

Pleasant View City Corporation

# Development, Design, & Construction Standards



**Revision 1 – February 12, 2019**  
**Original – November 14, 2017**



Prepared by  
**JONES & ASSOCIATES**  
*Consulting Engineers*



REVISION 1  
DEVELOPMENT, DESIGN, AND  
CONSTRUCTION STANDARDS  
for  
PLEASANT VIEW CITY



SUBMITTED & RECOMMENDED:

Dana Q. Shuler

Dana Q. Shuler, P.E.  
Jones & Associates



APPROVED:

Leonard Call

Leonard Call  
Mayor

2/21/19  
Date

Bill Cobabe

Bill Cobabe  
City Administrator/Planner

2/16/2019  
Date

Jay Palmer

Jay Palmer  
Public Works Director

2/25/19  
Date

Lorin Gardner

Lorin Gardner, P.E.  
City Engineer

2/21/2019  
Date

Tyson Jackson

Tyson Jackson  
Utilities/ Public Works Assistant  
Director

2-22-19  
Date

Laurie Hellstrom

Laurie Hellstrom  
Attest, City Recorder

2/25/19  
Date



## Resolution 2019-A

### A RESOLUTION OF THE PLEASANT VIEW CITY COUNCIL ADOPTING REVISION 1 OF THE PLEASANT VIEW CITY DEVELOPMENT, DESIGN, AND CONSTRUCTION STANDARDS

**WHEREAS**, Pleasant View City is an incorporated municipality; and

**WHEREAS**, Pleasant View City owns and maintains the public infrastructure; and

**WHEREAS**, Pleasant View City desires standards to provide structurally sound infrastructure; and

**WHEREAS**, these standards are subject to periodic review and update as new and better information, together with evolving industry standards, necessitates these updated standards; and

**WHEREAS**, this plan was formally presented to the Mayor and City Council on February 12, 2019;

**NOW, THEREFORE BE IT RESOLVED**, that by signatures below, the Pleasant View City Council does approve and adopt Revision 1 of the Pleasant View City Development, Design, and Construction Standards as presented in 'Exhibit A'.

**EFFECTIVE DATE** - This Resolution shall take effect immediately.

**APPROVED** this 12<sup>th</sup> day of February, 2019

Leonard M Call, Mayor

Attest:

Laurie Hellstrom, City Recorder



This ordinance has been approved by the following vote of the Pleasant View City Council:

<u>Yes</u>	Councilmember Burns
<u>No</u>	Councilmember Hansen
<u>Yes</u>	Councilmember Gibson
<u>Yes</u>	Councilmember Urry
<u>Yes</u>	Councilmember <u>Francis</u>

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## **SECTION 1      GENERAL**

### **1.01      Ordinances Govern**

**Nothing in this document shall be construed to be contrary to Pleasant View 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 “Pleasant View 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 Pleasant View City Public Works Standard Drawings, and/or the Manual of Standard Drawings, as applicable.
- D. Developer – The person sponsoring construction of the improvements.
- E. Development – The subject subdivision, minor subdivision, or building.
- F. Improvements – See “Work.”
- G. Improvement Plans – See “Drawings.”
- H. 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.
- I. 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.<sup>1</sup>
- J. See also “Title 17 – Subdivisions” of the Pleasant View 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.

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<sup>1</sup> 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. DWQ – Division of Water Quality
- E. DWRI – Division of Water Rights
- F. FEMA – Federal Emergency Management Agency
- G. HOA – Homeowners’ Association
- H. LID – Low Impact Development
- I. PVC – Pleasant View City
- J. RCP – Reinforced Concrete Pipe
- K. UAC – Utah Administrative Code
- L. UDEQ – Utah Department of Environmental Quality
- M. UDOT – Utah Department of Transportation
- N. UPDES – Utah Pollutant Discharge Elimination System
- O. UPRR – Union Pacific Railroad
- P. USACE – United States Army Corps of Engineers
- Q. UTA – Utah Transit Authority

#### **1.05 Modification Process**

- A. 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 work 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 the following manner:
- B. 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 City Planner, City Engineer, and the Public Works Director or his Representative 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.
  - 1. The City shall first receive a written request for a modification to the standards from any interested party.

2. 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.
3. 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      DEVELOPMENT STANDARDS**

### **2.01      Approval Procedure**

**See Title 17 – Subdivisions of the Pleasant View City Ordinances for details.**

### **2.02      Developer Responsibilities**

- A. Required Improvements and Guarantees – see Chapter 17.20 of Pleasant View 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
    - d. DWRi Stream Alteration
    - e. DWRi Dam Safety
    - f. EPA 404 Wetlands
    - g. FEMA LOMA and/or LOMR
    - h. UDOT
    - i. Others as applicable
- C. Improvements
  - 1. 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, water lines, sewer 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.

See Chapters 17.18 and 17.20 for more information.

2. Upsizing based on CFPs – The Developer will be required to construct/install infrastructure sized in accordance with the City’s currently adopted CFPs. The City will be responsible for paying difference in cost between the master planned infrastructure size and the minimum infrastructure size required for the development.
3. Seal Coat Escrow – See City Ordinances.
4. Street Lighting Escrow – See City Ordinances.
5. Street Signage Escrow– See City Ordinances.
6. Temporary Turnaround Escrow – See Section 3.05.I of this document.
7. Materials and Construction Testing Escrow – Developer shall escrow for all materials and construction testing. Testing will be performed by one of the City’s pre-selected testing agencies. Developer/contractor is responsible for all coordination. See Section 4.03.I for more information.
8. 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 manholes, valves, and fire hydrants.

### **2.03 Subdivision Standards**

- A. The general standards for subdivision layout and development are found in Chapters 17.18 and 17.20.
- B. See also Section 3 – Design Standards and Section 4 – Construction Standards of this document.

### **2.04 Geotechnical Investigation**

- A. A geotechnical investigation should be conducted for the following:
  1. All new subdivisions with more than two (2) lots (excluding residential minor subdivisions);
  2. All commercial subdivisions and sites;
  3. Any subdivision that includes public infrastructure improvements;
  4. Any development in the Sensitive Lands zone; and
  5. Upon request of the City Engineer.
- 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.



## **SECTION 3      DESIGN STANDARDS**

### **3.01      Required Improvements**

- A. See Chapter 17.20 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.

### **3.02      Improvement Plans**

- 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 Engineer prior to receiving final plat approval and prior to commencing construction. Per Title 17, no construction, including dirt work, shall begin until plans have been checked and approved by the City Engineer, and final approval is granted by the City Council.
- B. The following instructions are for the purpose of standardizing the preparation of drawings to obtain uniformity in appearance, clarity, size, and style. The plans and designs shall meet the standards defined in the specifications and drawings hereinafter outlined. The minimum information required on the drawings for improvements is as follows:
  - 1. All drawings and/or prints shall be clear and legible and conform to industry standard engineering and drafting practices.
  - 2. Drawings shall be legible and to a common scale when printed on 11"x17" paper.
  - 3. Both plan view and centerline profile must be shown. On subdivisions along steep cross slopes, profiles for each side of the street may be required to be shown.
  - 4. Plan and profiles shall indicate design and/or existing grades a minimum of 200 feet beyond the limits of the proposed project.
  - 5. All wet utilities (water, sewer, storm drain, irrigation) shall be shown in plan and profiles views.
- C. 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 Pleasant View City Standards and approved by the City Engineer.
- D. Separate drawings of elements of the Pleasant View 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.
- E. The plan and profile construction plans shall be submitted in portable document format ("pdf"). Upon approval, the developer's engineer shall provide the City Engineer with electronic files of the final plat and improvement plans in AutoCAD or other City Engineer

approved format. A hard copy of the approved construction plans bearing the signature of the City Engineer shall be kept available at the construction site. 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.

### **3.03 Sanitary Sewer Design**

- A. All design shall be in accordance with Utah Administrative Code R317.
  - 1. Changes in pipe size shall occur in a manhole. Match 0.8 depth point of sewer lines. (R317-3-2-H)
- B. All terminating sewer mains shall end with a city standard manhole.
- C. Service lateral connection shall not be allowed in sewer manholes.
- D. All sewer shall be gravity unless otherwise approved by the City.
- E. Collection lines shall be located in public rights-of-way or private road rights-of-way. Collection lines shall not be located on private property (easements) without the express written permission from the City. If such case is granted, easement shall be a minimum width of 20' and shall be dedicated to Pleasant View City.
- F. All sanitary sewer systems shall be public and shall connect to a public sewer line. Private sanitary sewer systems may be permitted on singularly owned property provided they discharge directly to a public sewer system and obtain the express written permission from the City.

### **3.04 Water Design**

- A. All design shall be in accordance with Utah Administrative Code R309.
- B. Valves are required on all branches of tees and crosses. On unbroken lengths of water line, valves are required:
  - 1. At 800-ft (maximum) spacing in residential areas, and
  - 2. At 500-ft (maximum) spacing in commercial and industrial areas.
- C. At dead end lines, including temporary dead ends, provide fire hydrant at termination point.
- D. Where a water line crosses surface water, designer/engineer shall contact the DDW and the City prior to final design.
- E. All fire lines shall meet public works standards but shall remain privately owned and maintained. Master meters are required. Contact City Water Superintendent for meter model information and installation and testing requirements.
- F. 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:
  - 1. No service connections are reasonably anticipated along the curvature, and

2. With the express and written approval by both the City Engineer and the Water/Sewer Superintendent.

G. 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 10-ft of any sanitary sewer line or manhole.

**3.05 Street/Road Design**

- A. Streets shall be designed in accordance with these Standards, standard engineering practices, and AASHTO and MUTCD guidelines.

- B. Local (residential) streets shall have not less than 333' radius curves.<sup>2</sup>

- C. No changes of grade in excess of 1.5% shall be permitted without a vertical curve.

- D. Sight triangles shall be shown at the request of the City Engineer.

- E. Horizontal points of curvature shall not be located closer than 150' from the center of an intersection.

F. Intersections

1. 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.
2. Intersections shall be no closer than 125-ft to one another, as measured from centerline to centerline.

G. Cul-de-sacs

1. Length of cul-de-sac shall not exceed 500-ft as shown in the Standard Drawings.

H. 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.

2. City Projects

- a. Pavement section shall be included in the Project plans.

3. See sheet CS-02 for pavement notes.

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

#### I. Temporary Turnarounds

1. 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.
2. The lot(s) on which the turnaround is constructed shall be restricted as follows:
  - a. Platted as an "R" (restricted) lot.
  - b. This lot cannot be sold or building permits issued until the road is extended beyond the subdivision boundary, complete with curb, gutter, and sidewalk.
3. Drainage onto adjacent property must be by written approval (easement) of adjacent property owner.
4. 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 Standard Drawings:
  - 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 Plans) 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.

#### J. Landscaping

1. When landscaping is required to be designed/installed, refer to the Standard Drawings.

#### K. 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.

### **3.06 Storm Drain and Drainage Design**

See Appendix A for Storm Drain and Drainage Design Standards.

#### A. Low Impact Development

See Appendix A.

#### B. 90<sup>th</sup> Percentile Storm Retention

See Appendix A.

## 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 right-of-ways 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 Pleasant View 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

1. 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:
2. Encroachment (City)
  - a. Pleasant View 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 the Pleasant View City Building Department 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 "No Fee Public Right-of-Way 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 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 Pleasant View City Ordinances.
3. USACE/DWRi Stream Alteration – Stream Alteration

4. UPDES
5. Dam Safety (DWRi)
6. UPRR Railroad Encroachment
7. UTA Encroachment
8. UDOT
9. Weber County Surveyor's Monument
10. Excavation Operations
  - a. Blue Stakes: Before commencing excavation operations, the permittee shall call "Blue Stakes" at 1-800-662-4111 or 811.
11. Traffic control devices: Traffic control devices such as construction signs, barricades, and cones must be in place before excavation begins.
12. 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.
13. Open trench limits: Open trenches will be limited to one block at a time or 660 feet, whichever is less.
14. In the event of a planned road closure, Contractor shall notify the City, Fire Department, emergency services dispatch, US Postal Service, Weber School District, and Utah Transit Authority (UTA) a minimum of 24 hours prior to the closure. In the case of an emergency, the above listed agencies will soon be notified at the soonest possible time.
15. Environmental Controls
  - a. 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.
  - b. Noise: The permittee or contractor shall keep neighborhood free of noise nuisance in accordance with the Noise Ordinance.
16. 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 Building Department determines cleaning equipment is ineffective.

17. Storm Water: All Contractors working within the boundaries of Pleasant View City shall conform to all requirements and regulations as outlined by the Pleasant View City Storm Water Management Plan. Copies of the plan are available in the Pleasant View City Offices.

#### **4.02 Pre-Construction Conference**

- A. The preconstruction conference shall not be held until the City Engineer has approved and signed the construction plans.
- B. A preconstruction conference shall be held before any excavation or other work is begun 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 Pleasant View City Departments
  6. Representatives of local utility companies as may be required by Pleasant View 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 insure that inspections take place where and when required. Certain types of construction shall have continuous inspection, while others may have only periodic inspections.

E. Requests for Inspections

1. Requests for inspections shall be made to the Public Works Department by the person responsible for the construction.
2. Requests for inspection on work requiring continuous inspection shall be made three (3) working days prior to the commencing of the work.
3. 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.

F. Continuous inspection

1. May be required on (but not limited to) the following types of work:
  - a. Laying of street surfacing
  - b. Placing of concrete for curb and gutter, sidewalks, and other structures
  - c. Laying of sewer pipe, irrigation pipe, drainage pipe, water mains, water service laterals and testing.
2. 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.

G. Periodic inspections

1. Shall be required on (but not limited to) the following types of work:
  - a. Street grading and gravel base
  - b. Excavations for curb and gutter and sidewalks
  - c. Excavations for structures
  - d. Trenches for laying pipe
  - e. Forms for curb and gutter, sidewalks and structures

H. 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.

I. Testing

1. Development Projects

- a. Developer/Contractor shall select a testing firm off of the City's pool of testing firms.
- 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 off of the City's pool of testing firms.
- 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.

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 Pleasant View 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 Pleasant View City

- A. Pleasant View 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. Pleasant View 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 GUIDELINES**

## **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.
- C. Implementation of LID measures and 90<sup>th</sup> percentile storm retention does not reduce or eliminate the requirement for detention/retention as contained in this document.

**A2. Definitions and Acronyms**

The following terms shall be defined as follows in this document relating to storm water:

- A. 90th Percentile Storm – The rainfall event whose precipitation total is greater than or equal to 90 percent of all storm events over a given period of record.
- B. Best Management Practices (BMPs) – Construction practices and control measures necessary to protect against pollution generated by construction sites.
- C. Common Plan of Development – "Common plan of development or sale" means one plan for development or sale, separate parts of which are related by any announcement, piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, plat, blueprint, contract, permit application, zoning request, computer design, etc.), physical demarcation (including contracts) that identify the scope of the project. A plan may still be a common plan of development or sale even if it is taking place in separate stages or phases, is planned in combination with other construction activities, or is implemented by different owners or operators.<sup>1</sup> Common plans of development may be residential, commercial, or industrial in nature.
- D. 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 the 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.
- E. 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.
- F. Disturb – To alter the physical condition, natural terrain or vegetation of land by clearing, grubbing, grading, excavating, filling, building or other construction activity.
- G. Drain Inlet – A point of entry into a sump, storm water basin, or storm drain system.

<sup>1</sup> General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s); State of Utah Department of Environmental Quality, Division of Water Quality; November 20, 2016



- H. Drinking Water Source Protection Zone – Zones determined by geo-hydrology designed to protect groundwater aquifers of a well in a culinary water system.
- I. Freeboard – The vertical distance between the emergency spillway and the top of the basin embankment.
- J. General Permit for discharges from MS4 (Permit) – Authorization for a municipal separate storm sewer system to discharge storm water into waters of the United States.
- K. Hardscape – Generally impervious areas, typically streets, sidewalks, driveways, parking areas, and roofs.
- L. Infiltration – The movement of water through the soil surface and into the soil;<sup>2</sup> the movement of water downward from the ground surface through the upper soil.<sup>3</sup>
- M. Infiltration Rate – The rate at which water actually enters the soils during a storm.<sup>2</sup>
- N. Infiltration System (storm water) – A system which is designed to return storm water runoff into an underground aquifer.
  - 1. 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.
  - 2. The discharge of storm water piping below grade for the purpose of infiltration is considered a Class V injection well facility.
- O. Injection Well, Class V – As defined in Utah Administrative Code R317-7-2:
  - 1. A bored, drilled, or driven shaft whose depth is greater than its largest surface dimension, OR
  - 2. A dug hole whose depth is greater than its largest surface dimension, OR
  - 3. An improved sinkhole, OR
  - 4. A subsurface fluid distribution system.
- P. 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.
- Q. LID Analysis and Report – A written analysis of a development or redevelopment site that (1)

<sup>2</sup> Linsley/Franzini/Freyberg/Tchobanglous. (1992). *Water Resources Engineering and Environmental Engineering*. New York: McGraw-Hill Inc.

<sup>3</sup> Lindeburg. (2003). *Civil Engineering Reference Manual*. Belmont, CA: Professional Publications, Inc.

- identifies appropriate methods to reduce storm water runoff, (2) identifies the pollutants to target for each drainage area, and (3) selects appropriate structural controls to implement on the site.
- R. Municipal Separate Storm Sewer System (MS4) – The storm water conveyance system owned by the City which includes streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains. For a full definition, see UAC 317-8.
  - S. 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.
  - T. Percolation – The movement of water through the subsurface soil layers, usually continuing downward to the groundwater table,<sup>3</sup> measured by a Standard Percolation Test in units of minutes per inch.
  - U. 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.
  - V. Redevelopment – Alteration of a property that change the footprint of a site or building.
  - W. 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.
  - X. Softscape – Generally pervious areas, such as native vegetation and landscaped areas.
  - Y. Spillway, Emergency – A storm drain basin feature that controls and guides storm water as it spills over the basin's embankment.
  - Z. 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.
  - AA. 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 publically or privately, which is designed and used for collecting and/or conveying storm water.
  - BB. 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.
  - CC. 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. This Report shall also contain the calculations for determining the 90<sup>th</sup> Percentile Storm volume and methods evaluated and selected to manage the rainfall on-site.

1. This Report may be combined with the LID Analysis and Report.

DD. 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.

EE. Subsurface Fluid Distribution System – An assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground. (i.e. infiltration galleries, underground retention)

FF. UAC – Acronym for Utah Administrative Code.

GG. UDEQ – Acronym for 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 25-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 25-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.
5. See Exhibits 1 and 2 for rainfall data.
6. The storm duration used for the sizing of basins shall be based upon the worst case scenario and not the time of concentration. The time of concentration shall be calculated and shown.

#### **C. 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 2019):
    - 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. Storm waters shall not be conveyed in irrigation ditches.
2. Irrigation waters shall not be conveyed in storm drain systems.

**B. 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.

- C. Access – 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.

**D. 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.

**E. 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 City Engineer.**

**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 City Engineer.
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 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 City Engineer 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 lesser of:
  - a. Pre-development runoff with pre-development, meaning the condition of the land prior to settlement, or
  - b. The discharge rate determined by using the standard rate of 0.1 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.
  8. Multi-Use Basins – Basins may be designed as multi-use facilities when appropriate precautions are incorporated into the design. If amenities such as pavilions, playground equipment, volleyball courts, etc. are to be constructed within the water detention area of a basin, they shall be designed appropriately. Structures shall be designed for saturated soil conditions and bearing capacities are to be reduced accordingly. Restrooms shall not be located in areas of inundation. Inlet and outlet structures should be located as far as possible from all facilities. No wood chips or floatable objects may be used in the area that will be inundated.
- 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 (excludes 90<sup>th</sup> Percentile Storm Retention; see Section A7)
1. Retention basins must be specifically approved by the City Engineer.
  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 City storm drain 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).
    - c. Recommendation by the City Engineer.
  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 per the City's Storm Water Management Plan.

#### **A7. 90th Percentile Storm Retention**

- A. Beginning March 1, 2019, all new development and redevelopment projects equal to or greater than one (1) acre, or projects that are less than one (1) acre that are part of a larger common plan of development or sale, shall be required to manage rainfall on-site, and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 90th percentile rainfall event [storm]. This objective must be accomplished by the use of practices that are designed, constructed, and maintained to infiltrate, evapotranspire, and/or harvest and reuse rainwater. If meeting this retention standard is technically infeasible, a rationale shall be provided on a case by case basis for the use of alternative design criteria. The project must document and quantify that infiltration, evapotranspiration, and rainwater harvesting have been used to the maximum extent technically feasible and that full employment of these controls are infeasible due to site constraints.<sup>3</sup>
- B. In Pleasant View, the 90<sup>th</sup> percentile storm has been determined to be 0.69 inches of depth.
- C. The intent is to manage water as close as possible to the point at which it falls.
- D. Calculations and implementation rationale must be contained in the Storm Water Report.
- E. LID measures should be implemented to meet the 90<sup>th</sup> Percentile Storm requirements.
- F. Implementation of this retention standard does not reduce or eliminate the requirement for detention/retention basins as described in Section A5.

#### **A8. Low Impact Development**

Beginning March 1, 2019, all new development and redevelopment projects equal to or greater than one (1) acre, or projects that are less than one (1) acre that are part of a larger common plan of development or sale, shall be required to evaluate Low Impact Development (LID) approaches to infiltrate, evapotranspire, and/or harvest and use storm water from the site to protect water quality.<sup>4</sup>

<sup>4</sup> Adapted from General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s); State of Utah Department of Environmental Quality, Division of Water Quality; November 20, 2016.

- A. Structural controls may include green infrastructure practices such as:
  - 1. Rainwater harvesting (e.g. rain barrels)
  - 2. Rain gardens
  - 3. Permeable pavement or pavers (not permitted on public streets)
  - 4. Vegetated swales
  - 5. Preservation of vegetation (non-disturbance)
  - 6. Xeriscaping
  - 7. Others as approved by the City Engineer
- B. LID approaches must be evaluated and detailed in a LID Analysis and Report, which shall be submitted to and approved by the City Engineer.
- C. If an LID approach cannot be utilized, the Applicant must document an explanation of the reasons preventing this approach and the rationale for the *chosen alternative controls* on a case by case basis for each project.<sup>3</sup>
- D. Implementation of LID measures does not reduce or eliminate the requirement for detention/retention basins as described in Section A5.

## **EXHIBIT 1 – NOAA POINT PRECIPITATION FREQUENCY ESTIMATES - INTENSITY**



NOAA Atlas 14, Volume 1, Version 5  
 Location name: Ogden, Utah, US\*  
 Latitude: 41.3199°, Longitude: -111.9888°  
 Elevation: 4475 ft\*  
 \* source: Google Maps



### 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 & aeriels](#)

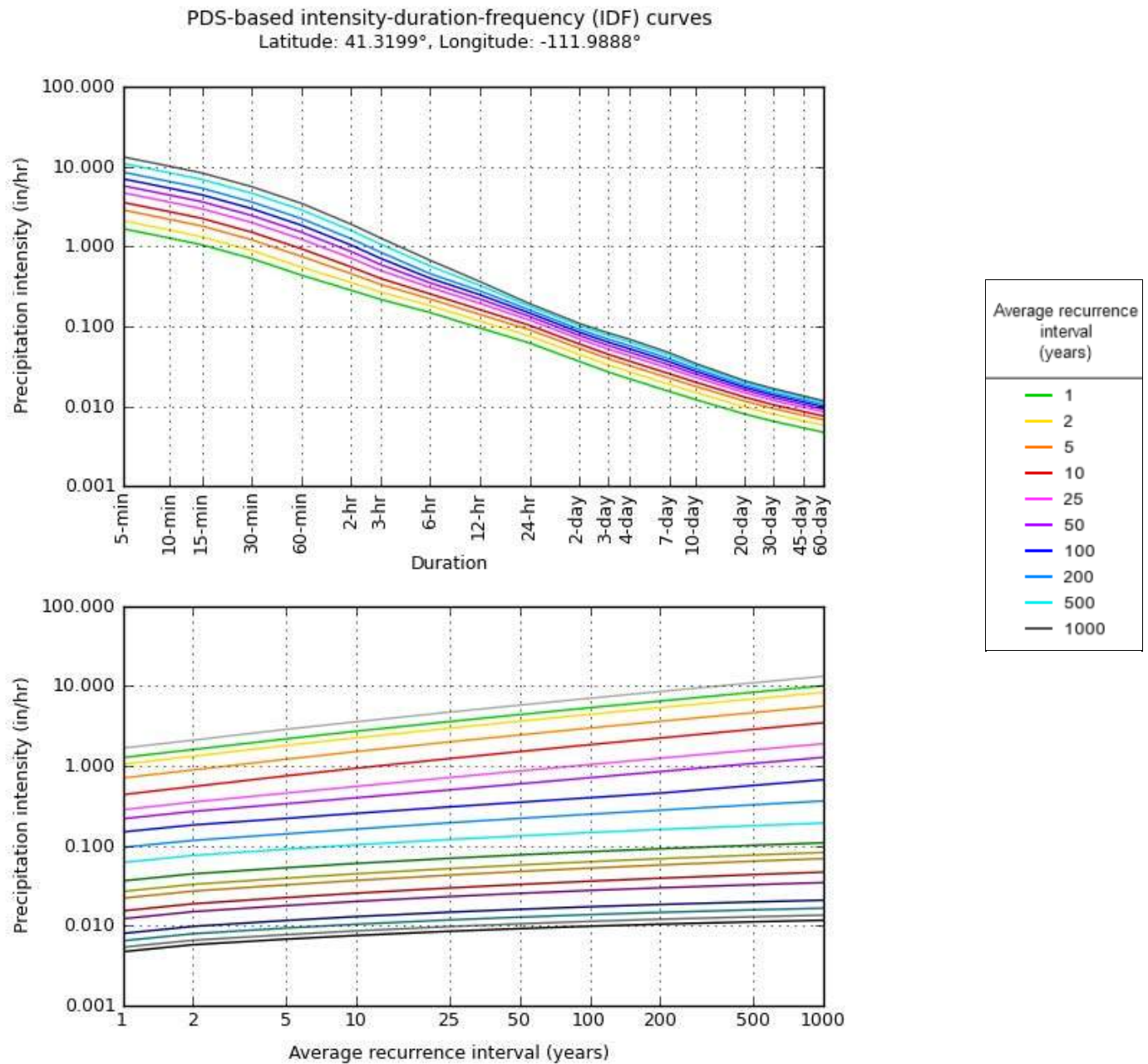
### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.67 (1.45-1.92)	2.10 (1.86-2.44)	2.87 (2.52-3.30)	3.56 (3.11-4.12)	4.70 (4.01-5.47)	5.76 (4.75-6.78)	7.02 (5.60-8.35)	8.52 (6.54-10.3)	11.0 (7.93-13.7)	13.2 (9.11-17.0)
10-min	1.27 (1.11-1.46)	1.60 (1.42-1.85)	2.18 (1.91-2.51)	2.72 (2.36-3.13)	3.58 (3.05-4.16)	4.39 (3.62-5.16)	5.35 (4.27-6.36)	6.48 (4.98-7.87)	8.33 (6.04-10.4)	10.1 (6.94-12.9)
15-min	1.05 (0.916-1.21)	1.32 (1.17-1.53)	1.80 (1.58-2.08)	2.24 (1.96-2.59)	2.96 (2.52-3.44)	3.62 (2.99-4.26)	4.42 (3.52-5.26)	5.36 (4.12-6.51)	6.89 (4.99-8.63)	8.31 (5.73-10.7)
30-min	0.706 (0.618-0.814)	0.890 (0.788-1.03)	1.21 (1.06-1.40)	1.51 (1.32-1.74)	1.99 (1.70-2.32)	2.44 (2.01-2.87)	2.98 (2.37-3.54)	3.61 (2.77-4.38)	4.64 (3.36-5.81)	5.60 (3.86-7.19)
60-min	0.437 (0.382-0.504)	0.551 (0.488-0.636)	0.750 (0.658-0.864)	0.935 (0.814-1.08)	1.23 (1.05-1.43)	1.51 (1.25-1.78)	1.84 (1.47-2.19)	2.23 (1.72-2.71)	2.87 (2.08-3.60)	3.46 (2.39-4.45)
2-hr	0.282 (0.251-0.321)	0.353 (0.314-0.402)	0.456 (0.403-0.518)	0.554 (0.484-0.631)	0.715 (0.612-0.822)	0.863 (0.722-1.00)	1.04 (0.840-1.23)	1.25 (0.972-1.51)	1.58 (1.16-1.97)	1.90 (1.33-2.42)
3-hr	0.218 (0.196-0.244)	0.269 (0.243-0.302)	0.336 (0.301-0.377)	0.399 (0.355-0.449)	0.500 (0.437-0.567)	0.595 (0.509-0.682)	0.712 (0.593-0.828)	0.849 (0.685-1.01)	1.07 (0.823-1.33)	1.28 (0.941-1.63)
6-hr	0.149 (0.137-0.164)	0.182 (0.166-0.201)	0.220 (0.200-0.243)	0.255 (0.230-0.282)	0.307 (0.273-0.342)	0.351 (0.308-0.394)	0.400 (0.346-0.456)	0.456 (0.385-0.527)	0.569 (0.465-0.672)	0.672 (0.532-0.822)
12-hr	0.096 (0.088-0.105)	0.117 (0.107-0.128)	0.141 (0.129-0.155)	0.162 (0.147-0.179)	0.194 (0.174-0.215)	0.220 (0.195-0.247)	0.249 (0.216-0.282)	0.279 (0.238-0.321)	0.326 (0.270-0.383)	0.364 (0.293-0.437)
24-hr	0.062 (0.056-0.068)	0.076 (0.069-0.083)	0.091 (0.082-0.100)	0.103 (0.094-0.113)	0.120 (0.108-0.132)	0.133 (0.120-0.146)	0.147 (0.131-0.161)	0.160 (0.143-0.176)	0.178 (0.158-0.198)	0.193 (0.169-0.222)
2-day	0.036 (0.033-0.040)	0.045 (0.041-0.049)	0.053 (0.049-0.058)	0.060 (0.055-0.066)	0.070 (0.063-0.076)	0.077 (0.070-0.084)	0.084 (0.076-0.093)	0.092 (0.083-0.101)	0.102 (0.091-0.112)	0.109 (0.097-0.120)
3-day	0.027 (0.025-0.030)	0.033 (0.030-0.036)	0.039 (0.036-0.043)	0.045 (0.041-0.049)	0.052 (0.047-0.057)	0.057 (0.052-0.063)	0.063 (0.057-0.069)	0.069 (0.062-0.076)	0.077 (0.068-0.085)	0.082 (0.073-0.091)
4-day	0.022 (0.020-0.024)	0.027 (0.025-0.030)	0.032 (0.030-0.036)	0.037 (0.034-0.040)	0.043 (0.039-0.047)	0.048 (0.043-0.052)	0.053 (0.047-0.058)	0.058 (0.051-0.063)	0.064 (0.057-0.071)	0.069 (0.061-0.077)
7-day	0.015 (0.014-0.017)	0.019 (0.017-0.021)	0.023 (0.020-0.025)	0.026 (0.023-0.028)	0.030 (0.027-0.033)	0.033 (0.030-0.036)	0.036 (0.032-0.040)	0.039 (0.035-0.044)	0.044 (0.039-0.049)	0.047 (0.041-0.052)
10-day	0.012 (0.011-0.013)	0.015 (0.014-0.017)	0.018 (0.016-0.020)	0.020 (0.018-0.022)	0.023 (0.021-0.025)	0.025 (0.023-0.028)	0.028 (0.025-0.030)	0.030 (0.027-0.033)	0.033 (0.029-0.036)	0.035 (0.031-0.038)
20-day	0.008 (0.007-0.009)	0.010 (0.009-0.011)	0.012 (0.011-0.013)	0.013 (0.012-0.014)	0.015 (0.013-0.016)	0.016 (0.015-0.018)	0.017 (0.016-0.019)	0.018 (0.017-0.020)	0.020 (0.018-0.022)	0.021 (0.019-0.023)
30-day	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.009 (0.009-0.010)	0.010 (0.010-0.011)	0.012 (0.011-0.013)	0.013 (0.012-0.014)	0.014 (0.013-0.015)	0.015 (0.013-0.016)	0.016 (0.014-0.017)	0.017 (0.015-0.018)
45-day	0.005 (0.005-0.006)	0.007 (0.006-0.007)	0.008 (0.007-0.008)	0.009 (0.008-0.009)	0.010 (0.009-0.011)	0.011 (0.010-0.011)	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	0.005 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.007)	0.008 (0.007-0.008)	0.009 (0.008-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.010 (0.010-0.011)	0.011 (0.010-0.012)	0.012 (0.011-0.013)

<sup>1</sup> 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.

