

TECHNICAL MANUAL

FOR

WATER, WASTEWATER AND

RECLAIMED WATER UTILITIES

March 2021

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PREFACE

This Technical Manual establishes standards for engineering design and construction of potable water, wastewater, and reclaimed water within the City of Plant City (City) limits and also provides minimum engineering standards for the facilities serving areas within the City limits. These standards do not relieve the Engineer to do his/her due diligence to check the applicability of the minimum standards for the specific project. Where a Developer executes an annexation agreement these Standards shall apply to the site where development is to occur. If the Standards set forth in this Manual conflict with Local, State, or Federal regulations, the regulation of the governing jurisdiction shall govern. Any City codes and/or ordinances, or other duly adopted regulations, which contain standards which are more stringent than the minimum standards adopted herein shall govern. The provisions contained in this Technical Manual shall apply to all work performed in public rights of way within the City, all work performed pursuant to an annexation agreement, and all work performed on City owned facilities regardless of their location.

SECTION 1: PROJECT REVIEW AND ACCEPTANCE PROCESS

1.1 Introduction

This technical manual has been prepared as a guide for the design and construction of water, wastewater, and reclaimed water system extensions to Plant City (City) utilities. The specifications, standards, drawings, and other information included herein are intended as MINIMUM requirements acceptable for a City facility. While this manual has been developed as a guideline for private enterprise (Developers) the requirements listed herein covering the design, construction, and acceptance criteria for projects are applicable for any project which is to be owned and maintained by the City of Plant City. The Water, Wastewater, and Reclaimed Water Utilities Construction Technical Specifications shall provide additional clarification regarding design details, materials of construction, installation and acceptance requirements.

As a general rule, the City owns and maintains all the water, wastewater, and reclaimed water system within the public right-of-way and in the City owned easements. Therefore, plans for these systems must be reviewed and approved by the City. In addition, utilities that are constructed on private property that are connecting to the City's systems shall be required to be built to the City's standards are also subject to review, inspection, and approval by the City.

1.2 Project Review Process – Developer Installed Projects

1.2.1 General

This section lists chronologically the steps that the City follows when reviewing a Developer-installed project. A Developer-installed project is defined as any project in which a private entity designs and constructs water, wastewater, and/or reclaimed water systems which will be owned, operated, and maintained by the City.

Design plans for new developer installed projects must be submitted to the Planning and Zoning Division for distribution to various departments for review and approval. All water, wastewater, and reclaimed water plans must be signed and sealed by an Engineer registered in the State of Florida. Since each project may have conditions which are project specific, there may be additional requirements not listed in this section. The City reserves the right to establish additional criteria by which to review and approve a given project.

The proposed project will be inspected by the City's inspection personnel (Inspector) during the construction phase. Final acceptance will be processed only after a determination has been made that the construction of the project is in compliance with all applicable regulations of the City and relevant agencies. The Developer is responsible for providing the City with signed and sealed record drawings of the construction and electronic copies of all final design files in accordance with the list of documents specified in section 1.6 herein.

1.2.2 Project Submittal

Every Developer involved in the subdivision of real property or the construction of any residential, multi-family, commercial or industrial building within the City limits must follow procedures listed in the City's Overview of Land Development Approval Process flow chart included in Appendix A.

The contractor shall refer to the Project Site Plan Submittal Checklist included in Appendix B and per City Ordinance Section 102 for list of documents that must be submitted to the Planning and Zoning Division in the acceptance process for subdivision infrastructure improvements, off-site utility improvements for non-residential developments and utility improvements.

Construction plans may be submitted only after the City's Planning Board approval of the submitted Plat. Actual reservation of plant treatment capacity will be effective upon Construction Plan Approval.

1.2.3 Development's Utility Master Plan

For residential or non-residential developments constructed in multiple phases or for single phase residential projects with more than one pump station, a Master Plan for water, wastewater, and reclaimed water system is required. The Master Plan must be approved prior to the approval of construction plans. The Developer is responsible for providing the City with a signed and sealed master plan with the requirements specified in section 2.

1.2.4 Construction Plans

The Developer shall have the construction plans prepared by a Professional Engineer registered in the State of Florida. The signed and sealed plans and specifications are then submitted to the Planning and Zoning Division for distribution and review.

The Developer's Engineer is responsible for the coordination of the design with other construction activity in the public rights-of-way and easements, i.e., State, County, and City highway and utility projects. The Engineer shall verify that the project design is compatible with the design of any existing or proposed City Capital Improvement Plan (CIP) project that may impact development. If design conflicts are encountered, the design constraints imposed by the CIP project shall take precedence over the development's design constraints.

The City will review the plans and specifications to ensure that the facilities proposed for construction are designed in accordance with the criteria in the current Water, Wastewater, and Reclaimed Water Utilities Technical Manual and the Utilities Standard Details included in Appendix C. The hydraulic characteristics of the proposed system will be reviewed by the Utilities Department to establish that the proposed system will operate within any specified flow or demand limits.

If the plans, specifications, or hydraulics do not conform to the requirements of the current Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications, the City will notify the Engineer and/or Developer of corrections or modifications required.

Once the City determines that the plans are in general conformance with the City's standards, the Developer will be notified by the City that the plans have been approved for construction. Approval does not relieve the Developer of responsibility to ensure that the plans meet the requirements listed in the Water,

Wastewater, and Reclaimed Water Utilities Technical Manual in effect at the time of approval. It will be the Developer's responsibility to make any changes/corrections to the design found during construction to be out of compliance with the Water, Wastewater, and Reclaimed Water Utilities Technical Manual.

