION PROJECTIONS

Heber City has considered population growth projections for the municipality and adjoining areas for the next 20 years. Population projections by Mountainland Association of Governments (MAG) show Heber City will grow from 15,723 persons in 2017 to 25,321 persons in 2037. The current 4.7% annual growth rate is projected to drop to 2.26% after 2021, and to 1.66% after 2031.

20 Year Population Projections

Year	Annual Growth Rate	Population	Population Change	Residential Units
2017	4.70%	15,723	706	211
2018	4.70%	16,462	739	221
2019	4.70%	17,236	774	231
2020	4.70%	18,046	810	242
2021	2.26%	18,454	408	122
2022	2.26%	18,871	417	124
2023	2.26%	19,297	426	127
2024	2.26%	19,733	436	130
2025	2.26%	20,179	446	133
2026	2.26%	20,635	456	136
2027	2.26%	21,102	466	139
2028	2.26%	21,579	477	142
2029	2.26%	22,066	488	146
2030	2.26%	22,565	499	149
2031	1.66%	22,939	375	112
2032	1.66%	23,320	381	114
2033	1.66%	23,707	387	116
2034	1.66%	24,101	394	117
2035	1.66%	24,501	400	119
2036	1.66%	24,908	407	121
2037	1.66%	25,321	413	123
	Total	**25,321**	**10,304**	**3076**

CURRENT AND PROJECTED COSTS OF INFRASTRUCTURE AND SERVICES

Heber City, the North Village Special Service District (NVSSD), the Jordanelle Special Service District (JSSD), and the Twin Creeks Special Service Districts (TCSSD) have adopted Capital Facilities Plans that consider current and projected costs of infrastructure, urban services, and public facilities necessary to facilitate full development of the area within their respective jurisdictions. These plans identify the necessary infrastructure, services, and facilities in the City's expansion area.

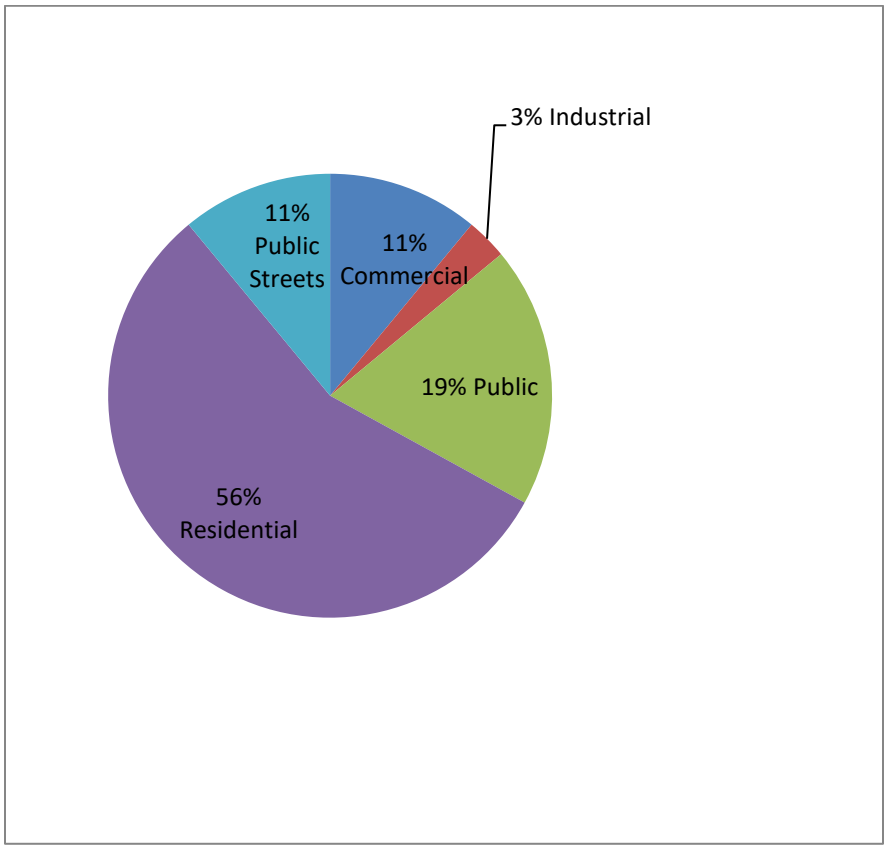
NEED FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL LAND

Heber City has considered, in conjunction with its General Plan, the need over the next 20 years for additional land suitable for residential, commercial, and industrial development. As shown in the table below, the City needs an additional 3,449 acres (5.39 square miles) to accommodate growth for the next 20 years, based on the growth rates projected for the City. This area consists of 378 acres of Commercial Land, 112 acres of Industrial Land, 645 acres of Public Land, 1936 acres of Residential Land, and 378 acres for Public Streets.

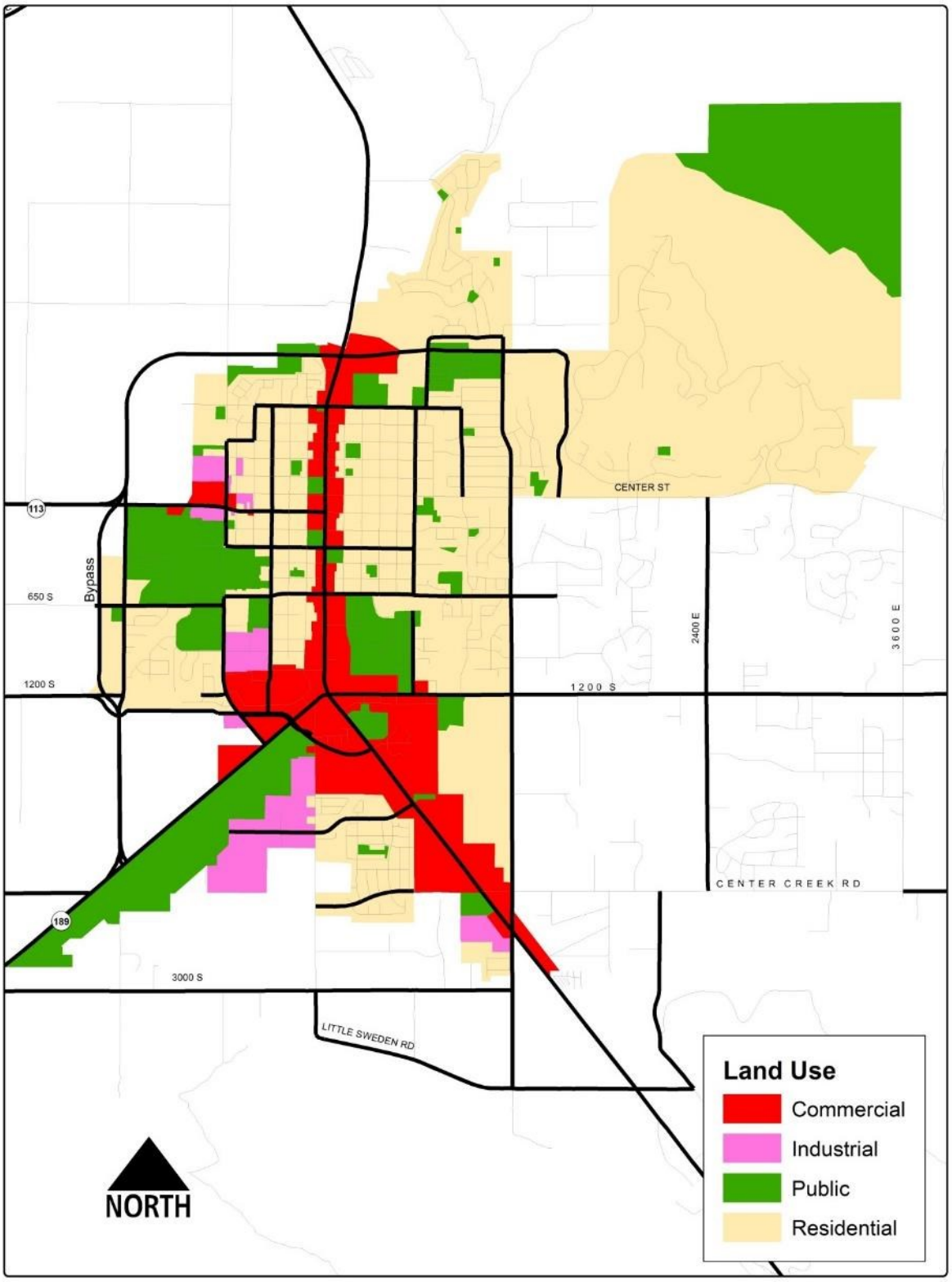
20 Year Land Needs

Land Use	2017 Area (sq. mi)	Additional 20 Year Land Need	Total 20 Year Land Need
Commercial	0.97 sq. mi. (11%)	0.59 sq. mi.	1.56 sq. mi.
Industrial	0.29 sq. mi. (3%)	0.16 sq. mi.	0.45 sq. mi.
Public	1.65 sq. mi. (19%)	1.01 sq. mi.	2.66 sq. mi.
Residential	4.95 sq. mi. (56%)	3.03 sq. mi.	7.98 sq. mi.
Public Streets	0.97 sq. mi. (11%)	0.59 sq. mi.	1.56 sq. mi.
Total	8.83 sq. mi.	5.38 sq. mi	14.21 sq. mi.

2017 Land Use Analysis



2017 Land Use Map Analysis



REASONS FOR INCLUDING SENSITIVE LANDS IN EXPANSION AREA

Heber City's expansion area includes some agricultural lands and forested areas. Recreational and wildlife management areas are not part of the City's expansion area.

The agricultural lands are located in the Twin Creeks area east of 1200 East. The City also included an agricultural area on the northwest corner of Heber City from current boundaries up to the future highway bypass because the bypass serves as the City boundary elsewhere. It is the intention of Heber City to maintain agricultural zoning or a conservation type subdivision development pattern in these areas that preserve agriculture and open space.

Forested areas are included within the City's expansion area. Wasatch County has zoning that permits higher density master planned communities in the forested area with open space requirements. Heber City envisions significant amounts of open space in that forested area with densities no more than that planned by Wasatch County. The Cooperative Wildlife Management Unit (CWMU) designation in the area will likely be dissolved, whether it is developed by Wasatch County or Heber City.

JUSTIFICATION FOR EXCLUDING AREAS FROM EXPANSION AREA WITHIN ½ MILE OF CURRENT BOUNDARY

North Fields

Consistent with the General Plan, Heber City will not annex properties in the North Fields. It is the intent of Heber City to promote the North Fields to remain as an agricultural area, and the City opposes the extension of any municipal services into the area. The Expansion Area Map utilizes the future Main Street Bypass as the future north and northwest municipal boundary adjoining the North Fields. The City will only entertain annexations of property up to and including the bypass upon condition of dedication of the requisite right of way for the bypass according to current UDOT requirements. Additionally, annexation in that area should include efforts to preserve agriculture in the North Fields, such as Transfer of Development Rights, Purchase of Development Rights, Large Lot Agricultural Zoning, and/or Conservation Developments that preserve natural and agricultural areas.

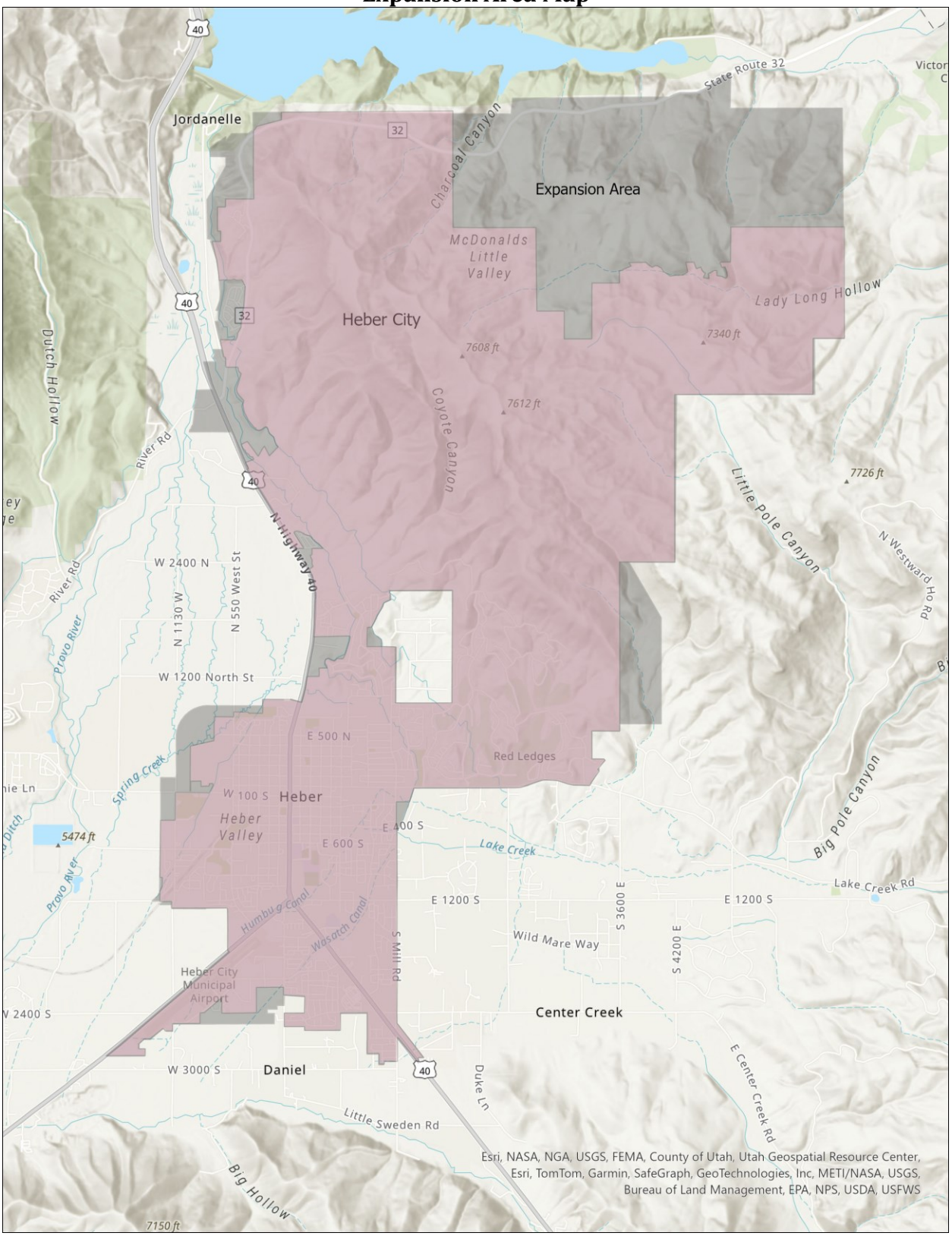
South Fields

Heber City desires a separation between itself and other municipalities with agricultural and/or open lands. The City supports keeping the land west of that canal as low density agricultural lands, either in Charleston Town or within the unincorporated area. The City opposes expansion of municipal services west of the canal.

Twin Creeks Area

The area between 1200 East 2400 East serves as a suburban transition zone to the lower agricultural densities envisioned east of 2400 East. A significant part of that area is contained within a master planned subdivision, the Crossings at Lake Creek. It is unlikely there would be any interest in annexing that area, as it is already developed. South of 1200 South, some large lot agricultural subdivisions exist that should remain as agricultural lots. East of the City's expansion area should remain as an agricultural area, decreasing in density as one travels away from the City. Greener Hills Subdivision exists to the east of Red Ledges and this area should remain at a lower density, as it has been developed. Much of the area east of 1200 East and North of 1200 South has already been developed in the unincorporated County at suburban style densities, and much of the area is therefore unlikely to be annexed into the City.

Expansion Area Map



CRITERIA FOR CONSIDERING ANNEXATIONS

The policy of the City Council is to ensure that proposals to annex territory to the City are based on compliance with Utah law, the General Plan, and the development policies as may be amended from time to time by the Council. The following criteria will be used to evaluate annexation proposals:

CONFORMANCE TO UTAH LAW AND LEGISLATIVE POLICY

1. A petition is to be submitted requesting annexation meeting the requirements established by the State Legislature.
2. The territory proposed for annexation shall be contiguous to corporate boundaries of Heber City and be a contiguous area.
3. The territory proposed for annexation will not leave or create an unincorporated island or unincorporated peninsula except as provided by Utah Code Subsection 10-2-418 (3) or unless the County and City have otherwise agreed.
4. The plat of the territory shall be drawn by a surveyor licensed to practice in the State of Utah.
5. Action to approve, approve with modifications, or deny an annexation shall be made in conformance with the provisions of Utah Code Title 10, Part 4.
6. The Council may add or delete territory from the annexation proposal to remove islands or unincorporated peninsulas created by the annexation.

CONFORMANCE TO CITY COUNCIL POLICY

The City Council establishes policies to ensure that annexations are added to the City in a systematic pattern that provides for logical expansion of City boundaries. The City Council recognizes that the Legislature from time to time may enact laws that are contrary to established practice and such laws shall supersede Council policy if conflict exists. Policies of the City Council follow:

1. The Council may accept territory proposed for annexation when the petitioned lands are located within a Township in order to protect the City's future growth options and programs.
2. Annexed territory shall be assessed to ensure that boundaries follow ownership, topography, natural features, and other readily defined boundaries.
3. To ensure efficient street and utility maintenance, the annexed area shall, whenever possible, include both sides of a street.
4. Arterial and collector roads should remain within one community for as great a distance as possible to ensure efficient street layout, control, and maintenance.
5. All major streets shall be as defined by the Heber City General Plan and Transportation Master Plan.
6. If practicable and feasible, the boundaries of an area proposed for annexation shall be drawn:

a. along the boundaries of existing local districts and special service districts for sewer, water, and other services, along the boundaries of school districts whose boundaries follow City boundaries or school districts adjacent to school districts whose boundaries follow City boundaries, and along the boundaries of other taxing entities;
b. to eliminate islands and peninsulas of territory that is not receiving municipal-type services;
c. to facilitate the consolidation of overlapping functions of local government;
d. to promote the efficient delivery of services; and
e. to encourage the equitable distribution of community resources and obligations.

7. The annexation shall be in conformance with the provisions of the Annexation Policy and any future Annexation Elements of the General Plan and the Annexation Policy Plan and Capital Facilities Plan.
8. The Council shall consider the fiscal impacts of development within the territory proposed for annexation, including both the cost of delivering services and the revenue stream generated by new development.
9. For large Annexations that exceed 500 acres, the City will analyze the need for regional facilities such as parks, trails, fire stations, police stations etc., and will consider the need to request dedications from annexation petitioners.
10. Annexation petitioners shall provide the following information:
    a. Accurate map showing the territory as proposed for annexation. The Council may direct the Administration to require additional mapping information with submittal of petitions for annexation.
    b. The Council shall require that a feasibility report be prepared by City staff when time and resources are available with costs paid by petitioners, or be submitted by a consultant of the City with costs paid by petitioner for the following:
        i. Existing and proposed population density;
        ii. Geology, geography, and topography of the area and its surroundings;
        iii. Determination of islands or peninsulas remaining in the unincorporated area;
        iv. Fiscal impact of the proposed annexation on the unincorporated area, other municipalities, other government entities, special districts, and school district;
        v. Current and five year projections of demographic and economic base for the proposed annexation area and surrounding unincorporated area;
        vi. Projected five year growth for the proposed annexation area and surrounding unincorporated area;
        vii. Current and five year projections of the cost of government services for the proposed annexation area;
        viii. Present and five year projection of revenue to be received by the City resulting from the annexation; and
        ix. Projected tax impact the annexation will have for the next five years on affected property owners.
11. The Council shall require an annexation agreement be recorded with the annexation plat, outlining specific circumstances relating to services, transportation corridors, zoning, and other issues identified by the City during the annexation process.

12. The Planning Commission shall review and provide a recommendation on each annexation petition received by the City.
13. Each Petition for Annexation shall include a concept plan. What is required in the concept plan at the time of filing the Petition for Annexation is limited to the best knowledge of the Petitioner at the time of said filing. This requirement to submit a concept plan with the petition, shall in no way limit or restrict changes, amendments, alterations or modifications to said concept plan throughout the annexation and development process as may be desired either by the Petitioner, Developer, Planning Commission or City Council.
14. Within Special Service Districts, the City could offer services or temporary services to areas that contain existing homes or in areas where it is infeasible for a Special Service District to provide sanitary water, sewer, or irrigation service. However, the City will need to carefully coordinate such effort with the district to ensure that financing for the district is not harmed by the City providing that service. It is generally understood that the primary utility provider for districts areas will be the districts.
15. Heber City prefers to not extend its services beyond its boundaries. The City Council may extend municipal services to the unincorporated areas if they find that such expansion is consistent with the overall Annexation Policy Plan and General Plan, will not present barriers for future annexation, and is acceptable to a Special Service District, if applicable. The petitioner will be charged an impact fee and be required to pay 1 1/2 times the monthly service fee. Additionally, the petitioner for services will be required to enter into an agreement to annex when the City reaches the property or to not oppose an annexation if one occurs.

CHARACTER OF THE COMMUNITY

Heber City is located about 45 miles from Salt Lake City, 20 miles from Park City and 27 miles from the Orem/Provo area. Heber is a high-amenity mountain valley community which provides an excellent location for individuals and families interested in an outdoor lifestyle surrounded by a scenic environment.

Heber City has been and will continue to be Heber Valley's center of commerce, industry, education, and government. The community has taken the initiative to provide the services for supportive land uses. In addition, the City has taken the lead in providing diversified housing to meet the needs of all people without regard for social or economic status. Housing development needs to be supported by adequate commercial and industrial development to allow a City revenue base that is broad and diverse. Future annexations should be considered from this perspective.

Agriculture and open spaces, especially on the community's periphery, are important community pursuits. Community separation that exists between communities is a tradition in Heber Valley. Heber City reserves the right to maintain agricultural land and/or open space between its self and other municipalities and to protect agricultural lands and lands containing natural hazards where it is in the best interest of the community. Annexations that can help preserve open space will be considered, as will annexations that can provide a developed setting that is consistent with community goals.

Heber City's development patterns are somewhat unique from smaller communities that are not part of a suburban environment but are separated from major population

centers. It is important that Heber City take a long-range view, at least 20 years, at its potential for expansion. At the same time, growth needs to be in areas where the City can efficiently extend municipal services and discourage leap frog and rural sprawl development which increases the costs and places a higher tax burden on the citizens.

The City has adopted a General Plan with Land Use, Open Space, Parks, and Transportation elements. This Plan identifies and defines community and neighborhood character. Heber City is a City of neighborhoods, and newly annexed areas are to be developed to either mesh with established neighborhoods or to create new neighborhoods.

It is the policy of the City to avoid development of wetlands, steep-slope, critical environmental habitat areas, shrink-swell soils or any other environmental conditions that threaten the integrity of the City infrastructure unless, in an annexation agreement, the developer can show how they will mitigate these issues in conformance with the City Ordinances, Code and Federal and State Regulations.

THE NEED FOR MUNICIPAL SERVICES IN DEVELOPED AND UNDEVELOPED UNINCORPORATED AREAS

In the past, Heber City has had limited extension of urban services in the unincorporated areas. A fundamental policy is that if someone desires urban services, they must be annexed into the City. In most of the residential areas, urban services have been extended. In the commercial area along Highway 40, there has been a limited amount of municipal services provided; however, full service needs to eventually be extended as the areas further develop and annexed.

SEWER

The valley's sewer treatment is addressed through two means. The Heber Valley Special Service District (HVSSD) provides waste water treatment to Heber City and Midway City. Those facilities are located near Midway on the west side of the Provo River. The district treats water through both mechanical means and through application of treated water to the Sewer Fields located along the north side of Highway 189.

Currently HVSSD also provides treatment for waste water from the Twin Creeks Special Service District (TCSSD), Jordanelle Special Service District (JSSD), and the North Village Special Service District (NVSSD). In the long term, these three SSD's intend to move some or all of their waste water treatment needs to the JSSD waste water treatment facility that is located along the old Highway 40 route, south of the Jordanelle Dam. This facility provides all of its treatment through mechanical means.

The County established a minimum five acre lot size many years ago for lots on septic tanks to protect the ground water in the valley. Any new lot less than five acres requires connection to a central sanitary sewer system. The City anticipates that all new growth occurring within the City will require central sewer service. Outside the City, sewer service availability and necessity depends upon location.

For the North Fields, an undeveloped area, County zoning requires 20 acres per lot. There is not a need for sanitary sewer service in that area, and there are no plans for the City or County to provide sewer in that area. Heber City has provided a handful of sewer connections to lots outside of the City that front Midway Lane in the North Fields, as the lots were within 300 feet of the sewer outfall line. There are numerous lots of record in the North Fields that are less than five acres in size that are near the City's sewer outfall line. The City should not provide additional sanitary sewer services to the North Fields area.

For the South Fields, an undeveloped area, County zoning requires 20 acre minimum lot sizes in part of the area and five acre minimum lot sizes near the western edge of the City. There is not a need for sewer services in the area. A few non-conforming lots and homes exist on lots that are smaller than five acres.

The Sewer Fields, north of the Highway 189, are currently undeveloped and the city wishes them to remain so to protect the rural environment, provide a buffer zone between the city and surrounding cities/ and support lower sewer rates. If the sewer fields are not needed in the future, the City should consider annexation of this area and provide sanitary sewer service to the area. On the south western portion of the City's annexation expansion area, there may be a need to provide sanitary sewer service.

East of Mill Road, the County has formed the Twin Creeks Special Service District to provide sanitary sewer service. The zoning in the unincorporated County in the area permits lots of 1 acre in size and larger. The area has a mixture of lot sizes and has some non-conforming lots less than five acres in size that are serviced with septic tanks and drain fields. Given availability of the Twin Creek's Special Service District (TCSSD) sewer system, Heber City will not need to provide sanitary sewer service for the area. The City is capable in servicing portions of the TCSSD. The City could offer service to areas that contain existing homes or in areas where it is infeasible for the TCSSD to provide sanitary sewer service. However, the City will need to carefully coordinate such effort with the TCSSD to ensure that financing for the district is not harmed by providing that service. It is generally understood that the primary sewer provider for this area will be the TCSSD.

North of Coyote Lane and north of existing City limits, Wasatch County has formed the North Village Special Service District (NVSSD), and Jordanelle Special Service District (JSSD) which will be capable of providing sanitary sewer service to the North Village and southern portion of the Jordanelle Planning Area. The area is planned to have densities that necessitate sanitary sewer service. Similar to the TCSSD area, the City is capable in servicing portions of the NVSSD. The City could offer services or temporary services to areas that contain existing homes or in areas where it is infeasible for the NVSSD to provide sanitary sewer service. However, the City will need to carefully coordinate such effort with the NVSSD to ensure that financing for the district is not harmed by the City providing that service. It is generally understood that the primary sanitary sewer provider for this area will be the NVSSD.

WATER

Residential Densities in the North Fields and South Fields are low enough that homes will not need access to a central water supply for culinary or fire protection uses. Most, if not all existing homes in the area are serviced with individual culinary wells. Heber City does not intend to provide, and opposes extension of culinary water into these areas.

The Sewer Fields are currently undeveloped and the city wishes them to remain so to protect the rural environment, provide a buffer zone between the city and surrounding cities, and support lower sewer rates. If the sewer fields are not needed in the future, the City should consider annexation of this area and provide central culinary water service to the area. On the south western portion of the City's annexation expansion area, there may be a more urgent need to provide water for culinary and fire protection purposes.

The TCSSD, JSSD, and NVSSD provide culinary water to the Twin Creeks area east of Mill Road, and much of the area north of Coyote Lane and the current City limits. The residential densities in the Twin Creeks area are about 1 unit per acre and generally require central culinary water. In the NVSSD and JSSD, densities exceed one unit per acre, and can approach 20 to 30 units per acre, necessitating culinary water service as well. The City is capable in servicing portions of the NVSSD, TCCSSD, and JSSD, but the overall demand and topography exceeds the City's ability to provide water service. The City could offer water services or temporary services to areas that contain existing homes or in areas where it is infeasible for the districts to provide culinary water service. However, the City will need to carefully coordinate such effort with the districts to ensure that financing for the district is not harmed by the City providing that service. It is generally understood that the primary culinary water provider for these areas will be the NVSSD, TCSSD, and the JSSD.

PRESSURIZED IRRIGATION

Pressurized irrigation is offered by Heber City, Special Service Districts, and the Central Utah Project (CUP) in many areas of the City's expansion area and unincorporated areas. In the unincorporated areas, irrigation is provided by a combination of canals, ditches and pressurized irrigation. In the North Fields, South Fields, TCSSD, NVSSD, and JVSSD, it is anticipated the CUP and/or Special Service Districts will provide irrigation water services. Heber City has its own pressurized irrigation system that relies on CUP facilities for access to irrigation water. Heber City will not offer irrigation services outside of its boundaries. As properties are annexed into the City, Heber City anticipates offering PI to properties as they develop, or having the Special Service District provide that service if the district provides that service. Consultation with districts, canal companies and the CUP will be necessary to determine how irrigation service will be provided.

POLICE AND ANIMAL SERVICES

Heber City has a Police Department that is responsible for police protection within its borders. Given Heber City's central location in the valley, Heber City Police often serve as the first responder outside of Heber City limits, particularly to higher density housing in the North Village and to commercial areas along Highway 40.

Heber City is unique in that many tourists pass through the City as they are enroute to nearby tourist destinations such as Strawberry Reservoir, Jordanelle Reservoir, Wasatch Mountain State Park, and Park City Ski Resorts. The primary transportation route from areas along the Wasatch Front to these destinations is Highway 40, which passes right through the middle of the City, and Heber City receives the tax benefits, as well as the crime and traffic that accompany the tourist visits.

Animal Services is provided by the Police Department. The Police Department also oversees various volunteer organizations such as CERT and VIPS that assist with emergency management and event management.

JUSTICE COURT.

Heber City provides a Justice Court that serves the needs for civil cases and non-felony crimes. Increases in population in and around the City, as well as increases to tourism in the valley, impact the Justice Court similar to the Police Department.

PARKS AND CEMETERY

Heber City's Parks and Cemetery Department provides maintenance services to City owned neighborhood parks, trails, cemetery, City buildings and grounds, downtown trees and planter strips, entrance features and other open spaces. Access to these facilities is open to the public, including residents of the unincorporated area. Heber City has a policy requiring at least 1.5 acres for any new City owned park. The City collects impact fees for parks and trails, based upon the Parks and Trails Component of the Heber City Capital Facilities Plan. As properties are annexed, the City should analyze the need for neighborhood parks in those areas, as well as the potential need for privately owned parks.

COMMUNITY DEVELOPMENT SERVICES

Heber City provides planning services through the staff of the Planning Department. The Building Department provides inspection to ensure compliance of all construction with the adopted International Building Code. The City's Engineer ensures compliance of new development with City Standards and Specifications.

PUBLIC WORKS

Heber City Public Works has responsibility for flood control, street, water, sewer, irrigation, storm drainage, street plowing and ditch and canal maintenance, excluding JSSD and NVSSD infrastructure.

PLANS FOR EXTENSION OF MUNICIPAL SERVICES

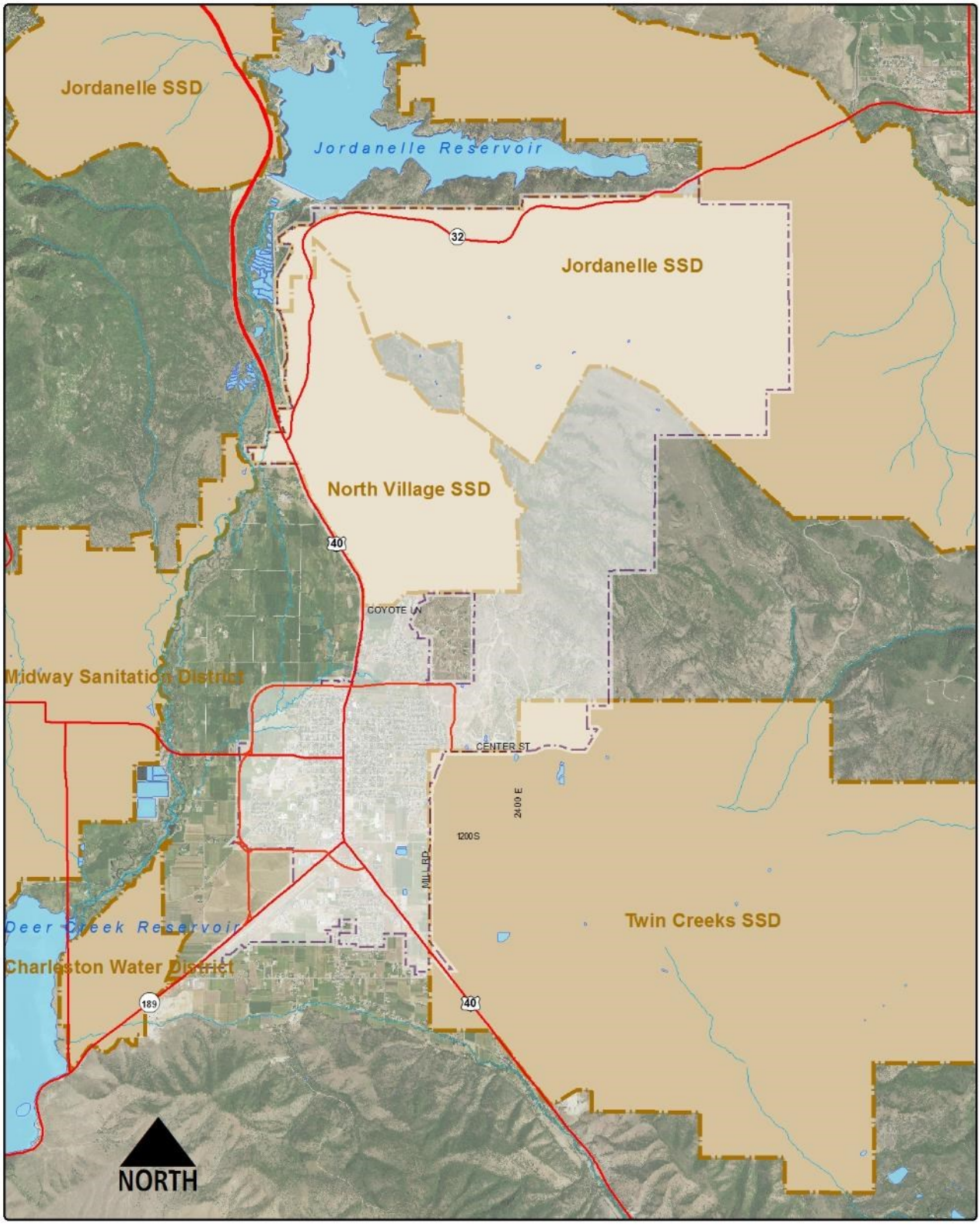
The plan for extension of municipal services is represented in the General Plan and the Capital Facilities Plan. This policy document is developed around the General Plan's Land Use Map. An important component of this extension of municipal services is the ability of the City to effectively serve these areas; therefore, development should be consistent with the General Plan, notwithstanding it may be amended from time to time. The Capital Facilities Plan is comprehensive in its analysis of utility needs, extension and financing of those facilities; therefore, a brief summary of its philosophy will suffice for the Annexation Policy Plan.

The City requires development to construct and dedicate all new public facilities needed for a new development. Heber City collects impact fees that upsize sewer, water,

irrigation, and street facilities to meet the needs of development. As a condition of annexation, developments may be required to extend streets, water and sewer, and other vital public facilities consistent with the Heber City Public Facilities Master Plan. It is the policy of Heber City to extend a high quality of municipal services delivered efficiently throughout the City, including areas of annexation. Such services may be provided directly by Heber City, through inter-local cooperative service agreements, or through creation of such special improvement districts as determined by Heber City to be in the best public interest of its citizens.

For areas located within a special service district, Heber City will rely upon the district to provide water, sewer, and irrigation services. The districts extend services when the services are needed or requested and do so in different ways. Developers often extend services, though the district has extended services as well.

Special Service District Locations



HOW MUNICIPAL SERVICES WILL BE FINANCED

Financing of services in the expansion area will be accomplished in the same manner as financing of infrastructure and services within the corporate limits. Infrastructure needed to service developed properties is installed at the expense of developers. Upon dedication to, and acceptance of the infrastructure by the City, maintenance is provided by the City with costs of operation and maintenance offset by a combination of property tax and sales tax revenues, class B and C road funds, and utility franchise fees. In addition the City will impose impact fees to offset the impact of offsite infrastructure systems needed for new development.

Heber City has adopted a Capital Facilities Plan that addresses future services for parks, trails, sewer, water, irrigation, and streets. The document identifies services that need to be addressed in order to accommodate growth areas at a level of service provided to current residents. This document serves as the basis for determining impact fee amounts and also the location and size of planned facilities such as streets, water, sewer and parks and trails. The Capital Facilities Plan is comprehensive in its analysis of utility needs and financing of those facilities; therefore, a brief summary of its philosophy will suffice for this Annexation Policy Plan.

New development is required to install the base sized facilities needed for their development. Impact fees are then used to upsize some of those facilities to accommodate new growth and development.

Upon an annexation petition, the City may require a developer to install offsite facilities as a condition of annexation. When a developer installs an offsite facility such as a road, waterline, or sewer line, the City, at the request of the developer, can put reimbursement agreements in place so that future development that benefits from those new services must pay their proportionate share back to the original developer.

The City requires all new development to provide water rights of the type and quantity as determined by the State Engineer that can be utilized for the City's culinary water supply and secondary irrigation system. Water rights are required to be conveyed to the City (or applicable Special Service District) prior to recording a subdivision plat, or prior to approval of a non-residential or multi-family residential building permit.

Another financing mechanism available to the City is the creation of a Special Improvement District or the creation of an Economic Development Area. The City should consider these options when a proposed development furthers the economic development or transportation goals of the City's General Plan, but these mechanisms should be used sparingly. A potential consideration could be an SID for 500 East between 1200 South and Highway 40, which provides a necessary transportation link in the City, but where the cooperation of several property owners is necessary to see that street constructed.

The Twin Creeks Special Service District, North Village Special Service District, and the Jordanelle Special Service District have plans for servicing their respective areas, separate from Heber City's water, irrigation, and sewer plans. The districts have adopted capital facility plans that specify necessary infrastructure to accommodate growth. The districts collect impact fees based on those plans to help pay for future infrastructure.

These impact fees are used to oversize facilities for future growth as well as pay for the extension of necessary infrastructure.

The districts have financed and extended infrastructure in various ways. In the past assessments on various properties were used to finance infrastructure. Currently the district relies more on impact fees. Developers usually install and dedicate the required infrastructure to the Special Service District, and the district can reimburse developers or put reimbursement agreements in place. Once constructed, the county Special Service Districts will operate and maintain such dedicated infrastructure. Developers can also prepay impact fees to move a planned Capital Facility Project forward sooner to accommodate a proposed development. If an area within a Special Service District is developed in the City, Heber City will need to ensure that impact fees are collected by the district prior to issuing a permit.

The Special Service Districts have limited capacities. Any development proposed within the City, within those respective districts, should closely consult with the SSDs to ensure service availability and available capacity to provide services. New developments should have a density near those planned for in the unincorporated area.

Between the three Special Service Districts, several different water rights may be used. The water rights and system is complex, and Wasatch County has established a Water Board to review water related issues for proposed developments. Wasatch County's water right process differs from Heber City's process in that the Water Board must review all developments prior to the developments receiving entitlements (see figure below). Heber City should establish a policy whereby City development located within a Special Service District should comply with established County Water Board processes. The City should consider requiring annexation petitioners to complete the first steps during the annexation process so the City can place conditions of annexation within an annexation agreement.

The Special Service Districts have differing definitions of Equivalent Residential Units (ERUs) for sewer versus water. Water right requirements vary between the various districts. Differences may exist between district and City water right and ERU definitions.

Wasatch County Water Board Process for Development

Development Path		
COUNTY	**DEVELOPER**	**DISTRICT**
	→	1. "Water Supply" Review
	→	2. Feasibility Letter (not a will serve letter)
3. Development Water Review Panel (Action Plan) Chapter 10.01	←	
4. Master Plan Chapter 16	←	
	→	5. Draft Will Serve Letter
6. Preliminary Approval	←	
	→	7. Source, Delivery, Treatment, Storage - **Development Agreement** - Applicable Fees and Associated Costs - Account Current = Proceed - Not Current = Stop
	→	8. Will Serve Letter
9. Final Approval	←	

ESTIMATE OF TAX CONSEQUENCES TO RESIDENTS BOTH CURRENTLY WITHIN THE CITY AND IN THE EXPANSION AREA

Annexing into any municipality will increase the tax liability for property owners. Table 1 below illustrates the tax implications for primary homes, secondary homes, and businesses. Current state law levies taxes on the full property value for secondary homes and non-residential land. Property taxes on primary homes are levied against 55% of the assessed value. The added annual tax for the owner of a primary home in the City valued at $300,000 would be $220.28. The added annual tax for a business in the City valued at $500,000 would be $667.50.

Property Tax Consequences (2016)

Type	Value	Unincorporated Tax Amount (1.1460%)	Incorporated Tax Amount (1.2795%)	Difference
Primary Dwelling	$300,000	$1,890.90	$2,111.18	$220.28
Business or Secondary Dwelling	$500,000	$5,730	$6,397.50	$667.50

Heber City does not intend to raise property taxes for the City as a result of annexation of any specific properties within the proposed annexation area. In considering proposed annexations, Heber City will assess the existing capacity of services, along with the additional demand for services that will be required of the City as a result of the annexation. Additional service demands from unincorporated areas will be weighed against potential revenues and other benefits that can be expected to accrue to the City as a result of the proposed annexation. The potential revenue and benefits may include 1) Property tax; 2) Sales tax; 3) Utility hookup fees; 4) Utility Franchise Fees; 5) Impact fees; and 6) exaction or related fees based on rough proportionality to city and county costs; 7) Intangible benefits that accomplish a stated goal of the General Plan or other City planning document. The City Council will weigh these factors in determining whether or not to grant a petition for annexation.

INTERESTS OF AFFECTED ENTITIES

The affected entities are municipalities, the school district, special service districts and County government. It is important that the affected entities be involved during the annexation process

The school district should coordinate their future development and facility needs consistent with the growth plans for the City. The County should have growth policies that reinforce and are complementary to the City's growth policies so that a cooperative and coordinated development within the County and City occur.

The effect of annexation on the tax base of the County will be either neutral or positive. Annexed properties will continue to pay Wasatch County property tax assessments. It is likely that the value of these properties will increase when improved by municipal services resulting in a net increase in tax revenue to Wasatch County. Wasatch County also benefits from annexations by reduced cost of service to annexed properties.

The Wasatch County School District serves the entire County and benefits from annexation by receiving additional tax revenue as property values increase. New residential development obligates the District to educate new students. New commercial and industrial development will be a windfall increase in tax revenue to the District.

Heber Light & Power (HLP) is not an affected entity, but is impacted by Heber City annexations. HLP is required to provide power service within Heber City Limits. If an annexation includes customers being served by another power provider, Utah law would require HLP to reimburse the other power provider "for the value of each facility used to serve each electric customer within the annexed area . . .[and] dedicated to provide service to the annexed area." *Utah Code Ann*. §10-2-421(2). The "value" or purchase price is based on data and costs provided to HLP by the other power provider. The annexation agreement shall provide: (1) that the parties seeking annexation shall pay HLP for its cost of acquiring the other provider's facilities required to serve the customers in the annexed area and (2) that these costs not be borne by Heber City and its residents or by HLP and its customers.

STATEMENTS MADE BY AFFECTED ENTITIES AT APRIL 27, 2017 PUBLIC MEETING

On April 27, 2017, the Heber City Planning Commission hosted a public meeting with Affected Entities to receive comments on the proposed amendment to the City's Annexation Policy Plan. Ron Phillips, Director of the Special Service Districts, submitted a letter listing the concerns of the SSDs in relation to the City's potential adoption of an amended expansion that includes portions of the SSDs, shown below.

Subsequent to that meeting, Heber City and Wasatch County discussed various issues additional concerns pertaining to services, utilities, transportation and zoning that have illustrated the need to update the plan and the General Plan.

Jordanelle

Jordanelle Special Service District
P.O. Box 519
Heber City, UT 84032
OFFICE: (435) 654-9233
FAX: (435) 657-9582

May 8, 2017

Heber City Planning Commission
Attn: Keith Rawlings, Chairman
75 North Main Street
Heber City, UT 84032

RE: Comments on the Proposed Heber City Annexation Policy Plan

Mr. Rawlings:

Thank you for the opportunity to provide comments on Heber City's proposed amendment to its Annexation Policy Plan (the "Annexation Plan"). The Wasatch County Council, acting as the Governing Board of the Jordanelle Special Service District ("JSSD"), the North Village Special Service District ("NVSSD"), and the Twin Creeks Special Service District ("TCSSD"), has asked me to submit these comments as the Annexation Plan includes land within the existing boundaries of JSSD, NVSSD, and TCSSD. JSSD, NVSSD, and TCSSD are separate legal entities, but are managed in coordination with each other, sharing costs of staff and overhead to provide greater efficiency to the public. I serve as the General Manager of the three Districts, and submit these comments on behalf of the Governing Board each of the three Districts.

As an initial matter, it is important to comment on what is ***not*** in the Annexation Plan posted for public review in advance of the April 27, 2017 Planning Commission meeting. Utah law requires that each annexation policy plan include the following, along with a map of the expansion area:

- A statement of the specific criteria that will guide future decisions on annexation petitions, addressing:
  - The character of the community;
  - The need for municipal services in undeveloped and developed unincorporated areas;
  - The municipality's plans for extension of municipal services;
  - How the services will be financed;
  - An estimate of the tax consequences to residents already within the municipal boundaries and in the expansion area;
  - The interests of all affected entities, such as special service districts; and
- A justification for excluding from the expansion areas containing urban development within ½ mile of the municipality's boundary

Wasatch County's SSD Written Concerns (page 2 of 3)

As far as the Districts can tell from documents posted for public review, the Annexation Plan consists of an old Annexation Policy Plan, dated June 1, 2006 (the "2006 Plan"), coupled with a new map (the "2017 Map"). The 2006 Plan contains only very generalized statements regarding the criteria listed above, which do not provide the Districts — or the general public — with enough information to assess the ramifications of annexation of unincorporated areas. As just one example, in addressing the tax consequences of annexation for current and future residents, the 2006 Plan simply states that: "It is anticipated that areas annexed into the City will increase in value, and the tax assessment on newly developed areas, along with impact fees, development fees, and additional revenue assessments will generate revenue to help support the new services." 2006 Plan, at p. 7. The Districts find this statement to be unhelpfully vague. If revenues from annexed areas merely "*help* support" the new services, will current residents of Heber City need to fund the balance of the cost of services? Furthermore, it is not clear why the City believes that land will automatically increase in value upon annexation into the City, especially when the land already has access to water and sewer services from the Districts. In short, the Districts do not believe the general statements in the 2006 Plan — which are now over a decade out of date — adequately address the specific criteria required by Utah law.

Moreover, the 2017 Map encompasses large swaths of additional land that were not considered by the 2006 Plan. Nothing in the 2006 Plan addresses the factors listed above with respect to the area encompassed by the 2017 Map, which contemplates annexing areas far removed from the City's existing infrastructure, and already served by infrastructure owned and operated by the Districts. For instance, NVSSD owns extensive culinary water infrastructure in the proposed annexation area, as well as extensive water rights necessary to serve those areas. The City's Annexation Plan does not even acknowledge these facts, let alone explain why it is necessary or prudent, in the City's view, to annex areas that already have access to municipal services. The District believes that the City must address the factors listed above as they apply to the new areas proposed to be included in the new expansion areas.

In addition, Utah law requires the City to consider the following:

- Population growth projections for the city and adjoining areas for the next 20 years;
- Current and projected costs of infrastructure, urban services, and public facilities necessary to facilitate full development within the city and to expand infrastructure, services, and facilities into the expansion area;
- The need for additional land over the next 20 years for additional land for residential, commercial, and industrial development;
- The reasons for including agricultural lands, forests, recreational lands, and wildlife management areas in the municipality;

Again, the Annexation Plan put forward by Heber City consists solely of the 2017 Map showing new areas eligible for annexation, coupled with the 2006 Plan. Both the 2017 Map and the 2006 Plan are completely silent as to the four factors listed above. There are no population growth projections, no projected costs of infrastructure, and no explanation why the City needs the vast amount of land encompassed by the 2017 Map.

Wasatch County's SSD Written Concerns (page 3 of 3)

Finally, Utah law requires the Planning Commission to be guided by certain factors as it develops, considers, and adopts an annexation policy plan. Specifically, if practical and feasible, the boundaries of areas proposed for annexation must be drawn:

- Along the boundaries of existing special service districts;
- To eliminate islands and peninsulas of territory that are not receiving municipal-type services;
- To facilitate the consolidation of overlapping functions of local government;
- To promote the efficient delivery of services; and
- To encourage the equitable distribution of community resources and obligations.

The Annexation Plan is again silent on all of these matters. There is no explanation as to why it is not practical or feasible to draw the annexation area along the boundaries of the three Districts, rather than swallowing up large portions of all three. There is no analysis as to how annexing the areas within the expansion area will promote efficient delivery of services. Nor is there any discussion of how the City intends to encourage the equitable distribution of community resources and obligations.

Given all these omissions, the Districts object to the adoption of the Annexation Plan in its current form. Moreover, even if the City amends the Annexation Plan to address the omissions described above, the Districts are fundamentally concerned about annexation of any land within their defined service areas. The Districts acquired water rights and designed infrastructure based on anticipated densities in unincorporated areas. If the City annexes areas within the Districts' service areas and increases allowable densities, the Districts may not have enough water to serve the new residents, and existing infrastructure may not have the required capacities.

Finally, the TCSSD specifically objects to the annexation of areas east of Mill Road and the Wasatch/Humbug Canal. As Heber City staff acknowledged at the April 27, 2017 Planning Commission meeting, there has been a "gentlemen's agreement" between the City and Wasatch County that the City would not annex that area. TCSSD requests that the City honor that agreement and remove that area from its annexation expansion area.

Sincerely,

Ron Phillips

Ron Phillips
General Manager of JSSD, NVSSD, and TCSSD

cc: Mayor Alan McDonald
Mark Anderson, City Manager

Responses to Special Service District May 8, 2017 Letter

Concern	Response
The draft Annexation Policy Plan lacks detail for the 8 points required by Utah Code, Section 10-2-401.5 (3)	The text of the draft Annexation Policy Plan has been modified to specifically address the required 8 points of Utah State Code, Section 10-2-401.5 (3) (b), and the 5 points of Utah State Code, Section 10-2-401.5 (4).
The draft Annexation Policy Plan lacks detail for the 5 points required by Utah Code, Section 10-2-401.5 (4)	
Why don't the annexation boundaries follow SSD Lines?	The map has been modified to follow JSSD and TCSSD boundaries.
The Districts are fundamentally concerned about annexation of any land within their defined service area. If the City annexes areas…and increases densities, the Districts may not have….capacities.	It is the intent of the City to establish land uses in the General Plan that have densities no more than envisioned by Wasatch County within the district areas so district capacity will not be an issue. A General Plan Amendment to the Land Use Plan will be adopted in conjunction with the Annexation Policy Plan that solidifies this commitment.
TCSSD…objects to the annexation of areas east of Mill Road and the Wasatch/Humbug Canal.	The area east of Mill Road has been removed from the expansion area map.
Utah law requires the [City] to be guided by certain factors…..the Annexation Plan is silent on all of these matters.	The Annexation Policy Plan incorporated the guidance of Utah Code, Section 10-2-403 (6) into the Annexation Policy Plan.
Why is it…necessary and prudent to annex areas that already have municipal services?	By state statute, the City as a normal course of business cannot annex properties on its own, annexations occur through petition of private property owners. The expansion area gives property owners the choice of services between Heber City or Wasatch County.

SITLA Meeting
February 5, 2025

In Attendance

Heber City	Wasatch County	SITLA	Utah State Rep
Heidi Franco Mike Johnston Yvonne Barney Matt Brower Tony Kohler	Eric Rowland Kendall Crittenden Colleen Bonner Dustin Grabau	Michelle McConkie Gregg McArthur Kyle Pasley	Mike Kohler

SITLA Property Information

- Parcel size 720 acres.
- SITLA issued an RFP to qualified developers.
- SITLA entered into an agreement with the Gardner Group.
- Gardner is the funding arm while Philo is the planning arm.
- Opened negotiations with Christensens to collaborate development.

SITLA Goals

- Monetize the land and maximize its value, with flexibility on how the land is monetized, which could include sale of the property, taking a percentage of the sale of homes and/or lots, etc. SITLA is looking to achieve a transaction that equals the fair market value of the land.
- There is no SITLA requirement for affordable housing on the property.
- SITLA hopes to achieve a density that matches surrounding density, such as that on Greener Hill. At the density of 1 unit per 5 acres, 720 acres would yield 144 units.
- SITLA does not need to develop with the Christensen properties.
- Developer has two more years to complete due diligence and must solve infrastructure issues before moving forward.
- Revenues from SITLA projects go towards a Permanent School Fund, which benefits all public schools in Utah, including those in Wasatch County.
- SITLA's authority to preempt local government land use authority can only be applied to the property owned by SITLA, not the Christensen properties.

Next Steps

It was suggested that a joint meeting between Heber City Council and Wasatch County Council be convened within the next 10 days to discuss a joint strategy for moving forward with a unified front. Following that meeting, a subsequent meeting should be held with the Gardner Group.

MEMORANDUM OF UNDERSTANDING WASATCH COUNTY AND HEBER CITY ANNEXATION ISSUES

This Memorandum of Understanding (this "MOU") is made and entered into by and between Heber City Corporation, whose address is 75 North Main Street, Heber City, Utah 84032 (the "City") and Wasatch County, whose address is 25 North Main Street, Heber City, Utah 84032 (the "County").

RECITALS

WHEREAS, the City and County desire to cooperate with each other to provide the best possible public facilities and services to residents within their respective jurisdictions; efficiently and effectively expend public money; and cooperate with respect to comprehensive long-term planning and land use development;

WHEREAS, to best service residents, County and City officials have been engaged in discussions related to numerous issues;

WHEREAS, the City and County desire to express their support for certain properties to remain unincorporated;

NOW, THEREFORE, the Parties agree as follows.

1. **Purpose and Scope.** The purpose of this MOU is express support for the following pending issues and commit to act with respect to certain pending issues that impact both Heber City and Wasatch County.

    A. **Annexation of Properties by Heber City.** Heber City's Annexation Policy Plan currently does not include properties to the North and East of the Red Ledges subdivision. Heber City has received one or more applications to amend Heber City's Annexation Policy Plan to include certain properties and/or to annex certain properties to Heber City within this area. Heber City agrees that properties to the North and East of the Red Ledges subdivision that are not currently included in Heber City's annexation are best developed under the authority of Wasatch County. However, because development of such properties could impact Heber City roads and other infrastructure, the County commits to including Heber City in any development approvals that would impact Heber City roads or other infrastructure.

WASATCH COUNTY

Wasatch County Council Chairman	Date
Attest: Wasatch County Clerk	Date
Approved as to Form: Wasatch County Attorney's Office	Date

HEBER CITY

Heber City Mayor	Date
Attest: Heber City Recorder	Date
Approved as to Form: Heber City Attorney's Office	Date

MEMORANDUM OF UNDERSTANDING
WASATCH COUNTY AND HEBER CITY
PROPERTY SALE INTENT

This Memorandum of Understanding (this "MOU") is made and entered into by and between Heber City Corporation, whose address is 75 North Main Street, Heber City, Utah 84032 (the "City") and Wasatch County, whose address is 25 North Main Street, Heber City, Utah 84032 (the "County").

RECITALS

WHEREAS, the City and County desire to cooperate with each other to provide the best possible public facilities and services to residents within their respective jurisdictions; efficiently and effectively expend public money; and cooperate with respect to comprehensive long-term planning and land use development;

WHEREAS, to best service residents, County and City officials have been engaged in discussions related to numerous issues;

WHEREAS, the City and County desire to express their support to sell two parcels from the County to the City;

NOW, THEREFORE, the Parties agree as follows.

1. **Purpose and Scope.** The purpose of this MOU is express support for the following pending issues and commit to act with respect to certain pending issues that impact both Heber City and Wasatch County.

    A. **Purchase of County Property by City**. As part of Heber City's effort to revitalize portions of downtown Heber City, Heber City has expressed a desire to purchase from the County Parcel 00-0005-0380 (the County Administrative Building Parcel) and Parcel 00-0004-9085 (the Fire Station Parcel). The County believe that cooperating with Heber City to allow Heber City to purchase the parcels at fair market value is in the best interest of residents, and the County commits to ongoing discussions with Heber City with respect to the best timing and methods for Heber City to purchase the parcels.

WASATCH COUNTY

Wasatch County Council Chairman	Date
Attest: Wasatch County Clerk	Date
Approved as to Form: Wasatch County Attorney's Office	Date

HEBER CITY

Heber City Mayor	Date
Attest: Heber City Recorder	Date
Approved as to Form: Heber City Attorney's Office	Date

Heber City Council Staff Report

MEETING DATE:	3/4/2025
SUBJECT:	Contract Award to Perco Rock Co for Construction of the Coyote Springs Park Project
RESPONSIBLE:	Russ Funk
DEPARTMENT:	Engineering
STRATEGIC RELEVANCE:	Necessary Administrative Action

SUMMARY

The purpose of this item is to seek Council approval to award a construction contract to Perco Rock Co for the Coyote Springs Park Project.

RECOMMENDATION

That the City Council authorize staff to execute a contract with the apparent low bidder Perco Rock Co for an amount of $1,705,234.20.

Based on Council Preference, if the Cove Springs Park Bridge & Trail Connection Bid Alternate of $290,626.00 is included, the award would be in the amount of $1,995,860.20.

BACKGROUND

When the VXC Annexation Agreement (and First Amendment) was negotiated, it included the requirement for the dedication of the "Coyote Park Parcel" to the City. The agreement anticipated that the City would make improvements to the park at a later date. The plan to improve Coyote Springs Park was included in the Parks and Trails Master Plan (including the Impact Fee Facilities Plan and Impact Fee Analysis) in the 2021 Update.

Heber City contracted with Sunrise Engineering in 2024 for Engineering Design and Construction Services relating to the Coyote Springs Park. The project was advertised for bid beginning on February 4, 2025 and a Public Bid Opening was held on February 24, 2025 at 3:00 pm at the Heber City Offices. Only one responsive bid was recieved.

Bidder	Base Bid Amount (Coyote Springs Park)	Alternate Bid Amount (Cove Park Bridge & Trail)
Perco Rock Co	$1,705,234.20	$290,626.00

Attached is the bid tabulation showing the bid details.

DISCUSSION

The Project included a Bid Alternate for the Cove Park Bridge and Trail Connection. This project would facilitate a trail connection between Coyote Springs Park and Cove Park, and would provide an access to the trail system on Calloway Drive. A portion of this trail connection is planned to be built by Ivory Development with Phase 7 of the Coyote Springs Subdivision in 2025. Because the trail connection requires installation of a box culvert and other improvements to the Wasatch Canal, part of the work needs to be completed either prior to April 15th, or after October 15th. The City is working with the USBR for a permit required to do the work. Depending on when the permit is approved, this work may need to be postponed until after October 15th.

The overall project is anticipated to be complete by May 26, 2025 to facilitate opening of the park to the public on Memorial Day. This timeline is weather-dependent. Additionally, the USBR approval could also play a role for the timing of the Cove Park Bridge & Trail Connection if awarded.

FISCAL IMPACT

Total Engineering design and inspection services for the project are estimated to be $103,800
The construction cost if awarded to Perco Rock Co is $1,705,234.20
Park Equipment (Playground Equipment, Pavillions, Benches, & Surfacing) is $449,796.24

The total budget for the Coyote Springs Park Project, including a 10% construction contingency, is estimated to be $2,430,000.

The FY24/25 Budget includes $2,521,000 of Impact Fee money (Fund 47 - Parks Impact Fees) for this project.

If the City Council wants to move forward with the Cove Park Bridge & Trail Connection Bid Alternate, a future Budget Amendment would be needed. It should be understood that the Cove Park Bridge & Trail Connection is not currently Impact Fee Eligible, and that unrestricted General Fund reserves would need to be used for this purpose.

CONCLUSION

Based on receiving a fair bid, and seeing that adequate budget is available for the project, Staff recommends that the Council approve the recommendation to award the contract to Perco Rock Co.

ALTERNATIVES

1. Approval for Coyote Springs Park Project
2. Approval for Coyote Springs Park Project including the Cove Park Bridge & Trail Connection
3. Approve as amended
4. Continue
5. Deny

POTENTIAL MOTIONS

Alternative 1 - Approval for Coyote Springs Park Project

I move to **approve** award of the Construction Contract for the Coyote Springs Park Improvements and authorize staff to execute a contract with Perco Rock Co in an amount of $1,705, 234.20.

Alternative 2 - Approval for Coyote Springs Park Project including the Cove Park Bridge & Trail Connection

I move to **approve** award of the Construction Contract for the Coyote Springs Park Improvements including the Cove Park Bridge & Trail Connection and authorize staff to execute a contract with Perco Rock Co in an amount of $1,995,860.20 and to bring a Budget Amendment back to the Council at a future meeting to fund the Cove Park Bridge & Trail Connection portion of the Contract.

Alternative 3 - Approve as Amended

I move to **approve** the item as amended, as follows.

Alternative 4 - Continue
I move to **continue** the item to another meeting on , with direction to the applicant and/or Staff on information and / or changes needed to render a decision, as follows:
Alternative 5 - Denial
I move to **deny** the item with the following findings.

ACCOUNTABILITY

Department: Engineering
Staff member: Russ Funk, City Engineer

EXHIBITS

1. Award Recommendation Letter
2. Bid Tabulation
3. Coyote Springs Park Exhibit
4. Playground Equipment Rendering
5. Cove Park Bridge & Trail Connection Exhibit

SUNRISE ENGINEERING
Utah County Office
1180 N. Mountain Springs Pkwy, Springville, Utah 84663 | TEL 801.704.5220 | FAX 801.523.0990

February 25, 2025

Heber City
75 North Main Street
Heber City, UT 84032

Attn: Russ Funk, P.E.
City Engineer

Subject: Heber City – Coyote Springs Park

Russ,

The bid opening for the Heber City Coyote Springs Park project was held on February 24th, 2025. The apparent low bidder was Perco Rock, Co. with a base bid amount of $1,705,234.20. After review of the submitted bid documents, it has been determined that Perco Rock has generally demonstrated compliance with the bidding documents in addition to submitting the lowest bid. The only additional information requested with the bid that Perco Rock needs to submit is Form 00310 (Schedule of Values), which could be requested prior to award.

Sunrise has worked with Perco Rock on two recent projects and can verify they are qualified to perform the scope of your project. Both Sunrise project managers stated that Perco Rock did good work, were fair, and completed the projects on time. We also reached out to references provided by Perco Rock for recent projects with similar scope and verified they have the experience to complete the project and have a reputation for being good to work with and completing projects efficiently and on time.

Sunrise Engineering, LLC hereby recommends that pending satisfactory response to any further requests for information, concurrence from the City Council, and upon submittal of the items required prior to award of contract, Heber City award the contract to Perco Rock, Co.

Sincerely,

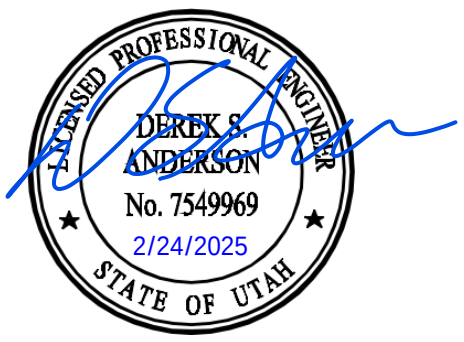
Derek S. Anderson, P.E.
Principal Engineer
danderson@sunrise-eng.com

Heber City - Coyote Springs Park

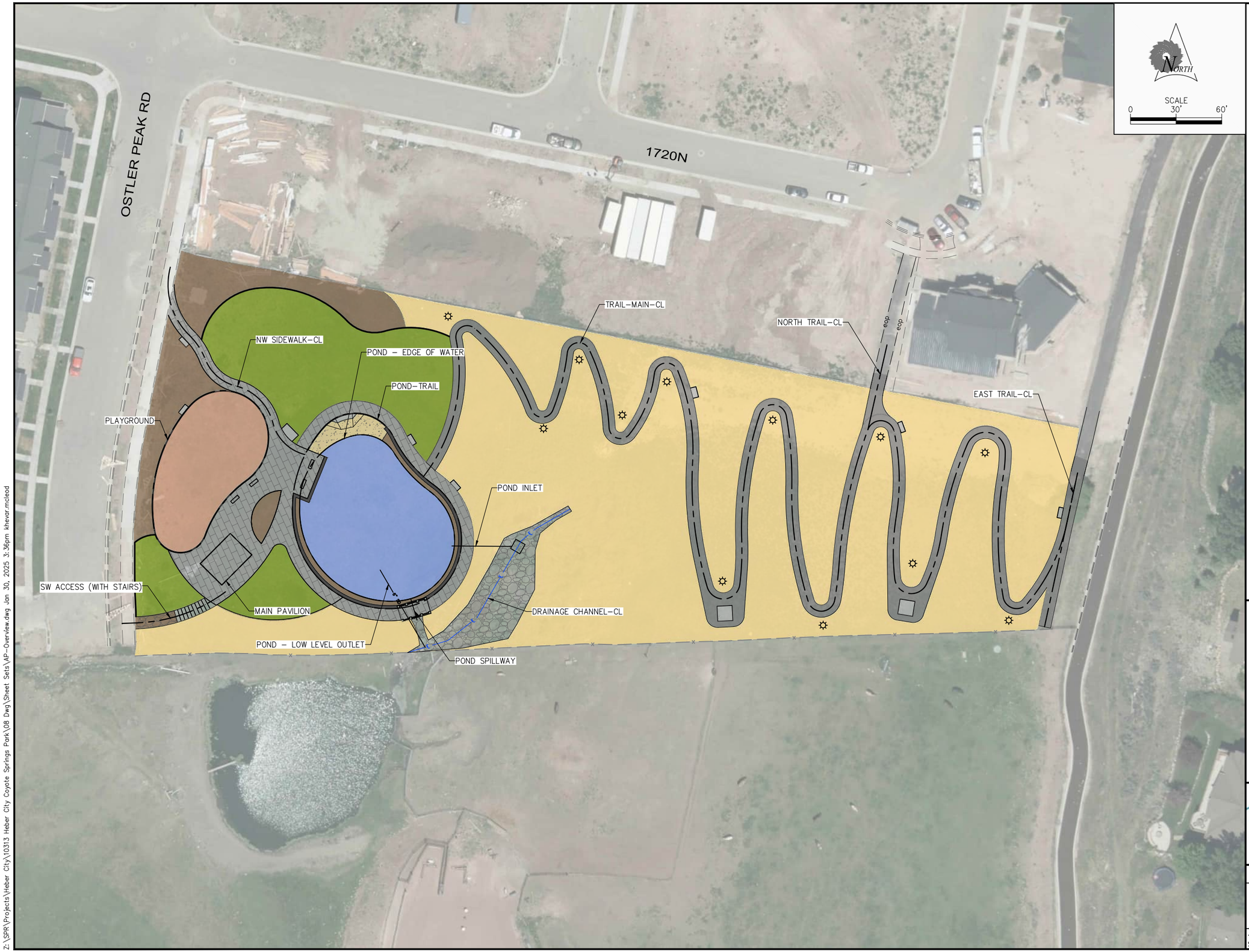
Bid Opening Date: February 24, 2025 @ 3:00 pm

BID TABULATION

Item No.	Item Description	Quantity	Unit	*Engineer's Opinion of Probable Cost*		*Perco Rock Co.*	
				Unit Price	Amount	Unit Price	Amount
BASE BID							
1	Mobilization	1	LS	$ 80,300.00	$ 80,300.00	$ 99,946.00	$ 99,946.00
2	Traffic Control	1	LS	$ 11,500.00	$ 11,500.00	$ 6,056.00	$ 6,056.00
3	SWPPP Compliance & Erosion Control	1	LS	$ 17,300.00	$ 17,300.00	$ 10,541.00	$ 10,541.00
4	Dust Control & Watering	1	LS	$ 40,300.00	$ 40,300.00	$ 9,926.00	$ 9,926.00
5	Owner-Directed Subsurface Investigation & Utility Coordination	8	HR	$ 345.00	$ 2,760.00	$ 389.00	$ 3,112.00
6	Clearing, Grubbing, & Demolition	1	LS	$ 28,800.00	$ 28,800.00	$ 19,361.00	$ 19,361.00
7	Construction Staking	1	LS	$ 13,800.00	$ 13,800.00	$ 11,664.00	$ 11,664.00
8	Materials Testing & Sampling	1	LS	$ 13,800.00	$ 13,800.00	$ 8,165.00	$ 8,165.00
9	Earthwork & Grading	1	LS	$ 115,000.00	$ 115,000.00	$ 120,942.00	$ 120,942.00
10	Dewatering	1	LS	$ 13,800.00	$ 13,800.00	$ 8,616.00	$ 8,616.00
11	Pond Excavation & Construction	1	LS	$ 28,800.00	$ 28,800.00	$ 80,117.00	$ 80,117.00
12	Concrete Retaining Wall	103	CY	$ 1,260.00	$ 129,780.00	$ 1,045.00	$ 107,635.00
13	Landscape Curb w/ Base	560	LF	$ 17.25	$ 9,660.00	$ 11.00	$ 6,160.00
14	Concrete Flatwork w/ Base	420	SF	$ 20.70	$ 8,694.00	$ 11.00	$ 4,620.00
15	Stamped Concrete Flatwork w/ Base	7,820	SF	$ 23.00	$ 179,860.00	$ 19.00	$ 148,580.00
16	8' Asphalt Trail w/ Base	13,000	SF	$ 5.75	$ 74,750.00	$ 7.30	$ 94,900.00
17	Stacked Stone Steps	9	EA	$ 1,150.00	$ 10,350.00	$ 648.00	$ 5,832.00
18	Concrete Apron	100	SF	$ 20.70	$ 2,070.00	$ 44.00	$ 4,400.00
19	Beach Curb	70	LF	$ 17.25	$ 1,207.50	$ 30.00	$ 2,100.00
20	Beach Ramp	200	SF	$ 20.70	$ 4,140.00	$ 16.00	$ 3,200.00
21	Riprap Swale	1,900	LF	$ 4.60	$ 8,740.00	$ 18.00	$ 34,200.00
22	Trail Lighting	12	EA	$ 1,150.00	$ 13,800.00	$ 12,194.00	$ 146,328.00
23	Install Owner Furnished Equipment	1	LS	$ 94,300.00	$ 94,300.00	$ 86,460.00	$ 86,460.00
24	Install Owner Furnished Park Shelters & Tables	1	LS	$ 34,500.00	$ 34,500.00	$ 70,509.00	$ 70,509.00
25	Install Owner Furnished Trash Can	5	EA	$ 580.00	$ 2,900.00	$ 963.00	$ 4,815.00
26	Install Owner Furnished Park Bench	11	EA	$ 580.00	$ 6,380.00	$ 1,083.00	$ 11,913.00
27	Install Owner Furnished Playground Surfacing	5,310	SF	$ 11.50	$ 61,065.00	$ 7.00	$ 37,170.00
28	Drinking Fountain w/ Sump	1	LS	$ 11,500.00	$ 11,500.00	$ 9,546.00	$ 9,546.00
29	EasyPro Sentinel 1/4 HP Pond Aerator System w/ Weighted Airline & Diffusers	1	LS	$ 5,800.00	$ 5,800.00	$ 7,574.00	$ 7,574.00
30	Install Split-Rail Fence Post	4	EA	$ 173.00	$ 692.00	$ 389.00	$ 1,556.00
31	6' Bufftech Privacy Fence (Sherwood) - Match Exist. Adjacent Fence	605	LF	$ 92.00	$ 55,660.00	$ 130.00	$ 78,650.00
32	Electrical	1	LS	$ 34,500.00	$ 34,500.00	$ 36,288.00	$ 36,288.00
33	Brown Playground Sand via Staker Parson - 18" Depth	30	CY	$ 184.00	$ 5,520.00	$ 175.00	$ 5,250.00
34	Stone Dust	214	SF	$ 5.20	$ 1,112.80	$ 19.00	$ 4,066.00
35	Landscape/Planting - Fine Grading and Soil Prep	15,730	SF	$ 0.30	$ 4,719.00	$ 0.30	$ 4,719.00
36	4" Depth Planting Soil Mix - for Turf Areas	265	CY	$ 63.00	$ 16,695.00	$ 58.00	$ 15,370.00
37	Nephi Crushed Stone Mulch 1 1/2"	7,300	SF	$ 2.85	$ 20,805.00	$ 4.00	$ 29,200.00
38	2" Calp. Deciduous Trees	53	EA	$ 630.00	$ 33,390.00	$ 600.00	$ 31,800.00
39	8-10' Tall Evergreen Trees	22	EA	$ 750.00	$ 16,500.00	$ 840.00	$ 18,480.00
40	5 Gal Shrubs	164	EA	$ 58.00	$ 9,512.00	$ 90.00	$ 14,760.00
41	1 Gal Wetland Plants	116	EA	$ 29.00	$ 3,364.00	$ 30.00	$ 3,480.00
42	Turf Grass Sod/Lawn	15,730	SF	$ 1.45	$ 22,808.50	$ 0.60	$ 9,438.00
43	Hydroseed	54,211	SF	$ 0.40	$ 21,684.40	$ 0.20	$ 10,842.20
44	Metal Edging	225	LF	$ 23.00	$ 5,175.00	$ 10.00	$ 2,250.00
45	Bridge-Like-Element 11'x20'	1	LS	$ 57,500.00	$ 57,500.00	$ 14,848.00	$ 14,848.00
46	Metal Stair Railing	50	LF	$ 144.00	$ 7,200.00	$ 143.00	$ 7,150.00
47	Landscape Boulders - Mixture of 3'-5'	173	EA	$ 400.00	$ 69,200.00	$ 339.00	$ 58,647.00
48	Irrigation Sod/Lawn Areas	15,730	SF	$ 2.60	$ 40,898.00	$ 1.60	$ 25,168.00
49	Irrigation Planting Beds/Trees	1	LS	$ 15,000.00	$ 15,000.00	$ 90,720.00	$ 90,720.00
50	Irrigation POC (Back flow, master valve, flow sensor)	1	LS	$ 17,300.00	$ 17,300.00	$ 12,960.00	$ 12,960.00
51	Irrigation Controller	1	LS	$ 11,500.00	$ 11,500.00	$ 12,960.00	$ 12,960.00
52	Raise/Lower & Collar Manhole	1	EA	$ 1,500.00	$ 1,500.00	$ 1,890.00	$ 1,890.00
53	Pond Inlet Pipe	50	LF	$ 104.00	$ 5,200.00	$ 79.00	$ 3,950.00
54	Pond Spillway - 12" RCP Pipe	12	LF	$ 518.00	$ 6,216.00	$ 154.00	$ 1,848.00
55	Pond Low Level Outlet Pipe (6")	60	LF	$ 103.00	$ 6,180.00	$ 67.00	$ 4,020.00
56	6" Gate Valve	1	EA	$ 3,500.00	$ 3,500.00	$ 2,557.00	$ 2,557.00
57	Diversion Box	1	EA	$ 9,200.00	$ 9,200.00	$ 4,228.00	$ 4,228.00
58	Drainage Channel	3,000	SF	$ 46.00	$ 138,000.00	$ 5.00	$ 15,000.00
59	4" HDPE Field Drain Pipe	100	LF	$ 25.00	$ 2,500.00	$ 47.00	$ 4,700.00
60	4" Field Drain Inlet	3	EA	$ 600.00	$ 1,800.00	$ 313.00	$ 939.00
61	Flowable Fill	20	CY	$ 345.00	$ 6,900.00	$ 324.00	$ 6,480.00
62	Water Service Connection	1	LS	$ 5,800.00	$ 5,800.00	$ 6,632.00	$ 6,632.00
				TOTAL - BASE BID	**$ 1,683,188.20**	**TOTAL - BASE BID**	**$ 1,705,234.20**
BID ALTERNATE #1 - COVE PARK TRAIL TIE-IN							
63	Mobilization	1	LS	$ 15,400.00	$ 15,400.00	$ 34,174.00	$ 34,174.00
64	Traffic Control	1	LS	$ 2,400.00	$ 2,400.00	$ 2,871.00	$ 2,871.00
65	SWPPP Compliance & Erosion Control	1	LS	$ 6,000.00	$ 6,000.00	$ 6,739.00	$ 6,739.00
66	Dust Control & Watering	1	LS	$ 2,400.00	$ 2,400.00	$ 4,056.00	$ 4,056.00
67	Owner-Directed Subsurface Investigation & Utility Coordination	4	HR	$ 345.00	$ 1,380.00	$ 389.00	$ 1,556.00
68	Clearing, Grubbing, & Demolition	1	LS	$ 6,000.00	$ 6,000.00	$ 13,844.00	$ 13,844.00
69	Construction Staking	1	LS	$ 2,400.00	$ 2,400.00	$ 3,888.00	$ 3,888.00
70	Materials Testing & Sampling	1	LS	$ 2,400.00	$ 2,400.00	$ 5,832.00	$ 5,832.00
71	Earthwork & Grading	1	LS	$ 30,000.00	$ 30,000.00	$ 10,393.00	$ 10,393.00
72	10' Asphalt Trail w/ Base	3,200	SF	$ 6.00	$ 19,200.00	$ 7.60	$ 24,320.00
73	Concrete Box Culvert Structure	1	LS	$ 90,000.00	$ 90,000.00	$ 40,606.00	$ 40,606.00
74	Concrete Inlet Structure	1	LS	$ 54,000.00	$ 54,000.00	$ 59,229.00	$ 59,229.00
75	Handrail	300	LF	$ 150.00	$ 45,000.00	$ 156.00	$ 46,800.00
76	Guardrail	24	LF	$ 150.00	$ 3,600.00	$ 156.00	$ 3,744.00
77	Remove Existing Storm Drain Manhole	1	LS	$ 4,800.00	$ 4,800.00	$ 2,232.00	$ 2,232.00
78	Remove Existing Grated Storm Drain Inlet	1	LS	$ 4,800.00	$ 4,800.00	$ 1,488.00	$ 1,488.00
79	Remove Existing Storm Drain Pipe	1	LS	$ 1,800.00	$ 1,800.00	$ 1,160.00	$ 1,160.00
80	60" Manhole	2	EA	$ 12,000.00	$ 24,000.00	$ 9,002.00	$ 18,004.00
81	24" HDPE Pipe	30	LF	$ 180.00	$ 5,400.00	$ 185.00	$ 5,550.00
82	Riprap Swale	230	LF	$ 8.50	$ 1,955.00	$ 18.00	$ 4,140.00
				TOTAL - BID ALT. #1	**$ 322,935.00**	**TOTAL - BID ALT. #1**	**$ 290,626.00**



Derek S. Anderson, P.E.



GENERAL NOTES

1. ELEVATIONS AND PROFILES GIVEN IN THE ALIGNMENT AND PROFILE SHEETS ARE TO FINISHED SURFACE ELEVATIONS. CONTRACTOR SHALL MAKE APPROPRIATE MEASUREMENTS AND CALCULATIONS OF SUBGRADE ELEMENTS AND PLAN IN THEIR BID TO COMPLETE THE WORK ACCORDINGLY.
2. CONTRACTOR SHALL ENSURE THAT LOCAL, STATE, AND FEDERAL ADA REQUIREMENTS ARE MET ON THE SITE.
3. VARY GRADE TO MATCH ADJACENT PROPOSED FEATURES.

PROFESSIONAL ENGINEER
30 Jan 2025
No. 13511625
TAYLOR C. TORGERSEN
STATE OF UTAH

HEBER CITY

SUNRISE ENGINEERING
1180 N MOUNTAIN SPRINGS PKWY
SPRINGVILLE, UT 84663
TEL 801.704.5220 | sunrise-eng.com

HEBER CITY
COYOTE SPRINGS PARK
ALIGNMENT & PROFILE OVERVIEW

SE NO.	DESIGNED	DRAWN	CHECKED	SHEET NO.	
S10313	KRM	KRM	TCT	15 of 60	APIDX

JANUARY 2025

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GENERAL NOTES

1. CONTRACTOR SHALL SEQUENCE CONSTRUCTION AND CHECK UTILITY ELEVATIONS SO AS TO ENSURE VERTICAL CLEARANCE OF CROSSING UTILITIES.
2. CONTRACTOR SHALL ENSURE THAT ALL FLOWLINES, TO DRAINAGE SYSTEM OR OTHERWISE, FUNCTION AS INTENDED. WHERE NECESSARY, ROUTE FLOWLINES AROUND OBSTRUCTIONS.
3. CONTRACTOR SHALL RAISE OR LOWER ALL EXISTING IRRIGATION, ELECTRICAL, OR OTHER UTILITY BOXES AS NEEDED TO MATCH ADJUSTED GRADES.

STORM DRAIN PLAN NOTES

(1) 60" MANHOLE PER STD DWG SEWER-3

(2) 24" HDPE PIPE

LEGEND

RIPRAP SWALE PER C/D1

FOR REVIEW ONLY
NOT
FOR CONSTRUCTION

HEBER CITY

SUNRISE ENGINEERING
1180 N MOUNTAIN SPRINGS PKWY
SPRINGVILLE, UT 84663
TEL 801.704.5220 | sunrise-eng.com

HEBER CITY
COVE PARK TRAIL
UTILITIES

SE NO.	DESIGNED	DRAWN	CHECKED	SHEET NO.	
S10313	KRM	KRM	TCT	19 of 28	UTIL1

DECEMBER 2024

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City Council Staff Report

MEETING DATE:	**03/04/25 Council Meeting @ 30:00 mins**
SUBJECT:	*Sunset Ridge Amphitheater* Future Operations / Fundraising / Design 2025
RESPONSIBLE:	Matt Brower
DEPARTMENT:	Administration – City Manager
STRATEGIC RELEVANCE:	Future Community Activation via Entertainment/Arts Meeting #2 of 2– **Action Requested**

SUMMARY

This agenda item for the COUNCIL MEETING is the second of two presentations by Heber Valley Arts Center (first one occurred on February 4, 2025) addressing the City's role and responsibilities as Venue Owner of the future Jordanelle Ridge *'Sunset Ridge'* Amphitheater. This presentation continues the discussion of operations / programming and the how the scale of the amphitheater's facilities design and construction impacts the projected annual outcomes. Both Jordanelle Ridge Development (JRD) and Heber Valley Arts Center (HVAC) seek Council / Mayor consideration and direction of two (2) Actions Requested:

1) **Action:** Advise and consent to City Staff and JRD to propose an amendment the current PID Agreement between Heber City Corporation and JRD to reallocate agreed public area capital improvement funds from Villages 1, 3, 4, 5 over to Village 2 specifically in support of the proposed *Enhanced Amphitheater* facilities,
2) **Action:** Advise and consent to JRD to move forward with the Village 2 Amphitheater Project Development by (a) engaging design architectural services through a competitive procurement process so that a general constructor contract bidding could occur as soon as fall/winter 2025 and (b) engaging Heber Valley Arts Center as Project Consultant for capital fundraising, development of venue operations planning and overall project design management for a mutually agreed term to complete those tasks.

RECOMMENDATION

Staff recommends that the Council / Mayor proceed with these two action items giving your legislative intent and direction for the development of this project to then ultimately move forward with the Amphitheater construction as part of the completion of the JRD Arts District

---

BACKGROUND

In compliance to the 2023/24 Ground Lease and Parking Agreement with Wasatch Arts Council and Heber City Corporation for the new Heber Valley Arts Center Project, the Arts Center is to present their proposal for the operations / programming of the new Heber City *Sunset Ridge Amphitheater*. Further, as Jordanelle Ridge Development has completed its architectural master planning of the new Village 2 Arts District, there are several options for the Amphitheater design and construction that impact the overall project capital cost, therefore the use of PID funds and the venue operations/programming potential annual outcomes.

DISCUSSION

The Council / Mayor should consider options within the JRD PID Agreement to reallocate investments in public-use facilities to Village 2 to realize the optimum potential public benefits of general residential quality of life experiencing local and regional arts and culture / live entertainment events. Further, these actions will yield more in-depth analysis of architectural, operational, and economic development options while securing actual cost estimates for the entire project.

FISCAL IMPACT

Both Actions for Advise and consent to JRD do not increase or reduce any financial commitments of Heber City nor JRD as these actions are implementing and potentially reallocating previously anticipated investments.

CONCLUSION

As the Jordanelle Ridge Development project is proceeding with their design and construction of the new JRD Arts District and this *Sunset Ridge* Amphitheater, it is time to consider the potential design options, move forward to obtain competitive construction cost bids, manage available funding resources, seek opportunities for fundraising additional construction budget and the plan operations / programming of this new publicly owned venue.

ALTERNATIVES

1. Approve as proposed
2. Approve as amended
3. Continue
4. Deny

POTENTIAL MOTIONS

Staff Recommended Option – Approval

I move to **approve** the item as presented, with the findings and conditions as presented in the conclusion above.

Alternative 2 – Continuance

I move to **continue** the item to another meeting on [DATE], with direction to the applicant and/or Staff on information and / or changes needed to render a decision, as follows:

_____
_____
_____
_____
_____
_____

Alternative 3 – DENIAL

I move to **deny** the item with the following findings.

_____
_____
_____
_____
_____
_____

ACCOUNTABILITY

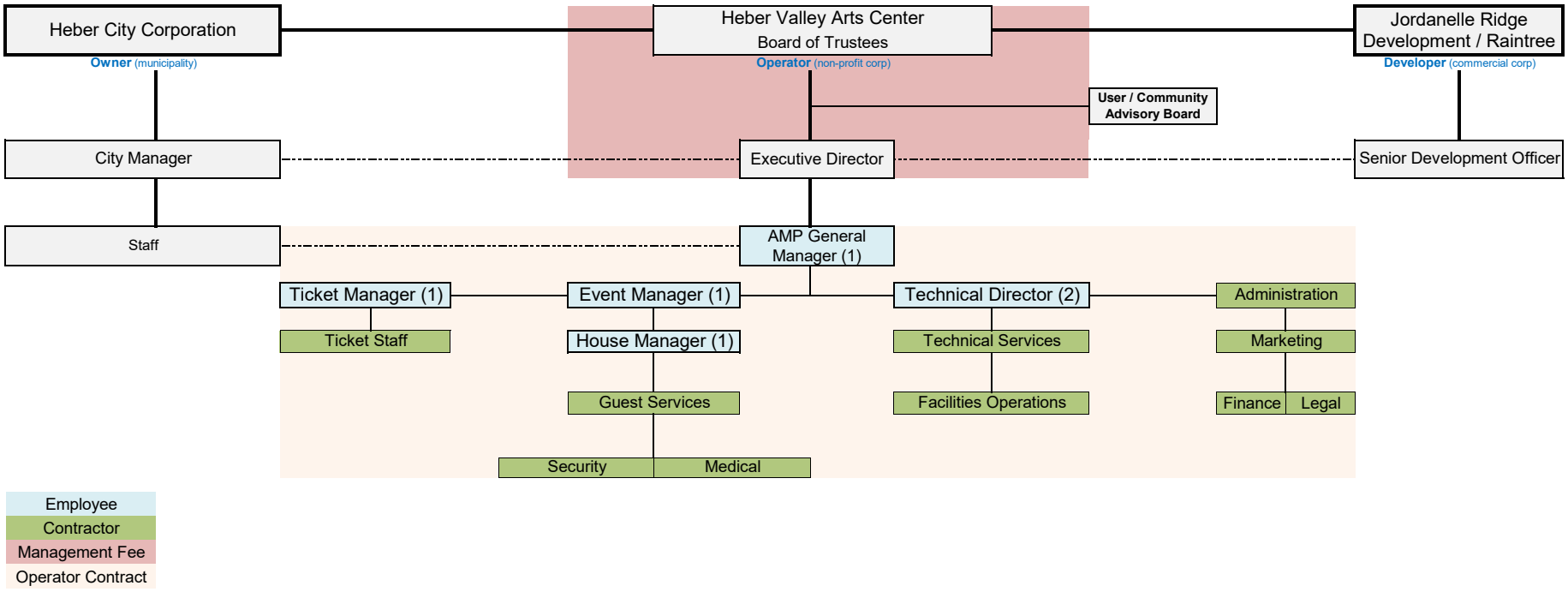
Department: Administration – City Manager
Staff Member: Matt Brower

EXHIBITS

#1 – Proposed JRD *'Sunset Ridge'* Amphitheater Summary 10 Year Operations Pro-forma by Heber Valley Arts Center – **BASE v. ENHANCED COMPARISON Version 03 04 25**
#2 – Proposed JRD *'Sunset Ridge'* Amphitheater Operations Management Organization Chart – **Staffing Plan**
#3 – 2022 State of Utah Division of Facilities Construction Management – **Architectural Services Fees** (highlights for applicable fees to the JRD *'Sunset Ridge'* Amphitheater Project

Heber City Sunset Ridge Amphitheater

Proposed Operations ORG Chart



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DIVISION OF FACILITIES AND CONSTRUCTION MANAGEMENT
ARCHITECTURAL/ENGINEER FEES

EFFECTIVE DATE: February 3, 2022

I. Purpose

To provide a standard for a reasonable A/E fee structure on State of Utah projects.

II. Background

The State Procurement Code requires that professional services for architects, engineers and surveyors be selected by one of the process in the Procurement Code, but that the initial selection is based on qualifications and not the fee. Once the selection is made by a lawful process, the fee can be considered and negotiated. However, a standard is required to ensure that reasonable and consistent fees are paid for awarded work, and therefore, this document shall serve as the definitive guide for determining such fees. This policy updates earlier standards with additional clarity.

III. Policy

DFCM Project Managers shall employ this standard for the negotiation of Architectural/Engineering/HPBS Consultant Fees. Any exception to this standard can only be obtained by written approval of the DFCM director or the director's designee.

IV. Procedures

A. The fee should be established with the individual project size and complexities in mind.
B. An individual project may have complexities due to the inherent nature of the project type, due to complexity of consultants' services required and/or due to complexities of the scope of the project.
C. The fee schedules represent the maximum allowable fee for basic services on a typical project type. Complexity of consultant is negotiated on a case-by-case basis and requires a separate fee proposal for each consultant. Complexity of scope is a reasonable fee negotiated on a case-by-case basis.
D. Basic Services include the design work that is customary on a typical project to take an established building program, site, and budget, and then develop the architectural design, engineer the building systems, produce construction documents, and perform construction administration for a single phase project. Basic Services include the design services customary on every project such as architectural, structural, civil, mechanical, and electrical engineering services.

   There are also typically three additional consultants hired by DFCM to ensure the State's building performance standards are met: Energy Engineer (EnE), Building Envelope Commissioning Agent (BECxA) and a Building System Commissioning Agent (CxA). These will be referred to as the High Performance Building Standard (HPBS) Consultants, although the CxA is required by current building code.
E. Basic Services for Civil Engineering on an Architectural Project shall be limited to the following: site planning including layout of site features, building position, preliminary grading, location of paving for walkways, driveways and parking, basic landscaping, and fencing locations. Also

included are the normal connections required to service the building such as water, drainage, and sanitary systems, if applicable.

F. Renovation: Complexity modifier for renovation is intended for capital development projects only. The fee schedule for the HPBS consultants applies to all applicable capital development projects including renovations.

G. Not included in the basic services are amounts to cover direct and reimbursable costs such as printing and travel. These costs are reimbursed at 105% of cost; travel will be determined as per state travel guidelines. Travel from servicing office location to the site less than 100 miles is included in the basic fee.

H. Instructions for determining fee: determine if the project is Architectural or Engineering; by use of building type, determine which schedule to use; using the proper budget range and schedule type, find the basic fee percentage. The basic fee is then determined by multiplying the construction budget by the scheduled percentage. The total fee is then determined by combining the basic services fee with the complexity of consultant fee and complexity of scope fee. Complexity of consultant and complexity of scope is intended for development projects only.

I. Basic Services will vary from project to project. For example, projects that don't require a complete A/E team or projects that require a specific discipline to take on a higher percentage of the work would necessitate a revision of the percentage allocation. The following is an example of a typical project allocation as a percentage of the fee. **THE ALLOCATION WILL BE DETERMINED ON A PROJECT BY PROJECT BASIS BY THE PRIME FIRM.**

Architectural 60%
Mechanical 15%
Structural 12%
Electrical 10%
Civil 3%

J. The HPBS consultants are hired directly by the building owner, often DFCM, but occasionally another state agency such as a College or University. Typical total fee for the three consultants will equal between .6 – 2% of the project's construction budget.

K. DFCM may elect to post a maximum allowable fee when soliciting for a project. When a maximum fee is posted any questions or concerns need to be addressed during the question period of the solicitation. If the fee is not adjusted by addendum it is to be considered accepted.

SCHEDULE OF ARCHITECTURAL PROJECT COMPLEXITY

Schedule -A	Schedule - B	Schedule - C	Schedule -D	Schedule - E
Considerably less than average Complexity	Less than Average Complexity	Average Complexity	More than average Complexity	Considerably more than average Complexity
Warehouses Parking Structures Garages Farm Structures Residential Housing Capital Improvement Roofing Projects	Student Housing Office Buildings Complex Parking Structures Liquor Stores Visitor Centers Shop & Maintenance Facilities Tenant Improvement Projects	Classroom Buildings General Teaching Spaces Clinics Gymnasia Armories Nursing Homes Care Facilities Athletic/Fitness Cntr. Mixed-Use Housing Public Safety Admin. Laundry Capital Improvement Projects	Complex Classroom Bldgs. Libraries Dinning Facilities Theaters - no stage Arenas Auditoriums - no stage Medical Schools Specialty Schools Physically Disadvantaged Adult or Youth Detention Court Facilities Performing Arts Medical Clinics Skilled Nursing Data Facilities Recreation Facilities Teaching Labs	Scientific Research Medical Research Engineering Research Hospitals Museums Mental Health Facilities Prison Facilities Stadiums Emergency Ops Center Fish Hatcheries Veterinarian Facilities Auditorium - w/Stage Theater - w/Stage
Complexity of Scope		Complexity of Consultant not included in the complexity of building type		
Schedule Acceleration Seismic Upgrade LEED Certification Complex Site Conditions Photo-realistic Rendering Additional Energy Measures Historical Renovation Complex Engineering Travel	Programming Master Planning Feasibility Studies	Commissioning Envelope Commissioning Envelope Testing Energy Modeling Site Surveys Geotechnical Surveys	Specialty Consultants Lab Consultants Complex Landscape Kitchen Consultant Acoustical Consultant Traffic Consultant Third Party Schedule Consultant Third Party Cost Consultant	FF&E Design Branding IT/AV

Complexity of consultant and complexity of scope is intended for Development projects only.

STATE OF UTAH

ARCHITECUTRAL PROJECT DESIGN FEE SCHEDULE

Construction Budget	Schedule A	Schedule B	Schedule C	Schedule D	Schedule E
$49,999 and below	9.90%	10.49%	11.09%	11.68%	12.38%
$50,000 to $99,999	9.41%	10.00%	10.59%	11.19%	11.88%
$100,000 to $149,999	9.11%	9.70%	10.30%	10.89%	11.58%
$150,000 to $199,999	8.81%	9.41%	10.00%	10.59%	11.29%
$200,000 to $299,999	8.51%	9.11%	9.70%	10.30%	10.99%
$300,000 to $499,999	8.22%	8.81%	9.41%	10.00%	10.69%
$500,000 to $749,999	7.92%	8.51%	9.11%	9.70%	10.40%
$750,000 to $999,999	7.62%	8.22%	8.81%	9.41%	10.10%
$1,000,000 to $1,499,999	7.33%	7.92%	8.51%	9.11%	9.80%
$1,500,000 to $1,999,999	7.03%	7.62%	8.22%	8.81%	9.50%
$2,000,000 to $2,999,999	6.73%	7.33%	7.92%	8.51%	9.21%
$3,000,000 to $3,999,999	6.53%	7.13%	7.72%	8.32%	9.01%
$4,000,000 to $4,999,999	6.34%	6.93%	7.52%	8.12%	8.81%
$5,000,000 to $7,999,999	6.14%	6.73%	7.33%	7.92%	8.61%
$8,000,000 to $11,999,999	5.94%	6.53%	7.13%	7.72%	8.42%
$12,000,000 to $14,999,999	5.64%	6.14%	6.63%	7.13%	7.62%
$15,000,000 to $19,999,999	5.45%	5.94%	6.44%	6.93%	7.43%
$20,000,000 to $24,999,999	5.25%	5.74%	6.24%	6.73%	7.23%
$25,000,000 to $29,999,999	5.15%	5.64%	6.14%	6.63%	7.13%
$30,000,000 to $34,999,999	5.05%	5.54%	6.04%	6.53%	7.03%
$35,000,000 to $39,999,999	4.95%	5.45%	5.94%	6.44%	6.93%
$40,000,000 to $49,999,999	4.85%	5.35%	5.84%	6.34%	6.83%
$50,000,000 and above	4.75%	5.25%	5.74%	6.24%	6.73%
For renovation projects add to percentage above for the portion that is renovation	0.50%	0.65%	0.75%	0.85%	1.00%

Complexity modifier for renovation is intended for Capital Development Projects only.

HPBS Consultants	Schedule A	Schedule B	Schedule C	Schedule D	Schedule E
EnE fee	5-10k Qualitative Only	8-15k Qualitative Only	.05 -.1%	.1 - .15%	.15 - .22%
BECxA fee	10-20k	.1 - .15%*	.15 - .2%*	.15 - .2%*	.2 - .25%*
CxA fee	.3 - .5%	.5 - .75%	.75 - 1%	1 - 1.25%**	1 - 1.5%**

* The minimum fee for the BECxA on these projects will be $15k. If the percentage on the chart = less than $15k, $15k should be used on the CBE.

** This fee included employing analytics on the BAS for the project and 1-2 years of continuous commissioning by the CxA.

SCHEDULE OF ENGINEERING PROJECT COMPLEXITY

Schedule -A	Schedule - B	Schedule - C
Below Average Complexity	Average Complexity	Above Average Complexity
Average Retaining Walls and Foundations	Complex Retaining Walls and Foundations	Unusual Foundations with Complex Soils
Average Parks, Marinas and Rec Area's	Complex Parks, Marinas and Rec Area's	Complex Acoustical Design
Average Roads and Streets	Complex Roads and Streets	Complex Mechanical and Electrical Controls *
Average Storm Drain & Sewage Collection	Complex Storm Drain & Sewage Collection	Storm Drain & Sewers - Heavily Urbanized Area
Small Dams	Large or Complex Small Dams	Complex Large Dams
Small Bridges	Asymmetric Bridges	Extremely Complex Bridges
Roofing Seismic Upgrade	Airport with Complex terminal Facilities	Complex Sewage & Water Treatment Facilities *
Water Wells	Capital Improvement Projects **	Complex Telecom Facilities *
Water Tanks	Sewage & Water Treatment Facilities *	Complex Utility Tunnels
Pump Station	Average Telecom Facilities	
Lift Station	Electrical & Data Transmission *	
	Solid Waste Disposal	
	Average Acoustical Design	
	Air Pollution Abatement, Control and Testing	
	Water Reservoirs	
	Utility Tunnel	

Complexity of Scope	Complexity of Consultant	
Commissioning	Programming	Site Surveys
Schedule Acceleration	Master Planning	Geotechnical Surveys
Complex Site Conditions	Feasibility Studies	Arc/Fault Current Study
Observation and Inspection	Specialty Consultants	
Seismic Upgrade		

These are examples of additional services that are not included in the complexity of schedules A-C. These services will be negotiated singularly and shall require a separate fee proposal. Complexity of consultant and complexity of scope is intended for Development projects only.

*These types of projects would need systems commissioning (CxA).

**These projects could potentially need either systems or building envelope commissioning services depending on the project.

