HEBER CITY CORPORATION
75 North Main Street
Heber City, UT 84032
Planning Commission Meeting

January 28, 2025

6:00 p.m. – Regular Meeting

-Time and Order of Items are approximate and may be changed as Time Permits-

Public notice is hereby given that the monthly meeting of the Heber City Planning Commission will be in the Heber City Office Building, 75 North Main, South door, in the Council Chambers upstairs.

1. Regular Meeting:

I. Call to Order

II. Roll Call

III. Pledge of Allegiance: By Invitation

IV. Prayer/Thought by Invitation ()

V. Recuse for Conflict of Interest

2. Consent Agenda: N/A

3. Action Items:

I. Public Hearing to consider updates to the Heber City Standard Specifications and Drawings, Standard Plat, and Stormwater Design Manual. (City Engineer Kyle Turnbow)

II. Recommendation for amendment to the Annexation Policy Plan for the Wasatch Highlands (Tony Kohler)

4. Work Meeting:

I. Central Heber Overlay Zone & Historic Building Use Ordinances (Tony Kohler)

5. Administrative Items:

I. City Council Communication Item (Jamie Baron)

6. Adjournment:

Ordinance 2006-05 allows Commission 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 Meshelle Kijanen at the Heber City Offices at 435.657.7898 at least eight hours prior to the meeting.

Posted on 01.23.2025, 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.

Planning Commission Staff Report

MEETING DATE:	1/28/2025
SUBJECT:	Public Hearing to consider updates to the Heber City Standard Specifications and Drawings, Standard Plat, and Stormwater Design Manual. (City Engineer Kyle Turnbow)
RESPONSIBLE:	Kyle Turnbow
DEPARTMENT:	Engineering
STRATEGIC RELEVANCE:	Necessary Administrative Action, Infrastructure Sustainability

SUMMARY

The policy questions include:

1. Should the Planning Commission recommend Staff's proposed updates to:
    1. Engineering Standards Specifications and Drawings
    2. Storm Water Design Manual
    3. Standard Plat

RECOMMENDATION

Staff recommends that the Planning Commission forward a positive recommendation to the City Council for Staff's proposed updates to the Engineering Standard Specifications and Drawings, Storm Water Design Manual, and Standard Plat with modifications and/or recommendations from the Planning Commission (if any).

BACKGROUND

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

DISCUSSION

Most 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 insure 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 needed a 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 a equivalent product.

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

Staff Recommended Option - Approval

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

Alterntive 2 - Continuance

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 3 - DENIAL
I move to **deny** the item with the following findings.

POTENTIAL MOTIONS

ACCOUNTABILITY

Department: Engineering
Staff member: Kyle Turnbow, Engineer

EXHIBITS

1. Standard Specifications Changes 2025
2. Complete Standard Drawings updates 250123
3. Heber City Storm Water Design Manual 2025 Update
4. Standard Plat Template Changes 2025

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.

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

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:

   > I hereby certify 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 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:

I hereby certify 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

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:

1. The City's Acknowledgment of these plans 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. The City's Acknowledgement of these Plans does not constitute a permit from the Federal or State Government or permission to deviate from Federal or State Laws or Regulations.
4. The City's Acknowledgement of these Plans 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~~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.

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~~-foo~~e~~t 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~~-foo~~e~~t 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.
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.

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 as~~t~~ the water main pipeline.

1.14~~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.

1.15~~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.

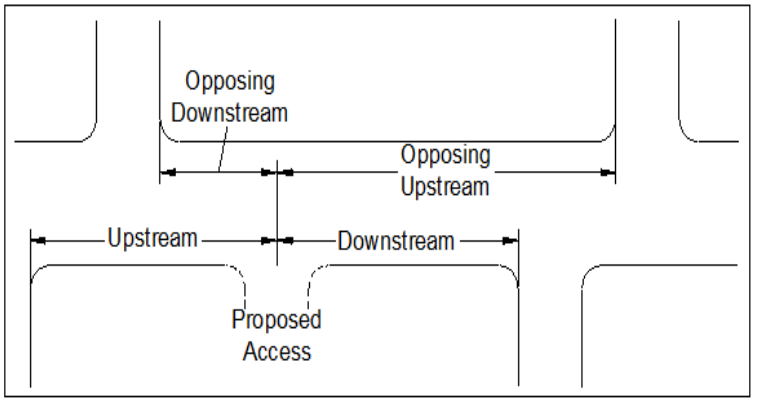

Figure 1: Measurements for Minimum Access Spacing Standards

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 Max		Type II Min	Max	Type III 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
TABLE OF CONTENTS

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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Lids:

- ~~—~~DFW Part #DFW18MUE-1~~I~~MBF2_Small_IRR
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Irrigation Service – Two Lots

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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
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Mueller:

- 1” Single-Service Box Part # 330CS1860RSBS000390N

Lids:

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Fire Hydrants:

- 6” Waterous WB-67-250
- Clow Medallion
- Mueller Super Centurion 250 cast-iron
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BRASS PARTS AND SADDLES

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Both Iron Pipe thread and CC thread will be accepted.

Ford:

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Mueller:

- Corp Stop Valve Part # B-25028-N

Curb Box and Stops

Ford:

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- Curb Box Part # EM2-50-46-42R

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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.

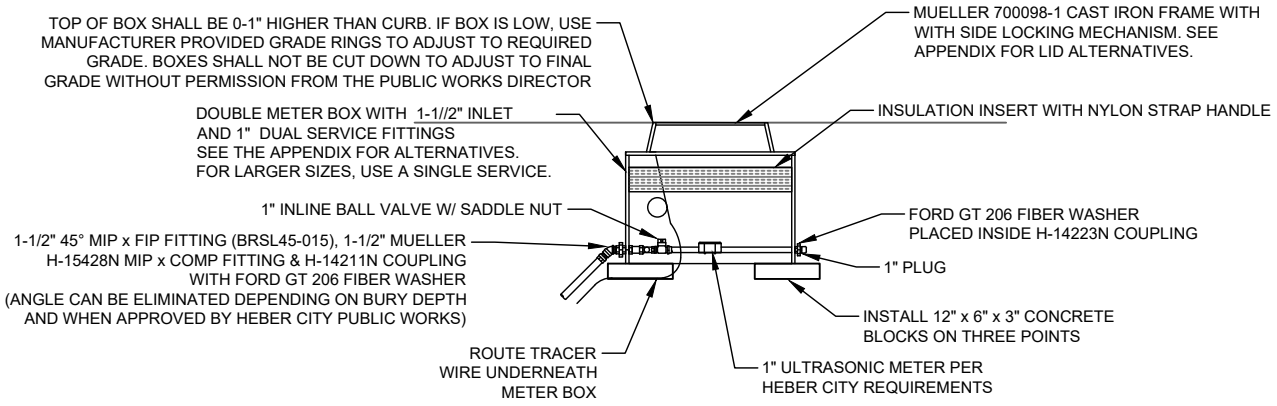
Ford:

- Saddle Part # 202BS

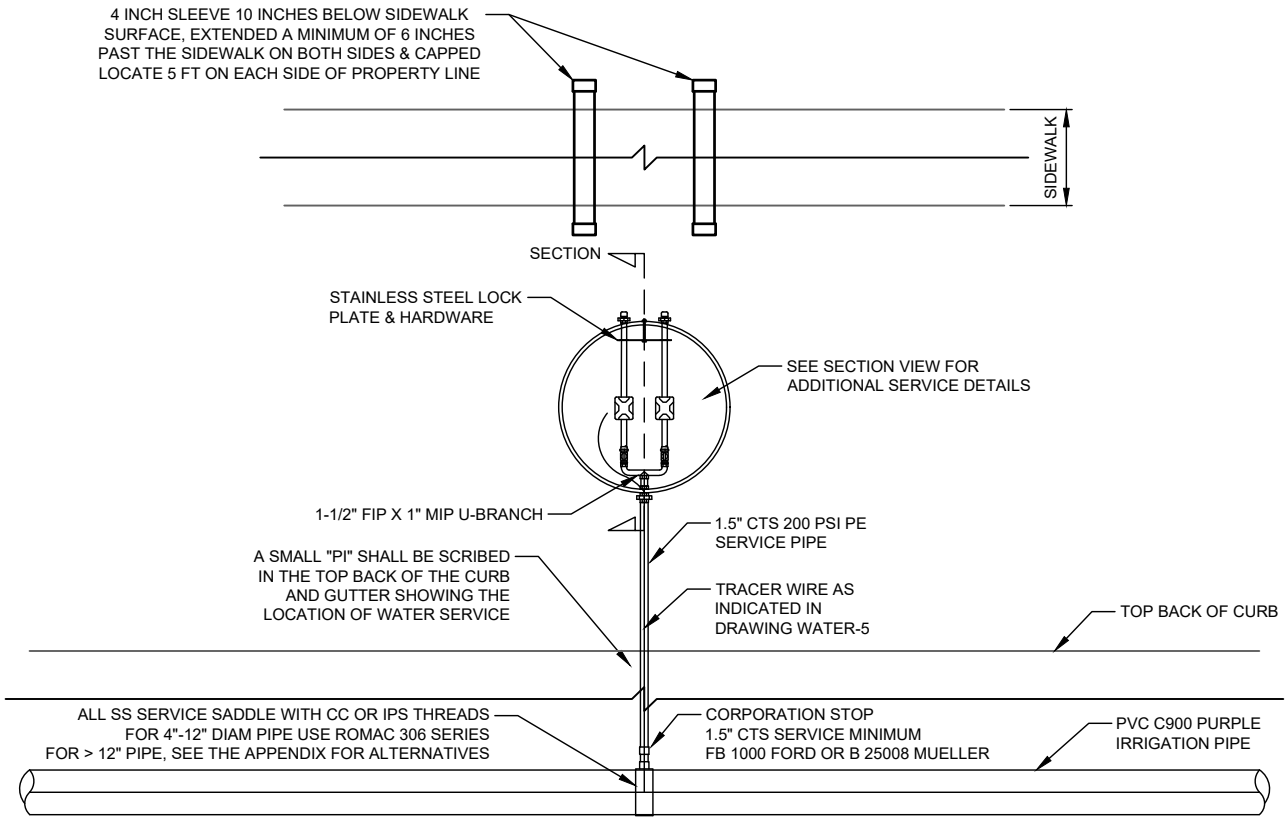
Mueller:

- 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.

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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

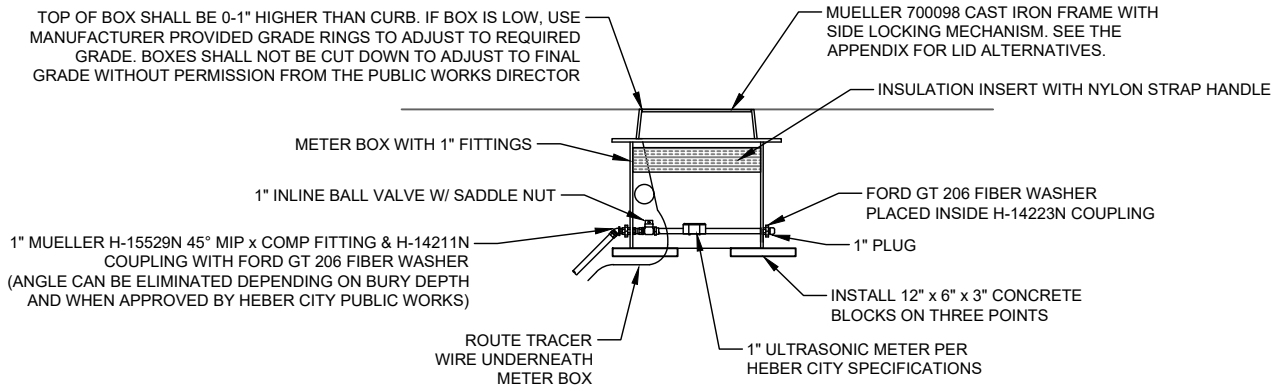
IRRIGATION SERVICE - TWO LOTS

IRR-1A

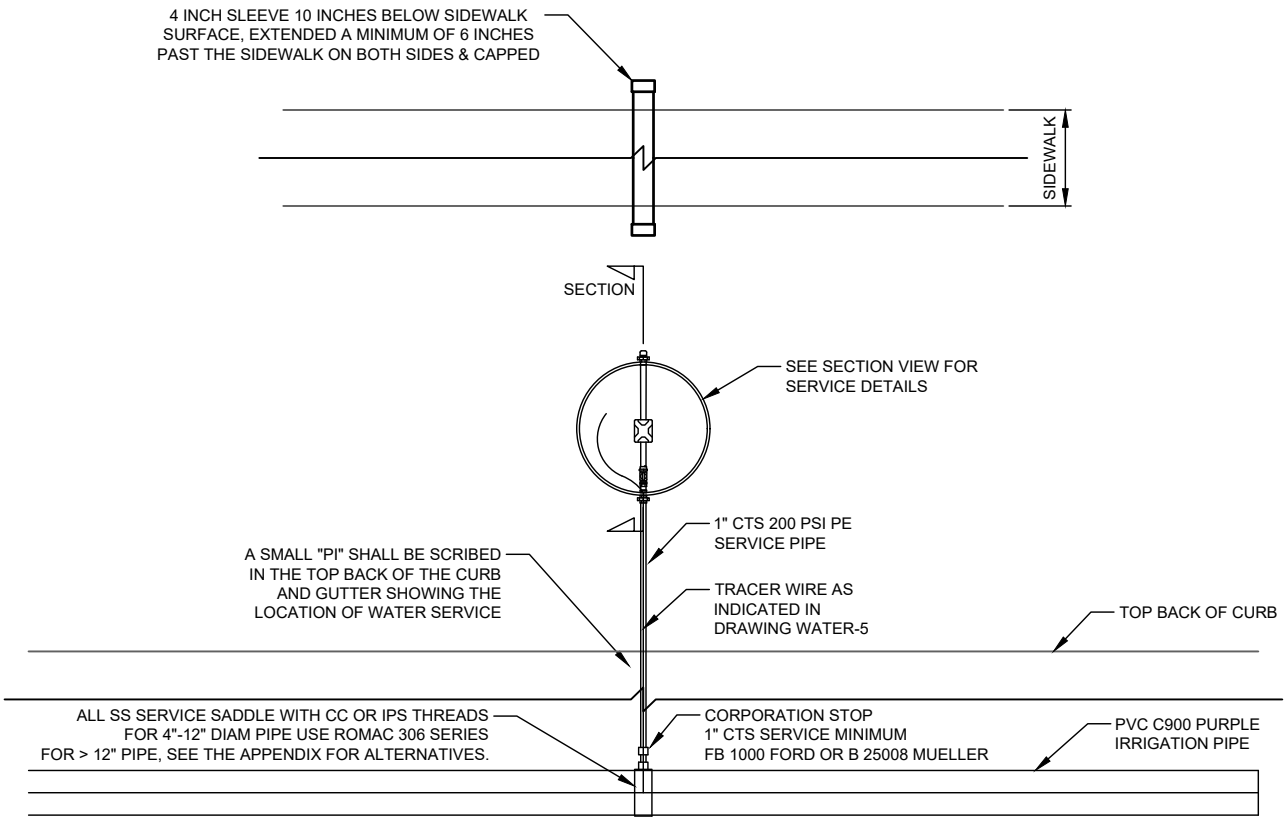
TABLE 1			
SERVICE LINE SIZE	MIN. BOX SIZE	BOX MODEL	LID / FRAME MODEL
1" MINIMUM	18" x 18"	SEE APPENDIX FOR ALTERNTIVES	SEE APPENDIX FOR ALTERNATIVES
1.5"	27" x 24"	500IS2724FAB000666N	DFW18MR-1BF1 SML IRR / 700098-1
2"	36" x 36"	550IS3636FAB000666N	SAME AS ABOVE w/ 790138 EXP RING

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.
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

DATE: 09/23

SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

IRRIGATON SERVICE - ONE LOT

IRR-1B

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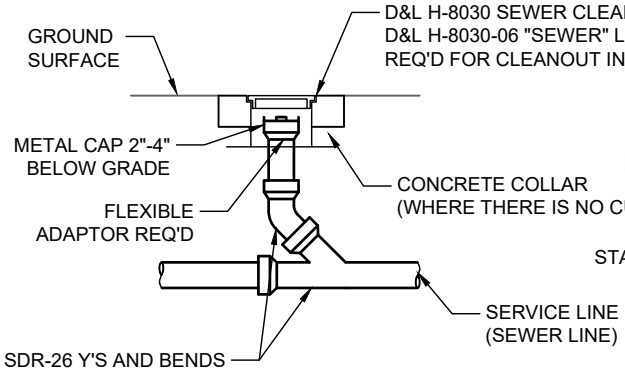
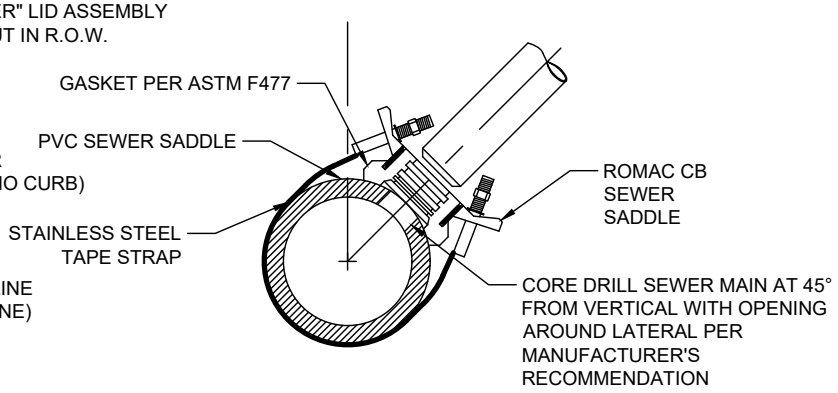
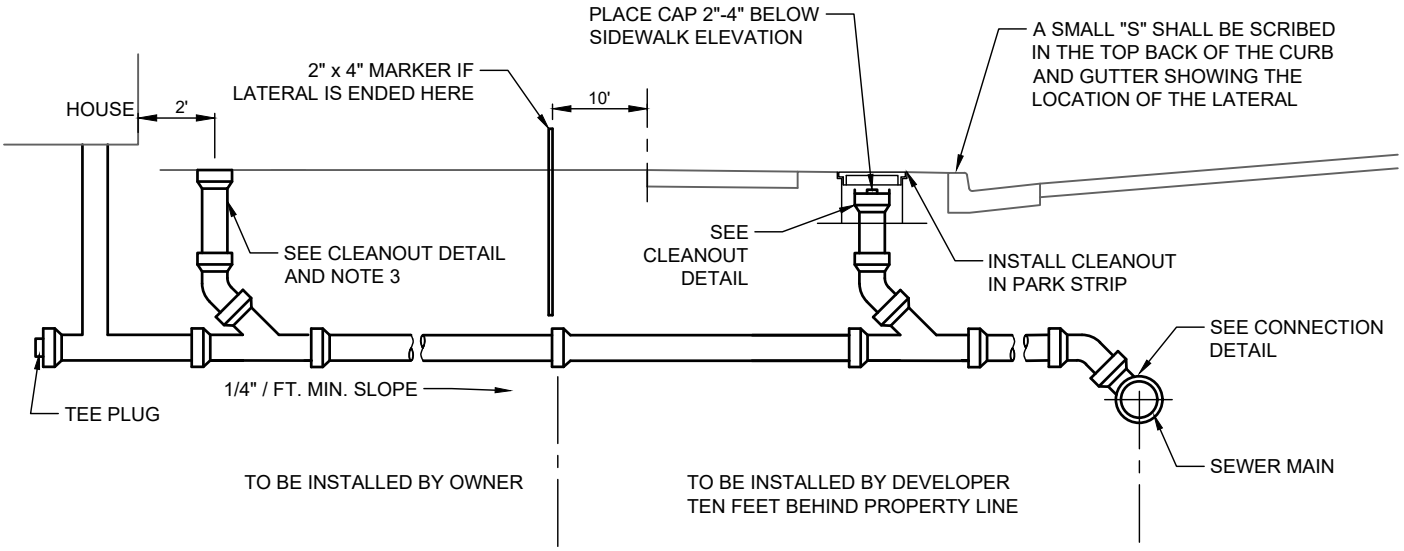


CLEANOUT DETAIL



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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SEWER LATERAL & DETAILS

SEWER-1

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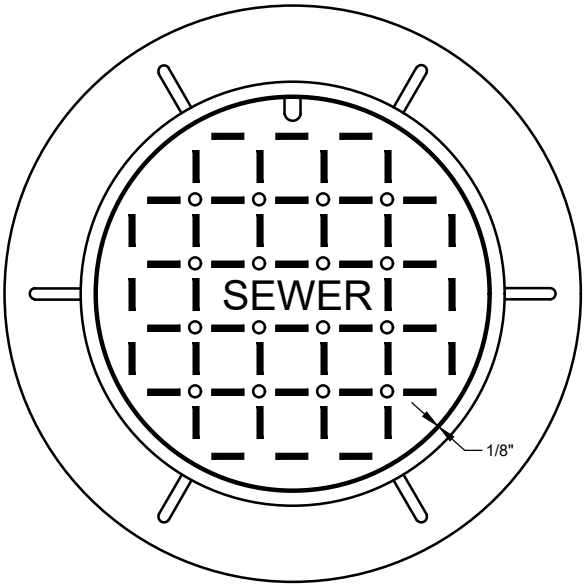
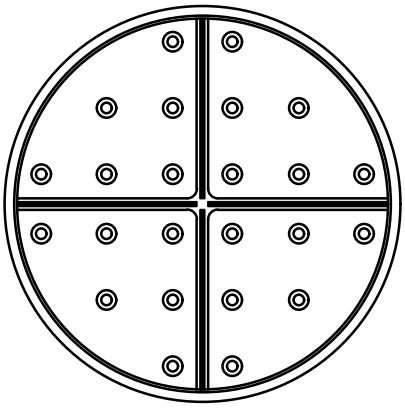
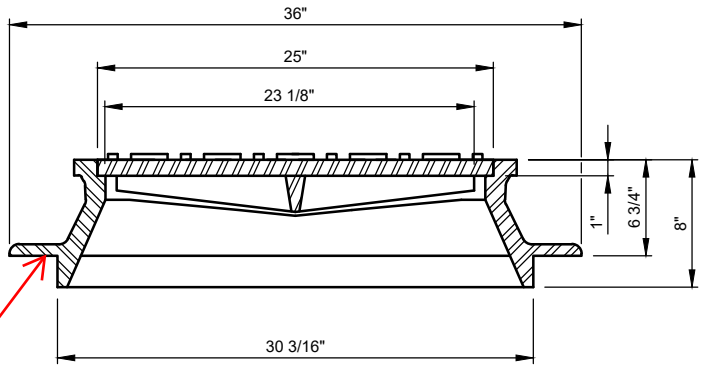


PLAN OF COVER AND RING



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

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

MANHOLE RING & COVER

SEWER-2

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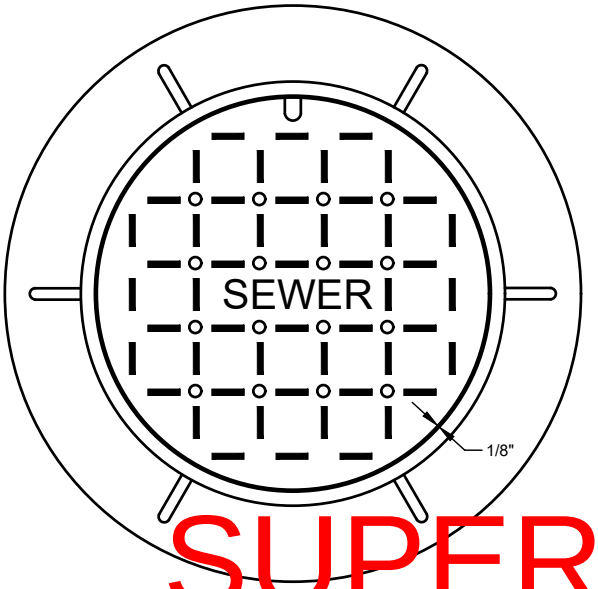
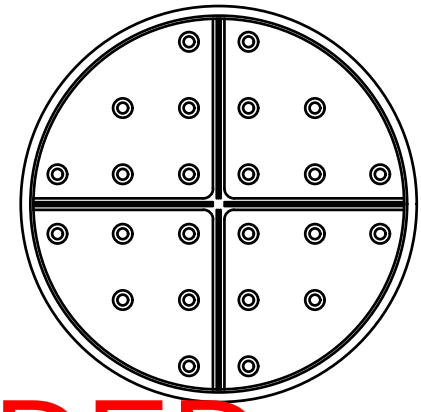


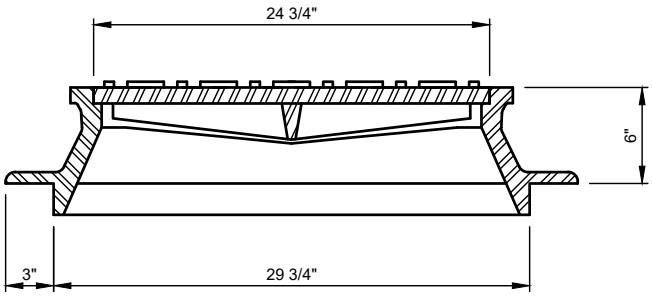


SUPERSEDED

PLAN OF COVER AND RING

BOTTOM VIEW OF COVER

D&L SUPPLY #A-1180 HEAVY DUTY, 400 LB. MINIMUM



SECTION

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HEBER CITY
HEART OF THE WASATCH BACK

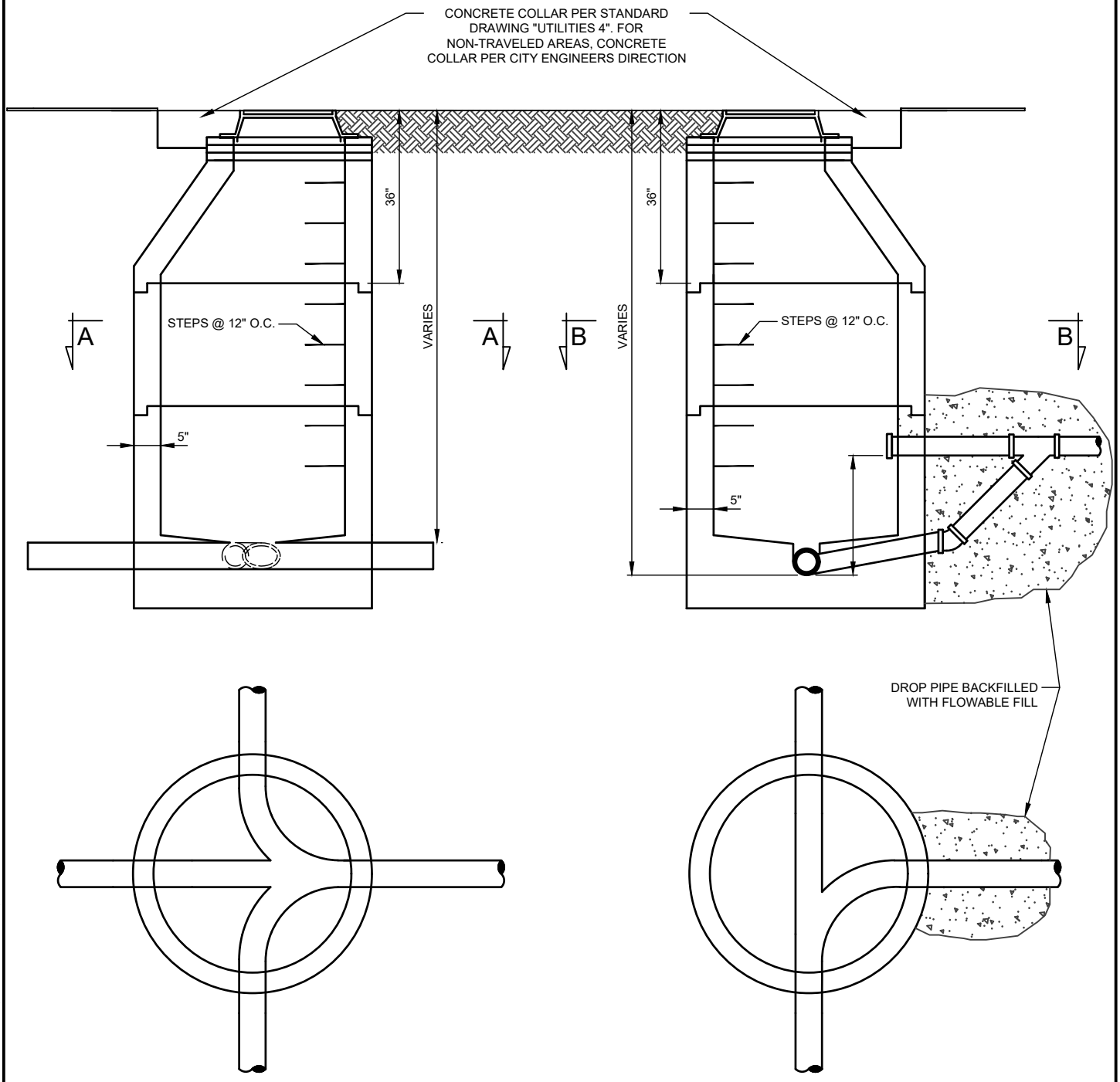
DATE: 03/17

SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

MANHOLE RING & COVER

SEWER-2



SECTION A-A

SECTION B-B

JUNCTION MANHOLE

DROP MANHOLE

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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
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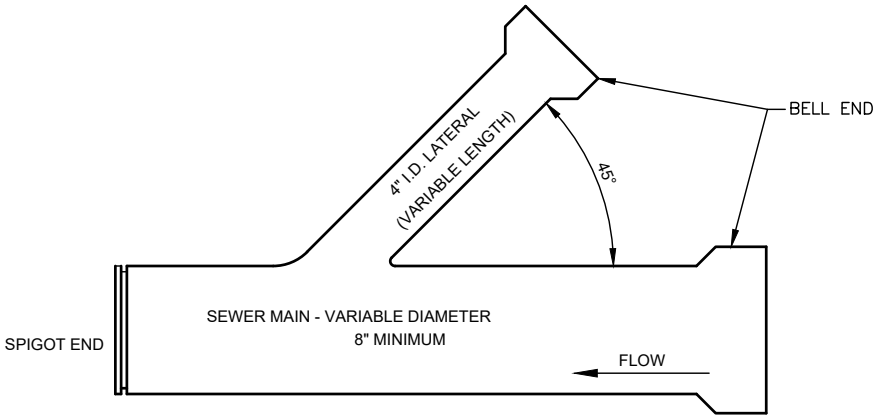
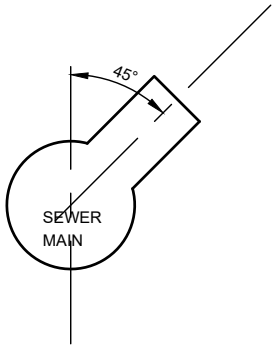
JUNCTION & DROP MANHOLES

SEWER-3





INSTALLATION END VIEW

REQUIRED ON ALL NEW SEWER MAIN CONSTRUCTION

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HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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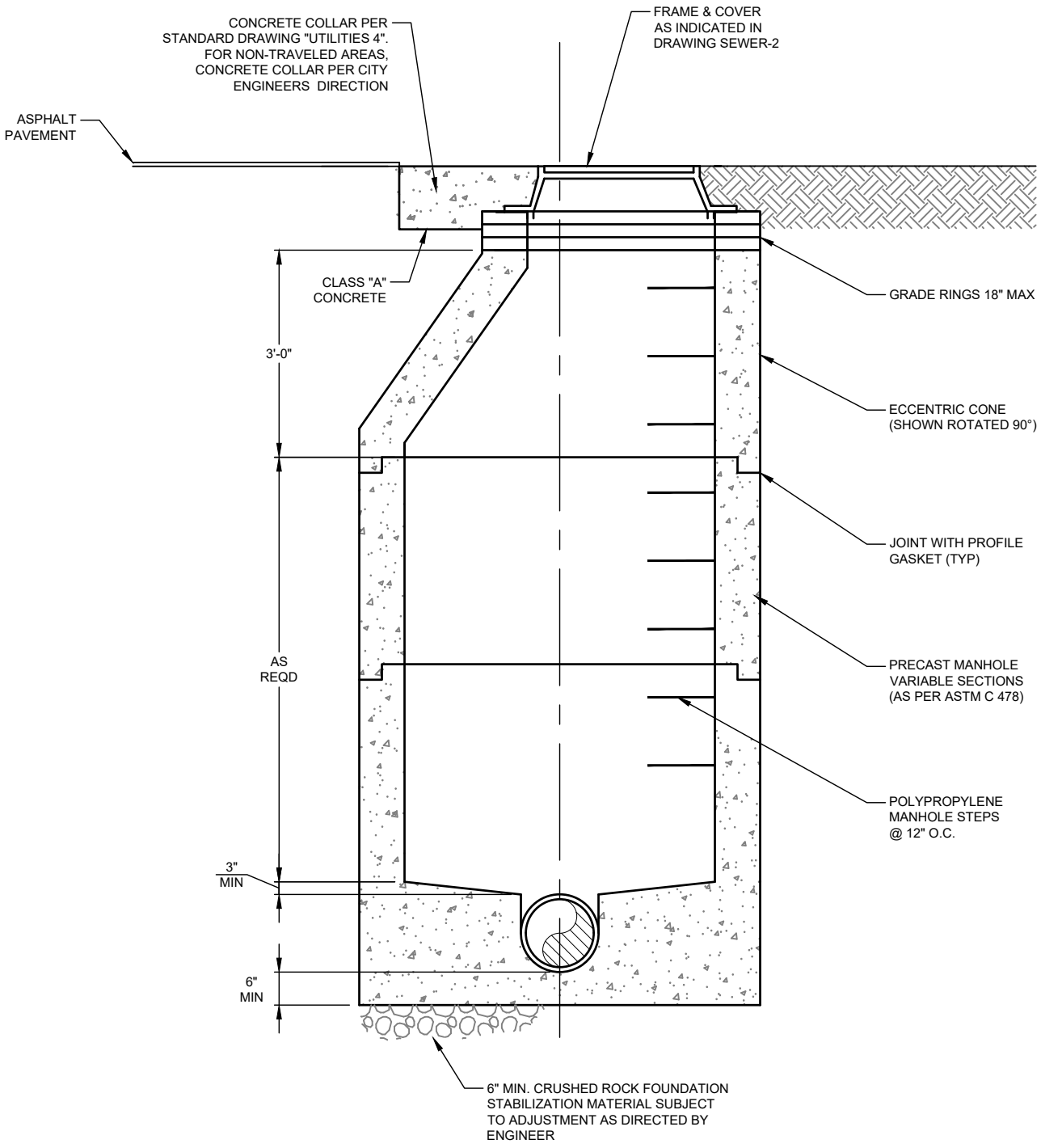
FABRICATED SEWER LATERAL

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

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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PRE-CAST CONCRETE SEWER MANHOLE

SEWER-5

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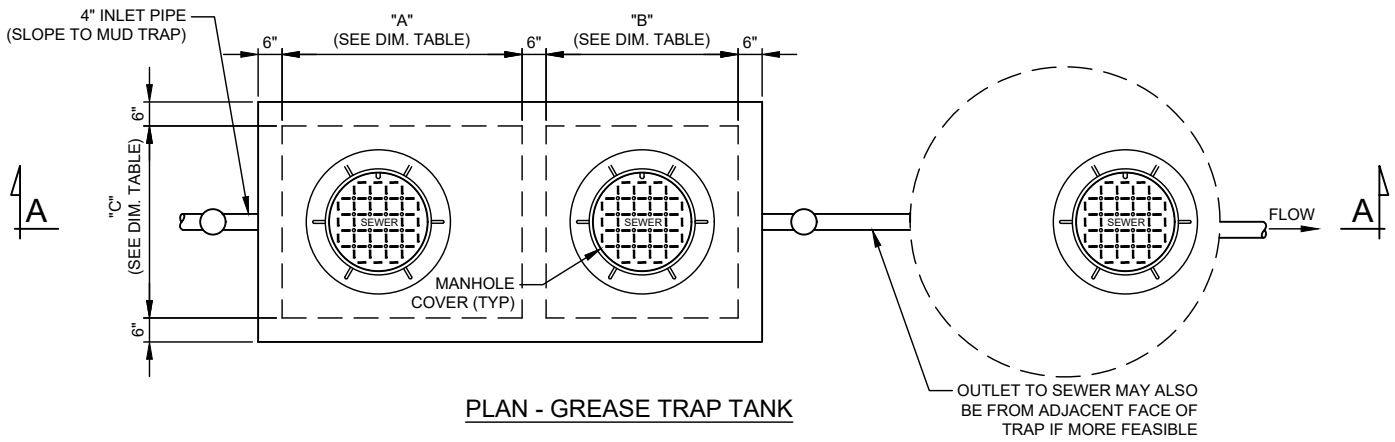
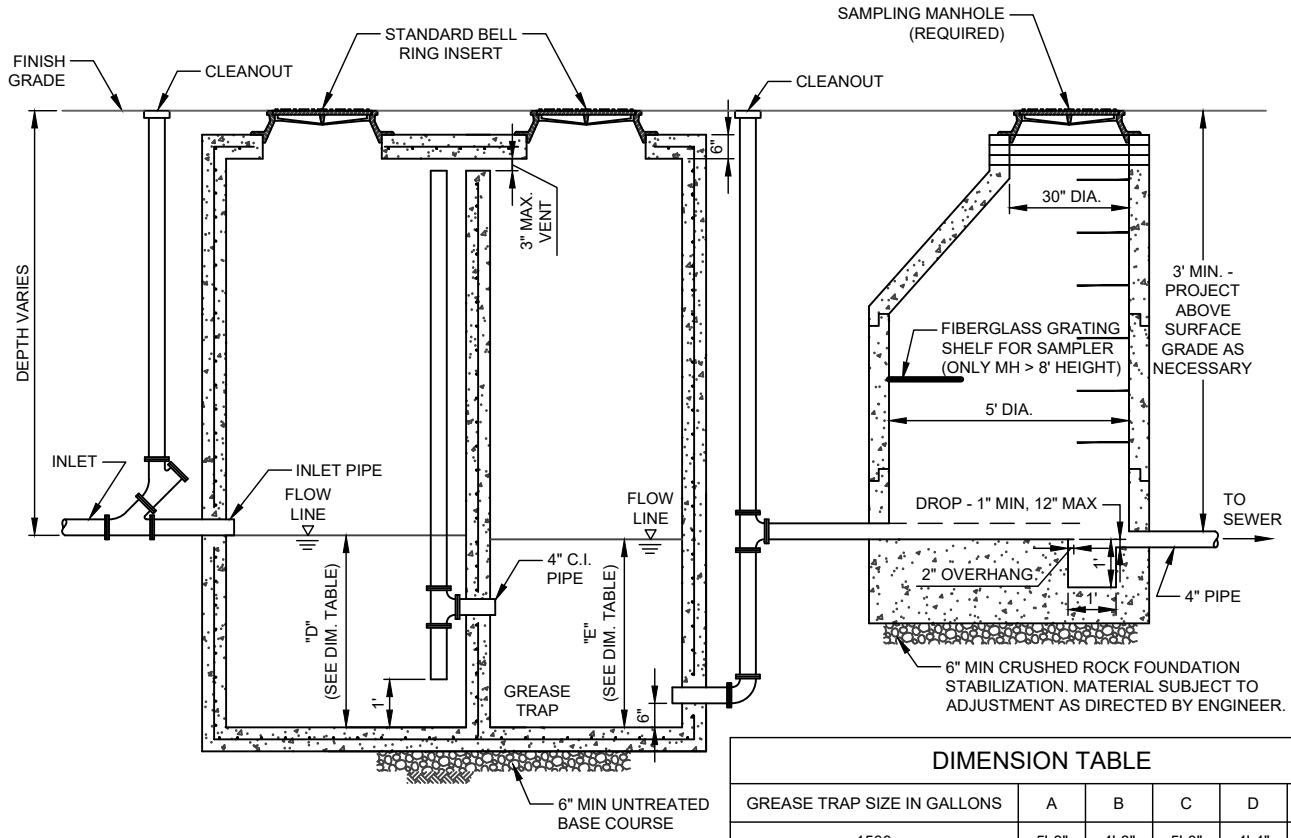


PLAN - GREASE TRAP TANK



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

DATE: 02/19
SCALE: N.T.S.

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HEBER CITY, UTAH 84032
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GREASE INTERCEPTOR

SEWER-6

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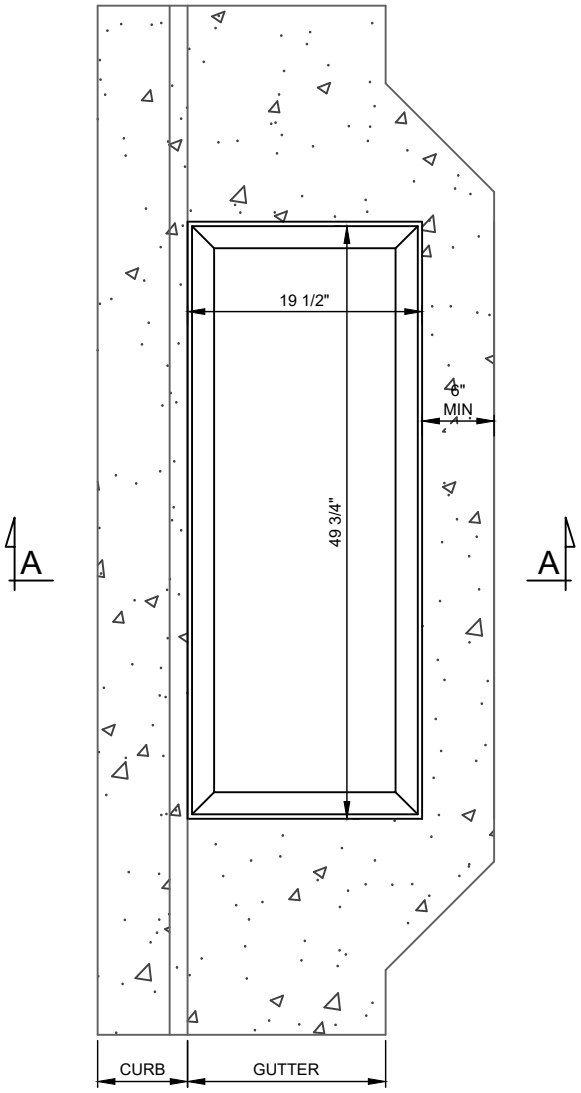

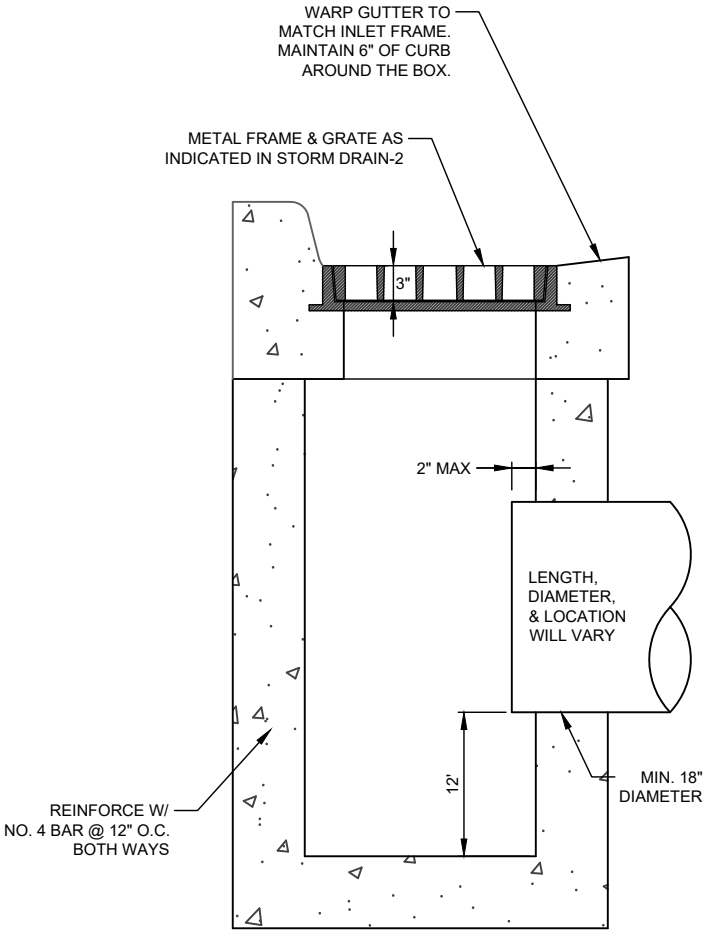

SECTION A-A

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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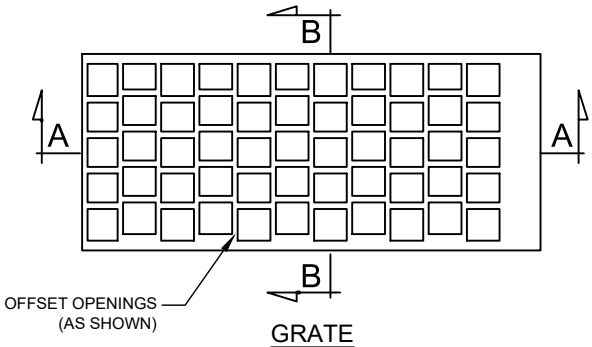
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

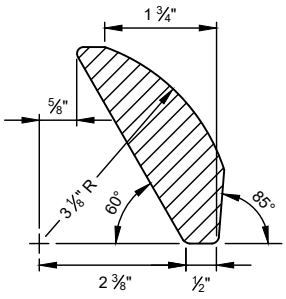
CURB-DROP INLET STANDARD BOX

DRAIN-1

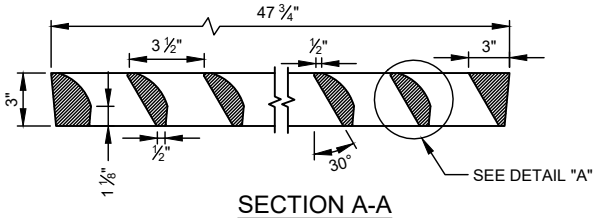


GRATE

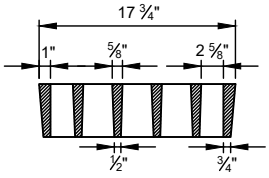
WEIGHT: 266 LBS.