The approval-for-construction will remain in effect for a period of five years. A one-year extension may be granted if a written request is submitted to the Planning and Zoning Division at least one month prior to the expiration of the original approval. An extension may be granted if there are no proposed changes to the original approved plans, the plans meet the most current Water, Wastewater and Reclaimed Water Utilities Technical Manual and satisfy the system hydraulic conditions in effect at that time, and the point of connection remains viable.

1.2.5 Construction

The Developer, the Engineer of Record (EOR), and the Contractor must comply with all specific conditions and general conditions listed in the authorization for construction letter provided by the City's Engineering department.

The Developer, the EOR, and the Contractor shall comply with all requirements of the Federal, State, and City; and other laws, codes, ordinances, and regulations that in any way affect those engaged or employed in the proposed construction, the materials or equipment used in or upon the site, or the conduct of the work.

The Developer, the EOR, and the Contractor shall obtain all permits and licenses, pay all charges and fees, and provide all notices necessary and incidental to the due and lawful prosecution of the work prior to the start of any construction. It shall be the responsibility of the EOR to schedule, arrange and coordinate a preconstruction meeting prior to commencement of any work on a project.

The Contractor is required to work from an approved construction set of plans. All work must be inspected by City inspection personnel. The Contractor shall request an inspection by the Utilities Inspector a minimum of 48 working hours prior to starting construction. The approved construction set of plans and any associated permits shall be located on the construction site at all times. At all times, valves on existing utilities will be operated by City's Utilities Department only during construction.

1.3 Right-of-Way Use Permits

The Engineer shall take the initiative to determine all the agencies with jurisdiction over the project, particularly agencies requiring permits for right-of-way use, such as Plant City, Florida Department of Transportation (FDOT), Hillsborough County, Polk County, Seaboard/CSX Railroad, or any other appropriate authority. These determinations should be made during the preliminary design stage.

If the Engineer finds that the project involves a non-City right-of-way, the Engineer shall contact the appropriate local office, discuss the project with their Utility Coordinator and comply with that agency's design and permitting requirements. The Engineer shall work simultaneously with the involved agency in finalizing the plans for submittal. City Right-of-Way Use Permits, if required, will be issued by the City's Engineering Department upon plan approval by all reviewing agencies.

1.4 Utility Easements

Minimum 25-foot wide Utility Easement Dedication is required for water, wastewater, and reclaimed water utilities and minimum 50'x50' Utility Easement Dedication is required for Lift Stations. Water, wastewater, and reclaimed water easements outside the right-of-way shall be dedicated for City use, and not specified for "public" use. No private entities shall be allowed to use easements dedicated to the City. The easement will need to be at least 10 feet wide centered on the new main and extend from the property line to far enough past the backflow preventer assembly (minimum 5 feet) to allow access for Utilities' personnel to perform annual testing and any maintenance that may be required.

Preparation of the easement agreement will be through the City Attorney. All easements must be accepted by the City/Commission before issuance of Certificate of Occupancy (CO) or project completion. The following documents will need to be provided to the City Attorney.

- Surveyor's sketch showing the easement that is acceptable to the City.
- Legal description of the easement
- Title search of the property to make sure that we have all the necessary parties join in the easement

Note: No privately owned structure, including decorative walls, driveways, or fences, shall be constructed in an easement that has been dedicated to the City. No obstruction of whatever kind shall be planted, built, or otherwise created within the limits of the easement, right-of-way or licensed or permitted area without the written permission of the City.

1.5 Authority of Inspectors

City's inspectors or representatives will inspect all construction, all materials, and may inspect preparation, fabrication or manufacture of supplies. The inspector or representative is not authorized to revoke, alter, or waive any requirements of the specifications, but he or she is authorized to call to the attention of the Contractor and/or Engineer any failure of work or materials to conform to the plans or specifications. The inspector or representative will have the authority to reject materials and may suspend the work, especially if public health or safety is involved. The City will not be responsible for any delay resulted by rejection or suspension due to health or safety concerned. The inspector or representative will not act as foreman, perform other duties for the Contractor, or interfere with the management of the work.

1.6 Requirements of Utility Acceptance

Final acceptance of water, wastewater, and reclaimed water system, including lift stations will be made only after the following conditions are met, but not limited to:

- All inspections have been made.
- The improvements are found to be in accordance with the applicable regulations of the City, the Florida Department of Environmental Protection (FDEP), and the standards contained herein; and for contributed assets (privately developed).
- The City is provided with all required documentation and testing reports specified in section 2.



All requirements of Code of Ordinances Building and Land Development Regulations are to be met prior to City acceptance of utility and other improvement facilities. The acceptance of improvement facilities within residential and commercial subdivisions is documented by Dedication in the Final Plat.

END OF SECTION

SECTION 2: PREPARATION OF MASTER PLANS, CONSTRUCTION PLANS, AND RECORD DRAWINGS

2.1 Master Plan

A “Master Plan” for water, wastewater, and/or reclaimed water is required for all residential or non-residential projects to be constructed in multiple phases, or for single phase residential projects with more than one pump station.

