



Public Works Design Standards



December 2023



Introduction

This manual contains standards and requirements for infrastructure under the jurisdiction of Mapleton City Public Works, including streets, storm drain, sewer, culinary water, and pressurized irrigation. This manual shall be used for all private development and public projects performed within Mapleton City jurisdiction. Any variation, substitution or exception to these Public Works Design Standards must be authorized in writing by the Mapleton City Public Works Director or City Engineer.

This manual is divided into the following sections:

PUBLIC WORKS DESIGN STANDARDS - This section contains the criteria design professionals shall use for reports and plan submittals.

PUBLIC WORKS STANDARD PLANS (Supplement to the APWA Utah Chapter Manual of Standard Plans) – Mapleton City adopts the APWA Utah Chapter Manual of Standard Plans for general use within Mapleton. This section contains drawings that Mapleton City has modified, replaced, or added to the APWA Manual.

PUBLIC WORKS STANDARD SPECIFICATIONS (Supplement to the APWA Utah Chapter Manual of Standard Specifications) – Mapleton City adopts the APWA Utah Chapter Manual of Standard Specifications for general use within Mapleton. This section contains specifications that Mapleton City has modified, replaced, or added to the APWA Manual.



PUBLIC WORKS DESIGN STANDARDS

STREETS

Street Location

- A. Incorporate arterial and collector roads shown in the Mapleton Transportation Master Plan. The final plat shall include the dedication of right-of-way, and plans shall show improvements following the applicable City standard plan for the street classification.
- B. Include local streets shown in the Mapleton Transportation Master Plan, and other local streets to access proposed development. The final plat shall include the dedication of right-of-way, and plans shall show improvements following the applicable City standard plan for the street classification.
- C. Proposed streets shall properly align and be compatible with adjacent streets.
- D. The city may require subdivisions to include one or more temporary dead-end streets (stub streets) which extend to the boundary of the subdivision. All such stub streets shall be fully developed to the boundary of the subdivision. Any plan for the subsequent development of the adjacent property shall provide for the continuation of any such stub street. Stub streets shall include a temporary cul-de-sac, turnaround areas, or travel easement to an adjacent street.
- E. Cul-de-sacs shall be discouraged. Cul-de-sacs may be appropriate in cases where the possibility of future adjacent development does not exist due to topography or existing development, where an additional through street would be unnecessary, or other special circumstances as determined appropriate by the DRC. When permitted, permanent cul-de-sacs shall be designed in accordance with the City standard plan. A sidewalk connection may be required through a cul-de-sac to allow for pedestrian connectivity to existing or future adjacent development and/or public streets.

Intersections

- F. Streets shall intersect each other as nearly as possible at right angles. Minor streets shall approach the major or collector streets at an angle of not less than eighty degrees (80°).



- G. Offsets in street alignment between fifteen feet (15') and one hundred fifty feet (150') shall be prohibited.
- H. Curbs at intersections shall be rounded with curves having a minimum radius at the lip of curb of fifteen feet (15') for local-to-local street connections, and twenty-five feet (25') for intersections with collector and arterial streets.
- I. ADA compliant ramps shall be required for sidewalks at all intersections. Ramps shall be designed to cross both intersecting streets, unless otherwise directed by the City Engineer.
- J. Bulb-outs shall be required on minor and major local streets at intersections. See Standard Plans (M-922 and M-923).

Slope

- K. The minimum grade of any street shall be 0.4%.
- L. The maximum grade of any street shall be eight percent (8%), except in rare cases of specific site constraints that has been approved by the City Engineer. In no case shall the City Engineer approve a street grade in excess of twelve percent (12%).
- M. Cross slopes for new streets shall be 2%. Cross slopes for widening and/or adding curb to an existing street shall target 2% cross slope, with the minimum being 1% and maximum being 4%.

Curves

- N. Where the street lines within a block deflect from each other at any one point more than ten degrees (10°), there shall be a connecting curve. The radius of the curve for the street centerline shall be not less than five hundred ten feet (510') for arterial streets, three hundred fifty feet (350') for collector streets, and two hundred feet (200') for local streets.
- O. Vertical curves shall be required at grade changes, using the following minimum K values ($L=KA$, where A = difference in slopes):

	Crest	Sag
35 mph	$K \geq 29$	$K \geq 49$
25 mph	$K \geq 12$	$K \geq 26$



Street names

- P. New street names shall not duplicate those already existing. A street obviously a continuation of another already in existence should bear the same name. Before the street is named, the proposed name must be submitted to and approved by the Community Development Director.

Street Cross Section

- Q. Streets shall be designed and constructed according to the Mapleton City Standard Plan corresponding to the street classification, including the corresponding pavement and right-of-way widths, curb and gutter, planter strips, sidewalk, and easements.
- R. All Mapleton City streets shall be hard surfaced (asphalt) with a minimum of three inches (3") bituminous coat even with the lip of the curb applied over eight inches (8") of untreated road base consistent with the Mapleton City standard plans. The minimum may be increased based on recommendations of the project geotechnical report. In addition, the developer shall be required to pay a fee to be determined by the City Engineer, for a seal coat to be applied one to three years after development. The City will then be responsible for the application of the seal coat.

Secondary Access and Traffic Impacts

- S. Subdivision projects of thirty (30) lots or more shall provide at least two (2) points of vehicular access.
- T. A traffic impact study shall be required for all residential subdivisions of thirty (30) lots or more. A traffic impact study shall be required for all non-residential or mixed uses subdivisions or projects that require fifty (50) parking spaces or more.

Streetlights

- U. Streetlights shall be located at the following locations:
 - 1. Local streets using the rural street section:
 - a. Streetlights not required.
 - 2. Local street using a standard street section:
 - a. One streetlight per intersection.
 - b. Every 600' on longer sections between intersections.



3. Collector streets:
 - a. Two streetlights at intersections, located kitty-corner from each other.
 - b. Every 300' on longer sections between intersections.
4. Off-street trails:
 - a. At street crossings.
 - b. Every 150' using trail lighting.
- V. New residential streetlights within Mapleton City are owned and operated by Rocky Mountain Power. Developments shall use the Mapleton City streetlight standard and show streetlight locations on project plans for City review. Final design and installation shall be coordinated through Rocky Mountain Power. Installation of streetlights shall be required before final inspection can pass for the development.
- W. Streetlights south of 1600 South and west of Main St shall always require concrete bases, due to frequent high winds. Direct bury shall not be allowed.

Signs

- X. Development project shall be responsible to show on project plans and install the following signs:
 1. Street name signs at every intersection
 2. 2-way stop or yield signs at every intersection with a major local, collector, or arterial street.
 3. Pedestrian crossing signs at proposed crosswalks.
 4. No parking signs, if required for the project.
- Y. Signs south of 1600 South and west of Main St shall always require concrete bases, due to frequent high winds. Direct bury shall not be allowed.

Other Applicable Standards

- Z. Where street design standards are not specified herein or in the Mapleton City Municipal Code, street design shall conform to the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) "A Policy on Geometric Design of Highways and Streets." Other published professional standards, such as ITE or NACTO, may be considered at the discretion of the City Engineer.



STORM DRAIN

General Requirements

- A. Each development shall retain and infiltrate the 100-year, 24-hour storm.
- B. Each development shall submit a Drainage Report containing the following information:
 - 1. Description and exhibit of existing site conditions, including:
 - a. Property boundary
 - b. Existing onsite ditches, swales, canals, pipes or other drainage facilities.
 - c. Onsite drainage areas.
 - d. Offsite drainage areas where lands upstream of the site would produce stormwater discharges onto the project site.
 - e. Existing contours labeled.
 - f. Waters of the US or Jurisdictional Wetlands, if applicable.
 - g. FEMA floodplain, if applicable.
 - 2. Description and exhibit of proposed site conditions, including:
 - a. Property boundary.
 - b. Proposed onsite and upstream offsite drainage areas.
 - c. Proposed stormwater facilities, including those to protect the site from upstream discharge, and those to capture and infiltrate the onsite 100-year 24-hour storm.
 - d. Existing and proposed contours labeled.
 - e. Waters of the US or Jurisdictional Wetlands, if applicable.
 - f. FEMA floodplain, if applicable.
 - 3. Description of groundwater conditions at the site, as identified in the Geotech Report (see stormwater related Geotech Report requirements below).
 - 4. Hydrologic calculations showing how the 100-year 24-hour storm was determined.
 - 5. Hydraulic calculations used to verify proposed facilities have sufficient capacity. Identify how infiltration rates were determined from the Geotech report, including what safety factor was applied.
 - 6. Identify who will own and maintain existing and proposed storm water facilities.
- C. Each development disturbing an acre or more shall submit a Storm Water Pollution Prevention Plan.



Street Drainage

- D. Inlets shall be placed on both sides of the street at a distance of no more than 400', when gutter flows are 3 cfs or more, and upstream of every intersection, ADA ramp, and reverse grade driveway.
- E. Double inlets shall be placed at low points of vertical street curves, and at the spacing specified above on streets with 5% or greater slopes.

Pipes

- F. Public storm drain shall be RCP, ADS, or HDPE.
- G. Storm drain shall be sized according to the calculations submitted in the drainage report, and the minimum allowable size shall be 12" for laterals (inlet to manhole) and 15" for main line.
- H. The minimum slope shall be 0.4% to the maximum extent feasible. Where 0.4% is not feasible, the minimum slope shall be equivalent to a full flow velocity of 3 fps.
- I. Storm drain manholes shall be located no further than 400' apart, and at all pipe transitions including changes in direction, elevation, slope, and pipe size.
- J. Normal depth calculations can be used for sizing when calculations show pipes are no more than 75% full. Alternatively, a full hydraulic model including minor losses can be used showing the HGL no higher than 1' below grade.
- K. Public storm drain shall generally be located in public right-of-way. If storm drain cannot be located in the public right-of-way, it shall require a minimum 20' easement.

Open Channels

- L. Open channels shall not generally be allowed in new developments unless required to protect identified jurisdictional waters. When allowed, open channels shall include 1' of freeboard above the 100-year flow.
- M. Maximum permissible velocities of engineered channels shall account for channel materials as follows:
 - 1. Fine sand, colloidal = 1.5 fps
 - 2. Fine gravel = 2.5 fps
 - 3. Course gravel, noncolloidal = 4 fps
 - 4. Large cobbles or unreinforced vegetation = 5 fps
 - 5. Riprap (sizing calculations must be submitted) = 10 fps



- N. A 10' minimum paved maintenance access shall be provided to one side of the open channel. Installation of the paved access shall be required before final inspection can pass for the development. An easement shall be provided from the edge of the maintenance access to 2' beyond the opposite top of channel. The minimum allowable easement shall be 20'.

Retention Systems

- O. Allowable retention and infiltration system shall be as follows:
1. Underground Stormtech or Stormbrixx systems, or approved equivalent engineered systems
 2. Above ground retention ponds
 3. Bioswales and rain gardens
 4. Permeable pavers or concrete in parking lots
 5. Infiltrations sumps
- P. Pretreatment of snouts or equivalent shall be required on all inlets, unless an alternative pretreatment has been approved by the City engineer and shown on the plans. Oil absorbent pillows shall be required in all inlets for developments wholly or partially contained in a Well Protection Zone 2.
- Q. Above ground retention:
1. A minimum of 1' of freeboard shall be provided above the 100-year elevation.
 2. Side slopes shall be 2H:1V or flatter for ponds 2' or shallower total depth (including freeboard), and 3H:1V or flatter for ponds above 2' total depth.
 3. Regular maintenance of vegetation within the pond shall be the responsibility of the property owner. The City will maintain pipes, sumps, and other concrete structures.
- R. Public retention systems not located within City right-of-way shall be located adjacent to a street or other publicly accessible paved area. Public retention systems shall not be located in backyards, nor in areas enclosed by private fences.
- S. Retention systems shall have paved access to outfalls, manholes, sumps, and/or other structures that will be the City's responsibility to maintain. Installation of the paved access shall be required before final inspection can pass for the development.
- T. Emergency overflow of the retention system shall be provided for the event that the retention facility plugs or otherwise fails. The emergency overflow shall be designed such that overflows can continue downstream of the development to a



City right-of-way, channel, or storm drain system without flooding homes, buildings, or adjacent properties.

FEMA Floodplains

U. See Chapter 15.44 Flood Damage Prevention, Mapleton City Code.

Geotech for Stormwater and Groundwater

- V. A project's Geotechnical Report shall include the following to analyze groundwater at the site:
1. Test pits and borings shall extend to at least 3 feet below the bottom of proposed finished floors (including basements) and retention/infiltration facilities.
 2. Elevations for test pits and borings shall be consistent with benchmarks established for the project throughout design and construction. Data shown only as "XX.X feet below existing" without identifying the actual elevations based the project benchmark is not adequate.
 3. Mapleton City maintains groundwater observation wells within the south-central and western areas of the city. Data from 2014 onward can be found on the Mapleton Public Works website under GIS Data or Stormwater>GIS Data. If no identifying features of a high-water mark can be found during the project geotechnical analysis, historic groundwater fluctuations at the City wells should be compared to project groundwater readings to estimate the high groundwater and establish minimum finished floor elevations and the bottom of infiltration systems. Minimum finished floor elevations shall be no lower than 3-feet above estimated high groundwater, and infiltration systems shall be no lower than 2-feet above estimated high groundwater.
 4. If the Geotech believes groundwater fluctuations at the city wells do not apply to a certain project, the project geotechnical report should address the reasons why the site is different and what observations were made to estimate high groundwater elevations. Projects within known or suspected high groundwater areas disputing the comparison to historic City well data may be required to complete a 1-year groundwater analysis, at the discretion of the City Engineer. Project groundwater observations shall include piezometer readings at least every two weeks during spring runoff and irrigation season (if in the vicinity of irrigated fields), and at least monthly the remainder of the year. Readings from 1-year study shall be compared to readings at the City wells during that same



- period to evaluate whether historic groundwater fluctuations at City wells should apply or not.
5. Areas outside of known or suspected high groundwater may have the 1-year study waived, at the discretion of the City Engineer. Test pits and borings for these projects shall still extend 3 feet below the bottom of proposed finished floors and retention/infiltration facilities. If no groundwater or visual indication of historic groundwater is observed, minimum finished floor elevations shall be no lower than 3-feet above the bottom of the test pit, and infiltration systems shall be no lower than 2-feet above the bottom of the test pit.
- W. Because Mapleton City's stormwater requirements include retention and infiltration, Geotech Reports shall include an analysis of measured permeability rate for the existing in-situ soil, and a design permeability rate using a safety factor of at least 2 to account for plugging, siltation, and the creation of biofilms over time. For example, if the measured permeability is 2 in/hr, the design infiltration rate for the retention/infiltration systems shall be no more than 1 in/hr.