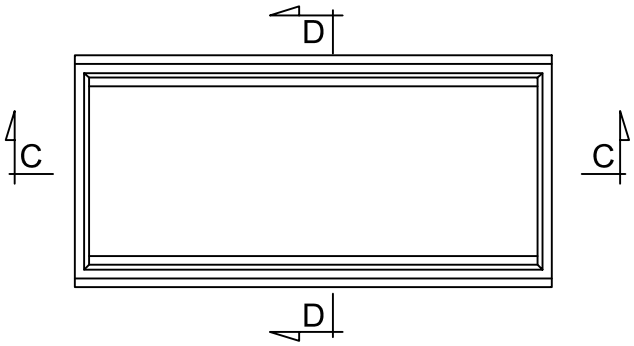
DETAIL "A"



SECTION A-A

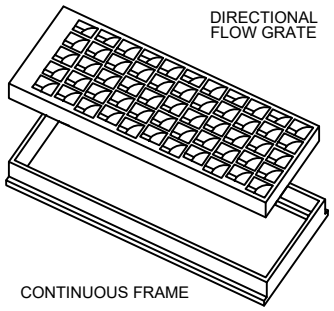


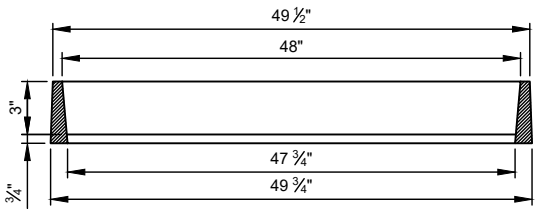
SECTION B-B



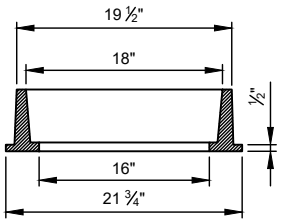
FRAME

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.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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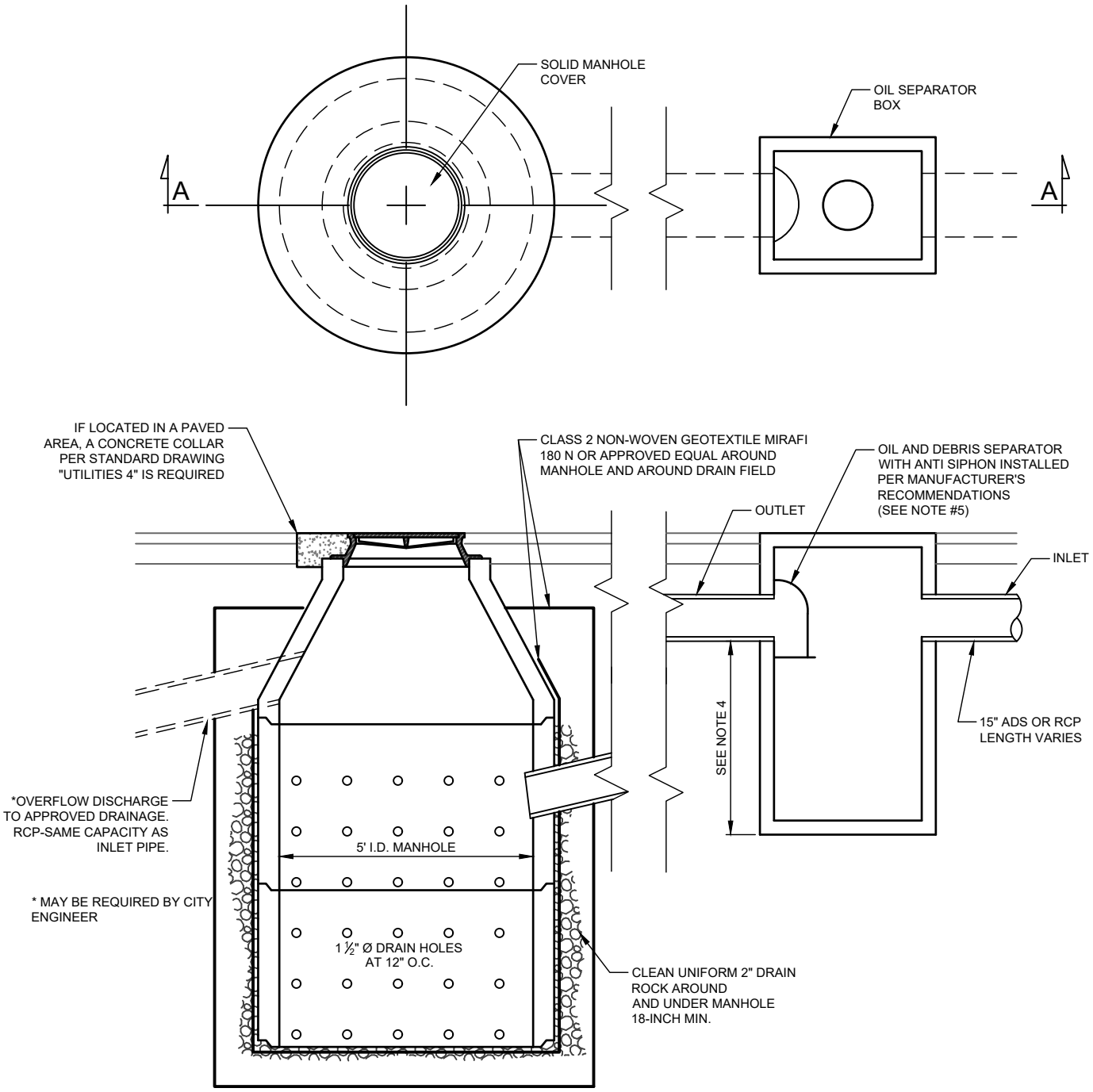
GRATE & FRAME

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

DATE: 09/23
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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SUMP DISPOSAL & OIL SEPARATOR

DRAIN-3

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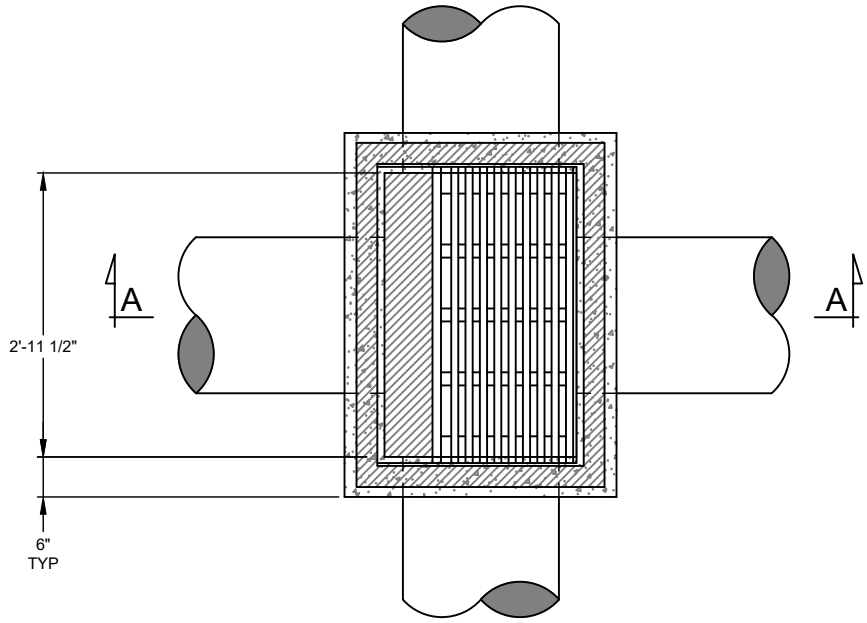

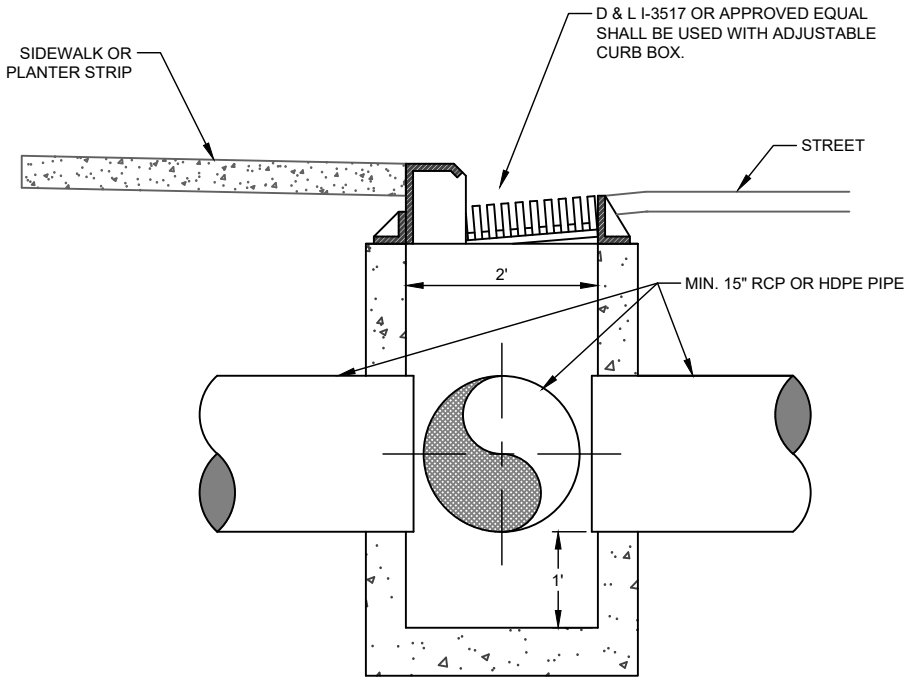

SECTION A-A

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.

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

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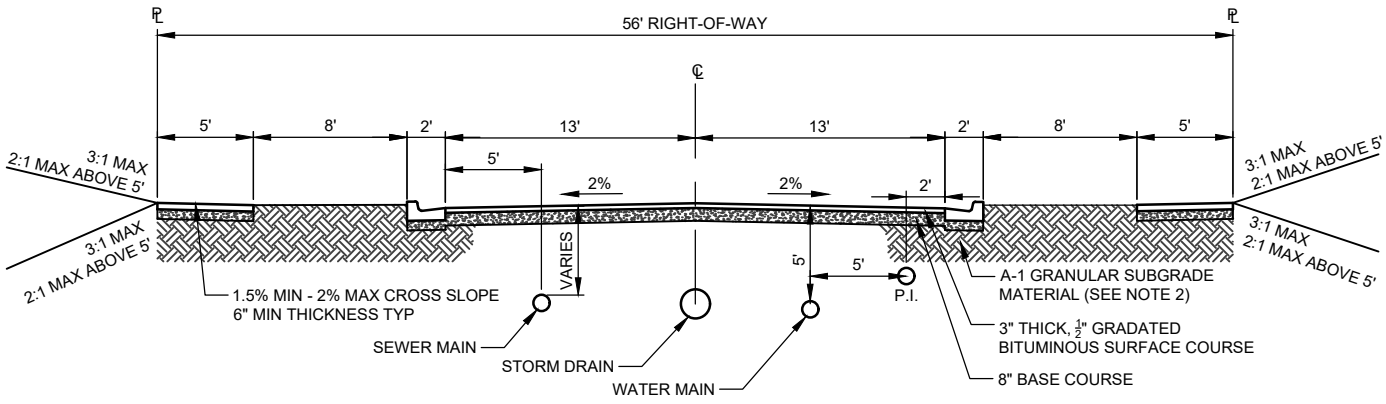
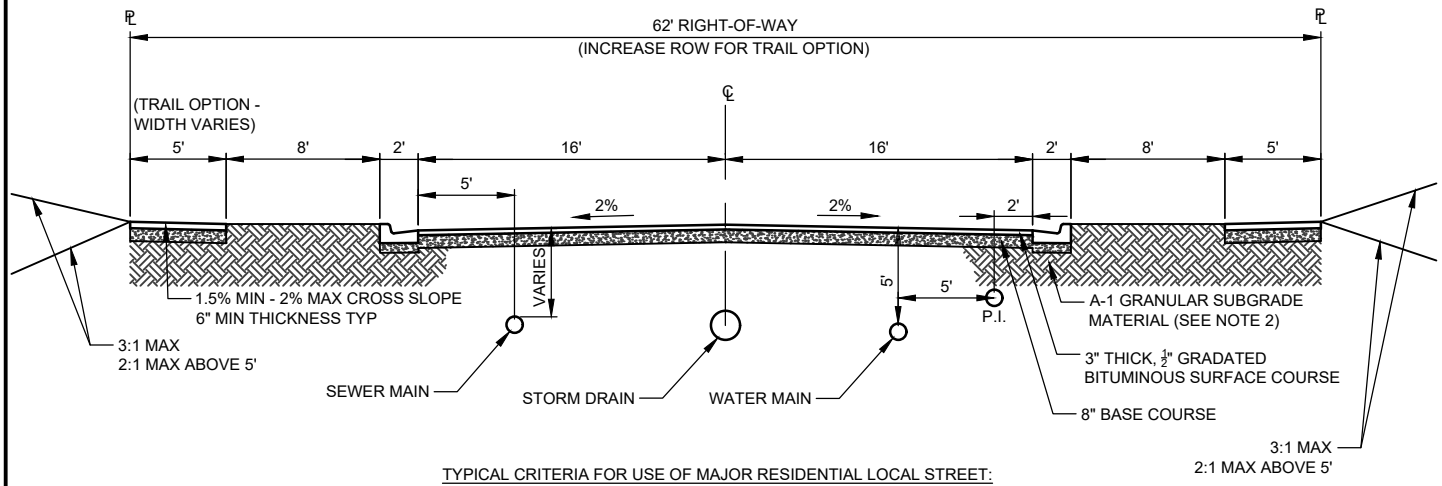


TYPICAL CRITERIA FOR USE OF MINOR RESIDENTIAL LOCAL STREET:

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
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

MAJOR & MINOR RESIDENTIAL LOCAL

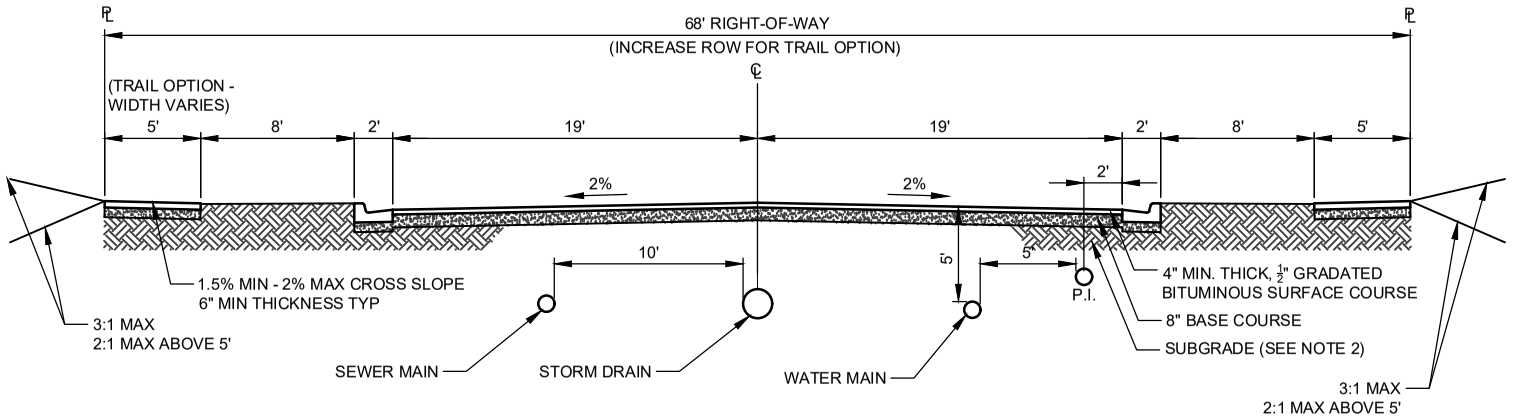
STREETS-1

HEBER CITY
HEART OF THE WASATCH BACK
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

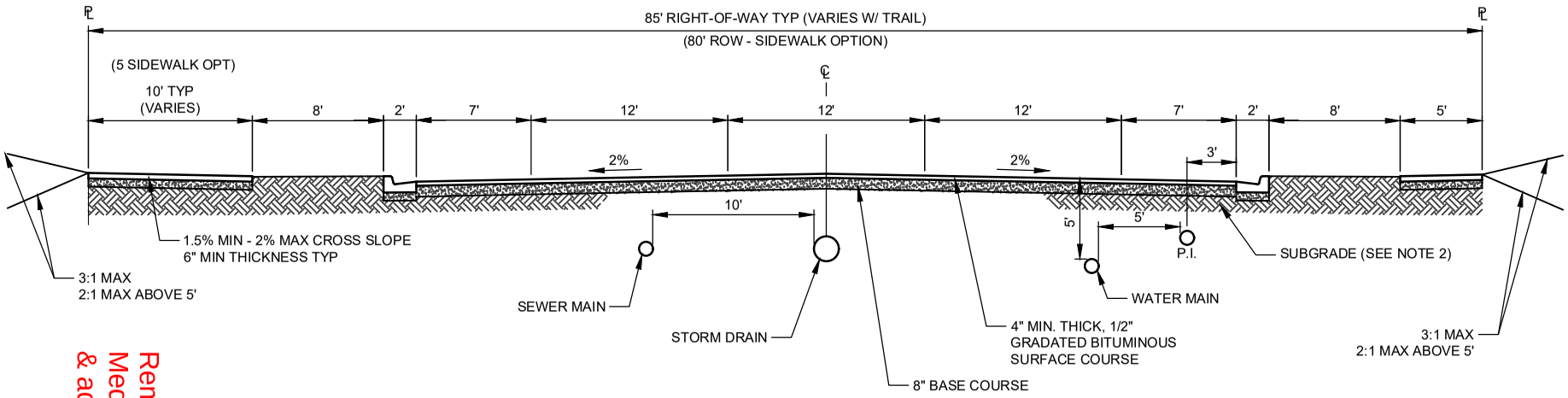
SCALE: N.T.S.
DATE: 01/25

STREETS-2A

MINOR COLLECTOR



MINOR COLLECTOR



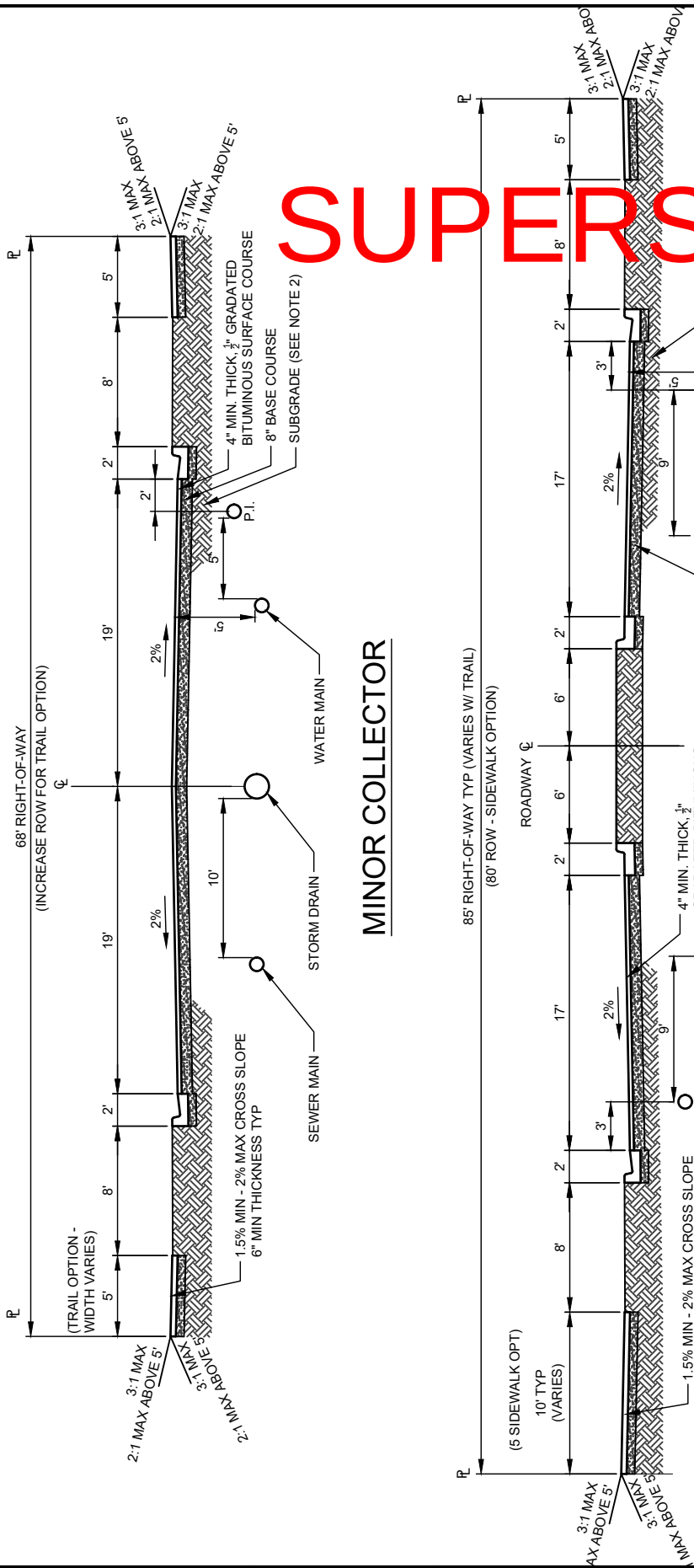
MAJOR COLLECTOR

Removed Landscaped Median on Major Collector & added Note 7.

NOTES FOR COLLECTOR STREETS:

1. 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. 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.

SUPERSEDED



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.

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HEBER CITY
HEART OF THE WASATCH BACK

DATE: 6/20
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

MINOR COLLECTOR

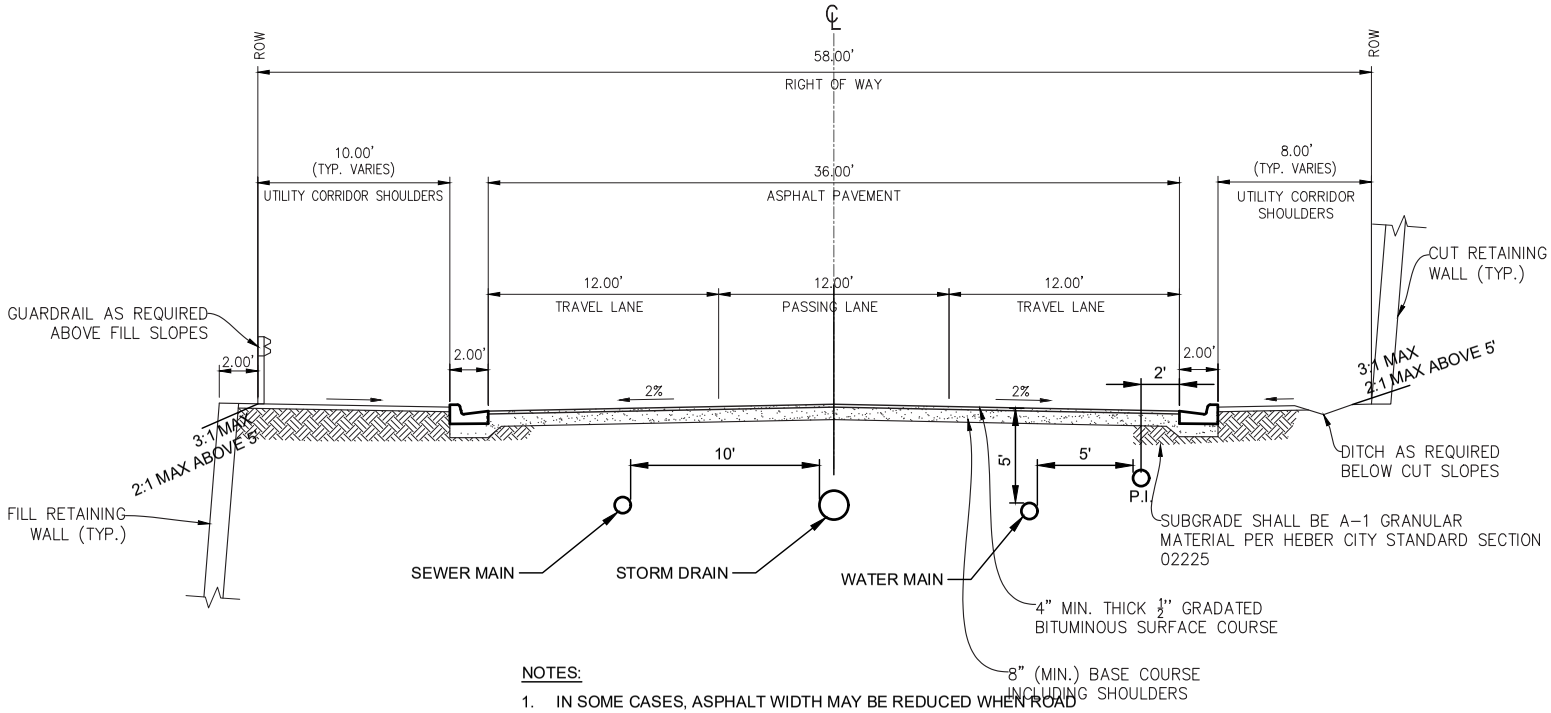
STREETS-2A

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

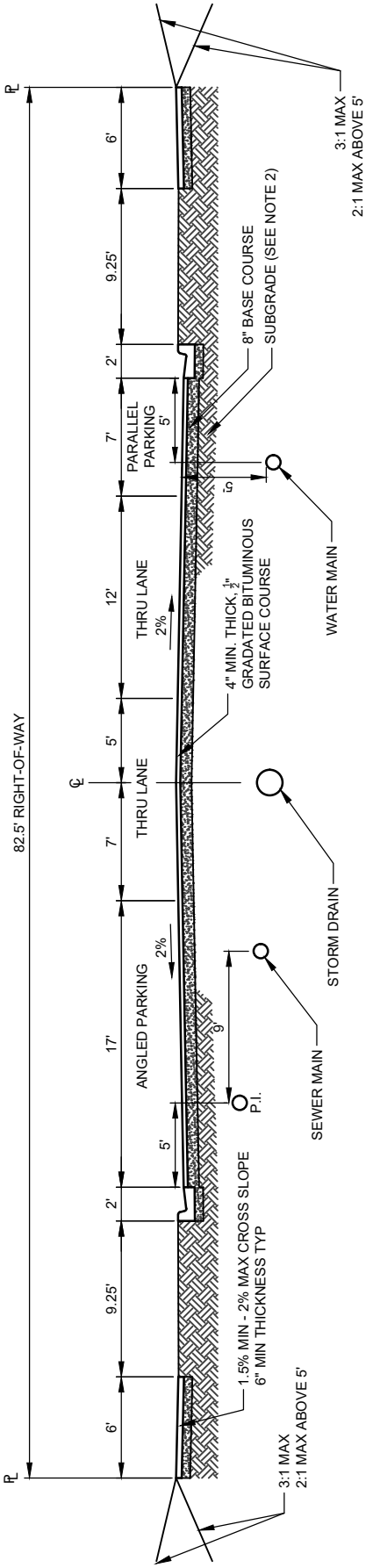
NO-ACCESS MOUNTAIN COLLECTOR



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

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HISTORIC BUSINESS CORE

STREETS-3A

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HEBER CITY
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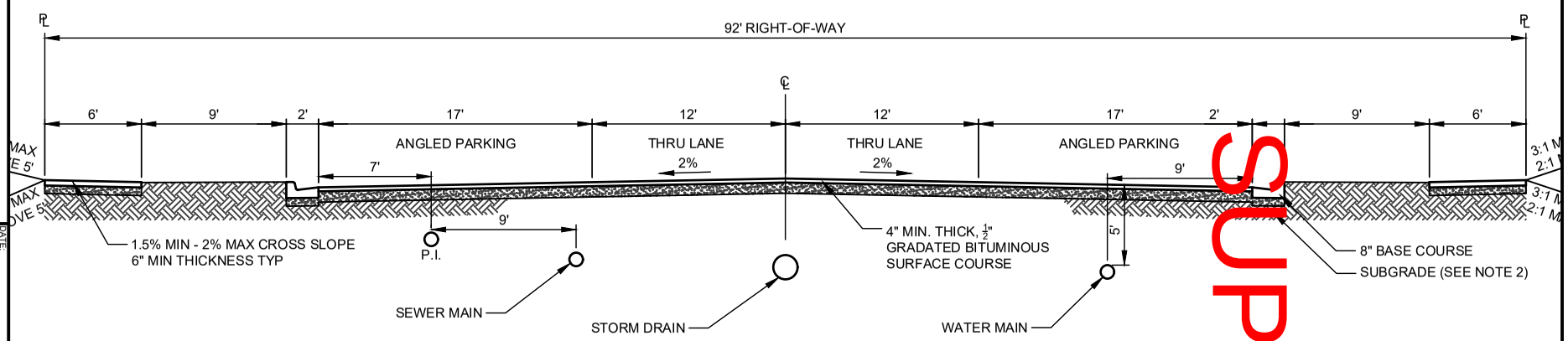
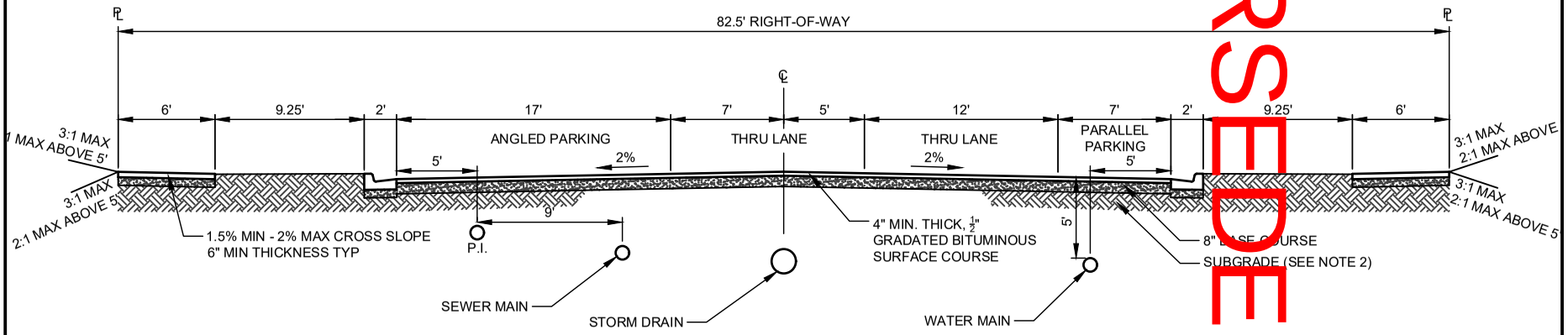
SCALE: N.T.S.
DATE: 06/20

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.
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6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

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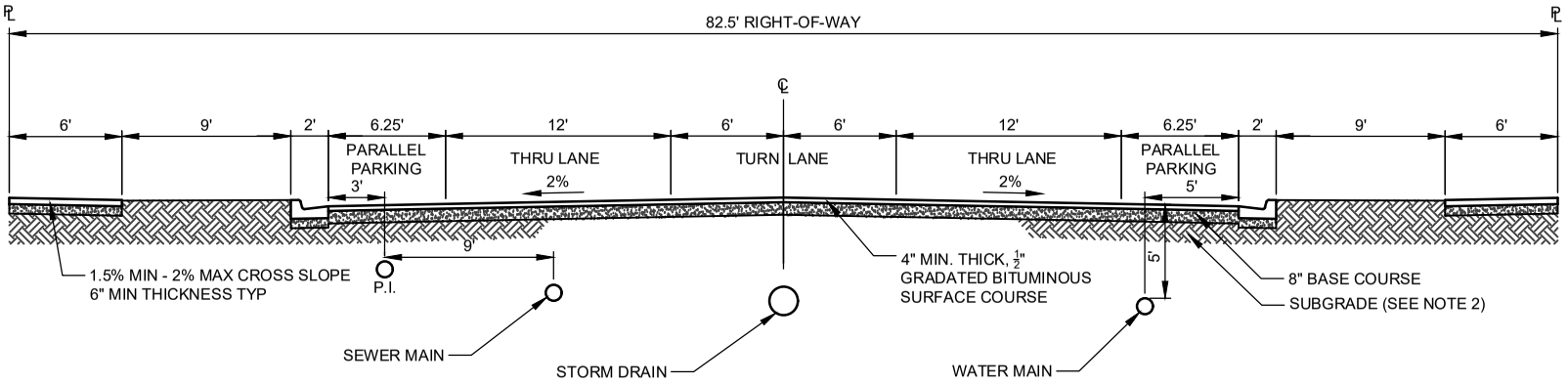
DATE: 01/25

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.
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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
75 NORTH MAIN STREET
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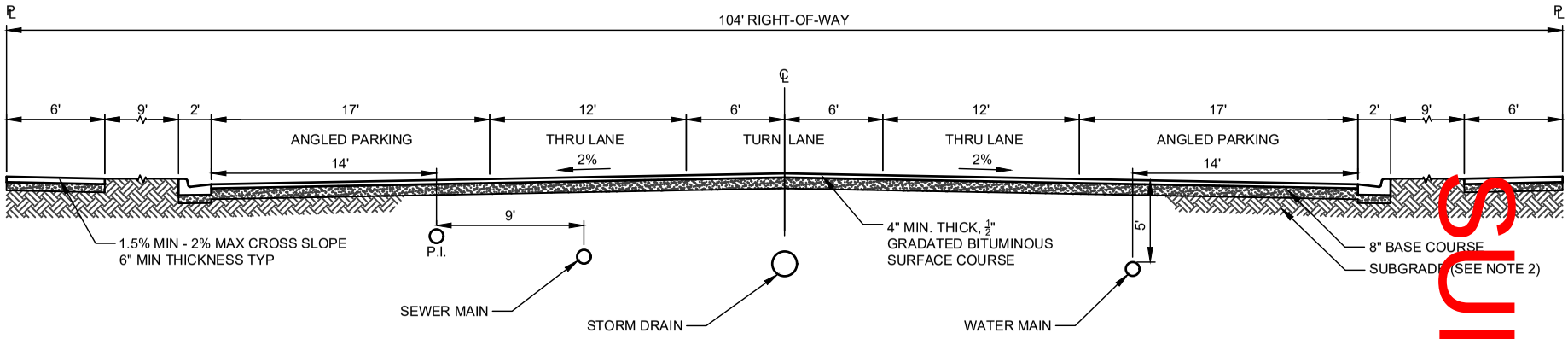
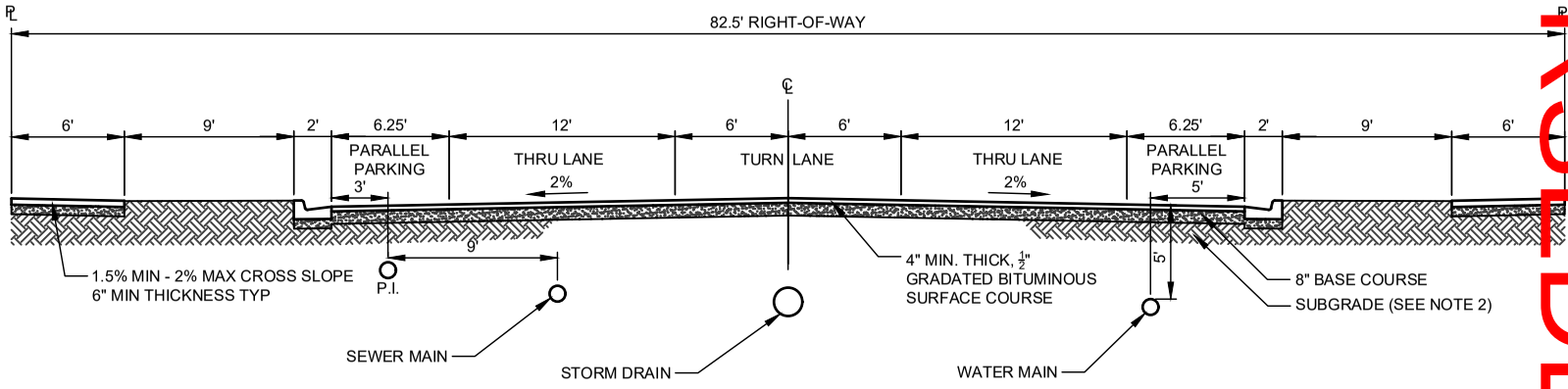
DATE: 06/20

HISTORIC BUSINESS CORE MAJOR INTERSECTION

STREETS-3B



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.
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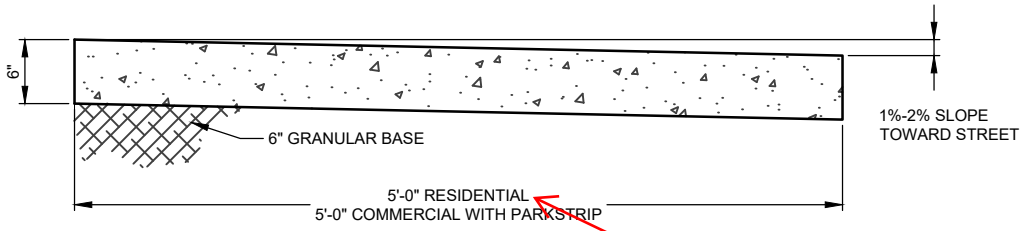
5. OPTION TO BE USED ONLY WITH PRIOR HEBER CITY APPROVAL.
6. WHEN APPROVED BY HEBER CITY, PARK STRIPS MAY BE REDUCED TO IMPLEMENT PLAZA AREAS.

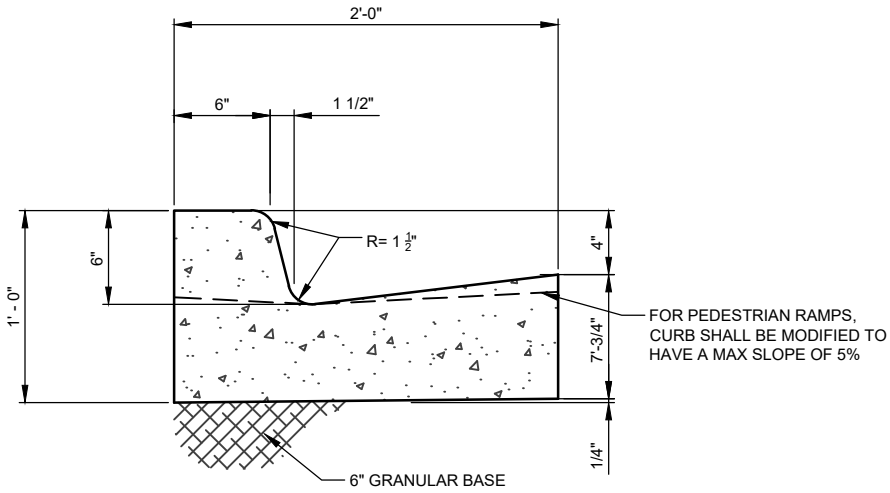
SUPERSEDED



Matched sidewalk width to current City Standard.

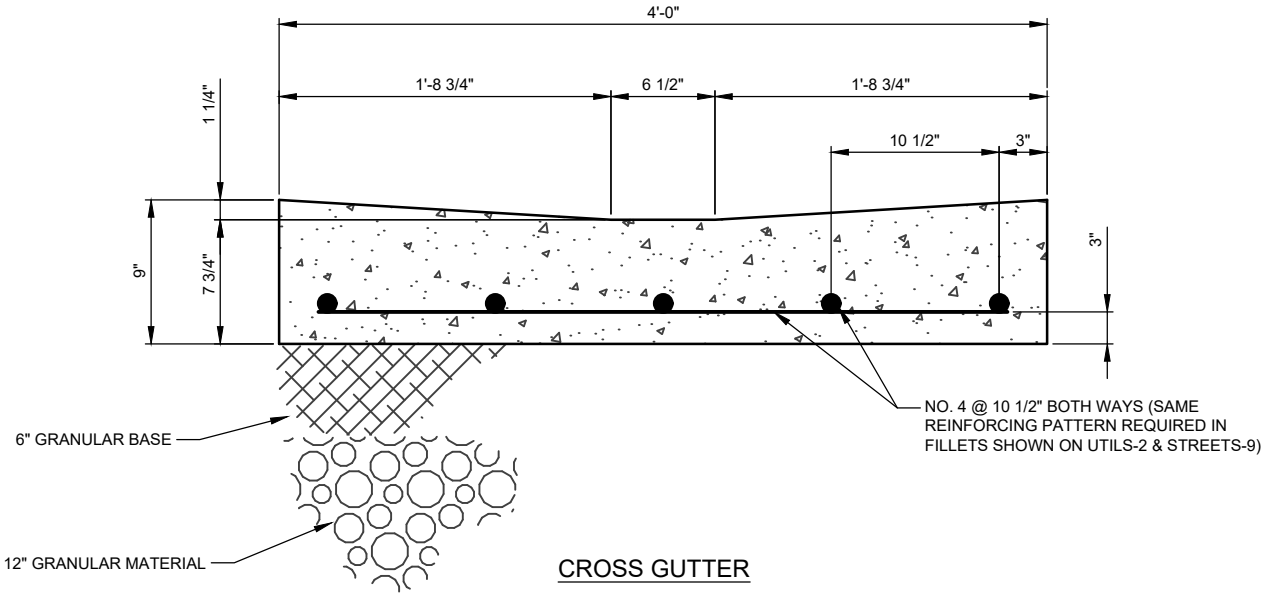
NOTE:
WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

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
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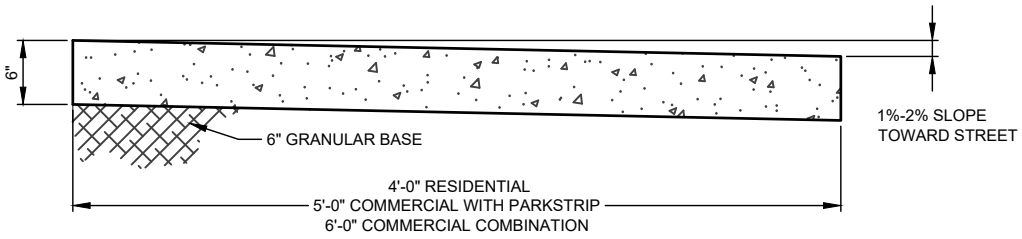
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

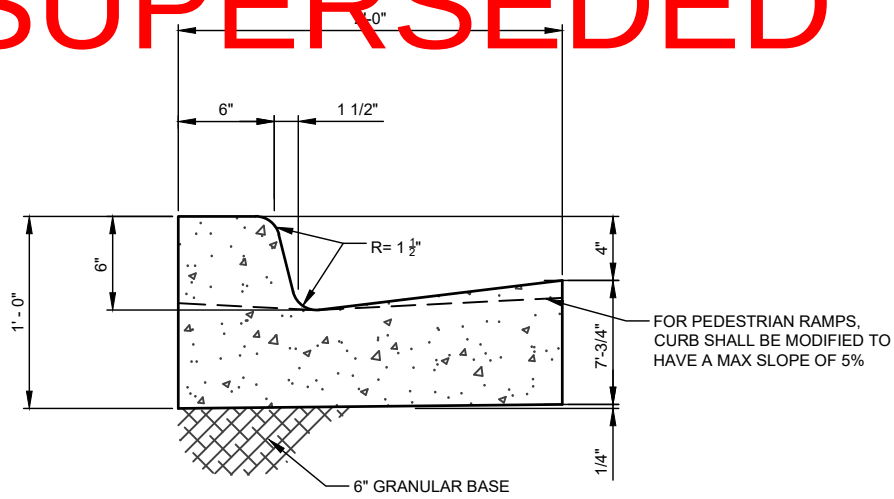
STREETS-4



NOTE: WHEN REPLACING SIDEWALK, THICKNESS MAY BE REDUCED TO 4" WITH CITY ENGINEER APPROVAL.