- The Master Plan must be approved prior to the approval of construction plans.
- The construction plans must be consistent with the approved Master Plan.
- For any changes to the development, the Developer must submit a revised and updated Master Plan. A revised Master Plan must be submitted with a letter specifying the proposed revisions to the Master Plan, in addition to the signed and sealed plan drawings.
- The requirement for submittal of a revised Master Plan may be waived if the City considers the changes to be minor or not significant.
- Signed and Sealed sets of plans as indicated in the Project Site Plan Submittal Checklist included in Appendix B must be submitted to the Planning and Zoning Division to distribute for review and approval.
- Master Plan approval does not imply acceptance of easements, construction methods, or other items that may be in conflict with technical standards.

The “Master Plan” will consist of a layout of the major water, wastewater, and/or reclaimed water system superimposed on a topographic map. The layout plan sheet(s) shall be at a minimum scale of one inch = 200 feet and show existing and proposed improvements in sufficient detail to show intent of design. In the event that the number of plan sheets exceeds two sheets at the one inch = 200 feet scale, the Master Plan shall be submitted at a scale of one inch = 500 feet. The Master Plan shall be signed and sealed by a Professional Engineer licensed in the State of Florida. The requirements for each specific utility plan include, but not limited to:

1. General
 - a. The topographic map shall be one-foot contours.
 - b. Developments immediately adjacent to undeveloped tracts shall include a conceptual plan for extension of potable water, wastewater, and/or reclaimed water service to said tracts.
 - c. “Master Plans” shall have a vicinity map showing the location of the project and the scale used.
 - d. All plan elevations shall use the 1988 NAVD Vertical Datum.
 - e. All utilities to be owned by the City shall be located within a right-of-way or utility easement.

2. Potable Water

- a. Calculations for maximum potable water demand based on ultimate development or use gross acreage and land use. Maximum water demand will be calculated as peak hour flow plus fire flow per Section 3 of this Technical Manual.
- b. Consult with the Utilities Department for assistance in obtaining system pressure information.
- c. Use the network response curve to design a water distribution network. Then, submit the “Master Plan” with a pipe network analysis report for flow and pressure distribution for approval. The “Master Plan” shall include connection points and pipe sizes. All available information on hydrant locations and lot platting should be included.
- d. Total potable water flow for each unit, tract, or phase stating: Type of use (single family residential, master-metered residential, commercial, etc.), Unit Flow Factors, and Peaking Factors.
- e. Clear delineation of existing versus future units or tracts.

3. Wastewater

- a. Inverts and top elevation for manholes.
- b. Pipe diameter (both force mains and gravity lines).
- c. Total wastewater flow (both average daily flow and peak) to each pump station. A summary of each unit, tract, or phase, including the contribution to each pump station, stating: Type of use (single family residential, master-metered residential, commercial, etc.), Unity Flow Factors, and Peaking Factors. Pump Station locations with top, invert, and bottom elevations. Clear delineation of existing versus future units or tracts.

4. Reclaimed Water

- a. Calculations for reclaimed water demand.
- b. Consult with the Utilities Department for assistance in obtaining system pressure information.
- c. Submit the final design with a pipe network hydraulic analysis report for flow and pressure distribution for approval. The final design shall include connection points, pipe sizes, meter location(s), and lot platting.

2.2 Construction Plan Format

2.2.1 General

- Plans shall be prepared on 22-inch by 34-inch sheets, unless otherwise pre-approved by the City. The cover sheet shall include a vicinity map.
- An index of all drawings shall be included on the cover sheet or first sheet following. Include an overall utility plan on one sheet and if there are more than three Plan and Profile sheets, include a key map to identify the Plan, and Profile sheet numbers.

- A title block shall be located in the lower right-hand corner of each sheet including the cover sheet identifying the Engineer of Record (EOR), firm, telephone number, and page content. The title block shall also list the datum used.
- The construction plans submitted for review and approval must be signed, sealed, and dated by the Florida Registered Professional Engineer responsible for the project.
- All submittals must be accompanied by a letter of transmittal to include the name, address, and telephone number of the EOR.
- If a pressure system is to be constructed, a copy of the manufacturer's pump performance curve overlaid on the system response curve must be included in the submittal.
- All plan elevations shall use the 1988 NAVD Vertical Datum, Florida West Datum, NAD 83.
- All construction plans require the EOR to have Level "A" Subsurface Utility Excavation (SUE) work (locate) performed for all points of connection. Level "A" SUE shall comply with the definition by ASCE 38-02 and adopted by FDOT. SUE work shall be submitted as part of the construction plans.

2.2.2 Design Criteria

The design criteria and specifications presented in Sections 3, 4, and 5 herein and within the Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications shall be used in preparation of design plans and specifications.

2.2.3 Drawings

Construction plans with gravity system shall show both plan and profile views. Plans with only on-site water, reclaimed water, and wastewater pressure facilities will not require profile views, unless the proposed construction will be within areas of existing infrastructure. The horizontal scale may be one inch = 20 feet down to, but no less than, one inch = 40 feet. The vertical scale shall be one inch = four feet.

When proposed construction will be within areas of existing infrastructure, e.g., points of connection to existing infrastructure in the road right-of-way, plan and profile views shall be shown. The horizontal scale shall be one inch = 20 feet and the vertical scale shall be one inch = four feet. All underground utilities, storm drains or other structures which may cross or be located close to the proposed pipelines and structures shall be shown on the drawings in both plan and profile views. Show cross section details of all conflicting crossings and location and elevation of all air release valves.

