

Honeyville City

Development, Design, and Construction Standards



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DEVELOPMENT, DESIGN, AND
CONSTRUCTION STANDARDS
for
HONEYVILLE CITY



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12/11/2024

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SECTION 1 GENERAL

1.01 Ordinances Govern

Nothing in this document shall be construed to be contrary to Honeyville City Ordinances. Should a conflict exist between this document and the Ordinances, the Ordinances shall govern.

1.02 Conformance with Federal, State, and Local Laws

Nothing in this document shall relieve the Developer, Engineer, or Contractor from abiding by any and all Federal, State, and local laws.

1.03 Definitions

- A. Chapter – When “Chapter” is written, it shall be as if “Honeyville City Ordinance, Chapter” is written.
- B. Contractor – The individual, firm, co-partnership, or corporation, and his, their, or its heirs, executors, administrators, successors, and assigns, or the lawful agent of any such individual firm, partnership, covenantor, or corporation, or his, their, or its surety under the contract bond, constituting one of the principals to the contract and undertaking to perform the Work.
- C. Drawings – The City-approved construction drawings, the Honeyville City Public Works Standard Drawings, and/or the APWA Manual of Standard Drawings, as applicable.
- D. Improvements – See “Work.”
- E. Improvement Plans – See “Drawings.”
- F. Inspector – The authorized representative of the City or City Engineer assigned to make all necessary inspections of the Work performed or being performed, or of materials furnished or being furnished by the Contractor.
- G. Standard Drawings – Honeyville City Public Works Construction Standard Drawings
- H. Work – All types of work necessary to provide safe access and utility service to and within proposed subdivision or site, including, but not limited to, site grading, utility installation, and street construction. Work includes all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning.¹
- I. See also Titles 10, 11, and 12 of the Honeyville City Ordinances. Where definition conflicts arise between City Ordinance and this document, the definitions in this document shall take precedence when in reference to this document.

¹ From EJCDC© C-700, Standard General Conditions of the Construction Contract.

1.04 Acronyms

- A. BMP – Best Management Practice
- B. CFP – Capital Facilities Plan
- C. DDW – Division of Drinking Water
- D. DRC – Development Review Committee
- E. DWQ – Division of Water Quality
- F. DWRi – Division of Water Rights
- G. FEMA – Federal Emergency Management Agency
- H. HNY – Honeyville City
- I. HOA – Homeowners' Association
- J. LID – Low Impact Development
- K. RCP – Reinforced Concrete Pipe
- L. SWPPP – Storm Water Pollution Prevention Plan
- M. UAC – Utah Administrative Code
- N. UDEQ – Utah Department of Environmental Quality
- O. UDOT – Utah Department of Transportation
- P. UPDES – Utah Pollutant Discharge Elimination System
- Q. UPRR – Union Pacific Railroad
- R. USACE – United States Army Corps of Engineers

1.05 Modification Process

Whenever, in the opinion of the City Public Works Department, the City Engineer, or the Superintendent having jurisdiction, a literal enforcement of these regulations may cause an undue hardship or a literal enforcement of the provisions may be unnecessary to meet the goals and standards of the City, the City may modify those standards in accordance with this section.

- A. Modifications may be granted when there are practical difficulties involving carrying out the provisions of the Public Works Standards and Technical Specifications and a panel consisting of the Zoning Administrator, City Engineer, and the Public Works Director, or their designees determine that granting of a modification for an individual case will meet the goals and requirements of the City without unduly jeopardizing the public and the individual's interest.
- B. The City shall first receive a written request for a modification to the standards from any interested party.

- C. Upon receipt of the request, the panel of three discussed above shall find that a special individual reason makes the strict letter of the standard impractical and shall find the modification is in conformance with the intent and purpose of the standards and shall find that such modification does not in any way lessen the integrity of the standards.
- D. When such findings of fact are made, the panel may grant such modification as it deems appropriate. The details of any action granted as modification by this panel shall be recorded and entered in the files of the City, with the specific reasons for the granting of said modification.

SECTION 2 GENERAL STANDARDS

2.01 Approval Procedure

See **Title 11 – Subdivision Development and Regulations** of the Honeyville City Ordinances.

2.02 Developer Responsibilities

- A. Required Improvements and Guarantees – see Title 11 of Honeyville City Ordinances.
- B. Permits and Approvals
 - 1. Developer is responsible for obtaining all necessary permits and approvals for the construction of the Improvements. Copies of all applications and approved permits shall be submitted to the City. Agencies/permits that may be required include, but are not limited to:
 - a. DDW Plan Approval (pre-construction)
 - b. DDW Operating Permit (post-construction)
 - c. UPDES NOI and NOT for all disturbances one (1) acre and greater, in accordance with the UPDES Construction General Permit
 - d. DWRi Stream Alteration
 - e. DWRi Dam Safety
 - f. EPA 404 Wetlands
 - g. FEMA LOMA and/or LOMR
 - h. UDOT
- C. Improvements
 - 2. The required improvements shall include:
 - a. All street improvements in front of all lots along all dedicated streets to a connection with existing improvements of the same kind and to the boundary(ies) of the subdivision (excluding through remnant or remainder parcels).
 - b. All street, storm drain lines, culinary, secondary, and irrigation water lines, and any other buried utility lines and conduits shall be installed to the boundary lines of the subdivision where reasonably expected to extend as determined by the City Engineer and based on anticipated future development and the City's capital facilities plans and/or master plans. Design must provide for future extension to adjacent development and be compatible with the contour of the ground.
 - c. See Title 11 for more information.
 - 3. Upsizing based on CFPs – The Developer is required to construct/install infrastructure sized in accordance with the City's currently adopted CFPs. The City is responsible for

paying the difference in cost between the master planned infrastructure size and the minimum infrastructure size required for the development.

- D. Materials and Construction Testing Escrow – Developer shall include in the improvements guarantee all materials and construction testing. Testing shall be performed by qualified and licensed testing agencies. Developer/contractor is responsible for all coordination. See Section 4.03 for more information.
- E. Survey of Existing Improvements – Developer shall reimburse City for City Engineer’s time spent surveying in locations of new improvements, including but not limited to services, valves, and fire hydrants.

2.03 Subdivision Standards

- A. The general standards for subdivision layout and development are found in Titles 10 and 11.
- B. See also Section 3 – Design Standards and Section 4 – Construction Standards of this document.

2.04 Plat Signature Blocks

See Final Subdivision Application Checklist on file with the City Clerk.

2.05 Geotechnical Investigation

- A. A geotechnical investigation must be conducted for the following:
 - 1. All new subdivisions;
 - 2. All commercial subdivisions and sites;
 - 3. Any development that includes public infrastructure improvements;
 - 4. Any development in the Sensitive Lands zone; and
 - 5. Upon request of the Development Review Committee.
- B. The geotechnical investigation should be complete in nature, and its findings shall be summarized in a Geotechnical Report. The Geotechnical Report shall be signed and sealed by a licensed Professional Engineer with expertise in the field of geotechnical engineering.
- C. See Appendix B for requirements regarding the Geotechnical Report, including minimum testing requirements and design parameters.

2.06 Required Improvements

- A. See Title 11 for information on the required improvements.
- B. See also Section 5 – Standard Specifications and Section 6 – Standard Drawings, Plans, and Details of this document for additional information.

2.07 Improvement Plans and Drawing Standards

- A. Complete and detailed, and signed and sealed (in accordance with Utah Code 58-22-602) construction plans and drawings of improvements shall be submitted to the City for the review by the City prior to receiving preliminary subdivision approval and prior to commencing construction.
- B. Separate drawings of elements of the Honeyville City Standards shall not be required to be redrawn and submitted with the construction drawings unless specific deviations from the standards are requested for approval; however, the construction drawings shall refer to the specific items of the Standards that are to be incorporated into the Work.
- C. A hard copy of the approved construction plans bearing the approval of the DRC shall be kept available at the construction site.
- D. Prior to final acceptance by the City, the developer, developer's representative, contractor, or project engineer shall submit to the City Engineer a set of "as built" drawings for permanent City file record.
- E. Improvement plans shall be submitted in the quantity and format shown in the checklist, or, if not specified, four (4) 11"x17" hard copies and one (1) pdf.
- F. All drawings shall be complete, clear and legible and shall conform to the accepted standards of the profession.
- G. General
 - 1. All drawings and/or prints shall be clear and legible and conform to industry standard engineering and drafting practices. Illegible or poorly drawn drawings shall be returned without action and will not be considered as having received a review.
 - 2. Drawings shall be legible and to a common scale when printed on 11"x17" paper.
 - 3. All wet utilities (culinary water, irrigation water, secondary water, storm drain) shall be shown in plan and profiles views.
- H. All Plans:
 - 1. North arrow (plan).
 - 2. Scale, benchmark datum and elevations, including the location of permanent benchmarks and their true elevations according to USGS or the City's datum. All profiles and construction drawings shall be drawn using true elevation.
 - 3. Complete data for field layout and office checking.
 - 4. Stationing and elevations for profiles.
 - 5. Title block shall include, but is not limited to:
 - 6. Project title (subdivision, etc.);

7. Name of Engineer or firm preparing drawings with license number and sealed by the responsible Engineer; and
 8. Revision block detailing revisions since previous reviewed plan version.
- I. Street Plans: Street plans drawings should show:
1. Improvements including: edge of asphalt, curb and gutter; sidewalks and handicap ramps; street cross sections; roadside ditches; storm water conveyance, catch basins, storm drain and their appurtenant works; detention pond.
 2. Scale shall be such that all improvements are legibly shown in both plan and profile.
 3. Dimensions of right-of-way, width of pavement.
 4. Profiles shall indicate existing and finished grades for the centerline and shall extend a minimum of two hundred feet (200') beyond the limits of the proposed project. Cross sections shall be provided when requested by the City Engineer. On subdivisions along steep cross slopes, profiles for each side of the street may be required to be shown.
 5. Stationing and top of asphalt or curb elevations with curve data shall be shown for all intersection radii and at least one additional control point for elevations besides those at the PC (point of curvature) and PT (point of tangency) shall be indicated on the plans to ensure drainage at the intersections.
 6. Elevations for the top of asphalt or curb and road centerlines shall be shown on the plans for all PCs, PTs and at all BVCs (begin vertical curve) and EVCs (end vertical curve).
 7. Complete curve data shall be shown for all horizontal and vertical curves.
 8. Type of cross drainage structures at intersections with adequate flow line elevations.
 9. Street monuments shall be designated on the final.
- J. Culinary, Irrigation, and Secondary Water drawings shall show:
1. Elevations, locations, and size of culinary water mains, valves, fittings, hydrants, services, meters, and appurtenances;
 2. Pipe designation and minimum cover;
 3. Grades and elevations of all non-pressurized pipes and appurtenances;
 4. Size, location and type of pipe, valves and turnouts for irrigation water system;
 5. Elevations, locations, and size of secondary water mains, valves, fittings, services, and appurtenances.
- K. Each set of plans shall be accompanied by a separate sheet of details for special structures which are to be constructed and are not covered by the City Standards. All structures shall be designed in accordance with the minimum Honeyville City Standards and approved by the City Engineer.

SECTION 3 DESIGN STANDARDS

3.01 Culinary Water Design

A. Service Requirements

1. The Engineer, who is responsible for maintaining the hydraulic water model, shall verify that the City's culinary water system is capable of servicing all new development, in accordance with R309-105-9 and R309-510-9.
2. Water demands shall be per the minimum requirements of the DDW, or as adopted by Honeyville City.

B. All design shall be in accordance with Utah Administrative Code R309.

C. Water Lines and Valves

1. Minimum size is 8-inch and may be larger as determined necessary by the City Engineer pursuant to applicable requirements of Titles 10 and 11 or the Culinary Water Capital Facilities Plan. The culinary water system shall be capable of delivering water as required by the Utah Division of Drinking Water or standards adopted by Honeyville City.
2. Water lines may not be located within 20-ft of a contamination source, including septic systems.
3. Water lines may be curved, with a minimum radius of twice the manufacturer's minimum radius. A reduction in the radii may be granted with the following requirements:
 - a. No service connections are reasonably anticipated along the curvature, and
 - b. With the express and written approval by both the City Engineer and the Public Works Director.
4. At dead end lines, including temporary dead ends, provide fire hydrant at termination point.
5. Where a water line crosses surface water, designer/engineer shall contact the DDW and the City prior to final design.
6. Valves are required on all branches of tees and crosses. On unbroken lengths of water line, valves are required:
 - a. At 800-ft (maximum) spacing in residential areas, and
 - b. At 500-ft (maximum) spacing in commercial and industrial areas.

D. Services

1. Culinary water laterals shall extend to 10-ft inside the front property line of each lot with water meter pits placed in accordance with the City's Standard Drawings.

E. Fire hydrants

1. Fire hydrants are to be installed in locations as required by the fire code and approved by the Fire Marshal and City Engineer, with a minimum spacing of 500-ft.
2. Fire hydrants shall not be located within 20-ft of any sanitary sewer line or manhole.
3. Fire hydrants shall be located such that any building lot will be not more than 250-ft from the nearest fire hydrant when measured along the most probable access route. Another fire suppression system may be recommended. Such a suppression system shall be approved by the fire chief, building official, and city engineer.