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### PF graphical



## **EXHIBIT 2 – NOAA POINT PRECIPITATION FREQUENCY ESTIMATES - DEPTH**



NOAA Atlas 14, Volume 1, Version 5  
 Location name: Ogden, Utah, US\*  
 Latitude: 41.3199°, Longitude: -111.9888°  
 Elevation: 4475 ft\*  
 \* source: Google Maps



### 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 & aeriels](#)

### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.139 (0.121-0.160)	0.175 (0.155-0.203)	0.239 (0.210-0.275)	0.297 (0.259-0.343)	0.392 (0.334-0.456)	0.480 (0.396-0.565)	0.585 (0.467-0.696)	0.710 (0.545-0.862)	0.913 (0.661-1.14)	1.10 (0.759-1.41)
10-min	0.212 (0.185-0.244)	0.267 (0.236-0.308)	0.363 (0.319-0.419)	0.453 (0.394-0.522)	0.597 (0.508-0.694)	0.731 (0.603-0.860)	0.891 (0.711-1.06)	1.08 (0.830-1.31)	1.39 (1.01-1.74)	1.68 (1.16-2.15)
15-min	0.262 (0.229-0.302)	0.330 (0.293-0.382)	0.450 (0.395-0.519)	0.561 (0.489-0.648)	0.740 (0.630-0.860)	0.906 (0.747-1.06)	1.10 (0.881-1.31)	1.34 (1.03-1.63)	1.72 (1.25-2.16)	2.08 (1.43-2.67)
30-min	0.353 (0.309-0.407)	0.445 (0.394-0.514)	0.606 (0.532-0.698)	0.755 (0.658-0.872)	0.997 (0.848-1.16)	1.22 (1.01-1.44)	1.49 (1.19-1.77)	1.80 (1.39-2.19)	2.32 (1.68-2.90)	2.80 (1.93-3.59)
60-min	0.437 (0.382-0.504)	0.551 (0.488-0.636)	0.750 (0.658-0.864)	0.935 (0.814-1.08)	1.23 (1.05-1.43)	1.51 (1.25-1.78)	1.84 (1.47-2.19)	2.23 (1.72-2.71)	2.87 (2.08-3.60)	3.46 (2.39-4.45)
2-hr	0.565 (0.502-0.642)	0.706 (0.628-0.804)	0.912 (0.806-1.04)	1.11 (0.968-1.26)	1.43 (1.22-1.64)	1.73 (1.44-2.00)	2.08 (1.68-2.45)	2.50 (1.95-3.01)	3.17 (2.33-3.94)	3.79 (2.66-4.83)
3-hr	0.655 (0.590-0.734)	0.808 (0.730-0.908)	1.01 (0.904-1.13)	1.20 (1.07-1.35)	1.50 (1.31-1.70)	1.79 (1.53-2.05)	2.14 (1.78-2.49)	2.55 (2.06-3.03)	3.22 (2.47-3.98)	3.84 (2.83-4.88)
6-hr	0.893 (0.820-0.982)	1.09 (0.997-1.21)	1.32 (1.20-1.45)	1.53 (1.38-1.69)	1.84 (1.64-2.05)	2.10 (1.84-2.36)	2.40 (2.07-2.73)	2.73 (2.31-3.15)	3.41 (2.78-4.03)	4.02 (3.19-4.92)
12-hr	1.15 (1.06-1.26)	1.41 (1.29-1.55)	1.70 (1.55-1.87)	1.95 (1.77-2.15)	2.34 (2.10-2.60)	2.65 (2.35-2.97)	3.00 (2.61-3.40)	3.36 (2.87-3.87)	3.92 (3.25-4.62)	4.38 (3.53-5.26)
24-hr	1.48 (1.35-1.63)	1.82 (1.65-2.00)	2.17 (1.98-2.39)	2.47 (2.24-2.72)	2.88 (2.60-3.16)	3.19 (2.88-3.51)	3.52 (3.15-3.87)	3.84 (3.43-4.23)	4.28 (3.79-4.74)	4.62 (4.07-5.32)
2-day	1.75 (1.60-1.92)	2.14 (1.96-2.36)	2.55 (2.33-2.80)	2.89 (2.64-3.17)	3.35 (3.05-3.67)	3.70 (3.35-4.06)	4.05 (3.66-4.45)	4.41 (3.96-4.85)	4.88 (4.36-5.38)	5.23 (4.64-5.77)
3-day	1.93 (1.76-2.12)	2.37 (2.16-2.60)	2.83 (2.59-3.11)	3.21 (2.93-3.52)	3.74 (3.40-4.09)	4.14 (3.75-4.54)	4.55 (4.10-4.99)	4.96 (4.45-5.46)	5.52 (4.91-6.09)	5.94 (5.24-6.58)
4-day	2.12 (1.94-2.33)	2.60 (2.37-2.85)	3.11 (2.84-3.41)	3.54 (3.23-3.88)	4.13 (3.75-4.51)	4.58 (4.14-5.02)	5.05 (4.54-5.54)	5.52 (4.94-6.08)	6.16 (5.46-6.81)	6.65 (5.85-7.38)
7-day	2.58 (2.34-2.85)	3.16 (2.88-3.49)	3.78 (3.44-4.17)	4.29 (3.90-4.73)	4.99 (4.51-5.49)	5.52 (4.98-6.08)	6.06 (5.45-6.69)	6.61 (5.91-7.31)	7.32 (6.50-8.15)	7.87 (6.95-8.79)
10-day	2.93 (2.67-3.23)	3.60 (3.27-3.97)	4.29 (3.90-4.72)	4.84 (4.40-5.32)	5.56 (5.05-6.11)	6.10 (5.52-6.71)	6.63 (5.99-7.31)	7.15 (6.44-7.90)	7.82 (7.00-8.67)	8.31 (7.40-9.24)
20-day	3.84 (3.49-4.21)	4.71 (4.29-5.17)	5.58 (5.08-6.12)	6.25 (5.69-6.84)	7.09 (6.45-7.76)	7.71 (7.00-8.43)	8.29 (7.51-9.08)	8.85 (7.99-9.70)	9.53 (8.58-10.5)	10.0 (8.98-11.0)
30-day	4.66 (4.28-5.10)	5.72 (5.24-6.25)	6.74 (6.18-7.36)	7.52 (6.88-8.20)	8.52 (7.79-9.29)	9.23 (8.43-10.1)	9.92 (9.04-10.8)	10.6 (9.60-11.6)	11.4 (10.3-12.5)	11.9 (10.8-13.2)
45-day	5.81 (5.32-6.34)	7.11 (6.52-7.75)	8.35 (7.66-9.07)	9.31 (8.53-10.1)	10.5 (9.64-11.4)	11.4 (10.4-12.4)	12.2 (11.2-13.3)	13.0 (11.8-14.2)	14.0 (12.7-15.3)	14.6 (13.2-16.0)
60-day	6.81 (6.25-7.40)	8.34 (7.65-9.06)	9.78 (8.98-10.6)	10.9 (9.99-11.8)	12.3 (11.2-13.3)	13.3 (12.1-14.4)	14.2 (13.0-15.4)	15.1 (13.7-16.4)	16.1 (14.7-17.5)	16.8 (15.3-18.4)

<sup>1</sup> 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.

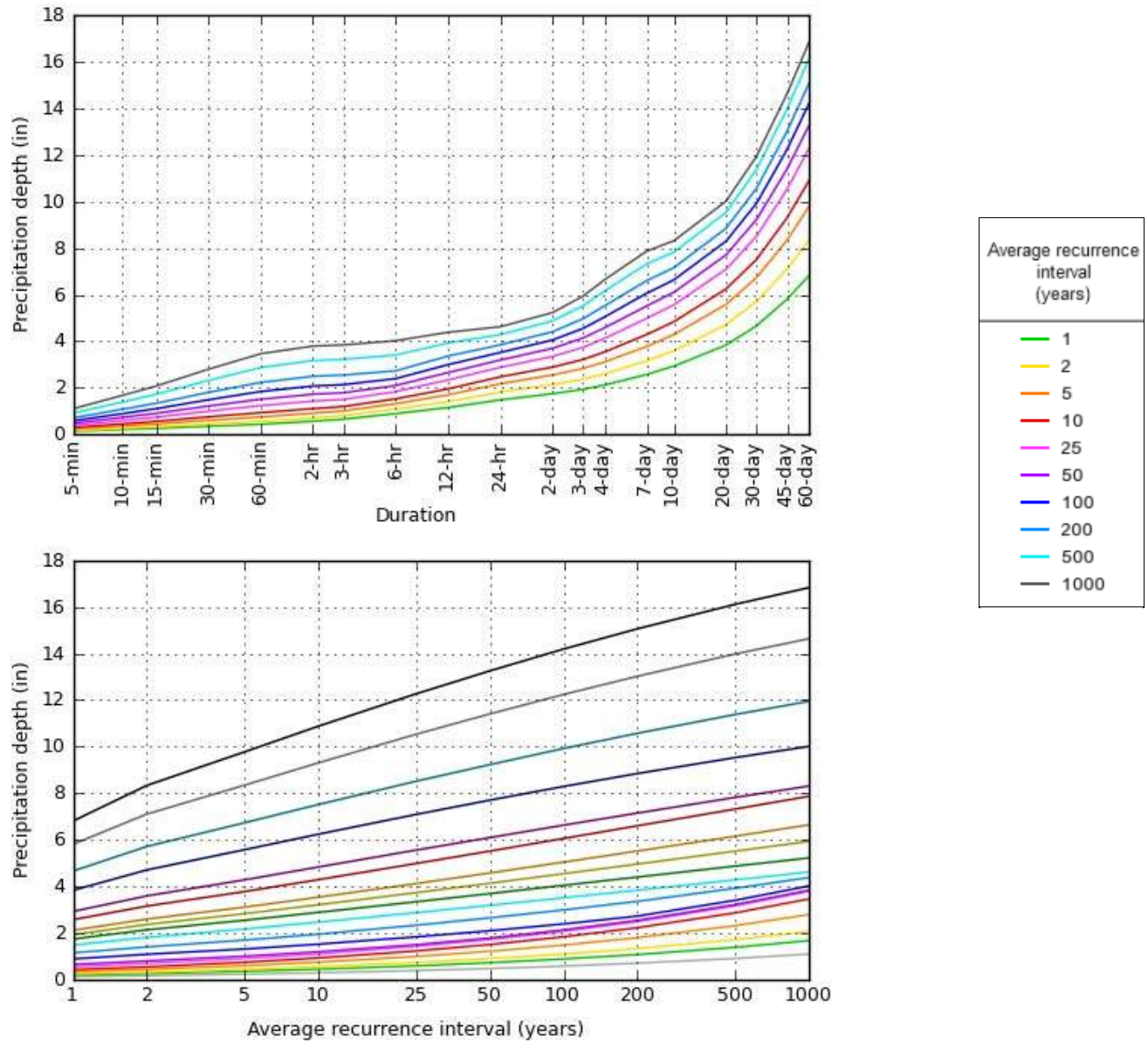
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### PF graphical



## PDS-based depth-duration-frequency (DDF) curves

Latitude: 41.3199°, Longitude: -111.9888°



**APPENDIX B – GEOTECHNICAL INVESTIGATION REPORT MINIMUM  
REQUIREMENTS**

**APPENDIX B (NEW)****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 Pleasant View 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 MANUAL OF STANDARD  
SPECIFICATIONS**

**APPENDIX C**

**MODIFICATIONS AND ADDITIONS TO THE**

***2017 MANUAL OF STANDARD SPECIFICATIONS***

as published by:  
Utah LTAP Center  
Utah State University  
Logan Utah  
2017

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**SECTION 03 20 00 M**  
**CONCRETE REINFORCING (MODIFIED)**

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<b>PART 3</b>	<b>EXECUTION</b>
---------------	------------------

---

**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**

**2.4      ADDITIVES**

*Add paragraph F as follows:*

- F.      Fiber Reinforcement: A minimum of 3.5 pounds per cubic yard of polyolefin fiber reinforcement shall be evenly distributed into the mix. Mixing shall be as recommended by the manufacturer/supplier such that the fibers do not ball up. Polyolefin fibers shall meet the requirements of ASTM C1116 and ASTM D7508.

**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)**

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<b>PART 3</b>	<b>EXECUTION</b>
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**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 Engineer or City Inspector.

**SECTION 31 23 16 M**  
**EXCAVATION (Modified)**

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**PART 3            EXECUTION**

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**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/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
- D 1557     Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
- 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



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**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)**

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<b>PART 1</b>	<b>GENERAL</b>
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**1.2 REFERENCES**

*Add paragraph C as follows:*

- C. Pleasant View 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:

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

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

Replace Table 2 with the following:

<b>Table 2 – Master Grading Band for Lightweight Aggregate</b>		
<b>Sieve</b>	<b>ASTM</b>	<b>C330 Requirement</b>
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.

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

2. Cover Material: Use Table 4.

<b>Table 4 – Cover Material Application Rate</b>	
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.

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### **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 12 05 M  
BITUMINOUS CONCRETE (MODIFIED)**

**1.2 REFERENCES**

*Add the following paragraph to Section 1.2:*

- A. **Utah Department of Transportation (UDOT)**  
Quality Management Plan 514 Hot-Mix Asphalt

**1.3 DEFINITIONS**

*Add the following paragraph to Section 1.3:*

H. **Road Class**

- Class I: Includes maintenance mixes, bike paths, and residential driveways. (ESAL < 10<sup>4</sup> per year)
- Class II: Includes non-industrial parking lots, local and residential streets, and low volume (minor) collectors. (ESAL between 10<sup>4</sup> and 10<sup>6</sup> per year)
- Class III: Includes high volume (major) collectors, arterials, and industrial parking lots (primary load from 3-axle or greater vehicles). (ESAL > 10<sup>6</sup> per year)

**1.4 SUBMITTALS**

A. **General:**

*Add the following paragraph:*

4. Submit plant certification documentation (see 3.1.A)

B. **Quality Assurance:**

*Revise paragraph 3 to read as follows:*

1. Testing Report: Submit Quality Control data to the Engineer within one (1) working day after completion of each day of paving.

*Add the following paragraph:*

2. Plant Production Report: Submit daily plant productions records to the Engineer within one (1) working day after completion of each day of paving and prior to the start of the next paving day. Report shall include the following information:
- a. Plant Location
  - b. Production Date and Times
  - c. Mix Designation
  - d. Total Mix Tonnage
  - e. Virgin Aggregate Tonnage

- f. Virgin Asphalt Tonnage
- g. RAP Aggregate Tonnage
- h. Lime Tonnage
- i. Water Tonnage

*Revise Section 2.3 to read as follows:*

### 2.3 ADDITIVES

- A. Mineral Filler: None
- B. Recycle Agent: None
- C. Anti-strip Agent: 1% Lime Slurry, minimum, meeting the HWT requirements for Superpave mixes
- D. RAP or ROSP (By weight or binder, whichever is lesser): Allowed up to 15%
  - 1. Free of detrimental quantities of deleterious materials
  - 2. No change in specified binder grade
  - 3. Determine RAP binder content by chemical extraction

### 2.4 MIX DESIGN

*Replace paragraph A with the following:*

- A. Project Specific Requirements:
  - 1. **Less than 3-inch depth (including overlays)**
    - a. Option 1 – Superpave
      - i. Mix Designator (Compaction Effort): 75 gyrations (75 N<sub>d</sub>)
      - ii. Binder Grade: PG 58-28
      - iii. Master Grading Band: SP ½
    - b. Option 2 – Marshall
      - i. Mix Designator (Compaction Effort): 50 blow
      - ii. Binder Grade: PG 58-28
      - iii. Master Grading Band: DM ½
  - 2. **3-inch and greater depth**
    - a. Superpave
      - i. Mix Designator (Compaction Effort): 75 gyrations (75 N<sub>d</sub>)
      - ii. Binder Grade: PG 58-28
      - iii. Master Grading Band: SP ½

**3.1 CONSTRUCTION EQUIPMENT**

*Revise paragraph A to read as follows:*

- A. Mixing Plant: ASTM D995. Use a UDOT Quality Management Plan 514 certified asphalt mixing plant. Provide:
  - 1. Positive means to determine the moisture content of aggregate.
  - 2. Positive means to sample all material components.
  - 3. Sensors to measure the temperature of the mix at discharge.
  - 4. Ability to maintain discharge temperature of mix.
  - 5. Capability of maintaining plus or minus five (5) percent tolerance on component percentages in final mix.
  - 6. Oil Sand Introduction System: Do not burn off the light oils in Bitumen Binder (oil sand).



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

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<b>PART 3</b>	<b>EXECUTION</b>
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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:*

3. 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**

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**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**

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**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)

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**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

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### 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%

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**PART 3            EXECUTION**

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**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**

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**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**

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- 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**

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**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)**

---

<b>PART 1</b>	<b>GENERAL</b>
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**1.2 REFERENCES**

*Replace paragraph A to read as follows:*

- A. **Pleasant View City Public Works Standard Drawings**

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<b>PART 2</b>	<b>PRODUCTS</b>
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**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.

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<b>PART 3</b>	<b>EXECUTION</b>
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**3.5 ASPHALT PAVEMENT RESTORATION**

*Revise paragraphs A and B to read as follows:*

- A. Follow Pleasant View 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.   Pleasant View 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
----	---

**G.   Utah Administrative Code**

R309	Drinking Water
------	----------------

**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 valves box covers shall contain the wording "PLEASANT VIEW WATER."

*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. Pleasant View City Public Works Standard Drawings.

**3.8 INSTALLATION – TAPS**

*Revise paragraph A to read as follows:*

- A. Pleasant View City Public Works Standard Drawings.



**3.9 INSTALLATION – SERVICE LINE**

*Revise paragraph C to read as follows:*

- C. Meter Box: Pleasant View 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. Pleasant View 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, Pleasant View City Public Works Standard Drawings.
- 2. Trench backfill, Pleasant View 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, Pleasant View 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 (4<sup>th</sup>) item in paragraph A to read as follows:*

C509            Resilient-Seated Gate Valves for Water Supply Service

*Add paragraph B as follows:*

**B.   Pleasant View 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. **Pleasant View 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 Pleasant View City Public Works Standard Drawings and AWWA M17.

*Revise paragraph H to read as follows:*

- H. Install thrust block according to Pleasant View 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.   **Pleasant View 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, Section 33 05 06.

*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 Pleasant View 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 copper 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 - PLEASANT VIEW CITY PUBLIC WORKS STANDARD DRAWINGS**

# PLEASANT VIEW CITY CORPORATION

## PUBLIC WORKS STANDARD DRAWINGS

### Index of Drawings

#### SUBMITTED & RECOMMENDED

*Dana Q. Shuler*  
DANA Q. SHULER, P.E.  
JONES & ASSOCIATES

**PROFESSIONAL ENGINEER**  
No. 6578621  
DANA Q. SHULER  
STATE OF UTAH

02/07/19  
DATE



#### APPROVAL

*Leonard Call*  
LEONARD CALL  
MAYOR

2/21/19  
DATE

*Bill Cobabe*  
BILL COBABE  
CITY ADMINISTRATOR

21 FEB 2019  
DATE

*Lorin Gardner*  
LORIN GARDNER, P.E.  
CITY ENGINEER

2/21/2019  
DATE

*Jay Palmer*  
JAY PALMER  
PUBLIC WORKS DIRECTOR

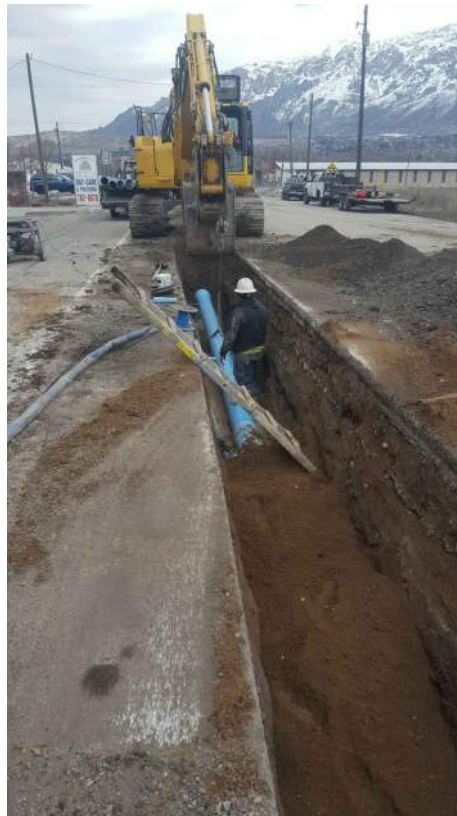
2/25/19  
DATE

*Tyson Jackson*  
TYSON JACKSON  
UTILITIES/PUBLIC WORKS ASSISTANT DIRECTOR

2-22-19  
DATE

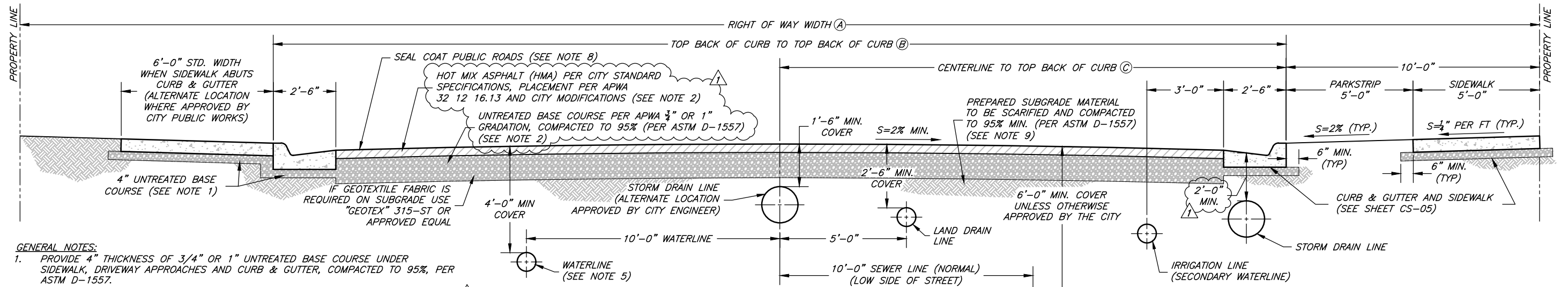
*Laurie Hellstrom*  
LAURIE HELLSTROM  
ATTEST, CITY RECORDER

2/25/19  
DATE



- CS-01....TITLE PAGE & INDEX OF DRAWINGS
- CS-02....PUBLIC ROADS - TYPICAL STREET SECTIONS & UTILITY LATERAL CONFIGURATION DETAILS
- CS-03....PUBLIC ROADS - TYPICAL INTERSECTION & STREET DETAILS
- CS-04....PUBLIC ROADS - TYPICAL DRIVE APPROACH, ASPHALT PATCH & DEFECTIVE CONCRETE REPLACEMENT DETAILS
- CS-05....PUBLIC ROADS - TYPICAL ADA RAMP, SIDEWALK, CURB & GUTTER, AND CONCRETE JOINT DETAILS
- CS-06....PUBLIC ROADS - CUL-DE-SAC & TEMP. TURNAROUND DETAILS
- CS-07....CULINARY WATER - RESIDENTIAL WATER SERVICE DETAILS
- CS-08....CULINARY WATER - AIR/VACUUM RELIEF STATION & FIRE HYDRANT DETAILS
- CS-09....CULINARY WATER - TRACER WIRE INSTALLATION DETAILS
- CS-10....CULINARY WATER - STANDARD WATER METER STATIONS
- CS-11....CULINARY WATER - PRESSURE REDUCTION STATION
- CS-12....CULINARY WATER - THRUST BLOCK, WATERLINE LOOP, PIPE TRENCH, & MISC. VAULT DETAILS
- CS-13....SANITARY SEWER - LATERAL & CONNECTION DETAILS
- CS-14....SANITARY SEWER - TYPICAL MANHOLES & DETAILS
- CS-15....STORM DRAIN - SINGLE AND DOUBLE CATCH BASIN DETAILS
- CS-16....STORM DRAIN - DRAINAGE INLET BOX, GENERAL GRATE & FRAME & TYPICAL LAND DRAIN TRENCH DETAILS
- CS-17....STORM DRAIN - MANHOLE DETAILS
- CS-18....STORM DRAIN - LARGE DETENTION BASIN DETAILS
- CS-19....STORM DRAIN - SMALL DETENTION BASIN DETAILS
- CS-20....GENERAL - CHAIN LINK FENCE DETAILS
- CS-21....GENERAL - STREET LIGHTING STANDARDS
- CS-22....GENERAL - LID (LOW IMPACT DEVELOPMENT) EXAMPLES

G:\Clients\Pleasant View City Standards and Codes\City Standards\2018 Revision 1 - draft Drawings\PVC - CS - February 2019.dwg, 2/7/2019 3:46:02 PM, 1:2



**GENERAL NOTES:**

1. PROVIDE 4" THICKNESS OF 3/4" OR 1" UNTREATED BASE COURSE UNDER SIDEWALK, DRIVEWAY APPROACHES AND CURB & GUTTER, COMPACTED TO 95%, PER ASTM D-1557.
2. PAVEMENT COMPONENT THICKNESSES SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER BASED ON A DETAILED SOILS ANALYSIS AND USING THE MINIMUM DESIGN PARAMETERS AS FOUND IN APPENDIX B, AND APPROVED BY THE CITY ENGINEER. THE ABSOLUTE MINIMUM PAVEMENT SECTION IS 3-INCH THICK HMA WITH 8-INCH UTBC. IF NO GEOTECHNICAL REPORT IS AVAILABLE (EMERGENCY SITUATION, ETC.), 4-INCH THICK HMA WITH 12-INCH THICK UTBC SHALL BE USED.
3. ALL ROAD CUTS SHALL BE PATCHED PER CS-04 AND CS-12
4. CURB & GUTTER AND SIDEWALKS SHALL BE CONSTRUCTED USING FIBER REINFORCED CONCRETE AND IN COMPLIANCE WITH PLEASANT VIEW CITY TECHNICAL SPECIFICATIONS AND THESE DRAWINGS.
5. ALL CULINARY WATER MAINS AND SERVICES MUST MAINTAIN A MINIMUM SEPARATION FROM ALL SEWER MAINS AND LATERALS OF 10'-0" HORIZONTAL AND 18" VERTICAL IN ACCORDANCE WITH THE STATE OF UTAH DIVISION OF DRINKING WATER RULES SECTION R309-550-7

**STANDARD STREET SECTION**

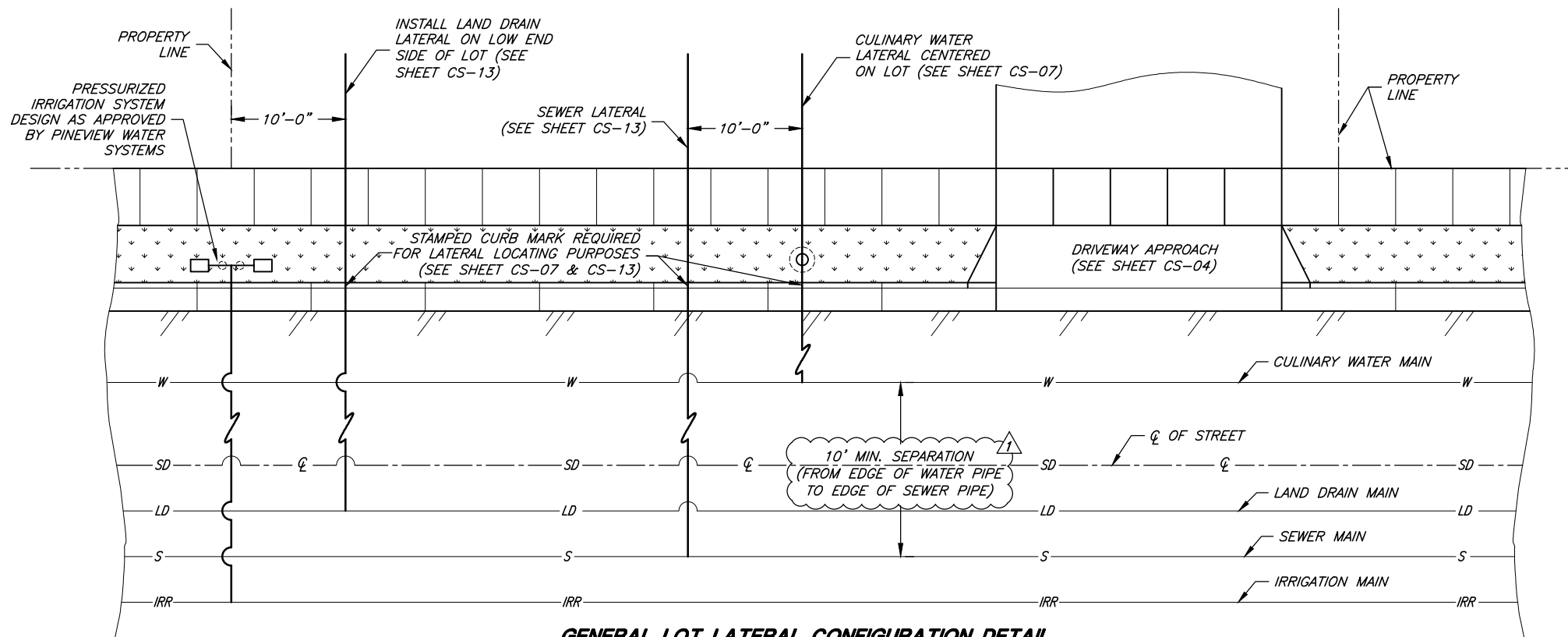
**GENERAL NOTES CONT.:**

6. THE 5'-0" SIDEWALK SHOWN ABOVE IS TO BE CONSIDERED THE "CITY STANDARD." OTHER LOCATIONS AND TYPES OF SIDEWALK AS REQUESTED BY THE DEVELOPER MUST BE APPROVED BY THE CITY. IF SIDEWALK IS LOCATED AGAINST THE TBC, IT MUST BE A MINIMUM OF 6 FEET IN WIDTH.
7. NATURAL GAS TYPICALLY LOCATED IN THE PARKSTRIP, POWER AND COMMUNICATION LINES TYPICALLY LOCATED BEHIND PROPERTY LINES OR IN LOT EASEMENTS.
8. "SEAL COAT" CONSISTS OF THE FOLLOWING:
  - a. CHIP SEAL PER APWA 32 01 13.64 AND CITY MODIFICATIONS, AND
  - b. FOG SEAL PER APWA 32 01 13.50 AND CITY MODIFICATIONS.
9. IMPORTED FILL UNDER ROADWAY SHALL BE GRANULAR BORROW, 2" MAX.

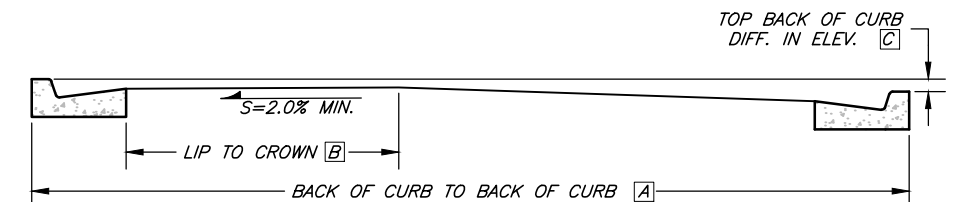
**CURBED ROAD SECTION**

STREET DESIGNATION	R.O.W. WIDTH (A)	T.B.C. TO T.B.C. (B)	CL TO T.B.C. (C)
STANDARD RESIDENTIAL	60'	40'	20'
MINOR COLLECTOR	66'	46'	23'
MAJOR COLLECTOR	70'	50'	25'
MINOR ARTERIAL	80'	60'	30'
MAJOR ARTERIAL	110'	90'	45'

NOTE: ROAD SECTION USED AS DETERMINED BY THE CITY ENGINEER & PLANNING COMMISSION BASED UPON ZONING, GENERAL PLAN, SIZE OF DEVELOPMENT, ESTIMATED TRAFFIC VOLUME, & AMOUNT OF OPEN SPACE ASSOCIATED WITH DEVELOPMENTS PROXIMITY TO HIGH VOLUME ROADS OR COMMERCIAL ZONING.



**GENERAL LOT LATERAL CONFIGURATION DETAIL**



**CROWN NOTES:**

- A. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN CURBS ON OPPOSITE SIDES OF THE STREET SHALL NOT EXCEED THOSE SHOWN IN DETAIL AND TABLE.
- B. ON ARTERIAL STREETS AND CERTAIN STREETS APPROVED BY THE CITY COUNCIL, THE CITY ENGINEER WILL PROVIDE A PAVEMENT DESIGN. LOCATION OF SIDEWALK AND CURB & GUTTER MAY VARY ON INDIVIDUAL ARTERIAL STREETS PER DIRECTION OF THE CITY ENGINEER.
- C. ALL OTHER PROPOSED STREET CROSS SECTIONS SHALL BE AS APPROVED BY THE CITY ENGINEER.

CROWN LOCATION TABLE		
(A)	(B)	(C)
40'-0"	17'-6"	0'-0"
40'-0"	12'-0"	0'-6"
40'-0"	10'-0"	1'-0"
46'-0"	20'-6"	0'-0"
46'-0"	10'-6"	0'-6"
46'-0"	10'-6"	1'-0"
CUL-DE-SAC		1'-0" MAX.