STATE OF UTAH

ENGINEERING PROJECT DESIGN FEE SCHEDULE

Construction Budget	Schedule A	Schedule B	Schedule C
$49,000 and below	11.88%	12.87%	13.86%
$50,000 to $99,999	10.89%	11.88%	12.87%
$100,000 to $149,999	10.40%	11.39%	12.38%
$150,000 to $199,999	9.90%	10.89%	11.88%
$200,000 to $299,999	9.41%	10.40%	11.39%
$300,000 to $499,999	8.91%	9.90%	10.89%
$500,000 to $749,999	8.42%	8.91%	9.60%
$750,000 to $999,999	7.92%	8.42%	9.11%
$1,000,000 to $1,499,999	7.52%	8.02%	8.71%
$1,500,000 to $1,999,999	7.13%	7.62%	8.32%
$2,000,000 to $2,999,999	6.93%	7.43%	8.12%
$3,000,000 to $3,999,999	6.73%	7.23%	7.92%
$4,000,000 to $4,999,999	6.53%	7.03%	7.72%
$5,000,000 to $6,999,999	6.34%	6.83%	7.52%
$7,000,000 to $11,999,999	6.14%	6.63%	7.33%
$12,000,000 to $19,999,999	5.94%	6.44%	7.13%
$20,000,000 to $29,999,999	5.84%	6.34%	7.03%
$30,000,000 to $49,999,999	5.74%	6.24%	6.93%
$50,000,000 and above	5.64%	6.14%	6.83%
For renovation projects add to percentage above for the portion that is renovation	0.50%	0.75%	1.00%

Sunset Amphitheater

Jordanelle Ridge



RAINTREE
INVESTMENT CORPORATION

HEBER VALLEY
ARTS CENTER

HEART OF THE WASATCH BACK
HEBER CITY
EST 1889

Introduction

Amphitheater Venue Owner - Heber City Corporation

- Consult to Design and Construction
- Venue Operation Management
- Venue Operation Funding
- Capital Maintenance

HEBER VALLEY ARTS CENTER

HEBER CITY

Introduction

Amphitheater Developer - Jordanelle Ridge / Raintree

- Project Consultant
- Design Team
- General Contractor / Construction Project Manager
- Complete Amphitheater / Arts District

HEBER VALLEY ARTS CENTER

HEBER CITY

RAINTREE

Introduction

Amphitheater Project Consultant - Heber Valley Arts Center

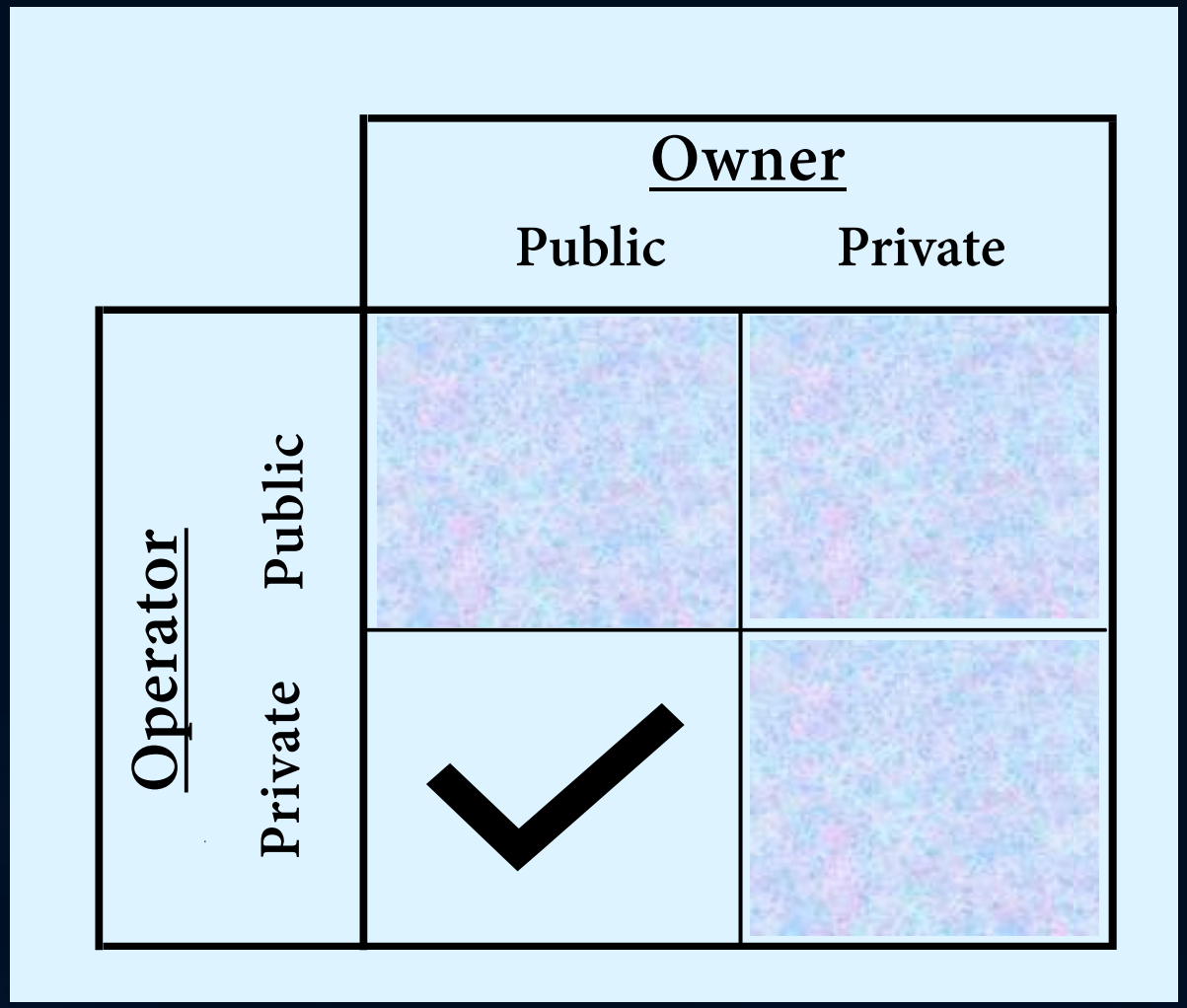
- Fundraising Campaign
- Designing for Operations
- Operations Planning / Readiness

HEBER VALLEY ARTS CENTER

HEBER CITY est 1889

RAINTREE INVESTMENT CORPORATION

Venue Organization & Management

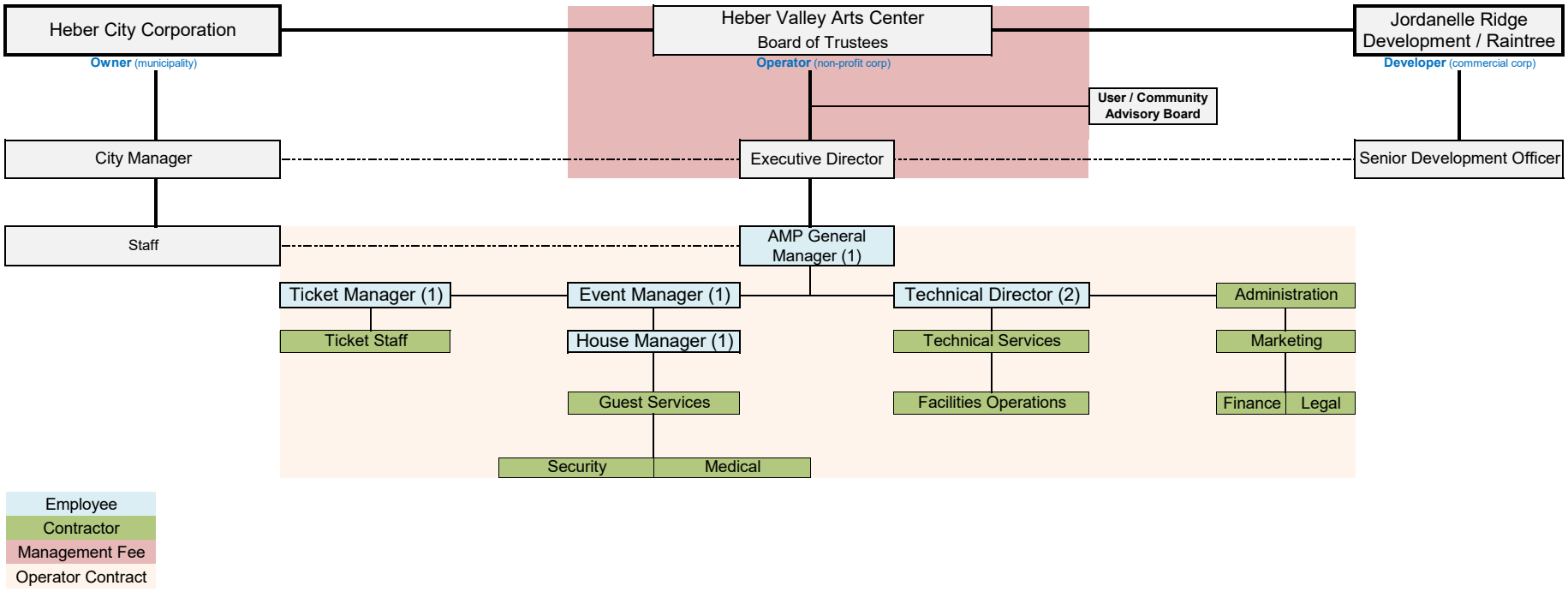

Owner
Public
Private
Operator
Public
Private

Venue Management Core Functions

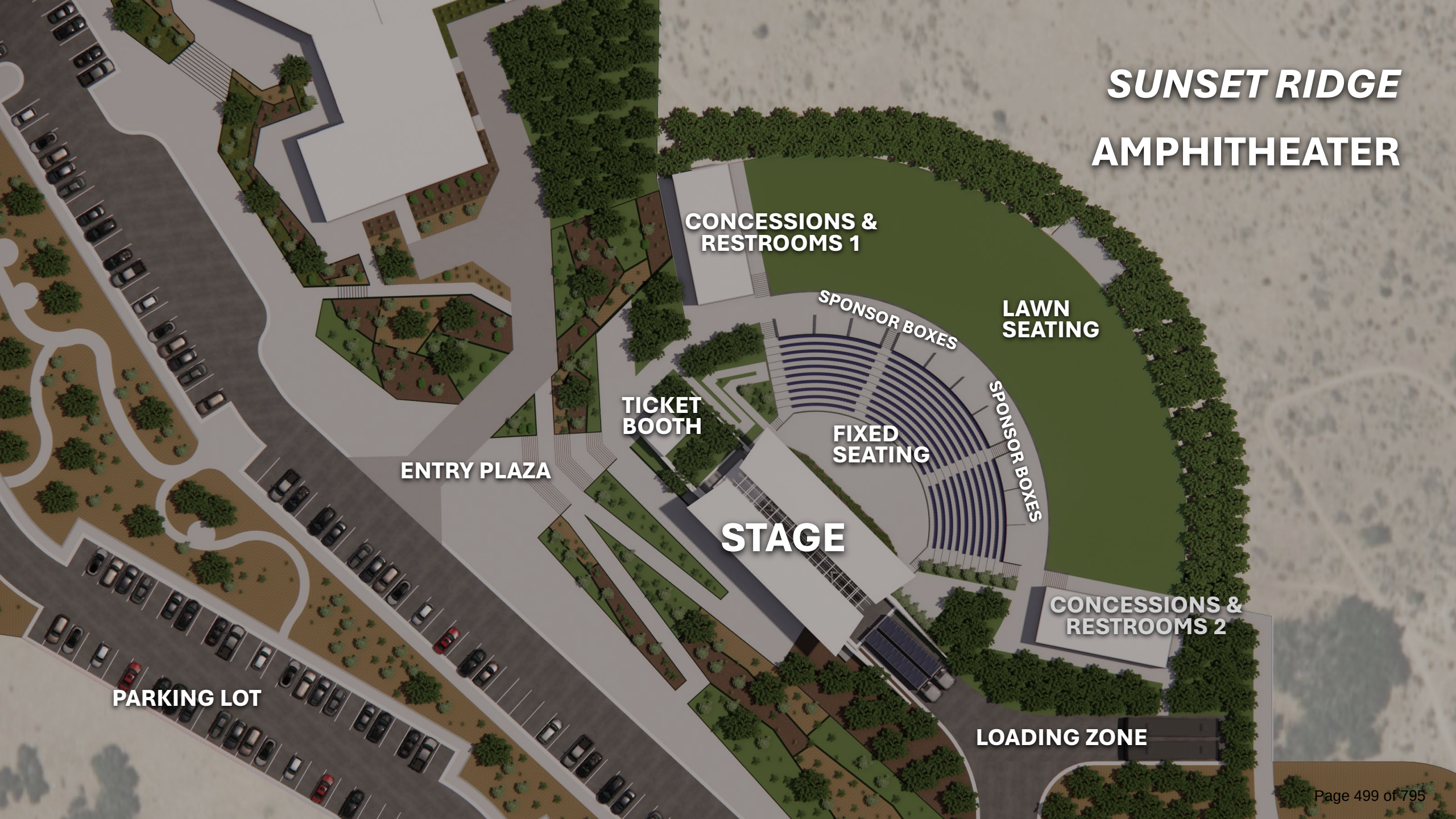
- Safety & Security ➔ Human Risk & Asset Control
- Event Management / Contracting ➔ Coaching Event Producers
- Ticketing ➔ Controlling Occupancy & Seat Inventory
- Finance ➔ Holding Revenues & Fronting Expenses
- Guest Experience
- Technical Functionality ➔ Equipment & Personnel
- F&B ➔ In-house or Contracted?
- Sponsor & Donor Fulfillment

Heber City Sunset Ridge Amphitheater

Proposed Operations ORG Chart



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SUNSET RIDGE
AMPHITHEATER
CONCESSIONS & RESTROOMS 1
SPONSOR BOXES
LAWN SEATING
TICKET BOOTH
FIXED SEATING
SPONSOR BOXES
ENTRY PLAZA
STAGE
CONCESSIONS & RESTROOMS 2
PARKING LOT
LOADING ZONE

Design impacts Operations Outcomes

Basic Design

- *'Civic - Community'* Amphitheater Facilities @ Open Area Seating
- Annual temporary Operations Equipment needed for stage / patrons
- Minimal Potential On-site Earned Revenues / Parking Experience

Enhancements Design

- *'Regional Professional'* Amphitheater Facilities @ Varied Seating Options
- Annual Operations Equipment on-site for stage / patrons
- Maximum Potential On-site Earned Revenues / Parking Experience

HEBER VALLEY ARTS CENTER

HEBER CITY

Sunset Ridge Amphitheater @ Base (Package 1)

Base Amphitheater

- Grass Seating with concrete walkways
- Loading Dock Access And Area
- Stage Building with basic lower level basic entry plaza
- Simplified Site

Site Utilities / Roads / Parking

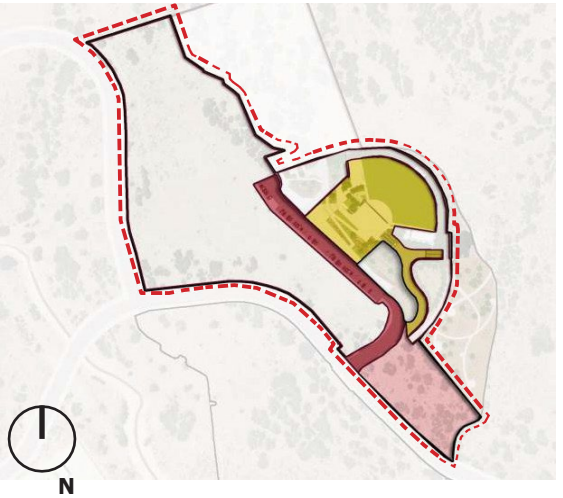
- Simplified Site
- Access Drive and Parking to the edge of base entrance
- Gravel Paving at Trailhead Area
- Essential Sidewalks
- Native Seed Blend at perimeter areas

HEBER VALLEY ARTS CENTER

HEBER CITY

Jordanelle Ridge - **Base** Amphitheater @ JRD PID Village 2





BASE AMPHITHEATER

- Grass Seating With Concrete Walkways
- Loading Dock Access And Area
- Stage Building with Basic Lower Level Basic Entry Plaza
- Simplified Site

SITE UTILITIES / ROADS / PARKING

- Simplified Site
- Access Drive And Parking To The Edge Of Base Entrance
- Gravel Paving At Trailhead Area
- Essential Sidewalks
- Native Seed Blend At Perimeter Areas

HEBER CITY · MOMENTUM DEVELOPMENT GROUP · method studio

Sunset Ridge Amphitheater' @ Enhancements (Package 2)

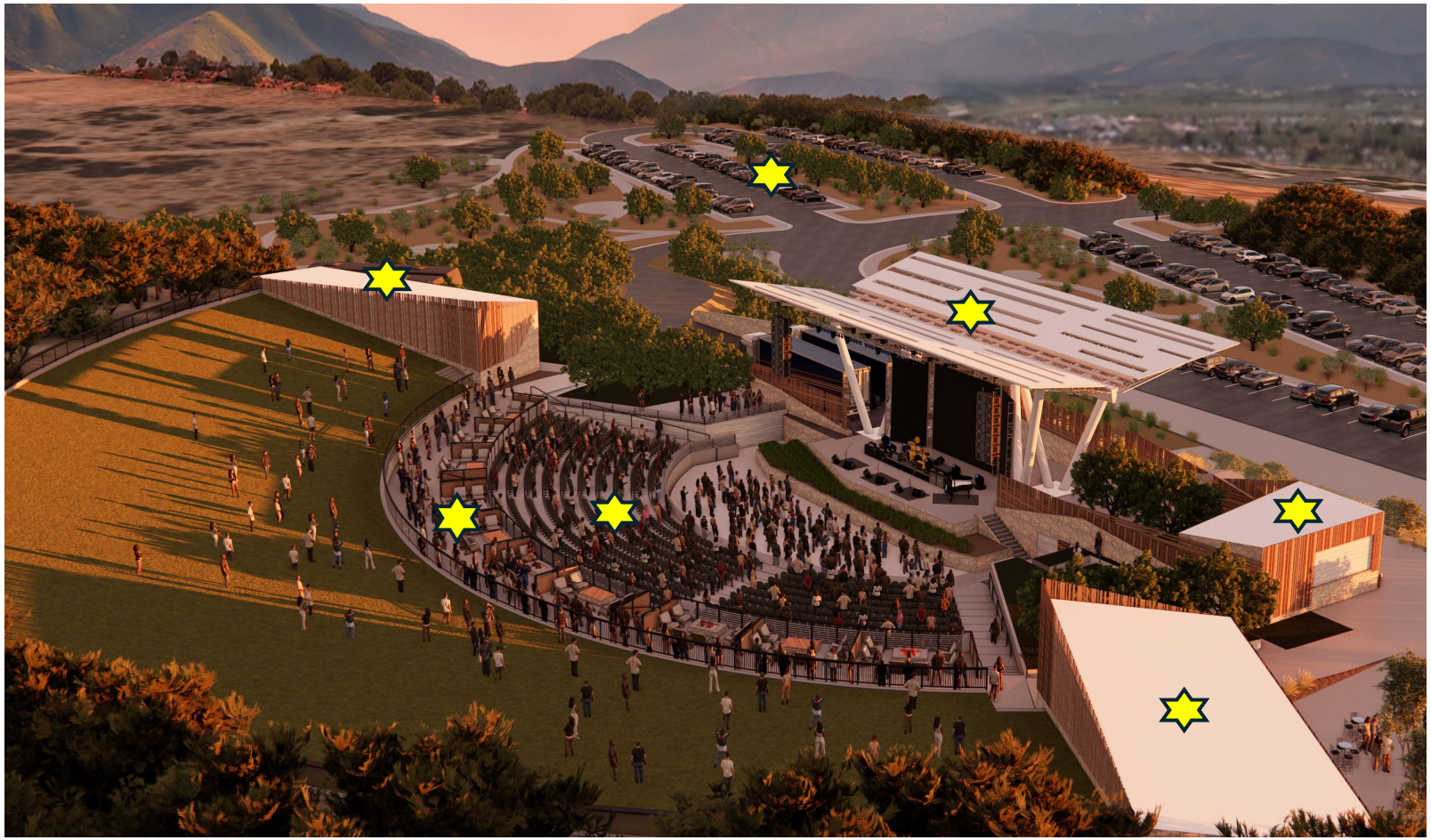
Enhancements

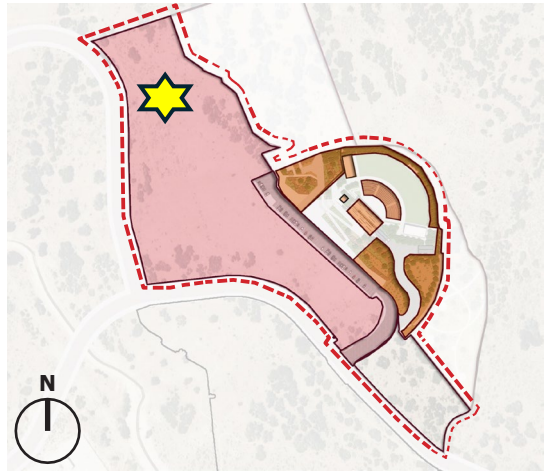
- Complete Stage Building / Add Elevator
- Permanent Stage Canopy
- Fixed Audience Seating
- Firepits Seating - sponsor / donor opportunities
- Restroom / Concessions Building #1
- Expanded Gravel Parking North Of Drive
- Ticketing Office Building

HEBER VALLEY ARTS CENTER

HEBER CITY

Sunset Ridge Amphitheater: Enhancements (Package 2)





AMPHITHEATER ENHANCEMENTS

-Complete Stage Building - Add Elevator
-Install Canopy
-Additional Concrete At Amphitheater
-Fixed Audience Seating
-First Restroom Building
-Ticketing Office

SITE UTILITIES / ROADS / PARKING

-Expanded Gravel Parking North Of Drive

Finance Management
10-year Pro-forma

'Follow the $$$'

Stressing the 10-year Model

		Aug - Sept		Activity
	Year 1	2028 / 29	Inaugural	10%
	Year 2	2029 / 30	Active	30%
Base Year	Year 3	2030 / 31	Normal	0%
	Year 4	2031 / 32	Off Year	-30%
	Year 5	2032 / 33	Normal	0%
	Year 6	2033 / 34	Active	30%
	Year 7	2034 / 35	Off Year	-30%
	Year 8	2035 / 36	Normal	0%
	Year 9	2036 / 37	Active	30%
	Year 10	2037 / 38	Off Year	-30%

HEBER VALLEY ARTS CENTER

HEBER CITY est 1889

RAINTREE INVESTMENT CORPORATION

Year 3 Normal		Base AMP				Enhanced AMP			
Version: Pro-forma v. 03 04 25									
Activity		Shows	Tickets	Occupancy	Gross Revenues	Shows	Tickets	Occupancy	Gross Revenues
Events	Popular Co-promotion (HVAC + Partner)	4	7,400	35%	$ 138,034	7	18,100	74%	$ 304,426
	Amateur Series (HVAC)	4	3,200	67%	$ 153,558	7	7,000	83%	$ 278,925
	Commercial	1	2,100	60%	$ 28,857	6	8,400	60%	$ 121,794
	Community / Resident Arts / Non-Profit	16	15,400	33%	$ 271,532	16	19,600	35%	$ 330,073
	Dance	6	5,250	25%	$ 107,977	6	6,300	30%	$ 122,362
	Government	0	0	0	$ -	0	0	0	$ -
	Special Event(s) @ ***'Fall Fest'***	4	6,300	60%	$ 80,172	8	12,600	60%	$ 160,347
Experience	Food & Beverage Commissions				$ 52,569				$ 152,850
	Catering Rent & Commissions				$ 48,538				$ 54,643
	Sponsorship & '***Firepits***'				$ -				$ 57,289
	Parking				$ 18,125				$ 62,609
	Totals	35	39,650		$ 899,362	50	72,000		$ 1,645,316
				Operating Expense	$ 1,067,397			Operating Expense	$ 1,348,221
				NET Operating Result	$ (168,035)			NET Operating Result	$ 297,094

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Design Impact		Base AMP	Enhanced AMP
Guest	Parking / Roadways / Public Transit	Drop Off-Circulation-VIP @ Asphalt / Public Parking @ Road base / Gra	ADD Public Parking @ Asphalt ADD Public Parking On-site
	Seating Options / Sightlines	Grass Seating Areas / No Sponsor-Premium Seating	ADD Fixed Seating (assigned) / Sponsor-Premium Firepits-Rooftop = Expanded # of Shows & NET Income
	F&B Concessions	Temporary Tents x2 / limited access = reduced Net Income	Designed-constructed Facilities including food prep & chilled beverages = expanded NET income
	Restrooms	Portable chemical toilets - Hand washing	Designed-constructed Facilities combine with F&B Concessions
	Ticket Pick-up / Remediation	Temporary Tent x1	Designed-constructed Facilities combine with Venue Offices-Meeting room
	VIP Options	Limited	Expanded Options for both Sponsor-Premium Seating & Hospitality Spaces
	Audio-Video-Lighting Production	Temporary Equipment Only	ADD capacity for temporary Audio / Video Equipment
Artist	Roof Protection	Temporary Equipment Only for x4 months per year / NO Winter Use	ADD permanent roof - overhead access for year-round events
	Stage Structures (weather protection)	Temporary Tents x2 @ on-stage artist needs	Designed-constructed Facilities for year-round artist needs
	Back Of House Accommodations	Minimal interior spaces below-stage / NO Rehearsal Room 30x50	Designed-constructed Facilities for year-round artist needs
	Technical Flexibility / Operations	Limited touring show & local production options due to weight-labor lim	Expanded touring show & local production equipment options
	Rehearsal Facilities	NO Rehearsal Room below-stage / options for added tents-floor-HVAC	ADD Rehearsal Room below-stage @ 30x50
	Audio-Video-Lighting Production	Temporary Equipment Only for x4 months per year / Reduced Winter Us	ADD capacity for temporary Audio / Video Equipment / Expanded Winter Use
Efficiencies	Staffing	Hourly staff required for installation-removal of all temporary facilities	Reduced staff hours for installation-removal / Expanded hours for expanded shows / guests / sponsor-premium hospitality
	Temporary Installations - Public	Operations / Cleaning / Maintenance @ short-term annually	Operations / Cleaning / Maintenance @ long-term annually
	Temporary Installations - Staging	Annual contracting / transport / quality equipment = LESS management	Annual contracting / transport / quality equipment = MORE management
	Parking / Roadways / Public Transit	LESS available parking on-site including staging public buses-rideshare	LESS available parking on-site including staging public buses-rideshare
	Finance	MORE cash flow requirements / LESS annual facility maintenance	LESS cash flow requirements / MORE annual facility maintenance
	Show - Event Bookings	MORE booking time windows w/ temporary facilities / Reduced Winter u	LESS booking time windows w/ temporary facilities / Expanded Winter us

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

Events Types & Numbers

		Year 3
AMP Main Stage	*HVAC Amateur Nights* Concerts (ticketed)	7
	Popular Co-promoted Entertainment / Concerts (ticketed)	7
	Resident Artist Performances (ticketed / non-ticketed)	8
	Community Performances (ticketed)	8
	Dance Performances (ticketed)	6
	Other Non-profit Performances (ticketed / non-ticketed) *(FALLFEST)*	8
	Commercial Performances / Events (ticketed / non-ticketed)	6
	Events: AMP Rehearsal Studio / On-stage Caterer Events	20
	Total	**70**

Model Assumptions

Inaugural Year			2028-29	
Base Year (3rd)			**2030-31**	
Calendar (Season or Annual)		Jan - Dec	Annual	
Owner (Public or Private)			Public	
Operator (Public or Commercial or NFP)		In-house	NFP	
Does Operator operate 'EDU" Facilities / not programs?			No	
Concert model (presenter, co-presenter, rental)			Co-presenter	
***HVAC Amateur Nights* Concert Series model (presenter, co-presenter, rental)**			Presenter	
Ticketing systems (Internal, Outsourced, Hosted, Combo?)			Hosted	
Facility Management (Public, Commercial, NFP) (Owner Staff, Contracted Management)		NFP	Contract	
Expense Contingency			3%	
Benefits & Taxes Rate			21%	
Total Capacity - AMP			3,500	
Total Tickets Sold - AMP		Year 3	65,700	
Percentage Tickets @ Subscribers			0%	
Total Capacity - Rehearsal Studio ~~/Jewel Room~~			200	
~~**Total Tickets Sold - Studios**~~			6,300	
AMP Average Single Ticket Handling Fee (average incl CC fees) **EXCEPT Popular Concerts**		Year 3	$ 5.70	
AMP Average Single Ticket Handling Fee (average incl CC fees) **Popular Concerts**		Year 3	$ 8.78	
~~Studios Average Single Ticket Handling Fee (average incl CC fees)~~			$ -	
~~Subscription Ticketing Fee per each ticket incl SGL Tix Add-ons (average incl CC fees)~~			5.50%	
Facility Fee - AMP		Year 3	$ 4.50	
~~Facility Fee - Rehearsal Room~~			-	
Arts For All Ticketing Fee (per ticket)		Year 3	$ 1.00	
Credit Card Commission (average)			3.45%	
Parking - patrons per car			2.3	
Parking capture rate			$ 1.00	
Security provided by Operator	Contractor	Outsourced	$ -	
Expenses Escalation			3%	
Revenues Escalation (every other year)			3%	
Sponsorship Sales (venue brand impressions)			$ 41,375	
Box Seat Program (Fire Pit Club x10 units x6 seats) Hospitality only - NO tix			$ 15,914	
~~Rent and CAM Revenues @ CAFÉ Tenant on venue~~			$ -	
ENHANCED DESIGN Gross square footage - Interior + Exterior Constructed Spaces			72,490	
AMP Spaces - INTERIOR - ENHANCED DESIGN	sq ft	14,240		**Base** 12,740
AMP Spaces - EXTERIOR - ENHANCED DESIGN	sq ft	58,250		55,700

		Aug - Sept		Activity	
	Year 1	2028 / 29	Inaugural	10%	Up
	Year 2	2029 / 30	Active	30%	Up
Base Year	Year 3	2030 / 31	Normal	0%	Flat
	Year 4	2031 / 32	Off Year	-30%	Down
	Year 5	2032 / 33	Normal	0%	Flat
	Year 6	2033 / 34	Active	30%	Up
	Year 7	2034 / 35	Off Year	-30%	Down
	Year 8	2035 / 36	Normal	0%	Flat
	Year 9	2036 / 37	Active	30%	Up
	Year 10	2037 / 38	Off Year	-30%	Down

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

SUMMARY PRO FORMA	Year 1 (in 000s)	Year 2 (in 000s)	Year 3 (in 000s)	Year 4 (in 000s)	Year 5 (in 000s)	Year 6 (in 000s)	Year 7 (in 000s)	Year 8 (in 000s)	Year 9 (in 000s)	Year 10 (in 000s)	Notes
	2028 / 29	2029 / 30	2030 / 31	2031 / 32	2032 / 33	2033 / 34	2034 / 35	2035 / 36	2036 / 37	2037 / 38	
	Inaugural	Active	Normal	Off Year	Normal	Active	Off Year	Normal	Active	Off Year	
EARNED REVENUES											
Popular (at-risk)	$16	$25	$20	$10	$20	$27	$11	$22	$31	$12	
Amateur Nights (HVAC - at-risk)	$45	$100	$133	$37	$143	$181	$37	$177	$251	$36	
Rental Income	$306	$405	$371	$310	$404	$476	$349	$416	$456	$396	
Box Seat Program *"Public Fire Pit Seats"*	$15	$15	$16	$16	$17	$17	$18	$18	$19	$20	NOT in BASE Design
Parking	$50	$65	$63	$47	$63	$70	$47	$63	$69	$50	
Food & Beverage	$86	$180	$174	$137	$123	$116	$88	$124	$138	$95	
Single Ticket Handling Fee	$368	$439	$466	$333	$466	$523	$333	$470	$512	$354	
Subscription Ticket Handling Fee	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
Arts for All Fee	$58	$74	$72	$63	$86	$97	$75	$104	$114	$105	
Facility Fee	$231	$298	$312	$234	$344	$387	$273	$376	$445	$308	
Sponsorship Sales (venue brand impressions)	$39	$40	$41	$43	$44	$45	$47	$48	$49	$51	NOT in BASE Design
TOTAL EARNED REVENUES	**$1,215**	**$1,642**	**$1,668**	**$1,228**	**$1,709**	**$1,940**	**$1,277**	**$1,819**	**$2,084**	**$1,426**	
OPERATING EXPENSES											
Administration	$143	$147	$152	$156	$161	$166	$171	$176	$181	$187	
Marketing	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	
Sales & Box Office	$155	$164	$169	$166	$180	$188	$181	$195	$204	$199	
Guest Services - Theater Operations	$287	$312	$310	$319	$314	$351	$333	$359	$377	$371	
Technical Production Operations	$96	$100	$103	$106	$109	$112	$115	$118	$122	$125	
Security & Building Operations	$125	$125	$128	$131	$134	$138	$142	$145	$149	$153	
Overhead Expenses	$86	$89	$91	$94	$97	$100	$103	$106	$109	$112	
Other Expenses / Opening Event(s)	$250	$263	$276	$289	$304	$319	$335	$352	$369	$388	
Arts for All Fee	$58	$74	$72	$63	$86	$97	$75	$104	$114	$105	
Expense Contingency	$35	$36	$37	$38	$39	$42	$42	$44	$46	$46	
TOTAL OPERATING EXPENSES	**$1,244**	**$1,320**	**$1,348**	**$1,374**	**$1,435**	**$1,523**	**$1,508**	**$1,612**	**$1,683**	**$1,698**	
											Average **$126**
OPERATING RESULT	**($29)**	**$323**	**$320**	**($146)**	**$275**	**$417**	**($231)**	**$208**	**$401**	**($273)**	
SUPPORT & FUNDING											
Government Support											
Individual Gifts											
Membership											
Major Gifts											
Foundation Support											
Corporate Support (Philanthropy)											
Tax Revenue											
In-Kind Gifts											
Special Events (net)											
Miscellaneous Income											
TOTAL FUNDING	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Endowment Income											
RESULTS AFTER FUNDING	**($29)**	**$323**	**$320**	**($146)**	**$275**	**$417**	**($231)**	**$208**	**$401**	**($273)**	

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

REVENUE SUMMARY

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)
	2028 / 29	2029 / 30	2030 / 31	2031 / 32	2032 / 33	2033 / 34	2034 / 35	2035 / 36	2036 / 37	2037 / 38
	Inaugural	Active	Normal	Off Year	Normal	Active	Off Year	Normal	Active	Off Year
Popular										
Co-Promoter Split (includes sponsorships)	$16	$25	$20	$10	$20	$27	$11	$22	$31	$12
Subtotal, Popular Co-Promoter Deal	*$16*	*$25*	*$20*	*$10*	*$20*	*$27*	*$11*	*$22*	*$31*	*$12*
HVAC Amateur Nights										
In-house Promotion / No Split (includes sponsorships)	$45	$100	$133	$37	$143	$181	$37	$177	$251	$36
Subtotal, Amateur Promoter Deal	*$45*	*$100*	*$133*	*$37*	*$143*	*$181*	*$37*	*$177*	*$251*	*$36*
Facility Rental										
AMP	$271	$366	$338	$285	$369	$435	$324	$380	$413	$359
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Event Spaces (Reh Studio, VIP Tent FOH, AMP Stage)	$35	$39	$34	$24	$35	$41	$25	$36	$44	$37
Sub-Total, Facility Rental	*$306*	*$405*	*$371*	*$310*	*$404*	*$476*	*$349*	*$416*	*$456*	*$396*
Other Operating Revenue										
Sponsorship Sales (venue brand impressions)	$39	$40	$41	$43	$44	$45	$47	$48	$49	$51
Box Seat Program (Fire Pit Club x10 units x6 seats)	$15	$15	$16	$16	$17	$17	$18	$18	$19	$20
Parking Commission (per car in On-venue Lots)	$50	$65	$63	$47	$63	$70	$47	$63	$69	$50
Catering Commissions	$21	$23	$21	$17	$21	$24	$16	$21	$24	$21
Concessions Commissions	$65	$157	$153	$120	$102	$92	$72	$104	$115	$74
Single Ticket Handling Fee	$368	$439	$466	$333	$466	$523	$333	$470	$512	$354
Sub Ticket Handling Fee	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Arts for All Fee	$58	$74	$72	$63	$86	$97	$75	$104	$114	$105
Facility Fee	$231	$298	$312	$234	$344	$387	$273	$376	$445	$308
Café Tenant Rent & CAM Fees	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Opening Event(s)	$0									
Sub-Total, Other Operating Revenue	*$847*	*$1,112*	*$1,143*	*$872*	*$1,142*	*$1,255*	*$880*	*$1,204*	*$1,347*	*$982*
TOTAL OPERATING REVENUES	**$1,215**	**$1,642**	**$1,668**	**$1,228**	**$1,709**	**$1,940**	**$1,277**	**$1,819**	**$2,084**	**$1,426**
Support & Funding										
Government Support										
Individual Contributions										
Membership Program										
Major Gifts										
Foundation Support										
Corporate Support (Philanthropy)										
Tax Revenue										
In-Kind Gifts										
Special Events (net)										
Miscellaneous Income										
Sub-Total, Funding	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Endowment Income	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL REVENUES	**$1,215**	**$1,642**	**$1,668**	**$1,228**	**$1,709**	**$1,940**	**$1,277**	**$1,819**	**$2,084**	**$1,426**

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

EXPENSE SUMMARY

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)	(in 000s)
	2028 / 29	2029 / 30	2030 / 31	2031 / 32	2032 / 33	2033 / 34	2034 / 35	2035 / 36	2036 / 37	2037 / 38
	Inaugural	Active	Normal	Off Year	Normal	Active	Off Year	Normal	Active	Off Year
Administration										
Owner Staff Compensation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operator Staff Compensation	$109	$113	$116	$120	$123	$127	$131	$135	$139	$143
Insurances & Bonding	$11	$11	$11	$12	$12	$13	$13	$13	$14	$14
HR & Payroll Services	$4	$4	$4	$5	$5	$5	$5	$5	$5	$5
Telephone - (based on headcount)	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Information Services Support & Website	$10	$11	$11	$11	$12	$12	$12	$13	$13	$13
Postal & Mailing - Gen'l	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Printing & Copying, General	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Travel, Meetings, Mileage	$3	$3	$3	$3	$3	$4	$4	$4	$4	$4
Memberships, Publications, Subscriptions & Dues	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Office Supplies & Equipment (based on headcount)	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Professional Development/Recruitment	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Consultants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$1	$1	$1	$1	$1	$1	$1	$1	$1	$1
Sub Total, Admin. & Fin.	**$143**	**$147**	**$152**	**$156**	**$161**	**$166**	**$171**	**$176**	**$181**	**$187**
Institutional Marketing										
Institutional Promotion	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13
Sub Total, Mktg.	**$10**	**$10**	**$11**	**$11**	**$11**	**$12**	**$12**	**$12**	**$13**	**$13**
Sales and Events										
Owner Staff Compensation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Operator Staff Compensation	$116	$120	$123	$127	$131	$135	$139	$143	$147	$152
Credit Card Fees	$23	$28	$29	$22	$31	$35	$24	$33	$37	$26
Box Office Overhead	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Box Office Systems License & Support	$16	$16	$17	$17	$18	$18	$19	$20	$20	$21
Sub-Total, Sales & Box Office	**$155**	**$164**	**$169**	**$166**	**$180**	**$188**	**$181**	**$195**	**$204**	**$199**
Guest Services Operations										
Operator Staff Compensation	$220	$227	$234	$241	$248	$255	$263	$271	$279	$287
AMP Front of House Staff	$66	$85	$76	$79	$66	$96	$70	$89	$98	$83
Studio Theatre Front of House Staff	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sub-Total, Guest Services Theater Operations	**$287**	**$312**	**$310**	**$319**	**$314**	**$351**	**$333**	**$359**	**$377**	**$371**
Technical Production Operations										
Operator Staff Compensation	$90	$93	$96	$99	$102	$105	$108	$111	$114	$118
Misc Venue / Production Ops Equipment Rentals	$4	$5	$5	$5	$5	$5	$5	$5	$5	$5
Repair & Maintenance - Tech. Equipment & Contracted Labor	$2	$2	$2	$2	$2	$2	$2	$2	$3	$3
Sub-Total, Technical Production Operations	**$96**	**$100**	**$103**	**$106**	**$109**	**$112**	**$115**	**$118**	**$122**	**$125**
Security & Building Operations										
Operator Staff Compensation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Utilities	$49	$49	$51	$52	$54	$56	$57	$59	$61	$63
Insurance	$21	$21	$21	$22	$23	$23	$24	$25	$26	$26
Security (Facilities Only)	$18	$18	$19	$19	$20	$21	$21	$22	$22	$23
Cleaning & Operations Maintenance	$18	$18	$19	$19	$20	$21	$21	$22	$23	$23
Annual (Ordinary) Repair & Replacement (does not incl Tech Equip)	$18	$18	$18	$18	$18	$18	$18	$18	$18	$18
Sub-Total, Security & Building Operations	**$125**	**$125**	**$128**	**$131**	**$134**	**$138**	**$142**	**$145**	**$149**	**$153**
Other Expenses										
Operator, Owner Overhead Reimbursement	$86	$89	$91	$94	$97	$100	$103	$106	$109	$112
ENHANCED PA / Lighting / Video / VIP Lounge Rent	$250	$263	$276	$289	$304	$319	$335	$352	$369	$388
Sub-Total, Other Expenses	**$336**	**$351**	**$367**	**$383**	**$401**	**$419**	**$438**	**$458**	**$478**	**$500**
Arts for All Fee	$58	$74	$72	$63	$86	$97	$75	$104	$114	$105
TOTAL OPERATING EXPENSES	**$1,209**	**$1,283**	**$1,311**	**$1,336**	**$1,395**	**$1,481**	**$1,466**	**$1,568**	**$1,638**	**$1,652**
Expense Contingency (except Arts For All Fee)	$35	$36	$37	$38	$39	$42	$42	$44	$46	$46
TOTAL OPERATING EXPENSES incl Contingency	**$1,244**	**$1,320**	**$1,348**	**$1,374**	**$1,435**	**$1,523**	**$1,508**	**$1,612**	**$1,683**	**$1,698**

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"															Notes
OPERATOR @ Management Contract	**BASE SALARY (US West)**	**Benefits**	**Total Comp**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**	**% Esc**	
		21.00%													
ADMINISTRATION															
General Manager	$ 88,000	$ 18,480	$ 106,480	$ 106,480	$ 109,674	$ 112,965	$ 116,354	$ 119,844	$ 123,440	$ 127,143	$ 130,957	$ 134,886	$ 138,932	3.00%	8 months @ Salary (Feb-Sept)
Accounting Clerk	Contract													3.00%	
Network & Data Management Specialist	Contract													3.00%	
Emlployee Awards /Gift Cards		$ -	$ 3,000	$ 3,000	$ 3,090	$ 3,183	$ 3,278	$ 3,377	$ 3,478	$ 3,582	$ 3,690	$ 3,800	$ 3,914	3.00%	
GUEST SERVICES															
House Manager	$ 45,000	$ 9,450	$ 54,450	$ 54,450	$ 56,084	$ 57,766	$ 59,499	$ 61,284	$ 63,122	$ 65,016	$ 66,967	$ 68,976	$ 71,045	3.00%	5 months @ Salary (April-Sept)
Asst House Manager	$ 40,000	$ 8,400	$ 48,400	$ 48,400	$ 49,852	$ 51,348	$ 52,888	$ 54,475	$ 56,109	$ 57,792	$ 59,526	$ 61,312	$ 63,151	3.00%	5 months @ Salary (April-Sept)
Sponsor & Membership Services Manager	Contract													3.00%	
Ticketing Manager	$ 72,000	$ 15,120	$ 87,120	$ 87,120	$ 89,734	$ 92,426	$ 95,198	$ 98,054	$ 100,996	$ 104,026	$ 107,147	$ 110,361	$ 113,672	3.00%	12 months @ Salary (Jan-Dec)
Assistant Ticketing Manager	$ 25,000	$ 5,250	$ 30,250	$ 30,250	$ 31,158	$ 32,092	$ 33,055	$ 34,047	$ 35,068	$ 36,120	$ 37,204	$ 38,320	$ 39,469	3.00%	5 months @ Salary (Jan-Dec)
Box Office Shift Supervisor (3/4)	Contract													3.00%	
Box Office Shift Supervisor (3/4)	Contract													3.00%	
Box Office FT (part time)	Contract													3.00%	
Box Office FT (part time)	Contract													3.00%	
Box Office FT (part time)	Contract													3.00%	
Box Office FT (part time)	Contract													3.00%	
SALES & EVENTS MANAGEMENT															
Sales & Marketing Director	Contract													3.00%	
Event Manager	$ 56,000	$ 11,760	$ 67,760	$ 67,760	$ 69,793	$ 71,887	$ 74,043	$ 76,264	$ 78,552	$ 80,909	$ 83,336	$ 85,836	$ 88,411	3.00%	7 months @ Salary (Feb-Sept)
Event Manager	$ 40,000	$ 8,400	$ 48,400	$ 48,400	$ 49,852	$ 51,348	$ 52,888	$ 54,475	$ 56,109	$ 57,792	$ 59,526	$ 61,312	$ 63,151	3.00%	7 months @ Salary (Feb-Sept)
Marketing Manager	Contract													3.00%	
Digital Media Coordinator	Contract													3.00%	
Event Coordinator	Contract													3.00%	
VENUE OPERATIONS															
Security Coordinator	Contract													3.00%	
Production Manager	Contract													3.00%	
Technical Director (audio / video)	$ 66,000	$ 13,860	$ 79,860	$ 79,860	$ 82,256	$ 84,723	$ 87,265	$ 89,883	$ 92,580	$ 95,357	$ 98,218	$ 101,164	$ 104,199	3.00%	6 months @ Salary (April-Sept)
Technical Director (lighting / rigging)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	3.00%	5 months @ Salary (May-Sept)
Technical Directors Temporary Staff x2 (retainer)	$ 10,500	$ -	$ 10,500	$ 10,500	$ 10,815	$ 11,139	$ 11,474	$ 11,818	$ 12,172	$ 12,538	$ 12,914	$ 13,301	$ 13,700	3.00%	5 months @ Flat Retainer (May-Sept)
Facilities Maintenance Supervisor	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	3.00%	
Facilities Operations Worker	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	3.00%	
Facilities Operations Worker	Contract													3.00%	
Facility Manager	Contract													3.00%	
Operations Supervisor (Cntr)	Contract													3.00%	
	$ 442,500	$ 90,720	$ 536,220	$ 536,220	$ 552,307	$ 568,876	$ 585,942	$ 603,520	$ 621,626	$ 640,275	$ 659,483	$ 679,267	$ 699,645		

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"											
Performance Hall Utilization by Event Type Assumptions	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists	Grand Opening - ticketed	Other Non Profit Uses - ticketed	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	
Performance	1	1	0	2	0	0	1	1	1	1	
Second Performance (in a day)	0	0	0	1	0	1	0	0	0	n/a	
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	1		2	2	5	1	1	1	1	
Student Performance	0	0	0	1	4	0	1	1	0	0	
HVAC Presents Performance		1		2	0						
HVAC Presents Second Performance (in a day)				1							
Dark Day	0	0	0	0	0	0	0	0	0	0	
Total Use Days	**1**	**3**	**0**	**9**	**6**	**6**	**3**	**3**	**2**	**2**	

Year 1 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists	Grand Opening - ticketed	Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events/titles	5	10	17	25	14	10	8	6	6	4	105
Performance	5	3	4	7	7	0	2	2	4	2	36
Second Performance (in a day)	0	0	0	3	0	0	0	0	0	0	3
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	6	10	13	6	6	6	4	2	2	55
Student Performance	0	0	3	2	1	0	0	0	0	0	7
HVAC Presents Performance	0	4	0	0	0	3	0	0	0	0	7
HVAC Presents Second Performance (in a day)	0	0	0	0	0	1	0	0	0	0	1
Dark Day	0	0	0	0	0		0	0	0	0	-
Total Use Days	**5**	**10**	**17**	**25**	**14**	**10**	**8**	**6**	**6**	**4**	**108**

Year 2 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events/titles	8	9	23	26	20		16	6	6	4	119
Performance	8	5	8	8	7		6	2	4	2	50
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	12	16	12		6	4	2	2	53
Student Performance	0	0	4	3	1		0	0	0	0	8
HVAC Presents Performance	0	9	0	0	0		2	0	0	0	11
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	**8**	**9**	**23**	**26**	**20**		**16**	**6**	**6**	**4**	**124**

Year 3 Total Utilization	Popular Events (Co-Pro)	Amateur Nights	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	7	7	18	20	20		16	6	6	4	104
Performance	7	7	6	6	7		6	2	4	2	47
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	9	12	12		6	4	2	2	47
Student Performance	0	0	3	2	1		0	0	0	0	6
HVAC Presents Performance		7	0	0	0		2	0	0	0	9
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	**7**	**7**	**18**	**14**	**20**		**16**	**6**	**6**	**4**	**111**

Year 4 Total Utilization	Popular Events (Co-Pro)	Amateur Nights	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	4	5	13	14	20		16	6	6	4	88
Performance	4	5	4	4	7		6	2	4	2	38
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	6	8	12		6	4	2	2	41
Student Performance	0	0	2	1	1		0	0	0	0	5
HVAC Presents Performance	0	5	0	0	0		2	0	0	0	7
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	**4**	**5**	**13**	**14**	**20**		**16**	**6**	**6**	**4**	**92**

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Year 5 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	7	7	18	20	20		16	6	6	4	104
Performance	7	7	6	6	7		6	2	4	2	47
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	9	12	12		6	4	2	2	47
Student Performance	0	0	3	2	1		0	0	0	0	6
HVAC Presents Performance	0	7	0	0	0		2	0	0	0	9
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	7	7	18	20	20		16	6	6	4	111

Year 6 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	8	9	23	26	20		16	6	6	4	119
Performance	8	9	8	8	7		6	2	4	2	54
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	12	16	12		6	4	2	2	53
Student Performance	0	0	4	3	1		0	0	0	0	8
HVAC Presents Performance	0	9	0	0	0		2	0	0	0	11
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	8	9	23	26	20		16	6	6	4	128

Year 7 Total Utilization	Popular Events (Co-Pro)	Amateur Nights	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	4	5	13	14	20		16	6	6	4	88
Performance	4	5	4	4	7		6	2	4	2	38
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	6	8	12		6	4	2	2	41
Student Performance	0	0	2	1	1		0	0	0	0	5
HVAC Presents Performance							2	0	0	0	
HVAC Presents Second Performance (in a day)	0	5	0	0	0		2	0	0	0	7
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	4	5	13	14	20		32	12	12	8	90

Year 8 Total Utilization	Popular Events (Co-Pro)	Amateur Nights	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	7	7	18	20	20		16	6	6	4	104
Performance	7	7	6	6	7		6	2	4	2	47
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	9	12	12		6	4	2	2	47
Student Performance	0	0	3	2	1		0	0	0	0	6
HVAC Presents Performance	0	7	0	0	0		2	0	0	0	9
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	7	7	18	20	20		16	6	6	4	111

Year 9 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	8	9	23	26	20		16	6	6	4	119
Performance	8	9	8	8	7		6	2	4	2	54
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	12	16	12		6	4	2	2	53
Student Performance	0	0	4	3	1		0	0	0	0	8
HVAC Presents Performance	0	9	0	0	0		2	0	0	0	11
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	8	9	23	26	20		16	6	6	4	128

Year 10 Total Utilization	Popular Events (Co-Pro)	*HVAC Amateur Nights*	Dance	Community Events	Resident Artists		Other Non Profit Uses - ticketed *FALLFEST*	Other Non Profit Uses - Non-ticketed	Other Commercial Uses	Other Commercial Uses-Non-Ticketed	TOTALS
# of events	4	5	18	14	20		16	6	6	4	93
Performance	4	5	4	4	7		6	2	4	2	38
Second Performance (in a day)	0	0	0	0	0		0	0	0	0	0
Rehearsal/Tech/Load-in/Load-Out / Dress Reh (with no performance)	0	0	12	8	12		6	4	2	2	46
Student Performance	0	0	2	1	1		0	0	0	0	5
HVAC Presents Performance	0	5	0	0	0		2	0	0	0	7
HVAC Presents Second Performance (in a day)	0	0	0	0	0		2	0	0	0	2
Dark Day	0	0	0	0	0		0	0	0	0	0
Total Use Days	4	5	18	14	20		16	6	6	4	98

SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

UTILIZATION PROJECTIONS	Year 1 Inaugural				Year 2 Active				Base Year Normal				Year 4 Off Year				Year 5 Normal			
	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge
Donor Lounge																				
Currently this space is not identified within the AMP																				
Performance-related event = NC																				
Private Event @ *VIP TENT Venue* (250 pers)																				
Commercial	4	3	$1,957	$13,699	6	3	$1,957	$17,613	4	3	$2,016	$14,110	1	3	$2,016	$8,063	4	3	$2,076	$14,533
Non Profit	2	3	$1,339	$6,695	2	3	$1,339	$6,695	2	3	$1,379	$6,896	2	3	$1,379	$6,896	2	3	$1,421	$7,103
On-stage Event (100 pers)																				
Commercial	2	1	$2,060	$6,180	1	2	$2,060	$6,180	1	1	$2,122	$4,244		1	$2,122	$2,122	1	1	$2,185	$4,371
Non Profit	1	1	$1,185	$2,369	1	1	$1,185	$2,369	1	1	$1,220	$2,440		1	$1,220	$1,220	1	1	$1,257	$2,513
Rehearsal Room @ AMP (150 pers)																				
Commercial		1	$2,112	$2,112		1	$2,112	$2,112		1	$2,175	$2,175		1	$2,175	$2,175		1	$2,240	$2,240
Non Profit	1	2	$1,288	$3,863	1	2	$1,288	$3,863	1	2	$1,326	$3,978	1	2	$1,326	$3,978	1	2	$1,366	$4,098
TOTAL USES	10	11		$ 34,917	11	12		$ 38,831	9	11		$ 33,843	4	11		$ 24,454	9	11		$ 34,858

UTILIZATION PROJECTIONS	Year 6 Active				Year 7 Off Year				Year 8 Normal				Year 9 Active				Year 10 Off Year			
	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge	Operator Use Days	Caterer Use Days	Rental Rate	Rental Charge
Donor Lounge																				
Currently this space is not identified within the AMP																				
Performance-related event = NC																				
Commercial			$0	$0			$0	$0			$0	$0			$0	$0			$0	$0
Non Profit			$0	$0			$0	$0			$0	$0			$0	$0			$0	$0
Private Event @ *VIP TENT Venue* (250 pers)																				
Commercial	6	3	$2,076	$18,686	1	3	$2,138	$8,554	4	3	$2,138	$14,969	6	3	$2,203	$19,824	4	3	$2,203	$15,418
Non Profit	2	3	$1,421	$7,103	2	3	$1,463	$7,316	2	3	$1,463	$7,316	2	3	$1,507	$7,535	2	3	$1,507	$7,535
On-stage Event (100 pers)																				
Commercial	1	2	$2,185	$6,556		1	$2,251	$2,251	1	1	$2,251	$4,502	1	2	$2,319	$6,956	1	1	$2,319	$4,637
Non Profit	1	1	$1,257	$2,513		1	$1,294	$1,294	1	1	$1,294	$2,589	1	1	$1,333	$2,666	1	1	$1,333	$2,666
Rehearsal Room @ AMP (150 pers)																				
Commercial		1	$2,240	$2,240		1	$2,307	$2,307		1	$2,307	$2,307		1	$2,377	$2,377		1	$2,377	$2,377
Non Profit	1	2	$1,366	$4,098	1	1	$1,407	$2,814	1	2	$1,407	$4,221	1	2	$1,449	$4,347	1	2	$1,449	$4,347
TOTAL USES	11	12		$ 41,196	4	10		$ 24,536	9	11		$ 35,904	11	12		$ 43,705	9	11		$ 36,981

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

Venue	Ticket Price Range FROM	Ticket Price Range TO	Ticket Price used for Fee calc.	CC/Presenter Fee	Year 3 Facility Fee	Patron Fee	%	Calc.without Facility Fee	Cross Check	Average for Pro-forma w/o Facility Fee	Total Service Fee including Facility Fee	Year 3 Arts Accessibility Fee	Total Service Fee including Facility + Arts Access Fee
Rehearsal Room	$ -	$ 14.99	$ 10.00	6.00%	$ 2.00	$ 1.50	21.00%	$ 2.10	$ 2.10	$ 2.76	$ 4.10	$ 1.00	$ 5.10
	$ 15.00	$ 24.99	**$ 21.00**	6.00%	$ 2.00	$ 1.50	**13.14%**	**$ 2.76**	$ 2.76		$ 4.76	$ 1.00	$ 5.76
	$ 25.00	$ 34.99	$ 31.00	6.00%	$ 2.00	$ 1.50	10.84%	$ 3.36	$ 3.36		$ 5.36	$ 1.00	$ 6.36
3500 Amphitheater	$ 35.00	$ 49.99	$ 45.00	6.00%	$ 4.00	$ 3.00	12.67%	$ 5.70	$ 5.70	$ 5.70	$ 9.70	$ 1.00	$ 10.70
	$ 50.00	$ 69.99	**$ 63.00**	6.00%	$ 4.00	$ 5.00	13.94%	**$ 8.78**	$ 8.78		$ 12.78	$ 1.00	$ 13.78
	$ 70.00	$ 89.99	$ 83.00	6.00%	$ 4.00	$ 5.00	**12.02%**	$ 9.98	$ 9.98		$ 13.98	$ 1.00	$ 14.98
	$ 90.00	Up	$ 100.00	6.00%	$ 4.00	$ 5.00	11.00%	$ 11.00	$ 11.00		$ 15.00	$ 1.00	$ 16.00

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

BOX OFFICE VOLUME & CHARGES REVENUES

	% of Capacity	Tickets Sold Per Event Type x % Cap	Year 1 # of Events	Year 1 Total Tickets Sold	Year 1 Subscriber Tickets Sold	Year 1 Single Tickets Sold	Year 1 Performance Hall Sub Tix Handling Fee (average incl CC fees)	Year 1 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 1 Facility Fee	Year 1 Arts For All Ticketing Fee (per ticket)	Year 2 # of Events	Year 2 Total Tickets Sold	Year 2 Subscriber Tickets Sold	Year 2 Single Tickets Sold	Year 2 Performance Hall Sub Tix Handling Fee (average incl CC fees)	Year 2 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 2 Facility Fee	Year 2 Arts For All Ticketing Fee (per ticket)	Year 3 # of Events	Year 3 Total Tickets Sold	Year 3 Subscriber Tickets Sold	Year 3 Single Tickets Sold	Year 3 Performance Hall Sub Tix Handling Fee (average incl CC fees)	Year 3 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 3 Facility Fee	Year 3 Arts For All Ticketing Fee (per ticket)	Year 4 # of Events	Year 4 Total Tickets Sold	Year 4 Subscriber Tickets Sold	Year 4 Single Tickets Sold	Year 4 Performance Hall Sub Tix Handling Fee (average incl CC fees)	Year 4 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 4 Facility Fee	Year 4 Arts For All Ticketing Fee (per ticket)	Year 5 # of Events	Year 5 Total Tickets Sold	Year 5 Subscriber Tickets Sold	Year 5 Single Tickets Sold	Year 5 Performance Hall Sub Tix Handling Fee (average incl CC fees)	Year 5 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 5 Facility Fee	Year 5 Arts For All Ticketing Fee (per ticket)
Grand Opening @ AMP	0%	-	4	0			$-	$-	$-	$-																												
~~Grand Opening @ Jewel Room~~	0%	-	0	0			$-	$-	$-	$-																												
Popular Events (Co-Pro)	Per	Per	5	12,300	-	12,300	$-	$107,994	$49,200	$12,300	8	20,100	-	20,100	$-	$114,570	$80,400	$20,100	7	18,100	-	18,100	$-	$158,918	$81,450	$18,100	4	9,000	-	9,000	$-	$79,020	$40,500	$11,250	7	18,100	-	18,100	$-	$158,918	$90,500	$22,625
HVAC Amateur Nights	Per	Per	4	2,400	-	2,400	$-	$13,680	$9,600	$2,400	9	5,000	-	5,000	$-	$43,900	$20,000	$5,000	7	7,000	-	7,000	$-	$39,900	$31,500	$7,000	5	2,450	-	2,450	$-	$13,965	$11,025	$3,063	7	7,000	-	7,000	$-	$39,900	$35,000	$8,750
Community Events @ AMP	35%	1,225	12	14,455	-	14,455	$-	$82,394	$57,820	$14,455	10	12,740	-	12,740	$-	$72,618	$50,960	$12,740	8	9,800	-	9,800	$-	$55,860	$44,100	$9,800	6	6,860	-	6,860	$-	$39,102	$30,870	$8,575	8	9,800	-	9,800	$-	$55,860	$49,000	$12,250
	0%	-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-
Resident Artists Shows @ AMP	35%	1,225	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	6	7,350	-	7,350	$-	$41,895	$29,400	$7,350	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800
	0%	-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-
Dance @ AMP	30%	1,050	6	6,300	-	6,300	$-	$35,910	$25,200	$6,300	8	8,190	-	8,190	$-	$46,683	$32,760	$8,190	6	6,300	-	6,300	$-	$35,910	$25,200	$6,300	4	4,410	-	4,410	$-	$25,137	$17,640	$4,410	6	6,300	-	6,300	$-	$35,910	$25,200	$6,300
~~Non Profit Uses (tkts)~~ *FALLFEST* @ AMP	60%	2,100	2	4,200	-	4,200	$-	$23,940	$16,800	$4,200	6	12,600	-	12,600	$-	$71,820	$50,400	$12,600	6	12,600	-	12,600	$-	$71,820	$56,700	$12,600	6	12,600	-	12,600	$-	$71,820	$56,700	$15,750	6	12,600	-	12,600	$-	$71,820	$63,000	$15,750
	0%	-	0	0	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-
Other Commercial Uses (tkts) @ AMP	60%	2,100	4	8,400	-	8,400	$-	$47,880	$33,600	$8,400	4	8,400	-	8,400	$-	$47,880	$33,600	$8,400	4	8,400	-	8,400	$-	$47,880	$33,600	$8,400	4	8,400	-	8,400	$-	$47,880	$37,800	$10,500	4	8,400	-	8,400	$-	$47,880	$42,000	$10,500
	0%	-	0	0	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-
Subtotal					-	**57,855**	**$0**	**$367,658**	**$231,420**	**$57,855**			-	**74,380**	**$0**	**$439,366**	**$297,520**	**$74,380**			-	**72,000**	**$0**	**$466,148**	**$311,750**	**$72,000**			-	**53,520**	**$0**	**$332,784**	**$233,735**	**$63,348**			-	**72,000**	**$0**	**$466,148**	**$343,900**	**$85,975**
TOTALS				**57,855**				**$367,658**	**$231,420**	**$57,855**		**74,380**				**$439,366**	**$297,520**	**$74,380**		**72,000**				**$466,148**	**$311,750**	**$72,000**		**53,520**				**$332,784**	**$233,735**	**$63,348**		**72,000**				**$466,148**	**$343,900**	**$85,975**
			PH:	**51,555**							PH:	**66,190**							PH:	**65,700**							PH:	**49,110**							PH:	**65,700**						
			ST:	**6,300**							ST:	**8,190**							ST:	**6,300**							ST:	**4,410**							ST:	**6,300**						
Facility Fee - Perf Hall									$4.00								$4.00								$4.50							$4.50								$5.00	
~~Facility Fee - Studio Theatre~~									$-								$-								$-							$-									
Arts Access Fee - All									$1.00								$1.00								$1.00							$1.25								$1.25	

SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

BOX OFFICE VOLUME & CHARGES REVENUES

	% of Capacity	Tickets Sold Per Event Type x % Cap	Year 6 # of Events	Year 6 Total Tickets Sold	Year 6 Subscriber Tickets Sold	Year 6 Single Tickets Sold	Year 6 Performance Hall Sub Tix Handling Fee (average incl CC	Year 6 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 6 Facility Fee	Year 6 Arts For All Ticketing Fee (per ticket)	Year 7 # of Events	Year 7 Total Tickets Sold	Year 7 Subscriber Tickets Sold	Year 7 Single Tickets Sold	Year 7 Performance Hall Sub Tix Handling Fee (average incl CC	Year 7 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 7 Facility Fee	Year 7 Arts For All Ticketing Fee (per ticket)	Year 8 # of Events	Year 8 Total Tickets Sold	Year 8 Subscriber Tickets Sold	Year 8 Single Tickets Sold	Year 8 Performance Hall Sub Tix Handling Fee (average incl CC	Year 8 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 8 Facility Fee	Year 8 Arts For All Ticketing Fee (per ticket)	Year 9 # of Events	Year 9 Total Tickets Sold	Year 9 Subscriber Tickets Sold	Year 9 Single Tickets Sold	Year 9 Performance Hall Sub Tix Handling Fee (average incl CC	Year 9 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 9 Facility Fee	Year 9 Arts For All Ticketing Fee (per ticket)	Year 10 # of Events	Year 10 Total Tickets Sold	Year 10 Subscriber Tickets Sold	Year 10 Single Tickets Sold	Year 10 Performance Hall Sub Tix Handling Fee (average incl CC	Year 10 Single Tix Handling Fee (average incl CC fees & No Subs)	Year 10 Facility Fee	Year 10 Arts For All Ticketing Fee (per ticket)
Grand Opening @ AMP	0%	-																																						
	0%	-																																						
Popular Events (Co-Pro)	Per	Per	8	20,100	-	20,100	$-	$176,478	$100,500	$25,125	4	9,000	-	9,000	$-	$79,020	$49,500	$13,500	7	18,100	-	18,100	$-	$158,918	$99,550	$27,150	8	20,100	-	20,100	$-	$176,478	$120,600	$30,150	4	9,000	-	9,000	$-	$79,020	$54,000	$18,000
HVAC Amateur Nights	Per	Per	9	9,100	-	9,100	$-	$51,870	$45,500	$11,375	5	2,450	-	2,450	$-	$13,965	$13,475	$3,675	7	7,700	-	7,700	$-	$43,890	$42,350	$11,550	9	10,920	-	10,920	$-	$62,244	$65,520	$16,380	5	2,450	-	2,450	$-	$13,965	$14,700	$4,900
Community Events @ AMP	35%	1,225	10	12,740	-	12,740	$-	$72,618	$63,700	$15,925	6	6,860	-	6,860	$-	$39,102	$37,730	$10,290	8	9,800	-	9,800	$-	$55,860	$53,900	$14,700	10	12,740	-	12,740	$-	$72,618	$76,440	$19,110	6	6,860	-	6,860	$-	$39,102	$41,160	$13,720
	0%	-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-
Resident Artists Shows @ AMP	35%	1,225	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800	8	9,800	-	9,800	$-	$55,860	$39,200	$9,800
	0%	-	8	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-	0	0	-	-	$-	$-	$-	$-
Dance @ AMP	30%	1,050	8	8,190	-	8,190	$-	$46,683	$32,760	$8,190	4	4,410	-	4,410	$-	$25,137	$17,640	$6,615	6	6,300	-	6,300	$-	$35,910	$25,200	$9,450	4	4,410	-	4,410	$-	$25,137	$17,640	$6,615	8	8,190	-	8,190	$-	$46,683	$32,760	$16,380
~~Non Profit Uses (tkts)~~ *FALLFEST* @ AMP	60%	2,100	6	12,600	-	12,600	$-	$71,820	$63,000	$15,750	6	12,600	-	12,600	$-	$71,820	$69,300	$18,900	6	12,600	-	12,600	$-	$71,820	$69,300	$18,900	6	12,600	-	12,600	$-	$71,820	$75,600	$18,900	6	12,600	-	12,600	$-	$71,820	$75,600	$25,200
	0%	-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-
Other Commercial Uses (tkts) @ AMP	60%	2,100	4	8,400	-	8,400	$-	$47,880	$42,000	$10,500	4	8,400	-	8,400	$-	$47,880	$46,200	$12,600	4	8,400	-	8,400	$-	$47,880	$46,200	$12,600	4	8,400	-	8,400	$-	$47,880	$50,400	$12,600	4	8,400	-	8,400	$-	$47,880	$50,400	$16,800
	0%	-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-	0	-	-	-	$-	$-	$-	$-
Subtotal		-		**80,930**	-	**80,930**	**$0**	**$523,209**	**$386,660**	**$96,665**		**53,520**	-	**53,520**	**$0**	**$332,784**	**$273,045**	**$75,380**		**72,700**	-	**72,700**	**$0**	**$470,138**	**$375,700**	**$104,150**		**78,970**	-	**78,970**	**$0**	**$512,037**	**$445,400**	**$113,555**		**57,300**	-	**57,300**	**$0**	**$354,330**	**$307,820**	**$104,800**
TOTALS		-		**80,930**				**$523,209**	**$386,660**	**$96,665**		**53,520**				**$332,784**	**$273,045**	**$75,380**		**72,700**				**$470,138**	**$375,700**	**$104,150**		**78,970**				**$512,037**	**$445,400**	**$113,555**		**57,300**				**$354,330**	**$307,820**	**$104,800**
			PH:	**72,740**							PH:	**49,110**							PH:	**66,400**							PH:	**74,560**							PH:	**49,110**						
			ST:	**8,190**							ST:	**4,410**							ST:	**6,300**							ST:	**4,410**							ST:	**8,190**						
Facility Fee - Perf Hall									$5.00								$5.50								$5.50							$6.00								$6.00	
~~Facility Fee - Studio Theatre~~									$-								$-								$-							$-									
Arts Access Fee - All									$1.25								$1.50								$1.50							$1.50								$2.00	

SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

POP ENTERTAINMENT / CONCERTS in AMP @ 3500 Seats

Summary Description	Inaugural				Active				Normal				Off Year				Normal			
	Year 1				Year 2				Year 3				Year 4				Year 5			
Description	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total
Tickets Sold Each Show	3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000	
Total Tickets Sold	3,300	5,000	4,000	12,300	6,600	7,500	6,000	20,100	6,600	7,500	4,000	18,100	-	5,000	4,000	9,000	6,600	7,500	4,000	18,100
Seats Availabile	3,500	7,000	7,000		7,000	10,500	10,500		7,000	10,500	7,000		-	7,000	7,000		7,000	10,500	7,000	
% capacity sold	94%	71%	57%		94%	71%	57%		94%	71%	57%		#DIV/0!	71%	57%		94%	71%	57%	
Estimated Number of Shows	1	2	2	5	2	3	3	8	2	3	2	7	0	2	2	4	2	3	2	7
Average Net Profit	$3,800	$2,800	$1,500		$3,800	$2,800	$1,500		$3,800	$2,800	$1,500		$4,000	$3,000	$1,900		$4,000	$3,000	$1,900	
Total Profit	$3,800	$5,600	$3,000	$12,400	$7,600	$8,400	$4,500	$20,500	$7,600	$8,400	$3,000	$19,000	$0	$6,000	$3,800	$9,800	$8,000	$9,000	$3,800	$20,800
Sponsorship Revenue				$20,000				$30,000				$20,000				$10,000				$20,000
Total Revenue				$32,400				$50,500				$39,000				$19,800				$40,800
OPS Profit/Loss Share			**0.5**	**$16,200**			**0.5**	**$25,250**			**0.5**	**$19,500**			**0.5**	**$9,900**			**0.5**	**$20,400**
Booking Partner Profit/Loss Share			0.5	$16,200			0.5	$25,250			0.5	$19,500			0.5	$9,900			0.5	$20,400

POP ENTERTAINMENT / CONCERTS in AMP

Summary Description	Active				Off Year				Normal				Active				Off Year			
	Year 6				Year 7				Year 8				Year 9				Year 10			
Description	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total	Big Show	Medium Show	Small Show	Total
Tickets Sold Each Show	3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000		3,300	2,500	2,000	
Total Tickets Sold	6,600	7,500	6,000	20,100	-	5,000	4,000	9,000	6,600	7,500	4,000	18,100	6,600	7,500	6,000	20,100	-	5,000	4,000	9,000
Seats Availabile	7,000	10,500	10,500		-	7,000	7,000		7,000	10,500	7,000		7,000	10,500	10,500		-	7,000	7,000	
% capacity sold	94%	71%	57%		#DIV/0!	71%	57%		94%	71%	57%		94%	71%	57%		#DIV/0!	71%	57%	
Estimated Number of Shows	2	3	3	8	0	2	2	4	2	3	2	7	2	3	3	8	0	2	2	4
Average Net Profit	$4,000	$3,000	$2,300		$4,500	$3,400	$2,700		$4,500	$3,400	$2,700		$5,300	$3,900	$3,000		$5,300	$3,900	$3,000	
Total Profit	$8,000	$9,000	$6,900	$23,900	$0	$6,800	$5,400	$12,200	$9,000	$10,200	$5,400	$24,600	$10,600	$11,700	$9,000	$31,300	$0	$7,800	$6,000	$13,800
Sponsorship Revenue				$30,000				$10,000				$20,000				$30,000				$10,000
Total Revenue				$53,900				$22,200				$44,600				$61,300				$23,800
OPS Profit/Loss Share			**0.5**	**$26,950**			**0.5**	**$11,100**			**0.5**	**$22,300**			**0.5**	**$30,650**			**0.5**	**$11,900**
Booking Partner Profit/Loss Share			0.5	$26,950			0.5	$11,100			0.5	$22,300			0.5	$30,650			0.5	$11,900

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Amateur Nights in AMP @ 1200 Seats CAP

Summary Description	Inaugural				Active				Normal				Off Year				Normal			
	Year 1				Year 2				Year 3				Year 4				Year 5			
Description			Small Show	Total			Small Show	Total			Small Show	Total			Small Show	Total			Small Show	Total
Tickets Sold Each Show			800				1,000				1,000				500				1,000	
Total Tickets Sold	-	-	2,400	2,400	-	-	5,000	5,000	-	-	7,000	7,000	-	-	2,450	2,450	-	-	7,000	7,000
Seats Availabile	-	-	3,600		-	-	6,000		-	-	8,400		-	-	5,880		-	-	8,400	
% capacity sold			67%				83%				83%				42%				83%	
Estimated Number of Shows			3	3			5	5			7	7			5	5			7	7
Average Net Profit			$13,453				$18,453				$18,352				$6,852				$19,649	
Total Profit	$0	$0	$40,358	$40,358	$0	$0	$92,263	$92,263	$0	$0	$128,465	$128,465	$0	$0	$33,575	$33,575	$0	$0	$137,540	$137,540
Sponsorship Revenue				$5,000				$8,000				$5,000				$3,000				$5,000
Total Revenue				$45,358				$100,263				$133,465				$36,575				$142,540
OPS Profit/Loss Share			1	**$45,358**			1	**$100,263**			1	**$133,465**			1	**$36,575**			1	**$142,540**
Booking Partner Profit/Loss Share			0	$0			0	$0			0	$0			0	$0			0	$0

Amateur Nights in AMP @ 1200 Seats CAP

Summary Description	Active				Off Year				Normal				Active				Off Year			
	Year 6				Year 7				Year 8				Year 9				Year 10			
Description			Small Show	Total			Small Show	Total			Small Show	Total			Small Show	Total			Small Show	Total
Tickets Sold Each Show			1,000				500				1,100				1,200				500	
Total Tickets Sold	-	-	9,100	9,100	-	-	2,450	2,450	-	-	7,700	7,700	-	-	10,920	10,920	-	-	2,450	2,450
Seats Availabile	-	-	10,920		-	-	5,880		-	-	8,400		-	-	10,920		-	-	5,880	
% capacity sold			83%				42%				92%				100%				42%	
Estimated Number of Shows			9	9			5	5			7	7			9	9			5	5
Average Net Profit			$19,649				$6,042				$24,442				$27,232				$6,932	
Total Profit	$0	$0	$178,803	$178,803	$0	$0	$29,606	$29,606	$0	$0	$171,095	$171,095	$0	$0	$247,814	$247,814	$0	$0	$33,969	$33,969
Sponsorship Revenue				$2,000				$7,500				$6,000				$3,000				$2,000
Total Revenue				$180,803				$37,106				$177,095				$250,814				$35,969
OPS Profit/Loss Share			1	**$180,803**			1	**$37,106**			1	**$177,095**			1	**$250,814**			1	**$35,969**
Booking Partner Profit/Loss Share			0	$0			0	$0			0	$0			0	$0			0	$0

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

RETAIL REVENUES - Concessions Commissions

			Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Year 10	
			Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales	Tickets	Sales
TICKET SALES																						
		AMP	14,578	$124,460	25,290	$214,110	22,350	$202,350	12,585	$101,865	17,450	$182,750	15,945	$149,955	9,155	$88,145	17,800	$187,300	21,880	$227,110	9,155	$88,145
		AMP	9,450	$90,300	29,190	$305,760	27,300	$298,200	25,410	$290,640	13,650	$149,100	14,595	$152,880	12,705	$145,320	13,650	$149,100	12,705	$145,320	14,595	$152,880
		GROSS SALES	**24,028**	**$214,760**	**54,480**	**$519,870**	**49,650**	**$500,550**	**37,995**	**$392,505**	**31,100**	**$331,850**	**30,540**	**$302,835**	**21,860**	**$233,465**	**31,450**	**$336,400**	**34,585**	**$372,430**	**23,750**	**$241,025**
		Total Food @ 100%		$ 24,028		$ 54,480		$ 49,650		$ 37,995		$ 31,100		$ 30,540		$ 21,860		$ 31,450		$ 34,585		$ 23,750
		Total NA Bev @ 100%		$ 67,883		$ 163,440		$ 148,950		$ 113,985		$ 93,300		$ 91,620		$ 65,580		$ 94,350		$ 103,755		$ 71,250
		Total Alcohol @ 100%		$ 122,850		$ 301,950		$ 301,950		$ 240,525		$ 207,450		$ 180,675		$ 146,025		$ 210,600		$ 234,090		$ 146,025
	Food & Beverage Comissions	Caterer		Venue																		
	Food	80%		20%		$ 4,806		$ 10,896		$ 9,930		$ 7,599		$ 6,220		$ 6,108		$ 4,372		$ 6,290		$ 6,917		$ 4,750
	NA Beverage	75%		25%		$ 16,971		$ 40,860		$ 37,238		$ 28,496		$ 23,325		$ 22,905		$ 16,395		$ 23,588		$ 25,939		$ 17,813
	Alcohol	65%		35%		$ 42,998		$ 105,683		$ 105,683		$ 84,184		$ 72,608		$ 63,236		$ 51,109		$ 73,710		$ 81,932		$ 51,109
	Capture Rate (buyers per show)	50.00%																				
	Gross Sales																					
	Concessions Comissions			0%		***$64,774***		***$157,439***		***$152,850***		***$120,279***		***$102,153***		***$92,249***		***$71,876***		***$103,588***		***$114,787***		***$73,671***

People
# of trans/pp/event
Avg spend per transaction

RETAIL REVENUES - Catering Commissions (no rent)

				Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8		Year 9		Year 10	
Operator	Capacity		Per Capita	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator	# of events	Operator
FOH VIP Tent	250		$ 20.00	6	$6,000	8	$8,000	6	$6,000	3	$3,000	6	$6,000	8	$8,000	3	$3,000	6	$6,000	8	$8,000	6	$6,000
AMP Stage	100		$ 25.00	3	$1,500	2	$1,000	2	$1,000	0	$-	2	$1,000	2	$1,000	0	$-	2	$1,000	2	$1,000	2	$1,000
Rehearsal Room @ AMP	150		$ 20.00	1	$600	1	$500	1	$500	1	$500	1	$600	1	$600	1	$600	1	$600	1	$600	1	$600
Catering Contribution Margin : Operator @ AMP			20%		*$8,100*		*$9,500*		*$7,500*		*$3,500*		*$7,600*		*$9,600*		*$3,600*		*$7,600*		*$9,600*		*$7,600*
Caterer	Capacity		Per Capita	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer	# of events	Caterer
FOH VIP Tent	250		$ 30.00	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000	6	$9,000
AMP Stage	100		$ 40.00	2	$1,600	3	$2,400	2	$1,600	2	$1,600	2	$1,600	3	$2,400	2	$1,600	2	$1,600	3	$2,400	2	$1,600
Rehearsal Room @ AMP	150		$ 30.00	3	$2,700	2	$1,800	3	$2,700	3	$2,700	3	$2,700	3	$2,700	2	$1,800	3	$2,700	3	$2,700	3	$2,700
Catering Contribution Margin : Operator @ AMP			20%		*$13,300*		*$13,200*		*$13,300*		*$13,300*		*$13,300*		*$14,100*		*$12,400*		*$13,300*		*$14,100*		*$13,300*
Total Catering Commisssions (no rent)					**$21,400**		**$22,700**		**$20,800**		**$16,800**		**$20,900**		**$23,700**		**$16,000**		**$20,900**		**$23,700**		**$20,900**

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SUNSET RIDGE AMPHITHEATER @ "ENHANCED DESIGN"

RETAIL REVENUES - Concessions Commissions

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Concessions by Event Type										

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Grand Opening										
Tickets Sold	-	-	-	-	-	-	-	-	-	-
Food	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NA Bev	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Alcohol	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Popular Events (Co-Pro)										
Tickets Sold	6,150	10,050	9,050	4,500	9,050	5,025	4,500	9,050	10,050	4,500
Food	$ 6,150	$ 10,050	$ 9,050	$ 4,500	$ 9,050	$ 5,025	$ 4,500	$ 9,050	$ 10,050	$ 4,500
NA Bev	$ 18,450	$ 30,150	$ 27,150	$ 13,500	$ 27,150	$ 15,075	$ 13,500	$ 27,150	$ 30,150	$ 13,500
Alcohol	$ 55,350	$ 90,450	$ 81,450	$ 40,500	$ 81,450	$ 45,225	$ 40,500	$ 81,450	$ 90,450	$ 40,500
Total	$ 79,950	$ 130,650	$ 117,650	$ 58,500	$ 117,650	$ 65,325	$ 58,500	$ 117,650	$ 130,650	$ 58,500
HVAC Amateur Nights										
Tickets Sold	1,200	2,500	3,500	1,225	3,500	4,550	1,225	3,850	5,460	1,225
Food	$ 1,200	$ 2,500	$ 3,500	$ 1,225	$ 3,500	$ 4,550	$ 1,225	$ 3,850	$ 5,460	$ 1,225
NA Bev	$ 3,600	$ 7,500	$ 10,500	$ 3,675	$ 10,500	$ 13,650	$ 3,675	$ 11,550	$ 16,380	$ 3,675
Alcohol	$ 10,800	$ 22,500	$ 31,500	$ 11,025	$ 31,500	$ 40,950	$ 11,025	$ 34,650	$ 49,140	$ 11,025
Total	$ 15,600	$ 32,500	$ 45,500	$ 15,925	$ 45,500	$ 59,150	$ 15,925	$ 50,050	$ 70,980	$ 15,925
Community Events @ AMP										
Tickets Sold	7,228	12,740	9,800	6,860	4,900	6,370	3,430	4,900	6,370	3,430
Food	$ 7,228	$ 12,740	$ 9,800	$ 6,860	$ 4,900	$ 6,370	$ 3,430	$ 4,900	$ 6,370	$ 3,430
NA Bev	$ 21,683	$ 38,220	$ 29,400	$ 20,580	$ 14,700	$ 19,110	$ 10,290	$ 14,700	$ 19,110	$ 10,290
Alcohol	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 28,910	$ 50,960	$ 39,200	$ 27,440	$ 19,600	$ 25,480	$ 13,720	$ 19,600	$ 25,480	$ 13,720
0										
Tickets Sold	-	-	-	-	-	-	-	-	-	-
Food	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NA Bev	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Alcohol	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Dance @ AMP										
Tickets Sold	3,150	8,190	6,300	4,410	3,150	4,095	2,205	3,150	2,205	4,095
Food	$ 3,150	$ 8,190	$ 6,300	$ 4,410	$ 3,150	$ 4,095	$ 2,205	$ 3,150	$ 2,205	$ 4,095
NA Bev	$ 9,450	$ 24,570	$ 18,900	$ 13,230	$ 9,450	$ 12,285	$ 6,615	$ 9,450	$ 6,615	$ 12,285
Alcohol	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total	$ 12,600	$ 32,760	$ 25,200	$ 17,640	$ 12,600	$ 16,380	$ 8,820	$ 12,600	$ 8,820	$ 16,380
Other Non Profit Uses (tktd) FALLFEST @ AMP										
Tickets Sold	2,100	12,600	12,600	12,600	6,300	6,300	6,300	6,300	6,300	6,300
Food	$ 2,100	$ 12,600	$ 12,600	$ 12,600	$ 6,300	$ 6,300	$ 6,300	$ 6,300	$ 6,300	$ 6,300
NA Bev	$ 6,300	$ 37,800	$ 37,800	$ 37,800	$ 18,900	$ 18,900	$ 18,900	$ 18,900	$ 18,900	$ 18,900
Alcohol	$ 18,900	$ 113,400	$ 113,400	$ 113,400	$ 56,700	$ 56,700	$ 56,700	$ 56,700	$ 56,700	$ 56,700
Total	$ 27,300	$ 163,800	$ 163,800	$ 163,800	$ 81,900	$ 81,900	$ 81,900	$ 81,900	$ 81,900	$ 81,900
Other Commercial Uses tktd @ AMP										
Tickets Sold	4,200	8,400	8,400	8,400	4,200	4,200	4,200	4,200	4,200	4,200
Food	$ 4,200	$ 8,400	$ 8,400	$ 8,400	$ 4,200	$ 4,200	$ 4,200	$ 4,200	$ 4,200	$ 4,200
NA Bev	$ 8,400	$ 25,200	$ 25,200	$ 25,200	$ 12,600	$ 12,600	$ 12,600	$ 12,600	$ 12,600	$ 12,600
Alcohol	$ 37,800	$ 75,600	$ 75,600	$ 75,600	$ 37,800	$ 37,800	$ 37,800	$ 37,800	$ 37,800	$ 37,800
Total	$ 50,400	$ 109,200	$ 109,200	$ 109,200	$ 54,600	$ 54,600	$ 54,600	$ 54,600	$ 54,600	$ 54,600

Event Type	Grand Opening	Popular Events (Co-Pro)	HVAC Amateur Nights	Community Events @ AMP	Dance @ AMP	Other Non Profit Uses (tktd) FALLFEST @ AMP	Other Commercial Uses tktd @ AMP	
Food		$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	$ 1.00	
NA Bev		$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 3.00	$ 2.00	
Alcohol		$ 9.00	$ 9.00	$ -	$ -	$ 9.00	$ 9.00	
Total F&B		$ 13.00	$ 13.00	$ 4.00	$ 4.00	$ 13.00	$ 12.00	

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JRD Public Infrastructure District (PID) Funding Options

- Villages 1 – 3 – 4 -5 Investments re-allocate to Village 2

HEBER VALLEY ARTS CENTER

HEBER CITY est 1889

RAINTREE INVESTMENT CORPORATION

JRD Project Development 2025

- Design Architect RFP - contract ➔ General Contractor Bid
- Heber Valley Arts Center consulting services – contract for fundraising and project management

HEBER VALLEY ARTS CENTER

HEBER CITY est 1889

RAINTREE INVESTMENT CORPORATION

Sunset Amphitheater

Jordanelle Ridge



Heber City Council Staff Report

MEETING DATE:	3/4/2025
SUBJECT:	Ordinance 2025-02 Amending the Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat
RESPONSIBLE:	Kyle Turnbow
DEPARTMENT:	Engineering
STRATEGIC RELEVANCE:	Nescessary Administrative Action, Infrastructure Sustainabiity

SUMMARY

The policy questions include the following:

1. Should the City Council adopt Staff's proposed updates to:
a. Engineering Standard Specifications and Drawings
b. Storm Water Design Manual
c. Standard Plat

RECOMMENDATION

Staff recommends that the City Council adopt Staff's proposed updates to the Engineering Standards Specifications and
Drawings, Storm Water Design Manual, and Standard Plat.

BACKGROUND

The subject documents have already been adopted by the City. From time to time, updates are necessary to stay abreast of current industry practices, State regulations, and to make clarifications.

DISCUSSION

Many of the changes to the Standard Specifications and Drawings were to address review comments from the Utah Division of Drinking Water. Heber City has the Division of Drinking Water review our Standards to ensure they are up to State code so that we can review our own plans for water system improvements and do not have to submit plans to them for review. This allows Heber City to more efficiently review plans and perform necessary engineering projects. Other changes to the

Specifications and Drawings were primarily clarifications, part number updates, and formatting.

The Storm Water Design Manual required design criteria adjusted to allow for a wider variety of hydrodynamic separators allowed. The initial criteria was too strict and eliminated too many manufacturers from being able to provide an equivalent product. The distance to groundwater in infiltration basins was also increased from 2 ft to 4 ft to insure proper filtration of storm water prior to entering groundwater.

The Standard Plat Template had a couple of signature boxes modified so that plats can be approved and recorded in a more streamlined manner.

FISCAL IMPACT

Necessary Administrative Action, No direct Fiscal Impact to the City

CONCLUSION

Staff recommends these updates for the previously described reasons.

ALTERNATIVES

1. Approve as proposed
2. Approve as amended
3. Continue
4. Deny

POTENTIAL MOTIONS

Alternative 1 - Approval - Staff Recommended Option

I move to **approve** the item as presented, with the findings and conditions as presented in the conclusion above.

Alternative 2 - Approve as Amended

I move to **approve** the item as amended, as follows.

Alternative 3 - Continue
I move to **continue** the item to another meeting on , with direction to the applicant and/or Staff on information and / or changes needed to render a decision, as follows:
Alternative 4 - Denial
I move to **deny** the item with the following findings.

ACCOUNTABILITY

Department: Engineering
Staff member: Kyle Turnbow, Engineer

EXHIBITS

1. Standard Specifications Changes 2025
2. Complete Standard Drawings updates 250224
3. Heber City Storm Water Design Manual 2025 Update 250224
4. Standard Plat Template Changes 2025
5. AG Standard Spec Ord 2025-02 250224

HEBER CITY STANDARD SPECIFICATIONS AND DRAWINGS

HEBER CITY

HEART OF THE WASATCH BACK

January 2025~~September 2023~~

Prepared by:

HEBER CITY CORPORTATION
75 North Main Street
Heber City, UT 84032

STANDARD SPECIFICATIONS
TABLE OF CONTENTS

Spec. No.	Last Rev.	Specification Name	
00200	06/21	Permit Requirements	Addressed DDW Comments, Formating and grammar issues
00700	01/25~~09/23~~	General Improvement Requirements	
00900	06/21	Procedural Policy for the Water and Sewer	
01450	06/21	Testing and Process Control	
02150	02/19	Shoring and Underpinning	
02205	02/19	Common Fill	
02206	01/25~~02/19~~	Select Fill	Formatting issues
02225	01/25~~06/21~~	Excavation and Backfill Operations	Addressed DDW Comments
02245	02/19	Low Density Concrete Backfill (Flowable Fill)	
02250	02/19	Soil Compaction	
02504	01/25~~06/20~~	Asphalt Concrete	Clarified Asphalt Spec
02505	02/19	Emulsified Asphalt Slurry Seal	
02510	01/25~~06/21~~	Asphalt Paving	Changed roughness Spec to include more roads in requirement and added Pay Reduction Table to Asphalt Compaction Specs
02512	02/19	Restoration of Surface Improvements	
02513	06/21	Utility Pothole Repair – Keyhole Method	
02607	09/23	Manholes and Covers	
02609	09/23	Grease and Sand Interceptor	
02660	01/25~~02/19~~	Pipeline Testing	Sewer Lateral camera update,
02668	01/25~~09/23~~	Water Transmission and Distribution Systems	Added single & dual bolt fittings, Addressed DDW Comments
02675	06/21	Disinfection	
02720	09/23	Sanitary Sewer and Storm Drain Systems	
02772	09/23	Ponds & Sumps	
02832	02/19	Fences	
03200	02/19	Concrete Reinforcement	
03216	06/21	Concrete Structures, Driveway, Sidewalk, Curb and Gutter	
03304	02/19	Portland Cement Concrete	
03310	06/21	Concrete Work	
03345	02/19	Concrete Finishing	
16530	09/23	Street Lighting	
16532	09/23	Commercial Business Street Lighting (Historic)	
16533	09/23	North Village Zone Street Lighting	
APPENDIX A	01/25~~09/23~~	Approved Equivalents	Part # updates, removed the Nycor lid due to manufacturing issues

STANDARD DRAWINGS FOLLOW SPECIFICATIONS

SECTION 00200

PERMIT REQUIREMENTS

PART 1 GENERAL

1.01 PURPOSE OF INTENT

A. The purpose of this section is to describe Heber City's Department of Public Work's policies for issuing permits and to control any excavation and construction operations in the public way in Heber City. All contractors and utility companies proposing to construct, repair or replace any facility within the public way, shall contact the Heber City Department of Public Works and complete all permit requirements prior to commencing proposed work as outlined in this section.

B. Utility companies and contractors constructing approved facilities in new subdivision streets shall not be required to obtain a "Street cut and/or Excavation Permit", but will still be subject to City inspection and compliance with subdivision requirements.

1.02 POLICIES

A. Permittee must be licensed with the State of Utah. It is the Policy of Heber City that contractors desiring to perform work in the City's public way shall be properly licensed in the State of Utah. The acceptable licenses include:

TYPE OF WORK	LICENSE
Any type of concrete work	E100 or S260
Paving	E100 or S260
Landscaping	E100 or S330
Buried gas, telephone, water, irrigation and power lines	E100 or S410
Sanitary sewer and storm drains	E100 or S410
Asphalt patching	E100, or S260
Trenching	E100
Highway sign installation	E100 or S440
Manhole covers	E100
Paint striping highways	E100, S260, or S270

Exceptions: A license shall not be required when the Permittee is a public utility company.

B. Policy for determining when "permit waivers" can be granted. Working within the public way without a permit violates Heber City ordinances unless the permit is waived by the Public Works Department. Waivers can be granted by the Public Works Department when any of the following conditions occur:

1. When routine maintenance work which is being done by the City, State and utility personnel does not involve excavations in the City's public way, i.e., crack sealing, street

resurfacing and repair, snow plowing, sanding, sweeping, garbage collection, storm drain cleaning, leaves pickup, above grade work, etc.

2. When a Permittee allows other contractors or utility companies to perform work in the permitted trench limits.

3. When utilities must be relocated or adjusted in conjunction with a City Public Works Department sponsored project provided the utility work is being accomplished within one week of the time the City or its Contractor is scheduled to begin construction at that location and provided the work is coordinated and approved by the City's Public Works Department.

C. Policy for issuing no fee permits. The Public Works Department reserves the right to issue "no fee permits" for work in the public way when the following conditions are met:

1. When utility companies are doing excavation work and such work is required in conjunction with a City Public Works Department project, and the work is required to be accomplished prior to the execution of the Public Works Department contract.

2. When the City Public Works Department is repairing or maintaining public way facilities such as curbs, gutters, cross drains, storm drains, traffic facilities, driveway, sidewalk, etc, and such work requires excavation.

3. When frames and lids in paved surfaces are raised or lowered providing the work does not disturb the underlying roadbase material.

4. When the work is otherwise covered under a separate bond in favor of Heber City and approval for a "No Fee Permit" is authorized by the Heber City Engineer.

D. Policy for revoking "Permit Waivers" and "No Fee Permits". "Permits Waivers" and "No Fee Permits" will be revoked by the Public Works Department if the work is defective or requires action or supplemental inspection by the Public Works Department. In the revocation proceedings, the Public Works Department shall serve written notice which defines the problems encountered and the time (at least one day) the Permittee has to correct the problem. If the work is not satisfactorily completed within the time specified, the "Permit Waiver" or the "No Fee Permit" shall be revoked. The Permittee will be required to secure a Fee Permit before proceeding to complete the work.

E. Policy for extending permit construction time limits. Subject to the Public Works Department's approval, permits which expire may be extended but may also be subject to payment of a permit extension fee as shown in the current Heber City Consolidated Fee Schedule. The length of the extension determined by the Permittee shall be subject to the approval of the Public Works Department.

1.03 GENERAL CONDITIONS

A. Permit: When the work is in progress, the Permittee shall have at the work site a copy of the permit and the Contractor's License Number under which the work is being performed.

B. Emergency work: Maintenance of pipelines or facilities in the public way may proceed without a permit when emergency circumstances demand the work be done immediately, provided a permit could not reasonably and practicably have been obtained beforehand.

In the event that emergency work is commenced on or within any public way of the City, the Public Works Department shall be notified within one-half hour when the work commences or as soon as possible from the time the work is commenced. If emergency work is commenced during

off business hours, the Public Works Department will be notified within one (1) hour of the start of work on the first regular business day on which City offices are open after such work commences, and, at the discretion of the Public Works Department, a permit may be issued which shall be retroactive to the date when the work was begun. Before commencing and while conducting emergency work, all necessary safety precautions for the protection of the public and the direction and control of traffic shall be taken. None of the provisions of these regulations are waived for emergency situations except the prior permit requirements.

C. Private access: Temporary, all weather roadways, driveway, walks, and right-of-ways for vehicles and pedestrians shall be constructed and continuously maintained where required.

D. Existing utilities: The Contractor shall use extreme caution to avoid a conflict, contact or damage to existing utilities, such as power lines, sewer lines, storm drains, street lights, telephone lines, television lines water lines, gas lines, poles or other appurtenances during the course of construction of this project. Any such conflict, contact or damage shall be immediately communicated to the Public Works Department.

E. Preconstruction pictures of existing public way improvements: The Permittee may secure pictures of the conditions of the existing public way improvements such as curbing, sidewalk, landscaping, asphalt surfaces, etc. In the event that public way improvements are damaged and no pictures are taken, the Public Works Department will assume the correction of the damage is the responsibility of the Permittee.

PART 2 REQUIREMENTS

2.01 STREET CUT AND/OR EXCAVATION PERMIT REQUIREMENTS

A. No excavations or street cuts shall be performed within the public right of way without first obtaining a permit from the City. Cut permits shall be valid for a period of 30 calendar days from the date of issuance. Such permits shall be issued by the Public Works Department upon the applicant meeting the conditions and making the commitments outlined below:

1. Show proof that a competent, responsible, and licensed contractor will do the work.

2. Present evidence of public liability insurance in an amount of not less than $200,000.

3. Post a $3,000 cash bond, an adequate performance bond, or a $10,000 blanket license and permit bond. The cash bond or performance bond will be held by the City to guarantee that the required improvements, restoration work, surface and every part thereof, will remain in good condition for a period of 2 years after final acceptance.

4. Agree, at no cost to the City, to make all repairs and to maintain the improvements, the trench, the surface, and every part thereof in good condition during the two (2) year warranty period.

5. Provide proper traffic signage in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) and provide for and maintain through traffic in a form approved by the City Engineer at all times throughout the duration of the work.

6. Obtain approval from the City Engineer for any required road closures and provide 48 hours notice to those responsible for emergency services: e.g. school authority, law enforcement and fire protection officials.

7. Properly backfill or plate all cuts and excavations at the end of each working day.

8. Obtain City inspection of the work. Calls for inspection need to be made 24 hours in advance.

9. Repair roadway surfaces with temporary “cold mix” asphalt surfacing, two (2) inches thick, if permanent “hot mix” asphalt paving cannot be completed within 2 days of backfilling the trench. Temporary surfaces must remain smooth and flush with the road surface, and repaired as necessary by the contractor to maintain this condition, until permanent paving is complete.

10. Backfill with untreated base course material compacted to 95 percent of the maximum dry density, starting from the pipe bedding and continuing up to the bottom of the pavement. Excavated material is not to be used for backfill unless contractor can provide density testing, and material is in compliance with Section 02225.3.09 of the City Standard Specifications.

11. Permanent resurfacing shall be per Heber City Standard Specifications and a minimum of 4 inches thick. Paving width shall extend 12 inches beyond each side of the re-compacted width of the trench. Existing pavement edges shall be saw cut to form a clean line. Asphalt edges shall be tacked and rolled with a steel drum roller to achieve a smooth level surface.

12. Fees: The application for a permit authorizing excavation and street cuts shall be accompanied by the fee established by the most current Heber City fee schedule that has been approved and adopted by the Heber City Council.

13. Temperatures must be warm enough to avoid the risk of frost damage to existing utilities and assure proper compaction. Road cut permits will be allowed between April 1st and October 15th. Road Cuts outside of these dates will be prohibited by the City once the temperature drops below 32° night or day, ground is frozen, or compaction cannot be obtained. This does not apply to borings, emergencies and excavations beyond 5 feet from edge of asphalt.

2.02 EXCAVATION OPERATIONS

A. Blue stakes: Before commencing excavation operations, the Permittee shall call “Blue Stakes” and Heber City Public Works Department.

B. Traffic control devices: Traffic control devices such as barricades, signs and cones must be in place before excavation begins.

C. Protection of paved surfaces outside of excavation area: In order to avoid unnecessary damage to paved surfaces, backhoes, outriggers, track equipment or any other construction equipment that may prove damaging to asphalt shall use rubber cleats or paving pads when operating on or crossing said surfaces.

2.03 ENVIRONMENTAL CONTROL

A. Dust and debris: The Permittee or Contractor shall keep dust and debris controlled at the work site at all times. If necessary, wet down dusty areas with water and provide containers for debris. The City Engineer reserves the right to shut down the work or issue a citation if dust is not controlled.

B. Noise: The Permittee or Contractor shall keep neighborhood free of noise nuisance in accordance with the Noise Ordinance.

C. Cleanup: The Permittee or Contractor shall remove all equipment, material, barricades and similar items from the right-of-way. Areas used for storage of excavated material will be smoothed and returned to their original contour.

D. Vacuum sweeping or hand sweeping shall be required when the Public Works Department determines cleaning equipment is ineffective.

2.04 ENFORCEMENT

A. Violators of these regulations of working within the Public Way shall be subject to the provisions of Heber City Ordinances.

END OF SECTION

SECTION 00700

IMPROVEMENT REQUIREMENTS

PART 1 GENERAL

This section defines the general requirements for improvements to be built by the Developer. The Developer is responsible to comply with these Standard Specifications. Alterations, substitutions, or changes from these Standard Specifications shall not be allowed unless prior authorization is obtained from the City Engineer. The developer is responsible for providing all documentation and research supporting requests for changes to these Standards, and the associated costs.

1.01 Street and utility improvements are required along the entire frontage of property being developed, extending to property lines to accommodate future development.

1.02 Public pipelines through private property shall typically be in dedicated home-owner-association or business-owner-association open space centered in a 20-feet-wide easement in favor of the City. Easements must extend 10 feet beyond the end of the utility. Show easements on the development plat and on the City's Standard Easement forms, which grant the easements to the City. Easements must be executed and returned to the City Office prior to acceptance being granted. Easements in the name of the City shall not be recorded by anyone except the City.

1.03 All parcels receiving water, sewer, or irrigation service shall have their own independent services and laterals. These laterals or services shall be contained within the parcel or along the frontage of the property for which the service is intended to eliminate special utility easements crossing adjacent properties.

1.04 For residential subdivisions, public utility easements, of not less than ten feet in width, are required on front lot lines. Public utility and/or drainage easements, of not less than 10 feet, are required on side lot lines and on rear lot lines where needed, when requested by public utility companies, or as otherwise required or approved by the City Engineer. City utilities shall normally be placed in City rights-of-way. When approved by the City Engineer, City utilities may be placed beneath private streets, private parking areas, or in other common open space in an exclusive City utility easement of not less than 20 feet in width. Easements shall be provided to the City using the City's standard utility easement language in use at the time such easements are provided. Easements for commercial or industrial development shall generally follow the same requirements.