3.02 Irrigation Water Facilities Design

When irrigation water facilities are required in accordance with the Honeyville City Ordinances:

- A. Irrigation water shall be provided to each lot via a piped system network. Pipe network shall be capable of providing adequate irrigation water to all lots.
- B. Turnout or valves shall be located on each lot.
- C. Manholes or access points shall be provided every 500 ft, at a minimum.
- D. No ditch, canal, or other waterway shall be permitted within property dedicated or to be dedicated for public use except as specifically approved by the Development Review Committee (DRC).
- E. The developer shall remove such waterways from property to be dedicated before the submission of the final plat.

3.03 Secondary Water Facilities Design

- A. All new development shall be required to install secondary water lines within all new street rights-of-way.
- B. Secondary Water Lines
 1. Material – Secondary water lines shall be 6-in C900 DR 18 purple PVC.
 2. Location
 - a. Rural streets – Secondary water lines shall be located 3-ft inside of the asphalt edge, opposite side of the street from the culinary water line.
 - b. Urban street – Secondary water lines shall be located 3-ft inside the asphalt edge (lip of the gutter), opposite side of the street from the culinary water line.
 3. Bedding and Backfill – Install per culinary water detail Bedding and Backfill Detail, with 3-ft minimum cover.
- C. Valves
 1. Gate valves shall be provided at all intersections (all branches) and terminuses.

2. Valve box lids shall be marked "IRR".
 3. Valve collars shall be 2-ft by 2-ft square, 6-in thick.
- D. Testing and Suspending
1. Provide all pressure testing per APWA Commissioning of Water Lines.
 2. No bacteriological testing is required.
 3. Drain pipes completely and plug after successful pressure test.

3.04 Sewage Disposal

- A. All onsite wastewater systems shall meet the requirements of [R317-4](#) Onsite Wastewater Systems.
- B. All onsite wastewater systems shall meet the separation distances as specified in [R317-4](#), Table 2.

3.05 Storm Water and Drainage Design

See Appendix A for Storm Drain and Drainage Design Standards.

3.06 Street/Road Design

- A. Streets shall be designed in accordance with these Standards, standard engineering practices, and AASHTO and MUTCD guidelines.
- B. Refer to Titles 10 and 11 for the applicability of rural and urban street sections.
- C. Grades
 1. Major and collector streets shall be limited to a maximum grade of eight percent (8%). Sustained grades shall be limited to five percent (5%).
 2. Minor streets shall be limited to a maximum grade of ten percent (10%). Sustained grades shall be limited to seven percent (7%).
 3. Cul-de-sacs with a negative grade progressing toward the turnaround shall be limited to a maximum grade of six percent (6%). The cul-de-sac bulb shall not exceed a grade of three percent (3%) in any direction.
 4. Street intersections shall have a vertical alignment such that the grade shall not exceed three percent (3%) for a minimum distance of 100-ft each way from the centerline of the intersection.
 5. A sustained grade is defined as 600-ft or longer.
 6. Exceptions to maximum grades may be approved by the DRC for reasons of exceptional topography.

D. Horizontal Curves

1. Local (residential) streets shall have not less than 333-ft radius curves.²
2. Horizontal points of curvature shall not be located closer than 150-ft from a center of an intersection.
3. A minimum tangent of 100-ft shall be required between reverse curves.

E. Vertical Curves

1. No changes of grade in excess of 1.5% shall be permitted without a vertical curve.
2. Vertical curves shall be designed to provide minimum sight distances of 200-ft for minor streets and 300-ft for all other streets, except that vertical curves for major streets shall be as determined by the latest version of the AASHTO "Geometric Design Guidelines." The minimum acceptable horizontal length of crest and sag vertical curves from beginning to end of the vertical curve is 200-ft for collector roads, 200-ft for crest vertical curves on minor streets and 100-ft for sag vertical curves on minor streets.

F. Intersections

1. No more than four (4) streets shall enter an intersection.
2. Roadway centerlines shall intersect at 90-degrees. Where a 90-degree angle is not feasible, the intersection angle may be reduced to as low as 80-degrees with the City Engineer's concurrence. In no case shall the angle be less than 80-degrees.
3. The crown section of the non-stop-controlled street shall carry through the intersection. The stop-controlled street's cross section shall transition to match non-stop-controlled street edge of asphalt.
4. Intersections shall be no closer than 150-ft to one another, as measured from centerline to centerline.
5. Sight triangles shall be shown at the request of the City Engineer.
6. No road intersections shall be located within 250-ft of a railroad crossing.
7. Radii shall be provided as follows:

Back-of-Curb or Edge of Asphalt Radii			
	Local (60' ROW)	Collector (66' ROW)	Arterial (>66' ROW)
Local (60' ROW)	20'	20'	30'
Collector (66' ROW)	20'	30'	30'
Arterial (>66' ROW)	30'	30'	40'

² AASHTO A Policy on Geometric Design of Highways and Streets (2011); Table 3-13b.

G. Pavement/Pavement Section

1. Developments

- a. Pavement section shall be designed by the developer's geotechnical engineer and included in the Geotechnical Report submitted to the City. See Appendix B of this document for Geotechnical Report Minimum Requirements, including testing requirements and design parameters.
- b. In no case shall the pavement be less than what is shown in the City Standard Drawings.

2. City Projects

- a. Pavement section as included in the Project plans.

H. Cul-de-sacs

1. Length of cul-de-sac shall not exceed 650-ft as shown in the Standard Drawings.
2. Cul-de-sacs be terminated by a circular turnaround (bulb) with a right-of-way diameter of not less than 110-feet and a radius dimension from the cul-de-sac center point to the face of curb or pavement edge of not less than 45-feet
3. If surface water drainage is towards the turnaround, necessary catch basins, drainage pipes, detention/retention basins, and drainage easements shall be provided to sufficiently drain or contain drainage entering the cul-de-sac turnaround to prevent undesirable ponding or flooding of private or public facilities which are not intended to receive drainage water.

I. Temporary Turnarounds

1. A temporary turnaround shall be constructed with the same pavement section as the main road. The turnaround area shall have a minimum drive surface radius of not less than 45-ft and a temporary turnaround easement of not less than 110-ft.
2. Phased Development – When a temporary turnaround is required at the end of a road where the road and the extension of the road are parts of an approved phased development, in lieu of constructing a paved temporary turnaround in accordance with the Standards:
 - a. When extension of the road is expected to begin construction within 12 months of conditional acceptance of the road and associated temporary turnaround, Developer may construct 12-inch thick untreated base course temporary turnaround (dimensions per the Standard Drawings) and place in escrow the cost of the asphalt paving.
 - b. If construction of the extension of the road has not begun within 12 months of conditional acceptance of the road and associated temporary turnaround, City may, at its discretion, utilize the monies in escrow to pave the temporary turnaround.

3. The easement and physical turnaround may either overlap onto adjacent lots on either side of the stub street or be provided beyond the stub street lots on property provided by the developer. Drainage of the stub street and temporary cul-de-sac turnaround shall conform to the same requirements for a permanent cul-de-sac.
4. When turnaround cannot be constructed outside of subdivision, it shall be located on a portion of the subdivision lots (as needed) with the developer placing in escrow an amount of money sufficient to complete the street improvements to the subdivision boundary. These funds will be used at such time the street is extended.

When the lot is in an urban area (R-1 and R-2), the lot(s) on which the turnaround is constructed shall be restricted as follows:

- a. Platted as an "R" (restricted) lot;
 - b. Building permits shall not be issued until the road is extended beyond the subdivision boundary, complete with curb, gutter, and sidewalk.
5. Drainage onto adjacent property must be by written approval (easement) of adjacent property owner.

J. Curb and Gutter and Sidewalk

1. Sidewalks, handicap ramps, curbs and gutters shall be provided on urban streets.
2. On curb returns, at least one additional control point for elevation besides those at points of curvature shall be established. Control points shall be staked in the field to ensure drainage of intersections.

K. Driveways

1. Corner lots adjacent to SR-38 or SR-240 (6900 North):
 - a. Shall have a "no access line" indicated on the plat along the UDOT-controlled roadway (unless otherwise approved in writing from UDOT); and
 - b. Shall have no driveway located within 150-ft of the corner lot line (as measured from the edge of the driveway or curb cut along the right-of-way line to perpendicular with the UDOT right-of-way line).
2. All driveways shall conform to the Standard Drawings.
3. No driveways shall be located within 250-ft of a railroad crossing.

L. Street Signs

1. Each street sign shall list both the name and the grid address in a format which conforms with the sign details in the Standard Drawings.

M. UDOT

1. Roadway intersections with UDOT-controlled streets shall be in accordance with UDOT standards. A copy of the approved UDOT Access Permit shall be submitted to the City.

N. Street Monuments

1. Street monuments shall be accurately set at the approved locations prior to release of the improvement guarantee.
2. Street monuments shall be installed by the developer's Engineer or land surveyor and shall be designated on the final drawings and approved by the City Engineer.

SECTION 4 CONSTRUCTION STANDARDS

4.01 General Policies

A. General Conditions

1. Permit/License: When the work is in progress, Contractor shall have at the work site a copy of the permit and his contractor's license number.
2. Private access: Temporary all weather roadways, driveways, walks, and rights-of-way for vehicles and pedestrians shall be constructed and continuously maintained where required.
3. Street excavation in winter: Excavation of City streets during the winter months (herein defined as November 15 to April 1) will be allowed only if the work is a new service connection, required maintenance or emergency, or otherwise approved by the Public Works Department. Permanent patching of City streets excavated in the winter may be delayed until April 1 with the following provisions: Within five working days from the completion of the excavation, the permittee provides/maintains a 1-1/2" thick temporary winter asphalt surface until such time as the permanent asphalt surface is installed; the permittee shall provide/maintain a temporary untreated base course surface until such time as the temporary winter asphalt surface is installed. These provisions apply regardless of whether the permittee or City crews are performing the permanent resurfacing.
4. 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, cable 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 said utility company and the Public Works Department. All projects shall be "Blue Staked" prior to construction.
5. 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.

B. Licensing

1. Contractor (including all sub-contractors) must be licensed with the State of Utah: It is the policy of Honeyville 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 shall be in accordance with UAC R156-55a-201.

2. Exceptions: A license shall not be required by the City when the permittee is a public utility company. (Subcontractors for utility companies shall have a valid contractor's license.)

C. Permits

Developer/Contractor is responsible for obtaining all necessary permits for the construction of the Improvements prior to commencement of said Improvements. Agencies/permits required may include, but are not limited to:

1. Encroachment (City)

- a. Honeyville City's Department of Public Works issues permits to control any excavation and construction operations in the public right-of-way. All contractors, sub-contractors, and utility companies proposing to construct, repair, or replace any facility within the public right-of-way shall contact Honeyville City and complete all permit requirements prior to commencing proposed work.
- b. Work by utility companies and contractors in constructing facilities in new subdivision streets shall be required to obtain a permit and will be subject to City inspection and compliance with all requirements.
- c. Emergency Work
 - (i) 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.
 - (ii) In the event that emergency work is commenced on or within any public way of 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. Contact shall be made to the City's "on call" personnel. 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 of 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 the 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 for the prior permit requirement.
- d. Enforcement: Violators of these regulations of working within the public way shall be subject to the provisions of the applicable Honeyville City Ordinances.

2. USACE/DWRi Stream Alteration – Stream Alteration

3. UPDES
4. Dam Safety (DWRi)
5. UPRR Railroad Encroachment
6. UDOT
7. Box Elder County Surveyor's Monument
8. Excavation Operations
 - a. Blue Stakes: Before commencing excavation operations, the permittee shall call "Blue Stakes" at 1-800-662-4111 or 811.
 - b. Traffic control devices: Traffic control devices such as construction signs, barricades, 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, tracked 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.
 - d. Open trench limits: Open trenches will be limited to one block at a time or 660 feet, whichever is less.
 - e. In the event of a planned road closure, Contractor shall notify the City, Fire Department, emergency services dispatch, US Postal Service, and Box Elder School District, a minimum of 24 hours prior to the closure. In the case of an emergency, the above-listed agencies shall be notified at the soonest possible time.
- D. Environmental Controls
 1. Dust and debris: The permittee or contractor shall keep dust and debris controlled at the work site at all times. If necessary, a container shall be provided for debris and dusty areas shall be wet down. The permittee or contractor shall be responsible for the cleanup of mud or debris from public roads deposited by vehicles or construction equipment exiting the work site. The City Engineer reserves the right to shut down the work or issue a citation if dust is not controlled.
 2. Noise: The permittee or contractor shall keep neighborhood free of noise nuisance in accordance with the Noise Ordinance.
- E. 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. Vacuum sweeping or hand sweeping shall be required when the Public Works Department determines cleaning equipment is ineffective.
- F. Storm Water: All Contractors working within the boundaries of Honeyville City shall conform to all requirements and regulations in accordance with UPDES Construction

General Permit and best management practices. A Notice of Intent must be filed prior to commencing construction activities.

4.02 Pre-Construction Conference

- A. The preconstruction conference shall not be held until the City has approved and signed the construction plans.
- B. A preconstruction conference shall be held before any excavation or other work begins in the subdivision or Project. The meeting will include:
 - 1. City Engineer
 - 2. Developer or Project Manager
 - 3. Subdivision or Project Engineer
 - 4. All contractors and subcontractors involved with installing the subdivision or project improvements
 - 5. Representatives of affected Honeyville City Departments
 - 6. Representatives of local utility companies as may be required by Honeyville City.
- C. Items pertaining to the construction and inspection of the subdivision or Project improvements will be discussed.