**CROWN LOCATION FOR VARIOUS CROSS SLOPES**



1 JAN '19 DQS REVISED AND/OR ADDED NOTES		
REV.	DATE	APPR.

SCALE:	DESIGNED
N. T.S.	DRAWN
	CHECKED



**CONSULTING ENGINEERS**  
6080 Fashion Point Drive  
South Ogden, Utah 84403 (801) 476-9767  
[www.jonescivil.com](http://www.jonescivil.com)

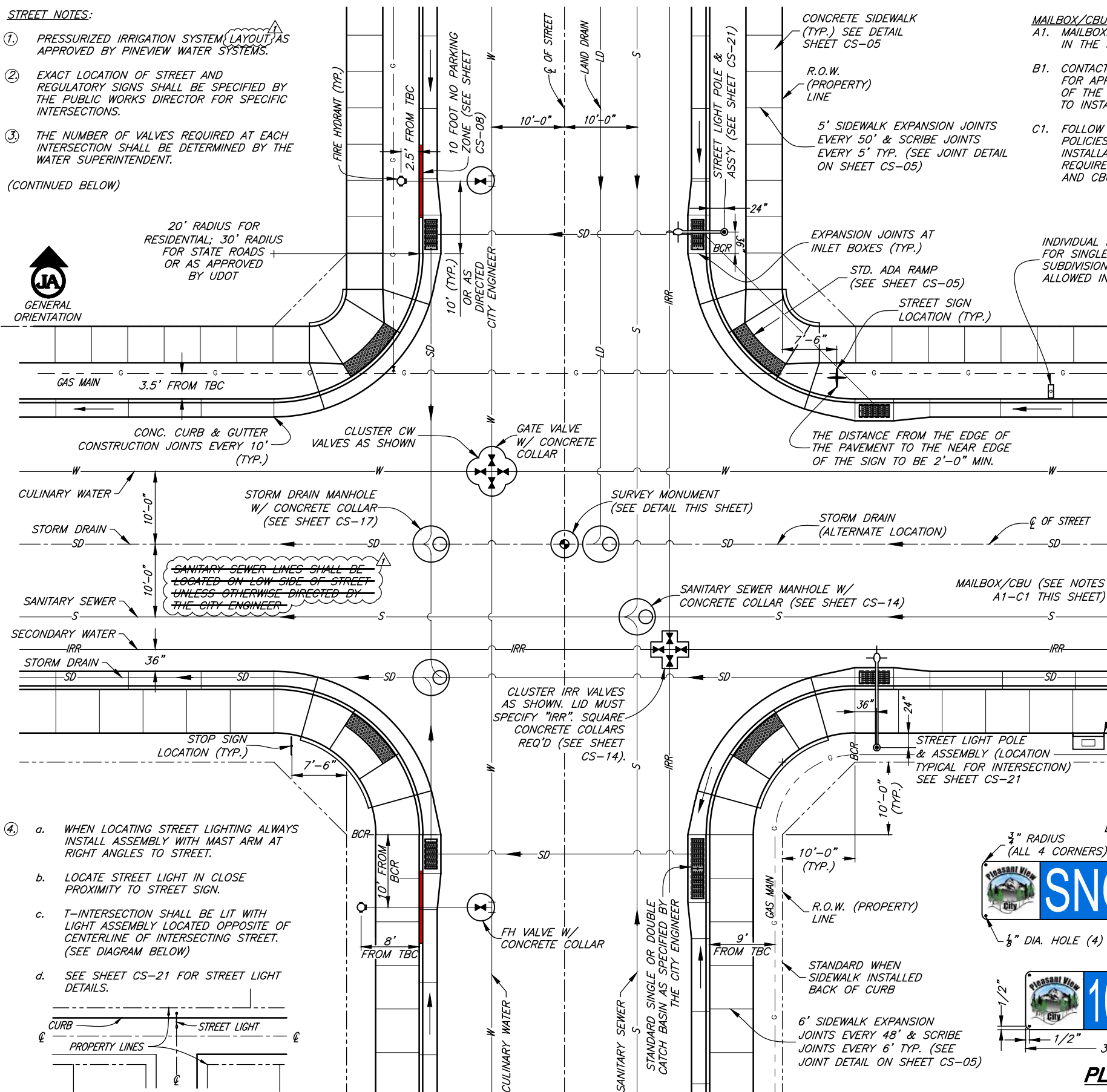
**PLEASANT VIEW CITY CORPORATION**  
**PUBLIC WORKS STANDARDS**  
**PUBLIC ROADS - TYPICAL STREET SECTIONS**  
**& UTILITY LATERAL CONFIGURATION DETAILS**

SHEET:  
**CS-02**  
OF 22 SHEETS



- ①. PRESSURIZED IRRIGATION SYSTEM LAYOUT AS APPROVED BY PINEVIEW WATER SYSTEMS.
- ②. EXACT LOCATION OF STREET AND REGULATORY SIGNS SHALL BE SPECIFIED BY THE PUBLIC WORKS DIRECTOR FOR SPECIFIC INTERSECTIONS.
- ③. THE NUMBER OF VALVES REQUIRED AT EACH INTERSECTION SHALL BE DETERMINED BY THE WATER SUPERINTENDENT.

(CONTINUED BELOW)



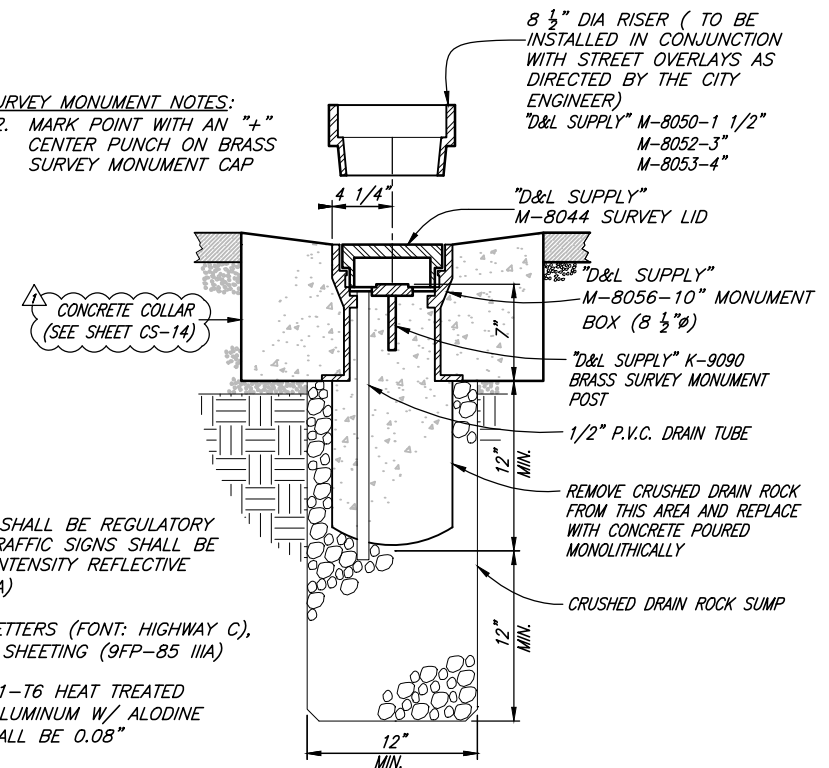
**MAILBOX/CBU NOTES:**

- A1. MAILBOXES SHALL NOT BE PLACED IN THE SIDEWALK.**
- B1. CONTACT THE LOCAL POSTMASTER FOR APPROVAL ON THE LOCATION OF THE MAILBOX OR CBU PRIOR TO INSTALLATION.**
- C1. FOLLOW USPS GUIDELINES & POLICIES FOR THE PLACEMENT, INSTALLATION, AND ACCESS REQUIREMENTS FOR ALL MAILBOX AND CBU UNITS.**

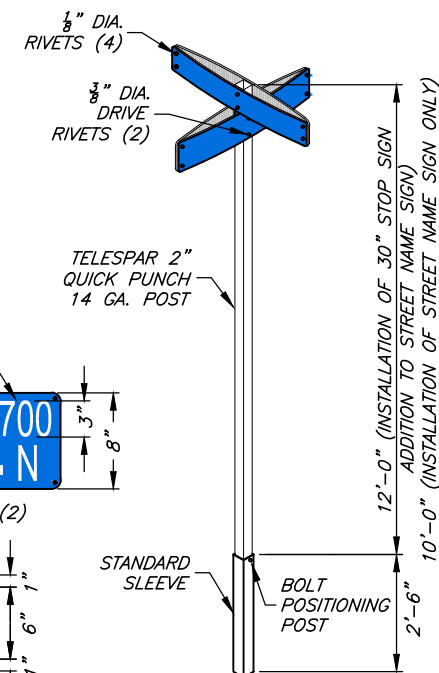
STREET SIGN NOTES:

- A. STREET SIGN BACKGROUND SHALL BE REGULATORY BLUE, BOTH STREET AND TRAFFIC SIGNS SHALL BE AT THE VERY LEAST HIGH INTENSITY REFLECTIVE SHEETING (9FP-85 TYPE IIIA)
- B. LEGEND SHALL BE WHITE LETTERS (FONT: HIGHWAY C), HIGH INTENSITY REFLECTIVE SHEETING (9FP-85 IIIA)
- C. SIGN BLANK SHALL BE 6081-T6 HEAT TREATED HIGH TENSILE DEGREASED ALUMINUM W/ ALODINE 1200 FINISH-THICKNESS SHALL BE 0.08"
- D. EACH SIGN SHALL CONSIST OF TWO PLATES RIVETED TOGETHER & MOUNTED AS SHOWN
- E. SIGNS ON PRIVATE ROADS SHALL MEET ALL SPECIFICATIONS FOR STANDARD SIGNS, EXCEPT BACKGROUND SHALL BE GREEN.
- F. ALL STREETS WITH NAMES MUST ALSO SHOW LOCATIONS COORDINATE DESIGNATION
- G. CONTACT CITY PRIOR TO MAKING SIGNS TO VERIFY PROPER NAMES AND COORDINATES

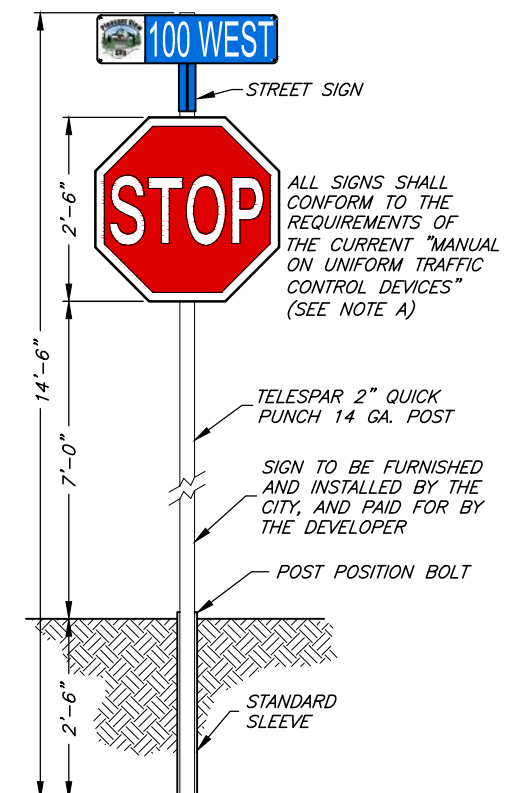
SURVEY MONUMENT NOTES:  
A2. MARK POINT WITH AN "+"  
CENTER PUNCH ON BRASS  
SURVEY MONUMENT CAP



### **SURVEY MONUMENT DETAIL**



**STREET SIGN**  
**& POST**



**STREET / TRAFFIC**  
**SIGN & POST**



PROJECT ENGINEER  
1/10/2019

<b>1</b>	<b>JAN '19</b>	<b>DQS</b>	<b>REVISED AND/OR DELETED NOTES</b>
<b>REV.</b>	<b>DATE</b>	<b>APPR.</b>	

SCALE:  
N.T.S.

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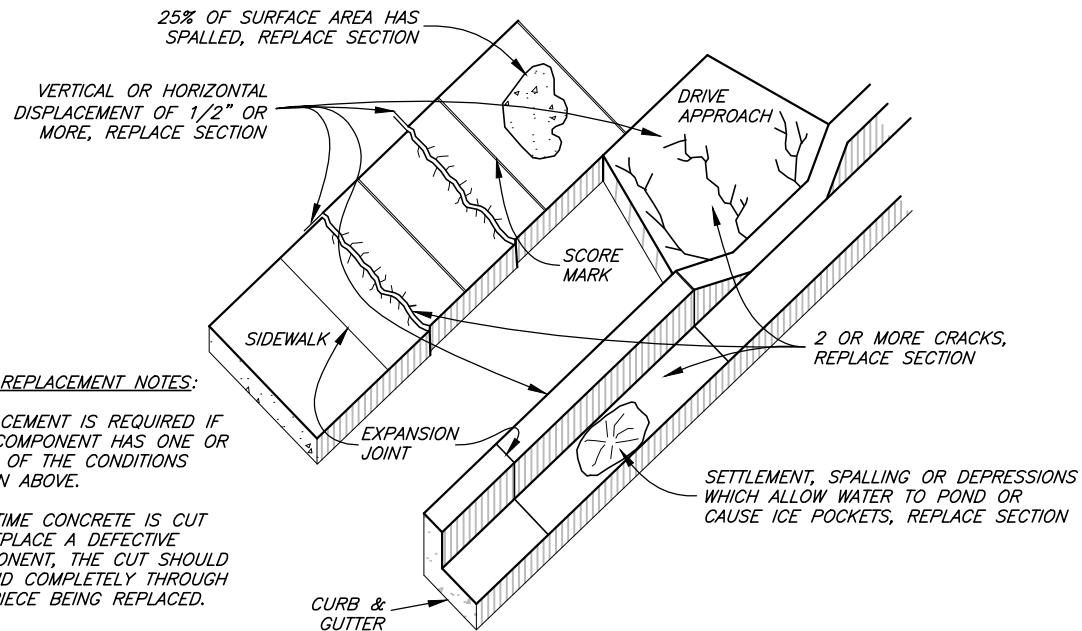
### ***PUBLIC ROADS - TYPICAL INTERSECTION & STREET DETAILS***

FEET:

**-03**

SHEETS

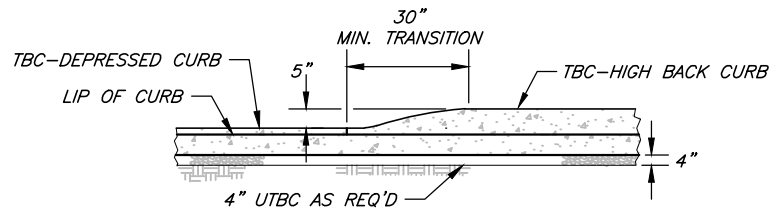
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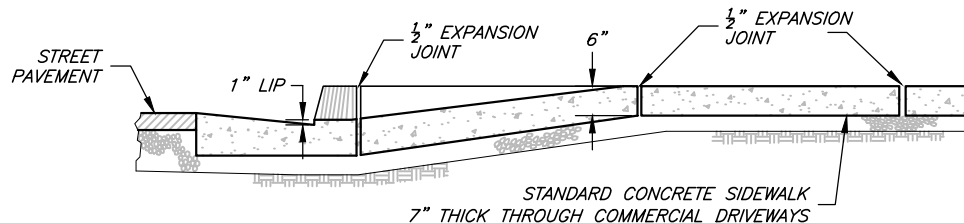
**CONCRETE REPLACEMENT NOTES:**

- REPLACEMENT IS REQUIRED IF ANY COMPONENT HAS ONE OR MORE OF THE CONDITIONS SHOWN ABOVE.
- ANY TIME CONCRETE IS CUT TO REPLACE A DEFECTIVE COMPONENT, THE CUT SHOULD EXTEND COMPLETELY THROUGH THE PIECE BEING REPLACED.
- CURB & GUTTER MIN. 10'-0" SECTIONS.

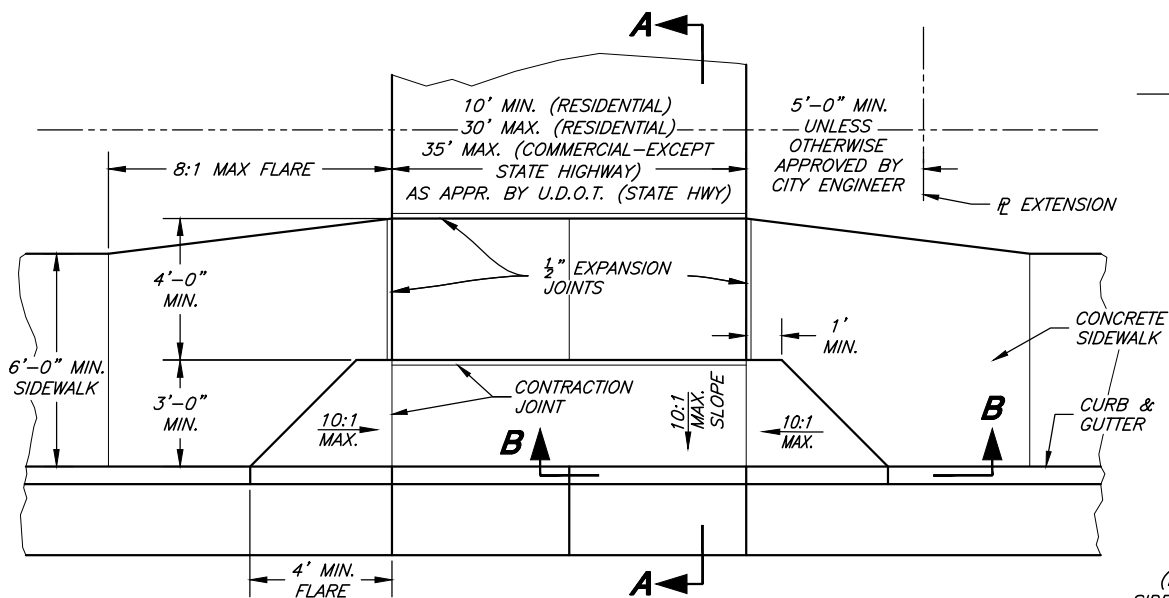
**DEFECTIVE CONCRETE REPLACEMENT CRITERIA**



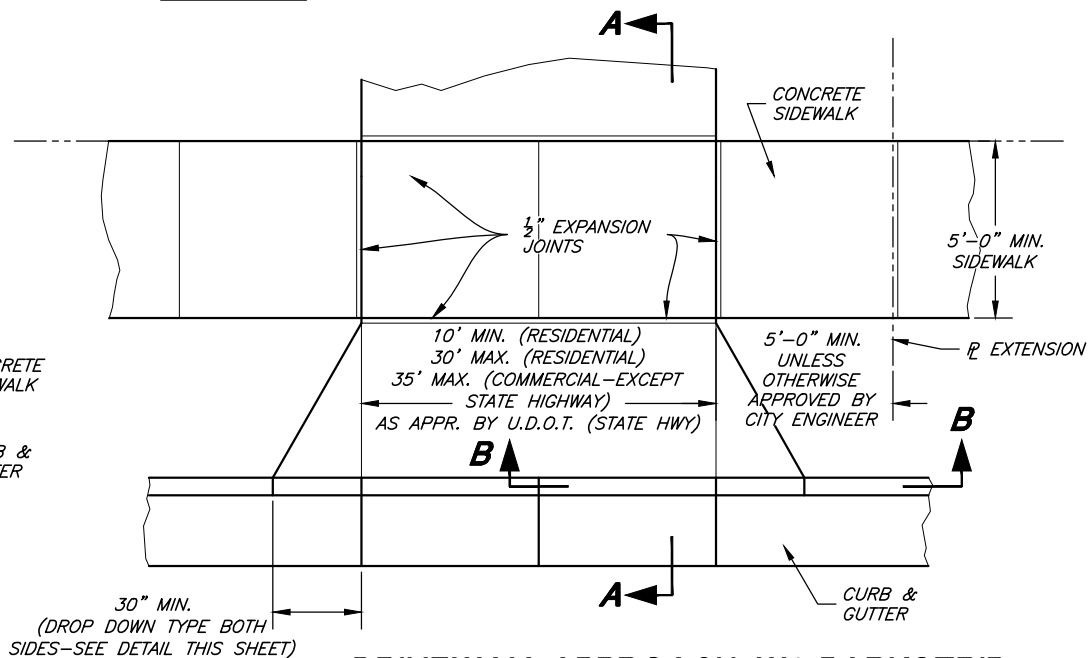
**SECTION B-B**



**SECTION A-A**

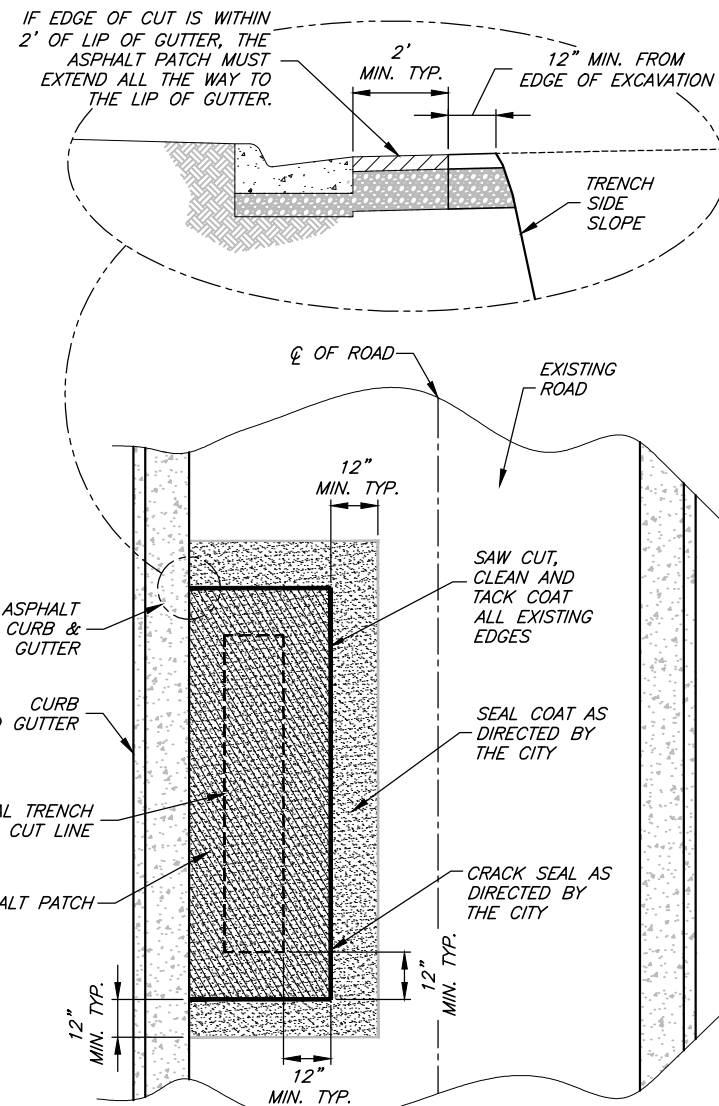


**DRIVEWAY APPROACH W/ ADJACENT SIDEWALK**



**DRIVEWAY APPROACH W/ PARKSTRIP**

DROP DOWN STYLE (CITY STANDARD)



**TYPICAL HORIZONTAL ASPHALT PATCH PLAN**

**TYPICAL PARALLEL ASPHALT PATCH PLAN**

**DRIVEWAY APPROACH NOTES:**

- IN NEW SUBDIVISIONS WHERE FUTURE DRIVEWAY LOCATIONS ARE UNKNOWN, THE DRIVEWAY APPROACH SHALL BE MADE BY SAW CUTTING THE BACK OF THE EXISTING CURB TO THE REQUIRED DRIVEWAY WIDTH. ALL SAW CUTTING SHALL BE ACCOMPLISHED BY A CITY APPROVED LICENSED CONTRACTOR.
- SCORE SIDEWALK 1/4" OF SIDEWALK THICKNESS AT EACH 5'-0" OR 6'-0" SECTION. EXPANSION JOINTS AT EACH 48'-0" (6'-0" SIDEWALK) OR 50'-0" (5'-0" SIDEWALK), PROVIDE ADDITIONAL CONTRACTION JOINTS ON OVERSIZED DRIVEWAYS AT 5'-0" MAX. SPACING



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**PUBLIC ROADS - TYPICAL DRIVE APPROACH, ASPHALT PATCH & DEFECTIVE CONCRETE REPLACEMENT DETAILS**

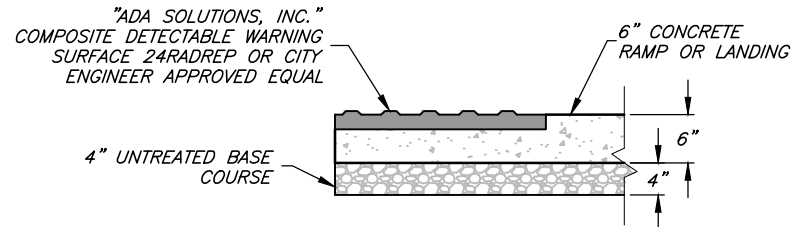
SHEET:

**CS-04**

OF 22 SHEETS

DETECTABLE WARNING SURFACE NOTES:

1. LOCATE THE DETECTABLE WARNING SURFACE SO THE OUTSIDE CORNER NEAREST THE STREET IS WITHIN 1 INCH OF THE BACK OF CURB (TBC). PROVIDE 2-FOOT MINIMUM DEPTH.
2. PROVIDE DETECTABLE WARNING SURFACE FOR FULL WIDTH OF CURB CUT.
3. THE DETECTABLE WARNING SURFACE DOMES SHALL BE ORIENTED SUCH THAT THE ROWS ARE PARALLEL WITH THE DIRECTION OF PEDESTRIAN TRAVEL TO THE RAMP ON THE OPPOSITE SIDE OF THE STREET.
4. THE STANDARD COLOR FOR THE DETECTABLE WARNING SURFACE SHALL BE DARK GRAY OR PRE-APPROVED CONTRASTING COLOR. WHEN THE EXISTING SIDEWALK COLOR IS NOT STANDARD CONCRETE, THE COLOR OF THE DETECTABLE WARNING SURFACE SHALL BE DETERMINED BY THE CITY ENGINEER OR AUTHORIZED REPRESENTATIVE.
5. WHEN A DETECTABLE WARNING SURFACE DOME IS CUT, THE REMAINING PORTION OF THE DOME SHALL BE BEVELED TO A MAXIMUM SLOPE OF 1:2.



DETECTABLE WARNING SURFACE DETAIL

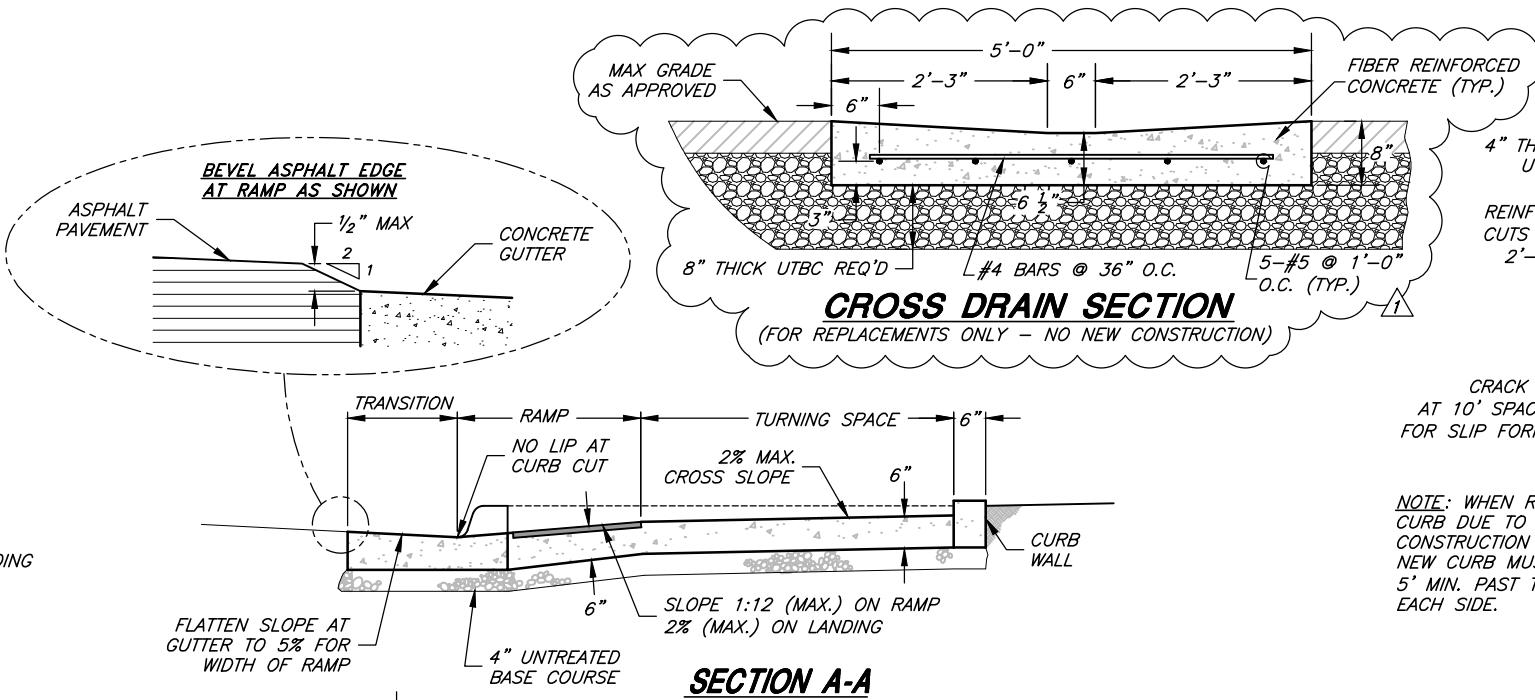
ADA RAMP NOTES:

- A. WHERE DESIGNATED BY THE CITY, ALTERNATE UDOT OR APWA RAMP DESIGNS MAY BE USED WITH THE PRIOR APPROVAL OF THE CITY ENGINEER AND THE CITY PUBLIC WORKS DEPARTMENT. SUBMIT ENGINEERED CONSTRUCTION PLANS TO CITY ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.
- B. SITE CONDITIONS WILL VARY. CONFIGURATION OF RAMP, LANDING, AND TRANSITION MAY BE CHANGED, BUT THEY MUST MEET DIMENSIONS AND SLOPES AS SHOWN IN THE MOST RECENT EDITION OF THE U.D.O.T. STANDARDS & SPECIFICATIONS (SHEETS PA1 THROUGH PA5). THE USE OF FLARES, CURB WALLS, ETC. ARE AT THE DISCRETION OF THE ENGINEER.
- C. LOCATE CURB CUT WITHIN CROSSWALK.
- D. RAMP GRADE BREAK MUST BE PERPENDICULAR TO THE RUNNING SLOPE.

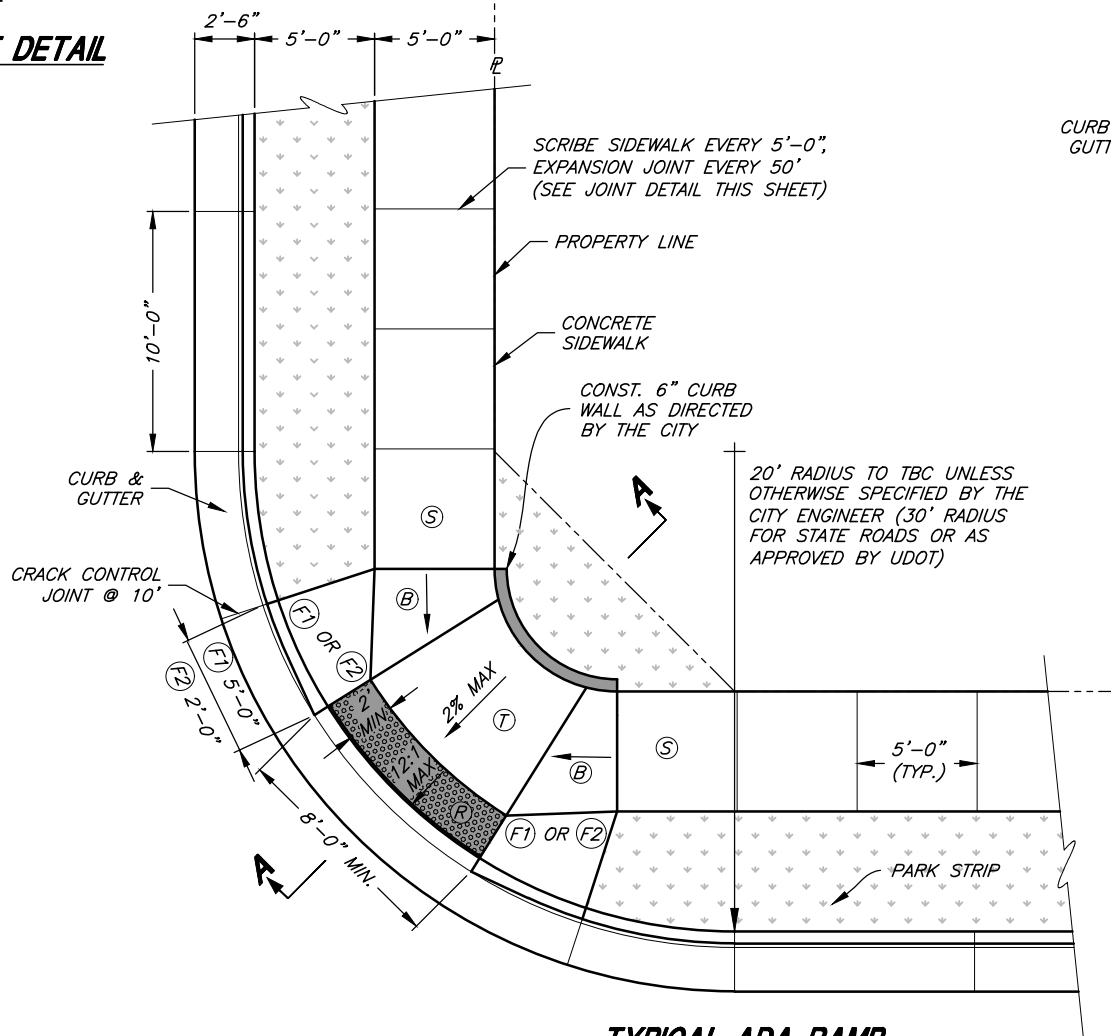
SLOPE TABLE			
	ITEM	MAX RUNNING SLOPE*	MAX. CROSS SLOPE*
⑦	TURNING SPACE <sup>2</sup>	2% (1V:48H)	2% (1V:48H)
⑧	RAMP	8.3% (1V:12H)	2% (1V:48H)
⑤	SIDEWALK	5% (1:20) <sup>1</sup>	2% (1V:48H)
①	TRAVERSABLE SURFACE	10% (1V:10H)	--
②	NON-TRAVERSABLE SURFACE	25% (1V:4H)	--
③	BLENDED TRANSITION	5% (1V:20H) 2% MIN.	2% (1V:48H)

\* RUNNING SLOPE IS IN THE DIRECTION OF PEDESTRIAN TRAVEL. CROSS SLOPE IS PERPENDICULAR TO PEDESTRIAN TRAVEL.