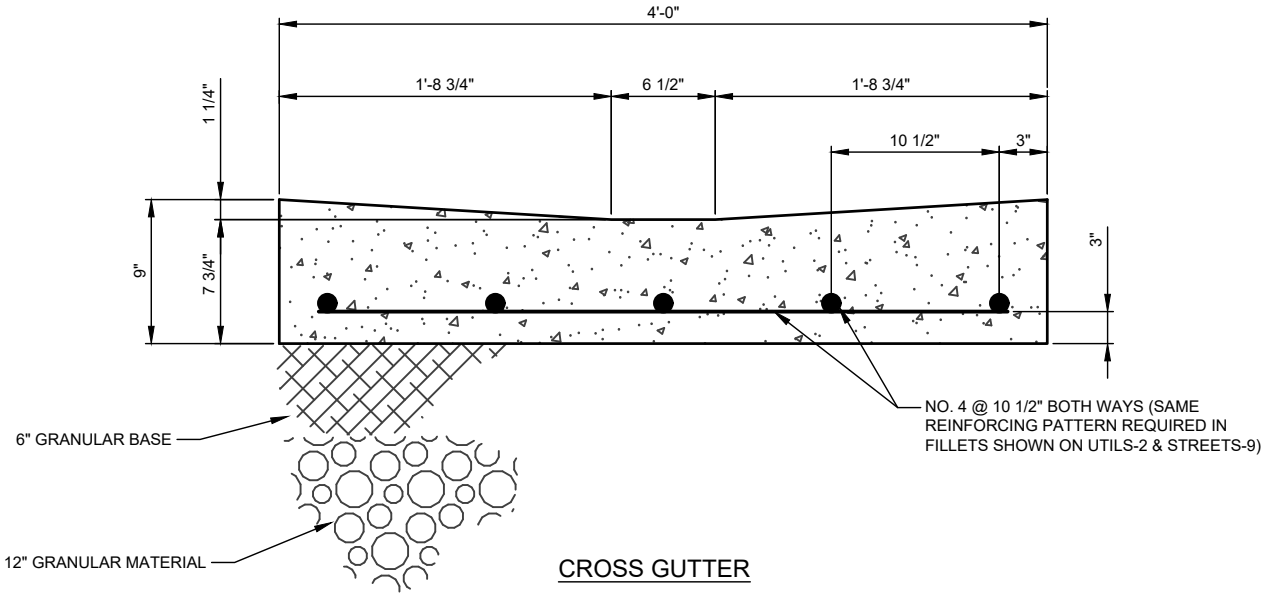
SIDEWALK

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

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75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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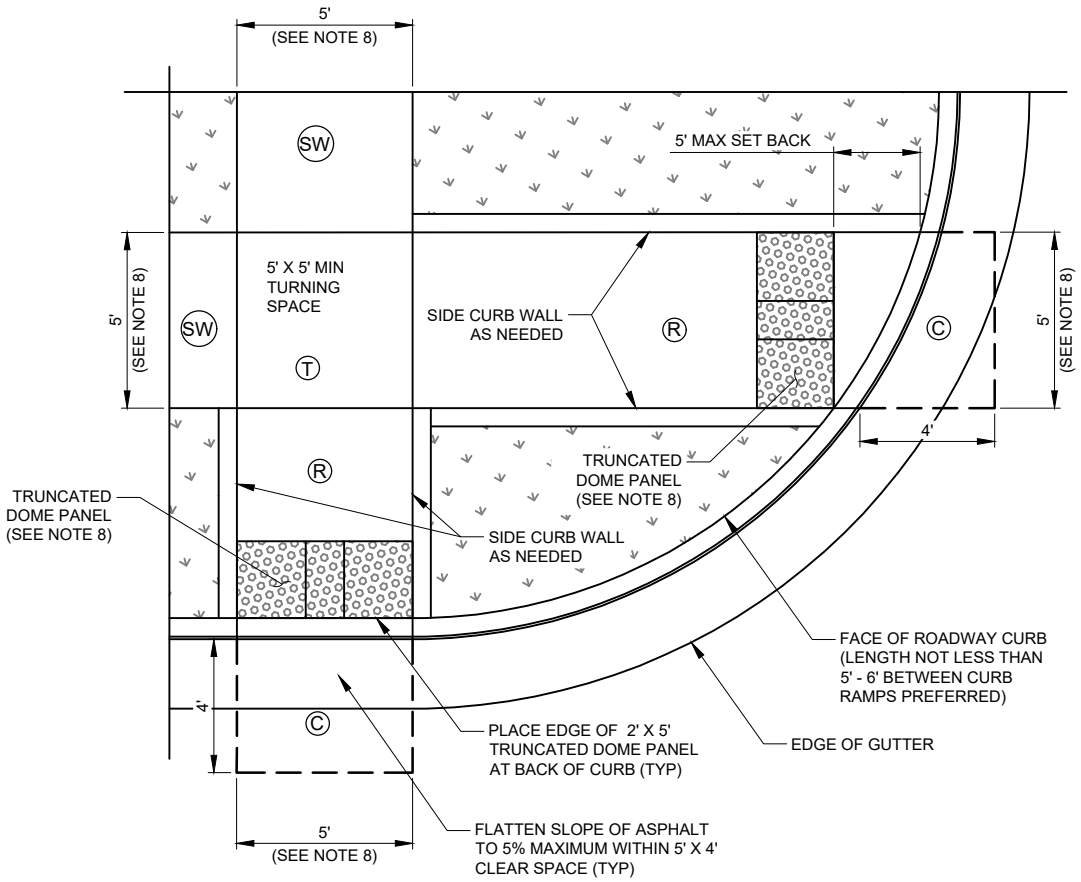
SIDEWALK, HIGH-BACK CURB & CROSS-GUTTER

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
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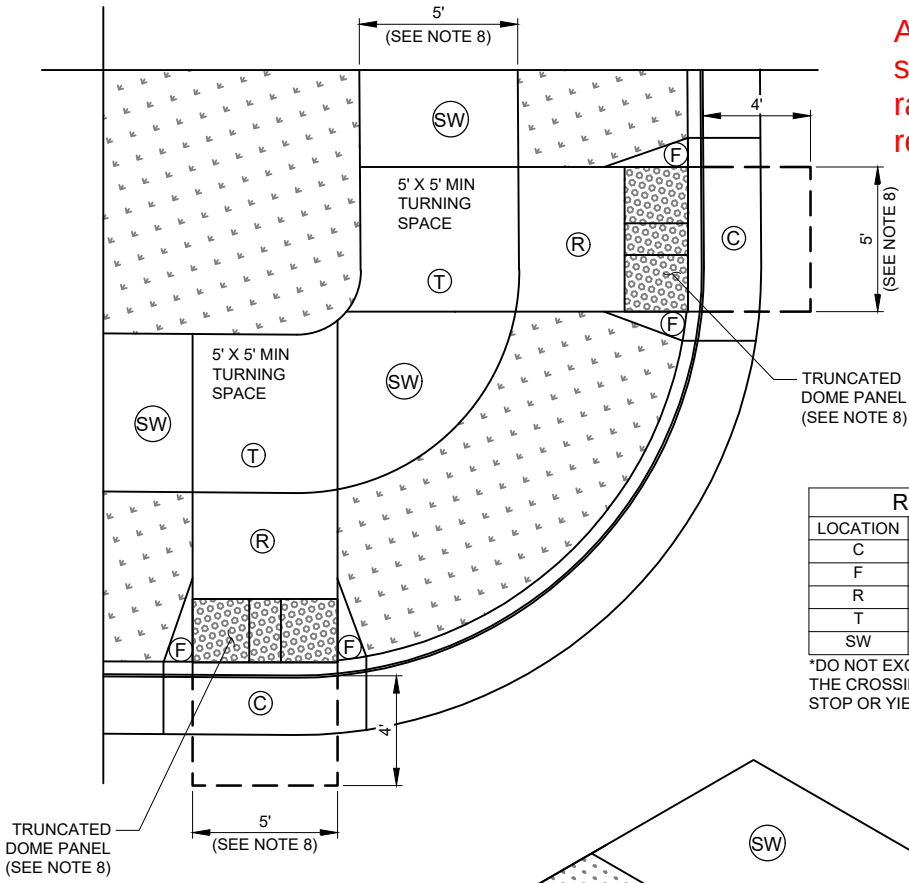
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

PERPENDICULAR CURB RAMPS

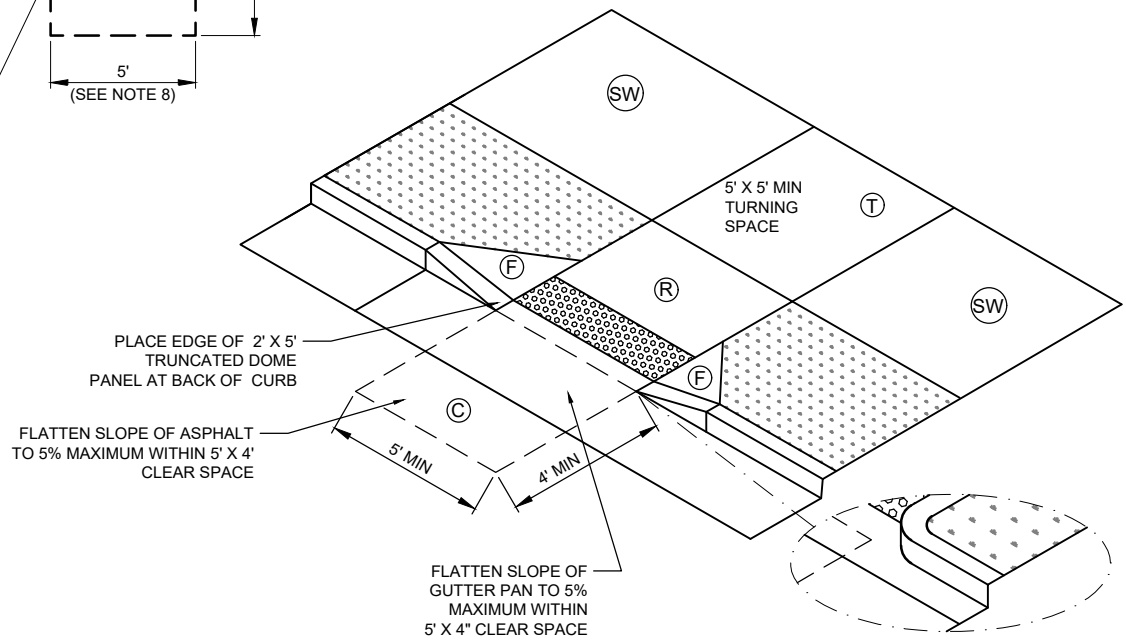
STREETS-5A

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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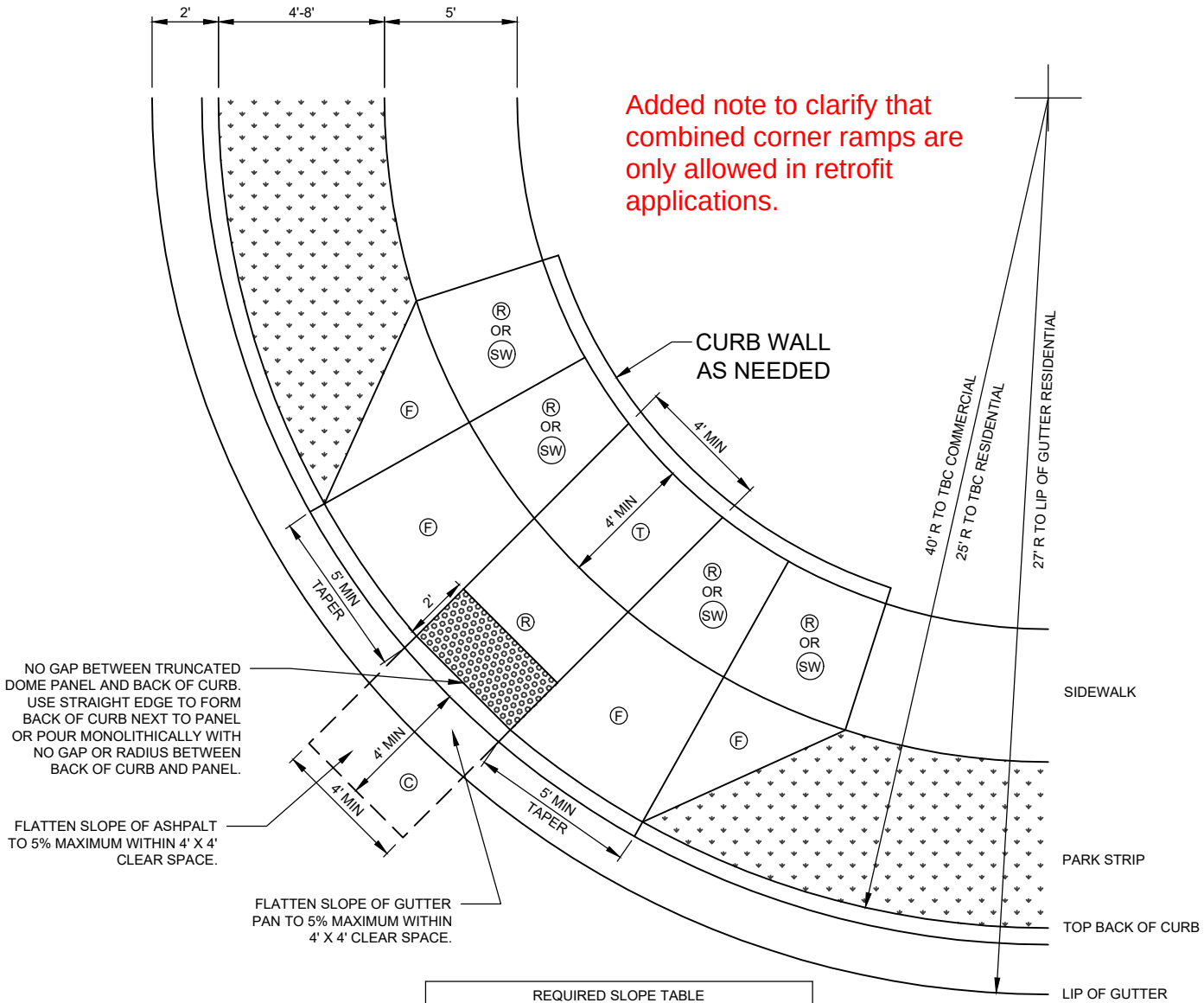
HEBER CITY
HEART OF THE WASATCH BACK

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.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
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CORNER PEDESTRIAN RAMPS

STREETS-5C

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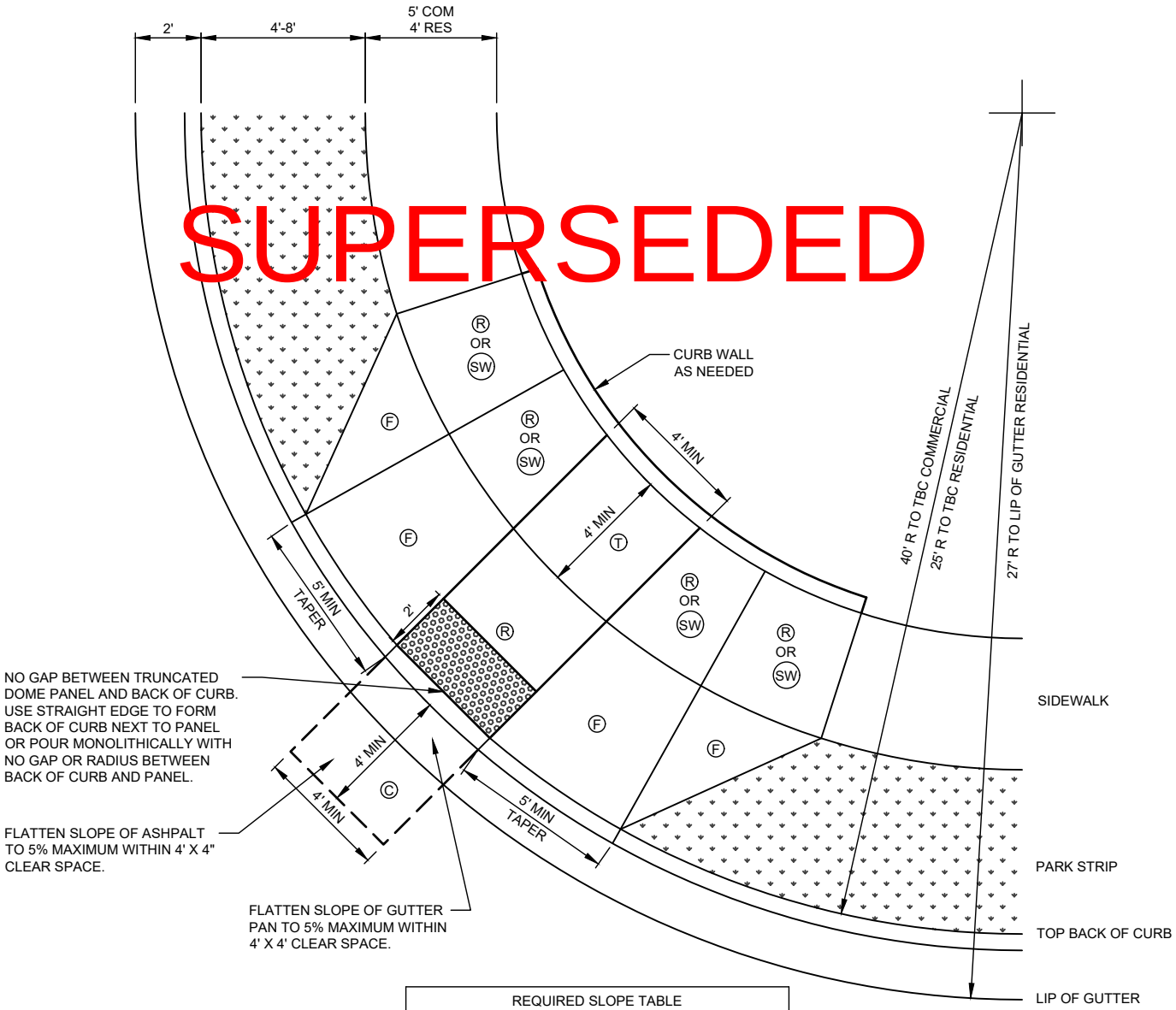

REQUIRED SLOPE TABLE		
LOCATION	RUNNING SLOPE	CROSS SLOPE
C	5% MAX	2% MAX *
F	10% MAX	-
R	5.1% MIN TO 8.3% MAX	2% MAX *
T	2% MAX	2% MAX *
SW	-	2% MAX

* 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. RAMP TO INCLUDE ADA DETECTABLE WARNING STRIP; IE. ADA SOLUTIONS, ARMOR-TILE CAST-IN-PLACE, MASCO CASTINTACT, WAUSAU, OR TEKWAY.
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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
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HEBER CITY, UTAH 84032
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CORNER PEDESTRIAN RAMPS

STREETS-5

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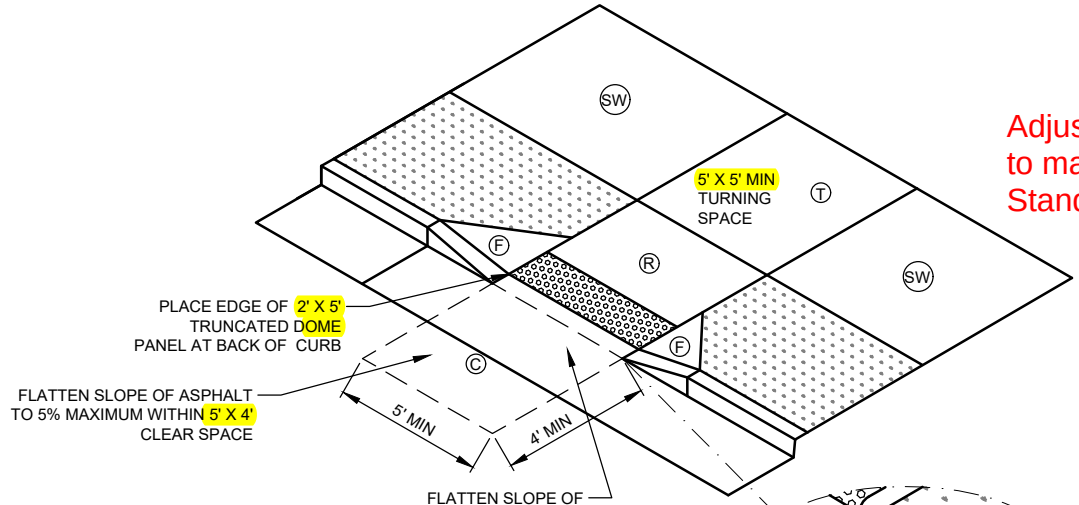
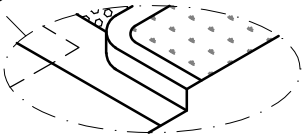
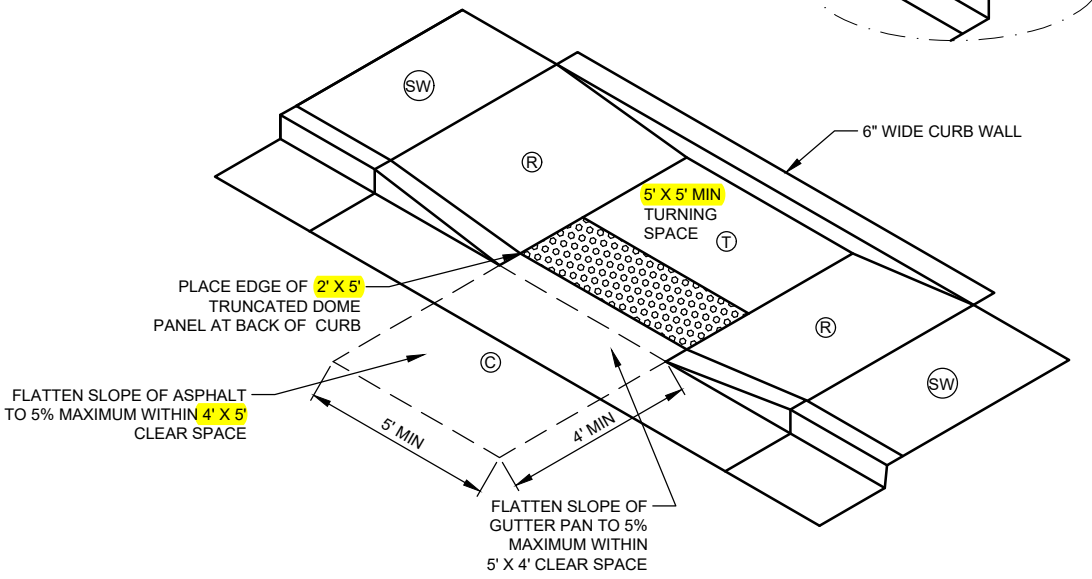
Adjusted dimensions to match City Standards





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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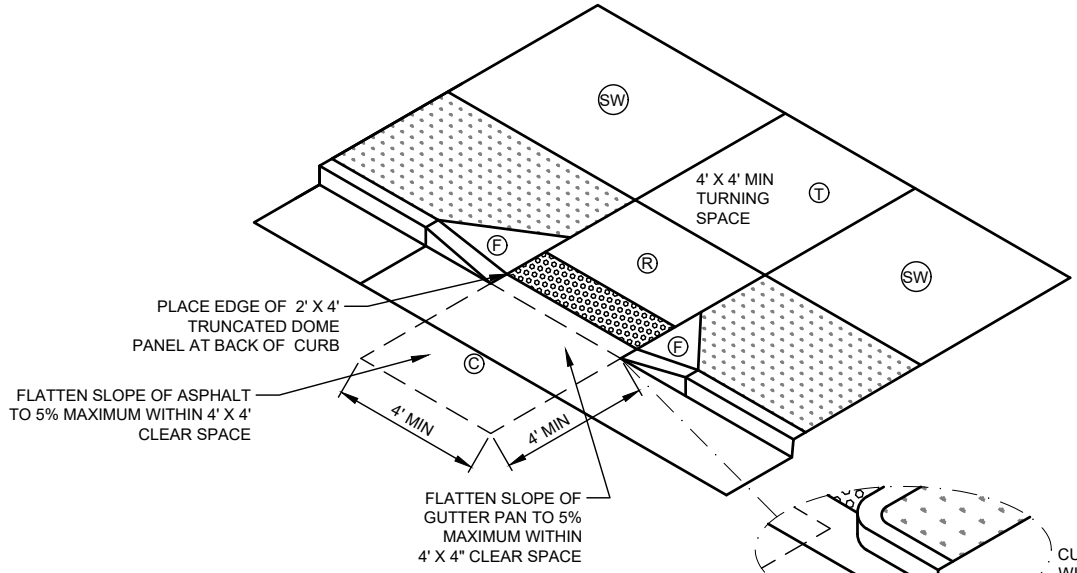
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

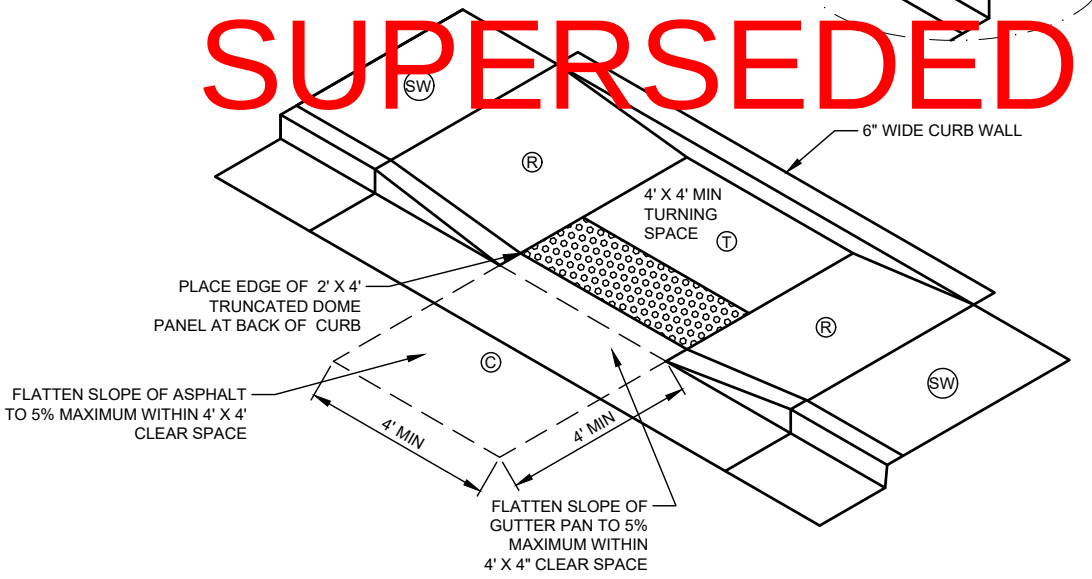
MID-BLOCK PEDESTRIAN RAMPS

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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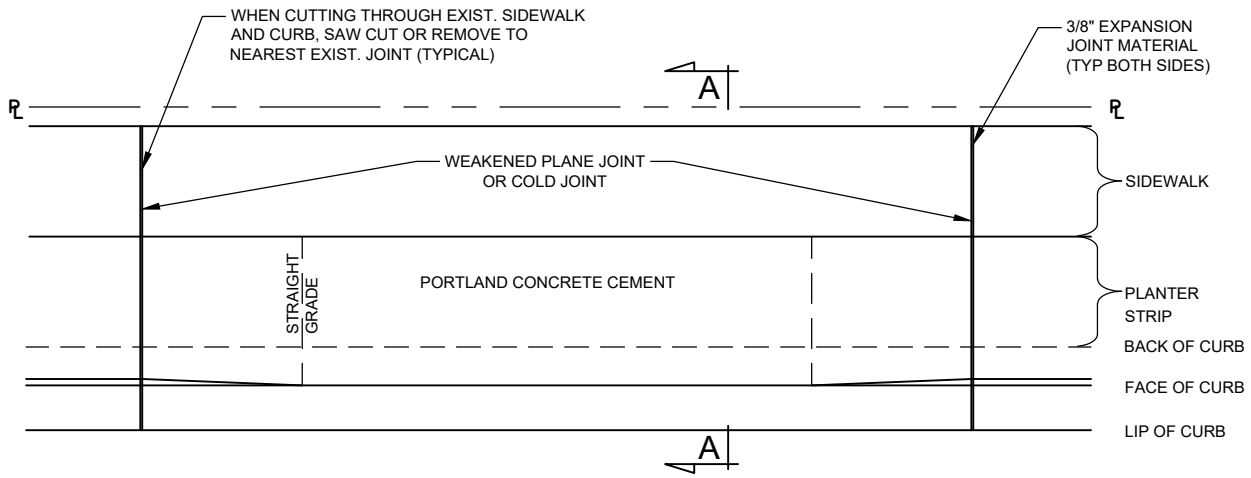
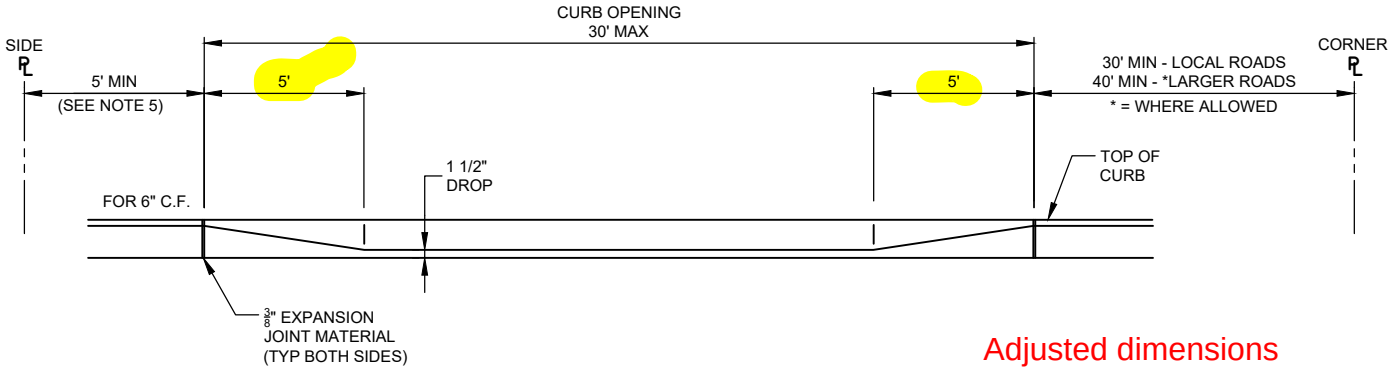
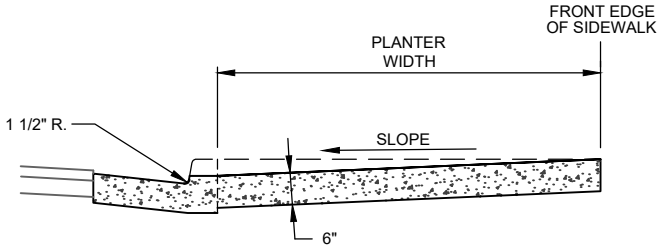


PLAN



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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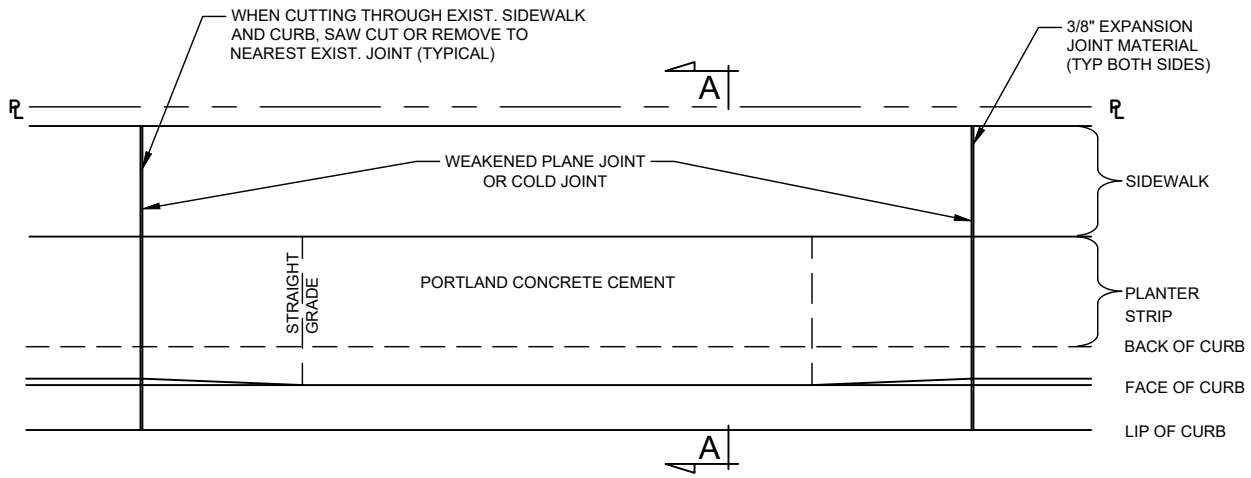
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 01/25
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

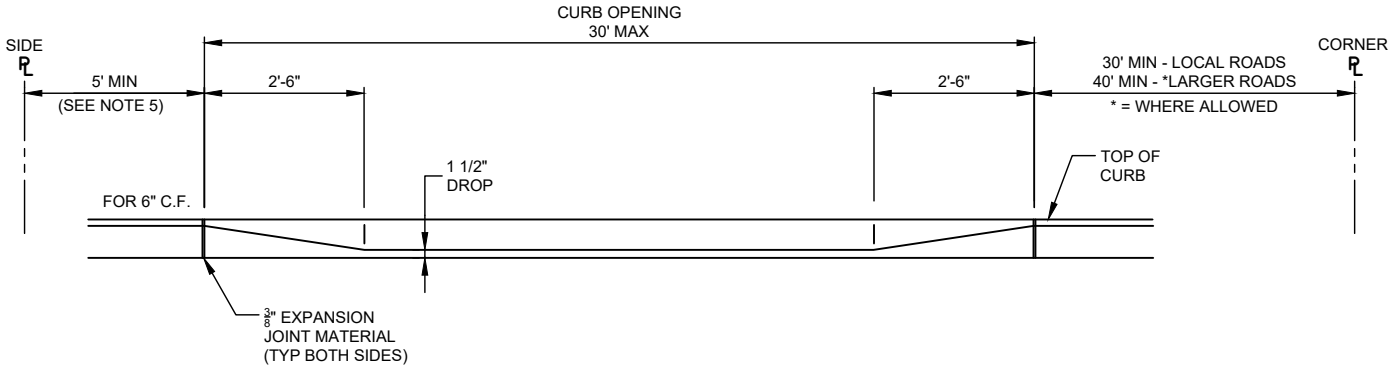
RESIDENTIAL DRIVEWAY APPROACH

STREETS-7



PLAN

SUPERSEDED



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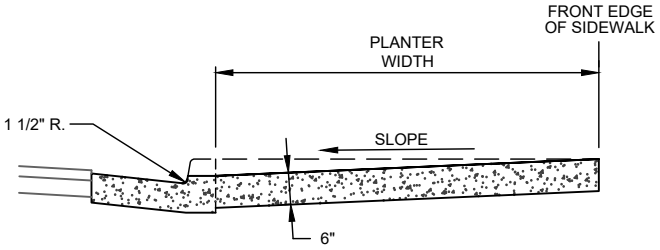

SECTION A-A

NOTES:

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3. INSTALL 4" PVC SLEEVE UNDER DRIVEWAY AND 10" BELOW SIDEWALK FOR PI SERVICE.
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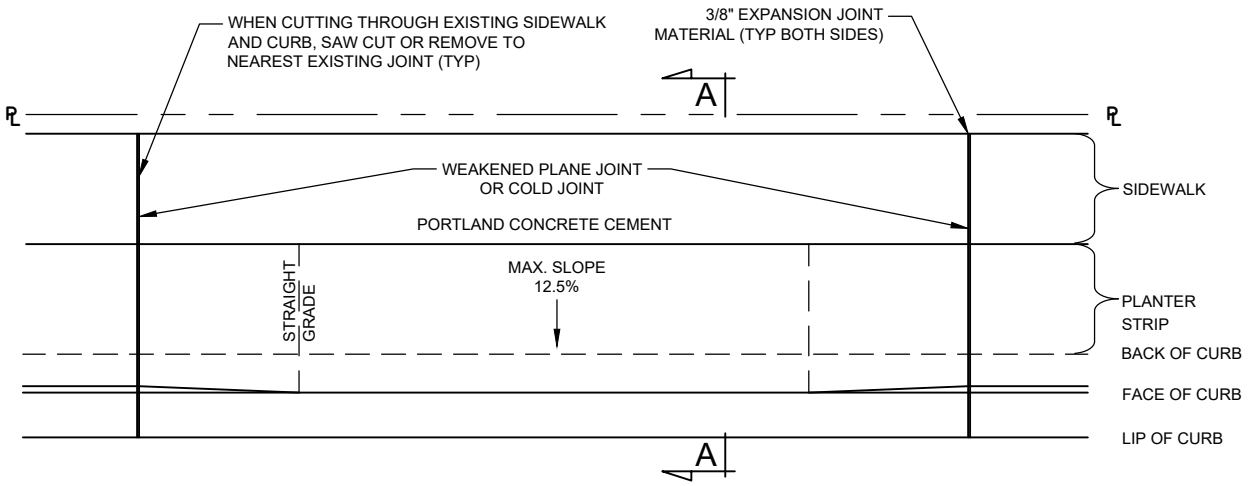
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

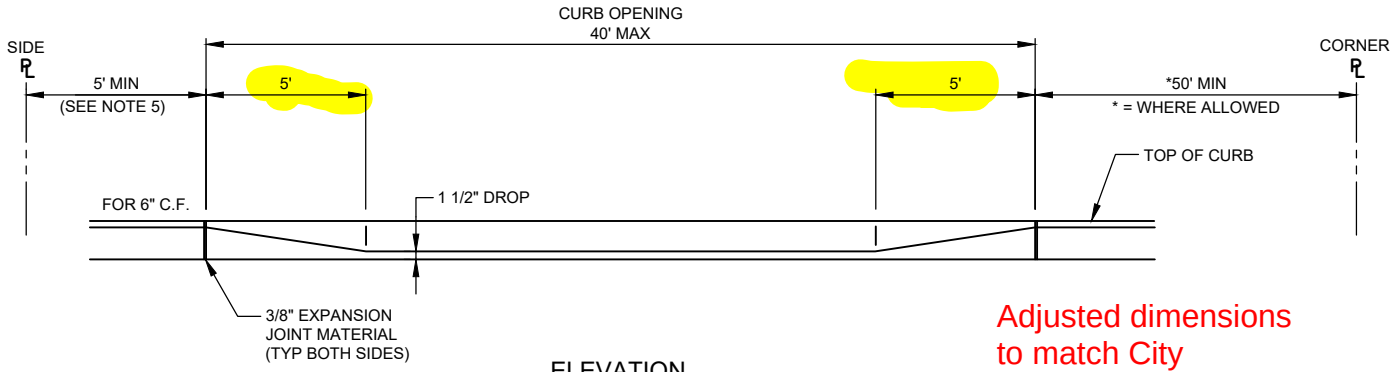
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

RESIDENTIAL DRIVEWAY APPROACH

STREETS-7

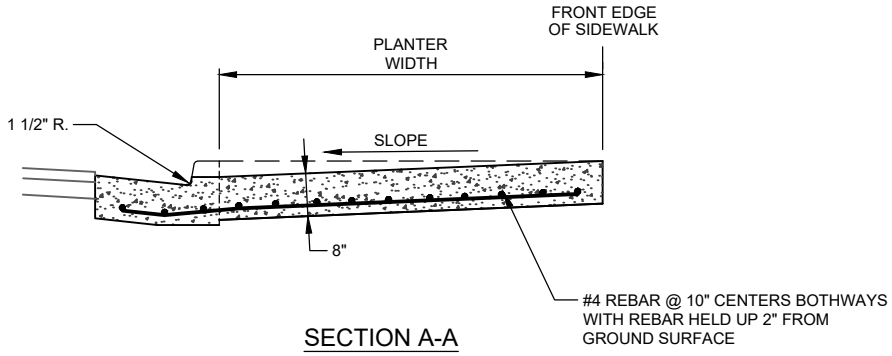


PLAN



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.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

COMMERCIAL DRIVEWAY APPROACH

STREETS-8

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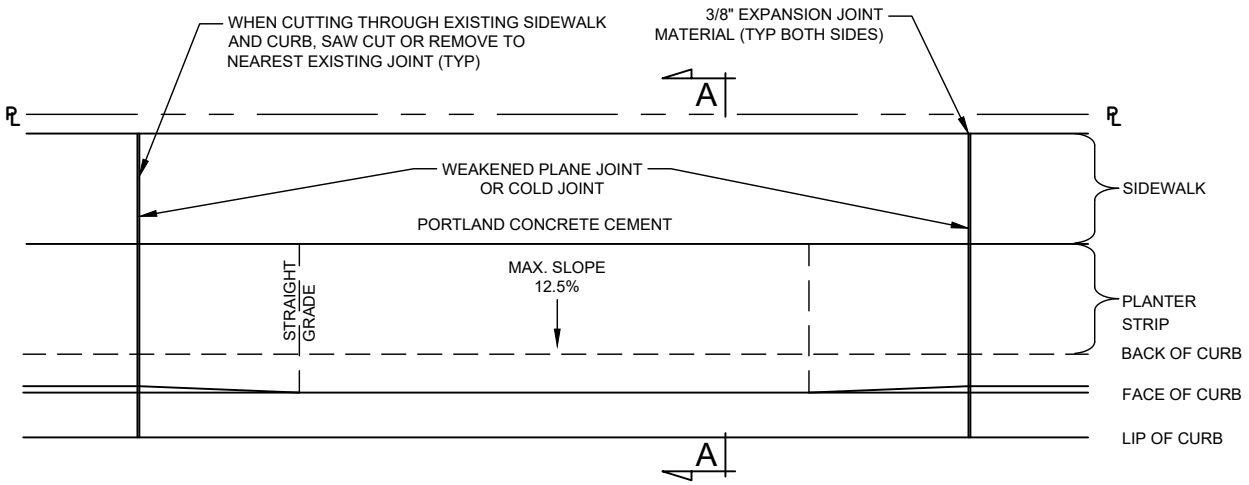
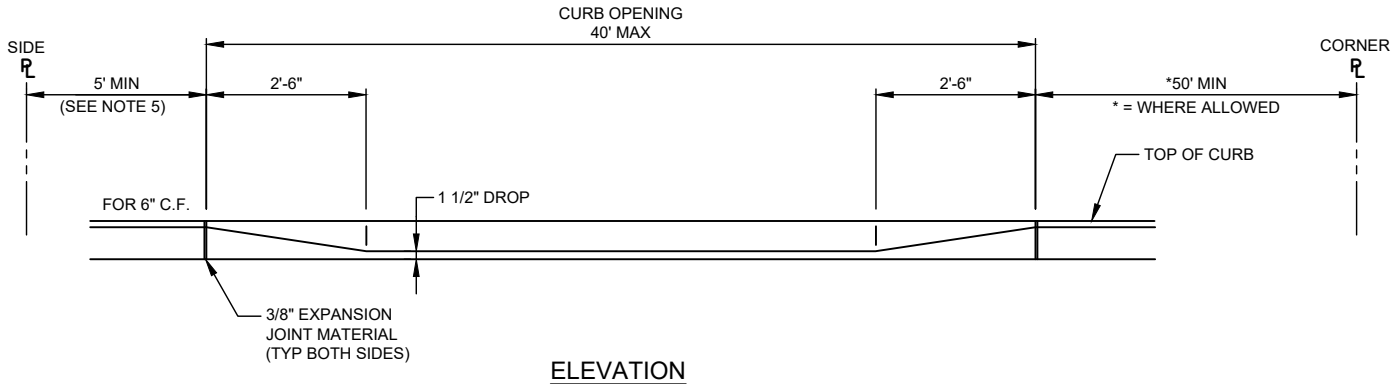


SUPERSEDED

PLAN



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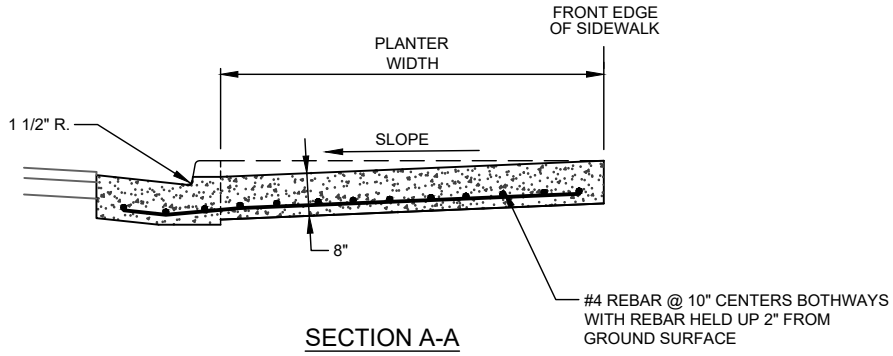

SECTION A-A

NOTES:

1. CURB OPENING SHALL HAVE A COURSE BROOM FINISH.
2. C.F. = CURB FACE.

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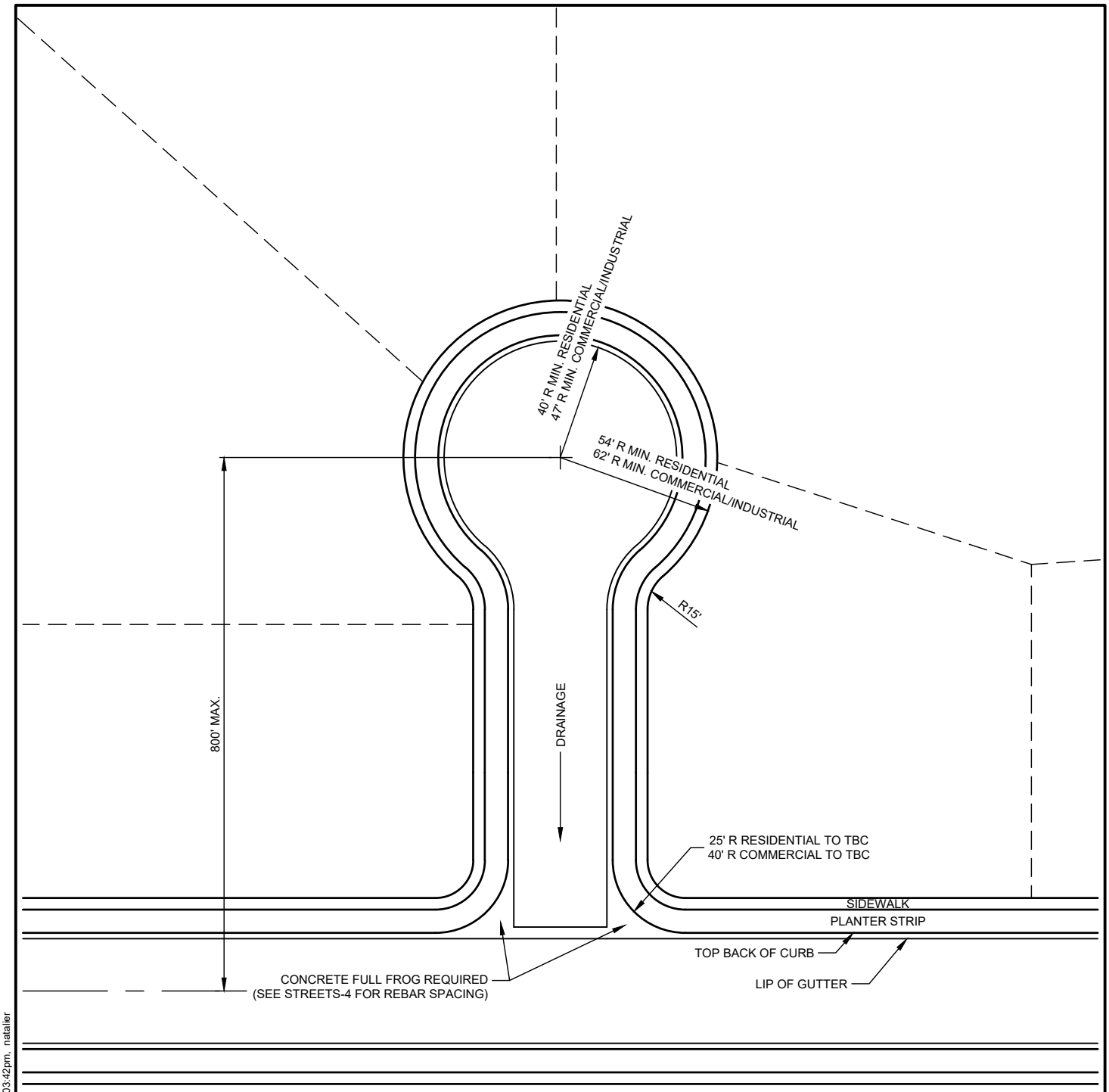
HEBER CITY
HEART OF THE WASATCH BACK