2.2.4 Utility Easements

Potable and reclaimed water transmission/distribution mains and wastewater collection systems must be constructed within City road rights-of-way. Under special circumstances, utility lines within easements may be approved. All pipeline easements shall be at least 25-foot wide.

All perpetual utility easement agreements or easement dedications by Plat shall include the following condition: **"No structure or pavement shall be placed or constructed, permanently or temporarily, on, in, or over the easement."**

Water, wastewater, and reclaimed water easements outside the right-of-way shall be dedicated for "City of Plant City" use, and not specified for "public" use. Minimum 25-foot wide Utility Easement Dedication is

required for water, wastewater, and reclaimed water utilities and minimum 50'x50' Utility Easement Dedication is required for Lift Stations. The easement will need to be at least 10 feet wide centered on the new main and extend from the property line to far enough past the backflow preventer (minimum 5 feet) to allow access for Utilities' personnel to perform annual testing and any maintenance that may be required.

Preparation of the easement agreement will be through the City Attorney. All easements must be accepted by the City/Commission before issuance of Certificate of Occupancy (CO) or project completion. The following documents will need to be provided to the City Attorney.

- Surveyor's sketch showing the easement that is acceptable to the City.
- Legal description of the easement
- Title search of the property to make sure that we have all the necessary parties join in the easement

2.3 Standard Items for Construction Plan Review

2.3.1 All Construction Plans

- Complete and submit Project Submittal Checklist.
- Plans on 24-inch by 36-inch paper.
- Proper scale is used and noted on each view.
- Plans must reflect the approved point of connection (P.O.C.)
- North arrow, abbreviations, notes, etc.
- Signed, sealed and dated by the Engineer of Record registered in the State of Florida (all sheets).
- Width and center line of each right-of-way indicated.
- Width of pavement and distance to property line shown for all streets.
- Street names or identifiers indicated (correct location on plan).
- Subdivision name, lot, and block numbers.
- All existing City-regulated utilities proximate to the design shall be shown on the plan view in their reported location with dimensioning.
- Maintain a minimum vertical clearance for all utility crossings, as specified in 62-555 F.A.C.
- Size, type, material, and length of pipes shown for all water, reclaimed water, and wastewater lines both on-site and off-site.
- Whenever the water, reclaimed water, or wastewater line crosses existing pavement, specify the crossing method, i.e., jack and bore or open-cut.
- Specify the invert of all intersecting utilities on the plan or profile views with the accompanying SUE information.
- Minimum line clearance from property line is five feet.
- Minimum cover is 36 inches over water pipelines, reclaimed water pipelines and force mains.

- Horizontal and vertical separation between underground water mains and sanitary or storm sewers, wastewater or stormwater force mains, and reclaimed water pipelines shall be per F.A.C. 62-555.314.
- Permanent structures shall not be constructed in easements or right-of ways containing water, reclaimed water or wastewater utilities.
- Show and identify the easement for meters and backflow preventer assemblies. The easement shall be adequately sized to accommodate operation and maintenance of any water meter and backflow preventer assemblies by utilities operators and equipment.
- Datum information shall be marked on each sheet of the construction plans.
- Include the sample point location, dead-end terminate with a fire hydrant, flushing hydrant, or blow-off for flushing purpose per City's standard details.

2.3.2 Plans with Water Mains

- Joint restraint length shall be specified at all water main bends, valves, fittings, fire hydrants, and tapping sleeves. The joint restraint information shall be included on the drawings. The joint restraint detail shall conform to City's Standard Details.
- Valves with roadway boxes shall be provided for all branch connections (three valves on a tee, four valves on a cross), loop ends, fire hydrant stubs and other locations, as required by the City's Utilities Department to facilitate operation of the distribution system. Valves shall be placed so that the maximum allowable length of water main required to shut down for repair work shall not be more than 500 feet in commercial, industrial, multi-family and residential districts; and 1,000 feet in rural areas. If construction is to be phased, a valve followed by one full length of pipe must be installed at the end of each line that is to be continued. Valves shall meet the requirements of Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications.
- Air release valves shall be at the specified water main high points where the profile is such that air pockets or entrapment could occur resulting in flow blockage.
- Fire hydrant spacing in accordance with Section 3 of this technical manual.
- The location of sleeves for use in connection with far side water service installations.
- Water distribution mains within residential subdivisions shall be PVC, or Ductile Iron Pipe (DIP), and shall comply with the requirements of Water, Wastewater and Reclaimed Water Utilities Construction Technical Specification. Note size and type of material.
- A note indicating that PVC water mains shall have suitable locator/tracer wire affixed to the pipe per City's standard details.

2.3.3 Plans with Wastewater Gravity Mains

- For gravity mains, the size, type of pipe, slope, and distance between manholes shall be stated on the profile view.
- Invert elevations and directions shall be specified for each pipe entering or exiting a manhole. Rim elevation must also be specified. Identify the lowest point (rim elevation) in the gravity system.
- All manhole stubs and connections shall be shown on both the plan and profile view. All stubs shall include plugs.

- Manhole and manhole connection details shall be shown.
- Drop manhole and detail is required for drops two feet or more per City's Standard Details.
- Gravity mains shall be eight-inch PVC minimum within right-of-way, six-inch minimum for double service laterals, and four-inch minimum for single service laterals.
- Manholes located in low-laying area or near a storm inlet, or as directed by the City, shall include water-tight manhole cover inserts.