4.03 Construction

- A. Specifications
 - 1. Contractor shall be responsible for constructing all improvements in accordance with the Technical Specifications, per Section 5 of this document.
 - 2. Deviations from such shall be reviewed and authorized by the City Engineer on a case-by-case basis.
- B. Plans and Details
 - 1. Contractor shall be responsible for constructing all improvements in accordance with the Drawings, Plans, and Details, per Section 6 of this document.
 - 2. Deviations from such shall be reviewed and authorized by the City Engineer on a case-by-case basis.
- C. Sequence/Timing
 - 1. All underground utility work shall be completed prior to placement and compaction of the roadway base course. Utilities, including service lines, not installed prior to roadway construction shall be bored as approved by the Public Works Director.
 - 2. All concrete collars shall be installed within fourteen (14) days of asphalt placement.

D. Inspection

1. All construction work involving the installation of improvements in the subdivision or project shall be subject to inspection by the City. It shall be the responsibility of the person responsible for construction to ensure that inspections take place where and when required. Certain types of construction shall have continuous inspection, while others may have only periodic inspections.
2. Requests for Inspections
 - a. Requests for inspections shall be made to the Public Works Department by the person responsible for the construction.
 - b. Requests for inspection on work requiring continuous inspection shall be made three (3) working days prior to the commencing of the work.
 - c. Notice shall also be given one (1) day in advance of the starting of work requiring periodic inspection, unless specific approval is given otherwise by the City Engineer, or his duly authorized representatives.

E. Continuous inspection

1. May be required on (but not limited to) the following types of work:
2. Laying of street surfacing;
3. Placing of concrete for curb and gutter, sidewalks, and other structures; and
4. Laying of water, secondary, irrigation, and drainage pipes; fire hydrants and water service laterals; and testing.
5. On construction requiring continuous inspection, no work shall be done except in the presence or by permission of the City Engineer or authorized city representative.

F. Periodic inspections

1. Shall be required on (but not limited to) the following types of work:
2. Street grading and gravel base
3. Excavations for curb and gutter and sidewalks
4. Excavations for structures
5. Trenches for laying pipe
6. Forms for curb and gutter, sidewalks and structures

G. Substantial and Final Completion Inspections

1. A substantial completion inspection shall be requested by the Contractor and made by the City Engineer or authorized representative after all construction work is completed. 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 the City Engineer's or authorized representative's Punchlist defining the faulty or defective work.

2. A final completion inspection shall be requested by the Contractor and made by the City Engineer or authorized representative after all faulty and defective work has been corrected.

H. Testing

1. Development Projects

- a. Developer/Contractor shall select a testing firm qualified to perform materials and compaction testing.
- b. Developer/Contractor shall be responsible for coordinating all testing in accordance with the Technical Specifications per Section 5 of this document.
- c. Testing reports shall be submitted to City weekly for review. Areas with failed tests shall be corrected and retested.
- d. Failure to have improvements tested as they are constructed may be cause for work stoppage or rejection by City.

2. City Projects

- a. Contractor shall select a testing firm qualified to perform materials and compaction testing.
- b. Contractor shall be responsible for coordinating all testing in accordance with the Technical Specifications per Section 5 of this document.
- c. Testing reports shall be submitted to City weekly for review. Areas with failed tests shall be corrected and retested. Contractor may be required to pay for retesting.
- d. Failure to have improvements tested as they are constructed may be cause for work stoppage or rejection by City.

- I. "As built drawings," in both pdf and hard copy (24"x36") formats, shall be furnished to the City Engineer upon completion of the improvements. The City will retain the improvement guarantee until such plans have been furnished in a manner acceptable to the City Engineer.

J. Safety

1. Contractor is solely responsible for jobsite safety.
2. Contractor shall comply with all local, state, and federal rules and regulations regarding jobsite safety.
3. City and/or its authorized representatives shall have the authority to shut down a job when unsafe working conditions are found.

SECTION 5 TECHNICAL SPECIFICATIONS

5.01 Technical Specifications for Honeyville City

- A. Adoption of Divisions 01 through 34 of the Manual of Standard Specifications, as published by Utah LTAP Center, Utah State University, Logan, Utah, current edition, with all published amendments.
- B. Modifications and Additions to Manual of Standard Specifications (see Appendix C)

5.02 Order of Precedence

- A. Approved project-specific specifications (when applicable)
- B. Modifications and Additions to Manual of Standard Specifications
- C. Manual of Standard Specifications, current edition, with all published amendments

SECTION 6 STANDARD DRAWINGS, PLANS, AND DETAILS

6.01 Standard Drawings, Plans, and Details for Honeyville City

- A. Honeyville City Standard Drawings, current edition (See Appendix D)
- B. Adoption of Manual of Standard Plans, published by Utah LTAP Center, Utah State University, Logan, Utah, current edition, with all published amendments.

6.02 Order of Precedence

- A. Approved project-specific drawings and details (when applicable)
- B. Honeyville City Standard Drawings, current edition
- C. Manual of Standard Plans, current edition, with all published amendments, when not covered by one of the aforementioned items

APPENDIX A
STORM DRAIN AND DRAINAGE DESIGN STANDARDS

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A1. General Provisions

- A. This document represents the reporting, design, and construction standards for private and public design and construction as it relates to storm drainage within the City.
- B. A Storm Water Report is required for all new development and redevelopment projects. All reports shall be signed and sealed by a registered Professional Engineer licensed in Utah.
- C. Design Of Drainage Systems: The drainage systems shall be designed to:
 - 1. Permit the unimpeded flow of natural watercourses unless otherwise approved by the City and other applicable government agencies.
 - 2. Ensure adequate drainage of all low points.
 - 3. Ensure applications of the following regulations regarding development in designated floodplains and flood prone areas.

A2. Definitions and Acronyms

- A. The following terms shall be defined as follows in this document relating to storm water:
 - 1. Best Management Practices (BMPs) – Construction practices and control measures necessary to protect against pollution generated by construction sites.
 - 2. Detention Basin –A water storage pond designed to store a volume of water that reduces the post-development peak runoff of a storm to the pre-development runoff rate or other rate as defined by the governing body. This is accomplished by the use of an outlet which controls the rate of flow out of the pond into the receiving storm drain or water body. Detention ponds contain an inlet, outlet, and spillway; the inlet and outlet may be one and the same. The detention basin is intended to drain the storm water within a period of time to make the volume available for the next storm event.
 - 3. Development – Any man-made change to unimproved land, including but not limited to site preparation, excavation, filling, grading, paving, and construction of buildings or other structures. Agricultural operations are not considered development.
 - 4. Disturb – To alter the physical condition, natural terrain or vegetation of land by clearing, grubbing, grading, excavating, filling, building or other construction activity.
 - 5. Drain Inlet – A point of entry into a sump, storm water basin, or storm drain system.
 - 6. Drinking Water Source Protection Zone – Zones determined by geo-hydrology designed to protect groundwater aquifers of a well in a culinary water system.
 - 7. Freeboard – The vertical distance between the emergency spillway and the top of the basin embankment.
 - 8. Hardscape – Generally impervious areas, typically streets, sidewalks, driveways, parking areas, and roofs.

9. Infiltration – The movement of water through the soil surface and into the soil;³ the movement of water downward from the ground surface through the upper soil.⁴
10. Infiltration Rate – The rate at which water actually enters the soils during a storm.
11. Infiltration System (storm water) – A system which is designed to return storm water runoff into an underground aquifer.
 - a. Bioretention facilities, rain gardens, and tree boxes that are designed to slow down and hold storm water runoff for biological treatment and use by vegetative uptake are not considered to be infiltration systems if they are isolated from groundwater. Groundwater isolation may be achieved with impermeable liners or an underdrain that does not discharge into a dug, bored, drilled or driven well, improved sinkhole or other subsurface fluid distribution system.
 - b. The discharge of storm water piping below grade for the purpose of infiltration is considered a Class V injection well facility.
12. Injection Well, Class V – As defined in Utah Administrative Code R317-7-2:
 - a. A bored, drilled, or driven shaft whose depth is greater than its largest surface dimension, OR
 - b. A dug hole whose depth is greater than its largest surface dimension, OR
 - c. An improved sinkhole, OR
 - d. A subsurface fluid distribution system.
13. Low Impact Development (LID) – An approach to land development (or re-development) that works with nature to more closely mimic pre-development hydrologic functions, reduces or minimizes the quantity of storm water runoff, and protects or improves water quality in receiving water bodies.
14. Outlet – The discharge mechanism of a detention basin, typically a pipe containing a head gate or orifice to control the release of water out of the basin.
15. Percolation – The movement of water through the subsurface soil layers, usually continuing downward to the groundwater table, measured by a Standard Percolation Test in units of minutes per inch.
16. Pollutant – Chemicals, sediment, trash, disease-carrying organisms, and other contaminants picked up by storm water which is conveyed into rivers, streams, and other water bodies.

³ Linsley/Franzini/Freyberg/Tchobanglous. (1992). *Water Resources Engineering and Environmental Engineering*. New York: McGraw-Hill Inc.

⁴ Lindeburg. (2003). *Civil Engineering Reference Manual*. Belmont, CA: Professional Publications, Inc.

17. Redevelopment – Alteration of a property that changes the footprint of a site or building.
18. Retention Basin – A water storage pond designed to store the runoff volume of a storm and dispose of water through percolation, infiltration, and evaporation within a period of time to make the volume available for the next storm event. A retention basin contains an inlet and spillway, but no structural outlet.
19. Softscape – Generally pervious areas, such as native vegetation and landscaped areas.
20. Spillway, Emergency – A storm drain basin feature that controls and guides storm water as it spills over the basin’s embankment.
21. Spillway, Internal – A storm drain basin feature that allows excess water to leave the basin through discharge piping which is set at an elevation below the emergency spillway.
22. Storm Drain System – The system of conveyances (including but not limited to catch basins, detention basins, retention basins, infiltration galleries, curbs, gutters, ditches, cross drains, roads, man-made channels, sumps, pipes, etc.) owned and operated publicly or privately, which is designed and used for collecting and/or conveying storm water.
23. Storm Water Pollution Prevention Plan (SWPPP) – A written plan that evaluates and minimizes the impact of pollutants on storm water through the use of control measures and activities that target pollution sources. A SWPPP template can be found on the UDEQ Water Quality website.
24. Storm Water Report – A written analysis of a development or redevelopment site that estimates the volume and rate of storm water runoff generated by the proposed improvements. The report details rationale and calculations for establishing the sizes of storm water piping and storage facilities in compliance with this document.
25. Storm Water Runoff – Precipitation that is not intercepted or otherwise captured at a site which eventually enters into natural water bodies such as rivers, streams, and lakes.
26. UAC – Utah Administrative Code.
27. UDEQ – Utah Department of Environmental Quality.

A3. Rainfall Hydrology

- A. All storm drain system components shall be designed to accommodate the 100-year storm event, unless otherwise stated.
- B. Storm Specifications
 1. Local storm drain piping shall be designed for the 10-year storm, where the street or other aboveground conveyance will carry the difference to the 100-year storm .

2. Local detention basins, including all piping into the basin from the nearest point of entry, shall be designed to accommodate the 10-year storm event.
 3. Local retention basins, including all piping into the basin from the nearest point of entry, shall be designed to accommodate the 100-year, 3-hour storm.
 4. Regional detention basins, including all piping into the basin from the nearest point of entry, shall be designed to accommodate the 100-year storm event.
- C. See Exhibits 1 and 2 for rainfall data.
- D. The storm duration used for the sizing of basins shall be based upon the worst-case scenario. The time of concentration shall be calculated and shown.
- E. Hydrologic Methodology
1. Parameters
 - a. For residential subdivisions:
 - i. Hardscape – Proposed streets and sidewalk areas plus the estimated hardscape areas determined by using a recent subdivision with similarly sized lots.
 - ii. Softscape – The remaining area of the subdivision not hardscape.
 - b. For commercial subdivisions:
 - i. Hardscape – Proposed street and sidewalk area plus 85% of lot area
 - ii. Softscape – 15% of lot area
 - c. For commercial site plans (original plat recordation prior to 2025):
 - i. Hardscape – 85% of lot area
 - ii. Softscape – 15% of lot area
 2. Developments less than 20 acres
 - a. The Rational Method may be used. A computer model may also be used. See paragraph 3 for more information.
 - b. Rainfall Intensity – When using the Rational Method, use the rainfall intensity table provided in Exhibit 1 of this document.
 - c. Runoff Coefficients – The following C-values shall be used when using the Rational Method:
 - i. Hardscape – 0.90
 - ii. Softscape (open space, landscaping) – 0.25
 - iii. Values from published sources may be used when pre-approved by the City Engineer.
 3. Developments larger than 20 acres

- a. A City Engineer-approved computer model shall be used.
- b. Rainfall Pattern and Depth – The following rainfall pattern shall be used. This pattern is based on the Farmer-Fletcher Distribution. This pattern is for a 1-inch unit storm and must be multiplied by rainfall depth for storms of other magnitudes, as provided in Exhibit 2.