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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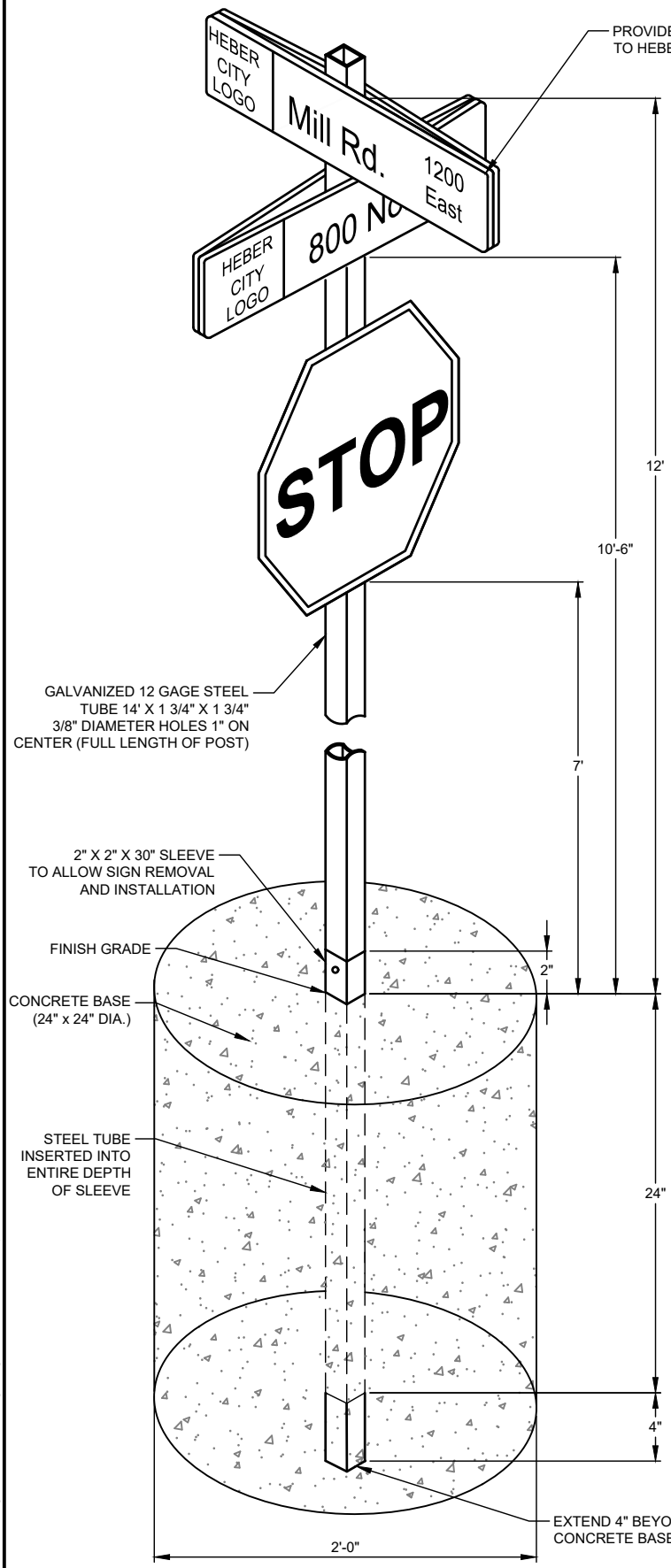

NOTES:

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

DATE: 02/19
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SIGNS

STREETS-10

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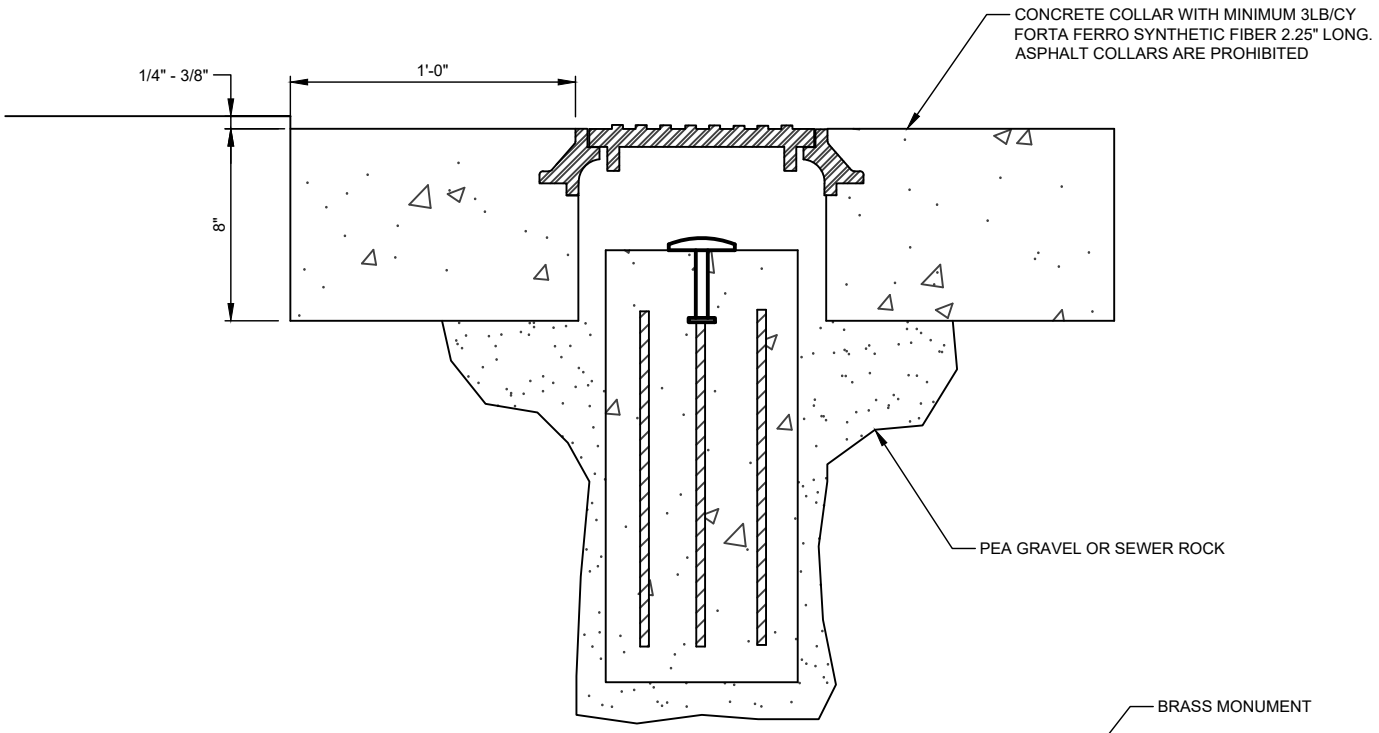
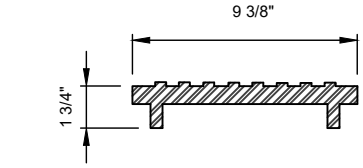
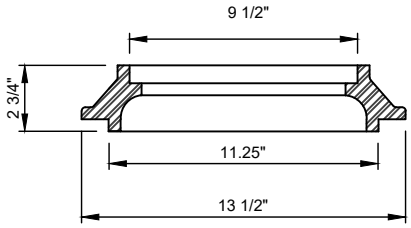
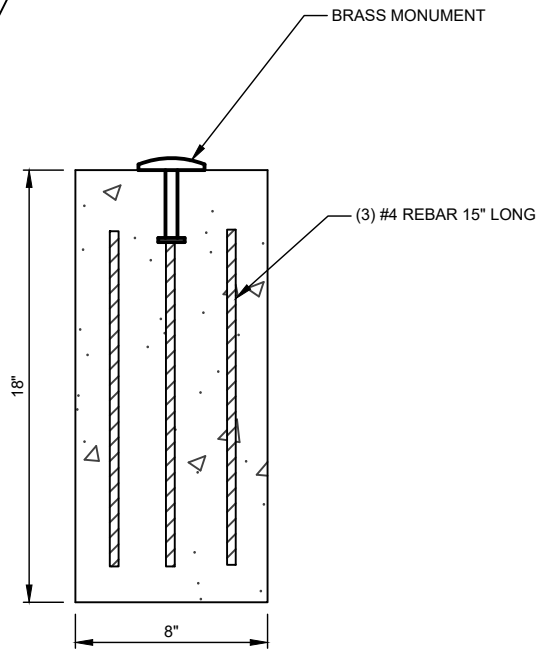






D & L SUPPLY # K-6313 OR APPROVED EQUAL



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

DATE: 03/17
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

SURVEY MONUMENTS

STREETS-11

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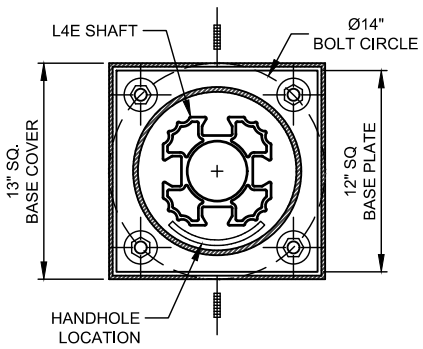
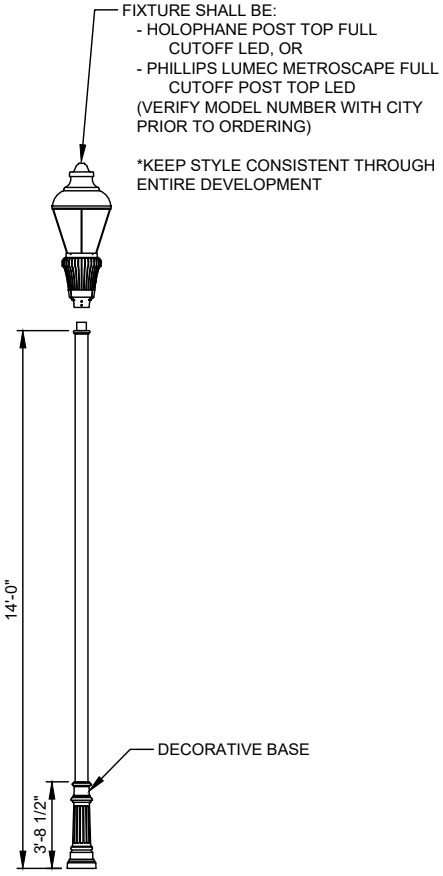
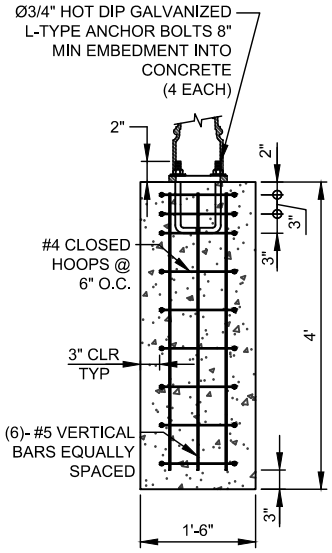


BASE PLATE DETAIL





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

DATE: 06/21
SCALE: N.T.S.

75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

STREET LIGHTING

STREETS-12

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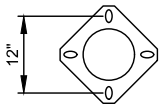
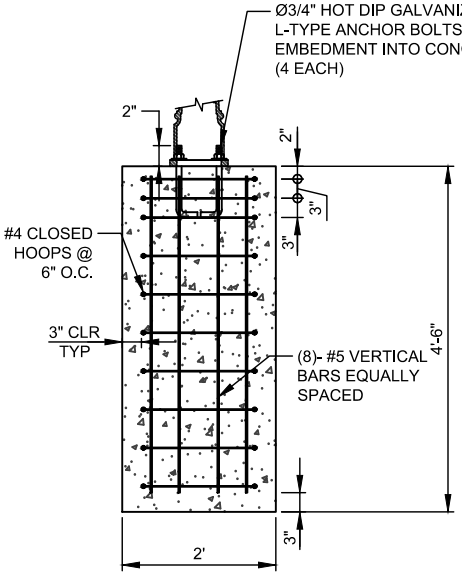
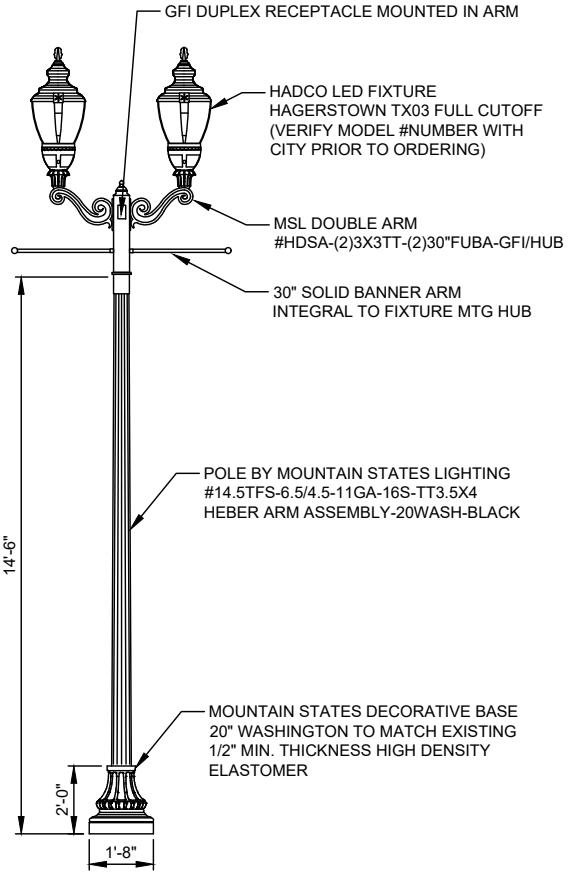


Ø3/4" X 18" min
HOT DIP GALVANIZED
L-TYPE ANCHOR BOLTS

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.

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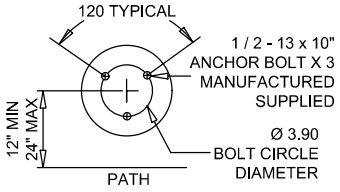
HEBER CITY
HEART OF THE WASATCH BACK

DATE: 06/21
SCALE: N.T.S.

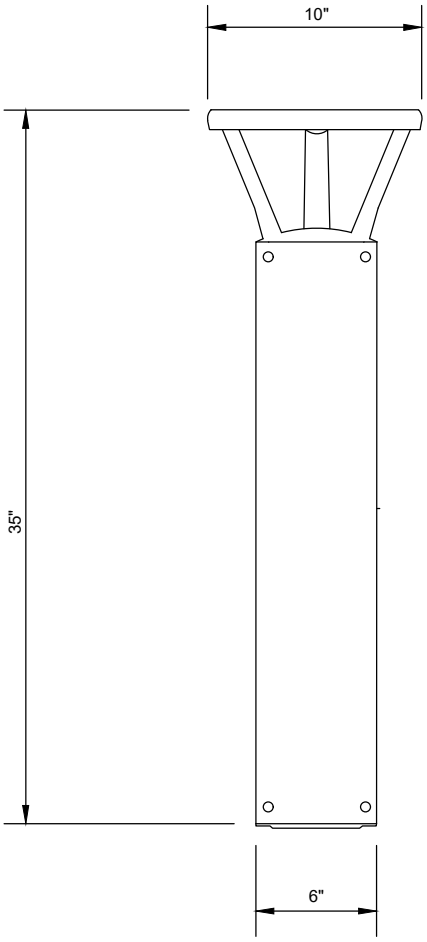
75 NORTH MAIN STREET
HEBER CITY, UTAH 84032
(435) 654-0757

COMMERCIAL HISTORIC STREET LIGHTING

STREETS-13

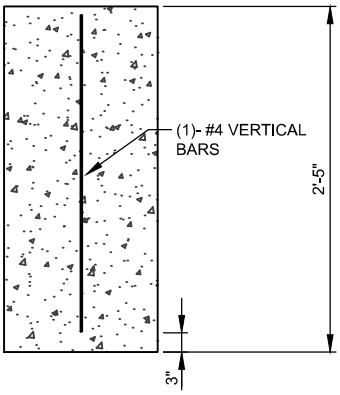


ANCHOR BOLT DETAIL



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.

75 NORTH MAIN STREET
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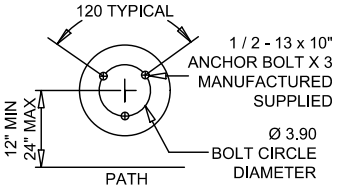
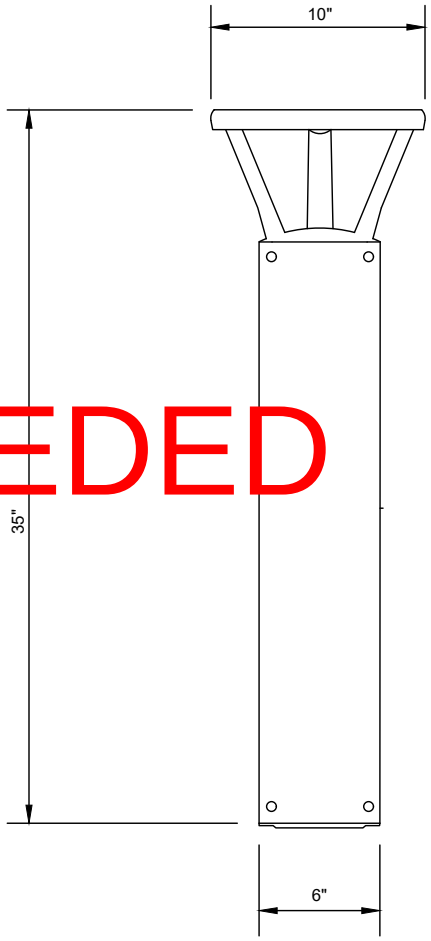
TRAIL LIGHTING

STREETS-14



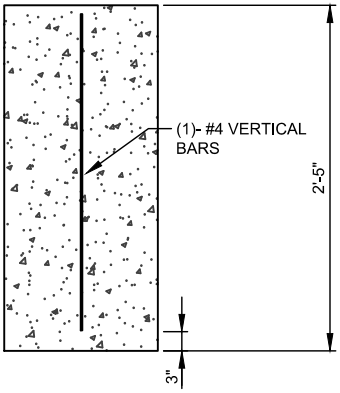
ANCHOR BOLT DETAIL

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

DATE: 09/23
SCALE: N.T.S.

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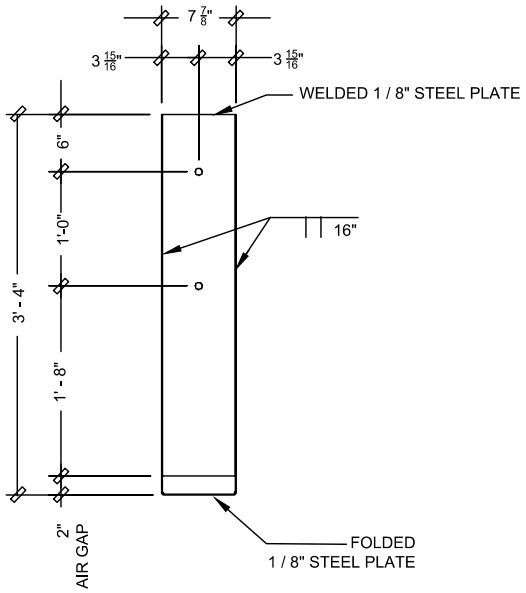
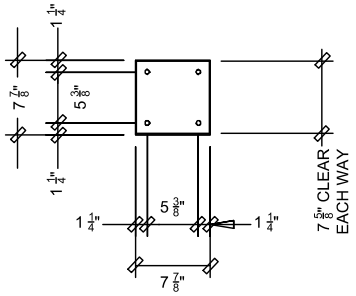
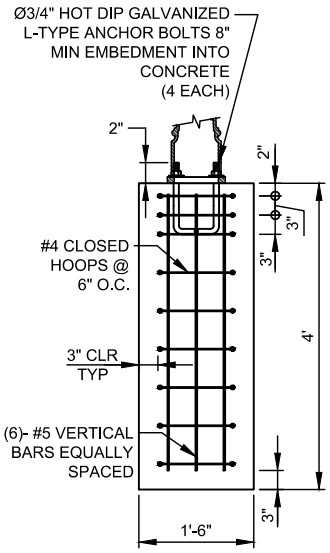
TRAIL LIGHTING

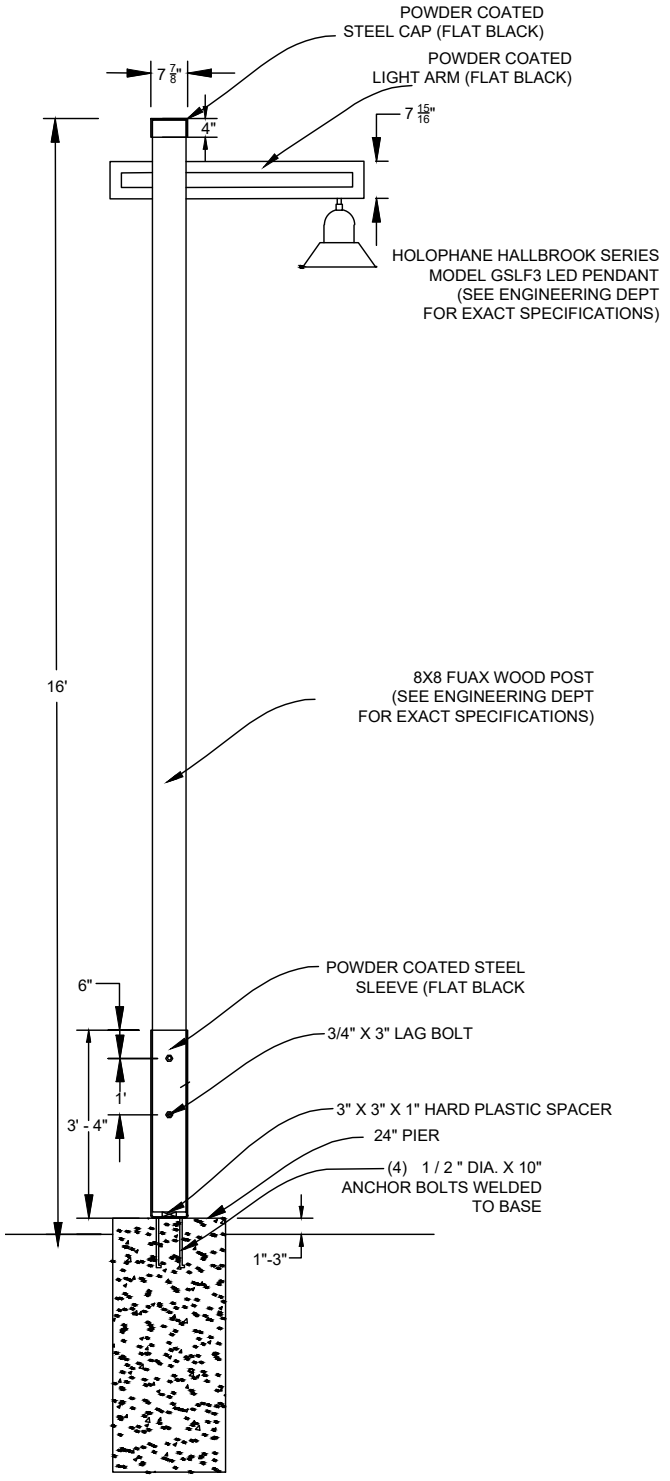
STREETS-14







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.

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NORTH VILLAGE LIGHTING

STREETS-15

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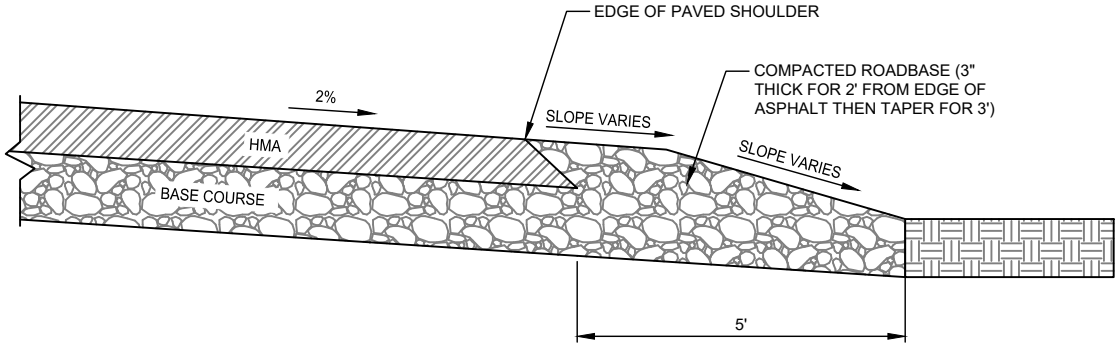

NOTES:

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.

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RESIDENTIAL ROAD SHOULDER WITHOUT CURB & GUTTER

STREETS-16

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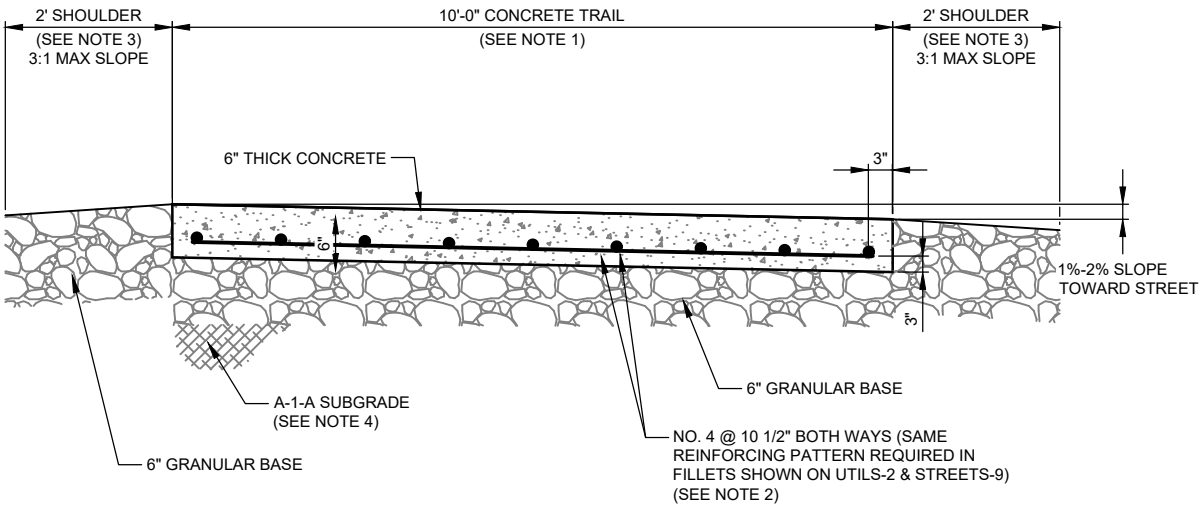
New detail added to show how we expect concrete trails to be built.



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.

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10' CONCRETRE TRAIL

STREETS-17

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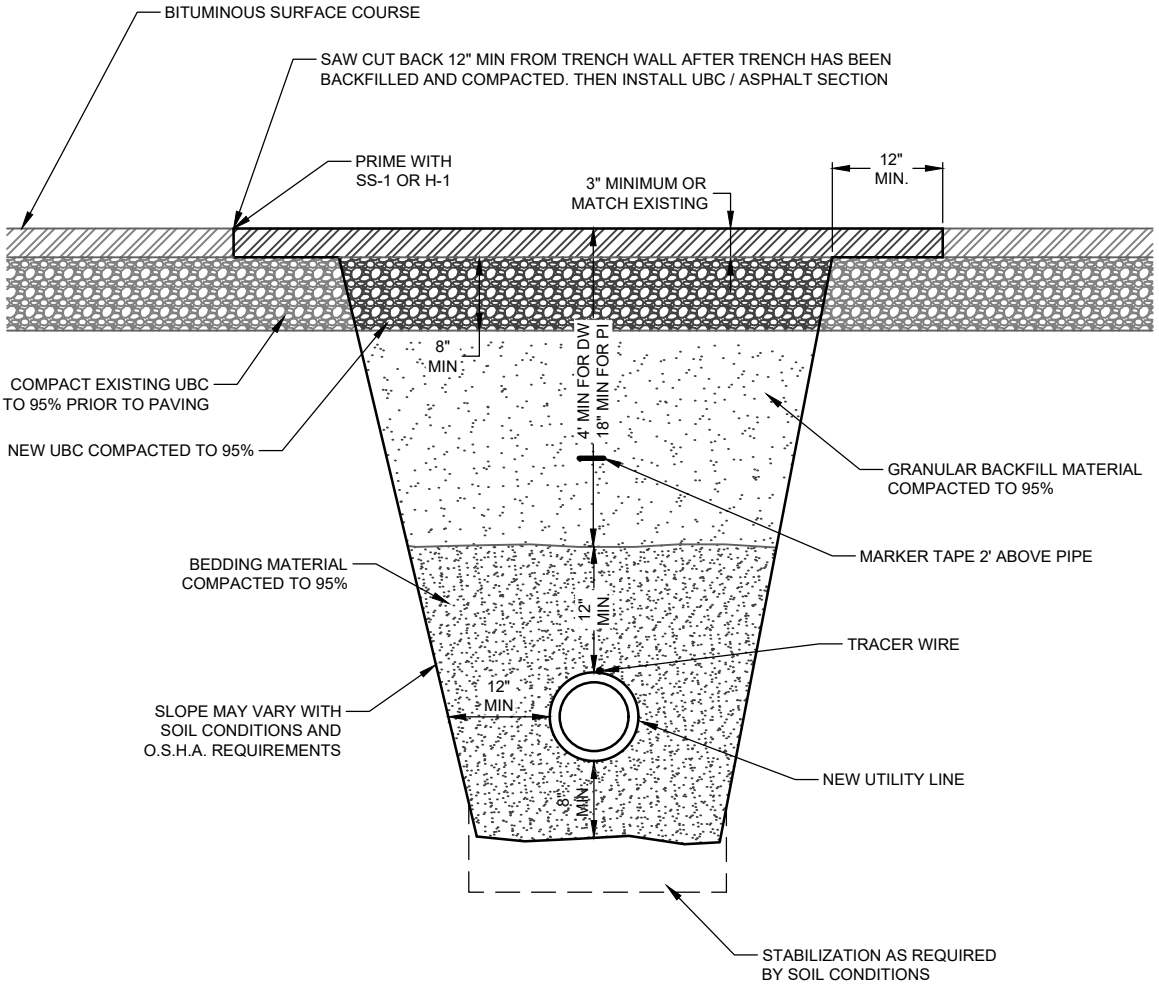

NOTES:

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

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UTILITY INSTALLATION TRENCH DETAIL

UTIL-1

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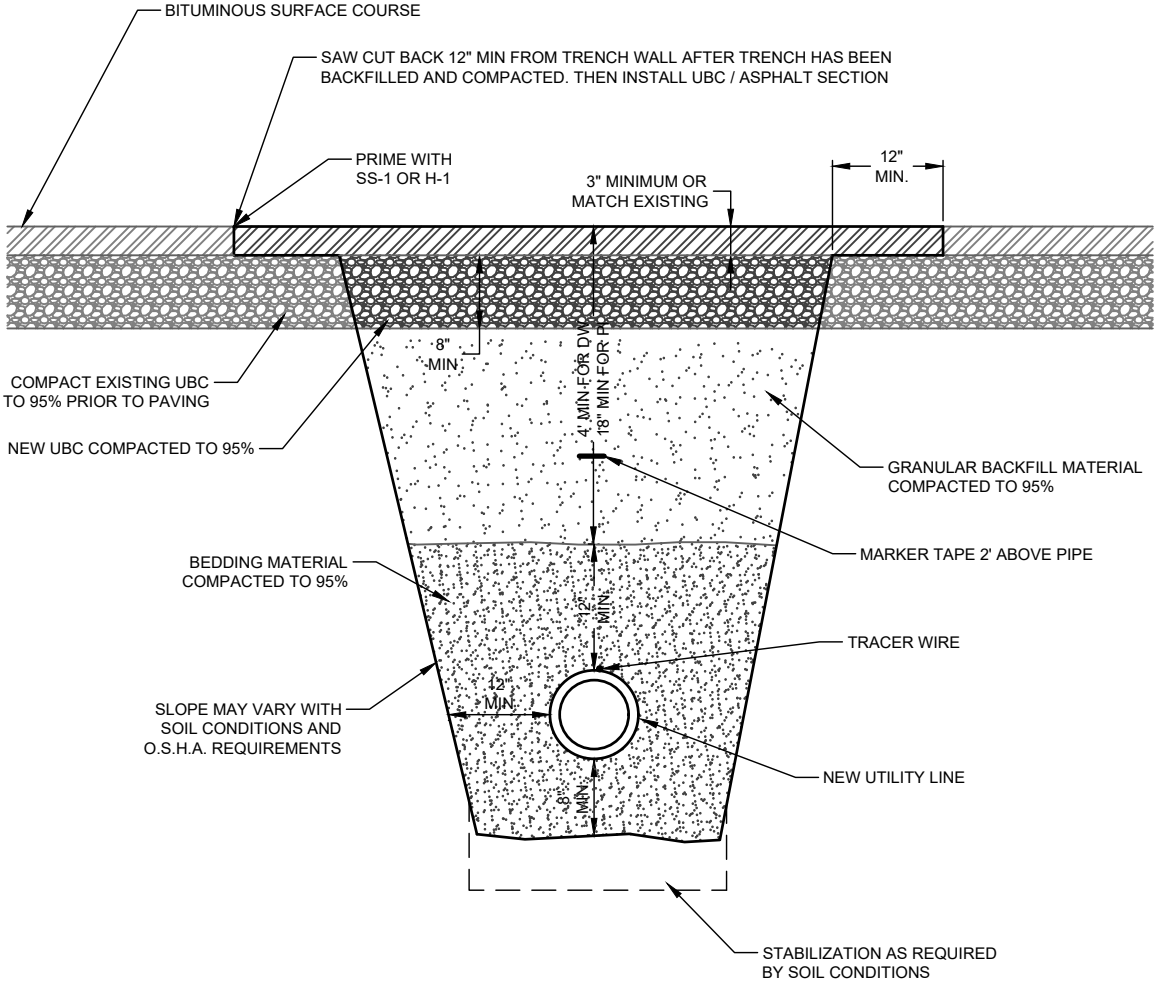

NOTES:

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.

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HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
SCALE: N.T.S.

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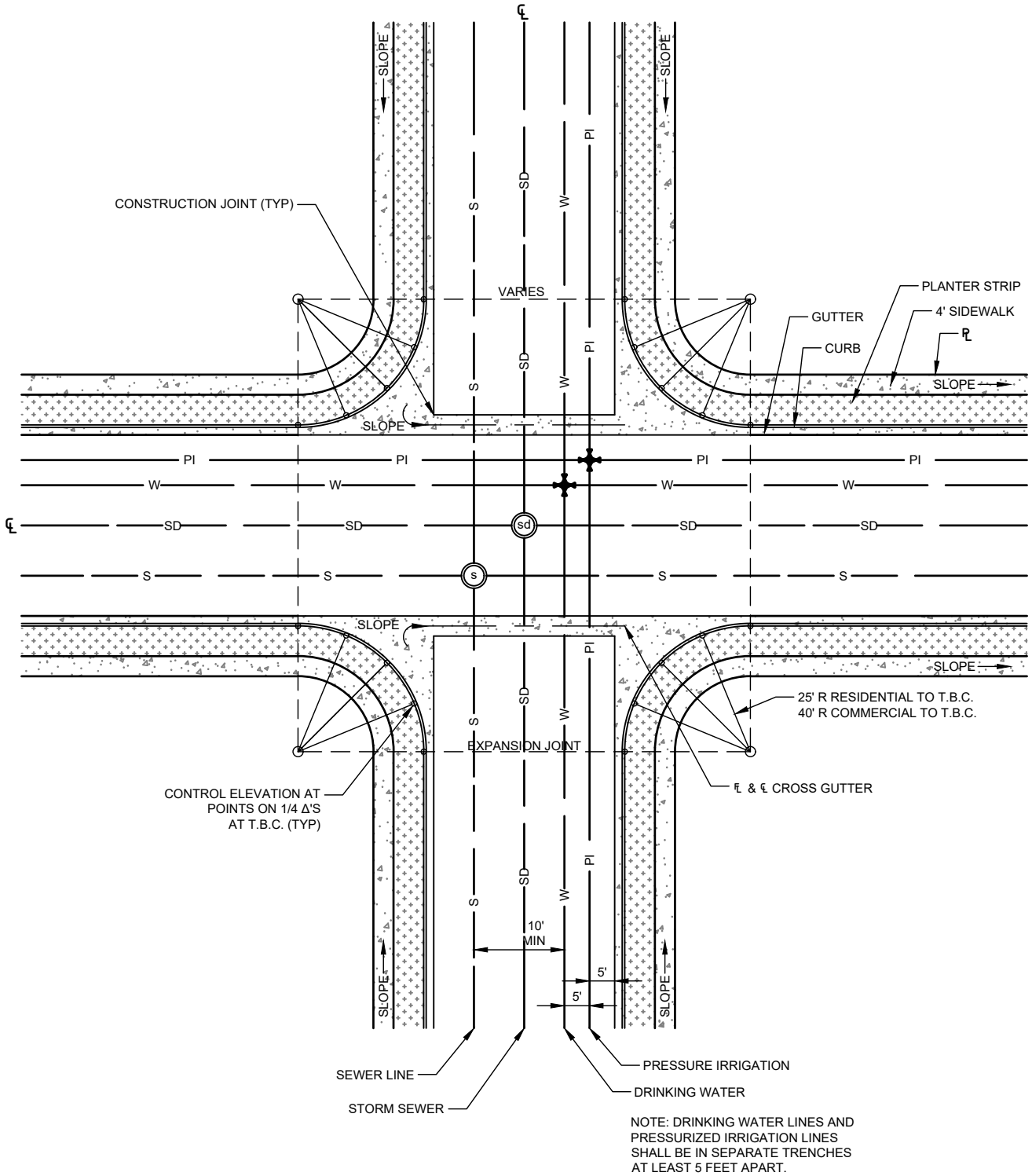
UTILITY INSTALLATION TRENCH DETAIL

UTIL-1



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HEBER CITY
HEART OF THE WASATCH BACK

DATE: 09/23
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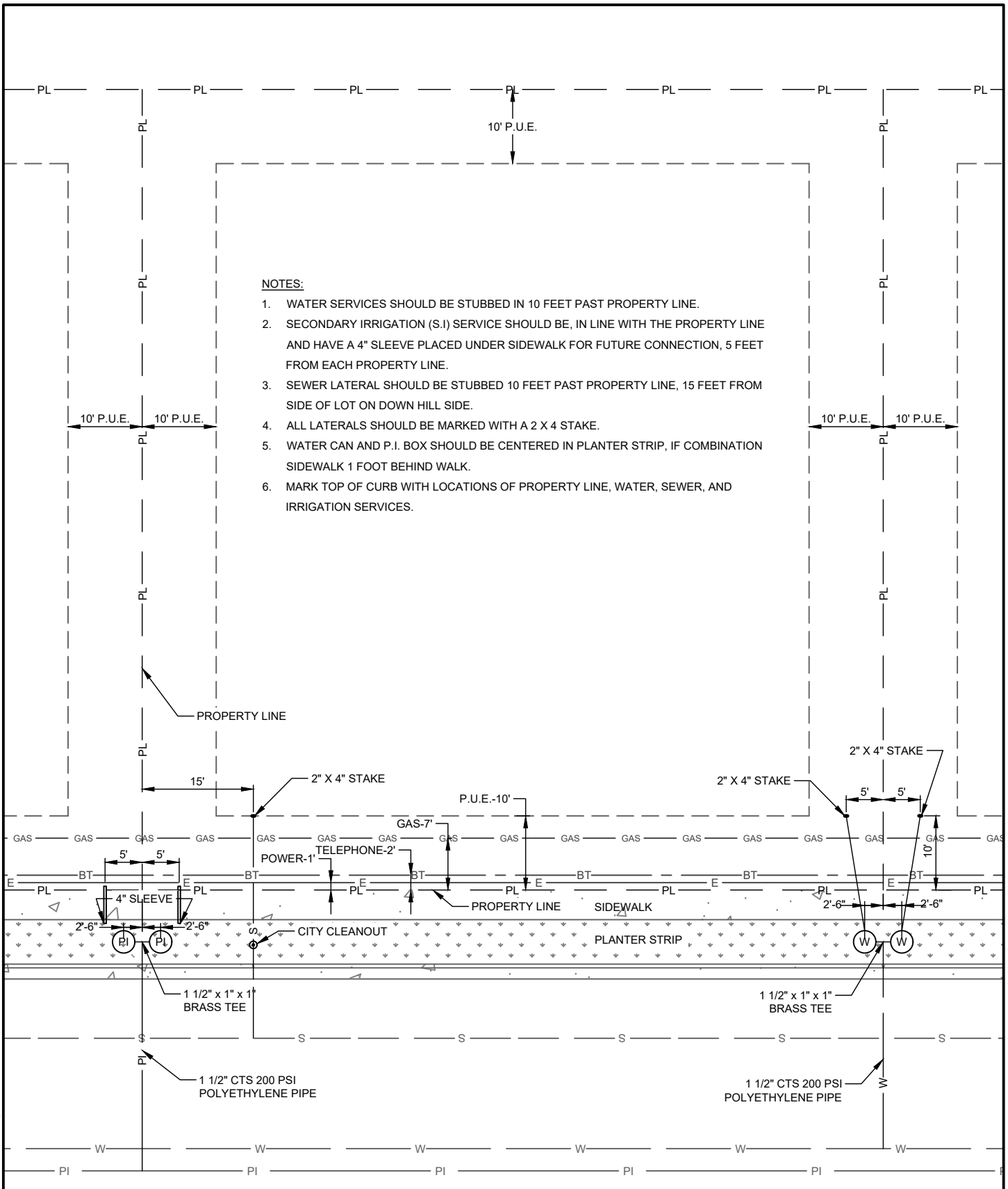
STANDARD STREET INTERSECTION & UTILITY LOCATION

UTIL-2



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HEBER CITY
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SCALE: N.T.S.