~~1.04~~1.05 All utilities passing under permanent structures such as retaining walls, canals, and other similar features shall be installed in a casing extending a reasonable distance from the feature to allow excavation of the casing ends without disturbing the structure.

1.0~~6~~5 DEFINITIONS

ACCESS: Any driveway or other point of entry or exit, such as a street, road, or highway that connects to the general street system. Where two public streets intersect, the secondary street is considered the access.

ACKNOWLEDGEMENT (Acceptance of Plans): Recognition by the City that the Engineer of Record, has certified his or her construction plans and supporting information to be in compliance with the Heber City Code and Standard Specifications and Drawings.

APPLICANT: Any person, corporation, entity, designee, or agency applying for a permit.

APPROVED EQUAL: Equipment or material which, in the opinion of the City's Representative, is equal in quality, durability, appearance, strength, design, performance, physical dimensions, and arrangement to the equipment or material specified, and will function adequately in accordance with the general design.

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AS-BUILT DRAWINGS: Drawings which show the Project as actually-constructed, and which include any and all changes made to the construction plans before and during construction.

BEST MANAGEMENT PRACTICE (BMP): Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the State.

CITY INSPECTOR: The authorized representative of the City or Engineer assigned to observe the Work performed, or materials furnished by the Contractor in an effort to ensure compliance with City requirements.

CITY/OWNER: Wherever the word "City" or "Owner" appears, it shall be interpreted to mean "Heber City", unless otherwise denoted.

CONSTRUCTION ACTIVITIES: Clearing, dredging, excavating, and grading of land and other activities associated with buildings, structures or other types of real property such as utilities, bridges, dams, and roads. Includes mobilization/demobilization and any other activity that occurs on site.

DRIVEWAY: A grade-separated access constructed within the right-of-way connecting the public street with adjacent property.

EASEMENT: An interest in real property that conveys use, but not ownership, of a portion of an owner's property.

ENGINEER: The City Engineer, or his or her representative.

ENGINEER-OF-RECORD: The professional engineer, licensed in the State of Utah, who prepared, or directly supervised the preparation of the engineering drawings and documents presented to the City for acknowledgement, and who shall accept sole responsibility for the completeness and accuracy of the drawings and documents presented to the City.

ESSENTIAL INFRASTRUCTURE: Essential infrastructure includes: water, sewer, irrigation, storm drain, curb, pavement, and street signs for emergency wayfinding. The access requirements of IFC Chapter 5 and Appendix D must be installedand approved prior to final inspection and the issuance of a Certificate of Occupancy. Temporary roads, where approved, are required to be capable of supporting vehicle loading under all weather conditions, and must meet the following criteria:

A. The surface of the road should be capable of carrying the load of the anticipated emergency response vehicles and be drivable in all kinds of weather.
B. Asphalt pavement.
C. Access roads shall be maintained for emergency and fire access throughout the duration of the project.
D. Fire hydrants must be installed and functional prior to combustible materials arrival on the site.

FINAL ACCEPTANCE OF PUBLIC INFRASTRUCTURE: The date specified in writing by the Engineer when all work, including all punch list work designated by the Engineer, is complete and accepted by the City after the completion of the warranty period.

INSPECTED AND ACCEPTED or ACCEPTANCE: City recognition of infrastructure conformance to all applicable City Standards.

INSPECTION: A review of the project, including but not limited to a visual review of the work completed to date. It does not include or imply an exhaustive or detailed review of the Work nor does it create a duty on the part of the Engineer or Owner to detect latent defects.

INTERSECTION: The general area where two or more streets join or cross at grade.

LAW: Any applicable City, County, State, or federal statutes or regulations governing anything relating to the Work embodied in the Agreement.

LOW-IMPACT DEVELOPMENT (LID): An approach to land development, or redevelopment, that works with nature to more closely mimic pre-development hydrologic functions.

PARTIAL STREET: A street that has full frontage improvements on the near side, the full width of pavement, and curb on the opposite side.

PAVEMENT: The uppermost layer of bituminous or Portland-cement concrete material placed on the traveled way or shoulders for a riding surface, whether rigid or flexible in composition. This term is used interchangeably with "surfacing."

PROFESSIONAL ENGINEER: An engineer who is licensed to practice in the State of Utah.

PROFESSIONAL LAND SURVEYOR: A land surveyor who is licensed to practice in the State of Utah.

PUBLIC UTILITY EASEMENT (PUE): A property right provided for "dry" utilities (gas, power, telecom) that are regulated by the Public Service Commission. City utilities are not public utilities.

RECOGNIZED-AND-GENERALLY-ACCEPTED GOOD ENGINEERING PRACTICES (RAGAGEPs): Practices that are based on established codes, standards, published technical reports or recommended practices or similar documents. RAGAGEPs are not practices from other cities or practices promoted by individuals based on their individual professional judgement.

RIGHT-OF-WAY (ROW): All public rights-of-way and easements, public footpaths, walkways and sidewalks, streets, roads, highways, alleys, and water or drainage ways. It does not, however, include Public Utility easements not within Public Ways of the City.

STANDARD SPECIFICATIONS: The Standard Specifications and Drawings for Heber City.

STREET: A general term for denoting a public way or private way for the purpose of transporting people, materials, and goods.

SUBGRADE: That portion of the roadbed surface which has been prepared, as specified, and upon which a layer of specified roadbed material or base, or sub-surfacing, or pavement is to be placed.

SUBSTANTIVE REVIEW: A general evaluation of the overall design and general compliance with the City Code and engineering standards. It is not an exhaustive review for compliance with each specific provision of the City Code, other applicable standards or regulations, or RAGAGEPs. Substantive review shall not shift the responsibility and liability for the completeness and accuracy of the plans and related designs from the Engineer-of-Record to the City.

SURFACE OR SURFACING: The uppermost layer of material placed on the traveled way or shoulders, and is usually of asphalt or concrete. This term is used interchangeably with "pavement."

WORK: The construction services performed including materials on City infrastructure and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations to construct a project. The term also includes the supervision, inspection, and other on-site functions incidental to the actual construction.

1.0~~6~~7 ADOPTION OF HEBER CITY STANDARD SPECIFICATIONS AND PLANS MANUAL

Heber City has adopted the following as the basis for the Heber City Standard Specifications and

Drawings:

A. Heber City Standard Specifications and Drawings Manual, as included herein.
~~B.~~ Heber City Storm Water Design Manual. All storm-drainage-related work not specifically

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B. described in said Manual shall conform to Mile High Flood District Urban Storm Drainage Manual, current edition (MHFD Manual).
C. International Fire Code (IFC), current edition, Appendix D.
D. All transportation-related work not specifically described in these Standards shall conform to the latest editions of: policies and practices published by the American Association of State Highway Transportation Officials (AASHTO), or the Institute of Transportation Engineers (ITE), or the Utah Department of Transportation (UDOT) Roadway Design Manual, the selection of which shall be at the sole discretion of the City Engineer.
E. FHWA and Utah Manual on Uniform Traffic Control Devices for Highways and Streets (MUTCD).
F. All work not specifically described in these Standards, MHFD Manual, AASHTO, ITE, IFC Appendix D, and MUTCD shall conform to RAGAGEPs. When none of the above-referenced standards apply or are otherwise determined as acceptable by the City. The City Engineer will be allowed two weeks to provide an adequate specification to control and provide guidelines for construction.

The Heber City Standard Specifications and Drawings Manual is available for download at www.heberut.gov.

1.087 CITY ENGINEER'S AUTHORITY

A. The City Engineer has the authority to provide Substantive Review of submitted Construction Drawings, studies, and supporting documentation.
B. The City Engineer shall provide feedback pursuant to his/her Substantive Review of the Construction Drawings, studies, and supporting documentation.
C. Changes to address the City Engineer's feedback shall be made to the Construction Drawings and returned to the City Engineer for City acknowledgement of the Construction Drawings.
D. The City Engineer has authority to issue Stop Work Orders when construction is progressing contrary to the City Code, the City's Standard Specifications and Drawings, or an acknowledged set of construction drawings.
E. The City Engineer will make the decision relating to all questions which may arise as to the quality and acceptability of alterations, substitutions, or changes proposed. In case any question should arise, relative to these Standards, the final determination or decision of the City Engineer shall be complied with as a condition of the Developer receiving final acceptance ~~approval~~ of the work in question.
F. The City Engineer has additional authority such as is stated in these Standards and the City Code.

1.098 CONSTRUCTION NOTES

The following are the Standard City Construction Notes. Additional notes may be required for specific projects at the discretion of the City Engineer.

A. TYPICAL

1. Contractor assumes all responsibility for job site conditions during construction of this project, including the safety and well-being of all persons and property. This responsibility shall apply continuously and not be limited to normal working hours.
2. Contractor shall obtain all applicable permits and/or written agreements necessary to complete the work.
3. City owned water valves may be operated only by City staff. Opening, closing or tampering with a City water valve without permission of the City public works department is a Class B misdemeanor punishable by up to six months in jail and a $1,000 fine.
4. Contractor shall schedule a pre-construction meeting with the City's Engineering Department at least 5 business days prior to the start of construction. Contractor must attend and bring one set of the Acknowledged construction drawings and a copy of the

current Heber City Standard Specifications and Drawings Manual (available at heberut.gov).

5. Contractor shall have in possession and on-site at all times one copy of the current acknowledged construction plans stamped, signed, and dated by the Engineer of Record, the Applicant, and the City.
6. Developer's Engineers (Civil and Geotechnical) shall perform sufficient inspections and surveys during grading and construction to render an opinion in writing as to adherence to the accepted plans and compliance with Heber City Standard Specifications and Drawings Manual.
7. Any work done in the absence of an inspector's approval shall be subject to rejection. All underground GPS data must be collected by a City representative prior to backfill. Inspectors may request the contractor to expose work that has been backfilled without prior inspection or collection of GPS data. All such rework shall be completed at the Developer's or Owner's expense.
8. Survey monuments must be installed in accordance with the current Heber City and Wasatch County Surveyor's Office requirements.
9. All disturbed property survey markers shall be reset in their original locations upon completion of all construction activities.
10. Contractor shall provide all traffic control which must conform to the current MUTCD. Provide site-specific Traffic Control Plans [prepared by an American Traffic Safety Services Association (ATSSA) or AGC-Certified Individual] prior to installation of any traffic control device. Traffic Control Plans must be ~~Accepted~~accepted by the City prior to implementation and before any shoulder, lane, or street closure.

B. TRENCHES AND UTILITIES

1. Trenches shall be completed and restored per City Standard Drawing UTIL-1.
2. Pothole existing utilities in accordance with City Standard Drawing UTIL-5.
3. Contractor is responsible to locate, avoid, protect, and repair all utilities encountered during construction, whether or not they are shown on the plans. Locations of underground utilities shown on plans are approximate and require field verification by Contractor.
4. All trenches within public right-of-way must be backfilled or securely plated during non-working hours. Trenches outside these areas shall be back-filled or protected by approved temporary fencing and/or barricades during non-working hours. Trenches in the roadway must be backfilled, compacted, and paved within 48 hours of road-cut. Paint striping shall be replaced in accordance to City Standards within 48-hours of restoration of pavement.

C. ROADWAY CONSTRUCTION AND RESTORATION

1. Subgrade must be approved prior to construction of untreated base course and pavement sections. Subgrade approval requires that a proof-roll be completed and verified by a City inspector, and that all utilities be installed, inspected with connections to main lines completed, and accepted by the City.
2. Asphalt patching to roads between October 15 and April 15 will be considered temporary only, and must be replaced according to City Standards and Specifications between the following April 15 and July 1.
3. Material Submittals are required for all items placed within the City right-of-way. All submittals must be dated within 90 days of the Construction Start Date (unless specified otherwise) and be submitted prior to the start of construction activities.
4. Moratorium Standard (New, Reconstructed, and Overlaid Streets): No cuts permitted for two (2) years from the time of construction/ reconstruction/overlay)

5. Special Restoration Standard: This standard applies to new, reconstructed, overlaid, and chip/slurry-sealed streets:
    a. New, Reconstructed, and Overlaid Streets (for 5 years after end of moratorium): The asphalt surface shall be milled a minimum depth of two (2) inches, and fifteen (15) feet each way from the edge of the cut. Milling shall be done in widths equivalent to existing striped traffic lanes. The City Engineer reserves the right to require additional area and/or depth if deemed appropriate to restore roadway to original condition. Approved fabric is required when existing pavement included a fabric prior to the permitted cut.
    b. Chip/Slurry-Sealed Streets (for one year after chip/slurry application): The asphalt surface shall be re-chipped/slurried a minimum of fifteen (15) feet each way from the edge of the cut, in widths equivalent to existing striped traffic lanes.
6. Roads shall be opened for traffic during peak hours. Lane closures may only be in effect from 9am-2pm, and 7pm-7am when night work is approved. Contractors shall accommodate all special school or local government schedules and events. Paint striping shall be replaced in accordance with City Standards within 48-hours of restoration of pavement.
7. All road closures must be approved by the City Engineer. All requests for road closures shall be made in writing and include a site-specific Traffic Control Plan for the proposed closure. When approved, closures of Collector Streets will require a 2-week advance notice to the public informing them of the upcoming closure. The notice shall be provided using on-site Variable Message Sign (VMS) boards indicating the anticipated start date and duration of the closure. VMS boards shall remain on site for the full two-week advance-notice period. If the duration of the closure is extended beyond the approved period, the extension shall be coordinated with the City Engineer and shall require additional VMS board notification to the public.

1.10~~09~~ SUBMITTALS REQUIRED FOR DEVELOPMENT ACKNOWLEDGEMENT

A. ENGINEERING PLAN REVIEW CHECKLIST – The City provides Engineering Plan Review Checklists to assist developers and their professionals in the preparation of the engineering submittals for the acceptance of a development project. The Engineering Checklist does not replace the City Code or Engineering Standards and Specifications. The Engineering Checklist must be completed and signed by the Applicant and the Engineer-of-Record at the time of application submittal.

B. SUPPLEMENTAL ENGINEERING REPORTS – All engineering reports submitted for final acknowledgment shall be stamped, signed, and dated by a professional engineer ON THE FIRST SUBMITTAL.

1. Drainage Report – Drainage reports must be prepared in accordance with the design criteria and methodologies specified in the Heber City Storm Water Design Manual. Drainage reports shall include an LID Evaluation to identify feasible BMPs, and an Infiltration Feasibility Determination. In addition to the required engineer's stamp, signature, and date, drainage reports must include a certification from the engineer stating:

    By affixing hereto my Professional Engineering stamp and signature, I hereby ~~certify~~represent that this report/design for the management of storm water of this development was prepared by me, or under my direct supervision in accordance with the provisions of Heber City's Storm Water Design Manual and Standard Specifications and Drawings, and was designed to comply with the provisions thereof. I understand that the City assumes no responsibility or liability for this report.

2. Geotechnical Report – Geotechnical reports shall include:
    a. Summary of Proposed Construction

b. Pavement designs that comply with City Standards.

c. Double-Ring Infiltrometer Tests that are performed pursuant to ASTM D 3385 and the City Storm Water Design Manual.
d. Evaluation of Geologic Hazards and Proposed Mitigation Measures
e. Subsurface Soil Profiles
f. Groundwater Considerations and Proposed Mitigation Measures
g. Soil Classifications
h. Soil Properties, including Corrosivity and Proposed Mitigation Measures
i. Design Recommendations
j. Construction Recommendations

3. Traffic Impact Study (TIS) – A traffic study is necessary to identify, review, and make recommendations for mitigation of the potential impacts a development may have on the roadway system. Identification of impacts and appropriate mitigation measures allows the City to assess the existing and future system safety, performance, maintenance, and capacity needs. TISs shall follow the Utah Department of Transportation's TIS Requirements, including the Levels of Study and associated thresholds. Additional requirements and investigation may be imposed upon the applicant as necessary. Likely information presented in a TIS may include, but is not limited to, site location and proposed access point(s), phased and/or full development trip generation, connection point design elements, adjacent and relevant development, existing and future traffic volumes, assessment of the system impacts, AND mitigation measures as appropriate.
4. Engineer's Estimate of Probable Costs – An Engineer's Estimate of Probable Costs shall be submitted to the City AFTER, not before, the engineering drawings have been accepted by the City. It shall include quantities, unit prices, and total prices of each landscaping and infrastructure improvement required as a condition precedent to recording a subdivision plat or the development of a commercial, industrial, mixed use, or multi-family project. When determining the assurance and warranty bond amounts, the City Engineer may change the unit prices in the estimate according to the City's research of market pricing.
5. Reimbursement Agreement Exhibits – Reimbursement requests for all infrastructure upsizing (system improvements) beyond the project improvement needs must be presented to the City at the Preliminary Plat or Commercial Initial Site Plan step to allow City staff advance time to work on a reimbursement agreement with the applicant. Reimbursement agreements must be accepted by the City and be executed by both parties before construction can begin on the project. All reimbursements that have not already been approved by the City Council in the City's approved and adopted budget require specific approval by the City Council.

   If the applicant wishes to begin construction before there is an agreement in place with the City, they must sign a waiver stating they accept the risk that they may not be reimbursed for any improvements installed, even if they are system improvements.

   The following exhibits are required to initiate a reimbursement agreement:

   a. Exhibit A -- Itemized Schedule of Values – Include quantities and unit prices of reimbursable items. Correlate it with an accompanying map. It shall be stamped, signed, and dated by the Engineer-of-Record.
   b. Exhibit B – Contractor bids or engineer estimates that support the prices shown in the Itemized Schedule of Values.
   c. Exhibit C -- Map of Reimbursable Items – Show the locations of all of the reimbursable items. Correlate it with the accompanying Itemized Schedule of Values.

C. BOUNDARY SURVEY – Boundary surveys, also known as record of survey, shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL. The survey shall be filed in the Office of the County Surveyor and, according to State Law, include evidence of filing.

D. EASEMENT AGREEMENT – All easement agreements shall be submitted to the City Engineer on the

City's Standard Easement templates (available upon request from the City Engineer) for City acceptance. Easements in the name of the City shall not be recorded by anyone except the City. After City acceptance and the recordation at the County Recorder's Office, the recordation shall be referenced on the subject plat. Right-of-Discharge easements (available upon request from the City Engineer) shall be granted to and indemnify the City whenever storm water drainage from City ROW discharges onto private property.

E. WATER RIGHT ACTION REPORT – Water rights to be used in development shall be summarized on a Water Right Action Report that is prepared by the Developer and approved by the City Engineer. A standard template for this the Report is available from the City Engineer upon request.

F. SUBDIVISION PLAT – Subdivision plats submitted for final acceptance shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.

G. DRY UTILITIES CONCEPTUAL PLAN

H. LEGAL DESCRIPTION – Legal descriptions submitted for final acceptance shall be accompanied by an illustration of the legal description, both of which shall be stamped, signed, and dated by a professional land surveyor ON THE FIRST SUBMITTAL.

I. NOTICE OF INTENT (NOI) – An NOI to the Utah Division of Water Quality for Storm Water Discharges Associated with Construction Activity shall be required prior to starting any construction activity.

J. FLOODPLAIN DEVELOPMENT PERMIT – The Floodplain Development Permit is the mechanism by which the City evaluates any and all impacts of activities proposed within regulated floodplains in the City. Contact the City Engineer for the Permit application when proposing activities within a regulated floodplain.

K. ENGINEERING DESIGN DRAWINGS –Accepted Engineering Design Drawings shall be valid for one year from the date of legislative approval. If construction has not begun within one year from the date of legislative approval, the Engineering Design Drawings shall become null and void unless an extension is granted by the City. Expired drawings must be re-checked by the City as part of a new application under the current ordinances in order to be Accepted again. Engineering Design Drawings must include, but are not limited to:

1. Reference to the City's Construction Notes (Section 1.04)
2. Boundary Survey
3. Topographical (existing conditions) Survey
4. Subdivision Plat
5. Demolition Plan (as necessary)
6. Impact-to-Private-Irrigation Plan (as necessary)
7. Site Plan
8. Grading and Drainage Plan
9. Utility Plan
10. Signing and Striping Plan, including a Safe Routes to School Plan (Coordinate with WCSD.)
11. Plan/Profile Sheets
12. Detail Sheets (not including copies of City Standard Drawings). City Standard Drawings shall be referenced in ONE place for all applicable infrastructure.

    The Impact-to-Private-Irrigation Plan shall include a certification, signed by the Applicant stating:

    As the developer of this property, I hereby ~~certify~~represent that I understand: (1) how the existing gravity irrigation system works in the vicinity of this property, (2) how my development of this property will affect this system and associated stakeholders, (3) that I have coordinated with and have approval from the subject irrigation company(ies), (4) that I take full responsibility for the

changes

I am making to this system, (5) Heber City does not assume responsibility or liability for changes I make to this system.

The Grading and Drainage Plan shall include a certification from the Engineer-of-Record stating:

By affixing hereto my Professional Engineering stamp and signature, I hereby ~~certify~~represent that this design for the management of storm water of this development was prepared by me, or under my direct supervision in accordance with the provisions of Heber City's Storm Water Design Manual and Standard Specifications and Drawings, and was designed to comply with the provisions thereof. I understand that the City assumes no responsibility or liability for this design.

Engineering Design Drawings submitted for Final Acceptance shall be certified on the cover sheet by the Engineer-of-Record, ON THE FIRST SUBMITTAL with the following language:

Engineer's Certification

By affixing hereto my Professional Engineering stamp and signature, I hereby represent ~~A~~as the Engineer-of-Record, ~~I hereby certify~~ that these construction drawings and supporting information ("Plans") comply with the Heber City Code and Standard Specifications and Drawings ("Standards"). I understand and agree that the City's Acknowledgement (Acceptance) of these plans:

1. ~~The City's Acknowledgment of these plans s~~Shall not be construed to be a permit for, or an approval of, any variance from any of the provisions of the Standards, unless a separate written approval authorizing a specific deviation has been provided by the City Engineer.
~~2. The City's Acknowledgement of these Plans, or feedback from the City on whether the Plans meet the Standards, shall not prevent the City from requiring the correction of errors in the Plans at any time, including after construction of improvements.~~
~~3.~~2. ~~The City's Acknowledgement of these Plans d~~Does not constitute a permit from the ~~F~~federal or ~~S~~state ~~G~~government or permission to deviate from Federal or State Laws or Regulations.
~~4.~~3. ~~The City's Acknowledgement of these Plans d~~Does not grant permission to work on the properties of others.

1.1~~0~~ STORM DRAIN SYSTEM

A. SEE THE HEBER CITY STORM WATER DESIGN MANUAL.

B. IRRIGATION DITCHES

1. Private irrigation ditches within developments shall remain open, or be piped, pursuant to the affected stakeholders' specifications. Such changes to existing irrigation systems shall be included in the engineering plans.
2. Provide irrigation easements on the subject plat "for the benefit of the upstream and downstream users" to formalize prescriptive easements.
3. City-operated-and-maintained irrigation ditches shall remain open, unless otherwise approved by the City Engineer. Any City irrigation ditches that are piped shall follow the applicable City standards.

1.1~~2~~1 SANITARY SEWER SYSTEM

A. The impact of any proposed sewer system, on the existing sewer system, will be reviewed by the City Engineer. The developer may be required to add additional off-site sewer improvements in order to provide adequate sewer service for the proposed development.

1. Areas that will be serviced through the proposed development will be considered and the method of service to those areas will be determined by the City Engineer. Increased system size may be required by the City Engineer for future development.
2. City-owned sewer lift stations are prohibited.

B. Sewer mains shall be as shown in the City's current Capital Facilities Plan or Master Plan.

C. The minimum size of any sewer main line shall be 8-inch diameter.

D. All sewer pipe between manholes shall be of the same SDR and classification, and shall be the highest SDR and classification required along the section.

E. The minimum size of sewer laterals shall be 4 inches.

F. All sewer pipes shall be sized to a maximum of 75 percent of their capacity.

G. Sewer lines shall be designed according to the minimum slopes below. The design flow shall be calculated based on equivalent residential connections in addition to a peaking factor depending on the size of sewer pipe. For 8-inch pipe, the peaking factor shall be 4.0. For pipe larger than 8-inches the peaking factor shall be 2.5. The minimum sewer slopes shall be as follows (foot/foot):

1. 8-inch – 0.004
2. 10-inch – 0.0028
3. 12-inch – 0.0022
4. 15-inch – 0.0015
5. 18-inch – 0.0012
6. >/= 21-inch – 0.001

H. The minimum sewer depth shall be 13.0 feet under normal conditions. In areas of shallower sewer, the following note shall be added to the development plat:

~~H.~~ "Shallow Sewer Depths! Contractor shall verify sewer depths before excavating for basement. Home(s) with basement may not have sewer service available for basement."

I. A minimum of 5 feet of cover shall be required over all sewer lines.

J. Sewer shall be located at 10-foot minimum horizontal distance from drinking water lines.

K. Manholes must be constructed at the end of all sewer lines. Cleanouts shall not be substituted for manholes nor installed at the ends of lines. Stubs for future sewer extension may be installed without a manhole or cleanout. But, no sewer services shall be connected to the sewer stub until the line is extended and a manhole has been installed at the end of the line.

L. The minimum size manhole shall be 4-foot diameter. 5-foot diameter manholes shall be used in the following situations:

1. At all intersections of four or more 8-inch or larger pipelines.
2. Where any connecting pipe size is 14 inches in diameter or larger.
3. Where the deflection angle of the pipeline exceeds 90 degrees.
4. When both items "1" and "2" occur in the same manhole, a 6-feet manhole is required.

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M. A 12-feet access road shall be constructed to all manholes and shall be capable of supporting H-20 loading.

N. Where new sewer lines are connected to existing sewer lines, a 5-feet-diameter manhole shall be constructed over the existing sewer line.

O. Manhole Spacing: The maximum span between manholes shall be 400 feet.

P. Six-inch and larger laterals shall connect to the main line through sewer manholes.

Q. The minimum drops through manholes shall be as follows:

1. Deflection Greater than 90° - 0.3 foot drop
2. Deflection of 75° - 90° – 0.2 foot drop
3. Deflection of 0° - 74° – 0.1 foot drop, not exceeding 0.20 feet across the manhole.

R. Drop manholes are required when the inverts differ by 24 inches or more.

S. Deflections in manholes on steep grades:

1. Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than or equal to 45 degrees but less than 90 degrees, a 5~~five~~-fooet manhole with an extra deep trough is required.
2. Where incoming slopes at manholes are greater than or equal to 5 percent and the deflection angle within the manhole is greater than 90 degrees, a 6~~six~~-fooet manhole with an extra deep trough is required.
3. The benching of the extra-deep trough shall be located 25 percent higher than the diameter of the incoming pipe.

T. Each non-single-family building or unit of separate ownership shall require a separate sanitary sewer lateral.

U. Grease interceptors, pursuant to the City Code and City Standard Specifications, shall be required on all commercial development where food service uses are anticipated.

1. Sampling manholes shall be installed downstream of all grease traps.
2. Sampling manholes and grease interceptors shall be inspected and maintained per the Utah Health Code, the City's Kitchen Best Management Practices Ordinance, and Wasatch County Health Department Regulations.

1.13~~2~~ DRINKING WATER SYSTEM

Private systems shall be designed and inspected the same as public systems.

A. PIPELINES

1. Pipelines shall be as shown in the City's current Capital Facilities Plan or Master Plan, and be at least 8 inches in diameter, unless approved otherwise by the City Engineer for water quality purposes in dead-end lines. Pipelines that supply fire hy~~r~~drants shall be at least 8 inches in diameter.
2. Fire hydrants shall be located on the same side of the street as the drinking water main line. The horizontal distance between the drinking water lines and pressurized irrigation lines shall be at least 5 feet.
3. Pipelines in private streets shall be on the same sides as in public streets unless approved otherwise by the City Engineer.
4. The horizontal distance between drinking water lines and sanitary sewer lines, including laterals,

shall be at least 10 feet. Where a water main and sewer line must cross, the water main shall be at least 18 inches above the sewer line. Separation distances shall be measured from pipe edge to pipe edge. Adherence to all separation requirements included in ~~Utah Administrative Code~~ Sections R309-550-7 and R309-550-12 of the Utah Administrative Code shall be required unless a written variance is requested and granted from the Utah Division of Drinking Water and Heber City.

5. Special design and construction considerations in accordance with Section R309-550-5(6) of the Utah Administrative Code shall be required for water mains located in areas of geologic hazard (e.g., slide zones, fault zones, river crossings, etc.)
6. Surface water crossings are generally prohibited and will only be allowed when no other practical alternatives exist and when specifically approved in writing by the City Engineer. If allowed, surface water crossings shall be designed and constructed in accordance with Section R309-550-8(8) of the Utah Administrative Code.
7. The minimum fire flow and pressure requirements shall be pursuant to State Standards, or more if determined by the Fire Marshall.
8. The minimum operating pressure in all parts of the system shall be 30 pounds per square inch during peak instantaneous demand.
9. The maximum static pressure in all parts of the system shall be 130 pounds per square inch.
10. Systems shall be designed so that pressures conform to the pressure zones shown in the City's Capital Facilities Plan.
11. The maximum flow velocity shall be 5 feet per second.
12. The impact of any proposed system on the existing system will be reviewed by the City Engineer. The developer may be required to add offsite infrastructure to mitigate impacts to the existing system and provide adequate water supply to their development.
13. If required by the City Engineer, the Engineer-of-Record shall provide a computer network model, for the City Engineer's review, of the proposed system showing compliance with this Standard. The City will provide boundary conditions, based on the system, for the model.
14. Individual booster pumps are not allowed, except in buildings with more than two stories above ground.
15. To provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins and "looping" of the drinking water system ~~whenever practical~~. Where dead-end mains do occur (permanent or temporary), a fire hydrant or approved blow-off assembly shall be installed for flushing purposes as directed by the City Engineer. Flushing devices must have the minimum sizes shown on Heber City Standard Drawing "Water-8", but must also be sized to provide a minimum velocity of 2.5 fps in the water main.
16. Permanent dead-ends shall not be longer than 600 feet.
17. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.

B. VALVES

1. Valves smaller than 14 inches shall be gate valves. Valves 14 inches and larger shall be horizontal gate valves or butterfly valves.
2. Valves shall be placed at intervals not exceeding 800 feet in non-commercial districts and not exceeding 500 feet in commercial districts. All valve spacing shall conform to Section R309-550-5 (8) of the Utah Administrative Code.
3. At junctions, valves shall be placed on all legs.
4. Valves shall be placed within 5 feet to 10 feet of the ends of casings.
5. Valves shall be placed at connections to the existing system.
6. When approved by the City, tapping sleeves may be used for fire lines or other branch connections. Tapping sleeves shall not be used for size-on-size applications. Branch lines must be at least one nominal pipe size smaller than the line being connected to.
7. Blow-offs shall be placed at the ends of and low points in pipelines. Fire hydrants may be used as blow-offs.
8. Air releases shall be installed at all peaks and sharp changes in gradient with a difference in elevation greater than 15 feet. If the water line has service connections within the location of the

peak or change in gradient, the air release may be eliminated at the City Engineer's discretion.

~~8.~~9. Pressure reducing valves (PRVs) shall be installed at connections between water pressure zones as shown in the City's Capital Facilities Plan or as required by the City Engineer. Isolation valves shall be installed on both sides of the PRV. Where variable flow conditions will be encountered, consideration shall be given to providing parallel PRV lines to accommodate low and high flow conditions. PRVs shall include power and data drops for SCADA capabilities.

C. FIRE HYDRANTS

1. Fire hydrants shall be placed at the ends of cul-de-sacs, the ends of dead-end streets, and at least every 1000 feet of off-site pipelines.
2. Fire hydrants shall be placed not more than 500 feet apart, or as directed by the Fire Marshall.

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3. The minimum fire flow shall be pursuant to State Standards, or more if required by the Fire Marshall.
4. Fire hydrants shall be placed on the same side of the street a~~s~~t the water main pipeline.

1.1~~4~~3 PRESSURIZED IRRIGATION SYSTEM

A. PIPELINES

1. Pipelines shall be as shown in the Capital Facilities Plan or Master Plan, and be at least 6 inches in diameter.
2. Pipelines in private streets shall be on the same sides as in public streets.
3. The minimum operating pressure in all parts of the system shall be 30 pounds per square inch during peak instantaneous demand.
4. The maximum static pressure in all parts of the system shall be 120 pounds per square inch.
5. Systems shall be designed so that pressures conform to the pressure zones shown in the City's Capital Facilities Plan.
6. The maximum peak day flow velocity shall be 5 feet per second.
7. The impact of any proposed system on the existing system will be reviewed by the City Engineer. The developer may be required to add offsite infrastructure to mitigate impacts to the existing system and provide adequate water supply to their development.
8. If required by the City Engineer, the Engineer-of-Record shall provide a computer network model, for the City Engineer's review, of the proposed system showing compliance with this Standard. The City will provide boundary conditions, based on the system, for the model.
9. The maximum allowable deflection of pipe joints shall be less than or equal to half of the manufacturer recommended maximum deflection.
10. Public pipelines through private property, if approved, shall be in dedicated home-owner-association or business-owner-association open space centered in a 20-feet-wide easement in favor of the City.
11. All pipelines shall be designed such that the system can be easily drained to surface ditches or storm drain systems.

B. VALVES

1. Valves smaller than 14 inches shall be gate valves. Valves 14 inches and larger shall be butterfly valves.
2. Valves shall be placed at intervals not exceeding 800 feet.
3. At junctions, valves shall be placed on all legs.
4. Valves shall be placed within 5 feet to 10 feet of the ends of casings.
5. Valves shall be placed at connections to the existing system.
6. When approved by the City, tapping sleeves may be used for branch connections. Tapping sleeves shall not be used for size-on-size applications. Branch lines must be at least one nominal pipe size smaller than the line being connected to.
7. Blow-offs shall be placed at the ends of and low points in pipelines.
8. Air releases shall be installed at all peaks and sharp changes in gradient with a difference in elevation greater than 15 feet. If the water line has service connections within the location of the peak or change in gradient, the air release may be eliminated at the City Engineer's discretion.
9. Drains shall be installed at low points in the system.

1.1~~5~~4 STREET SYSTEM

Private streets shall be privately-owned-and-maintained.

A. DESIGN REQUIREMENTS

1. The pavement design (subbase, roadbase, and asphalt) for private streets shall be at least the same as public streets.

2. The pavement width of private streets shall be at least as wide as required by the latest edition of Appendix D of the International Fire Code.
3. Normally, sidewalk, park strip, curb, and strip paving are required along redeveloping properties. In the event that the requirement for such is delayed by deed restriction, the shoulder of the road shall be improved with 3 inches of roadbase for a distance of 4 feet from the edge of asphalt. The surface of the roadbase shall tie in with the surface of the asphalt. Beyond the roadbase, the surface of the soil shall be graded to a swale and then slope up to the edge of the right-of-way.
4. Roundabouts, following Federal Highway Administration Design Guidelines, are required where feasible and practical, pursuant to the following criteria:
    a. Minimum inscribed diameter of 110 feet, using a WB-62 design vehicle for City roads of lower classification than major collector.
    b. Minimum inscribed diameter of 120 feet, using a WB-67 design vehicle for single-lane major collectors.
    c. Islands shall include mountable curb and decorative (stamped, colored, etc.) concrete aprons approved by Heber City.
    d. Minimum inscribed diameter of 150 feet for double-lane applications.
    e. Refuge areas shall be incorporated into intersection leg islands with crosswalks and ADA panels.
    f. Raised landscaped center islands with an additional feature/sculpture approved by Heber City.
5. Because preference is given to pedestrians, a driveway approach is required for all private accesses unless recommended otherwise by the City Engineer, based on site-specific considerations, such as:
    a. speed, slope, and functional classification of the adjacent street
    b. width of the proposed access
    c. volume of the proposed access
    d. drainage
6. Curb returns adjacent to ADA ramps shall have a maximum slope of 2 percent where possible. Where the base of the curb ramp, or the edge of the flush landing must join an intersection of two streets with running grades greater than 2 percent, the base of the curb ramp or the edge of the flush landing may be warped to meet the street running grade. Every effort shall be made to minimize this grade by warping the street cross slope plus or minus 4 percent on both legs of the intersection.
7. The following Table 1 serves as a guide to design professionals by providing a summary of the City's Street Design Standards.
8. A Level 2 traffic calming measure, as defined in the most recent Traffic Calming Policy. is required on local street segments longer than 1000 feet without at least a 45-degree turn.
9. School crosswalks and associated STOP bars and signage shall be placed along Safe-Routes-to-School routes. Other crosswalks shall be placed as directed by the City Engineer.
10. Access management of public streets shall follow Table 2.
11. The developer is required to complete a type II slurry seal on all street improvements one year after final inspection and prior to the expiration of the warranty period.
12. Temporary paved ~~hard-surfaced~~ turnarounds ~~cul-de-sacs~~ are required on all dead end public streets that will be extended and are greater than one-and-a-half lots in length. The cost of installing the future curb, gutter, sidewalk, driveway extension etc., when the temporary cul-de-sac is removed, shall be escrowed with the City.
13. The top back of curb shall be stamped, showing locations of water, sewer, and secondary irrigation lateral service pipes:
    a. "W" for drinking water.
    b. "S" for sewer.
    c. "I" for pressurized irrigation.
14. A brass pin shall be imbedded in the curb marking the location of each property line.

TABLE 1 – GEOMETRIC DESIGN OF STREETS

DESIGN ELEMENT	MINOR LOCAL	LOCAL	MINOR COLLECTOR	MAJOR COLLECTOR	MOUNTAIN COLLECTOR	HISTORIC BUSINESS CORE
Posted/Design Speed	25		30	35	35	25
Typical Section Elements						
ROW Width	56'	62'	68'	80' or 85'[a]	58'	92'[b]
Pavement Width	26'	32'	38'	38'-50'[c]	36'	48'/58'
Number of Lanes	2[g]			3	3	2
Side Cut/Fill Slopes	3:1 up to 5 feet high and 2:1 above 5 feet high					
20 Year ESAL Requirement	60,000	60,000	250,000			
VERTICAL DESIGN ELEMENTS						
Vehicle Design	Passenger, School Buses, Delivery trucks, dump Trucks	Passenger, School Buses, Delivery trucks, dump Trucks	Passenger, School Buses, Delivery trucks, Dump/Concrete Trucks	Passenger, School Buses, Delivery trucks, Dump/Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump / Concrete Trucks	Passenger, School Buses, Delivery Trucks, Dump/Concrete Trucks, Semi Loads
Minimum Centerline Grade	0.5%					
Maximum Centerline Grade	10%	8%[d]				5%
Maximum Centerline Grade Across Designated Crosswalks	2% with stop or yield control 5% without stop or yield control[h]		2% with stop or yield control 5% without stop or yield control[h]			
Max. Grade in Cul-de-Sacs	5%	Not Allowed				
Maximum Centerline Grade Break w/o Vertical Curve	1%		0.5%			0.5%
Maximum TBC Grade Break w/o a Vertical Curve[e]	2%					
Minimum Crest Vertical Curve "K" Value	12		19	29		
Minimum Sag Vertical Curve "K" Value	26		37	49		
Minimum Length of a Vertical Curve	60'		90'			
HORIZONTAL DESIGN ELEMENTS						
Minimum Mid-Block Centerline Curve Radius	198'		333'	510'		198'
Superelevation	Not Allowed					
INTERSECTIONS						
Intersection Sight Distance	Refer to AASHTO: A Policy on Geometric Design of Highways and Streets, Latest Edition					
Corner Curb Radius	25'		40'			40'
Minimum Angle of Intersection	60° for at least 100'		80° for at least 100'			
Maximum Centerline Offset	5'		2'			
Maximum Centerline Grade[f]	5%		4%			
Vertical Tie-In	Lower streets shall match the centerline crowns in an intersection. Higher streets shall tie in 12' off the centerline of local streets or at the edge of the outside travel lane of other streets.					

a. If a 10-feet trail is used, 5 feet more is required.
b. An 82.5-feet right-of-way may be used with City approval.
c. Depending on whether a landscaped median is used, and whether on-street parking is allowed.
d. Under special circumstances, grades up to 10 percent may be approved, if grades would exceed 8 percent in order to maintain 4 percent through the intersections, and conditioned upon providing individual designs to construct ADA-compliant ramps.
e. Maximum grade break of 2% along TBC with Minimum length of 25 feet between breaks.
f. Grade must extend at least 50 feet beyond the side of the lane of the intersecting street.
g. Turn lanes with appropriate stacking lengths may be required (per the TIS).
h. In some instances, the cross slope of pedestrian crossings may be increased to match the slope of the road in accordance with PROWAG R304.5.3.

TABLE 2 – ACCESS MANAGEMENT

Heber City Access Management Standards

Functional Classification	Minimum Driveway Spacing (feet)[1,2,3,4]			Cross Street Unsignalized Intersection Spacing (feet)	Geometric Design of Driveway Access[6]					Minimum Signal Spacing (feet)
					Single-Family Residential Driveways			Other Driveways		
	Upstream and Downstream (feet)	Opposing Upstream (feet)	Opposing Downstream (feet)		Approach Width (feet)[6]	Edge Clearance (feet)[7]	Curb Return Radius (feet)	Approach Width (feet)[6]	Edge Clearance (feet)[7]	
Major Arterial w/o Median Barrier	350	175	160	660	12 min – 30 max	5 min	10 min – 15 max	Two Way: 25 min – 40 max One Way: 16 min – 30 max	20 min	2640
Major Arterial w/ Median Barrier	200	130	160	400						2640
Minor Arterial w/o Median Barrier	200	115	105	660						1320
Minor Arterial w/ Median Barrier	150	65	105	400						1320
Collector w/o Median Barrier	150	105	90	250						1320
Collector w/ Median Barrier	85	50	70	150						1320
Minor Collector w/o Median Barrier	85	105	90	250						1320
Minor Collector w/ Median Barrier	50	50	70	150						1320
Local w/ or w/o Median Barrier	10	-	-	150						N/A

1. Driveway spacing is measured as shown in Figure 1. For Local streets, the spacing is measured from edge-to-edge.
2. Corner clearance requirements for access points should meet or exceed the minimum driveway spacing requirements. Curb cuts on major arterials should be spaced at distances greater than 230 feet apart, measured from face-of-curb to face-of-curb, with the preferred distance being 300 feet.
3. For corner properties, access to public streets should be provided from the lesser (lowest functional classification) street.
4. Driveways in right-turn lane transition areas are discouraged.
5. For the benefit of traffic safety and flow, access points may be required to be designed to prohibit certain types of turning movements.
6. Wider driveway widths may be permitted to accommodate additional turning and/or acceptance lanes.
7. Distance between side property line and edge nearest drive as measured along traveled way.

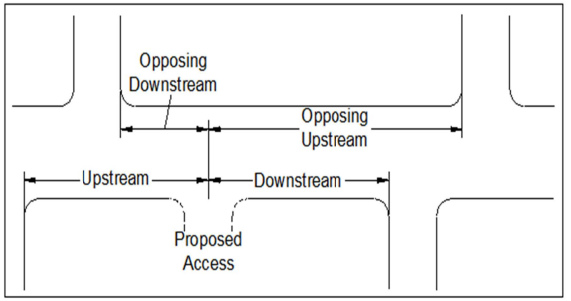


Figure 1: Measurements for Minimum Access Spacing Standards

B. MORATORIUM STANDARD (New, Reconstructed, and Overlaid Streets) -- No cuts permitted for two years from the time of the construction/restoration/overlay.

C. SPECIAL RESTORATION STANDARD (New, Reconstructed, Overlaid, and Chip/Slurry-Sealed Streets)

1. New, Reconstructed, and Overlaid Streets (for 5 years after end of moratorium): The asphalt surface shall be milled a minimum depth of two (2) inches, and fifteen (15) feet each way from the edge of the cut. Milling shall be done in widths equivalent to existing striped traffic lanes. The City Engineer reserves the right to require additional area and/or depth if deemed appropriate to restore roadway to original condition. Approved fabric is required when existing pavement included a fabric prior to the permitted cut.
2. Chip/Slurry-Sealed Streets (for one year after chip/slurry application)*:* The asphalt surface shall be re-chipped/slurried a minimum of 15 feet each way from the edge of the cut, in widths equivalent to existing striped traffic lanes.

1.1~~6~~5 STREET AND TRAILS LIGHTING SYSTEMS

A. Street lights shall be located at cul-de-sac ends, street intersections ~~with collector streets or larger~~, and critical points as determined by the City Engineer. On collector and larger street intersections, there shall be two lights located kitty-corner on the through street around the corners from the STOP signs.

B. Commercial Historic street lights shall be installed on Main Street between 400 South and 300 North, spaced four per block on both sides.

C. Trail lights shall be installed along all master-planned trail systems at 200-feet maximum intervals and at entrances to parks, trail intersections, bridges, and road crossings.

PART 2 EXECUTION

2.01 GENERAL

A. All construction work involving the installation of improvements in subdivisions shall be subject to inspection by the City.

B. Certain types of construction require approval prior to proceeding with the work while other types only require periodic inspection while the work is occurring.

1. Approval is required prior to proceeding with the following types of work:
   a. Placing concrete for curb, gutter, sidewalks, thrust blocks, collars and other structures.
   b. Connections or tie-in's to existing water, sewer, storm drain, and irrigation systems
   c. Pipe line flushing, pressure testing, and videoing of water, sewer, storm drain, and irrigation lines.
   d. Street subgrade proof roll, placing subbase, and laying street asphalt.

2. Periodic inspections shall be required on the following:
   a. Street grading and gravel base.
   b. Excavations for curb and gutter and sidewalks.
   c. Excavations for structures.
   d. Trenches for laying pipe.
   e. Forms for curb and gutter, sidewalks and structures.
   f. Laying of street surfacing.

C. On construction requiring approval prior to proceeding with the work, any work done in the absence of an inspector's approval shall be subject to rejection. All underground GPS data must be collected prior to backfill. Inspector may request contractor to expose work that has been backfilled without prior inspection or to collect GPS data.

2.02 PRECONSTRUCTION CONFERENCE

A. A preconstruction conference shall be held before any excavation or other work is begun in the subdivision or project. The meeting will be held at a location specified by the City Engineer and will include: (a) City Engineer; (b) Developer or Project Manager; (c) Subdivision or Project Engineer; (d) all Contractors and Subcontractors involved with installing the subdivision or project improvements; (e) a representative of Heber City Inspection Department; (f) representatives of local utility companies as may be required by Heber City. Items pertaining to the construction and inspection of the subdivision or Project Improvements will be discussed. Upon request, one (1) copy of the Heber City Standard Specification and Drawings will be issued to the contractor during this meeting. Additional copies may be obtained for $20.00 each.

2.03 REQUESTS FOR INSPECTION

A. Requests for inspections shall be made to the City, in writing or by personal contact with the inspector assigned to the project, by the person responsible for construction.

B. Requests for inspection on work requiring continuous inspection shall be made at least three (3) days prior to the commencing of the work.

C. Notice for all other inspections shall be given one (1) working day in advance of the required inspection (subsequent inspections and re-inspection shall require the same notification period.

D. After hour and/or weekend inspections are available under extreme conditions, but are subject to payment of after hour inspection fees as shown in the Heber City Consolidated Fee Schedule. .

E. The Contractor/Developer shall GPS surface features (i.e. valves, meter cans, hydrants, cleanouts, manholes, irrigation boxes, etc.) for the Record Drawings. The Contractor/Developer shall coordinate with the Heber City Public Works Department to expose and GPS all underground features and connections to mains (i.e. corp. stops, sewer lateral connections to main, cleanouts, transitions and/or fittings, etc.) for City Mapping of the utilities.

2.04 REQUESTS FOR WATER SHUT DOWN

A. Request for water shut down shall be made a minimum of 48 hours prior to the desired shut down.

B. Requests shall be made to the Public Works Superintendent and include, date, time and location.

C. Valves are to be opened and closed by City personnel only.

D. Contractor is to provide a minimum of 24 hour notification to all customers affected by the shutdown including but not limited to door to door contact and a flyer or handout describing the estimated date, time, location of the shut down, and emergency phone number. Contractor shall also notify the City 48 hours in advance so that a ~~Parlant~~ public notification can be sent to affected customers.

2.05 CONSTRUCTION COMPLETION INSPECTION

A. An inspection shall be made by the City Engineer after all construction work is completed.

B. Any faulty or defective work shall be corrected by the persons responsible for the work within a

period of thirty (30) days of the date of City Engineers Inspection Report defining the faulty or defective work.

C. The Developer shall furnish "Record" drawings of all improvements prior to subdivision final approval. Record drawings shall be submitted via electronic PDF. AutoCAD files and/or a printed mylar shall also be submitted when requested. Record drawings shall be the original drawings, signed by the City and engineer of record, with corrections of minor changes that occurred during construction noted. Major changes that significantly change a drawing sheet will have a new design sheet created during construction and resigned by the City Engineer. All changes made to the design during construction shall be recorded and include, but not be limited to changes to alignments, elevations, utility main line locations, service lateral locations, and any other changes made during construction.

2.06 GUARANTEE OF WORK

A. The Developer shall warrant and guarantee the improvements by executing Heber City's Standard Performance Agreement and posting a bond, acceptable to the City, for 100 percent of the estimated cost of the improvements to be constructed. The City will add 10 percent to the estimated cost to cover administrative costs incurred by the City to complete the improvements, if necessary. The improvements provided for hereunder, and every part thereof, will be guaranteed to remain in good condition for a period of one year, after the date of Final Acceptance by the City Engineer. Developer agrees to make all repairs to the improvements during the guarantee period at no cost to the City. At the end of the Warranty Period, Developer shall request a final inspection of the Improvements, which inspection shall be made by the City, unless the City is unable to complete the final inspection due to snow, weather, or other conditions, in which case the inspection shall be completed as soon as the City is reasonably able to complete the inspection based on weather and the City's scheduling demands. All Improvements found defective of which the City provides written notice of after the final inspection shall be repaired or replaced by the Developer, at no cost to the City, prior to final acceptance of the Improvements out of warranty. The improvement warranty period may be extended by the City if the City determines for good cause that the one-year period would be inadequate to protect the public health, safety, and welfare; and if the City has substantial evidence on record of prior poor performance by the applicant, or that the area upon which the infrastructure will be constructed contains suspect soil that the City has not required the applicant to mitigate.

B. Final Acceptance shall not be granted and the guarantee period shall not commence until all of the items noted on the project punch list have been completed.

C. The determination for necessity of repairs and maintenance of the work rests with the City Engineer. His decision upon the matter shall be final and binding upon the Developer, and the guarantee hereby stipulated shall extend to and include, but shall not be limited to the entire street base, and all pipe, joints, valves, backfill, and compaction as well as the working surface, curbs, gutter, sidewalks, and other accessories that are, or may be affected by the construction operations, and whenever, in the judgment of the City Engineer, said work shall be in need of repair or rebuilding.

D. If the Developer fails to begin making repairs within ten (10) days from the date of the service of such notice, the City Engineer shall have such repairs made and the cost of such repairs shall be paid by the Developer together with an additional 25 percent for stipulated damages for failure on the part of the Developer to make the repairs.

2.07 SUBDIVISION ORDINANCES

A. The Developer and his Engineer must familiarize themselves with the existing subdivision ordinances, requirements of which may not be included in these Standards.

2.08 ROADWAY PERMITS

A. For construction material and procedures not addressed by the specifications, the most recent revision of the standard specification of the following agencies shall apply:

1. American Association of State Highway & Transportation Officials. (AASHTO).
2. American Society for Testing & Material (ASTM).
3. American Waterworks Association (AWWA).
4. Uniform Building Code of the International Conference of Building Officials (UBC).
5. Utah Department of Transportation (UDOT) Standard Specifications and Standard Plans.
6. Manual on Uniform Traffic Control Devices (MUTCD).

2.09 BUILDING PERMIT AND OCCUPANCY

A. Subdivisions and other large scale development shall be nearly complete with essential facilities (as defined in Heber City ordinances) being constructed pursuant to the accepted drawings and operational before a building permit will be issued. Such completion shall be ~~-~~verified by the City Engineer or their designee.

B. Occupancy will be allowed within any subdivision or development only upon compliance with Heber City Ordinances.

2.10 UNUSUAL LOADINGS

A. In unusual circumstances of structural loading, the City Engineer shall have the authority to require measures to strengthen structure and/or foundations as needed to protect the City's interests.

2.11 SNOW REMOVAL FOR ROADS AND FIRE HYDRANTS

A. The owner of the subdivision or other large scale development shall be responsible to keep the roads and the fire hydrants cleared of snow until the roads are accepted by the City Engineer.

B. The fire hydrants shall be cleared for at least three (3) feet in all directions.

END OF SECTION

SECTION 00900

PROCEDURAL POLICY FOR WATER & SEWER

PART 1 HOOKUP FEES

1.01 SECTION INCLUDES

A. This section defines water and sewer hookup fees, billing procedures and policies.

1.02 WATER HOOKUP FEES

A.

LINE SIZE	HOOKUP FEE	IMPACT FEE**	MAX RATE *
3/4" Water Hookup	See Heber City Consolidated Fee Schedule	See Heber City Consolidated Fee Schedule	30 GPM
1" Water Hookup			50 GPM
1 1/2" Water Hookup			100 GPM
2" Water Hookup			160 GPM
3" Water Hookup			350 GPM
4" Water Hookup			1000 GPM

* Estimated at 80% of manufacturer's maximum rating. Meters 3-inches and above are compound meters which are determined separately.

** Impact Fees are adjusted annually based on the ENR index.

B. Apartment Complexes and other Multiple Dwelling units are responsible to pay a hookup fee for each separate meter servicing said units.

1.03 SEWER HOOKUP FEES

A.

TYPE	IMPACT FEE*
Residential	See Heber City Consolidated Fee Schedule
Non-Residential	Commercial development charges are based on Equivalent Residential Units (ERU's) calculated from average water usage and the number of fixture units.

* These are adjusted annually based on the ENR index.

PART 2 BILLING PROCEDURES

After completion of hookup, billing for Water and Sewer service will begin. Sewer will be billed at the base rate until the home is occupied. When the home becomes occupied, the Sewer will be billed using the State averages of usage based on the number of persons occupying the home until a history is obtained.

2.01 WATER BILLING PROCEDURES

A. Water fees will be set by resolution and may change as the City Council deems necessary. Water billings are billed in arrears. Current base fees based on line size are per Heber City Consolidated Fee Schedule.

B. County Residents who are permitted to hook onto Heber City's Water System will be billed 1 ½ times the normal rates.

C. The base fee will entitle each user to the number of gallons of water included in the base fee as shown in the current Heber City Consolidated Fee Schedule. Additional usage over the base amount will be billed at a higher rate per thousand gallons as indicated in the Heber City Consolidated Fee Schedule.

2.02 TEMPORARY/CONSTRUCTION WATER

A. Temporary water for construction or other similar purposes will be served from the local irrigation company when available. Culinary water may be obtained if the City determines that irrigation water is unavailable. Temporary water may be discontinued at any time if deemed necessary by the City. Persons wishing to obtain temporary water may apply for a construction meter at the City Public Works Office and submit a deposit identified in the Heber City Consolidated Fee Schedule. The City Public Works Department will install a meter at the fire hydrant location requested (unless installation by the Contractor is approved by Public Works) and periodically bill the applicant for water used at a rate identified in the Heber City Consolidated Fee Schedule per thousand gallons. Upon notification to discontinue service the City Public Works Department will remove the construction meter (unless removal by the Contractor is approved by Public Works) and, if in good condition refund the applicants deposit. Applicant is responsible for all water usage registered on the meter.

B. The City may issue one time water permits to users requiring minimal quantities of water. Water for these permits will only be provided from the hydrant located at the City's Public Works Yard. Users must have a permit in their possession and available for inspection at all times when transporting water.

C. If access to construction water through the meter service box is wanted during construction of new buildings, the contractor or owner will need to sign up for water service through the City and have the meter set by Public Works. Occupancy will not be granted until a water meter has been properly set by the City.

Upon receiving a request for final inspection, the Building Department personnel will check the water meter vault and determine if a meter has been set. If the meter is in place then the inspector will proceed with the inspection, if not then the inspection will cease until the meter has been installed. It is the responsibility of the individual(s) requesting occupancy to set up the water service account and request the meter be set.

2.03 POLICY REGARDING LEAKS

A. When a leak is discovered by the owner or the City, adjustments to billings will be given when proof of repair is provided. Repairs must take place within 10 days of the leak discovery or no adjustment will be made. Adjustments will be given to approximate the previous history of a similar period.

2.04 WINTER FREEZE UP POLICY

A. In certain circumstances the Public Works Director may authorize individuals to leave water running in their homes during the winter months to prevent water lines from freezing. If an individual is thus authorized, their water billing will be adjusted to the base rate. If individuals

leave water running without permission from the Public Works Director, no adjustment will be made to the billing.

2.05 SEWER BILLING PROCEDURES

A. Sewer fees will be set by resolution and may be changed as the City Council deems necessary. Sewer billings are billed one month in advance. Current base monthly fees are identified in the Heber City Consolidated Fee Schedule:

B. Sewer flow charges are based on the winter water usage from approximately October 10th to April 10th, of each year. Flow charges over the base rate are calculated as follows:

Water Usage / 6 months = Average Monthly Use

Average Monthly Use x $ Rate per Thousand Gallons = Flow Charge

C. Flow charges are then added to the base fee to equal your monthly bill.

D. If no sewer history exists, the City will use the formula below for the first year.

Base Rate + (Per Person Charge x #of People)

2.06 POLICY REGARDING WINTER WATER LEAKS

A. When a water leak is discovered during the winter months by the owner or a City employee, Heber City will use the State average usage for the number of persons living in the home for determining the flow charges for the April billing.

2.07 LIVESTOCK METERS

A. Persons who water livestock will be required to install a separate meter in order for Heber City to deduct water used for watering livestock before calculating flow charges for the Sewer billing.

2.08 SPRINKLER SYSTEMS

A. Persons wishing to install sprinkler systems attached to the culinary water system will be required to connect onto their water line between the home and the water meter, unless a hardship exists. The Public Works Director will determine if a hardship exists. The City Manager will give final approval. If a hardship exists, a separate meter can be installed and will be billed as a normal connection. Those who receive permission to have a separate connection will be required to pay the appropriate hook up fee as determined in section 1.02 A. These connections are not transferable to another property if they are abandoned.

All necessary backflow prevention devices are to be installed per the International Uniform Plumbing Code and City Ordinance. Backflow devices for sprinkler systems shall be Reduced Pressure Zone Backflow Prevention Assemblies (RP Devices). RP Devices will need to be accompanied by a certification from a licensed tester that the device is functioning properly prior to city acceptance.

2.09 ABANDONMENT OF SERVICES AND LATERALS

A. Existing water services shall be abandoned to the city's main line. The "corp" valve shall be removed and the tap plugged. All abandonments shall be coordinated with the Public Works Director.

B. Existing sewer laterals shall be abandoned by capping the lateral with a water tight plug at the main line. If the lateral ties into a manhole, the water tight plug may be placed inside the manhole.

2.10 WATER METER LOCATIONS

A. Water meters shall be installed in the public right-of-way perpendicular to the water main. The meters will normally be located in the park strip, or in cases where no park strip exists, may be installed on the city side of the property line. In the case of services tapped off water mains in easements, the meter shall be within the easement and adjacent to the main.

B. Water meters located within the driveway or driveway approach shall be flush with the concrete surface and shall be inspected and approved by the Public Works Department.

PART 3 CUTOFF POLICY

3.01 Heber City's policy regarding disconnection of services for delinquent payment is as follows:

A. When an account become 30 days past due, billings will be marked as past due with payment required in 10 days or service will be disconnected.

B. If no response is received within the first ten day period, a Notice of Disconnection will be mailed. This notice will allow ten additional days before disconnection will take place.

C. If no response is received within the 10 day period the water will be disconnected.

D. Before water services are restored, the bill must be paid in full and payment for a reconnect fee must be paid as identified in the Heber City Consolidated Fee Schedule.

END OF SECTION

SECTION 01450

TESTING AND PROCESS CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section defines the responsibility of the Developer or Contractor to adequately test native materials and construction materials, and to furnish the City with manufacturer's certifications of material quality.

1.02 QUALITY ASSURANCE

A. The developer or Contractor shall be responsible for all sampling, delivery of samples to a qualified testing agency, testing, and delivery of test results or materials certifications to City at no charge to the City. Testing and certifications reports shall be approved by the City as to conformance to City construction specifications prior to final inspection and/or acceptance by the City of any materials or workmanship.

1.03 SUBMITTALS

A. Field Test Report: When possible submit original reports immediately to Engineer or inspector, but in no case later than end of following day.

B. Laboratory Test Report: Submit original report to Engineer within 48 hours after test results are determined.

PART 2 EXECUTION

2.01 SAMPLING

A. Sampling of materials shall be as specified in each test.

B. The City Engineer or City Inspector may require that sampling be performed in their presence, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the preconstruction meeting, or when construction drawings are released by the City for construction, as applicable.

C. The presence of a City Inspector shall not relieve the Developer/Contractor of any requirement in this Section.

D. Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:

1. Name of Project.

2. Name of Developer/Contractor.

3. Project Street Address.

4. Appropriate Test Name.

5. Date of Sampling.

6. Sample Number (if more than one sample per day).

7. Name of technician who performed the testing.

8. Location of sample.

2.02 TESTING AGENCY

A. All materials testing, whether in a laboratory or in the field, shall be conducted by a certified independent testing agency approved by the City.

2.03 SOIL CLASSIFICATION TEST

A. The soil classification test shall be conducted to determine the suitability of native soils for road subbase and building foundations.

B. The soil classification test shall conform to AASHTO M-146 of latest revision.

C. The soil shall be classified according to AASHTO soil classifications.

D. One soil classification test shall be required for each test area. A test area shall be limited to one parcel of one soil type, a maximum 1,000 feet long and maximum 5 acres.

E. In test areas of less than 2 acres, the City Engineer may waive this requirement.

F. The soil sample shall be taken from a test area at a minimum depth of 24 inches below the future design grades, of native soil, and shall be free from foreign material, asphalt, concrete, ice or manmade materials.

G. Where deep footings or pile foundations are proposed, soil classification tests at several depths may be required in each test area.

H. The results of all determinations shall be reported in writing to City Engineer.

2.04 COMPACTION TEST OF SOIL AND UNTREATED BASE COURSE

A. Laboratory tests to establish maximum laboratory density shall be determined in accordance with AASHTO T-180, Method D for A-1 classification soils and AASHTO T-99, Method D for all other soils.

B. Samples to determine laboratory density shall be taken from the stockpiled backfill or from the uncompacted base course in place.

The acceptance of soil and base course with respect to compaction shall be based upon all density tests made in a lot meeting the density required.

ROADS

1. Field density tests shall be as specified by AASHTO T-191 or by use of a portable nuclear density testing device. Field density tests shall be taken at a depth equal to ½ the maximum depth of the lift tested.

2. A lot shall equal the amount of soil or untreated base course compacted in each production day.

3. A test lot shall be divided into sublots and one density test shall be taken within each sublot.

4. The location of sampling sites within the sublot shall be chosen on a random basis by use of a suitable random number table.

5. Each test lot shall have a minimum of two (2) sublots. A sublot shall be no larger than 1,000 cubic yards for embankment, no larger than 200 cubic yards for backfill over pipe or against structures and no larger 1,000 tons for untreated road base.

UTLITY PIPE

1. Main line utility trenches shall have a passing compaction test every 200 feet at each lift.

2. Lateral line utility trenches shall have a minimum of one passing compaction test.

3. Each manhole, inlet, water valve cluster, or any other utility which is raised to grade shall have a minimum of one passing compaction test.

4. All tests, whether they are pass or fail, shall be recorded and submitted by testing company each day.

5. If two sequential tests fail, the frequency of the tests may be increased at the City Engineer's discretion.

C. The test results of all samples tested shall be reported to the City Engineer. A test lot shall be accepted when the average of the density determinations is not less than the density required for that improvement in these specifications and when no one density determination is less than 95% of the density required by these specifications.

D. Compaction tests not conforming to required specifications may be rejected and re-compaction or related construction efforts to obtain compaction shall be at the Developer's expense.

2.05 TEST ROLL OF ROADWAY SUBGRADE

A. Roll Test shall be performed when required by City Engineer to determine the structural integrity of the subgrade and street section.

B. The Roll Test shall be performed as follows:

1. The contractor shall provide a loaded 10 wheel dump truck or water truck to drive over the subgrade material within the roadway.

2. The loaded truck shall be driven slowly over the subgrade to locate soft spots in the subgrade surface.

3. Soft spots in the subgrade shall be identified and marked by the City Engineer or Inspector.

4. It shall be the developer's responsibility to remove the rejected subgrade material to depth determined by City Engineer. The rejected material shall be replaced with A-1 granular backfill approved by City Engineer.

2.06 GRADATION TEST OF UNTREATED BASE COURSE

A. The gradation of untreated base course shall be determined in accordance with AASHTO T-27.

B. The total amount of material passing the No. 200 sieve shall be determined by washing in water in accordance with AASHTO T-11.

C. The acceptance of road base with respect to gradation shall be based upon the average of all determinations in a lot. A lot shall be limited to one source of borrow and limited to one subdivision plat or one development. One sample shall be required for each 1,000 tons of untreated base course in a test lot. When the test lot is less than 100 tons, the requirement for the gradation test may be waived by the City Engineer.

D. The location of sampling sites within a test lot shall be chosen on a random basis by a suitable random number table.

E. All material not conforming to the specified gradations may be rejected at the Developer's expense.

2.07 EXTRACTION - GRADATION TESTING OF BITUMINOUS SURFACE COURSE

A. Samples of the bituminous surface course or asphalt concrete shall be tested with respect to asphalt binder, sieve analysis, theoretical maximum specific gravity, and VMA in accordance with Utah Department of Highways Test Procedures.

B. Mix design shall be submitted to the City Engineer for approval a minimum of 5 working days before work is to begin.

C. Acceptance of bituminous surface course with respect to gradation and bitumen content shall be based upon the average of the determinations made in a lot.

1. A lot shall equal the amount of bituminous surface course placed in each production day.

2. When a lot exceeds 1,000 tons, a minimum of three (3) samples shall be taken in each lot.

3. When a lot is 1,000 tons or less, a minimum of two (2) samples shall be taken.

4. Samples shall be taken at the time of lay-down of bituminous surface course and before compaction. Samples shall be taken from the mat behind the lay-down machine.

5. Sampling shall be timed to represent the entire production day. The time of day, date of sample, station and offset location shall be clearly marked with the sample.

6. If the average asphalt is less than 2.5% of optimal content, the Contractor may be required to lay an additional lift or slurry seal, based on the City Engineer's recommendation.

2.08 COMPACTION TESTING OF BITUMINOUS SURFACE COURSE

A. Laboratory tests to establish the Theoretical Maximum Specific Gravity of the bituminous surface course shall be determined in accordance with ASTM D2041 and ASTM D1559.

B. Samples to determine maximum laboratory density shall be taken at the time of lay-down of bituminous surface course and before compaction.

C. Acceptance of bituminous surface course with respect to compaction shall be based upon the average determination of field density tests made in a lot.

1. Field density tests shall be by a portable nuclear density testing device and by laboratory density analysis of core samples. At a minimum, one core sample shall be taken every 2,000 tons or at each change in mix design to calibrate the portable nuclear density testing device(s). The location of the core shall be at a location also tested with the portable nuclear testing device. Each portable nuclear testing device shall be calibrated to the density of a core test at the same location as the core was taken. Additional core tests shall be completed per the direction of the City Engineer.

2. A test lot shall be the quantity of surface course placed and compacted in each construction day.

3. The test lot shall be subdivided into sublot(s) of approximately equal size and no larger than 1,600 square yards in area.

4. One field density test shall be taken in each sublot, randomly located in the test lot by use of a suitable random number table.

D. Test lots shall be accepted with respect to density when the average in place density meets the requirements of Section 02510. Entire test lots or individual areas not meeting these requirements are subject to removal and replacement at the discretion of the City Engineer.

E. Core Tests

1. Acceptance of the completed bituminous surface course with respect to thickness shall be based on the average thickness of a test lot.
   a. A test lot shall equal approximately 4,000 square yards of completed roadway.
   b. A lot shall be divided into sublots of approximately 2,000 square yards.

2. One thickness test, randomly selected by use of a random number table, shall be taken within each sublot. A minimum of three core tests will be taken.

3. A lot shall be accepted when the average thickness of all sublots is not less than 3/8 inch the total designated bituminous surface course thickness and when no individual sublot shows a deficient thickness of more than ½ inch.

4. Lots or sublots that are not acceptable because of deficient thickness shall be brought into compliance by placing additional surface course as directed by the Engineer.

5. The removed core will be replaced with low strength concrete.

2.09 COMPRESSIVE STRENGTH TESTING OF CONCRETE CYLINDERS

A. Samples of concrete shall be taken at the construction site, molded in standard cylinder shapes, allowed to cure, and tested with respect to comprehensive strength when required by the City Engineer.

B. All samples of concrete shall be taken in conformance to AASHTO T-141 of the latest revision.

C. Acceptance of concrete with respect to compressive strength shall be based upon the average determination of all "strength tests" made in a lot.

1. A test lot shall be the quantity of concrete placed at one job in a construction day.

2. For each 50 cubic yards of concrete in a test lot, a minimum of three (3) compressive "strength tests" shall be run, except that for lots of less than 5 cubic yards, the number of "strength tests" per lot shall be the average strength of three standard cylinders.

3. The making, curing and compressive strength testing of concrete cylinders shall conform to AASHTO T-22 and AASHTO T-23.

D. Concrete may be rejected if desired strengths are not obtained at the Developer's expense.

2.10 ADDITIONAL CONCRETE TESTING

A. Slump Test: Determine slump in accordance with AASHTO T-152. One slump test is required for every 50 yards with a minimum of one test per day.

B. Air Test: Determine normal weight concrete air content; AASHTO T-152 and light weight concrete air content; AASHTO T-196.

C. When requested by Engineer, test concrete in place by impact hammer, sonoscope, or other nondestructive device:

1. To determine relative strengths in various locations in Work.

2. To aid in evaluating concrete strength.

3. To select areas to be cored.

2.11 CERTIFICATIONS FOR WATER SYSTEM VALVES

A. In certain water system equipment, steel items and pipe listed below, a manufacturer's certificate shall be furnished with each unit of equipment, certifying conformance to the applicable requirements of City Standard Specifications:

1. Gate Valves.

2. Butterfly Valves.

3. Steel Reinforcing Bars.

4. Structural Steel.

5. Corrugated Metal Pipe.

6. Polyvinyl Chloride Pipe.

7. ABS Composite (Truss) and Solid Wall Pipe.

2.12 SUMMARY TABLE OF TESTS AND CERTIFICATIONS

A. The following is a summary of the tests, number of samples per test and certificates that are required for construction work and developments in Heber City. This summary is provided as a reference guide. For details governing each item, refer to the appropriate test specification herein.

TEST SUBJECT	SPECIFIC TEST	NUMBER OF TESTS
Soil Classification	AASHTO M-145	1 test per test area of uniform soil type and 5 acres maximum.
Compaction of Soil & Base Course	Lab Density- AASHTO T-99 Method D or AASHTO T-180 Method D Embankment & Base Course Field Density- Portable Nuclear	As needed to establish laboratory density 1 test plus minimum one test per 1,000 cu.yds.

TEST SUBJECT	SPECIFIC TEST	NUMBER OF TESTS
	Equipment or AASHTO T-191 Backfill Field Density- Portable Nuclear Equipment or AASHTO T-191	1 test plus minimum one test per 200 cu.yds.
Base Course Gradation	Sieve Analysis- AASHTO T-27 Passing No. 200 Sieve- AASHTO T-11 Utility Pipe	1 test per 1,000 tons Every 200 linear feet of main line trench at each lift. One test per lateral trench and at each utility (MH, Valve, box, etc.)
Extraction-Gradation Test of Bituminous Surface Course	UDOT Test Procedure 8-946 & 8-947	3 tests per pavement construction day
Compaction of Bituminous Surface Course	Lab Density- Marshall Test, ASTM D-1559 Field Density- Portable Nuclear Equipment	1 test per pavement construction day 1 test per 1600 square yards sublot
Core Tests	4" Core Sample	1 thickness test per 2,000 square yards or 3 test minimum
Concrete Test Cylinders Air & Slump Test	AASHTO T-23	3 cylinders per 50 cubic yards or minimum of 3 cylinders on placements less than 50 cubic yards
Pressure Reducing & Regulating Valves	Manufacturer's Certificate	1 for each valve
Gate Valves	Manufacturer's Certificate	1 for each valve over 12" diameter
Back Flow Reduced Pressure Zone Assembly (RP)	Field Test Certificate by licensed technician	
Butterfly Valves	Manufacturer's Certificate	1 for each valve
Steel Re-Bar	Manufacturer's Certificate	1 for each 1,000 pounds of one grade
Structural Steel	Manufacturer's Certificate	1 for each lot of one shape, one grade
Corrugated Metal Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class
Polyvinyl Chloride Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class
A.B.S. Pipe	Manufacturer's Certificate	1 for each 500 lineal feet of one size, one class

END OF SECTION

SECTION 02150

SHORING AND UNDERPINNING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shoring for open excavations requiring a protective system.

1.02 REFERENCES

A. OSHA Construction Standards Chapter P: Excavations, Trenching, and Shoring.

1.03 RESPONSIBILITY

A. Contractor/Developer is solely responsible for safety. It is the Contractor/Developer's responsibility to adhere to all of OSHA's current regulations.

1.04 DEFINITIONS

A. Accepted Engineering Practices: Those requirements or practices which are compatible with standards required by a duly licensed or recognized authority.

B. Benching: A method of protecting persons and property against cave-ins by excavation the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

C. Excavation: Any man-made cut, cavity, or depression in an earth surface, including trenches, formed by earth removal and producing unsupported earth conditions (sides). If installed forms or similar structures reduce the depth-to-width relationship, and excavation may become a trench.

D. Failure: The permanent deformation or breakage of a structural member or connection; or the collapse of all or part of an excavation.

E. Protective System: Any recognized method of protecting persons and property against cave-ins, the collapse of adjacent structures, or material that may fall or roll from an excavation side or into and excavation. Protective systems include support systems, sloping and benching systems and shield systems.

F. Shield/Trenchbox : A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect persons and property within the structure without preventing a cave-in. Shields may be permanent structures or may be designed to be portable and moved along as work progresses. Portable shields used in trenches are usually referred to as "trench boxes" or "trench shields".

G. Shoring: A structure that supports the sides of an excavation and thereby protects persons and property by preventing cave-ins.

H. Sides: A vertical or inclined earth surfaces formed at the outer edges of an excavation.

I. Sloping: A method of protecting persons and property against cave-ins by excavation to form sides that are inclined away from the excavation, the angle on incline being of such a degree for the conditions of exposure that a cave-in will not occur.

J. Support System: A structure which protects persons and property by providing support to an adjacent structure, underground installation, or the sides of an excavation.

K. Trench: A narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 feet.

1.05 DESIGN OF PROTECTIVE SYSTEMS

A. Use professional engineer to design support systems, shield systems, and the structural components of these systems, and sloping and benching systems to resist without failure all loads that are intended to be imposed or transmitted to them.

B. Fully compensate in design procedures for hydrostatic pressure in the excavation sides.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials shall be as per 1.05 of this section.

PART 3 EXECUTION

3.01 STABILITY OF ADJACENT STRUCTURES

A. Use support systems such as shoring, bracing, or underpinning where stability of adjoining buildings, walls, sidewalks, pavements, or other structures is endangered by excavation operations.

3.02 INSPECTIONS

A. Contractor/Developer shall employ and have on site at all times a competent person, as defined be OSHA, who is responsible for excavation inspection.

B. Inspect excavations daily for evidence of possible cave-ins, indications of failure of protective systems, or other hazardous conditions.

C. Upon discovery of hazardous conditions, cease all work in the excavations until additional precautions have been taken to ensure persons and property safety.

3.03 ADDITIONAL REQUIREMENT FOR TRENCH EXCAVATION

A. Do not excavate material to a level greater than 2 feet below the bottom of the members of a support system if the system is designed to resist the forces calculated for the full depth of the trench, and indications of a possible cave-in below the bottom of the support system are not evident while the trench is open.

END OF SECTION

SECTION 02205

COMMON FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Common fill material requirements.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.

B. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

1.03 DEFINITIONS

A. Common Fill: Backfill material which is not mechanically graded.

1.04 ACCEPTANCE

A. Acceptance of common fill shall be determined by Engineer and will be based upon sublots of 500 tons.

B. Engineer reserves the right to select and test backfill on a random basis from any location in the Work, on the site or from the backfill source.

PART 2 PRODUCTS

2.01 GRANULAR FILL

A. Classification A-1-a. Refer to AASHTO M145

B. Non-Plastic and well graded.

C. Bank run material: free of shale, clay, slag, friable material and debris.

D. The material must be within the following limits:

SIEVE SIZE	PERCENT BY WEIGHT PASSING SIEVE
4 inches	99
No. 4 (4.75 mm)	30 to 70
No. 200 (75 micro m)	3 to 15

2.02 BORROW

A. Sound, earthen material with 95% passing the 4 inch sieve.

B. Classifications A-1-a through A-4. Refer to AASHTO M145.

2.03 SAND

A. Clean, coarse, natural sand.

B. Nonplastic when tested in accordance with ASTM D 4318.

C. 100 percent shall pass a ½ inch screen.

D. No more than 20 percent shall pass a number 200 screen.

2.04 SOURCE QUALITY CONTROL

A. Verify gradation compliance in accordance with AASHTO T-27. Select samples uniformly in time on a random basis.

PART 3 EXECUTION

3.01 INSTALLATION

A. Excavation and Backfill Operations: In accordance with Section 02225.

END OF SECTION

SECTION 02206

SELECT FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Select fill material requirements.

1.02 REFERENCES

A. AASHTO T-96: Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

B. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

1.03 DEFINITIONS

A. Select Fill: Backfill material which is mechanically graded.

1.04 SUBMITTALS

A. Material analyses of each select fill material to be used.

1.05 ACCEPTANCE

A. Engineer reserves the right to select, reject, and test backfill on a random basis from any location in the Work or from the backfill source.

PART 2 PRODUCTS

2.01 AGGREGATES – UNTREATED BASE COURSE

A. Clean, hard, tough, durable and sound mineral aggregates that consists of 95% crushed stone, crushed gravel or crushed slag; free of deleterious and organic matter; and complies with the following:

1. Aggregate Wear Under AASHTO T-96: Less than 50 percent.

2. Material shall be classified as A-1-A material.

3. Two fractured faces Under AASHTO T-335: A minimum of 50 percent.

4. Dry Rodded Weight Under AASHTO T-19: Not be less than 75 lb/ft^3.

5. Gradation Limits: Establish the job mix target gradation for each sieve. Target grading curve must lie within the gradation limits of the Master Grading Band Limits. The Job Mix Gradation Tolerance is the allowable deviation from the job mix target gradation on the applicable sieves. The following limits are based on fine and course aggregate having approximately the same bulk specific gravities. Sieve gradations are based upon percent of aggregate passing by weight in accordance with AASHTO T-27 and T-11.

MASTER GRADING BAND LIMITS – UNTREATED BASE COURSE

SIEVE SIZE	Type 1-1/2 Min	Max	Type 1 Min	Max	Type 3/4 Min	Max	JOB MIX GRADATION TOLERANCE
1-1/2"	100	--	--	--	--	--	
1"	90	100	100	--	--	--	±9.0 (1-1/2")
3/4"	70	85	--	--	100	--	±9.0 (1-1/2 &1")
½"	65	80	79	91	--	--	±9.0
3/8"	55	75	--	--	78	92	±9.0
No. 4	40	65	49	61	55	67	±7.0
No. 16	25	40	27	35	28	38	±5.0
No. 200	7	11	7	11	7	11	±3.0

6. Source quality control shall be in accordance with AASHTO T-27. Verify job-mix grading band material compliance by selecting samples uniformly in time on a random basis.

2.02 DRAIN ROCK

A. Consist of hard, durable particles of stone or gravel, screened or crushed to specified size and gradation.

B. Free from vegetable matter, lumps or balls of clay, or other deleterious matter.

C. Crush or waste coarse material and waste fine material as required to meet gradation requirements.

D. Aggregate Wear: Percentage of wear not greater than 50 percent when tested in accordance with AASHTO T-96.

E. Conform to size and grade within the limits as follows when tested in accordance with AASHTO T-27.

	¾ " Drain Rock	1-1/2" Drain Rock	3" Drain Rock
SIEVE SIZE (Square Openings)	PERCENT BY WEIGHT PASSING SIEVE	PERCENT BY WEIGHT PASSING SIEVE	PERCENT BY WEIGHT PASSING SIEVE
4 inch	100	100	100
3 inch	100	100	95-100
2 inch	100	100	50-100
1-1/2 inch	100	95-100	15-55
3/4 inch	95-100	50-100	0-20
3/8 inch	15-55	15-55	0-15
Number 4	0-10	0-25	0-10
Number 8	0-5	0-5	0-5
Number 200	0-2	0-2	0-2

2.03 GRAVEL

A. Consist of hard, durable particles or fragments of stone or gravel, screened or crushed to specified sizes and gradations.

B. Free from vegetable matter, lumps or balls of clay, alkali, adobe, or other deleterious matter.

C. When sampled and tested in accordance with specified test methods, material shall comply with the following requirements:

1. Durability index: Percentage of wear not greater than 40 percent after 500 revolutions when tested in accordance with ASTM C 131.

2. Plasticity Index: Not greater than 5 when tested in accordance with ASTM D 4318.

3. Liquid limit: Not greater than 25 percent when tested in accordance with ASTM D 4318.

D. Conform to sizes and grade within the limits as follows when tested in accordance with ASTM C 136 and ASTM C 117:

SIEVE SIZE (Square Openings)	PERCENT BY WEIGHT PASSING SIEVE
3 inch	--
1-1/2 inch	100
Number 4	30-70
Number 8	20-60
Number 30	10-40
Number 200	0-12

2.04 PEA GRAVEL

A. Consists of hard, durable particles or fragments of stone or gravel, screen or crushed to specified sizes and gradations. Pea gravel shall only be used with Engineer's approval.

SIEVE	PERCENT PASSING BY WEIGHT
1/2 inch	100
3/8 inch	95-100
Number 4	0-3
Number 16	0-2
Number 200	0-1

2.05 COARSE SAND

A. Consists of hard, durable particles or fragments of stone or gravel, screen or crushed to specified sizes and gradations. Coarse sand shall only be used with Engineer's approval.

SIEVE	PERCENT PASSING BY WEIGHT
3/8 inch	100
Number 4	50-95~~95-50~~
Number 16	0-5
Number 200	0-3

2.06 BEDDING SAND

A. Friable river or bank aggregate, free of loam and organic matter. Graded as follows.

SIEVE	PERCENT PASSING BY WEIGHT
3/8 inch	100
Number 4	95-100
Number 50	0-70
Number 100	0-30
Number 200	0-20

PART 3 EXECUTION

3.01 INSTALLATION

A. Excavation and Backfill Operations: In accordance with Section 02225.

END OF SECTION

SECTION 02225

EXCAVATION AND BACKFILL OPERATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements for trenching and backfilling for underground pipelines.

B. Excavating and backfilling operations adjacent to and under structures including boxes, headwalls, or other structures as required by City Engineer.

C. Backfilling and compacting operation for construction and reconstruction of roadways, embankments, streets, parking lots, and other paved surface areas.

D. Excavation permit requirements.

1.02 DEFINITIONS

A. Pipe Zone: That zone in an excavation which supports, surrounds, and extends to 1 foot above the top of the pipe barrel.

B. Bedding: Process of preparing the trench bottom to receive the pipe and the backfilling on each side of the pipe to 12 inches over the top of the pipe.

C. Roadway: Area within the street right-of-way, including the area under the street, curb, gutter, and one (1) foot behind curb.

1.03 SUBMITTALS

A. Cut Sheets: In accordance with Section 00700.

B. Material Analysis Reports: In accordance with Sections 02205 or 02206 as applicable.

C. Density Test Reports: In accordance with Section 02250.

D. Depth of backfill lift. This information shall be contingent upon type of equipment used in compaction operation. Engineer may order lesser thickness if compaction is not achieved.

1.04 STORAGE AND HANDLING

A. Stockpile excavated material in a manner as to cause a minimum of inconvenience to public travel and provide for emergency traffic as necessary.

B. Maintain free access to all existing fire hydrants, water valves, irrigation valves, gas valves, manholes, cleanouts, and meters.

C. Maintain clearance for free flow of storm water in all gutters, conduits, and natural water courses.

D. Utilize appropriate traffic signs, markers, and procedures in all product storage and handling activities.

E. Promptly remove all other material from site.

1.05 SITE CONDITIONS

A. Unsuitable Weather Limitations: Do not place, spread, or roll any fill material during unsuitable weather conditions. Do not resume operations until moisture content of material is satisfactory.

B. Protection of Graded Areas: Protect graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or unsuitable weather, scarify surface, reshape, and compact to required density prior to further construction.

D. Prior to excavation operations, photograph existing surfaces along which Work may take place in order to determine, after construction is completed, whether any damage of existing improvements occurred prior to construction operations.

E. Grading: In compaction operations, do not vary the surface of finished aggregate base course more than 1/4" above or below grade.

PART 2 PRODUCTS

2.01 WATER

A. Make arrangements for source of water during construction and make arrangements for delivery of water to site. Comply with all local laws and regulations when securing water from water utility company at no additional cost to City.

2.02 SOIL MATERIALS

A. Over-excavation Fill: Select Fill: in accordance with Section 02206.

B. Common Fill: in accordance with Section 02205.

C. Select Fill: in accordance with Section 02206.

D. Native Backfill:

1. When approved by City Engineer, native backfill material obtained from project excavations may be used as backfill, provided organic material, rubbish, debris, rocks larger than 8 inches, and other objectionable materials are removed.

2. Bituminous pavement obtained from project excavations will not be permitted as backfill except for the following:
   a. May be mixed with road sub-base if material meets section 02205.2.01 gradation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify areas to be backfilled are free of debris, snow, ice, or water and ground surfaces are not frozen.

B. Verify foundation of basement walls are braced to support surcharge forces imposed by backfilling operations and that required concrete compressive strengths have been achieved.

C. Immediately prior to suspension of construction operations for any reason, provide proper and necessary drainage of work area.

3.02 PREPARATION

A. For pipelines, use means necessary to avoid displacement, and injury to, pipe and structures while compacting soil or operating equipment next to pipeline.

B. Movement of construction machinery over a pipeline at any stage is solely at Contractor's risk.

C. When excavation is required in jurisdictions other than City, satisfy all conditions of the appropriate agencies.

D. Identify required lines, grades, contours, and benchmarks.

E. Notify all affected utility companies and Blue Stakes prior to commencing excavation operation.

F. Support and protect from damage, until completion of the Work, any existing facilities and structures which exist in, pass through, or pass under the site.

3.03 CONTROL OF GROUNDWATER

A. All trenches shall be kept free from water during excavation, fine grading, pipe laying, jointing, and embedment operations.

B. Where the trench bottom is mucky or otherwise unstable because of the presence of groundwater, and in cases where the static groundwater elevation is above the bottom of any trench or bell holed excavation, such groundwater shall be lowered to the extent necessary to keep the trench free from water and the trench bottom stable when the work within the trench is in progress.

3.04 SHORING

A. Comply with Section 02150 when required by field condition.

3.05 GENERAL EXCAVATION OPERATIONS

A. If topsoil is on site, remove and store it for later use on site.

B. Excavate site to required grade for Work. Use all means necessary to control dust on or near Work and on or near all off-site borrow and disposal areas.

C. Notify Engineer of unexpected subsurface conditions.

D. Underpin adjacent structure which may be damaged by excavation work, including service utilities and pipe chases.

E. If unstable material is encountered at the bottom or face of excavation, suspend excavation and consult with Engineer. Obtain written approval from Engineer before proceeding. Correct unauthorized excavation at no cost to City.

F. Provide necessary protection to excavation walls as required. If conditions permit, slope excavation side to maintain a safe and clean working area. Remove loose materials.

G. Correct excavation beyond the specified lines and grades by filling the resulting voids with approved compacted fill. If the fill is to become the subgrade for other fill, use material approved by Engineer. Do not proceed until Engineer has approved the material and the proposed method of backfilling for over excavation errors.

3.06 EXCAVATION FOR PIPELINES

A. Trenches shall be excavated to the depths and widths required to accommodate the construction of the pipelines, as follows:

1. Except in ledge rock, cobble rock, stones or water saturated earth, mechanical excavation of trenches shall not extend below an elevation of 4 inches below the bottom of the pipe after placement in its final position.

2. All additional excavation necessary for preparation of the trench bottom shall be made manually.

3. Excavation for trenches in ledge rock, cobble rock, stones, mud or other material unsatisfactory for pipe foundation, shall extend to a depth of at least 4 inches below the bottom of the pipe.

4. A bedding of special material shall be placed and thoroughly compacted with pneumatic tampers in 4-inch lifts to provide a smooth, stable foundation.

5. Special foundation material shall consist of suitable earth material free from roots, sod, vegetation, or other organic matter.

6. Trench bottoms shall be hand shaped as specified in paragraph (2) above.

7. The maximum width of trench, measured at the top of the pipe, shall be as narrow as possible but a minimum of 6 inches on each side of the pipe.

8. Where ground water is encountered, clay dikes and/or filter fabric may be required at minimum100 foot intervals or as directed by the City Engineer.

B. Grade bottom of trenches to provide uniform bearing surface.

C. If necessary, make bell holes and depressions required to complete joining of pipe or box.

D. In public thoroughfares and regardless of trench depth, safely barricade and limit open trenches to a maximum of 200 lineal feet in the daytime, except in traveled roadways where a maximum of 80 lineal feet of open trench will be allowed.

E. Close trenches during nighttime conditions.

3.07 GRAVEL FOUNDATION FOR PIPE

A. Wherever the subgrade material does not afford a sufficiently solid foundation to support the pipe and superimposed load; where water must be drained to maintain a dry bottom for pipe installation and at other locations as previously defined, the subgrade shall be excavated to a minimum of 12 inches and replaced with crushed rock or gravel.

B. Gravel for pipe foundations shall conform to the requirements of Drain Rock in Section 02206.

C. Drain Rock material shall be deposited over the entire trench width in 18-inch maximum layers, each layer shall be compacted by tamping, rolling, or vibrating.

D. The material shall be graded to produce a uniform and continuous support for the installed pipe.

3.08 BEDDING & PIPE ZONE

A. Excavate pipe trench in accordance with this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Form and place concrete for pipe thrust restraints at any change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide thrust restraint bearing on native subsoil according to standard drawings.

C. Place bedding material at trench bottom in one continuous layer not exceeding 8 inches compacted depth; compact to 95 percent. Compacted bedding material shall normally consist of bedding sand in accordance of Section 02206.2.06.

D. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent.

E. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage.

F. Maintain optimum moisture content of bedding material to attain required compaction density.

3. 09 BACKFILLING FOR PIPELINES

A. Lift thickness for trench backfill shall not exceed 8 inches compacted depth.

B. Trench backfilling above the level of the pipe bedding shall normally be accomplished with A-1 material. Native excavated materials may be used when approved by Heber City and shall be free from rocks larger than 8-inches in diameter.

C. Compaction Requirements

1. Under pavements, shoulders, or other surface improvements the in-place density shall be a minimum of 95% of laboratory maximum dry density as determined by AASHTO T-180 (ASTM D1557) for A-1 soils and AASHTO T-99 (ASTM D698) for all other soils.

2. In other areas the in-place density shall be a minimum of 92% of the maximum dry density as determined by the same laboratory method.

3. See Section 01450.2.04.C.6.

D. Clay cut off dikes shall be constructed as required by City Engineer.

3.10 STRUCTURAL EXCAVATION

A. Provide all required shoring, cribs, cofferdams, and caissons including all pumping, bailing, draining, sheathing, bracing, and related items.

B. Slope excavation sides as excavation progress to maintain a safe and clean working area as required by OSHA.

C. Support excavation. Do not interfere with the bearing of adjacent foundations, pipelines, etc.

D. All unauthorized excavation below the specified structure subgrade shall be replaced with concrete, monolithic with that of the slab above or with coarse gravel thoroughly compacted into place.

E. Subgrade soil for all concrete structures shall be firm, dense, thoroughly compacted, and consolidated.

F. Subgrade soil shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete.

G. Coarse gravel or crushed stone may be used for subsoil reinforcement if results satisfactory to the City Engineer can be obtained thereby.

1. Material shall be applied in lifts of 6" or less.

2. Each lift shall be embedded in the subsoil by thorough tamping.

3. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner shall not be above the specified subgrade.

3. 11 BACKFILLING FOR STRUCTURES

A. Do not fill adjacent to structures until approval is obtained from Engineer.

B. All forms shall be removed and the excavation shall be cleaned of all trash and debris.

C. Backfill areas to contours and elevations indicated. Do not use frozen materials.

D. Do not use compaction equipment adjacent to walls or retaining walls that may cause wall to become overstressed or moved from final alignment.

E. Place select fill a minimum of 3 feet around the outside of structures.

F. Place and compact select fill materials in continuous lifts not exceeding 12" loose depth.

G. Place and compact common fill material in continuous lifts not exceeding 8" loose depth.

H. Do not disturb or damage foundation perimeter drainage, foundation, damp proofing, foundation waterproofing and protective cover, or utilities in trenches.

I. Backfill against foundation walls simultaneously on each side. Do not backfill against walls until concrete has obtained required 7 day strength.

J. Make smooth changes in grade. Blend slopes into level areas.

K. Remove surplus backfill materials from site.

L. Leave stockpile areas completely free of excess fill materials.

M. Slope grade away from structure at a minimum of 3" in 10 feet unless otherwise indicated.

N. Compaction: Each layer of material shall be compacted by hand or machines tampers or by other suitable equipment to a density equal to 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557) for A-1 soils and AASHTO T-99 (ASTM D698) for all other soils.

O. Restore any damaged structure to its original strength and condition and re-backfill to specifications.

3. 12 ROADWAY EXCAVATIONS

A. In advance of setting line and grade stakes, clean subgrade area of brush, weeds, vegetation, grass, and debris. Drain all depressions or ruts which contain water.

B. A soils classification, as determined by AASHTO T-27, shall be made on the proposed subgrade, and the following shall be required based on that classification:

SOIL CLASSIFICATIONS	REQUIREMENT
A-1	The subgrade shall be scarified to a depth of 12" and the loosened material shall be moistened and compacted to the equivalent of 95% of maximum dry density as measured by AASHTO T-180.
A-2, A-3, A-4 or A-5	The subgrade shall be over-excavated a minimum of 12" subgrade scarified and compacted, replaced with A-1 granular material, and be moistened and compacted as above.
A-6 or A-7	The subgrade shall be over-excavated a minimum of 18" subgrade scarified and compacted, replaced with A-1 granular material, and be moistened and compacted as above.

C. No organic material, soft clay, spongy material, or other deleterious material will be permitted in the scarified or imported subgrade layer.

D. Rough sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade and drainage shall be maintained at all times.

E. Moisture content of the subgrade layer shall be maintained at not less than 95% or more than 105% of optimum moisture content, during the compaction process. The entire roadbed, to one foot behind the back of curb, must be compacted to the specified density to a minimum depth of 8 inches.

F. If removal of boulders, rubble, or existing improvements, found within the excavated area results in a lower excavation elevation than indicated, backfill over excavation in a manner approved by Engineer.

G. Remove all deposits susceptible to frost heave.

H. Excavations through or under City streets, sidewalks, street shoulders, driveways, etc. shall comply with the following requirements:

1. Material removed by excavation is not to be used as backfill or placed back into the trench under any paved portion of the street. However, sand may be used for backfill up to one foot above top of pipe.

2. The remaining trench shall be filled with select fill as per section 02206.

3. The trench shall be filled to the existing asphalt level and guarded from traffic until set.

4. Within 10 days of the fill, sufficient fill material shall be removed and replaced with material comparable to the adjacent surface material shall meet the requirements of Section 02504 of these specifications.

5. The City Engineer shall inspect all work.

3. 13 SUBGRADE PREPARATION

A. Compact subgrade surfaces to density specified for overlying backfills. Refer to Section 02250.

B. If areas of subgrade are not readily capable of in-situ compaction, secure City Engineer's authorization for extra excavation and backfill.

C. Maintain minimum overburden cover of 2 feet over pipelines or conduits during subgrade preparation.

3. 14 BACKFILLING FOR PAVEMENT

A. Before beginning backfilling operations obtain Engineer's approval of excavation operation.

B. Do not damage subsurface structures, utility mains, or service lines.

C. Process backfill and avoid segregation. Keep base course free from pockets of coarse or fine material.

D. Deposit base course on the roadbed in a uniform manner which will provide the required compacted thickness. Maintain moisture content.

E. Shoulders are an integral part of the embankment. Do not build shoulders to a grade higher than that of the adjacent granular base course. Maintain efficient surface runoff at all times.

F. Compaction: in accordance with Section 02250.

G. Prior to placing pavements, proof roll in accordance with Section 01450.

3. 15 BLASTING

A. Blasting will not be allowed except by permission from the City Engineer.

B. The Contractor shall comply with all laws, ordinances, and applicable safety code requirements and regulations relative to the handling, storage, and use of explosives and protection of life and property.

C. If allowed, Contractor shall be fully responsible for all damage attributable to his blasting operations.

D. Excessive blasting or overshooting will not be permitted and any material outside the authorized cross-section which may be shattered or loosened by blasting shall be removed by the Contractor.

3. 16 COMPACTION OF BACKFILL

A. In accordance with Section 02250.

3. 17 IMPORTED BACKFILL MATERIAL

A. In the event the native excavated material is not satisfactory for backfilling as determined by the City Engineer, the Contractor shall provide imported granular fill in accordance with Section 02205.

3. 18 DISPOSAL OF EXCESS MATERIALS

A. All excess material shall be hauled away from the construction site and disposed of by the Contractor.

END OF SECTION

SECTION 02245

LOW DENSITY CONCRETE BACKFILL (FLOWABLE FILL)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Low density concrete backfill.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. C 150 - Specification for Portland Cement.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements

1. Low Density Concrete Backfill:
   a. 28 day compressive strength shall be between 100 psi and 150 psi. (1 bag mix)

1.04 SUBMITTALS

A. Proposed mix design.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pregenerated foam: One of the following or equal:

1. Mearl Corporation, Roselle Park, N.J., Mearl Geofoam Liquid.

2.02 MATERIALS

A. Low Density Concrete Backfill Components:

1. Type II low alkali Portland cement.

2. Water.

3. Aggregate: Pregenerated foam, vermiculite, or other low weight aggregate material which will conform to the strength and density requirements specified herein.

PART 3 EXECUTION

3.01 INSTALLATION

A. General

1. Low density concrete (flowable fill) may only be used for backfill when approved by the City Engineer.

2. Install low density concrete backfill as a nonstructural backfill material as indicated on the submitted Drawings.

3. Place low density concrete backfill in a manner so that minimal consolidation of the material occurs during and after placement.

B. Metal plates shall be placed over trench for 48 hours to protect concrete.

END OF SECTION

SECTION 02250

SOIL COMPACTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Compaction control of native and imported backfill material.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.

B. AASHTO T-99: Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Hammer and 12-In. (305-mm) Drop.

C. AASHTO T-180: Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using a 10-lb (4.54-kg) Hammer and an 18-In. (457-mm) Drop.

D. AASHTO T-238: Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.03 DEFINITIONS

A. A-1 Soils: AASHTO M 145 describes the nature of these soils.

B. Modified Proctor: The test method used for moisture-density relationship of soils as determined by the ASTM D 1557 test method.

C. Percent Compaction or Percent Density: The ratio of the field dry density to the laboratory maximum dry density expressed as a percentage.

D. Standard Proctor: The test method used for moisture-density relationship of soils as determined by the ASTM D 698 test method.

1.04 WARRANTY

A. Correct deficient conditions. Replace or repair surfacing materials and damaged facilities.

B. The method of construction repair shall be proposed in writing by Contractor for approval by Engineer prior to correcting the failed condition.

C. Failure to detect any defective work or material does not prevent later rejection of the work nor obligate Engineer for final acceptance when such defective work or material is discovered.

PART 2 EXECUTION

2.01 COMPACTION REQUIREMENTS

A. The Developer\Contractor shall be responsible to perform and pay for all testing of earth materials.

B. Moisten or de-water backfill material to obtain optimum moisture for compaction compliance.

C. The material shall be deposited in horizontal layers having a compacted thickness of no more than 12 inches for roadway and 6 inches for trenches.

D. The distribution of materials shall be such that the compacted material will be homogeneous and free from lenses, pockets, or other imperfections.

E. The material shall have the optimum moisture content required for the purpose of compaction and the moisture content shall be uniform throughout the layer, insofar as practicable.

F. Backfill shall be compacted by means of sheepsfoot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers of a size and type approved by the City Engineer.

G. If the required relative density is not attained, test sections will be required to determine any adjustments in compacting equipment, thickness of layers, moisture content and compactive effort necessary to attain the specified minimum relative density.

H. Approval of equipment, thickness of layers, moisture content and compactive effort shall not be deemed to relieve the Contractor of the responsibility for attaining the specified minimum relative densities.

I. The Contractor in planning his work shall allow sufficient time to perform the work connected with test sections and to permit the City Engineer to make tests for relative densities.

J. The Contractor shall take care not to overwork soils and exceed maximum compaction percentages when such percentages are defined. Contractor shall be responsible to adjust work methods and equipment necessary to meet compaction requirements without additional costs to the City.