SANITARY SEWER

Size and Material

- A. Sanitary sewer shall be green SDR-35 pipe. Minimum size for sewer main is 8" diameter. Size for trunklines shall conform to the Mapleton City Wastewater Master Plan.
- B. Smaller main lines (up to 15") shall be sized to be no more than 50% full. Trunk lines (18" and above) shall be sized to be no more than 75% full.

Slopes

- C. The minimum slope of sanitary sewer shall be the following:

Sewer size	Minimum Slope
8"	0.40%
10"	0.28%
12"	0.22%
15"	0.15%
18"	0.12%
21" and above	0.10%



- D. Sewer mains may not be upsized for the purpose of achieving a flatter slope unless calculations are provided by the engineer showing the system will have a minimum velocity of no less than 2.0 fps.
- E. The upstream segments of 8" mains may be required to be placed at 1% min. slope if there is not sufficient flow to provide adequate scour velocity.
- F. Slopes above 5% will require additional flow and velocity calculations to determine if additional requirements are needed to prevent hazardous conditions.

Vertical and Horizontal Alignment

- G. Top of sewer shall be at least 18" below bottom of culinary water lines, and at least 4' below the ground surface.
- H. Sewer shall be a minimum of 10' horizontally from culinary water lines, measured outside of pipe to outside of pipe.
- I. Sewer pipes shall not intersect at an angle greater than 90°.

Manholes

- J. Sewer manholes design shall follow Mapleton City Standard Plan M-411.
- K. Sewer manholes shall be placed no more than 400' apart.
- L. Sewer manholes shall have a minimum 4' inner diameter. Minimum 5' inner diameter shall be required for manholes with 3 or more pipe connection 8" or above (such as the junction of two mainlines), manholes over 15' deep, or where the manhole has an invert drop of 1 foot or greater.

Laterals and pretreatment

- M. Single family residential structures shall be serviced from separate laterals.
- N. Standard lateral size is 4" for single family residential, or common laterals serving 5 or fewer Equivalent Residential Units.
- O. Minimum lateral size for all other uses is 6".
- P. Minimum slope for a sewer lateral is 2%. 6" laterals having a slope no less than 1% may be approved by the City Engineer, if the design engineer provides calculations showing the capacity is adequate based on calculated project flows, and the sewer is in front of the property it services and does not cross other properties.
- Q. Lateral tie-ins shall be according to Utah APWA Standard Plan 431. Tie-ins at manholes shall be no higher than the top of the mainline and shall have a trough to the mainline trough.



- R. Because the Mapleton City sewer discharges to the sewer treatment plant in Spanish Fork, the pretreatment program is administered by Spanish Fork. All non-residential (commercial, industrial, etc.) users are required to submit a Pretreatment Questionnaire to Spanish Fork Public Works to determine the need for pretreatment such as a grease trap or sand/oil separator. A link to the questionnaire can be found on Spanish Fork's website under Pretreatment Regulations. Pretreatment shall be sized according to the current Uniform Plumbing Code (UPC).

CULINARY WATER

Size and Material

- A. Culinary water system mains shall be sized as shown in Mapleton City's Master Plan. For local mains not shown in the Master Plan, the State of Utah Minimum Sizing Requirement (R309-510) shall be used, within the minimum allowable main being 8-inches.
- B. All projects proposing culinary water main or connections shall submit plans to the City's water modeling consultant for analysis, to be paid at the developer's expense. Contact Public Works for contact information.
- C. Culinary water systems under 16" shall be specified as Blue C900 DR18 (235 PSI) PVC. Culinary water systems 16" and above shall be Ductile Iron AWWA C600.
- D. Culinary water mains shall be installed with identification tape following the product requirements of Utah APWA Specification 33 05 20, buried at the top of the imported back fill 18" above the pipe.

Vertical and Horizontal Alignment

- E. A minimum of 4' and maximum of 5' of cover shall be provided for all culinary water pipes. Cover may exceed 5' only where necessary to avoid conflicts with other utilities.
- F. Minimum horizontal spacing between culinary water and sanitary sewer is 10', per Utah Code. The minimum spacing from other utilities is 3' (outside to outside of pipe), to leave space between utilities for repairs without undermining adjacent utilities.



- G. Where water lines must cross sewer lines, 18" of clearance must be maintained between the bottom of the water line and top of the sewer, per Utah Code.
- H. Minimum radius shall follow manufacturer's recommendations to ensure maximum deflection is not exceeded. Joint restraints and thrust blocks shall be provided at hard bends. Follow Mapleton City thrust block standard drawing.
- I. Developments shall provide looping (redundancy) for their entire project.
- J. In residential subdivisions, water mains shall be located in the street. Water mains not located in the public right-of-way shall be located within a minimum 20' easement.

Valves

- K. A cluster of valves (one each direction) shall be provided at every junction (3 for tees, 4 for crosses) of the main. No hot taps allowed.
- L. Valves up to 12" shall be resilient seated gate valves. Valves above 12" shall be butterfly valves.
- M. Concrete collars shall be provided for all valves. Follow Mapleton City water valve standard drawing.

Services and meters

- N. The minimum service and meter size shall be 1". Follow Mapleton City standard drawings for water service connections.
- O. Meter boxes shall be located outside of sidewalks and driveways. If location in a driveway is unavoidable, box and lid must be traffic rated.
- P. Private booster pumps shall not be allowed.
- Q. Fire flow pipes shall connect to the main separately from the services.

Fire Hydrants

- R. Provide minimum fire flow required by the Uniform Fire Code for proposed structures. Submit fire suppression plans to the Fire Chief for review and approval.
- S. The maximum allowable spacing between fire hydrants is 500' (250' from buildings). Fire hydrants shall also be placed at the end of cul-de-sacs or other dead-end streets, and every 1000' on offsite transmission lines.



- T. Fire hydrants shall be located at property lines to the maximum extent feasible.
- U. The “foot valve” for fire hydrants shall be placed at the tee, not next to the hydrant. Follow Mapleton City fire hydrant connection standard drawing.

Air Relief Valves

- V. Air-vacuum valve stations shall be placed at high points on transmission lines and at other locations as required for proper system operation.
- W. Air-vacuum valve station venting shall be located in a landscaped area near the edge of right-of-way (ROW).

PRESSURIZED IRRIGATION (SECONDARY WATER)

Size and Material

- A. Pressurized irrigation mains shall be sized as shown in Mapleton City’s Master Plan. For local mains not shown in the Master Plan, the minimum allowable main shall be 8-inches.
- B. All projects proposing pressurized irrigation main or connections shall submit plans to the City’s water modeling consultant for analysis, to be paid at the developer’s expense. Contact Public Works for contact information.
- C. Pressurized irrigation systems shall be specified as Purple C900 DR18 (235 PSI) PVC.
- D. Pressurized irrigations mains shall be installed with identification tape following the product requirements of Utah APWA Specification 33 05 20, buried at the top of the imported back fill 18” above the pipe.

Vertical and Horizontal Alignment

- E. A minimum of 4’ and maximum of 5’ of cover shall be provided for all culinary water pipes. Cover may be reduced to 30” only where necessary to avoid conflicts with other utilities.
- F. The minimum spacing from other utilities shall be 3’ (outside to outside of pipe), to leave space between utilities for repairs without undermining adjacent utilities.



- G. Minimum radius shall follow manufacturer's recommendations. Joint restraints or thrust blocks shall be provided at hard bends. Follow Mapleton City thrust block standard drawing.
- H. Developments shall provide looping (redundancy) for their entire project.
- I. In residential subdivisions, pressurized irrigation mains shall be located in the street. Mains not located in the public right-of-way shall be located within a minimum 20' easement.

Valves

- J. A cluster of valves (one each direction) shall be provided at every junction (3 for tees, 4 for crosses) of the main.
- K. Valves up to 12" shall be resilient seated gate valves. Valves above 12" shall be butterfly valves.
- L. Concrete collars shall be provided for all valves. Follow Mapleton City water valve standard drawing.

Services and meters

- M. The minimum service and meter size shall be 1" for residential connections. Follow Mapleton City standard drawings for secondary irrigation service connections.
- N. Meter boxes shall be located outside of sidewalks and driveways. If location in a driveway is unavoidable, box and lid must be traffic rated.
- O. Private booster pumps shall not be allowed.

Air Relief Valves

- P. Air-vacuum valve stations shall be placed at high points on transmission lines and at other locations as required for proper system operation.
- Q. Air-vacuum valve station venting shall be located in a landscaped area near the edge of right-of-way (ROW).

Drain Lines

- S. 2" minimum drain lines shall be provided to storm drain inlets at every low point in the PI system. At least one drain line shall be provided in every development.



PUBLIC WORKS STANDARD PLANS



Preface

Mapleton City has adopted the APWA Utah Chapter Manual of Standard Plans for general use within Mapleton. However, in some cases the City has either modified or replaced the APWA Standard Plan, and in other cases the City has added a drawing for items not fully addressed in the APWA Standard Plans.

This document serves to detail the standard plans that shall be used within Mapleton City. The Table of Contents lists the adopted standard plans, including which ones are adopted from the APWA Manual of Standard Plans (indicated by the APWA plan #) and which ones have been modified or added (generally following the APWA plan numbering, but with an “M” indicating Mapleton City has modified or added it). Standard Plans that Mapleton City has modified, replaced, or added are included with this document. The APWA Utah Chapter Manual of Standard Plans is available for purchase on the APWA Utah Chapter website (utah.apwa.net).

The Table of Contents also includes a “Do Not Use” indication for some APWA plans. These indicate items that generally will not be permitted within Mapleton City. Exceptions may be made in rare circumstances, and only after explicit written consent by the City Engineer or his/her designee.



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Pipe pass through base.....	APWA Plan 341.2
Concrete deck.....	APWA Plan 345
Raise frame to grade	
Grade ring.....	APWA Plan 360.1
Plastic form.....	APWA Plan 360.2
Cover collar for storm drains.....	APWA Plan 362
Infiltration sump.....	<i>Mapleton City Plan M-363</i>
Piping	
Area drain.....	APWA Plan 372
Concrete pier.....	APWA Plan 373
Trenching	
Trench backfill.....	<i>Mapleton City Plan M-255</i>
Pipe zone backfill.....	<i>Mapleton City Plan M-255</i>

PART 4 – SANITARY SEWER

Abbreviations and Symbols

Abbreviations and symbols for sewer.....	APWA Plan 401
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Manholes and hardware

30" Frame and cover.....	APWA Plan 402
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Sanitary sewer manhole.....	APWA Plan 411
Invert cover.....	APWA Plan 412
Cover collar for sanitary sewer manhole.....	APWA Plan 413

Piping

Sewer lateral connection.....	APWA Plan 431
Sewer lateral relocation.....	APWA Plan 432
Pipe drop.....	APWA Plan 433

Liquid Separation Systems

Grease trap.....	APWA Plan 441
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Trenching..... *Mapleton City Plan M-255*

PART 5 – WATER SYSTEMS

Abbreviations and Symbols

Abbreviations and symbols for water.....	APWA Plan 501
--	---------------

Concrete boxes and hardware

27" Frame and cover.....	APWA Plan 502
38" Frame and double cover.....	APWA Plan 503
Concrete meter boxes.....	APWA Plan 505

Fire Hydrants

Fire hydrant with valve.....	<i>Mapleton City Plan M-511</i>
------------------------------	---------------------------------

Meters

1" culinary water service connection.....	<i>Mapleton City Plan M-521</i>
1 ½" and 2" culinary water service connection.....	<i>Mapleton City Plan M-522</i>
3" and 4" compound meter with 2" bypass.....	<i>Do Not Use</i>
6" compound meter with 2" bypass.....	<i>Do Not Use</i>
8" compound meter with 2" bypass.....	<i>Do Not Use</i>
10" Turbo meter with 6" turbo meter and 2" bypass.....	<i>Do Not Use</i>
Pressurized irrigation service connection.....	<i>Mapleton City Plan M-530</i>
Pressurized irrigation service meter.....	<i>Mapleton City Plan M-531</i>

Monitoring Systems

Electrolysis monitoring station details.....	APWA Plan 535
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Piping

Water service line.....	APWA Plan 541
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Water service line loop.....	APWA Plan 542
Water main loop	
Style A.....	APWA Plan 543.1
Style B, C.....	APWA Plan 543.2
Fire hydrant replacement or relocation.....	APWA Plan 546
¾" and 1" Service taps.....	APWA Plan 551
1 ½" and 2" Service taps.....	APWA Plan 552

Thrust Blocks

Direct bearing thrust block.....	Mapleton City Plan M-561
Tie-down thrust restraints.....	APWA Plan 562

Trenching.....Mapleton City Plan M-255

Valves

4" Washout valve.....	Do Not Use
Detector check valve with ¾" bypass meter.....	Do Not Use
6" Pressure reducing valve with 2" bypass.....	Mapleton City Plan M-573
Water valve.....	Mapleton City Plan M-574
Air release assembly.....	APWA Plan 575

General

Pressurized irrigation water and potable water interface	
Type A – pump interconnect.....	APWA Plan 593.1
Type B – backflow preventer interconnect.....	APWA Plan 593.2

PART 6 – IRRIGATION AND LANDSCAPING

Abbreviations and Symbols

Abbreviations and symbols for irrigation and landscaping.....	APWA Plan 601
---	---------------

Gravity flow system

Curb face inlet – irrigation.....	APWA Plan 611
Irrigation diversion box.....	APWA Plan 613
Irrigation diversion box.....	APWA Plan 614