Farmer-Fletcher Distribution

Unit Storm

Time (Min.)	Depth (inches)	Time (Min.)	Depth (inches)	Time (Min.)	Depth (inches)	Time (Min.)	Depth (inches)	Time (Min.)	Depth (inches)	Time (Min.)	Depth (inches)
1	0	11	0.004	21	0.033	31	0.052	41	0.012	51	0.005
2	0	12	0.005	22	0.034	32	0.045	42	0.011	52	0.005
3	0.002	13	0.008	23	0.035	33	0.04	43	0.01	53	0.004
4	0.002	14	0.009	24	0.038	34	0.035	44	0.009	54	0.004
5	0.002	15	0.009	25	0.039	35	0.03	45	0.009	55	0.004
6	0.002	16	0.013	26	0.045	36	0.022	46	0.008	56	0.003
7	0.002	17	0.017	27	0.052	37	0.02	47	0.006	57	0.003
8	0.002	18	0.02	28	0.054	38	0.018	48	0.006	58	0.002
9	0.003	19	0.024	29	0.054	39	0.016	49	0.005	59	0.002
10	0.003	20	0.029	30	0.054	40	0.014	50	0.005	60	0.001

A4. Storm Drain System

A. Independent System

1. Generally, storm waters shall not be conveyed in irrigation ditches, and irrigation waters shall not be conveyed in storm drain systems. See following paragraphs for additional information.
2. No ditch or canal shall be approved as suitable for the disposal of storm drainage water without the written permission of the appropriate ditch or canal company or of the water users of said ditch or canal.
3. No ditch or canal shall be used for stormwater disposal unless adequately improved to handle such water as might be reasonably expected to flow in the canal or ditch as irrigation water, the subdivision runoff water, and any other water expected to reach such canal or ditch.

B. Curb and Gutter

1. Gutter capacities will be limited to that flow which will not create a hazard, damage or flood adjacent properties and which can be safely intercepted at the inlets.

C. Piping

1. All storm drain lines considered part of the City's storm drain system shall be reinforced concrete pipe (RCP), of appropriate class.
2. Minimum size for storm drain mains shall be 15-inch diameter.
3. Public storm drain pipes shall not be curved.
4. Pipe specifications are included in the Section 5 of the Development, Design, and Construction Standards.
5. Pioneering Agreement – Where determined by the City Engineer and/or the Storm Drain Capital Facilities Plan, larger drain lines shall be installed to accommodate future development. The cost to provide adequate storm drainage for a development shall be paid for by the Developer. Upsizing will be coordinated at the time of development. The cost of upsizing will be the responsibility of the City.
6. Where applicable, the system shall be designed to accommodate runoff from those areas adjacent to and "upstream" from the subdivision.

D. Access and Structures

1. Storm drain lines shall have cleanout boxes, inlets, or manholes installed at all changes in grade or alignment, with a maximum distance of 400 feet between accesses. Structures shall be installed in accordance with the Technical Specifications and Standard Drawings.
2. Stormwater inlets and catch basins shall be provided within the roadway improvements at points approved by the City Engineer.

E. Sumps

1. Sumps are not allowed in the City's storm drain system, except as approved by the City Engineer on a case-by-case basis.
2. Sumps shall not be permitted within zones 1, 2, or 3 of any Drinking Water Source Protection Zone of any drinking water source.
3. Class V Injection Well permitting is required.

- F. Grates – Grates shall be provided at all entrances/exits of the storm drain system, and on the upstream end of all culverts greater than 50-ft in length.

A5. Detention and Retention Basins

- A. Storm drainage basins are required for all development; however, residential developments less than one (1) acre are not required to have detention or retention, except when determined by the DRC.

B. Basin Property, Easement, and Access

1. Public Basins – Public basins shall be located on a separate parcel dedicated to the City. The developer shall provide the City permanent access to any public basin.
2. Private Basin – Private basins serving multiple lots shall be located on a separate parcel, owned by the home-or land-owners association. Private basins serving a single lot shall be located within the lot. The City shall be provided an easement to, around, and across the basin for emergency access, operation, and/or repair for a private basin.
3. Access – Each basin shall be constructed with sufficient, all-weather, drivable access to all structures from a public street. A turnaround area shall be provided at the termination of the access road.

C. Maintenance and Ownership

Actual ownership and responsibility shall be specifically defined in the Owner's Dedication, Certificates, Development Agreements, or by Deed.

1. Local Public Basins – Local basins shall be constructed by the developer. Following conditional acceptance of the construction, the operation and maintenance shall be conveyed to the City.
2. Regional Basins – Regional basins shall be owned and maintained by the City, constructed according to the criteria herein, and approved of the DRC.
3. Private Basins
 - a. Single Lots (Non-residential only) – When approved, private basins shall be owned and maintained by the property owner.
 - b. Multiple Lots – When approved, private basins shall be owned and maintained by the Homeowners' Association.
 - c. Access may be provided from a private street provided an access easement is granted to the City providing access to/from the basin from a public street.
 - d. For all private basins, Developer is required to enter into a Long-Term Storm Water Maintenance Agreement with the City.

D. Basin Volume

1. All basin designs and calculations shall be included in the Storm Water Report and submitted to and reviewed by the DRC for approval.
2. Volume shall be measured to the internal spillway (overflow) elevation.
3. Volume in pipes, ditches, or roadside swales shall not be considered in the volume calculation for detention and retention basins.
4. Storage of water shall not be allowed in parking lots.

E. Allowable Discharge Design

1. See Section A3.B for storm specifications.
2. Discharge shall not exceed the standard rate of 0.2 cubic feet per second per total acre.
Show all calculations or provide spreadsheet or program file.
3. Calculations shall be based on the total acreage of the development draining to the basin.
4. Pass-through of offsite drainage through the development must be considered and will be allowed.

F. Underground Storage – Underground storage will be considered for private basins only. See also paragraph J of this section.

G. Detention and Retention Basin Elements

1. Side slopes – Side slopes shall not be steeper than 4:1 (horizontal to vertical).
2. Bottom Slope – The basin floor shall be designed so as to prevent the permanent ponding of water. The slope of the floor of the basin shall not be less than 1% to provide drainage of water to the outlet grate and prevent prolonged wet, soggy, or unstable soil conditions. The preferred minimum slope is 2%.
3. Freeboard – At least one (1) foot of freeboard is required (berm above the high water mark).
4. Spillways
 - a. The spillway shall be designed to carry the 200-year storm flow minus the 100-year storm flow which is handled by the outlet control structure.
 - b. Spillways shall introduce flows back into the pipe or stream downstream of the outlet control.
 - c. Spillways shall include a maintained swale and drainage easement to a safe location.
 - d. The spillway shall be designed to prevent erosion.
 - e. All spillways shall be designed to protect adjacent embankments, nearby structures, and surrounding properties.
5. Ground Covers – The surface area of the basin shall be hydro-seeded or hydro-mulched. Use seed mixture found in the Technical Specifications. Developer/contractor is responsible for establishing vegetation.
6. Embankment (Fill) Construction – If a raised embankment is constructed for a basin (constructed with granular materials), it shall be provided with a minimum of 6-inches of clay cover on the inside of the berm to prevent water passage through the soil.

7. Excavation (Cut) Construction – If the basin is constructed primarily by excavation, then it may be necessary to provide an impermeable liner (for detention basins) and land drain system when constructed in the proximity of basements or other below grade structures as determined by the geotechnical investigation.

H. Detention Basins

1. Percolation – No reduction due to percolation for detention basins volumes shall be permitted.
2. Outlet Control – Private detention basins may have a calculated fixed orifice plate mounted on the outlet of the basin. Public detention basins shall have movable, screw-type head gates set at the calculated opening height with a stop block required to carry the maximum allowable discharge.
3. Low Flow Piping – The inlet and outlet structures may be located in different areas of the basin, requiring a buried pipe to convey any base flows that enter and exit the basin. (Cross gutters and surface flows are prohibited.)

I. Retention Basins

1. Retention basins must be specifically approved by the DRC.
2. Retention basins shall not be permitted within zones 1, 2, or 3 of any Drinking Water Source Protection Zone of any drinking water source.
3. An approved oil/sediment separator shall be installed upstream of retention basin.
4. Retention Basin Criteria – Retention basins may be permitted if the following conditions apply:
 - a. The distance between the nearest storm water conveyance facility and the boundary of the development is greater than:
 - i. 500 feet for subdivisions or 10 lots or less;
 - ii. 1,000 feet for subdivisions greater than 10 lots.
 - b. The basin is not located within a Hazardous Area (such as a steep slope) or some other sensitive area (such as a Drinking Water Source Protection Zone).
5. Percolation Rate for Retention Basins
 - a. A percolation test shall be performed by a licensed tester. The percolation test shall be performed at the elevation of the proposed grade of the bottom of the retention basin.
 - b. Due to degradation of soils ability to percolate over time, only 80% of the percolation rate shall be used in the calculations for the retention basins.
6. Retention basins shall be designed to completely drain within 48 hours of the primary storm event.

J. Subsurface Fluid Distribution Systems

1. Subsurface Fluid Distribution Systems are allowed for private basins only.
2. See Paragraph I for requirements related to Percolation Rate for Retention Basins.
3. A Class V injection well permit is required.
4. An approved oil/sediment separator shall be installed upstream of subsurface fluid distribution system.
5. Subsurface Fluid Distribution Systems are not allowed for storm water disposal if located in Zone 1 or 2 of a drinking water source. They may be allowed in Zone 3 or 4 of a drinking water source if they are equipped with appropriate pretreatment and approved by the City Engineer.
6. Examples of Subsurface Fluid Distribution Systems include but are not limited to: ADS StormTech® systems, ACF Environmental R-Tanks® and similar; perforated pipe infiltration galleries, etc.

A6. Water Quality

- A. Long-term Best Management Practices (BMPs) shall be used to maintain, to the maximum extent practical, the quality of the water to the pre-developed condition.
- B. Construction BMPs shall be implemented during construction.

EXHIBIT 1 – NOAA POINT PRECIPITATION FREQUENCY ESTIMATES - INTENSITY



NOAA Atlas 14, Volume 1, Version 5
Location name: Honeyville, Utah, USA*
Latitude: 41.6389°, Longitude: -112.0796°
Elevation: m/ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.46 (1.28-1.68)	1.87 (1.66-2.15)	2.56 (2.24-2.93)	3.19 (2.77-3.66)	4.19 (3.56-4.82)	5.09 (4.22-5.89)	6.14 (4.97-7.20)	7.39 (5.78-8.80)	9.38 (6.98-11.4)	11.2 (7.98-13.9)
10-min	1.12 (0.978-1.28)	1.42 (1.26-1.63)	1.95 (1.70-2.23)	2.42 (2.11-2.78)	3.19 (2.71-3.67)	3.87 (3.22-4.49)	4.68 (3.79-5.48)	5.63 (4.40-6.69)	7.14 (5.32-8.69)	8.51 (6.08-10.6)
15-min	0.924 (0.808-1.06)	1.17 (1.04-1.35)	1.61 (1.41-1.84)	2.00 (1.74-2.30)	2.63 (2.24-3.03)	3.20 (2.66-3.71)	3.87 (3.13-4.53)	4.65 (3.64-5.53)	5.90 (4.39-7.18)	7.04 (5.02-8.75)
30-min	0.622 (0.544-0.710)	0.790 (0.698-0.908)	1.08 (0.948-1.24)	1.35 (1.17-1.55)	1.77 (1.51-2.04)	2.16 (1.79-2.50)	2.60 (2.11-3.05)	3.13 (2.45-3.72)	3.97 (2.96-4.84)	4.74 (3.38-5.89)
60-min	0.384 (0.337-0.440)	0.489 (0.432-0.562)	0.671 (0.587-0.768)	0.835 (0.726-0.958)	1.10 (0.934-1.26)	1.33 (1.11-1.54)	1.61 (1.30-1.89)	1.94 (1.51-2.30)	2.46 (1.83-2.99)	2.93 (2.09-3.65)
2-hr	0.250 (0.224-0.282)	0.314 (0.280-0.354)	0.411 (0.365-0.462)	0.500 (0.439-0.564)	0.643 (0.553-0.727)	0.772 (0.651-0.880)	0.922 (0.757-1.06)	1.10 (0.874-1.29)	1.38 (1.04-1.66)	1.63 (1.18-2.00)
3-hr	0.196 (0.177-0.220)	0.245 (0.222-0.275)	0.310 (0.279-0.347)	0.371 (0.331-0.417)	0.466 (0.409-0.526)	0.551 (0.474-0.626)	0.650 (0.547-0.749)	0.765 (0.624-0.895)	0.949 (0.741-1.14)	1.12 (0.838-1.36)
6-hr	0.134 (0.122-0.147)	0.165 (0.151-0.183)	0.204 (0.186-0.226)	0.239 (0.215-0.265)	0.290 (0.258-0.323)	0.333 (0.292-0.372)	0.380 (0.329-0.430)	0.435 (0.368-0.497)	0.528 (0.434-0.617)	0.611 (0.488-0.727)
12-hr	0.087 (0.080-0.096)	0.108 (0.099-0.119)	0.132 (0.121-0.146)	0.153 (0.139-0.169)	0.184 (0.165-0.204)	0.209 (0.185-0.233)	0.236 (0.206-0.265)	0.264 (0.226-0.300)	0.307 (0.257-0.356)	0.343 (0.279-0.403)
24-hr	0.057 (0.052-0.062)	0.070 (0.064-0.077)	0.086 (0.079-0.094)	0.099 (0.091-0.109)	0.118 (0.107-0.129)	0.133 (0.120-0.145)	0.148 (0.133-0.163)	0.165 (0.147-0.181)	0.187 (0.165-0.206)	0.205 (0.179-0.226)
2-day	0.033 (0.030-0.036)	0.041 (0.037-0.045)	0.050 (0.046-0.055)	0.058 (0.053-0.064)	0.068 (0.062-0.075)	0.077 (0.070-0.085)	0.086 (0.077-0.095)	0.096 (0.085-0.106)	0.109 (0.096-0.121)	0.120 (0.104-0.134)
3-day	0.024 (0.022-0.027)	0.030 (0.027-0.033)	0.037 (0.034-0.041)	0.043 (0.039-0.047)	0.051 (0.046-0.056)	0.057 (0.051-0.063)	0.064 (0.057-0.070)	0.071 (0.063-0.078)	0.081 (0.071-0.090)	0.089 (0.077-0.099)
4-day	0.020 (0.018-0.022)	0.025 (0.023-0.027)	0.030 (0.028-0.033)	0.035 (0.032-0.039)	0.042 (0.038-0.046)	0.047 (0.042-0.052)	0.053 (0.047-0.058)	0.059 (0.052-0.065)	0.067 (0.058-0.074)	0.073 (0.063-0.081)
7-day	0.014 (0.012-0.015)	0.017 (0.016-0.019)	0.021 (0.019-0.024)	0.025 (0.022-0.027)	0.029 (0.026-0.032)	0.033 (0.029-0.037)	0.037 (0.033-0.041)	0.041 (0.036-0.046)	0.047 (0.041-0.052)	0.051 (0.044-0.057)
10-day	0.011 (0.010-0.012)	0.014 (0.012-0.015)	0.017 (0.015-0.018)	0.019 (0.017-0.021)	0.023 (0.021-0.025)	0.026 (0.023-0.028)	0.029 (0.026-0.032)	0.032 (0.028-0.035)	0.036 (0.031-0.040)	0.039 (0.034-0.043)
20-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.012)	0.012 (0.011-0.013)	0.014 (0.013-0.015)	0.016 (0.014-0.017)	0.017 (0.016-0.019)	0.019 (0.017-0.021)	0.021 (0.019-0.023)	0.022 (0.020-0.025)
30-day	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.008-0.009)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.013 (0.011-0.014)	0.014 (0.013-0.015)	0.015 (0.014-0.017)	0.017 (0.015-0.018)	0.018 (0.016-0.020)
45-day	0.005 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.012 (0.011-0.013)	0.013 (0.012-0.014)	0.014 (0.012-0.015)
60-day	0.004 (0.004-0.004)	0.005 (0.005-0.005)	0.006 (0.006-0.007)	0.007 (0.006-0.007)	0.008 (0.007-0.008)	0.008 (0.008-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.011 (0.010-0.012)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