2.02 FIELD QUALITY CONTROL

A. Optimum Soil Density: Unless indicated otherwise.

1. In accordance with AASHTO T-180 Method D test (Modified Proctor).

2.03 COMPACTION UNDER ROADWAYS

A. Fill or embankment material shall normally consist of A-1 materials and be compacted to not less than 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557).

B. Compaction shall extend one foot beyond proposed back of curb line.

2.04 COMPACTION UNDER SIDEWALKS, CURB AND GUTTER, AND DRIVEWAYS

A. Fill or embankment material shall normally consist of A-1 materials and be compacted to not less than 95% of maximum dry density as measured by AASHTO T-180 (ASTM D1557).

B. Compaction of material shall extend to at least one foot each side of the edge of the slab.

2.05 COMPACTION OF OTHER FILLS AND EMBANKMENTS

A. Fill or embankment materials other than those mentioned above shall be compacted to not less than 92% of maximum dry density as measured by AASHTO T-180 (ASTM D1557) for A-1 soils and by AASHTO T-99 (ASTM D698) for all other soils.

END OF SECTION

SECTION 02504

ASPHALT CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This is a material specification for hot mix and cold mix bituminous paving mixtures.

1.02 REFERENCES

A. AASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

B. AASHTO M-17: Standard Specification for Mineral Filler for Bituminous Paving Mixtures.

C. AASHTO T-165: Standard Test Method for Effect of Water on Cohesion of Compacted Bituminous Mixtures.

D. AASHTO T-245: Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus.

E. AASHTO T-246: Standard Test Methods for Resistance to Deformation and Cohesion of Bituminous Mixtures by Means of Hveem Apparatus.

F. AASHTO T-182: Standard Test Method for Coating and Stripping of Bitumen-Aggregate Mixtures.

G. AASHTO M-156: Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.

H. ASTM D 4215: Standard Specification for Cold-Mixed, Cold-Laid Bituminous Paving Mixture.

1.03 DEFINITIONS

A. Traffic Classifications:

1. Class I: Parking lots, driveways, light traffic residential streets, light traffic farm roads.

2. Class II: Residential streets, rural farm and residential roads.

3. Class III: Urban minor collector streets, rural minor collector roads.

4. Class IV: Urban minor arterial and light industrial and light industrial streets, rural major collector and minor arterial highways.

5. Class V: Urban freeways, expressways and principal arterial highways, rural interstate and other principal arterial highways.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 14 days prior to use in the Work. Include in the report the following information:

1. Mix design method: A Marshal Mix Design or Superpave Mix Design shall be used for Class I and Class II roads. Superpave Mix Design shall be used for Class III, Class IV, and Class V roads.
   a. For Marshall: use a five (5) point design using a four (4) point binder series with a one (1) point verification at the optimum binder content.
   b. For Superpave Mix Design: follow the 2017 Utah Department of Transportation (UDOT) Standard Specification section 02741 Hot Mix Asphalt (HMA) requirements for aggregates and volumetric mix design. All designs gyrations and compaction parameters shall meet the 20 year design ESALS 0.3 to < 3 Million. (N_{design}/% of G_{mm} = 75/97)~~, 3% Air Voids~~. Super Pave Mix shall be ½" Fine Mix (95% or more passing the ½" sieve) with 15% maximum Reclaimed Asphalt Pavement (RAP) content.
   ~~b.~~c. Air voids shall be 3.0% on all Class III, IV, and V roads.

2. Job control target data for aggregate ideal grading.

3. Permissible range limits of bitumen content in mixture.

4. Mixture's index of retained strength, AASHTO T-165

5. Additives. If none, state none are required.

6. Percent voids.

B. Source Aggregate Sample Report. Indicate rodded weight of aggregate, percentage of wear, weight loss, sand equivalent value, percent of fractured faces, amount of organic matter, plasticity of fines, and percentage of fines retained on the aggregate.

C. Pre-Approved Mix Design Data: If supplier has on record, a City approved mix design, submit name and address of supplier for each mix design 3 days prior to using asphalt concrete mix.

1.05 QUALITY ASSURANCE

A. Bitumen weights shall be determined by the mix design.

B. Use asphalt cement when recycled asphalt mixtures are indicated.

C. Do not change source of supply of paving asphalt or aggregate without Engineer's written approval.

D. Each shipment of bituminous material shall be uniform in appearance and consistency with no foaming when heated to the specified mixing temperature.

E. Do not use storage containers contaminated with other asphalt types or grades.

F. Gradation, density, and maximum density shall be determined by extraction tests, ASTM D 5444. Asphalt binder content shall be determined by using a burn-off oven, ASTM D 6307.

G. Validate binder grade received from the supplier.

PART 2 PRODUCTS

2.01 ASPHALT BINDER

A. Class I and II Streets, Trails and patches: Performance Grade (PG) of virgin asphalt binder shall be PG 58-28.
B. Class III, IV, & V Streets: Performance Grade (PG) of virgin asphalt binder shall be PG 64-34.

2.02 AGGREGATES - MATERIALS

A. Clean, hard, tough, durable and sound mineral aggregates that consist of crushed stone, crushed gravel, crushed RAP or RAP blend, or crushed slag conforming to the following requirements:

1. Rodded Weight density; not less than 75 pounds per cubic foot.

2. Percentage of wear of coarse aggregate retained on the No. 8 sieve; not exceeding 40 unless specific aggregates having higher values are known to be satisfactory.

3. Weight loss; not exceeding 16 percent by weight when subject to 5 cycles of sodium sulfate.

4. The combined aggregate after going through the dryer shall have a sand equivalent value of not less than 60 percent.

B. Coarse Aggregate: Use an aggregate that the portion retained on the No. 4 sieve has not less than 50 percent of particles by weight with at least two mechanically fractured faces or clean angular faces.

C. Fine Aggregate: Fine Aggregate Angularity per AASHTO T304 shall be 40% minimum.

D. Fine aggregate passing the No. 4 sieve may be either a natural or manufactured product containing not more than 2 percent by weight of organic matter or other deleterious substances.

1. Aggregate passing the No. 40 sieve is nonplastic.

2. Natural sand shall be a maximum of 15%.

3. Mineral Filler: When mix design indicates need, add as separate ingredient; AASHTO M-17.

2.03 AGGREGATES - MASTER GRADING BAND LIMITS FOR MARSHAL MIX DESIGN

A. Maximum particle size of ½ compacted lift thickness. DM-1/2" mix shall be used unless otherwise specified on the plans and/or standard drawings.

B. The following gradations describe the total percent passing by weight, AASHTO T-27, and is based on fine and coarse aggregate having approximately the same bulk specific gravities.

C. Target Grading Curve must lie within one of the Master Grading Bands in the following table.

MASTER GRADING BAND LIMITS FOR MARSHALL MIX DESIGN				
Sieve Size	DENSE MIXTURES			
	Type DM-3/4		Type DM-1/2	
	Min	Max	Min	Max
1"				
3/4"	100	-----		
½"	-----	-----	100	-----
3/8"	75	91	-----	-----
# 4	46	62	60	80
# 8	-----	-----	-----	-----
# 16	22	34	28	42
# 50	11	23	11	23
# 200	5	7	5	7

2.04 AGGREGATES - JOB-CONTROL GRADING BAND LIMITS

A. The job control formula shall produce a smooth curve approximately paralleling the master grading band limits for the designated mix. If application of the tolerances results in a job control grading band outside the master grading band, the full job control tolerances shall apply. The following describes the job control grading bands.

JOB-CONTROL GRADING BAND LIMITS					
Sieve Size	Amount Passing Sieve, weight %				
	1 Test	2 Tests	3 Tests	4 Tests	5 Tests
≥ ½	± 10	± 7.3	± 6.3	± 5.6	± 5.2
3/8	± 9	± 6.9	± 5.9	± 5.3	± 4.9
No. 4	± 9	± 6.7	± 5.7	± 5.2	± 4.8
No. 8	± 7	± 5.6	± 4.8	± 4.3	± 4.0
No. 16	± 7	± 5.2	± 4.6	± 4.2	± 3.9
No. 50	± 6	± 4.3	± 3.8	± 3.4	± 3.2
No. 200	± 3	± 2.4	± 2.0	± 1.8	± 1.7

2.05 MARSHALL MIX DESIGN

A. The Marshall mix design shall be based upon AASHTO T-245, traffic classifications, and the following:

MARSHALL MIX DESIGN REQUIREMENTS						
	CLASS I		CLASS II		CLASS III to V	
	Min	Max	Min	Max	Min	Max
Number of Compaction Blows (each end of specimen)	35	34	50	50	NA	NA
Stability, lb (ASTM D 6927)	1500	-----	1500	-----	NA	-----
Flow, in 0.01 in. units	8	20	8	18	NA	NA
% Voids in Mineral Aggregate (VMA), (ASTM D 3203)						
½" nominal maximum particle size	15		15		NA	
¾" nominal maximum particle size	14		14		NA	
% Air Voids,	3	3.5	3	3.5	NA	NA
Unconfined Compression Strength Retention, % (AASHTO T-165)	80	-----	80	-----	NA	-----

B. Compensate for specific gravity and absorption of aggregate to determine bitumen content by laboratory testing.

C. Recycled Asphalt Pavement (RAP) for Marshall Mix and Superpave Mixes: A maximum 15% Reclaimed Asphalt Pavement (RAP) by total weight of the mix is allowed in asphalt concrete mix, and a maximum 15% of the total binder content of the mix may be RAP asphalt binder.

D. Dust to Binder ratio should not be more than 1.4.

E. The mix design air voids shall be between 3% and 3.5%, where mix shall not exceed 3.5% air voids per ASTM D 3203. However, the percent asphalt or fines may need to be adjusted to achieve optimal strength.

F. If mix design is older than 365 days from date of submission, mix shall be recertified.

G. Voids in the Mineral Aggregate (VMA) shall be calculated using Gsb dry for both virgin and rap aggregates.

2.06 MIXING PLANT

A. Hot-mixed, hot-laid paving mixtures; AASHTO M-156.

2.07 SOURCE QUALITY CONTROL

A. Unconfined Compression Strength Retention: When crushed mineral aggregate which is thoroughly coated with bitumen has an index of retained strength less than 80 percent bring the strength into compliance by adding any of the following additives to the mix.

1. Anti-stripping agent.

2. Hydrated lime.

3. Portland cement.

B. Coating and Stripping of Bitumen-Aggregate Mixture: Immediately after mixing, the mixing shall meet the requirements of AASHTO T-182, whereby not more than 5 percent of the aggregate particles shall remain uncoated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Plant Mix Bituminous Paving: In accordance with Section 02510.

END OF SECTION

SECTION 02505

EMULSIFIED ASPHALT SLURRY SEAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This is a material specification and application specification for emulsified asphalt slurry seal.

1.02 REFERENCES

A. ASHTO T-27: Standard Method for Sieve Analysis of Fine and Coarse Aggregate.

B. AASHTO T-2: Sampling Mineral Aggregates.

C. AASHTO T-11: Materials Finer than No. 200 in Mineral Aggregate.

D. AASHTO 176: Sand Equivalent Value of Soils and Fine Aggregate.

E. AASHTO T-84: Specific Gravity and Absorption of Fine.

F. AASHTO T-19: Unit Weight Aggregate.

G. AASHTO T-96: Resistance to Abrasion of Small Size Coarse Aggregate by use of the Los Angeles Machine.

H. AASHTO T-37: Sieve Analysis of Mineral Filler.

I. AASHTO T-40: Sampling Bituminous Materials.

J. AASHTO T-59: Testing Emulsified Asphalt.

K. AASHTO M-140: Specification for Emulsified Asphalt.

L. AASHTO T-49: Penetration 100 gm at 5 sec. 77°F(25°C).

M. ASTM D242: Mineral Filler for Bituminous Paving Mixtures.

1.03 DEFINITIONS

A. The slurry seal shall consist of a mixture of an approved emulsified asphalt, mineral aggregate, water and specified additives, proportioned, mixed and uniformly spread over a properly prepared surface. The completed slurry seal shall leave a homogeneous mat, adhere firmly to the prepared surface, and have a friction resistant surface texture throughout its service life.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 14 days prior to use in the Work.

PART 2 PRODUCTS

2.01 EMULSIFIED ASPHALT

A. POLYMER MODIFIED EMULSION The emulsified asphalt shall be CQS-1HL, CQS-1HP, QS-1HL, or QS-1HP as specified in AASHTO M-140. The polymer modifier shall be either a solid synthetic rubber or latex material. The polymer modifier shall be combined with the base asphalt or asphalt emulsion at a minimum rate of 3% solids by weight of asphalt prior to loading at the manufacturing plant. The polymer modified emulsion shall be compatible with the mix design developed for the conventional slurry seal. Each shipment of emulsified asphalt shall be accompanied by a certificate of analysis / compliance from the manufacturer.

2.02 AGGREGATES - MATERIALS

A. The mineral aggregate shall be manufactured (100% crushed) stone such as granite, slag, limestone, chat, or other high quality aggregate that is free from dirt, organic matter, clay balls, adherent films of clay, dust, or other objectionable matter.

B. The Contractor shall insure that all oversize aggregate and other objectionable matter are removed from the mineral aggregate utilized in the slurry seal mixture. Screening shall be required at the stockpile if there are problems created by oversize materials in the mixture.

2.03 AGGREGATES - GRADING BAND LIMITS

A. Gradation Type II will be used unless otherwise specified.

B. The following gradations describe the total percent passing by weight, AASHTO T-27, and is based on fine and coarse aggregate having approximately the same bulk specific gravities.

GRADING BAND LIMITS						
Sieve Size	DENSE MIXTURES					Stockpile Tolerance
	Type I		Type II		Type III	
	Min	Max	Min	Max	Min	Max
3/8"	100	-----	100	-----	100	-----
# 4	100	-----	90	100	70	90
# 8	90	100	65	90	45	70
# 16	65	90	45	70	28	50
# 30	40	65	30	50	19	34
# 50	25	42	18	30	12	28
# 100	15	30	10	21	7	18
# 200	10	20	6	15	5	15
						+ or - 5%
						+ or - 5%
						+ or - 5%
						+ or - 5%
						+ or - 4%
						+ or - 3%
						+ or - 2%

2.04 AGGREGATES - JOB-CONTROL GRADING BAND LIMITS

A. The job mix gradation shall be within the gradation band for the desired type. After the target gradation has been submitted, then the percent passing each sieve shall not vary by more than the stockpile tolerance and still remain within the gradation band.

2.05 MINERAL FILLER

A. Portland Cement, hydrated lime, limestone dust, flyash, Aluminum sulfate, or other approved filler meeting the requirements of ASTM D242 shall be used if required by the mix design. They shall

be considered as part of the dry aggregate. The quantity and type of filler, if required, shall be determined by the job mix design. It shall be used for one or more of the following reasons only: to improve the gradation of the aggregate to provide improved stability and workability of the slurry, or the increase the durability of the cured slurry.

2.06 WATER

A. Water for the slurry mixture shall be clear, potable, free from harmful soluble salts, and compatible with the slurry mixture. If the water is obtained from a source other than sanitary systems, such as a river, stream, or pond, a sample of the water must be tested and approved by the laboratory performing the mix design.

2.07 MIX DESIGN

A. The mix design shall be made with the same aggregate gradation that the Contractor will provide on the project. Sources of all materials shall be selected prior to the time when the mix design is prepared and the materials are required to be used in the work. Slurry seal mixture shall not be placed until a mix design, submitted by the Contractor, has been approved by the Project Manager. The exact proportions of asphalt emulsion, aggregate, mineral filler, additives, and water to be used in the preparation of the slurry seal shall be determined by an approved testing laboratory experienced in slurry seal mix design procedures.

The approved slurry mix shall be a homogeneous mixture, sufficiently stable during the entire mixing/spreading period so that the emulsion does not break, there are no segregation of the fines from the coarse aggregate, and the liquid portion of the mix does not float to the surface. The amount and type of asphalt emulsion to be blended with aggregate shall be determined by the laboratory mix design. The set control additive shall be introduced into the slurry seal mixture by an approved method that will assure uniform distribution and proper control. The exact amount shall be determined by conditions in the field and indicated in the mix design. A minimum amount of water shall be used as necessary to obtain a workable and homogeneous mixture. The slurry seal mixture shall show no signs of uncoated aggregate or premature breaking of emulsion when applied to the pavement surface.

B. The mix design and all slurry seal materials shall be approved by the City Engineer prior to use. The component materials shall be within the following limits:

1.	Residual Asphalt	Type I: 10% - 16% Type II: 7.5% - 13.5% Type III: 6.5% - 12% Based on dry weight of aggregate
2.	Mineral Filler	0.5% - 2.0% Based on dry weight of aggregate
3.	Additives	As needed
4.	Water	As needed to achieve proper mix consistency

2.06 ADDITIVES

A. Additives may be used to accelerate or retard the break-set of the slurry seal, or improve the resulting finished surface. The quantity and type of set control additive, if required, shall be determined by the job mix design and conform to the applicable sections of ASTM D3910 and ISSA T102. The use of additives in the slurry mix shall be made initially in quantities predetermined by the mix design with field adjustments if required, after approval by the City Engineer.

PART 3 EXECUTION

3.01 EQUIPMENT - GENERAL

A. All equipment, tools, and machines used in performance of this work shall be maintained in satisfactory working condition.

3.02 MIXING EQUIPMENT

A. Mixing Unit. The slurry seal shall be mixed and applied with a machine designed and manufactured to lay slurry seal with a minimum aggregate capacity of eight (8) cubic yards to reduce the number of transverse joints. The slurry seal mixing machine shall be a continuous flow mixing unit, capable of delivering accurately predetermined proportions of aggregate, asphalt emulsion, and mineral filler (if required) to a revolving spiraled multi-blade mixer and of discharging the thoroughly mixed product on a continuous basis. The mixing unit shall be capable of thoroughly blending all ingredients together without violent action. The mixing machine shall be equipped with an approved fines feeder that provides an accurate metering device or method of introducing a predetermined proportion of mineral filler to the aggregate. The fines feeder shall be used only when mineral filler is part of the mix design. The mixing machine shall be equipped with a water pressure system and fog type spray bar. The machine shall be capable of mixing materials at preset proportions regardless of the speed of the machine and without changing machine settings.

Each mixing unit to be used in performance of the work shall be calibrated prior to construction. Previous calibration documentation covering the exact materials to be used may be accepted, provided it was made during the current calendar year. The documentation shall include an individual calibration of each material at various settings which can be related to the machine metering device(s).

Attached to the mixing machine shall be a mechanical squeegee distributor (spreader box) having a rubber-like material in contact with the surface to prevent unwanted egress of slurry. It shall prevent loss of slurry on varying grades and crown by adjustments to assure uniform spread. An appropriate mechanical device for lateral distribution of the slurry shall be operated within the spreader box. There shall be a steering device, a flexible strike-off, and a burlap or other approved drag. The spreader box shall be adjustable to widths from eight (8) to fifteen (15) feet to minimize the number of longitudinal joints. Broken slurry seal mixture shall not be allowed to collect in the spreader box or on the flexible strike-off.

3.03 SPREADING EQUIPMENT

A. The mixture shall be spread uniformly by means of a conventional surfacing spreader box attached to the mixer and equipped to agitate and spread the material evenly throughout the box. A front seal shall be provided to insure no loss of the mixture at the road contact point.

3.04 WEATHER LIMITATIONS

A. The slurry seal shall not be applied if either the pavement or air temperature is below 50°F(10°C) and falling, but may be applied when both pavement and air temperature are above 45°F(7°C) and rising. No slurry seal shall be applied when there is danger that the finished product will freeze before 24 hours. The mixture shall not be applied when weather conditions prolong opening to traffic beyond a reasonable time.

3.05 NOTIFICATION AND TRAFFIC CONTROL

A. All homeowners and business affected by the paving shall be notified one day in advance of the surfacing. Should work not occur on the specified day, a new notification will be distributed.

B. Suitable methods shall be used by the contractor to protect the slurry seal from all types of vehicular traffic without damage. Opening to traffic does not constitute acceptance of the work. Traffic control shall in accordance with the MUTCD manual.

3.06 SURFACE PREPARATION

A. Immediately prior to applying the slurry seal the surface shall be cleared of all loose material, oil spots, vegetation, and other objectionable material. Any standard cleaning method will be acceptable. If water is used, cracks shall be allowed to dry thoroughly before slurry surfacing. Manholes, valve boxes, drop inlets and other service entrances shall be protected from the slurry seal by a suitable method. The City Engineer shall approve the surface preparation prior to surfacing.

B. It is advisable to pre-treat cracks in the pavement surface with an acceptable crack sealer prior to application of the slurry seal. Crack sealing shall be completed a minimum of 3 months prior to slurry seal.

3.07 APPLICATION

A. When required by local conditions, the surface shall be pre-wetted by fogging ahead of the spreader box.

B. The slurry seal shall be of the desired consistency upon leaving the mixer. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained.

C. No streaks, such as those caused by oversized aggregate shall be left in the finished surface.

D. No excess buildup, uncovered areas, or unsightly appearance shall be permitted on longitudinal or transverse joints. The Contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved area. A maximum of six inches (6") shall be allowed for overlap of longitudinal lane line joints.

E. Areas which cannot be reached with slurry seal machines shall be surfaced using hand squeegees to provide complete and uniform coverage. The area to be handworked shall be lightly dampened prior to mix placement and the slurry worked immediately. Care shall be exercised to leave no unsightly appearance from handwork. The same type finish as applied by the spreader box shall be required. Handwork shall be completed during machine applying process.

F. Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide good appearance.

G. All areas, such as manways, gutters and intersections, shall have the slurry seal removed as specified by the City Engineer. The Contractor shall remove any debris associated with the performance of the work on a daily basis.

H. Rate of Application measured in pounds of dry aggregate per square yard:

APPLICATION RATE	
Type I	8-12#/SY
Type II	12-20#/SY
Type III	18-30#/SY

I. The longitudinal joint between adjacent lanes shall have no visible lap, pinholes, or uncovered areas. Thick application caused by overlapping shall be smoothed immediately with hand squeegees before the slurry seal mixture breaks. When possible, longitudinal joints shall be placed on lane lines. The Contractor shall provide suitable spreading equipment to minimize the number of longitudinal joints. Overlays that occur at transverse joints shall be smoothed before the slurry seal mixture breaks, so that a uniform surface is obtained.

J. Care shall be taken to insure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections shall be kept straight to provide a good appearance.

3.08 SAMPLING AND TESTING

A. Suitable sized samples of aggregate, asphalt emulsion, and mineral filler (if required) shall be submitted, when requested by the Project Manager, for approval not less than ten (10) days before the work starts. All samples of materials shall be supplied by the Contractor at his expense, and all tests necessary to determine conformance with requirements specified shall be performed without cost to the Contractor. Additional samples of materials shall be furnished as directed by the Project Manager during progress of the work. The owner will notify the Contractor immediately if any test fails to meet the specifications.

If it is established that a satisfactory slurry seal mixture meeting the requirements specified herein cannot be produced from the materials furnished, the materials shall be rejected and the Contractor shall submit new samples.

END OF SECTION

SECTION 02510

ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section covers the requirements for bituminous surface paving on roads and trails.

PART 2 SUBMITTALS

A. Contractor shall establish a mix gradation and the amount of bituminous material shall be submitted fourteen (14) working days prior to surfacing for the approval by the City Engineer and shall meet the requirements of the gradation selected.

B. Test Reports: Submit test reports as requested by City Engineer verifying compliance with specified standards.

PART 3 EXECUTION

3.01 ALL STREETS AND TRAILS SHALL BE SURFACED IN ACCORDANCE WITH THE FOLLOWING:

A. Streets:
1. 8-inch minimum untreated base course over prepared and approved subgrade.
2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all local streets.
3. 4-inch minimum compacted thickness plant mix asphalt surfacing on all collector and arterial streets.
4. 2-lift minimum for plant mix asphalt surfacing when final compacted pavement thickness is greater than 3 inches unless otherwise approved by the City Engineer.

B. Trails:
1. 6-inch minimum untreated base course over prepared and approved subgrade and weed barrier geotextile.
2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all trails.
3. Weed barrier geotextile according to the following:

Table 7 – Weed Barrier Geotextile

Property	ASTM	MARV Standard
Grab tensile strength, lbs.	D 4632	315
Grab elongation, percent, minimum	D 4632	50
Puncture strength, lbs.	D 4833	900
Trapezoid tear, lbs.	D 4533	100
Apparent opening size (AOS), US sieve, minimum	D 4751	40
Ultraviolet degradation, percent	D 4355	70
NOTES (a) Percent of grab elongation retained determined after ultraviolet weathering, ASTM D 4355 for 500 hours.		

3.02 BASE COURSE

A. Base for all streets shall consist of select material, as specified in Section 02206.

B. Base shall be laid in accordance with Section 02225.

C. Surfaces shall be true to the established grade with thickness being not less than 1/4 inch from the required layer thickness and with the surface elevation varying not more than 3/8 inch in ten feet from the true profile and cross section.

3.03 BITUMINOUS SURFACE COURSE

A. Base course shall be free of any contamination prior to laying surface course.

B. The surface course shall consist of a mixture of mineral aggregate and binder conforming to Section 02504.

C. Gradation of aggregate shall conform to Section 02504.

D. The Contractor shall apply a tack coat to all new or existing asphalt or concrete edges and surfaces that will be in contact with the new bituminous surface course. This includes all longitudinal and transverse joints regardless of the joint temperature.

1. Tack coat shall be SS-1 or 1-H.

E. The bituminous surface course shall be mixed at a mixing plant and spread and compacted on the prepared base in conformance with the lines and dimensions shown on the plans and in accordance with these Specifications.

F. All existing asphalt shall be saw cut to remove fractures, cracked or damaged asphalt.

1. Asphalt shall be saw cut in straight lines.

3.04 CONSTRUCTION METHODS AND EQUIPMENT

A. All asphalt will be laid using a lay down machine unless written approval is granted by City Engineer.

B. The methods employed in performing the work, all equipment, tools and machinery and other appliances used in handling the materials and executing the work shall be the responsibility of the Contractor.

C. At no cost to the City, the Contractor shall make such changes in the methods employed and in the equipment used as are necessary whenever the bituminous being produced does not meet the specification herein established.

D. Provide necessary survey stakes for horizontal control and vertical control on roads and trails. Furnish, place, and maintain supports, wire devices, and materials as required to provide continuous line and grade reference control for placing pavement and matching existing pavement surfaces on roads and trails.

3.05 SPREADING

A. The bituminous mixtures shall be spread with self-propelled mechanical spreading and conditioning equipment capable of distributing at least a 12-foot width.

B. The City Engineer shall determine whether or not the bituminous surface course shall be spread in one or more courses.

C. No surface course shall be placed less than 1 inch in thickness.

D. The mixture shall be spread and struck off in such a manner that the finished surface shall result in a uniform smooth surface.

E. The longitudinal joints in any succeeding courses shall be offset at least 6 inches transversely to avoid a vertical joint through more than one course.

F. The temperature of the bituminous mix shall be between 250° F and 325° F when placing.

G. Asphalt joints and seams shall be placed at lane lines when possible, and shall not be placed in wheel lines without written approval from the City Engineer.

3.06 COMPACTION

A. After the mixture has been spread, the surface shall be rolled in longitudinal direction commencing at the outside edge or lower side and preceding to the higher side.

B. Each pass of the roller shall overlap the preceding pass at least one-half the width of the roller.

C. The average in place density shall be in the range of 94% to 96% of the Theoretical Maximum Specific Gravity determined by the testing methods outlined in Section 01450 with no individual areas falling below 92% or above 97.5% of the Theoretical Specific Gravity. At the Engineers discretion, any density averages that does not meet the average in place density requirement above may be accepted with a pay factor in accordance with Table 1.

~~C.~~

Table 1 - Compaction Pay Factors	
Mat Density in Percent	**Pay Factor**
98-100	0.7
97-97.9	0.85
96.1-96.9	0.9
94-96	1
93-93.9	0.85
92-92.9	0.7
91.9 & Under	Fail

D. Rolling operations shall be conducted in such a manner that shoving or distortion will not develop beneath the roller.

E. Do not over compact the asphalt pavement nor under compact. Complete compaction before the following temperatures are reached: 180 degrees F for hot mixes, and 140 degrees F for warm mixes.

F. Quality Control

1. The surface of the pavement, after compaction, shall be uniform and true to the established crown and grade.
2. The Developer/Contractor shall be responsible to test bituminous mixtures for compaction in accordance with Section 01450, TESTING AND PROCESS CONTROL.

3. Traffic shall not be allowed to travel on new asphalt surface until pavement temperature has reached 120º F or lower.

3.07 WEATHER LIMITATIONS

A. No bituminous surface shall be placed when the temperature of the air or road bed is 50° F or below, during rainy weather, when the base is wet or during other unfavorable weather conditions as determined by the City Engineer.

B. The air temperature shall be measured in the shade.

3.08 FLAGGING

A. Flaggers shall be required as directed to facilitate the safe control of traffic over highways and streets under construction at such locations as required and directed by the City Engineer.

B. Flagging shall be performed by certified, trained, and properly equipped flaggers.

C. All flagging shall be done as described in the Safety Orders covering flaggers of the Industrial Commission of Utah and in accordance with the MUTCD manual.

3.09 ROUGHNESS TOLERANCE

A. When tested with a ten (10) foot straight edge placed parallel to the center line of the pavement, the surface of the pavement at any point shall not deviate from the lower edge of the straight edge by more than one-quarter of an inch. If any part of the pavement fails the 10 foot straight edge test, roughness shall be determined using a certified profilograph or profiler.

B. The following table shall be used to verify roughness tolerances.

ROUGHNESS TOLERANCE						
Speed MPH	Traffic Class	Profile Roughness Index (PRI), Inches / Mile				Profile Deviation Inches/25 feet Maximum
		IRI		PI		
		Min	Max	Min	Max	
25 to 30	II	--	--	--	110	0.4
	III or IV	129	177	46	66	0.4
31 to 45	I or II	90	155	35	50	0.4
	III or IV	70	90	21	35	0.4
45 +	All Classes	--	70	--	21	0.30.4

Notes:
a) IRI (International Roughness Index), ASTM E 950. Use a ¼ car.
b) PI (Profile Index), ASTM E 1274. Use a zero blanking band.
c) Profile deviation applies to bump and depression measurements.
d) As a minimum, trace right wheel path in direction of travel.

C. Profile Roughness Index (PRI): Verify bumps and depressions are removed so profile index in each lot meets tolerance: Lot is 0.1 lane mile (528 feet long one lane wide). Add segments shorter than 250 feet to preceding lot. Treat partial segments longer than 250 feet as a lot. Excluded from the lot are turn lanes, parking lanes, medians, street fixtures, crowns of intersecting streets, bridge decks, ~~grades greater than eight (8) percent,~~ and vertical curves less than 1,000 feet radius.

D. Profile Deviation: Verify "must grind" bumps and depressions are removed from the lot surface where lot is the total pavement area placed, no area excluded. Begin traces 50 feet before edge of new pavement and end traces 50 feet after edge of new pavement. Areas (including the 50 feet end of traces) exceeding the profile deviation tolerance are "must grind" areas.

E. Mark all “must grind” areas on pavement to identify locations to be corrected.

F. Repair: Grinding is an acceptable method for correcting “must grind” areas. Skin patching with feather edge for depressions is NOT acceptable. Raise depressions by milling and inlay or remove and replace repair. Re-profile corrected segments to verify index meets tolerance. Apply GSB-88 or other approved emulsion to grind areas at a rate of 0.11± 0.01 gal/yd^2, using approximately 40% residual asphalt.

G. Notify the Engineer in writing when corrective work will be performed and at least two working days before re-profile will be completed.

H. When thickness is deficient, place additional material over deficient areas. Do not skin patch. Mill for inlay as necessary.

END OF SECTION

SECTION 02512

RESTORATION OF SURFACE IMPROVEMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Restoration of surface improvement requirements.

1.02 GENERAL IMPROVEMENT REQUIREMENTS

A. The Contractor shall be responsible for the protection and the restoration or replacement of any improvements existing on public or private property at the start of work or placed there during the progress of work.

B. Existing improvements shall include but are not limited to landscaping, permanent surfacing, curbs, ditches, driveways, culverts, fences and walls. All improvements shall be reconstructed to equal or better, in all respects, to the existing improvements removed.

PART 2 PRODUCTS

A. Select Fill: In accordance with Section 02206.

B. Asphalt Concrete: In accordance with Section 02510.

C. Concrete: In accordance with Section 03304.

PART 3 EXECUTION

3.01 ROAD BASE REPAIR

A. Where trenches are excavated through gravel surfaced areas such as roads and driveways, etc., the gravel surface shall be restored and maintained as follows:

1. The gravel shall be placed deep enough to provide a minimum of 6-inches of material.

2. The gravel shall be placed in the trench at the time it is backfilled. The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the Engineer. Excess material shall be removed from the premises immediately.

3. Material for use on gravel surfaces shall be obtained from sound tough durable gravel or rock meeting the requirements of Section 02206.

3.02 BITUMINOUS SURFACE REPAIR

A. Where trenches are excavated through bituminous surfaced roads, driveways or parking areas, the surface shall be restored and maintained as follows:

1. Trenches shall be backfilled with untreated base course from the pipe bedding to 3 inches from the top of existing asphalt.

2. Asphalt shall be saw cut back 12 inches from existing trench wall's and the exposed road base surface shall be compacted as shown on standard drawing.

3. Pavement restoration shall include priming of pavement edges with bituminous material and placing and rolling plant mix bituminous material to the level of the adjacent pavement surfaces. Proper compaction of the bituminous material shall be verified per the requirements of Section 02510.

3.03 CONCRETE REPAIR

See Section 03310 Concrete Work

END OF SECTION

SECTION 02513

UTILITY POTHOLE REPAIR-KEYHOLE METHOD

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This specification covers the requirements for keyhole coring, vacuum excavation, backfilling, and reinstatement of the keyhole core in asphalt or concrete pavements to allow for underground utility repairs and underground exploratory potholing. Keyhole coring shall be defined as follows: The operation of coring a circular hole through the roadway pavement using diamond tipped core drilling equipment.

1.02 Pothole Excavation:

A. The vertical alignment of the keyhole coring shall be perpendicular to the horizon, and the cutting shall extend to the full depth of the existing pavement section.

B. Unless otherwise approved by the Engineer, keyhole cores shall be no less than 6 –inches and no greater than 18- inches in diameter. Adjacent cores shall not be closer than 3 feet from each other (edge to edge), shall not contain a joint or any pavement cracks greater than 1/8-inch wide, and shall not be performed in pavements where the section is less than 3-inches thick. Coring shall be performed with a keyhole coring saw with high strength steel diamond tipped core drill bits.

C. The Contractor shall place a temporary mark on the keyhole core prior to cutting to insure that the removed section is replaced in the same orientation as originally found in the pavement.

D. Soils within potholes shall be removed by air/vacuum extraction methods to expose utilities. The zone of soil removal shall remain essentially within a vertical plane extending below the edges of the removed pavement. The Contractor shall remove all excess materials excavated from the site.

PART 2 PRODUCTS

A. Bonding Agent: The bonding agent is material required to bond asphalt pavement cores to the asphalt concrete pavement from which it was originally removed. Bonding material shall be a single component cementitious, rapid hardening, high strength, waterproof bonding agent conforming to the physical properties shown in Table-1 below, and Section 3.01 B.

TABLE 1 – BONDING MATERIAL PROPERTIES

Property	ASTM Test method	Requirements
Bond Strength (Slant Shear), psi (70° F., 30 minute cure)	C882	200 minimum
Strength, psi (70° F., 60 minute cure)	C109	1500 minimum

1) Bonding material shall be impervious to water penetration at the joint after curing.
2) Bonding material shall, within 30 minutes at minimum ambient temperature of 70 degrees F., allow an 18" diameter core to support a traffic load equivalent to at least three (3) times the AASHTO H-25 standard wheel load.
3) The bonding material is required to securely bond the asphalt concrete core to asphalt concrete pavement and to fill all voids between the core and pavement and within the core.
4) Specifications and test results for the bonding material shall be submitted to the City for review and approval before use.

PART 3 EXECUTION

3.01 Pavement Restoration

A. Pothole Backfill: The Contractor shall place 1 ft of compacted bedding sand over utility. The remainder of the hole shall be filled with flowable fill in accordance with Section 02245 – Flowable Fill, to the bottom of the pavement surface

B. The surface cut by keyhole coring restored to its original condition with the reinstated core flush with and in the original orientation as the existing surface, matching existing pavement surface appearance.

C. A bonding agent shall be a single component cementitious, rapid hardening, high strength, water proofed application such as Utilibond, manufactured by Utilicor Technologies, Inc., or an Engineer approved equal shall be used for pavement core reinstatement. Excess bonding material shall be removed from the restored surface. A patched appearance shall be avoided in surface restoration wherever possible.

D. Unless otherwise approved by the Engineer, the Contractor shall reinstate the bonded keyhole core within 24 hours of cutting the pavement. Openings allowed to be left open greater than 24 hours shall be covered with an approved steel road plate capable of supporting traffic loads.

3.02 Surface Tolerances

A. The reinstated core shall be flush and level with the adjacent pavement. Gaps attributable to the positioning of the core shall be less than 1/16-inch between the bottom of a minimum 3- foot long straightedge and the surface of the pavement in any direction on the surface of the keyhole core, except across the pavement crown or drainage gutters.

B. Deficiencies

1. Where the pavement core is found to be fractured or defective upon removal, or becomes damaged after removal and prior to reinstating, the defective or damaged core shall not be used to reinstate the pavement. Pavement repair shall be performed in accordance with Section 02512.
2. A pavement core is considered unacceptable when one of the following conditions exist:
   1) The core contains any vertical cracks wider than 1/8-inch extending full depth or partial depth through the core; or
   2) Any deteriorated piece of the core is larger than 10 percent of the overall area of the core.
   3) Two or more successive layers of asphalt concrete in the core become horizontally delaminated and cannot be rebounded to each other with the bonding compound.
3. All unacceptable pavement cores shall be removed from the job site.
4. If another equivalent core of sound condition and matching existing pavement of the same diameter, depth and composition as the defective core is available, it may be reinstated in substitution of the defective core.

END OF SECTION

SECTION 02607

MANHOLES AND COVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular precast concrete manhole sections with tongue-and-groove joints, covers, anchorage, and accessories.

1.02 RELATED SECTIONS

1.03 REFERENCES

A. AASHTO M-105: Gray Iron Castings.

B. ASTM C478: Precast Reinforced Concrete Manhole Sections.

C. ASTM C923: Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.

1.04 SUBMITTALS FOR REVIEW

A. Shop Drawings: Indicate manhole locations, elevations, piping, and sizes and elevations of penetrations.

B. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 GENERAL REQUIREMENTS

A. The Contractor shall furnish and install watertight cast-in-place or precast concrete manholes at the locations shown on the Drawings approved by the City Engineer. All new manholes shall be precast unless the manhole is being installed on an existing line, unless otherwise approved in writing by the City Engineer. All precast manholes shall have flexible watertight pipe-to-manhole boot connectors. All cast-in-place manholes shall have a hydrophilic water stop at pipe-to-manhole connections.

B. Manholes shall be furnished complete with cast iron rings and covers.

C. Cleanouts on sewer laterals shall be placed every 100 feet and at all bends.

D. Flow Channels:

1. The flow channel through manholes shall conform to the inlet and outlet pipe.
2. The depth of flow channels should be one-half to three-quarters of the diameter of the pipe.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturers:

1. Materials and Equipment: Product options and substitutions. Substitutions: Permitted.
2. Materials shall be manufactured by a Concrete Precast Association (CPA) approved facility.

B. Manhole Sections: Reinforced precast concrete in accordance with AASHTO M-199 and ASTM C923. Mortar and Grout: Type S.

2.02 COMPONENTS

A. Wall and Cone Sections:

1. Manhole walls shall be constructed of 48" I.D. precast sectional, reinforced concrete pipe.
2. For pipelines of 14" diameter or larger, the manholes shall be 60" minimum I.D.
   a. The throat section of the manhole shall be adjustable by use of pipe sections up to 18 inches in height.
   b. The taper section shall be a maximum of 3 feet in height, shall be of eccentric conical design, and shall taper uniformly from 48 inches to 30 inches inside diameter.
   c. The 48-inch inside diameter pipe used in the base section shall be furnished in section lengths of 1, 2, 3 and 4 feet as required.
   d. Reinforcing steel shall consist of a circular cage with a minimum cross sectional area of three-tenths (0.3) of a square inch of steel per foot in both directions.
   e. 18" space maximum between cone and lid.
3. All joint surfaces of precast sections and the face of the manhole base shall be thoroughly cleaned and wet prior to setting precast sections.
4. All manhole joints, including grade rings, shall be sealed with a butyl rubber sealant (mastic) that is permanently flexible and non-shrinking, similar to Brandt No. 95 Cold Weather Vault Sealant.
5. Mortar can be used for repairs and additional sealing of joints including grade rings and manhole rings. The mortar shall consist of 1 part cement and 1-1/2 parts sand with sufficient water added to bring mixture to workable consistency.

B. Manhole Steps:

1. 12" Copolymer Polypropylene Plastic Steps.
2. Reinforcement: ½" grade 60 steel reinforcement.
3. Steps must meet requirements outlined in ASTM C478 and ASTM C497.

C. Concrete Base Pad:

1. Except as noted below, manhole bases shall be pre-cast concrete conforming to the requirements of Section 03310 of these Specifications.
2. Where sewer lines pass through or enter manholes the invert channels shall be smooth and semi-circular in cross section.
3. Changes of direction of flow within the manholes shall be made with a smooth curve with as long a radius as possible and a minimum of 0.2 feet of fall.
4. The floor of the manhole outside the flow channels shall be smooth and slope toward the channel at not less than ½ inch per foot.

5. For high ground water areas, precast manholes and bases shall be required.

D. Lid and Frame:

1. All iron castings shall conform to the requirements of AASHTO M-105 for grey iron castings.
2. Rings and covers shall have machined bearing surfaces and a minimum cover weight of 150 pounds and minimum ring weight of 233 pounds.
3. The foundry name, year of manufacture, and “WATER”, “SEWER”, “STORM DRAIN”, or “IRRIGATION” shall be marked on the cover.
4. All manhole rings shall be carefully set to the grade shown on the approved drawings or as directed by the City Engineer.
5. The manhole covers shall be so installed to be within 1/4” from the asphalt surface.
6. A concrete ring 12" wide, but no greater than 18” wide, and 8" thick will be poured around lid in accordance with Section 03304. Asphalt concrete collars are prohibited.
7. All manhole lids should be vented unless directed otherwise by the City Engineer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of Work are properly sized and located.

B. Verify that built-in items are in proper location and ready for roughing into Work.

C. Verify excavation for manholes is correct.

3.02 PREPARATION

A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 PLACING MANHOLE SECTIONS

A. Place base pad, with top surface level.

B. Place manhole sections plumb and level, trim to correct elevations, anchor to base pad.

C. Cut and fit for pipe as required.

D. Grout vase of shaft sections to achieve slope to exit piping. Trowel smooth. Contour as required.

E. Set cover frames and covers level without tipping, to correct elevations.

3.04 DROP TYPE MANHOLES

A. Where the difference in elevation between the incoming sewer and manhole invert is less than 24 inches, the invert shall be filleted to prevent solids deposition.

B. Drop manholes should be constructed with an outside wye drop connection. If an inside drop connection is necessary, it shall be secured to the interior wall of the manhole and provide access for cleaning. Inside drop connections will not be allowed without written approval from the Heber City Engineer.

C. Due to the unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in low density concrete.

3.05 SCHEDULES

A. Storm Sewer Manholes: Precast concrete sections, copolymer polypropylene plastic steps, 48 inch inside dimension, to depth indicated, with bolted lid.

END OF SECTION

SECTION 02609

GREASE AND SAND INTERCEPTOR

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular precast concrete grease interceptor sections with joint covers, access holes, anchorage, cast iron ring, grate, and accessories.

B. Modular precast concrete sand interceptor sections with joint covers, access holes anchorage, cast iron ring, grate, and accessories.

C. Injection molded thermoplastic hydromechanical grease interceptors with covers, access holes, and accessories.

1.02 RELATED SECTIONS

1.03 REFERENCES

A. AASHTO M-105: Gray Iron Castings.

B. AASHTO M-199: Precast Reinforced Concrete.

C. ASTM C-923: Resilient Connectors between Reinforced Concrete Structures and Pipes.

1.04 SUBMITTALS FOR REVIEW

A. Product Data: Provide ring & covers, component construction, features, configuration, and dimensions.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.06 GENERAL REQUIREMENTS

A. Grease and sand interceptors are required as pre-treatment before discharging into the sanitary sewer system from car washes, automobile service stations, any non-residential facility with a floor drain, and all non-residential food preparation facilities. Follow Chapter 10 of the International Plumbing Code. Grease interceptors, indoor and outdoor, shall be sized by the applicant, and a sizing certification from a professional engineer shall be provided to the City upon request.

1. Standard Grease Interceptors (outdoor, gravity):
   a. Grease interceptors are required on all new non-residential building construction or retrofits which include food preparation and serving areas
   b. A sampling manhole shall be located below the downstream outlet.
2. Hydromechanical Grease Interceptors (HGIs) (outdoor)

a. When approved by the City Engineer, approved HGIs may be used in low-grease/fat food service applications with less than 8 total fixture unit equivalents.
b. HGIs shall be properly sized EnduraXL models by Canplas Industries or approved equivalent.
c. Must include a separate sampling manhole or built in port that can be used for sampling.

3. Indoor Grease Interceptors
a. For retrofit or remodel commercial construction, when approved by the City, an indoor Big Dipper Grease Interceptor system (or approved equivalent) may be installed inside the building.
b. Indoor grease interceptors will only be approved when, in the opinion of the City, space constraints make outdoor interceptors impractical or infeasible.
c. Access shall be provided upon request to City personnel for system inspection.

B. The Contractor shall furnish and install watertight cast-in-place or precast concrete grease interceptors and sand interceptors as required by the City Engineer or City Officials.

C. Grease interceptors and sand interceptors shall be furnished complete with cast iron rings and covers.

D. Design of grease/sand interceptors and grease traps need to be approved by City Engineer.

E. Flow Channels

1. The flow channel through Grease interceptors shall conform with the slope of the sewer.
2. Adjacent floor area should drain to the channel with the minimum slope of 1 inch per foot.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturers:

1. Amcor
2. Geneva Pipe
3. Dura-crete

B. Grease interceptor Sections and sand interceptor: Reinforced precast concrete in accordance with AASHTO M-199 with gaskets in accordance with ASTM C923.

C. Mortar and Grout: Type S.

2.02 COMPONENTS

A. Standard Grease Interceptors

1. Outdoor gravity grease interceptors shall have a minimum of two compartments.
2. The minimum size for grease interceptors shall be 750 gallons, unless otherwise approved.
3. Wall Sections to be designed to meet ASTM C913 with AASHTO HS-20 loading:
a. Interceptors shall be constructed of 6" thick precast reinforced concrete. Box size to be 3-foot by 3-foot and the height as shown on plans. Provide grade rings as needed.

b. Grease interceptor shall be designed to meet ASTM C-857 “minimum structural design loading for underground precast concrete utility structures. Provide grade rings as needed.
c. All joint surfaces of precast sections and the face of the walls, base, and grade rings shall be thoroughly cleaned and wet prior to setting precast sections.
d. All joints including grade rings shall be set in mortar consisting of 1 part cement and 1 ½ parts sand with sufficient water added to bring the mixture to workable consistency, or the joints shall be sealed with butyl rubber gasket that is permanently flexible and non-shrinking, similar to Brandt No. 95 Cold Weather Vault Sealant.

4. Lid and Frame
a. All iron castings shall conform to the requirements of H-20 loading for grey iron castings.
b. Rings and grates shall have machined bearing surfaces and a minimum cover weight of 150 pounds and minimum ring weight of 233 pounds.
c. The foundry name, year of manufacture, and “SEWER”shall be marked on the cover.
d. All Grease interceptor and clean-out box rings shall be carefully set to the grade as shown on the approved drawings or as directed by the Engineer.
e. Grate covers shall be so installed to be within 1/4" below the finished surface.
f. A concrete ring 12" wide and 8" thick will be poured around lid in accordance with Section 03304.

2.03 CONFIGURATION

A. Shape: rectangular.

B. Design Size: design criteria to be submitted to the City Engineer for review.

C. Clear Grate and Lid Opening: 24 inches diameter.

D. Pipe Inlet and Outlet: Pipe inlet and outlet to be grouted to eliminate infiltration and leakage.

PART 3 EXECUTION

3.01 PLACING CONCRETE SECTIONS

A. Place base pad, trowel top surface level.

B. Place Grease interceptor or sand interceptor plumb and level, trim to correct elevations, anchor to base pad.

C. Cut and fit for pipe as required.

D. Grout base of shaft sections to achieve slope to exit piping.

E. Provide grade rings and Trowel smooth. Contour as required.

F. Set cover frames and covers level without tipping, and to correct elevations.

3.02 SCHEDULES

A. Grease interceptors and sand interceptors: Precast concrete sections, copolymer polypropylene plastic steps, to depth indicated, with tamper proof lid.

END OF SECTION

SECTION 02660

PIPELINE TESTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing requirements for potable and non-potable water piping systems and sanitary sewers.

1.02 DEFINITIONS

A. Leakage: The quantity of water required to maintain the specified hydrostatic test pressure after the pipeline has been filled with water and the air expelled.

B. Non-rigid Pipe: Any pipe which requires bedding and backfill material for structural support.

1.03 SUBMITTALS

A. Pipeline Test Report: Include the following items:

1. Type of test
2. Identification of pipe system
3. Size, type, location and length of pipe in test section
4. Test pressure and time
5. Amount of leakage versus allowable
6. Date of test approval
7. Signature of test supervisor
8. Signature of the City Engineer, Inspector, or City Water Superintendent witnessing and approving the test
9. One copy of video tape

1.04 PROJECT CONDITIONS

A. After construction of sanitary or storm sewer lines, they shall be thoroughly cleaned, tested for leakage and alignment, and closed circuit television inspected in the presence of the City Engineer or the City Inspector before acceptance by the City. If directional drilling or underground boring takes place after sewer and/or storm drain lines have been installed, inspected, and tested, the sewer and/or storm drain lines near the drilling/boring shall be inspected a second time with a closed circuit television inspection per Section 2660 - 3.09.

B. Repair pipeline system at no additional cost to City until it passes subsequent retesting.

C. Recording Equipment:

1. Supply all necessary equipment to perform pressure testing.
2. Secure City's approval of pressure gages.
3. Locate all gages and recording equipment away from affects of sunshine or other weather conditions.
4. Place, vents, pressure taps and drains for the test. Repair pipeline at the completion of the test at no cost to City.

PART 2 PRODUCTS

2.01 TESTING MATERIALS

A. Medium: Water or air, as required by test.

B. Equipment: Temporary motors, pumps, pumping apparatus, pressure gages, connections, power, etc. for making the tests.

PART 3 EXECUTION

3.01 PREPARATION

A. Notify City Engineer or City Water Superintendent 48 hours in advance of test.

B. Carry out tests as pipeline construction progresses to ensure construction methods are producing satisfactory results.

C. Disinfect potable water pipelines per Section 2675 prior to pressure testing if connected to an existing system.

3.02 PRESSURE TESTING FOR PRESSURIZED WATER PIPELINES

A. Test shall be performed only after the pipeline has been properly filled, flushed, and purged of air. Provide air release taps at points of highest elevations as needed before testing. Insert permanent plugs after test has been completed. The test pressure shall be applied by means of an approved and disinfected pumping assembly connected to the pipe in a manner satisfactory to the City.

B. The test pressure shall not exceed the thrust restraint design pressure or 50 psi in excess of the pressure class of the pipe, fittings, or valves, whichever is less (as specified by the manufacturer). During the tests, the system and any exposed pipe, fittings, valves, and hydrants shall be carefully examined for leakage.

C. Test pressure and duration: The duration of the hydrostatic test shall be 2 hr. The hydrostatic test pressure shall be set to 50 psi in excess of the lowest class rating of any pipe, saddle, fitting, or valve within the section being tested at the highest pressure along the test section. The test pressure shall not vary by more than 5 psi (plus or minus) for the duration of the test. If necessary, the test pressure shall be maintained by additional pumping during the 2 hr test duration. The pressure reading shall be noted every 10 minutes during the test.

D. The testing allowance: The testing allowance shall be defined as the quantity of water that must be supplied to the pipe section being tested to maintain a pressure within 5 psi of the specified hydrostatic test pressure. The quantity of water shall be accurately measured in gallons by suitable methods. No installation will be accepted if the quantity of makeup water is greater than that determined by the formula:

$$Q = \frac{LD\sqrt{P}}{148{,}000}$$

Where:
Q = quantity of makeup water in gallons per hour
L = length of pipe section being tested, in feet
D = nominal diameter of pipe, in inches
P = average test pressure during the hydrostatic test, in pounds per square inch (gauge)

E. Provide suitable means for determining water lost by leakage under the test pressure.

F. Locate and repair the defective elements and retest until the leakage is within the specified allowance.

G. Repair any noticeable leakage even if total leakage is less than allowable.

H. Service Lines:

1. Potable water service lines shall be connected to a potable water line before disinfection and bacteriological testing of the line is completed in accordance with Section 2675 Part 3.06, unless the service line needs to remain active during a replacement project, or as otherwise approved by the City Engineer. Service lines must be flushed in accordance with Section 2675 Part 3.06.
2. All service lines shall be pressure tested up to the curb stop in accordance with this section.
3. The connection between the water meter box and curb stop shall be either pressure tested in accordance with the guidelines in this section or visually inspected for leaks once the working water pressure is turned into the service line.

3.03 ALIGNMENT AND GRADE TEST

A. No variance will be allowed from line and grade in excess of 1/32" per inch of pipe diameter or ½" maximum provided that such variation shall not result in a level or reverse sloping invert.

B. Variations in invert elevations between adjoining ends of pipe due to eccentricity of joining surface and pipe interior surface shall not exceed 1/64" per inch of pipe diameter, or ½" maximum.

3.04 OBSTRUCTION TEST

A. Visually examine pipe internally for obstructions by use high power light or mirror.

B. When required by the City Engineer, a round incompressible mandrel 1" less in diameter than the internal pipeline diameter and 2 times the diameter in length will be passed through the pipeline.

3.05 NON-RIGID PIPE DEFLECTION TEST

A. When required by the City Engineer, test installed sections of non-rigid pipeline to ensure that circumferential deflection does not exceed 5 percent of the average inside diameter using a rigid mandrel with a circular cross section pulled through the pipe by hand.

3.06 INFILTRATION TEST

A. No pipe section will be accepted if the infiltration rate exceeds 100 gallons per inch diameter per mile per 24 hours.

3.07 FLUSHING OF SANITARY SEWERS

A. All sanitary sewer lines shall be flushed and cleared prior to acceptance by the City.

B. Flushing:

1. Laterals and trunk lines shall be flushed by water with a high pressure sewer jet to remove all foreign material. Flushing shall be completed prior to television inspection.

2. All debris located at the bottom of each manhole shall be removed. Dirt grease, sand, and gravel shall be removed so that the walls of the sewer pipe can be inspected.
3. Wastewater and debris shall not be permitted to enter sewer lines in service, but shall be removed at the lowest manhole of the extension.
4. Other methods of cleaning may be used upon approval of the City Engineer.
5. After the lines have been thoroughly cleaned, they shall be tested between all manholes for displacement.

3.08 LEAKAGE TESTS FOR SANITARY SEWERS

A. General Requirements:

1. The contractor shall test all sanitary sewers by means of an exfiltration test.
2. Length of line tested at one time shall be limited to the length between adjacent manholes.

B. Testing with Water:

1. Each section of the sewer shall be tested between successive manholes by closing the lower end of the sewer to be tested and the inlet of the upper manhole with stoppers.
2. The pipe and manhole shall be filled with water to a point approximately 4-feet above the invert of the sewer at the center of the upper manhole.
3. The allowable leakage will be computed by the formula:

$$E = 0.25\ D\ H$$

Where: E = Allowable leakage in gallons per minute per 1000 feet of sewer tested.
D = Internal diameter of the pipe in inches.
H = Difference in elevation in the water surface in the upper manhole and the invert of the pipe at the lower manhole (feet).

4. Leakage from the sewer, as shown by the test, which exceeds that allowed by the formula will be corrected by the Contractor to reduce the exfiltration to within permissible limits.
5. Where the difference in elevation between inverts of adjacent manholes exceeds 10-feet, the exfiltration leakage test will be modified as directed by the City Engineer.
6. House surface laterals shall be considered part of the main sewer to which they are connected and shall be tested with the main line sewer.

C. Testing with air:

1. Air pressure may be used in lieu of the water exfiltration test subject to the approval of the City Engineer.
2. The low pressure air test shall be conducted by the following method under the direction of the City Engineer or City Inspector with equipment equal to Cherne Industrial, Inc.
3. All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral extensions.
4. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs. One of the plugs shall have three hose connections. Air for inflation of the triple connection pneumatic plug shall be supplied through a factory-equipped control panel. There shall be three hose connections from the control panel to the pneumatic plug. One hose shall be used for inflation of the plug. The second hose shall be used for continuously reading the air pressure in the sealed line. The third hose shall be used for introducing low pressure air into the sealed line.
5. There shall be a 3-1/2" or larger diameter, 0.30 psig gauge mounted on the control panel for reading of the internal pressure in the line being tested. Calibrations from the 0-10 psig range shall be in tenths of pounds and the 0-10 psig portion shall cover 90% of the complete dial range.

6. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any ground water that may be over the pipe.
7. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psig minimum pressure in the pipe), the third hose shall be disconnected from the control panel.
8. The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following tables:

PIPE DIAMETER (Inches)	MINUTES
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

9. If the installation fails to meet this requirement, the Contractor shall determine at his own expense the source of leakage.
10. The Contractor shall repair or replace all defective materials and/or workmanship.
11. Pressure test concrete sewer manholes by the negative air pressure (vacuum) test as per ASTM C1244.

3.09 CLOSED CIRCUIT TELEVISION INSPECTION

A. Contractor shall inspect the sewer and storm drain lines with a color television camera. The camera test shall be supervised and witnessed by the City Engineer or the City Inspector and shall be done as follows:

1. The lines, ~~and~~ lateral connections, and sewer laterals from the main line to the City sewer cleanout will be televised at the cost of the Developer until the lines are accepted by the City.
2. The camera shall have “PAN and TILT” capability for detailed wall, joint, and service inspection. The camera shall be pulled through the sewer line or propelled with a tractor.
3. The light intensity and camera focus shall be adjusted to obtain a good clear picture at all times.
4. The operator shall control the travel speed of the camera so that the walls of the pipe can be clearly viewed. The speed shall not be greater than 20 feet per minute. The operator shall stop and inspect each service, obstruction, or pipe deformation. Locations of each shall be noted and included in the final Inspection Report.
5. Defects such as high and low spots, joint separations, offset joints, chipped ends, cracked or damaged pipe, infiltration points and debris in lines shall be corrected . The maximum acceptable limits for 8 to 10 inch pipes are: 0.25 inches for joint separations, 0.5 inches for low spots, and 0.25 inches for chipped ends.
6. A flat or reverse grade will not be acceptable.
7. If the pipeline is found unacceptable, the problem shall be corrected by the contractor and re-televised.
8. The television inspection process shall be done immediately after running water in the pipe and no visible discharge occurs at the downstream manhole.
9. Television inspection must be scheduled with the City at least one (1) week in advance of inspection.

10. A typed log of the closed circuit television inspection with a digital ~~CD/DVD~~ video on a USB drive shall be turned over and become the property of the City. The Inspection Report shall contain the following:
    a. Location of sewer line and direction of flows
    b. Connecting manhole numbers with starting and ending manhole
    c. Manhole condition, flowline condition, and cover conditions
    d. Pipeline size, material, and condition, with defect locations noted from center of manhole
    e. Location of services located as to distance from center of manhole
    f. Date of inspection, name of contractor, and signature of operator/logger
11. After cleaning and inspection have been completed and any defects are corrected and accepted, the lines shall be tested for leakage by methods discussed in Section 3.08.

3.10 PIPE TESTING SCHEDULE

A. Irrigation:

1. Alignment and grade test
2. Pressure test
3. Operational Testing:
    a. Perform operational testing after hydrostatic test is complete, backfill is in place and sprinkler heads adjusted to final position.
    b. Demonstrate system meets coverage requirements and automatic controls function properly.
    c. Coverage requirements are based on operation of 1 circuit at a time.

B. Sanitary Sewers:

1. Displacement test
2. Pressure test for gravity pipeline systems
3. Pressure test for pressure pipeline systems
4. Video test for sanitary sewers
5. Pressure test manholes

C. Subdrains:

1. Alignment and grade test
2. Obstruction test
3. Non-rigid pipe deflection test (if applicable)

D. Storm Drains:

1. Alignment and grade test
2. Obstruction test
3. Non-rigid pipe deflection test (if applicable)
4. Pressure test for pressure pipeline systems
5. Video test for storm drain per 1.04 Project Conditions paragraph A

E. Potable Water System:

1. Obstruction test
2. Bacteria test
3. Pressure test
4. If pressure test fails and line is repaired, the bacteria test shall be repeated.

END OF SECTION

SECTION 02668

WATER TRANSMISSION AND DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings for culinary water line.

B. Valves, fire hydrants and water meters.

1.02 RELATED SECTIONS

A. Section 02205: Common Fill.

B. Section 02206: Select Fill.

C. Section 02225: Excavating and Backfill Operations.

D. Section 02250: Soil Compaction.

E. Section 02660: Pipeline Testing.

F. Section 02675: Disinfection.

G. Section 03300: Cast-in-Place Concrete: Concrete for thrust restraints.

1.03 REFERENCES

A. ASME B16.18: Cast Copper Alloy Solder Joint Pressure Fittings.

B. ASME B16.22: Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

C. ASTM B88: Seamless Copper Water Tube.

D. ASTM D2241: Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).

E. ASTM D2855: Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and fittings.

F. AWWA C104: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.

G. AWWA C105: Polyethylene Encasement for Ductile Iron Piping for Water and Other liquids.

H. AWWA C110: American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids.

I. AWWA C111: Rubber-Gasket Joints for Ductile Iron and Grey-Iron Pressure Pipe and Fittings.

J. AWWA C151: Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.

K. AWWA C500: Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems.

L. AWWA C502: Dry Barrel Fire Hydrants.

M. AWWA C504: Rubber Seated Butterfly Valves.

N. AWWA C600: Installation of Ductile-Iron Water Mains and Appurtenances.

O. AWWA C900: Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water.

P. AWWA C906: Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In. for Water Distribution and Transmission

Q. UL 246: Hydrants for Fire - Protection Service.

1.04 SUBMITTALS

A. Prior to construction, submit 6 copies of the manufacturers specification for all products to the engineer for approval.

1.05 SUBMITTALS AT PROJECT CLOSEOUT

A. Record and submit actual locations of piping, valves, connections, thrust restraints, and invert elevations.

B. Identify and describe unexpected variations in subsoil conditions or utilities.

1.06 SPECIAL REQUIREMENTS & CONSIDERATIONS

A. All materials which may contact drinking water, including pipes, gaskets, lubricants, and O-Rings, shall be ANSI-certified as meeting the requirements of ANSI/NSF Standard 61, Drinking Water System Components – Health Effects. To permit field-verification of this certification, all components shall be appropriately stamped with the NSF logo.

B. Pipe, joints, fittings, valves, and fire hydrants shall conform to applicable sections of AWWA Standards C104-A21.4-08 through C550-05 and C900-07 through C950-07.

C. All pipe materials and fittings shall be “lead free” in accordance with Section 1417 of the Federal Safe Drinking Water Act. They shall be certified as meeting ANSI/NSF 372 or Annex G of ANSI/SNF 61.

PART 2 PRODUCTS

2.01 DUCTILE IRON WATER PIPE

A. Ductile Iron Water pipe shall be Class 50 for slip-on joint piping (Class 51 for 4-inch size) and Class 53 for mechanical joint and flanged joint piping.

B. All piping shall conform to AWWA Specification C151 of the latest revision.

C. Pipe joints shall be the push-on rubber gasket type of mechanical joint type with rubber gaskets conforming to AWWA C111 of latest revision or flanged connections conforming to AWWA C115 of latest revision.

D. All Ductile Iron Pipe wall thickness shall conform to AWWA C150.

E. Fittings: Fittings shall conform to AWWA Specification C110, or C153 and shall have mechanical, flanged or push-on rubber gasket joints.

F. Coatings and Linings for Ductile Iron Pipe:

1. All exterior surfaces of pipe and fittings shall be coated with hot coal tar approximately 1 mil thick or polyethylene encasement (AWWA C105) when soils conditions require additional protection.
2. All interior surfaces of pipe and fittings shall be coated with the standard thickness cement mortar lining in conformity with the requirements of AWWA C104

G. Markings:

1. Pipe markings shall include the following, marked continuously down the length:
   a. Manufacturer's Name
   b. Nominal Size
   c. Class Pressure Rating
   d. NSF Logo
   e. Identification Code

2.02 POLYVINYL CHLORIDE PIPE (PVC)

A. All PVC pipe used for transmission lines shall be AWWA C900, DR-18 or as determined by the City Engineer. All PVC pipe used for secondary irrigation lines shall be AWWA C900, DR-18 Purple pipe or as determined by the City Engineer.

B. Conformance: All PVC pipe shall conform to the latest revisions of the following specifications:

1. AWWA Spec. C900 (PVC pressure pipe for water)
2. ASTM Spec. D-2241 (Dimensions, Class, SDR, and tolerances)
3. National Sanitation Foundation Testing Laboratories (NFS)
4. Rubber Gasketing shall conform to ASTM F477
5. Joints in compliance with ASTM D3139

C. Pipe Dimensions:

1. Standard lengths shall be 20 feet.
2. Wall thickness shall be in accordance with ASTM d-2241.
3. Pipe ends shall be beveled to accept the gasketed coupling (4" and larger).

D. Couplings and Fittings:

1. For pipelines over 2 inches in diameter, ductile iron fittings in conformance with AWWA C110 or C153 shall be used on PVC pipelines and shall have mechanical, flanged or push-on rubber gasket joints.
~~1.~~ 2. Under certain design conditions with prior approval from City Engineer, single or dual bolt mechanical joint restrained fittings may be used. Fittings must be an integral, full circumferential, stab-fit, mechanical restraint system to provide a fully restrained and pressure rated connection on plain end pipe. Connection shall maintain a restrained, tight seal under applied operating pressures. Center Ring, End Ring(s), Bolt Guide(s) and Grippers are cast ductile iron, meeting or exceeding ASTM A536, Grade 65-45-12. Center Ring is fusion bonded epoxy certified and listed to ANSI/NSF 61 & 372. Gaskets are compounded for water and sewer service to ASTM D2000, certified & listed ANSI/NSF 61 & 372. Draw Hooks, Bolt(s) and Nut(s) are Type 304 stainless steel with epoxy or anti-galling coatings. All Couplings and Flange Coupling Adapters shall be Romac ALPHA Restraint or approved equal.
~~2.~~3. Where PVC fittings or couplings are used, they shall be furnished by the pipe manufacturer and shall accommodate the pipe for which they are to be used.
~~3.~~4. They shall have a minimum pressure rating of 200 psi.

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4.5. Insertion depth of the pipe in the coupling shall be controlled by a gauge mark or mechanical stop in the coupling which will allow for a thermal expansion and contraction.

E. Lubrication: Lubrication shall be water soluble, non-toxic, be non-objectionable in taste and odor imparted to the fluid, be non-supporting of bacteria growth, and have no deteriorating effect on the PVC or rubber gaskets.

F. Concrete Blocking:

1. All fittings at bends and branches in water pipe lines shall be provided with concrete thrust blocking as shown on the Standard Drawings in addition to mechanical restraints.
2. All bolts shall be greased and bends will be wrapped with 8 mil plastic.
3. Blocking shall be of concrete specified in Section 03300, poured in place and shall bear against solid undisturbed earth at the sides and bottom of the trench excavation and shall be shaped in order to not obstruct access to the joints of the pipe or fitting.
4. Blocking is required under all fittings on pipelines of 4 inches in diameter and greater.

2.03 HIGH-DENSITY POLYETHYLENE (HDPE)

A. HDPE pipe shall only be used under certain design conditions with prior approval from City Engineer. All HDPE pipe used for culinary water transmission lines shall be AWWA C906, DR-11 with blue stripe or as determined by the City Engineer. All HDPE pipe used for secondary irrigation lines shall be AWWA C906, DR-11 with purple pipe or as determined by the City Engineer.

B. Conformance: All HDPE pipe shall conform to the latest revisions of the following specifications.

1. AWWA Spec. C906 (Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission).
2. A ASTM D-2239 (Standard Spec for Polyethylene (PE) Plastic Pipe), ASTM D2737, ASTM D3035, and F714 (PVC plastic pipe SDR-PR and Class T).

G. Pipe Dimensions:

1. D.I.P.S shall be used unless otherwise stated.
2. Standard lengths shall be 40 or 50 feet.

2.04 GATE VALVES

A. Gate valves shall be used for all applications. In cases where there is limited vertical clearance or when the operating nut of the gate valve would be less than three (3) feet from the surface, horizontal gate valves shall be used.

B. Furnish gate valves that conform to the requirements of AWWA C509.

C. Operating Direction: Open counterclockwise.

D. Buried Valves: Unless otherwise shown or specified, in line valves shall be of Mechanical Joint connection design for buried service. Flange connections shall be used connecting valves to tees or crosses for buried service.

E. Buried Valves shall have 2" operation nuts.

F. Horizontal gate valves shall have 2:1 beveled gear reduction, unless otherwise approved by the City Engineer.

2.05 BUTTERFLY VALVES

A. Material, in accordance with AWWA C504.

B. Body Type:

1. Valves shall be high strength cast iron ASTM A-126, Class B with 18-8 Type 304 stainless steel body seat.
2. Valve vane shall be mechanically secured with an integral 18-8 stainless steel clamp ring and 18-8 stainless steel nylon locked screws.
3. If mechanical joints are used, the installation shall be per AWWA Specification C111 and accessories (bolts, glands, and gaskets) shall be included.
4. All butterfly valves shall be of the rubber-seated tight-closing type. The rubber seat shall be a full circle 360° seat not penetrated by the valve shaft.

C. Valve Shafts:

1. The valve shaft shall be one piece extending full size through the entire valve and operator with no neckdown, keyways, or holes to weaken it.
2. The valve shaft shall have 304 stainless steel journals rotating in reinforced Teflon bearings.
3. Valves shall have permanently set two-way thrust bearing.
4. Packing shall be "triple-seal" rubber designed for permanent duty in underground service.

D. All valves shall have stainless bolts and zinc coated stainless steel nuts.

E. Flange connections shall be used connecting valves to tees or crosses for buried service.

2.06 VALVE BOXES

A. All buried valves shall be installed with cast iron, 2 piece, sleeve type, with an expanded bell base, 5 1/4 inch shaft valve boxes.

B. All valve nut extensions shall be pinned or otherwise locked to the valve nut.

2.07 TAPPING SADDLES / SLEEVES

A. For tapping saddles used for service connections to plastic pipe, provide full circle saddles. For all other pipe provide double strap bronze alloy, ductile iron, or stainless steel saddles.

B. Provide tapping saddles that have a minimum rated working pressure of 300 psi, neoprene Buna N gaskets, and bronze tapered threads.

C. When approved by Heber City, tapping sleeves may be used for fire lines or other branch branch connections. Tapping sleeves shall be ROMAC Industries SST (or approved equivalent). Tapping sleeves shall not be used for size-on-size applications. The branch line must be at least one nominal pipe size less than the line being connected to. Bricks shall be used for support, not wood shims or any other material.

2.08 SERVICE CONNECTIONS

A. Provide and install according to standard drawings.

B. Service Pipe:

1. Provide single length Polyethylene pipe (copper tube size) with compression fittings. Copper services are not allowed.
2. Locate service taps in the upper quadrant of the main line, approximately at 45 degrees. The minimum distance between taps is 24", with a 5 degree stager. Do not make service taps within 24" of the end of the main line.
3. Service saddles are required on all taps unless indicated otherwise. All water main saddles must be installed with a torque wrench to the torque setting found on the informational tags attached to the saddle body.
4. In subdivision developments, the contractor shall be responsible to furnish and install the corporation type stop and laterals to a point on private property 10 feet past the street right-of-way line.

5. No splices in water services for new service and relocation unless approved by City Engineer.

~~5.~~6. Service lines shall be capped until connected for service.

C. New Meter Boxes: Thermal-Coil Meter Assembly. See the Appendix for alternatives. Existing Meter Box Repairs: Double walled plastic can with ring and cover of sufficient strength to withstand H-20 loadings without damage.Meter Boxes are allowed within the driveway "zone" with prior approval from the Public Works Department. The driveway "zone" shall include the flared driveway approach including five feet either side from the top of the flare. All retrofit of meter boxes within the driveway "zone" shall include shear support at the bottom of the meter box and shall be flush with the concrete surface.

D. Meter Setters: Series 70 manufactured by Ford or Mueller.

E. Service connections greater in size than 2" shall follow the Compound Meter with 2" Bypass details in the latest version of the APWA Standard Plans & Specifications published under the direction of the Utah Chapter of the American Public Works Association. For details on specific meter requirements, contact the Heber City Public Works Department.

F. All materials to be supplied by the Contractor, except for the meter.

2.09 HYDRANT

A. In accordance with AWWA C502 and pattern approved by Owner.

B. 6-inch cast iron hydrant as manufactured by Mueller Centurion 250, Waterous – Model # WB-67-250, or Clow Medallion.

C. Cast-Iron Body Fire Hydrant: Compression type, opening against pressure and closing with pressure, base valve design, 150 psi working pressure, with 1/4" diameter minimum tapping and bronze plug in standpipe.

1. Size: Minimum 5 1/4" valve opening
2. Direction to Open Hydrant: Left
3. Size and Shape of Operating and Cap Nuts: Pentagon 1-1/2" point to flat
4. Hose Nozzles: Two 2-1/2" National Standard Thread, cap, gasket and chain
5. Pumper Nozzles: One 4-1/2" National Standard Thread, cap, gasket and chain
6. Depth of Cover: 5'-0" to top of pipe unless indicated otherwise
7. Connection to Main: O-ring seals and a 6" ASA 125 pound flanged inlet
8. Pressure: Designed for a working pressure of 175 psi and a hydrostatic pressure of 350 psi.
9. Bottom connection: 6" flanged. Designed to allow the flanges at the sidewalk level to separate when hydrant is sheared off.
10. Automatic drain: Opens as the hydrant is closed.

11. Hydrants shall be provided by the manufacturer with a factory applied red coating. Field painting of hydrants shall not be allowed.

D. Mechanical joint or flanged in accordance with AWWA C110 and AWWA C111.

2.10 FIRE SERVICE

A. All fire service shall be a minimum 3" ductile iron pipe.

B. All fire services are required to install a gate valve at the main line connection and a RP double check backflow valve immediately inside the building. Tracer wire shall be installed along entire length of fire service.

2.11 BACKFLOW PREVENTORS

A. All irrigation lines connected to culinary system shall have RP backflow devices with 3 chambers, and above ground air release with an air gap.

B. All backflow preventers shall be tested by a certified backflow technician, and a passing test report will need to be provided to the City.

2.13 HARDWARE, ACCESSORIES & BOLT PACKS

A. All hardware, bolt packs, etc. to be buried shall be greased with food grade FM grease and wrapped in 8 mil (min) plastic secured in place using heavy duty adhesive tape.

A. All hardware, piloting, bolt packs, etc. to be exposed (including in manholes and vaults) shall be Stainless Steel unless otherwise approved by the City Engineer.

PART 3 EXECUTION

3.01 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.02 BEDDING

Refer to Section 02225

3.03 INSTALLATION – PIPE & FITTINGS

A. The bottom of the trench shall be cut flat, true and even to provide uniform bearing for the full length of the pipe barrel.

B. Under no circumstances shall pipe or accessories be dropped into the trench.

C. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with adjoining pipe to prevent sudden offsets.

D. Pipe bedding and trench backfill shall be as defined in the previous sections.

E. Install fittings, valves, etc., without the use of repair sleeves unless otherwise approved by the Public Works Director. Cut-in fittings, valves, etc., shall be installed with the use of Mechanical Joint by Flange adapters (or other means as necessary) to eliminate the need for repair sleeves.

F. As work progresses, interior of pipe shall be cleared of dirt and other superfluous materials.

G. Trenches shall be kept free from water until pipe jointing has been completed. Pipe shall not be laid when condition or trench or weather is unsuitable for such work.

H. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed so that no water, earth, or other substance will enter pipe or fittings.

I. Maintain separation of water main and services from sewer piping in accordance with Utah State Code.

J. Install pipe to indicated elevation to within tolerance of 5/8 inches.

K. Install ductile iron piping and fittings to AWWA C600.

L. Route pipe in straight line.

M. Install pipe to allow for expansion and contraction without stressing pipe or joints.

N. Install access fittings to permit disinfection of water system performed under Section 02675.

O. Slope secondary irrigation water pipe and position drains at low points. Drains shall discharge into storm drain system or other stream course that will not adversely impact adjacent properties.

P. Form and place concrete for thrust restraints at each elbow, change of direction, or dead end of pipe main.

Q. Install mechanical joint restraints approved by Heber City at all bends, branches, or dead ends.

R. Establish elevations of buried culinary piping to ensure not less than 5 feet of cover.

S. Establish elevations of buried irrigation piping to ensure not less than 2 feet of cover. Elevation of buried irrigation piping shall be set to match the design elevations and slopes identified in the plans. Survey cut stakes shall be utilized and followed when installing irrigation piping.

T. Install metallic tape continuous over top of pipe buried 12 inches above pipe line.

U. Backfill trench in accordance with Section 02250.

V. Handling Ductile Iron Pipe

1. Pipe and fittings shall be handled in such a manner as to insure installations in sound, undamaged condition.
2. Particular care shall be taken not to injure the pipe coating and lining. Cement lining in pipe or fittings which is broken or loosened shall be cause for rejection of pipe or fittings.
3. All damaged pipe coating shall be repaired, prior to laying pipe or placing backfill.
4. Repair shall be accomplished by removing all damaged coating, wire-brushing to exposed metal, and applying two coats of coal tar coating of a type and quality to that originally in coating the pipe.

W. Cutting, Cleaning and Inspection

1. Cutting of pipe for closure pieces or for other reasons shall be done in a neat and workmanlike manner by a method which will not damage the pipe.
2. Before installation, each pipe shall be inspected for defects.
3. All defective, damaged or unsound pipe shall be rejected.

X. Location of Stub Pipes

1. The location of each stub shall be marked by placing a 2 x 4 marker at the end of the pipe and extending vertically from the end of the pipe to approximately 15 inches above the ground surface.
2. The portion of the 2 x 4 extending above ground, shall be painted as follows:
   a. Green - indicating sewer stub
   b. Blue - indicating water

3.04 INSTALLATION - VALVES AND HYDRANTS

A. Set valves on solid bearing.

B. Locate valves on property lines, at each intersection, and not more than 500 feet between.

C. Center and plumb valve box over valve. Set box cover flush with finished grade with concrete collar as per standard drawings.

D. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway.

E. Valves located next to fittings shall be connected via flange x flange joints.

F. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

G. On private building fire services, a gate valve must be installed at the property line to isolate the fire service and a detector check valve must be installed where the fire line first enters the building.

3.05 INSTALLATION - SERVICE CONNECTIONS

A. The contractor or home owner must provide and install all parts according to the standard drawings.

B. The Engineer or Public Works Department must inspect the installation before burying or backfilling. The Contractor shall conform to the following requirements before a water meter shall be installed by Heber City:

1. Notify the Water Department at least five working days prior to the time the meter is to be installed and before backfilling.
2. The water lateral should be exposed in the street right-of-way one foot outside the property line, even if the lateral extends onto the property.
3. The end of the house lateral should be within 2 feet of the service lateral.
4. Both laterals should be exposed freely in the center of the excavation.
5. To prevent damage from possible freezing, the water lateral may be covered with materials such as sand, light gravel, straw, insulation, or similar light materials.
6. To establish the correct street right-of-way line, the property line pins or the sidewalk must be in place.

C. All of the above requirements must be complied with to the satisfaction of the City before the water meter will be installed.

D. A service charge will be assessed for crew time when prerequisites are not met before setting a meter. This fee must be paid before the meter installation will be rescheduled.

E. Any required re-setting of the water meter following initial installation shall be done by the City at the expense of the Developer or Contractor.

F. Place meter can in park strip or 1 foot behind sidewalk or on city side of property line, as directed by City Engineer.

G. Install setter no closer than 24" of ground surface.

H. Lids shall be flush with top of sidewalk elevation.

3.06 DISINFECTION OF CULINARY WATER PIPING SYSTEM

A. Flush and disinfect system in accordance with Section 02675.

3.07 TESTING OF WATER PIPING SYSTEMS

A. Test pipeline system in accordance with Section 02660.

3.08 TRACER WIRE INSTALLATION

A. Copper tracer wire to be installed the total length of pipeline with a branch to each tee, cross, and fire hydrant. (See Standard Drawing):

1. Copper wire should be #12 gauge single strand jacketed wire, manufactured for underground service.
2. Wire shall be continuous without breaks. Splices shall be made with petroleum filled wire nut caps.
3. Tracer Wire to be secured to top of pipe at a minimum of every Ten feet, by means other than metallic.
4. Tracer Wire should be brought up in all fire hydrants in culinary water lines, and in the first lateral of each street for pressurized irrigation (not to exceed 500 feet).

B. Perform a continuity test in the presence of the City Inspector prior to paving.

3.09 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with section 02250.

B. If tests indicate Work does not meet specified requirements, remove work, replace, and retest.

END OF SECTION

SECTION 02675

DISINFECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Disinfection of potable water system.

B. Test and report results.

1.02 REFERENCES

A. AWWA A100: AWWA Standard for Water Wells.

B. AWWA B300: AWWA Standard for Hypochlorites.

C. AWWA B301: AWWA Standard for Liquid Chlorine.

D. AWWA C651: AWWA Standard for Disinfecting Water Mains.

E. AWWA C652: AWWA Standard for Disinfection of Water-Storage Facilities.

F. State of Utah: Public Drinking Water Regulations, Part 2, Section 12.

1.03 DEFINITIONS

A. Disinfectant Residual: The quantity of disinfectant in treated water.

B. ppm: Parts per million.

1.04 SUBMITTALS

A. Contractor’s evidence of experience in disinfection.

B. Bacteriological laboratory’s evidence of certification.

C. Disinfection Report: 3 copies including:

1. Date issued
2. Project name and location
3. Treatment contractor’s name, address and phone number
4. Type and form of disinfectant used
5. Time and date of disinfectant injection started
6. Time and date of disinfectant injection completed
7. Test locations
8. Initial and 24 hour disinfectant residuals in ppm for each outlet tested
9. Time and date of flushing start
10. Time and date of flushing completion
11. Disinfectant residual after flushing in ppm for each outlet tested

D. Bacteriological Report: 3 copies including:

1. Date issued
2. Project name and location
3. Laboratory's name, certification number, address, and phone number
4. Time and date of water sample collection
5. Name of person collecting samples
6. Test locations
7. Time and date of laboratory test start
8. Coliform bacteria test results for each outlet tested
9. Certification that water conforms or fails to conform to bacterial standards of State of Utah public drinking water regulations
10. Bacteriologist's signature

1.05 QUALITY ASSURANCE

A. Affidavit by manufacturer that disinfectant conforms to AWWA and NSF standards.

B. Bacteriological Laboratory: Certified by State of Utah.

1.06 PRODUCT HANDLING

A. Store and protect disinfectant in accordance with manufacturer's recommendations to protect against damage or contamination. Do not use unsuitable disinfectant.

B. Follow all instruction labeling for safe handling and storage of disinfectant materials.

1.07 REGULATORY REQUIREMENTS

A. Conform to State of Utah public drinking water regulations.

PART 2 PRODUCTS

2.01 DISINFECTANT

A. Liquid Chlorine: AWWA B301 with chlorine 99.5 percent pure by volume.

B. Sodium Hypochlorite: AWWA B300 with not less than 100 grams per liter available chlorine.

C. Calcium Hypochlorite: AWWA B300 with 65 to 70 percent available chlorine by weight in granular form.

D. Powder, tablet, or gas according to manufacturer's specification.

PART 3 EXECUTION

3.01 PREPARATION

A. Disinfect the potable water pipelines prior to pressure testing if connected to an existing system.

B. Unless waived by the City Engineer for retrofit/reconstruction projects, all water system components (including service connections) within the section of pipeline being tested must be complete before the testing is performed.

C. Ensure that the pipeline to be disinfected is isolated from the existing system.

D. Follow all guidelines set forth in AWWA C651.

3.02 DISINFECTION OF WATER LINES

A. Use one of the approved chlorination methods in AWWA C651.

B. Chlorination shall provide a minimum of 25 ppm residual after 24-hours contact in the pipeline. In general, this residual may be expected with an application of 50 ppm although some conditions may require more.

C. If calcium hypochlorite granules are used, granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500 foot intervals. The quantity of granules shall be shown in table below, where D is the inside diameter in feet.

PIPE SIZE (inches)	CALCIUM HYPOCHLORITE GRANULES (oz)	CALCIUM HYPOCHLORITE GRANULES (g)
4	1.7	48
6	3.8	108
8	6.7	190
10	10.5	298
12	15.1	428
14 and larger	D^2 x 15.1	D^2 x 428

D. During the process of chlorinating the pipeline all valves and other pipeline appurtenances shall be operated several times to provide sufficient contact with the chlorinating agent.

E. See Section 02660 3.02 H for requirements of potable service lines.

3.03 DISINFECTION OF CULINARY WELLS

A. Use one method defined under AWWA A100 as approved by City Engineer.

B. Do not start disinfection until well is thoroughly cleaned.

C. Use a disinfecting solution containing a minimum of 50 ppm residual chlorine.

3.04 DISINFECTION OF WATER STORAGE RESERVOIRS

A. Use one method defined under AWWA C652, as approved by City Engineer.

B. Do not start disinfection until water storage tank is thoroughly cleaned.

C. Provide and use necessary safety equipment for workers in contact with disinfectant or gasses they may produce.

3.05 QUALITY CONTROL - BACTERIOLOGICAL TEST

A. No samples for testing shall be taken sooner than 24 hours after system flushing.

B. At least one set of samples shall be collected from every 1,200 feet of new water main, plus one set from the end of the line and at least one set from each branch. Sample water at each of the following locations, as applicable:

1. Where water enters system, including each source
2. Ends of piping runs
3. Remote outlets

C. Analyze water samples in accordance with State of Utah requirements. Two (2) samples, 24 hours apart, will be taken at each location.

D. If bacteriological test proves water quality to be unacceptable, repeat system treatment.

E. Water systems shall not be accepted or placed into service until a negative bacteriological test is made on water taken. Repeat dosing as necessary until a negative test is obtained. Provide a copy of the negative bacteriological test to City Engineer.

F. The Public Works Department will perform bacteriological sampling on all new water distribution system infrastructure intended to become part of the community's water system. All locations for sampling will be determined by water department personnel. The cost for each sample will be billed to Developer / Contractor. Payment for testing shall be made before results will be released by the City.

3.06 FLUSHING AND DISPOSAL OF DISINFECTANT

A. After the 24 hour retention period, flush the chlorinated water from the main until chlorine measurements show the concentration in the water leaving the main is no higher than that generally prevailing in the system or is acceptable for domestic use.

B. Legally dispose of disinfecting water and ensure no chlorine buildup or damage to the environment. Unless otherwise approved by the Public Works Director, disinfecting water shall not be discharged onto the ground. Disinfecting water shall normally be discharged into a holding container or water truck where the chlorine concentration level shall be brought down to an acceptable level prior to discharge per the direction of the Public Works Director through the use of de-chlorination tablets or other acceptable reducing agents.

C. Failing to flush the line may require Contractor to replace all gaskets and valves within the system at Contractor's expense.

D. Flushing shall be accomplished through hydrants or, if a hydrant does not exist at the end of the line, the Contractor shall install a tap of sufficient size to provide for a 2.5 foot per second flushing velocity in the line. When flushing water service lines, all water meter vault inlets and/or ball valves shall be flushed of all disinfectant.

E. The following flow quantity required to provide a 2.5 foot per second flushing velocity:

PIPE SIZE (In.)	FLOW (gpm)
4	100
6	220
8	390
10	610
12	880
16	1567

END OF SECTION

SECTION 02720

SANITARY SEWER AND STORM DRAIN SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. The requirements for pipe material and installation in sewer and drainage collection systems. All materials and workmanship shall strictly comply with the Utah State Plumbing Code.

1.02 REFERENCES

A. Section 02660: Pipeline Testing.

B. AASHTO-291: Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

C. ASTM D 1248: Standard Specification for Polyethylene Plastics Molding and Extrusion Materials.

D. ASTM D 2239: Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter.

E. ASTM D 2321: Standard Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.

F. ASTM D 2657: Standard Recommended Practice for Heat Joining of Thermoplastic Pipe and Fittings.

G. ASTM D 2774: Standard Recommended Practice for Underground Installation of Thermoplastic Pressure Piping.

H. ASTM D 3261: Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.

I. ASTM D 3350: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

J. ASTM F 405: Standard Specification for Corrugated High Density Polyethylene (PE) Tubing and Fittings.

K. ASTM F 667: Standard Specification for Large Diameter Corrugated High Density Polyethylene Tubing and Fittings.

L. ASTM F 1055: Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing.

M. ASTM C 1479: Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations.

1.03 DEFINITIONS

A. Standard Dimension Ratio (SDR): Average diameter of pipe divided by the minimum wall thickness. The diameter may be either inside or outside measurement depending upon which standard is referenced.

B. Code Designation: A rating of polyethylene pipe materials by the Plastic Pipe Institute. The designation PE 3408 designates the type of plastic pipe (PE), the grade (34), and the hydrostatic design stress measured in units of 100 psi (08).

1.04 SUBMITTALS

A. Manufacturer's affidavit certifying product was manufactured, tested and supplied in accordance with applicable references in this section together with a report of the test results and the date each test was completed.

PART 2 MATERIALS

2.01 REINFORCED CONCRETE SEWER AND STORM DRAIN PIPE

A. Reinforced concrete pipe shall be used for all sanitary sewers and storm drains where installation does not provide a cover of at least 2 feet over the top of the pipe.

B. Reinforced concrete pipe shall comply with the requirements of ASTM C76-109 with bell and spigot rubber gasket type joints for sanitary sewers and the alternate option of tongue and groove mortar joints for storm drain lines.

2.02 SUBSURFACE DRAIN PIPE

A. Pipe

1. Perforated PVC (ASTM D-1784).

2. Perforated Concrete Sewer Pipe (AASHTO M-86 & M-170).
3. Corrugated polyethylene piping (ASTM F-405-77a).

B. Bedding shall be drain rock.

2.03 PLASTIC SEWER PIPE

A. This specification covers rigid polyvinyl chloride pipe and fittings, hereinafter called PVC pipe and PVC fittings. The pipe and fittings shall meet or exceed all of the requirements of ASTM Specification D3034 and ASTM F679.

B. Samples of pipe, physical and chemical data sheets shall be submitted to the City Engineer for approval and his approval shall be obtained before pipe is purchased.

C. This pipe shall be homogeneous throughout and free form cracks, holes, foreign inclusions or other defects. The pipe shall be as uniform as commercially practical in color.

D. Physical Requirements

1. All PVC sewer pipe and fittings shall be made from clean, virgin, Type 1, Grade 1, PVC and minimum SDR-35 (PS46), conforming to ASTM resin specification D-1784. SDR-26 (PS115) or thicker (including fittings) shall be used for depths exceeding 12 ft measured from the top of the pipe, unless otherwise approved by the City Engineer.

2. All pipe joints shall be bell and spigot type with rubber ring gasket to permit expansion and contraction.

3. Pipe and fittings must be assembled with a nontoxic lubricant.

4. All pipe shall be less than 20 feet in length.

5. Spigot ends will have 15° tapered end with a memory mark around the diameter of the pipe to indicate proper insertion depth.

6. Wyes shall be of the same material as the pipe and in no case shall have thinner walls than that of the pipe furnished.

7. Sample wyes must be submitted for the City Engineer's approval and his approval must be obtained before purchase of the wyes.

2.04 HIGH DENSITY POLYETHYLENE STORM DRAIN PIPE (HDPE)

A. Smooth pipe systems

1. Material: Polyethylene code designation PE 3408 as rated in ASTM D 2239 with a minimum ASTM D 3350 cell classification of 345434C, and an SDR or pressure class rating as indicated.

2. Fittings: Manufactured of same resin as the pipe.

3. Joints:
   a. Thermally welded butt fusion in accordance with ASTM D 3261.
   b. Flanged in accordance with ASTM D 2657.
   c. Ultra high molecular weight electrofusion tape with a polyethylene coupler meeting ASTM F1055 requirements.
4. Nuts and Bolts: Carbon steel machined heavy hex heads, Class 2 fit in accordance with ASTM A 307; Grade B, threads in accordance with ASME B1.1 Tape wrap steel materials for protection against corrosion after piping installation.

B. Corrugated Pipe Systems

1. Material: "High density polyethylene pipe shall be smooth lined and meet the requirements of AASHTO M294 Type S."
2. Material: Polyethylene, in accordance with ASTM F 405 or ASTM F 667, Type III, Category 4 or 5, Grade P33, Class C, or Grade P34, Class C as defined by ASTM D 1248.
3. Material: Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1
4. Fittings: Manufactured of same resin as the pipe
   a. Polypropylene fittings shall conform to ASTM F2881 or AASHTO M330. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.
5. Joints: Bell and Spigot Type
   a. Polypropylene joints shall be joined using bell & spigot joints meeting the requirements of ASTM F2881 or AASHTO M330. The joint shall be watertight

according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477.

C. Pipe Markings

1. Mark pipes continuously to identify:
   a. Manufacturer's name (or trade mark) and code.
   b. Nominal size.
   c. Polyethylene code designation.
   d. SDR rating. (Not applicable to corrugated polyethylene.)
   e. Date of manufacture.
   f. Pressure class. (Not applicable to corrugated polyethylene.)
   g. ASTM or AWWA designation number.

2.05 SEWER LATERAL CONNECTIONS

A. All sewer lateral connections to new sewers shall be through preformed wyes.

B. Connections to existing sewers will be done with a sewer tapping machine as shown in Standard Drawings and use a Romac CB sewer saddle. “Inserta Tee” may be used only with prior approval from the Public Works Director and only on sewer laterals 10” and larger. All installations of “Inserta Tee” must be witnessed, inspected, and certified by authorized City agents.

C. Sewer laterals and fittings shall be constructed of a minimum of SDR 35 PVC. When SDR 35 PVC is used, a poured-concrete support, at least 4-inches thick and at least 4-inches beyond the sides of the fitting, shall be placed under the wyes. SDR-26 PVC shall be used for depths exceeding 12 ft, measured from the top of pipe, unless otherwise approved by the City Engineer. All laterals shall have a minimum size of 4-inches.

PART 3 EXECUTION

3.01 PIPE LAYING

A. All sewer pipe installation shall proceed up grade on a stable foundation with joints closely and accurately fitted.

B. Gaskets shall be fitted properly in place and care shall be taken in joining the pipe units to avoid twisting of gaskets.

C. Joints shall be clean and dry and a joint lubricant, as recommended by the pipe supplier, shall be applied uniformly to the mating joint surfaces to facilitate easy positive joint closure.

D. If adjustment of position of a pipe length is required after being laid, it shall be removed and rejointed as for a new pipe.

E. When laying is not in progress, the ends of the pipe shall be closed with tight fitting stopper to prevent the entrance of foreign material.

F. In addition to the above requirements all pipe installation shall comply to the specific requirements of the pipe manufacturer.

G. HDPE shall be installed as per manufacturer’s instructions, ASTM D 2321 or ASTM D 2774 as applicable.

1. A minimum of 2 ft bury depth under paved areas for HDPE and PP pipe is required. Installation under non-paved areas, shall be installed per manufactures recommendations

H. Pipe shall be air tested per state regulations.

I. Concrete collars are required at all storm drain pipe connections to manholes or inlets. The concrete collar shall seal the storm drain pipe to the manhole or inlet.

J. All sewer repairs or joints that abut without a bell and spigot or mechanical joint shall use an approved gasketed solid sleeve, a“Fernco Stainless Steel Shear Ring”, or a “Shear Guard” with concrete support saddle.

3.02 GRAVEL FOUNDATION FOR PIPE

A. Refer to Section 02225.

3.03 BEDDING

A. Refer to section 02225.

3.04 COMPACTION

A. Refer to Section 02250.

END OF SECTION

SECTION 02772

PONDS & SUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clear pond site and dispose of debris and unsuitable material.

B. Materials for dike.

1.02 REFERENCES

A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures of Highway Construction Purposes.

1.03 SUBMITTALS

B. Laboratory analysis report of fill to be used in dikes in accordance with the sections referenced in this section and AASHTO M 145.

1.04 PERFORMANCE REQUIREMENTS

A. Protection: Do not contaminate embankment materials with debris or unsuitable material. Protect existing improvements, trees, structures or other items from damage during construction.

B. Dust Control: Thoroughly moisten all surfaces to prevent dust being a nuisance to the public, neighborhood, and concurrent performance of separate work on site.

C. Testing: 1 density test for each 100 square yard lift of backfill compacted in the Work.

1.05 JOB CONDITIONS

A. Do not interrupt surface drainage systems at site without City Engineer's approval.

B. Correct any damage caused by runoff or erosion during construction.

PART 2 PRODUCTS

2.01 BACKFILL SOILS

A. Native Fill: In accordance with Section 02205.

B. Common Fill: In accordance with Section 02205.

C. Select Fill: In accordance with Section 02206.

D. Impermeable Embankment: A-6 (CL) or A-4 (CL) material as defined in AASHTO M 145 with a plasticity index of at least 10, and a coefficient of permeability of less than 7 x 10-6 cm/sec.

E. Obtain City Engineer's approval of the material to be supplied prior to beginning construction.

2.02 GEOTEXTILE MATERIALS

A. Nonbiodegradable sheet material that is inert to soil chemicals, resistant to molds, mildew, acids and alkalies, and within a pH range of 3 to 12.

B. Sumps and Drain Fields: Geotextiles used as a separation layer between angular stone and fill or between stone and sump manhole/perforated pipe to prevent fines intrusion shall be AASHTO M288 Class 2 Non-Woven material (i.e. Mirafi 180 N, Contech C-70NW, etc.)

PART 3 EXECUTION

3.01 EXCAVATION AND PREPARATION

A. In accordance with Section 02225.

B. Remove and stockpile all topsoil material for later placement on the outer dike surfaces.

C. Level areas where dikes are to be constructed. Unless indicated otherwise scarify the top 12" of the base material and compact to a minimum Standard Proctor of 92 percent in accordance with Section 02250.

3.02 EMBANKMENT CONSTRUCTION

A. Compact backfills to an average Standard Proctor density of 96 percent in accordance with Section 02250 with no single density reading less than 92 percent.

B. Place embankment materials in lifts consistent with the compaction equipment used.

C. Do not construct embankment with frozen or unapproved material.

D. Top of bank shall not be less than 10' wide with a 2% slope toward pond.

E. Overflow shall be provided by safety weir or a 5 fps max overflow outlet.

3.03 TOLERANCES

A. Dike Surface: Plus or minus 1" from true line and grade.

B. Dike Width: Plus or minus 6" from true line and grade.

3.04 FINISHING

A. After pond and slopes have been constructed to the lines and grades indicated, spread topsoil 6" deep on pond surfaces and grade to uniform slope.

B. Pond shall be landscaped and irrigated as approved by the City Engineer.

C. Dispose of excess or unsuitable materials and level all affected areas.

D. Leave site free of excess fill material and debris.

END OF SECTION

SECTION 02832

FENCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Chain Link Fence.

B. Wood Fence.

C. Construction Fence.

1.02 RELATED SECTIONS

A. Section 03304: Concrete anchorage for posts.

1.03 REFERENCES

A. ASTM A116: Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric.

B. ASTM A123: Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A392: Zinc-Coated Steel Chain-Link Fence Fabric.

D. ASTM F567: Installation of Chain-Link Fence.

E. ASTM F573: Residential Zinc-Coated Steel Chain Link Fence Fabric.

F. ASTM F1083: Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence structures.

G. ASTM F1234: Protective Coating on Steel Framework for Fences.

1.04 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM F567.

PART 2 PRODUCTS

2.01 CHAIN LINK FENCE MATERIAL AND COMPONENTS

A. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, coating conforming to ASTM F1234 Type A on pipe exterior and interior.

B. Fabric Wire (Steel): ASTM A392 zinc coated wire fabric.

C. Concrete: Type specified in Section 03304.

D. Line Posts: 1.9 inch O. D. galvanized pipe at 2.72 lbs per foot.

E. Corner, Gate, Pull, and Terminal Posts: 2.4 inch O.D. galvanized pipe at 2.65 lbs. per foot.

F. Top Rail: 1.4 inch diameter, plain end, sleeve coupled.

G. Brace Rail: Minimum 1.6 inch O.D. galvanized pipe and adjustable 3/8 inch truss

H. Tension Wire: 7 gage, Bottom only.

2.02 WOOD FENCE MATERIAL AND COMPONENTS

A. Slats: Redwood, cedar, combed spruce or other wood covering acceptable to the City Engineer or his representative.

B. Bottom and top rail: Minimum 2x4x8 cedar stud.

C. Corner, Gate, End, or Line Posts: Minimum size 4x4 cedar wood post.

D. Concrete: Type specified in Section 03304.

2.03 CONSTRUCTION FENCE MATERIAL AND COMPONENTS

A. Material:

1. Fabric to be wire mesh which shall conform to AASHTO Designation M-279, nominal 0.9999-inch Farm Grade with standard six (6) inch graduated spacing. The wire mesh shall have a Class 1 zinc coating.
2. Corner, gate, end or line posts shall be painted metal tee, U or Y channel, angular, or other approved shapes 6'6" in length.