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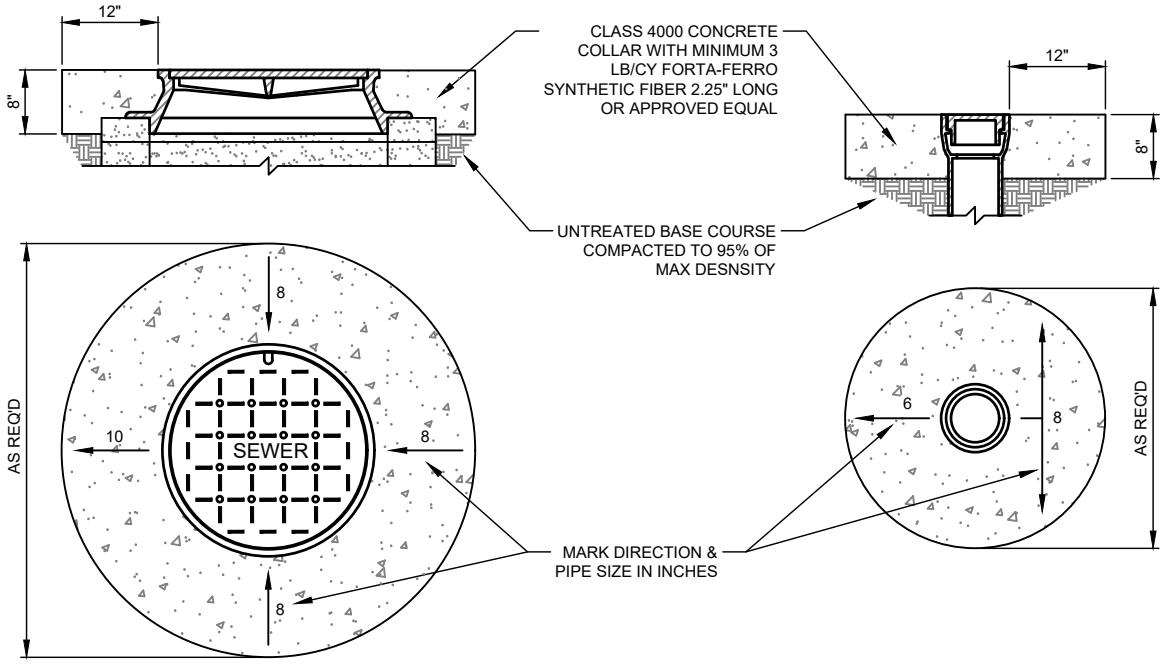
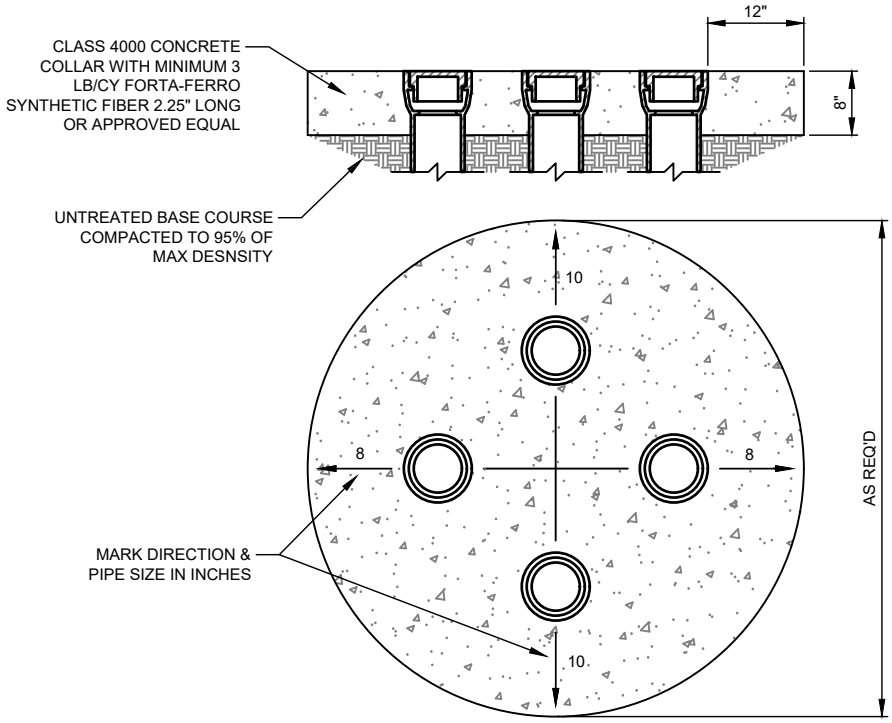
LATERALS & UTILITY LOCATION

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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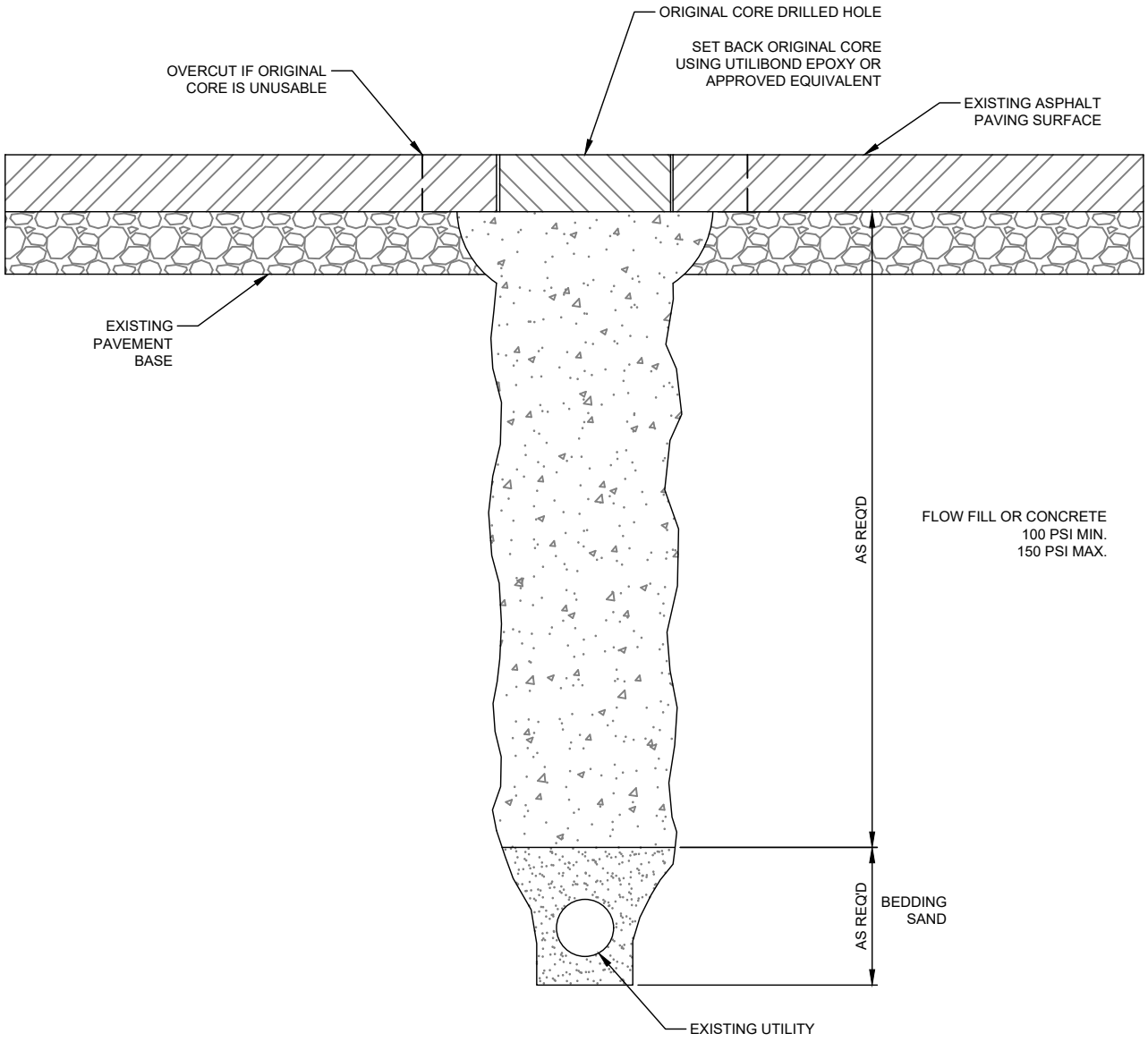

NOTES:

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

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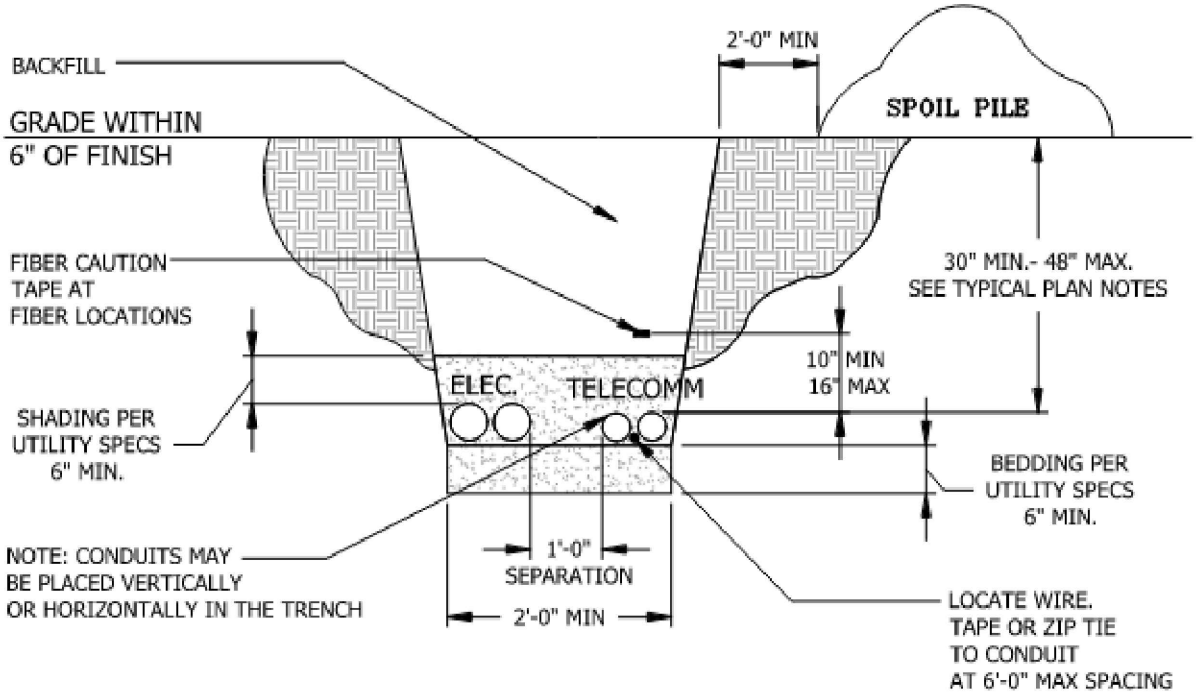

NOTES

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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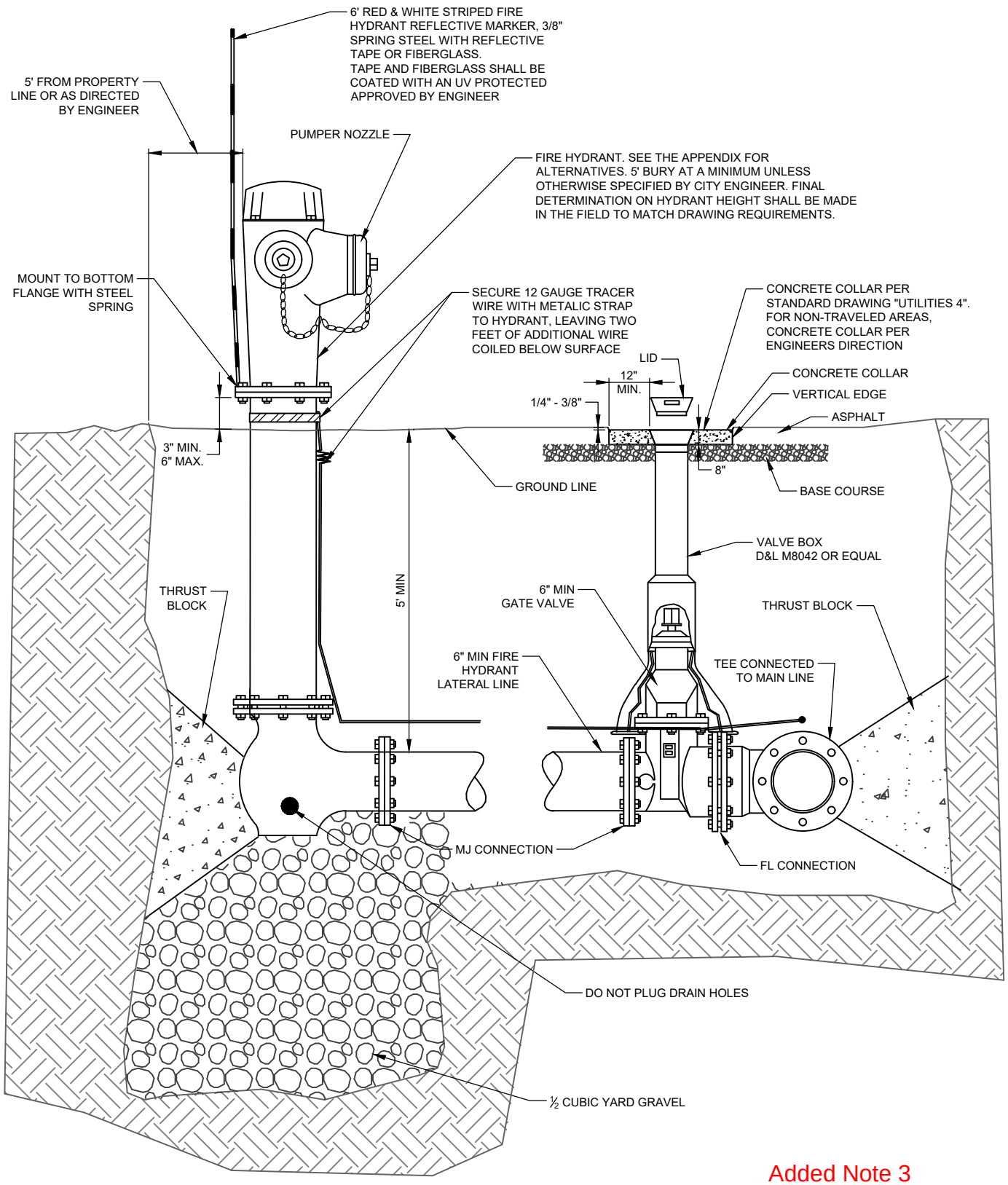
TELECOMMUNICATIONS & POWER SHARED TRENCH

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
HEART OF THE WASATCH BACK

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FIRE HYDRANTS

WATER-1

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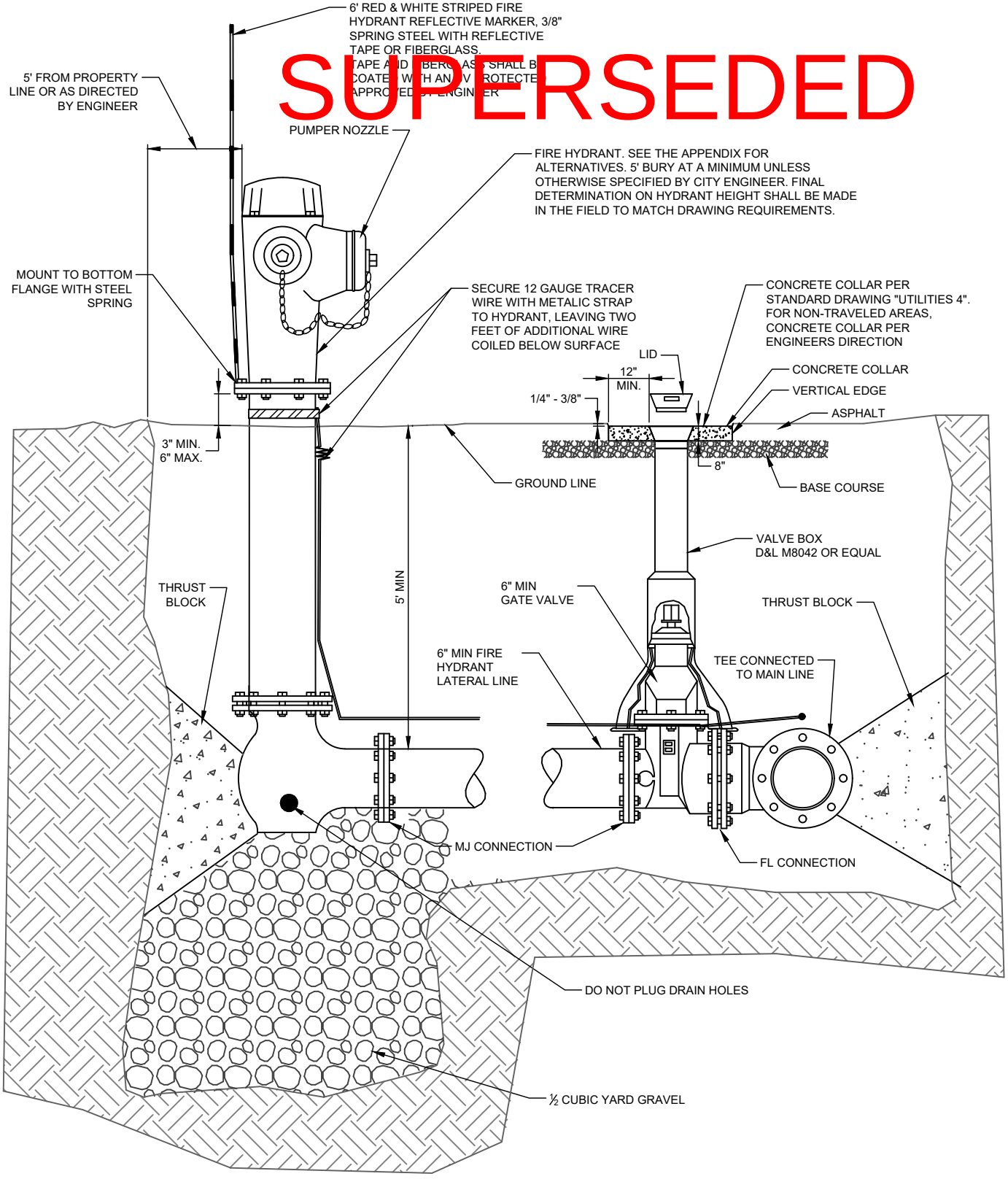

NOTES:

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

SCALE: N.T.S.

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FIRE HYDRANTS

WATER-1

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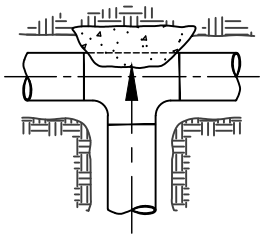
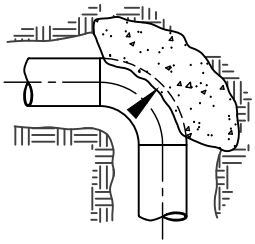


CONDITION 1



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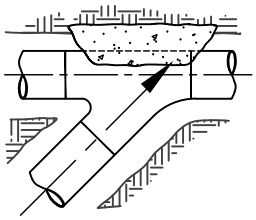

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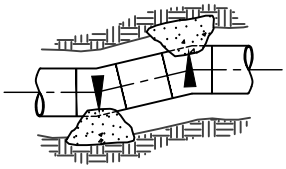

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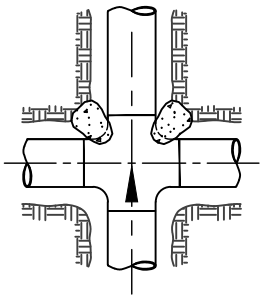
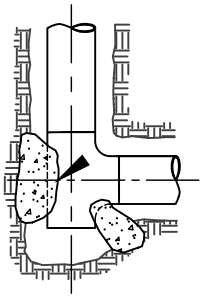
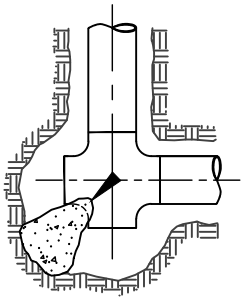


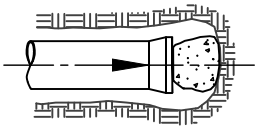
CONDITION 5
(@ ENGINEERS DISC)



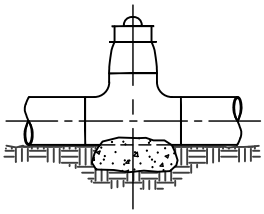
CONDITION 6



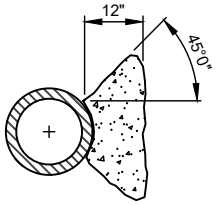
CONDITION 7



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.

HEBER CITY
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TYPICAL PIPE THRUST BLOCKING

WATER-2

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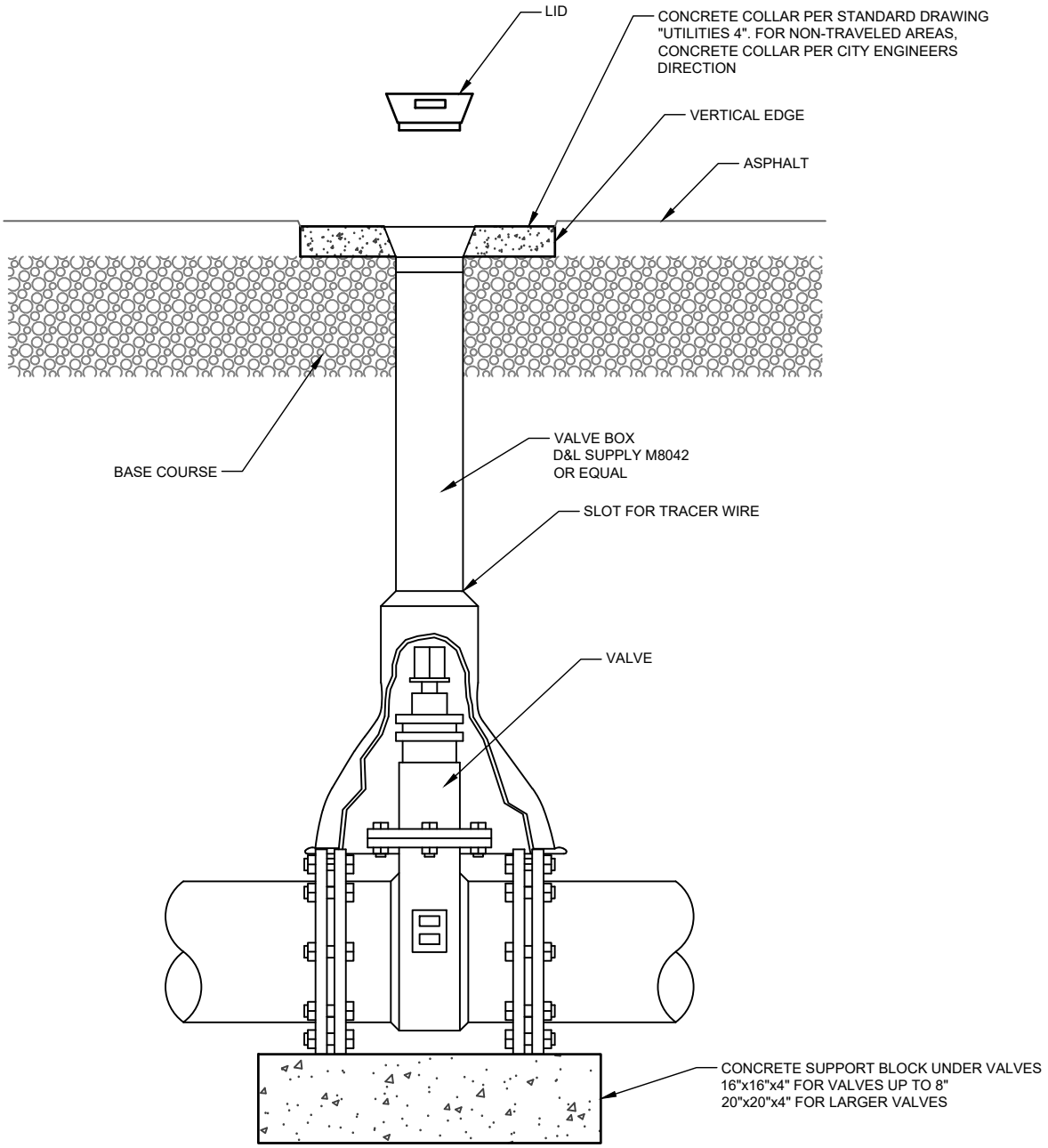

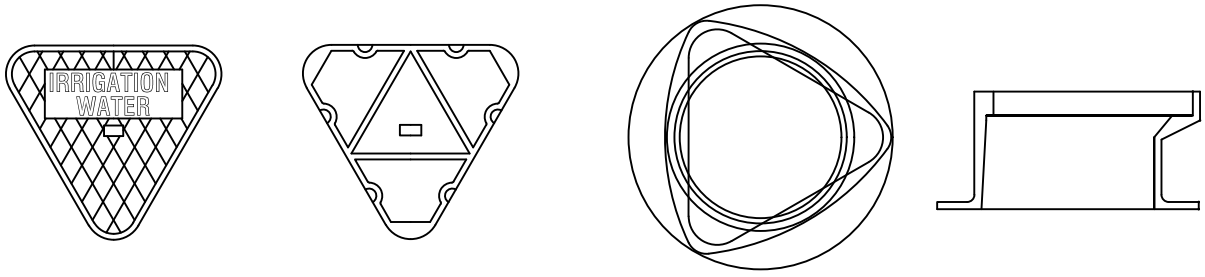

NOTES:

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.

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VALVE BOX & COLLARS

WATER-3

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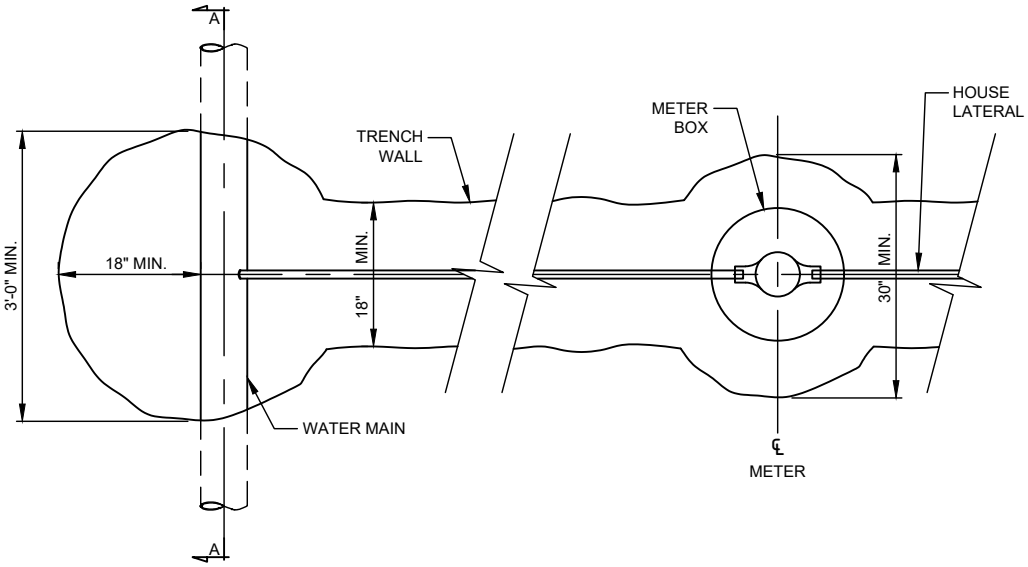

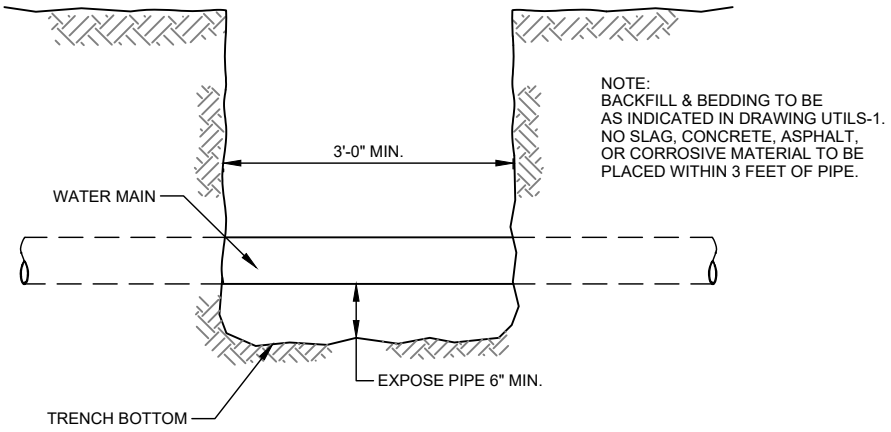

SECTION A-A

HEBER CITY
HEART OF THE WASATCH BACK

DATE: 03/17

SCALE: N.T.S.

75 NORTH MAIN STREET
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1" SERVICE TRENCH

WATER-4

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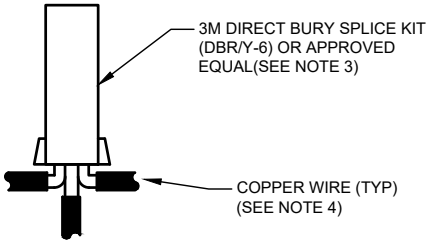
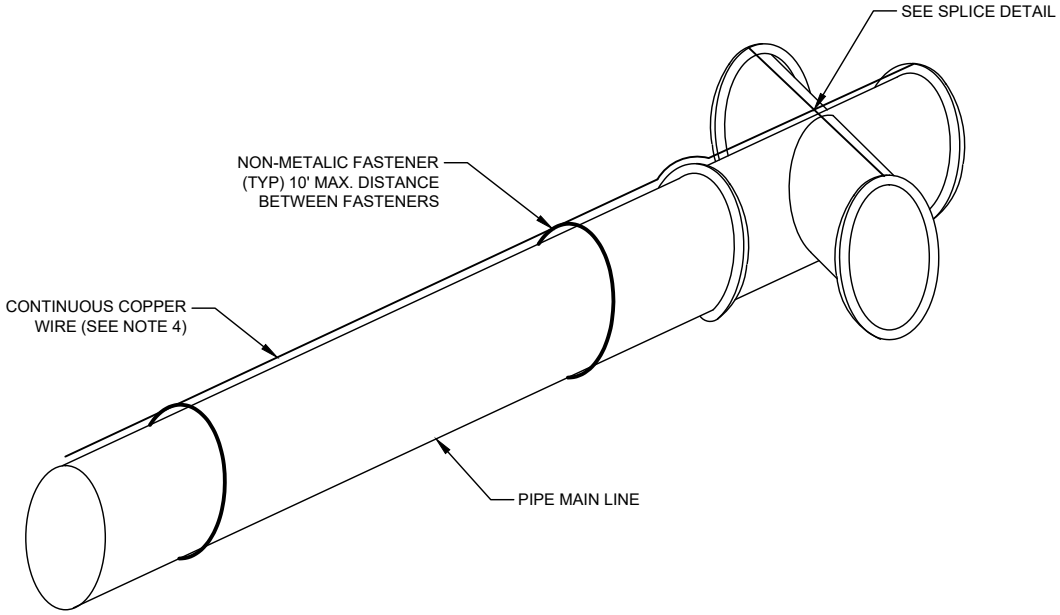


SPLICE DETAIL



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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TRACER WIRE INSTALLATION

WATER-5

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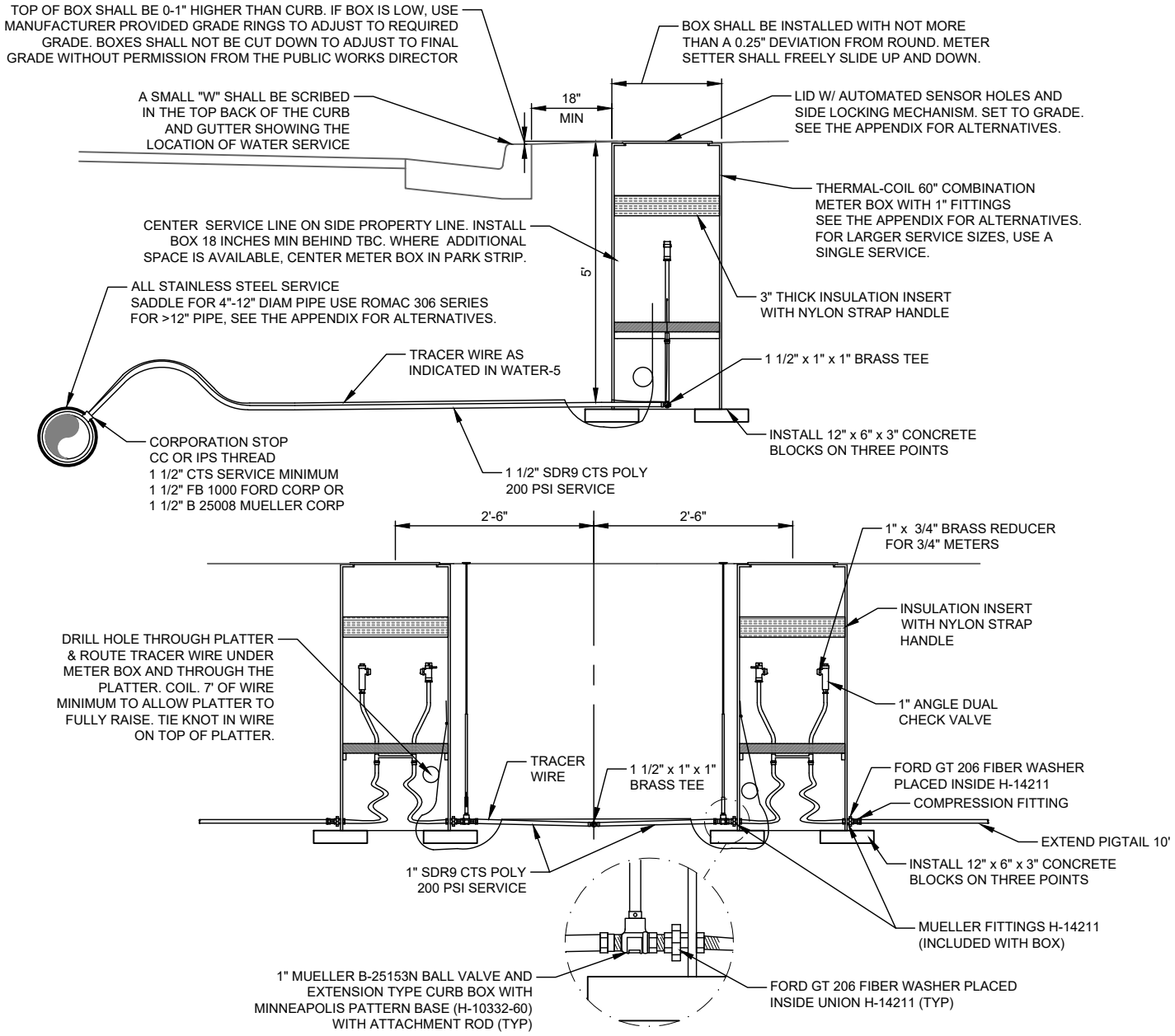

NOTES:

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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WATER SERVICE - TWO LOTS

WATER-6A

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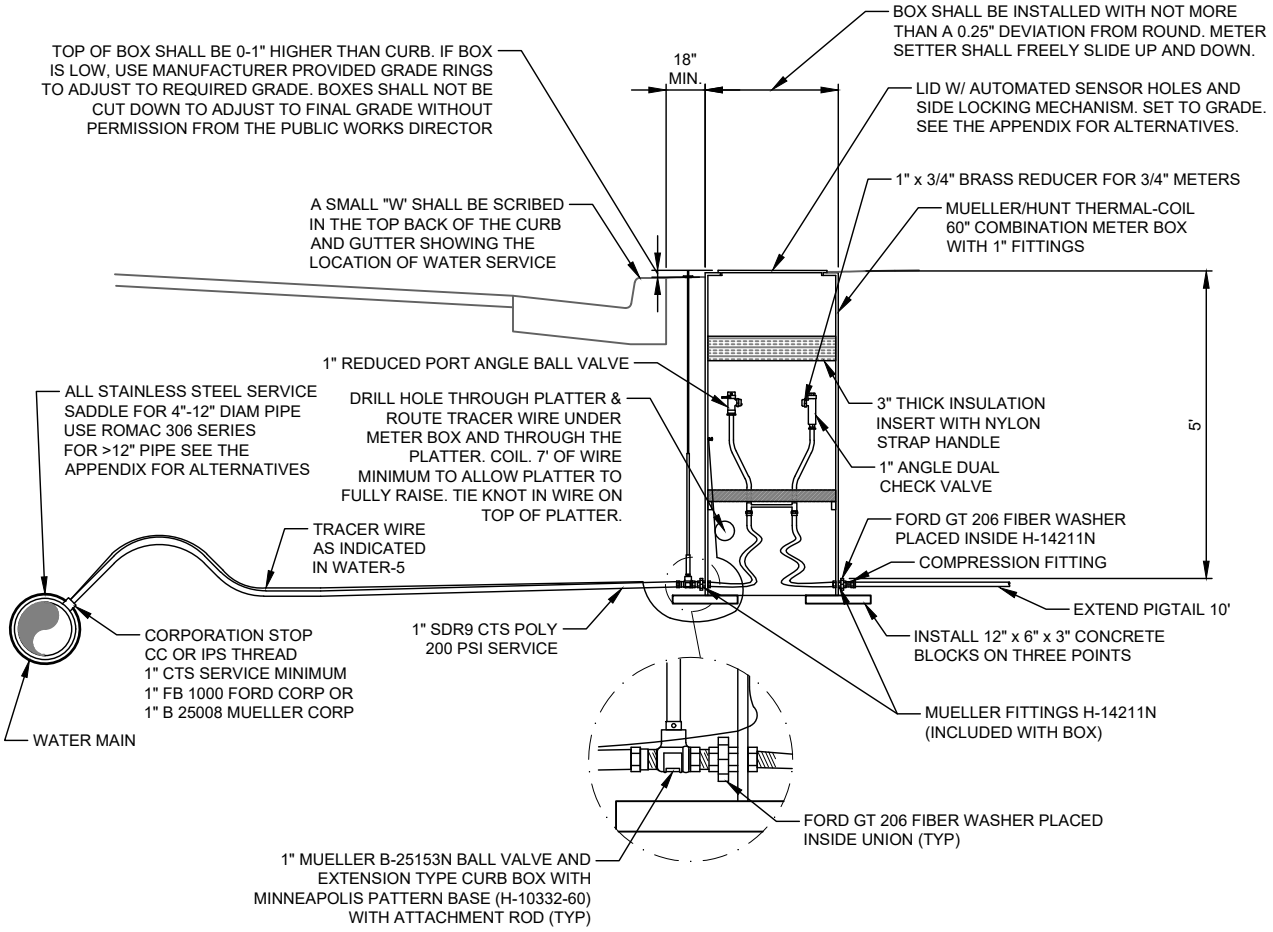
TABLE 1					
SERVICE LINE SIZE	MINIMUM METER BOX SIZE	BOX MODEL	FRAME MODEL	COMMENTS	INSULATION INSERTS
1" MINIMUM		SEE THE APPENDIX FOR ALTERNATIVES			790153
1 1/2"	24" x 60"	500VS2460RVB000520N	700098-1	" "	790325
2"	27" x 60"	550VS2760RVB000520N	700098-1	" "	790327

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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SCALE: N.T.S.

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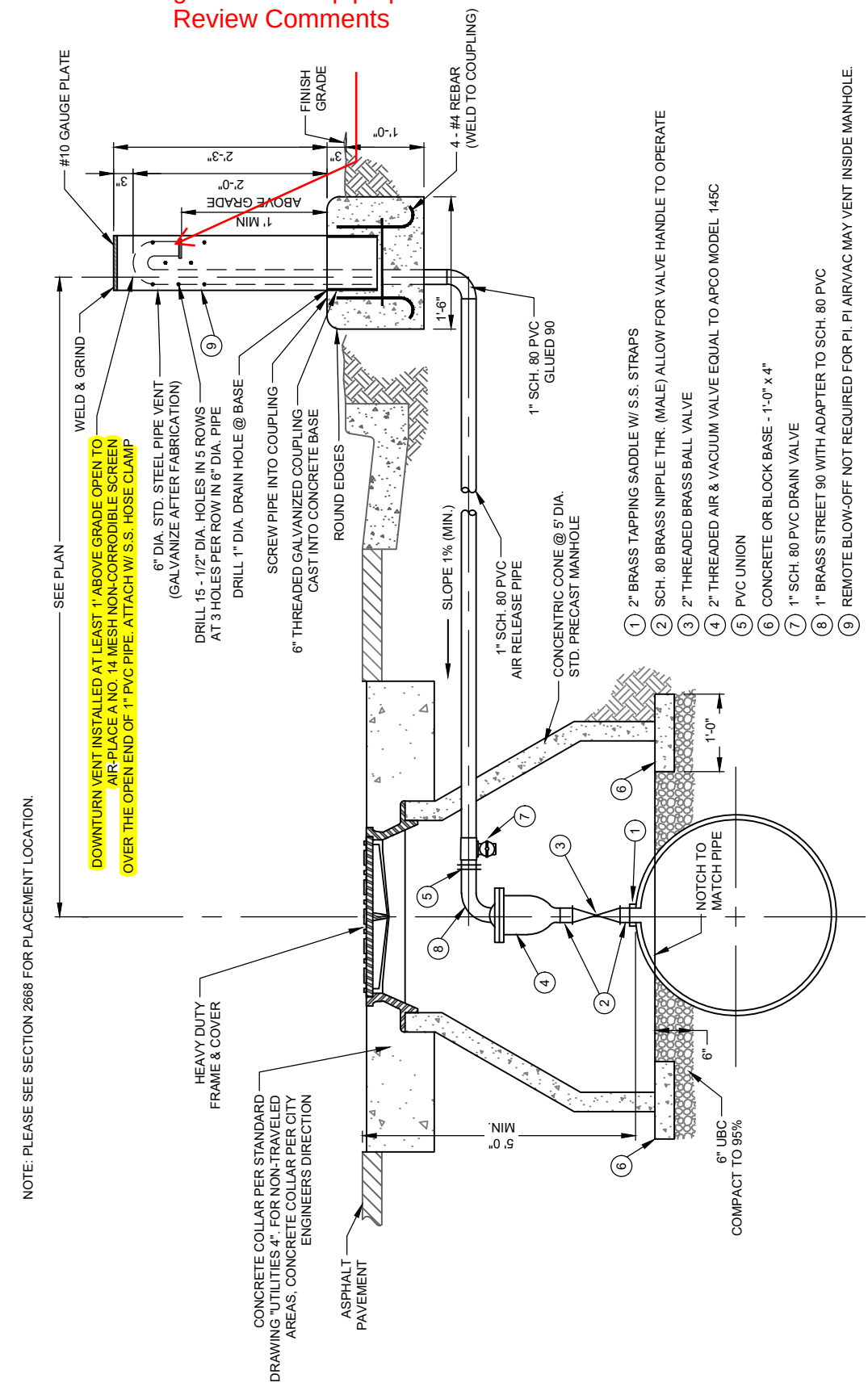
WATER SERVICE - SINGLE LOT

WATER-6B

Changed note and added gooseneck in pipe per DDW Review Comments



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SCALE: N.T.S.

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AIR VAC RELEASE STATION

WATER-7

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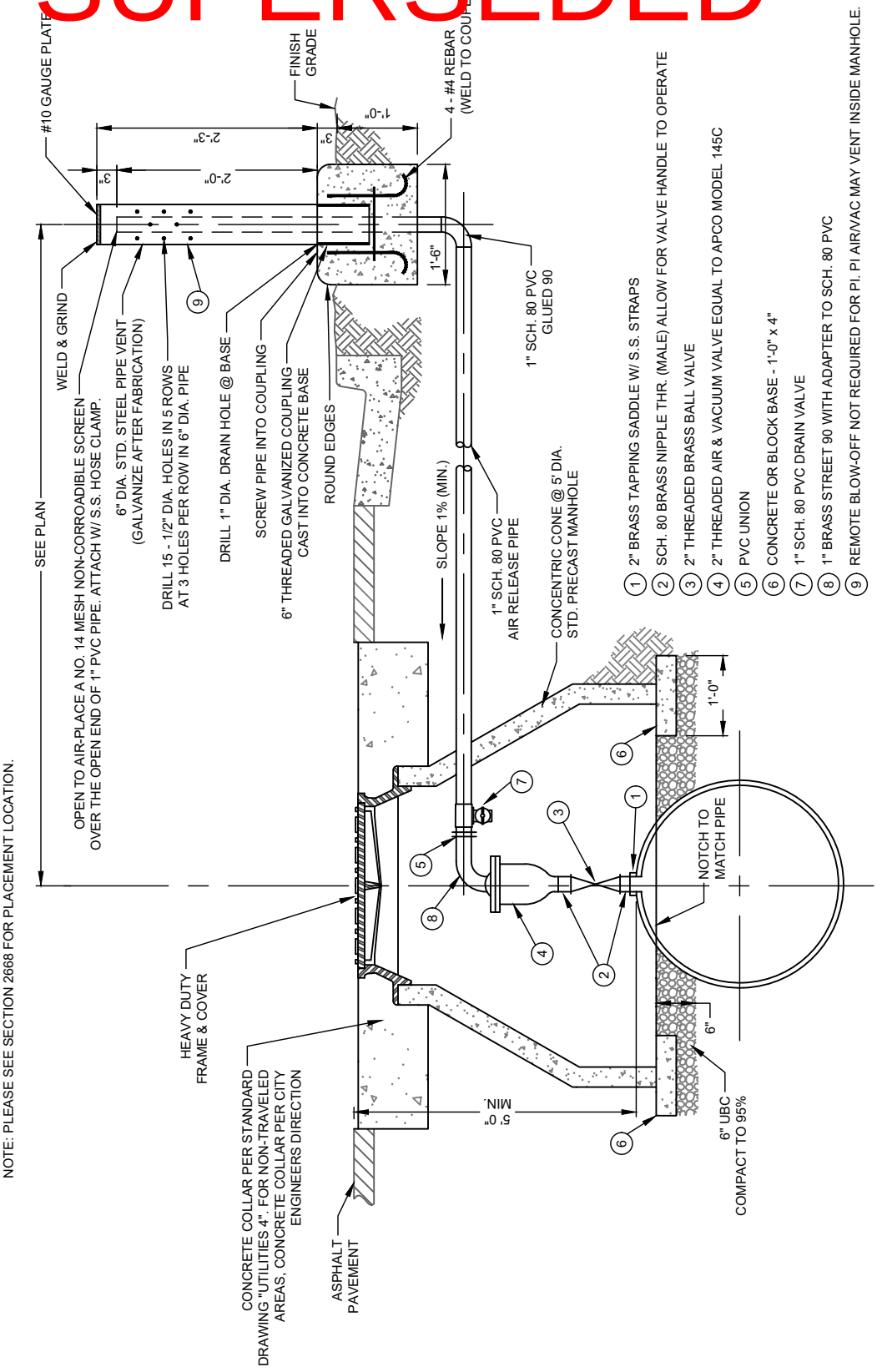
SUPERSEDED



NOTE: PLEASE SEE SECTION 2668 FOR PLACEMENT LOCATION.

HEBER CITY
HEART OF THE WASATCH BACK

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SCALE: N.T.S.