EXHIBIT 2 – NOAA POINT PRECIPITATION FREQUENCY ESTIMATES - DEPTH



NOAA Atlas 14, Volume 1, Version 5
Location name: Honeyville, Utah, USA*
Latitude: 41.6389°, Longitude: -112.0796°
Elevation: 4304 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.122 (0.107-0.140)	0.156 (0.138-0.179)	0.213 (0.187-0.244)	0.266 (0.231-0.305)	0.349 (0.297-0.402)	0.424 (0.352-0.491)	0.512 (0.414-0.600)	0.616 (0.482-0.733)	0.782 (0.582-0.952)	0.933 (0.665-1.16)
10-min	0.186 (0.163-0.213)	0.237 (0.210-0.272)	0.325 (0.284-0.372)	0.404 (0.351-0.464)	0.531 (0.452-0.611)	0.645 (0.536-0.748)	0.780 (0.631-0.913)	0.938 (0.733-1.12)	1.19 (0.886-1.45)	1.42 (1.01-1.76)
15-min	0.231 (0.202-0.264)	0.293 (0.259-0.338)	0.402 (0.352-0.461)	0.501 (0.435-0.575)	0.658 (0.560-0.758)	0.800 (0.664-0.927)	0.967 (0.782-1.13)	1.16 (0.909-1.38)	1.48 (1.10-1.80)	1.76 (1.26-2.19)
30-min	0.311 (0.272-0.355)	0.395 (0.349-0.454)	0.542 (0.474-0.621)	0.675 (0.586-0.774)	0.886 (0.754-1.02)	1.08 (0.894-1.25)	1.30 (1.05-1.52)	1.57 (1.22-1.86)	1.99 (1.48-2.42)	2.37 (1.69-2.95)
60-min	0.384 (0.337-0.440)	0.489 (0.432-0.562)	0.671 (0.587-0.768)	0.835 (0.726-0.958)	1.10 (0.934-1.26)	1.33 (1.11-1.54)	1.61 (1.30-1.89)	1.94 (1.51-2.30)	2.46 (1.83-2.99)	2.93 (2.09-3.65)
2-hr	0.500 (0.448-0.564)	0.628 (0.561-0.709)	0.823 (0.730-0.925)	1.00 (0.879-1.13)	1.29 (1.11-1.46)	1.54 (1.30-1.76)	1.84 (1.51-2.12)	2.20 (1.75-2.58)	2.75 (2.08-3.31)	3.26 (2.36-4.00)
3-hr	0.590 (0.534-0.662)	0.736 (0.667-0.827)	0.933 (0.839-1.04)	1.12 (0.995-1.25)	1.40 (1.23-1.58)	1.66 (1.43-1.88)	1.95 (1.64-2.25)	2.30 (1.88-2.69)	2.85 (2.23-3.42)	3.35 (2.52-4.10)
6-hr	0.804 (0.735-0.885)	0.992 (0.905-1.10)	1.22 (1.12-1.36)	1.43 (1.29-1.59)	1.74 (1.55-1.94)	2.00 (1.75-2.23)	2.28 (1.97-2.58)	2.60 (2.20-2.98)	3.17 (2.60-3.70)	3.66 (2.93-4.36)
12-hr	1.06 (0.971-1.16)	1.31 (1.20-1.44)	1.60 (1.46-1.76)	1.85 (1.68-2.04)	2.22 (2.00-2.46)	2.52 (2.24-2.81)	2.84 (2.49-3.20)	3.19 (2.73-3.62)	3.71 (3.10-4.29)	4.13 (3.37-4.86)
24-hr	1.37 (1.26-1.50)	1.70 (1.56-1.86)	2.08 (1.90-2.28)	2.40 (2.19-2.62)	2.84 (2.58-3.11)	3.20 (2.89-3.50)	3.57 (3.21-3.92)	3.96 (3.53-4.35)	4.50 (3.97-4.96)	4.92 (4.30-5.45)
2-day	1.61 (1.48-1.77)	1.98 (1.82-2.18)	2.42 (2.22-2.66)	2.79 (2.55-3.07)	3.31 (3.00-3.64)	3.73 (3.37-4.10)	4.17 (3.74-4.59)	4.63 (4.12-5.11)	5.27 (4.63-5.84)	5.79 (5.03-6.44)
3-day	1.79 (1.63-1.97)	2.20 (2.02-2.43)	2.69 (2.46-2.96)	3.10 (2.82-3.42)	3.68 (3.33-4.05)	4.15 (3.74-4.57)	4.64 (4.15-5.11)	5.15 (4.57-5.68)	5.87 (5.14-6.49)	6.44 (5.58-7.14)
4-day	1.96 (1.79-2.16)	2.42 (2.21-2.67)	2.96 (2.70-3.26)	3.42 (3.10-3.76)	4.06 (3.66-4.46)	4.57 (4.10-5.03)	5.11 (4.56-5.62)	5.68 (5.02-6.25)	6.46 (5.66-7.13)	7.08 (6.14-7.84)
7-day	2.40 (2.18-2.66)	2.98 (2.71-3.30)	3.65 (3.31-4.04)	4.21 (3.81-4.67)	5.00 (4.50-5.54)	5.63 (5.04-6.24)	6.29 (5.60-6.97)	6.98 (6.16-7.74)	7.93 (6.93-8.82)	8.69 (7.52-9.70)
10-day	2.72 (2.48-3.00)	3.37 (3.08-3.72)	4.13 (3.76-4.55)	4.75 (4.32-5.24)	5.61 (5.08-6.19)	6.28 (5.65-6.93)	6.98 (6.25-7.71)	7.70 (6.84-8.51)	8.68 (7.64-9.62)	9.44 (8.25-10.5)
20-day	3.58 (3.30-3.89)	4.43 (4.09-4.82)	5.36 (4.93-5.83)	6.08 (5.59-6.62)	7.05 (6.46-7.68)	7.78 (7.11-8.48)	8.52 (7.74-9.29)	9.24 (8.36-10.1)	10.2 (9.16-11.2)	10.9 (9.76-12.0)
30-day	4.35 (4.03-4.73)	5.38 (4.97-5.84)	6.48 (5.98-7.05)	7.37 (6.79-8.02)	8.55 (7.85-9.31)	9.45 (8.64-10.3)	10.4 (9.44-11.3)	11.3 (10.2-12.3)	12.5 (11.2-13.7)	13.4 (12.0-14.7)
45-day	5.46 (5.05-5.90)	6.73 (6.23-7.28)	8.03 (7.41-8.68)	9.04 (8.33-9.78)	10.4 (9.51-11.2)	11.3 (10.4-12.3)	12.3 (11.2-13.4)	13.3 (12.0-14.5)	14.6 (13.1-15.9)	15.5 (13.9-17.0)
60-day	6.45 (5.97-6.95)	7.94 (7.36-8.57)	9.39 (8.68-10.1)	10.5 (9.68-11.3)	11.9 (11.0-12.9)	12.9 (11.9-14.0)	13.9 (12.7-15.1)	14.9 (13.6-16.1)	16.1 (14.6-17.5)	17.0 (15.3-18.6)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

APPENDIX B

GEOTECHNICAL INVESTIGATION REPORT MINIMUM REQUIREMENTS

B1. General Provisions

- A. All reports shall include the Minimum Testing Requirements and use the Design Parameters as detailed below.
- B. All reports shall be signed and sealed by a registered Professional Engineer licensed in Utah.

B2. Report Contents

- A. Geotechnical Investigation Report submitted to Honeyville City shall generally include the following contents, as applicable.

CONTENTS

- 1.0 Project Description/Overview
 - 1.1 Existing Conditions
 - 1.2 Proposed Improvements
- 2.0 Site Conditions
 - 2.1 Surface Conditions
 - 2.2 Subsurface Conditions
 - 2.3 Groundwater
- 3.0 Subsurface Investigation
 - 3.1 Percolation Test
 - 3.2 Infiltration Test
- 4.0 Laboratory Testing
- 5.0 Geologic Hazards
 - 5.1 Rock Fall
 - 5.2 Faulting
 - 5.3 Seismic/Ground Motions
 - 5.4 Lateral Spread
 - 5.5 Liquefaction Potential
 - 5.6 Landslide and Scarps
 - 5.7 Debris Flow/Alluvial Fan
 - 5.8 Expansive/Collapsible Soils

- 5.9 Avalanche
- 6.0 Earthwork
 - 6.1 Site Preparation and Grading
 - 6.2 Temporary Excavations
 - 6.3 Permanent Cut and Fill Slopes
 - 6.4 Fill Material Composition, Placement, and Compaction
 - 6.5 Roadway and Embankments Fill
 - 6.6 Structural Fill
 - 6.7 Utility Trenches
 - 6.8 Re-use of Excavated Soil Materials
- 7.0 Foundations
 - 7.1 Foundation Recommendations
 - 7.2 Installation Requirements
 - 7.3 Estimated Settlement
 - 7.4 Lateral Resistance
- 8.0 Static and Seismic Lateral Earth Pressures (Active, Moderately Yielding, At-Rest, and Passive Conditions)
- 9.0 Floor Slabs
- 10.0 Drainage Recommendations
 - 10.1 Surface
 - 10.2 Subsurface
 - 10.3 Foundation Drains/Subdrains
- 11.0 Pavement Section
 - 11.1 (See Section B4)
 - 11.2 Exterior Concrete Flatwork
- 12.0 Retaining Walls (Required for all retaining walls taller than 4 feet, when used)
 - 12.1 Surface and Subsurface Drainage
 - 12.2 Internal and Global Stability (Static and Seismic Loading)
 - 12.3 Dimensions and Elevations
 - 12.4 Settlements

12.5 Construction Inspection

13.0 Slope Stability (Required for slopes greater than 25%)

14.0 References

*Tables**Figures*

- A. Project Location/Site Map
- B. Boring/Test Pit Locations
- C. Boring/Test Pit Logs
- D. Key to Symbols for Boring/Test Pit Logs

*Appendices, as needed***B3. Minimum Testing Requirements**

A. Borings (B) and Test Pits (TP), either known as a “hole”

1. Total: Minimum 1 hole per 2 acres, rounded up
 - a. Example: 5.5 acre site: $5.5 \div 2 = 2.75$, round up to 3 holes
2. Roadway: 1 hole + 1 hole per 500 lf of roadway (rounded up, along centerline alignment) (counts towards Total)
 - a. Example: 10.5 acre subdivision with 1,850 lf of roadway centerline
 - i. Roadway: $1 + (1,850 \div 500) = 4.7$, round up to 5 holes
 - ii. Total, minimum: $10.5 \div 2 = 5.25$, round up to 6 holes
 - iii. Therefore, 6 total holes are required for subdivision, with 5 of the holes being along the roadway alignment.
3. Commercial sites: 1 hole + 1 hole per 5,000 square feet (rounded up) for buildings
 - a. Example: 13,500 sf building: $1 + (13,500 \div 5,000) = 3.7$, round up to 4 holes
4. Additional borings or test pits as may be required for a representative sampling of the site, as determined by the geotechnical engineer.