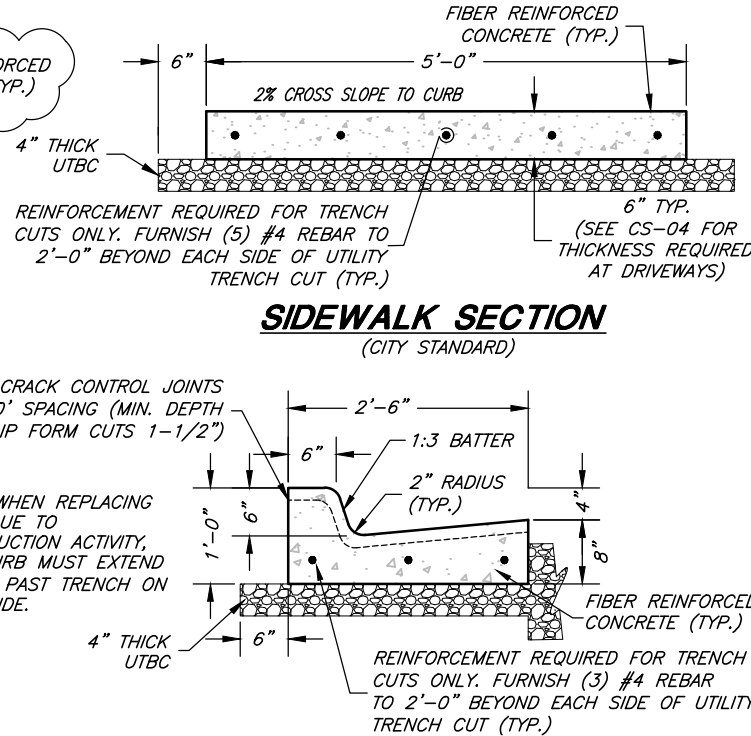
- <sup>1</sup> 5% MAX OR NATURAL SLOPE OF LAND
- <sup>2</sup> NOT TO EXCEED 2% IN ANY DIRECTION



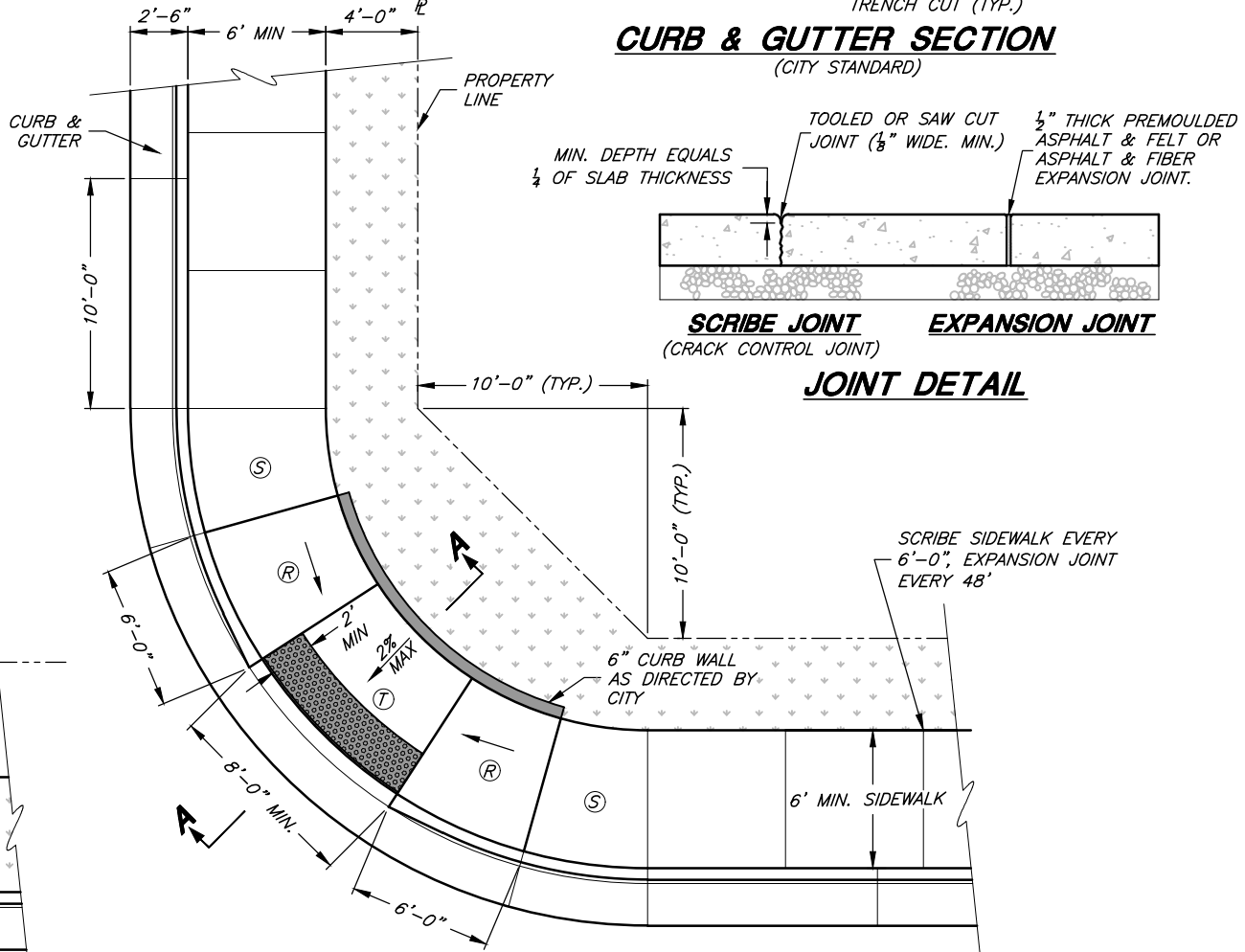
SECTION A-A



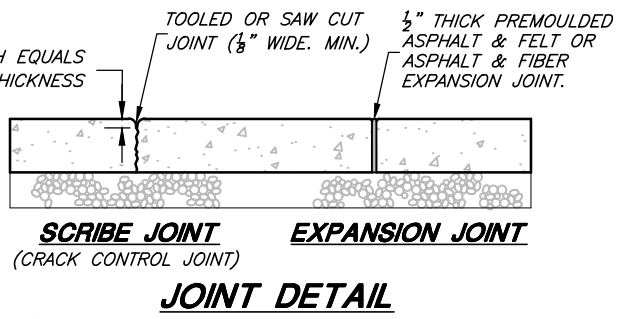
TYPICAL ADA RAMP



SIDEWALK SECTION (CITY STANDARD)



CURB & GUTTER SECTION (CITY STANDARD)



JOINT DETAIL

ADA RAMP-DETAIL "B" (WITHOUT PARK STRIP)



1	JAN '19	DQS	ADDED DETAIL
REV.	DATE	APPR.	

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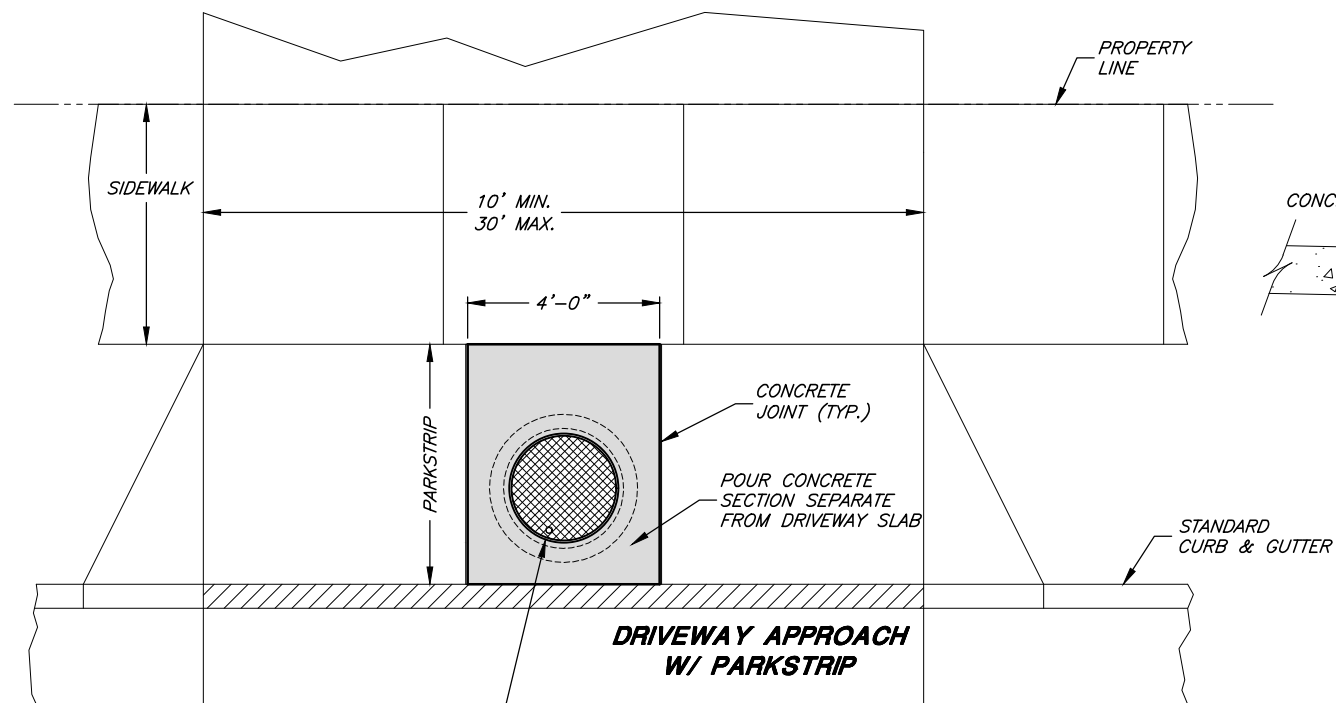
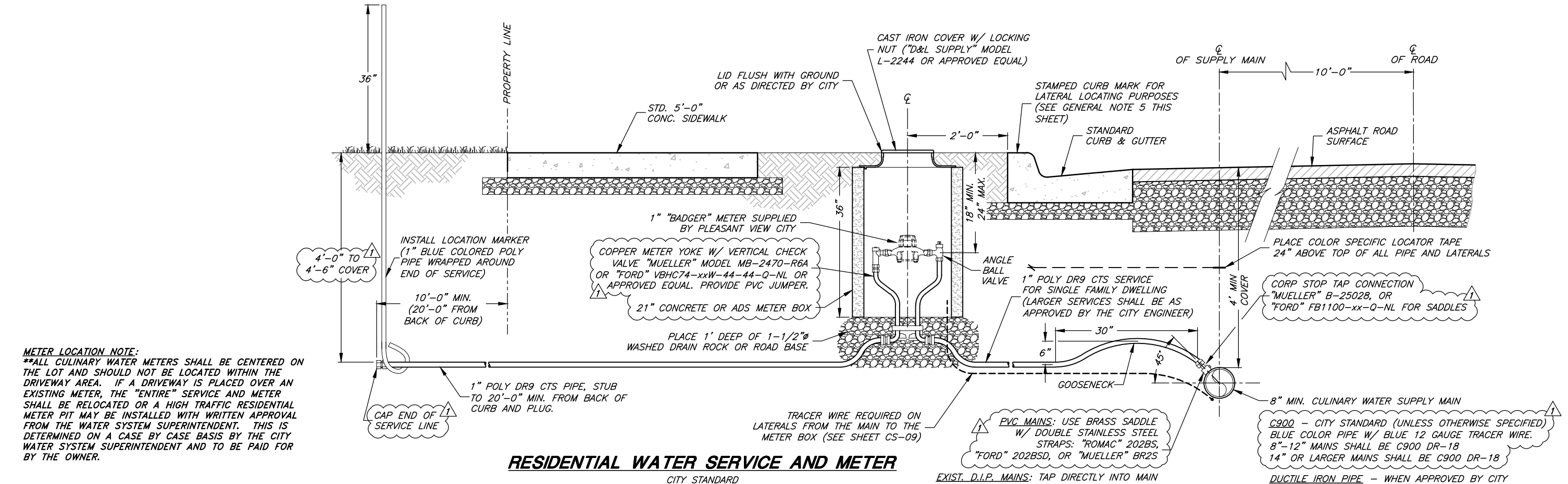
PLEASANT VIEW CITY CORPORATION
PUBLIC WORKS STANDARDS
PUBLIC ROADS - TYPICAL ADA RAMP, SIDEWALK, CURB & GUTTER, AND CONCRETE JOINT DETAILS

SHEET:	CS-05
OF 22 SHEETS	





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- GENERAL NOTES:**
1. ALL FITTINGS SHALL BE "MUELLER" COMPRESSION TYPE UNLESS OTHERWISE NOTED.
  2. "BLUE" BOLTS AND NUTS ARE REQUIRED BY THE CITY.
  3. ALL SUPPLIES, LABOR, MACHINERY, ETC. WILL BE SUPPLIED BY THE CONTRACTOR. PLEASANT VIEW CITY WILL SUPPLY AND SET THE METER ONLY ON 1" CONNECTIONS. THE CONTRACTOR SHALL SUPPLY METERS FOR CONNECTIONS GREATER THAN 1" (SEE SHEET CS-10).
  4. ALL SPECIFIED BRANDS OF MATERIALS SHOWN ON THESE DRAWINGS ARE "CITY STANDARDS." OTHER EQUIVALENT BRANDS MAY BE USED WITH THE PRIOR APPROVAL OF THE CITY ENGINEER AND THE CITY WATER SYSTEM SUPERINTENDENT.
  5. STAMPED CONCRETE CURB MARKS USED FOR LATERAL LOCATING ARE REQUIRED BY THE CITY. STAMPED CURB MARKS SHALL BE INSTALLED DURING ALL NEW CONSTRUCTION OR RESTORED WHEN REPLACING DAMAGED CURB & GUTTER DUE TO ANY CONSTRUCTION RELATED ACTIVITY. STAMP "S" FOR SANITARY SEWER, "W" FOR CULINARY WATER, AND "L" FOR LAND DRAIN.



1 JAN '19 DQS REVISED AND/OR ADDED NOTES		
REV.	DATE	APPR.

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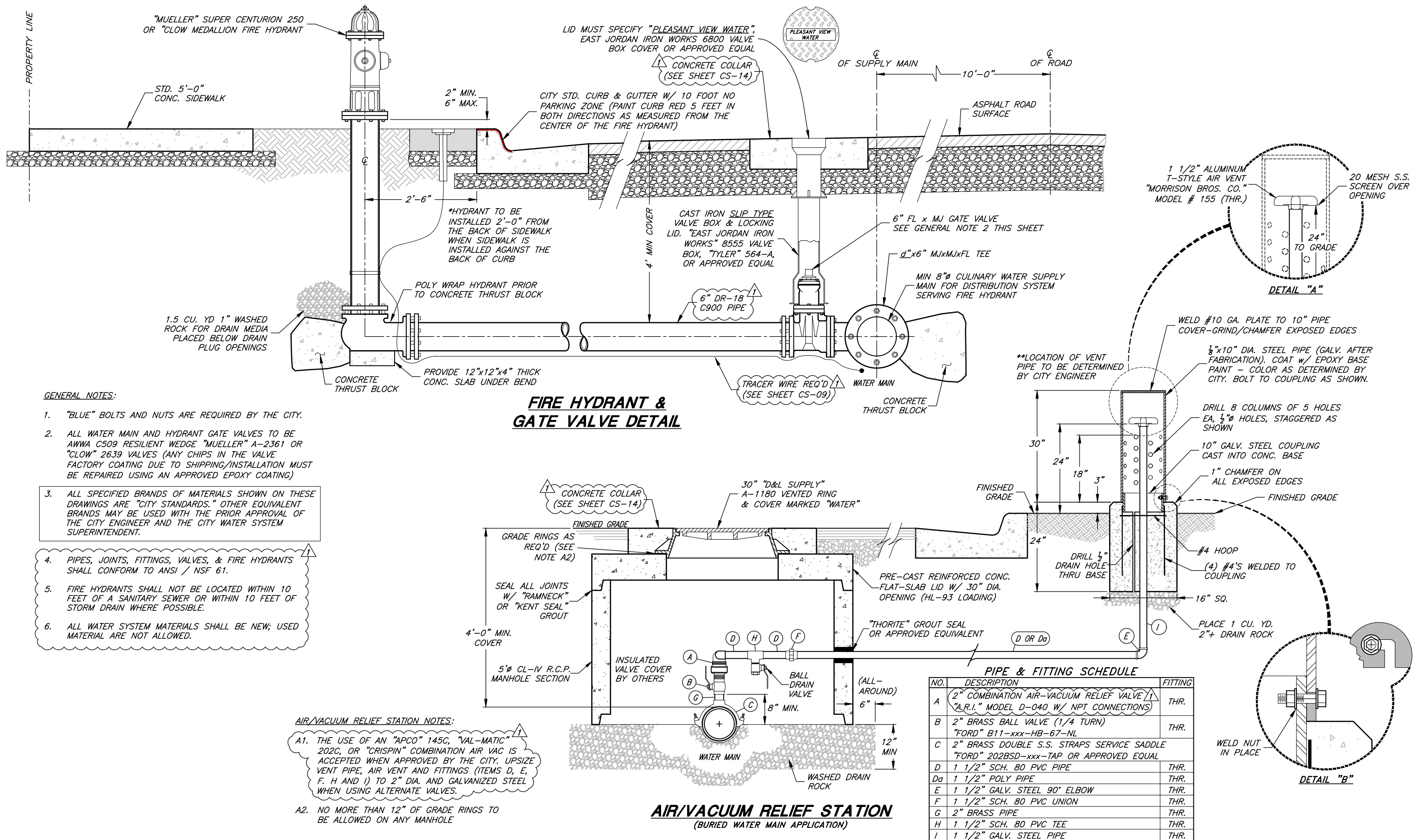
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**PLEASANT VIEW CITY CORPORATION**  
**PUBLIC WORKS STANDARDS**  
**CULINARY WATER - RESIDENTIAL WATER SERVICE DETAILS**

SHEET:  
**CS-07**  
OF 22 SHEETS



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1 JAN '19 DQS REVISED NOTES		
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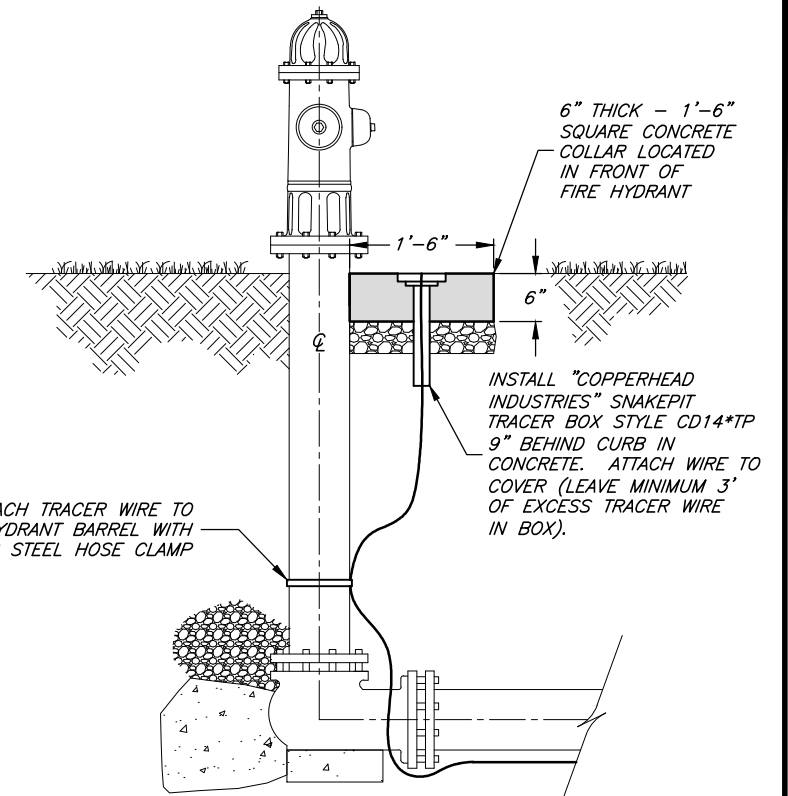
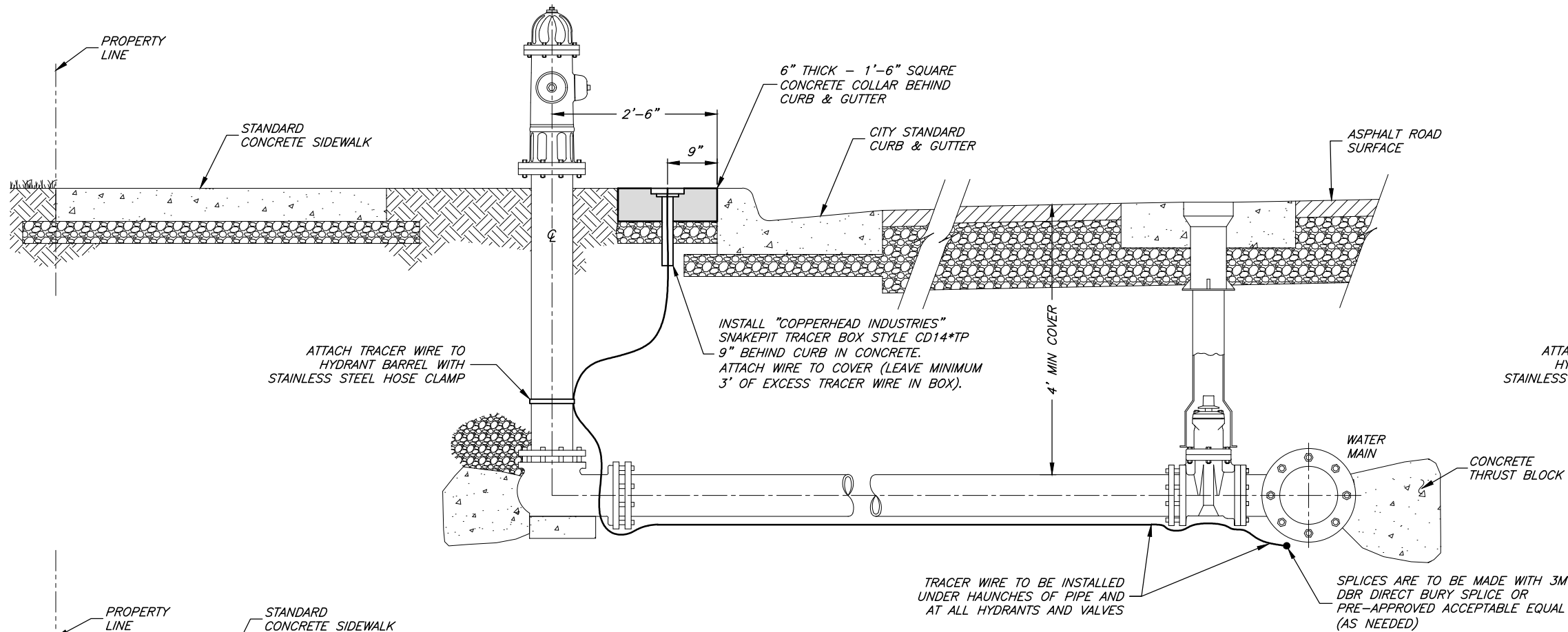
**CULINARY WATER - AIR/VACUUM RELIEF STATION & FIRE HYDRANT DETAILS**

SHEET:

**CS-08**

OF 22 SHEETS

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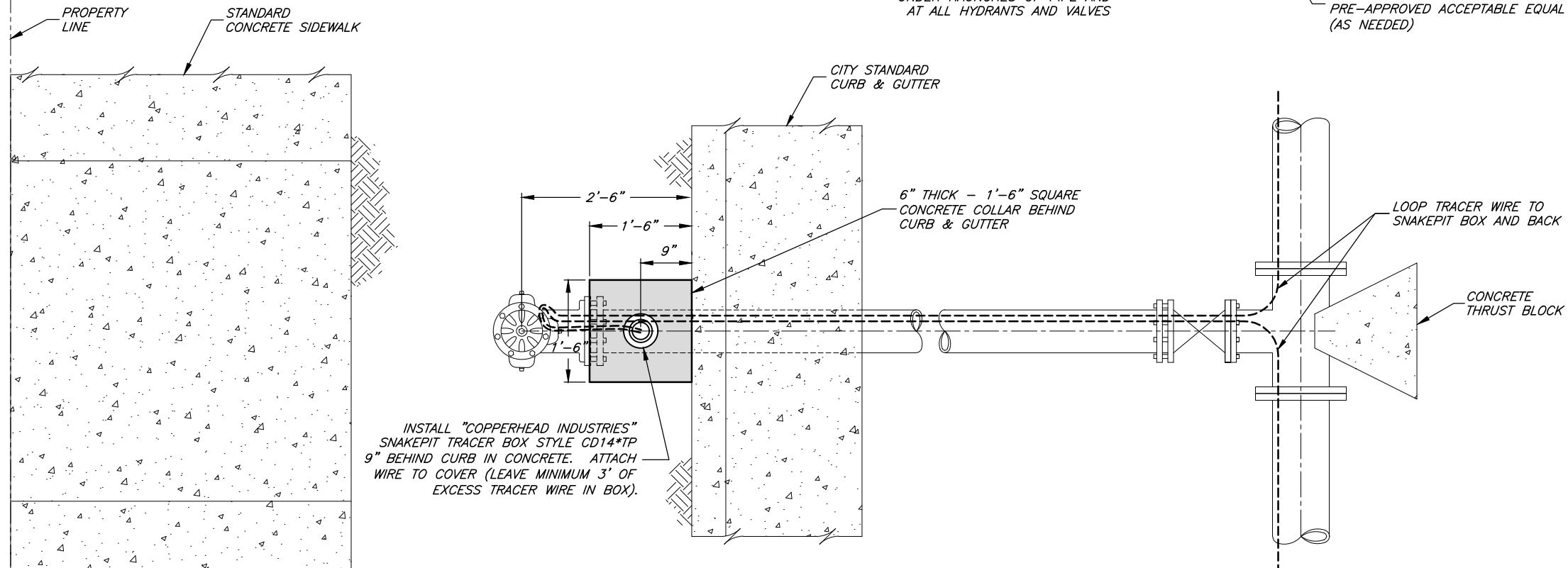


### ALTERNATE TRACER WIRE INSTALLATION

WHERE APPROVED BY THE WATER SYSTEM SUPERINTENDENT ON STREET SECTIONS WITH NO CURB & GUTTER

#### NOTES:

1. ALL WATERLINES SHALL HAVE A MINIMUM 12 GA. INSULATED TRACER WIRE INSTALLED UNDER THE HAUNCHES OF THE PIPE PRIOR TO BACKFILLING.
2. TRACER WIRES SHALL TERMINATE AT ALL FIRE HYDRANTS. AT SERVICE SADDLES AND TAPPING SLEEVES, THE TRACER WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND THE PIPE. A GROUNDING ROD SHALL BE INSTALLED AT ALL TRACER SYSTEM TERMINAL POINTS.
3. TRACER WIRE SHALL BE COPPER WIRE WITH BLUE INSULATION RATED FOR DIRECT BURIAL. ALL WIRE CONNECTORS SHALL BE 3M DBR DIRECT BURY SPLICE OR PRE-APPROVED ACCEPTABLE EQUAL AND SHALL BE WATERTIGHT TO PROVIDE ELECTRICAL CONTINUITY.
4. ALL TRACER WIRE SHALL BE TESTED FOR CONTINUITY IN THE PRESENCE OF THE PUBLIC WORKS INSPECTOR PRIOR TO ASPHALT PLACEMENT. ANY TRACER WIRE FOUND NOT TO BE CONTINUOUS AFTER TESTING SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR PRIOR TO ASPHALT PLACEMENT.



### TRACER WIRE INSTALLATION

CITY STANDARD STREET SECTION (CURB & GUTTER)



PROJECT ENGINEER  
1/10/2019  
DATE

1 JAN '19 DQS CHANGED TRACING TO TRACER (TYP.)

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PLEASANT VIEW CITY  
PUBLIC WORKS STANDARDS  
CULINARY WATER - TRACER WIRE  
INSTALLATION DETAILS

SHEET:

CS-09

OF 22 SHEETS

CONCRETE COLLAR (SEE SHEET CS-14)

30"Ø MANHOLE RING & COVER; "D&L SUPPLY" A-1180-S47 VENTED COVER, MARKED "WATER". SEE ALSO NOTE C6.

TOP REINFORCED TO CARRY HL-93 TRAFFIC LOADING

FINISHED GRADE

18" MAX.

"BILCO" LADDER UP SAFETY POST REQ'D

MANHOLE STEPS OR ACCESS LADDER (SEE DETAIL SHEET CS-12).

PRESSURE GAUGE W/HOSE BIB

GROUT LINES IN PRECAST OPENINGS

VARIES (6'-6" MIN.)

4'-0" MIN. COVER

3/4" ANCHOR BOLTS (TYP)

18" CONC. PIPE SUMP

WATERTIGHT CONC. PLUG IN AREAS WHERE SHALLOW GROUNDWATER IS PRESENT. NO PLUG IN AREAS WHERE GROUNDWATER IS DEEP.

1 1/2 CU. YD. GRAVEL UNDER SUMP IF PLUG IS NOT INSTALLED.

DEPENDING ON GROUNDWATER & VAULT DRAINAGE, A SUMP PUMP MAY BE REQUIRED. THIS IS A CASE BY CASE ITEM DETERMINED BY THE CITY ENGINEER.

SLOPE TO DRAIN


8"

2'-6"

1-1/2" WASHED ROCK (12" THICK MINIMUM)

SECTION

### 3" & 4" WATER METER STATION

NO.	DESCRIPTION (3" & 4" METER STA.)	JOINT TYPE	3" LINE	4" LINE
1a	"BADGER" RECORDALL COMPOUND SERIES METER	FL	CSM-3"	CSM-4"
1b	"BADGER" DUAL-FLANGE PLATE STRAINER	FL	3"	4"
2	"MUELLER" RESILIENT WEDGE GATE VALVE W/ HANDWHEEL	FL	3" A-2362	4" A-2361
3	"ROMAC" DJ400 DISMANTLING JOINT	FL	3"	4"
4	SPOOL PIECE	FL	3"	4"
5	TEE	FL	3"	4"
6	90° ELBOW	FL	3"	4"
7	SPOOL PIECE	FL	3"	4"
8	NIPPLE	FLXPE	3"	4"
9	"CLOW" F-1608 OR "ANVIL" #264 GALV. PIPE SUPPORT W/ COMPANION FLANGE & VARIABLE HEIGHT NIPPLE (4 EA REQ'D)			 SYMBOL

**NOTE:**  
ALL SPECIFIED BRANDS OF MATERIALS SHOWN ON THESE DRAWINGS ARE "CITY STANDARDS." OTHER EQUIVALENT BRANDS MAY BE USED WITH THE PRIOR APPROVAL OF THE CITY ENGINEER AND THE CITY WATER SYSTEM SUPERINTENDENT.

NO.	DESCRIPTION (1 1/2" & 2" METER STA.)	JOINT TYPE	1 1/2" LINE	2" LINE
10	"BADGER" M120 RECORDALL DISC METER	FL	1 1/2"	--
	"BADGER" M170 RECORDALL DISC METER	FL	--	2"
	METER YOKE (18" HEIGHT) "MUELLER" B2423-2	-	1 1/2"	2"
11	OR "FORD" VBHH77-xxBHC-11-77-NL OR	-	--	2"
	"FORD" VBHH77-xxB-44-77-AWT-Q-NL	-	--	2"
12	"MUELLER" 110 COMPRESSION CONNECTION COUPLING OR "FORD" C84-xx-Q-NL	-	1 1/2"	2"

1 1/2" & 2" METER NOTES:

- B1. 1½" SERVICE LINE-13" METER  
2" SERVICE LINE-17" METER
- B2. NO MORE THAN 12" OF GRADE RINGS TO BE ALLOWED ON ANY MANHOLE
- B3. MANHOLE STEPS (FOR MANHOLES OVER 6' DEEP.) UNIFORMLY SPACED (1'-0" MAX.) POLYPROPYLENE COVERED STEEL STEPS, MODEL PSI-PF AS MANUFACTURED BY "M.A. INDUSTRIES" OR APPROVED EQUAL - INSTALLATION OF STEPS SHALL BE WATERPROOF.