Heads

Stationary head.....	APWA Plan 621
Pop-up head.....	APWA Plan 622

Valves

Backflow preventer	
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Less than 3 inches.....	APWA Plan 631.1
3 Inches and larger.....	APWA Plan 631.2
Drain valve.....	APWA Plan 632
Control valve.....	APWA Plan 633
Isolation valve.....	APWA Plan 635

Electrical

Wire runs for landscape irrigation.....	APWA Plan 651
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Trees and Plants

Tree.....	APWA Plan 681
Shrubs and bushes.....	APWA Plan 683

PART 7 – LIGHTING, TRAFFIC CONTROL

Street Lighting

Abbreviations and symbols for traffic signals.....	APWA Plan 702
Riser.....	APWA Plan 710
Collar for street light pole.....	APWA Plan 730
Junction box.....	APWA Plan 731
Trench for buried electrical conduit	
Park strip.....	APWA Plan 732.1
Roadway.....	APWA Plan 732.2
Joint use trench.....	APWA Plan 733
Street light pole terminal.....	APWA Plan 736
Street light meter pedestal.....	APWA Plan 737
Screw-in base street light pole.....	APWA Plan 741
Direct burial street light pole.....	APWA Plan 742
Concrete base for street light pole.....	APWA Plan 743

Signals

Signal pole foundation.....	APWA Plan 751
Signal pole wiring.....	APWA Plan 752
Signal light head	
Types and drawing symbols.....	APWA Plan 753.1
Placement.....	APWA Plan 753.2
Signal cabinet base	
Type 5.....	APWA Plan 754.1
Type 6.....	APWA Plan 754.2
Pedestrian push button pole.....	APWA Plan 755



Speed humps

Speed bump.....	<i>Do Not Use</i>
Speed table.....	APWA Plan 762

PART 8 – GENERAL FACILITIES

Design Standards

Defective concrete.....	APWA Plan 802
Design vehicle	
Type A.....	APWA Plan 805.1
Type B.....	APWA Plan 805.2

Security Fencing

Chain link fence.....	APWA Plan 832
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Miscellaneous

Bus stop pad.....	APWA Plan 880
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PART 9 – STREET DESIGN

Typical Street Sections

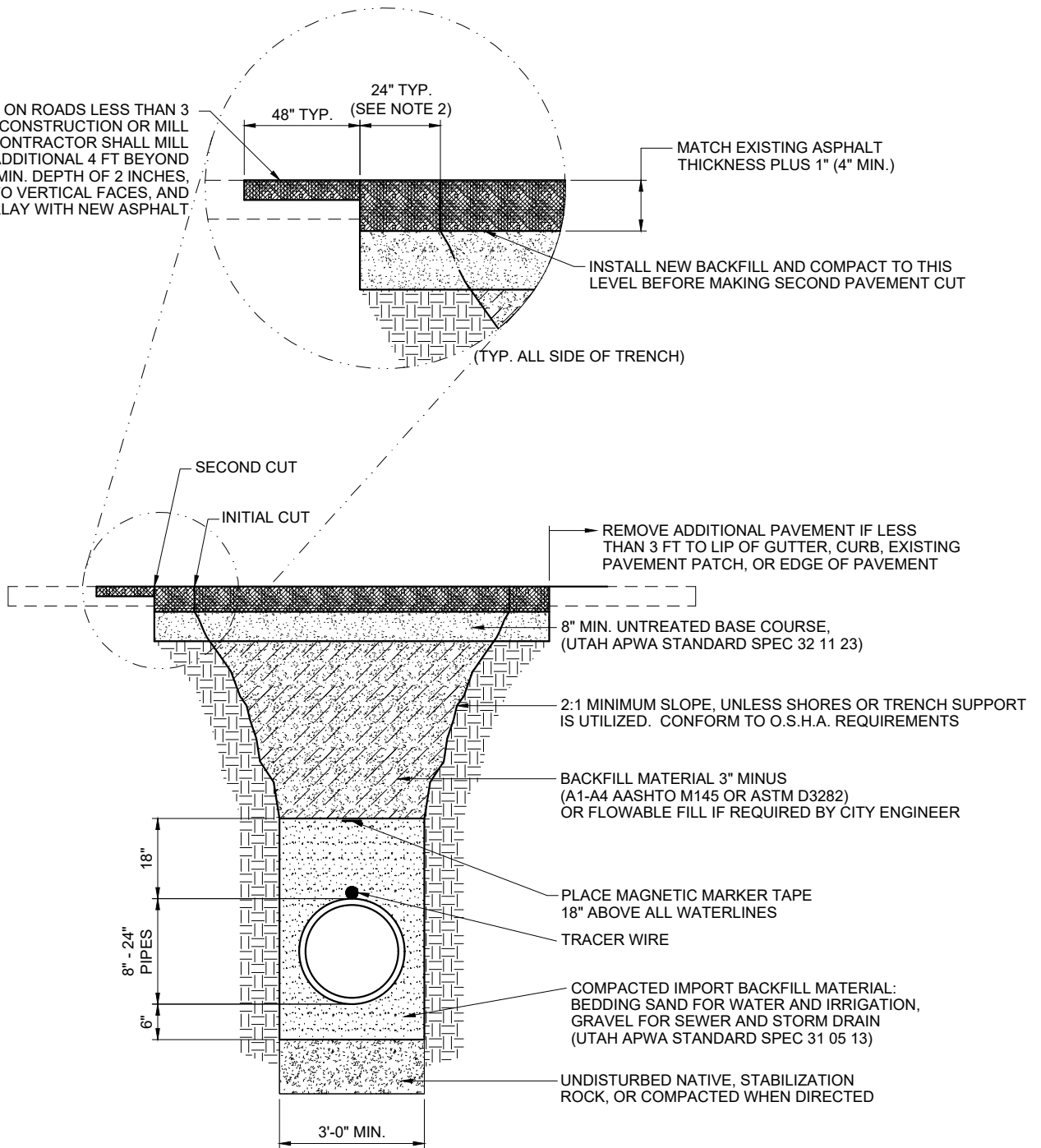
Local and collector streets.....	<i>Mapleton City Plan M-901</i>
UDOT roads.....	<i>Mapleton City Plan M-902</i>
Hillside local and country lane.....	<i>Mapleton City Plan M-903</i>
Pavement section and utility location.....	<i>Mapleton City Plan M-910</i>

Street design

Local-to-local street intersection.....	<i>Mapleton City Plan M-921</i>
Local-to-collector street intersection.....	<i>Mapleton City Plan M-922</i>
Cul-de-sac.....	<i>Mapleton City Plan M-931</i>

END OF CONTENTS

FOR TRENCHES ON ROADS LESS THAN 3 YEARS AFTER NEW CONSTRUCTION OR MILL AND OVERLAY, CONTRACTOR SHALL MILL TRENCH AREA AN ADDITIONAL 4 FT BEYOND THE SECOND CUT, A MIN. DEPTH OF 2 INCHES, APPLY TACK COAT TO VERTICAL FACES, AND OVERLAY WITH NEW ASPHALT



NOTES:

1. NO SAW CUTS TO END UP IN THE WHEEL PATH.
2. IF PAVEMENT IS LESS THAN 1 YR OLD, REPLACE ASPHALT ACROSS FULL WIDTH OF PAVEMENT.
3. WRAP ALL DUCTILE IRON PIPE WITH 8 MIL. THICK POLYETHYLENE SHEET AND TAPE. APPLY POLY-FM GREASE TO ALL METAL FITTINGS.

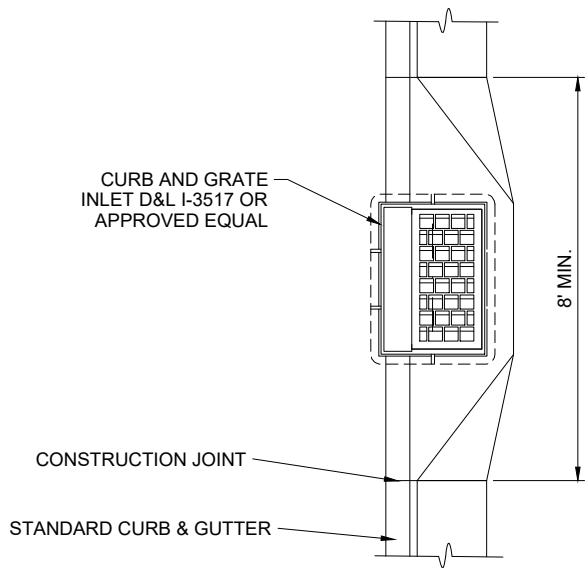


MAPLETON STANDARD PLANS
TRENCH CROSS SECTION

STD. PLAN NO.

M-255

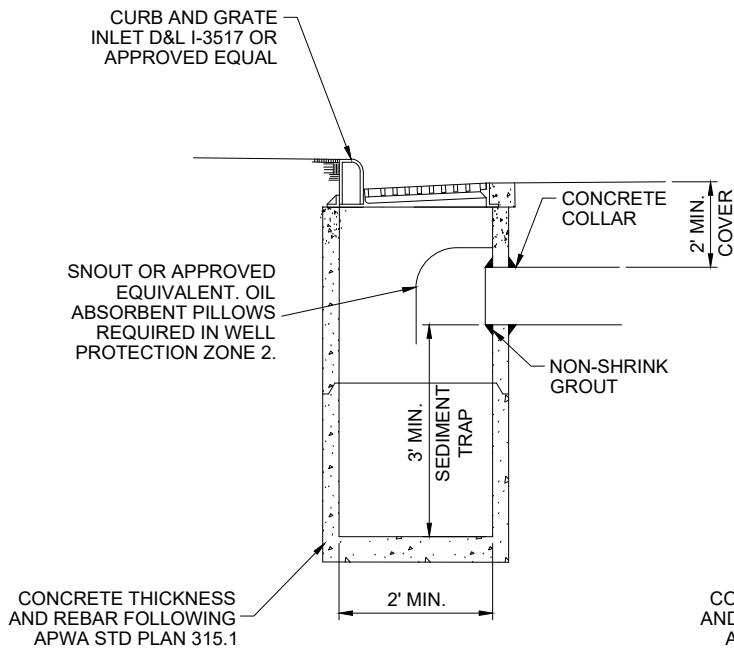
Sheet 1 of 1



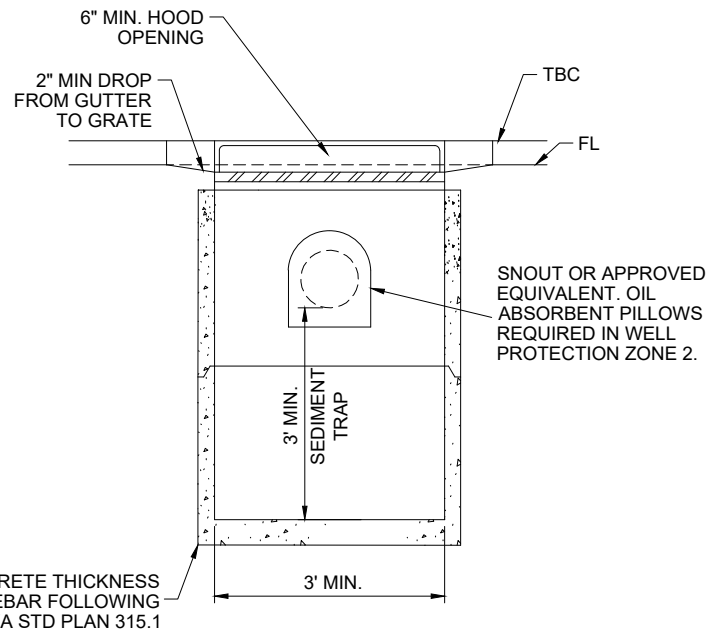
PLAN

NOTES:

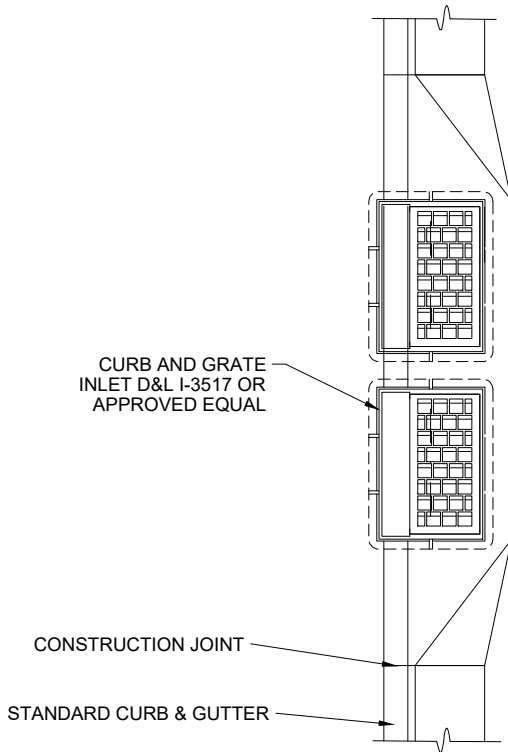
1. CONCRETE AND STEEL REINFORCEMENT PER APWA STANDARD PLAN 315.1.
2. BOXES AND FRAMES MUST SUPPORT HS-20 LOADS.
3. REFER TO APPROVED PLAN SET FOR PIPE SIZE AND LOCATIONS.
4. A SNOOT WITH MIN. 36" SEDIMENT TRAP IS REQUIRED AT EVERY INLET UNLESS ALTERNATE TREATMENT PLAN HAS BEEN APPROVED AND SHOWN IN PLANS. AN ATTACHED OIL ABSORBENT PILLOW IS REQUIRED IN WELL PROTECTION ZONE 2.