2.3.4 Plans with Wastewater Force Mains

- Joint restraint length shall be specified at all force main bends, valves, fittings, and tapping sleeves. The joint restraint information shall be included on the plan and profile drawings. The joint restraint detail shall conform to City specifications.
- Valves with roadway boxes shall be provided for all branch connections (three valves on a tee, four valves on a cross), and other locations as required by the City's Utilities Department to facilitate the operation of the distribution system. Isolation valves shall be provided at intervals not to exceed 2,000 feet. Branches of intersecting force mains shall be provided with appropriate valves such that one branch may be shut down for maintenance and repair without interrupting the flow of other branches. Stub-outs on a force main, placed in anticipation of future connections, shall be equipped with a valve to allow such connections without interruption of service. Valves shall meet the requirements of Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications.
- Air release valves shall be specified where the force main profile is such that air pockets or entrapment could occur resulting in flow blockage.
- A note indicating that all PVC force mains shall have a locator/ tracer wire affixed to the pipe.
- Pipe and fittings used in force mains shall comply with the requirements of Water, Wastewater and Reclaimed Water Utilities Construction Technical Specification.

2.3.5 Plans with Reclaimed Water Mains

- Joint restraint length shall be specified at all reclaimed water main bends, valves, fittings, and tapping sleeves. The joint restraint information shall be included on the plan and profile drawings. The joint restraint detail shall conform to the City's specifications. Valves with roadway boxes shall be provided for all branch connections (three valves on a tee, four valves on a cross), and other locations as required by the City's Utilities Department to facilitate operation of the distribution system. Valves shall be placed so that the maximum allowable length of reclaimed water main required to shut down for repair work shall not be more than 1,000 feet in commercial, industrial, multi-family, and residential districts; and 2,000 feet on transmission systems. If construction is to be phased, a valve followed by one full length of pipe shall be installed at the end of each line that is to be extended. Valves shall meet the requirements of Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications.
- Air release valves (manual preferred) shall be specified where the water main profile is such that air pockets or entrapment could occur resulting in flow blockage.

- The location of sleeves for use in connection with far side reclaimed water service installations. Reclaimed water distribution mains within residential subdivisions shall be PVC, or Ductile Iron Pipe (DIP). Note pipe size and class and type of material per the City's Approved Products List.
- A note indicating that PVC reclaimed water mains shall have a locator/tracer wire affixed to the pipe.

2.3.6 Jack and Bore Crossings

- Jacked crossings shall show the casing pipe on both the plan and profile view. City standard jacking detail must be included. Jack & Bore details can be found in Water, Wastewater, and Reclaimed Water Utilities Standard Details. A cross sectional detail of the jacking shall be included with all accompanying SUE information. All utility crossings require a Level "A" SUE locate.
- Casing pipe diameter must be specified on the detail and profile views.
- Class and thickness of casing pipe shall be specified.

2.3.7 Plans with Wastewater Pump Stations (Privately Owned)

- Location of pump station on private property.
- Design capacity (average daily/peak flows) and system response/curve calculations.
- Pump identification, including all nameplate data.
- Pump detail drawing indicating the minimum submergence for the pump.
- Pump curve for selected pump with design point noted and minimum and maximum system curves plotted on the pump curve.
- Wet well operating elevations, inverts, and slab elevations.
- Identification of fittings and valves on private property.
- Add a note that the lift station will be privately owned and maintained.

2.3.8 Plans with Wastewater Lift Stations (to be City Owned and Maintained)

- Size of site to be dedicated to City. Minimum 50 feet by 50 feet site size is required for lift stations. The service driveway shall be a minimum of 25 feet from edge of road pavement to front of pump station fence/gate, unless otherwise approved.
- Setback requirements for a Master Lift Station (serves 1,500 ERCs or more) are 20 feet to residential lot line and 50 feet to surrounding residential structures or building envelopes. Setback requirements for a Neighborhood Lift Station (serves less than 1,500 ERCs.) are 20 feet to the rear or side lot line and 30 feet to surrounding residential structures or building envelopes.
- All utilities required for maintenance and operation of the lift station.
- Valve and piping identification.
- Backflow prevention device.
- By-pass capabilities approved by the City.
- Pump identification, including all nameplate data.
- Pump detail drawing indicating the minimum submergence for the pump.

- Design capacity (average daily/peak flows) and system response/curve calculations.
- Wet well design criteria and pump control level settings.
- Pump curve for selected pump with design point noted and minimum and maximum system curves plotted on the pump curve.
- Provide all electrical and Supervisory Control and Data Acquisition (SCADA) components as shown on the Standard Details.

2.3.9 Wastewater Lift Stations Hydraulic Requirements

Prior to actual design of any wastewater lift station, the Developer's Engineer must coordinate with the City to verify the wastewater capacity. Proper coordination will assure the proposed lift station will meet the hydraulic requirements of the City wastewater system.