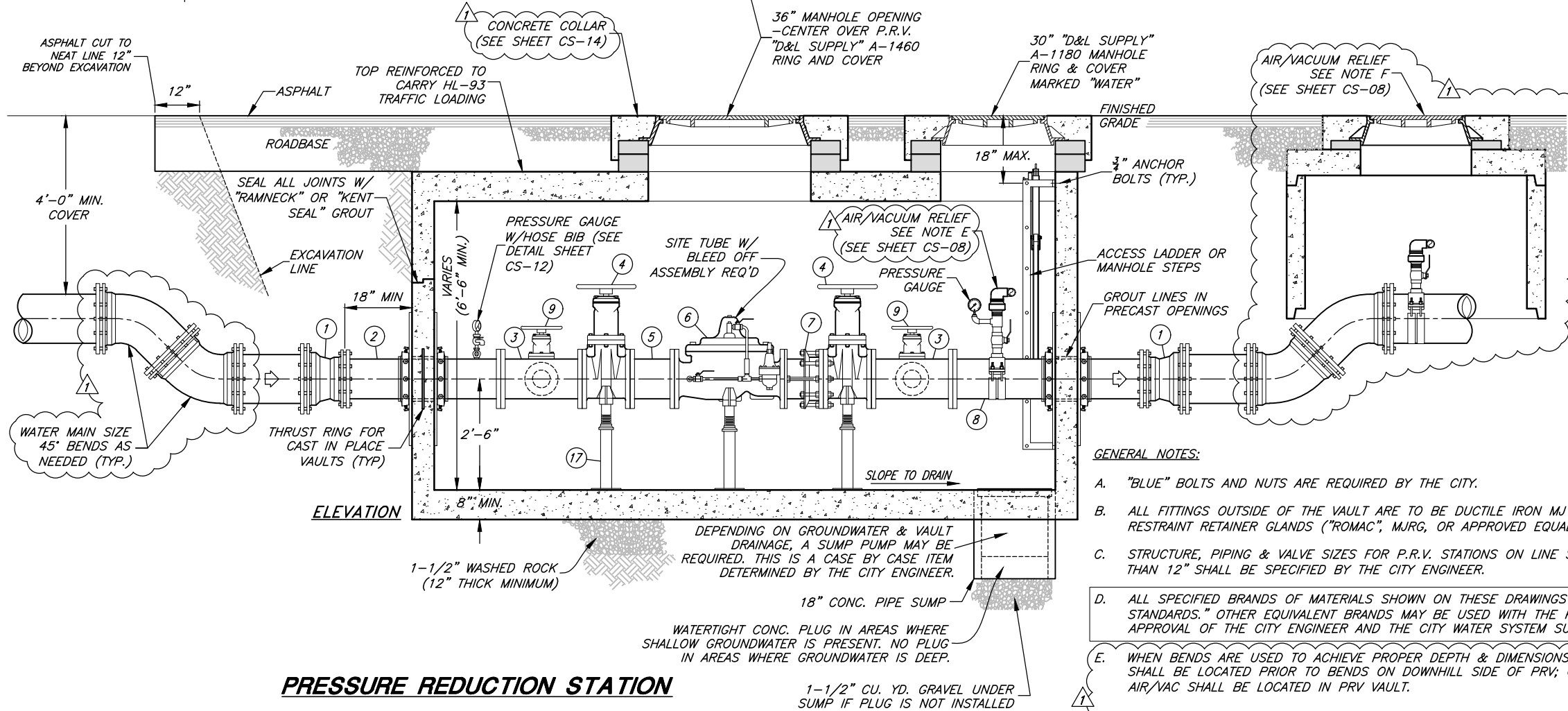
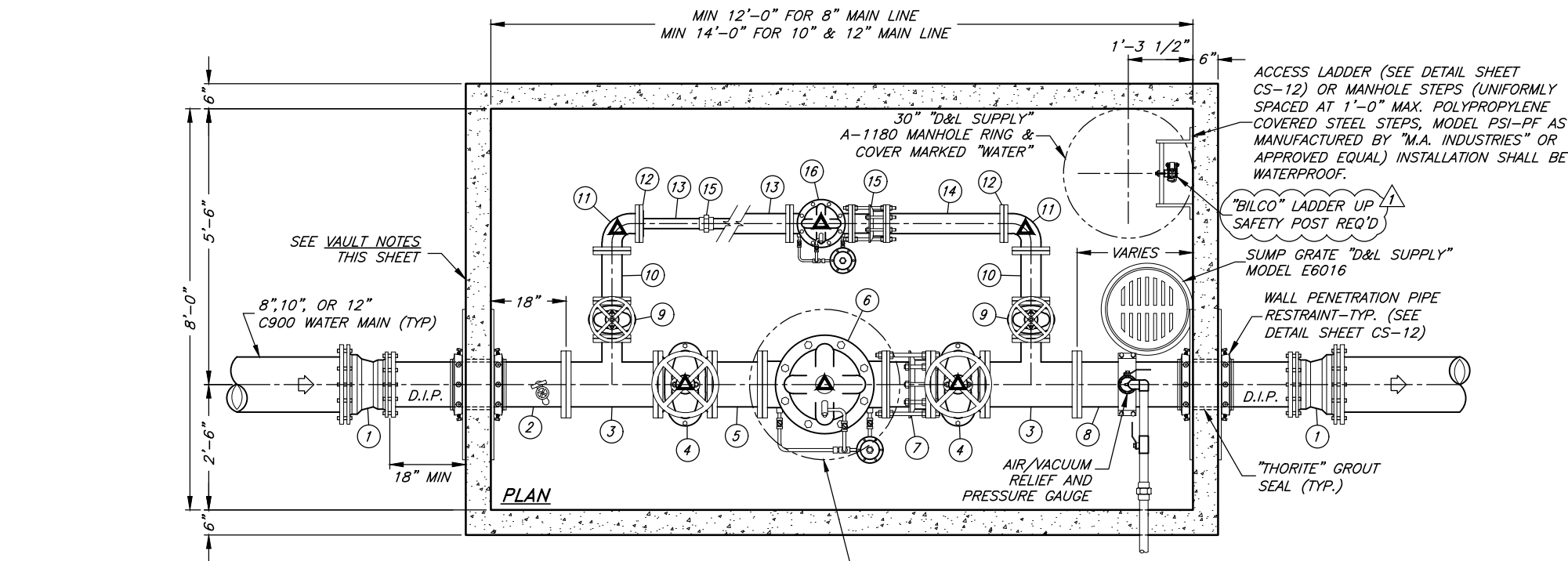
3" & 4" METER VAULT NOTES:

- A1. ALL FITTINGS OUTSIDE OF THE VAULT ARE TO BE DUCTILE IRON MJ WITH THRUST RESTRAINT RETAINER GLANDS ("ROMAC", MJRG, OR APPROVED EQUAL)
- A2. PENETRATION WALLS NEED TO BE ADEQUATELY DESIGNED STRUCTURALLY FOR ANTICIPATED THRUST.
- A3. THE PRECAST VAULT MANUFACTURER IS RESPONSIBLE FOR DESIGN RELATED TO TRAFFIC LOADING AND THRUST. VERIFICATION OF PROPER DESIGN MUST BE PROVIDED TO THE CITY BY THE DEVELOPER, CONTRACTOR, OR PROPERTY OWNER AS THE CASE MAY BE.
- A4. ALL FITTINGS SHALL BE AWWA C-110 WITH 125 LB. FLANGES. ALL PIPING SHALL BE DUCTILE IRON PIPE CLASS 350 P.S.I. MIN.

GENERAL NOTES:

- C1. PROPERTY OWNER OR CONTRACTOR SHALL PAY FOR ALL COSTS OF INSTALLATION INCLUDING ALL MATERIALS, ALL EXCAVATION AND FILL, ASPHALT REPLACEMENT AND WATER MAIN CONNECTION.
- C2. INSPECTION OF ALL WATER LINE INSTALLATIONS WILL BE DONE BY THE CITY WATER DEPARTMENT, WITH A 48 HOUR MINIMUM NOTICE REQUIRED PRIOR TO START OF WORK.
- C3. IF APPLICABLE, A CITY EXCAVATION PERMIT MUST BE REQUESTED AND APPROVED PRIOR TO START OF WORK.
- C4. "BLUE" BOLTS AND NUTS ARE REQUIRED BY THE CITY.
- C5. CONTRACTOR TO SUPPLY ALL METERS 1 1/2" OR LARGER.
- C6. FOR METER STATIONS LOCATED IN TRAFFIC AREAS, CONTACT CITY FOR METER LID SPECIFICATIONS.

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## PRESSURE REDUCTION STATION

PIPE & FITTING SCHEDULE					
NO.	DESCRIPTION	JOINT TYPE	8" LINE	10" LINE	12" LINE
1	D.I. REDUCER (2)	MJxMJ	8"x6"	10"x8"	12"x10"
2	D.I. NIPPLE PIECE	FLxPE	6"	8"	10"
3	D.I. REDUCING TEE (2)	FL	6"x6"x4"	8"x8"x4"	10"x10"x4"
4	"MUELLER" A-2361 GATE VALVE W/ HANDWHEEL (2)	FL	6"	8"	10"
5	12" D.I. SPOOL PIECE	FL	6"	8"	10"
6	"CLA-VAL" 90-01 PRESSURE REDUCTION VALVE	FL	6"	8"	10"
7	"ROMAC" DJ400 DISMANTLING JOINT	FL	6"	8"	10"
8	D.I. NIPPLE PIECE	FLxPE	6"	8"	10"
9	"MUELLER" A-2361 GATE VALVE W/ HANDWHEEL (2)	FL	4"	4"	4"
10	12" D.I. SPOOL PIECE	FL	4"	4"	4"
11	D.I. 90° ELBOW (2)	FL	4"	4"	4"
12	BLIND FLANGE W/ THR. CONNECTION (2)	FLxTHR.	4"x2"	--	--
13	D.I. SPOOL PIECE	FL	--	4"	4"
14	BRASS PIPE	THR.	2"	--	--
15	"ROMAC" DJ400 DISMANTLING JOINT	FL	--	4"	4"
16	"CLA-VAL" 90-01 PRESSURE REDUCTION VALVE	FL	--	4"	4"
17	"CLOW" F-1608 OR "ANVIL" #264 GALV. PIPE SUPPORT W/ 3" COMPANION FLANGE & VARIABLE HEIGHT 3" NIPPLE (6 EA REQ'D.)	THR.	2"	--	--

### PRV GENERAL SPECIFICATIONS:

- PRV TO BE CLA-VAL #90-01 YBCSKC
- 150 # FLANGED FOR 250 PSI WORKING PRESSURE, 300# FLANGED IF GREATER THAN 250 PSI
- DUCTILE IRON BODY GLOBE PATTERN
- EPOXY LINED AND COATED
- STAINLESS STEEL INTERNAL TRIM
- BRONZE PILOT CONTROLS
- STAINLESS STEEL TUBES & FITTINGS
- SPRING RANGES FOR PRESSURE REDUCING PILOT
- X101 VALVE POSITION INDICATOR
- CK2 ISOLATION BALL VALVES (STAINLESS)
- CV FLOW CONTROL (OPENING)

### COATING NOTES:

- THE P.R.V. VALVE SHALL INCLUDE FACTORY INSTALLED INTERIOR EPOXY COATING.
- ALL NEW AND EXISTING PIPING, VALVES, FITTINGS, METERS, ETC, INSIDE THE VAULT SHALL BE EPOXY PAINTED.
- METAL SURFACES TO BE PAINTED SHALL BE PRIMED AND THEN PAINTED W/ TWO COATS OF EPOXY PAINT.
- COLORS AS DIRECTED BY THE CITY ENGINEER OR CITY WATER SYSTEM SUPERINTENDENT.

### VAULT NOTES:

- PRE-PLUMBED PRV VAULTS ARE THE PREFERRED OPTION FOR INSTALLATION. THE USE AND LOCATION OF A PRE-PLUMBED PRV VAULT SHALL BE AS DIRECTED BY THE CITY ENGINEER FOLLOWING REVIEW OF CURRENT SITE CONDITIONS.
- WHERE APPLICABLE, PRESSURE RELIEF VALVE ASSEMBLY MAY BE REQUIRED. THIS IS A CASE BY CASE ITEM DETERMINED BY THE CITY WATER DEPARTMENT (PRV VAULT WILL NEED TO BE LENGTHENED TO ACCOMMODATE SUCH VALVE)
- PRECAST CONCRETE STRUCTURE CAN BE REPLACED WITH A CAST-IN-PLACE CONCRETE VAULT. SUBMIT ENGINEERED CONSTRUCTION PLANS WITH REBAR DETAILS TO CITY ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.
- PENETRATION WALLS NEED TO BE ADEQUATELY DESIGNED STRUCTURALLY FOR ANTICIPATED THRUST.
- THE PRECAST VAULT MANUFACTURER IS RESPONSIBLE FOR DESIGN RELATED TO HL-93 TRAFFIC LOADING AND THRUST. VERIFICATION OF PROPER DESIGN MUST BE PROVIDED TO THE CITY BY THE DEVELOPER, CONTRACTOR, OR PROPERTY OWNER AS THE CASE MAY BE.

### GENERAL NOTES:

- "BLUE" BOLTS AND NUTS ARE REQUIRED BY THE CITY.
- ALL FITTINGS OUTSIDE OF THE VAULT ARE TO BE DUCTILE IRON MJ WITH THRUST RESTRAINT RETAINER GLANDS ("ROMAC", MJRG, OR APPROVED EQUAL)
- STRUCTURE, PIPING & VALVE SIZES FOR P.R.V. STATIONS ON LINE SIZES GREATER THAN 12" SHALL BE SPECIFIED BY THE CITY ENGINEER.
- ALL SPECIFIED BRANDS OF MATERIALS SHOWN ON THESE DRAWINGS ARE "CITY STANDARDS." OTHER EQUIVALENT BRANDS MAY BE USED WITH THE PRIOR APPROVAL OF THE CITY ENGINEER AND THE CITY WATER SYSTEM SUPERINTENDENT.
- WHEN BENDS ARE USED TO ACHIEVE PROPER DEPTH & DIMENSIONS, AIR/VAC SHALL BE LOCATED PRIOR TO BENDS ON DOWNHILL SIDE OF PRV; OTHERWISE AIR/VAC SHALL BE LOCATED IN PRV VAULT.
- ADD HIGH PRESSURE RELIEF VALVE IN PRVs WHERE DIRECTED BY CITY/ENGINEER.



1	JAN '19	DQS	REVISION TO DETAIL
REV.	DATE	APPR.	

SCALE:  
N. T.S.

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**CULINARY WATER - PRESSURE REDUCTION STATION**

SHEET:  
**CS-11**  
OF 22 SHEETS

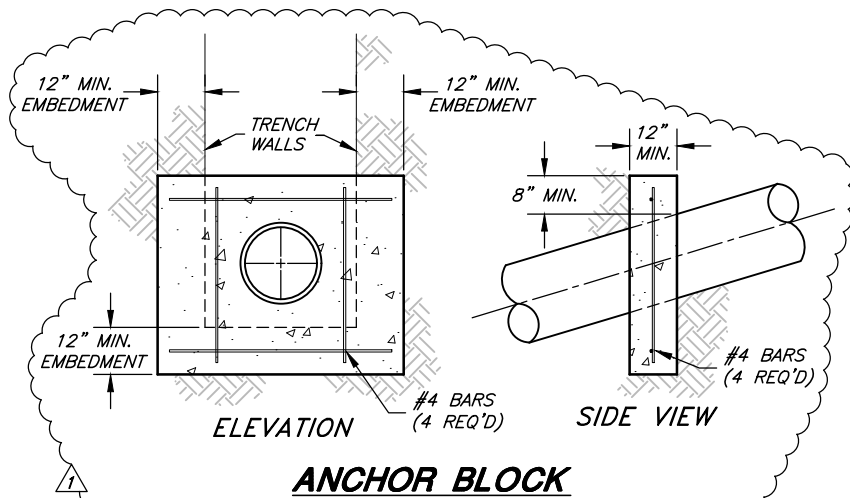




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GENERAL NOTES:

1. ALL SANITARY SEWER LATERAL CONNECTIONS ON SEWER MAINS IN NEW SUBDIVISIONS SHALL BE MADE WITH IN LINE PRE-FORMED WYES OR TEES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
2. FLOWLINE ELEVATION OF LATERALS SHALL EQUAL THE INSIDE TOP OF PIPE ON MAINLINE AT THE CONNECTING POINT (THE LATERAL TAP SHALL BE IN THE TOP QUARTER OF THE SEWER MAIN LINE PREFERABLY IN THE 10:00 OR 2:00 POSITION).
3. SANITARY SEWER SERVICE LATERAL CONNECTIONS SHALL NOT BE ALLOWED IN SEWER MANHOLES.
4. SANITARY SEWER MAINS AND LATERALS SHALL BE "GREEN" IN COLOR. LAND DRAIN MAINS AND LATERALS SHALL BE SCHEDULE 40 "WHITE" IN COLOR. IRRIGATION PIPES SHALL BE "PURPLE" IN COLOR. PREVIOUS YEARS PIPE COLORS VARY THROUGHOUT THE CITY. CONTRACTOR TO VERIFY EXISTING PIPE PRIOR TO MAKING ANY CONNECTION.
5. INSERTA TEE PRODUCT IS NOT APPROVED BY THE CITY.
6. ALL CLEANOUTS SHALL BE MARKED AND FITTED WITH A BRASS PLUG FOR LOCATION PURPOSES.
7. ALL CULINARY WATER MAINS AND SERVICES MUST MAINTAIN A MINIMUM SEPARATION ABOVE ALL SEWER MAINS AND LATERALS OF 18" VERTICAL AND 10'-0" HORIZONTAL IN ACCORDANCE WITH THE STATE OF UTAH DIVISION OF DRINKING WATER (DDW) RULES SECTION R309-550-7. EXCEPTIONS MUST BE APPROVED BY DDW.
8. ALL SANITARY SEWER LINES SHALL BE INSPECTED BY MEANS OF VIDEO CAMERA WHEN CONSTRUCTED.
9. STAMPED CONCRETE CURB MARKS USED FOR LATERAL LOCATING ARE REQUIRED BY THE CITY. STAMPED CURB MARKS SHALL BE INSTALLED DURING ALL NEW CONSTRUCTION OR RESTORED WHEN REPLACING DAMAGED CURB & GUTTER DUE TO ANY CONSTRUCTION RELATED ACTIVITY. STAMP "S" FOR SANITARY SEWER, "W" FOR CULINARY WATER, AND "L" FOR LAND DRAIN.
10. DOWNSTREAM LAND DRAIN CONNECTION TO AN EXISTING STORM DRAIN SYSTEM IS REQUIRED.
11. TRACER WIRE SHALL BE INSTALLED ON ALL LAND DRAIN LATERALS.

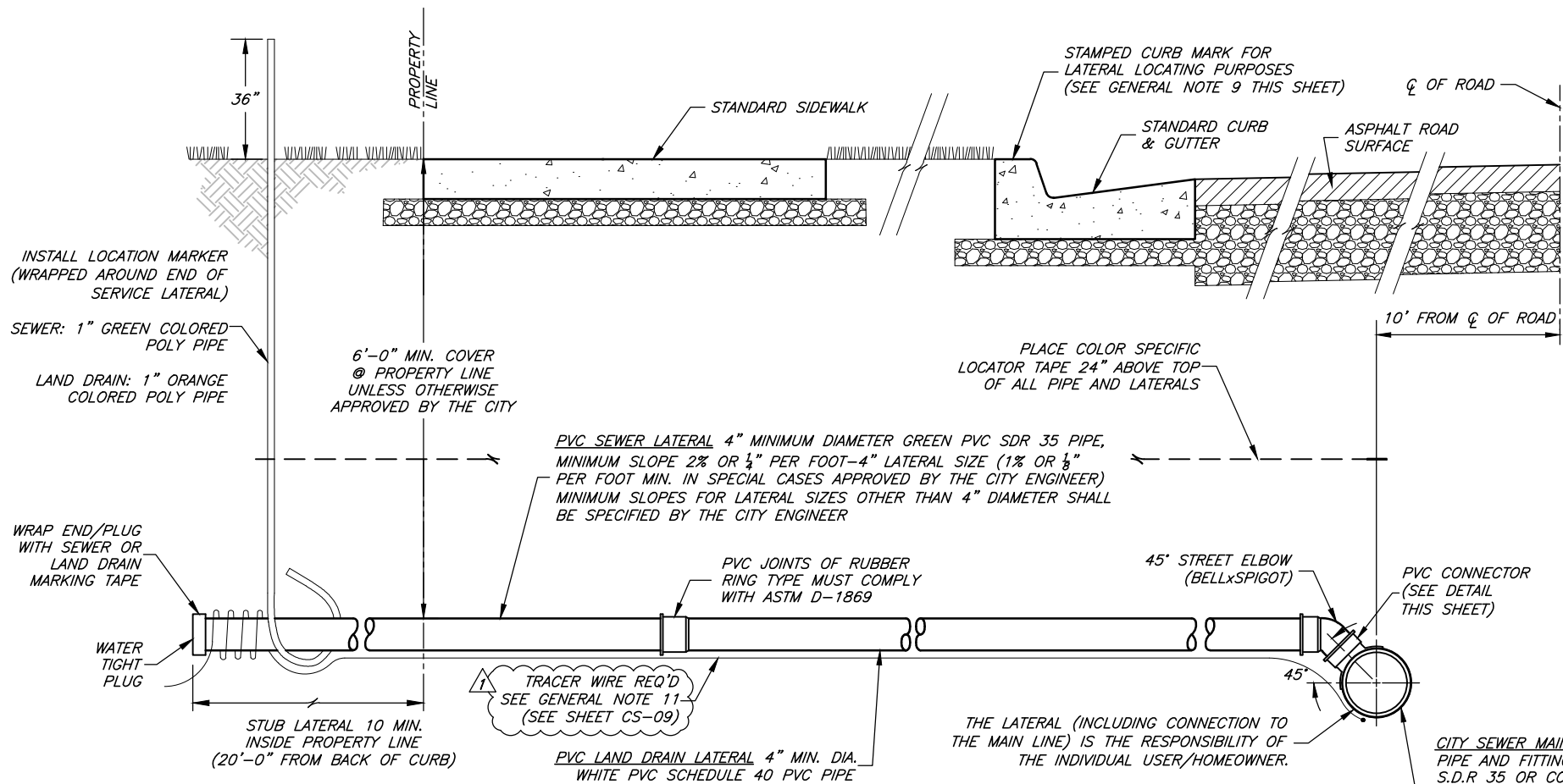


ANCHOR BLOCK NOTES:

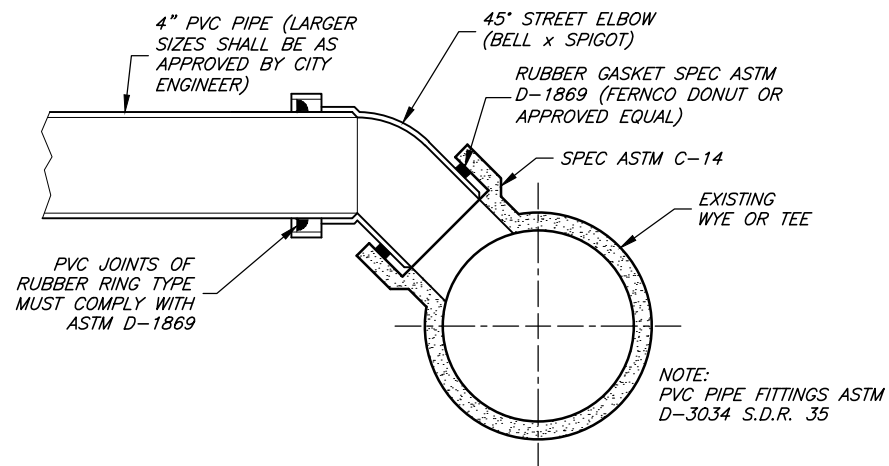
- A. PIPE ANCHOR BLOCKS SHALL BE INSTALLED ON ALL CULINARY WATER, STORM DRAIN, SANITARY SEWER, AND IRRIGATION WATER LINES WHERE SLOPE EXCEEDS 20%.

B. SPACING:

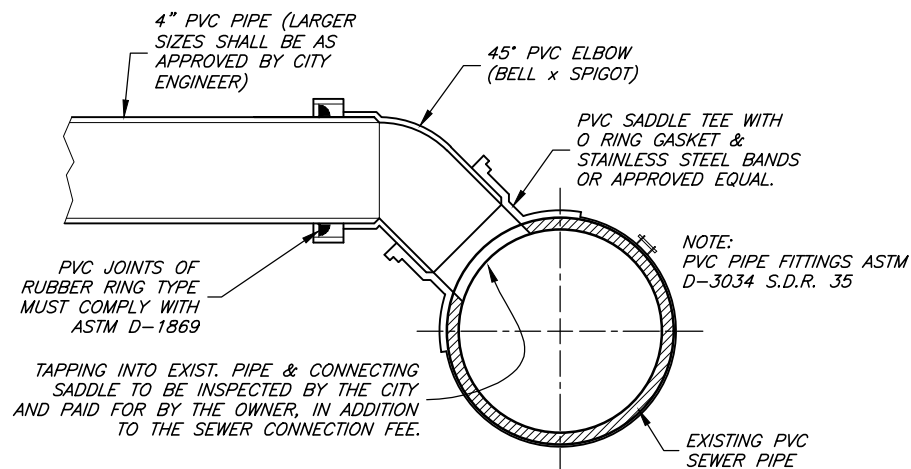
SLOPE	SPACING
20%-35%	36'
35%-50%	24'
50%+	16'



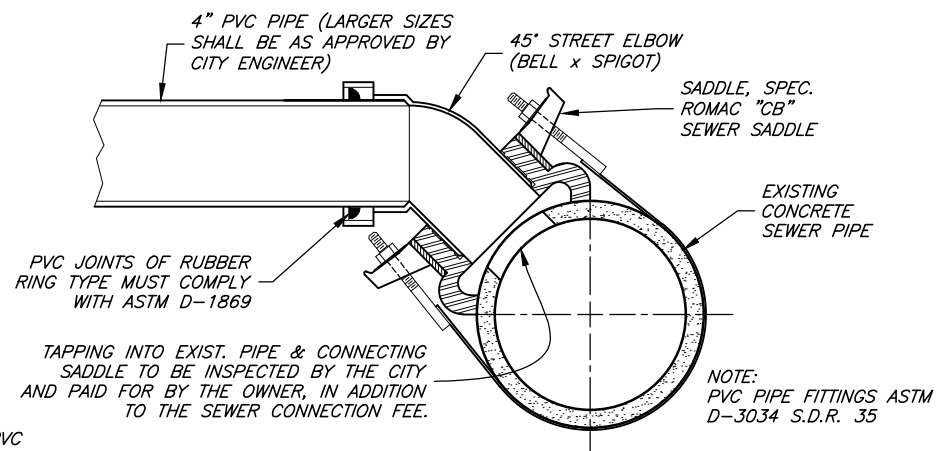
TYPICAL SEWER / LAND DRAIN LATERALS CONNECTION



CONNECTING INTO EXISTING WYE OR TEE



TAPPING INTO EXISTING PVC PIPE



TAPPING INTO EXISTING CONCRETE PIPE



PROJECT ENGINEER  
1/10/2019  
DATE

REV.	DATE	APPR.
1	JAN '19	DQS
DELETED EX. DETAIL; ADDED DETAIL; MODIFIED NOTES		

SCALE:  
N. T.S.

DESIGNED \_\_\_\_\_  
DRAWN \_\_\_\_\_  
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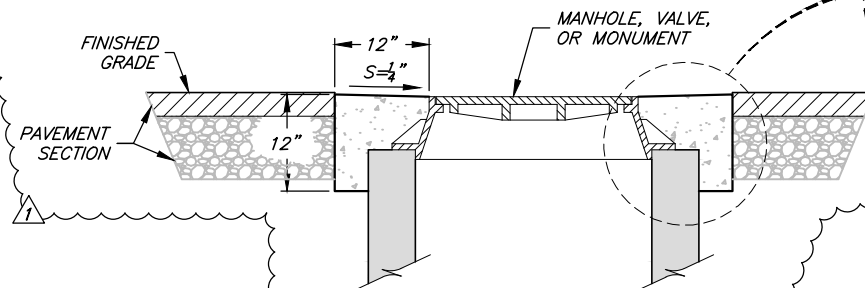
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PUBLIC WORKS STANDARDS  
SANITARY SEWER - LATERAL & CONNECTION DETAILS

SHEET:  
CS-13  
OF 22 SHEETS

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#### CONCRETE COLLAR NOTES:

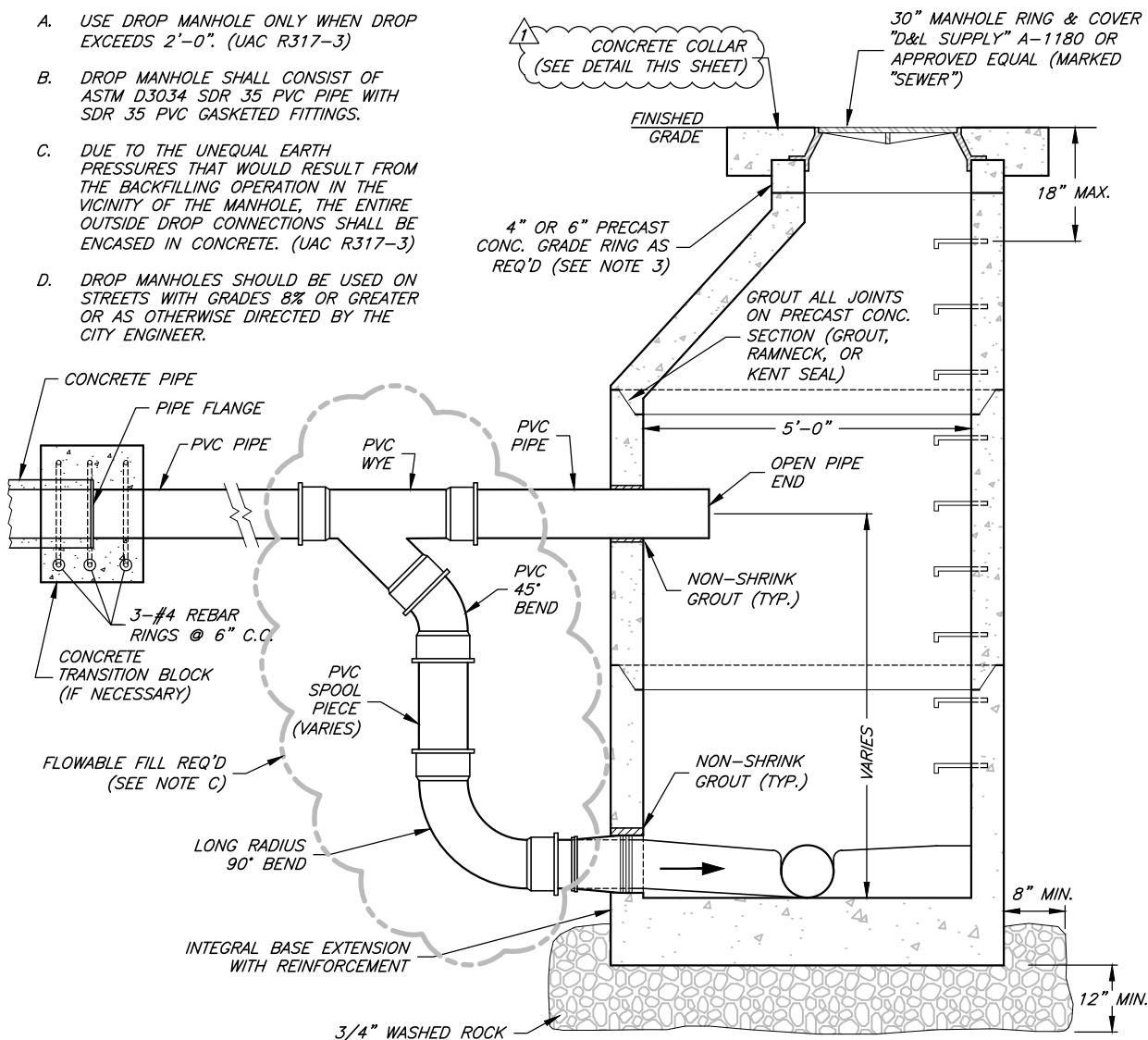
- A1. ALL CONCRETE COLLARS TO BE INSTALLED WITHIN 14 DAYS AFTER PAVING.
- B1. COLLARS AROUND MANHOLES AND CULINARY WATER VALVES ARE TO BE ROUND.
- C1. COLLARS AROUND IRRIGATION VALVES ARE TO BE SQUARE.
- D1. FIBER MESH SHALL BE ADDED TO ALL CONCRETE.