SIDE ELEVATION



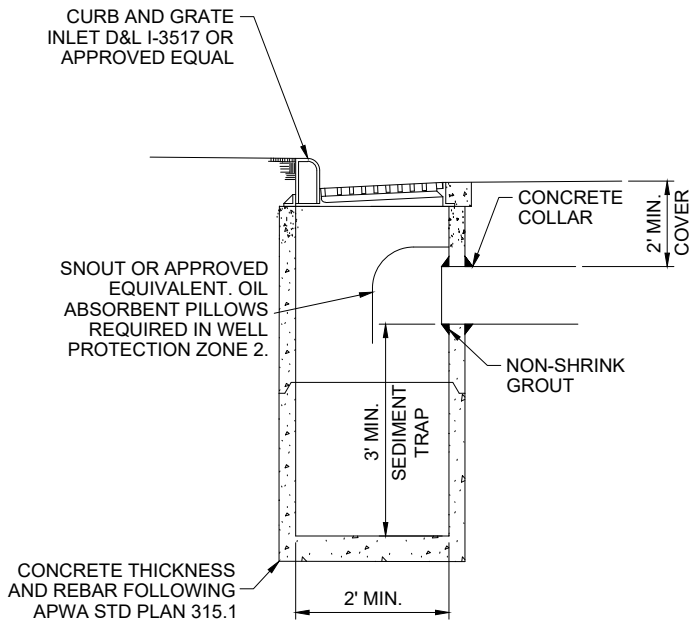
FRONT ELEVATION



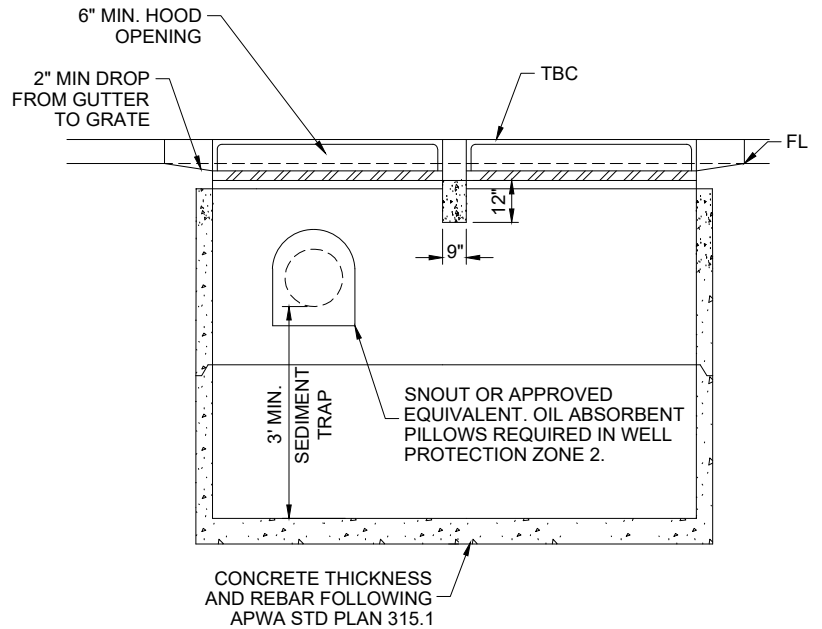
PLAN

NOTES:

1. CONCRETE AND STEEL REINFORCEMENT PER APWA STANDARD PLAN 315.2.
2. BOXES AND FRAMES MUST SUPPORT HS-20 LOADS.
3. REFER TO APPROVED PLAN SET FOR PIPE SIZE AND LOCATIONS.
4. A SNOOT WITH MIN. 36" SEDIMENT TRAP IS REQUIRED AT EVERY INLET UNLESS ALTERNATE TREATMENT PLAN HAS BEEN APPROVED AND SHOWN IN PLANS. ATTACHED OIL ABSORBENT PILLOWS ARE REQUIRED IN WELL PROTECTION ZONE 2.



SIDE ELEVATION



FRONT ELEVATION



MAPLETON STANDARD PLANS

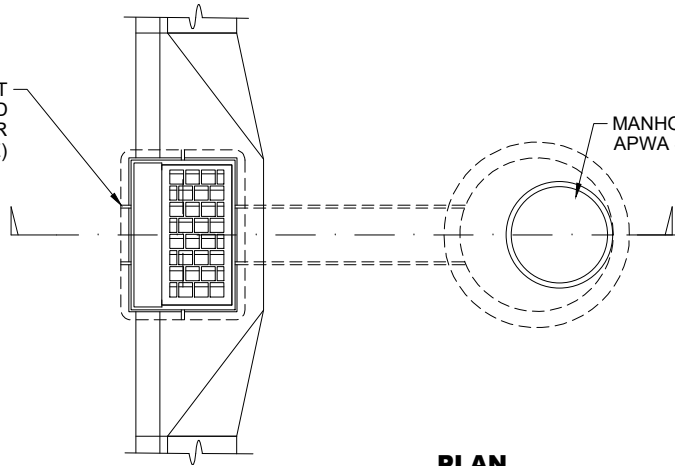
CATCH BASIN
DOUBLE GRATE

STD. PLAN NO.

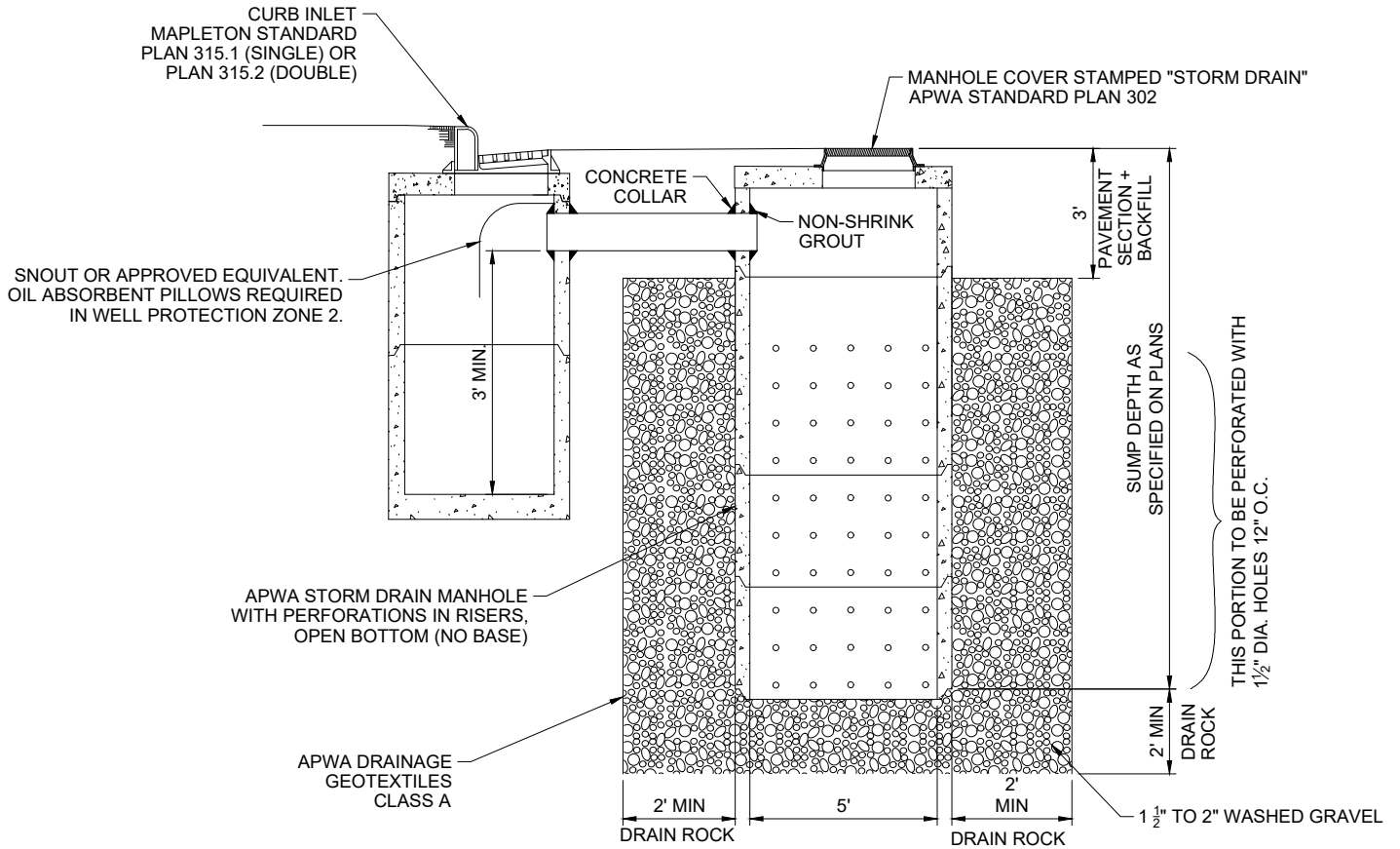
M-315.2

Sheet 1 of 1

CURB INLET
MAPLETON STANDARD
PLAN 315.1 (SINGLE) OR
PLAN 315.2 (DOUBLE)



PLAN



CROSS SECTION



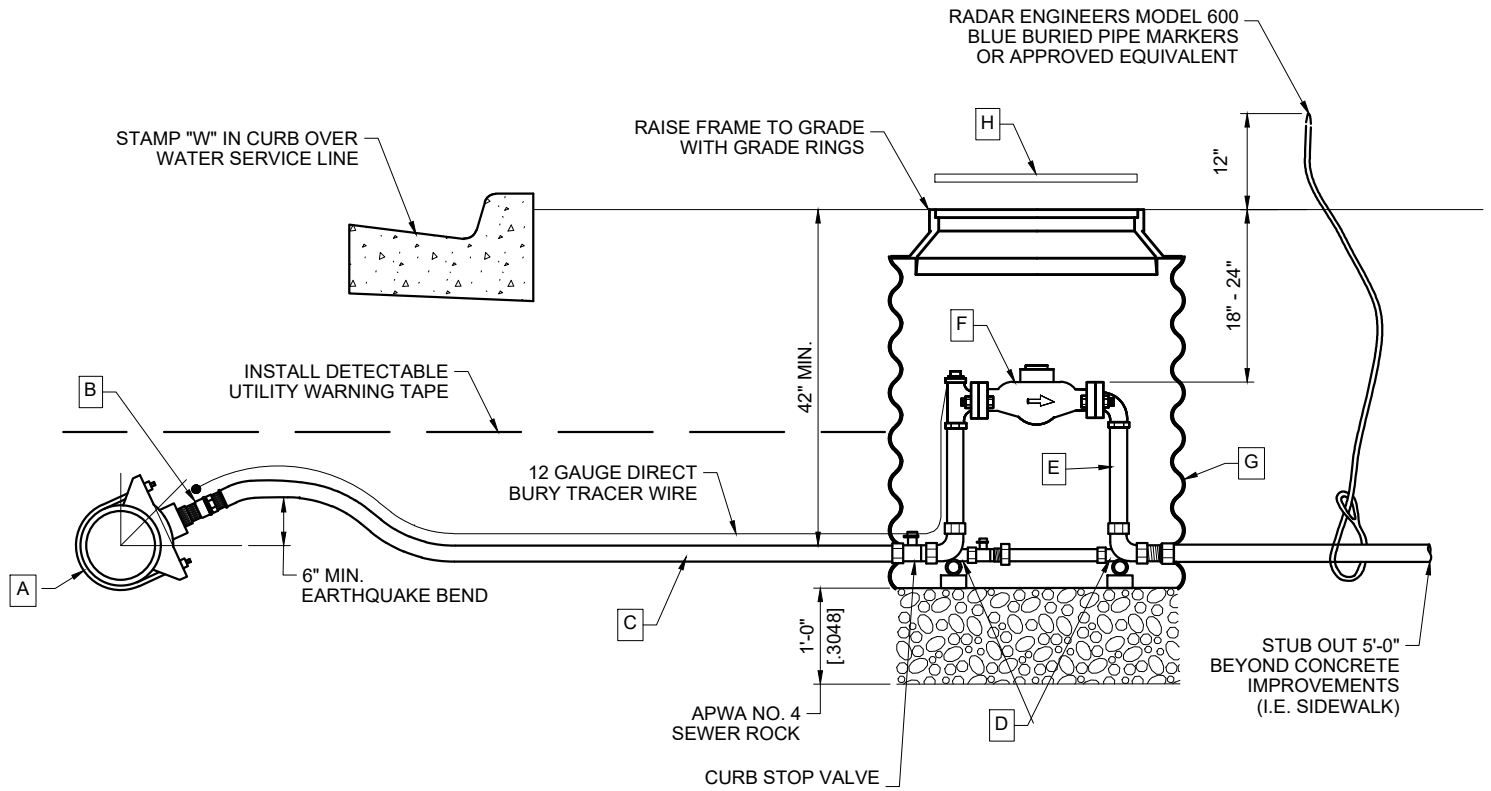
MAPLETON STANDARD PLANS

INFILTRATION SUMP

STD. PLAN NO.

M-363

Sheet 1 of 1



LEGEND

NO.	ITEM	DESCRIPTION
(A)	CONNECTION TO MAIN	USE DOUBLE STRAP BRASS SADDLE IN ALL CASES
(B)	CORPORATION STOP	BRASS - IRON PIPE THREAD WITH TRACER WIRE NUT
(C)	PIPE	DR9 POLYETHYLENE TUBING MEETING AWWA C901 AND NSF61 WITH 12 GAUGE TRACER WIRE AND METAL INSERTS.
(D)	ADAPTER	BRASS - MALE x COMPRESSION
(E)	METER YOKE	COPPER - EQUIP WITH INLET VALVE, VERTICAL DUAL CHECK VALVE, STABILIZER BARS PERPENDICULAR TO SETTER, & SOLID BAR BETWEEN INLET & OUTLET AT BASE AND HALFWAY UP METER YOKE. INCLUDE BYPASS.
(F)	METER	TO BE INSTALLED BY CITY. PROTECT FROM DAMAGE
(G)	METER BOX	CONCRETE OR HDPE (30" DIA. x 30" HEIGHT (MIN.))
(H)	LID	D&L FOUNDRY AND SUPPLY L-2244 RING AND L-2336 30" ADAPTOR RING, WITH DFW12AUT-1MW+T OR EQUIVALENT POLYMER LID IN LANDSCAPE AREAS: TRAFFIC RATED BOX WITH B-5343 RING OR A-1180 WITH A-1180 COVER IN CONCRETE AREAS.