2.4 Record Drawing Submittals

Following completion of construction and testing, the Engineer of Record (licensed in the State of Florida) shall submit, to the Planning and Zoning Division, the following:

1. USB 3.0 flash drive (preferred) or CD/DVD containing the following "Record" drawings files:
 - a. AutoCAD files:
 - i. Development Projects (Contributed Assets): One (1) AutoCAD 2018 or later DWG file having no XREF dependencies and containing a consolidated, pre-construction base map geo-referenced to the Florida West NAD 83 and visibly include at least one (1) City benchmark published in LABINS. Said base map shall include the site topography, roadway geometry, all existing utility geometry (water, wastewater, reclaimed water, storm water, and other buried utilities if known), all newly installed utility geometry (water, wastewater, reclaimed water, and storm water), and all newly installed utility features (valves, fittings, manholes, etc.). All geometry and utility features shall be easily discernable (line weight and type) on separate layers with appropriate labeling. No cross sections, profiles, construction notes, tabs, dimensions, or details need to be included.
 - ii. Capital Improvement Projects: One (1) AutoCAD 2018 or later DWG file with all associated XREFs, blocks, sheets, survey drawings, details, profiles, DWF underlays, raster images, data point files, point file format descriptors, and TIN files. Also, one (1) consolidated drawing file in DWG format meeting all the requirements as delineated above.
 - b. PDF files:
 - i. All projects: One (1) PDF file electronically signed and sealed by EOR containing a complete set of Record Drawings for the Project. The PDF file shall include the entire project plan set, from cover sheet through the final details. It shall be comprehensive in nature and include all water, wastewater, and reclaimed water utility design sheets, all plan/profile sheets, all roadway design sheets, all storm water utility and drainage design sheets, all cross sections, all construction details, and any landscaping plans associated with the project (saved at 24-inch by 36-inch, 300 DPI with bar scale).

- ii. Capital Improvement Projects: One (1) color PDF of the Contractor's red lined markups (As-built plan set).

All drawing revisions shall be consistent in style, color, line weight, font, symbol, and layer with the original construction documents. No additional colors, fonts, line weights, or block symbol shall be accepted.

All file revisions must be performed on a computer using AutoCAD 2018 or later. No conversions from Microstation or other CAD based programs will be accepted.

Record drawings must reflect all changes to the approved construction plans. The completed Record Drawings shall have the look and appearance of the original construction plans, meeting the standards set forth above. When Record drawings have numerous changes or are so "congested" that legibility is an issue, the City will require the Engineer of Record to supply additional sheets showing the detailed changes to the original plans. The Record Drawings shall also include the following information:

1. All Water/Wastewater/Reclaimed Water Record Drawing shall be prepared by using data provided by Licensed Land Surveyor in the State of Florida.
 - a. Offsets from edge of pavement and right-of-way to pipelines shall be shown at not greater than 200 feet intervals.
 - b. Location of the ends of casing pipe, concrete encasement, and sheeting by X-Y-Z coordinate. Include size (diameter), length, material type and wall thickness of casing.
 - c. Grade elevations.
 - d. Datum information.
 - e. Record changes in alignment or elevation of other utilities due to construction.
 - f. Record all found utilities not shown on approved construction plans.
 - g. Installed pipe diameter, material type, and AWWA/ASTM/ANSI classification. If abandonment of existing facilities is approved by the City, provide size, type, depth, location, and limits (XYZ coordinates) of any abandoned pipe. Also include the method of abandonment (i.e., grout filled, etc.).
 - h. Cross-sectional details shall be provided where utilities cross.
 - i. Record Drawings shall contain a clear statement if the project name has changed.
 - j. Information on the as-built features (potable water, wastewater, and reclaimed water) shall be submitted per Asset Data Spreadsheets included in Appendix D. The information shall be submitted on a USB 3.0 flash drive (preferred) at the time of Record Drawing submittal. Each feature on the spreadsheet shall be given a unique ID that shall correspond with its designation on the Record Drawings.
2. Water, Wastewater, and Reclaimed Water Pressure Pipe Drawings
 - a. X-Y-Z coordinates taken at the top of pipe/appurtenance and at finished grade for all fittings, bends, reducers, sleeves, plugs, caps, tees, crosses, taps, restrained joints, valves, blow-offs, hydrants, high and low points, meter, etc.

- b. Provide installed top of pipe (XYZ coordinates) for pipes and finished grade elevations at a minimum of 200 feet intervals for all pressure mains and at all high points for air release valves. For offset air release valves, provide XYZ coordinates at tap and rim of the air release valve.
 - c. X-Y-Z coordinates for all service connections when they are not on property lines.
3. Gravity Line Drawings and Inspection Report Requirements
- a. On the plan view, show X-Y-Z coordinates at center of wastewater manhole cover. Annotate the distance between manholes, finished rim elevations, entrance and exit pipe invert elevations, invert directions at each manhole, and pipe slopes on plan and profile sheets.
 - b. Provide X-Y of all lateral cleanouts and the depth of cover at the property line.
 - c. Provide size, length, invert elevation and surface grade of stub outs for future connections.
 - d. Provide Closed-Circuit Television (CCTV) report and videos of all constructed gravity lines.
4. Wastewater Lift Station Drawings
- a. Provide Pump nameplate data.
 - b. Pump detail drawing indicating the minimum submergence for the pump.
 - c. Wet well operating elevations, inverts, and slab elevations.
 - d. Operation and Maintenance (O&M) Manual

2.4.1 Other Certification

When certification of "Record" Drawings is performed by an Engineer other than the Design Engineer, the following requirements shall apply:

- The certification shall be completed by a Registered Professional Engineer (PE) licensed in the State of Florida.
- Any deviations from the original design which were made shall be coordinated with the Design Engineer to insure that the integrity of the original design was not compromised. The Record Drawing shall meet all the requirements as indicated above, with the exception that any items revised by the certifying Engineer shall be highlighted on the drawing, using a small numbered triangle and annotated in the revision block. Revisions shown on Record Drawings shall be in CAD or drafted to the same quality as the original drawings, not hand drawn. All revisions to computer generated drawings shall be made in AutoCAD 2018 or later using the same symbols, style, colors, line weights and fonts as used in the original drawings. All completed Record Drawings shall have the look and appearance of the original drawings.
- A statement by the certifying Engineer, responsible for making the revisions, shall be placed on each sheet, which states that they made the revisions designated by the numbered triangles and is responsible for the revision.
- Each sheet shall contain the certifying Engineer's engineering company logo with their Certificate of Authorization, name, address and telephone number.