**CONCRETE COLLAR DETAIL**

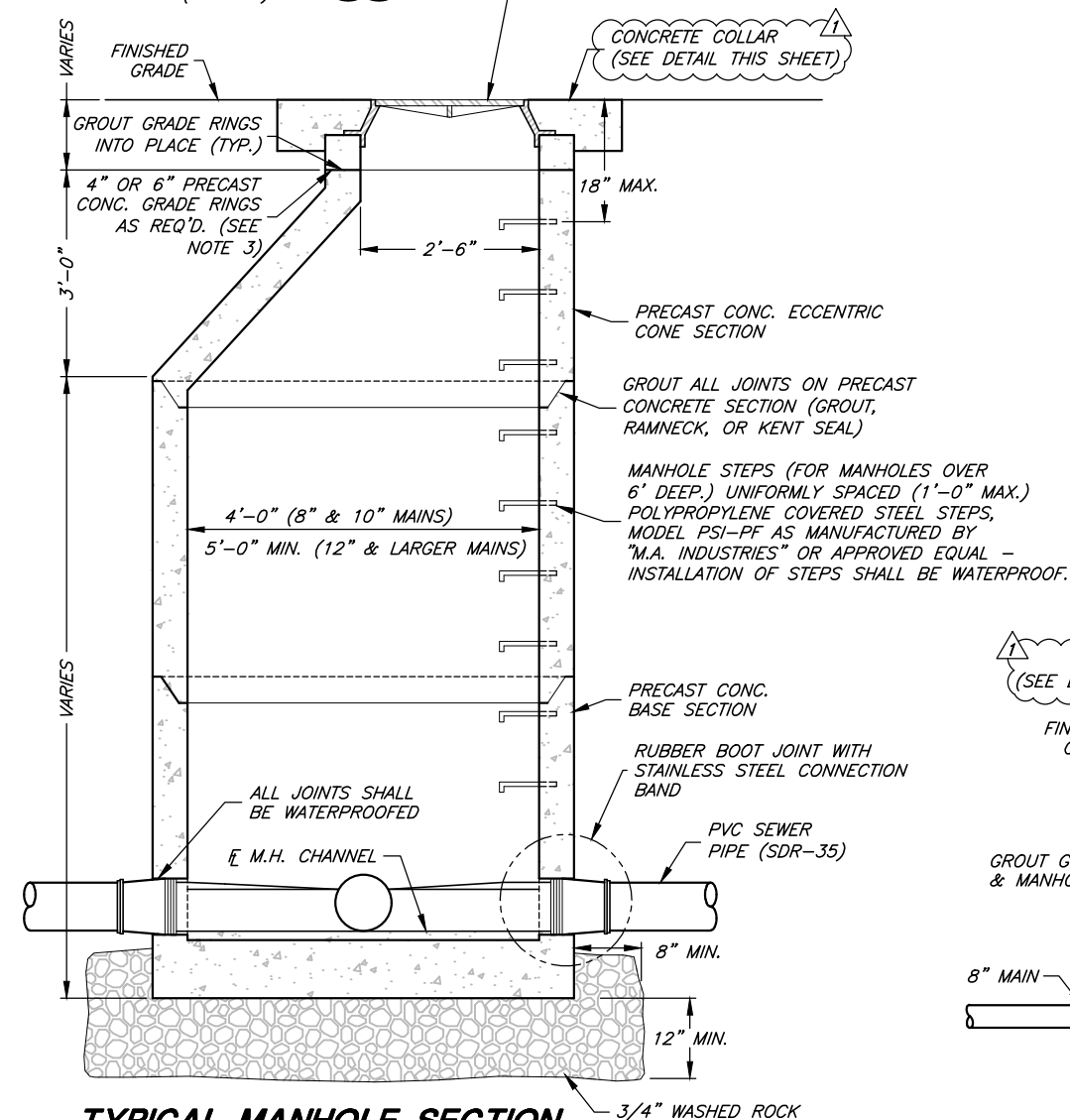
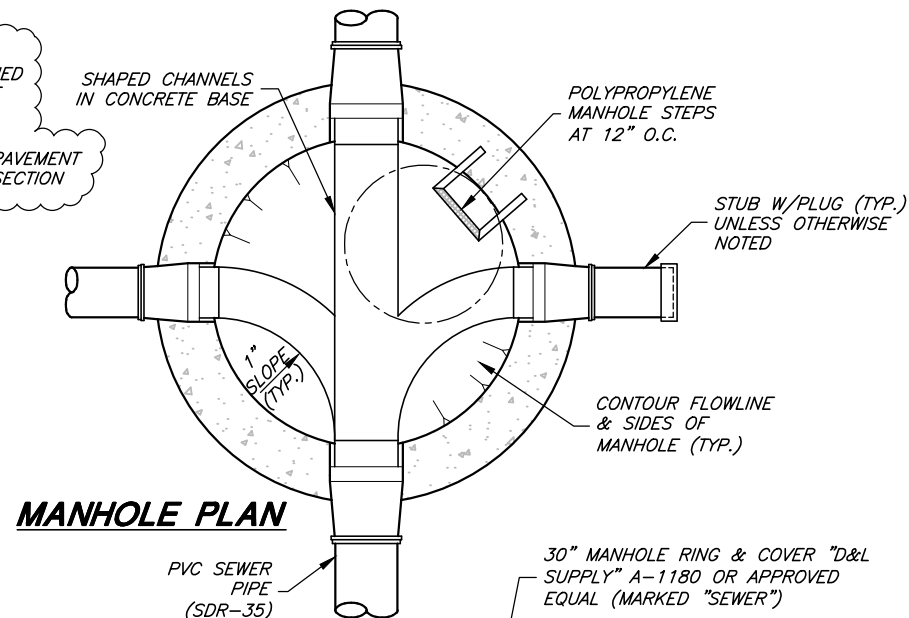
#### DROP MANHOLE NOTES:

- A. USE DROP MANHOLE ONLY WHEN DROP EXCEEDS 2'-0". (UAC R317-3)
- B. DROP MANHOLE SHALL CONSIST OF ASTM D3034 SDR 35 PVC PIPE WITH SDR 35 PVC GASKETED FITTINGS.
- C. DUE TO THE UNEQUAL EARTH PRESSURES THAT WOULD RESULT FROM THE BACKFILLING OPERATION IN THE VICINITY OF THE MANHOLE, THE ENTIRE OUTSIDE DROP CONNECTIONS SHALL BE ENCASED IN CONCRETE. (UAC R317-3)
- D. DROP MANHOLES SHOULD BE USED ON STREETS WITH GRADES 8% OR GREATER OR AS OTHERWISE DIRECTED BY THE CITY ENGINEER.



**TYPICAL DROP MANHOLE SECTION**

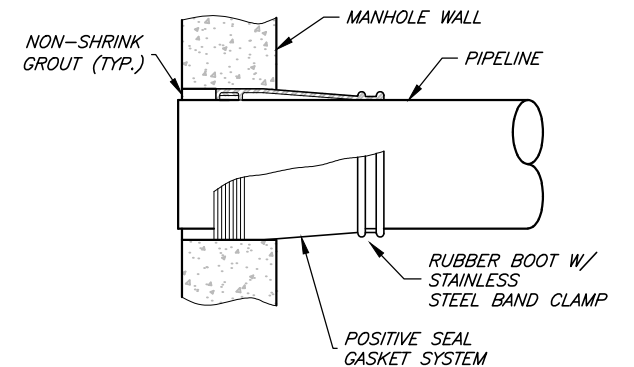
**MANHOLE PLAN**



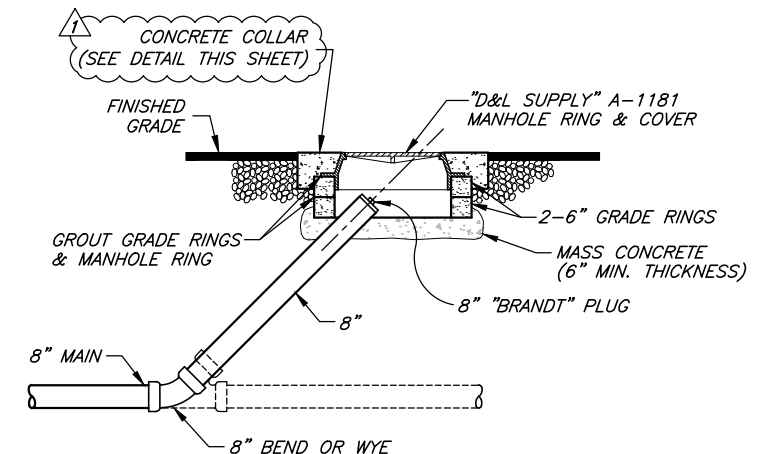
**TYPICAL MANHOLE SECTION**

#### GENERAL NOTES:

1. SECURE INVERTS IN ALL MANHOLES DURING CONSTRUCTION SO AS TO PREVENT GRAVEL AND OTHER DEBRIS FROM COLLECTING INSIDE.
2. A LARGER DIAMETER MANHOLE MAY BE REQUIRED BY THE DESIGN ENGINEER AFTER EVALUATION OF THE NUMBER, SIZE, AND ANGLE OF THE PIPES THAT CONNECT TO THE MANHOLE.
3. NO MORE THAN 12" OF GRADE RINGS TO BE ALLOWED ON ANY MANHOLE.
4. ALL TERMINATING SEWER MAINS SHALL END WITH A CITY STANDARD MANHOLE.
5. SERVICE LATERAL CONNECTIONS SHALL NOT BE ALLOWED IN SEWER MANHOLES.
6. ALL SANITARY SEWER LINES SHALL BE INSPECTED BY MEANS OF VIDEO CAMERA AND AIR TESTED WHEN CONSTRUCTED. SEE APWA 33 08 00 AND CITY MODIFICATIONS FOR MORE INFORMATION.
7. WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE INCOMING SEWER AND MANHOLE INVERT IS LESS THAN 24 INCHES, THE INVERT SHOULD BE FILLETED.



**RUBBER BOOT DETAIL**



**DRAIN/SEWER MAINLINE CLEANOUT**

TEMPORARY (USE ONLY UPON APPROVAL FROM THE CITY ENGINEER)



PROJECT ENGINEER  
1/10/2019  
DATE

7 JAN '19 DQS ADDED DETAIL; REVISED NOTES

REV. DATE APPR.

SCALE:

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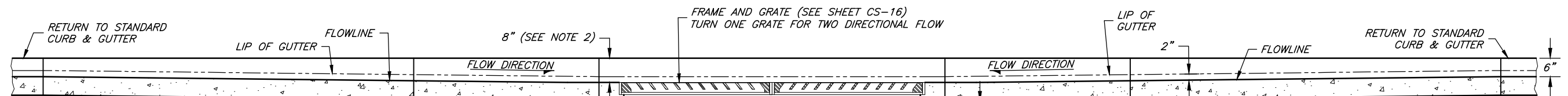
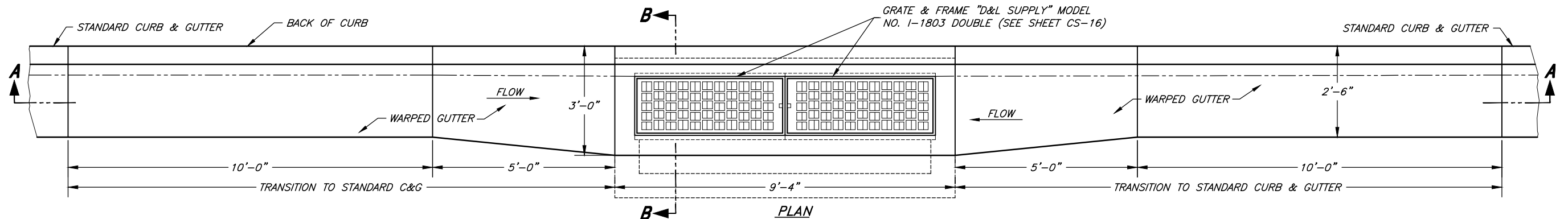
**SANITARY SEWER - TYPICAL MANHOLES & DETAILS**

SHEET:

**CS-14**

OF 22 SHEETS

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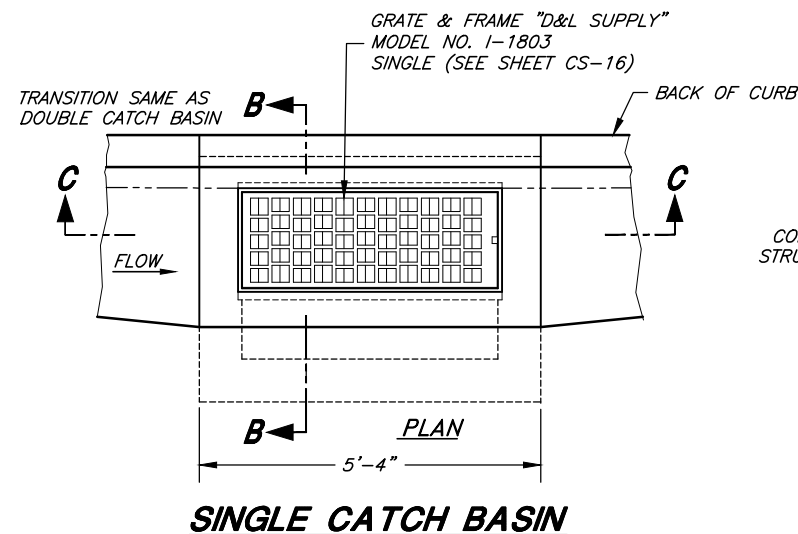
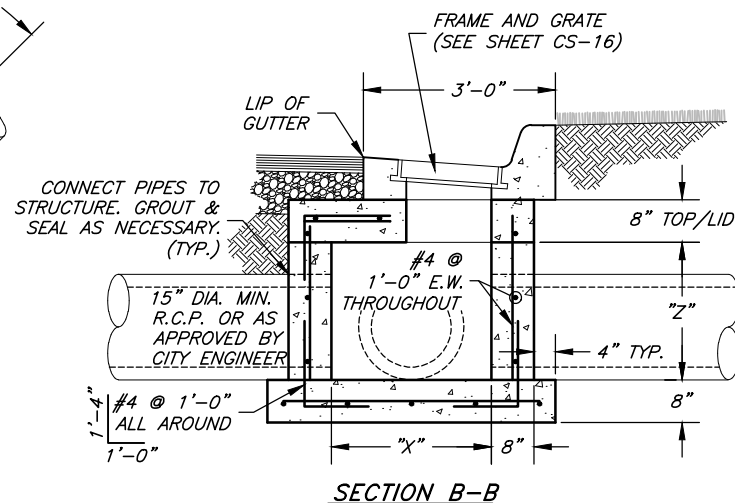
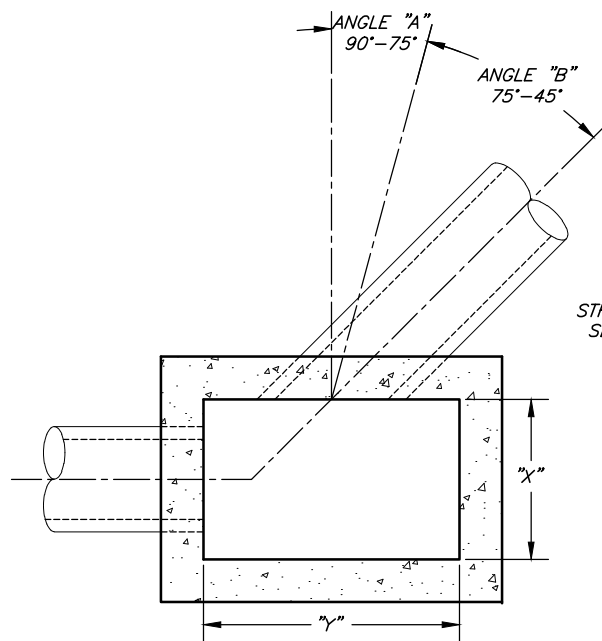


STANDARD CATCH BASIN DIMENSION TABLE					
PIPE SIZE (IN.)	"X"	SINGLE CATCH BASIN		DOUBLE	"Z" MIN.
		"Y" (ANGLE A)	"Y" (ANGLE B)		
15	2'-6"	4'-0"	4'-0"	8'-0"	2'-0"
18	2'-6"	4'-0"	4'-0"	8'-0"	2'-6"
21	4'-0"	4'-0"	4'-0"	8'-0"	3'-0"
24	4'-0"	4'-0"	5'-0"	8'-0"	3'-0"
30	4'-0"	4'-0"	6'-0"	8'-0"	3'-6"
36	4'-0"	5'-0"	6'-0"	8'-0"	4'-0"
42	6'-0"	6'-0"	7'-0"	8'-0"	5'-0"
48	6'-0"	6'-0"	8'-0"	8'-0"	5'-6"

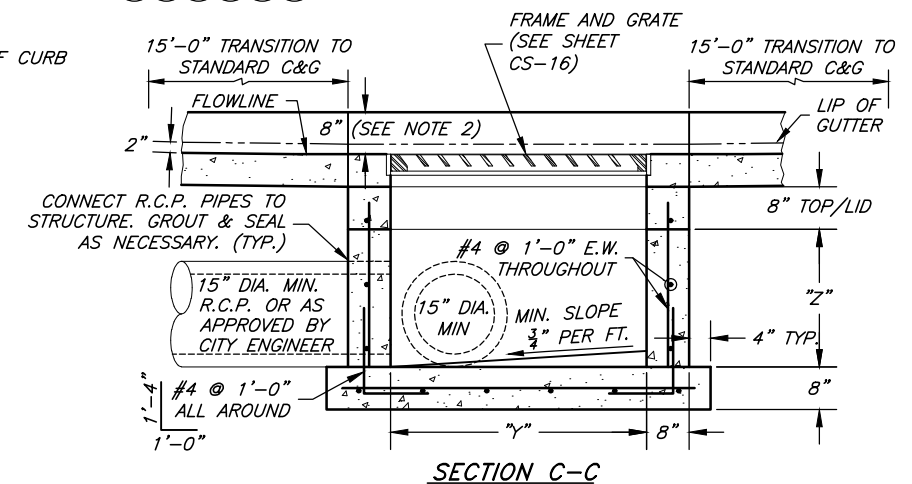
### DOUBLE CATCH BASIN

#### GENERAL NOTES:

- ALL CATCH BASIN BOX SIZES REFLECT DIMENSIONS FOR THE MINIMUM 15" PIPE SIZE. BOX DIMENSIONS MUST INCREASE PROPORTIONALLY TO ACCOMMODATE LARGER PIPE SIZES.
- DEPTH MAY VARY FROM 6" TO 10" AS DIRECTED BY THE CITY ENGINEER.
- CAST-IN-PLACE CONCRETE CATCH BASINS CAN BE REPLACED WITH PRECAST CONCRETE CATCH BASINS WITH HL-93 DECK LOADING AND COMPARABLE SIZE.
- ALL BOXES SHALL BE FORMED ON THE INSIDE AND OUTSIDE OF THE BOX AND INSPECTED BY THE CITY PRIOR TO THE PLACING OF CONCRETE.
- DOUBLE CATCH BASINS WILL BE REQUIRED IN LOCATIONS SPECIFIED BY THE CITY ENGINEER (TYPICALLY IN LOW SPOTS OR WHERE ADDITIONAL INLET CAPACITY IS NEEDED).
- STORM DRAIN LINES SHALL BE 15 INCH MINIMUM DIAMETER REINFORCED CONCRETE PIPE (RCP), OF APPROPRIATE CLASS.
- CURB INLET WITH A GRATE & CURB HOOD MAY BE USED AS REQUIRED AND/OR APPROVED BY THE CITY.
- ALTERNATE STRUCTURE (E.G. COMBO BOXES) MAY BE USED WITH APPROVAL OF THE CITY ENGINEER. STRUCTURES SHALL FOLLOW APWA STANDARD PLANS AND BE A COMMON SIZE.



### SINGLE CATCH BASIN



PROJECT ENGINEER  
Dana Q. Shuler  
1/10/2019  
DATE

REV.	DATE	APPR.
1	JAN '19	DQS
ADDED NOTE		

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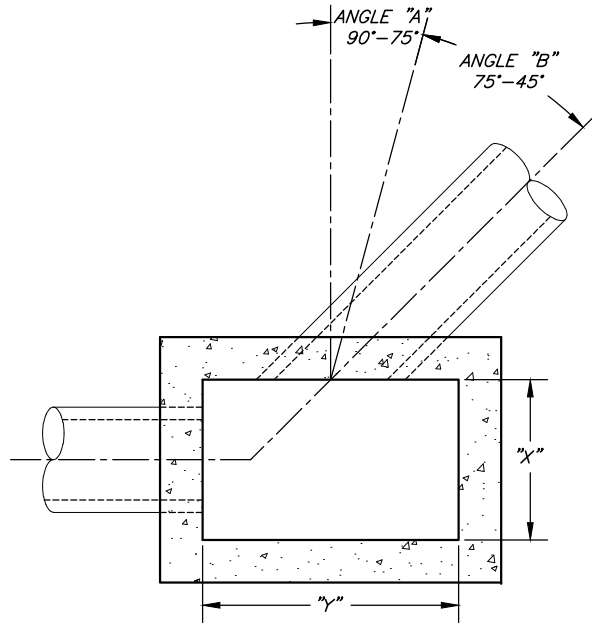
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## STORM DRAIN - SINGLE & DOUBLE CATCH BASIN DETAILS

SHEET:  
CS-15  
OF 22 SHEETS



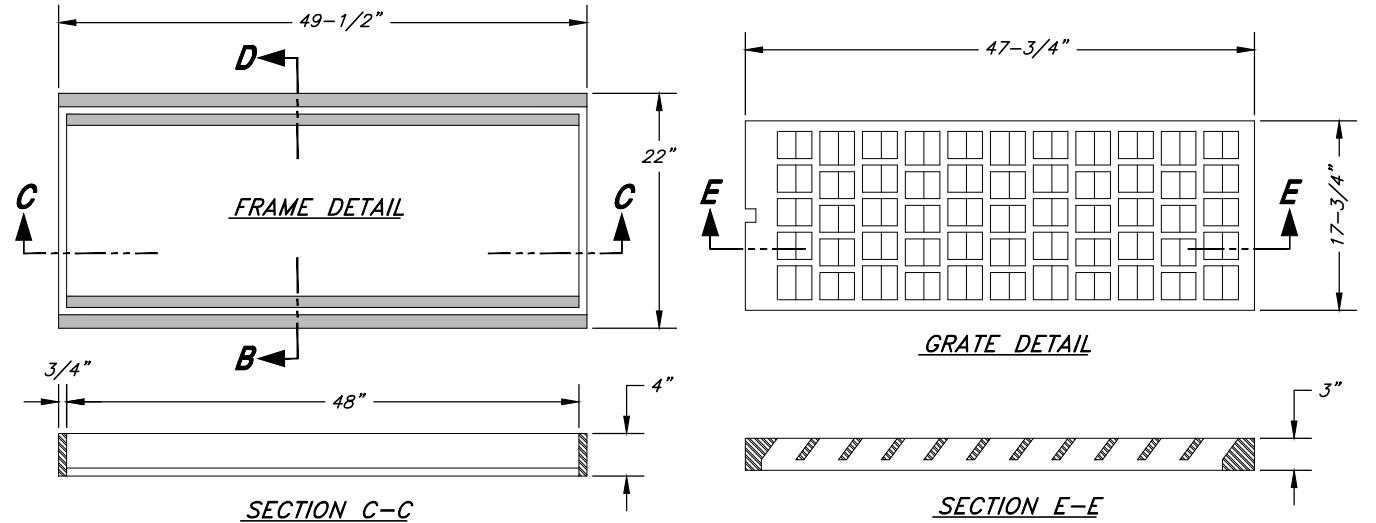
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PIPE SIZE (IN.)	"X"	INLET BOX		"Z" MIN.
		"Y" (ANGLE A)	"Y" (ANGLE B)	
15	2'-6"	4'-0"	4'-0"	2'-0"
18	2'-6"	4'-0"	4'-0"	2'-6"
21	4'-0"	4'-0"	4'-0"	3'-0"
24	4'-0"	4'-0"	5'-0"	3'-0"
30	4'-0"	4'-0"	6'-0"	3'-6"
36	4'-0"	4'-0"	6'-0"	4'-0"
42	6'-0"	6'-0"	7'-0"	5'-0"
48	6'-0"	6'-0"	8'-0"	5'-6"

**GENERAL NOTE:**

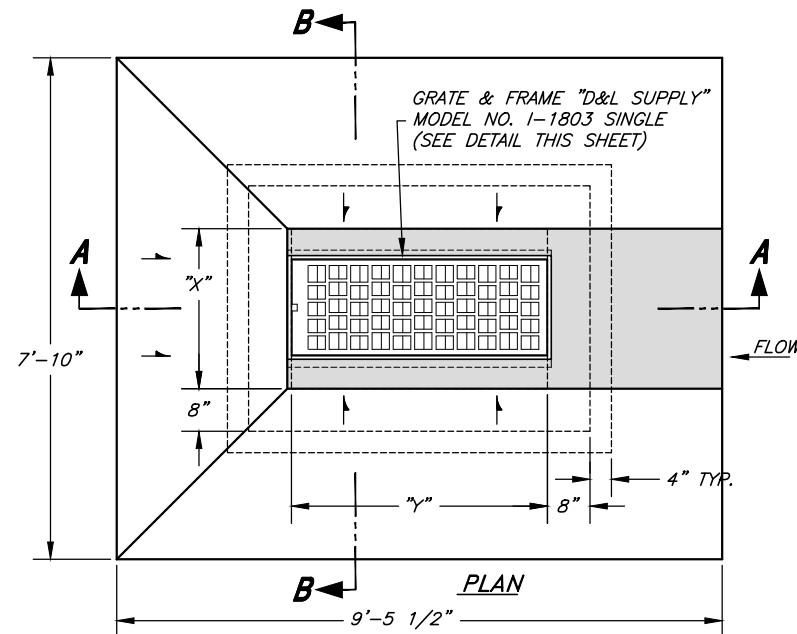
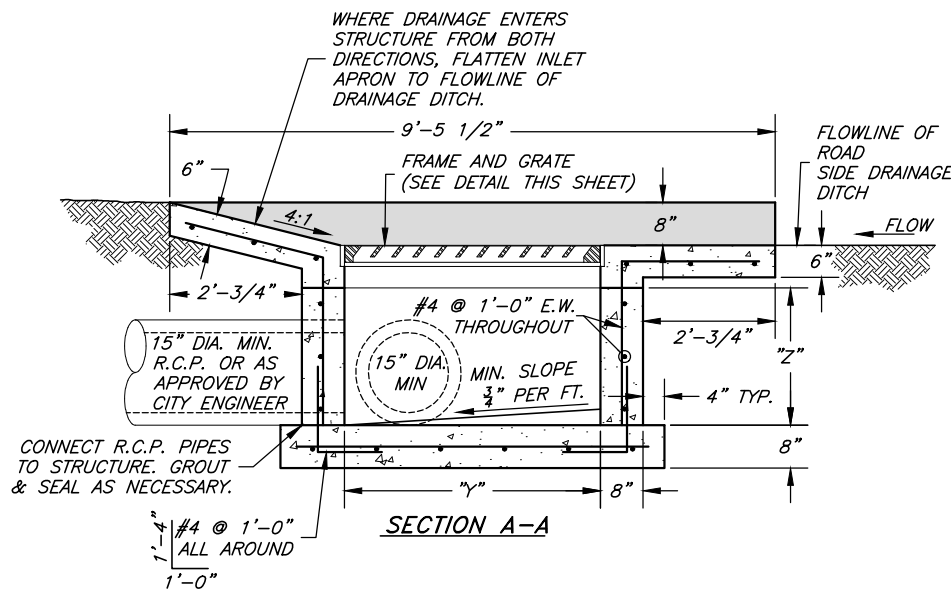
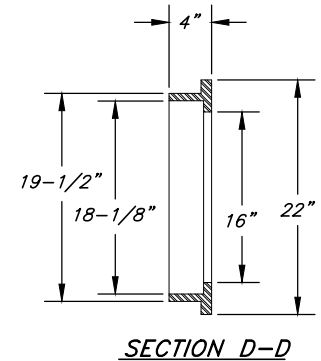
STORM DRAIN LINES SHALL BE 15 INCH MINIMUM DIAMETER REINFORCED CONCRETE PIPE (RCP), OF APPROPRIATE CLASS.



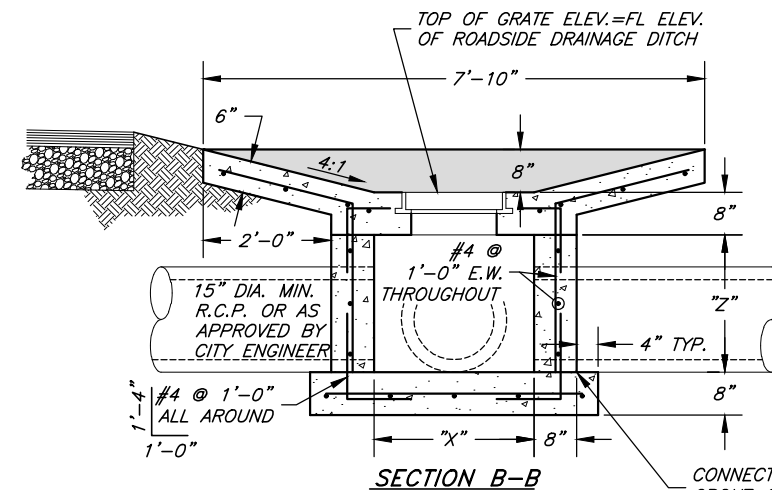
**FRAME & GRATE DETAILS**

**FRAME AND GRATE NOTES:**

- A1. GRATE AND FRAME SHALL BE AS MANUFACTURED BY "D&L SUPPLY" I-1803
- B1. BICYCLE SAFE GRATE REQUIRED.
- C1. "OR EQUAL" GRATES AND FRAMES WILL BE CONSIDERED AS APPROVED BY THE CITY ENGINEER.



**DRAINAGE DITCH / PARKING LOT INLET BOX**



**DRAINAGE BOX NOTES:**

1. ALL BOX SIZES REFLECT DIMENSIONS FOR THE MINIMUM 15"Ø PIPE SIZE. BOX DIMENSIONS MUST INCREASE PROPORTIONALLY TO ACCOMMODATE LARGER PIPE SIZES. (SEE TABLE THIS SHEET)
2. CAST-IN-PLACE CONCRETE STRUCTURES CAN BE REPLACED WITH PRECAST CONCRETE STRUCTURES WITH HL-93 DECK LOADING AND COMPARABLE SIZE.
3. ALL BOXES SHALL BE FORMED ON THE INSIDE AND OUTSIDE OF THE BOX AND INSPECTED BY THE CITY PRIOR TO THE PLACING OF CONCRETE.



PROJECT ENGINEER  
1/10/2019  
DATE

REV. DATE APPR.