PART 3 EXECUTION

3.01 CHAIN LINK FENCE INSTALLATION

A. Line Pole Spacing, Straight run, tangents or curves:

1. Uniform spacing. Maximum 10 feet.
2. 100-foot radius or less, maximum 5 feet.
3. 100 to 200 foot radius, maximum 6 feet.
4. 200 to 500 foot radius, maximum 8 feet.

B. Set posts plumb, in concrete footings with top of footing 2 inches above finished grade. Slope top of concrete for water runoff.

C. Line Post Footing: Minimum 6 inches of concrete below bottom of post, 8 inches in diameter.

D. Corner, Gate, Pull, and Terminal Post Footing: Minimum 6 inches of concrete below bottom of post, 10 inches in diameter. Changes in line of more than 30 degrees shall be considered as corners.

E. Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gate posts.

F. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

G. Do not stretch fabric until concrete foundation has cured 7 days.

H. Stretch fabric between terminal posts or at intervals of 500 feet maximum, whichever is less.

I. Position bottom of fabric 2 inches above finished grade and on a straight grade between posts. Excavate if necessary, fill only with approval of City Engineer.

J. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.

K. Fence fabric shall be placed on road side of posts unless otherwise indicated.

3.02 WOOD FENCE INSTALLATION

A. Construction Methods: The cedar posts shall be set true to line and grade in concrete bases at least two (2) feet in depth. All posts shall be sound and free from all decay, splits, multiple cracks, or any other defect which would weaken the posts or otherwise cause them to be structurally unsuitable for the purpose intended.

B. The maximum distance between posts in any section shall not exceed eight (8) feet. The top and bottom railing shall be securely fastened to the posts with galvanized nails or other acceptable means. Changes in line of 30 degrees or more shall be considered as corners. A minimum of six (6) inches of concrete shall be provided below the bottom of each post. End posts, corner posts, and gate posts shall have a concrete base at least twelve (12) inches in diameter. Bases for line posts shall also be twelve (12) inches in diameter.

C. Fence slats shall be placed on the roadway side of posts unless otherwise specified. The slats shall be placed approximately one (1) inch above the ground, and on a straight grade between posts by excavating high points of the ground. Filling depressions will be permitted only upon approval of the City Engineer. The slats shall be sound and free from all major decay or defects which would weaken or otherwise cause them to be unsuitable for fence slats. Fastening to top and bottom railing shall be done with two (2) galvanized nails and screw at both the top and bottom rail.

3.03 CONSTRUCTION FENCE INSTALLATION

A. Construction Methods:

1. Metal fence posts shall be a spaced a maximum interval of sixteen (16) feet. Posts spacing measurements shall be made parallel to the ground slope. All posts shall be placed in a vertical position. Metal posts may be installed by driving, if this can be done without damage to the post. Otherwise, they shall be installed to the specified depth (2'6") in larger drilled or dug holes and backfilled and compacted.
2. Corner posts shall be braced in two directions. End and gate posts shall be braced in one direction.
3. Wire mesh fabric shall be drawn tight enough to eliminate all sag without causing the “tension crimps” to fail to function.
4. Any high points along the ground surface which interfere with the placing of wire mesh shall be excavated to provide at least two (2) inches of ground clearance.
5. Every alternate lateral wire in the mesh fabric shall be fastened to each post by means of a clamp.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel bars, wire fabric or rod mats for cast-in -place concrete.

B. Support chairs, bolsters, bar supports, and spacers for supporting reinforcement.

1.02 REFERENCES

A. AASHTO M 254: Standard Specification for Corrosion Resistant Coated Dowel Bars.

B. ACI 301: Specifications for Structural Concrete for Buildings.

C. ACI 315: Details and Detailing of Concrete Reinforcement.

D. AASHTO M-32: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

E. AASHTO M-55: Standard Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.

F. AASHTO M-55: Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

G. ASTM A 706: Standard Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.

H. AWS D1.1: Structural Welding Code Steel.

I. AWS D1.4: Structural Welding Code Reinforcing Steel.

J. CRSI Document: Manual of Standard Practice.

1.03 SUBMITTALS

A. Shop drawings.

1. Indicate sizes, spacing, locations, and quantities of reinforcing steel, wire fabric, bending and cutting schedules, splicing, stirrup spacing, supporting, and spacing devices.
2. When required by Engineer, prepare shop drawings by an engineer who complies with Utah licensing law and is acceptable to Engineer.

1.04 QUALITY ASSURANCE

A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice.

B. Comply with ACI 301.

C. Welders: AWS D1.1 or AWS D1.4 as applicable.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing Steel: In accordance with AASHTO M-31 or ASTM A 706 deformed bars, grade and type as indicated, including supplementary requirements S1, either uncoated or as indicated. When no grade is indicated use 60 grade steel. Use ASTM A 706 steel if welding is indicated or allowed.

B. Welded Steel Wire Fabric: In accordance with AASHTO M-55 plain type; in flat sheets or coiled rolls either uncoated or as indicated.

C. Stirrup Steel: In accordance with AASHTO M-32.

D. Plain Dowel Bars for Expansion Joints: In accordance with AASHTO M-31, Grade 60.

1. Provide metal dowel cap at one end of dowel to permit longitudinal movement of dowel within concrete section. Design caps with 1 end closed.
2. Provide for movement equal to joint width plus ½".
3. For load transfer bars, paint with 1 coat of lead or tar paint conforming to AASHTO M 254 and coat ½ with grease.

2.02 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type or a patented system accepted by Engineer.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.03 FABRICATION

A. Fabricate reinforcement in accordance with ACI, providing for the concrete cover specified in Section 03304.

B. Locate reinforcing splices not indicated on drawings at points of minimum stress. Indicate location of splices on shop drawings.

C. Weld reinforcing bars in accordance with AWS D1.4.

PART 3 EXECUTION

3.01 PLACING

A. All reinforcement to be free of loose mill scale, loose or thick rust, dirt, paint, oil or grease.

B. Place all reinforcement in the exact position indicated. With tie wire tie bars together at alternate intersections.

C. Maintain the distance from vertical forms and between layers of reinforcement by means of prefabricated chairs, ties, hangers, or other approved devices. Placing and fastening of reinforcement in each section of the Work must be approved by Engineer before concrete is placed.

D. Overlap sheets of metal mesh one square plus 6" to maintain a uniform strength. Securely fasten

at the ends, edges, and support to maintain clearances.

E. Support reinforcing steel of formed flat slabs with metal chairs, precast concrete blocks or other slab bolsters. Size chairs or bolsters to position the steel in the exact location indicated. Space chairs for supporting the top steel and bolsters for supporting the bottom steel not more than 5 feet on centers in each direction. Plastic or epoxy coat that portion of the metal support in contact with the forms to prevent rust. Tie down deck steel to beams or forms at regular intervals of not more than 5 feet on centers along the beams or forms to prevent movement of the steel during placement of the concrete.

3.02 SPLICING

A. Furnish all reinforcement in the full lengths indicated unless otherwise permitted. Splicing of bars, except where indicated is not permitted without written approval from Engineer. Stagger splices where possible.

B. Unless indicated otherwise, overlap reinforcing bars a minimum of 30 diameters to make the splice. In lapped splices, place the bars and wire in such a manner as to maintain the minimum distance for clear spacing to the surface of the concrete.

C. Do not use lap splices on bars greater in diameter than No. 11 unless approved by Engineer.

D. Weld reinforcing steel only if indicated or if authorization is made by Engineer in writing. Weld in conformance to AWS D1.4.

E. Do not bend reinforcement after embedding in hardened concrete, unless permitted by Engineer.

F. Do not permit reinforcement or other embedded metal items bonded to the concrete, to extend continuously through any expansion joint, except dowels in floors bonded on only one side of joints.

3.03 PLACING EMBEDDED ITEMS

A. Place all sleeves, inserts, anchors and embedded items prior to concrete placement. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.

B. Give all trades whose work is related to the concrete section ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.

END OF SECTION

SECTION 03216

CONCRETE STRUCTURES, DRIVEWAY, SIDEWALK, TRAILS, CURB AND GUTTER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Materials, installation and tolerances for Portland cement concrete ramps, sidewalk, curbs, gutters, and driveway approaches.

1.02 SUBMITTALS

A. Concrete mix design must be submitted 48 hours before placement and physical-chemical analysis of aggregates, in accordance with Section 03304.
B. Test reports: Submit test reports as requested by Engineer verifying compliance with standards.

PART 2 PRODUCTS

2.01 BACKFILL MATERIALS

A. Common fill, in accordance with Section 02205.

B. Select fill, in accordance with Section 02206.

2.02 MATERIALS: Materials used in Portland cement concrete and reinforcing of Portland cement concrete shall meet the following requirements:

A. In accordance with Section 03304.

B. Reinforcing Steel: All bar material used for reinforcement of concrete shall be intermediate grade steel conforming to the requirements of ASTM Designation A-15 and shall be deformed in accordance with ASTM Designation A-305.

C. Welded Wire Fabric: Welded wire fabric for concrete reinforcement shall conform to the requirements of AASHTO M-55.

2.03 FORMS

A. Forms shall be substantially built and adequately braced so as to withstand the liquid weight of concrete. All linings, studding, walling and bracing shall be such as to prevent bulging, spreading, or loss of true alignment while pouring and displacement of concrete while setting.

B. Metal forms shall be used for curb and gutter work except at curves and on winding roads, unless continuous lay down machine is used, or as directed by city engineer.

C. Continuous curb lay down machine shall be used on all winding roads over 100 feet long, unless otherwise approved by City Engineer.

D. All edge forms for sidewalk pavements, trail pavements, curbs and gutters shall be of sufficient rigidity and adequately braced to accurately maintain line and grade.

E. Forms for curved sections shall be so constructed and placed that the finish surface of walls, edge of sidewalks, or curbs and gutters will not deviate appreciably from the arc of the curve.

F. Exposed vertical and horizontal edges of the concrete in structures shall be chamfered by the placing of moldings in the forms.

2.04 PORTLAND CEMENT CONCRETE

A. In accordance with Section 03304.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces scheduled to receive concrete form work for defects that will adversely affect the quality of the work and be out of compliance with tolerances for installation of concrete material.

B. Do not start work until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. A minimum slope of 0.5 % shall be maintained on all concrete used for drainage purposes unless discussed with and approved by the City Engineer.

B. Joining to Existing Concrete: Cut existing concrete to provide a straight line. Make all cuts at score lines or expansion joints. If existing adjacent concrete slabs not scheduled for replacement are damaged by Contractor's operation, replace concrete at no additional cost to City. When connecting to existing curb and gutter or waterways, the existing concrete shall be drilled and dowels inserted to make the connection.

C. Subgrade: A soils classification, as determined by AASHTO T-27 shall be made on the proposed subgrade and the following preparation schedule shall be followed based on that classification:

Sidewalk, Curb and Gutter, and Driveway Subgrade Preparation Schedule

SOIL CLASSIFICATION	REQUIREMENT
A-1 or A-2	The subgrade shall be moistened and compacted in accordance with Section 02250.
A-3 or A-4	The subgrade shall be over excavated a minimum of 12inches and replaced with select granular material and be moistened and compacted in accordance with Section 02250.
A-5, A-6, or A-7	The subgrade shall be over excavated a minimum of 18 inches, replaced with select granular material, and be moistened and compacted in accordance with Section 02250.

1. No organic material, soft clay, spongy material, or other deleterious material will be permitted in the scarified or imported subgrade layer.
2. Rough subgrade shall be shaped and graded at least 6 inches beyond the back of the sidewalk to within a tolerance of 0.10 feet of design grade and drainage shall be maintained at all times.

D. Compaction: As indicated, in accordance with Section 02250.

E. Select Backfill: Unless indicated otherwise, provide 6" minimum of select fill below curbs, gutter, driveway approaches, alley intersections, ~~and~~ sidewalks, and trails.

F. Reinforcement and Embedded Items

1. Reinforcing steel shall be clean and free from rust, scale, paint, grease, or other foreign matter which might impair the bond. It shall be accurately bent and shall be tied to prevent displacement when concrete is poured. Reinforcing steel shall be held in place by only metal or concrete ties, braces and supports. No steel shall extend from or be visible on any finished surface.
2. The Contractor shall use concrete chairs for holding the steel away from the subgrade and spreader or other type bars for securing the steel in place. The spreader bars shall be not less than 3/8 inch in diameter.

G. Site Preparation

1. Before batching and placing concrete, all equipment for mixing and transporting the concrete shall be cleaned.
2. All debris and ice shall be removed from the places occupied by the concrete.
3. Forms shall be thoroughly wetted (except in freezing weather), or oiled.
4. Masonry filler units that will be in contact with concrete shall be well drenched (except in freezing weather).
5. Reinforcement shall be thoroughly cleaned of ice or other coatings.
6. Water shall be removed from spaces to receive concrete.

3.03 CONCRETE PLACEMENT

A. Place in accordance with Section 03310.

B. No concrete shall be placed until the surfaces have been approved by the City Inspector.

C. When placing concrete on earth surfaces, the surfaces shall be free from frost, ice, mud, and water.

D. When the subgrade surface is dry soil or pervious material, it shall be sprayed with water immediately before placing of concrete or shall be covered with a plastic membrane.

E. Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to re-handling or flowing.

F. The concrete placing shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the corners of forms and reinforcing bars.

G. No concrete that is partially hardened or been contaminated by foreign material shall be deposited in the work, nor shall retempered concrete be used.

H. All concrete in structures shall be vibrator compacted during the operation of placing and shall be thoroughly worked around reinforcement and embedded fixtures and into the corners of forms.

I. Placing concrete in cold weather:

1. No concrete shall be placed where the air temperature is lower than 40 degrees Fahrenheit, at a location where the concrete cannot be covered or protected from the surrounding air.
2. When concrete is placed below a temperature of 35 degrees Fahrenheit the ingredients of the concrete shall be heated so that the temperature of the mixture shall not be less than 50 degrees or more than 100 degrees Fahrenheit.
3. Before mixing, the heated aggregates shall not exceed 175 degrees Fahrenheit.
4. Cement shall not be added while the temperature of the mixed aggregates and water is greater than 100 degrees Fahrenheit.

5. When there is likelihood of freezing during the curing period, the concrete shall be protected by means of an insulated covering to prevent freezing of the concrete for a period of not less than 7 days after placing.
6. Equipment for protecting concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing.
7. In the event heating is employed, care shall be taken to insure that no part of the concrete becomes dried out or is heated to temperatures above 100 degrees Fahrenheit.
8. The housing, covering, or other protection used shall remain in place and intact at least 24 hours after the artificial heating is discontinued.
9. For a period of five days concrete shall be kept between 40 degrees and 100 degrees F.

3.04 CONCRETE MIXING

A. Concrete mix design must be submitted 48 hours before placement.

B. The concrete shall be mixed until there is a uniform distribution of the materials.

C. Sufficient water shall be used in mixing concrete to produce a mixture which will flatten and quake when deposited in place, but not enough to cause it to flow or exceed the water - cement ratio.

D. In no case shall the quantity of water used cause the collection of a surplus in the forms.

E. Ready-mixed concrete shall be mixed and delivered in accordance with the requirements set forth in AASHTO M-157.

F. Concrete shall be delivered and deposited in its final position within 90 minutes after adding the cement and water to the mixture.

G. Washing out of mixer trucks shall not be permitted within City rights-of-way.

3.05 CONTRACTION JOINTS

A. Sidewalks shall have contraction joints with the following requirements:

1. Spacing shall match sidewalk width.
2. Approximately 3/16 inch wide.
3. Approximately one-fourth of slab thickness.

B. Curb and Gutter shall have contraction joints with the following requirements:

1. Ten (10) foot intervals.
2. Approximately 3/16 inch wide.
3. Approximately one-half of slab thickness.

C. Trails shall have contraction joints with the following requirements

1. Spacing shall match trail width, not to exceed 10 foot intervals.
2. Approximately 3/16 inch wide.
3. Approximately one-fourth of slab thickness.

3.06 EXPANSION JOINTS

A. One-half (½) inch expansion joints, extending the full thickness of the slab shall be provided at minimum 60 foot intervals in all sidewalks in addition to locations where sidewalks adjoin

existing sidewalks, or driveways. One-half (½) inch expansion joints shall be provided at minimum 100 ft intervals in curb and gutter.

B. Material for one-half (½) inch expansion joints shall be as defined in AASHTO M-33. Rubber Expansion Joint Filler is also acceptable as long as it meets or exceeds ASTM D1751-04 and AASHTO M-213-95

C. Expansion joints shall be installed with the top approximately one-quarter (1/4) inch below the concrete surface and extend to the bottom of the concrete.

3.07 SEALING OF EXPANSION AND CONTRACTION JOINTS

A. The sealant shall be one of the following or approved equal:

1. Polysulfide polymer by Thiokol Chemical Corporation.
2. Sonolastic one-part sealant by Sonneborn-Contech Corporation.

B. As an alternative to the above sealant a continuous film of 4 mil thickness water-proof plastic may be placed under all concrete sidewalks, curbs and gutters on the low sides of streets.

C. Other erosion prevention measures may be used as an alternate if the developer first obtains written approval from the City Engineer concerning material types and installation procedure.

3.08 FINISHING

A. Refer to Section 03345 for finishing requirements.

B. Slabs:

1. The concrete shall be brought to established grade and screened, and then worked with a magnesium float.
2. The concrete shall be given a light broom finish.
3. Dry cement or a mixture of dry cement and sand should in no case be sprinkled on the surface to absorb moisture or hasten hardening.
4. Do not spray water on the surface of concrete to aid in finishing.
5. Surface edges of all slabs shall be rounded to a radius of one-half (½) inch.

C. Curb and Gutter:

1. Curb and gutter shall be slipped with a continuous curb machine where possible.
2. Where concrete must be poured in curb and gutter forms it shall be tamped and spaded to insure a thorough mixture, eliminate air pockets, and create uniform and smooth sides.
3. While the concrete is still green and not thoroughly set, the forms shall be removed and the front and top sides shall be finished with a float or steel trowel to make a uniform finished surface.
4. The top and face of the curb and also the top of the apron on combined curb and gutter must be finished true to line and grade and without any irregularities of surface noticeable to the eye.
5. The gutter shall not hold water to a depth of more than one-fourth (1/4) of an inch nor shall any portion of the surface or face of the curb or gutter depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the curb parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.

D. Sidewalk:

1. The sidewalk shall not hold water ~~to a depth of more than one-fourth (1/4) of an inch~~ nor shall any portion of the surface or face depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the side-walk parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.
2. The concrete shall be given a light broom finish.

E. Trail:
1. The trail shall not hold water nor shall any portion of the surface or face depart more than one-fourth (1/4) of an inch from a straight edge ten (10) feet in length, placed on the trail parallel to the centerline of the street nor shall any part of the exposed surface present a wavy appearance.
~~1.~~2. The concrete shall be given a light broom finish.

3.09 CURING

A. Apply curing compound in accordance with Section 03310 unless water cure is indicated. Water cure is required if concrete surface sealing compound is to be applied.

B. A chemical curing agent may be used, provided it is applied in accordance with the manufacturers specifications.

C. As soon as the concrete has hardened sufficiently to prevent damage, the finished surface shall be sprinkled with water and kept wet for at least three (3) days.

3.10 PROTECTION AND REPAIRS

A. See Section 03310 Concrete Work

END OF SECTION

SECTION 03304

PORTLAND CEMENT CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Portland cement concrete material requirements.

B. Mix design requirements.

1.02 REFERENCES

A. AASHTO T- 26: Standard Method of Test for Quality of Water to be Used in Concrete.

B. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.

C. ACI 211.3: Standard Practice for Selecting Proportions for No-Slump Concrete.

D. ACI 214: Recommended Practice for Evaluation of Strength Test Results of Concrete.

E. ACI 306: Cold Weather Concreting.

F. AASHTO M-157: Standard Specification for Ready-Mix Concrete.

G. AASHTO M-85: Standard Specification for Portland Cement.

H. AASHTO M-154: Standard Specification for Air-Entraining Admixtures for Concrete.

I. AASHTO M-194: Standard Specification for Chemical Admixtures for Concrete.

J. AASHTO M-295: Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

1.03 DEFINITIONS

A. Average Strength (f_{cr}): The required average strength for 3 consecutive strength tests which statistically assures no more than the permissible proportions of tests will fall below specified strength.

B. Specified Strength (f_c'): The indicated strength.

1.04 SUBMITTALS

A. Mix Design: Submit each proposed mix design 48 hours prior to use in the Work. Indicate whether mixes have been designed for pumping. Include the report the following information.

1. Water-cement ratio
2. Proportion of materials in the mix
3. Source and type of cement
4. Analysis of water to be used

5. Type and name of admixtures applied. Indicate when accelerating or retarding admixtures are to be used.
6. Slump, air content and temperature of samples.
7. Unit weight of fresh and dry light weight concrete.

1.05 QUALITY ASSURANCE

A. Use the same source and type of cement, air-entraining agent, water reducing agent, other admixtures, and aggregate.

B. In proportioning materials for mixing, use scales certified by the State of Utah. Do not use volume measurement except for water and liquid admixtures.

C. Do not change the quantity of cement per cubic yard.

D. Use of admixtures will not relax hot or cold weather placement requirements.

E. Ready-mixed concrete, in accordance with AASHTO M-157 and requirements in this Section.

F. Testing Concrete: In accordance with Section 01450.

PART 2 PRODUCTS

2.01 CEMENT

A. Type II (moderate sulfate resistance) or Type V (high sulfate resistance), in accordance with ASTM M-185.

2.02 WATER

A. Water used in mixing concrete shall be clean and free from oil, acid, salt, injurious amounts of alkali, organic matter or other deleterious substances. Clean, non-staining and not detrimental. Comply with AASHTO T 26.

2.03 AGGREGATES - GENERAL

A. Gravel, crushed slag, crushed stone, or other inert material, composed of hard, strong, durable particles free of injurious coatings.

B. The materials passing the No. 200 sieve shall not exceed 1.75 percent by weight in the combined coarse and fine aggregate.

2.04 ADMIXTURES

A. Air Entrainment: pH 2.0 maximum type in accordance with AASHTO M-152.

B. Water Reducing and Water Retarding Agents: In accordance with AASHTO M-194.

1. Type A: Water reducing
2. Type B: Retarding
3. Type C: Accelerating
4. Type D: Water reducing and water retarding
5. Type E: Water reducing and accelerating
6. Type F: High range water reducing (super plasticizer)*
7. Type G: High range water reducing and retarding*

*The relative durability factor of water reducing admixtures shall not be less than 90 and the chlorides content (as Cl-) shall not exceed 1 percent by weight of the admixtures.

C. Calcium Chloride: None allowed.

D. Pozzolan: Pozzolan conforming to the requirements of ASTM C 618, Class F, is allowed as Portland cement replacing agent under the following conditions:

1. If a blended aggregate passes an unmodified ASTM C 1293 test, use of a pozzolan is allowed. If aggregate does not pass ASTM C 1293, select a pozzolan (or blended cement, or both) and determine the effective dosage to meet one of the following tests:
   a. ASTM C 1567. The expansion of the cement-pozzolan-aggregate job-mix mortar bar is less than or equal to 0.10 percent at 16 days. Do not use the test if a lithium admixture is used in the job-mix.
   b. ASTM C 441. The expansion of a test mixture at 56 days is less than or equal to a control mixture prepared with cement with equivalent alkalis between 0.5 and 0.6 percent.
2. Do not replace more than 10 percent of the Portland Cement.
3. The ratio of replacement by weight of Pozzolan to cement shall be 1.25 to 1.0.
4. The minimum cement content shall be used in the design formulas before replacement is made.
5. Loss of ignition of pozzolan is less than 3 percent and the water requirement shall not exceed 100 percent.
6. All other requirements of this section still apply.
7. Mix designs including trial batches are required for each aggregate source and for each concrete class.

E. Fly Ash: Class F fly ash allowed as a cement replacement under the following conditions:

1. Before replacement is made, use the minimum cement content in the design formula to establish the water/cement ratio.
2. Replace up to 20 percent of the cement by weight on a one (1) part fly ash to one (1) part cement basis.
3. Submit to Engineer a quality history of the fly ash identifying a minimum of 20 of the most current ASTM C 618 analysis.

2.05 ENTRAINING AGENT

A. An air-entraining agent shall be used in all concrete exposed to the weather. The agent shall conform to AASHTO Designations M-152.

2.06 ACI MIX DESIGN

A. The amount by which the average strength of a concrete mix exceeds the specified strength shall be based upon no more than 1 in 100 random individual strength tests falling below the specific strength.

B. Proportion the materials in accordance with ACI 211.1, 211.2 or 211.3 as applicable to produce concrete having the following properties or limitations:

CONCRETE MIX PROPERTIES			
Properties	Concrete Class		
	4000	3000	2500
Specified Compressive Strength f_c' at 28 days, psi	4000	3000	2500
Compressive Strength at 7 days, psi[(a)]	2680	2010	1675
Water-cement ratio (by weight), max	0.44	(c)	
Cement content (94 lb. sacks of cement per cubic yard of concrete)	6.5	5.5	5
Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size	Entrained air content, (% by volume) based on aggregate size
2"	4.0 to 7.0	4.5 to 7.5	3.0 to 6.0
1-1/2"	4.5 to 7.5	4.5 to 7.5	3.0 to 6.0
1"	5.0 to 7.5	4.5 to 7.5	3.0 to 6.0
¾"	5.0 to 7.5	4.5 to 7.5	3.0 to 6.0
Slump Range, in. [(b)]	2 to 4	2 to 4	2 to 4

(a) Used for monitoring purposes only.
(b) Not more than 8" after adding high range water reducer admixture (super-plasticizer) to verified 2" to 3" slump concrete.
(c) Specific to exposure conditions and finishing need

C. The use for each class of concrete is as follows:

1. 4000 psi: Reinforced structural concrete
2. 4000 psi: Sidewalks, curb and gutter, cross gutters, concrete collars, pavements and unreinforced footings and foundations.
3. 3000 psi: Thrust blocks, anchors and mass concrete.

D. Water:

1. Sufficient water shall be added to produce concrete with the minimum practicable slump.
2. The slump of mechanically vibrated concrete shall not exceed 4 inches.
3. No concrete shall be placed with a slump in excess of 5 inches.
4. The maximum permissible water cement ratio (including free moisture of aggregates shall be 5 and 5 3/4 gallons per bag of cement respectively for 4000 and 3000 psi air entrained concrete.

2.07 HAND MIXING

A. Do not hand mix batches exceeding 0.5 cubic yards.

2.08 HEATING, WATER AND AGGREGATE

A. Do not allow products of fuel combustion to contact the aggregate.

B. Heat aggregate and mixing water to 150 degrees F. maximum. Heat aggregates uniformly.

C. Maintain mixed concrete temperature at time of placement between 60 and 90 degrees F.

D. Do not mix cement with water or with mixtures of water and aggregate greater than 90 degrees.

PART 3 EXECUTION

3.01 DELIVERY

A. Slump: Do not transport concrete to the work location if concrete is greater than permissible slump.

B. Discharge: After the introduction of mixing water to the cement and aggregates at the batch plant, discharge concrete from truck mixer within 90 minutes.

3.02 RE-TEMPERING

A. Adding Water: When concrete arrives at site with slump below specified, water may be added once if neither the maximum approved water/cement ratio nor the maximum slump is exceeded provided that the drum turns a minimum of 90 revolutions.

B. Super-plasticizer: Premeasure and add high range water reducers (super-plasticizer) in accordance with manufacturer's instructions. Add super-plasticizer at site using truck-mounted power injection equipment capable of rapidly and uniformly distributing the admixture to the concrete. Mix for a minimum of 3 minutes prior to discharge.

C. Re-tempering after delivery time with super-plasticizer is prohibited.

3.03 CONCRETE PLACEMENT

A. In accordance with Section 03310.

END OF SECTION

SECTION 03310

CONCRETE WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete placement operations for slabs on grade, slabs on fill, structural building frame, and other concrete components.

1.02 REFERENCES

A. AASHTO M-182: Standard Specification for Burlap Cloth Made from Jute or Kenaf.

B. ACI 301: Specifications for Structural Concrete for Buildings.

C. ACI 305: Hot Weather Concreting.

D. ACI 306: Cold Weather Concreting.

E. ACI 309: Standard Practice for Consolidation of Concrete.

F. ACI 315: Details and Detailing of Concrete Reinforcement.

G. AASHTO M-148: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

H. ASTM C-642: Standard Test Method for Specific Gravity, Absorption, and Voids in Hardened Concrete.

1.03 RELATED WORK

A. Manufacture of Portland cement concrete and delivery to site, in accordance with Section 03304.

1.04 SUBMITTALS

A. Record of Placed Concrete: Record date, location of pour, quantity, air temperature, and test samples taken.

B. Product name, type, and chemical analysis of the following as applicable:

1. Curing compound.

2. Sealing compound.

3. Chemical hardener.

1.05 QUALITY ASSURANCE

A. Rejection: Concrete work which fails to meet one or more of the following requirements, and which cannot be brought into compliance shall be rejected. Engineer shall determine appropriate modifications or payment adjustments to be made.

1. Appearance: Concrete exposed to view with defects which adversely affect appearance of specified finish.

2. Strength: Strength of concrete fails to comply with any of the following requirements:
   a. Low compressive or flexural strength.
   b. Reinforcing steel size, quantity, strength, position, damage, or arrangement at variance with requirements.
   c. Concrete which differs from required dimensions or location in such a manner as to reduce its strength or load carrying capacity.
   d. Inadequate protection of concrete from extremes of temperature during the early stages of hardening and strength development.
   e. Mechanical injury, construction fires, accidents, or premature removal of formwork likely to result in deficient strength development.
   f. Workmanship likely to result in deficient strength.

3. Slab Tolerance: Field quality control as specified herein.

4. Material Sources: In accordance with Section 03305.

1.06 WARRANTY

A. Repair or replace defective or damaged work at no additional cost to City.

PART 2 PRODUCTS

2.01 ACCESSORIES

A. Bonding Compound: Polyvinyl acetate or acrylic base, rewettable type.

B. Vapor Retarder: 10 mil thick clear polyethylene sheet. Type recommended for below grade application.

C. Forms: In accordance with Section 03216 and ACI 315.

D. Reinforcement: In accordance with section 03200.

E. Covering: Waterproof paper, polyethylene sheet or burlap cloth complying with AASHTO M 182, Class two.

2.02 CONCRETE SURFACE CURING COMPOUND

A. Liquid membrane, in accordance with AASHTO M-148

B. Type of Compound: Engineer to select.

1. Type 1, clear or translucent without dye.

2. Type 1-D, clear or translucent with red fugitive dye.

3. Type 2, white pigmented.

C. Class of Vehicle: Class A, no restrictions.

D. Performance Criteria of Compound: Compatible with sealing compound, if sealing compound is to be applied over concrete curing compound.

PART 3 EXECUTION

3.01 PREPARATION

A. All exposed corners shall be chamfered (3/4" x 3/4").

B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not impede placing concrete.

C. Do not allow construction loads to exceed member capacity.

D. Prepare previously placed concrete by cleaning with steel brush and applying bonding compound. Apply bonding compound in accordance with manufacturer's instructions.

E. At locations where new concrete is dowelled to existing work, drill holes in existing concrete work placed at ambient temperatures above 40 degrees F. Use of admixtures will not relax cold weather placement requirements.

F. Do not disturb reinforcement, inserts, embedded parts, and formed joints.

G. Do not break or interrupt successive pours such that cold joints occur.

H. Honeycomb or embedded debris in concrete is not acceptable.

3.02 JOINTS

A. Saw cut patterns where indicated. Saw cut control joints without raveling of the concrete. A maximum of 24 hours after pouring the concrete and prior to occurrence of any surface cracking.

3.03 CONSOLIDATION

A. In accordance with ACI 309.

B. Keep spare vibrator available during concrete placement operations.

3.04 FINISHING

A. Do not add water or retemper concrete unless Engineer's approval is secured.

B. Slab Finishing Tolerances: When tolerance is not indicated, use Straightedge Tolerance.

1. Very Flat Tolerance: True plane with maximum variation of 1/8-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

2. Flat Tolerance: True plane with maximum variation of 3/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

3. Straightedge Tolerance: True plane with maximum variation of 5/16-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

4. Bullfloated Tolerance: True plane with maximum variation of 1/2-inch in 10 feet when measured with a 10-foot straightedge placed anywhere on the slab in any direction.

C. Finishes: In accordance with Section 03345. When type of finish is not indicated, use following finishes as applicable:

1. Sidewalks, garage floors, and ramps: Broom or belt finish.

2. Exterior concrete pavement: Broom or belt finish.

3. Exterior platforms, steps, and landings, exterior and interior pedestrian ramps, not covered by other finish materials: Nonslip finish.

4. Surfaces intended to receive bonded applied cementitious applications: Scratched finish.

5. Surfaces intended to receive roofing, except future floors, waterproofing membranes, and roof surfaces which are future floors or sand bed terrazzo: Floated finish.

6. Floors and roof surfaces which are floors intended as walking surfaces or to receive floor coverings: Troweled finish.

7. Unpainted concrete surfaces not exposed to public view: Smooth as-cast form finish.

8. Unpainted concrete surfaces exposed to public view: Rubbed finish.

9. Concrete surfaces to receive paint or plaster: Grout cleaned finish.

D. Chemical Hardener: After completion of curing, apply chemical hardener in accordance with manufacturer's instructions to all interior floor slabs which are exposed in finished work and elsewhere as indicated. After final coat of chemical hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water. Do not place liquid floor hardener on floor areas scheduled to receive synthetic matrice terrazzo, or setting beds for tile, terrazzo, vinyl flooring, or like items.

3.05 CURING

A. General: Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete. Cure concrete by applying curing compound, by moisture curing, by moisture-retaining cover curing, or by combinations thereof.

B. Curing Compounds:

1. Apply curing compound to concrete slabs within 2 hours of completing final finishing operations. Apply uniformly in continuous operation. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period. Should side forms be removed before expiration of 7 days from start of curing, coat exposed surfaces with curing compound.

2. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, damproofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Engineer.

C. Moisture Curing: Provide either of the following methods.

1. Keep concrete surface continuously wet by covering with water or continuous water-fog spray.

2. Cover concrete surface with absorptive cover, thoroughly saturated with water and kept continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

3.06 SEALING

A. Seal concrete by applying a sealing compound as required by Engineer.

B. Surface Preparation: If necessary to remove curing compound, sandblast concrete surface. Clean surface free of dirt, oil, grease and other contaminants. If necessary use proprietary cleaning compounds (not raw acids) followed by thorough water rinsing. Use high pressure water equipment providing 1,200-2,000 psi to remove detergent residues. Do not attempt application when condensation is present.

C. Application: Spray with low pressure (20 psi) airless spray equipment. Saturate the surface to the point of rejection. On vertical surfaces apply 2 coats.

D. Coverage Rates: In accordance with manufacturer's recommendation.

E. Paint Adhesion: Always test to verify compatibility between sealant and other proposed surface treatments.

F. Warning: Remove inadvertent splashes before the solution has dried on the surface. If sealant is a hazardous material, allow use only by professional applicator. Three (3)- 4-inch cylinders shall be taken and a slump and air test shall be done at the beginning of concrete placement and every 50 cubic yards thereafter.

3.07 TESTS

A. Arrange for and perform all testing required for qualification of proposed materials and the establishment of mix designs, in determining strengths for early form removal, for cylinder tests after the addition of water, and other needs of Contractor.

B. Two slump tests, one before and one after the addition of super-plasticizer.

C. Three (3) standard 4-inch cylinder samples of concrete from trucks receiving water after addition of water.

3.08 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required levels, lines, details, and elevations.

B. Structural analysis and additional testing may be required at no additional cost to Owner when the strength of a structure is considered potentially deficient.

C. Where allowed, patch imperfections. Refer to Section 03345 for finish requirements.

3.09 PROTECTION AND REPAIRS

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. All concrete curbs, gutter, sidewalks, and driveways requiring removal and replacement, shall be removed and replaced to the next joint or scoring lining beyond the actually damaged or broken sections.

D. In the event that joints or scoring lines do not exist or are five or more feet from the removed or damaged section, the damaged portions shall be saw cut, removed, and reconstructed to neat, plane faces.

E. When saw cut sections are allowed for removal and replacement, use epoxied dowels in all cut planes.

F. All new concrete shall match, as nearly as possible, the appearance of adjacent concrete improvements.

G. Where necessary, lampblack or other pigments shall be added to the new concrete to obtain the desired results.

H. The concrete surface must not be damaged or pitted by rain.

I. The Contractor shall provide and use, when necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours.

J. The Contractor shall erect and maintain suitable barriers to protect the finished surface.

K. Any section damaged from traffic or other causes occurring prior to its official final acceptance shall be repaired or replaced by the Contractor at his own expense in a manner satisfactory to the City Engineer.

L. Spalling: Concrete shall not spall or show signs of spalling before the warranty expiration. All concrete with spalling shall be removed and replaced by the Contractor or Owner at his own expense. When approved by City Engineer, concrete with spalling may be repaired by an approved method. The approved method must be a five step process which includes a muriatic acid wash, pressure wash with orbital nozzle, application of approved grout & cement modifier, and application of an approved sealer. The following products are approved for use to repair spalling concrete:

1. Planicrete AC Acrylic Latex Admixture for Mortar and Concrete mixed with Planitop X One-Component Fast Setting Vertical and Overhead Repair Mortar with Planiseal WR 40 Water Based 40%-Silane Penetrating Water Repellant.
2. Duraset 1000 Modified Acrylic Resin mixed with G100 Pro-Series Grout Mix and Liquid Colorant.
3. SuperSeal 2000 Solvent Based Acrylic Sealer.

M. Damaged Sidewalk and/or Curb & Gutter shall be repaired or replaced according to the following criteria.

1. Cracks in Concrete Infrastructure
    a. Cracks in Concrete Sidewalk
        i. Single “hairline” cracks running perpendicular to the length of the sidewalk, and which do not show evidence of vertical offset or movement, do not require repair or replacement.
        ii. All other cracks in sidewalk require removal and replacement of the entire concrete section*.
    b. Cracks in Concrete Curb & Gutter

i. Single “hairline” cracks running perpendicular to the length of the curb & gutter, and which do not show evidence of vertical offset or movement, do not require repair or replacement.
ii. Single cracks running perpendicular to the length of the curb & gutter which are greater in width than a “hairline” crack, but which are less than 1/8 inch in width, shall be repaired by sealing the crack with an approved sealant following preparation including routing and cleaning.
iii. All other cracks in curb & gutter require removal and replacement of the entire concrete section*.

2. Gouges in Concrete Infrastructure (Damage to Planar Surfaces, excludes Edges/Corners)
   a. Gouges in Concrete Sidewalk or Concrete Curb & Gutter
      i. Single (or minimal) gouges up to 3 inches in length and less than ½ inch in depth, and which do not represent a safety hazard in the opinion of the inspector, do not require repair or replacement.
      ii. Single (or minimal) gouges up to 3 inches in length and less than 3 inches in depth, shall be repaired using an approved two-part epoxy patching compound.
      iii. All other gouges in sidewalk require removal and replacement of the entire concrete section*.

3. Chips to Concrete Infrastructure (Damage to Edges & Corners)
   a. Chips in Concrete Sidewalk
      i. Single (or minimal) chips up to 3 inches in length and less than 1 ½ inches in width, and which do not represent a safety hazard in the opinion of the inspector, do not require repair or replacement.
      ii. All other chips in sidewalk require removal and replacement of the entire concrete section*.
   b. Chips in Concrete Curb & Gutter
      i. Single (or minimal) chips up to 3 inches in length and less than 1 ½ inches in width, shall be repaired using an approved two-part epoxy patching compound.
      ii. All other chips in curb & gutter require removal and replacement of the entire concrete section*.

4. In addition to the information provided above, removal and replacement of the entire concrete section* is required for the following types of damage:
   a. Multiple cracks, where the cracks are less than a sidewalk width apart.
   b. Cracks that converge creating small isolated pieces of concrete.
   c. Cracks that generally run parallel to the length of the infrastructure.
   d. Cracks that circle back to the original side creating “half moon” pieces of concrete.
   e. Cracks that allow the concrete to move vertically from the adjoining piece.
   f. Excessive scaring, spalling, or scraping of the finished concrete surface.
   g. Cracks with chipping along the edge at the surface indicating settlement or movement along the crack.
   h. Any damage, which in the inspectors’ opinion, was clearly the result of negligence on the part of the builder, or damage which appears will result in failure of the sidewalk or gutter and its intended function.

   *Sections may be cut and the damaged portions removed, provided no remaining or new section(s) are less than 5 feet in length. (Cut lines are considered as section lines.)

N. Approved Products for Concrete Damage Repair:
   1. Concrete Sealant: Sikaflex® 1a or 1cSL (or approved equal)
   2. Epoxy Repair: Rezi-weld 2-Part Gel Paste (or approved equal)

3. Epoxy Repair: Quikcrete Concrete Repair No. 8620-49 (or approved equal)

Note: As an alternate to the two-part epoxy patching compound, and when approved by the City Engineer, the 5 step process and products listed for spalling repair may be used for chip and gouge repair.

O. Concrete sidewalk and curb & gutter which is defective due to settlement, uneven joints, or tripping hazards may be corrected by "Concrete Lifting" as approved by City Engineer. Concrete lifting shall conform to the following:

1. Concrete repair by lifting shall only be performed by a licensed contractor specializing in concrete lifting.

2. Concrete lifting shall be completed by drilling strategically placed holes in concrete. A grout, sand, Portland cement, and water mixture shall be used proportioned to harden without settlement and to sufficiently fill voids beneath the concrete. Foam products may also be used when approved by City Engineer. Holes shall be placed to allow for pumping the mixture under the concrete to lift the settled areas. Additional holes shall also be drilled to allow for filling voids created by the lifting procedure.

3. The proportion of Portland cement shall be a minimum of 5 percent by weight of dry mixture.

4. The use of the concrete lifting technique may be attempted to correct uneven adjoining sections of concrete or correct areas of defective drainage. If concrete lifting does not correct the defective concrete to the Engineers satisfaction, the concrete shall be removed and replaced.

3.10 PLACING CONCRETE IN COLD WEATHER

A. No concrete shall be placed where the air temperature is lower than 40 degrees Fahrenheit, at a location where the concrete cannot be covered or protected from the surrounding air.

B. When concrete is placed below a temperature of 35 degrees Fahrenheit the ingredients of the concrete shall be heated so that the temperature of the mixture shall not be less than 50 degrees or more than 100 degrees Fahrenheit.

C. Before mixing, the heated aggregates shall not exceed 175 degrees Fahrenheit.

D. Cement shall not be added while the temperature of the mixed aggregates and water is greater than 100 degrees Fahrenheit.

E. When there is likelihood of freezing during the curing period, the concrete shall be protected by means of an insulated covering to prevent freezing of the concrete for a period of not less than 7 days after placing.

F. Equipment for protecting concrete from freezing shall be available at the job site prior to placing concrete. Particular care shall be exercised to protect edges and exposed corners from freezing.

G. In the event heating is employed, care shall be taken to insure that no part of the concrete becomes dried out or is heated to temperatures above 100 degrees Fahrenheit.

H. The housing, covering, or other protection used shall remain in place and intact at least 24 hours after the artificial heating is discontinued.

I. For a period of five days the concrete shall be kept above 40 degrees F and below 100 degrees F.

END OF SECTION

SECTION 03345

CONCRETE FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Application procedure for concrete surface finishes.

1.02 PROJECT CONDITIONS

A. Allow concrete to cure not more than 72 hours before commencing surface finish operations, unless otherwise acceptable to Engineer.

B. Protect adjacent materials and finishes from dust, dirt and other surface or physical damage during finishing operations. Provide protections as required and remove from site at completion of Work.

C. For surfaces to be blast finished, perform abrasive blasting within 24 to 72 hours after casting. Coordinate with form work construction, concrete placement schedule, and form work removal to ensure that surfaces are blasted at same age for uniform results.

PART 2 EXECUTION

2.01 PATCH FINISHING

A. Repair surface defects immediately after form removal.

B. Make any patches in concrete to closely match color and texture of surrounding surfaces. Determine mix formula for patching mortar by trial and obtain a good color match with concrete when both patch and concrete are cured and dry.

1. Mix white and gray Portland cement as required to match surrounding concrete to produce grout having consistency of thick paint.
2. Use a minimum amount of mixing water.
3. Mix patching mortar in advance and allow to stand without frequent manipulation, without addition of water, until it has reached stiffest place able consistency.
4. After initial set, dress surfaces of patches manually to obtain same texture as surrounding surfaces.

C. Repair defective areas.

1. Remove honeycomb and defective concrete down to sound concrete.
2. Make edges perpendicular to surface or slightly undercut.
3. Featheredges are not permitted.
4. Dampen area to be patched and at least 6" surrounding it to prevent absorption of patching mortar water.
5. Prepare bonding grout.
6. Mix to consistency of thick cream.
7. Brush into surface.

D. After surface water has evaporated from patch area, brush bond coat into surface.

1. When bond coat begins to lose water sheen, apply patching mortar.

2. Thoroughly consolidate mortar into place and strike-off to leave patch slightly higher than surrounding surface.
3. Leave undisturbed for at least 1 hour before final finish.
4. Keep patched area damp for 72 hours or apply curing compound.
5. Do not use metal tools in finishing an exposed patch.

E. Tie Holes: Unless indicated otherwise, after being cleaned and thoroughly dampened, fill the hole solid with patching mortar.

F. Where as-cast finishes are indicated, total patched area my not exceed 1 in 500 of as-cast surface. This is in addition to form tie patches, if ties are permitted to fall within as-cast areas.

G. In any finishing process which is intended to expose aggregate on surface, patched areas must show aggregate.

1. Outer 1" of patch shall contain same aggregates as surrounding concrete.
2. For aggregate transfer finish, patching mixture shall contain same selected colored aggregates.
3. After curing, expose aggregates together with aggregates of adjoining surfaces by same process.

2.02 SLAB FINISHING

A. Broom or Belt Finish: After concrete has been placed, consolidated, struck-off, and leveled to the required tolerance, roughen surface transversely with stiff brushes, rakes, or burlap belt before final set.

B. Float Finish: After concrete has been placed, consolidated, struck-off, and leveled, do not work further until ready for floating.

1. Begin floating when water sheen has disappeared and surface has stiffness sufficient to permit operation.
2. During or after first floating, check planeness of entire surface with a 10 feet long straightedge applied at 2 or more different angles.
3. Cut down high spots and fill low spots to the required tolerance.
4. Refloat slab immediately to a uniform sandy texture.

C. Trowel Finish:

1. Float finish surface
2. Power trowel
3. Hand trowel as required to provide surface. Do not apply water to retemper concrete in finishing operations.
4. First troweling after power floating shall produce smooth surface relatively free of defects but which may still show some trowel marks.
5. Second trowel by hand after surface has hardened.
6. Leave finished surface essentially free of trowel marks, uniform in texture and appearance.
7. On surfaces intended to support floor coverings, grind off defects which would show through floor covering.

2.03 AS-CAST FORMED FINISHING

A. Rough: Patch defects, chip or rub off fins exceeding 1/4" height.

B. Smooth: Patch tie holes and defects and remove fins completely:

1. When surface texture is impaired and form joints misaligned, grind, bushhammer, or correct affected concrete as directed by Engineer.
2. Slurry grout areas evidencing minor mortar leakage to match adjacent concrete.
3. Repair major mortar leakage as a defective area.
4. When in opinion of Engineer, workmanship is less than acceptable standard, provide one of rubbed finishes at no additional cost to Owner.

2.04 RUBBED FINISHING

A. Produce following finishes on concrete with a smooth form finish.

1. Smooth Rubbed: Remove forms and perform necessary patching as soon after placement as possible.
2. Finish newly hardened concrete no later than 24 hours following form removal.
3. Wet surfaces and rub with carborundum brick or other abrasive until uniform color and texture are produced.

B. Grout Cleaned: Undertake no cleaning operations until all contiguous surfaces are completed and accessible.

1. Wet surface of concrete sufficiently to prevent absorption of water from grout.
2. Apply grout uniformly.
3. Immediately after grouting, scrub surface with cork float or stone to coat surface and fill voids.
4. While grout is still plastic, remove excess grout by working surface with rubber float or sack.
5. After-surface whitens from drying, rub vigorously with clean burlap.
6. Keep damp for at least 36 hours after final rubbing.
7. Cork Floated: Remove forms within 2 to 3 days of placement where possible.
8. Remove ties.
9. Remove all burrs and fins.
10. Dampen wall surface.
11. Apply mortar with firm rubber float or with trowel, filling all surface voids.
12. Compress mortar into voids.
13. If mortar surface dries too rapidly to permit proper compaction and finishing, apply a small amount of water with fog sprayer.
14. Produce final texture with cork float using a swirling motion.

2.05 UNFORMED FINISHING

A. After concrete is placed, strike smooth, tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces.

B. Float to texture which is reasonably consistent with formed surfaces.

C. Continue final treatment on formed surfaces uniformly across uniformed surfaces.

END OF SECTION

SECTION 16530

STREET LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior lighting and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 03310 – Concrete work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURERS

A. Holophane
B. Philips Lumec

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – Post Top Full Cutoff LED Series
Verify exact model number with City before ordering
Philips Lumec – Metroscape Full Cutoff LED Post Top
Verify exact model number with City before ordering

B. LED Performance Package: 80W to 100W Dimmable

C. Color Temperature: 3000 K CCT

D. Voltage: Auto-Sensing Voltage (120-227)

E. Housing/Trim/Covers: Modern Style – Swing Open Design, No Trim, Full Cover

F. Finish, Trim and/or Final Finish: Black

G. Optics: Asymmetric Lunar Optic - IES Type III

H. Finial: Standard

I. Prewired Leads: 25 feet prewired leads

J. Photocontrol: Long Life DTL Twistlock Photocontrol For Solid-State

K. Receptacle: Dimming Receptacle – 7 PIN

L. Mounting Condition: Concrete base with J bolts.

M. Pole: As required in this schedule.

2.03 POLES

A. Pole: Salem Aluminum Pole (SMA 14 F4J 13 P07 ABG BK)

B. Height: 14 feet

C. Shaft Style: F4J 4 inch diameter Fluted, 0.25 wall

D. Material: Aluminum or Concrete, non-direct burial type

E. Color/Finish: Powder Coat Paint Finish, Black

F. Shape: Fluted or smooth with 3’-8.5” high decorative bottom piece

G. Base: 13 inch Square Base, Base Weight 60, Base EPA 3.7880625

H. Anchor Bolt: AB-26-4

I. Loading Capacity Ratings:
1. 100 Pounds.
2. Steady Wind: 90 MPH minimum.

2.04 CONDUIT

A. One inch PVC scheduled 90 electrical (gray) conduit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide concrete bases for lighting poles at intersections and cul-de-sac's or as shown on the plans. All concrete shall be a minimum of 4 foot below finished grade.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each light after installation and connection. Inspect for proper connections and operation.

B. Test photo-electric for cell operation.

3.03 ADJUSTING

A. Adjust light to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISHED WORK

A. Re-lamp lights which have failed Final Completion.

END OF SECTION

SECTION 16532

COMMERCIAL BUSINESS STREET LIGHTING (HISTORIC)

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior luminaries and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 003310 – Concrete Work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. IES RP 20-Lighting for Parking Facilities.

D. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURERS

A. Holophane
B. Mountain States Lighting

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – Utility Washington Series Luminaire Full Cutoff LED2 (WFCL2). Verify exact model number with the City before ordering.

B. L.E.D. Performance Package: 11,500 Nominal Lumens

C. Color Temperature: 3000 K CCT

D. Voltage: Auto-Sensing Voltage (120-227)

E. Optics: Type 3 Distribution – Full Cutoff

F. Housing Color: Black

G. Finial: None

H. Pre-Wired Leads: 25 feet pre-wired leads.

I. Photo Control: NEMA Twistlock Photocontrol Receptacle – 7 PIN. Externally mounted.

J. Other Required Options: Field Adjustable Output, Shorting Cap

K. Mounting Condition: Concrete base with J-bolts.

L. Pole: As required in this schedule.

2.03 POLE REQUIREMENTS

A. Pole: Mountain States Lighting (#14.5TFS-6.5/4.5-11GA-16S-TT3.5X4
Steven Sales Company (FL210-D672A146-TENON-FP-AB) with Twin Arm Assembly

B. Height: 14.6 feet to Banner Arm (See Standard Drawing STREETS-13)

C. Shaft Style: Round Fluted, Tapered Diameter 6.5-inch to 4.5-inch.

D. Material: Aluminum or Steel, non-direct burial type.

E. Color/Finish: Powder Coat Paint Finish, Black.

F. Shape: Fluted with decorative base and double-banner arm.

G. Decorative Base: 20-inch Washington-Style High-Density Elastomer, or Aluminum Clam Shell Base (black).

H. Loading Capacity Ratings:
1. 100 pounds.
2. Steady Wind: 90 mph min.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pole to be direct burial at locations indicated. Auger hole without disrupting the soil below butt of the pole. Do not dig pole hole with a backhoe, to minimize disruption of firm soil. Fill with sand around pole, tamped regularly while backfilling.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for proper connections and operation.

B. Test for photo-electric cell operation.

3.03 ADJUSTING

A. Adjust luminaries to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISH WORK

A. Relamp luminaries which have failed work at substantial completion.

3.06 LIGHTING LOCATION

A. Install at locations as indicated on the plans or as otherwise approved by the City Engineer.

END OF SECTION

SECTION 16533

NORTH VILLAGE ZONE LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior lighting and accessories.

B. Poles.

1.02 RELATED SECTIONS

A. Section 03310 – Concrete work.

1.03 REFERENCES

A. ANSI C78.379 – Electric Lamps – High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.

B. IES RP-8 – Recommended Practices for Roadway Lighting.

C. NFPA 70-National Electrical Code.

1.04 SUBMITTALS FOR REVIEW

A. Shop drawings: Indicate dimensions and components for each luminaire.

B. Product Data: Provide dimensions, ratings, manufacturer, type, model and performance data.

C. Test Reports: Indicate measured illumination levels.

D. Submit manufacturer's installation instructions.

1.05 COORDINATION

A. Coordinate with electrical contractor.

B. Coordination with City and Heber Light & Power to verify location and connection of fixtures.

C. Receive approval by Civil Engineer for pole foundation.

D. Furnish bolt templates and pole mounting accessories to installer / contractor of pole foundations.

PART 2 APPROVED PRODUCTS

2.01 MANUFACTURES

A. Holophane
B. Luminis

2.02 FIXTURE REQUIREMENTS

A. Model: Holophane – GlasWerks Luminescent LED Hallbrook (GSLF3)
Verify exact model number with City before ordering

B. LED Lumen Package: P40 Performance Package

C. Color Temperature: 3000 K, 70 CRI

D. Voltage: MVOLT 120-227V

E. Optics: Asymmetric

F. Mounting Style: Quick Stem Mount

G. Finish Color: Black

H. Prewired Leads: 25 feet prewired leads

I. Photocontrol: 7 PIN NEMA Photocontrol Receptacle

J. Arm: Holophane HCA 36IN 1A BO SSA QSM BK RFD331152

K. Pole: As required in this schedule.

2.03 POLES

A. Pole: Luminis – BVP616XM6554

B. Height: 16 feet (Cap to Base)

C. Shaft Style: Square 6” x 6”

D. Material: Aluminum, non-direct burial type

E. Color/Finish: Polyester Powder-Baked Coating
5-Stage Bath Preparation Process
Luminis Heber City Faux Wood Finish
UV-Stabilized Durable Scratch & Fade Resistant Finish

F. Base: Aluminum Decorative Cover Plates & Base (Match Holophane Support Arm)

G. Cap: Decorative Top Cover Plates & Base (Match Holophane Support Arm)

H. Receptacle: NEMA C136.41 &-PIN Receptacle with Shorting Cap Pre-Installed in pole cap

2.04 CONDUIT

A. One inch PVC scheduled 90 electrical (gray) conduit.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide concrete bases for lighting poles at intersections and cul-de-sac’s or as shown on the plans. All concrete shall be a minimum of 4 foot below finished grade.

B. Install poles plumb. Provide shims and double nuts to adjust to plumb.

C. Install all components according to manufacturer recommendations.

D. Install conduit and secondary boxes according to Heber Light and Power specifications.

3.02 FIELD QUALITY CONTROL

A. Operate each light after installation and connection. Inspect for proper connections and operation.

B. Test photo-electric for cell operation.

3.03 ADJUSTING

A. Adjust light to provide illumination levels and distribution as directed.

B. Adjust photo-electric cell to operate correctly.

3.04 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photo-cell surface as recommended by the manufacturer.

D. Clean finish and touch up damage.

3.05 PROTECTION OF FINISHED WORK

A. Re-lamp lights which have failed Final Completion.

END OF SECTION

STANDARD DRAWINGS
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Note: In some instances, alternative products are accepted. See the Appendix for alternative products.

Drawing No.	Last Rev.	Drawing Name
IRR-1A	09/23	Irrigation Service – Two Lots
IRR-1B	09/23	Irrigation Service – One Lot
SEWER-1	09/23	Sewer Lateral & Details
SEWER-2	01/25~~03/17~~	Manhole Ring and Cover
SEWER-3	09/23	Junction & Drop Manholes
SEWER-4	03/17	Fabricated Sewer Lateral
SEWER-5	09/23	Pre-cast Concrete Sewer Manhole
SEWER-6	02/19	Grease Interceptor
DRAIN-1	08/23	Curb Drop Inlet Standard Box
DRAIN-2	03/17	Grate & Frame
DRAIN-3	09/23	Sump Disposal & Oil Separator
DRAIN-4	03/17	Curb Inlet Box – Open Face
STREETS-1	09/23	Major & Minor Residential Local
STREETS-2A	01/25~~06/20~~	Minor Collector
STREETS-2B	09/23	No Access Mountain Collector
STREETS-3A	01/25~~06/20~~	Historic Business Core
STREETS-3B	01/25~~06/20~~	Historic Business Core Major Intersection
STREETS-4	01/25~~09/23~~	Sidewalk, High Back Curb & Cross Gutter
STREETS-5A	01/25~~09/23~~	Perpendicular Curb Ramps~~Corner Pedestrian Ramps~~
STREETS-5B	01/25	Perpendicular Curb Ramps
STREETS-5C	01/25	Corner Pedestrian Ramps
STREETS-6	01/25~~06/21~~	Mid-Block Pedestrian Ramps
STREETS-7	01/25~~09/23~~	Residential Driveway Approach
STREETS-8	01/25~~09/23~~	Commercial Driveway Approach
STREETS-9	03/18	Cul-De-Sac
STREETS-10	02/19	Signs
STREETS-11	03/17	Survey Monuments
STREETS-12	06/21	Street Lighting
STREETS-13	06/21	Commercial Historic Street Lighting
STREETS-14	01/25~~09/23~~	Trail Lighting
STREETS-15	09/23	North Village Lighting
STREETS-16	09/23	Residential Road Shoulder without Curb and Gutter
STREETS-17	01/25	Concrete Trail
UTIL-1	01/25~~09/23~~	Utility Installation Trench Detail
UTIL-2	09/23	Standard Street Intersection & Utility Location
UTIL-3	03/17	Laterals & Utility Location
UTIL-4	03/17	Utility Concrete Collar
UTIL-5	09/23	Utility Pothole Repair
UTIL-6	09/23	Telecommunications & Power Shared Trench
WATER-1	01/25~~04/22~~	Fire Hydrants

WATER-2	06/21	Typical Pipe Thrust Blocking
WATER-3	04/22	Valve Boxes & Collars
WATER-4	03/17	1" Service Trench
WATER-5	03/17	Tracer Wire Installation
WATER-6A	09/23	Water Service – Two Lots
WATER-6B	09/23	Water Service – Single Lot
WATER-7	01/25~~03/17~~	Air Vac Release Station
WATER-8	04/22	Temporary & Permanent Blowoff Flush Valve

APPENDIX A

HEBER CITY APPROVED EQUIVALENTS

The following is a list of pre-approved equivalents to be used in conjunction with the Heber City Standard Specifications and Drawings. These items may be used without prior approval from the City Engineer or Public Works Director. Any other requests for consideration as equivalents which differ from the Heber City Standard Specifications and Drawing will need to be submitted to and approved by the City Engineer and/or Public Works Director.

IRRIGATION

Irrigation Service – One Lot 1" Service:

McDonald:

- 1" McDonald 18" Pit Part # E-5-12940
- Insulation Pad Part # 90-C1 18x4

Mueller:

- 1" Single-Service Irrigation Box Part # 330IS1818FABS000296N

Ford:

- 1" Ford 18" Pit Part # PK488-18-~~C16819-002-NL~~95059-024-NL
- Insulation Pad Part # CCID-18-4 Closed-Cell Foam Disc

Lids:

- ~~—~~DFW Part #DFW18MUE-1~~I~~MBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

Irrigation Service – Two Lots

Ford:

- 1 ½ x (2) 1" Ford Dual Meter Pit Part # PKD411-24C-C16050-004-NL
- Insulation Pad Part # CCID-24 Closed Cell Foam Disc
- Lid Adapter Ring Ford Drawing #C17109-001

Mueller:

- 1" Single-Service Irrigation Box Part # 330ID2718FAB000650/700098-1

Lids:

- DFW Part #DFW18MUE-IMBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

CULINARY WATER

1” Culinary Water Service

Ford:

- Meter Pit Part # PFCBHC-488-18-60-R-NL~~PFCBHH60-C16819-001-NL~~ 1” x 60” Ford 18” coil meter pit with reduced port valves
- Insulation Disc Ford Part # CCID-18-4 Closed Cell Foam Disc
- Adjustable Curb Box Ford Part # EM2-50-46-42R with inner rod

Mueller:

- 1” Single-Service Box Part # 330CS1860RSBS000390N

Lids:

- DFW Part # 18MUE-1~~I~~MBF_Small_Water Lid
- ~~Nicor Part # 18.75 LLBLKWATthDLTE~~

Fire Hydrants:

- 6” Waterous WB-67-250
- Clow Medallion
- Mueller Super Centurion 250 cast-iron
- Mueller Super Centurion 350 cast-iron

BRASS PARTS AND SADDLES

Corporation Stops

Both Iron Pipe thread and CC thread will be accepted.

Ford:

- Corp Stop Valve Part # FB1100-4-Q-NL

Mueller:

- Corp Stop Valve Part # B-25028-N

Curb Box and Stops

Ford:

- Curb Stop Valve Part # B84-444M-Q-NL
- Curb Box Part # EM2-50-46-42R

Saddles

These alternatives are for 10” or larger pipe size and/or if higher pressure ratings are needed than the standard Romac 305 and 306 stainless saddles can accommodate.

Ford:

- Saddle Part # 202BS

Mueller:

- Saddle Part # B2RS

END OF SECTION

STANDARD DRAWINGS
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SEWER-2	01/25~~03/17~~	Manhole Ring and Cover
SEWER-3	09/23	Junction & Drop Manholes
SEWER-4	03/17	Fabricated Sewer Lateral
SEWER-5	09/23	Pre-cast Concrete Sewer Manhole
SEWER-6	02/19	Grease Interceptor
DRAIN-1	08/23	Curb Drop Inlet Standard Box
DRAIN-2	03/17	Grate & Frame
DRAIN-3	09/23	Sump Disposal & Oil Separator
DRAIN-4	03/17	Curb Inlet Box – Open Face
STREETS-1	09/23	Major & Minor Residential Local
STREETS-2A	01/25~~06/20~~	Minor Collector
STREETS-2B	09/23	No Access Mountain Collector
STREETS-3A	01/25~~06/20~~	Historic Business Core
STREETS-3B	01/25~~06/20~~	Historic Business Core Major Intersection
STREETS-4	01/25~~09/23~~	Sidewalk, High Back Curb & Cross Gutter
STREETS-5A	01/25~~09/23~~	Perpendicular Curb Ramps~~Corner Pedestrian Ramps~~
STREETS-5B	01/25	Perpendicular Curb Ramps
STREETS-5C	01/25	Corner Pedestrian Ramps
STREETS-6	01/25~~06/21~~	Mid-Block Pedestrian Ramps
STREETS-7	01/25~~09/23~~	Residential Driveway Approach
STREETS-8	01/25~~09/23~~	Commercial Driveway Approach
STREETS-9	03/18	Cul-De-Sac
STREETS-10	02/19	Signs
STREETS-11	03/17	Survey Monuments
STREETS-12	06/21	Street Lighting
STREETS-13	06/21	Commercial Historic Street Lighting
STREETS-14	01/25~~09/23~~	Trail Lighting
STREETS-15	09/23	North Village Lighting
STREETS-16	09/23	Residential Road Shoulder without Curb and Gutter
STREETS-17	01/25	Concrete Trail
UTIL-1	01/25~~09/23~~	Utility Installation Trench Detail
UTIL-2	09/23	Standard Street Intersection & Utility Location
UTIL-3	03/17	Laterals & Utility Location
UTIL-4	03/17	Utility Concrete Collar
UTIL-5	09/23	Utility Pothole Repair
UTIL-6	09/23	Telecommunications & Power Shared Trench
WATER-1	01/25~~04/22~~	Fire Hydrants

WATER-2	06/21	Typical Pipe Thrust Blocking
WATER-3	04/22	Valve Boxes & Collars
WATER-4	03/17	1" Service Trench
WATER-5	03/17	Tracer Wire Installation
WATER-6A	09/23	Water Service – Two Lots
WATER-6B	09/23	Water Service – Single Lot
WATER-7	01/25~~03/17~~	Air Vac Release Station
WATER-8	04/22	Temporary & Permanent Blowoff Flush Valve

APPENDIX A

HEBER CITY APPROVED EQUIVALENTS

The following is a list of pre-approved equivalents to be used in conjunction with the Heber City Standard Specifications and Drawings. These items may be used without prior approval from the City Engineer or Public Works Director. Any other requests for consideration as equivalents which differ from the Heber City Standard Specifications and Drawing will need to be submitted to and approved by the City Engineer and/or Public Works Director.

IRRIGATION

Irrigation Service – One Lot 1" Service:

McDonald:

- 1" McDonald 18" Pit Part # E-5-12940
- Insulation Pad Part # 90-C1 18x4

Mueller:

- 1" Single-Service Irrigation Box Part # 330IS1818FABS000296N

Ford:

- 1" Ford 18" Pit Part # PK488-18-~~C16819-002-NL~~95059-024-NL
- Insulation Pad Part # CCID-18-4 Closed-Cell Foam Disc

Lids:

- ~~—~~DFW Part #DFW18MUE-1~~I~~MBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

Irrigation Service – Two Lots

Ford:

- 1 ½ x (2) 1" Ford Dual Meter Pit Part # PKD411-24C-C16050-004-NL
- Insulation Pad Part # CCID-24 Closed Cell Foam Disc
- Lid Adapter Ring Ford Drawing #C17109-001

Mueller:

- 1" Single-Service Irrigation Box Part # 330ID2718FAB000650/700098-1

Lids:

- DFW Part #DFW18MUE-IMBF2_Small_IRR
- ~~Nicor Part # 18.75LLBLKIRRZthOLTE~~

CULINARY WATER

1” Culinary Water Service

Ford:

- Meter Pit Part # PFCBHC-488-18-60-R-NL~~PFCBHH60-C16819-001-NL~~ 1” x 60” Ford 18” coil meter pit with reduced port valves
- Insulation Disc Ford Part # CCID-18-4 Closed Cell Foam Disc
- Adjustable Curb Box Ford Part # EM2-50-46-42R with inner rod

Mueller:

- 1” Single-Service Box Part # 330CS1860RSBS000390N

Lids:

- DFW Part # 18MUE-1~~I~~MBF_Small_Water Lid
- ~~Nicor Part # 18.75 LLBLKWATthDLTE~~

Fire Hydrants:

- 6” Waterous WB-67-250
- Clow Medallion
- Mueller Super Centurion 250 cast-iron
- Mueller Super Centurion 350 cast-iron

BRASS PARTS AND SADDLES

Corporation Stops

Both Iron Pipe thread and CC thread will be accepted.

Ford:

- Corp Stop Valve Part # FB1100-4-Q-NL

Mueller:

- Corp Stop Valve Part # B-25028-N

Curb Box and Stops

Ford:

- Curb Stop Valve Part # B84-444M-Q-NL
- Curb Box Part # EM2-50-46-42R

Saddles

These alternatives are for 10” or larger pipe size and/or if higher pressure ratings are needed than the standard Romac 305 and 306 stainless saddles can accommodate.

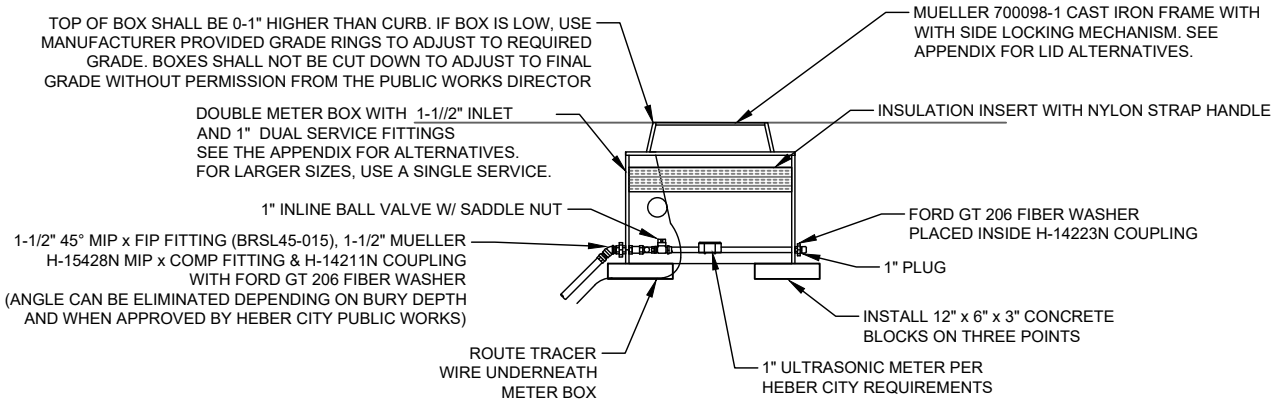
Ford:

- Saddle Part # 202BS

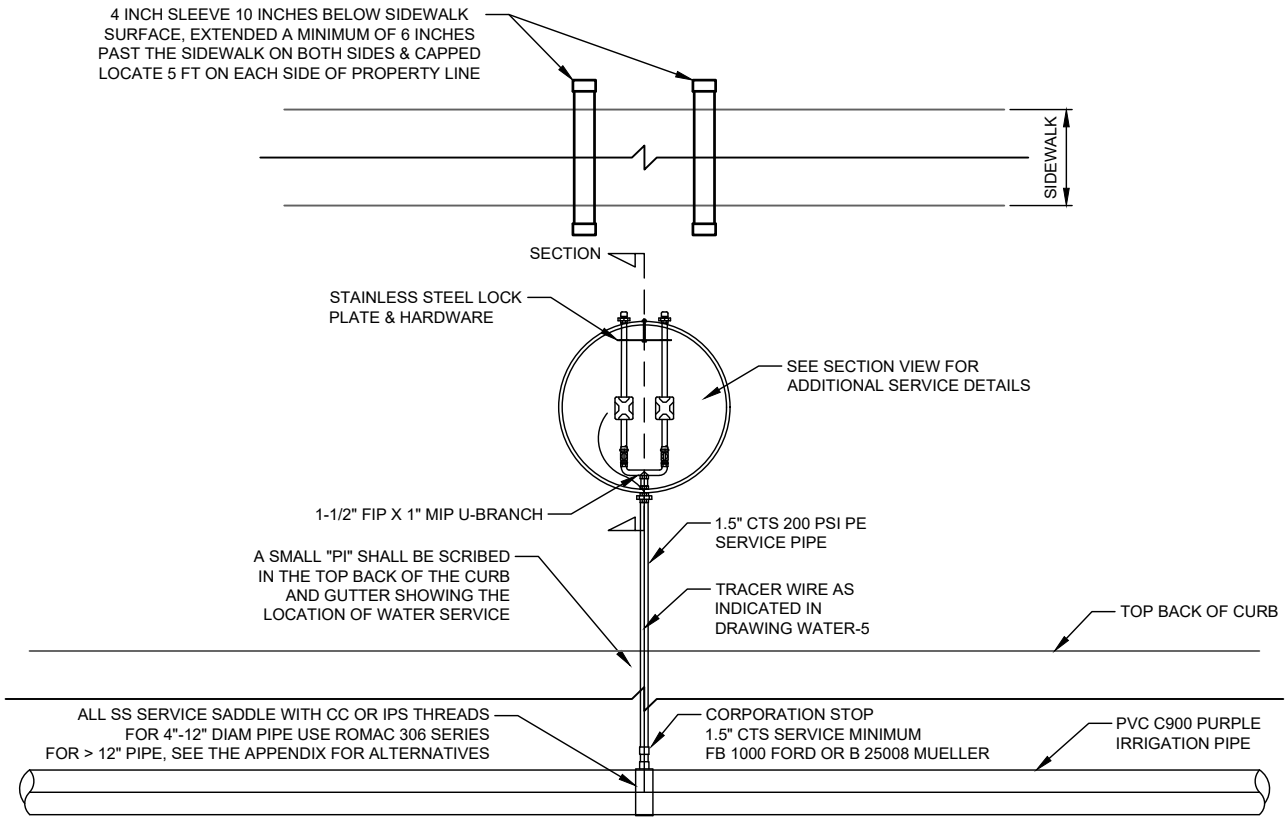
Mueller:

- Saddle Part # B2RS

END OF SECTION



SECTION VIEW



NOTES:

1. ALL COMPONENTS SHOWN TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. ALL BOXES SHALL BE EQUIPPED WITH UNIONS.
3. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
4. METER BOXES ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
5. WHEN METER BOXES ARE INSTALLED WITHIN DRIVEWAY ZONES OR WITHIN OTHER PAVED SURFACES, DIFFERENT TRAFFIC RATED LIDS & FRAMES MAY BE REQUIRED PER THE DIRECTION OF THE PUBLIC WORKS DIRECTOR.
6. IRRIGATION METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER. 4" SLEEVE REQUIRED ON ALL INSTALLATIONS INCLUDING EXISTING SIDEWALK.
7. IRRIGATION SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF OF SERVICE LINES.
8. METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. BEDDING OF ALL PIPE SHALL CONFORM TO HEBER CITY BEDDING STANDARDS FOR CULINARY WATER.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.

HEBER CITY
HEART OF THE WASATCH BACK
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(435) 654-0757

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IRRIGATION SERVICE - TWO LOTS

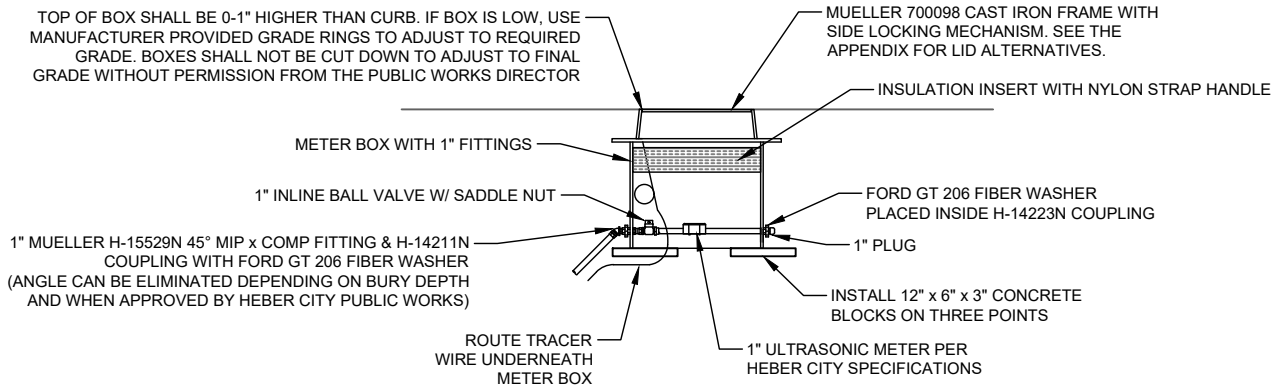
IRR-1A

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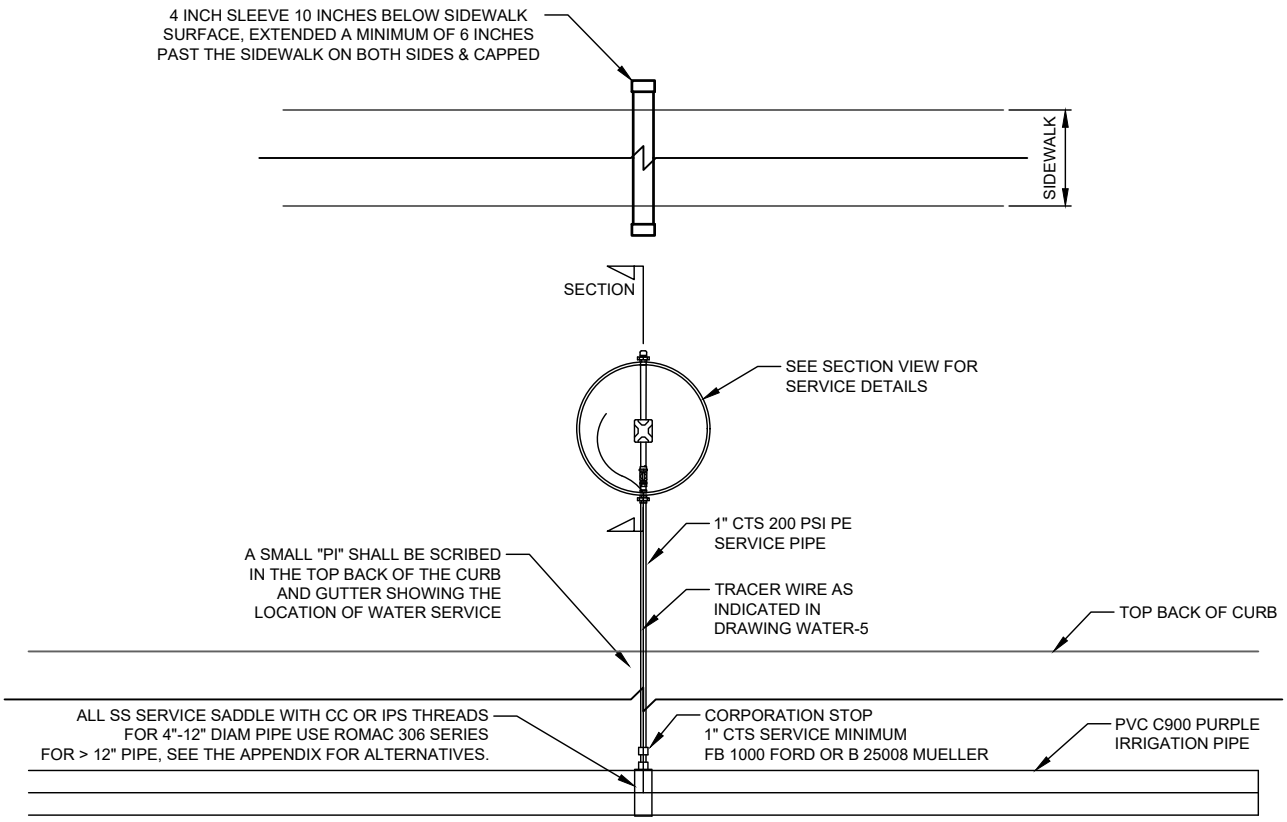
TABLE 1			
SERVICE LINE SIZE	MIN. BOX SIZE	BOX MODEL	LID / FRAME MODEL
1" MINIMUM	18" x 18"	SEE APPENDIX FOR ALTERNTIVES	SEE APPENDIX FOR ALTERNATIVES
1.5"	27" x 24"	500IS2724FAB000666N	DFW18MR-1BF1 SML IRR / 700098-1
2"	36" x 36"	550IS3636FAB000666N	SAME AS ABOVE w/ 790138 EXP RING

NOTE 1: FOR LARGER SIZES CONTACT PUBLIC WORKS FOR REQUIREMENTS.

NOTE 2: SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.



SECTION VIEW



NOTES:

1. ALL COMPONENTS SHOWN TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
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7. IRRIGATION SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF OF SERVICE LINES.
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10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23

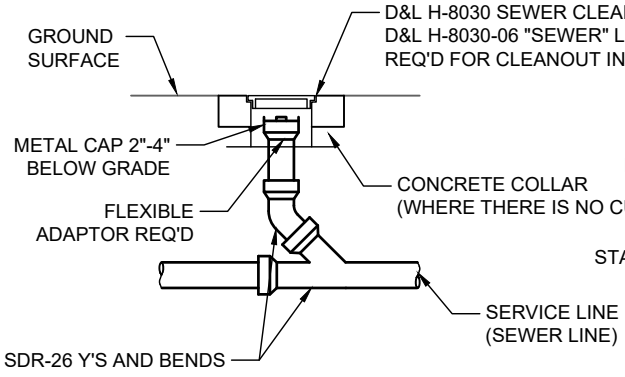
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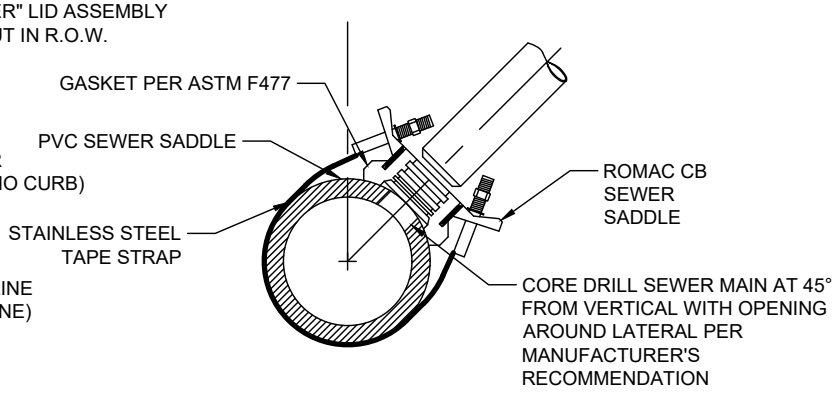
IRRIGATON SERVICE - ONE LOT

IRR-1B

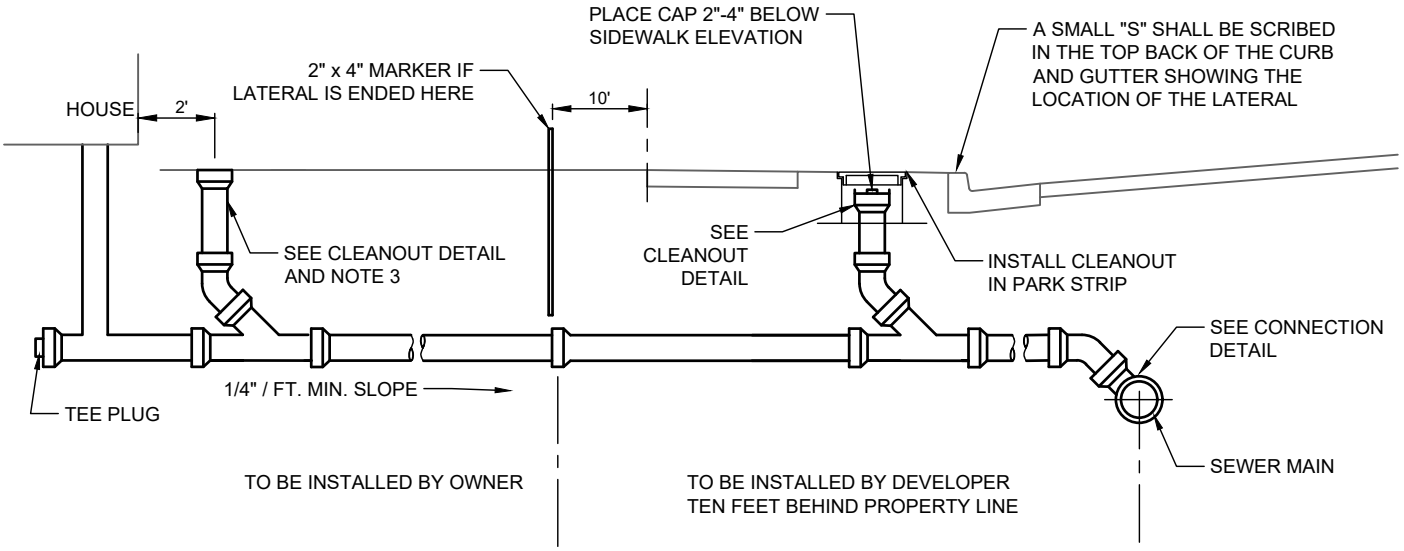
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CLEANOUT DETAIL



CONNECTION DETAIL
ON EXISTING MAIN LINES
(SEE NOTE 6)



NOTES:

1. PIPE GRAPHICS DO NOT NECESSARILY INDICATE TYPE OF PIPE TO BE USED.
2. ALL PVC SEWER LATERAL PIPE AND FITTINGS WITHIN THE R.O.W. SHALL BE A MINIMUM OF SDR-26.
3. MAXIMUM SPACING BETWEEN CLEANOUTS IS 100' AND AT ALL BENDS.
4. MAXIMUM ALLOWED BEND IN LATERAL IS 22 1/2 DEGREES.
5. SEWER & WATER LATERALS ARE PROHIBITED IN COMMON TRENCH PER STATE CODE R 309-550-7.
6. "INSERTA TEE" MAY BE USED FOR CERTAIN CONDITIONS WITH PRIOR CITY ENGINEER APPROVAL.
7. WHEN APPROVED, "INSERTA TEE" INSTALLATION MUST BE WITNESSED, INSPECTED AND CERTIFIED BY AUTHORIZED CITY AGENTS
8. IN CERTAIN AREAS WHERE CONCERN FOR SEWER BACKUP EXISTS, A SEWER BACKFLOW PREVENTER (RECTORSEAL 97034) SHALL BE REQUIRED.
9. PIPE SLOPE SHALL BE 1/4" / FT MIN.

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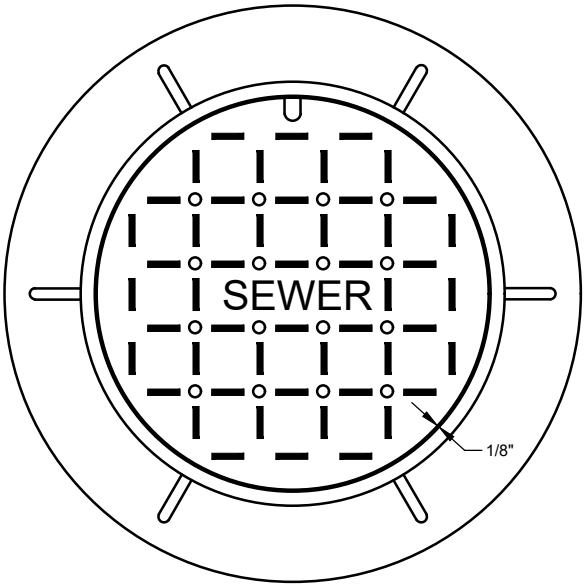
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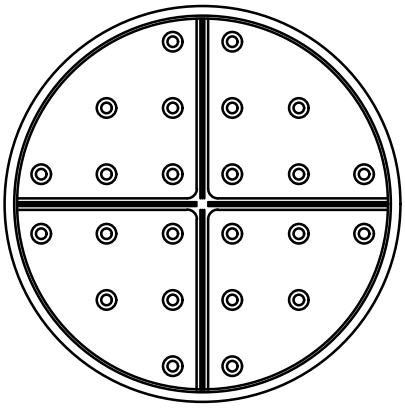
SEWER LATERAL & DETAILS

SEWER-1

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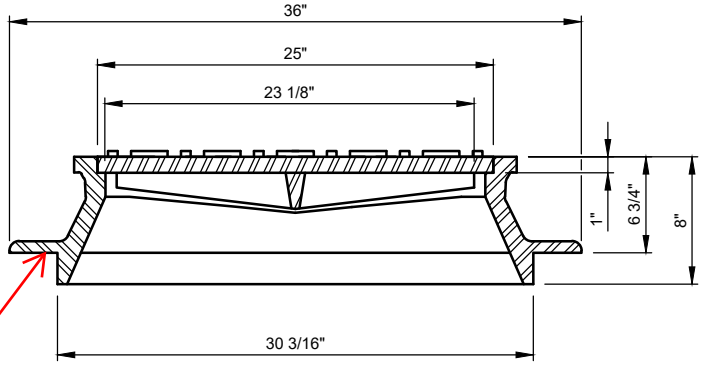


PLAN OF COVER AND RING



BOTTOM VIEW OF COVER

D&L SUPPLY #A-1180 HEAVY DUTY, 400 LB. MINIMUM



SECTION

Added Additional Dimensions to match called out ring and lid.

HEBER CITY
HEART OF THE WASATCH BACK

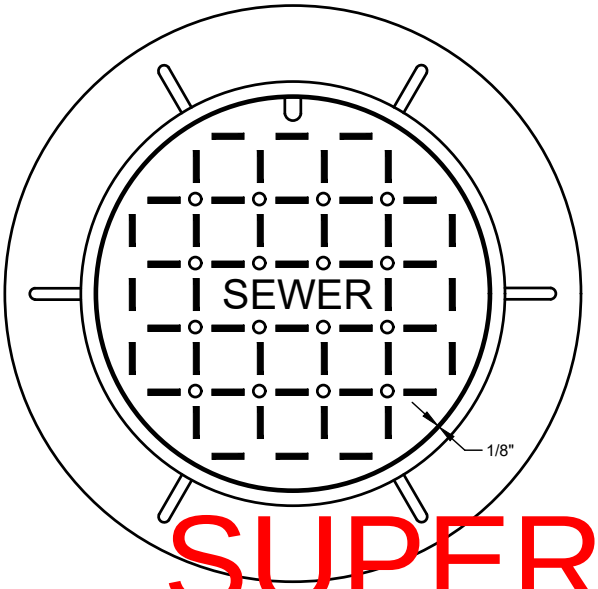
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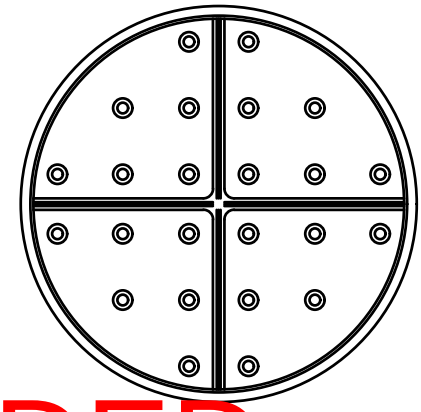
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MANHOLE RING & COVER

SEWER-2

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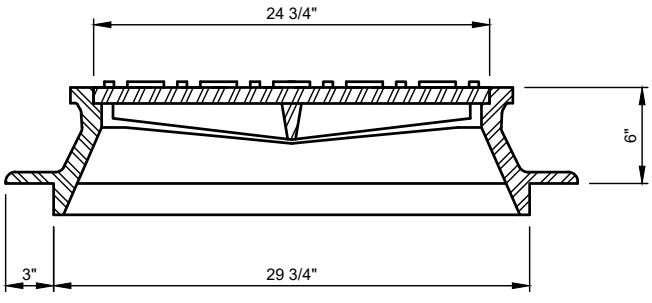


SUPERSEDED

PLAN OF COVER AND RING

BOTTOM VIEW OF COVER

D&L SUPPLY #A-1180 HEAVY DUTY, 400 LB. MINIMUM



SECTION

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

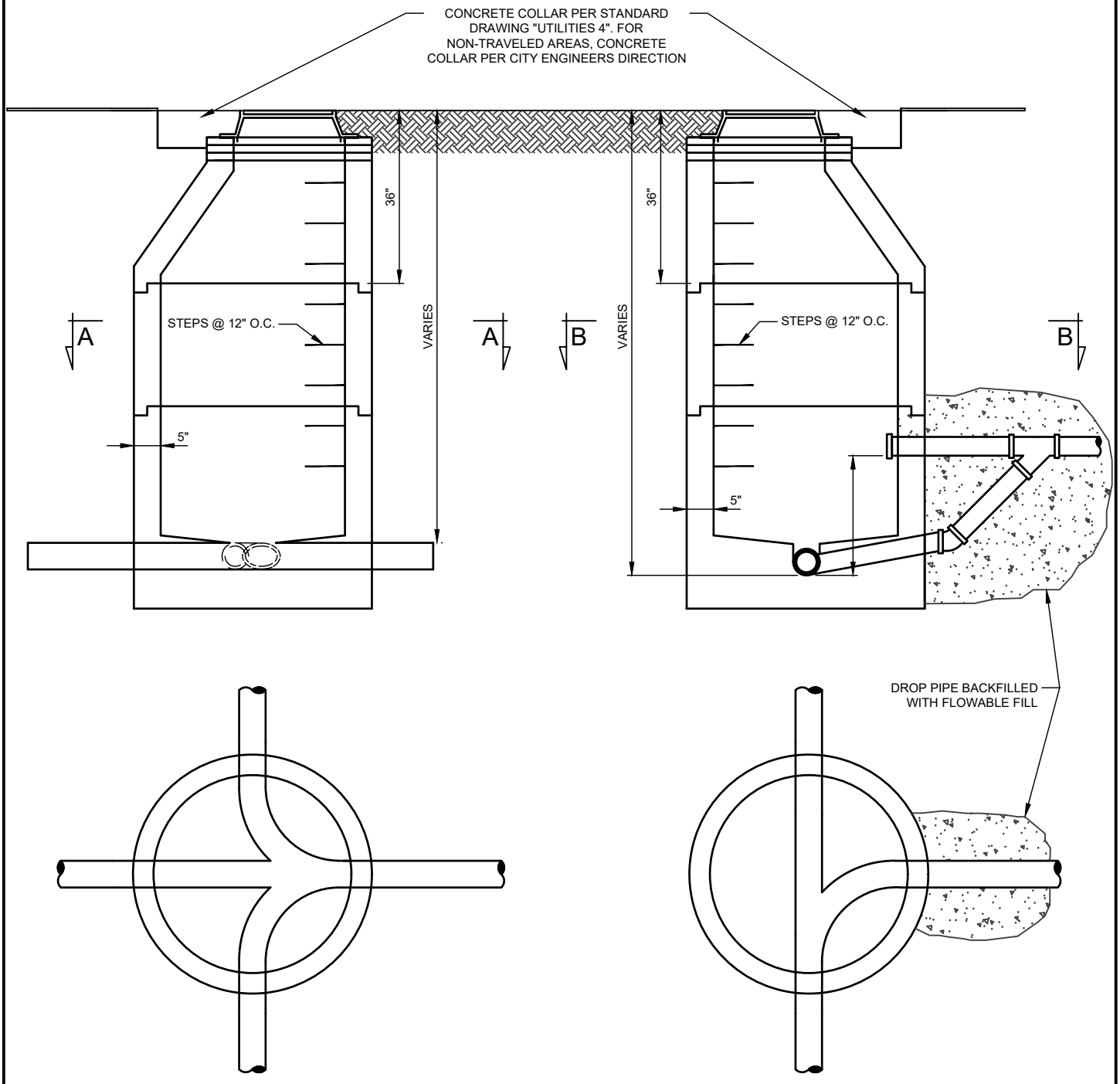
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MANHOLE RING & COVER

SEWER-2

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SECTION A-A

SECTION B-B

JUNCTION MANHOLE

DROP MANHOLE

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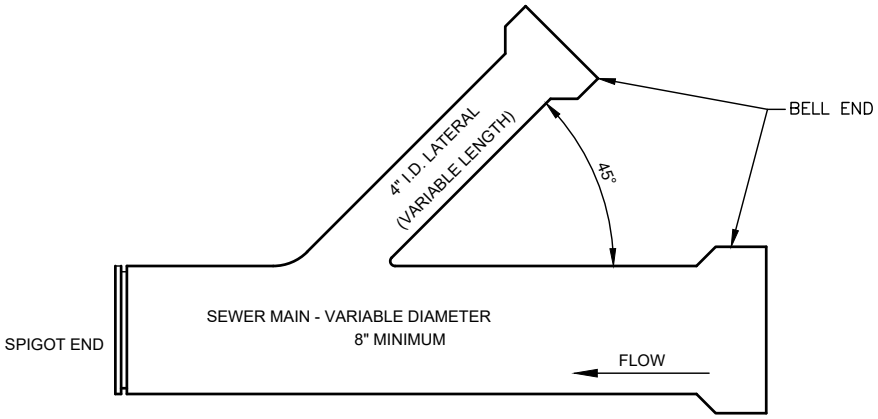
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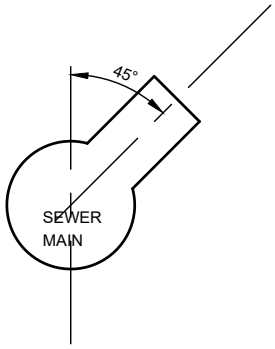
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JUNCTION & DROP MANHOLES

SEWER-3





INSTALLATION END VIEW

REQUIRED ON ALL NEW SEWER MAIN CONSTRUCTION

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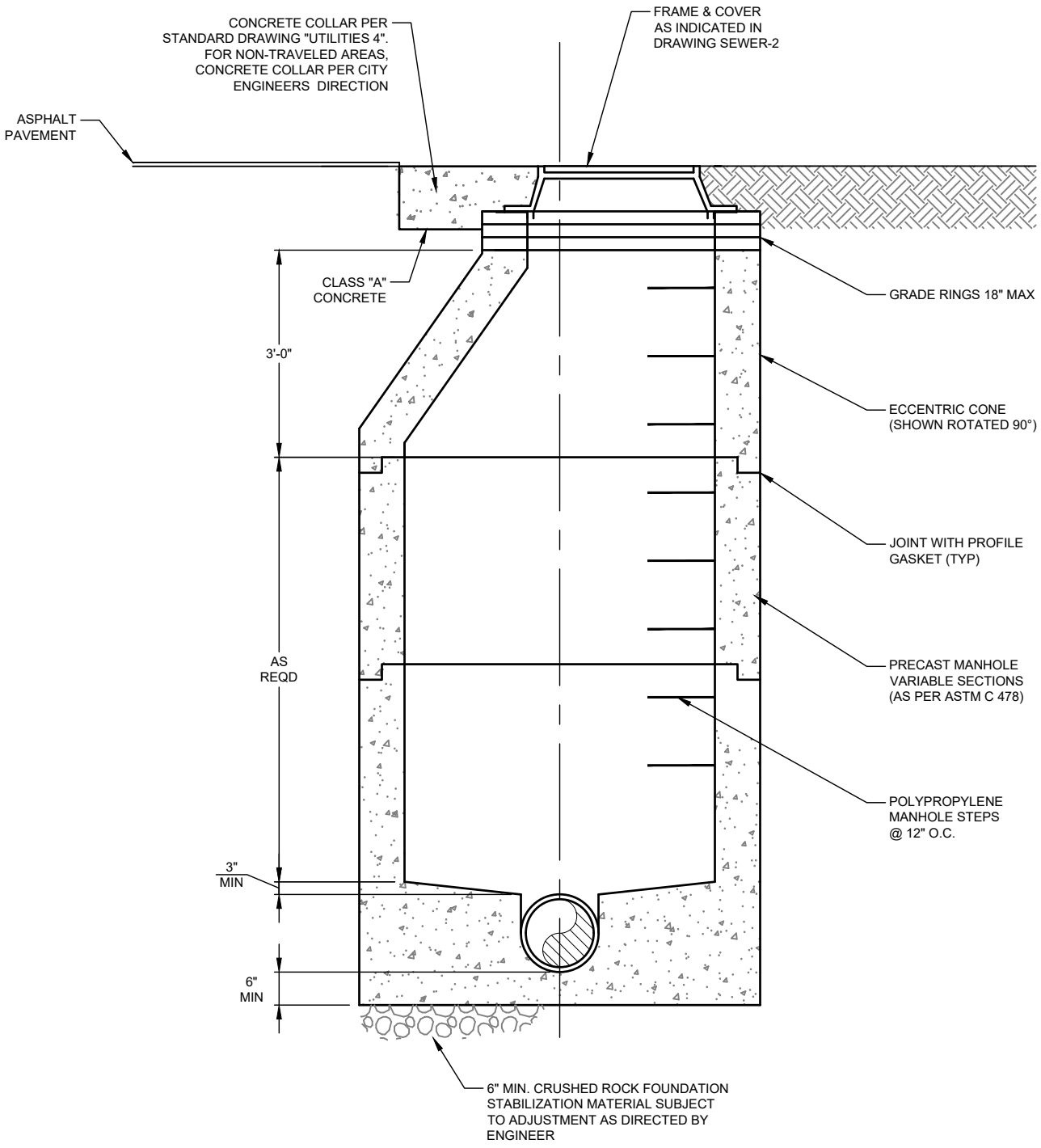
DATE: 03/17

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FABRICATED SEWER LATERAL

SEWER-4



NOTES:

1. LOCATE MANHOLE COVER ON SIDE OF MANHOLE AS SHOWN ABOVE. SET MANHOLE FRAME IN GROUT.
2. ALL MANHOLES TO BE WATER TIGHT AND TESTED AS PER STD. SPEC. 02660.
3. MANHOLE BASE AND 1ST SECTION OF MANHOLE TO BE FABRICATED AS AN INTEGRAL UNIT.