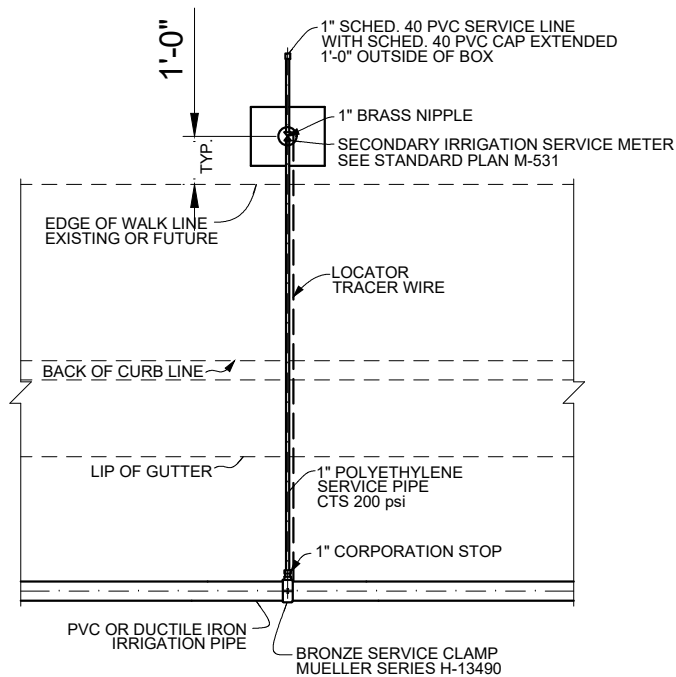
MAPLETON STANDARD PLANS

1½" & 2" WATER SERVICE CONNECTION

STD. PLAN NO.

M-522

Sheet 1 of 1



SINGLE SERVICE CONNECTION

IRRIGATION CONNECTION NOTES:

1 1/2" SINGLE SERVICE CONNECTION TO MAIN:

USE MUELLER SERIES H-13490 BRONZE SERVICE CLAMP AND A BRASS COMPRESSION x MIPT ADAPTER. A RIGID LINER SHALL BE USED INSIDE OF TUBING AT THE COMPRESSION FITTINGS ON 2" SINGLE SERVICE LINE

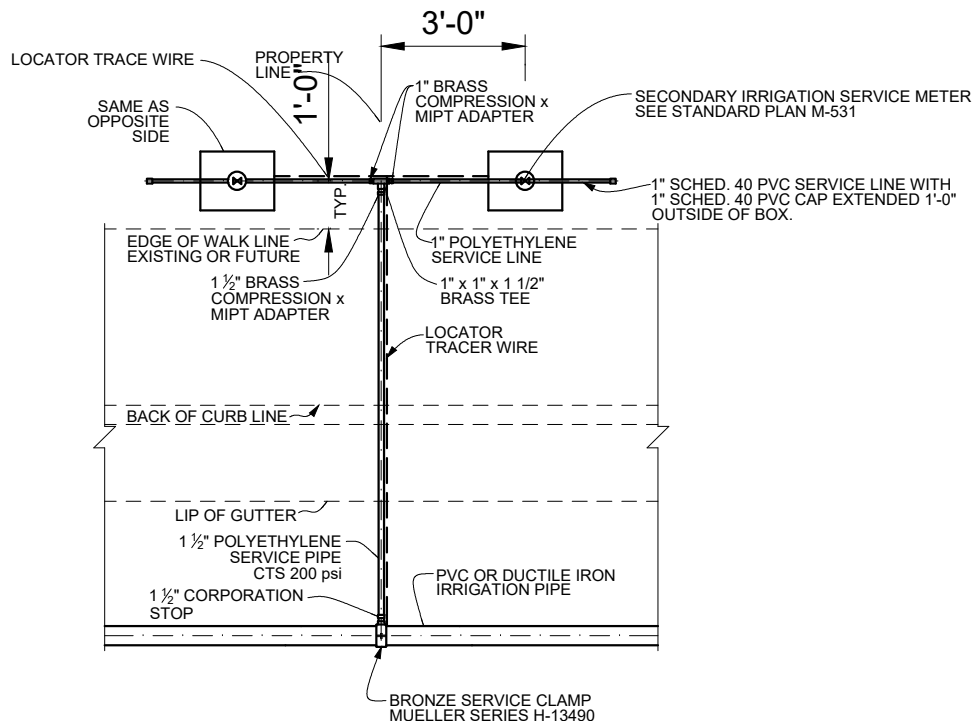
IF MAIN PIPE IS DUCTILE IRON, MAKE DIRECT TAP WITHOUT SADDLE. SEE APWA PLAN 551 & 552.

GENERAL NOTES:

ALL FITTINGS SHALL BE COMPATIBLE WITH SERVICE SIZE.

SERVICE LINE INSTALLATION AT AN EXISTING CURB GUTTER & SIDEWALK WITH A PLANTER STRIP SHALL HAVE THE UTILITY BOX LOCATED IN THE PLANTER STRIP.

SERVICE LINE INSTALLATION AT A LOCATION WITH NO CURB, GUTTER & SIDEWALK SHALL HAVE THE UTILITY BOX LOCATED AS SHOWN ON PLANS.



DOUBLE SERVICE CONNECTION

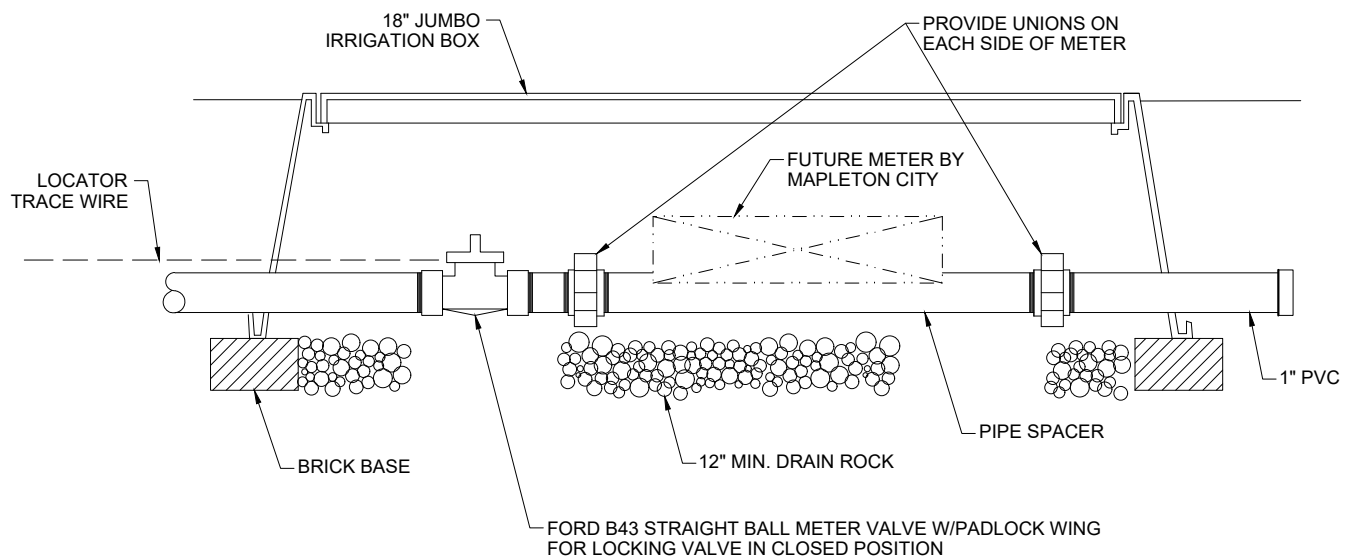


MAPLETON STANDARD PLANS PRESSURIZED IRRIGATION SERVICE CONNECTION

STD. PLAN NO.

M-530

Sheet 1 of 1



MAPLETON STANDARD PLANS
PRESSURIZED IRRIGATION
SERVICE METER

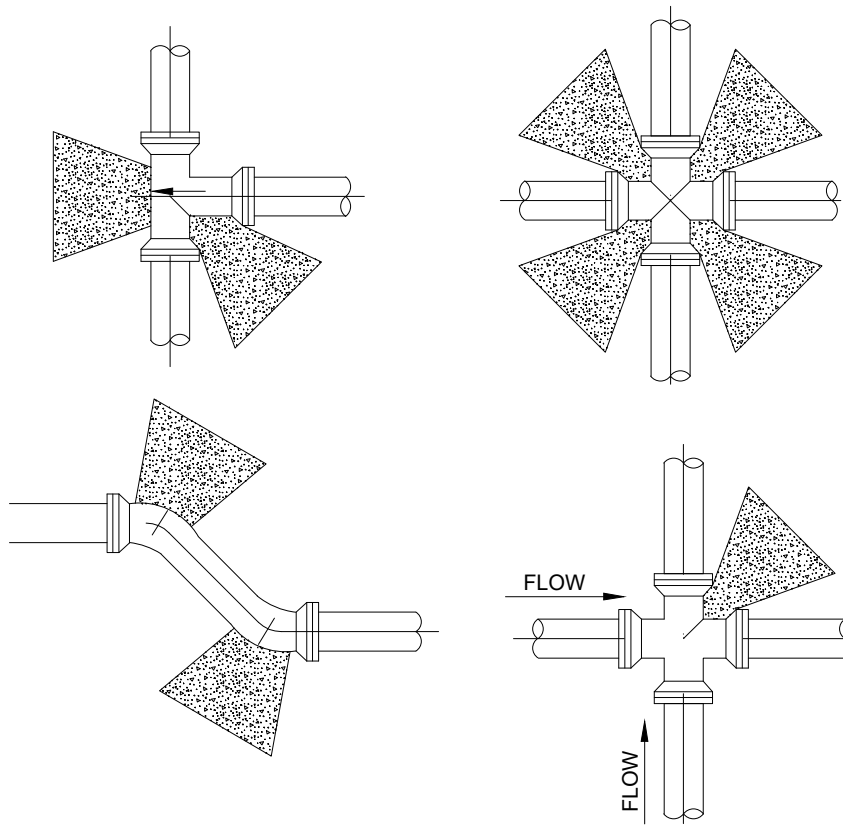
STD. PLAN NO.

M-531

Sheet 1 of 1

**THRUST BLOCK
MINIMUM BEARING AREA IN SQUARE FEET**

SIZE OF PIPE	TEES VALVES PLUGS	90° BEND	45° BEND	22.5° BEND	11.25° BEND
4"	2	3	2	2	2
6"	4	5.5	3	1.5	1
8"	6.5	9.5	5	2.75	1.5
12"	14	20	11	5.5	3
14"	19	26.5	14.5	7.5	4
18"	26	43	23.5	12	11



THRUST BLOCK NOTES:

1. INSPECTION: PRIOR TO BACKFILLING AROUND THRUST BLOCK, SECURE INSPECTION OF INSTALLATION BY ENGINEER.
2. BACKFILL: INSTALL AND COMPACT ALL BACKFILL MATERIAL PER APWA SECTION 33 05 20.
3. CONCRETE: CLASS 3,000 MINIMUM PER APWA 03 30 04. POUR CONCRETE AGAINST UNDISTURBED SOIL.
4. PIPE JOINTS: DO NOT COVER WITH CONCRETE. LEAVE COMPLETELY ACCESSIBLE.
5. GREASE: APPLY POLY-FM GREASE TO ALL BURIED METAL SURFACES. WRAP WITH 8 MIL THICK POLYETHYLENE SHEET AND TAPE WRAP.
6. SPECIAL CONSTRUCTION REQUIREMENTS:
 - A. THRUST DESIGN FOR PIPE SIZES OR CONFIGURATIONS NOT SHOWN REQUIRE SPECIAL DESIGN.
 - B. BEARING AREAS, VOLUMES, AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
 - C. REINFORCING STEEL BARS TO BE EPOXY COATED AT LEAST 15 MILS THICK. MINIMUM STRESS YIELD STRENGTH OF TIE DOWN BARS IS 70,000 PSI.
 - D. LOCKING RESTRAINTS DEVICES WILL BE USED ON ALL MJ FITTINGS IN CONJUNCTION WITH CONCRETE THRUST BLOCKING.