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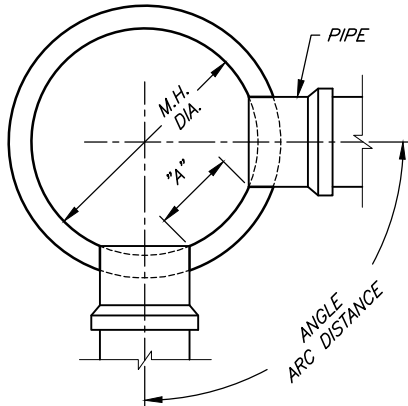
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STORM DRAIN - DRAINAGE DITCH INLET BOX & GENERAL GRATE AND FRAME DETAILS

SHEET:  
CS-16  
OF 22 SHEETS

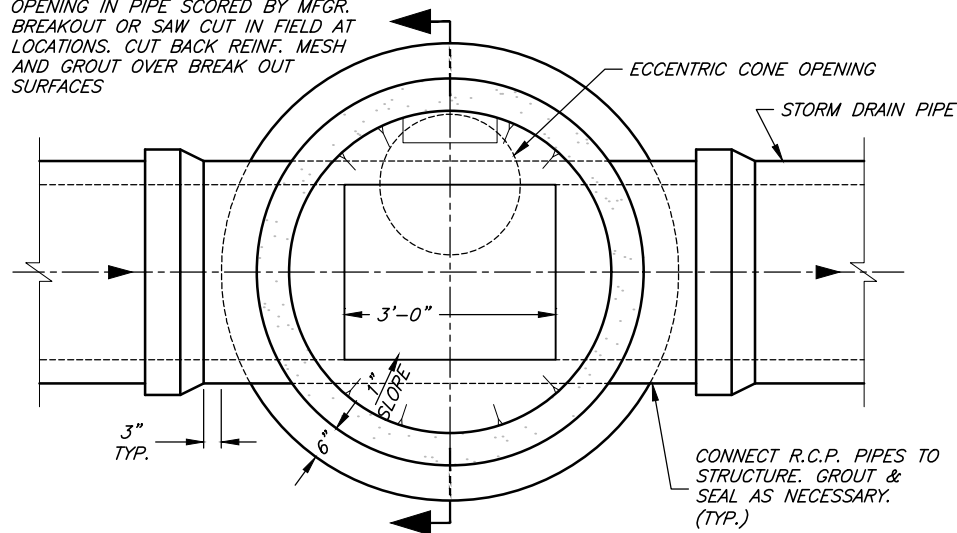
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PIPE SIZES											
M.H. SIZE	IN-LINE M.H. 180°	JUNCTION MANHOLE (ANGLE / ARC DISTANCE)									
		90°	85°	80°	75°	70°	65°	60°	55°	50°	45°
4' Ø M.H.	15"-24"	15"-18"	15"-18"	15"	15"	--	--	--	--	--	--
5' Ø M.H.	27"-30"	21"-24"	21"-24"	18"-21"	18"-21"	15"-18"	15"-18"	15"	--	--	--
6' Ø M.H.	36"-48"	27"-30"	27"-30"	24"-27"	24"	21"-24"	21"	18"	15"-18"	15"	--
7' Ø M.H.	54"	36"	36"	30"	27"-30"	27"	24"	21"-24"	21"	18"	15"
8' Ø M.H.	60"	42"	42"	36"	36"	30"	27"-30"	27"	24"	21"	18"

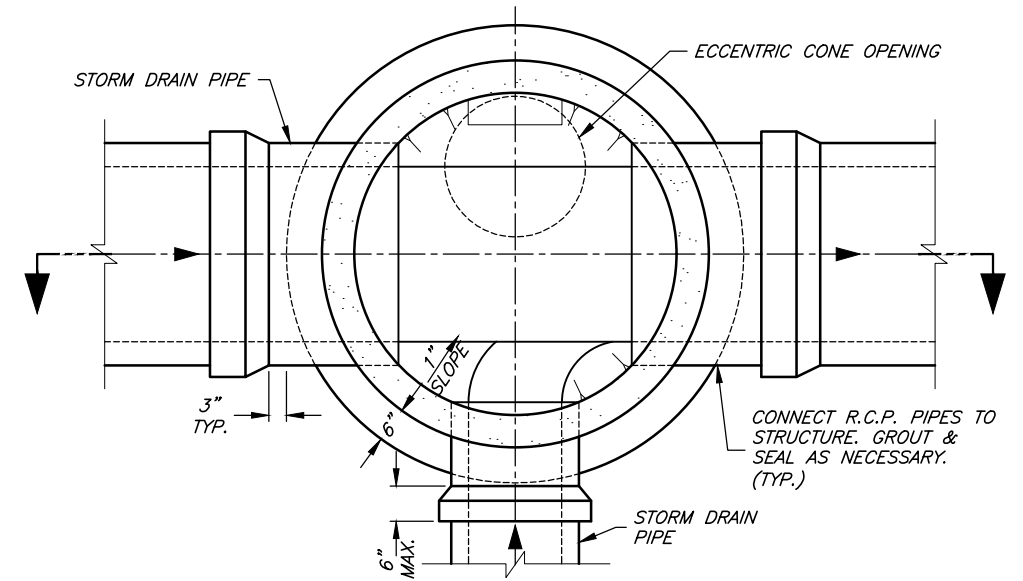


- SIZING NOTES:**
- SUGGESTED "A" DISTANCE IS 6" OR GREATER FOR 48", 60" AND 72" DIAMETER MANHOLES
  - SUGGESTED "A" DISTANCE IS 8" OR GREATER FOR 84" AND 96" DIAMETER MANHOLES

OPENING IN PIPE SCORED BY MFR. BREAKOUT OR SAW CUT IN FIELD AT LOCATIONS. CUT BACK REINF. MESH AND GROUT OVER BREAK OUT SURFACES



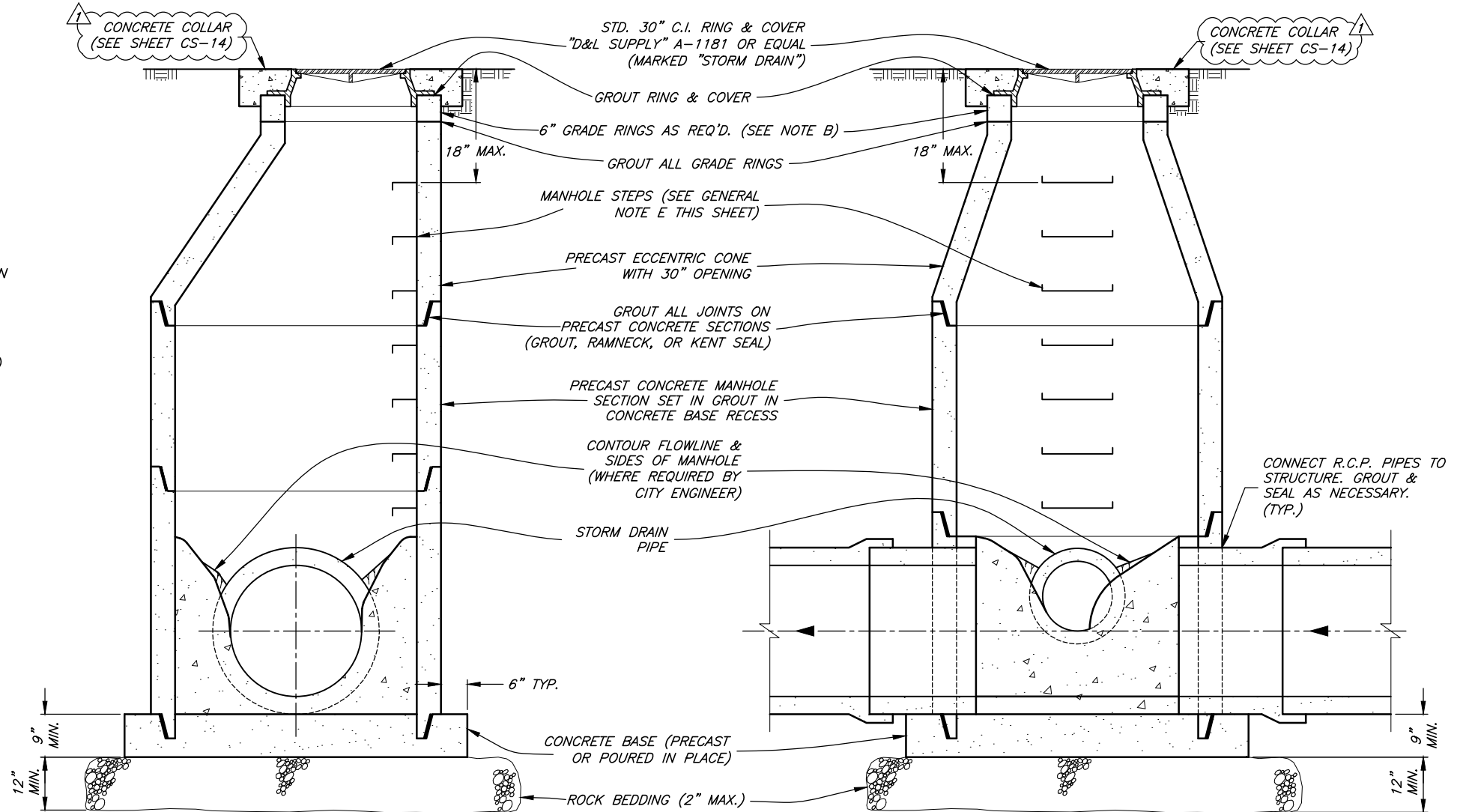
**TYPICAL LINE MANHOLE**



**TYPICAL JUNCTION MANHOLE**

**GENERAL NOTES:**

- STORM DRAIN MANHOLE DIAMETER TO BE DETERMINED BY THE DESIGN ENGINEER AFTER EVALUATION OF THE NUMBER, SIZE, AND PIPE ENTRY ANGLE OF THE PIPES THAT CONNECT TO THE MANHOLE.
- NO MORE THAN 12" OF GRADE RINGS TO BE ALLOWED ON ANY MANHOLE
- PLYWOOD COVERS SHALL BE USED AT MANHOLE FLOOR TO COVER FLOWLINE DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES.
- ALL INTERIOR JOINTS SHALL BE SMOOTH AND EVENLY GROUTED WITH NON-SHRINK GROUT MIX.
- MANHOLE STEPS UNIFORMLY SPACED (1'-0" MAX.) POLYPROPYLENE COVERED STEEL STEPS, MODEL PSI-PF AS MANUFACTURED BY "M.A. INDUSTRIES" OR APPROVED EQUAL - INSTALLATION OF STEPS SHALL BE WATERPROOF.
- STORM DRAIN LINES SHALL BE 15 INCH MINIMUM DIAMETER REINFORCED CONCRETE PIPE (RCP), OF APPROPRIATE CLASS.



PROJECT ENGINEER  
1/10/2019  
DATE

REV.	DATE	APPR.
1	JAN '19	DQS DELETED NOTE, DIMENSIONS; ADDED NOTE

SCALE:  
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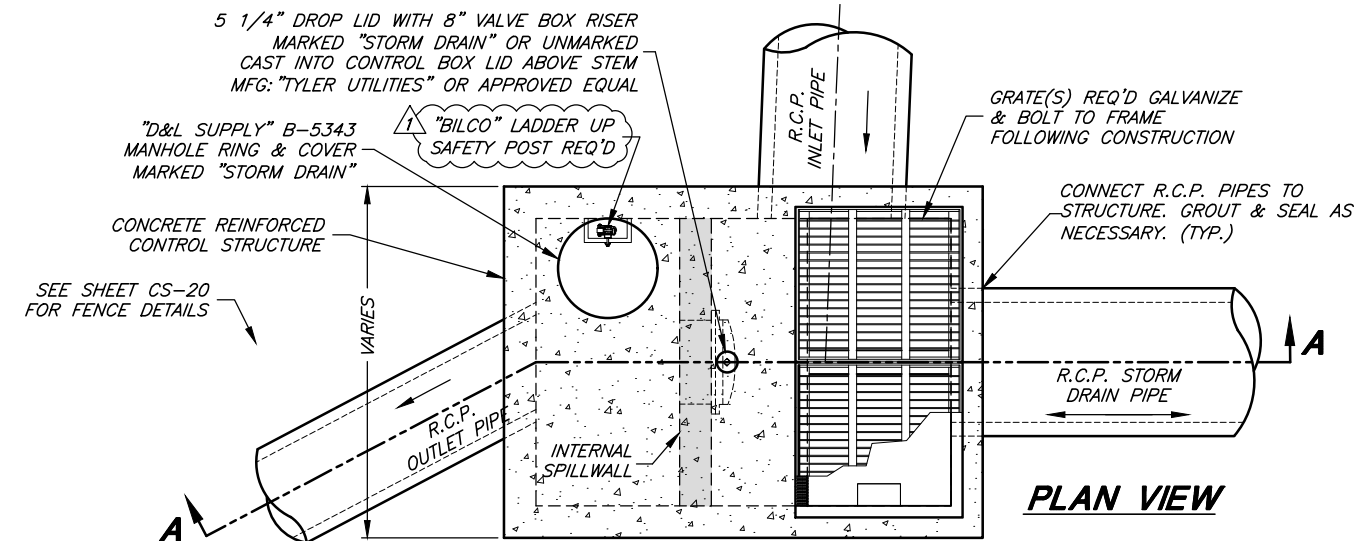
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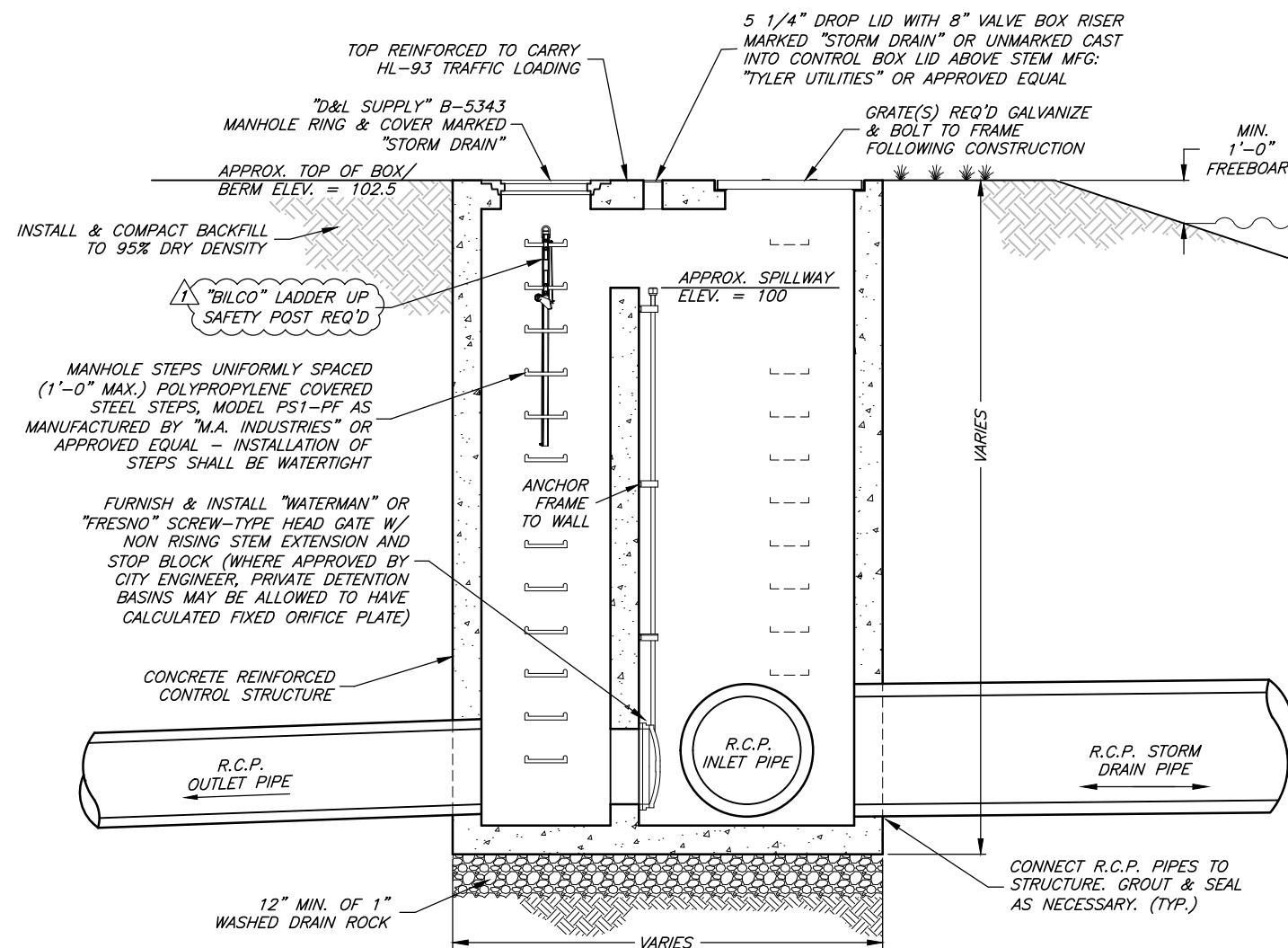
**STORM DRAIN - MANHOLE DETAILS**

SHEET:  
**CS-17**  
OF 22 SHEETS

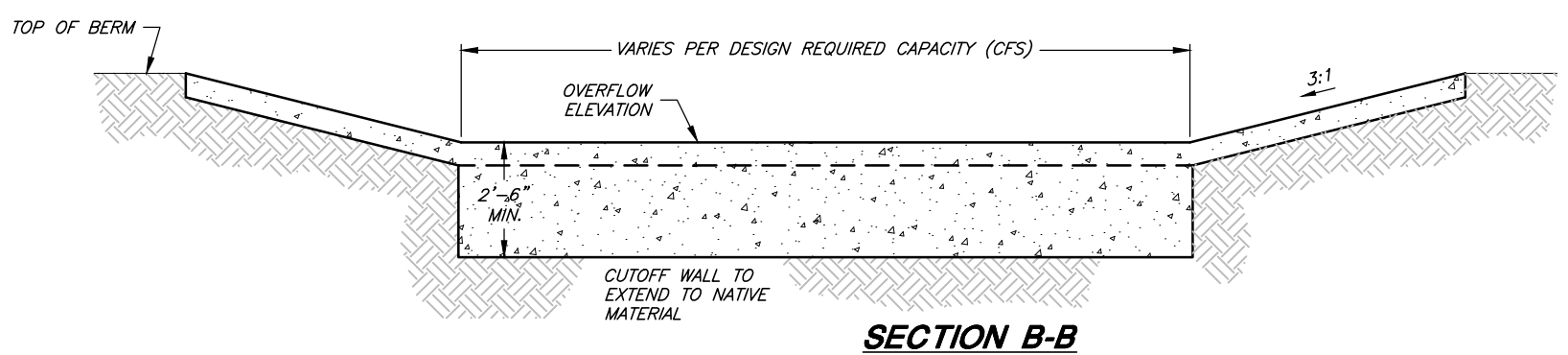
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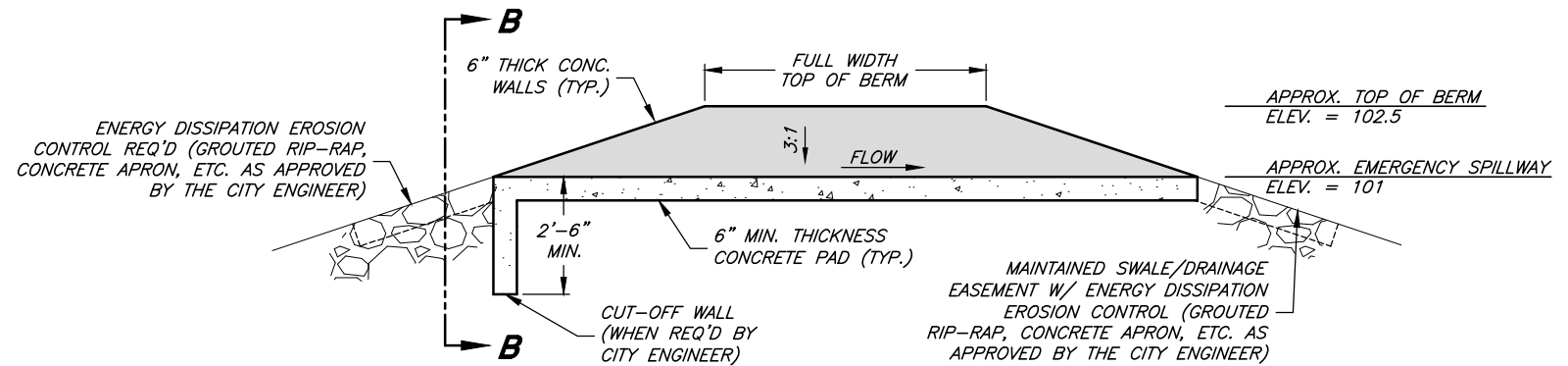
**DETENTION INLET/OUTLET CONTROL STRUCTURE**  
(PRECAST OR CAST-IN-PLACE)



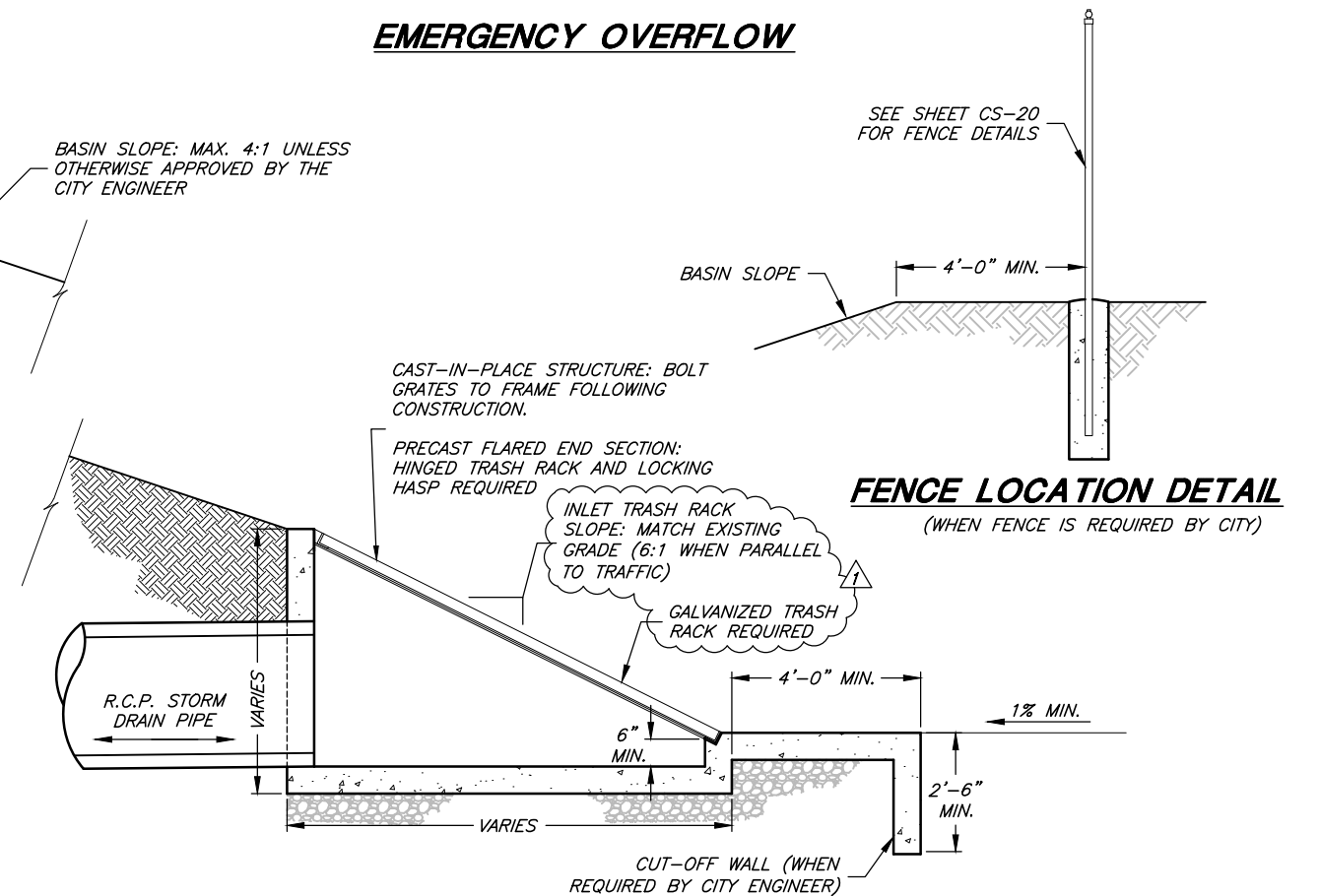
**SECTION A-A**



**SECTION B-B**



**EMERGENCY OVERFLOW**



**FENCE LOCATION DETAIL**  
(WHEN FENCE IS REQUIRED BY CITY)

GENERAL AND STRUCTURAL NOTES:  
SEE SHEET CS-19

**INCLINED GRATE STORM DRAIN INLET**



1 JAN '19 DQS ADDED LADDER UP & MODIFIED NOTES		
REV.	DATE	APPR.

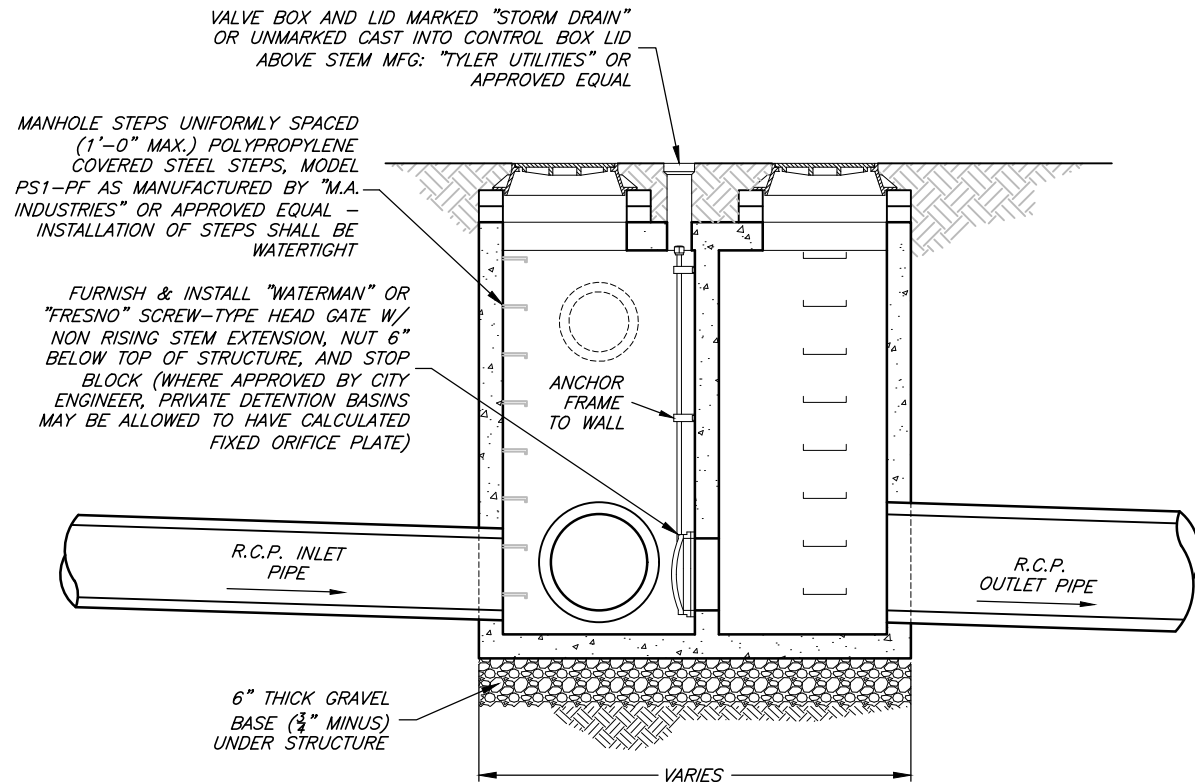
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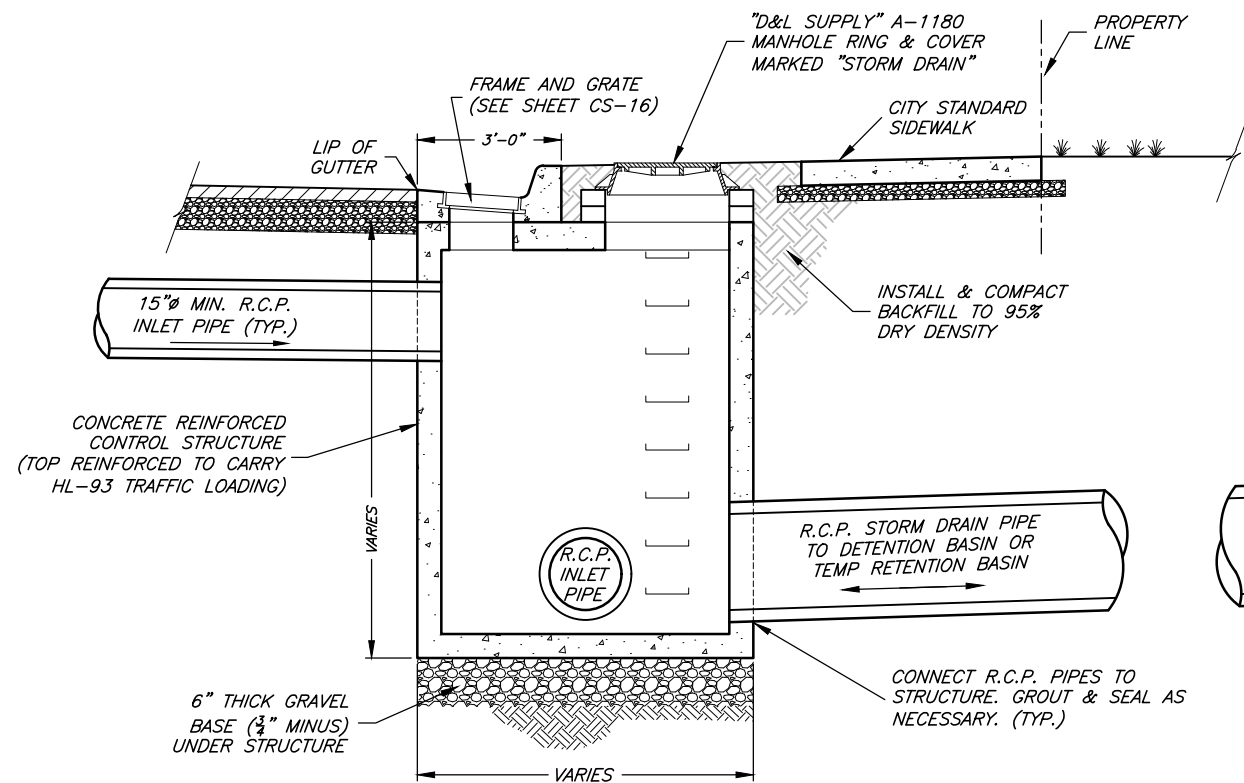
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PLEASANT VIEW CITY PUBLIC WORKS STANDARDS	
STORM DRAIN - LARGE DETENTION BASIN DETAILS	
SHEET:	CS-18
OF 22 SHEETS	

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**SECTION B-B**



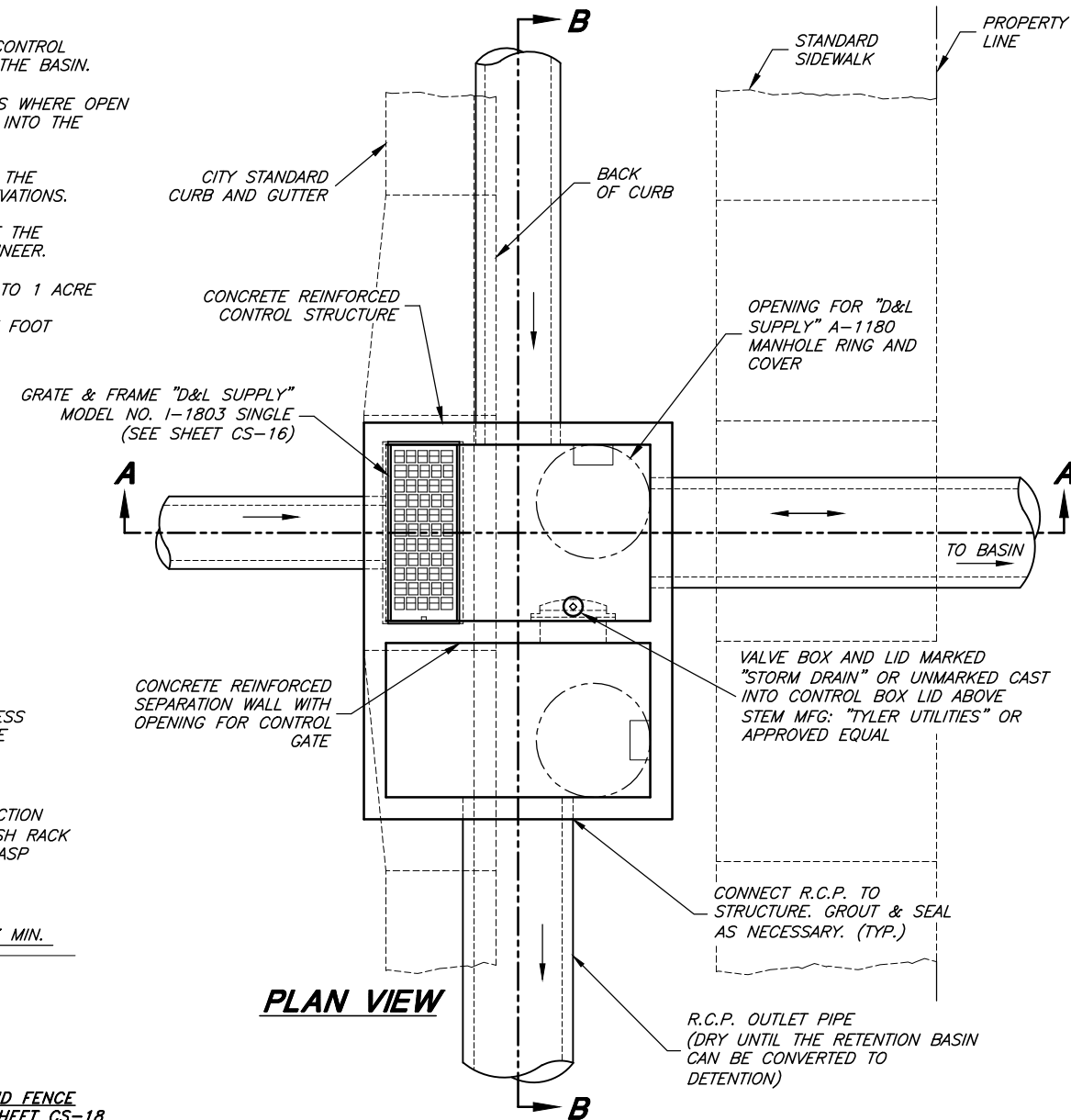
**SECTION A-A**

**GENERAL NOTES:**

1. ALL BASINS REGARDLESS OF LOCAL OR REGIONAL SHALL BE DESIGNED TO ACCOMMODATE A 100 YEAR STORM EVENT.
2. A DAM SAFETY (UTAH DIVISION OF WATER RIGHTS) HAZARD PERMIT MAY BE REQUIRED.
3. STRUCTURE DESIGN AND FLOW CALCULATIONS MUST BE APPROVED BY CITY ENGINEER PRIOR TO CONSTRUCTION.
4. STORM DRAIN LINES SHALL BE 15 INCH MINIMUM DIAMETER REINFORCED CONCRETE PIPE (RCP), OF APPROPRIATE CLASS.
5. THE SURFACE AREA OF THE BASIN SHALL BE SODDED AND SHALL BE PROVIDED WITH AN AUTOMATED SPRINKLER SYSTEM APPROVED BY THE CITY ENGINEER.
6. GRATES SHALL BE REMOVABLE FOR MAINTENANCE PURPOSES
7. GRATES SHALL BE HOT DIPPED GALVANIZED WITH BARS AT MAXIMUM 3 INCH SPACING.
8. LOW FLOWS MUST BE PIPED CONTINUOUSLY TO THE CONTROL STRUCTURE. NO OPEN FLOW IS PERMITTED THROUGH THE BASIN.
9. INCLINED GRATES ARE REQUIRED ON ALL PIPES/INLETS WHERE OPEN CHANNELS, DITCHES, OR PONDS DISCHARGE DIRECTLY INTO THE STORM DRAIN SYSTEM.
10. AN INTERNAL SPILLWAY MAY BE CONSTRUCTED INSIDE THE STRUCTURE DEPENDING ON SITE CONDITIONS AND ELEVATIONS.
11. BASIN STRUCTURES ARE DETERMINED BY THE SIZE OF THE DETENTION BASIN OR AS REQUIRED BY THE CITY ENGINEER. (SEE SHEET CS-18 OR CS-19)
  - a. SMALL DETENTION BASIN: LESS THAN OR EQUAL TO 1 ACRE FOOT
  - b. LARGE DETENTION BASIN: GREATER THAN 1 ACRE FOOT

**STRUCTURAL NOTES:**

- A. PRECAST CONCRETE STRUCTURE CAN BE REPLACED WITH CAST-IN-PLACE CONCRETE VAULT. SUBMIT ENGINEERED CONSTRUCTION PLANS WITH REBAR DETAILS TO CITY ENGINEER FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.
- B. ADD REINFORCEMENT AROUND OPENINGS EQUAL TO REINFORCEMENT DISPLACED BY OPENING.
- C. THE PRECAST VAULT MANUFACTURER IS RESPONSIBLE FOR DESIGN RELATED TO TRAFFIC LOADING AND THRUST. VERIFICATION OF PROPER DESIGN MUST BE PROVIDED TO THE CITY BY THE DEVELOPER, CONTRACTOR, OR PROPERTY OWNER AS THE CASE MAY BE.
- D. REINFORCEMENT TO CONFORM WITH ASTM A 615 GRADE 60
- E. CONCRETE SHALL HAVE A 28-DAY COMPRESSIVE STRENGTH OF 5,000 PSI
- F. USE AN AIR-ENTRAINING AGENT ON ALL CONCRETE EXPOSED TO THE WEATHER.
- G. HL-93 LOADING



**PLAN VIEW**

**INLET/OUTLET CONTROL STRUCTURE**

(PRECAST OR CAST-IN-PLACE)



PROJECT ENGINEER  
1/10/2019  
DATE

REV.	DATE	APPR.