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AIR VAC RELEASE STATION

WATER-7

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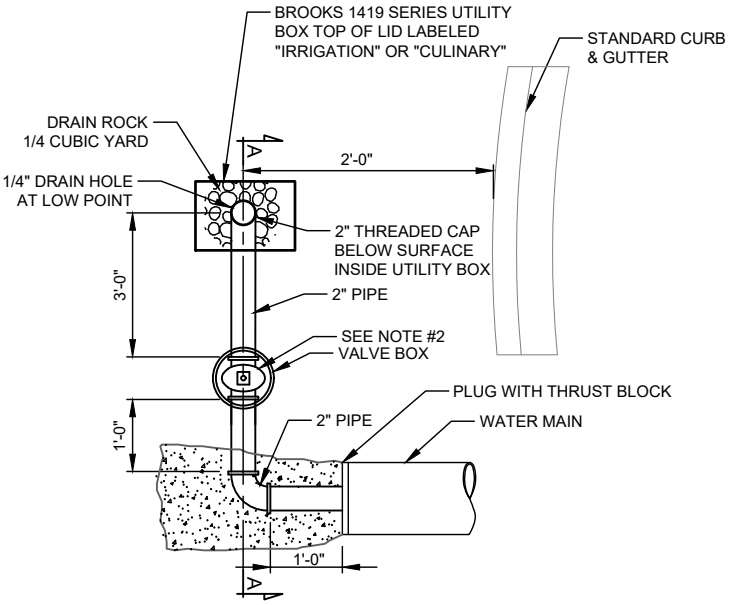
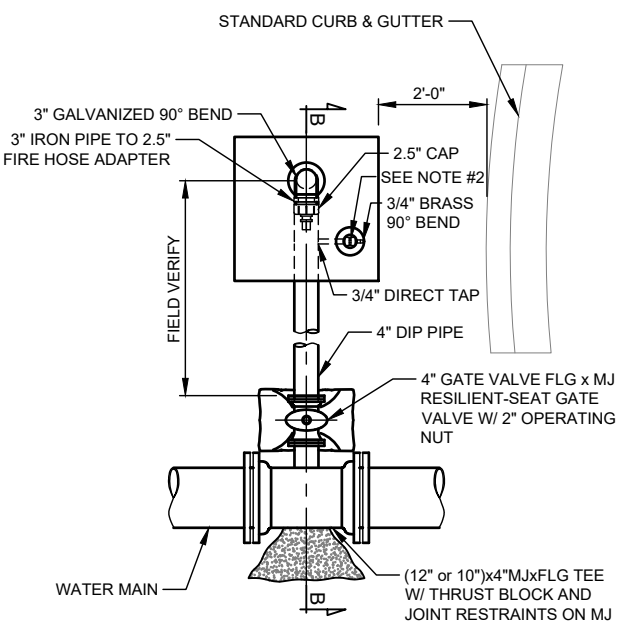


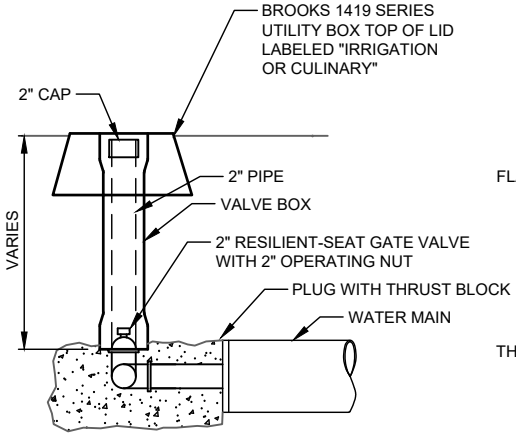
NOTES:
1. ALL PIPE TO BE GALVANIZED AFTER FABRICATION.
2. 2" RESILIENT-SEAT GATE VALVE WITH 2" OPERATING NUT.

PLAN

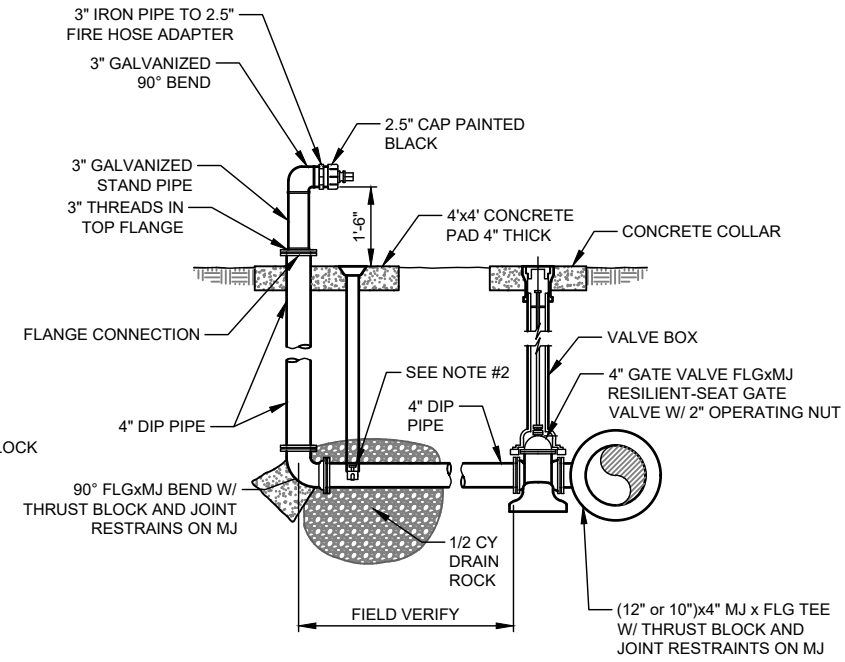


NOTES:
1. CONTRACTOR SHALL INSTALL WATER SAMPLING SPIGOT AS NEEDED DURING CONSTRUCTION FOR BACTERIA TESTING AND CHLORINE RESIDUAL TESTING.
2. 3/4" MUELLER BALL VALVE W/ EXTENSION TYPE CURB BOX W/ MINNEAPOLIS PUTTORN BASE (H-10332-60) OR 3/4" (FORD B41-333QM) BALL VALVE W/ ATTACHMENT ROD (EM2-60-4654R
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
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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.

HEBER CITY

HEART OF THE WASATCH BACK

HEBER CITY STORM WATER DESIGN MANUAL

Heber City Engineering

~~SEPTEMBER 5, 2023~~JANUARY 1, 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.

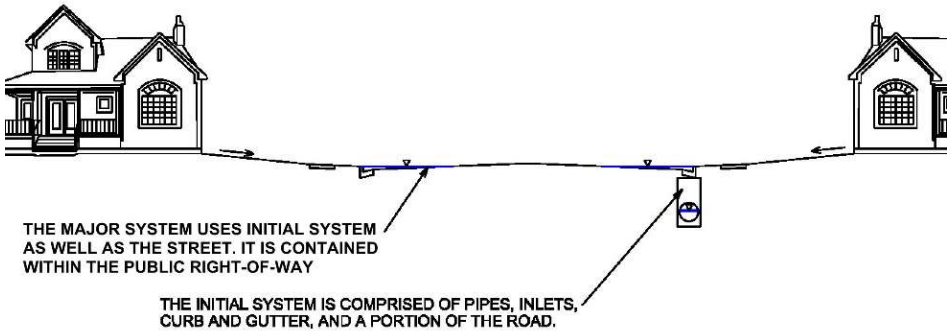

Figure 1. Initial and Major Drainage Systems

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 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 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

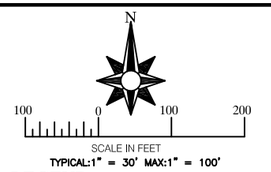
(FAA Method Storage Facility Volume)

Obtain Excel file from City

Appendix J

(Storm Water Maintenance Agreement and Management Plan)

STANDARD PLAT FORMAT



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__,
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NOTES FOR PLATS WITH COMMON AREA

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9–LOTS/UNITS MAY BE SUBJECT TO ASSOCIATION BYLAWS, ARTICLES OF INCORPORATION AND CC&R'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: _____

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

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
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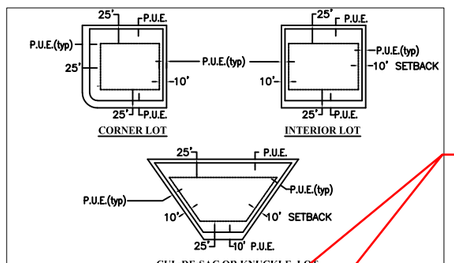
OPEN SPACE	2.3	101750	17%		
BUILDABLE LAND	8.1	354476	58%		
ROW AREA	3.5	150954	25%		
LANDSCAPING AREA	4.5	197518	33%		
LOTS				61	
NET DENSITY DWELLINGS BY ACRE				4.4	

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

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:_____

PLANNING DEPARTMENT	CITY ENGINEER	WASATCH CO. FIRE DISTRICT	SPECIAL SERVICE DISTRICT	COUNTY SURVEYOR
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

COUNTY RECORDER

STANDARD PLAT FORMAT

PLAT REQUIREMENTS

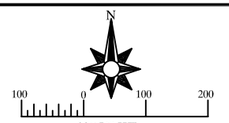
- FINAL PLAT SHALL BE PREPARED ON A SHEET OF APPROVED REPRODUCIBLE D-SIZE MYLAR AND MADE WITH TEXT NOT LESS THAN ONE-TENTH INCH IN SIZE, SHALL BE SO DRAWN THAT THE TOP OF THE SHEET FACES EITHER NORTH OR EAST, WHICHEVER ACCOMMODATES THE DRAWING BEST.
- ACCURATE LINES MUST BE DRAWN FOR ALL LINES, ANGLES 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:

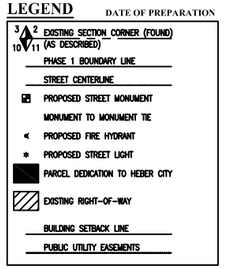
- SECTION INFORMATION – TWO OR MORE CORNERS IF POSSIBLE
- BASIS OF BEARING CLEARLY LABELED
- BOUNDARY CLEARLY SHOWN AND DIMENSIONED WITH LEGAL DESCRIPTION
- POINT OF BEGINNING CLEARLY LABELED
- BENCHMARK FOR PROJECT HORIZONTAL AND VERTICAL CONTROLS
- BOUNDARY LINES OF ADJACENT TRACTS OF UN-SUBSIDIZED 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).



LEGEND DATE OF PREPARATION



PLAT NAME AND PHASE

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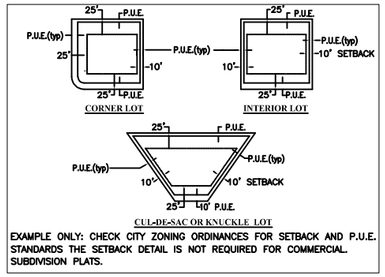

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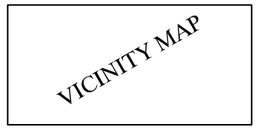
EXAMPLE

SUPERSEDED

VICINITY MAP



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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
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

COUNTY RECORDER

Planning Commission Staff Report

MEETING DATE:	1/28/2025
SUBJECT:	Recommendation for amendment to the Annexation Policy Plan for the Wasatch Highlands (Tony Kohler)
RESPONSIBLE:	Tony Kohler
DEPARTMENT:	Planning
STRATEGIC RELEVANCE:	Community Development

SUMMARY

Heber City has been approached by the SITLA Lands and Christensen properties for potential annexation into Heber City. These properties are not part of Heber City's Expansion Area Map. 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, 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.
Policy Questions for this item includes:

- Should Heber City amend its Annexation Policy Plan by adding the area of the Wasatch Highlands?

RECOMMENDATION

The City Council discussed the item at their December 21 meeting. It is doubtful that the item will have support by Council to adopt the proposed amendment. However, staff recommends the Planning Commission provide their honest feedback in a recommendation to Council to either 1) update the annexation plan; or 2) not update the annexation policy plan. Staff recommends the City update the annexation policy plan so the City will be part of the conversation when the property is developed, and establish an interlocal agreement or MOU between Heber City and Wasatch County as described below.

BACKGROUND

Wasatch County has expressed their hope that Heber City will not amend its Annexation Policy Plan. The County has expressed such in a joint meeting earlier this fall, in the attached letter and at a recent interlocal meeting this month. The City Council is torn on the issue, as they would like the City to 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. On the other hand, Council does not want to irritate Wasatch County, who has expressed they do not support Heber City considering annexation of this property.

DISCUSSION

One potential option is to recommend the City continue forward with amending the Annexation Policy Plan, but to have the City enter into an interlocal agreement with Wasatch County regarding expectations on development of the properties. Such an agreement might address how multi-jurisdictional issues such as traffic and services will be dealt with, when or if the property is proposed to be developed. It might 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.

FISCAL IMPACT

N/A

CONCLUSION

The proposed amendment be approved and include an interlocal agreement or memorandum of understanding between Heber City and Wasatch County to address a process for addressing multi-jurisdictional issues with development of the property.

ALTERNATIVES

Staff Recommended Option – Recommend Approval

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

Alternative 2 – Recommend Approval as Amended

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

_____

_____

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 – Deny

I move to **deny** the item with the following findings.

_____
_____

POTENTIAL MOTIONS

ACCOUNTABILITY

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

EXHIBITS

1. County Comments
2. Annexation Policy Plan
3. Expansion Area Map Amendment
4. Expansion Area Map Modification

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.

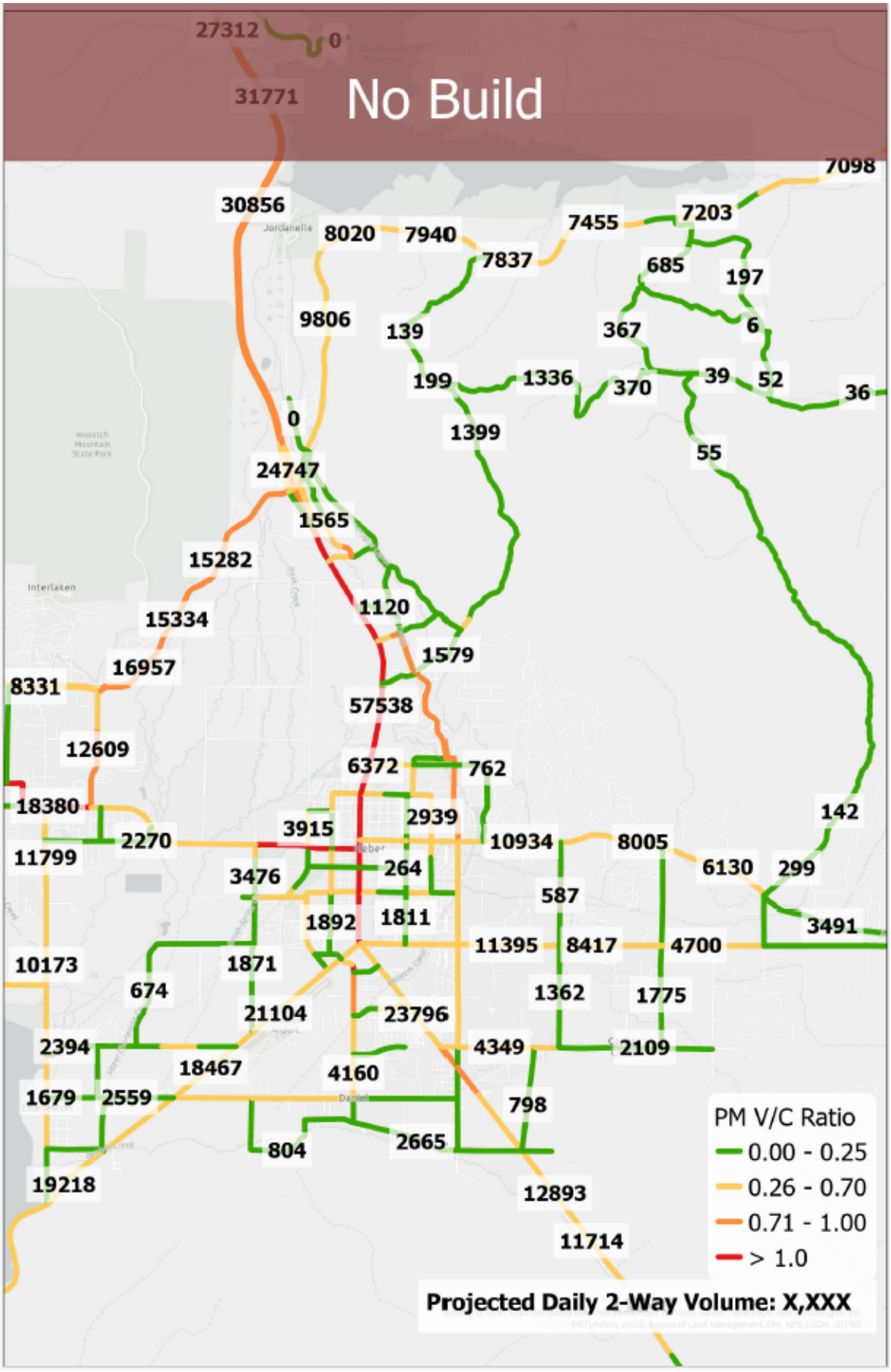
The following issues seem to have no easy solution:

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
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31771
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7837
7455
7203
7098
685
197
6
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367
199
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370
39
52
36
0
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24747
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15282
1120
15334
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16957
8331
57538
12609
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762
18380
2939
142
3915
2270
10934
8005
11799
6130
299
3476
264
587
1892
1811
3491
11395
8417
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10173
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PM V/C Ratio
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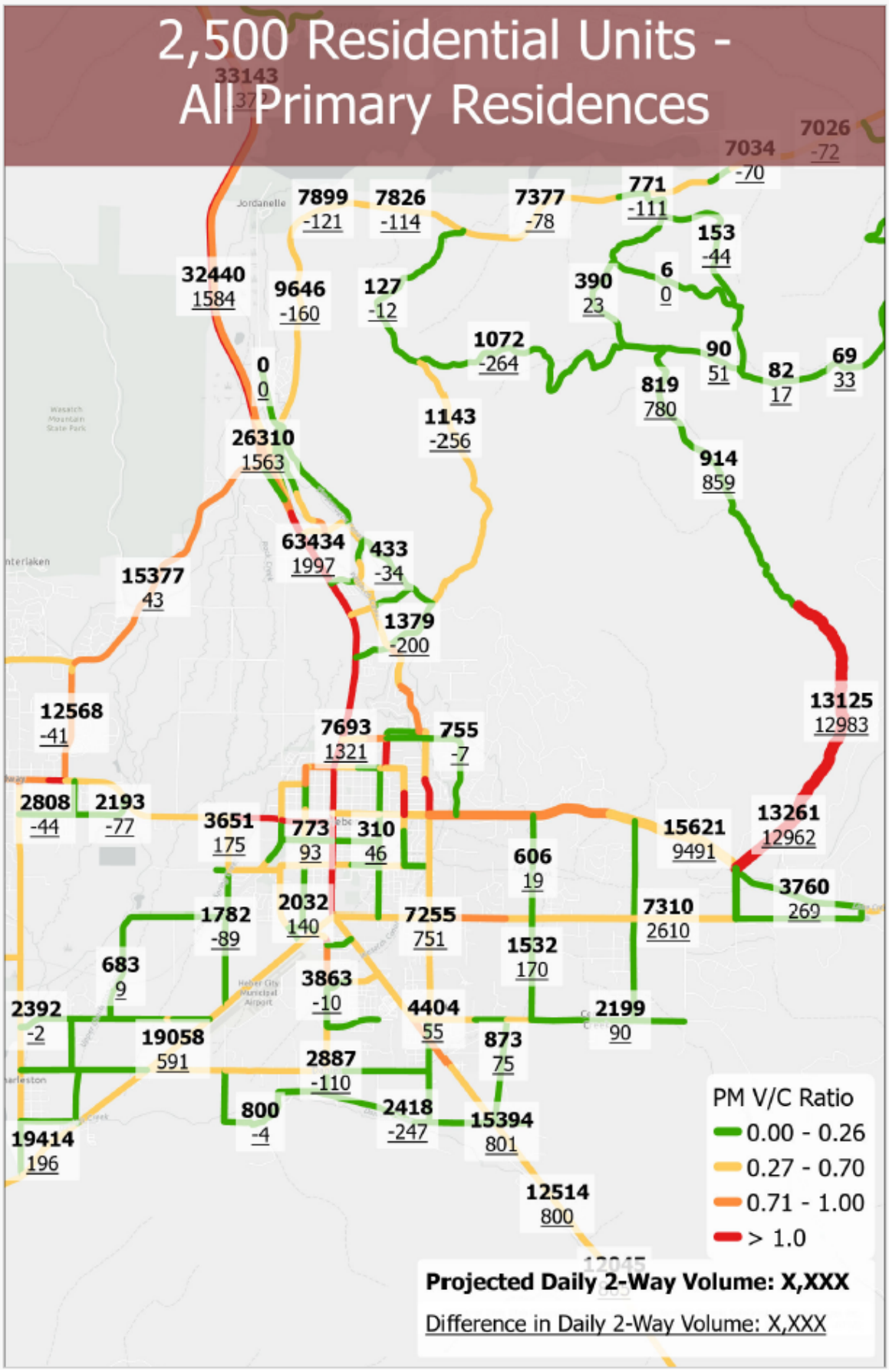
> 1.0
Projected Daily 2-Way Volume: X,XXX


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
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0
819
780
1143
-256
26310
1563
914
859
63434
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433
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1379
-200
12568
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1321
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2808
-44
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683
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-10
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PM V/C Ratio
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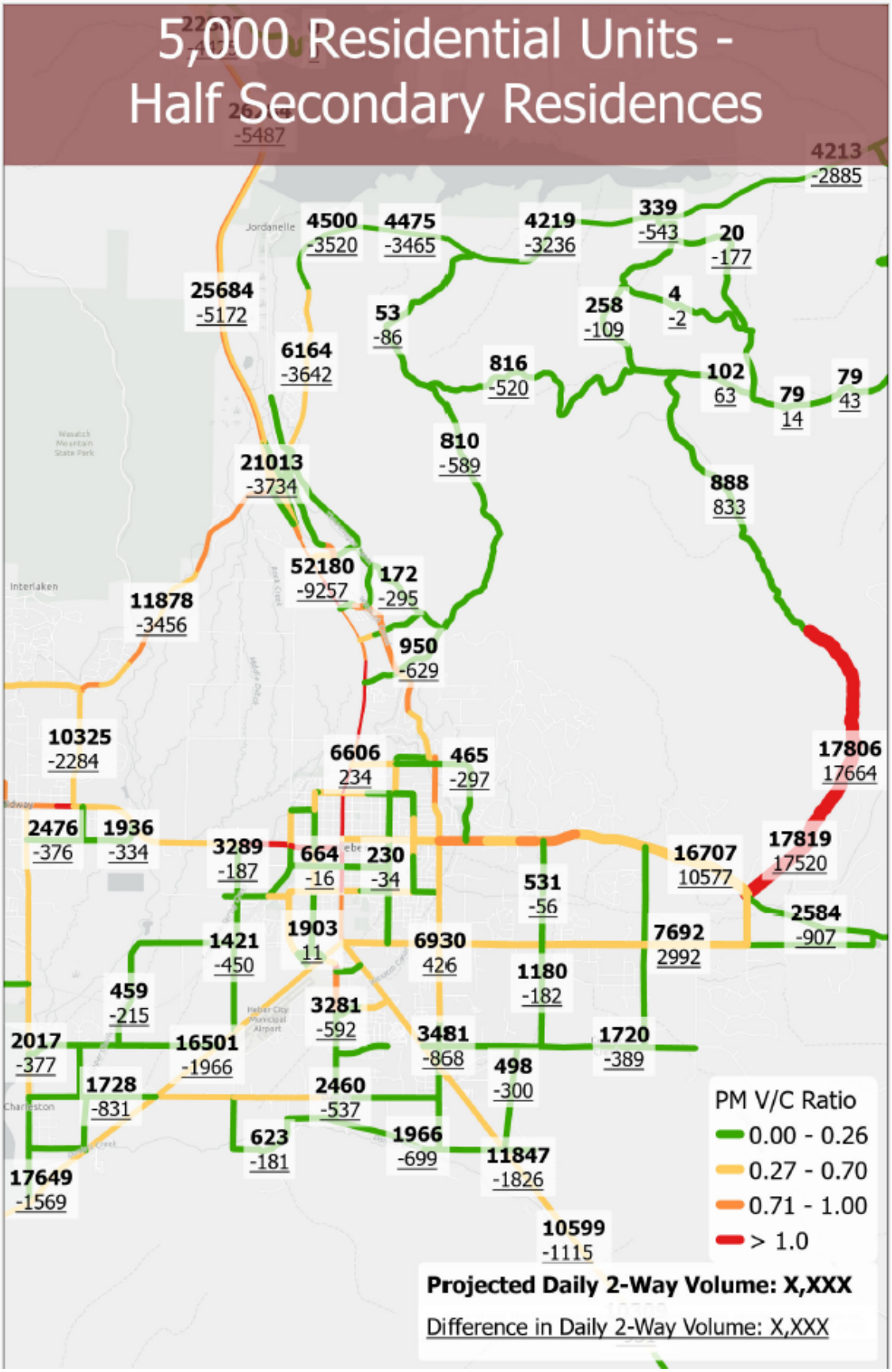
> 1.0
Projected Daily 2-Way Volume: X,XXX
Difference in Daily 2-Way Volume: X,XXX


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
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-34
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1903
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6930
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7692
2992
2584
-907
1421
-450
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-182
459
-215
3281
-592
3481
-868
1720
-389
2017
-377
16501
-1966
498
-300
1728
-831
2460
-537
623
-181
1966
-699
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-1826
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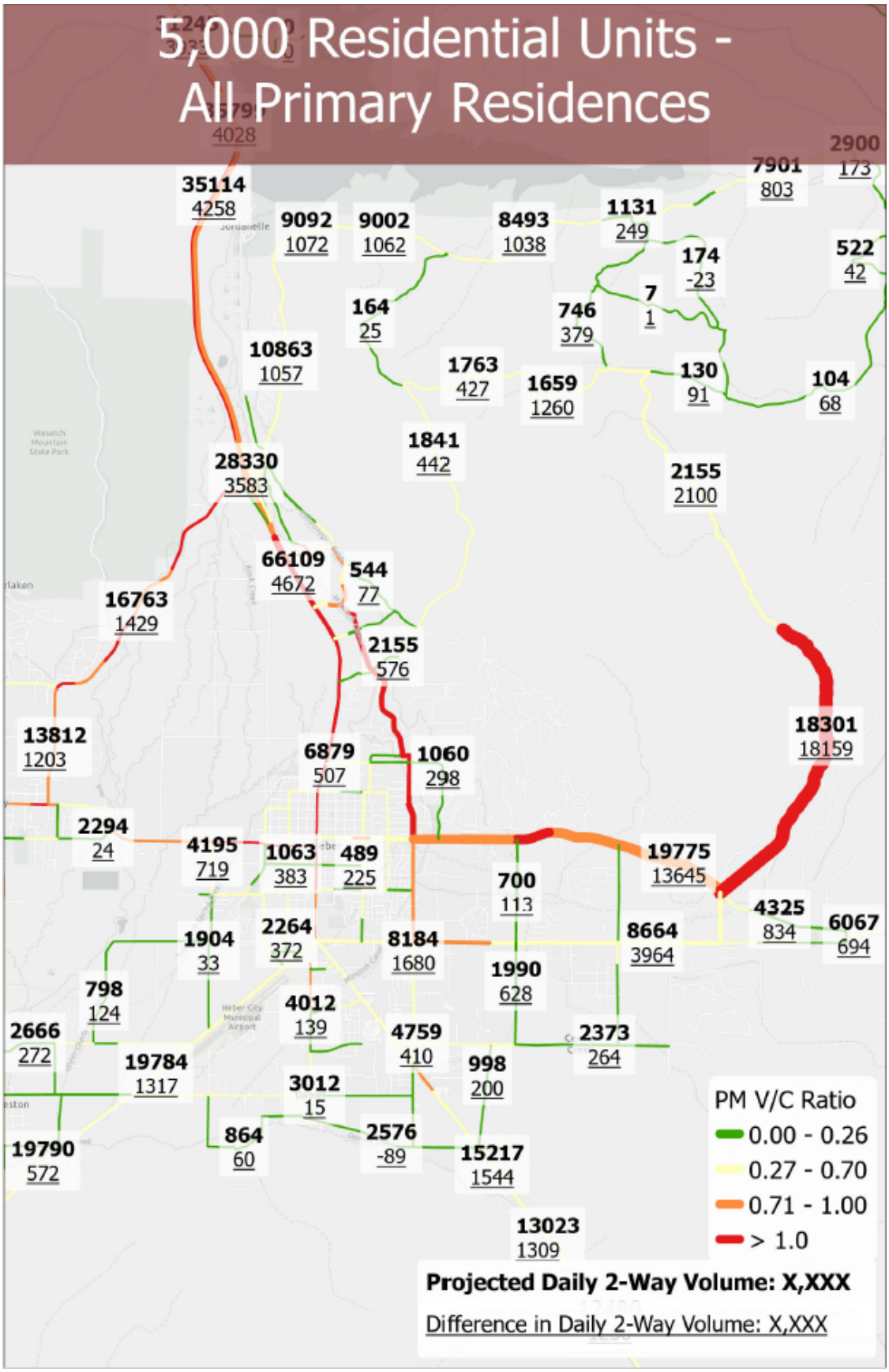
PM V/C Ratio
0.00 - 0.26
0.27 - 0.70
0.71 - 1.00
> 1.0
Projected Daily 2-Way Volume: X,XXX
Difference in Daily 2-Way Volume: X,XXX


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
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746
379
164
25
10863
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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
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2264
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8184
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1990
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124
4012
139
4759
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2373
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272
19784
1317
998
200
3012
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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

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.

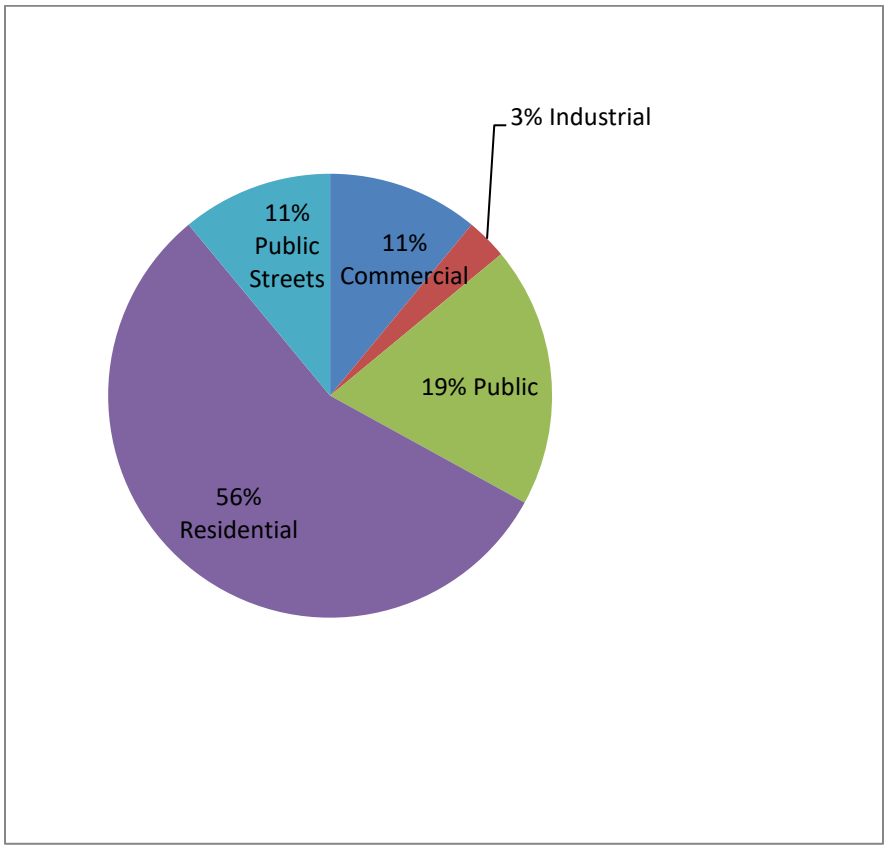
NEED FOR RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL LAND

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.

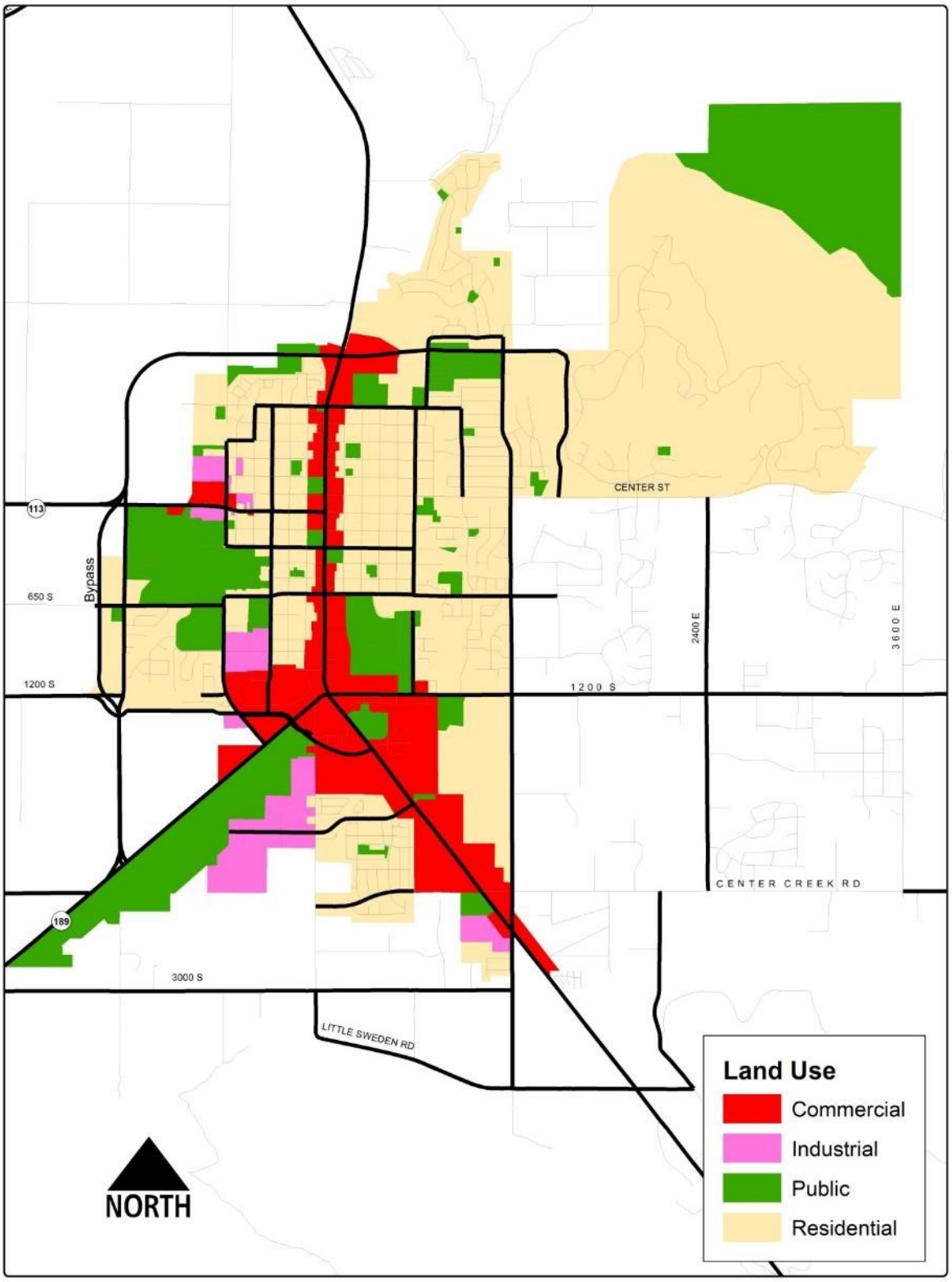
20 Year Land Needs

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.

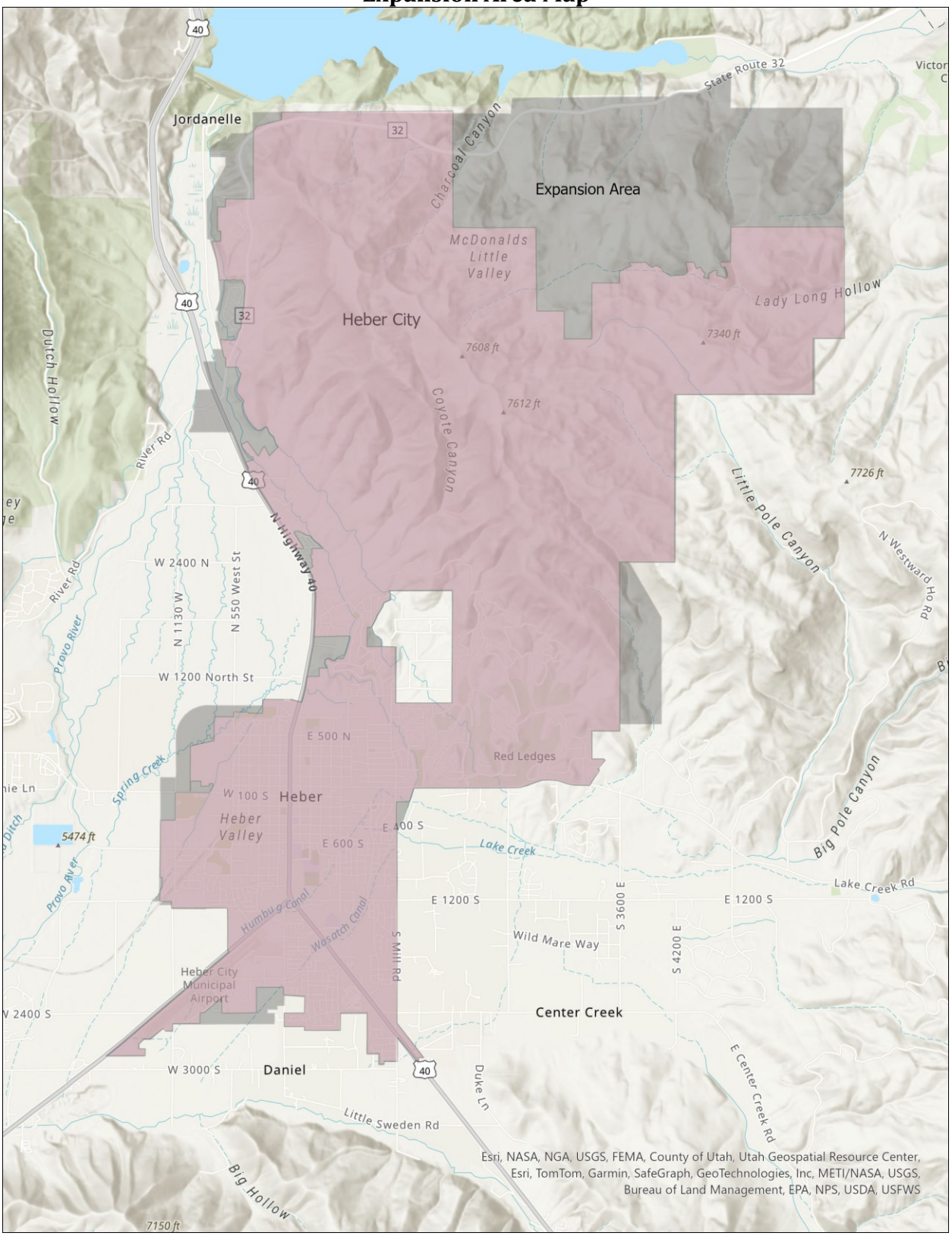
South Fields

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

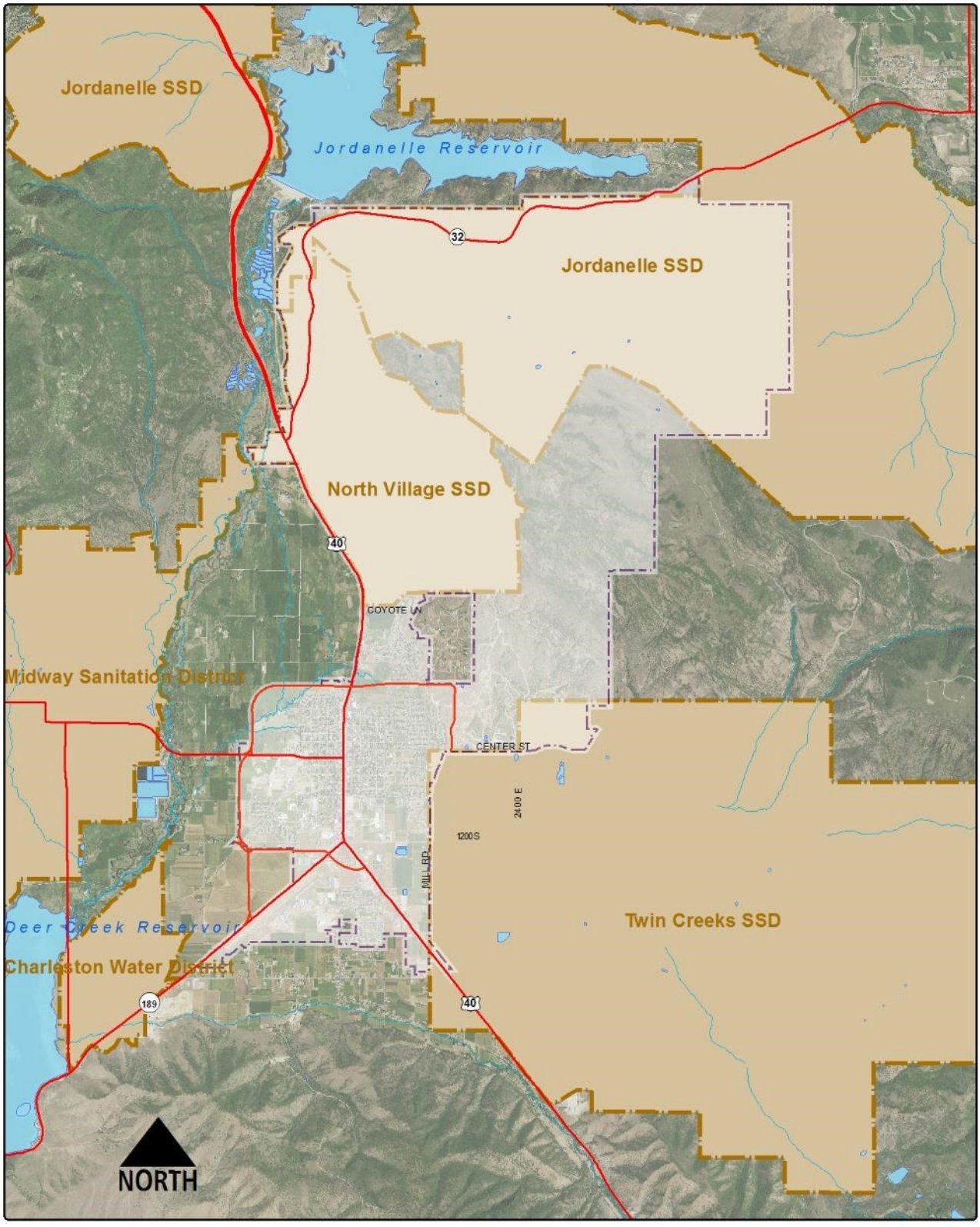
The plan for extension of municipal services is represented in the General Plan and the Capital Facilities Plan. This policy document is developed around the General Plan's Land Use Map. An important component of this extension of municipal services is the ability of the City to effectively serve these 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,

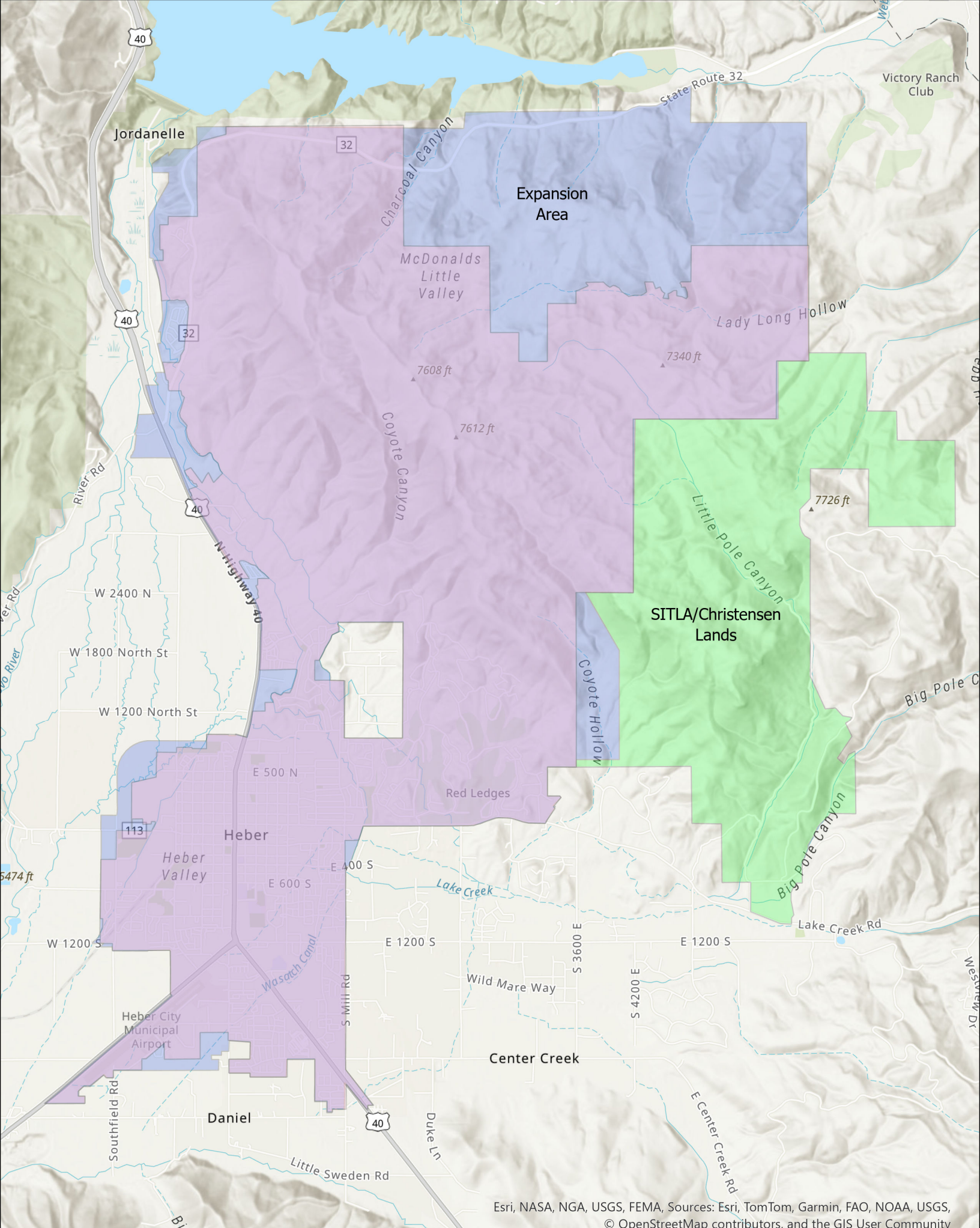
Ron Phillips

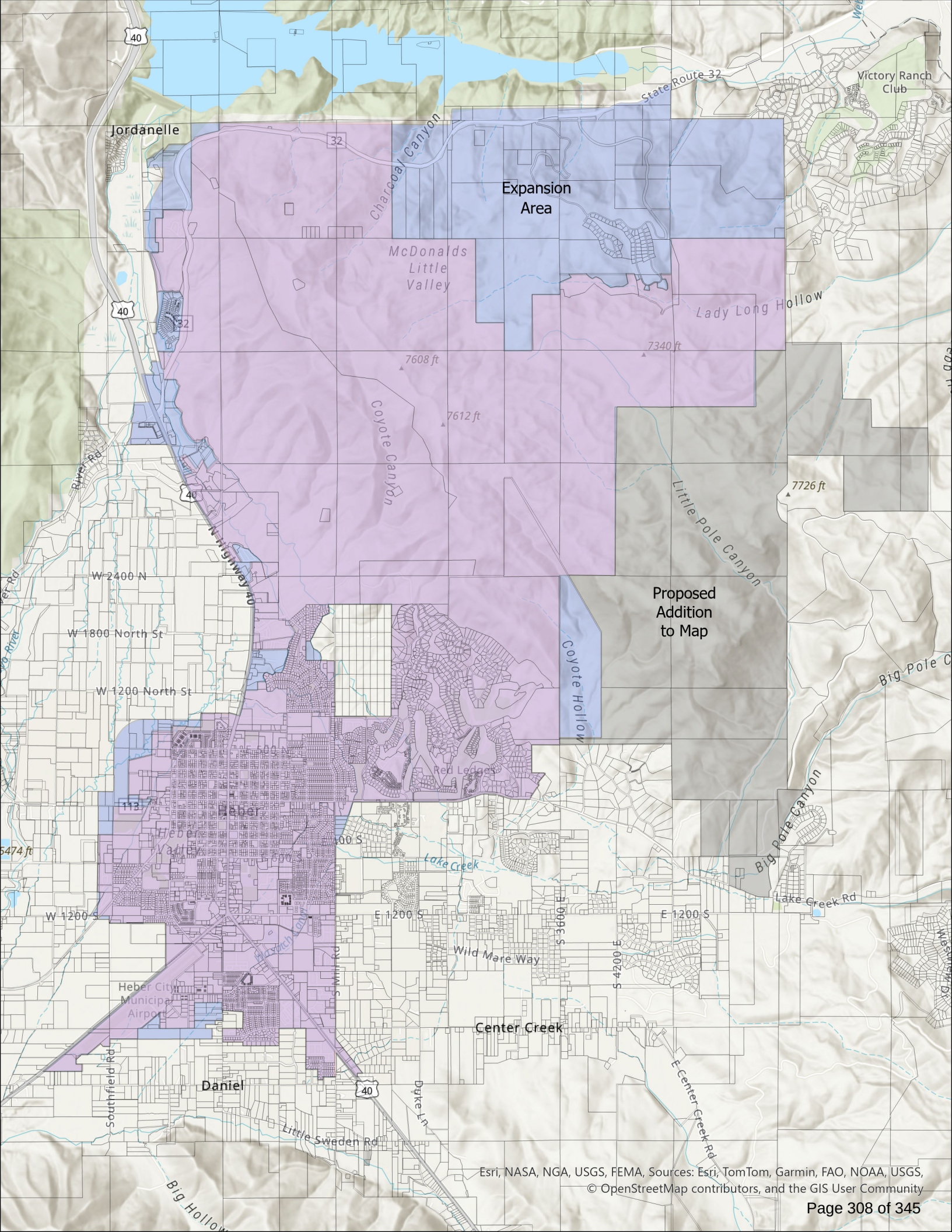
Ron Phillips
General Manager of JSSD, NVSSD, and TCSSD

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.