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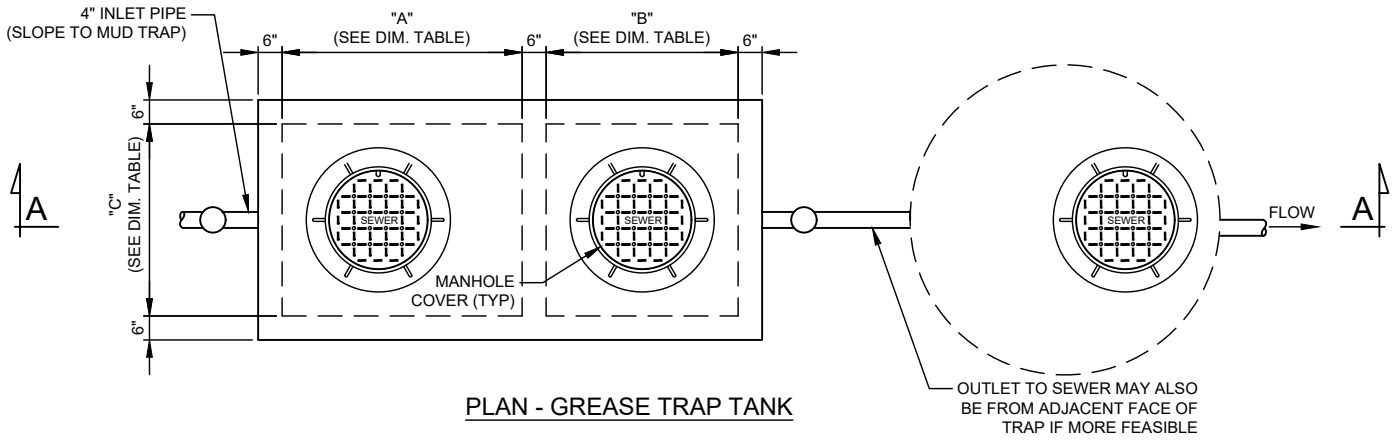
HEBER CITY
HEART OF THE WASATCH BACK

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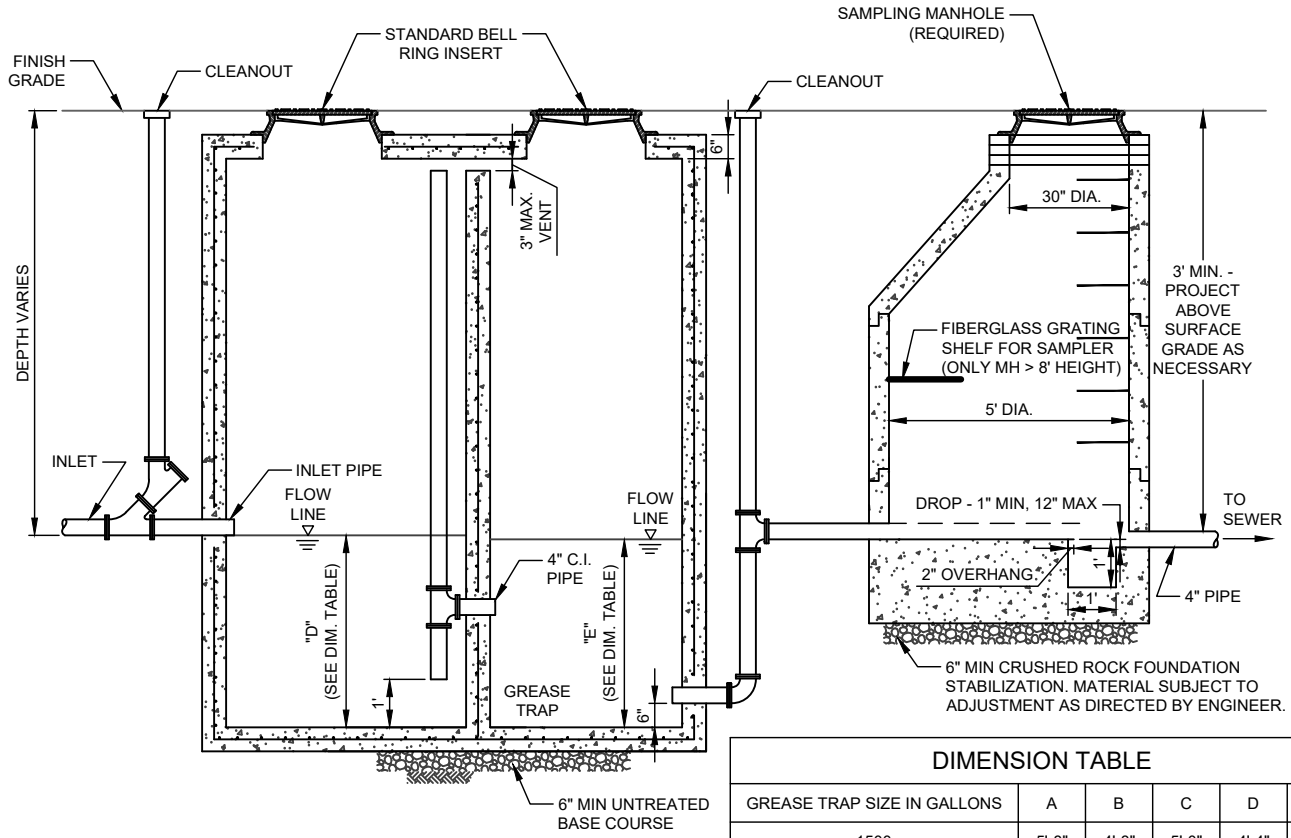
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PRE-CAST CONCRETE SEWER MANHOLE

SEWER-5



PLAN - GREASE TRAP TANK



SECTION A-A
GREASE TRAP TANK

DIMENSION TABLE					
GREASE TRAP SIZE IN GALLONS	A	B	C	D	E
1500	5'-8"	4'-8"	5'-0"	4'-4"	4'-0"
1000	5'-0"	4'-0"	4'-0"	4'-0"	3'-11"
750	3'-1"	3'-1"	4'-0"	4'-2"	3'-10"

NOTES:
1. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
2. REINFORCING STEEL SHALL BE ASTW A615 GRADE 60.
3. THE CONCRETE COVER OVER THE REINFORCING STEEL SHALL BE A MINIMUM OF 1½ INCHES.
4. THE STRUCTURE SHALL BE DESIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF UTAH.
5. THE STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LOADING CRITERIA:
   A. WALLS DESIGNED FOR A SATURATED EQUIVALENT FLUID AT-REST SOIL PRESSURE OF 120 PCF PLUS TRUCK SURCHARGE.
   B. TRUCK LOADING USING AN AASHTO H-20 TRUCK LOAD.
6. THE MANWAY FRAME AND COVER SHALL BE A TRAFFIC TYPE CASTING FOR H-20 TRUCK LOAD.
7. WHERE THE SEWER LINE ALREADY EXISTS, THE SEWER INVERT INTO AND OUT OF THE TANK SHALL BE 4'-0" ABOVE THE TANK FLOOR.
8. PLUMBING OUTSIDE OF THE GREASE INTERCEPTOR WILL BE IN ACCORDANCE TO LOCAL REGULATIONS.
9. THE BAFFLE INSIDE THE INTERCEPTOR SHALL BE WITHIN 3 INCHES OF THE CEILING.
10. COVERS SHALL BE CIRCULAR AND SHALL BE SOLID WITH PICK HOLES FOR REMOVAL.
11. THE INLET PIPE SHALL BE AT AN ELEVATION OF 1 INCH OR HIGHER THAN THE OUTLET PIPE.
12. SANITARY WASTES FROM TOILETS SHALL NOT BE PLUMBED TO GREASE INTERCEPTORS.
13. PIPING AS PER CITY OR SANITARY DISTRICT REQUIREMENTS.
14. PROVIDE A SEPARATE VENT LINE AS REQUIRED BY THE INTERNATIONAL PLUMBING CODE.

HEBER CITY
HEART OF THE WASATCH BACK

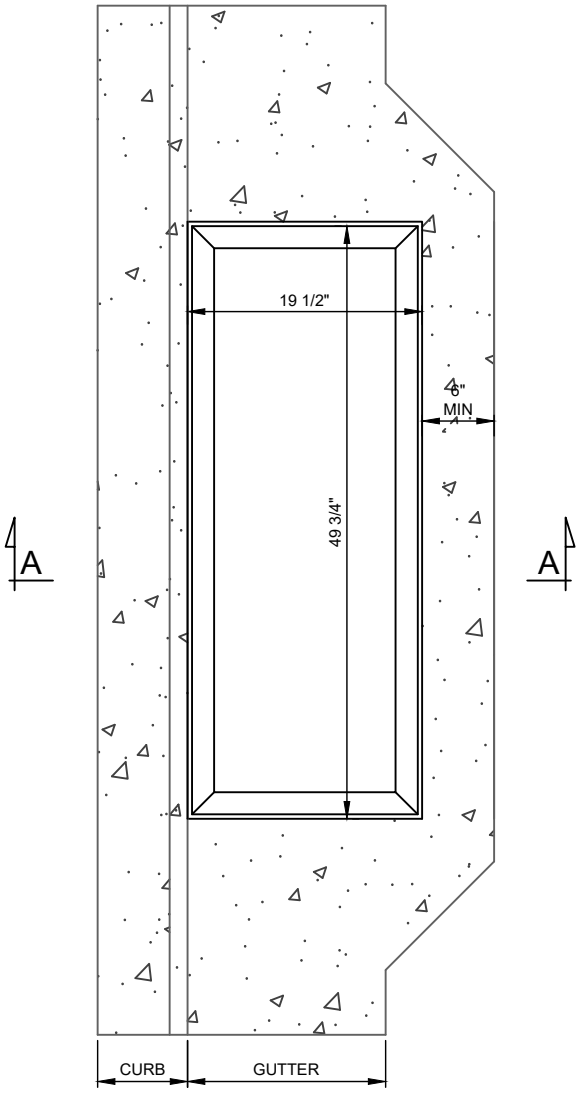
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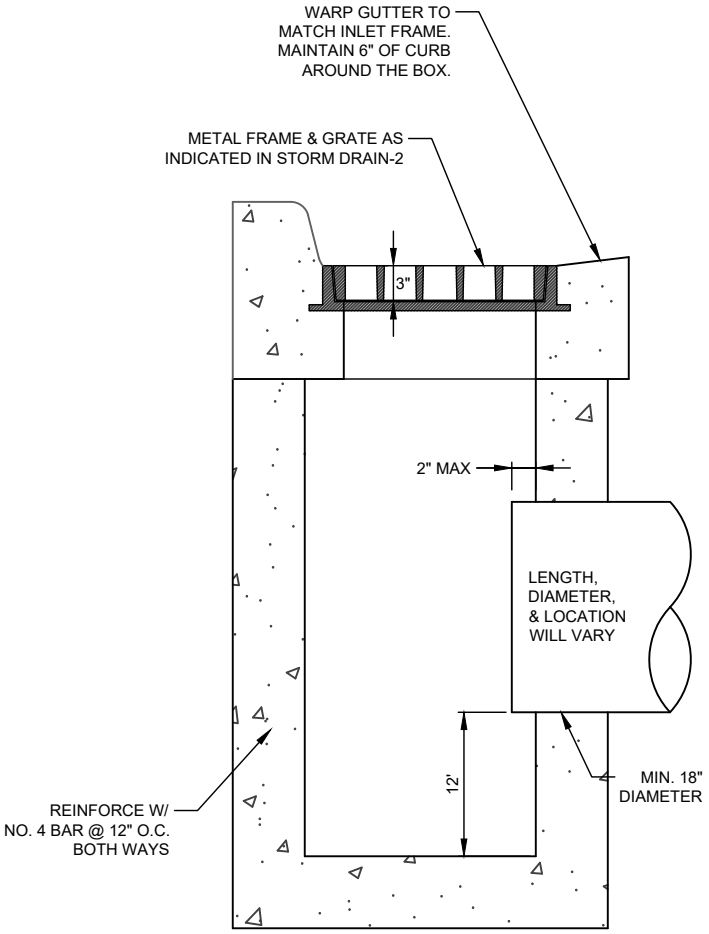
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GREASE INTERCEPTOR

SEWER-6

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SECTION A-A

NOTES:

1. ALL FRAMES & GRATES TO BE CAST IRON.
2. CONSTRUCT BOX (WALL THICKNESS) TO MATCH EXISTING OR NEW TYPE OF CURB AS SHOWN.
3. A SNOUT OR APPROVED EQUAL SHALL BE USED WHERE THE STORM WATER IS LEAVING THE BOX OR STORM WATER SYSTEM AND ENTERING A SUMP, RETENTION / DETENTION POND, OR DISCHARGE POINT.

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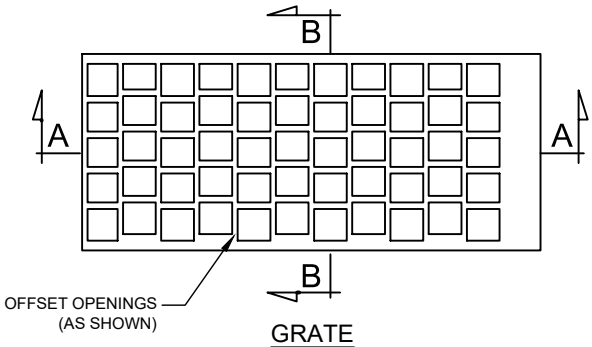
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

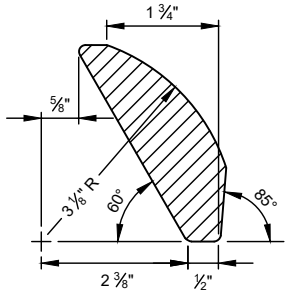
CURB-DROP INLET STANDARD BOX

DRAIN-1

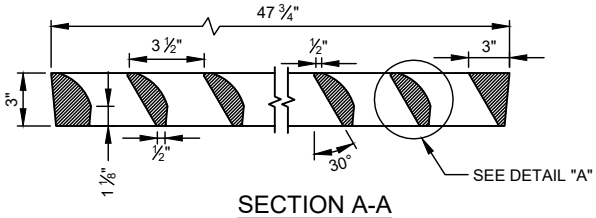


GRATE

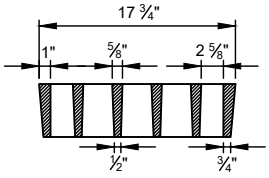
WEIGHT: 266 LBS.



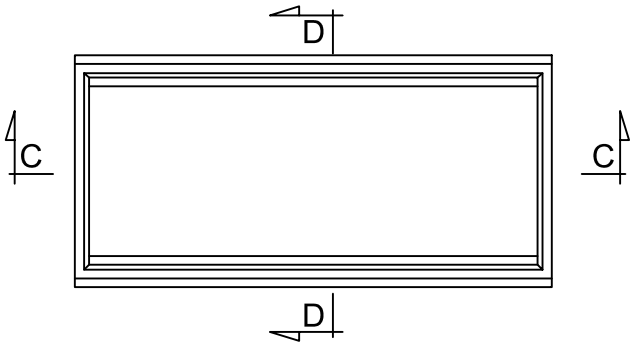
DETAIL "A"



SECTION A-A

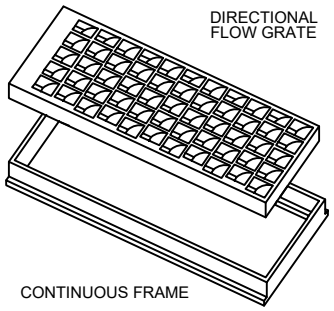


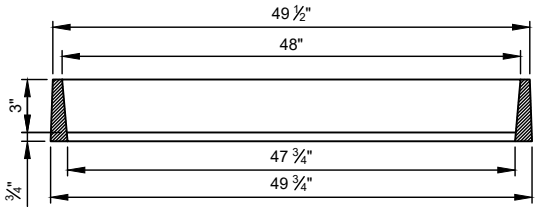
SECTION B-B



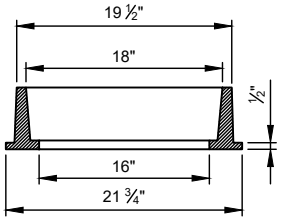
FRAME

WEIGHT: 160 LBS.





SECTION C-C



SECTION D-D

NOTES:

1. ALL DIMENSIONS ARE INCHES (in) UNLESS OTHERWISE NOTED.
2. GRATE AND FRAME MAY BE FURNISHED IN EITHER DUCTILE IRON (ASTM A-536 GRADE 60) OR CAST GRAY IRON: AASHTO M-105, CLASS 30 B (ASTM A-48).
3. INSTALLATION REQUIRES SUPPORT UNDER LONGITUDINAL AXIS OF FRAME. ORIENT GRATE WITH DIRECTION OF FLOW.
4. GRATE & FRAME SHALL BE D&L I-1803 OR APPROVED EQUAL.

DESIGN DATA:

MS 18 (HS-20) OR INTERSTATE ALTERNATE LOADING IN ACCORDANCE WITH CURRENT AASHTO AND INTERIM SPECIFICATIONS.

DUCTILE IRON AND STRUCTURAL STEEL: fs=138 MPa

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

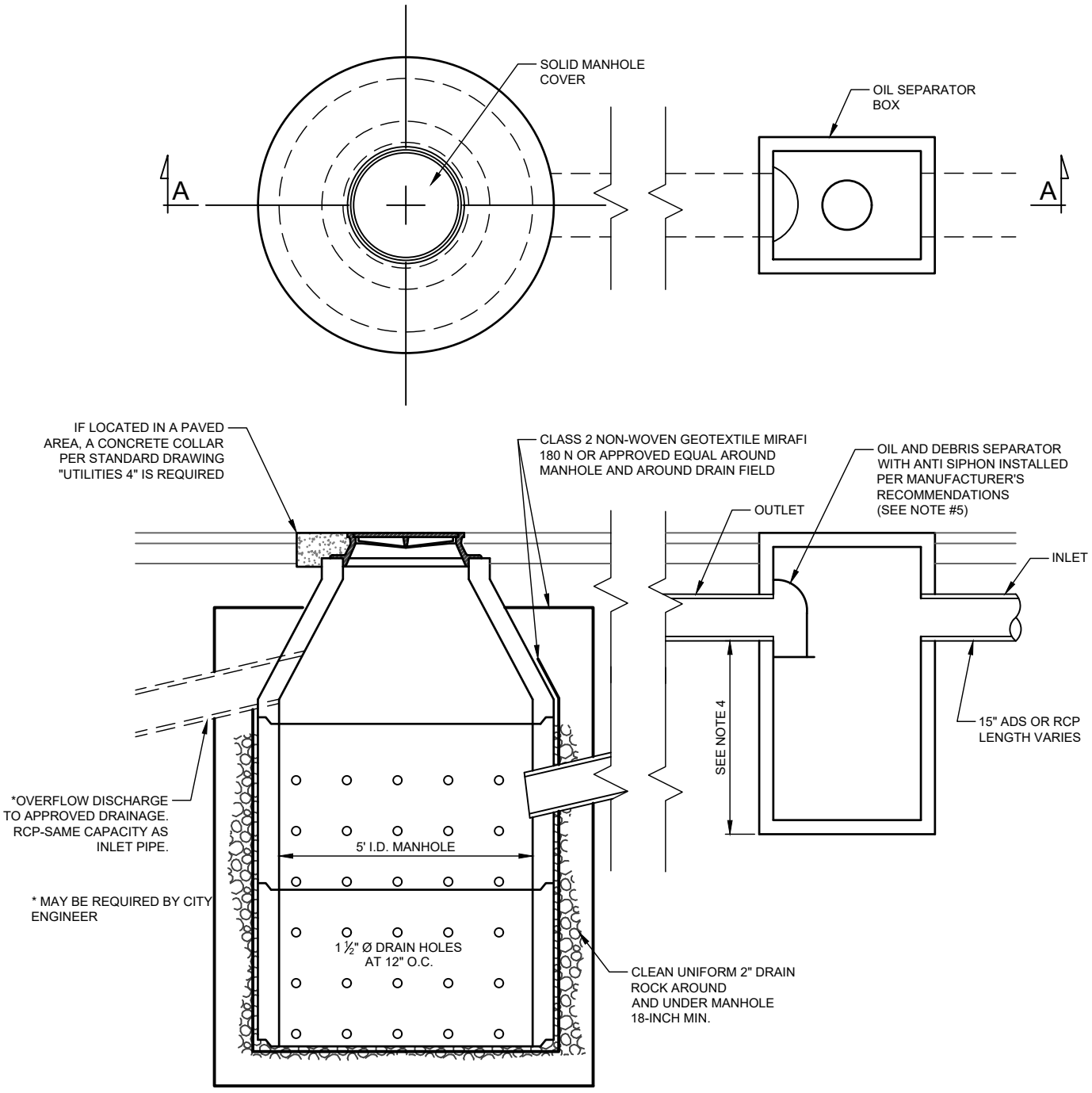
SCALE: N.T.S.

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GRATE & FRAME

DRAIN-2

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\STORM DRAIN-2.dwg - Grate Frame - 9/07/2023 03:41pm, nataller



SECTION A-A

NOTES:

1. CONSTRUCT DROP INLET BOX TO MATCH WIDTH OF CURB & GUTTER. MATCH INSIDE LENGTH OF BOX TO INSIDE LENGTH OF FRAME.
2. D & L I-3516 WITH ADJUSTABLE CURB BOX.
3. STANDARD CAST IRON MANHOLE RING & LID.
4. SUMP DEPTH = 36" MIN. FOR 12" DIAMETER OUTLET AND SMALLER, FOR OUTLET DIAMETER 15" AND LARGER, DEPTH = 2.5 TO 3 TIMES THE DIAMETER.
5. SEE STANDARD SPECIFICATION 02772 PONDS.

HEBER CITY
HEART OF THE WASATCH BACK

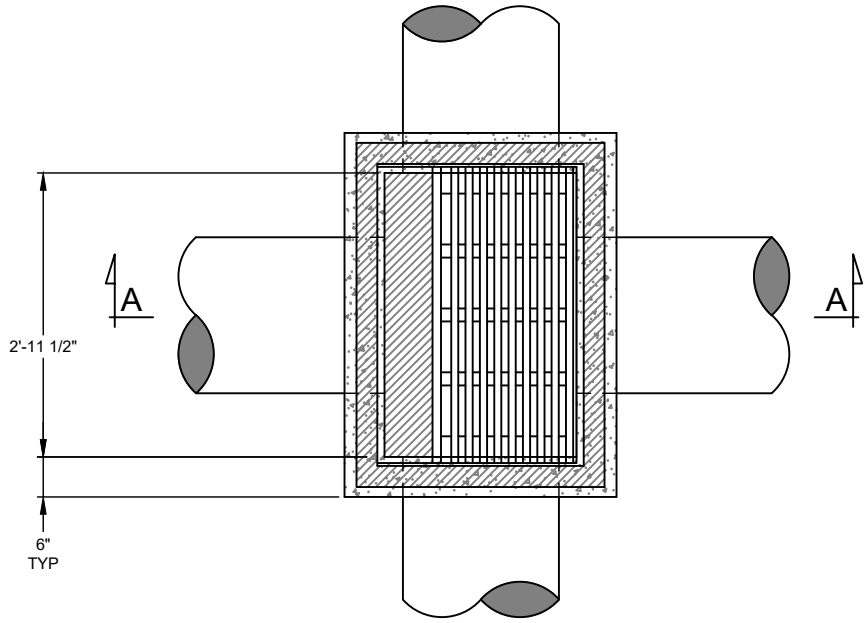
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SCALE: N.T.S.

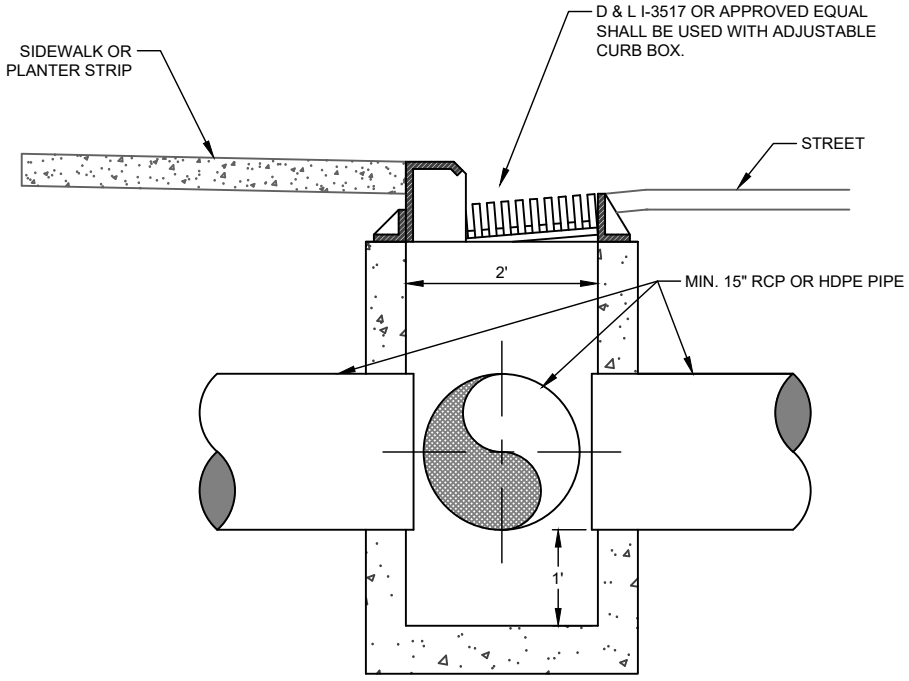
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SUMP DISPOSAL & OIL SEPARATOR

DRAIN-3

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SECTION A-A

NOTES:

1. #4 REBAR SPACED NO GREATER THAN 12" O.C. HORIZ. AND 8" O.C. VERTICAL. 14" OVERLAP OF REBAR REQUIRED.
2. OPEN FACE CATCH BASIN TO BE USED ONLY AT THE CITY ENGINEER'S DISCRETION.
3. D & L I-3517 GRATE AND FRAME WITHOUT HOOD MAY BE USED AT CITY ENGINEER'S DISCRETION.

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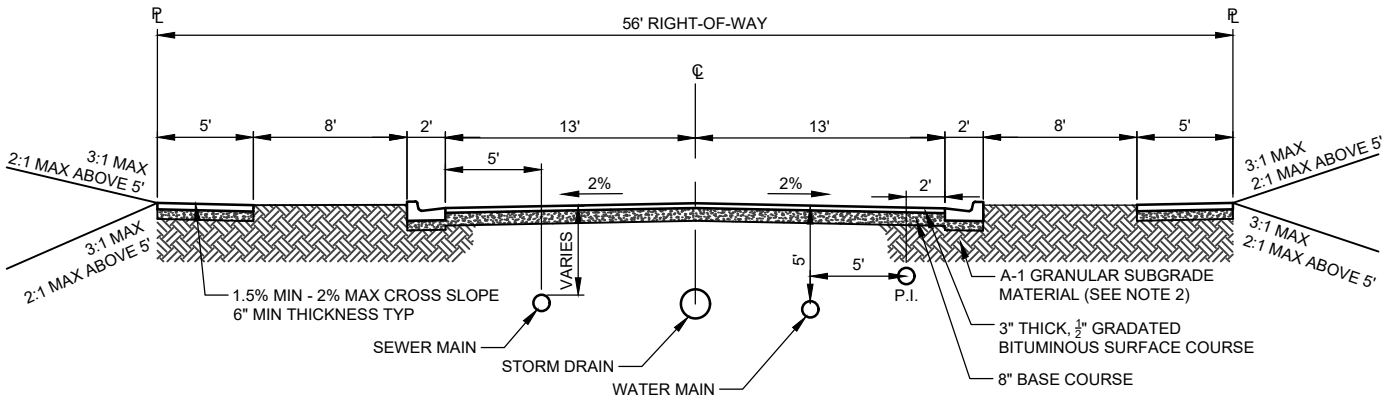
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17
SCALE: N.T.S.

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CURB INLET BOX - OPEN FACE

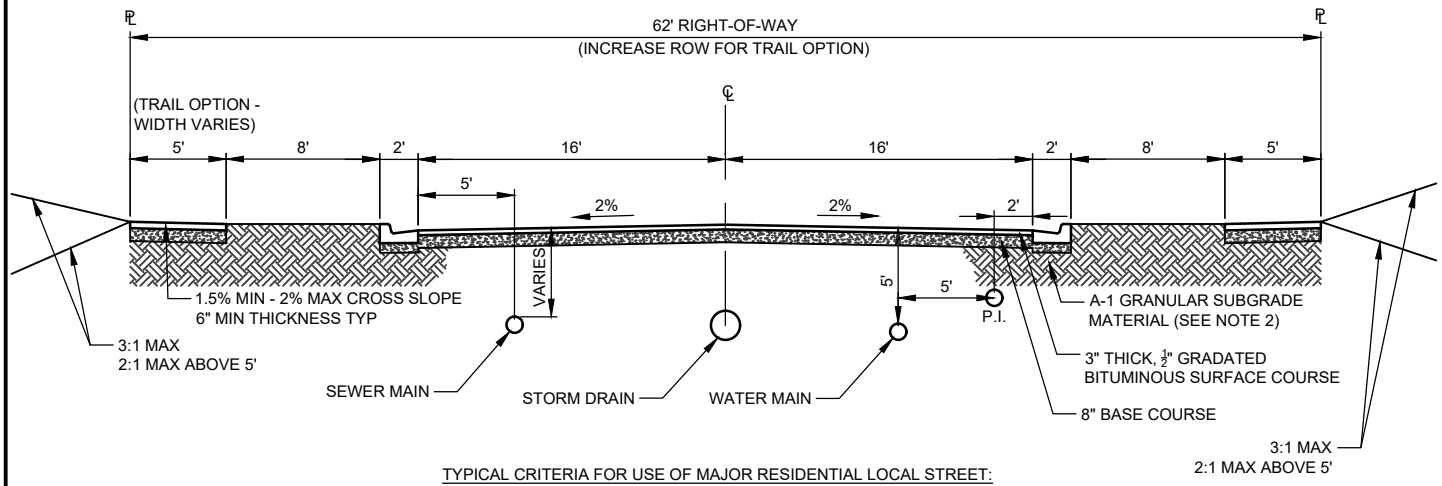
DRAIN-4



TYPICAL CRITERIA FOR USE OF MINOR RESIDENTIAL LOCAL STREET:

1. THE MAXIMUM AVERAGE DAILY TRIPS SHALL NOT EXCEED 500.
2. THE TOTAL NUMBER OF UNITS MUST BE LESS THAN 100.
3. PARKING TO BE RESTRICTED AS DIRECTED BY THE CITY ENGINEER.

MINOR RESIDENTIAL LOCAL



TYPICAL CRITERIA FOR USE OF MAJOR RESIDENTIAL LOCAL STREET:

1. THE MAXIMUM AVERAGE DAILY TRIPS SHALL NOT EXCEED 2000.
2. THE TOTAL NUMBER OF UNITS MUST BE LESS THAN 200.

MAJOR RESIDENTIAL LOCAL

NOTES FOR RESIDENTIAL STREETS:

1. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
2. MAXIMUM ROAD GRADE IS 8% WITHOUT CITY ENGINEER'S APPROVAL.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
5. TRAIL OPTION AND WIDTH IS DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.

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MAJOR & MINOR RESIDENTIAL LOCAL

STREETS-1

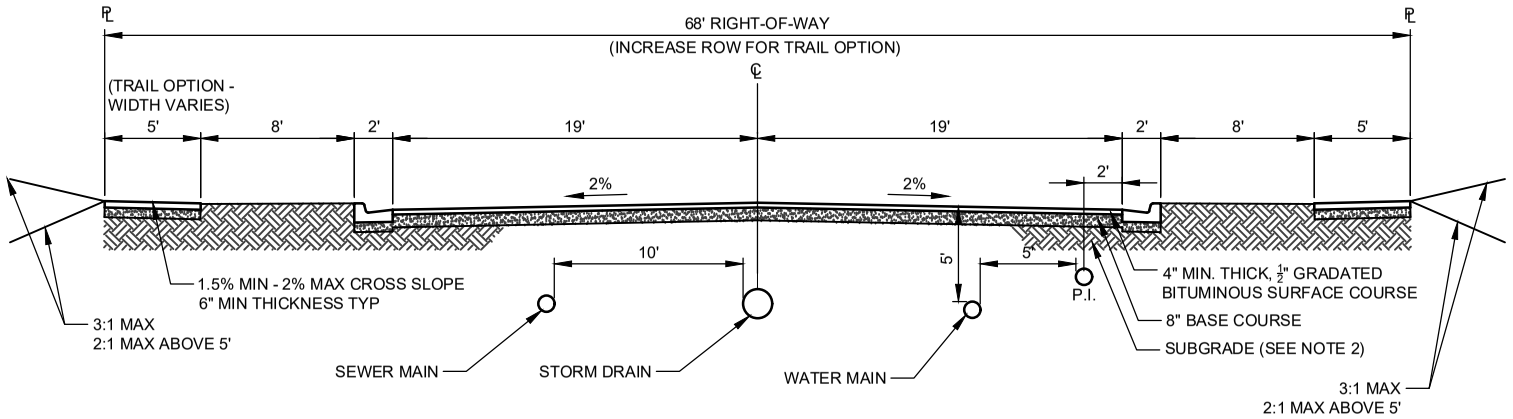
HEBER CITY
HEART OF THE WASATCH BACK
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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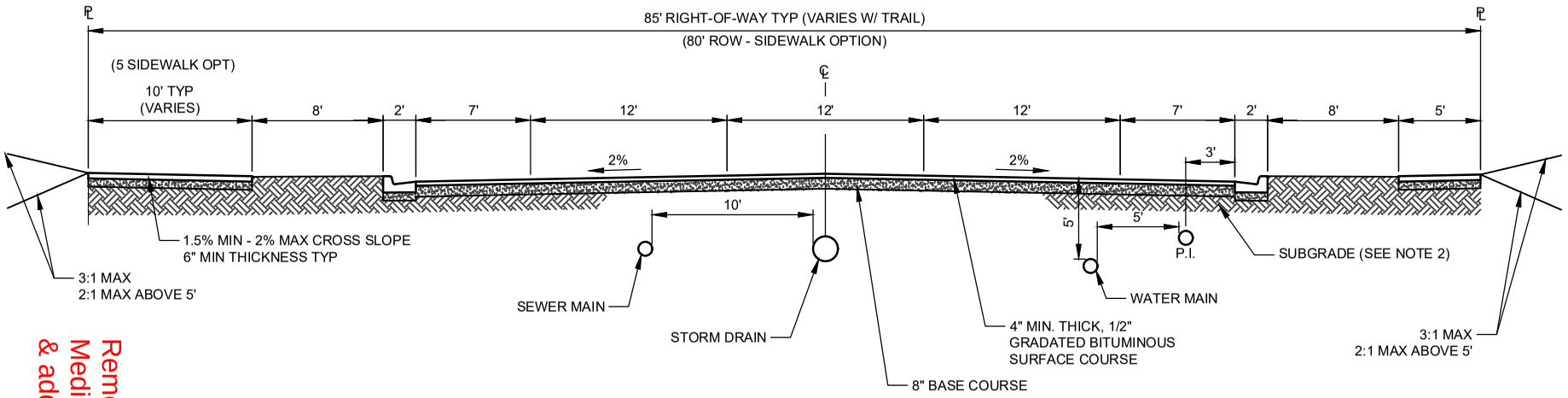
DATE: 01/25

STREETS-2A

MINOR COLLECTOR



MINOR COLLECTOR



MAJOR COLLECTOR

Removed Landscaped Median on Major Collector & added Note 7.

NOTES FOR COLLECTOR STREETS:

1. SINGLE FAMILY RESIDENTIAL DRIVEWAYS ARE PROHIBITED ON COLLECTOR ROADS.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. SIDEWALK TO BE FIVE FEET WIDE MINIMUM.
4. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
5. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
6. TRAIL AND SIDEWALK OPTIONS ARE DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.
7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

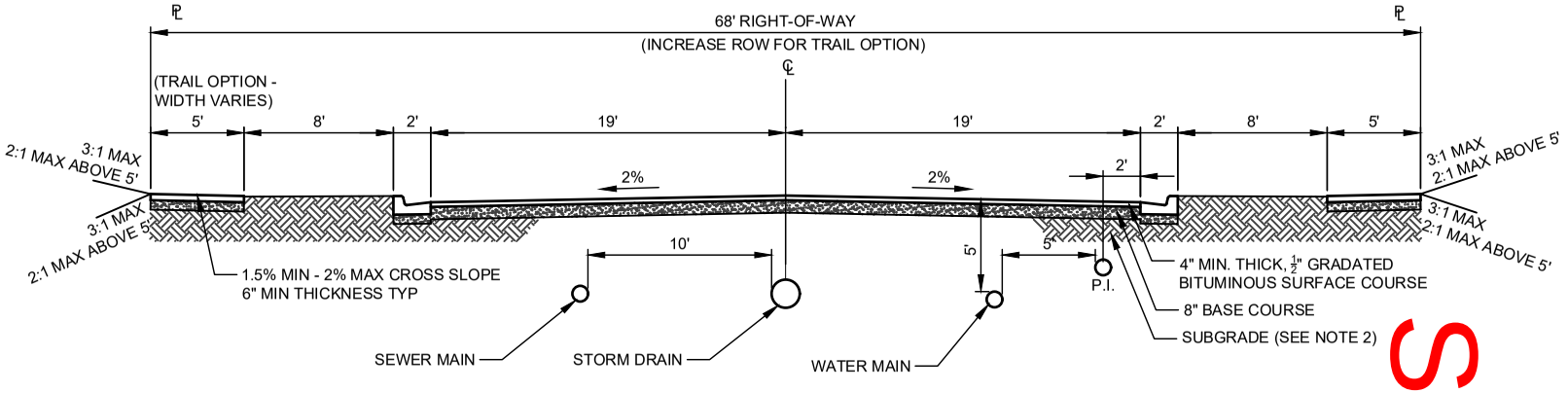
HEBER CITY
HEART OF THE WASATCH BACK
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HEBER CITY, UTAH 84032
(435) 654-0757

SCALE: N.T.S.

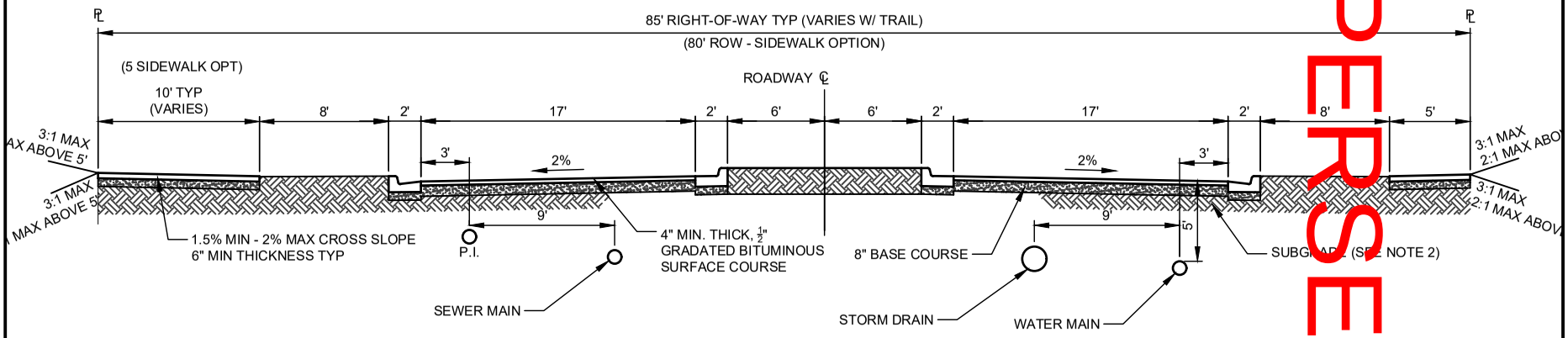
DATE: 6/20

MINOR COLLECTOR

STREETS-2A



MINOR COLLECTOR



MAJOR COLLECTOR

NOTES FOR COLLECTOR STREETS:

1. MAJOR COLLECTOR ROADS INCLUDE EITHER LANDSCAPED MEDIANS OR CENTER TURN LANES. RESIDENTIAL DRIVEWAYS ARE PROHIBITED. LANDSCAPED MEDIANS ASSUME NO PARKING. ASPHALT WIDTHS MAY BE REDUCED TO 48' WITH PARKING OR 38' WITHOUT PARKING WHEN LANDSCAPED MEDIANS ARE OMITTED.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. COMMERCIAL SIDEWALK TO BE FIVE FEET WIDE MINIMUM.
4. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
5. WHERE HEBER CITY APPROVES INSTALLING A TRAIL OR SIDEWALK ON ONLY ONE SIDE, THE FULL RIGHT-OF-WAY DEDICATION IS STILL REQUIRED TO ALLOW FOR FUTURE INSTALLATION OF SIDEWALK.
6. TRAIL AND SIDEWALK OPTIONS ARE DETERMINED BY HEBER CITY ACCORDING TO THE CURRENT TRAILS MASTER PLAN.

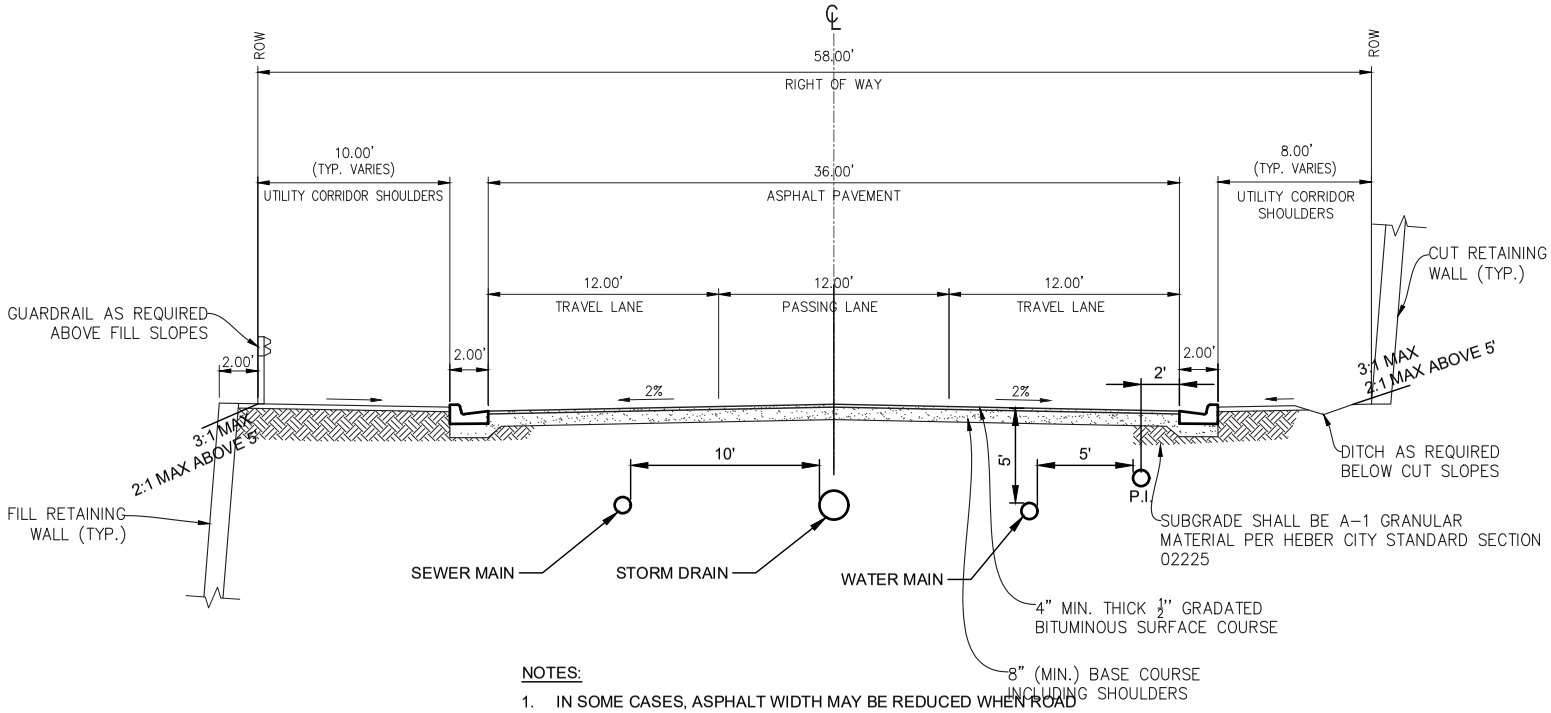
SUPERSEDED

HEBER CITY
HEART OF THE WASATCH BACK
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SCALE: N.T.S.
DATE: 09/23

STREETS-2B

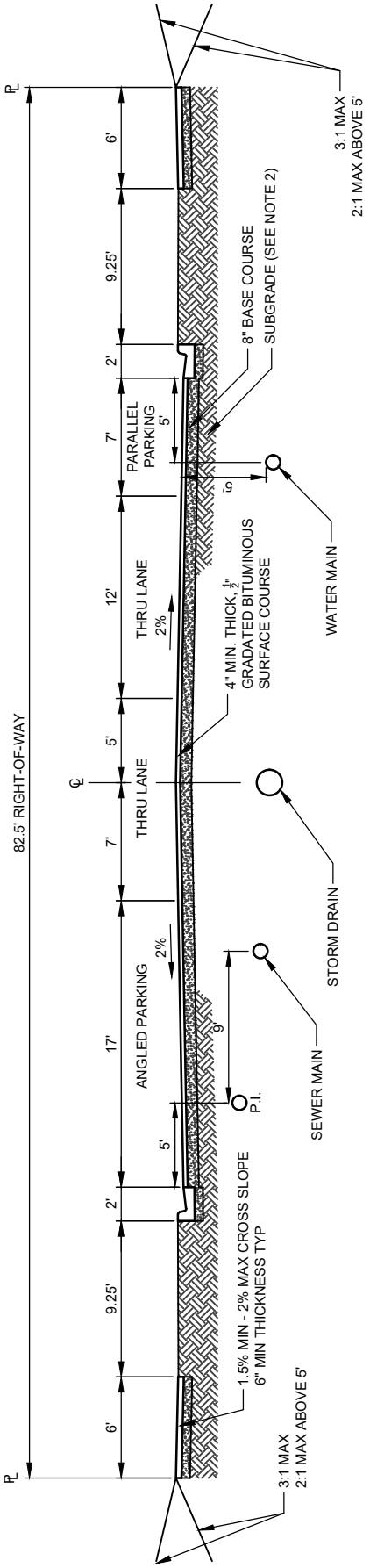
NO-ACCESS MOUNTAIN COLLECTOR



NOTES:

1. IN SOME CASES, ASPHALT WIDTH MAY BE REDUCED WHEN ROAD GRADE IS LESS THAN 4% WITH PRIOR CITY ENGINEER APPROVAL.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. SHOULDERS TO BE FILLED TO WITHIN ONE INCH OF T.B.C.
4. NO PARKING.
5. NO RESIDENTIAL DRIVEWAYS.
6. TRAVERSES NON-DEVELOPABLE TERRAIN.
7. ENCROACHMENT EASEMENTS REQUIRED FOR WALLS/SLOPES OUTSIDE OF ROW.
8. TRAILS SHALL BE LOCATED OUTSIDE OF THE ROW.

NO ACCESS MOUNTAIN COLLECTOR



HISTORIC BUSINESS CORE

NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.
7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

Removed the additional ROW Option, Added Note 7

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
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HISTORIC BUSINESS CORE

STREETS-3A

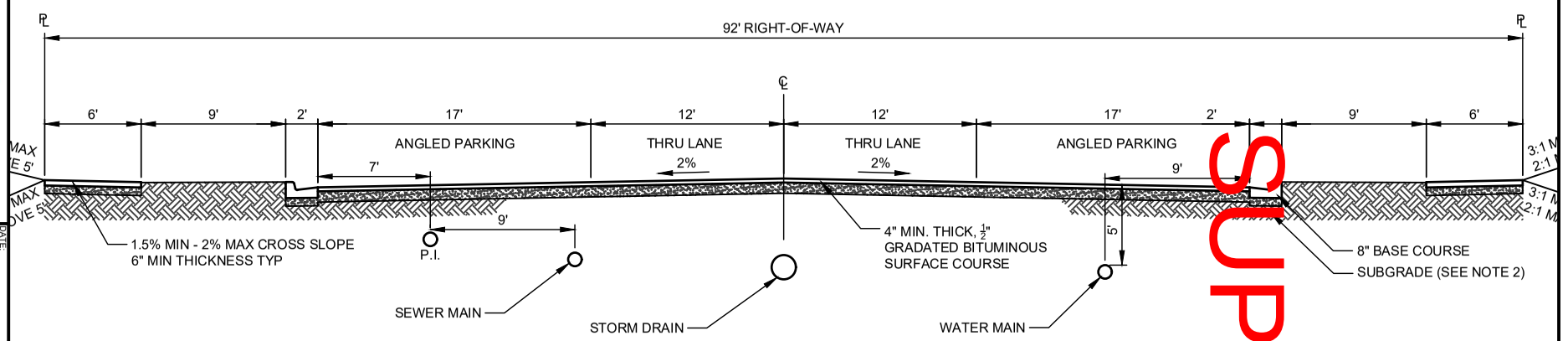
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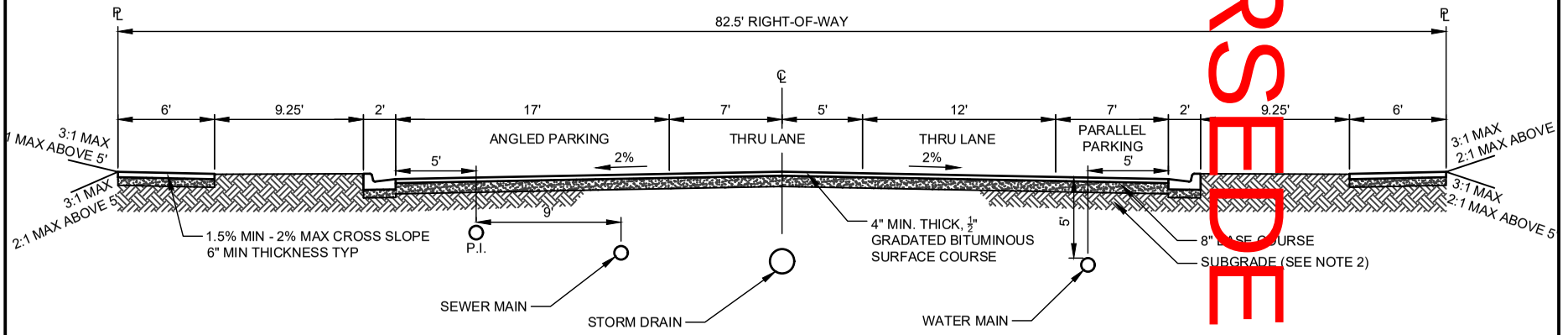
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DATE: 06/20

STREETS-3A

HISTORIC BUSINESS CORE



HISTORIC BUSINESS CORE



HISTORIC BUSINESS CORE - OPTION

SUPERSEDED

NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

HEBER CITY
HEART OF THE WASATCH BACK

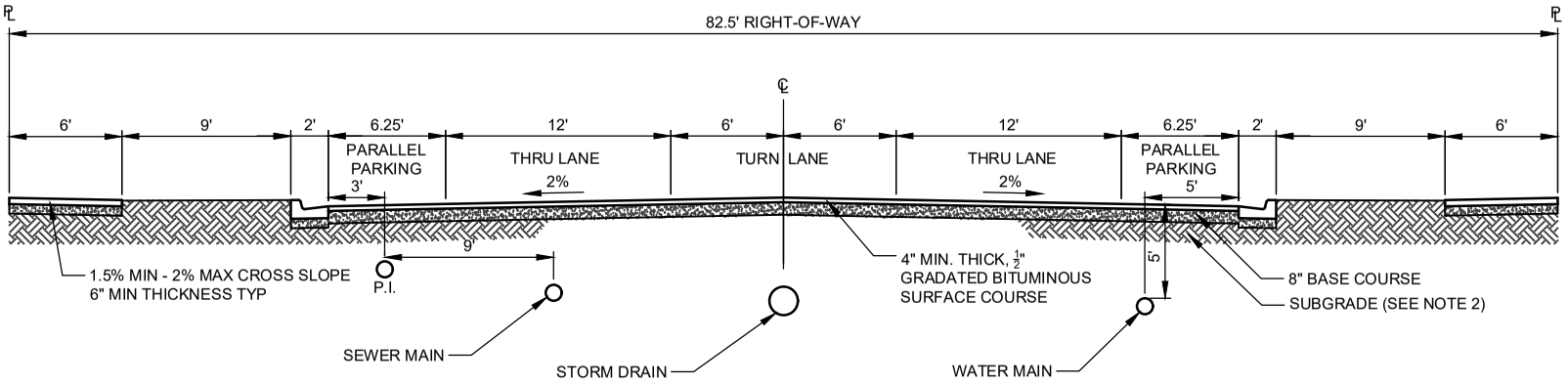
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DATE: 01/25

HISTORIC BUSINESS CORE MAJOR INTERSECTION

STREETS-3B



HISTORIC BUSINESS CORE - MAJOR INTERSECTION

Removed the additional ROW Option, Added Note 7

NOTES FOR HISTORIC BUSINESS CORE ROADS:

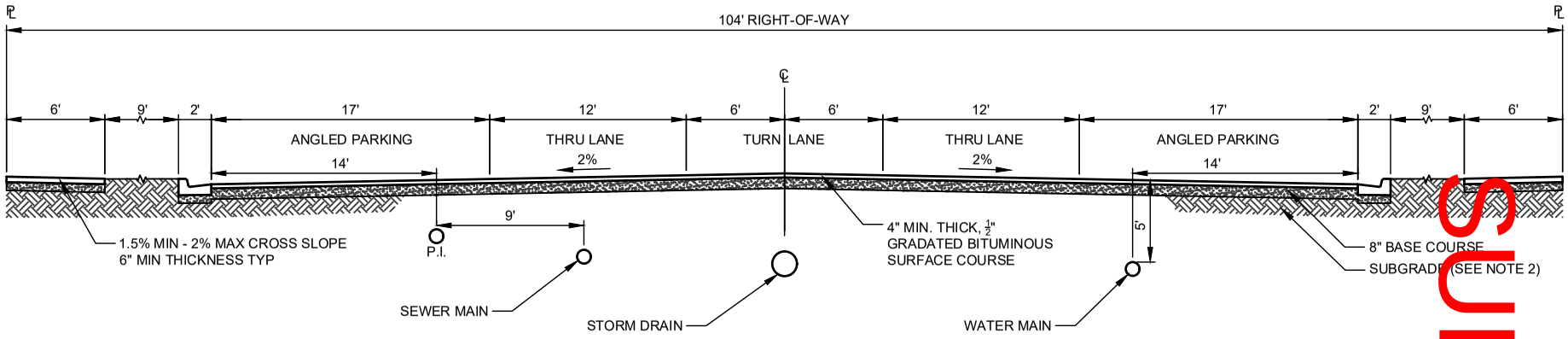
1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN THE LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
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7. ADDITIONAL TURNING AND/OR ACCELERATION LANES MAY BE REQUIRED PER THE DIRECTION OF THE CITY ENGINEER.

HEBER CITY
HEART OF THE WASATCH BACK

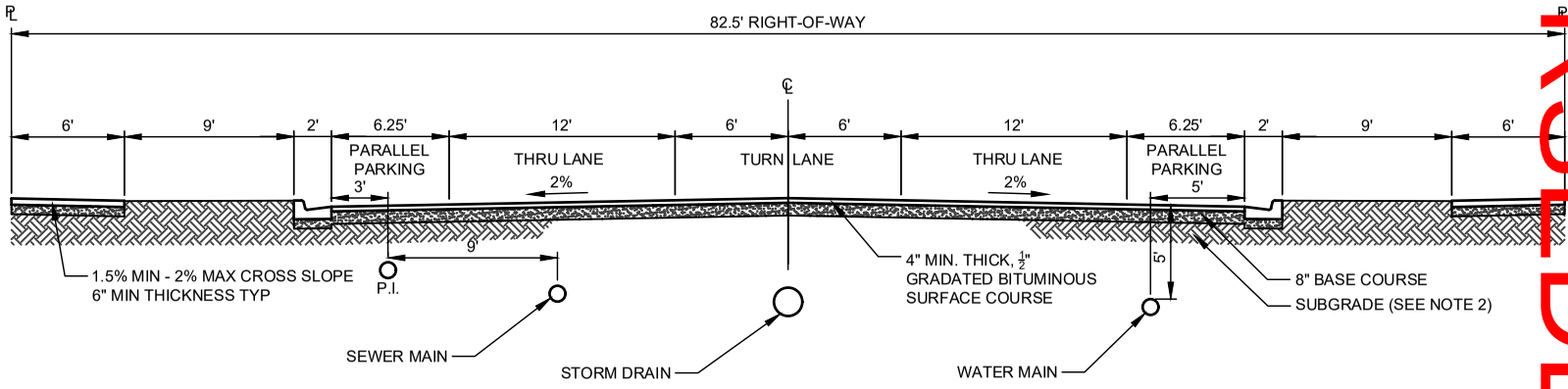
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DATE: 06/20



HISTORIC BUSINESS CORE - MAJOR INTERSECTION



HISTORIC BUSINESS CORE - MAJOR INTERSECTION - OPTION

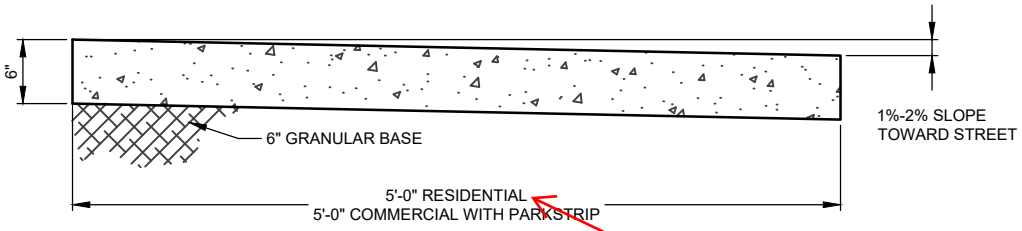
NOTES FOR HISTORIC BUSINESS CORE ROADS:

1. WHEN INTERSECTION BULB-OUTS ARE APPROVED, ASPHALT WIDTH BETWEEN BULB-OUTS SHALL BE EQUAL TO OR GREATER THAN THE LANE WIDTHS SHOWN.
2. SUBGRADE SHALL BE A-1 GRANULAR MATERIAL PER SECTION 02225.
3. PARK STRIPS TO BE FILLED TO WITHIN ONE INCH OF T.B.C. AND TOP OF SIDEWALK.
4. PARK STRIPS TO BE LANDSCAPED PER THE HEBER CITY ZONING REQUIREMENTS.
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

SUPERSEDED

HISTORIC BUSINESS CORE MAJOR INTERSECTION

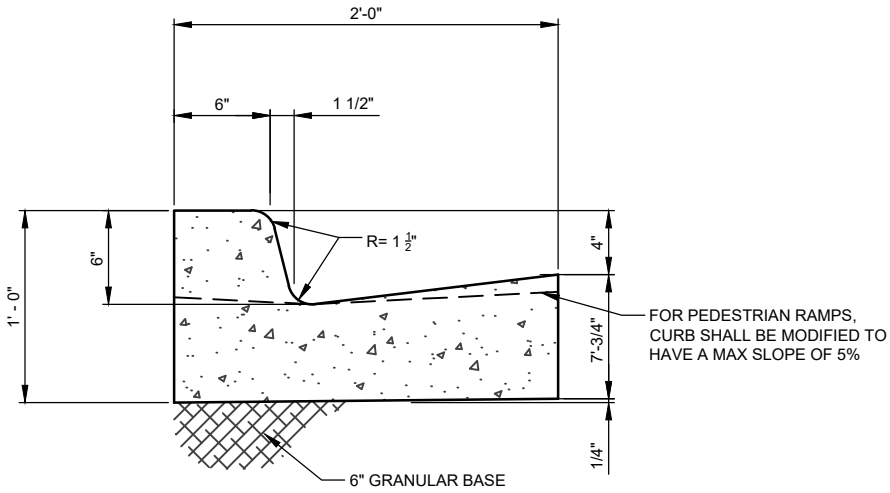
STREETS-3B



Matched sidewalk width to current City Standard.

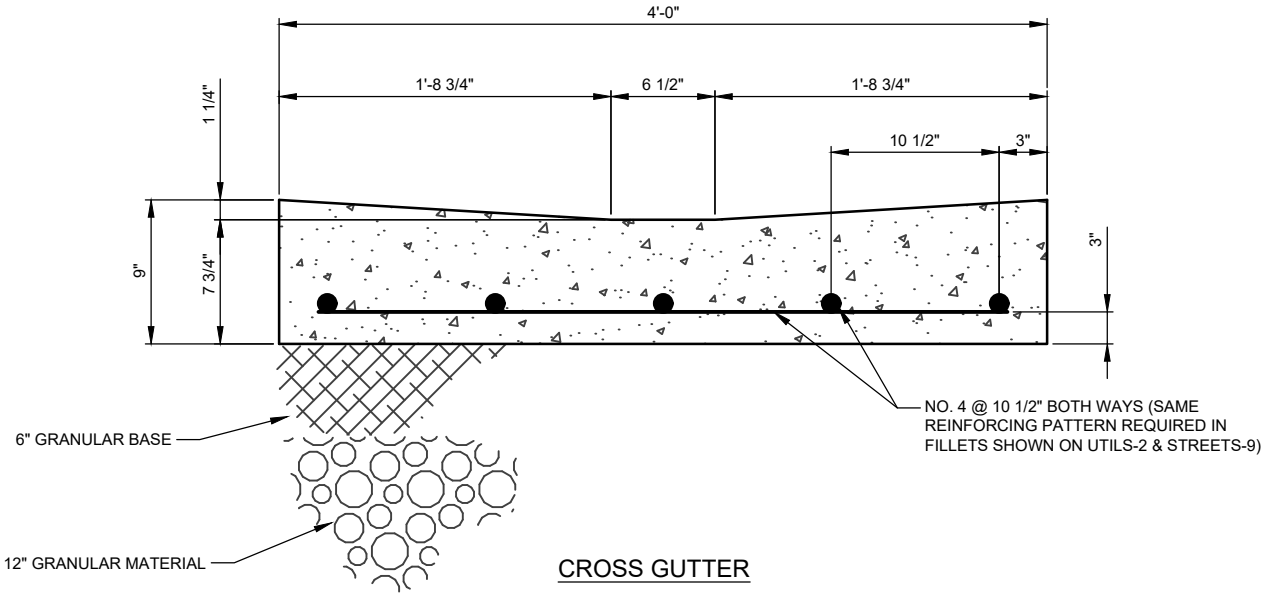
NOTE:
WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

SIDEWALK



NOTES:
THE TOP BACK OF CURB SHALL BE STAMPED ACCORDING TO SECTION 700-1.14-A-13

HIGH BACK CURB & GUTTER



CROSS GUTTER

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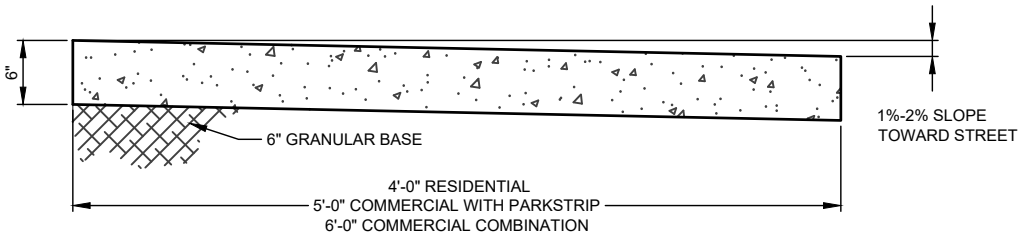
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

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(435) 654-0757

SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

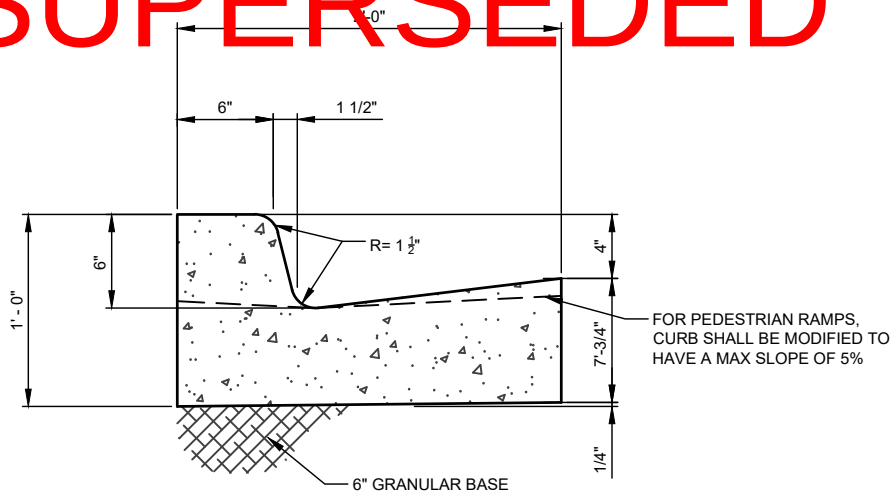
STREETS-4



NOTE: WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

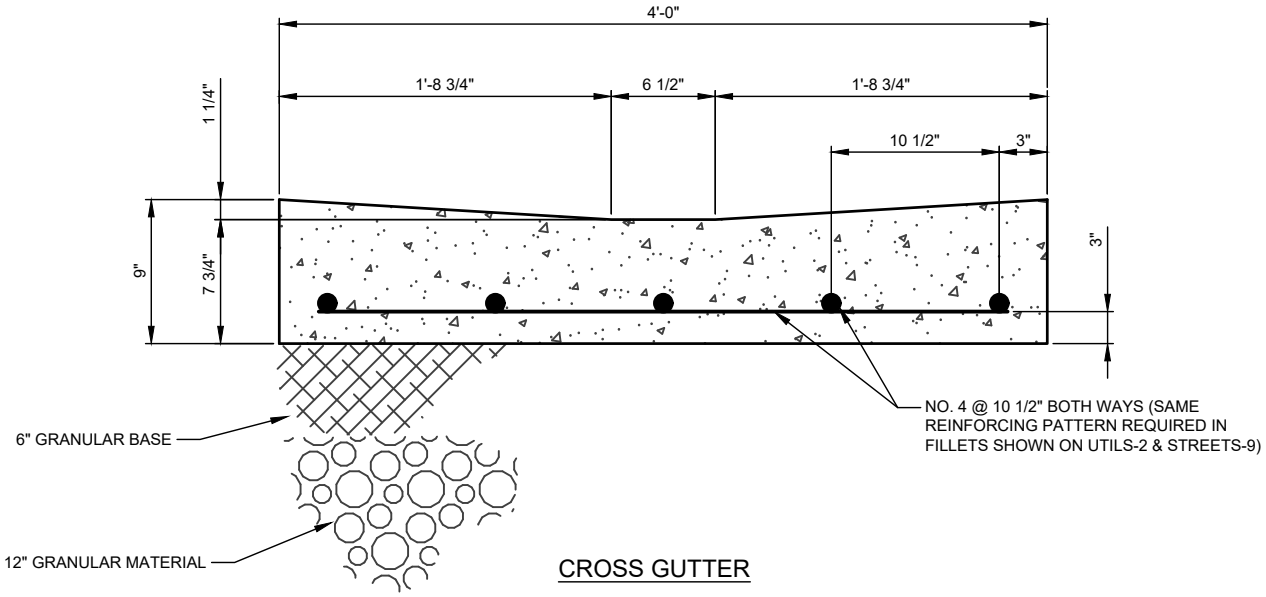
SIDEWALK

SUPERSEDED



NOTES:THE TOP BACK OF CURB SHALL BE STAMPED ACCORDING TO SECTION 700 - 1.02 - L.

HIGH BACK CURB & GUTTER



CROSS GUTTER

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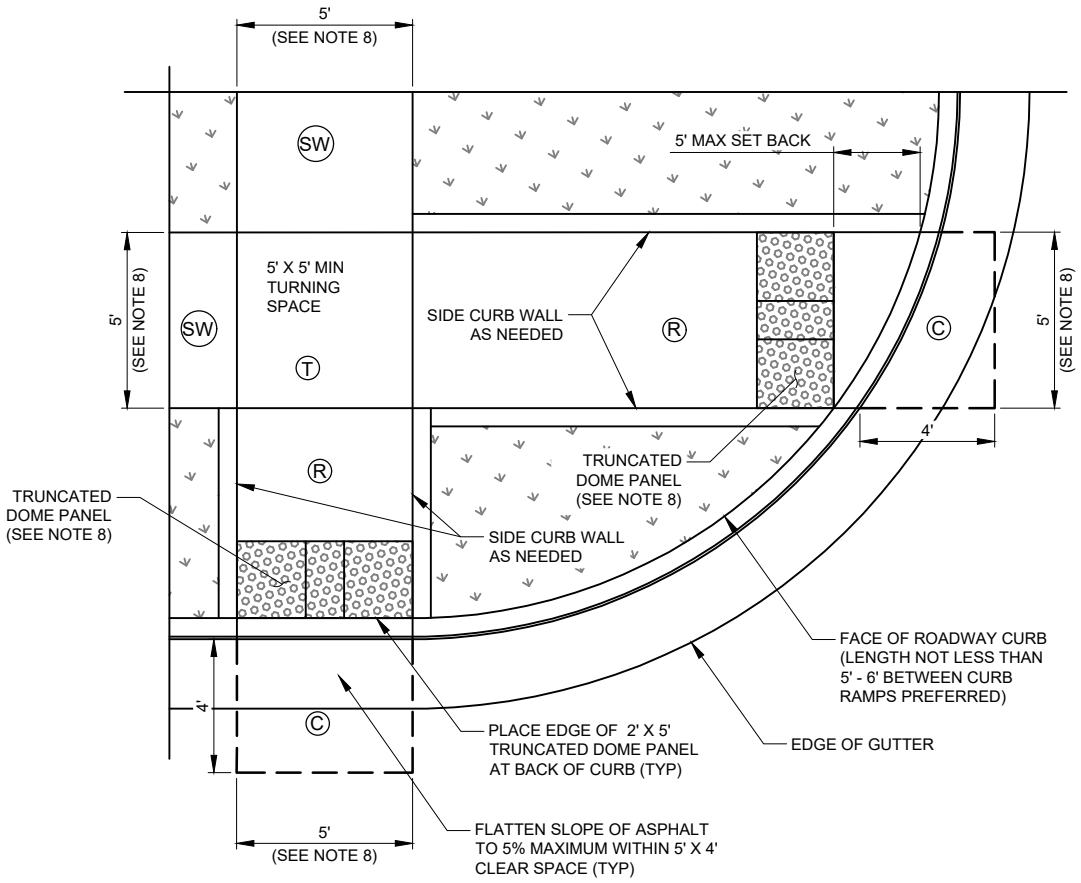
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

STREETS-4



Added to meet current ADA standards. Combined corner ramps are only allowed in retrofit applications.

REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX*
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX*
T	2% MAX	2% MAX*
SW	-	2% MAX*

*DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSSING SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
2. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
3. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
4. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
5. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
6. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
7. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
8. ADA RAMP TO MATCH THE WIDTH OF THE SIDEWALK (5') OR TRAIL (8' - 10').

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HEBER CITY
HEART OF THE WASATCH BACK

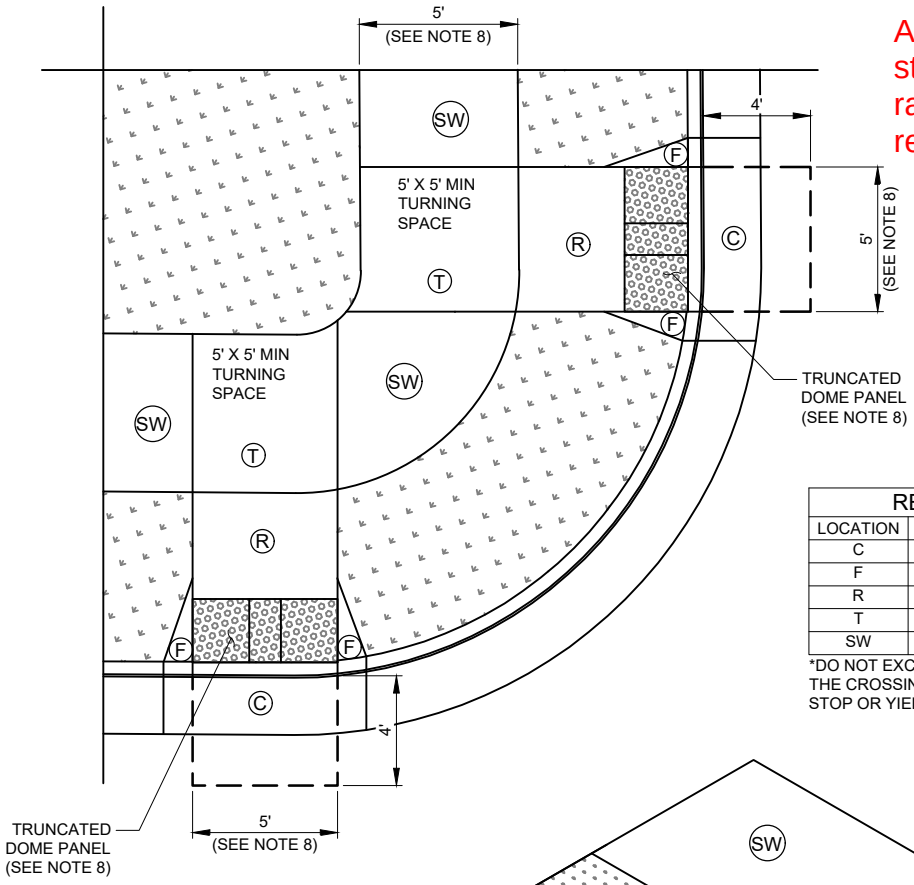
DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

PERPENDICULAR CURB RAMPS

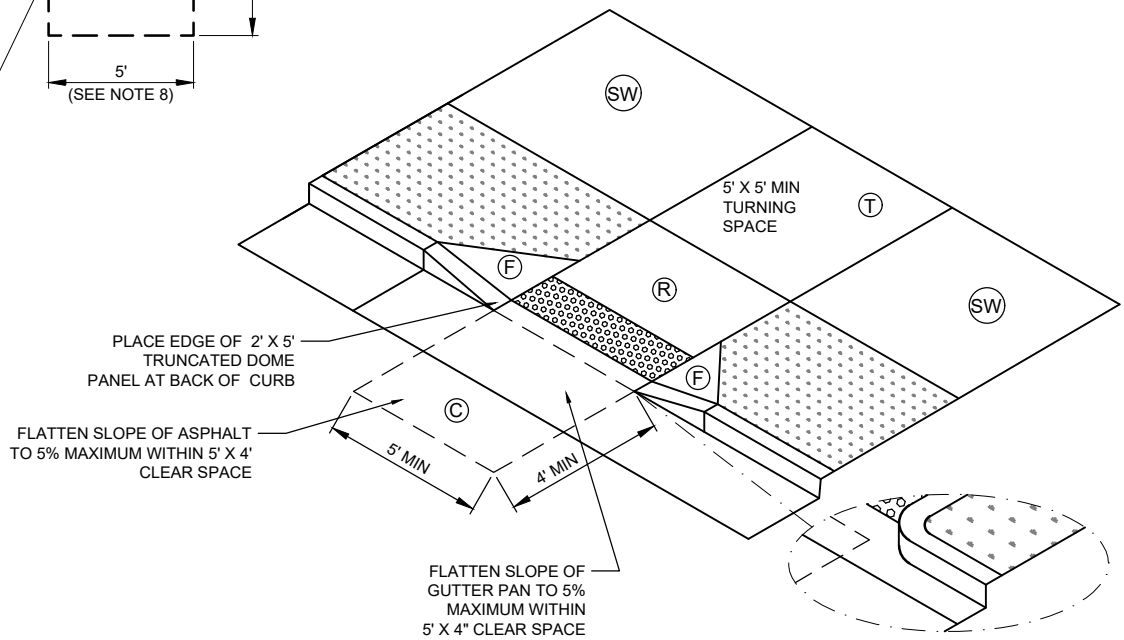
STREETS-5A

Added to meet current ADA standards. Combined corner ramps are only allowed in retrofit applications.



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX*
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX*
T	2% MAX	2% MAX*
SW	-	2% MAX*

*DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSSING SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.



CURB RETURN ALTERNATIVE WITH PRIOR APPROVAL FROM CITY ENGINEER

NOTES:

1. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
2. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
3. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
4. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
5. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
6. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
7. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
8. ADA RAMP TO MATCH THE WIDTH OF THE SIDEWALK (5') OR TRAIL (8' - 10').

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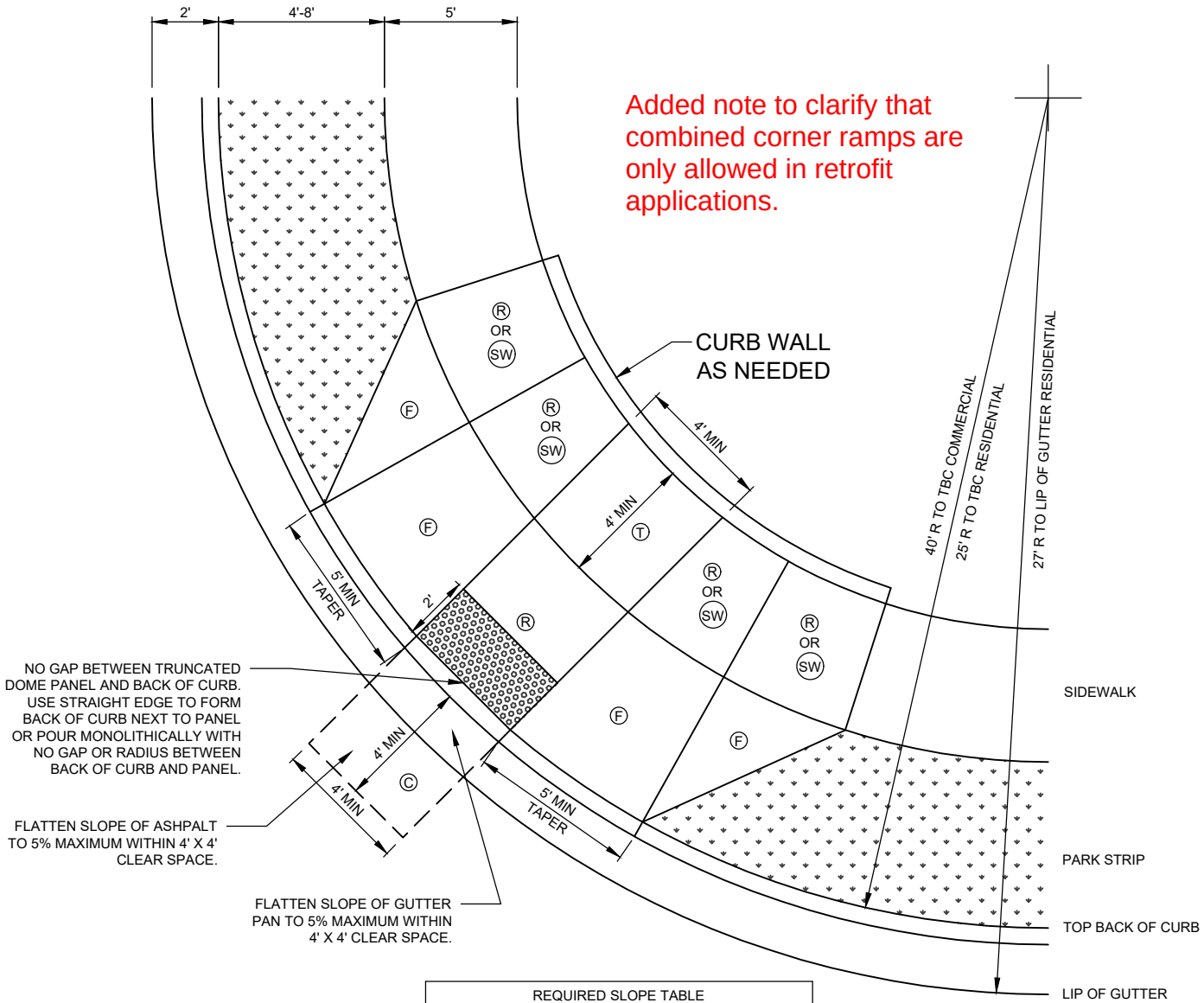
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

PERPENDICULAR CURB RAMPS

STREETS-5B



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. ONLY APPROVED FOR RETROFITS WHEN APPROVED BY CITY ENGINEER, OTHERWISE USE STREETS-5A OR 5B.
2. ALL ADA RAMPS & LANDINGS SHALL BE CONCRETE.
3. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
4. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
5. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
6. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
7. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
8. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.
9. COMBINED CORNER RAMPS ONLY ALLOWED IF EXISTING SITE RESTRICTIONS DO NOT ALLOW PERPENDICULAR CURB RAMPS.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

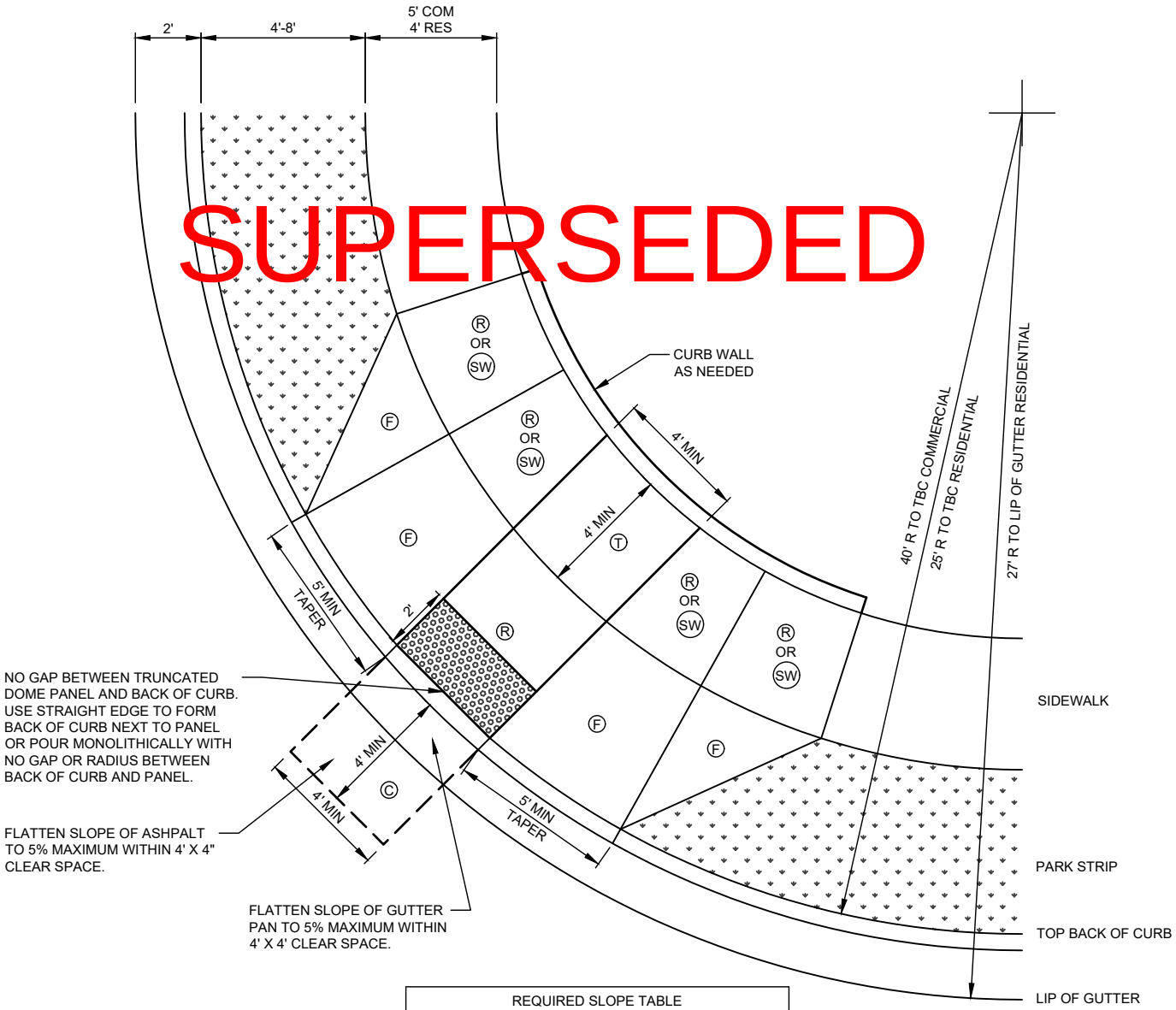
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HEBER CITY, UTAH 84032
(435) 654-0757

CORNER PEDESTRIAN RAMPS

STREETS-5C

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SUPERSEDED



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. CURB TAPER SLOPE SHALL BE 10% MAXIMUM.
5. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
6. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE UDOT PEDESTRIAN ACCESS STANDARD DRAWINGS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

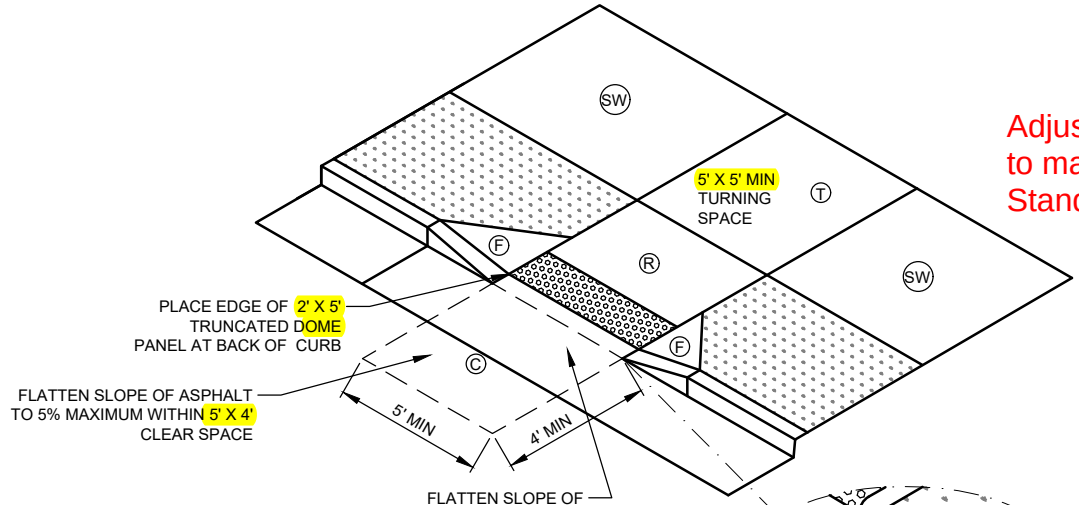
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

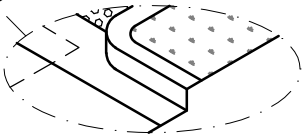
CORNER PEDESTRIAN RAMPS

STREETS-5

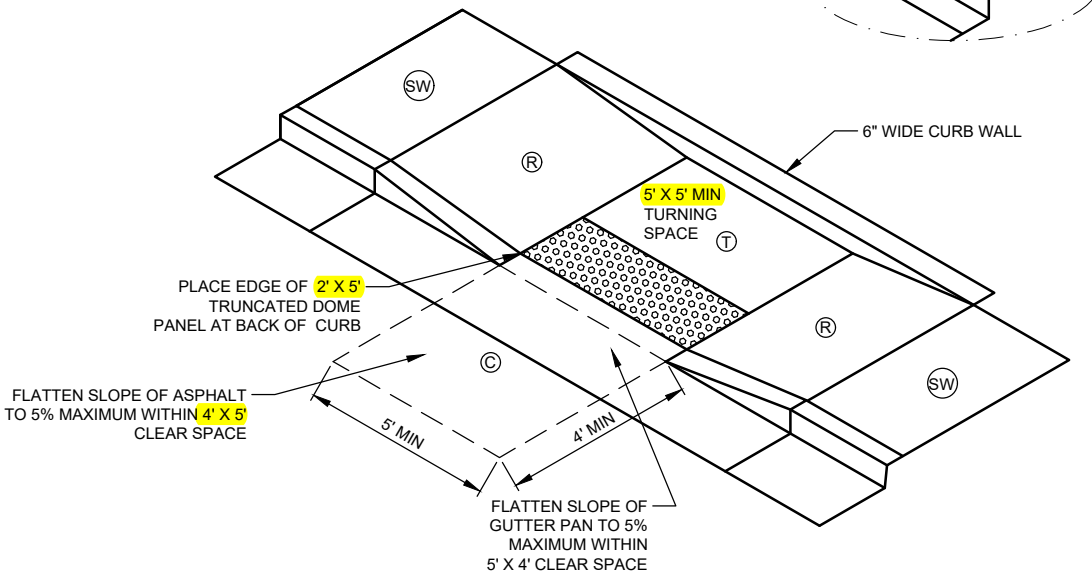
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Adjusted dimensions to match City Standards





CURB RETURN ALTERNATIVE WITH PRIOR APPROVAL FROM CITY ENGINEER



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
5. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE ADA ACCESS BOARD STANDARDS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

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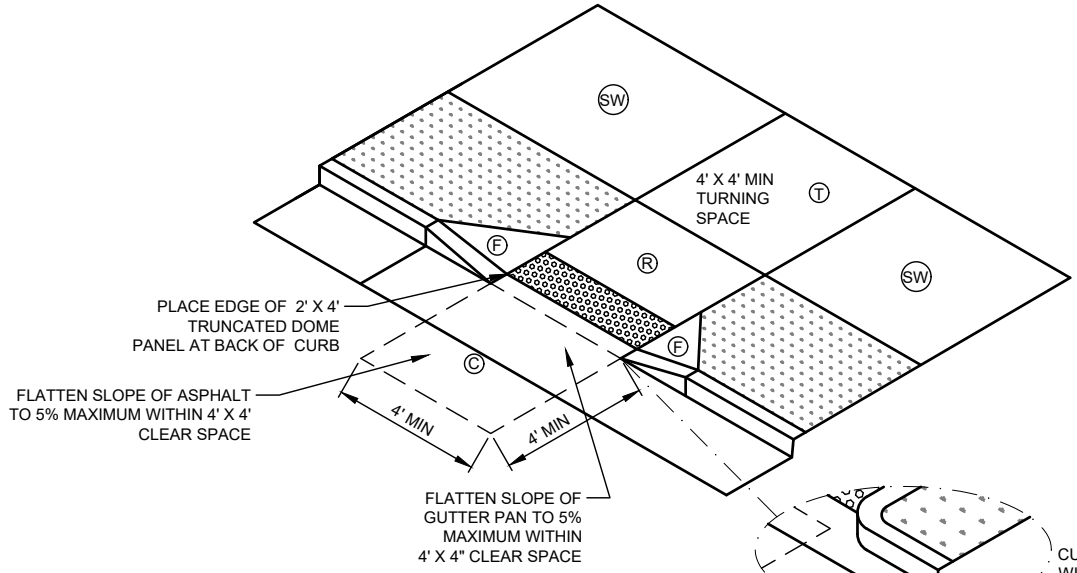
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

MID-BLOCK PEDESTRIAN RAMPS

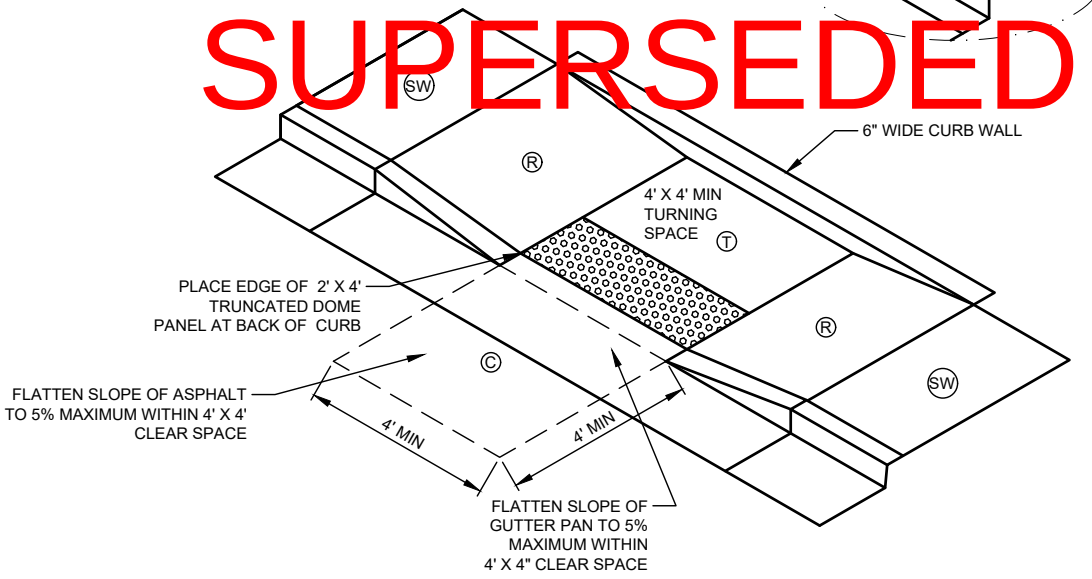
STREETS-6





CURB RETURN ALTERNATIVE
WITH PRIOR APPROVAL FROM
CITY ENGINEER

SUPERSEDED



REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	25% MAX (SEE NOTE 4)	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* DO NOT EXCEED THE ROADWAY PROFILE GRADE FOR THE CROSS SLOPE AT LOCATIONS WITHOUT A STOP OR YIELD SIGN OR AT MID-BLOCK RAMPS.

NOTES:

1. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
2. COLOR OF ADA DETECTABLE WARNING STRIP SHALL BE DARK RED OR GRAY.
3. TRUNCATED DOME PANEL WIDTH SHALL MATCH THE WIDTH OF THE CONNECTING SIDEWALK OR TRAIL.
4. CURB TAPER SLOPE FOR FLARES SHALL BE 10% MAXIMUM IF IT FALLS WITHIN THE PEDESTRIAN ACCESS ROUTE AS DEFINED BY UDOT.
5. NO LIPS ALLOWED. AT THE CURB CUT, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/4". AT THE GUTTER/ROAD TRANSITION, A LIP IS A VERTICAL DISCONTINUITY GREATER THAN 1/2". VERTICAL DISCONTINUITIES GREATER THAN 1/4" SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN 50%.
6. ALL PEDESTRIAN RAMPS ON ADA-ACCESSIBLE ROUTES ARE SUBJECT TO THE REQUIREMENTS SHOWN ON THE UDOT PEDESTRIAN ACCESS STANDARD DRAWINGS. WHERE CONFLICTS EXIST, THE MORE STRINGENT SHALL GOVERN.

HEBER CITY
HEART OF THE WASATCH BACK

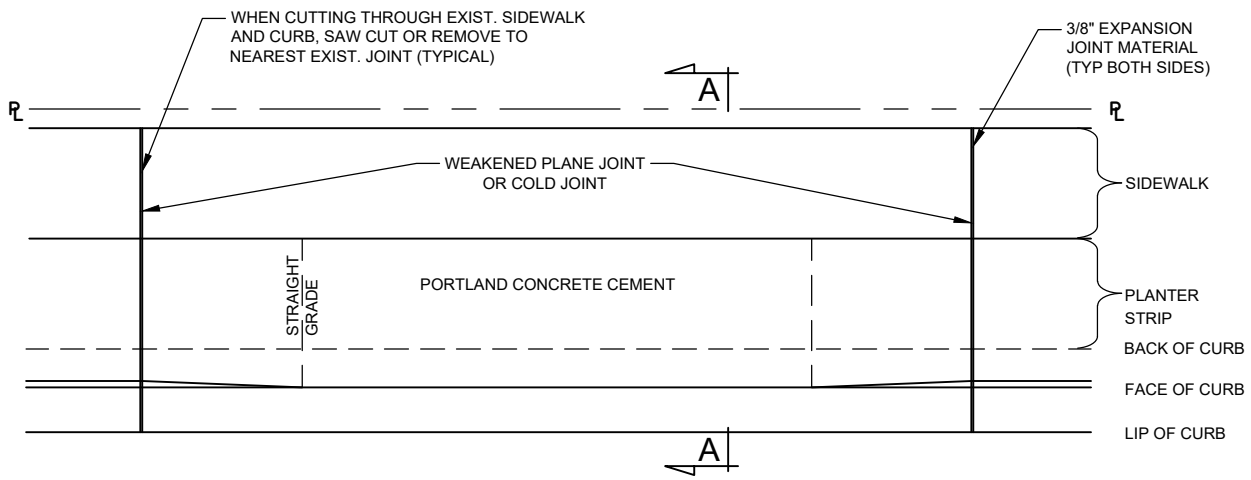
DATE: 06/21
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

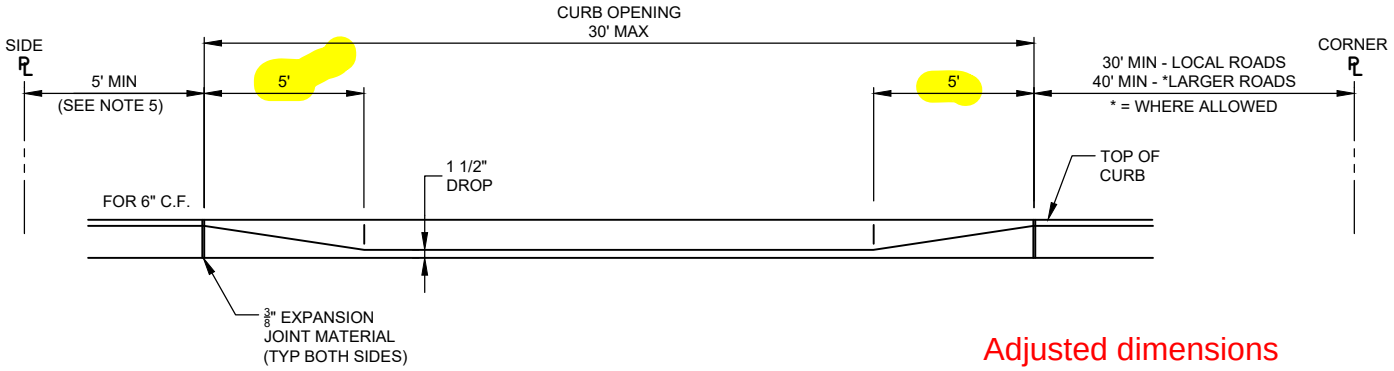
MID-BLOCK PEDESTRIAN RAMPS

STREETS-6

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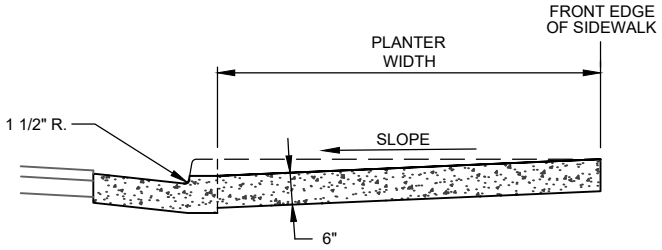


PLAN



ELEVATION

Adjusted dimensions to match City Standards



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE
3. INSTALL 4" PVC SLEEVE UNDER DRIVEWAY AND 10" BELOW SIDEWALK FOR PI SERVICE.
4. WHEN PERMITTED ON ROADS WITH HIGHER CLASSIFICATIONS, APPROACHES SHALL NOT BE CLOSER THAN 50' TO ANOTHER DRIVEWAY APPROACH.