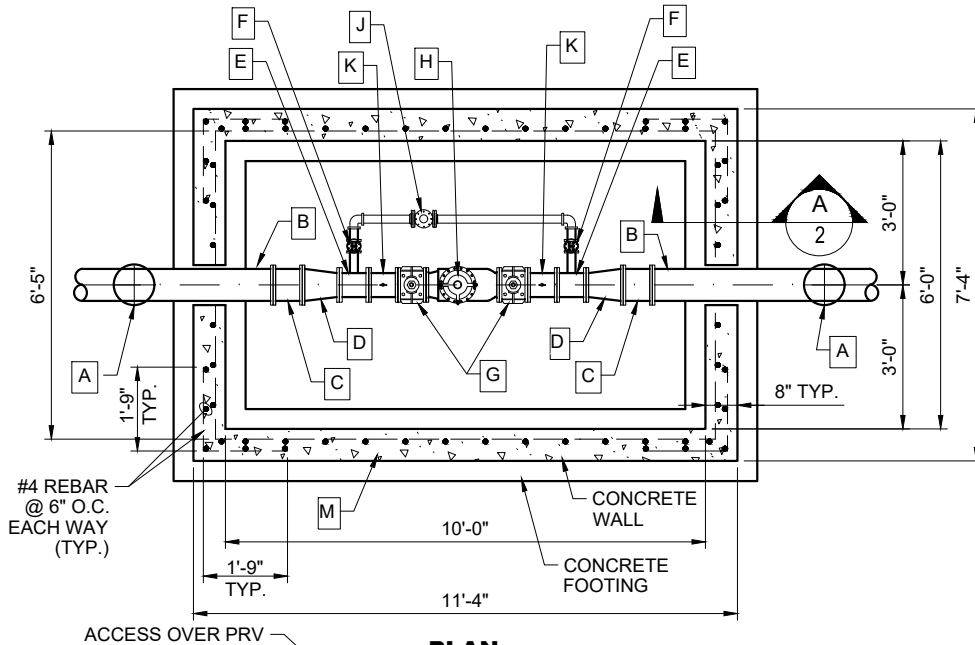
MAPLETON STANDARD PLANS

THRUST BLOCKS

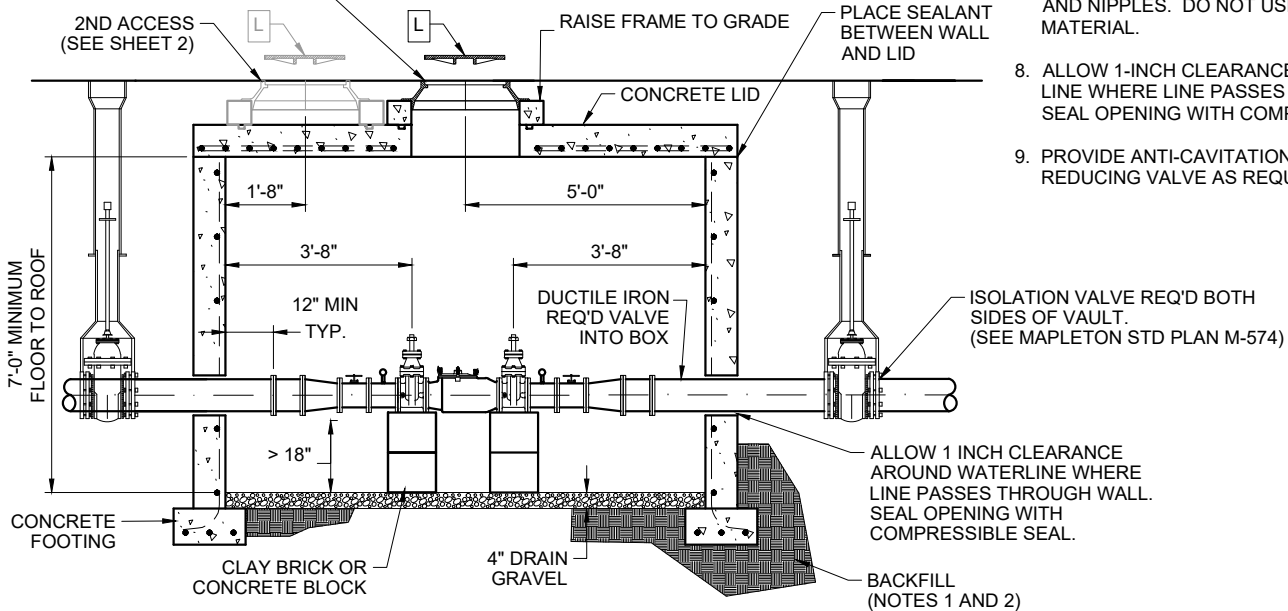
STD. PLAN NO.

M-561

Sheet 1 of 1



PLAN



ELEVATION

NOTES:

1. INSPECTION: ALL WORK MUST BE INSPECTED BY MAPLETON CITY PRIOR TO BACKFILL
2. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.
3. REINFORCEMENT: ASTM A615, GRADE 60, DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS.
4. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE CONCRETE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
5. CONCRETE BLOCKING AND ADJUSTABLE STEEL PIPE SUPPORT REQ'D. AS SHOWN.
6. DIMENSIONS ON METER ASSEMBLY MAY VARY SLIGHTLY.
7. SMALL FITTINGS: PROVIDE BRASS FITTINGS AND NIPPLES. DO NOT USE GALVANIZED MATERIAL.
8. ALLOW 1-INCH CLEARANCE AROUND WATER LINE WHERE LINE PASSES TYPICAL BOX WALL. SEAL OPENING WITH COMPRESSIBLE SEAL.
9. PROVIDE ANTI-CAVITATION TRIM TO PRESSURE REDUCING VALVE AS REQUIRED.

LEGEND

NO.	DESCRIPTION
A	ISOLATION VALVE (SEE MAPLETON WATER VALVE STANDARD PLAN M-574)
B	DUCTILE IRON PIPE REQ'D FROM ISOLATION VALVE INTO VAULT
C	8" M.J. x FLANGE ADAPTER (CEMENT LINED)
D	8"x 6" FLANGE REDUCER
E	6" FLANGED STEEL SPOOL WITH 2" OUTLET (EPOXY COATED AND LINED)
F	2" GATE VALVE
G	6" GATE VALVE WITH 2"x 2" OPERATING NUT
H	6" PRESSURE REDUCING VALVE (CLA-VAL MODEL 90-01BY)
J	2" PRESSURE REDUCING VALVE (CLA-VAL MODEL 90-01AS)
K	SPOOL WITH 3/4" I.P. TAP WITH PRESSURE GAUGE
L	FRAME & COVER D&L SUPPLY A-1005 OR EQUAL
M	PRECAST CONCRETE BOX PER DETAILS THIS SHEET



MAPLETON STANDARD PLANS

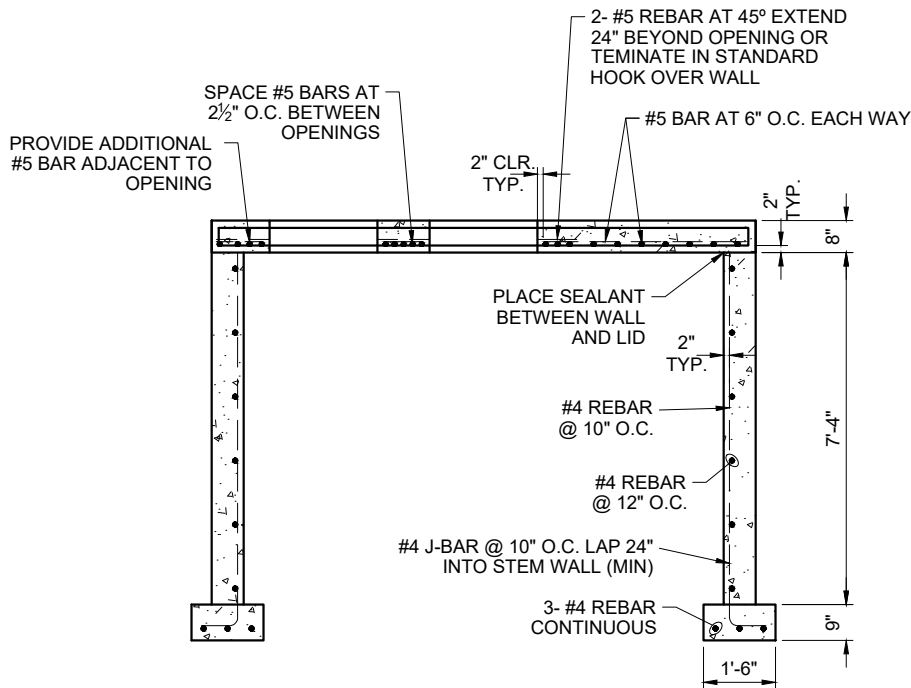
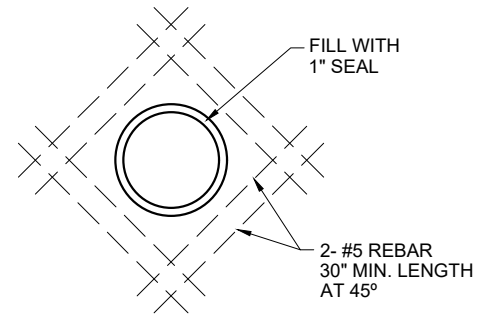
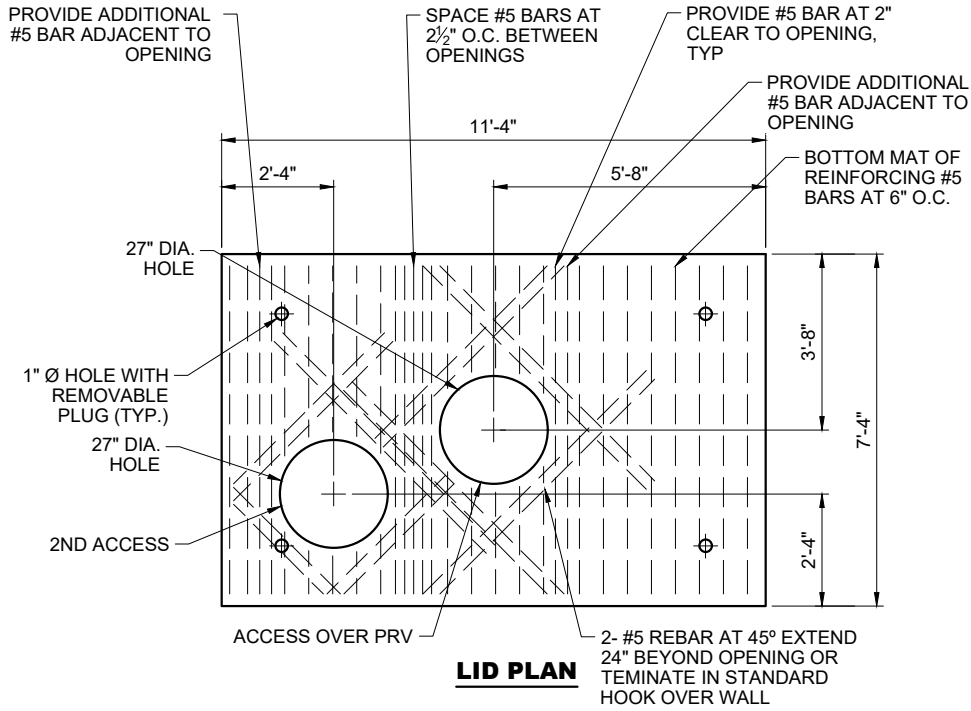
6" PRESSURE REDUCING VALVE & VAULT

LAST UPDATE: SEP 2023

STD. PLAN NO.