Expansion Area
SITLA/Christensen Lands
Jordanelle
Victory Ranch Club
State Route 32
Charcoal Canyon
McDonalds Little Valley
Lady Long Hollow
7340 ft
7608 ft
7612 ft
7726 ft
Coyote Canyon
Little Pole Canyon
Coyote Hollow
Big Pole Canyon
River Rd
N Highway 40
W 2400 N
W 1800 North St
W 1200 North St
E 500 N
Red Ledges
Heber
Heber Valley
E 400 S
E 600 S
Lake Creek
Lake Creek Rd
W 1200 S
E 1200 S
S 3600 E
S 4200 E
Wasatch Canal
S Mill Rd
Wild Mare Way
Heber City Municipal Airport
Center Creek
Daniel
Southfield Rd
Duke Ln
E Center Creek Rd
Little Sweden Rd
Big Hollow
Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community


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
S Mill Rd
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

Planning Commission Staff Report

MEETING DATE:	1/28/2025
SUBJECT:	Central Heber Overlay Zone & Historic Building Use Ordinances (Tony Kohler)
RESPONSIBLE:	Tony Kohler; John Janson
DEPARTMENT:	Planning
STRATEGIC RELEVANCE:	Community Development

SUMMARY

As part of the Phase 3 Envision Heber Code Update, the Central Heber Vision suggested providing more housing and commercial use options in the neighborhoods to the east and west of Main Street and along Midway Lane. The current overlay for Midway Lane was to be enlarged and updated, more housing options provided in the neighborhoods, and a transition zone from Main Street into the neighborhoods were all part of the Vision that was adopted as an update to the City's General Plan.

Through recent meetings, decisions were made to consider just two sub-districts, the Central Neighborhoods, and the Transition Corridors District, because two of the earlier proposed districts were not that much different.

This work session staff report includes the new draft text for the CHOZ which includes the two sub-districts mentioned above. It also includes a new overlay specific to historic homes to allow for greater use flexibility, to hopefully provide more options for long term retention of these historic homes.

Included is the presentation that was made to the City Council during their retreat. Many of the slides could be used for the posters in an open house.

A schedule for the adoption process is included for your review.

RECOMMENDATION

Staff recommends the Planning Commission study the proposed drafts and provide comments to enable revisions prior to an open house and the Planning Commission Public Hearing.

BACKGROUND

Envision Heber Phase 3, included the Vision for Central Heber, a grass roots process that created a series of recommendations for the Downtown area.

These ordinance amendments are a result of the contract with People + Place, John Janson, Logan Simpson design for graphics, and the Planning Department staff. The proposals within the drafts include policy suggestions and are essentially new overlay zones for your review.

DISCUSSION

Within the general CHOZ Overlay, there are two sub-districts: Central Neighborhoods for the neighborhoods, and the Corridor Transition District (east and west of Main Street and along Midway Lane). The intent of each district is as follows:

Central Neighborhoods District (CND). The Central Neighborhoods District, as part of the Central Heber Overlay Zone, has been established to allow for various forms of infill. These include flag lots, small lots, and certain missing middle housing types. The CND adds additional housing flexibility to the R-2 and R-3 zones in the Downtown area.
Transition Corridors District (TCD). The Central Heber Vision suggests an additional mix of uses could be considered as a transition to the residential neighborhoods east and west of the Main Street area and along Midway Lane. The Transition Corridors District (TCD) has been established to promote limited uses with a mix consisting of residential and commercial uses. The mix of uses would allow for medium to higher density residential uses, with occasional corners for lower intensity commercial uses. A portion of the TCD, between 150 West and 150 East, has been identified by the Central Heber Vision, as an area to be considered for rezoning to C-3 Commercial.
Use Options for Historic Homes in the Central Heber Overlay Zone. As a new chapter this draft ordinance provides for additional use options for historic buildings with certain architectural features. The intent is to provide additional income possibilities that could assure the continuation of these older buildings. If the area becomes eligible for an historic designation or additional homes get designated, businesses within the dwellings can help provide tax credits to the property owner.

Additional uses are proposed, especially for various housing types. Some new housing concepts are proposed including, flag lots, smaller lots (based on your current infill ordinance), courtyard buildings, and.
Some spatial requirements have been made more flexible but all development types will accommodate needed easements for Public Works.
Design standards are based on the type of building being proposed.
A new small lot concept is also suggest which would allow for a detached ADU-like lot access by a permanent easement.

The suggested process leading to adoption includes a public open house for February 5th (poster session for the CHOZ sub-districts and historic homes use flexibility) with a possible public hearing with the Planning Commission on March 11th. Since the State Law did not change this past session, it is suggested that the open house and public hearing be advertised together via a mailed notice to all property owners within the CHOZ.

FISCAL IMPACT

None at this time.

CONCLUSION

The CHOZ is intended to implement the Central Heber Vision.

ALTERNATIVES

N/A

POTENTIAL MOTIONS

ACCOUNTABILITY

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

EXHIBITS

1. CHOZ
2. CHOZ 1-28-25 Draft
3. Historic Uses

HEBER CITY
EST 1889
PLANNING

ENVISION
CENTRAL HEBER

Central Heber Overlay Zone (CHOZ)

January 28, 2025

Tentative Schedule

- **JAN 28, 2025, 6 PM:** PC review of Process
  - Central Heber Overlay Zone
  - Historic Building Reuse
  - Historic Board Invitation
  - Calendar Review
- **FEB 11, 2025:** Property Owner Notice for PC Hearing
- **FEB 27, 2025, 6 PM:** Open House (Location TBD)
- **MAR 11, 2025, 6 PM:** PC Public Hearing
- **APR 8, 2025, 6 PM:** PC Deliberation & Recommendation
- **MAY 20, 2025, 4 PM:** CC Work Meeting (TBD)
- **JUN 3, 2025, 6 PM:** CC Work Meeting/Decision (TBD)
- **JUN 17, 2025, 6 PM:** CC Decision (TBD)

Envision Heber 2050

General Plan

The "Why & What"

General Policies such as:

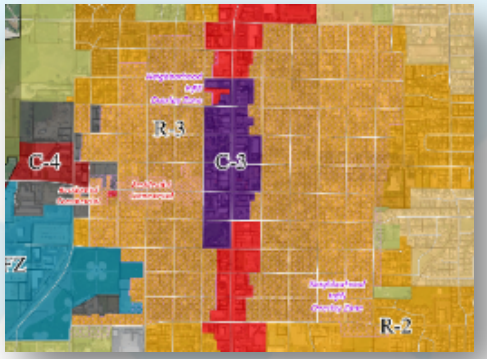
- Land Use Goals
- Land Use Map

Implementation Tools

The "How"

Specific Policies such as:

- Zoning Map
- Zoning Ordinance
- Capital Facilities Planning



Envision Central Heber

- Part of Heber City's General Plan
- Adopted December 5, 2023
- Extensive public process in 2023
- New future vision for Central Heber
- Recommends changes to current adopted policies
  - Revise 1972 Zoning Ordinance
  - Revise 1972 Zoning Map

CENTRAL HEBER VISION

The heart of our community and region, Central Heber is a destination area featuring unique shopping, dining, and gathering areas for residents and visitors who enjoy a welcoming and peaceful environment with a sense of history and place in a beautiful mountain valley. Downtown is our economic catalyst, featuring our historic center and working, living, and public gathering areas in a mixed use environment, which help support street level retail, restaurants, and entertainment. Outdoor-oriented local and regional recreation are features at our Recreation and Arts Destination, which is the place to go to enjoy the train, rent a bike, enjoy a ballgame, or plan regional recreational adventures. Heber's quiet central neighborhoods provide places to live that are rooted in our history while also conveniently located nearby places to work, play, shop and dine.

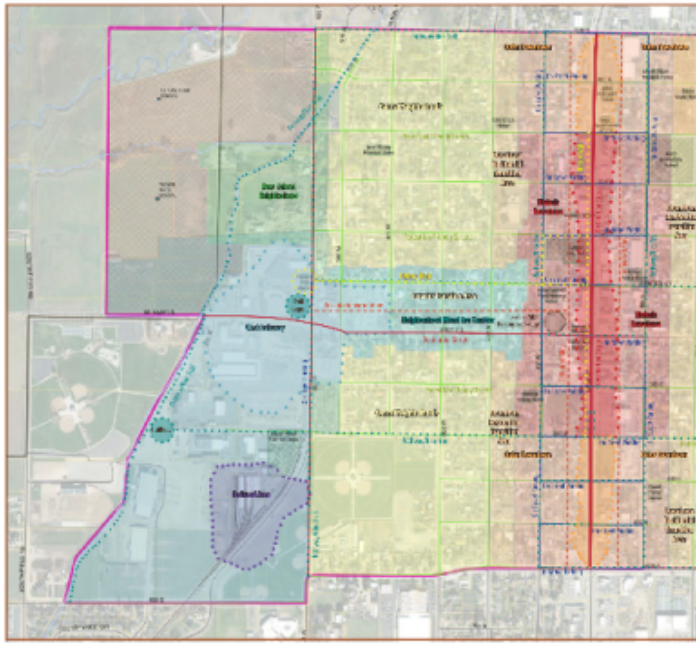
GENERAL RECOMMENDATIONS

1. Highlight Heber's sense of history and place in a beautiful mountain valley, and its welcoming and peaceful environment.
2. Create a walkable, bikeable central city, with safe and pleasant streets.
3. Connect destination places and districts with interesting, pedestrian-friendly routes.
4. Create increased living and working opportunities in the Downtown area, for economic resilience and to better support uses like shopping, dining, gathering, and entertainment.
5. Activate and connect public spaces on Main Street, including Heber City Park, Civic Center Block, and the Public Safety Block, adding amenities, activities, and attractions that people return to again and again.
6. Enliven the streets in Heber's Downtown with features that provide interest and comfort and encourage repeat visits.
7. Create a new recreation/lifestyle gateway on the west side of town that supports existing and new arts, recreation, tourism, and outdoor-oriented pursuits, better positioning Heber as a destination for regional recreational opportunities.
8. Provide a small neighborhood dining/shopping area near the train station to provide amenities adjacent to tourism and sporting events.
9. Create a new missing middle neighborhood east of the planned high school to provide needed housing options.
10. Preserve Central Heber's neighborhoods, enhancing their quiet, friendly atmosphere while providing options for new housing that fits into the historic fabric.

THE RECREATION & ARTS DISTRICT

The western gateway into Heber from Midway at 600 West and 100 South is anchored by a flex-space venue and plaza supporting the arts and recreational opportunities and lifestyle. It includes mixed uses focusing on meeting day-to-day needs of nearby residents and visitors, and supporting and promoting local and regional arts, recreation, and tourism opportunities. A small commercial area adjacent to the railroad depot provides convenient options for dining and services. Needed missing middle and more reasonably priced housing is provided east of the planned high school.

WEST GATEWAY | NEW SCHOOL NEIGHBORHOOD | RAILROAD AREA



THE DOWNTOWN DISTRICT

Downtown is characterized by a vibrant business environment and ample housing opportunities that support dining, shopping, playing, and gathering opportunities, providing a strong destination in the heart of Heber City. Historic Downtown (200 North to 300 South) features the richest suite of options for people to return to again and again, from restaurants and shops to inviting public spaces and streets, making the area a strong destination for residents and visitors. Alleys off Main Street as well as streets bisecting Main provide quieter spaces for shopping and dining. Outer Downtown (north of 300 North and south of 300 South) offers the greatest opportunities for working and living near Historic Downtown. The District as a whole features Downtown destinations for living and beautification.

HISTORIC DOWNTOWN | OUTER DOWNTOWN | DOWNTOWN RESIDENTIAL TRANSITION AREA

CENTRAL NEIGHBORHOODS DISTRICT

In central neighborhoods, changes in housing is typical of older neighborhoods, maintaining and enhancing existing homes, rebuilding those that warrant it, there are no longer subdivisions, and adding attached accessory dwelling units. Detached accessory dwellings and flag lots are allowed to provide more neighborhood housing options, but in keeping with the low density character of single family residential area. The 100 South corridor between 600 West and Main includes new missing middle housing and neighborhood retail, restaurants, and services.

CENTRAL NEIGHBORHOODS & MIXED USE CORRIDOR

OUR DOWNTOWN IS FOR NURTURING COMMUNITY

As we grow Downtown will foster new places to gather and work, especially places for gathering together as a community, to share news, to express artistic flair or heritage. This is what makes a city life together and creates such a culture of being friendly, open, and welcoming.

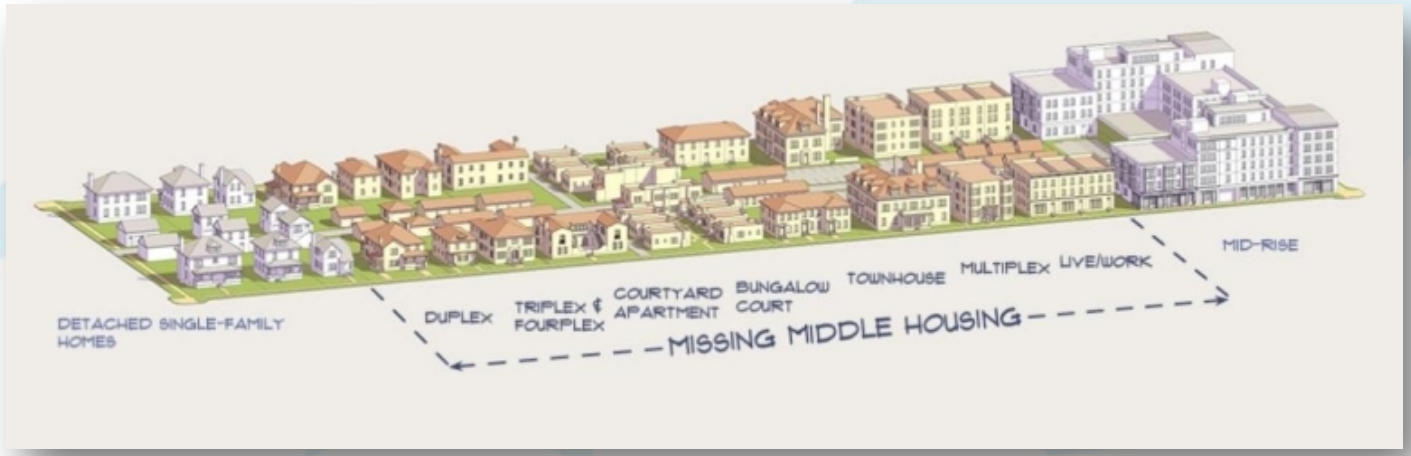
ENVISION CENTRAL HEBER

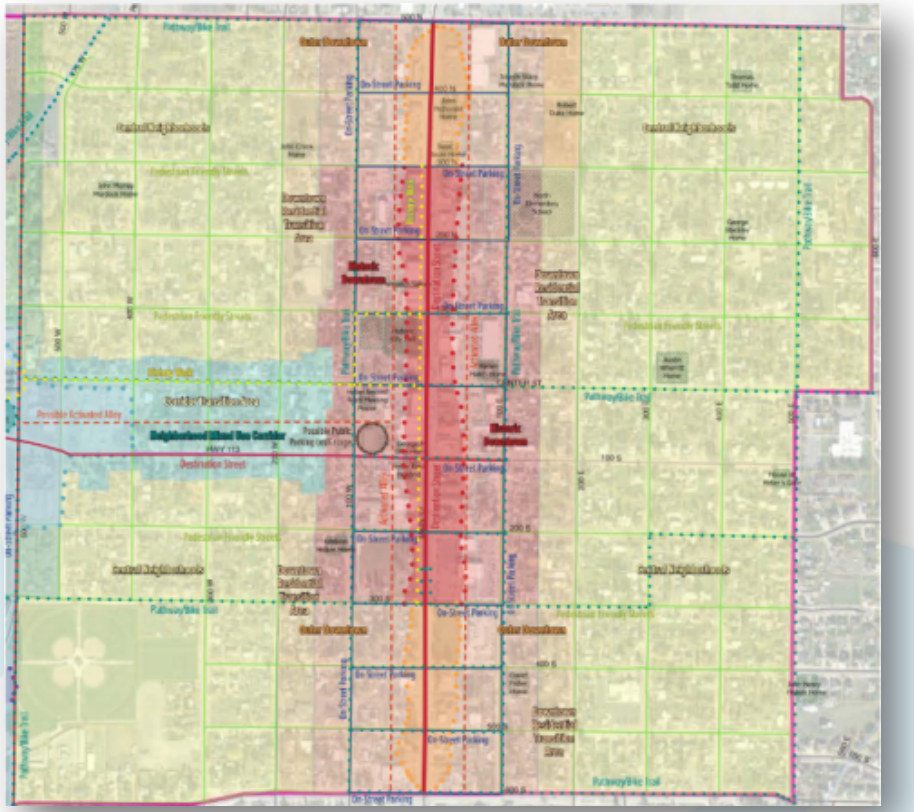
The “Why & What”: Envision Central Heber

ENVISION CENTRAL HEBER

Recommendations for Central Heber

- Mixed use housing
- Tourism based business along 100 South
- Redevelop/enhance housing
- Increase living & working opportunities
- Create Missing Middle Housing
- New options for housing





HEBER CITY PLANNING

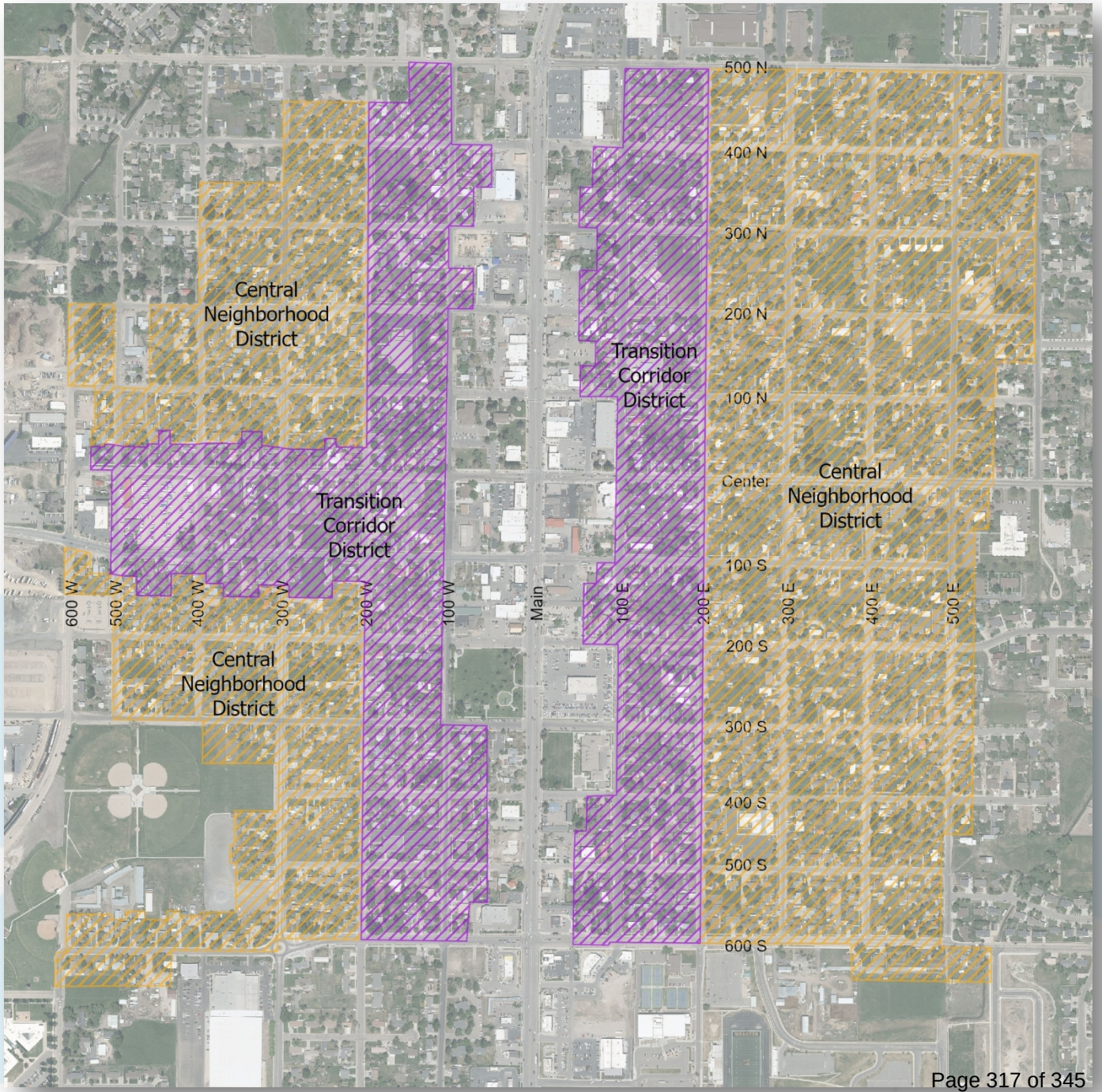
The “How”: Central Heber Overlay Zone (CHOZ)

Two Districts within CHOZ

1. **Central Neighborhood District (CND)**
- 200 E/W to 600 E/W
- Provide for lower intensity, flexible residential infill options that are compatible with existing residential neighborhoods

2. **Transition Corridor District (TC)**
- 100 E/W to 200 E/W
- 50 N to 150 S along Midway Lane
- Provide a moderate intensity, mixed residential-commercial transition area from existing commercial to existing residential, and from downtown connecting westward to the new high school area

ENVISION CENTRAL HEBER



Purpose of Central Heber Overlay Zone

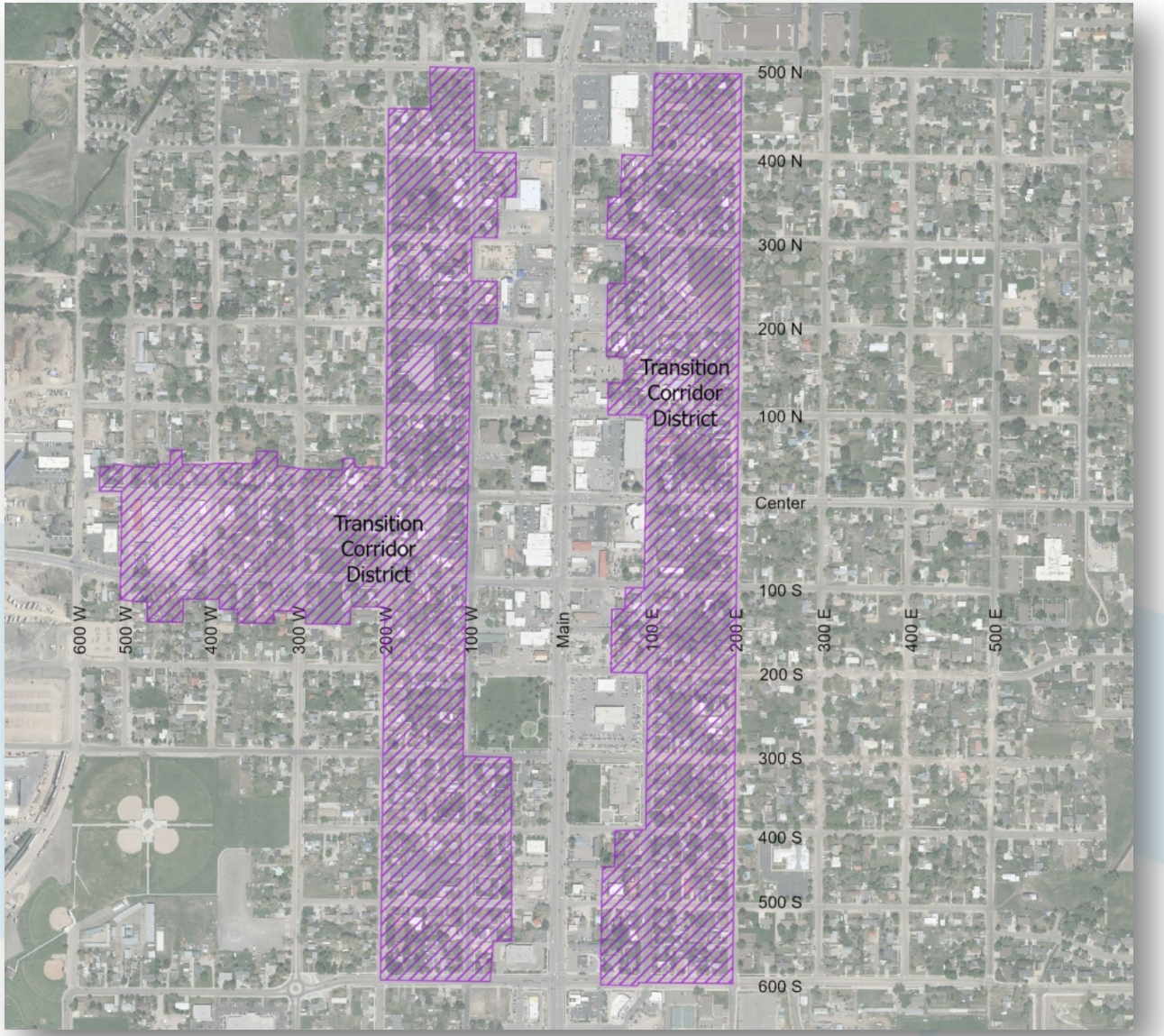
- **Central Neighborhoods District (CND)** is established to allow for various low intensity forms of infill, combined with options to preserve historic homes. Infill options include certain missing middle housing types and historic building use flexibility.

- **Transition Corridors District (TCD)** is established to permit a moderate intensity mixture of residential and commercial uses. The TCD serves as a transition area from the C-3 Commercial Zone westward and eastward of Main Street to existing residential neighborhoods. The district also serves as a connecting land use from the C-3 Commercial Zone westward to the area containing the new high school, railroad and Southfield Park. The TCD promotes missing middle housing types, historic building use flexibility, mixed use buildings and lower intensity commercial uses.

Transition Corridors (TCD)

Place a Green dot for "like" & a Red dot for "dislike"

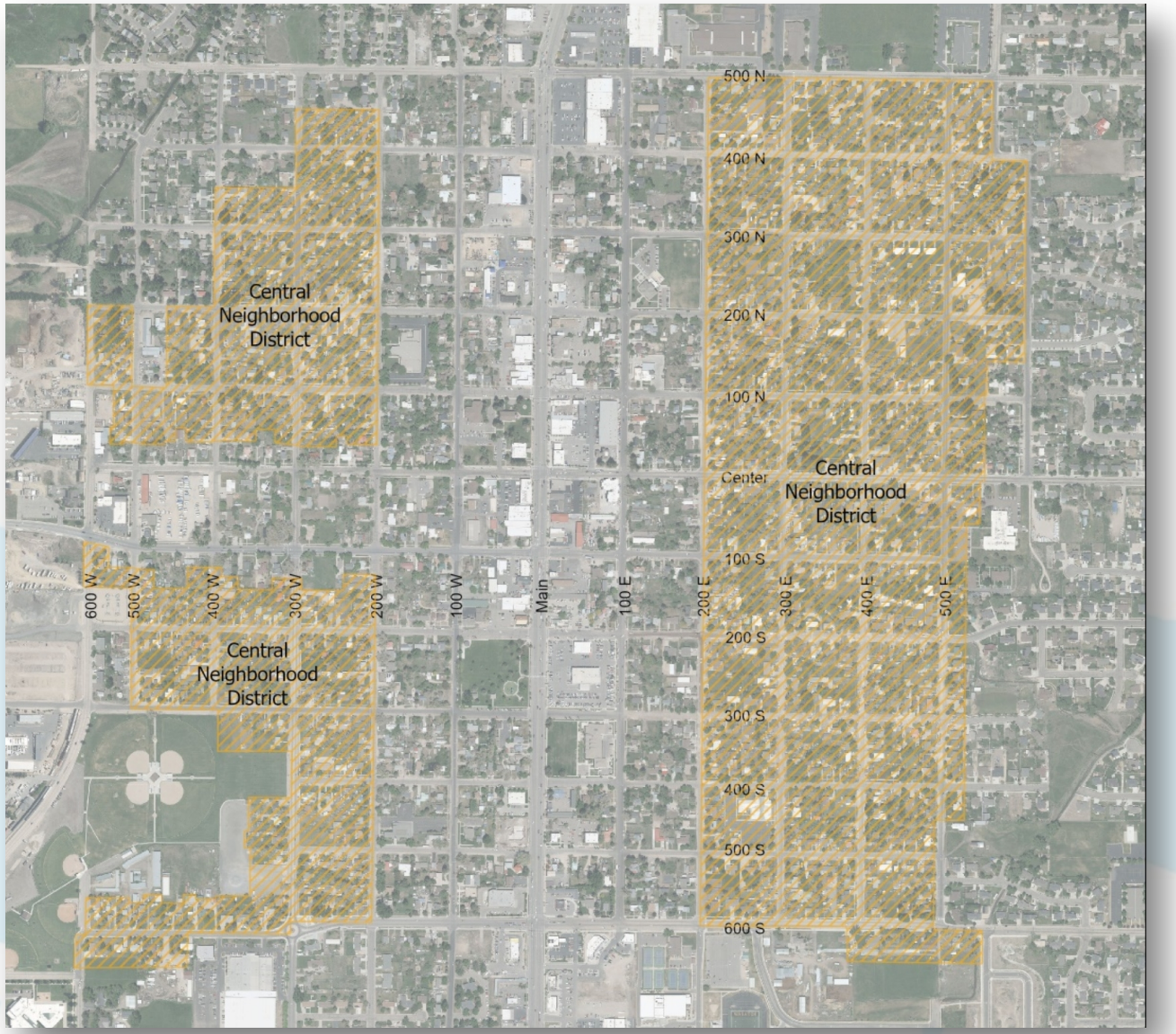
- Commercial Buildings
- Duplex & Twin Home
- Flag Lots
- Mansion Style Apartments
- Multi-family Courtyard
- Mixed Use Buildings
- Subordinate Detached ADU
- Townhouses



Central Heber Neighborhoods District (CND)

Place a Green dot for "like" & a Red dot for "dislike"

- Duplex and Twin Home
- Flag Lots
- Historic Building Additional Uses
- Mansion Style Apartments (conditional)
- Small Lots
- Subordinate Detached ADU
- Townhouse (conditional)



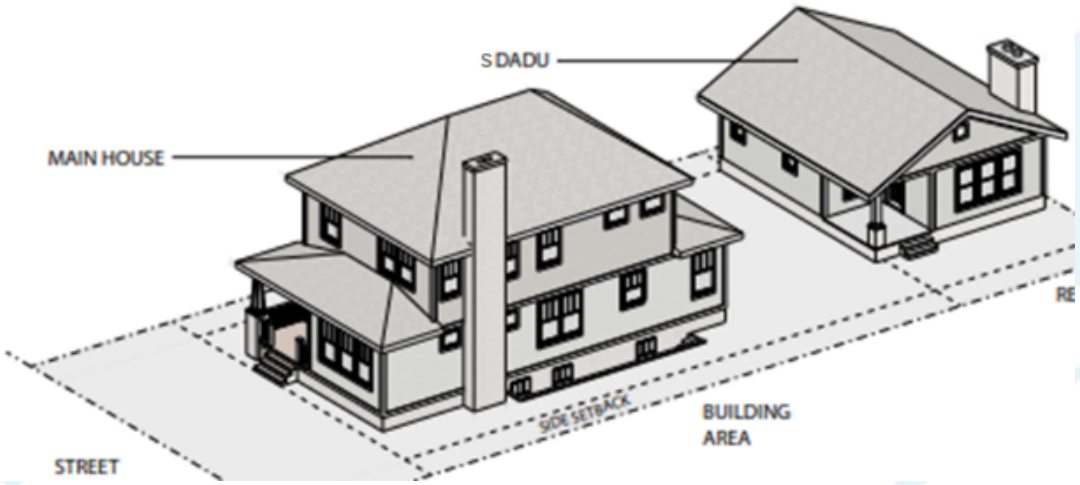
Flag Lots and Subordinate Detached ADU

For each category below, place a *Green* dot for "like" & a *Red* dot for "dislike"

ENVISION CENTRAL HEBER

Flag Lots

Subordinate Detached ADU



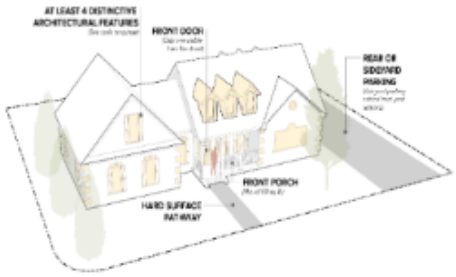
Duplexes/Twin Homes & Mansion Style Apartments

For each category below, place a *Green* dot for "like" & a *Red* dot for "dislike"

ENVISION CENTRAL HEBER

Duplexes/Twin Homes

Mansion Style Homes



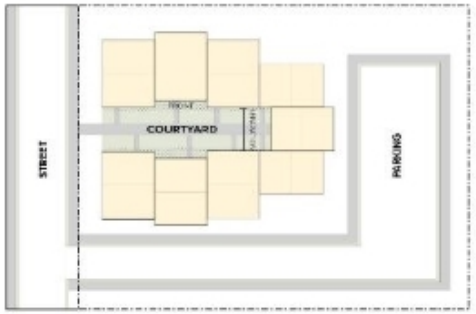
Townhouses and Multi-Family Courtyard Homes

For each category below, place a *Green* dot for "like" & a *Red* dot for "dislike"

ENVISION CENTRAL HEBER

Townhouses

Multi-Family Courtyard Buildings



Design features for multi-family buildings

Place a *Green* dot for "like" & a *Red* dot for "dislike"

ENVISION
CENTRAL HEBER

- Brick, rock/stone, board and batten wood siding
- Balconies (for multi-family homes)
- Doors on the street with patios/porches
- Rear loaded garages
- Pitched roofs and/or decorative varying height parapets
- Open space type playground or recreational features
- Rooftop patios (townhouses)
- 35 foot height limit

Mixed-Use Buildings (Permitted in TCD only)

Please focus on features not style – Place a *Green dot for "like" & a Red dot for "dislike"*

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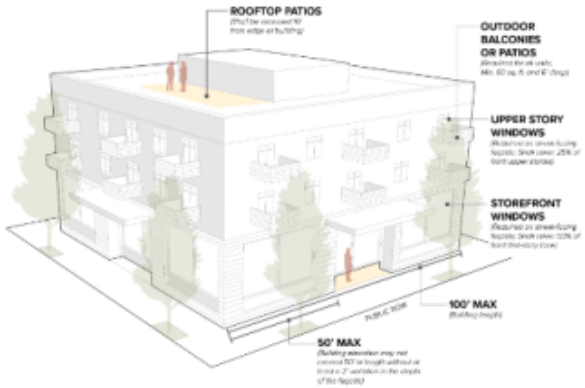
- First floor commercial use
- Awnings
- Upper story balconies
- Materials – brick, stone, composites
- Stepbacks on upper floors
- Façade indentations
- Gooseneck light fixtures
- Defined sign spaces
- Varying height parapets
- 35 foot height limit



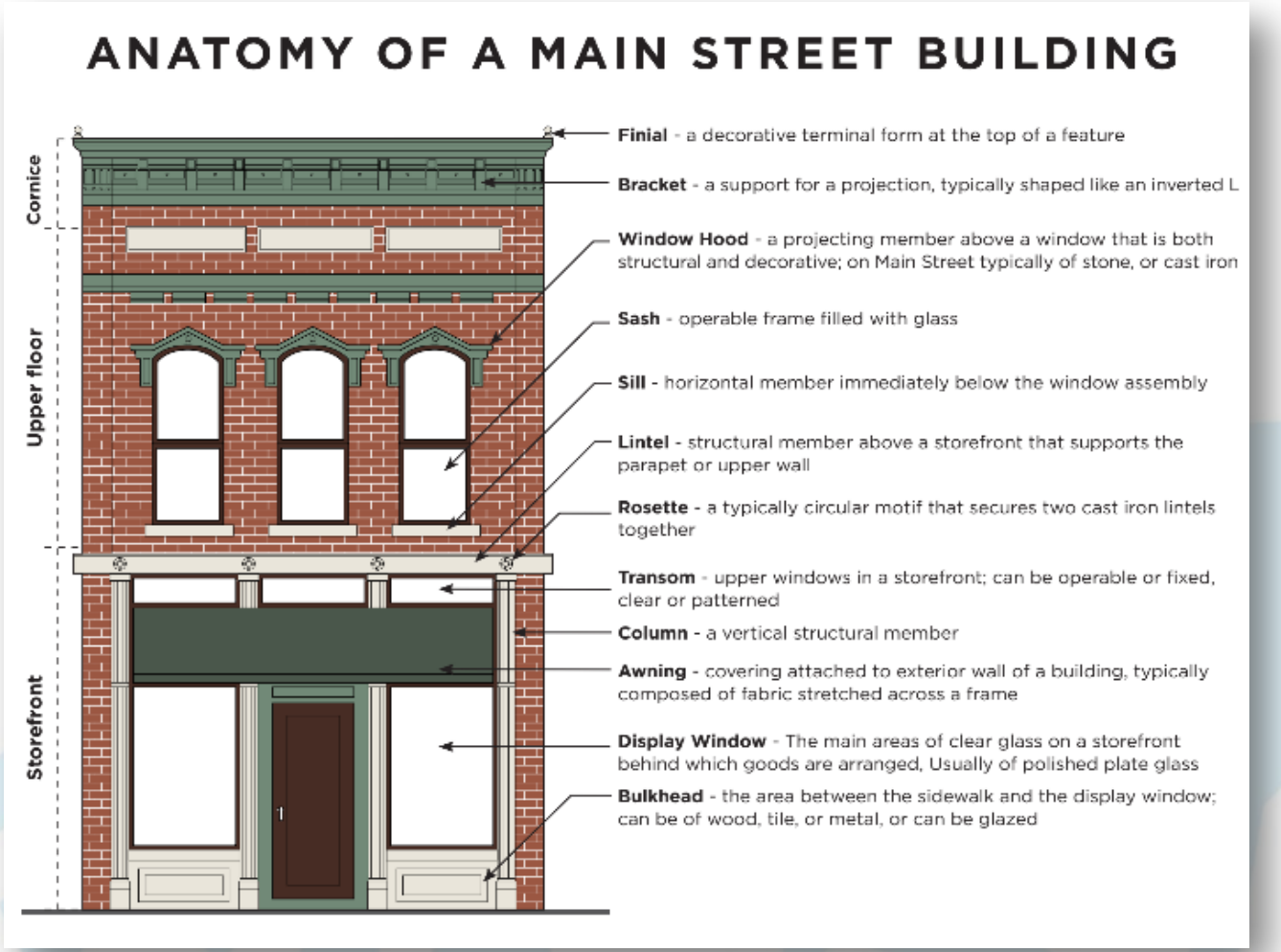
Commercial Buildings (Permitted in TCD only)

ENVISION
CENTRAL HEBER

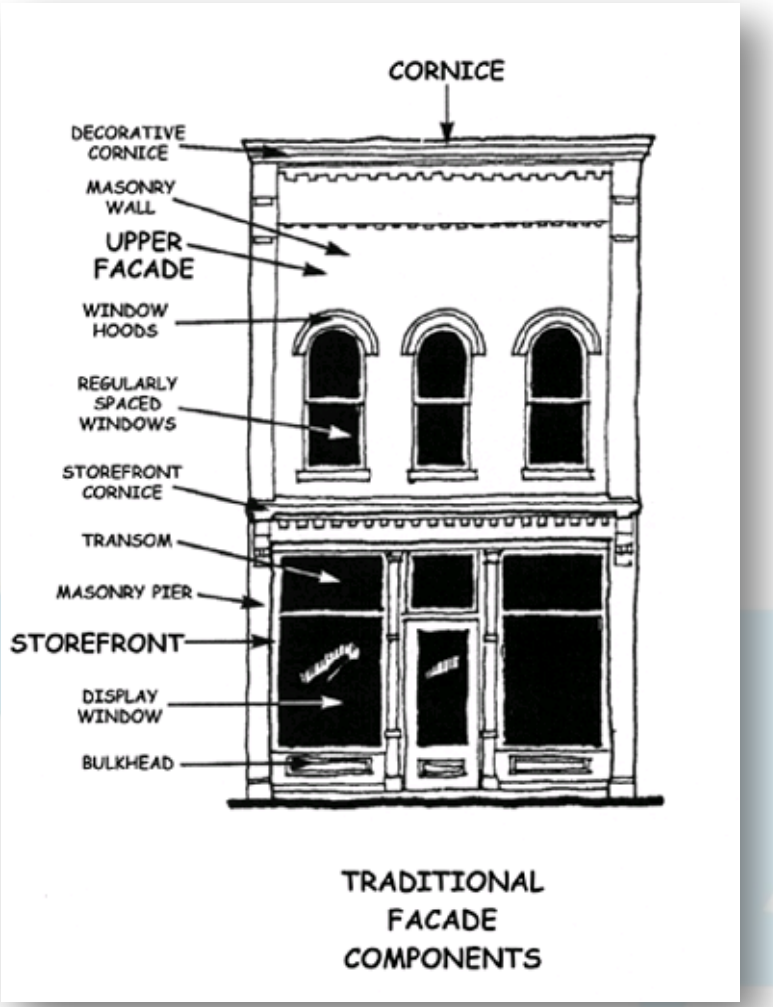
Commercial Buildings (Permitted in TCD only)

Please focus on features not style - Place a *Green dot for "like"* & *Red dot for "dislike"*

Detailed Standards



Simplified Standards



Historic Building Use Flexibility

Place green dots on your favorite uses

- Bed & Breakfast
- Commercial Daycare (TCD only)
- Instructional/private schools
- Mansion Style Housing
- Minor retail/sales/galleries
- Offices
- Personal services
- Restaurant/Bakery/Coffee shop

18.83 Central Heber Overlay Zone (CHOZ)

Draft Date: January 22, 2025

18.83.010 Purpose
18.83.020 Permitted and Conditional Uses
18.83.030 Spatial Requirements
18.83.040 Design Requirements
18.83.050 Visual Screening
18.83.060 Definitions
18.83.070 Related Provisions

18.83.010 Purpose

To implement the Central Heber Vision of the General Plan, the Central Heber Overlay Zone (CHOZ) is hereby created to include two distinct land use districts. If the use of the Overlay is desired by an applicant, the uses and standards of this chapter shall apply.

A. **Central Neighborhoods District (CND)** is established to allow for various low intensity forms of infill, combined with options to preserve historic homes. Infill options include certain missing middle housing types and historic building use flexibility.
B. **Transition Corridors District (TCD)** is established to permit a moderate intensity mixture of residential and commercial uses. The TCD serves as a transition area from the C-3 Commercial Zone westward and eastward of Main Street to existing residential neighborhoods. The district also serves as a connecting land use from the C-3 Commercial Zone westward to the area containing the new high school, railroad and Southfield Park. The TCD promotes missing middle housing types, historic building use flexibility, mixed use buildings and lower intensity commercial uses. A portion of this area, located between 150 W/E to the C-3 Commercial Zone, has been identified by the General Plan as an area to be considered for rezoning to the C-3 Commercial Zone, in the future.