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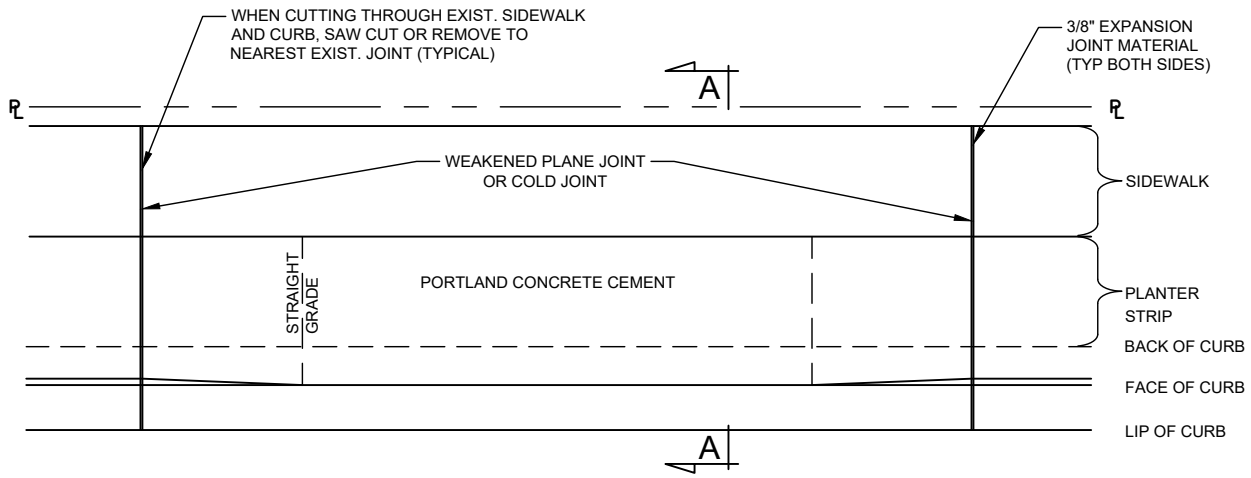
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

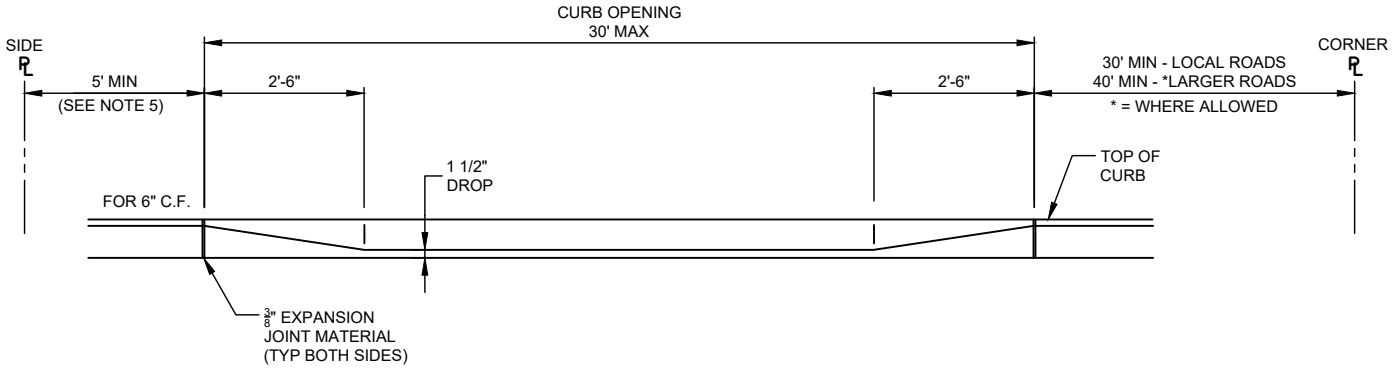
RESIDENTIAL DRIVEWAY APPROACH

STREETS-7

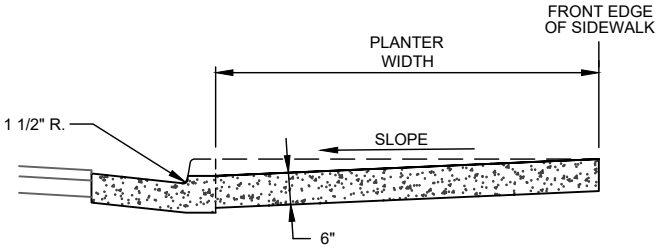


PLAN

SUPERSEDED



ELEVATION



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE
3. INSTALL 4" PVC SLEEVE UNDER DRIVEWAY AND 10" BELOW SIDEWALK FOR PI SERVICE.
4. WHEN PERMITTED ON ROADS WITH HIGHER CLASSIFICATIONS, APPROACHES SHALL NOT BE CLOSER THAN 50' TO ANOTHER DRIVEWAY APPROACH.

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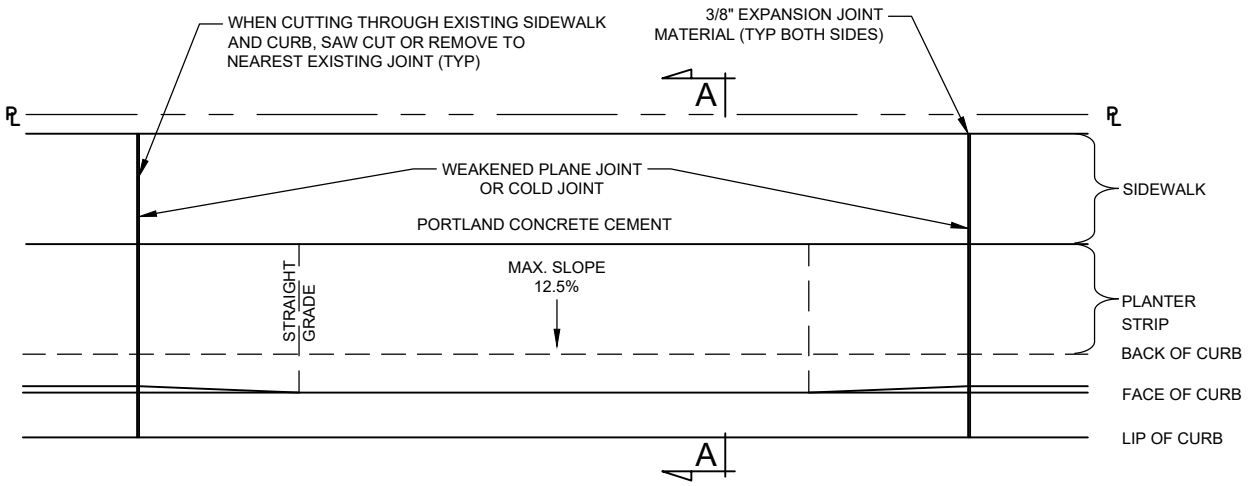
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

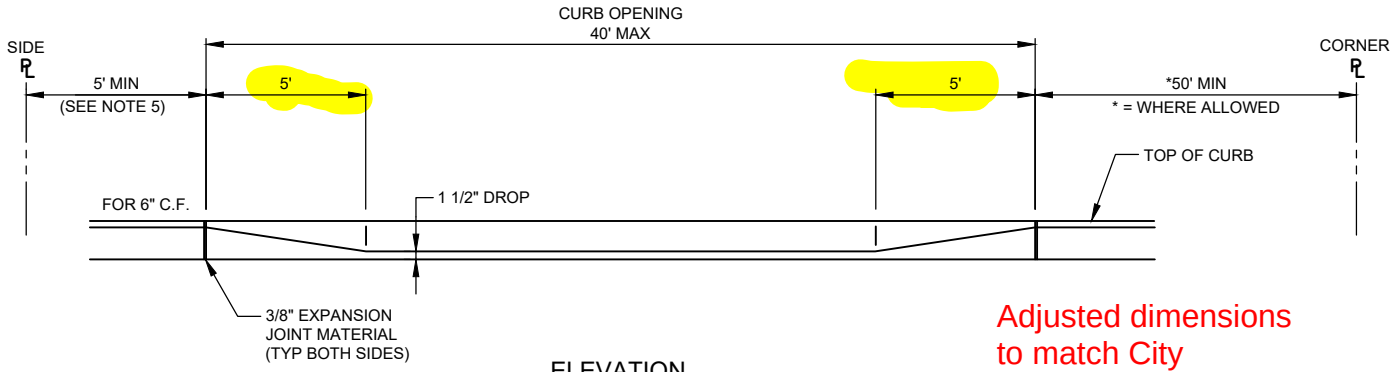
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

RESIDENTIAL DRIVEWAY APPROACH

STREETS-7

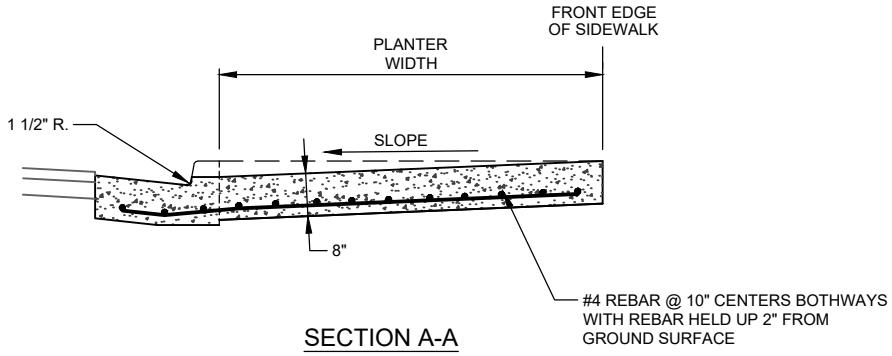


PLAN



ELEVATION

Adjusted dimensions to match City Standards



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE.

HEBER CITY
HEART OF THE WASATCH BACK

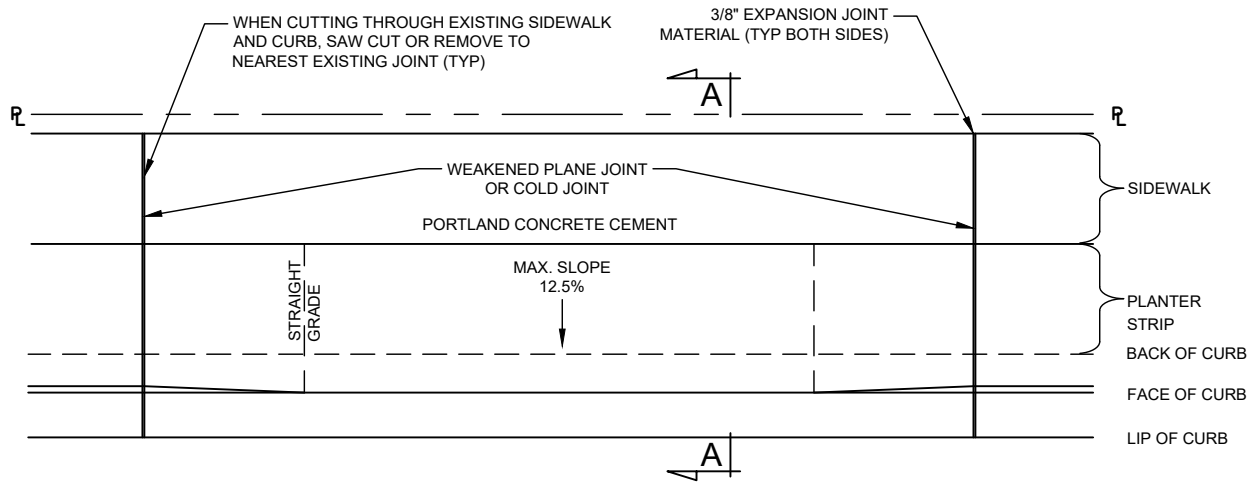
DATE: 01/25
SCALE: N.T.S.

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COMMERCIAL DRIVEWAY APPROACH

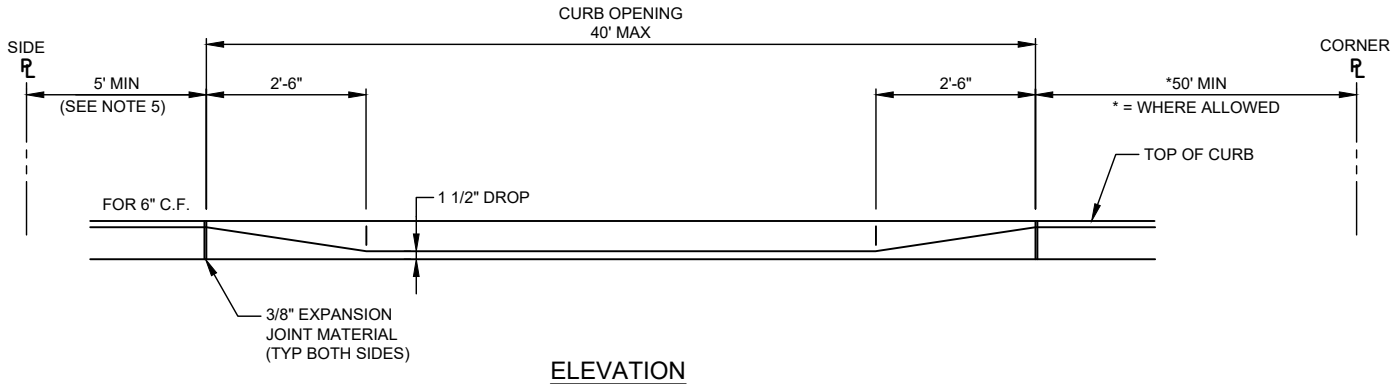
STREETS-8

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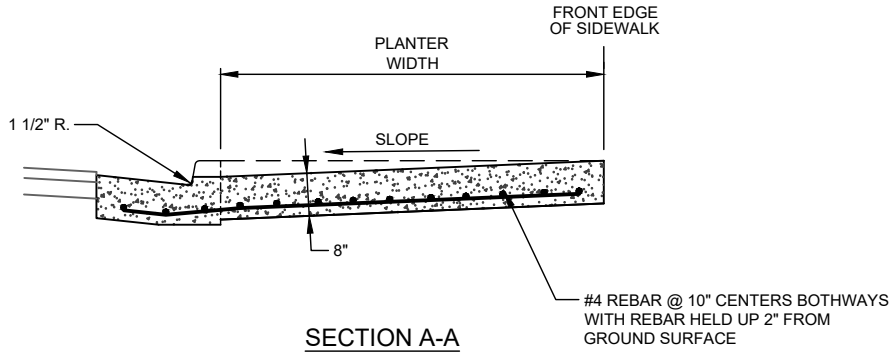


SUPERSEDED

PLAN



ELEVATION



SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE.

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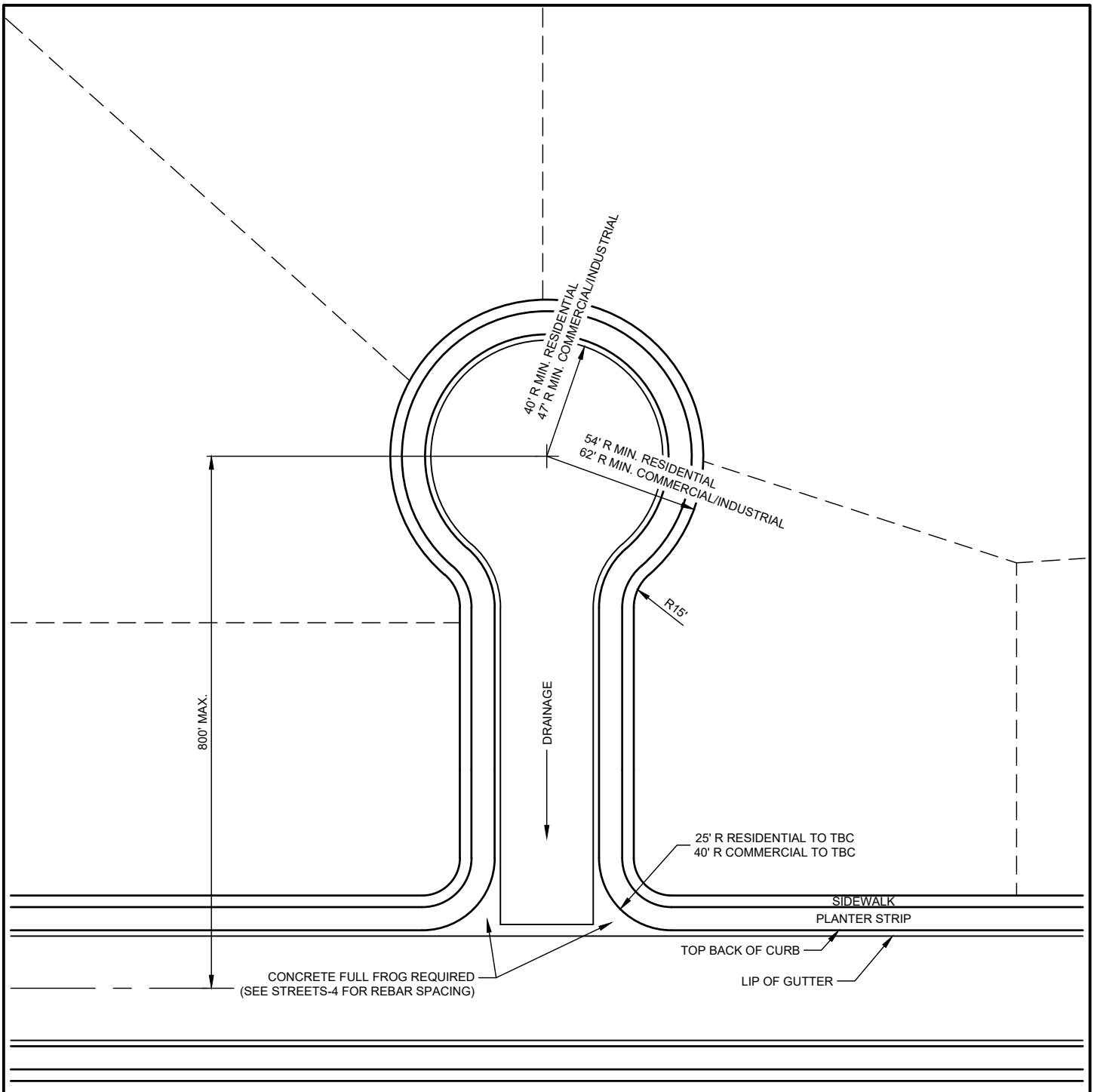
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

COMMERCIAL DRIVEWAY APPROACH

STREETS-8



NOTES:

1. WHEN REQUIRED BY CITY ENGINEER, PARK STRIP MAY BE INCREASED TO 10' IN WIDTH TO ADDRESS CONCERNS WITH SNOW STORAGE AND/OR LOT FRONTAGE IN THE CUL-DE-SAC.
2. THE CUL-DE-SAC RADIUSES SHOWN ABOVE ARE TO BE CONSIDERED AS MINIMUMS AND MAY NEED TO BE INCREASED IN CERTAIN SITUATIONS BASED ON FIRE DISTRICT REVIEW.

HEBER CITY
HEART OF THE WASATCH BACK

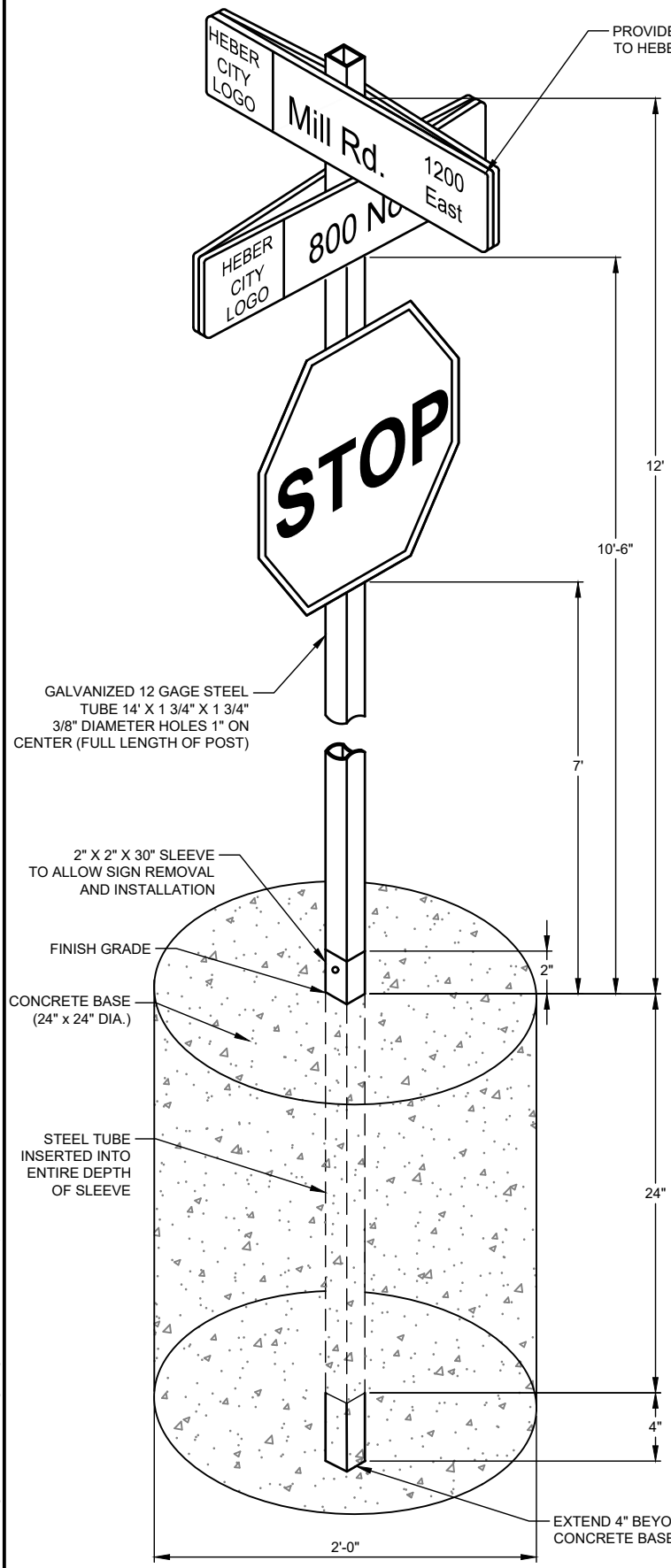
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SCALE: N.T.S.

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CUL-DE-SAC

STREETS-9

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NOTES:

1. FORMAT: SECURE ENGINEER'S APPROVAL OF SIGN FORMAT AND INSTALLATION.
2. INSTALLATION:
   A. INSTALL SIGNS ON THE SAME SIGN POST AS THE STOP SIGN AS APPROPRIATE.
   B. INSTALL THE EDGE OF THE SIGN 2 FEET FROM THE VERTICAL EXTENSION OF THE BACK OF CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB P.C. (POINT OF CURVATURE).
3. NAMED STREETS SHOULD ALSO INCLUDE NUMERIC LOCATION ON RIGHT SIDE OF SIGN.

STREET NAME SIGNS:

1. SIZE 38" X 8".
2. DOUBLE BLADED .080 ALUMINUM WITH RIVETED ENDS AND BACK WASHERS.
3. THE LETTERING FOR NAMES OF STREETS AND HIGHWAYS ON STREET NAME SIGNS SHALL BE COMPOSED OF A COMBINATION OF LOWER-CASE LETTERS WITH INITIAL UPPER-CASE LETTERS (SERIES C).
4. LETTERING ON POST-MOUNTED STREET NAME SIGNS SHOULD BE COMPOSED OF INITIAL UPPER-CASE LETTERS AT LEAST 6 INCHES IN HEIGHT AND LOWER-CASE LETTERS AT LEAST 4.5 INCHES IN HEIGHT (SEE MUTCD FOR SPEEDS GREATER THAN 40 MPH).
5. 3" SERIES C LETTERS IF COORDINATE IS REQUIRED.
6. PRISMATIC GRADE LETTERING ON PRISMATIC GRADE BACKGROUND.
7. 8" X 8" LOGO LEFT HAND PORTION OF SIGN.
8. COLOR: GREEN AND WHITE (PRIVATE ROADS: BLUE AND WHITE).
9. LOGO: APPROVED HEBER CITY LOGO. ALL LOGOS AND SIGNS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.

REGULATORY SIGNS:

1. ALL STOP (R1-1-30), YIELD (R1-2-36) & SPEED LIMIT (R2-1-24) SIGNS ARE .080 ALUMINUM WITH PRISMATIC REFLECTIVE SHEETING.
2. ALL OTHER SIGNS .080 W/ PRISMATIC GRADE SHEETING.
3. ALL STOP, YIELD, AND SPEED LIMIT SIGNS SHALL BE 7 FEET MINIMUM FROM BOTTOM OF SIGN TO T.B.C. OR ASPHALT SURFACE.
4. THE OUTER EDGE OF ALL SIGNS SHALL BE A MINIMUM OF 2 FEET BEHIND THE FACE OF CURB.

TRAIL SIGNS:

1. COORDINATE WITH ENGINEER ON SIGN PLACEMENT.
2. TRAIL SIGNS SHALL BE INSTALLED WITH BOTTOM OF SIGN 5' FROM GROUND LEVEL.

HEBER CITY
HEART OF THE WASATCH BACK

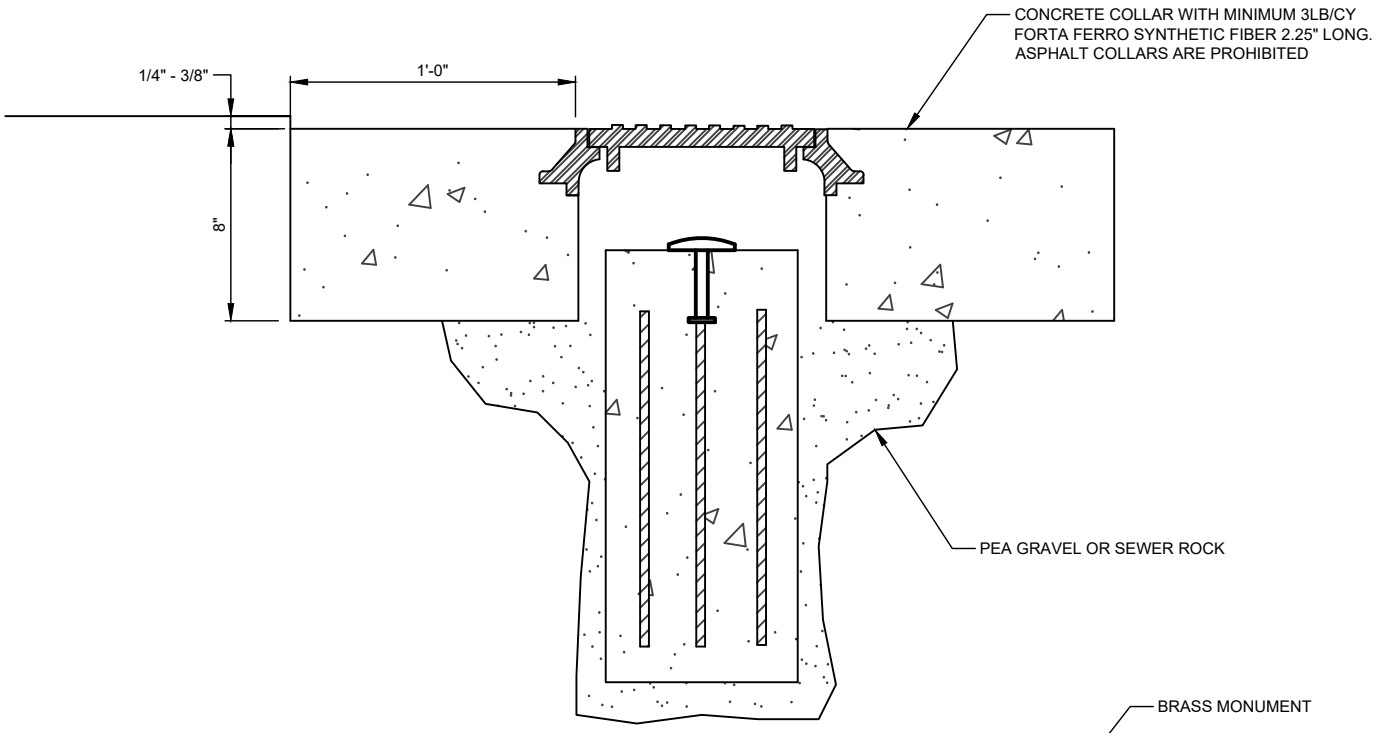
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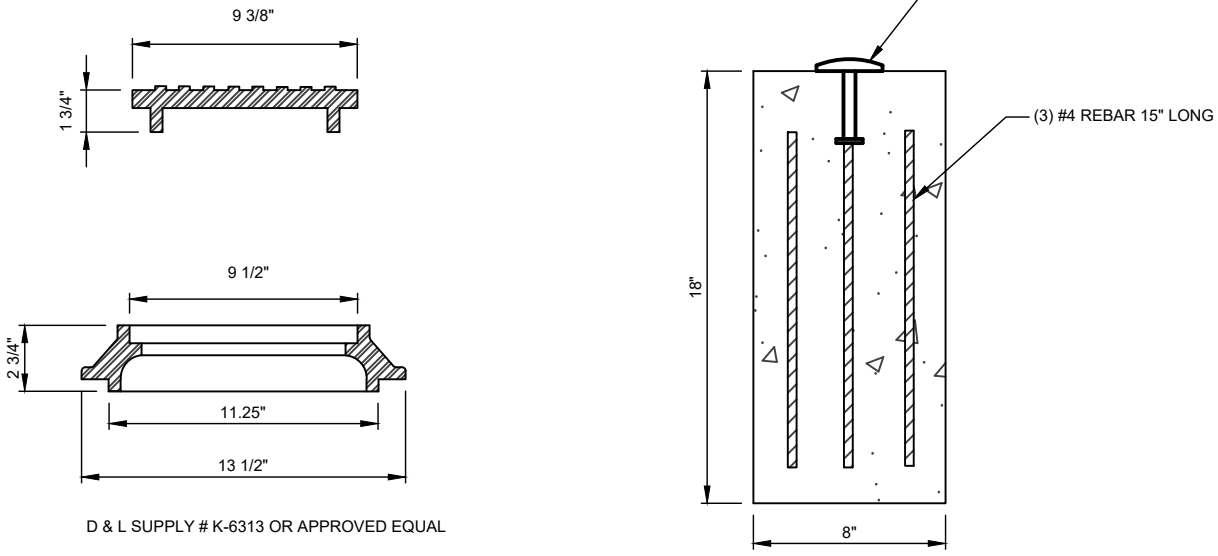
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIGNS

STREETS-10

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D & L SUPPLY # K-6313 OR APPROVED EQUAL

NOTES:

1. CAP SHOULD BE MARKED WITH CROSS ON WHICH LOCATION CORRESPONDS WITH RECORD OF SURVEY FILED WITH THE COUNTY.
2. CONCRETE BASE FOR THE SURVEY MONUMENT SHOULD BE INDEPENDENT OF CONCRETE COLLAR OF LID TO MINIMIZE VIBRATIONS TO MONUMENT.
3. CONCRETE BASE SHOULD BE INSTALLED USING PEA GRAVEL OR SEWER ROCK.
4. CONCRETE COLLAR TO HAVE TWO #4 BAR CONTINUOUS AROUND COLLAR WITH 12" OVERLAP.
5. CONCRETE COLLAR SHOULD BE 1/4" LOWER THAN SURROUNDING PAVEMENT.
6. LOCATE AT CENTERLINE OF INTERSECTIONS AND CUL-DE-SACS

HEBER CITY
HEART OF THE WASATCH BACK

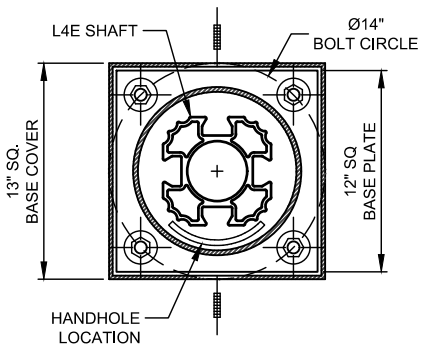
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HEBER CITY, UTAH 84032
(435) 654-0757

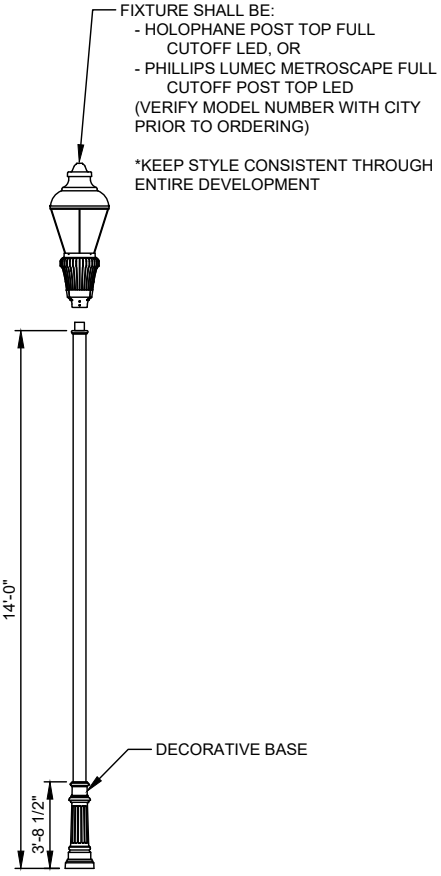
SURVEY MONUMENTS

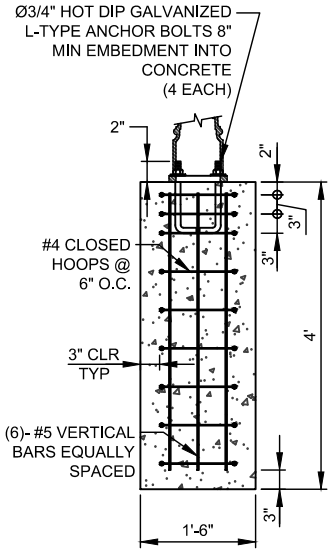
STREETS-11

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BASE PLATE DETAIL





CONCRETE BASE

NOTES:
1. RESIDENTIAL POLES SHALL BE FLUTED OR SMOOTH ALUMINUM WITH BLACK FINISH.
2. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 90 MPH MINIMUM.
3. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
4. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
5. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
6. THE TOP OF CONCRETE BASES SHALL BE BETWEEN 1 AND 3 INCHES ABOVE GRADE.

HEBER CITY
HEART OF THE WASATCH BACK

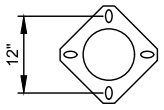
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SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

STREET LIGHTING

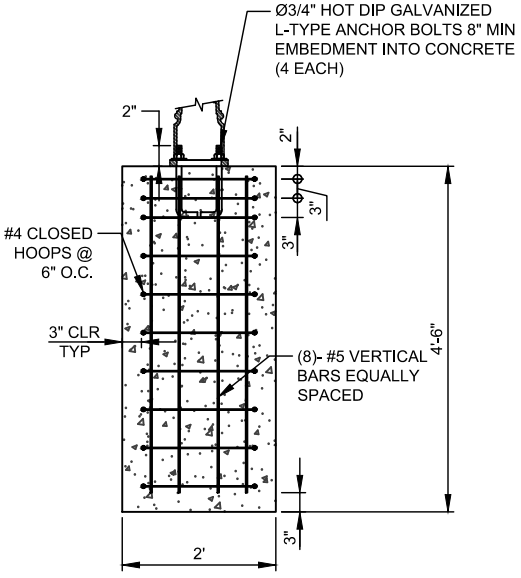
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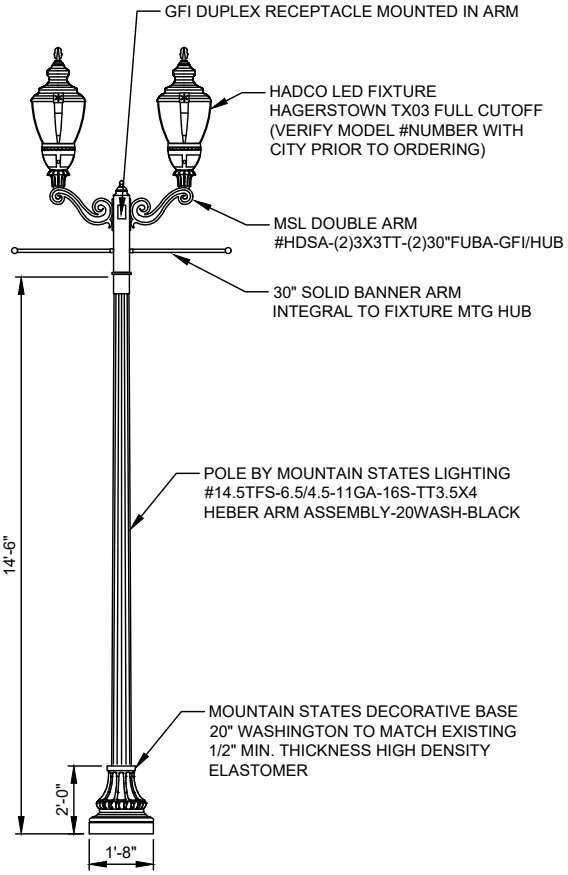


Ø3/4" X 18" min
HOT DIP GALVANIZED
L-TYPE ANCHOR BOLTS

BASE PLATE DETAIL



CONCRETE BASE



NOTES:
1. POLE SHALL BE FLUTED OR SMOOTH ALUMINUM WITH BLACK FINISH.
2. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 115 MPH MINIMUM.
3. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
4. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
5. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
6. THE BOTTOM OF THE DECORATIVE BASE SHALL BE FLUSH WITH THE ADJACENT GRADE.

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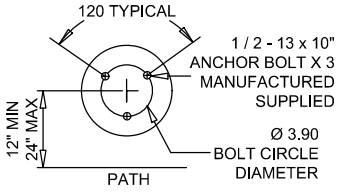
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 06/21
SCALE: N.T.S.

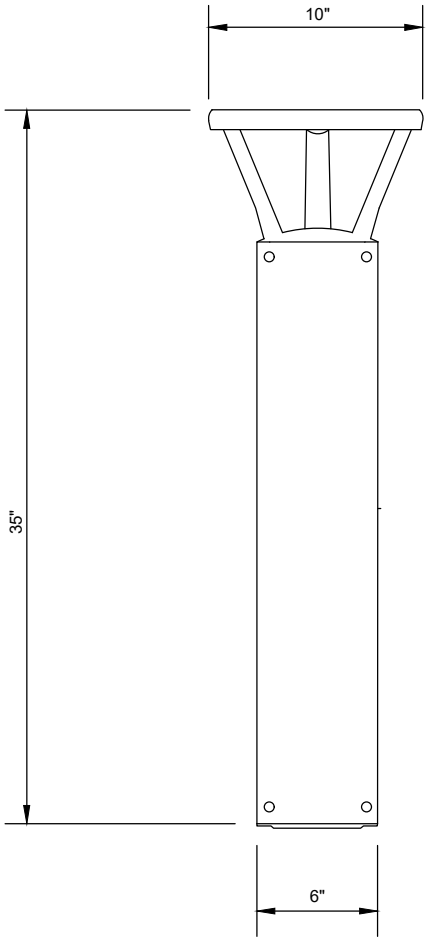
75 NORTH MAIN STREET
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COMMERCIAL HISTORIC STREET LIGHTING

STREETS-13

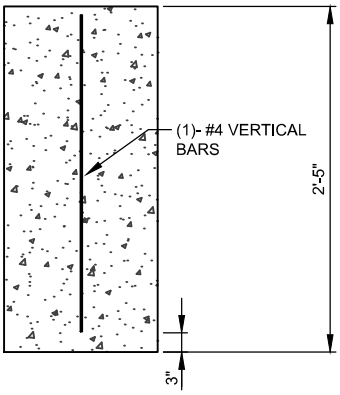


ANCHOR BOLT DETAIL



PLB - 102

NOTES:
1. TRAIL BOLLARD SHALL BE PLB SERIES SOLAR POWERED LED BOLLARD MODEL PLB 102 BK ASM WW 00 SEC BY FIRSTLIGHT TECHNOLOGIES



CONCRETE BASE

NOTES:
1. CONCRETE SHALL BE CLASS 3000 MIN PER SECTION 033014
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT
3. THE TOP OF THE CONCRETE BASE SHALL BE 1 TO 2 INCHES ABOVE THE ADJACENT GRADE.
4. BOLLARDS SHALL BE PLACED WITHIN 2 FEET OF EDGE OF TRAIL.

Added Note 4 to clarify location of bollard.

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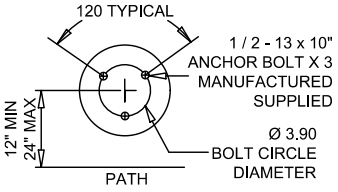
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

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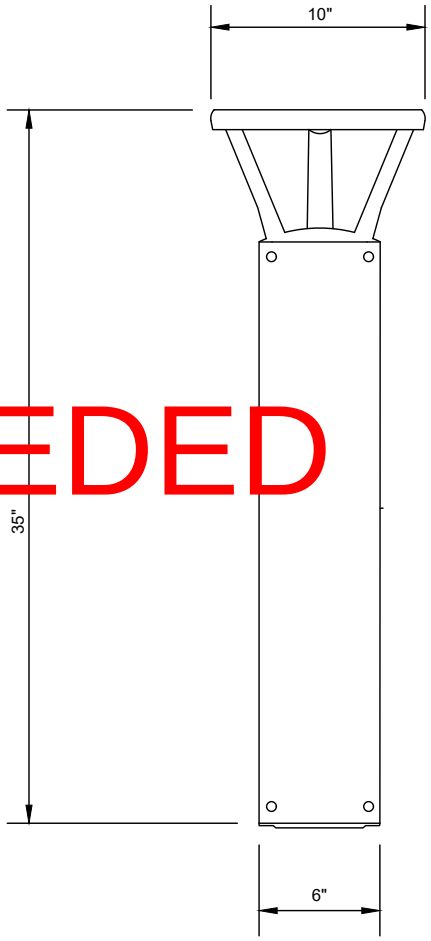
TRAIL LIGHTING

STREETS-14



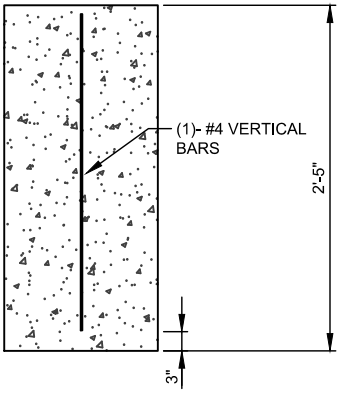
ANCHOR BOLT DETAIL

SUPERSEDED



PLB - 102

NOTES:
1. TRAIL BOLLARD SHALL BE PLB SERIES SOLAR POWERED LED BOLLARD MODEL PLB 102 BK ASM WW 00 SEC BY FIRSTLIGHT TECHNOLOGIES



CONCRETE BASE

NOTES:
1. CONCRETE SAHLL BE CLASS 3000 MIN PER SECTION 033014
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT
3. THE TOP OF THE CONCRETE BASE SHALL BE 1 TO 2 INCHES ABOVE THE ADJACENT GRADE.

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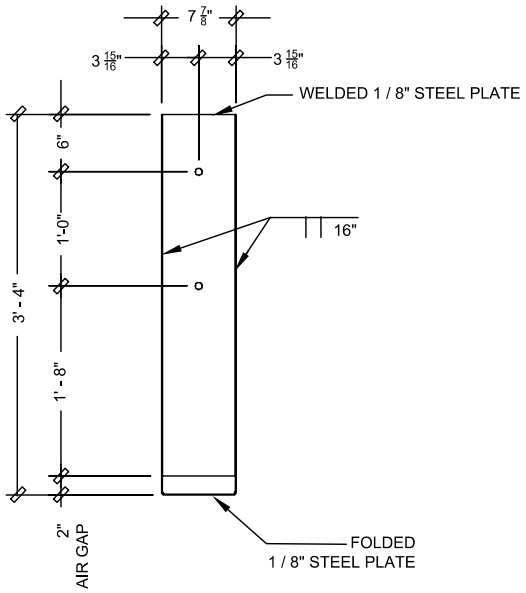
HEBER CITY
HEART OF THE WASATCH BACK

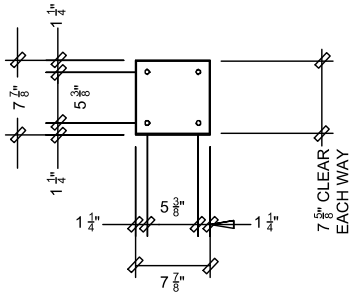
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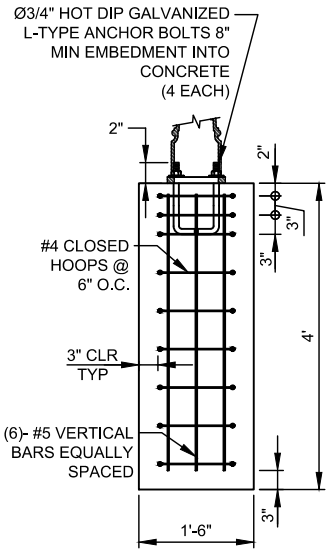
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HEBER CITY, UTAH 84032
(435) 654-0757

TRAIL LIGHTING

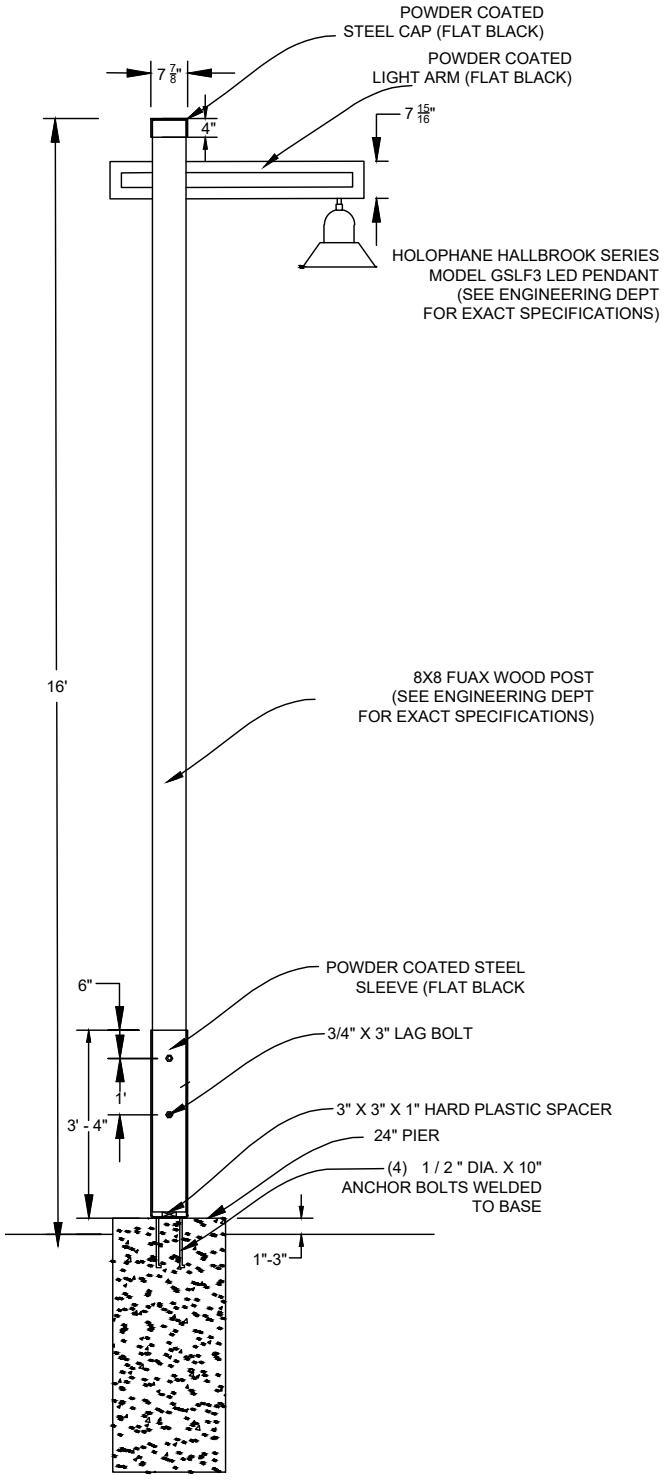
STREETS-14







CONCRETE BASE



NOTES:

1. LOADING CAPACITY OF POLE SHALL BE 100 POUND RATED FOR A STEADY WIND OF 90 MPH MINIMUM.
2. CONCRETE BASES SHALL BE BACKFILLED WITH SUITABLE MATERIAL COMPACTED TO 95 PERCENT.
3. CONCRETE BASES SHALL INCLUDE CONDUIT AND GROUNDING WIRE PER HEBER LIGHT & POWER REQUIREMENTS.
4. CONCRETE COMPRESSIVE STRENGTH (f'c) SHALL BE 4000 PSI.
5. THE TOP OF CONCRETE BASES SHALL BE BETWEEN 1 AND 3 INCHES ABOVE GRADE.

HEBER CITY
HEART OF THE WASATCH BACK

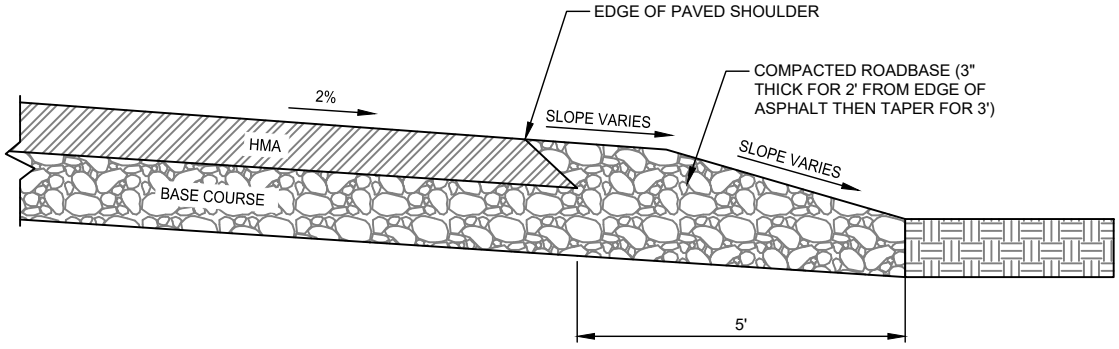
DATE: 09/23
SCALE: N.T.S.

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HEBER CITY, UTAH 84032
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NORTH VILLAGE LIGHTING

STREETS-15

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NOTES:

1. MAINTAIN POSITIVE DRAINAGE AWAY FROM ROAD AT THE SHOULDER.
2. ROADBASE MATERIAL REQUIREMENTS - FOLLOW HEBER CITY STANDARD SPECIFICATIONS SECTION 02206 (SELECT FILL) FOR UNTREATED BASE COARSE.
3. COMPACTION REQUIREMENTS:
   A. MAINTAIN OPTIMUM MOISTURE CONTENT +/- 2%.
   B. USE A MINIMUM OF TWO PASSES WITH A ROLLER OR AS DIRECTED BY THE ENGINEER.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

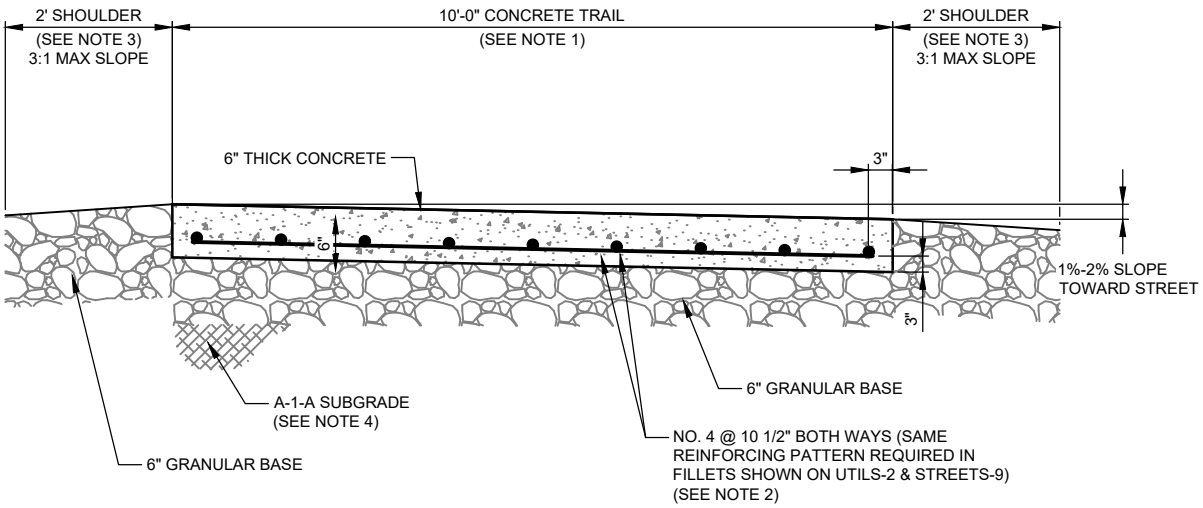
75 NORTH MAIN STREET
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RESIDENTIAL ROAD SHOULDER WITHOUT CURB & GUTTER

STREETS-16

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New detail added to show how we expect concrete trails to be built.



10' WIDE CONCRETE TRAIL SECTION

NOTES:

1. ALL TRAILS TO BE CONCRETE UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
2. REBAR REQUIRED AT ALL COMMERCIAL DRIVE APPROACHES AND OTHER VEHICULAR CROSSINGS.
3. ADD 2' ROAD BASE SHOULDER TO EACH SIDE (EXCEPTION: ADD GRASS OR OTHER LANDSCAPING TO EITHER SIDE OF TRAIL, REFERENCE LANDSCAPE PLANS).
4. SUBGRADE SHALL BE A-1-A GRANULAR MATERIAL PER SECTION 02225.

HEBER CITY
HEART OF THE WASATCH BACK

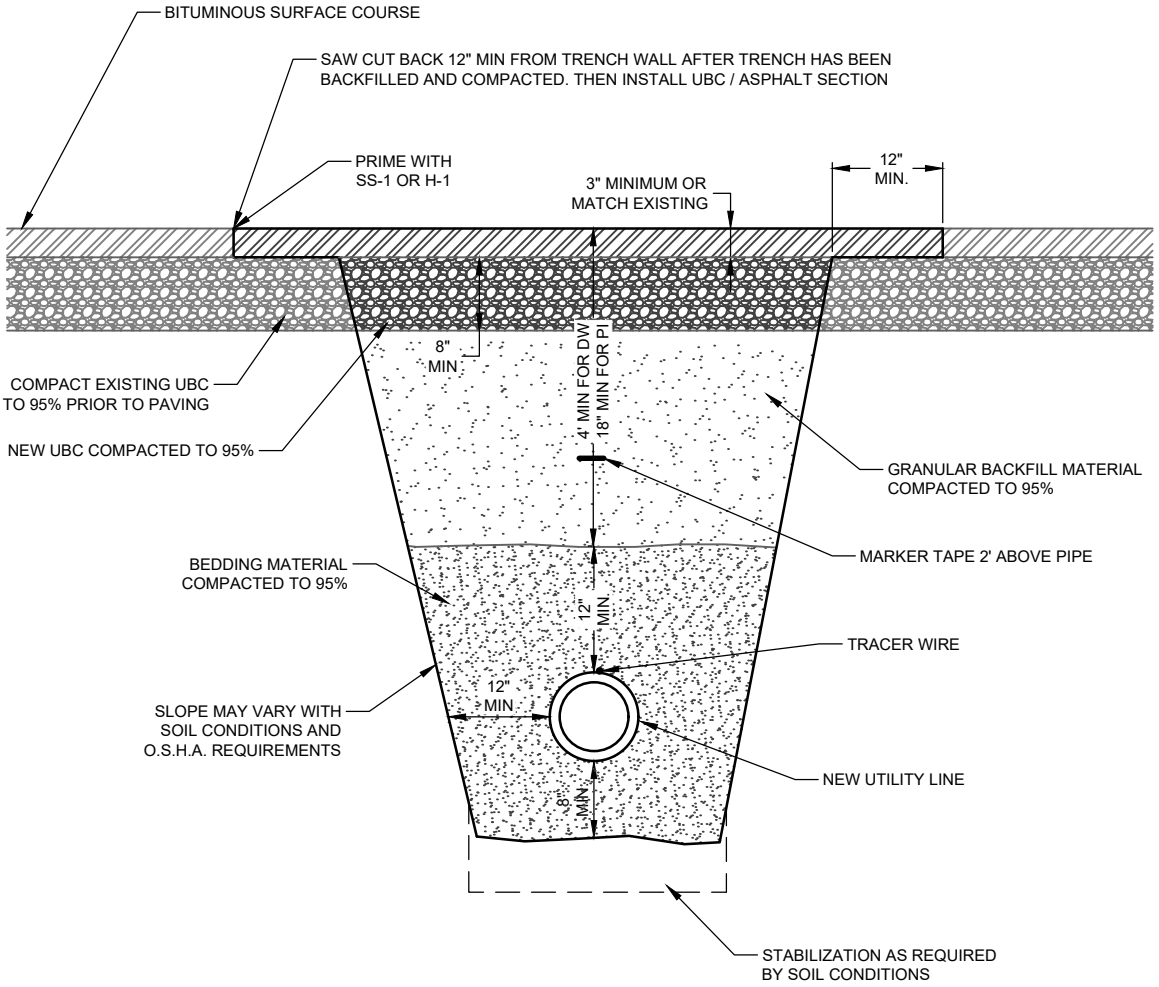
DATE: 01/25
SCALE: N.T.S.

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10' CONCRETRE TRAIL

STREETS-17

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NOTES:

1. COMPACTED BEDDING MATERIAL SHALL NORMALLY CONSIST OF BEDDING SAND (SEE SECTION 02206.2.06 OF THE HEBER CITY STANDARD SPECIFICATIONS).
2. IF APPROVED BY CITY ENGINEER, 3/4" DRAIN ROCK MAY BE USED FOR BEDDING MATERIAL AND SHALL BE WRAPPED IN APPROVED FILTER FABRIC (SEE SECTION 02772.2.02 OF THE HEBER CITY SPECIFICATIONS), UNLESS OTHERWISE APPROVED.
3. MATERIALS, METHOD & COMPACTION SHALL BE APPROVED BY ENGINEER.
4. USE OF PEA GRAVEL OR COURSE SAND FOR BEDDING MATERIAL IS PROHIBITED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
5. USE OF NATIVE MATERIAL FOR BACKFILL IS PROHIBITED (EXCEPT AS APPROVED BY THE CITY ENGINEER WITH FULL TIME TESTING AND INSPECTION).
6. USE PROPER MARKER TAPE AS APPROVED BY CITY ENGINEER.
7. INSTALL TRACER WIRE (SEE DETAIL WATER-5 OF THE HEBER CITY STANDARD DETAIL DRAWINGS).
8. FLOWABLE FILL IS PROHIBITED AS BACKFILL MATERIAL UNLESS OTHERWISE APPROVED BY CITY ENGINEER. WHEN APPROVED, SURFACE FINISHES MUST STILL BE MATCHED.
9. ALL EXCAVATION AND BACKFILL OPERATIONS SHALL CONFORM TO THE HEBER CITY SPECIFICATIONS (SEE SECTION 02225 OF THE HEBER CITY STANDARD SPECIFICATIONS).

Added to the notes to tie back detail to Specification Sections.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

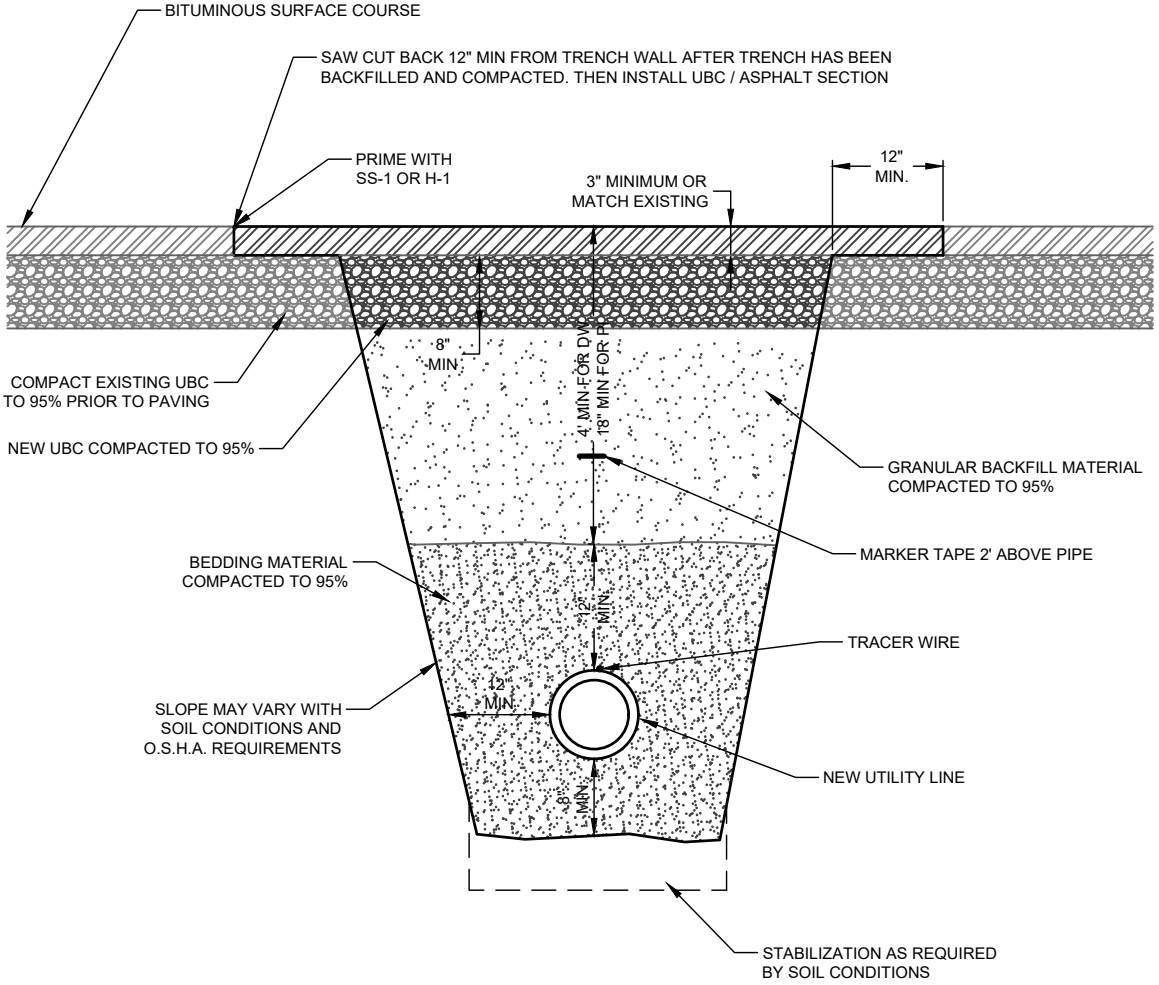
75 NORTH MAIN STREET
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UTILITY INSTALLATION TRENCH DETAIL

UTIL-1

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SUPERSEDED



NOTES:

1. COMPACTED BEDDING MATERIAL SHALL NORMALLY CONSIST OF BEDDING SAND.
2. IF APPROVED BY CITY ENGINEER, 3/4" DRAIN ROCK MAY BE USED FOR BEDDING MATERIAL AND SHALL BE WRAPPED IN APPROVED FILTER FABRIC (SEE HEBER CITY SPECIFICATION 02772.2.02), UNLESS OTHERWISE APPROVED.
3. MATERIALS, METHOD & COMPACTION SHALL BE APPROVED BY ENGINEER.
4. USE OF PEA GRAVEL OR COURSE SAND FOR BEDDING MATERIAL IS PROHIBITED UNLESS OTHERWISE APPROVED BY THE CITY ENGINGEER.
5. USE OF NATIVE MATERIAL FOR BACKFILL IS PROHIBITED (EXCEPT AS APPROVED BY THE CITY ENGINEER WITH FULL TIME TESTING AND INSPECTION).
6. USE PROPER MARKER TAPE AS APPROVED BY CITY ENGINEER.
7. INSTALL TRACER WIRE AS PER WATER-5.
8. FLOWABLE FILL IS PROHIBITED AS BACKFILL MATERIAL UNLESS OTHERWISE APPROVED BY CITY ENGINEER. WHEN APPROVED, SURFACE FINISHES MUST STILL BE MATCHED.

HEBER CITY
HEART OF THE WASATCH BACK

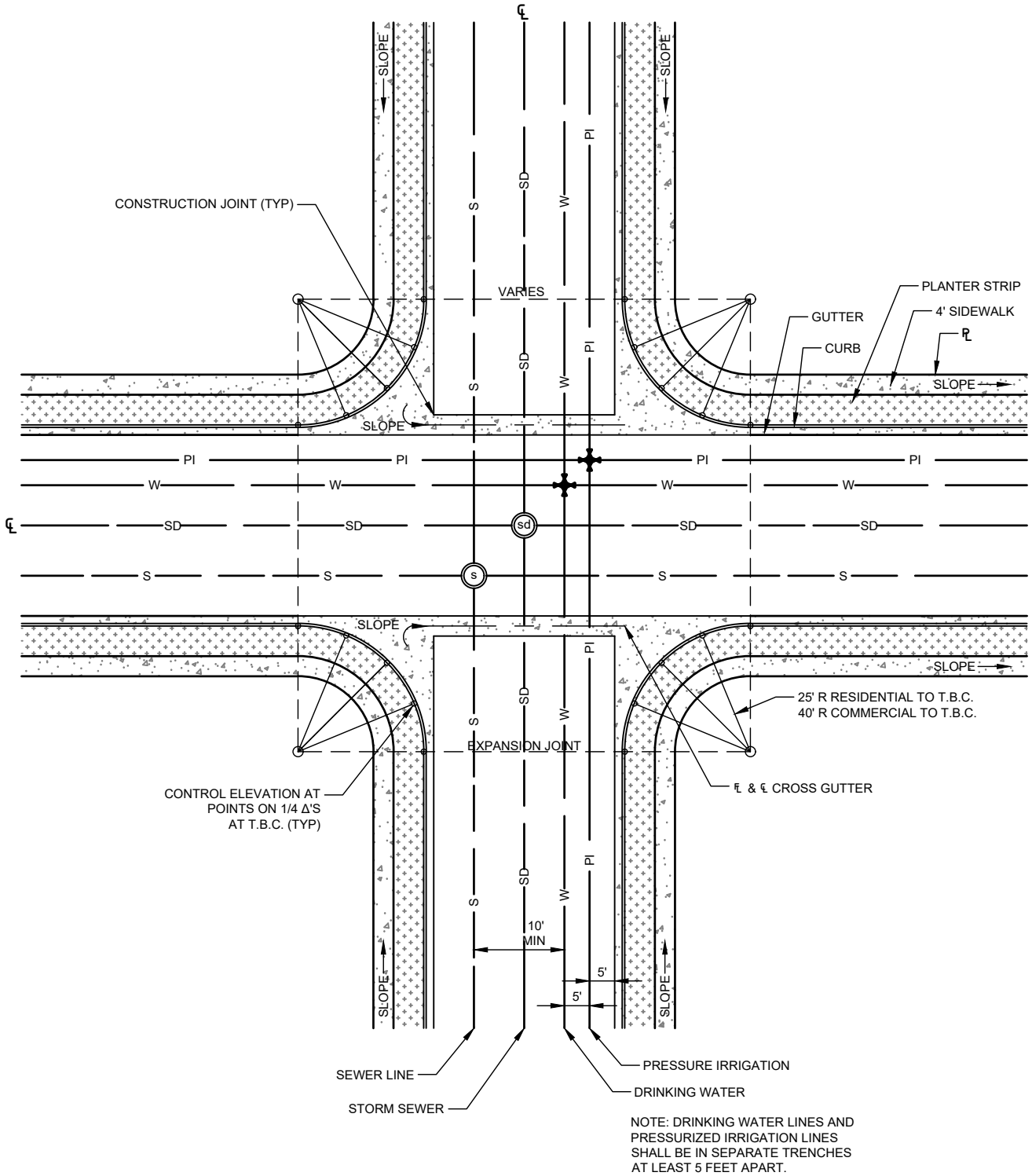
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SCALE: N.T.S.

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UTILITY INSTALLATION TRENCH DETAIL

UTIL-1

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\UTILITIES-1 Updated.dwg - Trench - 9/07/2023 03:43pm, natalier



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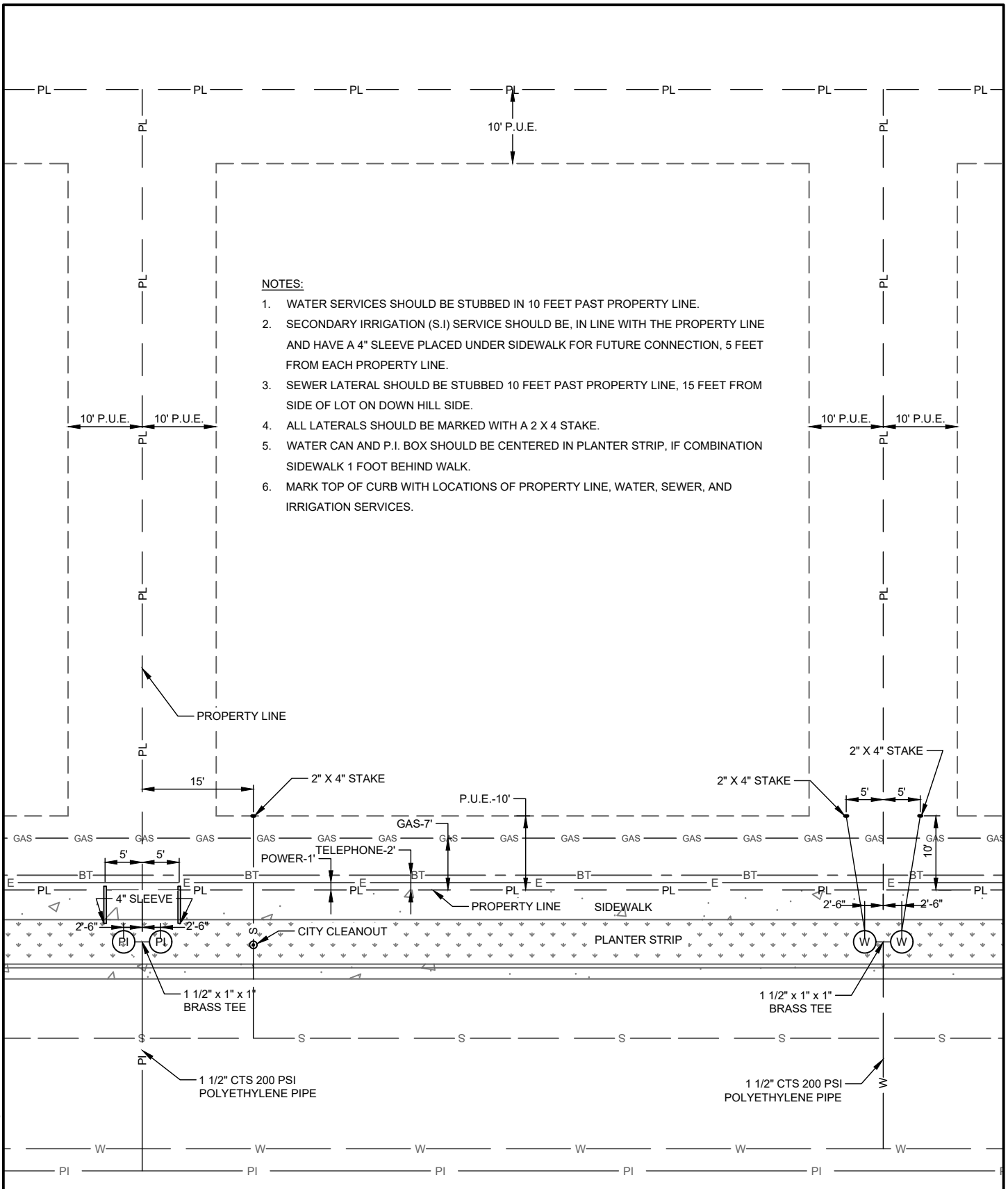
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

STANDARD STREET INTERSECTION & UTILITY LOCATION

UTIL-2



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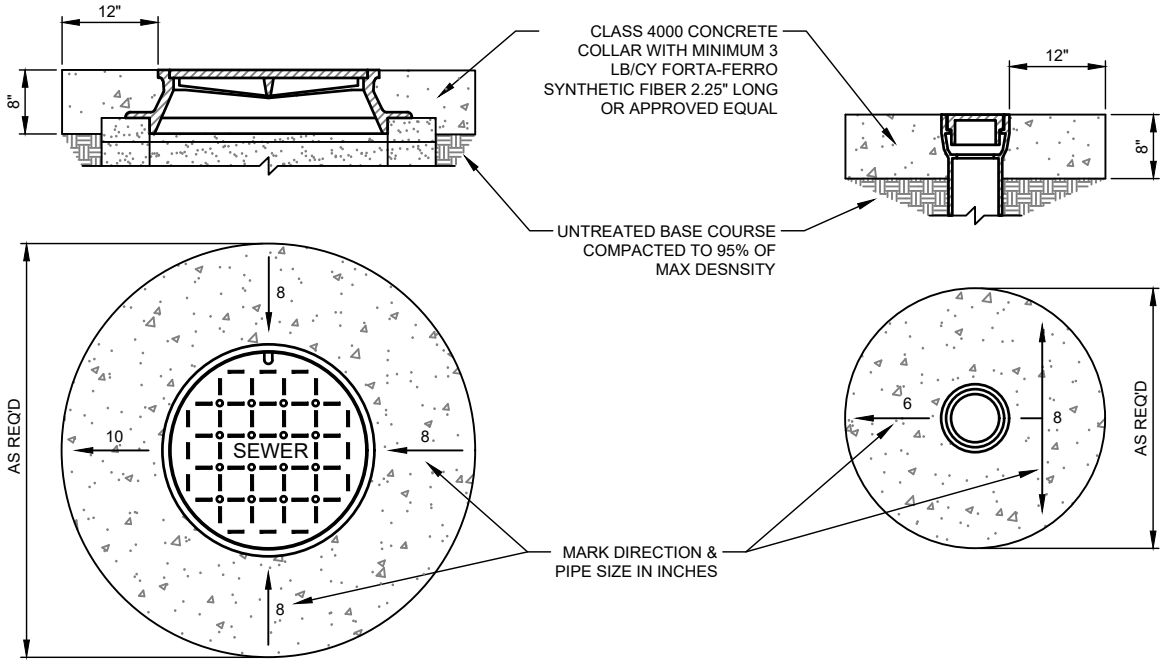
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17
SCALE: N.T.S.

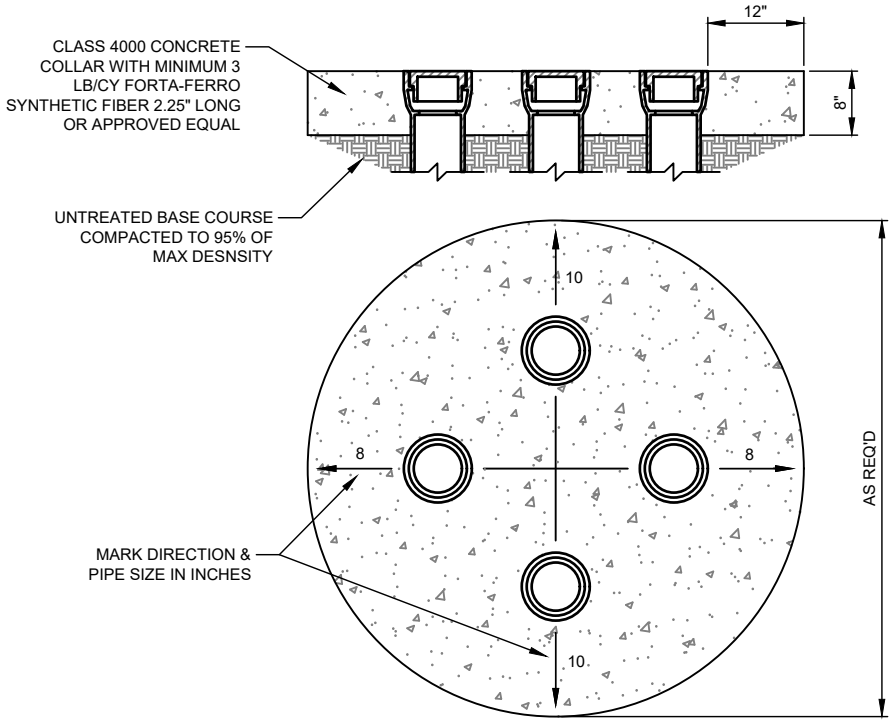
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LATERALS & UTILITY LOCATION

UTIL-3



SINGLE ITEM CONCRETE COLLAR



MULTIPLE ITEM CONCRETE COLLAR

NOTES:

1. NEW AND EXISTING VALVE BOXES AND OTHER SIMILAR ITEMS SHALL BE ADJUSTED TO GRADE AFTER PAVING IS COMPLETE.
2. THE SURFACE OF THE ADJUSTED RING SHALL MATCH THE GRADE OF THE CONCRETE COLLAR. THE CONCRETE COLLAR SHALL BE 1/4" to 3/8" BELOW THE ADJACENT PAVED SURFACE.
3. ASPHALT SHALL BE CUT IN STRAIGHT VERTICAL LINES AT COLLAR EDGES.
4. MARK CONCRETE COLLAR WITH DIRECTION ARROW AND PIPE SIZE IN INCHES.
5. SIZES AND CONFIGURATIONS FOR EXAMPLE ONLY. SHOW ACTUAL CONFIGURATION FOR EACH SITUATION.
6. WHERE WHIRLYGIG SYSTEMS (OR EQUAL) ARE USED TO BRING MANHOLE COLLARS TO GRADE IN PLACE OF CONCRETE GRADE RINGS, THE CONCRETE COLLAR SHALL EXTEND ALL THE WAY TO THE CONE OR HIGHEST MANHOLE SECTION.

HEBER CITY
HEART OF THE WASATCH BACK

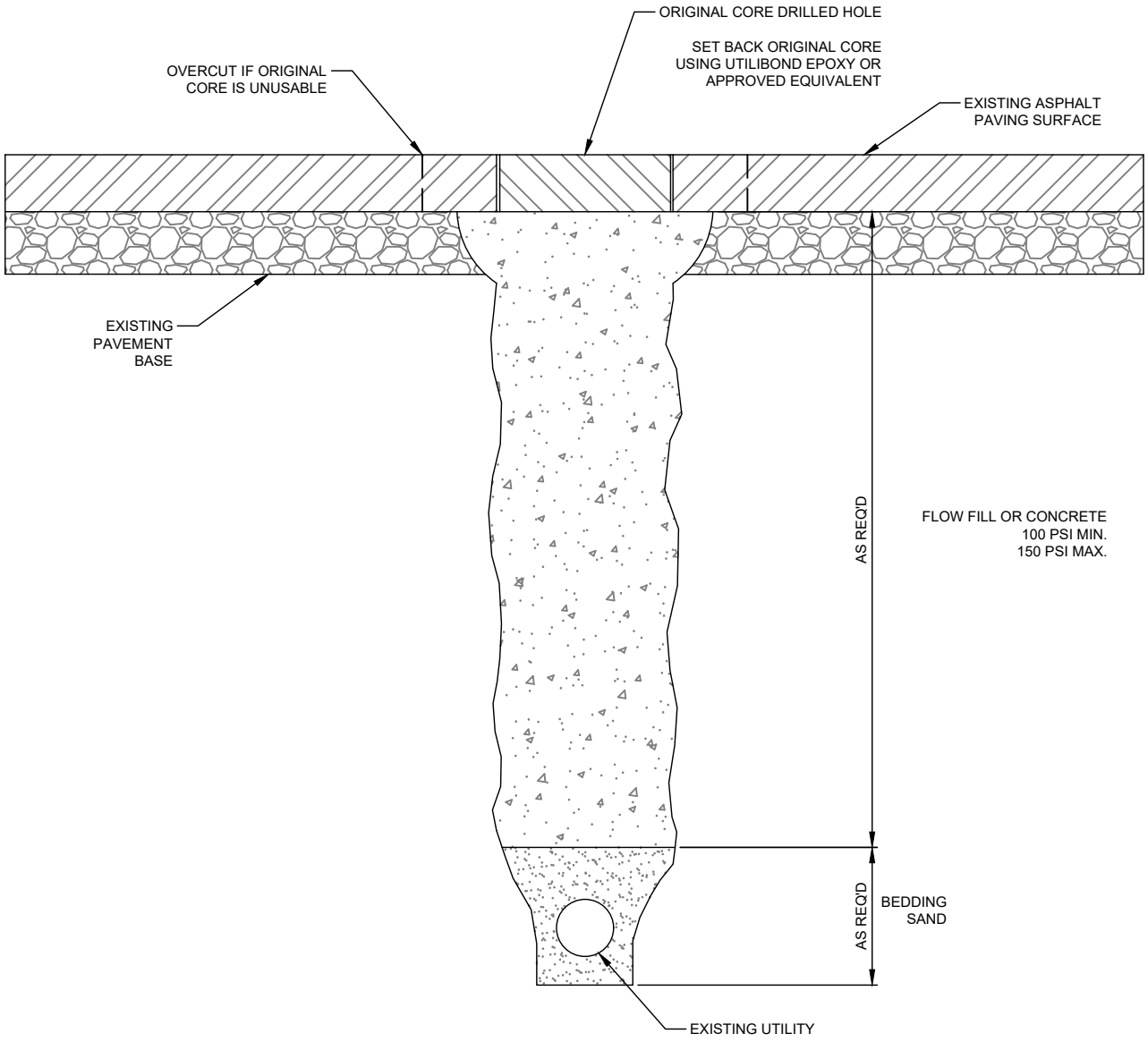
DATE: 03/17
SCALE: N.T.S.

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UTILITY CONCRETE COLLAR

UTILITIES-4

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NOTES:

1. IF ORIGINAL CORE CANNOT BE USED, THEN CORE MUST BE OVERCUT 12" MIN. AND THEN FILLED WITH HOT MIX ASPHALT.

HEBER CITY
HEART OF THE WASATCH BACK

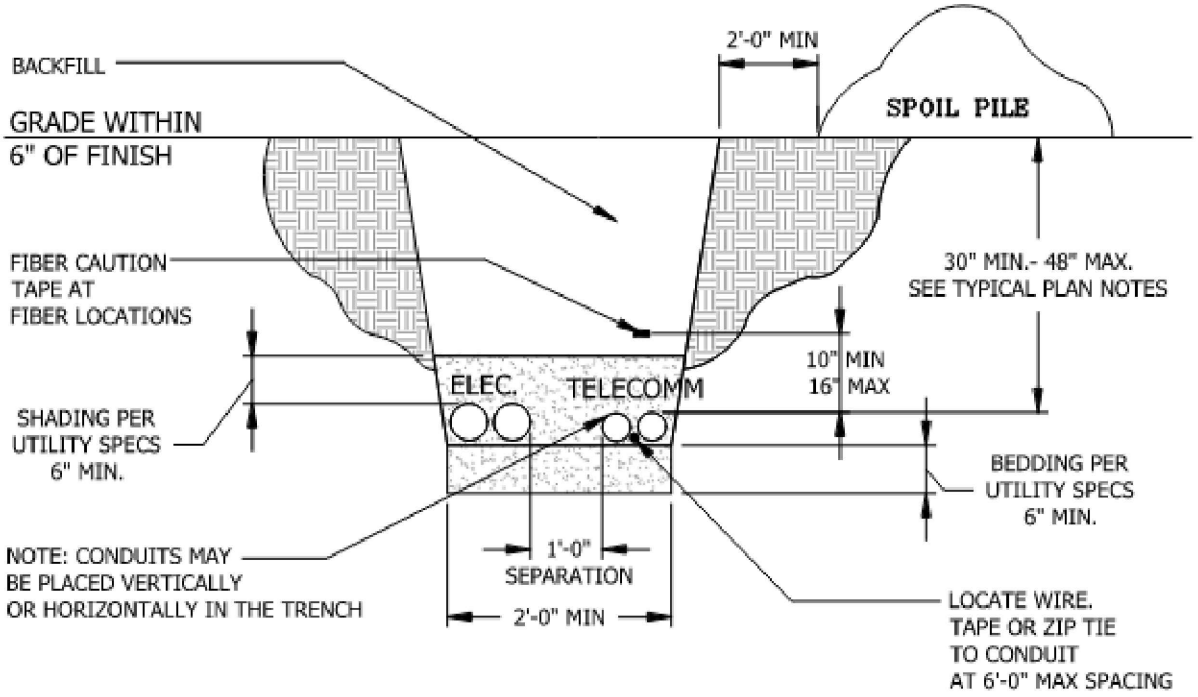
DATE: 09/23
SCALE: N.T.S.

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UTILITY POTHOLE REPAIR

UTIL-5

H:\Heber City\Std Dwgs\2023 September\Std Dwgs\UTILITIES-5 Updated.dwg - Pothole Rpr - 9/07/2023 03:43pm, natalier



NOTES

1. SEE THE TYPICAL DETAILS FOR MORE INFORMATION.
2. TYPICAL TRENCH DEPTHS:
   - 2.1. ALL TRENCH DEPTHS ARE THE MINIMUM REQUIRED FROM FINAL FINISH GRADE TO TOP OF CONDUIT.
     - 2.1.1. RESIDENTIAL RIGHT-OF-WAY: 30"
     - 2.1.2. OTHER RIGHT-OF-WAY: 36"
3. ALL PEDESTALS AND VAULTS SHALL BE PLACED NEXT TO GROUND TRANSFORMERS, SWITCHES, AND OTHER GROUND-INSTALLED POWER FACILITIES, AND SHALL MEET MINIMUM CLEARANCE REQUIREMENTS REQUIRED BY HEBER LIGHT & POWER COMPANY.
4. ALL PEDESTALS AND VAULTS SHALL BE PLACED A MINIMUM OF 4'-0" CLEAR OF POWER POLES.
5. CONDUIT AND RUNS TO MAINTAIN 4'-0" MINIMUM FROM POWER POLE RUNNING LINE.
6. NOTIFY THE INSPECTOR IF MINIMUM CLEARANCES TO POWER POLES OR POWER RUNNING LINES ARE NOT ABLE TO BE MET.
7. ALL CONDUITS PLACED IN AN OPEN TRENCH SHALL BE LOCATED SUCH THAT THEY MINIMIZE SNAKING AND MAINTAIN AS STRAIGHT A PROFILE AS POSSIBLE.
8. ALL CONDUIT PATHWAYS SHALL BE PROOFED FOR FUTURE CABLE INSTALLATION PRIOR TO THE COMPLETION OF CONSTRUCTION.

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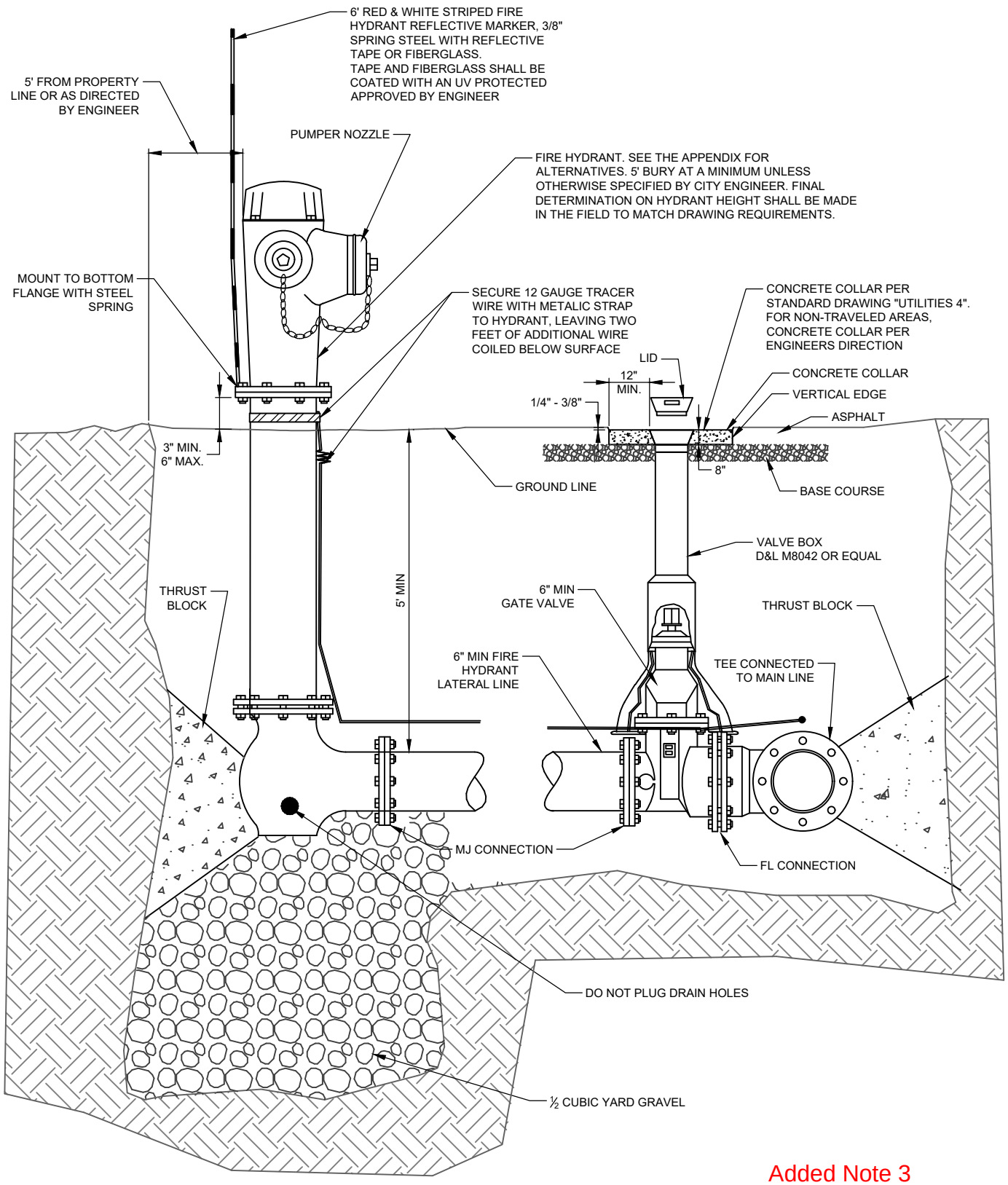
HEBER CITY
HEART OF THE WASATCH BACK

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TELECOMMUNICATIONS & POWER SHARED TRENCH

UTIL-6



Added Note 3

NOTES:

1. FIRE HYDRANT DRAINS SHALL NOT BE CONNECTED TO, OR LOCATED WITHIN, 10 FEET OF SANITARY SEWERS. WHERE POSSIBLE, HYDRANT DRAINS SHALL NOT BE LOCATED WITHIN 10 FEET OF STORM DRAINS.
2. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.
3. NO MORE THAN ONE STEM EXTENSION/ RISER ON A FIRE HYDRANT.

HEBER CITY
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DATE: 01/25
SCALE: N.T.S.

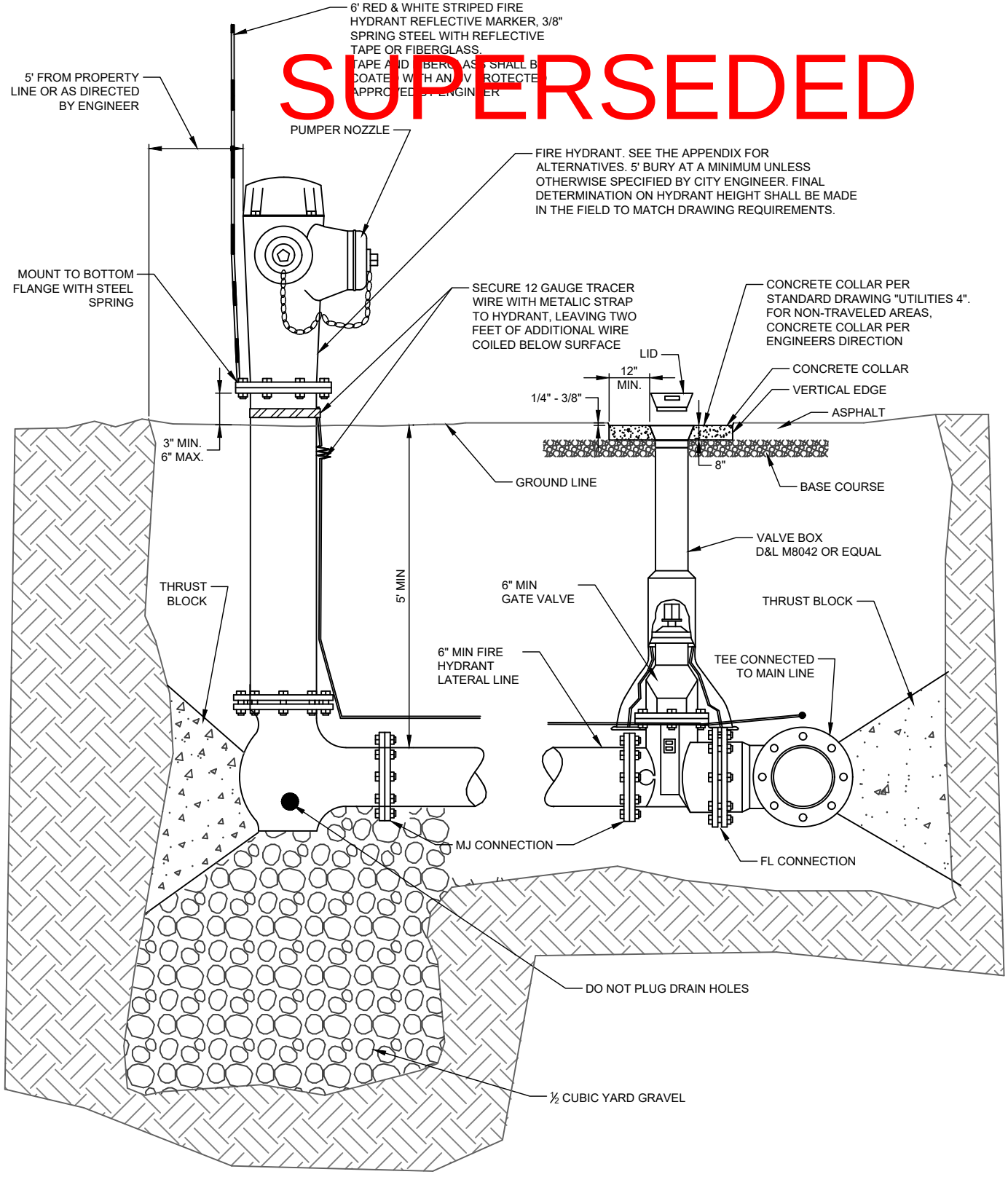
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FIRE HYDRANTS

WATER-1

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SUPERSEDED



NOTES:

1. FIRE HYDRANT DRAINS SHALL NOT BE CONNECTED TO, OR LOCATED WITHIN, 10 FEET OF SANITARY SEWERS. WHERE POSSIBLE, HYDRANT DRAINS SHALL NOT BE LOCATED WITHIN 10 FEET OF STORM DRAINS.
2. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 04/22

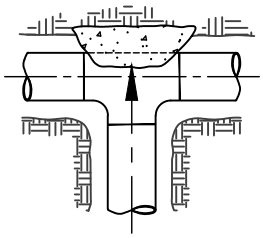
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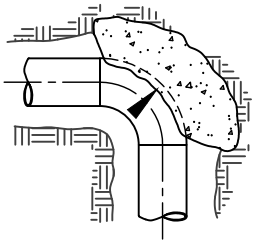
FIRE HYDRANTS

WATER-1

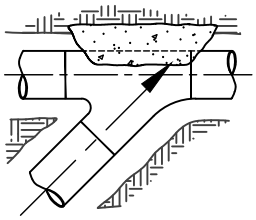
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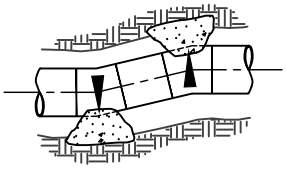
CONDITION 1



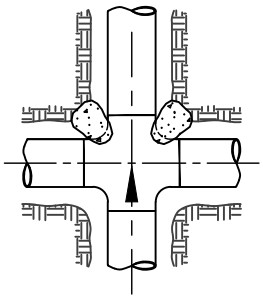
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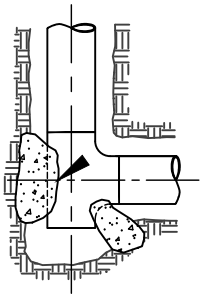
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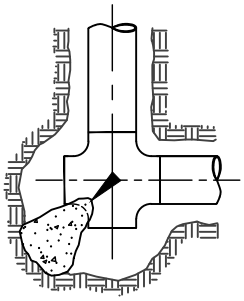
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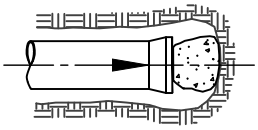
CONDITION 5
(@ ENGINEERS DISC)



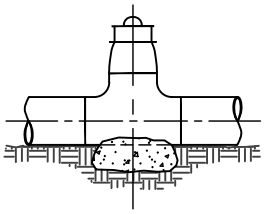
CONDITION 6



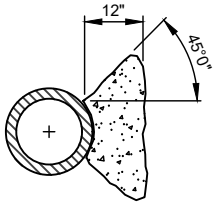
CONDITION 7



CONDITION 8



ANCHOR REQ'D. FOR
VALVES 12" OR LARGER



TYPICAL SECTION
THRU THRUST BLOCK

THRUST BLOCK BEARING AREA IN SQ. FT.

PIPE SIZE	CONDITION							
	1	2	3	4	5	6	7	8
4	2.6	3.3	2.6	1.3	1.3	2.0	3.3	2.6
6	4.6	6.5	3.9	2.0	2.6	3.3	6.5	4.6
8	7.8	11.0	5.9	3.3	3.9	5.9	11.0	7.8
10	12.4	17.5	9.8	5.2	6.5	9.1	17.5	12.4
12	17.5	24.8	13.6	7.8	9.1	12.3	24.8	17.5
14	24.0	33.8	18.2	9.7	12.3	16.9	33.8	24.0
16	31.1	44.0	23.8	12.7	15.5	23.2	44.0	31.1
20	48.6	68.8	37.2	19.8	24.2	36.3	68.8	48.6
24	89.8	90.1	48.8	24.9				

NOTES:

1. ALL THRUST BLOCK BEARING FACES SHALL BE POURED AGAINST UNDISTURBED SOIL OR APPROVED COMPACTED BACKFILL
2. CONCRETE SHALL BE CLASS 6.0-B-3000.
3. ALL THRUST BLOCK SIDES SHALL BE WOOD FORMED UNLESS OTHERWISE APPROVED.
4. CALCULATED ON 225 LB. TEST PRESSURE AND ALLOWABLE BEARING PRESSURE OF 200 LBS. PER SQUARE FEET.
5. IN POORER SOILS SPECIAL DESIGN IS REQUIRED.
6. VALVE BOLTS, WEEP-HOLES, AND OTHER FITTING APPARATUSES SHALL NOT BE COVERED WITH CONCRETE AND SHALL HAVE A MINIMUM 3" CLEARANCE FROM CONCRETE.
7. ALL THRUST BLOCKS SHALL BE INSPECTED BY AUTHORIZED CITY INSPECTOR PRIOR TO POUR AND PRIOR TO BACKFILL.

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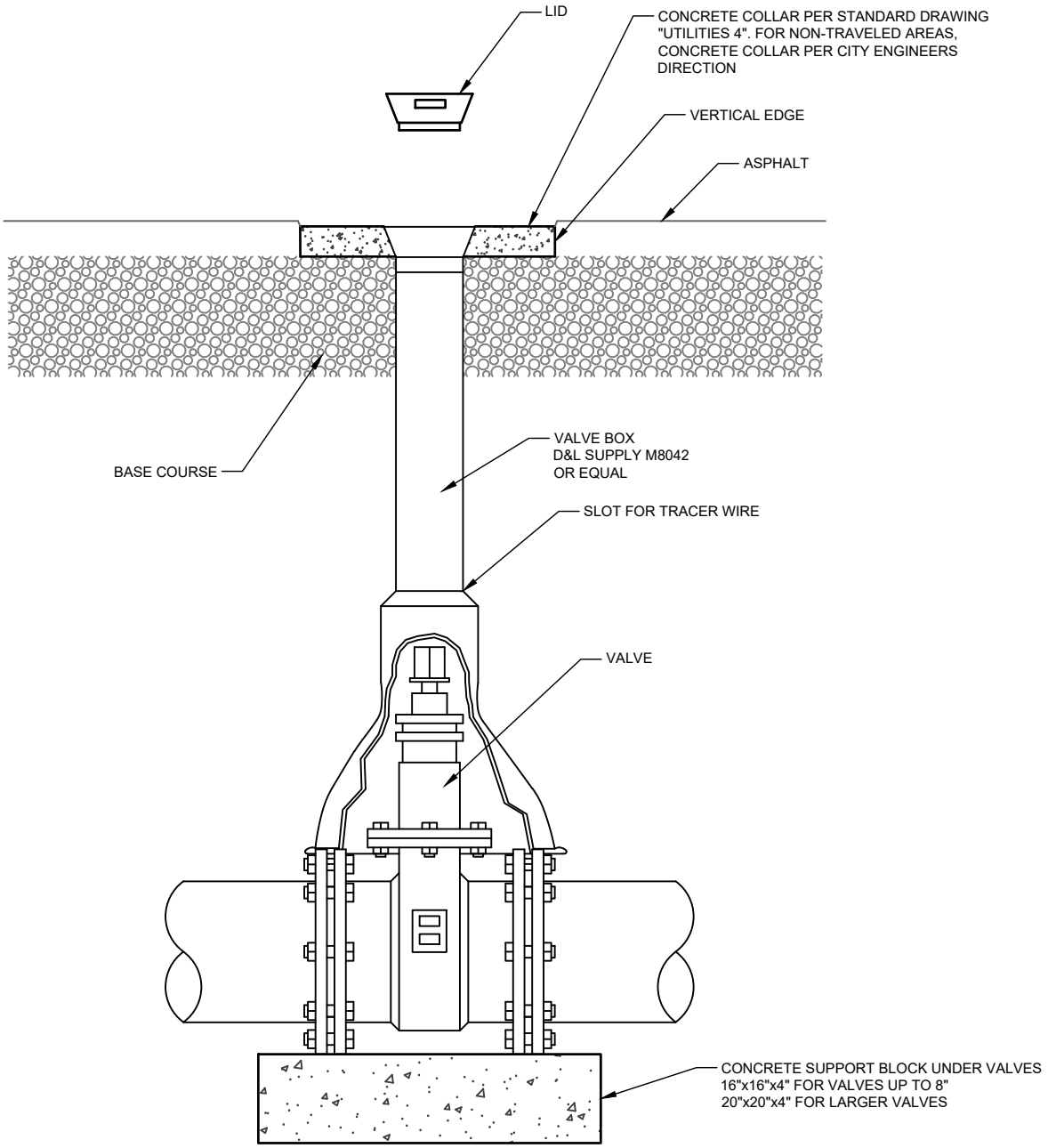
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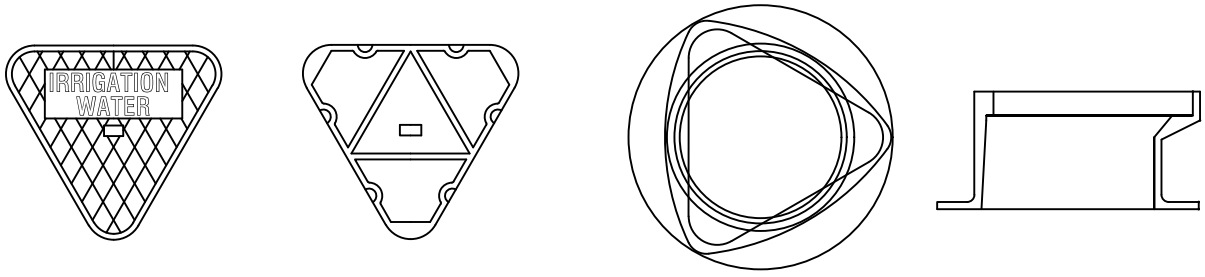
SCALE: N.T.S.