- Each sheet shall contain a statement that the certifying Engineer, or someone under their direct supervision, observed the construction, prepared the Record Drawing, and found that the construction was performed in substantial compliance with the intent of the design drawings.
- The certifying Engineer shall sign in ink, date, and seal each record drawing sheet. Drawings and electronic file submittals shall comply with the requirements in Section 2.4.

END OF SECTION

SECTION 3: SPECIFICATIONS FOR DRINKING WATER DISTRIBUTION SYSTEMS DESIGN

3.1 General

The following section covers the general design, review of plans and specifications, and acceptance of drinking (potable) water distribution systems, water main extensions, and all appurtenant items which are to be constructed by private enterprise and are to be owned and maintained by City.

All improvements and modifications made to the City's water system shall be done in accordance with plans approved by the City. Material, workmanship, and installation shall comply with Water, Wastewater, and Reclaimed Water Utilities Construction Technical Specifications and Standard Details.

All pipeline and appurtenance materials in contact with potable water must be NSF-61 certified and shall conform to the latest standards issued by ASTM, AWWA and ANSI/NSF. All backflow preventer assemblies shall comply with the City of Plant City Manual of Cross-connection Control.

3.2 Plans Preparation

All water distribution systems, water main extensions, and all appurtenant items shall be designed in accordance with the applicable regulations of City, the Florida Department of Environmental Protection (FDEP), and the standards established herein.

City shall own and maintain all portions of the water system up to and including the backflow, water meter, curb stop and meter box.

The distribution system or any portion thereof, which is to become the property and sole responsibility of the City's Utilities Department, shall be designed and constructed within a public right-of-way or easement which may be used for said purpose. The primary feed for the distribution system shall be routed within the City road right-of-way. A secondary feed may be routed within a utility easement dedicated to the City.

The water distribution system or water main extension shall be designed and constructed in accordance with the requirements specified in Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications and standard details.

3.3 Plans Review

All plans shall comply with the requirements of the Division 1, Section 2 of this Technical Manual.

3.4 Project Acceptance

Following completion of construction and testing, the water system will need to clear through the Florida Department of Health (FDOH) to be placed in service. The Developer's Engineer of Record (EOR) shall submit certified "Record" drawings and the Asset Data spreadsheet with the "as-built" information shown on the original design as outlined in Division 1, Section 2 of this Technical Manual.

3.5 System Design and Flow Criteria

The provisions of this Section set forth the general requirements for the design of potable water distribution systems and facilities and provide criteria for determining flow demands. The Engineer shall comply with all the requirements of the FDEP in addition to the criteria contained herein.

3.5.1 Line Sizing Criteria

The pipe sizing design criteria for water distribution systems shall as a minimum provide for at least 100% of the combined peak hour, maximum day demand rate, plus fire flow. The allowable minimum service pressure under said design condition shall not be less than 20 psi at grade level, prior to meter connection, or 35 psi in a transmission line. Design flows and method of computation shall be submitted to the Planning and Zoning Division for review by the City's Utilities Department at the time of the preliminary plat or site plan submittal, or at the time of the Master Plan submittal. When a distribution main will serve existing or future developments beyond the borders of the proposed site, the City may request oversizing.

3.5.2 Minimum Line Size

The minimum pipe size for distribution mains shall be four inches, with the exception that the minimum size for distribution mains serving fire hydrants and fire hydrant branches shall be a minimum of six inches in diameter.

3.5.3 Line Routing

The primary feed for the water distribution system for a residential or commercial subdivision shall be routed within City, County, or State road right-of-way. A secondary feed may be routed within a water, wastewater, or reclaimed water utility easement that is dedicated to the City, only if there is no road right-of-way available. Multiple points of connection may be required in order to minimize service outage in emergencies, repairs, etc., and to improve fire protection and water quality.

As a minimum, at the entrance to the project, the off-site main extension shall be extended within the right-of-way with a valve and one length of pipe with a cap.

The water mains shall be looped making appropriate tie-ins to avoid dead-ends, in order to provide increased reliability of service and reduce head loss.

Sufficient valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located no more than 500 feet apart in commercial, industrial, and high-density residential areas and no more than 1,000 feet in all other areas.

The horizontal and vertical separation between underground potable water mains and sanitary or storm sewers, wastewater or stormwater force mains, and reclaimed water mains shall be per F.A.C 62-555.314.

3.5.4 Depth of Cover

- Cover as measured from finished grade to top of the pipeline shall be a minimum of 36 inches for pipe diameters up to and including 12 inches.

- Depth of cover for pipes greater than 12 inches in diameter shall be a minimum of 48 inches.
- For pipe in Florida Department of Transportation (FDOT) right-of-way, City or County arterial road right-of-way, or crossings of City or County arterial roads, the minimum depth of cover shall be 48 inches.