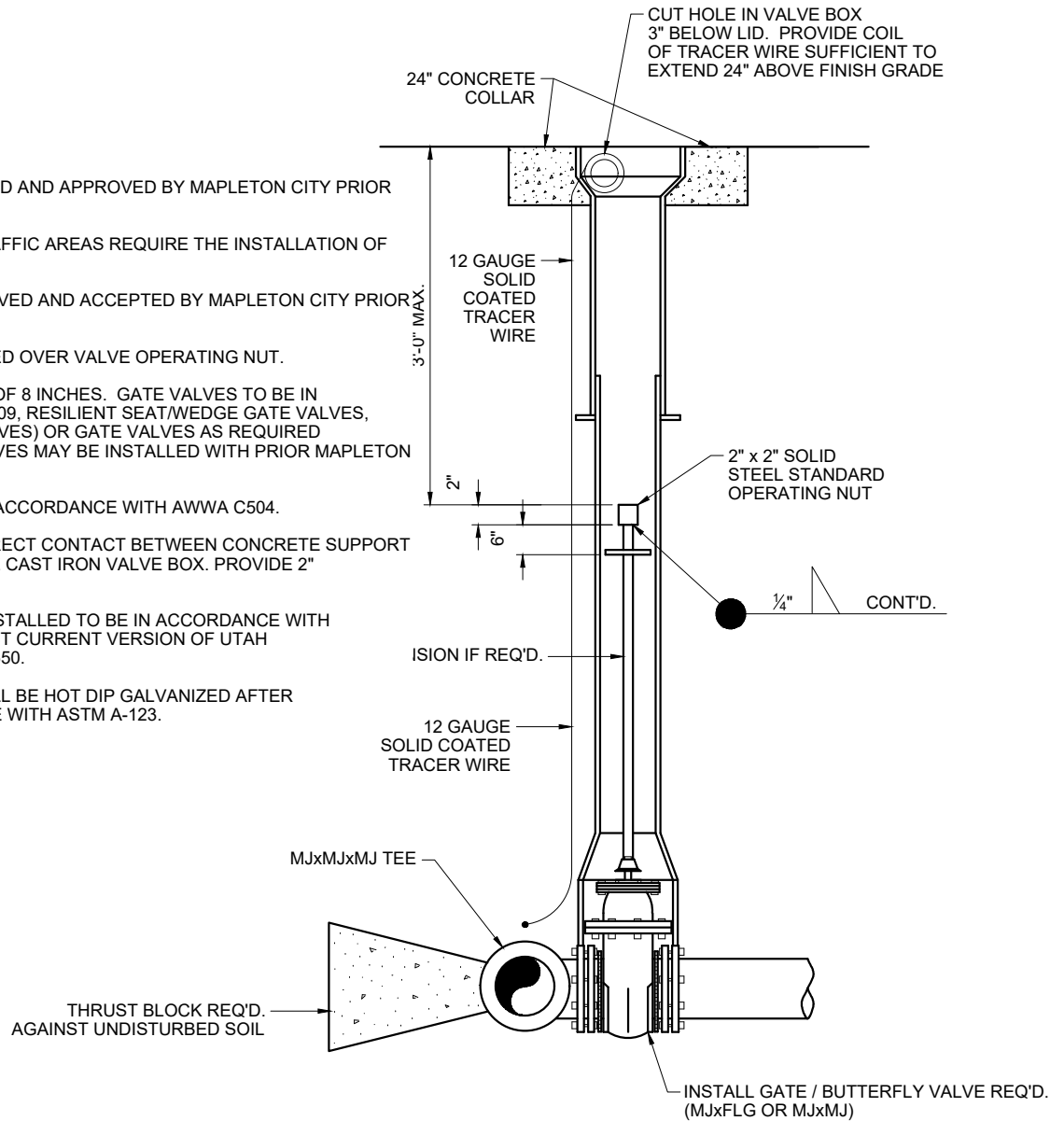
M-573

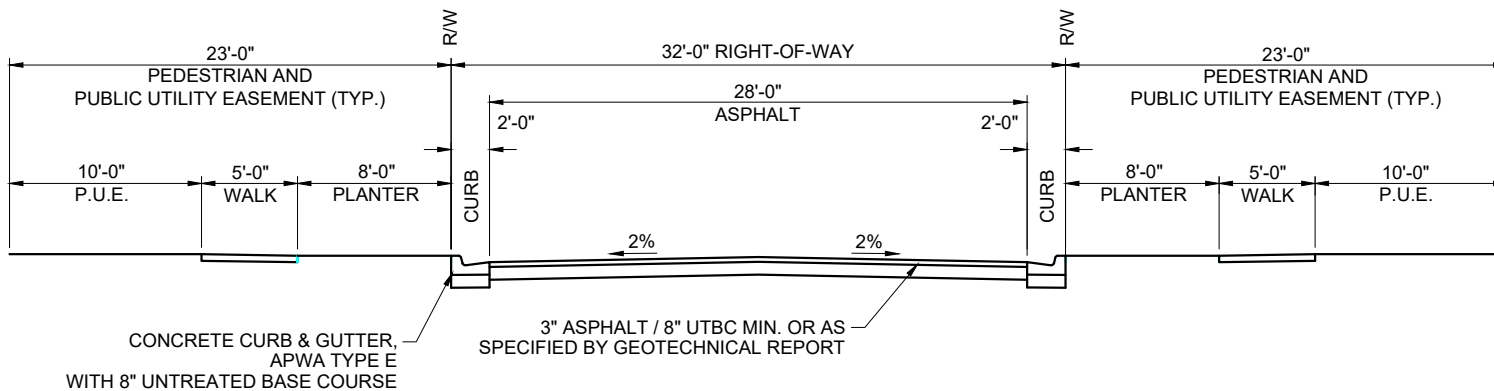
Sheet 1 of 2



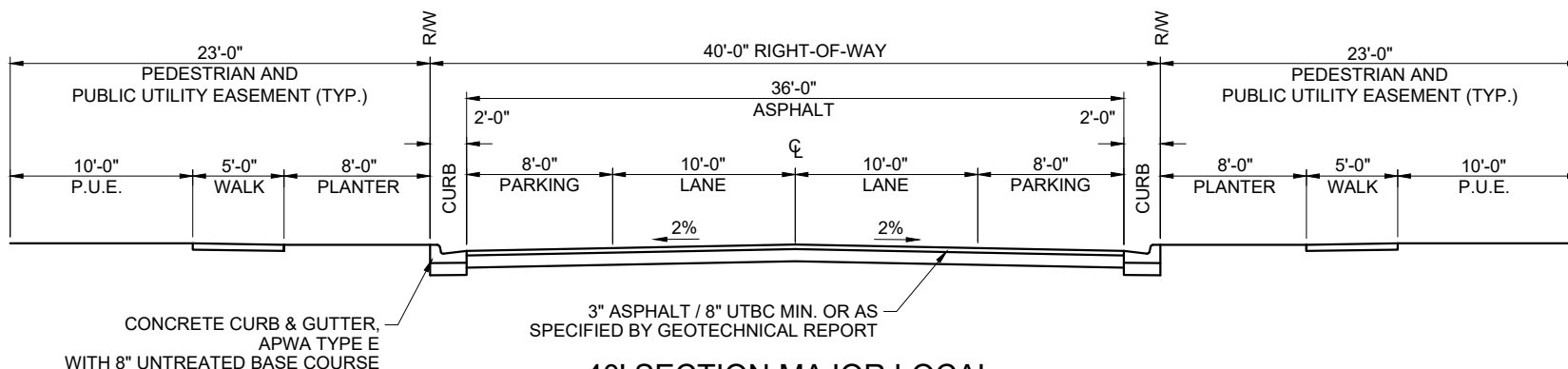
VALVE NOTES:

1. ALL WORK MUST BE INSPECTED AND APPROVED BY MAPLETON CITY PRIOR TO BACKFILL.
2. ALL VALVES INSTALLED IN TRAFFIC AREAS REQUIRE THE INSTALLATION OF TRAFFIC LIDS.
3. SUBSTITUTIONS TO BE APPROVED AND ACCEPTED BY MAPLETON CITY PRIOR TO INSTALLATION.
4. VALVE BOXES TO BE CENTERED OVER VALVE OPERATING NUT.
5. GATE VALVES MAXIMUM SIZE OF 8 INCHES. GATE VALVES TO BE IN ACCORDANCE WITH AWWA C509, RESILIENT SEAT/WEDGE GATE VALVES, PARALLEL SEAT (TAPPING VALVES) OR GATE VALVES AS REQUIRED. RESILIENT SEAT TAPPING VALVES MAY BE INSTALLED WITH PRIOR MAPLETON CITY APPROVAL.
6. BUTTERFLY VALVES TO BE IN ACCORDANCE WITH AWWA C504.
7. INSURE THAT THERE IS NO DIRECT CONTACT BETWEEN CONCRETE SUPPORT AND THE ADJUSTABLE 2 PIECE CAST IRON VALVE BOX. PROVIDE 2" CLEARANCE PER DETAIL.
8. ALL WORK AND MATERIALS INSTALLED TO BE IN ACCORDANCE WITH MAPLETON CITY AND THE MOST CURRENT VERSION OF UTAH ADMINISTRATIVE RULE R-309-550.
9. STEM EXTENSION FINISH SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A-123.

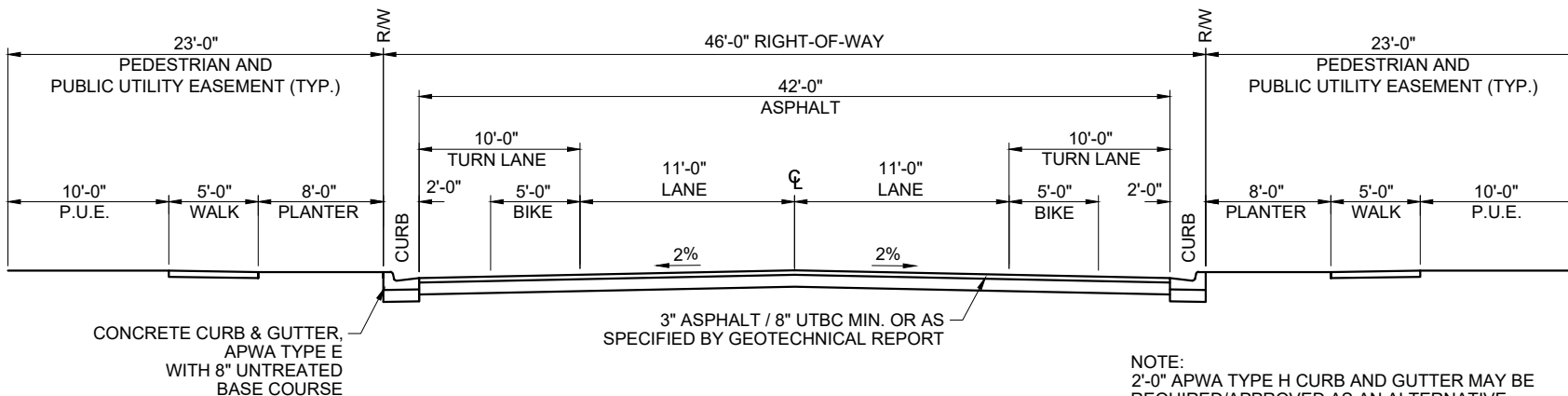




32' SECTION MINOR LOCAL

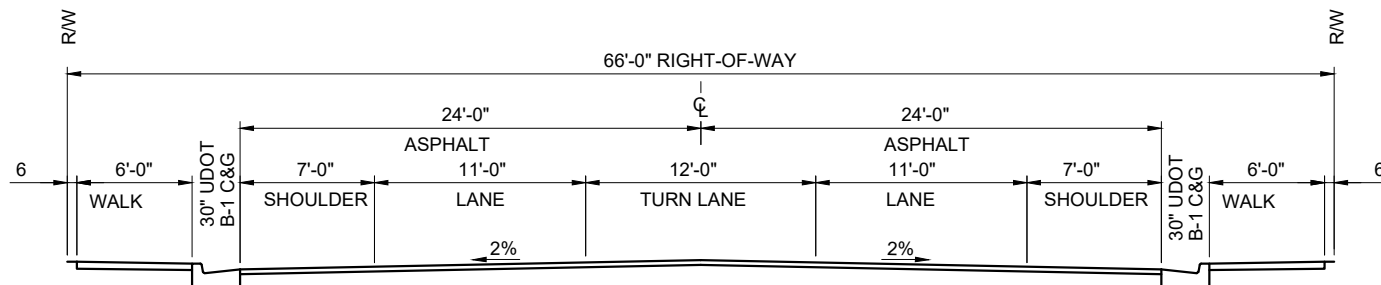


40' SECTION MAJOR LOCAL



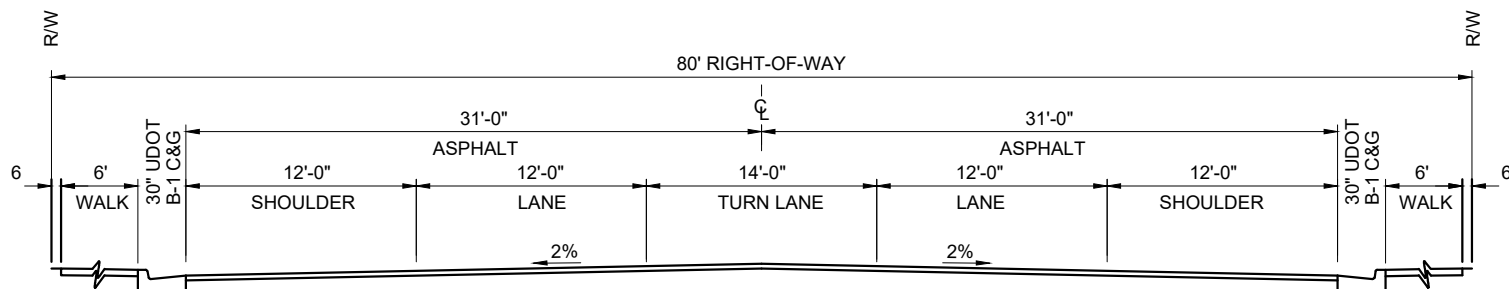
46' SECTION COLLECTOR

NOTE:
2'-0" APWA TYPE H CURB AND GUTTER MAY BE REQUIRED/APPROVED AS AN ALTERNATIVE.



66' SECTION

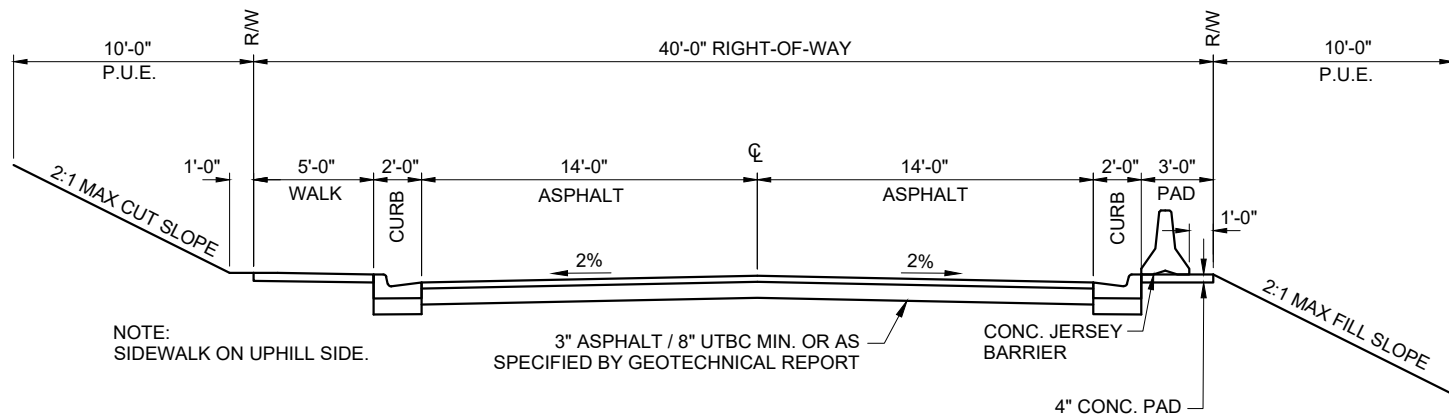
UDOT
S.R. - 147
1600 SOUTH - HWY 89 TO MAIN STREET
MAIN STREET - 1600 SOUTH TO MAPLE STREET



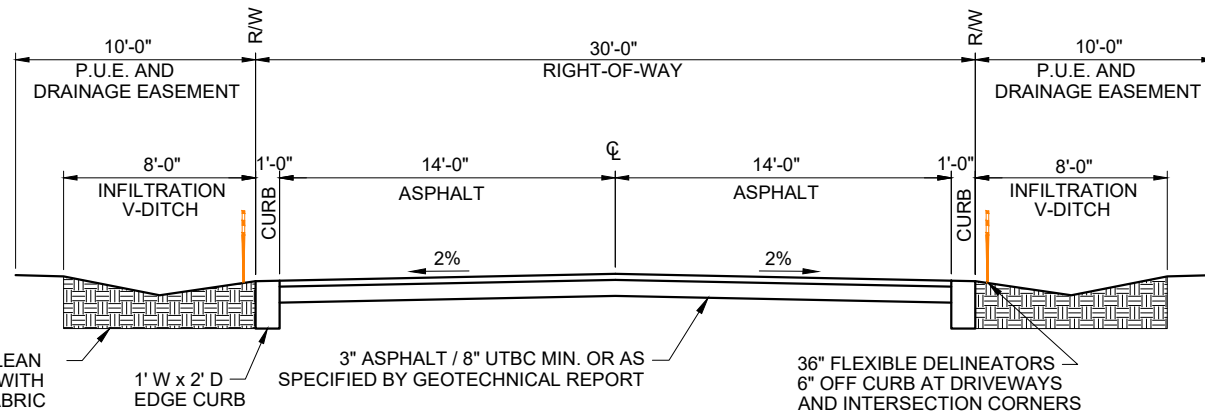
80' SECTION

UDOT
S.R. - 147
MAPLE STREET - HWY 89 TO MAIN STREET

NOTES:
UDOT SPECIFICATIONS REQUIRED
BITUMINOUS SURFACE COURSE - 6" MIN.
UNTREATED BASE COURSE - 12" MIN.