B4. Minimum Design Parameters for Pavement

A. Local/Residential

1. 75,000 ESALS
2. 20-yr design life
3. 3% growth factor

B. Cul-de-Sac

1. 50,000 ESALS
2. 20-yr design life
3. 3% growth factor

C. Minor Collector (as shown on the City's Master Street Map)

1. 300,000 ESALS
2. 20-yr design life
3. 3% growth factor

D. Major Collector / Minor Arterial

1. Contact City for traffic requirements

APPENDIX C
MODIFICATIONS AND ADDITIONS TO THE
MANUAL OF STANDARD SPECIFICATIONS

as published by:
Utah LTAP Center
Utah State University
Logan Utah
Current edition

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SECTION 03 20 00 M
CONCRETE REINFORCING (Modified)

PART 3	EXECUTION
---------------	------------------

3.1 PLACING

Add paragraphs F and G as follows:

- F. No steel shall extend from or be visible on any finished surface
- G. All steel shall have a minimum of 1.5-inches of concrete cover.

**SECTION 03 30 04 M
CONCRETE (Modified)****PART 2 PRODUCTS****2.5 MIX DESIGN**

Replace Paragraph A with the following:

- A. **Class:** : When not specified in the plans or project specification, use the following table to select the class of concrete required for the application:

Class	Application
5,000	Reinforced Structural Concrete
4,000	Sidewalks, curb, gutter, cross gutters, waterways, pavements, and unreinforced footings and foundations
3,000	Thrust blocks
2,000	Anchors, mass concrete

SECTION 03 30 10 M
CONCRETE PLACEMENT (Modified)

PART 3	EXECUTION
---------------	------------------

3.2 PREPARATION

Add paragraph F as follows:

- F. No concrete shall be placed until the surfaces have been inspected and approved by the City or authorized representative.

SECTION 31 23 16 M
EXCAVATION (Modified)

PART 3	EXECUTION
---------------	------------------

3.3 GENERAL EXCAVATION REQUIREMENT

Add paragraph I as follows:

- I. Excavation for pipelines under existing curb and gutter, concrete slabs, or sidewalks shall be open cut. In no case shall tunneling be allowed. At the option of the City Engineer, jacking under permanent facilities may be allowed based on his/her direction.

Add Section 31 23 20 Fill

**SECTION 31 23 20
FILL**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Non-structural fill materials.
- B. Non-structural placement and compaction.

1.2 REFERENCES

A. ASTM Standards

- D 698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- D 1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
- D 2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. When requested by ENGINEER, submit laboratory dry density and optimum laboratory moisture content for each type of fill to be used.

1.4 QUALITY ASSURANCE

- A. Do not change material sources without ENGINEER's knowledge.
- B. Reject material that does not comply with the requirements specified in this Section.

1.5 STORAGE

- A. Safely stockpile materials.
- B. Separate differing fill materials, prevent mixing, and maintain optimum moisture content of materials.

1.6 SITE CONDITIONS

- A. Do not place, spread, or roll any fill material over material that is damaged by water. Remove and replace damaged material at no additional cost to OWNER.
- B. Control erosion. Keep area free of trash and debris. Repair settled, eroded, and rutted areas.
- C. Reshape and compact damaged structural section to required density.

1.7 ACCEPTANCE

- A. General: Native material may be wasted if there is no additional cost to substitute material acceptable to ENGINEER.
- B. Lift thickness: One test per Lot.

- C. Compaction: One test per Lot. Verify density using nuclear tests, ASTM D 2922. Compaction and Lot sizes as follows:
 - 1. Compact to 92% Standard Proctor
 - 2. One Lot = 1500 square feet per lift

1.8 **WARRANTY**

- A. Repair settlement damage at no additional cost to OWNER.

PART 2 PRODUCTS

2.1 **FILL MATERIALS**

- A. Material shall be free from sod, grass, trash, rocks larger than four (4) inches in diameter, and all other material unsuitable for construction of compacted fills.

2.2 **WATER**

- A. Make arrangements for sources of water during construction and make arrangements for delivery of water to site.
- B. Comply with local Laws and Regulations at no additional cost to OWNER when securing water from water utility company.

PART 3 EXECUTION

3.1 **PREPARATION**

- A. Implement the traffic control plan requirements, Section 01 55 26.
- B. Verify material meets maximum size requirements.
- C. If ground water is in the intended fill zone, dewater.

3.2 **PROTECTION**

- A. Protect existing trees, shrubs, lawns, structures, fences, roads, sidewalks, paving, curb and gutter and other features.
- B. Protect above or below grade utilities. Contact utility companies to repair utility damage. Pay all cost of repairs.
- C. Avoid displacement of and damage to existing installations while compacting or operating equipment.
- D. Do not use compaction equipment adjacent to walls or retaining walls that may cause wall to become over-stressed or moved from alignment.
- E. Restore any damaged structure to its original strength and condition.

3.3 **LAYOUT**

- A. Identify required line, levels, contours, and datum.
- B. Stake and flag locations of underground utilities.

- C. Upon discovery of unknown utility or concealed conditions, notify ENGINEER.
- D. Maintain all benchmarks, control monuments and stakes, whether newly established by surveyor or previously existing. Protect from damage and dislocation.
- E. If discrepancy is found between Contract Documents and site, ENGINEER shall make such minor adjustments in the Work as necessary to accomplish the intent of Contract Documents without increasing the Cost of the Work to CONTRACTOR or OWNER.

3.4 **SUBGRADE**

- A. Protect Subgrade from desiccation, flooding, and freezing.
- B. Before placing fill over Subgrade, get ENGINEER's inspection of subgrade surface preparations.
- C. If Subgrade is not readily compactable get ENGINEER's permission to stabilize the subgrade.

3.5 **TOLERANCES**

- A. Compaction: Ninety-two (92) percent minimum relative to a standard proctor density, Section 31 23 26.
- B. Lift Thickness (before compaction):
 - 1. Eight (8) inches when using riding compaction equipment.
 - 2. Six (6) inches when using hand held compaction equipment.

3.6 **CLEANING**

- A. Remove stockpiles from site. Grade site surface to prevent free standing surface water.
- B. Leave borrow areas clean and neat.

END OF SECTION

**SECTION 31 41 00 M
SHORING (Modified)**

PART 1 GENERAL

1.2 PRICE – MEASUREMENT AND PAYMENT

A. In Trenching, Shoring:

Revise subparagraph 1 to read as follows:

1. A two (2) part Protective System is required if each Side of the Trench is to be shored. The use of a Trench Box shall be classified as one Protective System.

1.4 DESIGN OF PROTECTIVE SYSTEMS

Add paragraphs C and D as follows:

- C. Trenches five (5) feet deep or greater require a protective system unless the excavation is made entirely in stable rock. If less than five (5) feet deep, a competent person may determine that a protective system is not required.
- D. Trenches 20 feet deep or greater require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared and/or approved by a registered professional engineer in accordance with 1926.652(b) and (c).

1.5 SUBMITTALS

Revise paragraph A to read as follows:

- A. Submit a Protective System plan:
 1. When excavation is over twenty (20) feet deep, or
 2. When requested by ENGINEER.

Add Article 1.6 as follows:

1.6 REFERENCES

- A. 29 CFR Part 1910 – Occupational Safety and Health Standards
- B. 29 CFR Part 1926 Subpart P – Excavations

PART 3 EXECUTION

3.4 INSPECTIONS

Add paragraph C as follows:

- C. OWNER and/or ENGINEER may order an immediate work stoppage if working conditions are thought to be unsafe. Work may resume only after proper safety precautions are implemented.

SECTION 32 01 06 M
STREET NAME SIGNS (Modified)

PART 1	GENERAL
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1.2 REFERENCES

Add paragraph C as follows:

- C. **Honeyville City Public Works Standard Drawings**

**SECTION 32 01 13.64 M
CHIP SEAL (Modified)**

PART 1 GENERAL

1.2 REFERENCES**A. ASTM Standards:**

Add the following to paragraph A:

- | | |
|-------|--|
| C 29 | Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate |
| C 330 | Standard Specification for Lightweight Aggregates for Structural Concrete |

Rename Article 1.5 as follows:

1.5 WEATHER AND CONDITIONS**D. Temperature**

Add subparagraph 4 as follows:

4. Do not place if forecasted temperature is expected to drop below 40 deg F within 72 hours of placement.

B. Moisture and Wind:

Add subparagraph 1 as follows:

1. Do not place chip seal coat if surface moisture is present.

PART 2 PRODUCTS

2.1 ASPHALT BINDER

Revise paragraph B as follows:

- A. Emulsified Asphalt: CRS-2P or LMCRS, Section 32 12 03. Use any of the following additives to match aggregate particle charge, weather conditions, and mix design:
(Subparagraphs 1-5 remain unchanged.)

2.2 COVER AGGREGATE**A. Material:**

Revise subparagraph 2 to read as follows:

2. 100% Crusher processed rotary kiln lightweight expanded shale chips (Utelite or approved equal).

Replace Table 1 with the following:

Table 1 – Physical Properties of Lightweight Aggregate (ASTM C330)			
Property	ASTM	Min.	Max.
Clay Lumps and Friable Particles, percent	C142	-	2
Bulk Density Dry Loose Condition, lb/ft ³	C29	-	55

B. Gradation: Analyzed on a dry weight and percent passing basis.

Replace Table 2 with the following:

Table 2 – Master Grading Band for Lightweight Aggregate		
Sieve	ASTM	C330 Requirement
1/2"	C136	100
3/8"		80-100
No. 4		5-40
No. 8		0-20
No 16		0-10
No. 200		0-10

Replace Article 2.3 with the following:

2.3 FOG SEAL/FLUSH COAT

A. Material: Use cationic emulsified asphalt grade CSS-1h, Section 32 12 03.

Add Article 2.4 as follows:

2.4 MIX DESIGN

- A. Select Type and grade of emulsified asphalt, ASTM D 3628.
- B. Use the following application rates, or submit mix design for approval by Engineer.
 - 1. Emulsion: Use Table 3.

Table 3 – Emulsion Application Rate	
Emulsion	Application Rate (gal/sy)
CRS-2P	0.32 – 0.35
LMCRS-2	0.32 – 0.35

2. Cover Material: Use Table 4.

Table 4 – Cover Material Application Rate	
Emulsion	Application Rate (lbs/sy)
CRS-2P	10.0 – 12.0
LMCRS-2	10.0 – 12.0

3. Fog Seal/Flush Coat: Use 0.10 – 0.12 gal/sy at a 2:1 dilution rate.

PART 3 EXECUTION

3.2 PREPARATION

Add paragraph F as follows:

- F. Cover manholes, valves boxes, storm drain inlets, and other service utility features before placing any chip seal coat.

3.4 APPLICATION

Revise paragraph A to read as follows:

- A. Asphalt Emulsion: Keep viscosity between 50 and 100 centistokes during application, ASTM D 2170. Keep temperature to a minimum of 145 deg F.

Revise Article 3.6 to read as follows:

3.6 FOG SEAL/FLUSH COAT

- A. Apply asphalt seal over the chips within 24 hours of placing chips.
- B. Keep viscosity between 50 and 100 centistokes, during application, ASTM D 2170.

SECTION 32 16 13 M
DRIVEWAY, SIDEWALK, CURB, GUTTER (Modified)

PART 3	EXECUTION
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3.4 CONTRACTION JOINTS

D. Curb, Gutter, Waterway:

Revise subparagraph 1 to read as follows:

1. Place joints at intervals not exceeding 10 feet.

3.5 EXPANSION JOINTS

B. Sidewalks:

Add subparagraph 5 as follows:

5. Place expansion joints wherever new sidewalk adjoins existing sidewalks, driveways, or aprons.

C. Curb, Gutter, Waterway:

Add subparagraph 4 as follows:

1. Place expansion joint where new curb and gutter adjoins existing curb and gutter.

SECTION 32 31 13 M
CHAIN LINK FENCES AND GATES (Modified)

PART 2 PRODUCTS

2.6 POSTS, CAPS, RAILS, COUPLINGS

- A. Posts, Frames, Stiffeners, Rails: ASTM F 1043:

Revise applicable rows of Table 1 to read as follows:

Top Rail	1-5/8" pipe
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PART 3 EXECUTION

3.6 INSTALLATION OF FENCE FABRIC

Revise paragraph A to read as follows:

- A. Place fence fabric on roadway side of posts unless otherwise specified. Place fabric approximately 1 inch above the grounds. Maintain a straight grade between posts by excavating ground high points and filling depressions with soil.

SECTION 32 31 16 M
WELDED WIRE FENCES AND GATES (Modified)

PART 1 GENERAL

1.2 REFERENCES

Add paragraph D as follows:

D. UDOT Standard Drawing

FG 2A Right of Way Fence and Gates (Metal Post)

FG 2B Right of Way Fence and Gates (Metal Post)

PART 3 EXECUTION

3.2 INSTALLATION

Add paragraph N as follows:

N. Install per UDOT Standard Drawings FG 2A and FG 2B.

Add Section 32 31 23 Poly(Vinyl Chloride)(PVC) Fences and Gates

**SECTION 32 31 23
POLY(VINYL CHLORIDE)(PVC) FENCES AND GATES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. PVC fencing, posts, gates, and appurtenances.