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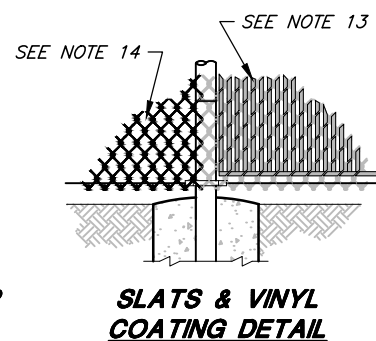
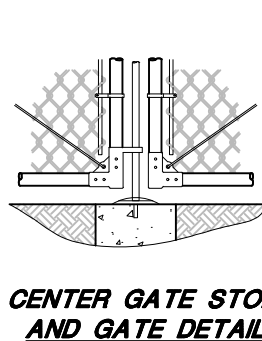
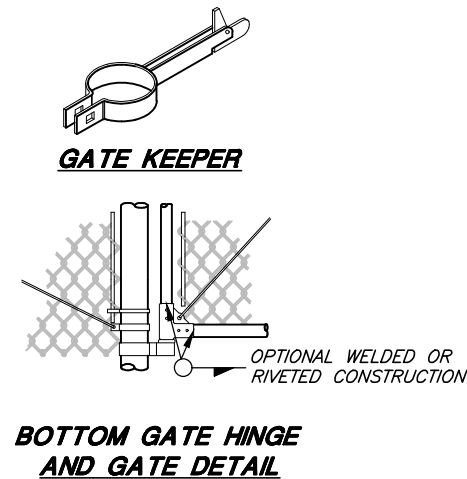
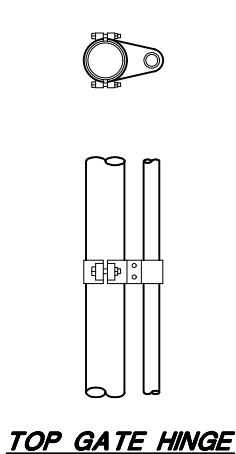
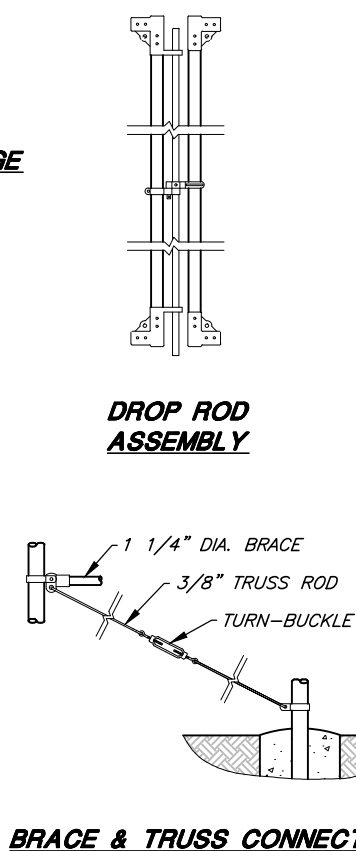
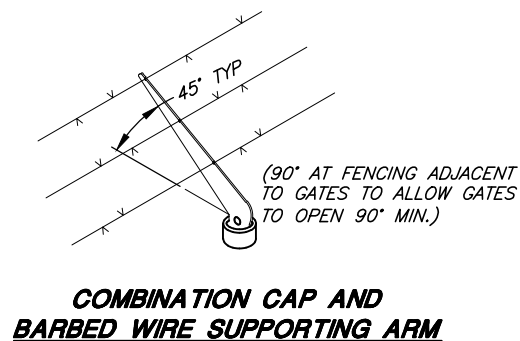
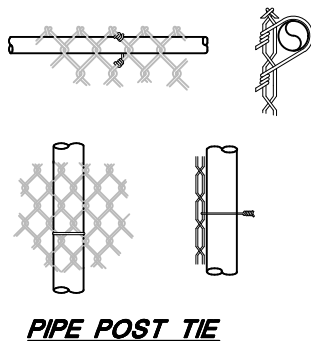
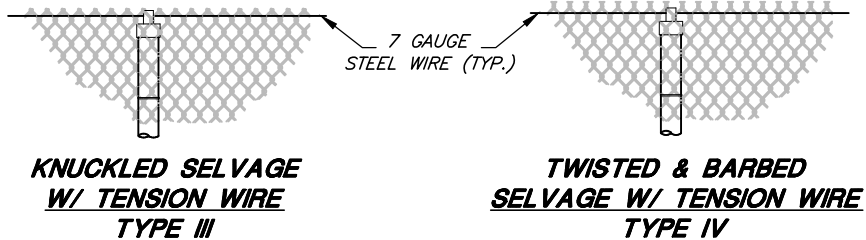
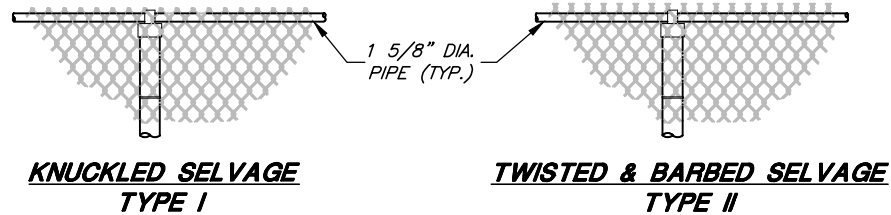
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PLEASANT VIEW CITY  
PUBLIC WORKS STANDARDS

**STORM DRAIN - SMALL DETENTION BASIN DETAILS**

SHEET:  
**CS-19**  
OF 22 SHEETS

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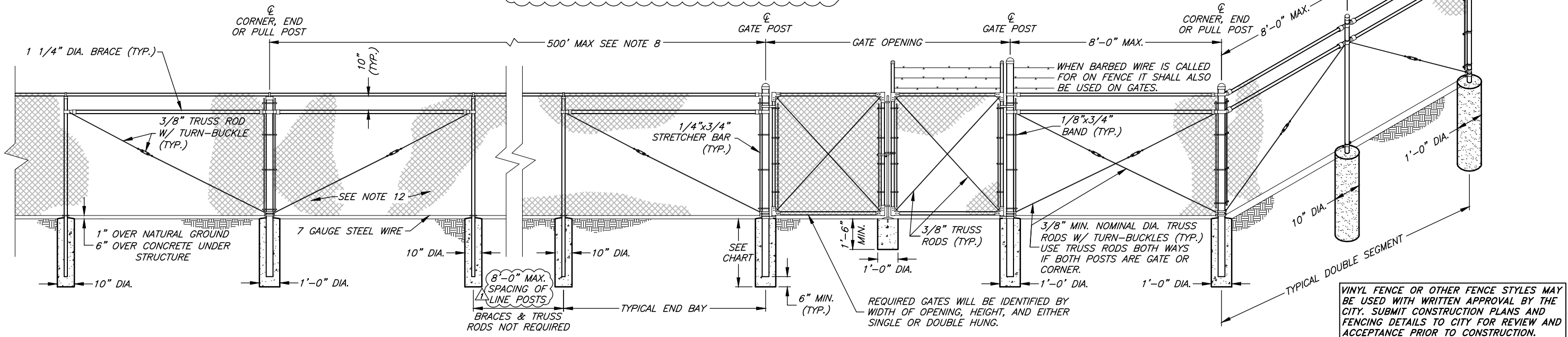


**GENERAL NOTES:**

1. MATERIALS, CONSTRUCTION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH PROJECT STANDARD SPECIFICATIONS.
2. THE TYPE OF TOP SUPPORT IS SPECIFIED IN THE BIDDING SCHEDULE, TYPES I AND II TUBULAR RAIL, TYPES III AND IV TENSION WIRE.
3. BARB WIRE SHALL BE USED ONLY WHEN DESIGNATED ON THE PLANS OR IN THE SPECIFICATIONS.
4. TWISTED AND BARBED SELVAGE TOP AND BOTTOM SHALL BE USED ON FENCES 5- FEET HIGH OR GREATER.
5. KNUCKLED SELVAGE ON TOP AND TWISTED AND BARBED ON BOTTOM SHALL BE USED ON FENCES LESS THAN 5- FEET.
6. ALL STEEL PIPE MEMBERS SHALL CONFORM TO ASTM A53 HOT DIPPED ZINC COATED HIGH TENSILE STEEL PIPE.
7. POSTS SHALL BE SCHEDULE 40 PIPE.
8. LINE POSTS SHALL BE LOCATED AT EQUAL SPACING FOR EACH SEGMENT WITH A MAXIMUM SPACING AS FOLLOWS:
  - a. TANGENT SECTIONS TO 500-FOOT RADIUS NOT MORE THAN 8- FEET.
  - b. UNDER 500-FOOT RADIUS TO 200-FOOT RADIUS NOT MORE THAN 8- FEET.
  - c. UNDER 200-FOOT RADIUS TO 100-FOOT RADIUS NOT MORE THAN 6- FEET.
  - d. UNDER 100-FOOT RADIUS NOT MORE THAN 5- FEET.
9. TRUSS RODS AND BRACES SHALL NOT BE REQUIRED FOR FABRIC HEIGHT LESS THAN 5- FEET.
10. TENSION WIRE SHALL BE 7 GAUGE ZINC- OR ALUMINUM- COATED COIL SPRING STEEL TENSION WIRE.
11. ALL POSTS SHALL BE SET IN 3000 PSI CONCRETE AND SHALL BE TOPPED WITH BALL TYPE OR OTHER APPROVED ORNAMENT.
12. ALL FABRIC SHALL BE 2" GALVANIZED 9 GAUGE MESH.
13. VERTICAL SEMI-PRIVACY VINYL SLATS WITH BOTTOM-LOCKING SLAT, WHEN REQUIRED BY THE CITY. COLOR AS APPROVED BY THE CITY.
14. VINYL COATED CHAINLINK FENCING WHEN REQUIRED BY THE CITY. COLOR AS APPROVED BY THE CITY.
15. ALL FENCING SHALL CONFORM TO LOCATION AND HEIGHT LIMITATIONS AS STATED IN PLEASANT VIEW CITY FENCING ORDINANCE.

HEIGHT	GATE OPENING	GATE POST	GATE FRAME
UNDER 6 FEET	SINGLE TO 6' OR DOUBLE TO 12'	2"	1"
	SINGLE OVER 6' TO 8' OR DOUBLE OVER 12' TO 16'	2 1/2"	1 1/2"
	SINGLE OVER 8' TO 12' OR DOUBLE 16' TO 24'	4"	
6 FEET AND OVER	SINGLE TO 6' OR DOUBLE TO 12'	3 1/2"	
	SINGLE OVER 6' TO 12' OR DOUBLE OVER 12' TO 24'	4"	1 1/2"
	SINGLE OVER 12' TO 18' OR DOUBLE OVER 24' TO 36'	6"	
	SINGLE OVER 18' OR DOUBLE OVER 36'	8"	

HEIGHT OF FABRIC	DEPTH OF POSTS	LENGTH OF END, CORNER OR PULL POST	LENGTH OF LINE POST	SIZE OF POSTS	
				END, CORNER, & PULL POSTS	LINE POST
				NOM. SIZE	NOM. SIZE
7'	3'	10'	9'-8"	2 1/2"	2"
6'	3'	9'	8'-8"	2 1/2"	2"
5'	3'	8'	7'-8"	2"	1 1/2"
4'	3'	6'	5'-8"	2"	1 1/2"
3'	3'	5'	4'-8"	2"	1 1/2"



REV.	DATE	APPR.
1	JAN '19	DQS
ADDED DIMENSION; MODIFIED TABLE & NOTES.		

SCALE:  
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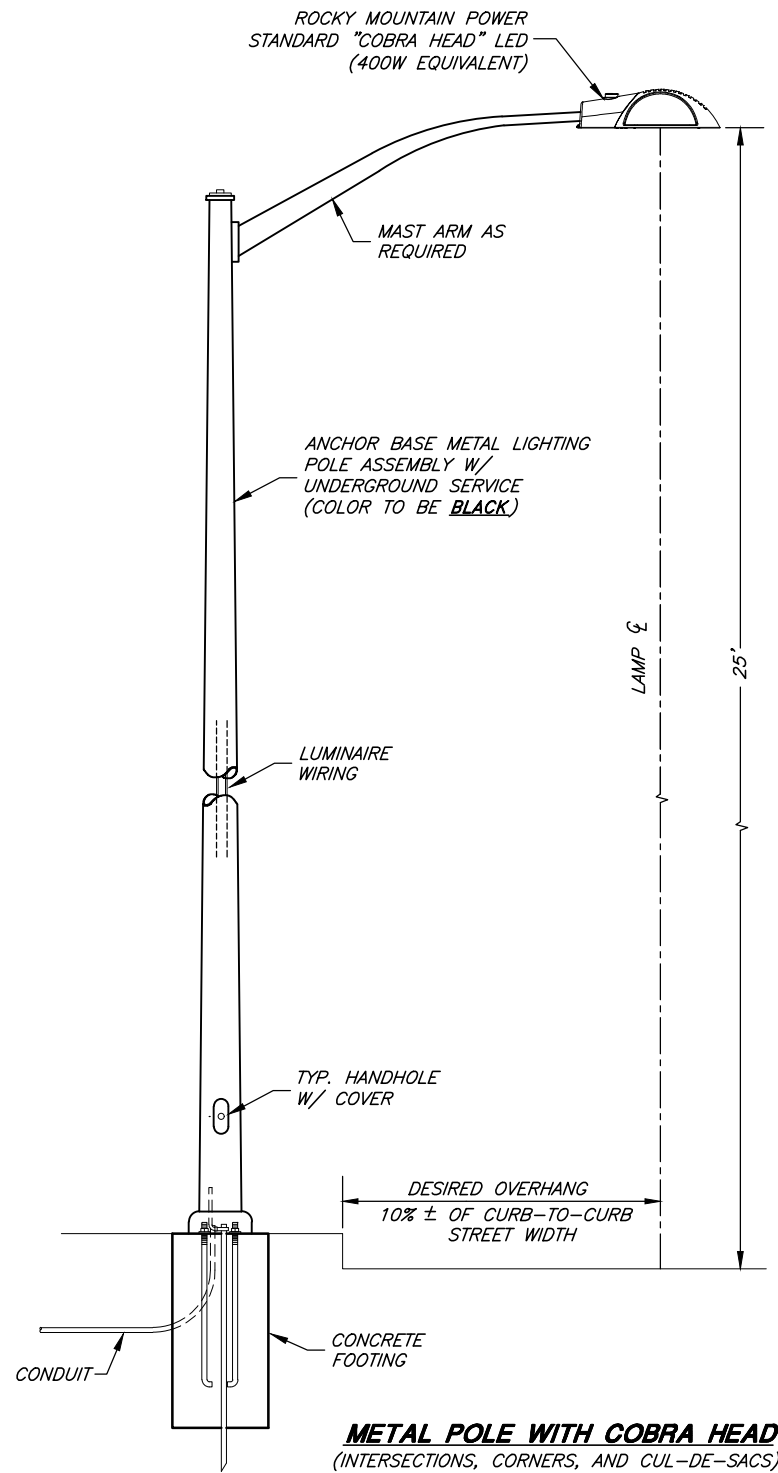


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[www.jonescivil.com](http://www.jonescivil.com)

**PLEASANT VIEW CITY**  
**PUBLIC WORKS STANDARDS**  
**GENERAL - CHAIN LINK FENCE DETAILS**

SHEET:  
**CS-20**  
OF 22 SHEETS

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**ATTENTION**

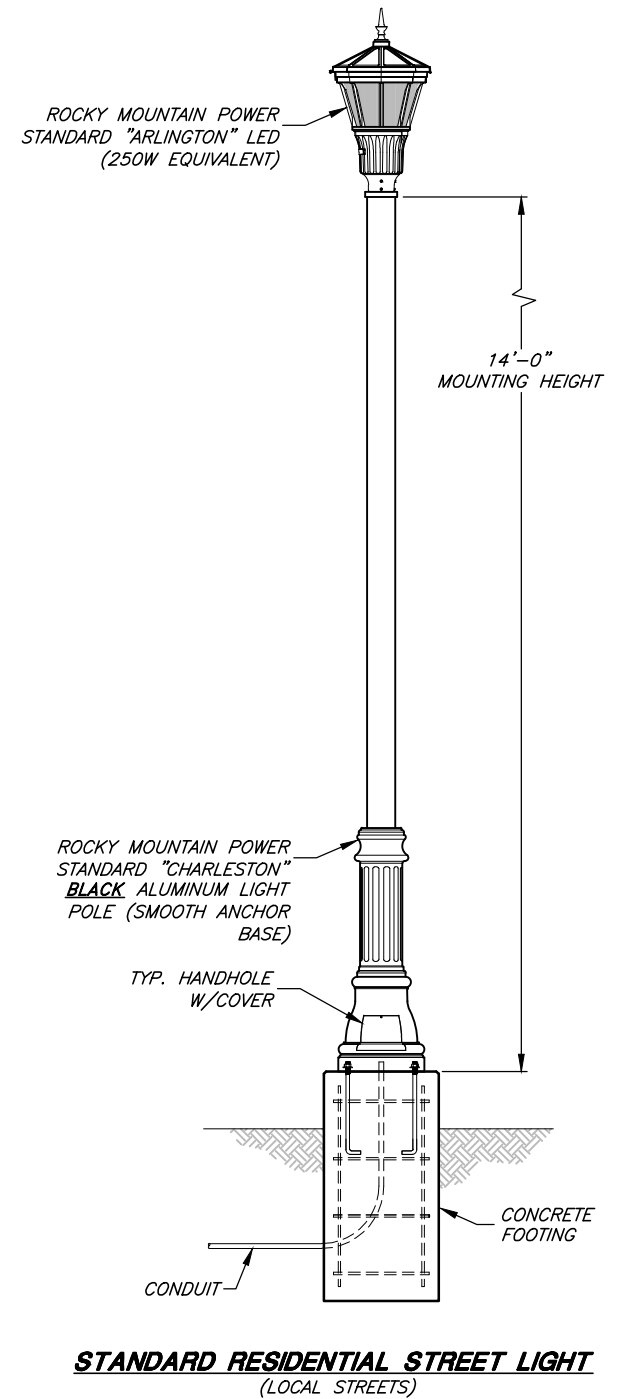
DEVELOPER/CONTRACTOR SHALL NOTIFY ROCKY MOUNTAIN POWER DESIGN OFFICE PRIOR TO LIGHTING INSTALLATION TO ARRANGE FOR POWER TO BE PROVIDED ON SITE, AS WELL AS APPROVAL OF LIGHTING UNIT LOCATIONS AND APPROVAL OF ACTUAL COMPONENT SELECTION.

**ROCKY MOUNTAIN POWER**  
**1-888-221-7070**

ALL FINAL WORK AND MATERIALS TO BE APPROVED BY THE CITY AND THE CITY ENGINEER.

- GENERAL NOTES:**
1. LIGHTS SHOWN ARE ROCKY MOUNTAIN POWER STANDARD STREET LIGHTS. STREET LIGHTS TO BE FURNISHED AND INSTALLED BY ROCKY MOUNTAIN POWER IN ACCORDANCE WITH THEIR REGULATIONS AND SPECIFICATIONS **AND PAID FOR BY THE DEVELOPER/CONTRACTOR.**
  2. FOOTINGS TO BE INSTALLED PER MANUFACTURER/ROCKY MOUNTAIN POWER RECOMMENDATIONS. FOOTINGS SHOULD BE LOCATED WITH THE VERTICAL CENTERLINE 24" BACK FROM THE EDGE OF CURB.
  3. THE DEVELOPER/CONTRACTOR MUST SUBMIT A WRITTEN REQUEST INCLUDING A MAP SHOWING THE LOCATION OF ALL STREET LIGHTS TO THE CITY. THE CITY WILL THEN SUBMIT A STREET LIGHT WORK ORDER TO ROCKY MOUNTAIN POWER.

- SPACING AND LOCATION REQUIREMENTS**
- A. COBRA HEAD STREET LIGHTS MUST BE LOCATED AT ALL INTERSECTIONS, CORNERS, AND CUL-DE-SACS FOR ALL STREET TYPES AT LOCATIONS SHOWN ON APPROVED CONSTRUCTION PLANS.
  - B. STREET LIGHTS MUST BE SPACED AT A MAXIMUM 400 FOOT SPACING AND SHOULD ALTERNATE EACH SIDE OF THE STREET ON THE PROPERTY LINE AT LOCATIONS SHOWN ON APPROVED CONSTRUCTION PLANS.



PROJECT ENGINEER <i>Dana Q. Shuler</i> 1/10/2019 DATE			REV. DATE APPR.		

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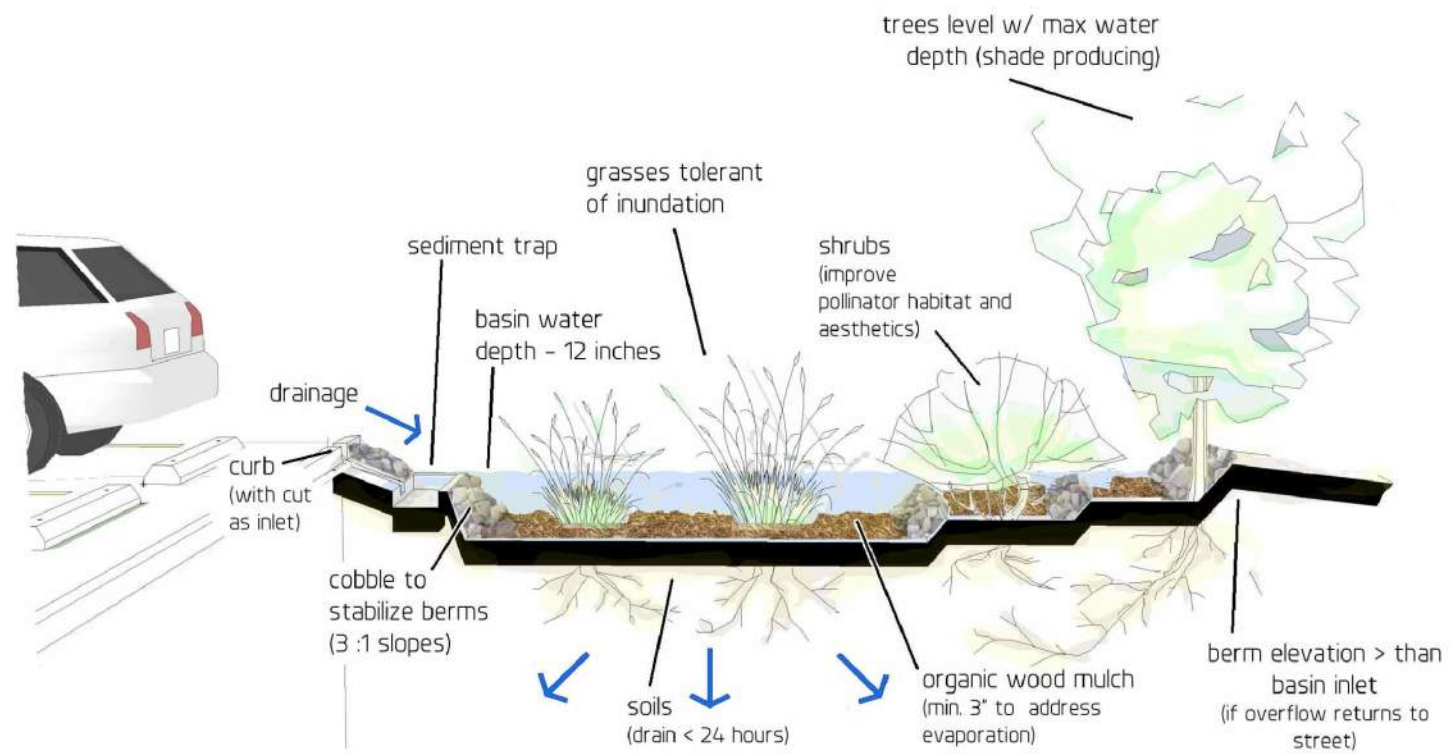
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**PLEASANT VIEW CITY CORPORATION**  
**PUBLIC WORKS STANDARDS**  
**GENERAL - STREET LIGHTING STANDARDS**

SHEET:  
**CS-21**  
OF 22 SHEETS



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### Basic Basin Design Considerations

#### RAIN GARDEN

\*\*\* [http://www.lid-stormwater.net/site\\_map.htm](http://www.lid-stormwater.net/site_map.htm) \*\*\*

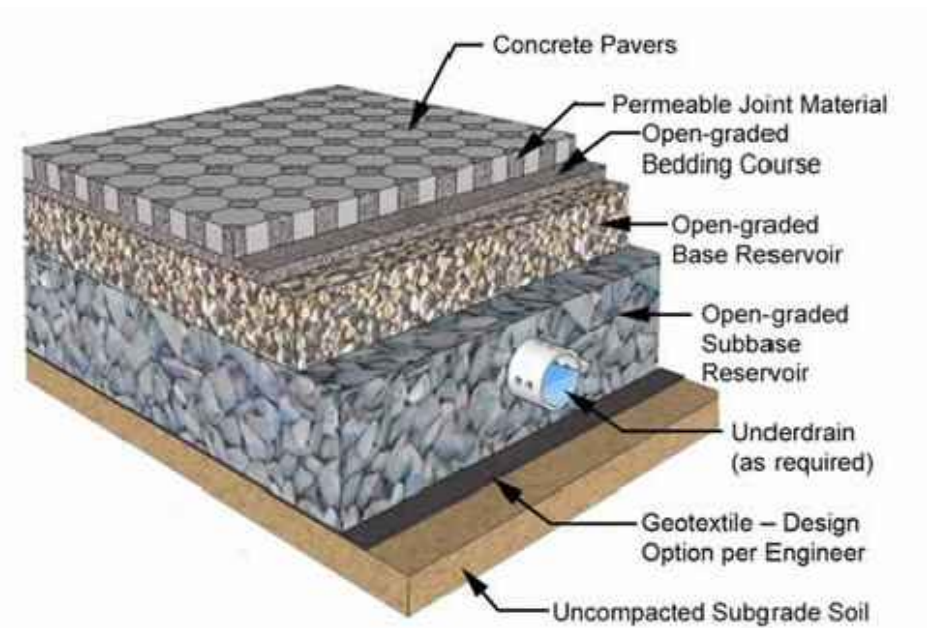
diagram by  
Paul Navrot  
for SUH



#### RAIN BARREL

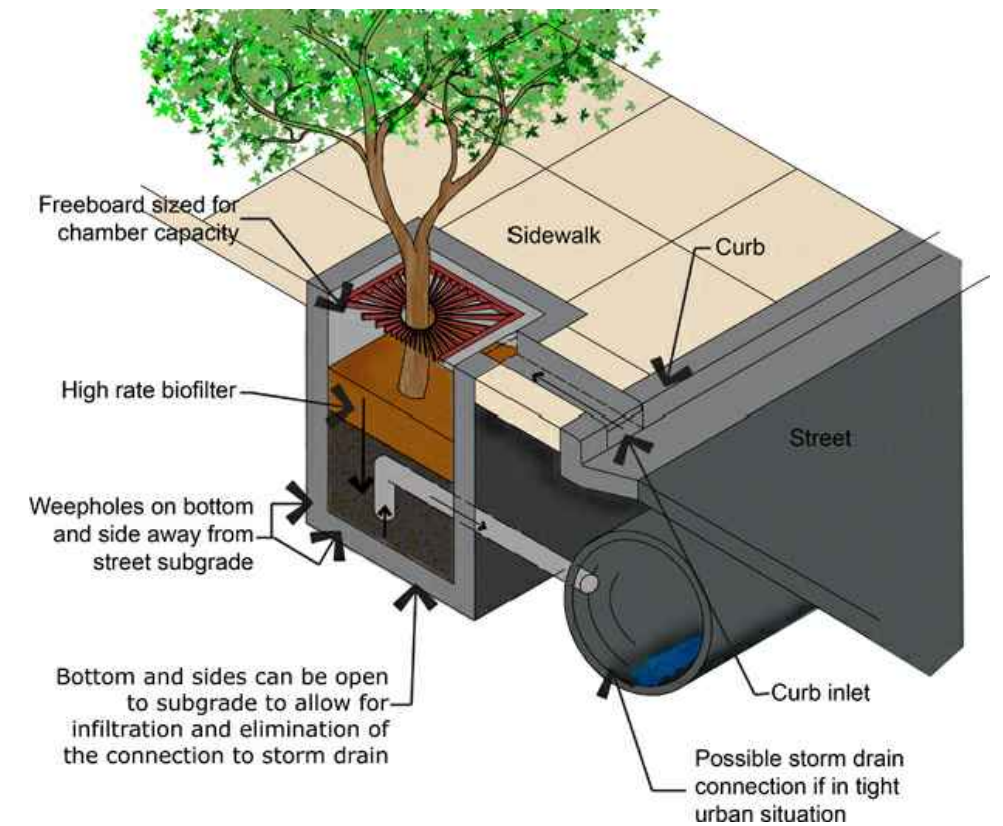
\*\*\* <http://www.goodideasinc.com/products/rain-barrels/rain-wizard-50/> \*\*\*

**DISCLAIMER:**  
ALL LID EXAMPLES SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY. ANY SPECIFIC WEBSITES, COMMERCIAL PRODUCTS, PROCESS OR SERVICE BY TRADE NAME, TRADEMARK, MANUFACTURER, OR OTHERWISE, DOES NOT CONSTITUTE OR IMPLY ITS ENDORSEMENT, RECOMMENDATION, OR FAVORING BY PLEASANT VIEW CITY. THE PURPOSE OF PROVIDING SPECIFIC PRODUCT INFORMATION IS TO ENSURE THAT THE CONTRACTOR AND/OR DEVELOPER HAS ALL THE APPROPRIATE INFORMATION AND REFERENCES TO ASSESS THE USEFULNESS OF THE PRODUCT.



#### PERMEABLE PAVER

From Smith, D. 2006. *Permeable Interlocking Concrete Pavement—selection design, construction and maintenance. Third Edition.* Interlocking Concrete Pavement Institute. Herndon, VA



#### TREE BOX FILTER

From [www.wbdg.org](http://www.wbdg.org)



PROJECT ENGINEER  
Dana Q. Shuler  
1/10/2019  
DATE

REV.	DATE	APPR.

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PUBLIC WORKS STANDARDS

GENERAL - LID (LOW IMPACT DEVELOPMENT) EXAMPLES

SHEET:  
CS-22  
OF 22 SHEETS