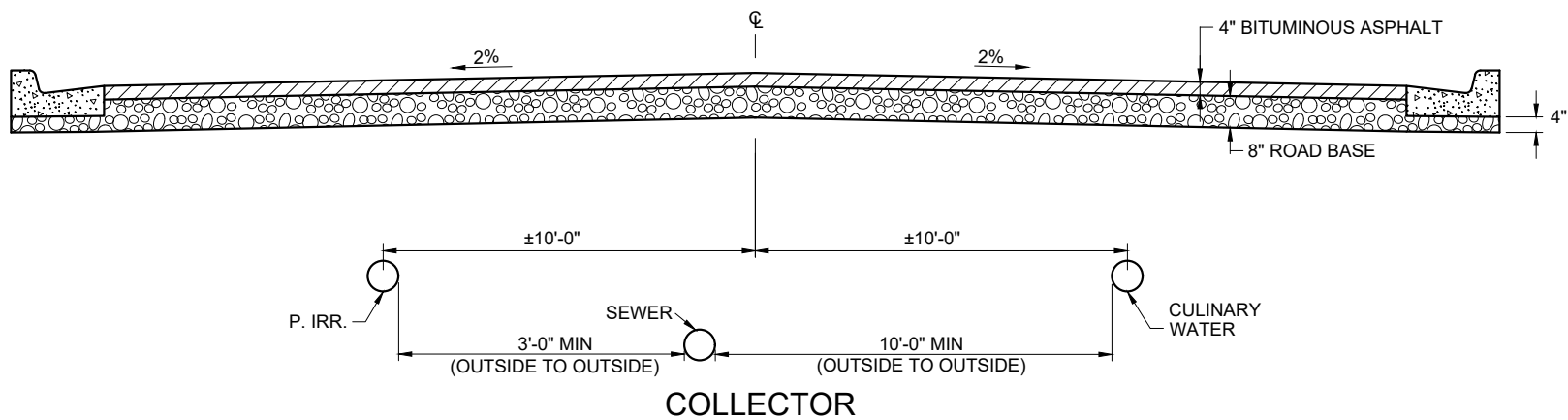
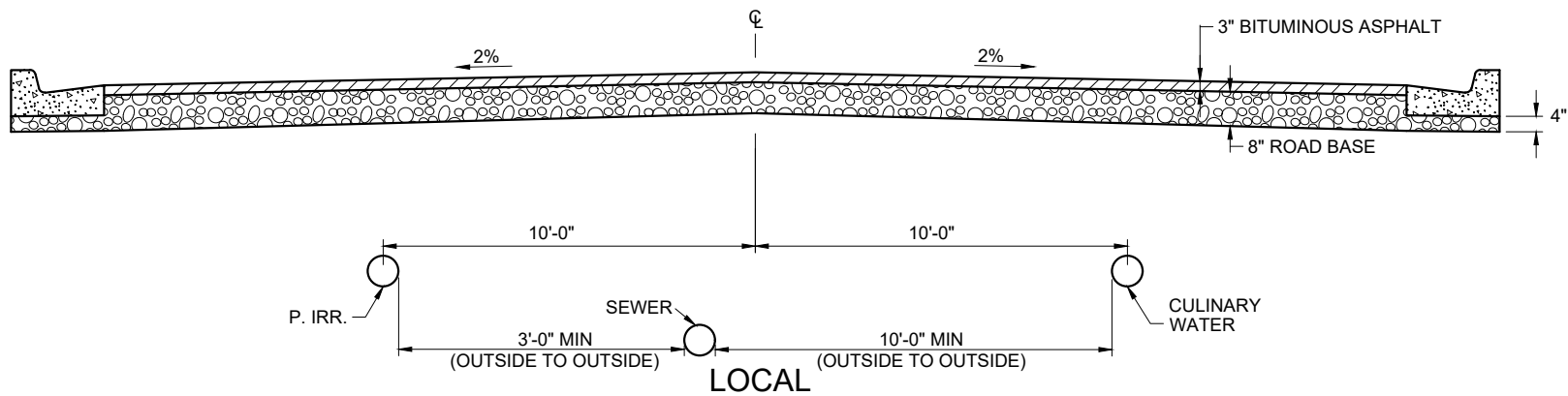


HILLSIDE LOCAL



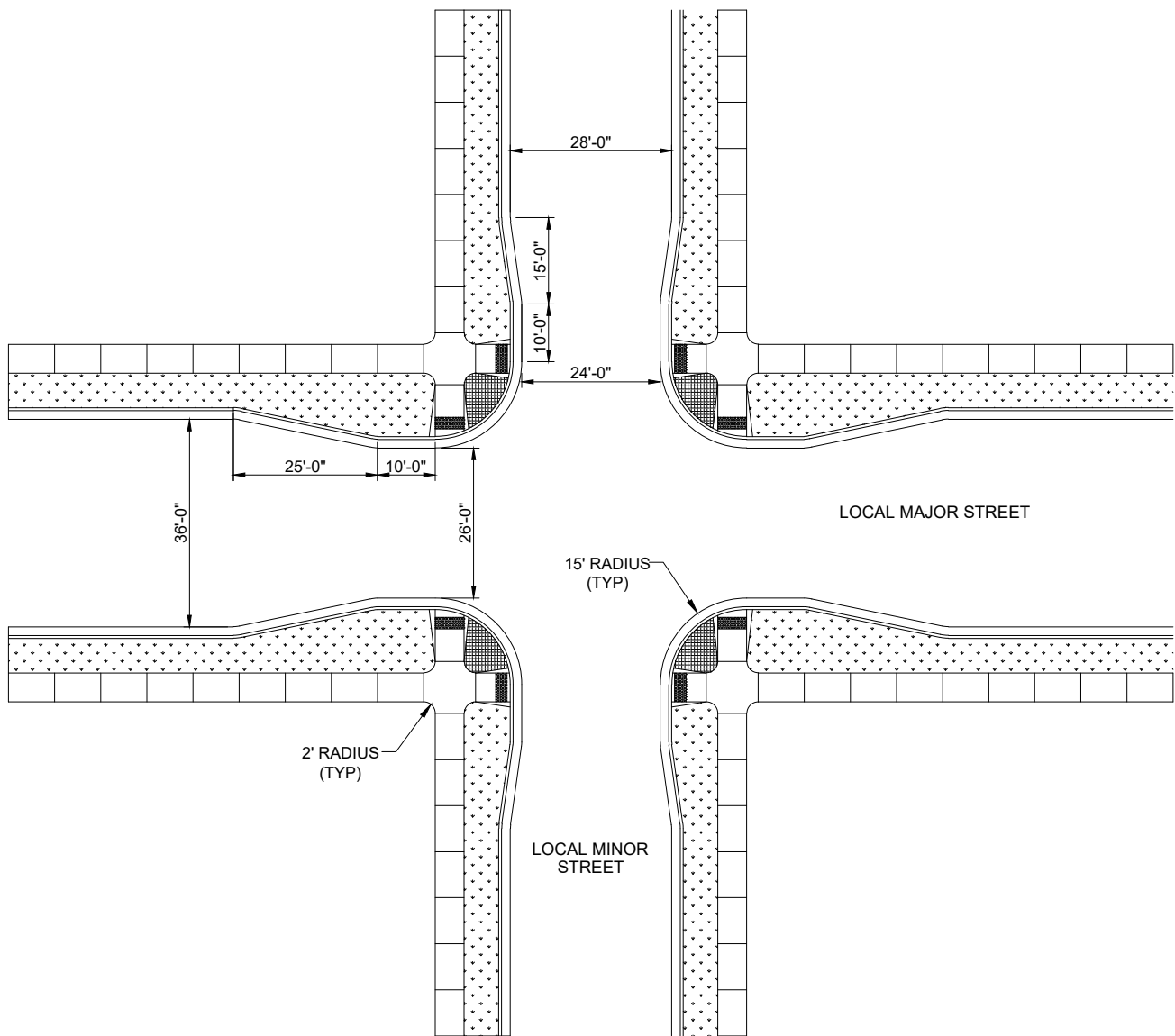
COUNTRY LANE

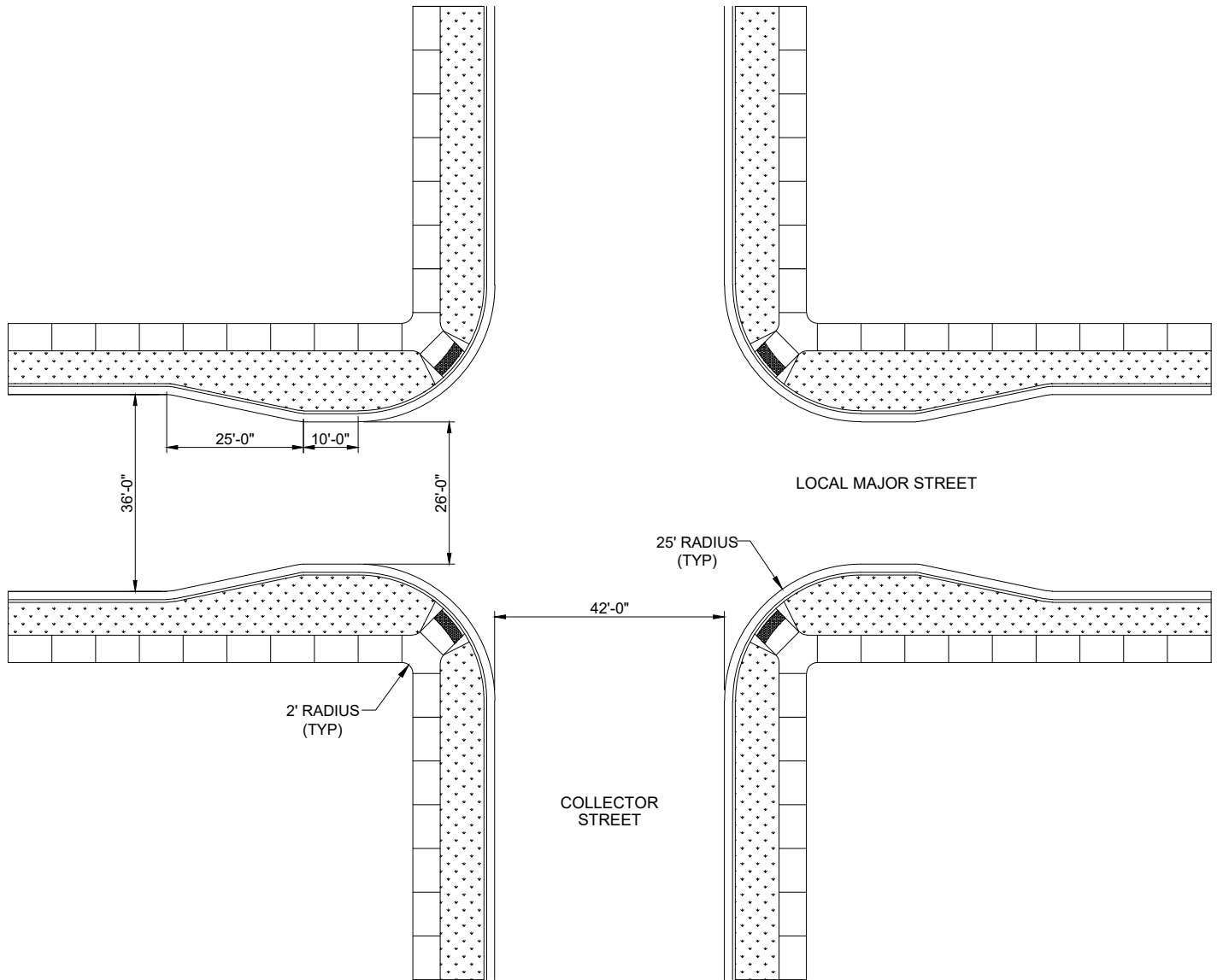
(SEE TRANSPORTATION MASTER PLAN FOR APPROVED LOCATIONS)

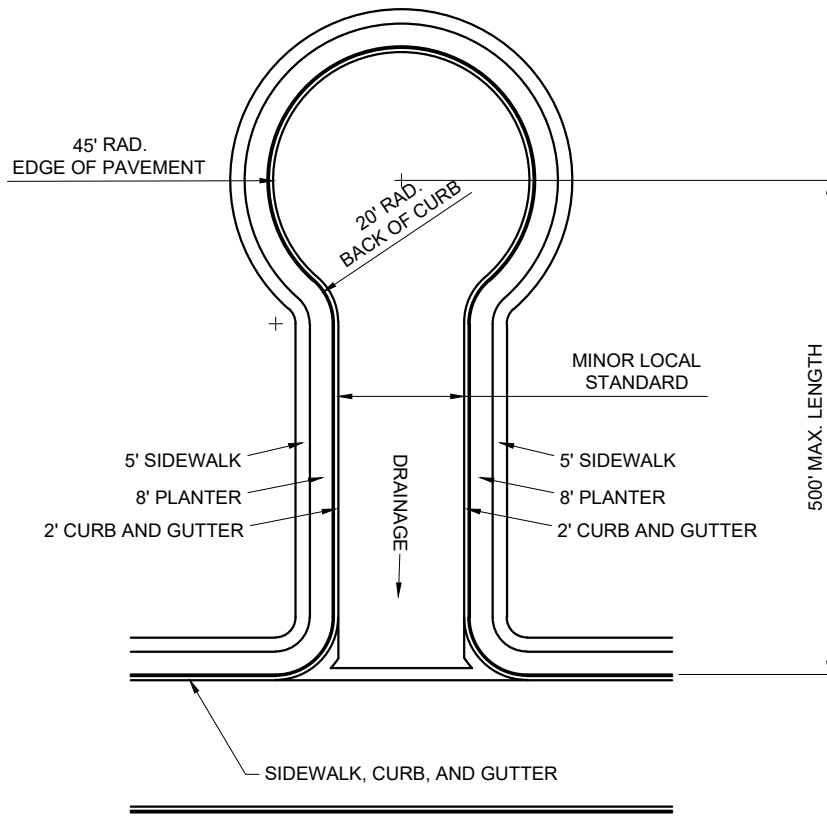


NOTES:
BITUMINOUS SURFACE COURSE - 3" LOCAL
4" COLLECTOR
UNTREATED BASE COURSE - 8" MIN.
SUB-BASE - TO BE DETERMINED BY CBR TEST AND CITY ENGINEER.

NOTES:
WATER, PRESSURE IRRIGATION, & SEWER
IN PAVEMENT AS SHOWN.
P.U.E. TO BE USED BY GAS,
ELECTRIC, AND COMMUNICATIONS.









PUBLIC WORKS STANDARD SPECIFICATIONS

Mapleton City has no modified, replaced, or added Standard Specifications at this time. Refer to the APWA Manual of Standard Specifications.