1.2 REFERENCES

A. ASTM Standards:

- D 1784 Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
- F 626 Fence Fittings
- F 964 Rigid Poly(Vinyl Chloride)(PVC) Exterior Profiles Used for Fencing and Railing
- F 1999 Installation of Rigid Poly(Vinyl Chloride)(PVC) Fence Systems

1.3 SUBMITTALS

- A. Drawings: Indicate plan layout, grid, size and spacing of components, accessories, fittings, anchorage, and post section.
- B. Data: Submit manufacturer's installation instructions and procedures, including details of fence and gate installation.
- C. Submit sample of fence fabric and typical accessories.

PART 2 PRODUCTS

2.1 GENERAL

- A. Products from other qualified manufacturers having a minimum of 5 years' experience manufacturing PVC fencing will be acceptable by the architect as equal, if approved in writing, ten days prior to bidding, and if they meet the following specifications for design, size, and fabrication. PVC Profiles, lineals, and extrusions used as components must "meet or exceed" the minimum performance guidelines laid out in ASTM 964.

2.2 PVC FENCE

- A. Pickets, rails, and posts fabricated from PVC extrusion. The PVC extrusions shall comply with ASTM D 1784, Class 14344B and have the following characteristics:

Specific Gravity (+/- 0.02)	1.4
Using 0.125 specimen Izod impact ft. lbs./in. notch	23.0
Tensile strength, PSI	6,910
Tensile modulus, PSI	336,000
Flexural yield strength, PSI	10,104
Flexural modulus, PSI	385,000
DTUL at 264 PSI	67°C

- B. All fence parts made from PVC shall have a minimum thickness of 0.17 in except where specified otherwise.

2.3 POST CAPS

- A. Molded, one piece.
- B. Cross Section: Match post or gate upright cross section.
- C. Thickness: 0.095" minimum.
- D. Configuration: Flat or four-sided as required for installation to top of posts and gate.

2.4 ACCESSORIES

- A. Standard gate brace, screw caps, rail end reinforcers, and other accessories as required.

2.5 MISCELLANEOUS MATERIALS

- A. Stiffener Chemicals: Galvanized steel structural channel. Configure channels for concealed installation within PVC rails with pre-drilled holes for drainage. Aluminum extruded channel available upon request.
 - 1. Cross Section: 3.00" x 3.00" x 1.500" hourglass shape to grip picket.
 - 2. Thickness: 0.040 Gauge (minimum)
- B. Fasteners and Anchorage: Stainless Steel. All fasteners to be concealed or colored heads to match. Provide sizes as recommended by fence manufacturer.
- C. PVC Cement: As recommended by fence manufacturer.

2.6 GATE HARDWARE AND ACCESSORIES

- A. General: Provide hardware and accessories for each gate according to the following requirements.
- B. Hinges: Size and material to suit gate size, non-lift-off type, self-closing, glass filled nylon with stainless steel adjuster plate, offset to permit 120 degree gate opening. Provide one pair of hinges for each gate.
 - 1. Stainless Steel, painted with carbo zinc base.
 - 2. Finish: Pre-painted, 2 coats "Polane."
 - 3. Color: Black Gravity Latch or dual access gravity latch.

C. Latch: Manufacturers' standard self-latching, thumb latch, pre-finished steel, or stainless steel gravity latch. Provide one latch per gate.

1. Finish: Match gate hinge finish.

D. Hardware: Stainless Steel. Provide sizes as recommended by fence manufacturer.

1. Finish: Match gate hinge finish.

2.7 CONCRETE

A. Use Class 3000 concrete. Section 03 30 04.

2.8 REINFORCING FOR FILLED POSTS

A. Steel Reinforcing:

1. Steel Reinforcing Bars: ASTM A 615. Grade 60. Deformed (#4 or ½").

2. Install 2 bars for each corner or gate post as specified in the drawings.

PART 3 EXECUTION

3.1 PREPARATION

A. Locate and preserve utilities, Section 31 23 16.

B. Excavation, Section 31 23 16.

C. Review to ASTM F 567 and CLFMI products manual for chain link fence installation.

D. Protect roots and branches of trees and plants to remain.

E. Limit amount of clearing and grading along fence line to permit proper installation.

3.2 LAYOUT OF WORK

A. Accurately locate and stake locations and points necessary for installation of fence and gates.

B. General arrangements and location of fence and gates are indicated. Install except for minor changes required by unforeseen conflicts with work of other trades.

3.3 INSTALLATION – GENERAL

A. Install fence in compliance with manufacturer's written instructions.

B. PVC components shall be carefully handled and stored to avoid contact with abrasive surfaces.

C. Install components in sequence as recommended by fence manufacturer.

D. Install fencing as indicated on the drawings provided.

E. Variations from the installation indicated must be approved.

F. Variations from the fence and gate installation indicated and all costs for removal and replacement will be the responsibility of the CONTRACTOR.

3.4 INSTALLATION OF POSTS

A. Excavation

1. Drill or hand-excavate (using post hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
2. If not indicated on drawings, excavate holes for each post to a minimum diameter of 12 inches.
3. Unless otherwise indicated, excavate hole depths not less than 30 inches or to frost line.

B. Posts

1. Install posts in one piece, plumb and in line. Space as noted in the drawings. Enlarge excavation as required to provide clearance indicated between post and side of excavation.
2. Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment and hold in position during placement and finishing operations.
 - a. Unless otherwise indicated, terminate top of concrete footings 3 inches below adjacent grade and trowel to a crown to shed water.
 - b. Secure posts in position for manufacturer's recommendations until concrete sets.
 - c. After installation of rails and unless otherwise indicated, install reinforcing in posts in opposing corners of post as shown and fill end and gate posts with concrete to level as indicated. Concrete fill shall completely cover the reinforcing steel and gate hardware fasteners. Consolidate the concrete by striking the post face with a rubber mallet, carefully tamping around the exposed post bottom.
 - d. Install post caps. Use #8 screws, nylon washers and snap caps.
 - e. Remove concrete splatters from PVC fence materials with care to avoid scratching.

3.5 INSTALLATION OF RAILS

A. Top and Bottom Rails

1. Install rails in one piece into routed hole fabricated into posts to receive top and bottom rails, and middle where necessary. Except at sloping terrain, install rails level.
 - a. Prior to installation of rails into posts, insert concealed steel channel stiffeners in top rail, where necessary. Bottom rails shall include minimum 2- $\frac{1}{4}$ " drainage holes.
 - b. At posts to receive concrete fill, tape rail ends to prevent seepage when filling post with concrete.

B. Middle Rails:

1. Where necessary, install middle rails in one piece into routed hole in posts with larger holes facing down. Except at sloping terrain, install middle rails level. Secure mid rail to pickets with 2-#8 x 1- $\frac{1}{2}$ " screws evenly spaced.
 - a. At posts to receive concrete fill, tape rail ends to prevent seepage when filling post with concrete.

3.6 INSTALLATION OF FENCE FABRIC/PICKETS

- A. Pickets: Install pickets in one piece as per manufacturer recommendations. Install pickets plumb.

3.7 INSTALLATION ON SLOPING TERRAIN

- A. At sloping terrain rails may be racked (sloped) or stepped to comply with manufacturer's recommendations.

3.8 INSTALLATION OF GATES

- A. Prior to installation of rails into posts, apply PVC cement into sockets per manufacturer's recommendations. Bottom rail shall include minimum 2-¼" drainage holes.
- B. Assemble gate prior to fence installation to accurately locate hinge and latch post. Align gate horizontal rails with fence horizontal rails.
- C. Install gates plumb, level, and secure for full opening without interference according to manufacturer's instructions.
- D. Gate Latch Installation. Install gate latch according to manufacturer's instructions.
- E. Allow minimum 72 hours to let concrete set-up before opening gates.

END OF SECTION

SECTION 32 92 00 M
TURF AND GRASS (Modified)

PART 1 GENERAL

1.3 SUBMITTALS

Add paragraph C as follows:

- C. Submit seed mix if proposing alternate to seed mix shown in paragraph 2.1.D below.

PART 2 PRODUCTS

2.1 SEED

Add paragraph D as follows:

- D. Seed Mix:

<u>SEED #</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>% by Weight</u>
1	Agropyron cristatum 'Fairway'	Fairway Crested Wheatgrass	15%
2	Agropyron riparium 'Sodar'	Streambank Wheatgrass	20%
3	Bromus inermis 'Manchar'	Smooth Brome	32%
4	Fescue rubra 'Fortress'	Red Fescue	25%
5	Poa compressa 'Reuben's'	Reuben's Canadian Bluegrass	6%
6	Trifolium repens	White Dutch Cover	2%

PART 3 EXECUTION

3.4 SEEDING

Revise paragraph A to read as follows:

- A. Apply seed at a rate of eight (8) pounds per 1,000 square feet evenly in two (2) intersecting directions. Rake in lightly.

Add Section 33 05 12 Conductive Tracer Wire for Pipe Installation

**SECTION 33 05 12
CONDUCTIVE TRACER WIRE FOR PIPE INSTALLATION**

PART 1 GENERAL

1.1 SUMMARY

This section covers the requirements for installation of a conductive tracer wire with underground pipe.

1.2 SYSTEM DESCRIPTION

Install electrically continuous tracer wire with access points as described herein to be used for locating pipe with an electronic pipe locator after installation.

PART 2 PRODUCTS

- 2.1 Tracer wire shall be twelve (12) gauge minimum solid copper with thermoplastic insulation recommended for direct burial. Wire connectors shall be 3M DBR, or approved equal, and shall be watertight and provide electrical continuity.

PART 3 EXECUTION

3.1 ERECTION / INSTALLATION / APPLICATION AND/OR CONSTRUCTION

- A. General: Tracer wire shall be installed in the same trench and inside bored holes and casing with pipe during pipe installation. It shall be secured to the pipe as required to insure that the wire remains adjacent to the pipe. The tracer wire shall be securely bonded together at all wire joints with an approved watertight connector to provide electrical continuity, and it shall be accessible at all new water valve boxes, water meter boxes, fire hydrants, sewer manholes, and sewer cleanouts as applicable to the utility line being installed.
- B. Manholes: The wire shall be installed from the exterior of the manhole to the interior by installing the wire underneath the manhole frame.

3.2 TESTING

CONTRACTOR shall perform a continuity test on all tracer wire in the presence of ENGINEER or ENGINEER's representative. Testing shall be performed prior to road construction.

3.3 REPAIR / RESTORATION

If the tracer wire is found to be not continuous after testing, CONTRACTOR shall repair or replace the failed segment of the wire.

END OF SECTION

SECTION 33 05 25 M
PAVEMENT RESTORATION (Modified)

PART 1 GENERAL

1.2 REFERENCES

Replace paragraph A to read as follows:

- A. **Honeyville City Public Works Standard Drawings**

PART 2 PRODUCTS

2.2 ASPHALT PAVEMENT

Revise paragraph A to read as follows:

- A. Permanent Warm Weather Asphalt Concrete: Section 32 12 05 M unless indicated otherwise.

Revise paragraph C to read as follows:

- C. Pavement Sealing:
1. Crack Seal: Section 32 01 17
 2. Chip Seal: Section 32 01 13.64 and 32 01 13.64 M.
 3. Fog Seal: Section 32 01 13.50.

PART 3 EXECUTION

3.5 ASPHALT PAVEMENT RESTORATION

Revise paragraphs A and B to read as follows:

- A. Follow Honeyville City Public Works Standard Drawings.
- B. Match existing pavement thickness or 4-inches minimum, whichever is greater.

SECTION 33 08 00 M
COMMISSIONING OF WATER UTILITIES (Modified)

PART 3 EXECUTION

3.5 INFILTRATION TEST

Revise paragraph A to read as follows:

- A. General: 150 gallons per inch diameter per mile per day. If the ground water table is less than two (2) feet above the crown of the pipe, the infiltration test is not required.

Revise Article 3.6 in its entirety to read as follows:

3.6 EXFILTRATION TEST

A. Non-Pressurized System:

- 1. General: Air test or hydrostatic test is CONTRACTOR's choice.
- 2. Air Test:
 - a. Plastic Pipe: ASTM F 1417.
 - (i) For pipe up to 30 inches diameter, pressure drop is 0.5 psi.
 - (ii) For pipe larger than 30 inches diameter, isolated joint test is 3.5 psi maximum pressure drop is 1.0 psi in 5 seconds.
 - b. Concrete Pipe:
 - (i) ASTM C 1214 for concrete pipe 4" to 24" diameter.
 - (ii) ASTM C 1103 for concrete pipe 27" and larger.
- 3. Hydrostatic Test: Provide air release taps at pipeline's highest elevations and expel all air before the test. Insert permanent plugs after test has been completed.
 - a. Plastic Pipe: ASTM F 2497.
 - b. Concrete Pipe: ASTM C 497. Abide by Section 3 and Section 16 in the ASTM standard and applicable recommendations of manufacturer.

B. Pressurized System:

- 1. Pressure Test: All newly laid pipe segments and their valves, unless otherwise specified, shall be subjected to a hydrostatic pressure test of 225 psi or 50 psi above working pressure, whichever is higher. The hydrostatic pressure test shall be conducted after the pipe segments have been partially backfilled.
- 2. Duration of Pressure Test: The duration of each hydrostatic pressure test shall be at least two (2) hours.
- 3. Test Procedure: Each pipe segment shall be slowly filled with water and the specified test pressure, measured at the point of lowest elevation, shall be applied by means of a pump connected to the pipe in a satisfactory manner. Testing against closed valves will be allowed. The pump, pipe connection, and all necessary apparatus including gauges

and meters shall be furnished by the CONTRACTOR. CONTRACTOR shall provide all labor and equipment necessary to perform the test.