18.83.020 Permitted and Conditional Uses

The underlying zone uses remain. The CHOZ includes additional uses and limitations as described below. In order to accomplish the objectives and purposes of this title and to stabilize and protect the essential district characteristics, the following uses are allowed the CHOZ:

A. **Land Use Regulations Terms**
   P = PERMITTED USE (P) A site plan application is required with staff processing. Site plan applications are approved, when and if they meet the ordinance standards.
   C = PLANNING COMMISSION CONDITIONAL USE REVIEW (C). A site plan application with Planning Commission review is required.
   N = not allowed in the particular overlay area
B. Within the Table, if a use is not specifically designated below, then it is prohibited, except as specified in the underlying zone.
   All uses listed in the use table, that require a building permit shall also require a site plan application.

18.83.020.1 Permitted and Conditional Use Chart

Land Use	CND	TCD	Limitations
Residential (less than 6 units per building)	P	P	See Section 18.83.040 for permitted building types per district
Residential (more than 6 units per building)	C	P	See Section 18.83.040 for permitted building types per district
Artist studios & live-work	N	P	
Office, Retail, Services and Secondhand Stores	N	P	• Max 5000 sf footprint • See note 1 below • Tattoo parlors, tobacco shops, adult related businesses, pawn shops & cannabis facilities are prohibited)
Cafes/restaurants, bakery, outdoor dining	N	C	• No drive-up windows • No fast food • See note 2 below
Hotels	N	C	See note 1 below
Medical offices, clinics	N	P	See note 1 below
Institutional/Religious, Museums & Public Uses	C	P	
Fitness centers & gymnasiums	N	P	See note 1 below
Commercial day care	N	P	As regulated by State Law
Home occupations, home based pre-school, daycare and micro-school	P	P	As regulated by Section 18.68.609 & State Law
Public/Private schools	P	P	As regulated in State Law and Section 18.68.230
Signs	N	P	• As regulated by Section 18.104 • Further limited to one monument sign (max 15 square feet and 4' in height) with a rock/brick base, and one wall sign (max 24 square feet and 3' in height) or one projecting sign (as per the standards in 18.104)

Note 1 - For the TCD, permitted only for properties fronting 100 South and for properties fronting 100 East and 100 West

18.83.030 Spatial Standards

A. The minimum spatial standards shall be as set forth in the underlying zone, with the addition of Small lots, Flag lots and SDADUs, as described below.
B. The maximum height of all principal structures shall be thirty-five feet and accessory buildings shall follow the requirements of the underlying zone.

Table 18.83.030.1 Spatial Requirements by Building Type*

Frontage	Min Front Setback	Min Rear Setback	Min Side Setback	Min Area & Depth	Max Height
98 foot min for courtyard building; All other buildings must meet the frontage requirements of the underlying zone	15 feet min from public right of way; 10 feet min for flag lots from PUE/access easement to any building	15 feet to property line	5 feet min to each side property line; 15 feet min from public right of way	98 foot min depth for corner lots	20 foot max for flag lots; 35 foot max for all other buildings

*Other standards may apply elsewhere in this code.

18.83.040 Building Typologies & Design Requirements

Table 18.83.040.010 Permitted Building Type per District

Building Typology	CND	TCD
Courtyard Residential Building	N	P
Small lot	P	N
Flag lot	P	P
Subordinate Detached Accessory Dwelling Unit (SDADU)	P	P
Detached and Internal Accessory Dwelling Unit (ADUs)	P	P
Duplexes & Twin Home	P	P
Commercial Building	N	P
Mixed Use Building	N	P

A. Those who desire to convert homes, lots or other buildings to commercial use or multi-family use shall maintain the required landscaping. No parking is allowed in a front yard.

B. Rooftops may be used as garden type open space, and/or passive recreation space.

C. All Rooftop Heating, Ventilating, and Air Conditioning equipment (HVAC) shall be enclosed or screened such that it is not readily recognizable as HVAC equipment.

D. Special Standards for certain uses and structures.

1. Non-residential uses shall not produce noise exceeding fifty-five (55) decibels as measured at the property line, vibration, fumes smoke, dust or other particulate matter, odorous matter, heat, humidity, glare, electrical interference or other objectionable effects.
2. Where garages are built, they shall be wired for 220 Volt vehicle charging.
3. Temporary outdoor sales are allowed.

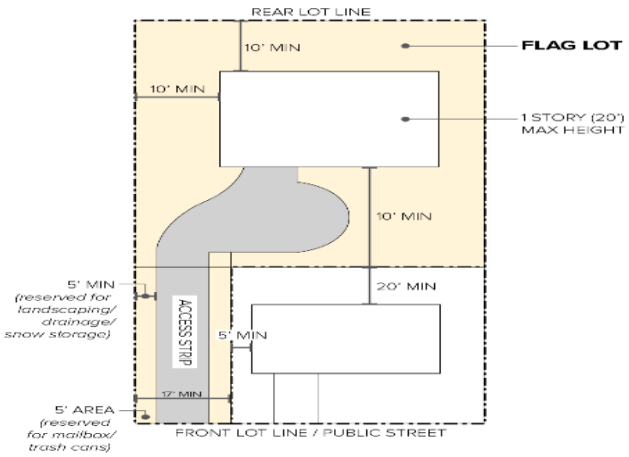
E. Small lots. Smaller lots than the standard lot size required in the R-2 and R-3 zones are allowed as follows**:**

1. Such interior lots may have a width no less than 49’at the front yard setback and if located on a corner, 56’ wide.
2. Any street facing garage shall be setback from the front face of the dwelling by at least ten feet.

3. Lots with a detached rear yard garage are required to have a minimum twelve (12') foot side yard from the side property line, to accommodate a driveway to the required rear parking. The opposite side yard setback is a minimum of six (6) feet.
4. A minimum lot size of 3,500 square feet is required.

F. Flag lots. Flag lots shall meet the following requirements. These requirements supersede the requirements for flag lots in Section 18.52.050:

1. Up to two (2) flag lots (plus the existing home) may be created from an existing parcel of property.
2. The flag lot(s) shall be used exclusively as a single-family residential dwelling which includes the potential for one internal Accessory Dwelling Unit and shall be located to the rear of the original or front lot. If the dwelling on the front lot is torn down, any new dwelling shall face the adjacent street.
3. The main body of a flag lot, exclusive of the access strip, shall be no smaller than 50% of the required lot area in the zone in which it is located.
4. The existing front lot shall meet the required lot area, lot width, front yard, side and rear yard setback requirements for the governing zoning district in which it is located.
5. If two flag lots are proposed, one behind the other, see graphic below. The access strip portion of a flag lot:

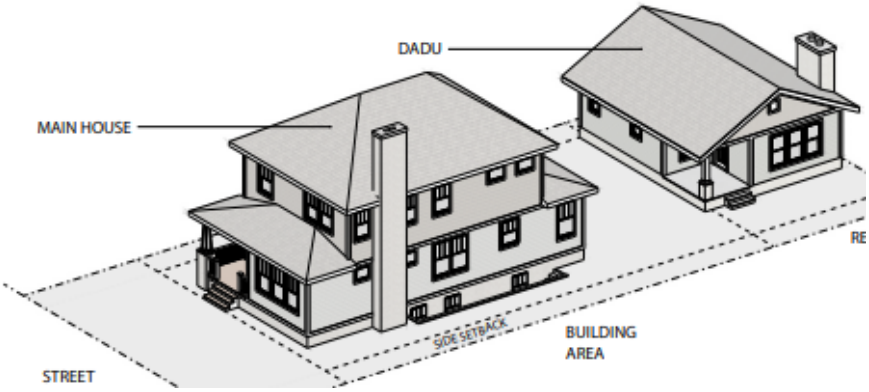


   a. Shall be at least 17’ wide for its entire length from the street to the point where the access strip adjoins the main body of the flag lot;
   b. Shall be paved except for the 5’ reserved for landscaping/drainage/snow storage adjacent to the neighboring property line, unless agreed to in writing by the adjoining property owner;
   c. Hard surfaced driveways shall be located a minimum of 5’ from any existing home on the original or neighboring lots;
   d. Shall front on a public street; and
   e. Shall not exceed one hundred fifty feet (150’) in length unless approved by the Fire Department
      1) Where the 5’ landscaped area abuts the public street, it shall contain a mailbox (s), displaying the lot address (s), and a gravel or paved area for trash cans.
6. Where two flag lots are proposed behind a lot on the public street, the middle lot may have a zero lot line using the property line adjacent to the furthest lot.
7. Two (2) adjoining flag lots may share a common access strip only if the access strip is twenty (20’) wide or greater – this includes a 5’ landscaped drainage/snow storage area and 15’ of pavement.
8. The access strip portion of a flag lot shall be platted as a contiguous portion of the flag lot(s) or as an easement but require public utility easements for access and public utilities from the original lot and to the adjacent street, in addition to recorded agreements about maintenance by the property owners.
9. The subdivision plat shall include an outline of the buildable area proposed for the home (s).

10. 2 parking spaces are required for the home, as well as a turnaround area to prevent the need to back out through the driveway/access strip.
11. The address of the flag lot dwelling shall be clearly visible on the home(s) when viewed from the access strip.

G. Subordinate Detached Accessory Dwelling units (SDADU)

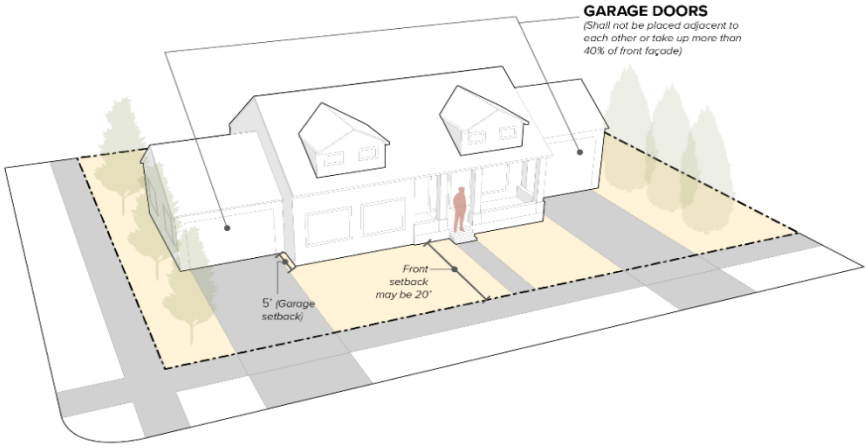
1. These ordinance provisions only apply to lots 5000 square feet and larger and located in the CHOZ. If an SDADU can be located on a property, it is considered an additional voluntary benefit provided to the homeowner and therefore is subject to additional regulations.
2. A Permitted use application for a Subordinate Detached Accessory Dwelling Unit (SDADU) is required. Such applications shall show the footprint and height, materials/design of the SDADU, the proposed lot, side yards, rear yards, the designated front yard, and the proposed permanent access easement. In addition, a subdivision plat and processing is required.
3. Standards: The following standards and conditions shall apply to all SDADUs:
    a. Location: A SDADU shall only be allowed as part of, or in conjunction with, a single-household dwelling, and SDADUs shall contain no more than a one-story (15') building (pitched roof excluded) and shall have minimum side and rear yard of 5 feet. The front yard shall have a minimum of 10' unless adjacent to a street or alley, where 15' minimum is required.
    b. Number: A maximum of one SDADU is allowed and only the original, existing dwelling may contain an additional internal ADU. The SDADU shall not have an internal ADU.
    c. Parking: At least one off-street parking stall shall be provided for the SDADU. The required parking space may be a designated tandem space on the original lot as a permanent easement area. Parking spaces shall be identified on the subdivision plat.
    d. Design And Character: The SDADU shall be designed to reflect the architecture of the existing home and as a small home with painted wood, composite wood-like appearing materials, brick or stone exteriors as well as a pitched roof, 3 by 12 minimum.
4. Size: An SDADU shall be subordinate to the footprint of the original single-household dwelling. The SDADU shall not have less than a three hundred (300) square foot footprint or more than an eight hundred (800) square foot footprint.
5. Lot Size and Frontage:
    a. The original home shall be located on a lot that is at least 5000 square feet and meet the setbacks as specified in this ordinance.
    b. No frontage on a public street or alley is required for an SDADU, but a walkable or drivable permanent access easement is required (see 11 below).
6. Foundation: The SDADU shall be secured to a permanent concrete foundation in accordance with the International Building Code, as adopted and amended by the City.
7. Occupants: The SDADU shall be occupied exclusively by one household.



8. The SDADU shall be occupied by the owner. The City may require the recording of an instrument with the property to notify the public of this requirement.
9. The SDADU shall have separate utilities from the original dwelling.
10. An SDADU shall have a recorded permanent access easement or a deeded driveway. If the permanent access easement can only accommodate pedestrians, then the original lot shall accommodate the required one additional parking space. Such walkable pathways shall be a width of 5’ to 12’.
11. Accessory buildings shall meet the standards for accessory buildings in the existing zone. Accessory buildings shall be subordinate in height to the SDADU. Once a front yard is designated, accessory buildings are not allowed in the front yard.
12. The front entry shall include a covered or uncovered porch at least 6’ deep and containing at least 60 square feet.

H. Duplexes and Twin homes: as an extra allowance in the CHOZ, construction of a duplex or a twin home is considered an additional voluntary benefit provided to the property owner and therefore is subject to additional regulations.

1. If garages are proposed, the garage door shall encompass no more than 40% of the front façade (A) and shall be recessed, a minimum of 5’, as per the drawing below.



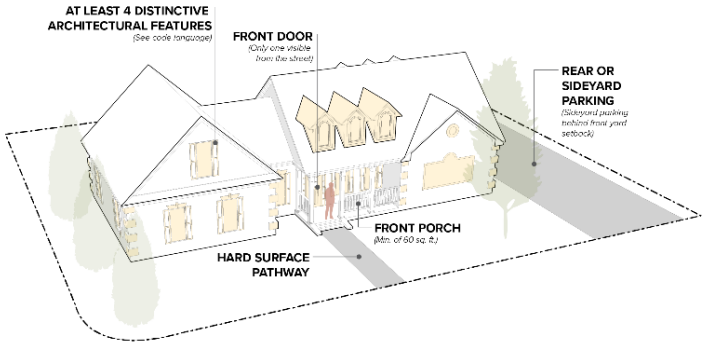
2. If garages are proposed for each unit, they shall not be placed adjacent to each other.
3. Vinyl, aluminum siding and stucco are not allowed.
4. Separate utility lines and connections are required for each unit.
5. Duplexes located on a corner lot shall have one unit facing each street.

I. Mansion Style Apartments. Mansion Style Homes shall be designed to resemble larger homes, and shall only have one visible front door as viewed from the public street. The front door area shall include a porch with a minimum of 60 square feet and a hard surfaced

pathway to the street. Parking shall be provided to rear or side beyond front yard setback. Vinyl, aluminum and stucco wall surfaces are not allowed.

All Mansion Style apartment buildings shall include at least 4 distinctive architectural features from the following list (only one item from each letter below, as a minimum) and shall be incorporated in each building:

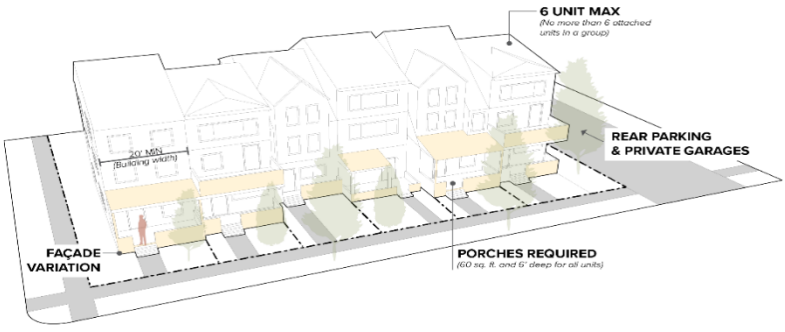
1. Ornamental details such as knee braces, exposed joists, decorative vents, window shutters.
2. Box or bay windows
3. Balconies with at least 50 square feet.
4. A minimum of 5 windows, 12 square foot minimum on the front façade.
5. A substantial/noticeable change of material applied to the front façade.
6. A substantial/noticeable change of color applied to the front façade.
7. A change of pattern that is substantial/noticeable on the façade (Example: changing brick work from face brick to a soldier course or basket weave pattern.)
8. Brick or stone along the front of the building, covering at least 25% of the front of the building.
9. Materials – brick, stone, wood, cement composite materials, and metal accents



Separate utilities for each unit are required if condominium units are proposed.

J. Townhouse. Horizontally attached multi-story units in a rowhouse configuration. This building type can include live/work units. If end units face the street, they shall include windows covering at least 25% of the façade for each floor. Parking and private garages shall be to the rear of the building allowing the primary façade to front a public street or public greenspace. Garages shall include the infrastructure for a 220 outlet capable of faster car charging. Provide outdoor balconies or patios for 100% of the units at a minimum of 6 feet deep and 60 square feet each.

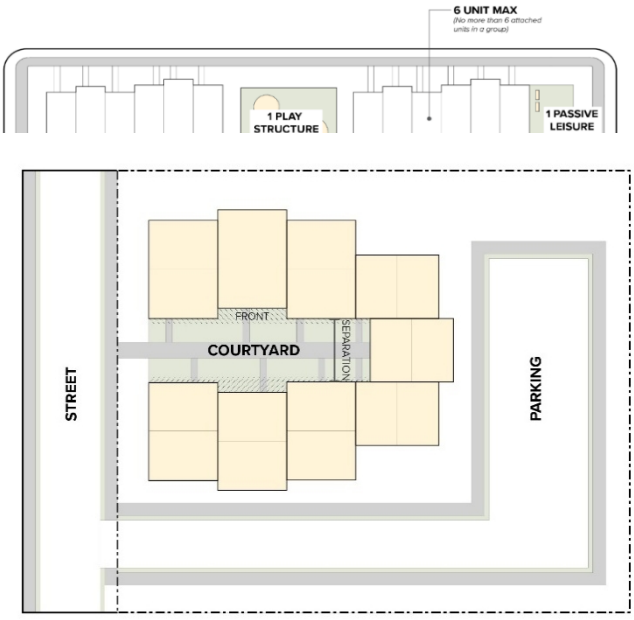
Building width shall be a minimum of 20'. Guest parking shall not include any driveway area that accesses a garage. No more than 6 attached units per building. Setbacks shall be varied where a development has more than 6 units. Townhouse developments with over 12 units shall include at least a play structure and a barbeque/seating area and one passive leisure space of at least 3000 square feet. Separate utilities for each unit are required and may require easements for units that are distant from a public street. Building height shall not exceed 2 stories in the CND and no more than 3 stories in the TCD, and in no case shall either situation exceed 35 feet.



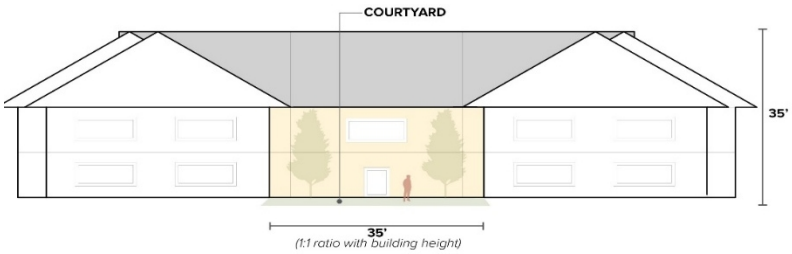
K. Multi-family Courtyard Oriented Development: A building (s) that contains residential uses, oriented toward a courtyard with parking to the rear. Provide outdoor balconies or patios for 100% of the units at a minimum of 6 feet deep and 60 square feet each. If end units face the street, they shall include windows, covering at least 25% of the façade for each floor. Multi-family developments with over 12 units shall provide recreational amenities, with at least a play structure and a barbeque/seating area and one passive leisure space of at least 3000 square feet. Unit diversity shall be accomplished by constructing at least 20% of the units with different numbers of bedrooms.

Parking shall occur at the side or rear of the building. If located to the side, it shall be setback at least 10' and that setback shall be landscaped to obscure the parking lot.

Exterior materials of a durable or resilient nature such as brick, stone, composite materials, or other materials of similar quality, hardiness, and low maintenance characteristics are required. Roughhewn, exposed wood beams, columns and supports are required for all facades facing a street. New development in the TCD shall incorporate common, locally found materials such as granite, stone, sandstone, wood, and brick as part of the first floor of each building for at least 75% of the first floor, excluding the windows. All stories above the first floor shall incorporate at least 50% of the above specified materials. Stucco and EIFS are prohibited for use as materials on any façade visible from a right-of-way, but may be used on second and third floor if additional scoring provides a brick-like appearance. Other materials may be considered by the Planning Director for soffits, or as accents or unique architectural features. Twenty-five year guaranteed architectural shingles or other longer-lasting materials are required for sloped roofs.



Up to two stories may be constructed for this type of development. Separate utilities for each unit are required and may require easements for units that are distant from a public street.



L. Mixed-use buildings. Intended for a mix of primarily residential with commercial/office or commercial and office uses required to be located on the first floor, and optional above the first floor at or near the front build-to-line with parking to the rear, underground, or podium type. No podium parking is allowed to front a street. This building type may support office, retail, hotel/hospitality or residential uses mixed vertically. For residential units, provide outdoor

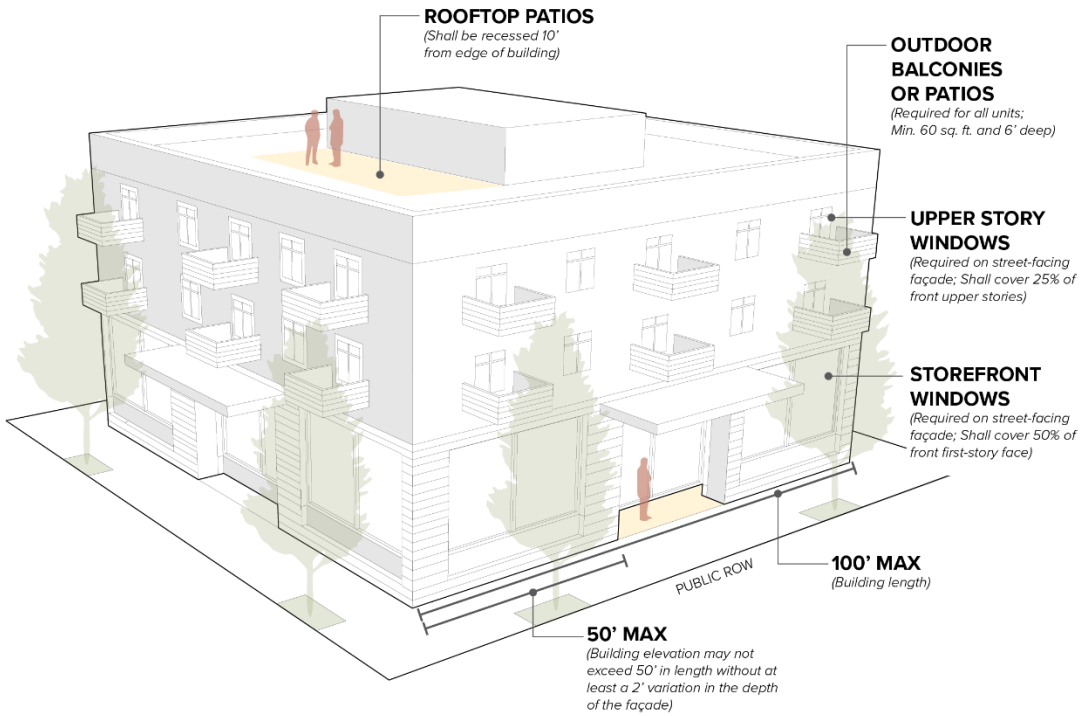
balconies or patios for 100% of the residential units at a minimum of 6 feet deep and 60 square feet each. No wood burning fireplaces, stoves, appliances, or outdoor fire pits are allowed. Provide indoor bike storage or bike lockers. Rooftop patios are allowed but shall be recessed ten feet from the edge of the building.

Exterior materials of a durable or resilient nature such as brick, stone, composite materials, or other materials of similar quality, hardiness, and low maintenance characteristics are required. Roughhewn, exposed wood beams, columns and supports are required for all facades facing a street. New development in the TCD shall incorporate common, locally found materials such as granite, stone, sandstone, wood, and brick as part of the first floor of each building for at least 75% of the first floor, excluding the windows. All stories above the first floor shall incorporate at least 50% of the above specified materials. Stucco and EIFS are prohibited for use as materials on any façade visible from a right-of-way, but may be used on second and above stories if additional scoring provides a brick-like appearance. Other materials may be considered, by the Planning Director for soffits, or as accents or unique architectural features. Twenty-five year guaranteed architectural shingles or other longer-lasting materials are required for sloped roofs. 360 degree architectural consistency is required.

No new building elevation may exceed 50 feet in length without at least a 2-foot variation in the depth of the façade along the public right of way and a 1-foot variation on other facades. Residential unit balconies shall not be interpreted to meet this requirement. No single building shall exceed 100 feet.

Parking shall be to the rear of the building.

Storefront windows are required on the street facing façade and street facing windows shall be cover a minimum of 50% of the front first story face and 25 percent of all upper story facades.



10 foot wide dry utility easements shall be provided along each public and private right of way. Dry utility placement shall occur in the public Right of Way or through negotiated locations such as the private drive/street, an alley or a public utility easement (PUE) on

private property. A determination of the best locations for utilities shall occur during the application process with an application requirement for a conceptual utility plan as part of that process. No above ground utilities, especially utility boxes, shall be placed in the clear view of an intersection or driveway. Any above ground utilities shall be located in an easement (PUE) behind the front face of the building, and preferably to the rear of the building.

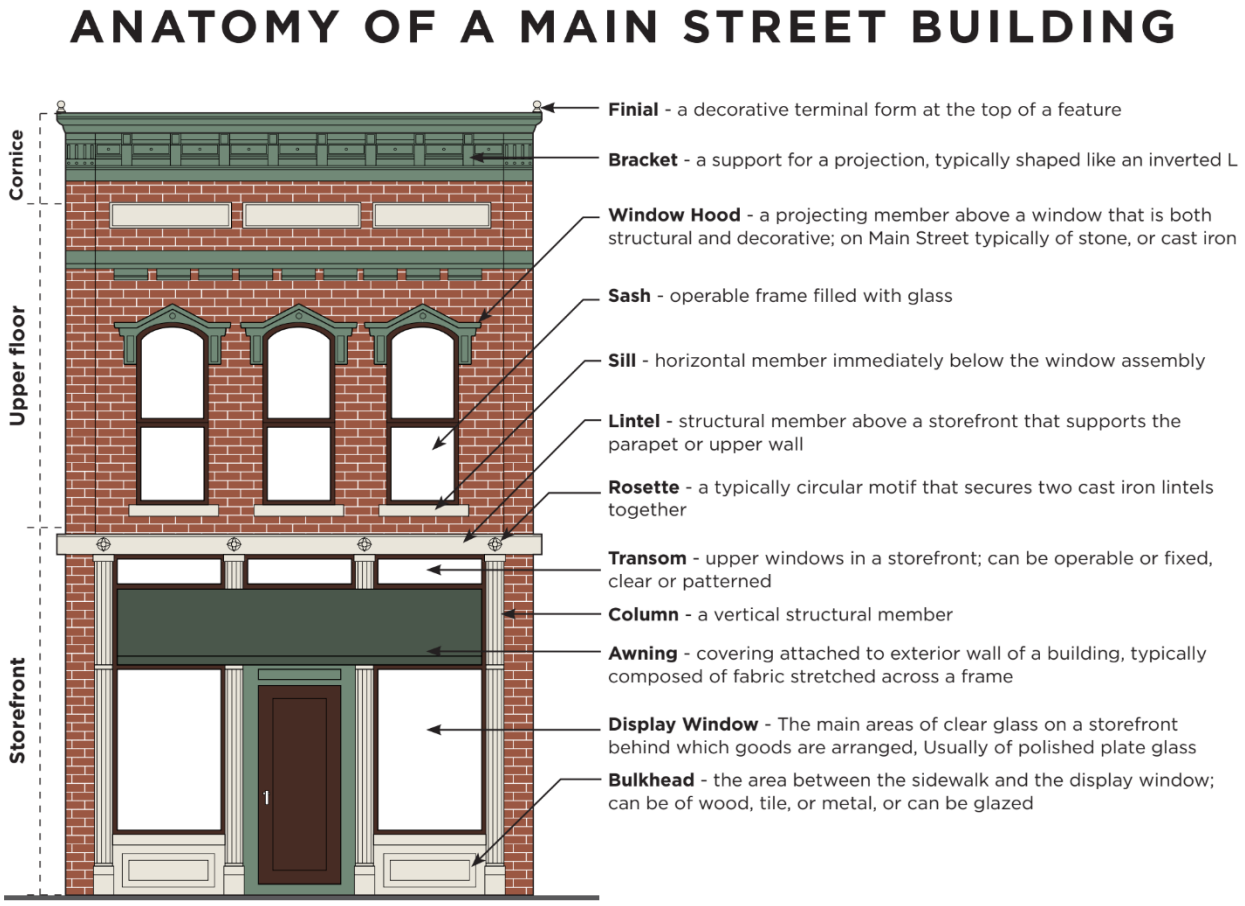
Sewer, water, and irrigation shall be metered from the public ROW and distributed through the development as private ownership. Such extensions are not a City responsibility.

M. Commercial Buildings.

Minimum 2-story building with the primary use of office, retail, civic or commercial use. All such buildings shall include at least 1 vehicle charging station per building.

Exterior materials of a durable or resilient nature such as brick, stone, composite materials, or other materials of similar quality, hardiness, and low maintenance characteristics are required. Roughhewn, exposed wood beams, columns and supports are required for all facades facing a street. New development in the TD and MLD, shall incorporate common, locally found materials such as granite, stone, sandstone, wood, and brick as part of the first floor of each building for at least 75% of the first floor, excluding the windows. All stories above the first floor shall incorporate at least 50% of the above specified materials. Stucco and EIFS are prohibited for use as materials on any façade visible from a right-of-way, but may be used on second and above stories if additional scoring provides a brick-like appearance. Other materials may be considered, by the Planning Director for soffits, or as accents or unique architectural features. Twenty-five year guaranteed architectural shingles or other longer-lasting materials are required for sloped roofs. 360 degree architectural consistency is required.

Principal entrance shall face the street or be located on the corner of the building and recessed. Front façade shall include a storefront type appearance and include at least two additional features from the sketch below:



18.83.050 Visual Screening

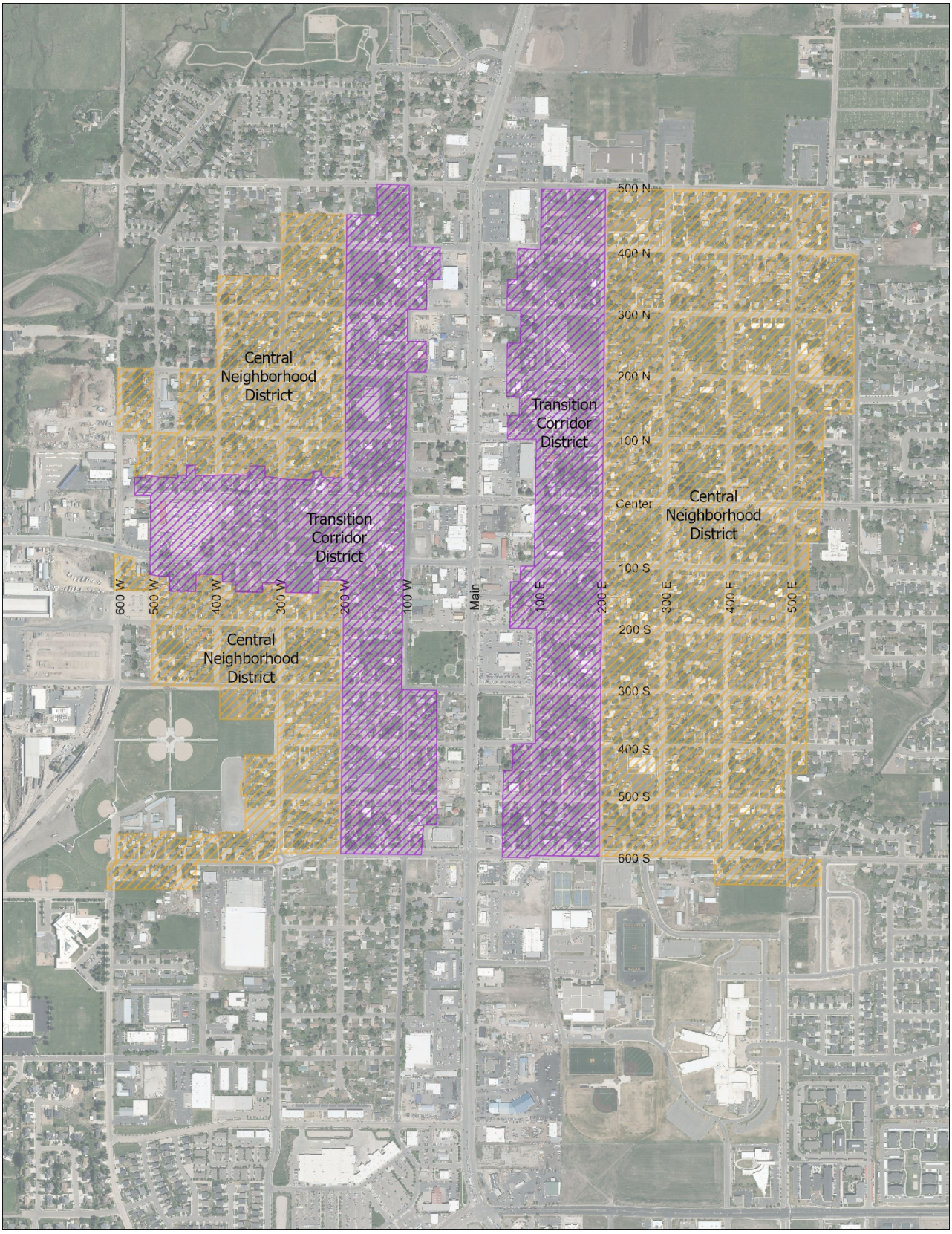
All commercial lots within the zone shall have a six-foot rear yard sight obscuring fence.

18.83.060 Definitions (added as needed and likely relocated to the definitions chapter)

18.83.070 Related Provisions

Chapter 18.12	Administration
Chapter 18.08	Definitions
Chapter 18.68	Supplementary Regulations
Chapter 18.108	Conditional Use Permits
Chapter 18.72	Off-Street Parking and Loading
Chapter 18.103	Sign Regulations
Chapter 18.78	Lighting
Chapter 18.174	Enforcement
Chapter 18.117	Subdivisions

CHOZ Overlay Zone Map



18.54 Use Options for Historic Homes in the Central Heber Overlay Zone (CHOZ)
Draft date: January 22, 2025

18.53.010 Purpose
18.53.020 Applicability
18.53.030 Permitted and Conditional Uses
18.53.040 Design Standards for Rehabilitation and Additions

18.53.010 Purpose

Many of Heber's older Central Neighborhoods, generally encompassed by the R-2 and R-3 zones, have historic homes that exhibit character and designs not often found in today's newer neighborhoods. The intent of this chapter is to provide land use options that could assist in the desire to retain these older buildings instead of eventually being knocked down or entering a state of neglect. These options are intended to incentivize owners to maintain their buildings and remain in the City. These buildings reinforce the historic urban character of Heber's neighborhoods and could provide convenience and walkability benefits for area residents, as well as a new revenue stream for existing historic homes.

18.53.020 Applicability

A. Eligible Homes. Homes that are eligible for approval as per this code must meet the following requirements.
   1. 1. Originally built before 1950.
   2. The home must include the design features described in 18.53.020 B.

B. Design Features. At least one feature from each category of the following architectural features shall be present on the building (these features must have been on the original building as well as on the present building):
   1. **Materials**: brick, sandstone, painted or stained wood
   2. **Ornamental features**: decorative features, including eave trim, railings, and/or intricate molding/frames (lintels, keystones, arches, corbelling etc.)
   3. **Projections**: façade variations, including bay windows, porches, balconies, chimney (s), and/or dormers
   4. **A pitched roof**
   5. **Doors:** doors that are recessed with a non-traditional shape, and/or include a complimentary window schemes (transom, sidelight, etc.),
   6. **Windows:** stained glass or defined decorative sills, windowpanes and intricate frames

C. Setbacks. Existing non-conforming setbacks shall not impact any new use. Additions to historic buildings shall be consistent with the following :
   1. **Front:** a minimum of 15 feet from right of way
   2. **Side** at minimum of 5 feet from property line
   3. **Side street:** a minimum of 15' from any public right of way

4. **Rear:** a minimum of 15 feet from property line

D. Parking. On-site parking requirements are waived except as per the table (18.53.031) below.

1. No parking lot with more than three parking stalls (a typical three-car driveway width) shall be located within a front yard. Parking lots larger than a typical driveway need to be reviewed and approved by the Engineering Department for conformance to storm drain requirements and located within a side or rear yard.
2. Any provided parking, including within a public right of way, shall be hard-surfaced. Parking in the right of way shall conform to the standards found in the Heber City Standards and Specifications manual.
3. Parking spaces adjoining the property, and located within the right of way, count for required parking, but shall be hard-surfaced and require Engineering Department's approval.
4. Parking may be shared from/with an adjoining private property owner upon an executed written recorded agreement stating permission by that property owner to use the adjacent off-site private property parking for a time period of at least 5 years.
5. Historic buildings and structures (built prior to 1950), shall not be torn down to provide parking.

E. Height. The height of the structure may only be increased by one story.

F. Architecture. Additions shall reflect the style of the existing building and/or features identified in "B" above.

G. Area.

1. The maximum site area shall be one acre.
2. The maximum total business area shall be 5,000 square feet, including any accessory buildings.

H. Signs and Outdoor Displays. Each building may have one 15 square foot free standing monument sign that includes a rock/brick base, not exceeding 4 feet in height and must meet the required placement standards of the sign ordinance in Section 18.104 of the code. One wall sign or blade sign is permitted, not exceeding 3 square feet. Temporary outside displays and A-frame advertising are allowed if such items are removed and placed inside the building daily.

I. Occupancy. The home shall continue to be owner and/or manager occupied as per Table 18.53.03.1.

J. Deterioration. Significantly deteriorated buildings shall be disqualified from these use options when they display clear evidence of neglect such as broken windows, rust, rot, missing railings, broken stairs, and peeling paint. If such buildings are permitted to use one of these options, through an agreement, the building shall be repaired within 90 days or lose their use permit (s) and cease the business-related operations. Buildings when approved under one of these use options shall maintain the building to avoid the appearance of neglect, or after written notice, lose their permit approval.

K. Street & Utility Improvements. Historic building sites, when converted to a non-residential or multi-family use, are not required to install curb, gutter & sidewalk or buried power, unless the historic property adjoins another property that contains existing curb, gutter & sidewalk. A deed restriction shall be recorded with the property requiring property owner financial participation if such improvements are initiated by the City in the future or by other property owners along the street.

1. A paved driveway shall be installed to connect street pavement to any onsite parking.

L. Additional Standards for Rehabilitation and Additions. See Section 18.53.040 for additional Design Standards for Rehabilitation and Additions.

M. Reviews and Approvals. It is the intent of this chapter that use flexibility for Historic Buildings will receive a priority and expedient review. The Community Development Director or its designee serves as the Land Use Authority responsible for approving permitted non-residential use conversions and associated site plans/elevations for new uses in historic buildings per this chapter, while the Planning Commission serves as the Land Use Authority for any new use that requires a Conditional Use. Building permits and business licenses are required as per City ordinances.

18.53.030 Permitted and Conditional Uses

The following table displays the potential uses allowed for historic buildings in the Central Neighborhood's residential zones.

Table 18.53.03.1

Re-use options for Historic Buildings in the R-2 and R-3 Residential zones	Permitted (P) or Conditional (C) Use	Limitations
Personal Services/care	P	Cannabis, adult related businesses and financial institutions prohibited. Homeowner or manager required to live in the building
Office	P	Homeowner or manager required to live in the building
Art galleries, bookstores & reception centers	P	Homeowner or manager encouraged to live in the building
Private Schools		As regulated by Section 18.68.230, except with no lot size minimum. Homeowner or manager encouraged to live in the building.
Indoor Commercial Retail Sales	P	Tattoo parlors, tobacco shops, adult related businesses, pawn shops, drive-up windows & cannabis facilities are prohibited). Homeowner or manager required to live in the building.
Café/Restaurant, Bakery and/or Coffee shop	C	Hours of operation limited to 7 AM to 10 PM. Outside dining limited to 9 PM. No drive-up windows. No onsite coffee roasting. One parking stall per 1,000 square feet required. Homeowner or manager encouraged to live in the building.
Institutional/Religious Land Uses, Museums, and Public Uses	P	

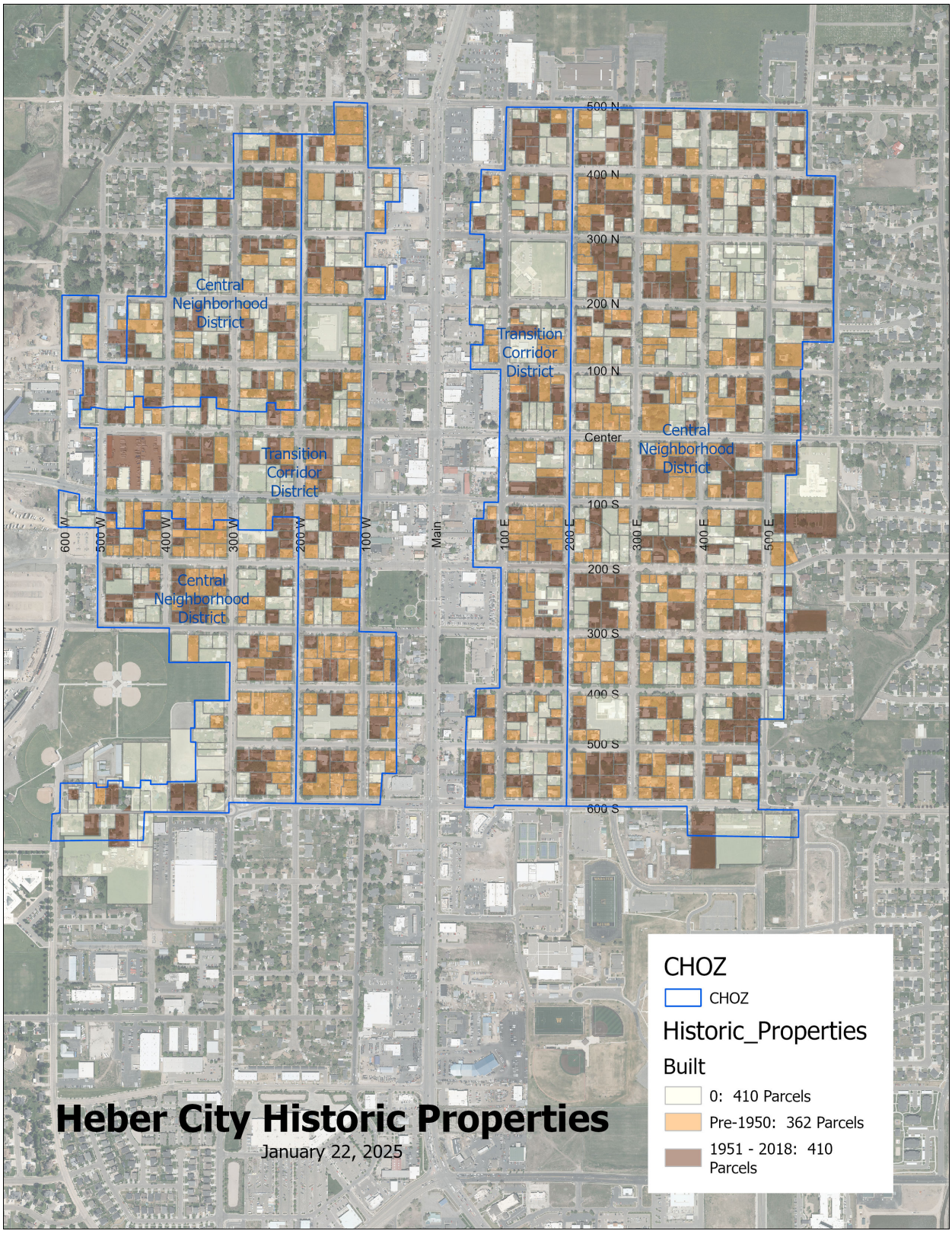
Re-use options for Historic Buildings in the R-2 and R-3 Residential zones	Permitted (P) or Conditional (C) Use	Limitations
Multi-Family Dwelling Units	C	Minimum 500 square feet per dwelling unit. Minimum of one off-street parking stall per unit. Homeowner or manager encouraged to live in the building
Live/work unit	P	For approved uses only Homeowner or manager required to live in the building

18.53.040 Design Standards for Rehabilitation and Additions

The following suggested standards shall be incorporated for any building renovations, rehabilitations, and additions. Disturbance of the site is also addressed. The intent of these provisions is to ensure appropriate treatment of historic properties.

A. Design Standards for Rehabilitation and Additions:

1. The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that provide the historic character of a property should be avoided.
2. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
3. New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall reflect the style, be complimentary to the existing building, and be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment. No accessory building shall be larger than the main building.
4. Removal of any portions of the building, including additions, shall be accomplished in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.


Heber City Historic Properties
January 22, 2025
CHOZ
CHOZ
Historic_Properties
Built
0: 410 Parcels
Pre-1950: 362 Parcels
1951 - 2018: 410 Parcels
Central Neighborhood District
Transition Corridor District
Central Neighborhood District
Transition Corridor District
Central Neighborhood District
500 N
400 N
300 N
200 N
100 N
Center
100 S
200 S
300 S
400 S
500 S
600 S
600 W
500 W
400 W
300 W
200 W
100 W
Main
100 E
200 E
300 E
400 E
500 E