TYPICAL PIPE THRUST BLOCKING

WATER-2

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NOTES:

1. ALL IRRIGATION BOXES TO BE INSTALLED USING THE ABOVE LID. REF# M-9009
2. RAISE VALVE BOX TO GRADE AFTER PAVING OPERATIONS ARE COMPLETED.
3. GRIND SMALL SLOT FOR TRACER WIRE TO PASS THROUGH AT FLARE IN VALVE BOX.
4. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

HEBER CITY
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DATE: 04/22

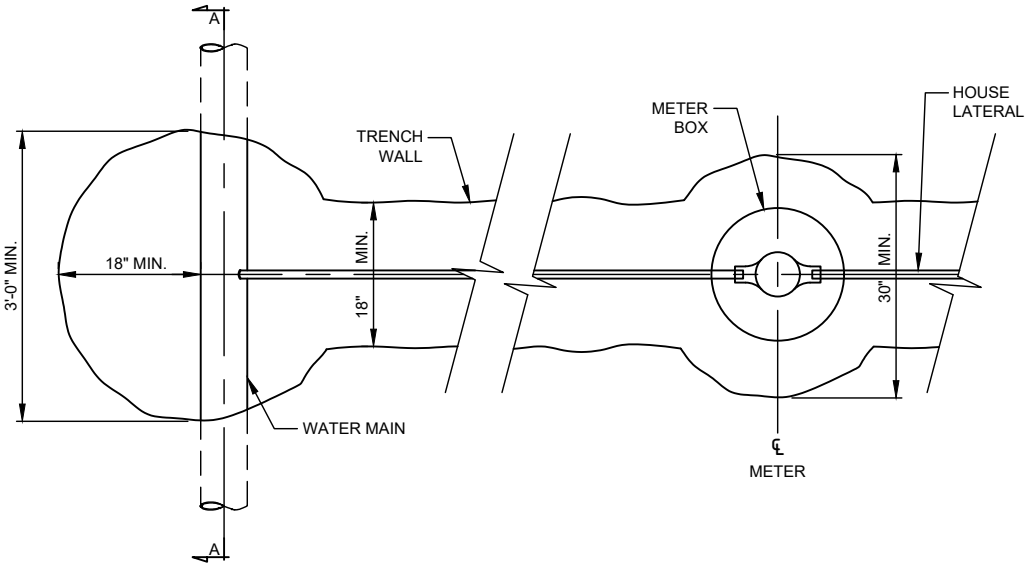
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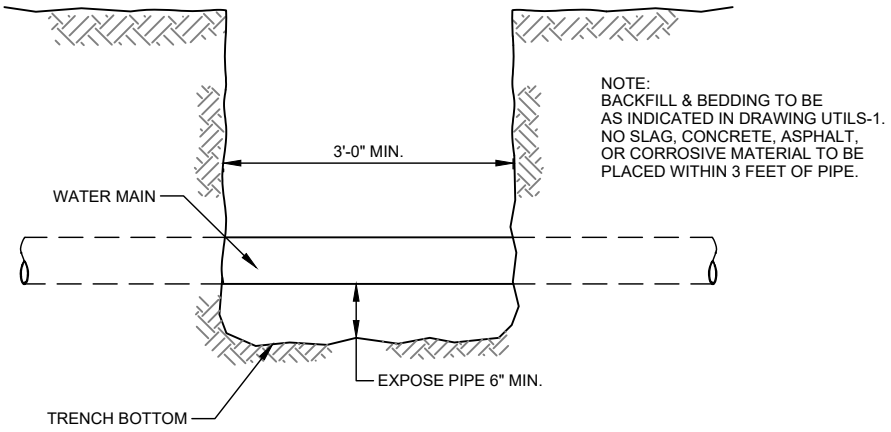
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VALVE BOX & COLLARS

WATER-3

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SECTION A-A

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

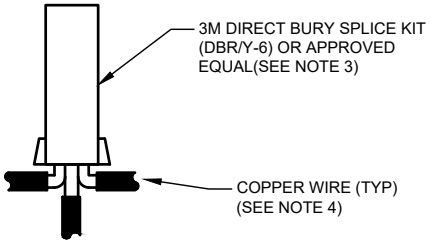
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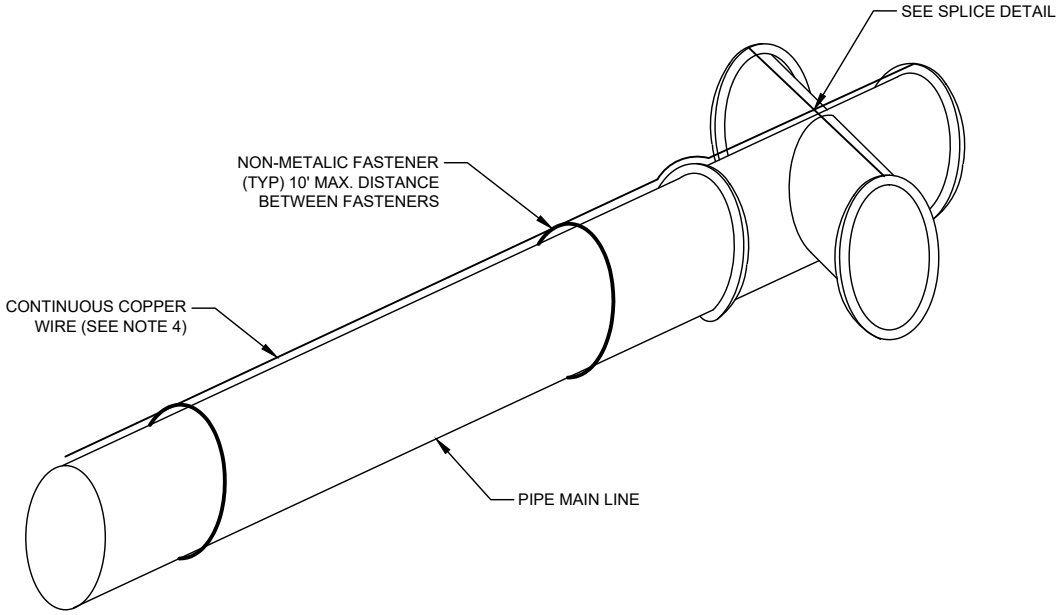
1" SERVICE TRENCH

WATER-4

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SPLICE DETAIL



NOTES:

1. COPPER TRACER WIRE TO BE INSTALLED THE LENGTH OF PIPELINE AND EACH CULINARY SERVICE, AND SECONDARY SERVICE, ALONG EACH PRESSURIZED IRRIGATION PIPELINE AND SERVICE. TRACER WIRE TO BE BROUGHT UP IN AT LEAST ONE VALVE IN EACH INTERSECTION. TRACER WIRE TO BE BROUGHT TO THE END OF EACH FIRE HYDRANT ON CULINARY LINES. (NOT TO EXCEED 500 FEET).
2. TRACER WIRE TO BE INSTALLED AND MAINTAINED ON TOP OF PIPE CENTERLINE DURING BACKFILL.
3. SPLICE KIT USED TO ELECTRICALLY CONNECT TWO OR MORE PRESTRIPPED COPPER WIRES AND MOISTURE SEAL THE CONNECTION FOR DIRECT BURIAL. THE KIT SHALL INCLUDE A 3M (OR APPROVED EQUAL) PERFORMANCE PLUS WIRE CONNECTOR AND A HIGH IMPACT, UV RESISTANT POLYPROPYLENE TUBE PREFILLED WITH MOISTURE-RESITANT GREASE.
4. COPPER WIRE SHALL BE #12 AWG SOLID UF TYPE WITH CROSS-LINKED POLYETHYLENE INSULATION RATED TO 600 VOLTS.
5. CONTRACTOR SHALL TEST TRACER WIRE FOR CONTINUITY PRIOR TO PAVING IN THE PRESENCE OF THE ENGINEER.
6. THE TEE/CROSS IS SHOWN WITHOUT VALVES AND IS INTENDED TO SHOW TRACER WIRE ROUTING ONLY.

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HEART OF THE WASATCH BACK

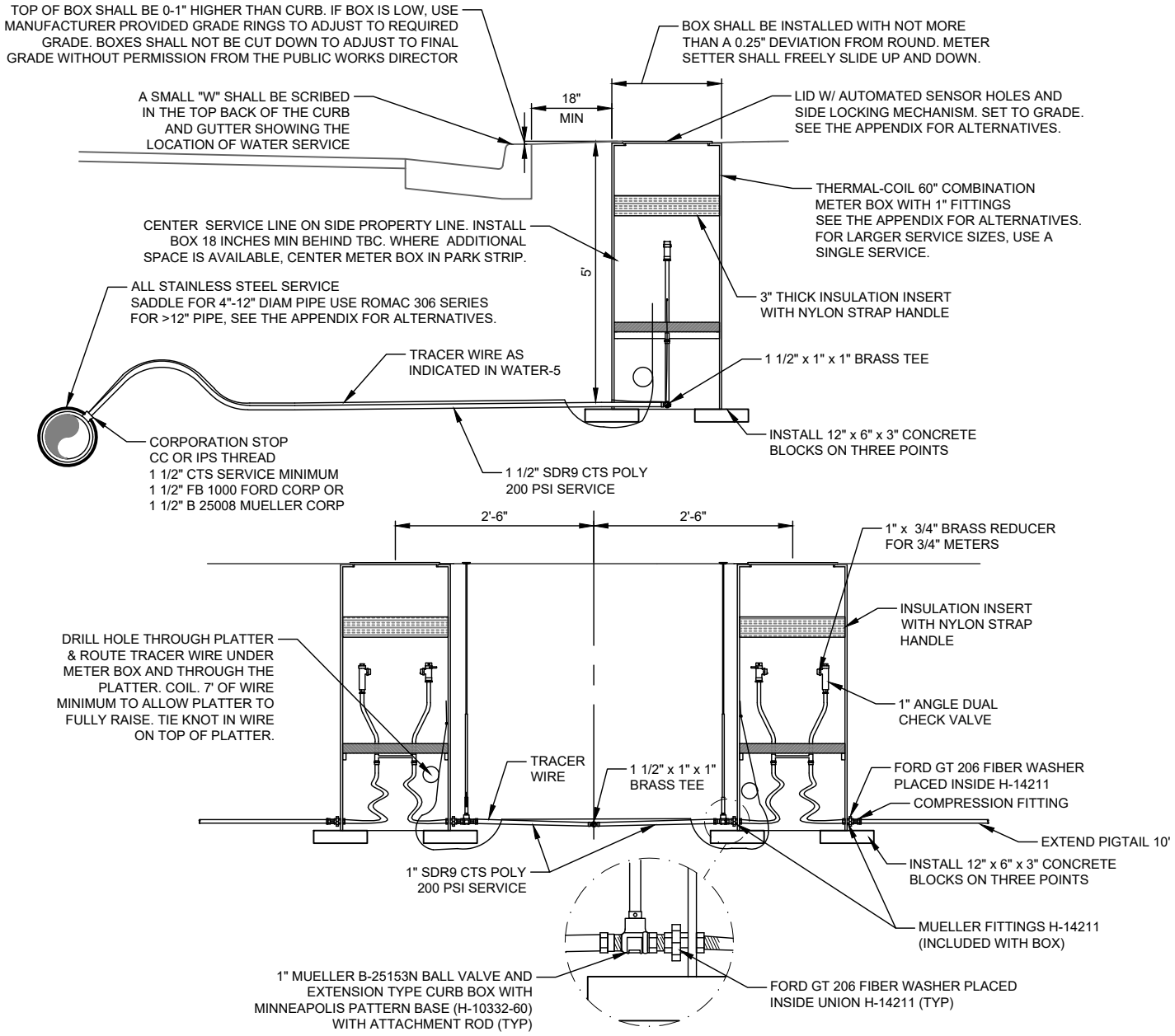
DATE: 03/17
SCALE: N.T.S.

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TRACER WIRE INSTALLATION

WATER-5

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NOTES:

1. METER BOX, COVER, COPPER SETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
3. METER BOXES ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
4. WATER METER WILL BE INSTALLED BY HEBER CITY.
5. SEE UTILS-3 FOR PLAN VIEW.
6. WATER METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER.
7. WATER SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF FIRE HYDRANT LINE OR SERVICE LINES.
8. WATER METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. ANY NIPPLES USED IN SERVICE SHALL BE STAINLESS STEEL.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.
11. SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.

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HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

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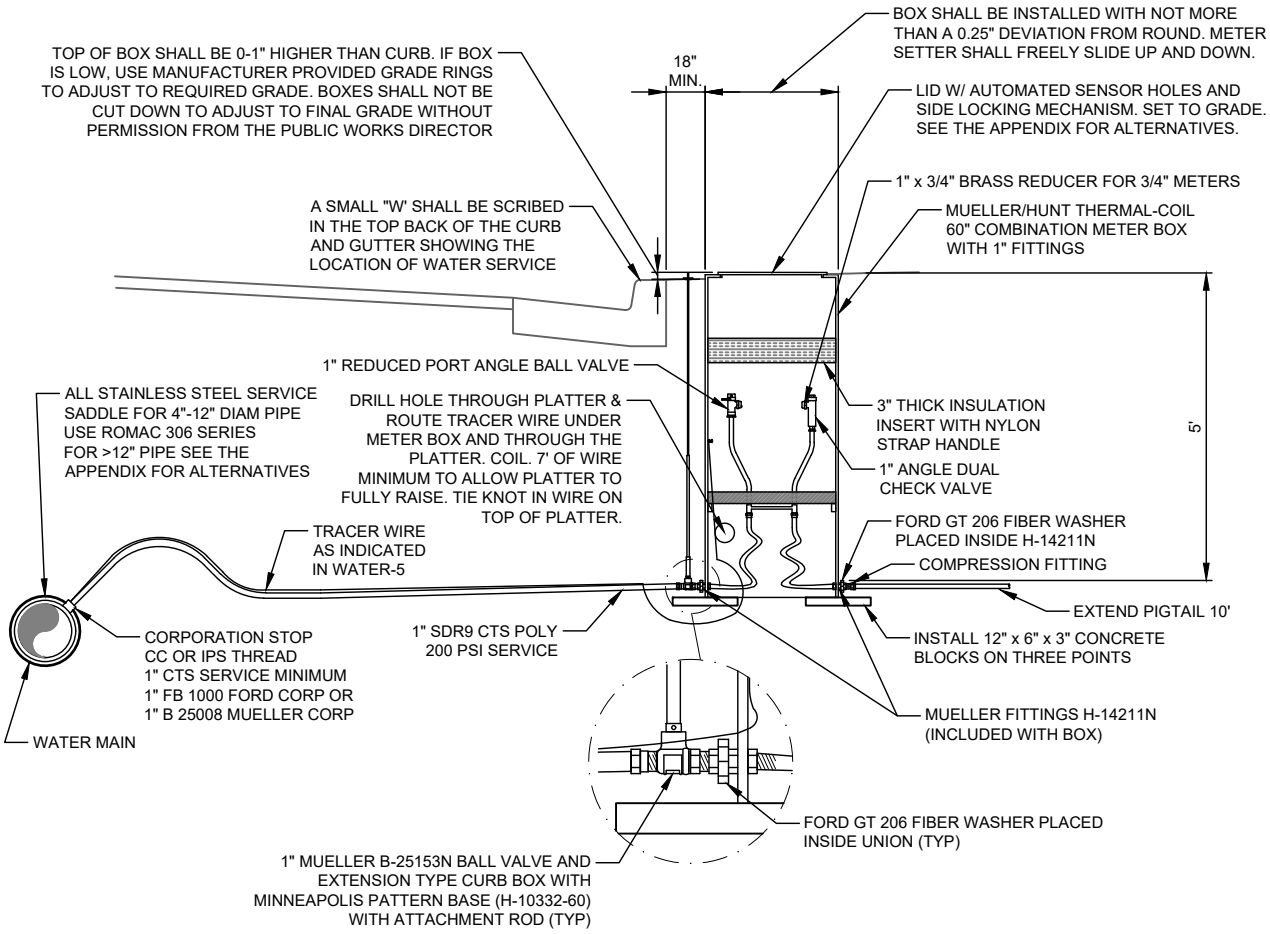
WATER SERVICE - TWO LOTS

WATER-6A

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TABLE 1					
SERVICE LINE SIZE	MINIMUM METER BOX SIZE	BOX MODEL	FRAME MODEL	COMMENTS	INSULATION INSERTS
1" MINIMUM		SEE THE APPENDIX FOR ALTERNATIVES			790153
1 1/2"	24" x 60"	500VS2460RVB000520N	700098-1	" "	790325
2"	27" x 60"	550VS2760RVB000520N	700098-1	" "	790327

NOTE 1: FOR LARGER SIZES CONTACT PUBLIC WORKS FOR REQUIREMENTS



NOTES:

1. METER BOX, COVER, COPPER SETTER, CORPORATION STOP, & SERVICE LINES TO BE FURNISHED AND INSTALLED BY DEVELOPER AND CONFORM TO AWWA C800.
2. STAINLESS STEEL STIFFENERS ON ALL POLY CONNECTIONS.
3. METER BOXES ARE ALLOWED WITHIN DRIVEWAY ZONE ONLY WITH PRIOR APPROVAL FROM PUBLIC WORKS DIRECTOR.
4. WATER METER WILL BE INSTALLED BY HEBER CITY.
5. SEE UTILS-3 FOR PLAN VIEW.
6. WATER METER CAN TO BE LOCATED IN THE MIDDLE OF THE PLANTER STRIP OR BETWEEN SIDEWALK AND PROPERTY LINE (FOR COMBINATION SIDEWALK) OR AS DIRECTED BY ENGINEER.
7. WATER SERVICE SHOULD CONNECT DIRECTLY TO THE MAIN LINE AND NOT "TEE" OFF FIRE HYDRANT LINE OR SERVICE LINES.
8. WATER METER CAN SHALL BE COMPLETELY BACKFILLED WITH COMPACTED 3" MINUS GRANULAR MATERIAL FROM TOP TO BOTTOM.
9. ANY NIPPLES USED FOR SERVICE SHALL BE STAINLESS STEEL.
10. METER FEE WILL BE ASSESSED WITH BUILDING PERMIT OR AT TIME OF METER INSTALLATION.
11. SEE APPENDIX A FOR ADDITIONAL APPROVED ALTERNATES.

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DATE: 09/23
SCALE: N.T.S.

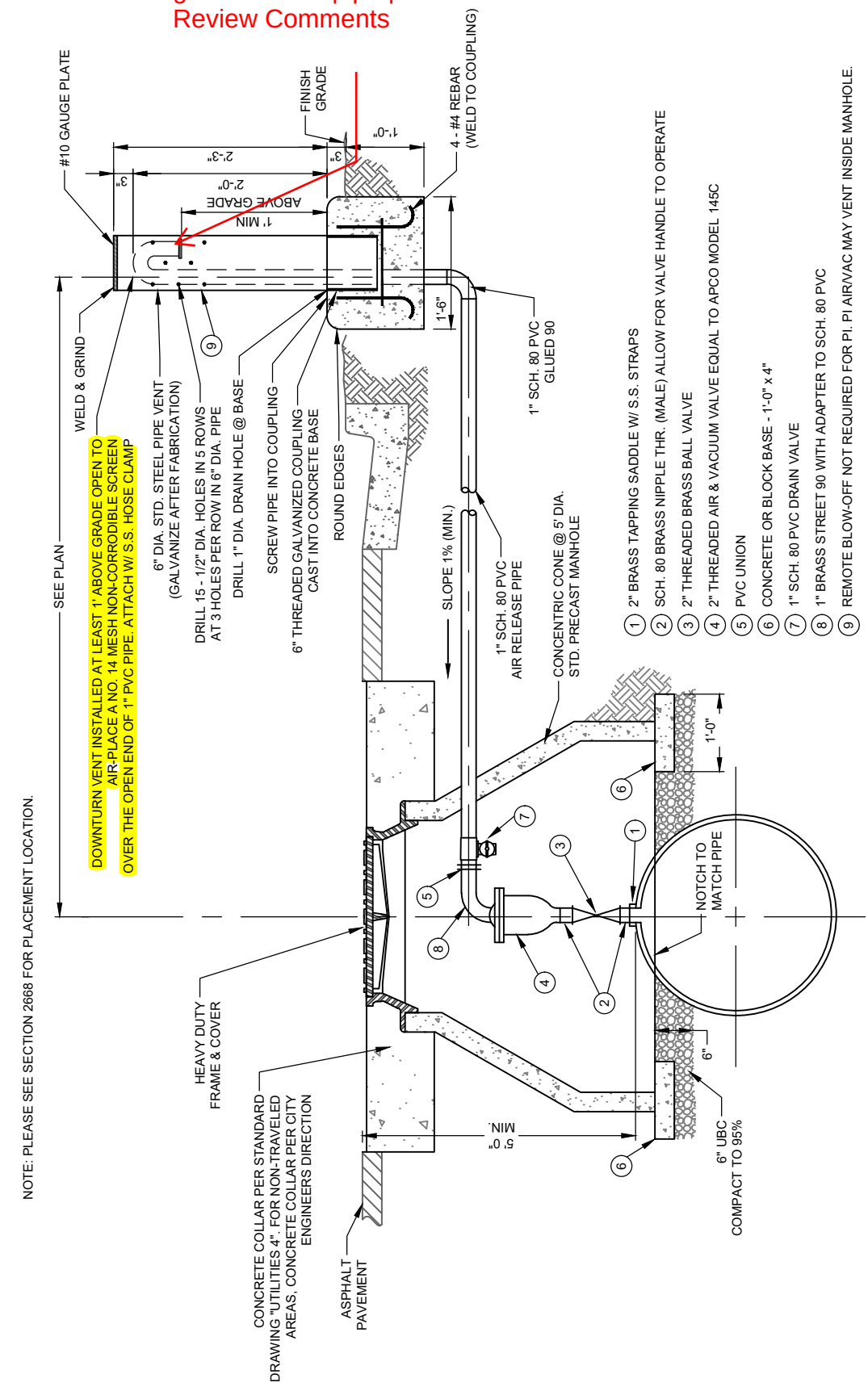
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

WATER SERVICE - SINGLE LOT

WATER-6B

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Changed note and added gooseneck in pipe per DDW Review Comments



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HEART OF THE WASATCH BACK

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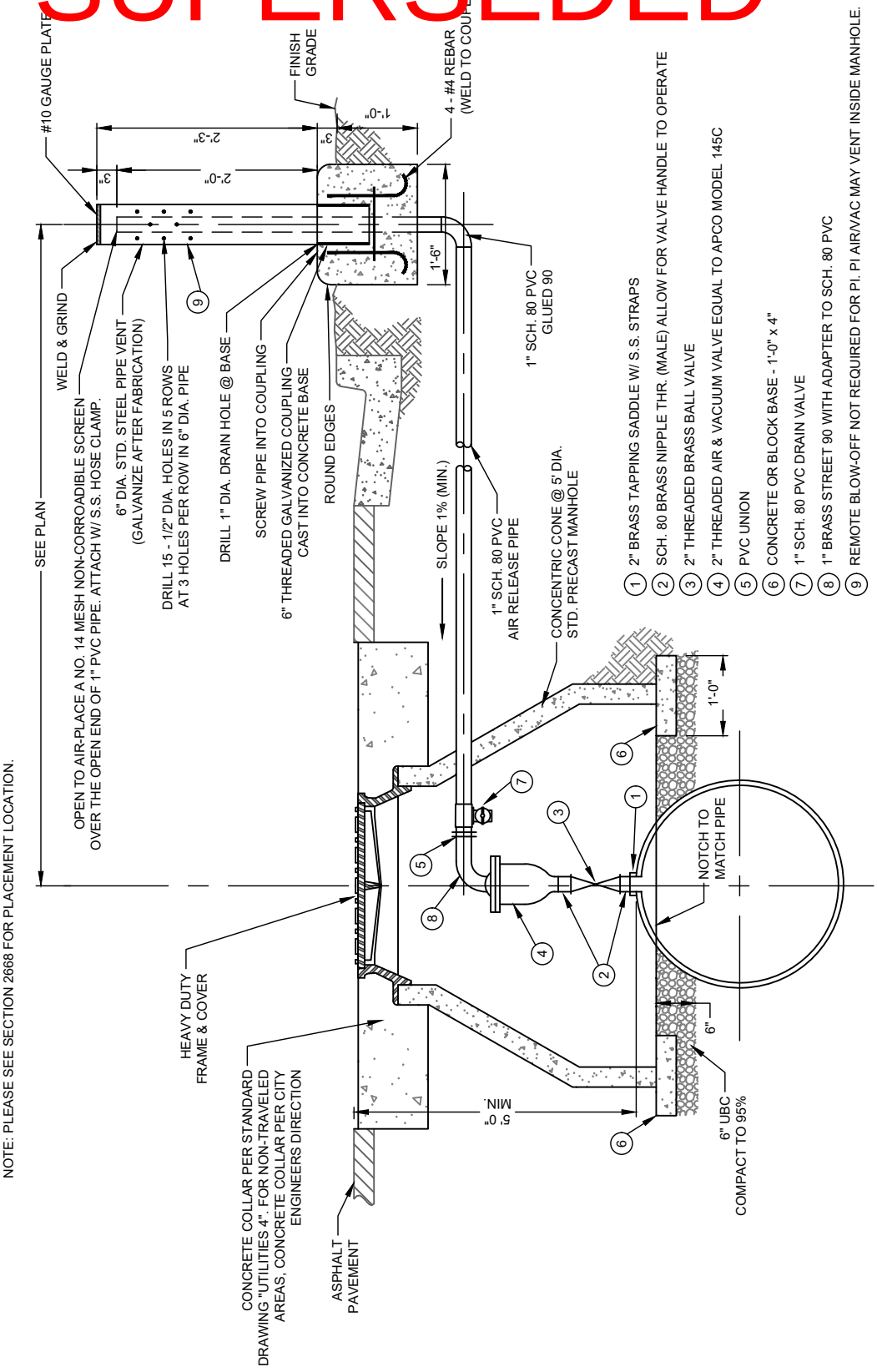
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

AIR VAC RELEASE STATION

WATER-7

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SUPERSEDED



HEBER CITY
HEART OF THE WASATCH BACK

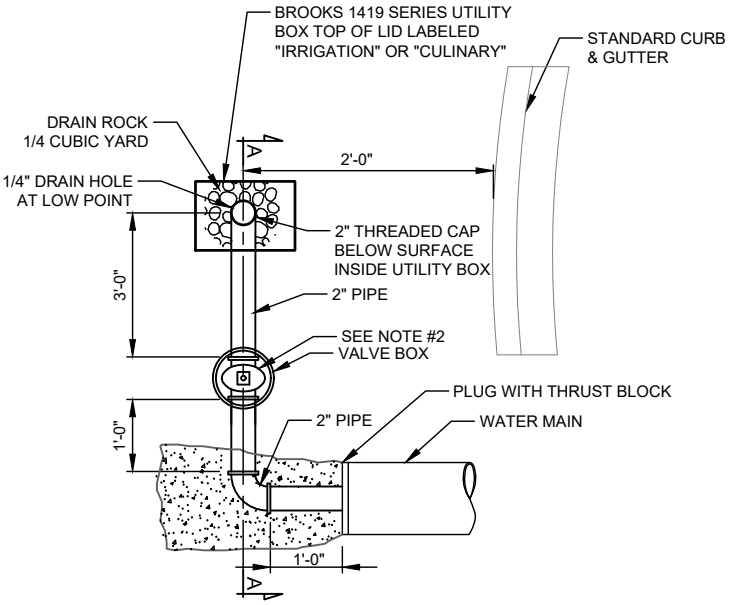
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SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

AIR VAC RELEASE STATION

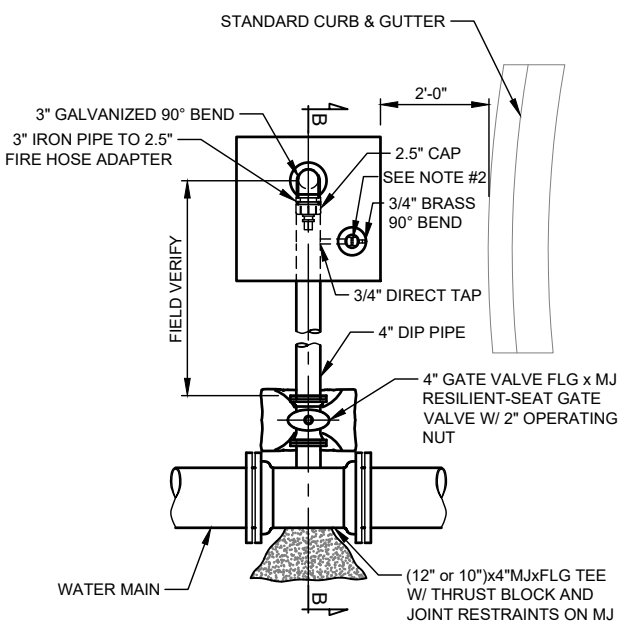
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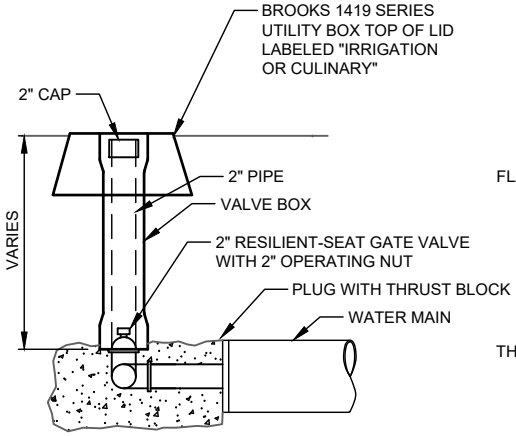
NOTES:
1. ALL PIPE TO BE GALVANIZED AFTER FABRICATION.
2. 2" RESILIENT-SEAT GATE VALVE WITH 2" OPERATING NUT.

PLAN

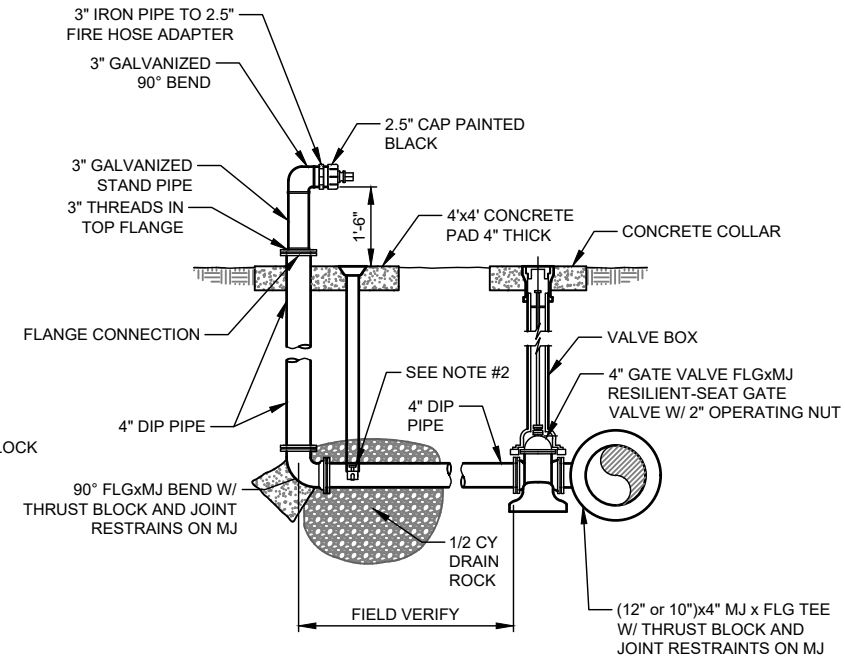


NOTES:
1. CONTRACTOR SHALL INSTALL WATER SAMPLING SPIGOT AS NEEDED DURING CONSTRUCTION FOR BACTERIA TESTING AND CHLORINE RESIDUAL TESTING.
2. 3/4" MUELLER BALL VALVE W/ EXTENSION TYPE CURB BOX W/ MINNEAPOLIS PUTTORN BASE (H-10332-60) OR 3/4" (FORD B41-333QM) BALL VALVE W/ ATTACHMENT ROD (EM2-60-4654R
3. ALL VALVE NUT EXTENSIONS SHALL BE PINNED OR OTHERWISE LOCKED TO THE VALVE NUT.

PLAN



SECTION A-A



SECTION B-B

TEMPORARY BLOWOFF FLUSH VALVE

PERMANENT BLOWOFF FLUSH VALVE

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 04/22
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

TEMPORARY & PERMANENT BLOWOFF FLUSH VALVE

WATER-8

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Page 13 of the manual was updated by removing a design requirement that was overly restrictive for available hydrodynamic separators on the market.

Pages 9 & 10 of the manual updated the minimum groundwater depth to infiltration basin from 2 ft to 4 ft.

HEBER CITY

HEART OF THE WASATCH BACK

HEBER CITY STORM WATER DESIGN MANUAL

Heber City Engineering

~~SEPTEMBER 5, 2023~~MARCH 4, 2025

HEBER CITY
75 N Main Street
Heber City, UT 84032

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Introduction

Purpose of document

The purpose of this document is to establish design standards and guidelines for storm drainage infrastructure within Heber City. This document also promotes uniformity among development design submittals and drainage reports.

The design criteria in this document are for use on public and private projects within the city. There are other adopted City documents that also reference requirements related to storm drain systems within the city. These documents include the Heber City Standard Specifications and Drawings, the Heber City Master Plans, and the Heber City Municipal Code. This document is designed to work in collaboration with these other stated references, however, in the case of discrepancies the more stringent standard will apply. All requirements and the intent of design requirements in this document shall be met unless otherwise approved by the City Engineer.

Definitions

cfs	*Cubic feet per second (449 gallons per minute)*
Ac-Ft	*Acre-foot (volume of water required to cover an acre of land to a depth of one foot)*
Detention	*Short term storage of runoff provided by a pond or similar facility. An outlet is provided that allows water to be released from the facility at a predetermined rate.*
LID	*Low Impact Development is an approach to improving water quality by reducing the amount of storm runoff generated by a project and relying on infiltration or evaporation to handle runoff where it is generated.*
Retention	*Long term storage of storm water provided by a pond or similar facility that does not allow water to be discharged. Water will stay in a retention pond after a storm event until it either evaporates or infiltrates into the bottom of the pond.*

Approval Procedure

Preliminary Drainage Plan and Report

i. A preliminary drainage plan and report are required for all site plan and subdivision developments within the city. The preliminary drainage plan must include the following as applicable:
    1. Existing topography (2-foot contours or finer) extending at least 100 feet beyond the site
    2. Existing drainage infrastructure and features
    3. Existing drainage and gravity irrigation channel/canal features
    4. Watershed delineations and existing drainage patterns/flow paths
    5. Proposed drainage infrastructure and features (onsite and offsite)
    6. Proposed drainage patterns/flow paths

ii. The preliminary drainage report must include the following as applicable:
    1. Introduction
    2. Project Scope
    3. Project Location
    4. Description of Existing Conditions
    5. Drainage Design Criteria
    6. Off-Site Watershed Drainage and Hydrology
        a. Preliminary Upstream/Downstream Flood Analysis
        b. Preliminary Hazards & Debris-Flow Analysis
    7. On-Site Area Drainage and Hydrology and Hydraulics
    8. LID features
    9. Detention and/or Retention Facilities
    10. Water Quality Features (e.g., LID, HDS, pretreatment etc.)
    11. Major Stream Crossings
    12. Non-pressurized Irrigation Systems

Final Drainage Plan and Report

iii. Final drainage plans and report are required for all site plan and subdivision developments within the City shall be submitted after acceptance/approval of the preliminary submittal. The final drainage report shall be submitted for review prior to final site plan or subdivision approval.

iv. Final Drainage Plans must include the following as applicable:
    1. Existing and proposed topography (2-foot contours or finer) extending at least 100 feet beyond the site
    2. Existing drainage infrastructure and features
        a. Onsite features (channels, flow control, etc.)
        b. Offsite features (debris basins, etc.)
    3. Existing drainage and gravity irrigation channel/canal features
    4. Watershed delineations and existing drainage patterns/flow paths
    5. Location of all proposed drainage features
        a. Onsite features (channels, flow control, etc.)
        b. Offsite features (debris basins, etc.)

6. Proposed drainage patterns/flow paths
7. Proposed drainage details
8. Improvements to city facilities
9. LID, water quality and retention features

v. Final Drainage Report must include as applicable:
1. Introduction
2. Project Scope
3. Project Location
4. Detailed Description of Existing Conditions
5. Drainage Design Criteria
6. Off-Site Drainage and Hydrology with Final Calculations
    a. Final Upstream/Downstream Flood Analysis
    b. Final Hazards & Debris-Flow Analysis
    c. Recommended Mitigation
7. On-Site Drainage Hydrology and Hydraulics with Final Calculations
8. Description of LID Measures
    a. Justification for products selected and why they are most appropriate
    b. Compliance with on-site retention rules
9. Detailed Description of Detention and/or Retention Facilities
10. Major Stream Crossing
11. Non-pressured Irrigation Systems
12. Permanent Erosion Control Features
13. Water Quality Features (e.g., LID, HDS, pretreatment etc.)
14. Storm Drain System Calculations

All plans and reports are subject to review and approved by Provo River Watershed Council. See Appendix A for list of resources for drainage design in Heber City.

Design Standards and Analysis Methods

These standards apply to all developments within Heber City including the North Village area or other areas that may annex into the City in the future. Heber City may establish additional storm drain design criteria for certain development areas through a new Storm Drain Master Plan and/or Master Plan update. All developments shall comply with the City Storm Drain Master Plan that is applicable for the respective development.

Design Storms for Conveyance

New developments within Heber City must have an initial and a major storm drain system for storm water conveyance. The initial system's purpose is to reduce the frequency of street flooding, reduce maintenance costs, and provide protection against regularly recurring damage from storm runoff. The initial conveyance system must handle the 10-year storm event at a duration equal to or less than the time of concentration (T_c), and typically consists of pipe, storm drain inlets, curb and gutter, or drainage swales that convey the storm water.

The purpose of the major conveyance system is to avoid major property damage or loss of life during flood level runoff conditions. The major system is comprised of the initial conveyance system elements but also includes the entire roadway cross section, including park strip and sidewalk, or other safe surface routes. The major system must protect against flooding during the 100-year storm event at a duration equal to or less than the T_c.

Every effort shall be made to keep the major system above ground. But, where that is impractical, the City Engineer may approve the major system to be underground if it is designed for it from the top of the catchment. "Funneling" at the bottom of a catchment is not allowed. The following figure details how the initial and major systems must function.

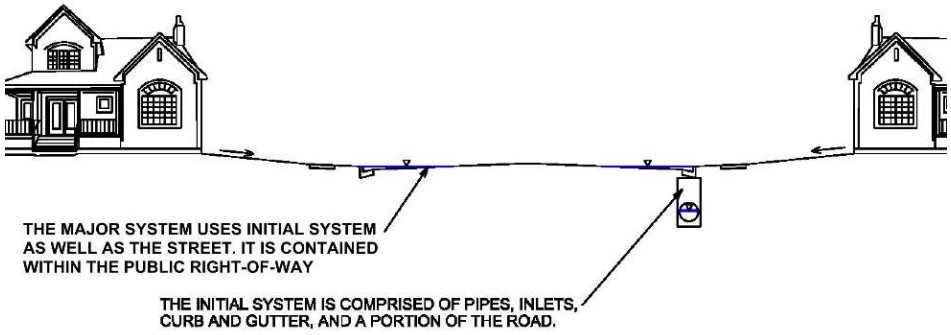


Figure 1. Initial and Major Drainage Systems

Directly connected impervious areas should be independent watershed basins and should not be combined and averaged with pervious areas.

Storage Facilities

Storm drain storage facilities are required for flood control and water quality purposes. Storage facilities may be above ground basins/ponds or below ground storage systems. Detention storage facilities require an approved suitable discharge location approved by the City Engineer. Retention facilities are required when no suitable discharge location is available. Detention facilities must be designed to store and detain the 100-year event with a maximum release rate of 0.1 cfs/acre. If downstream conveyance capacities are limited, storm water runoff peak flow rates shall be further reduced to offset the impacts to the downstream system capacity. See the Post Construction Peak Discharge section for more detailed requirements. Retention storage facilities must provide retention volume for the 100-year, 24-

hour event. Infiltration may be considered as outflow when sizing retention facilities. See the section on Infiltration in this document for details regarding infiltration requirements. However, if infiltration is utilized for facility sizing design, shorter storm durations with higher intensities must be checked (i.e., rational spreadsheet), and the controlling or largest volume, minus the infiltration, shall be used to size the storage facility. Therefore, the 24-hour storm may not result in the largest storage volume. When utilizing the SCS Type II 24-hour storm for sizing storage facilities with infiltration, the storm distribution must provide a peak intensity where the majority of the rainfall occurs during a shorter period of time.

Storm Drain System Hydraulic Requirements

Pipe systems used for conveyance must be designed such that they flow unpressurized during the required design event. Minimum pipe diameter for public storm drain pipes within City right-of-way is 18 inches but may be reduced to 15 inches for pipes from a single inlet box. Private storm drain pipe may be reduced to 10 inches but must still adhere to conveyance design storm requirements. Pipe material must adhere to Heber City Standard Specifications and Drawings. Junction boxes or manholes should be placed such that the maximum pipe length between two structures does not exceed 400 feet.

Apply an inlet clogging factor of 30% for inlets on grade and 50% for inlets in sags.

The minimum pipe slopes shall be pursuant to HEC 22 Table 7-7. The n-values shall be 0.012 for plastic pipe and 0.013 for concrete pipe.

On steeper slopes, provide a sufficient number of inlets to reduce inlet bypass to less than 0.2 cfs and to reduce risk of water sweeping pedestrians off their feet.

Design storm drain system per HEC-22.

Channel Hydraulic Requirements

Open channels that are part of the initial conveyance system shall be designed to convey the 10-year flow while maintaining one-foot of freeboard. Channels that are located within a FEMA Special Flood Hazard Area, open channels that are the major conveyance system, and natural drainage channels shall be designed to convey the 100-year flow with one foot of freeboard. All channel sections must be adequately designed, detailed, and constructed, pursuant to the latest edition of HEC 15, to prevent erosion of the channel bed and banks for the 10-year event.

Above Ground Storage Basins (Ponds)

Above ground storage basins (ponds) shall be designed as attractive and usable spaces. Water depth should be five feet or less where feasible, appropriate landscaping shall be incorporated, and include elements that eliminate standing water and low flow impacts. Detention ponds shall include a low-flow surface channel, or underdrain that is sized for the 2-year storm event.

The required freeboard for detention basins is two feet in areas where any portion of the pond is constructed above existing ground and one foot when the pond is excavated in existing ground.

Basins that are not acting as a biofilter, or which have natural flow only, shall include at least one sump manhole to help facilitate infiltration of storm water, and the inlet into the basin shall be connected directly to the sump manhole.

Side slopes on City owned and maintained basins shall be 5H:1V or flatter on two or more sides, 4H:1V or flatter slopes on remaining sides, with a minimum 1% bottom slope. If the natural existing slope is greater than 8% then basin side slopes may be increased to 3H:1V. A suitable location for ingress and egress shall be incorporated for ponds deeper than three feet, and this must include an access at least 15-feet wide at less than 15% grade. A minimum five-foot buffer between any pond grading and the property lines shall be provided.

Landscaping: Grass or other suitable landscaping materials should be used, and turf irrigation systems shall be installed for ponds that will be maintained by City personnel, unless a low-maintenance landscaping alternative is approved. Irrigating methods and practices must be accounted for in the hydrologic and infiltration calculations when designing and sizing ponds. Developers will be required to escrow funds to landscape ponds when located on private lots for future reimbursement to the owner who completes the landscaping at a future time. Developers will not use landscaping that may hinder infiltration if it is used in the sizing of the pond or required for Municipal Separate Storm Sewer (MS4) compliance. See infiltration section for more information on infiltration and landscaping requirements.

Easements: If basins are placed on private property, a minimum 20-foot easement for all underground lineal pipeline facilities and access to maintain ponds must be provided. Additionally, an easement must be provided over the pond area and a minimum of five feet beyond the pond top of slope perimeter. The easement shall be ten feet beyond the pond perimeter when an access along the pond edge is required. Pond easements shown on subdivision plats shall have restrictive language labeled with dimensions to facilitate locating in the field.

Basins shall be designed with provisions for an emergency overflow that will avoid flood damage to surrounding properties in the event of a storm exceeding the design capacity of the basin.

Retention basins shall be designed with mechanisms to ensure that the basin will completely drain within 48 hours after the 24-hour event with additional precipitation. (Verify a 72-hour storm will not overtop the basin). See the section on Infiltration in this document for details regarding infiltration requirements.

Basin inlets and outlets shall have trash racks or grates installed. A storm water pretreatment device, approved by the City, shall be installed upstream of the pond or sump inlets. See the Water Quality section of this report for requirements.

Culverts

Culverts that convey off-site flows through a project or beneath a road shall be designed for the 100-year event. Culverts shall be designed so the headwater elevation does not exceed 1.5 times the culvert diameter, or one foot below the elevation where water spills over the road or out of the channel. Concrete box culverts shall have a minimum 5-feet height from floor to ceiling, and multi-barrel culverts may not be used where high amounts of debris is expected. If multi-barrel culverts are used in other locations, designers must consider elevations of roads, buildings, driveways, and other features to prevent adverse impacts. Normal depth equations (Manning's Equations) cannot be used for culvert analysis. Inlet and outlet control shall be checked, and culvert hydraulic calculations provided.

Roadway Drainage

Inlets within roadways should be placed to control spread, or the amount of water flowing along the side of the road and in the gutter. Allowable spread is determined by the roadway classification as follows:

Table 1. Design Spread for Roadways

Design Frequency and Spread		
Roadway Classification	**Design Frequency**	**Design Spread**
Highway or Major Collector > 35 MPH	10-Year @ T_c	Shoulder (Outside of travel lane)
Highway or Major Collector ≤ 35 MPH	10-Year @ T_c	Shoulder + three feet
Local Street	10-Year @ T_c	½ Driving Lane

Inlets should also be placed upstream of intersections and pedestrian ramps to reduce bypass flows. Spread calculations shall be checked using HEC 22, Appendix A, Chart 1B.

Rainfall Runoff Computation Methods

Precipitation data obtained from the NOAA ATLAS 14 Point Precipitation Frequency website including intensity and depth data for Heber City is contained in Appendix B. This information shall be used for all development within Heber City.

Several hydrologic methods may be applicable depending on what type of analysis is required. The Rational Method is the most common method and may be used for sizing pipes, checking inlet spread and estimating peak flow rates for areas up to 100 acres.

Rational Method runoff coefficients are shown in Table 2. The runoff coefficients listed in Table 2 are the minimum values to be used in Heber City. Any runoff coefficients for other characteristics should be adjusted to account for the 100-year rainfall.

Table 2. Rational Runoff Coefficients

Surface or Cover Type *	**Runoff Coefficient (C)**
Asphalt or Concrete Pavement	0.90 (asphalt) 0.95 (concrete)
Roofs of Buildings (type dependent)	0.90 (asphalt shingles) 0.95 (steel)
Grass-covered Sandy Soils, Slopes 2% or less	0.13
Grass-covered Sandy Soils, Slopes > 2%	0.20
Grass-covered Clay Soils, Slopes 2% or less	0.22
Grass-covered Clay Soils, Slopes > 2%	0.49

***** Surfaces not addressed in this table shall be approved by the City Engineer.

For storm analyses that require developing a volume or routing a volume of runoff, a dynamic hydrograph simulation model is required using AutoDesk SSA, HEC-HMS, or SWMM. Within dynamic hydrograph simulation models, the transform method shall be the NRCS Unit Hydrograph Method, and the routing method for runoff hydrographs shall be the Muskinghum-Cunge Method. Multiple

hydrographs were developed by the Soil Conservation Service (SCS), now known as Natural Resources Conservation Service (NRCS). The SCS Type II 24-hour storm distribution should be used for estimating the precipitation for developments within Heber City.

The SCS method uses the Curve Number Method for determining rainfall runoff. Curve Numbers are determined by using a land cover type in conjunction with a hydrologic soil group. Land cover information can be obtained by means of aerial topography or GIS data. Hydrologic soil group information may be obtained from NRCS's Web Soil Survey website. The land cover and hydrologic soil group information are used to select an appropriate curve number using the manual titled *TR-55 Urban Hydrology for Small Watersheds*. TR-55 worksheets and calculation methods are provided in Appendix G and shall be utilized for developments that use the SCS method to estimate run-off. Typical CN values are included in Appendix C. Engineering judgement should be used when selecting curve numbers. Part 630 of the National Engineering Handbook says, "As a result of construction and other disturbances, the soil profile can be altered from its natural state and the listed group assignments generally no longer apply, nor can any supposition based on the natural soil be made that will accurately describe the hydrologic properties of the disturbed soil. In these circumstances, an onsite investigation should be made to determine the hydrologic soil group." Site specific factors such as terrain, potential precipitation on frozen ground, future conditions and other factors should be considered when selecting curve numbers. The SCS method shall only be used for estimating the run-off for development which are greater than 10 acres.

The Federal Aviation Administration (FAA) Method for estimating detention or retention volumes is outdated because it does not model the release rate correctly. But, it still may be used if the Guo Averaging Parameter is included. The FAA Method is not applicable to in-series (cascading) ponds. This method is applicable for developments less than 100 acres, and the SCS method is required for developments larger than 100 acres. The FAA Method uses a spreadsheet to evaluate several storm durations for a given return period for the 100-year storm. The total inflow volume for a storm duration is developed by multiplying the peak flow rate by the storm duration. The volume out is developed by utilizing a controlled discharge amount (discharge with detention only), and/or exfiltration from the detention pond when conditions permit. The required volume is equal to the inflow volume minus the outflow volume. This is evaluated for all storm durations to determine which storm duration provides the maximum required volume. Developments that use the FAA Method for estimating storage facility volumes shall use the spreadsheets provided by the City including the Guo Averaging Parameter when off-site discharge is utilized. An example is shown in Appendix I, or other approved spreadsheet formats.

Several methods for estimating time of concentration exist. They were each developed for specific parameters such as watershed size, slope, etc. Time of concentration methods used should be applicable to the areas in which they are being analyzed. The minimum time of concentration value should be 5 minutes.

For all software models, input and output data shall be provided so that it can be reviewed by the City. A copy of the model file shall also be provided to the City for review. Models must be provided to the City in Civil 3D Storm and Sanitary Analysis. City may consider other software models based on prior approval from the City Engineer.

Post Construction Peak Discharge

Heber City has adopted a 0.10 cfs/acre maximum release standard for undeveloped areas, i.e., areas outside Central Heber. This rate is assumed to be the historical undeveloped flow. For example, a 10-

acre housing development would be able to have a post-development discharge rate of 1.0 cfs (10 acres x 0.10 cfs/acre) provided there is a suitable point to discharge to. If the historic flow is found to be less than the 0.1 cfs/acre, this shall be used as the maximum allowed post-development discharge. Moreover, if the downstream system does not have capacity for the 0.1 cfs/acre discharge rate, the available capacity will become the controlling factor. To ensure that flow from new developments do not exceed 0.10 cfs/acre, detention facilities with controlled discharge are required. In cases where there is no suitable point to discharge to, retention facilities are required. See storage facilities section for more information.

Infiltration

Infiltration of treated storm water into the ground is encouraged. Detention and retention basin volumes may be sized by considering infiltration as an outflow component. Prior to assuming infiltration is a viable option, infiltration tests shall be conducted by a professional geotechnical engineer, geologist, or soil scientist licensed in Utah that determines the infiltration rate and demonstrates that the proposed soil profile is suitable for infiltration and will readily accept the water. Infiltration tests shall be performed using the double ring infiltrometer test in accordance with ASTM D 3385, and shall be performed at the location of where the result will be applied and at the elevation of the bottom of the facility where infiltration will occur. A minimum of two tests shall be performed with a minimum of one test per 10,000 square feet of the infiltration area. The slower or average of the infiltration rates shall be used for design purposes.

Groundwater elevations shall be determined. Potential ground water level fluctuations shall be considered, and the lowest elevation of any detention basin should be at least four~~two~~ feet higher than the highest seasonal groundwater elevation. All design infiltration rates shall have a safety factor of two (2) or higher applied to the actual rate measured by the official infiltration test.

Only the wetted area when the storage volume, excluding freeboard, is at half depth may be used as an infiltration surface in infiltration calculations unless stage-volume-discharge curves are created and used. Infiltration must not be considered as an outflow prior to the storm water entering the pond, as this could create negative storage volume. Where infiltration galleries are located beneath surface ponds, the infiltration surface shall be the surface pond only.

Infiltration rates shall only be applied to the same soil that has been tested. If topsoil or other less permeable soil is added to a storage facility where percolation is being applied, the infiltration rate used in the design shall match rate of the less permeable soil. Alternatively, a permeable layer of gravel shall be used in the entire infiltration area.

An infiltration rate map is included in Appendix D. It is included to provide general infiltration information but shall not replace actual field tests.

Comply with all State groundwater protection regulations, guidelines and permits such as those associated with infiltration, infiltration wells, Class V injection wells and any others applicable to the site.

Long-Term Storm Drain Facility Maintenance

All public storm drain facilities will be maintained by Heber City unless otherwise specified in the development agreements. Developers, property owners, or their representatives such as a Homeowners Association, shall enter into a post-construction storm water management agreement with the City for

all privately owned storm drain facilities, and/or publicly owned storm drain facilities that convey storm water from private roads and facilities. See Appendix J for template agreements.

Low Impact Development

Low Impact Development (LID) is a method of reducing storm runoff by capturing, treating, and retaining it on a very local level within each individual development. Although Heber City is not currently on the Utah MS4 list, it is anticipated to become an MS4 community in the future. LID is required by the Utah Department of Environmental Quality as part of an MS4 Program. To prepare for future compliance with the MS4 storm water discharge program and to reduce post-development storm water run-off in general, developments within Heber City must retain and treat the 80th percentile rainfall event as part of LID requirements. LID measures can also help achieve the onsite retention and treatment requirements. The 80th percentile depth for Heber City has been determined to be 0.47 inches. See Appendix E for this calculation. The Reese method, as shown in Appendix E, shall be used to calculate the volumetric runoff coefficient used for determining the 80th percentile volume. For developments larger than 10 acres use SCS Method to determine 80th percentile volume.

Localized LID methods are encouraged, however, the 80th percentile volume may be incorporated into larger detention or retention storage facilities if those facilities are located on site within the development area, or adjacent to, and if approved by the City Engineer.

Several typical LID measures are described in the following paragraphs. Portions of the LID descriptions have been taken from the Utah City Engineers Association (UCEA) and Utah DEQ LID Manual. See Appendix F for LID general details. The following LID descriptions are the approved LID measures to be used in Heber City. Any other proposed LID measures shall be approved by the City Engineer on a case-by-case basis. Please see the DEQ "Guide to Low Impact Development with Utah" for additional LID design guidelines and design flow-chart requirements.

Vegetated Swales

Vegetated swales may be considered dry or wet swales, and serve as a vegetative buffer between paved areas and storm drain facilities. The main advantages of vegetated swales are the degree of velocity reduction, detention, infiltration, and reduction of hard surface runoff. Storm runoff flows through the swale, where sediment and pollutants may settle out prior to entering downstream drainage facilities. A curb cut is one means of directing flow into swales where changes in elevation are limited.

Swales are often an attractive BMP solution because they can take advantage of already planned park strips. It should be noted that studies have shown that vegetated swales have a moderate ability to remove pollutants from storm water.

Dry Swales

A dry swale is a shallow, gently sloping drainage channel with broad, vegetated, side slopes. Dry swales provide temporary storage, filtration, and infiltration of storm runoff. A dry swale is versatile because it requires a relatively small area. Reduced channel velocities increase infiltration and water quality treatment and may reduce peak runoff. Channel vegetation can include turf, meadow grass, shrubs, and in limited quantities, small trees. Dry swales must be located above the water table to provide drainage. Dry swales are only allowed when groundwater is equal to or greater than four~~2~~ ~~-~~feet below the swale bottom elevation. When infiltrations rates are greater than 6.0 in/hour, dry swales shall either be

designed as a biofilter for treatment of storm water or be preceded by an approved pre-treatment system. See the Water Quality section in this report for requirements. Retention LIDs shall provide treatment through settling, decreased flow rate, and bioretention with a designed release time.

Wet Swales

Wet swales are a type of filtration BMP and occur when the water table is located close to the surface. Wet swales act as a long and linear shallow treatment system. Like dry swales, check dams can be used as needed to create cells and contain the entire water quality treatment volume. Cells may be planted with emergent wetland plant species to improve pollutant removal. Wet swales, at a minimum, shall be preceded by a pre-treatment device to capture and remove pollutants and coarse sediment particles, see the Water Quality section below.

Infiltration Basin/Galleries

An infiltration basin is essentially a detention basin that is constructed such that storm water can exit the basin by means of infiltration into the surrounding ground. These include underground pipe and chamber systems. These systems can reduce pollutants by settling out or filtering materials and any pollutants that may be bound to those materials. They are also effective at reducing nutrients, metals and other pollutants.

Basins with no outlet or highly restricted outlets can be effective at eliminating pollutants, but there is some risk of concentrating pollutants or introduction of pollutants to groundwater that must be considered. One way to address this is by the utilization of a biofilter, hydrodynamic separator (HDS), or other pollutant removal measures within or upstream of a basin that is sized to handle the water quality design storm. All infiltration basins shall be preceded by a pre-treatment or treatment system to capture and remove pollutants and coarse sediment particles, see requirements in the Water Quality section below.

Basins and galleries must be sized to drain within 48 hours after the end of the design storm and to not overtop in the 72-hour storm.

Underground injection wells are included in this category, but water quality and applicable regulations must be considered and utilized.

Rain Gardens

A rain garden is a planted depression or similar feature that allows storm runoff from impervious urban areas like roofs, driveways, walkways, parking lots, and compacted lawn areas the opportunity to infiltrate into the soil.

Rain gardens are an LID tool that can be used in new or established developments. Rain gardens can be constructed in commercial and residential sites. The garden may be located near a street or parking lot in a shallow depression where runoff can be diverted into it. Native perennial plants are recommended in rain gardens with a barrier to reduce weeds. Nutrients in the storm runoff are reduced as plants or other growing media make use of them to grow.

Rain gardens can be constructed to allow infiltration. Where complete infiltration is not desired or is not feasible due to existing soil conditions, an underdrain may be installed to convey excess water to a storm drain retention system.

Studies underway at Utah State University have identified common reed and sedges are the optimal plant for use in northern Utah to remove nutrients, metals, and other pollutants (Dupont and McLean), but it must be harvested and disposed of elsewhere at regular intervals to prevent concentration of pollutants in the soil or in the biofilters. Mulching and leaving in place does not address this. Whether such concentrations are critical depends on the contact with groundwater, and is still under study.

Root zone soil media must be shallow and water must pool or move slowly through the system or the pollutant removal is ineffective.

Rain garden filtration media shall meet the specification for biofilters (see Water Quality section below), are only allowed in private areas, and shall be maintained by the property owner.

Water Quality

Water quality is of utmost importance to Heber City. There are a variety of mechanisms to protect water quality from storm drain discharge systems. All storm water must pass through a pre-treatment or treatment system prior to discharging to a storage facility (above or below ground) that captures the 25-year to 100-year storm events. LID measures are intended to reduce storm runoff and to improve overall water quality. However, as most LID measures rely on infiltration, water quality must also be considered during design and implementation. Unless the native soil infiltration rate is less than 6.0 in/hr and/or the LID facility is designed and determined to treat the storm water (biofilter treatment), an approved hydrodynamic separator (HDS) pre-treatment device shall be used prior discharging to LID systems. All storm water that flows over an impervious surface must be treated.

Pre-treatment and Treatment Systems

Pre-treatment and treatment systems shall be sized, at a minimum, to treat the 2-year storm event at the duration that produces the highest flow rate while also being able to by-pass the peak conveyance storm at the time of concentration (T_c) without disrupting the treatment system. The peak conveyance storm represents the actual capacity of the initial conveyance system and may be larger than the 10-year event. Note, treatment systems that also serve as LID retention areas may be sized for the 80th percentile storm event but shall adhere to the by-pass requirements stated above. Requirements for pre-treatment and treatment are listed below.

Oil-Water and Hydrodynamic Separators (HDS) Pre-Treatment Devices:

All developments are required to install an appropriately sized hydrodynamic separator (HDS) prior to discharging to the retention/detention storage facility that captures the 25-year to 100-year storm events unless the LID methods utilized in the development incorporate a sized biofilter per the specification listed below and the storm water is not re-introduced to a source of pollution after it flows through the localized LID methods. Pre-treatment devices shall be maintained at least twice per year and per the guidelines provided by the manufacturer. All HDS devices must achieve, at a minimum, the following treatment levels:

- The HDS system shall be required to have a General Use Level Designation (GULD) performance verification through the TAPE program (Emerging stormwater treatment technologies (TAPE) - Washington State Department of Ecology). The device shall be sized to treat the peak runoff flow rate generated by the 2-year storm event at the Tc, when using Rational Method. Use the storm duration and distribution that creates the highest flow rate during a 2-year storm event

when using other run-off computation methods. The proposed hydraulic loading rate (HLR) must not exceed the design HLR of the proposed device to be used. TAPE approval letters can be found on the website and provide the design HLR and/or the maximum treatment flow rate for each model.

- The HDS system shall be concrete unless otherwise approved by the City Engineer.
- The HDS system shall provide 90% removal of trash and other particles larger than 5mm at the design treatment flow rate. Adding a screen to the tested system is not allowed to meet this spec, as modifying a TAPE verified system with a screen can significantly affect hydraulics, and thus water quality performance.
- ~~The HDS system shall be designed to remove 80 percent of the total suspended solids (TSS) 110 microns or larger from the storm water.~~
- The HDS system shall be designed to by-pass the peak conveyance storm event and prevent these larger storm events from washing out the oil, debris, and sediment that has been previously captured (off-line storage).
- The HDS system shall provide a minimum sump and oil storage capacity as follows:

Treatment Capacity Range (cfs)	Minimum Sump Storage Capacity (yd^3)	Minimum Oil Capacity (gal)
0-4	> 0.4	> 60
4-9	> 2	> 200
9-20	> 4	> 500
> 20	> 8	> 1000

Biofilter Treatment Systems: Biofilter is a generic description for bioswales, vegetated filter strips, rain gardens, or other structures that use a filtration media to capture storm water pollutants. The pollutants are decomposed by a biomass such as plants, a tree, or a specially designed biofilter media. These systems are typically connected to a storm drain system and if used shall be combined with detention/retention facilities.

All biofilters shall be sized to treat the 2-year T_c storm event flow rate while also be sized to by-pass larger flows without disrupting the treatment system. Biofilters shall treat the storm water prior to infiltrating into the native soils with infiltration rates greater than 6.0 in/hr and/or prior to discharging to a detention/retention facility unless a sized HDS system is properly incorporated as pre-treatment.

The growing media of the biofilter and shall be designed and certified to meet the following specifications.

RAIN GARDEN AND BIOFILTER GROWING MEDIA (Soil + Organics)

Assume a saturated hydraulic conductivity rate of 2.0 in/hr. Then, divide it by a safety factor of 2.0. So, the net rate is 1.0 in/hr.

RAIN GARDEN AND BIOFILTER SOIL

Particle Size Distribution

sand: 70-80%

silt: 0-30%

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clay: 0-15%

Chemical Attribute and Nutrient Analysis

pH: 6.8-7.5

organic matter: < 1.5%

nitrogen: < 15 ppm

phosphorous: < 15 ppm

salinity: < 6 mmhos/cm

RAIN GARDEN AND BIOFILTER ORGANICS

shredded mulch: 3-5% (by weight of growing media)

VEGETATION

The filter area shall be vegetated with drought tolerant species that thrive in sandy soils. Table 3 provides a suggested seed mix for sites that will not need to be irrigated after the grass has been established.

Table 3. Suggested Seed Mix

Common Name	Scientific Name	Variety	PLS[2] lbs per Acre	Ounces per Acre
Sand bluestem	Andropogon hallii	Garden	3.5	
Sideoats grama	Bouteloua curtipendula	Butte	3	
Prairie sandreed	Calamovilfa longifolia	Goshen	3	
Indian ricegrass	Oryzopsis hymenoides	Paloma	3	
Switchgrass	Panicum virgatum	Blackwell	4	
Western wheatgrass	Pascopyrum smithii	Ariba	3	
Little bluestem	Schizachyrium scoparium	Patura	3	
Alkali sacaton	Sporobolus airoides		3	
Sand dropseed	Sporobolus cryptandrus		3	
Pasture sage[1]	Artemisia frigida			2
Blue aster[1]	Aster laevis			4
Blanket flower[1]	Gaillardia aristata			8
Prairie coneflower[1]	Ratibida columnifera			4
Purple prairieclover[1]	Dalea (Petalostemum) purpurea			4
Sub-Totals:			27.5	22
Total lbs per acre:			**28.9**	

[1] Wildflower seed (optional) for a more diverse and natural look.
[2] PLS = Pure Live Seed.

EXECUTION

thickness: >/= 18 inches

compaction: 80-85% of maximum dry density as measured by AASHTO T-99 (ASTM D698)

vegetation: Mix seed well and broadcast, followed by hand raking to cover seed and then mulched. Hydromulching can be effective for large areas. Do not place seed when standing water or snow is present or if the ground is frozen. Weed control is critical in the first two to three years, especially when starting with seed. When using sod, specify sand–grown sod. Do not use conventional sod. Conventional sod is grown in clay soil that will seal the filter area, greatly reducing overall function of the BMP.

Irrigation: Provide spray irrigation at or above the WQCV elevation or place temporary irrigation on top of the rain garden surface. Do not place sprinkler heads on the flat surface. Remove temporary irrigation when vegetation is established. If left in place this will become buried over time and will be damaged during maintenance operations. Adjust irrigation schedules during the growing season to provide the minimum water necessary to maintain plant health and to maintain the available pore space for infiltration.

Water Quality Control Measures

Other water quality control requirements are listed below.

Detention/Retention Facilities (Pollutant Control, LID): Detention basins are used to attenuate peak flow rates of a runoff hydrograph. They also can be designed to allow sediment, debris, and other contaminants to settle out by reducing water velocity or holding the water until it infiltrates or evaporates.

Retention facilities have no outlet and water is removed by infiltration or evaporation. Retention basins still function as a BMP the same way a detention basin does. Detention and retention facilities shall be used in combination with hydrodynamic separators or biofiltration systems.

These facilities require regular maintenance to remove debris, contaminants, and sediment build-up.

Outlet Protection/Energy Dissipation Devices: Outlet protection reduces or eliminates soil erosion thereby preventing the migration of soil to downstream channels. Outlet protection, pursuant to HEC 14, is required at all open discharge points.

Slope Protection: Slope protection ensures slopes will be stable during and after construction. The primary means of stabilization of a slope is establishing permanent vegetation, but may also consist of temporary or permanent rock, mulch, erosion control blankets, check dams, diversion dikes, or other means of protection. All slopes shall be stabilized after disturbance. Slopes of 3H:1V and steeper require permanent slope stabilization.

Source Protection

The Utah Division of Drinking Water requires that each well and spring serving a public drinking water system must have a source protection plan. Part of that plan includes the protection of groundwater from point and non-point sources. Developers within Heber must certify that all private and public source protection zones are protected from storm water pollutants. Source protection zones for Heber City culinary water sources are shown on the source protection maps in Appendix H.

Storm water infiltration, drainage wells, or storm water injection wells are prohibited within 100 feet of Zone 1 of any source protection area. All storm drain storage facilities within 100 feet of a Zone 1 area shall be lined with an approved waterproof liner to prevent all storm water infiltration.

Natural Channels

All major natural channels in newly developed areas must maintain a buffer of open space and offset from development. This buffer is intended to help maintain water quality, prevent damage from flooding events, and maintain habitat and aesthetics. A minimum buffer width of 100-ft generally centered on the major natural drainage channel should be maintained. When natural topography or existing conditions favor a shift of the overall buffer area in one direction or another from the channel centerline, the City may approve a buffer zone shift with adequate justification. Development (including individual lots and buildings) is not allowed in the buffer zone. The drainage channel shall be protected and remain undisturbed where possible and with the exception of road or other crossings. Crossings of the natural channels shall be a minimum distance of 200-feet measured along the channel. Exceptions may be granted where proposed road crossings are adjacent to canal crossings or collector roads. Additional landscaping, green space, trails, or other amenities may be allowed if it is shown they will not negatively affect water quality or compromise the other goals of the buffer area. All improvements proposed in the natural drainages shall be approved by the City.

When existing developed areas are redeveloped and prior encroachment along or piping of historic channels has already taken place, a minimum buffer width of 50-ft generally centered on the major natural drainage channel shall be provided. No structures are allowed in the buffer area. Other improvements such as fencing, landscaping, hardscape, etc. may be allowed with written City approval and if adequate access along the channel is not compromised.

All development along natural channels, including proposals to relocate, alter, or pipe existing natural channels shall follow the National Flood Insurance Policy (NFIP) requirements and related City policies.

Where major historic channels are being re-established below the existing irrigation canals due to changes in the upstream drainage patterns (specifically as required in the North Village area), the buffer required along the re-established portion of the historic channel may be reduced by up to 40 ft, conditioned upon the following criteria:

- The re-established channel must be designed to convey the historic 100-year storm event considering no upstream retention/detention with a free board of 2 ft independent of the buffer area.
- Buffer area outside of the defined channel (on both sides) shall be a minimum of 20 feet wide, be designed to slope toward the channel, and allow for maintenance access along each side.

- Unless otherwise approved by the City, the re-established channels shall be constructed in a manner to appear as natural as possible with side slopes no steeper than 3H:1V.
- All provisions of this manual regarding natural channels and buffer areas with the exception of buffer area width shall still apply.

All buffer areas for natural channels shall have an easement dedicated to Heber City for emergency use.

Flood and Debris Flow Hazards

FEMA Flood Analysis

Ensure all pertinent FEMA flood mapping data is incorporated into plans and plats maps. Ensure all FEMA guidelines from https://www.fema.gov are followed including the sections on Floods & Maps, Floodplain Management, and Flood Insurance. FEMA uses the most accurate flood hazard information available and applies rigorous standards in developing Flood Insurance Rate Maps (FIRMs). All areas within Flood Hazard Areas shall be shown on plans and plats, and all Base Flood Elevation (BFE) data pertinent to the development must be provided.

To change the FIRM designation of a property, a Letter of Map Amendment (LOMA) and/or the Letter of Map Revision-Based on Fill (LOMR-F) processes must be strictly followed.

Debris-Flow Flood Hazard Analysis

The Western Unities states is beginning to see increased precipitation intensity and increasing fire size and frequency (Kean and Staley et al, 2021). Generally, there is not adequate time to prevent or mitigate a debris flow hazard *after* a wildfire has taken place. The USGS has found that 1-year storm events will typically trigger a post-wildfire debris flow event. Therefore, if a wildfire takes place, some type of debris flow is likely to happen within 1-year of the fire. These types of hazards should be prevented or controlled as deemed feasible. New development with undeveloped land upstream or downstream of the property containing natural slopes 30% and greater and/or where the City Engineer determines there could be a potential debris-flow risk, requires a specialized post wild-fire debris-flow analysis of the site including an estimated post-fire hazard assessment with mitigation measures.

Flood and Debris-flow hazard analysis reports shall include but shall not be limited to the following information for the areas to be developed:

- FEMA Flood Mapping Data including 100-year flood hazard zones
- Include and label the drainageways susceptible to periodic flooding associated with storm events or rapid snowmelt that are outside the FEMA designated flood zones
- U.S. Geological Survey Map
- Aerial Map
- Contour map with slopes labeled
- Geotechnical Test pit data
- Geologic Mapping Data to include historic upstream and downstream alluvial fan deposits and historic upstream or pass-through debris/mud flows as data is available.
- Vegetative cover type and percentage analysis
- Utah Division of Water Rights – Dam Safety requirements

- Post-fire debris-flow volume calculations with flood and post-fire debris-flow hazard assessment and mitigation

Flood and post-fire debris-flow hazard assessment and mitigation recommendations shall adhere to the following guidelines:

The storage volume fordebris and sediment shall be calculated using model equation (2) from the 2010 Cannon study (Cannon et al,, 2010) using a minimum 80% burn of slopes 30% and greater. The entire drainage basin shall be modeled. Methods from the Gartner 2014 study and equation (3) may also be used until another model paper is published and adopted by USGS. (Gartner et al., 2014).

The minimum storm event interval shall be a 10-year occurrence with a T_c peak rainfall depth, unless otherwise approved by the City Engineer. Intensity is used for the Gartner method.

When the Gartner method is used, the watershed area burned at moderate to high severity shall be calculated based on a vegetation type assessment of the entire drainage basin. Vegetation type and coverage area data shall be obtained and summarized under the direction of a licensed Professional Engineer or other approved licensed professional. Forested areas and other areas with small or large tree species (deciduous or evergreen) and/or thick brush, such as Gambel Oak shall be assumed to burn at moderate to high severity. Staley et al. (2018) spells out further guidance on vegetation types and burn severity per vegetation type.

Debris flow is difficult to accurately model due to the nature of the material being carried by the storm water, especially if the natural channel that the debris flow will enter and travel through is altered by road crossings, culverts, or other diversions/obstructions over and through the natural channel. Unless the natural channel is undisturbed and can be accurately modeled to safely convey the debris flow without having to travel through any obstructions, culverts, roads, etc. that would otherwise plug or divert the flow off-course, the estimated debris volume needs to be contained in a debris-basin upstream from development. Road or other crossings shall be designed to allow and divert debris flow and/or flood water over the crossing using depression or other mechanism to allow the flow to pass the crossing continue down the natural channel. Other measures to contain and/or divert the debris volume may be considered, as approved by the City Engineer.

References

Cannon, S.H., Gartner, J.E., Rupert, M.G., Michael, J.A., Rea, A.H., & Parrett, C. (2010). Predicting the probability and volume of postwildfire debris flows in the intermountain western United States. *GSA Bulletin*, *v. 122*(1-2), 127-144. https://doi.org/10.1130/B26459.1

Gartner, J.E., Cannon, S.H., & Santi, P.M. (2014). Empirical models for predicting volumes of sediment deposited by debris flows and sediment-laden floods in the transverse ranges of southern California. *Engineering Geology*, *176*, 45-56. https://doi.org/10.1016/j.enggeo.2014.04.008

Kean, J.W., & Staley, D.M. (2021). Forecasting the frequency and magnitude of postfire debris flows across southern California. *Earth's Future*, *9*(3), e2020EF001735. https://doi.org/10.1029/2020EF001735

Staley, D.M., Tillery, A.C., Kean, J.W., McGuire, L.A., Pauling, H.E., Rengers, F.K., & Smith, J.B. (2018). Estimating post-fire debris-flow hazards prior to wildfire using a statistical analysis of historical

distributions of fire severity from remote sensing data. *International Journal of Wildland Fire*, *27*(9), 595-608. https://doi.org/10.1071/WF17122

Appendices

Appendix A

Drainage Design Resources

Standard Drawings | Heber City, UT (heberut.gov)

Standard Specifications | Heber City, UT (heberut.gov)

Storm-Intensity-Curves-PDF (heberut.gov)

Low Impact Development - Utah Department of Environmental Quality

DWQ-2019-000161.pdf (utah.gov)

Microsoft PowerPoint - A Guide to Low Impact Development within Utah (Training)

Emerging stormwater treatment technologies (TAPE) - Washington State Department of Ecology

Nonpoint Source: Urban Areas | US EPA

Appendix B

(IDF Data)

Appendix C

(CN Tables)

Appendix D

(Infiltration & Groundwater Maps)

Appendix E

(80th Percentile Calculations)

Appendix F

(UCEA LID Details)

Appendix G

(TR-55 Worksheets)

Appendix H

(Source Protection Maps)

Appendix I

(FAA Method Storage Facility Volume)

Obtain Excel file from City

Appendix J

(Storm Water Maintenance Agreement and Management Plan)

STANDARD PLAT FORMAT

PLAT REQUIREMENTS

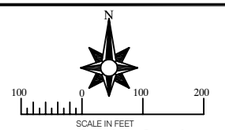
-FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET IS EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
-ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES AND CURVES USED TO DESCRIBE BOUNDARIES, BLOCKS, LOTS, STREETS, ALLEYS, EASEMENTS, AREAS TO BE RESERVED FOR PUBLIC USE AND OTHER IMPORTANT FEATURES.
-BOUNDARY LINES SHALL BE DRAWN HEAVIER THAN STREET AND LOT LINES.
-MONUMENTS SHALL BE INSTALLED BY THE SUBDIVIDER'S ENGINEER OR LAND SURVEYOR AT SUCH POINTS DESIGNATED ON THE FINAL PLAT AS ARE APPROVED BY THE PLANNING DEPARTMENT.
-MONUMENTS MUST BE PLACED PRIOR TO FINAL BOND RELEASE.
-THE WASATCH COUNTY RECORDER'S OFFICE MAY HAVE ADDITIONAL REQUIREMENTS FOR THIS PLAT

ITEMS REQUIRED FOR PRELIMINARY PLAT:

-SECTION INFORMATION - TWO OR MORE CORNERS IF POSSIBLE
-BASIS OF BEARING CLEARLY LABELED
-BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
-POINT OF BEGINNING CLEARLY LABELED
-BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
-BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED LAND
-THE 100-YR FLOOD LEVEL OF ALL WATERCOURSES INDICATED WITH VERTICAL DATUM
-SURROUNDING PROPERTY OWNERSHIP
-LOCATION OF AND DIMENSIONS TO THE NEAREST BENCH MARK OR MONUMENT ON TWO OPPOSITE SIDES OF THE PLAT
-PROPERTIES LOCATED IN THE SENSITIVE LANDS OVERLAY ZONE
-LOT SIZE CLEARLY LABELED IN SQ. FT. & ACRES WITH LENGTH & WIDTH
-NORTH ARROW
-DRAWING SCALE CLEARLY MARKED AND NOT LESS THAN 1" = 100'
-AREAS WITH SLOPES LESS THAN 30%, 30-40%, 40-50% AND > 50%
-IDENTIFIED NATURAL HAZARDS AND MITIGATION MEASURES FOR AREAS, SUBJECT TO AVALANCHE, LANDSLIDE, ROCK FALL, LIQUEFACTION, DEBRIS FLOWS, SURFACE FAULT RUPTURE, COLLAPSIBLE SOILS, SHRINK-SWELL SOILS, SHALLOW GROUNDWATER (WITHIN 3 FEET OF THE SURFACE), SURFACE WATER, STREAM BEDS (INCLUDING INTERMITTENT), SPRINGS, 100-YEAR FLOOD ZONES, AND DRINKING WATER SOURCE PROTECTION ZONES.

ITEMS REQUIRED FOR FINAL PLAT:

-INCLUDE ALL ITEMS REQUIRED ON PRELIMINARY PLAT (EXCEPT CONTOURS)
-STREET MONUMENTS
-BUILDING SETBACKS
-PUBLIC UTILITY EASEMENTS, ACCESS EASEMENTS, EXISTING EASEMENTS
-PROPOSED STREET NAMES
-INTERSECTION ADDRESSES
-LOT ADDRESSES
-TYPICAL LOT DETAILS SHOWING BOTH CORNER AND INTERIOR LOTS
-VICINITY MAP
-PLAT NOTES
-PHYSICAL MARKERS SHALL BE PLACED AT EACH LOT CORNER
-IF PROPERTY CONTROLLED BY PUBLIC AGENT OR UTILITY COMPANY, APPROVAL FOR LOCATION, IMPROVEMENT, AND MAINTENANCE MUST BE SHOWN
-ELECTRONIC COPY THAT IS COMPATIBLE WITH CITY'S AUTOCAD MAPPING SYSTEM SHALL BE SUBMITTED
-OPEN SPACE AREAS ARE COVNEYED TO (INSERT NAME OF ENTITY).



LEGEND DATE OF PREPARATION

- EXISTING SECTION CORNER (FOUND) (AS DESCRIBED)
- PHASE 1 BOUNDARY LINE
- STREET CENTERLINE
- PROPOSED STREET MONUMENT
- MONUMENT TO MONUMENT TIE
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- PARCEL DEDICATION TO HEBER CITY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK LINE
- PUBLIC UTILITY EASEMENTS

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____QUARTER OF SECTION__,
TOWNSHIP __ SOUTH, RANGE __EAST,
SALT LAKE BASE AND MERIDIAN
HEBER CITY, WASATCH COUNTY, UTAH

STANDARD PLAT NOTES

1-PRIOR TO BUILDING PERMITS BEING ISSUED, SOIL AND/OR GEOTECHNICAL TESTING STUDIES MAY BE REQUIRED ON EACH LOT AS DETERMINED BY THE CITY BUILDING OFFICIAL.
2-BUILDING PERMITS WILL NOT BE ISSUED UNTIL ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED PER CITY STANDARDS AND ALL FEES INCLUDING IMPACT AND CONNECTION FEES ARE PAID.
3-NO CITY MAINTENANCE SHALL BE PROVIDED FOR STREETS AND IMPROVEMENTS DESIGNATED AS "PRIVATE" ON THIS PLAT.
4-ALL COMMON AND PARKING AREAS, AS APPLICABLE, AND PRIVATE STREETS, ARE DEDICATED AS CITY UTILITY EASEMENTS. HEBER CITY HAS THE RIGHT OF ACCESS THROUGH THESE EASEMENTS TO ACCESS, MAINTAIN, AND REPAIR CITY UTILITIES. NO CHANGES TO TOPOGRAPHY, STRUCTURES, ABOVE OR BELOW GROUND ARE ALLOWED IN EASEMENTS WITHIN 10 FEET OF CITY UTILITIES WITHOUT WRITTEN PERMISSION FROM THE HEBER CITY ENGINEER. ANY OBSTACLES ERECTED WITHIN THESE EASEMENTS WITHOUT WRITTEN PERMISSION WILL BE REMOVED AT THE CURRENT PROPERTY OWNER'S EXPENSE. ALL STORM DRAIN UTILITIES AND THEIR MAINTENANCE WITHIN PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF PROPERTY OWNER. ALL SEWER LATERALS AND THEIR MAINTENANCE TO THE PUBLIC RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. ALL DRINKING WATER AND PRESSURIZED IRRIGATION SERVICES AND THEIR MAINTENANCE FROM THE WATER METER OR SERVICE VAULT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
5-INFRASTRUCTURE OF THIRD-PARTY PUBLIC UTILITIES IS TO BE INSTALLED WITHIN DEDICATED PUBLIC UTILITY EASEMENTS (PUE) AND AT PERPENDICULAR CROSSINGS WITH A HEBER CITY UTILITY EASEMENT OR RIGHT OF WAY (ROW). BESIDES CROSSINGS, THIRD-PARTY PUBLIC UTILITY INFRASTRUCTURE IS NOT ALLOWED IN HEBER CITY UTILITY EASEMENTS OR ROWs UNLESS SPECIFICALLY IDENTIFIED AND LOCATED ON THIS PLAT OR WITH SUBSEQUENT WRITTEN PERMISSION FROM THE CITY ENGINEER.
6-A GEOTECHNICAL REPORT HAS BEEN COMPLETED BY [GEOTECHNICAL ENGINEER], WHICH ADDRESSES SOIL AND GROUNDWATER CONDITIONS, PROVIDES ENGINEERING DESIGN CRITERIA, AND RECOMMENDS MITIGATION MEASURES IF PROBLEMATIC CONDITIONS WERE ENCOUNTERED. THE CITY ASSUMES NO LIABILITY OR RESPONSIBILITY FOR ANY RELIANCE ON THE INFORMATION OR LACK THEREOF IN THE REPORT.
7- AGRICULTURAL USES, OPERATIONS, AND RIGHTS ARE ADJACENT TO OR NEAR THE PLAT AND LOTS. THE LOTS IN THIS PLAT ARE SUBJECT TO THE SIGHTS, SOUNDS, ODORS, NUISANCES, AND ASPECTS ASSOCIATED WITH AGRICULTURAL OPERATIONS, USES, AND RIGHTS. THESE USES AND OPERATIONS MAY OCCUR AT ALL TIMES OF THE DAY AND NIGHT INCLUDING WEEKENDS AND HOLIDAYS. THE CITY IS NOT RESPONSIBLE OR LIABLE FOR THESE USES AND IMPACTS AND WILL NOT RESTRICT ANY GRANDFATHERED AGRICULTURAL USE FROM CONTINUING TO OCCUR LAWFULLY.
8- DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS, ACCORDING TO THE BUILDING CODE.

NOTES FOR PLATS WITH COMMON AREA

9-ALL OPEN SPACE, COMMON SPACE, AND TRAIL IMPROVEMENTS LOCATED HEREIN ARE TO BE INSTALLED BY OWNER AND MAINTAINED BY A HOMEOWNERS ASSOCIATION UNLESS SPECIFIED OTHERWISE ON EACH IMPROVEMENT.
10-LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'S."

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
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CL3	345.00	191.93	31°52'30"	98.52	189.47	S15°47'45"E

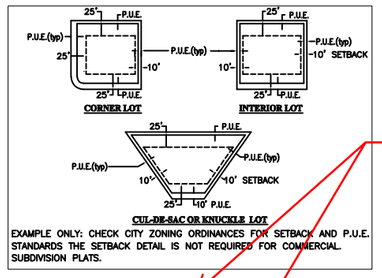
CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHORD BEARING
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C8	50.00	5.12	05°51'42"	2.56	5.11	N09°10'38"E

DATA TABLE

INFORMATION	AC	SQ. FT.	%TOTAL	#	NOTES
TOTAL PROJECT AREA	13.9	607182	100%		
SENSITIVE LANDS	0.2	7503	1%		7% OF OPEN SPACE
OPEN SPACE	2.3	101750	17%		
BUILDABLE LAND	8.1	354478	58%		
ROW AREA	3.5	150954	25%		
LANDSCAPING AREA	4.5	197518	33%		
LOTS				61	
NET DENSITY DWELLINGS BY ACRE				4.4	

TYPICAL SETBACK & P.U.E. DETAILS



EXAMPLE ONLY: CHECK CITY ZONING ORDINANCES FOR SETBACK AND P.U.E. STANDARDS THE SETBACK DETAIL IS NOT REQUIRED FOR COMMERCIAL SUBDIVISION PLATS.

Changed Planning Signature box to allow for authorized employees to sign instead of just Manager

Added SSD signature block for when applicable

Added Note 5 to address PUE's in ROW's

VICINITY MAP

VICINITY MAP

SURVEYOR'S CERTIFICATE

I, the undersigned surveyor, do hereby certify that I am a professional Land Surveyor and that I hold a license (number shown below) in accordance with Utah Code Title 58, Chapter 22 of the Professional Engineers and Land Surveyors Licensing Act. I further certify that, by authority of the owners, I have completed a survey of the property described on this subdivision plat in accordance with Section 17-23-17, have verified all measurements, have subdivided said tract of land into lots, streets, together with easements, and have placed monuments on the ground as represented on the plat. I also certify that I have filed with the Wasatch County Surveyor, pursuant to State Law, a map of the survey I completed.

BOUNDARY DESCRIPTION

A parcel of land situated in the _____Quarter of Section ___, Township ___ South, Range East, Salt Lake Base and Meridian, said parcel being more particularly described as follows:

Beginning at a point....

Acres: _____, # of lots ___, # of parcels _____.

SURVEYOR'S SEAL

OWNER'S DEDICATION

The undersigned owner(s) of the above-described tract of land has/have caused the same to be subdivided into lots, parcels, and streets, together with easements and rights-of-way, to be hereafter known as:

XXXXX

and do hereby dedicate for the perpetual use of the public and City all parcels, lots, streets, easements, rights-of-way, and public amenities shown on this plat as intended for public or City use. The undersigned owner(s), agents, successors, and assigns shall voluntarily defend, indemnify, and save harmless the City against any easements or other encumbrance on a dedicated street, easement, or right-of-way that will interfere with the City's use, maintenance, and operation of the street or utilities. The undersigned owner(s), agents, successors, and assigns also hereby convey any other easements, as shown and/or noted on this plat, to the parties indicated and for the purposes shown and/or noted hereon. The City assumes no liability with respect to the creation of this subdivision, the alteration of the ground surface, vegetation, drainage, or surface or sub-surface water flows within this subdivision, and the development activity within this subdivision.

In witness whereof I have set forth my hand this___ day of ____, 20__.

Signature _____ Print Name _____ Title & Entity _____

Signature _____ Print Name _____ Title & Entity _____

OWNER'S ACKNOWLEDGMENT

STATE OF UTAH) S.S.
County of Utah)

On this___day of ____, 20__, personally appeared before me _____, who being by me duly sworn, did prove to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies).

WITNESS my hand and official seal.

Notary Public Full Name: _____

Each owner's signature must be notarized separately if multiple owners sign in front of different notaries. Please add an owner's acknowledgment signature block for each owner who signs the plat.

APPROVAL BY LEGISLATIVE BODY

The City Council of Heber City, County of Wasatch, approves this subdivision subject to the conditions and restrictions stated hereon, and hereby accepts the dedication of all streets, easements, and other parcels of land intended for the public purpose of the perpetual use of the public.

Mayor _____ Date _____

RECORDER'S SEAL

ENGINEERING FIRM NAME: _____
ENGINEERING FIRM ADDRESS: _____
SURVEYING FIRM NAME: _____
SURVEYING FIRM ADDRESS: _____

PLANNING DEPARTMENT	CITY ENGINEER	WASATCH CO. FIRE DISTRICT	SPECIAL SERVICE DISTRICT	COUNTY SURVEYOR	COUNTY RECORDER
Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	
TITLE:	CITY ENGINEER	FIRE CHIEF	TITLE:	COUNTY SURVEYOR	

STANDARD PLAT FORMAT

PLAT REQUIREMENTS

- FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET FACES EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
- ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES AND CURVES USED TO DESCRIBE BOUNDARIES, BLOCKS, LOTS, STREETS, ALLEYS, EASEMENTS, AREAS TO BE RESERVED FOR PUBLIC USE AND OTHER IMPORTANT FEATURES.
- BOUNDARY LINES SHALL BE DRAWN HEAVIER THAN STREET AND LOT LINES.
- MONUMENTS SHALL BE INSTALLED BY THE SUBDIVIDER'S ENGINEER OR LAND SURVEYOR AT SUCH POINTS DESIGNATED ON THE FINAL PLAT AS ARE APPROVED BY THE PLANNING DEPARTMENT.
- MONUMENTS MUST BE PLACED PRIOR TO FINAL BOND RELEASE.
- THE WASATCH COUNTY RECORDER'S OFFICE MAY HAVE ADDITIONAL REQUIREMENTS FOR THIS PLAT

ITEMS REQUIRED FOR PRELIMINARY PLAT:

- SECTION INFORMATION – TWO OR MORE CORNERS IF POSSIBLE
- BASIS OF BEARING CLEARLY LABELED
- BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
- POINT OF BEGINNING CLEARLY LABELED
- BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
- BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED LAND
- THE 100-YR FLOOD LEVEL OF ALL WATERCOURSES INDICATED WITH VERTICAL DATUM
- SURROUNDING PROPERTY OWNERSHIP
- LOCATION OF AND DIMENSIONS TO THE NEAREST BENCH MARK OR MONUMENT ON TWO OPPOSITE SIDES OF THE PLAT
- PROPERTIES LOCATED IN THE SENSITIVE LANDS OVERLAY ZONE
- LOT SIZE CLEARLY LABELED IN SQ. FT. & ACRES WITH LENGTH & WIDTH
- NORTH ARROW
- DRAWING SCALE CLEARLY MARKED AND NOT LESS THAN 1" = 100'
- AREAS WITH SLOPES LESS THAN 30%, 30-40%, 40-50% AND > 50%
- IDENTIFIED NATURAL HAZARDS AND MITIGATION MEASURES FOR AREAS, SUBJECT TO AVALANCHE, LANDSLIDE, ROCK FALL, LIQUEFACTION, DEBRIS FLOWS, SURFACE FAULT RUPTURE, COLLAPSIBLE SOILS, SHRINK-SWELL SOILS, SHALLOW GROUNDWATER (WITHIN 3 FEET OF THE SURFACE), SURFACE WATER, STREAM BEDS (INCLUDING INTERMITTENT), SPRINGS, 100-YEAR FLOOD ZONES, AND DRINKING WATER SOURCE PROTECTION ZONES.

ITEMS REQUIRED FOR FINAL PLAT:

- INCLUDE ALL ITEMS REQUIRED ON PRELIMINARY PLAT (EXCEPT CONTOURS)
- STREET MONUMENTS
- BUILDING SETBACKS
- PUBLIC UTILITY EASEMENTS, ACCESS EASEMENTS, EXISTING EASEMENTS
- PROPOSED STREET NAMES
- INTERSECTION ADDRESSES
- LOT ADDRESSES
- TYPICAL LOT DETAILS SHOWING BOTH CORNER AND INTERIOR LOTS
- VICINITY MAP
- PLAT NOTES
- PHYSICAL MARKERS SHALL BE PLACED AT EACH LOT CORNER
- IF PROPERTY CONTROLLED BY PUBLIC AGENT OR UTILITY COMPANY, APPROVAL FOR LOCATION, IMPROVEMENT, AND MAINTENANCE MUST BE SHOWN
- ELECTRONIC COPY THAT IS COMPATIBLE WITH CITY'S AUTOCAD MAPPING SYSTEM SHALL BE SUBMITTED
- OPEN SPACE AREAS ARE COVNEYED TO (INSERT NAME OF ENTITY).

N

100 0 100 200

SCALE IN FEET

TYPICAL:1" = 30' MAX:1" = 100'

LEGEND DATE OF PREPARATION

- EXISTING SECTION CORNER (FOUND) (AS DESCRIBED)
- PHASE 1 BOUNDARY LINE
- STREET CENTERLINE
- PROPOSED STREET MONUMENT
- MONUMENT TO MONUMENT TIE
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- PARCEL DEDICATION TO HEBER CITY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK LINE
- PUBLIC UTILITY EASEMENTS

PLAT NAME AND PHASE

LOCATED IN A PORTION OF THE _____ QUARTER OF SECTION__,
TOWNSHIP __ SOUTH, RANGE __ EAST,
SALT LAKE BASE AND MERIDIAN
HEBER CITY, WASATCH COUNTY, UTAH

STANDARD PLAT NOTES

1- PRIOR TO BUILDING PERMITS BEING ISSUED, SOIL AND/OR GEOTECHNICAL TESTING STUDIES MAY BE REQUIRED ON EACH LOT AS DETERMINED BY THE CITY BUILDING OFFICIAL.
2- BUILDING PERMITS WILL NOT BE ISSUED UNTIL ALL REQUIRED IMPROVEMENTS HAVE BEEN INSTALLED PER CITY STANDARDS AND ALL FEES INCLUDING IMPACT AND CONNECTION FEES ARE PAID.
3- NO CITY MAINTENANCE SHALL BE PROVIDED FOR STREETS AND IMPROVEMENTS DESIGNATED AS "PRIVATE" ON THIS PLAT.
4- ALL COMMON AND PARKING AREAS, AS APPLICABLE, AND PRIVATE STREETS, ARE DEDICATED AS CITY UTILITY EASEMENTS. HEBER CITY HAS THE RIGHT OF ACCESS THROUGH THESE EASEMENTS TO ACCESS, MAINTAIN, AND REPAIR CITY UTILITIES. NO CHANGES TO TOPOGRAPHY, STRUCTURES, ABOVE OR BELOW GROUND ARE ALLOWED IN EASEMENTS WITHIN 10 FEET OF CITY UTILITIES WITHOUT WRITTEN PERMISSION FROM THE HEBER CITY ENGINEER. ANY OBSTACLES ERECTED WITHIN THESE EASEMENTS WITHOUT WRITTEN PERMISSION WILL BE REMOVED AT THE CURRENT PROPERTY OWNER'S EXPENSE. ALL STORM DRAIN UTILITIES AND THEIR MAINTENANCE WITHIN PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF PROPERTY OWNER. ALL SEWER LATERALS AND THEIR MAINTENANCE TO THE PUBLIC RIGHT-OF-WAY SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. ALL DRINKING WATER AND PRESSURIZED IRRIGATION SERVICES AND THEIR MAINTENANCE FROM THE WATER METER OR SERVICE VAULT SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER.
5- A GEOTECHNICAL REPORT HAS BEEN COMPLETED BY [GEOTECHNICAL ENGINEER], WHICH ADDRESSES SOIL AND GROUNDWATER CONDITIONS, PROVIDES ENGINEERING DESIGN CRITERIA, AND RECOMMENDS MITIGATION MEASURES IF PROBLEMATIC CONDITIONS WERE ENCOUNTERED. THE CITY ASSUMES NO LIABILITY OR RESPONSIBILITY FOR ANY RELIANCE ON THE INFORMATION OR LACK THEREOF IN THE REPORT.
6- AGRICULTURAL USES, OPERATIONS, AND RIGHTS ARE ADJACENT TO OR NEAR THE PLAT AND LOTS. THE LOTS IN THIS PLAT ARE SUBJECT TO THE SIGHTS, SOUNDS, ODORS, NUISANCES, AND ASPECTS ASSOCIATED WITH AGRICULTURAL OPERATIONS, USES, AND RIGHTS. THESE USES AND OPERATIONS MAY OCCUR AT ALL TIMES OF THE DAY AND NIGHT INCLUDING WEEKENDS AND HOLIDAYS. THE CITY IS NOT RESPONSIBLE OR LIABLE FOR THESE USES AND IMPACTS AND WILL NOT RESTRICT ANY GRANDFATHERED AGRICULTURAL USE FROM CONTINUING TO OCCUR LAWFULLY.
7- DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS, ACCORDING TO THE BUILDING CODE.

NOTES FOR PLATS WITH COMMON AREA

8- ALL OPEN SPACE, COMMON SPACE, AND TRAIL IMPROVEMENTS LOCATED HEREIN ARE TO BE INSTALLED BY OWNER AND MAINTAINED BY A HOMEOWNERS ASSOCIATION UNLESS SPECIFIED OTHERWISE ON EACH IMPROVEMENT.
9- LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'S."

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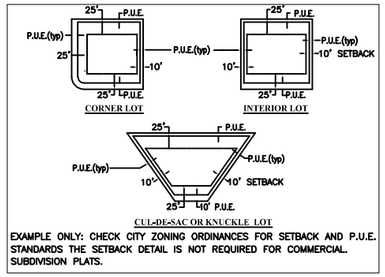
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EXAMPLE

SUPERSEDED

VICINITY MAP

VICINITY MAP

SURVEYOR'S CERTIFICATE

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Acres: _____ , # of lots ____ , # of parcels _____.

SURVEYOR'S SEAL

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In witness whereof I have set forth my hand this___ day of _____ , 20__.

Signature Print Name Title & Entity

Signature Print Name Title & Entity

OWNER'S ACKNOWLEDGMENT

STATE OF UTAH } S.S.
County of Utah

On this___day of _____, 20__, personally appeared before me _____ who being by me duly sworn, did prove to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies).

WITNESS my hand and official seal.

Notary Public Full Name:_____

Each owner's signature must be notarized separately if multiple owners sign in front of different notaries. Please add an owner's acknowledgment signature block for each owner who signs the plat.

ENGINEERING FIRM NAME:_____
ENGINEERING FIRM ADDRESS:_____
SURVEYING FIRM NAME:_____
SURVEYING FIRM ADDRESS:_____

APPROVAL BY LEGISLATIVE BODY

The City Council of Heber City, County of Wasatch, approves this subdivision subject to the conditions and restrictions stated hereon, and hereby accepts the dedication of all streets, easements, and other parcels of land intended for the public purpose of the perpetual use of the public.

Mayor Date

RECORDER'S SEAL

PLANNING MANAGER	CITY ENGINEER	WASATCH CO. FIRE DISTRICT	CITY ATTORNEY	COUNTY SURVEYOR	COUNTY RECORDER
Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	Approved on this _____ day of _____, 20____	
_____ PLANNING MANAGER	_____ CITY ENGINEER	_____ FIRE CHIEF	_____ CITY ATTORNEY	_____ COUNTY SURVEYOR	

ORDINANCE 2025-02

AN ORDINANCE AMENDING THE HEBER CITY
STANDARD SPECIFICATIONS AND DRAWINGS, STORM WATER DESIGN MANUAL,
AND STANDARD PLAT

BE IT ORDAINED by the City Council of Heber City, Utah as follows:

The Heber City Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat are amended by the Heber City Council in the form and language attached hereto as:

Exhibit A - Heber City Standard Specifications and Drawings
Exhibit B - Heber City Storm Water Design Manual
Exhibit C - Heber City Standard Plat

This Ordinance shall take effect immediately upon passage.

PASSED, APPROVED and ORDERED TO BE PUBLISHED BY THE HEBER CITY COUNCIL this _____ day of _____ 2022.

	AYE	NAY	ABSENT	ABSTAIN
Aaron Cheatwood	_____	_____	_____	_____
Scott Phillips	_____	_____	_____	_____
Sid Ostergaard	_____	_____	_____	_____
Yvonne Barney	_____	_____	_____	_____
Mike Johnston	_____	_____	_____	_____

APPROVED:

_____
Mayor Heidi Franco

ATTEST:

_____ Date: _____
RECORDER

EXHIBIT A