4. Expelling Air Before Test: Before applying the specified test pressure, all air shall be expelled from the pipe. To accomplish this, air release mechanisms shall be installed, if necessary, at points of highest elevation, and afterwards tightly capped.
5. Examination Under Pressure: All pipes, fittings, valves, hydrants, joints, and other hardware will be subject to examination under pressure during the hydrostatic test. Any defective pipes, fittings, hydrants, valves, or other hardware discovered in consequence of this pressure test shall be removed and replaced by the CONTRACTOR with sound material, at no expense to the OWNER, and the test shall be repeated until the ENGINEER is satisfied.
6. No piping installation will be acceptable until the leakage is less than the amount allowed by industry standards for the type of pipe material being tested. Or, if no standard prevails, then the number of gallons per hour is determined by the formula:

$$Q = \frac{LD\sqrt{P}}{148,000}$$

Where: Q = allowable leakage, gallons per hour
 L = length of pipe under test, feet
 D = diameter of pipe, inches
 P = average test pressure, psig

SECTION 33 11 00 M
WATER DISTRIBUTION AND TRANSMISSION (Modified)

PART 1 GENERAL

1.2 REFERENCES

Revise paragraph B to read as follows:

B. Honeyville City Public Works Standard Drawings

Add the following to paragraph C. AWWA Standards:

C105	Polyethylene Encasement for Ductile Iron Pipe Systems
C110	Ductile-Iron and Gray-Iron Fittings
C111	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
C223	Fabricated Steel and Stainless Steel Tapping Sleeves
M14	AWWA Recommended Practice for Backflow Prevention and Cross-Connection Control

Add paragraphs F and G as follows:

F. ANSI/NSF Standards:

61	Drinking Water System Components – Health Effects
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G. Utah Administrative Code

R309	Drinking Water
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1.3 PERFORMANCE REQUIREMENTS

Replace paragraph A with the following:

A. Depth of Cover:

1. Minimum as indicated on the drawings. If minimum cannot be achieved, contact ENGINEER.
2. Maximum of 72 inches unless indicated on the plans or approved by ENGINEER.

1.5 SITE CONDITIONS

Revise paragraph D to read as follows:

- D. Do not operate any water valve until its owner and water company's permission is secured.**

PART 2 PRODUCTS

2.1 PIPES AND FITTINGS

Revise paragraph A to read as follows:

- A. Provide piping materials and factory fabricated piping products of sizes, types, pressure ratings, and capacities indicated. Use only NSF 61 approved products in drinking water systems. All such products shall be appropriately stamped with the NSF logo.

Add paragraphs E and F as follows:

- E. Mechanical Joint Fittings: Ductile iron, Class 250
- F. Flanged Fittings: Ductile iron, Class 250

2.3 VALVE BOX

Revise paragraph A to read as follows:

- A. Buried Valves in Traffic Areas: Cast iron two (2) piece slip sleeve type, 5-1/4 inch shaft, with a drop lid, rated for HS-20 loading.

Revise paragraph C to read as follows:

- C. Markings: Potable water main line valve box covers shall contain the wording "WATER." Secondary water main line valve box covers shall contain the wording "IRR."

Add Articles 2.9 and 2.10 as follows:

2.9 TAPPING SLEEVE AND VALVE

- A. AWWA C223.
- B. Sleeve shall be full circumferential seat with all stainless steel tapping sleeve.
- C. Flanged outlet with flanged by MJ valve.

2.10 FIRE SPRINKLER/SUPPRESSION LINES

- A. Lines:
 - 1. Ductile iron, Class 51, or as approved in writing by OWNER or ENGINEER.
 - 2. Meet all specifications for main lines.
- B. Valve:
 - 1. All fire lines shall be equipped with an isolation gate valve located at the main line.

PART 3 EXECUTION

3.3 LAYOUT

Replace paragraph B with the following:

- B. The Utah Division of Drinking Water must grant an exception where a potable water line crosses under a sanitary sewer line.

3.4 INSTALLATION – PIPE AND FITTING

- A. General:

Add subparagraphs 3 through 7 as follows:

- 3. Encase all buried ductile iron valves, fitting, connections, and specialties in minimum 8 mil. polyethylene sheets in accordance with AWWA C105.
- 4. Waterline shall be laid and maintained to lines and grades established by the drawings, with fittings and valves at the required locations. Deviations as approved in writing by OWNER or ENGINEER.
- 5. Lay water lines on a continuous grade to avoid high points except as shown on the plans.
- 6. Cut edges and rough ends shall be ground smooth. Bevel end for push-on connections.
- 7. Do not drop pipe or fittings into trench.

Add paragraph I as follows:

- I. Tie-Ins:
 - 1. All tie-ins shall be made dry and not on a day proceeding a weekend or holiday.
 - 2. OWNER requires 48-hours' notice for water turn-off.
 - 3. At least 24-hours prior to a service disruption, CONTRACTOR shall notify all affected water users.
 - 4. Where shutting down a line is not feasible as determine by OWNER or ENGINEER, CONTRACTOR shall make a wet tap using a tapping sleeve and valve.

3.5 INSTALLATION – CONCRETE THRUST BLOCK

Revise paragraph A to read as follows:

- A. Honeyville City Public Works Standard Drawings.

3.8 INSTALLATION – TAPS

Revise paragraph A to read as follows:

- A. Honeyville City Public Works Standard Drawings.

3.9 INSTALLATION – SERVICE LINE

Revise paragraph C to read as follows:

- C. Meter Box: Honeyville City Public Works Standard Drawings.

Add paragraph D as follows:

- D. New Water Service Line
 - 1. 1" Service
 - a. All laterals must be of one continuous copper tube between the corp stop and the meter box. No joints or copper to copper connectors are allowed.
 - 2. 1.5" and 2" Services
 - a. All solder joints shall be 95-5 solder or better, or Mueller compression fittings.

3.10 INSTALLATION – WATERMAIN LOOP (SYPHON)

Revise paragraph A to read as follows:

- A. Honeyville City Public Works Standard Drawings.

3.12 BACKFILLING

- B. Trenches: Section 33 05 20:

Revise subparagraphs 1 and 2 to read as follows:

- 1. Pipe zone backfill, Honeyville City Public Works Standard Drawings.
- 2. Trench backfill, Honeyville City Public Works Standard Drawings.

3.13 SURFACING RESTORATION

- A. Roadway Trenches and Patches: Section 33 05 25:

Revise subparagraphs 1 and 2 to read as follows:

- 1. Asphalt concrete patch, Honeyville City Public Works Standard Drawings.
- 2. Concrete pavement patch, contact OWNER for instructions.

Add new Article 3.14 as follows:

3.14 FIRE SPRINKLER/SUPPRESSION LINES

- A. Notify OWNER 48 hours prior to installation.
- B. Unless written authorization is given by OWNER, no services shall be connected to the fire sprinkler/suppression lines.
- C. Location: As approved by OWNER.

**SECTION 33 12 16 M
WATER VALVES (Modified)**

PART 1 GENERAL

1.2 REFERENCES

Modify the fourth (4th) item in paragraph A to read as follows:

C509 Resilient-Seated Gate Valves for Water Supply Service

Add paragraph B as follows:

B. Honeyville City Public Works Standard Drawings

PART 2 PRODUCTS

2.1 VALVES – GENERAL

A. Underground:

Add subparagraph 3 as follows:

3. Valves over five (5) feet in depth shall have a valve nut extension stem.

2.2 GATE VALVES

Add paragraph D as follows:

D. Model: Mueller A-2361, Clow 2639

Add Article 2.10 as follows:

2.10 AIR/VACUUM RELIEF VALVES

- A. Operation: Relieve air build-up and/or allow intrusion of air to prevent vacuum conditions within pipe.
- B. Location: Valve and vent placement location as approved by OWNER or ENGINEER.
- C. Connection: Service saddle.

PART 3 EXECUTION

3.1 INSTALLATION

Add paragraphs D, E, and F as follows:

- D. Prior to installation, inspect valves for direction of opening, freedom of operation, tightness of pressure-containing bolting, and cleanliness of valve ports and seating surfaces.
- E. Examine all valves for damage or defects immediately prior to installation.

- F. Mark and hold defective materials for inspection by OWNER or ENGINEER. Replace rejected materials.

**SECTION 33 12 19 M
HYDRANTS (Modified)**

PART 1 GENERAL

1.2 REFERENCES

Revise paragraph A to read as follows:

- A. Honeyville City Public Works Standard Drawings

PART 2 PRODUCTS

2.1 DRY-BARREL FIRE HYDRANT

Add paragraph C as follows:

- C. Model: Mueller Super Centurion, Clow Medallion.

2.2 VALVES

Revise paragraph A to read as follows:

- C. Gate Valve: Section 33 12 16.

2.3 ACCESSORIES

Revise paragraph D to read as follows:

- D. Valve Box, Valve Chamber: Section 33 11 00.

PART 3 EXECUTION

3.2 INSTALLATION

Revise paragraph A to read as follows:

- C. Install hydrant according to Honeyville Public Works Standard Drawings and AWWA M17.

Revise paragraph H to read as follows:

- H. Install thrust block according to Honeyville City Public Works Standard Drawings.

**SECTION 33 12 33 M
WATER METER (Modified)**

PART 1 GENERAL

1.2 REFERENCES

Add paragraph B as follows:

- E. Honeyville City Public Works Standard Drawings.**

PART 2 PRODUCTS

2.2 METERS FOR SERVICE PIPING

Revise paragraph A to read as follows:

- F. OWNER shall supply and set all 1" meters. All other meters supplied and set by CONTRACTOR.**

2.3 SERVICE LINE, VALVES, AND FITTINGS

Revise paragraph A to read as follows:

- A. Service Pipe: Smooth wall polyethylene, CTS SDR 9, Section 33 05 06 or Type K copper, Section 33 05 03. Refer to Honeyville City Public Works Standard Drawings.**

Revise paragraph B to read as follows:

- B. Service Valves and Fittings:**
- 1. AWWA C800.**
 - 2. 1-Inch Service Laterals – Brass corporation stops with CC thread.**
 - 3. 1.5-Inch and 2-Inch Service Laterals – Copper or brass screw-type fittings (ball valves, strainers, nipples, tees, bends, etc.).**
 - 4. 3-Inch and 4-Inch Service Laterals**
 - a. Ductile iron pipe.**
 - b. Cast iron, flanged valves and fittings.**
 - 5. Greater than 4-Inch – Coordinate with and obtain approval from OWNER and ENGINEER.**

Replace Article 2.4 with the following:

2.4 METER BOXES

- A. See Honeyville City Public Works Standard Drawings.**

PART 3 EXECUTION

3.1 INSTALLATION

Revise paragraph D to read as follows:

- D. OWNER Supplied Meters: Installed by OWNER unless indicated otherwise.

Add paragraphs E and F as follows:

- E. Install one solid piece of pipe from main to meter.
- F. Install service laterals with 48-inches of cover, minimum.

**SECTION 33 13 00 M
DISINFECTION (Modified)**

PART 1 GENERAL

1.2 REFERENCES

Modify paragraph B to read as follows:

- B. Utah Administrative Code
 R309 Drinking Water

Add paragraph C as follows:

- C. NSF/ANSI Standards:
 60 Drinking Water Treatment Chemicals – Health Effects

1.4 SUBMITTALS

Delete paragraphs B, C, and D in their entirety.

Add Article 1.8 as follows:

1.8 WORK PERFORMED BY OWNER

- A. OWNER will perform bacteriological and high chlorine sampling and testing. CONTRACTOR shall provide all other work associated with this Section.

PART 2 PRODUCTS

2.1 DISINFECTANT

Add paragraph E as follows:

- E. All products shall comply with NSF/ANSI 60.

PART 3 EXECUTION

3.1 PREPARATION

Add paragraphs C and D as follows:

- C. Notify OWNER at least 72 hours prior to any flushing or disinfecting.
- D. Install temporary connections for flushing water lines after disinfection. After the satisfactory completion of the flushing work, remove and plug the temporary connection.

3.2 **DISINFECTION OF WATER LINES**

Revise paragraph D to read as follows:

- D. Coordinate with OWNER to collect a bacteriological water sample at end of line to be tested. If sample fails bacteriological test, flush system and retest. Continue flushing and retesting until sample passes test.

Revise paragraph G to read as follows:

- G. After a passing bacteriological test sample is obtained, let the system relax for 24 hours. Flush and coordinate with OWNER to collect a subsequent bacteriological sample for testing. If the subsequent test passes, then water line is acceptable.

3.5 **FIELD QUALITY CONTROL**

- A. Bacteriological Test:

Revise subparagraphs 1 and 2 to read as follows:

1. Coordinate with OWNER to collect samples for testing no sooner than 16 hours after system flushing.
2. OWNER will have water samples analyzed per State of Utah requirements.

Add Article 3.6 as follows:

3.6 **SPECIAL PROCEDURE FOR TAPPING SLEEVES**

- A. Before a tapping sleeve is installed, the exterior of the main to be tapped shall be thoroughly cleaned, and the interior surface of the sleeve shall be lightly dusted with calcium hypochlorite powder.

APPENDIX D - HONEYVILLE CITY PUBLIC WORKS STANDARD DRAWINGS