3.5.5 Flow Criteria

- Residential and Commercial Flow Demand: Flow demands for design shall be calculated based on full or projected ultimate development. Peaking factors for water flow criteria shall be in accordance with the Application for Engineering Plan Review Section D City's General Requirements for Site Water and Sewer included in Appendix E.
- Needed Fire Flow: Fire flow requirements shall be calculated in accordance with the guidelines specified by the Insurance Services Office (ISO) based on type of construction, type/size of occupancy, and distance from adjacent structures. The minimum residual pressure at peak hour, maximum day demand condition, plus fire demand shall not be less than 35 psi for transmission mains and 20 psi for distribution mains.

3.5.6 Fire Hydrant Spacing, Location, and Flow

- Fire hydrant access and water supply shall be in accordance with National Fire Protection Association NFPA 1, Chapter 18.
- Manufacturing and Industrial Areas: The maximum distance to a fire hydrant from the closest point on the building shall not exceed 300 feet. The maximum distance between hydrants shall not exceed 500 feet. The minimum required fire flow shall be 1000 gpm.
- Commercial and Apartment Areas: The maximum distance to a fire hydrant from the closest point on the building shall not exceed 400 feet. The maximum distance between hydrants shall not exceed 500 feet. The minimum required fire flow shall be 1000 gpm.
- Residential Areas: Fire hydrants shall be placed a maximum of 800 feet apart along the right-of-way with a maximum of 500 feet to the farthest lot. The minimum flow from each hydrant shall be 1000 gpm.
- Other Areas: Fire hydrants shall be placed a maximum of 1,000 feet apart, along the right-of-way of rural roads or other areas as approved by the City on a case-by-case basis.

3.5.7 Temporary Water Plan for Construction

The provisions set forth herein shall be applicable to all construction projects. The Developer shall be responsible to submit a temporary water plan (Plan). The Plan shall describe how water will be provided and metered for construction needs and, if applicable, fire demand. It shall include the maximum peak hour flow which will be required prior to acceptance for occupancy. The Plan shall be submitted to the Planning and Zoning Division along with the required construction plans.

END OF SECTION

SECTION 4: SPECIFICATIONS FOR WASTEWATER COLLECTION / TRANSMISSION SYSTEMS DESIGN

4.1 General

The following specifications cover the general design, review of plans and specifications, and acceptance of wastewater collection systems, wastewater pumping stations, wastewater transmission force mains, wastewater line extensions, and all appurtenant items which are to be owned and maintained by the City.

All improvements and modifications made to the City wastewater collection system shall be done in accordance with plans approved by the City. Material, workmanship, and installation shall comply with Water, Wastewater, and Reclaimed Water Utilities Construction Technical Specifications and Standard Details.

4.2 Plans Preparation

All wastewater collection systems, wastewater pumping stations, wastewater transmission force mains, wastewater line extensions, and all appurtenant items shall be designed in accordance with the applicable regulations of the City and the Florida Department of Environmental Protection (FDEP) and the standard established herein.

The wastewater collection system or wastewater transmission system or any portion thereof, which is to become the property and sole responsibility of the City, shall be designed and constructed within a public right-of-way or easement which may be used for said purpose.

4.3 Plans Review

All plans shall comply with the requirements of the Division 1, Section 2 of this Technical Manual.

4.4 Project Acceptance

Following completion of construction and testing, the wastewater collection system will need to clear through the Environmental Protection Commission of Hillsborough County (HCEPC) to be placed in service. The Developer's Engineer of Record shall submit certified "Record" drawings and the Asset Data spreadsheet with the "as-built" information shown on the original design as outlined in Division 1, Section 2 of this Technical Manual.

4.5 System Design and Flow Criteria

The provisions of this section set forth the general requirements for design and installation of wastewater collection/transmission systems and facilities. The Engineer shall comply with all the requirements of the Florida Department of Environmental Protection in addition to the criteria contained herein.

4.5.1 Siting Requirements

Lift Stations shall be sited to consider the potential for damage or interruption of operation because of flooding. Lift station structures and electrical and mechanical equipment shall be designed to be protected from physical damage by the 100-year flood. Lift stations shall be designed to remain fully operational and accessible during the 25-year flood unless lesser flood levels are appropriate based on local considerations, but not less than the 10-year flood. [62-604.400(2) (e), F.A.C.]

4.5.2 Flow Criteria

Flow estimates for design shall be calculated based on full or projected ultimate development. Peaking factors for wastewater flow criteria shall be in accordance with the Application for Engineering Plan Review Section D City's General Requirements for Site Water and Sewer. When a wastewater main will serve existing or future developments beyond the borders of the proposed site, the City may request oversizing.

4.5.3 Connection Feasibility

The developer needs to verify the existing wastewater collection system connections are adequate for new development. The developer will be responsible for extending the service to a point where the City's wastewater collection system has capacity to receive the additional flow.

4.5.4 Gravity Collection System

- Gravity mains shall be sized to accommodate peak flow when flowing half full. No gravity sewer main shall be less than eight inches in diameter.
- All gravity mains shall be laid with straight alignment between manholes.
- Gravity mains shall be designed and constructed per the recommended minimum slopes in the recommended standards for wastewater facilities.
- The horizontal and vertical separation between underground potable water mains and sanitary or storm sewers, wastewater or stormwater force mains, and reclaimed water mains shall be per F.A.C 62-555.314.

4.5.5 Wastewater Manholes

- Manholes shall be installed at the end of each line, at all changes in grade, size or alignment, and at all gravity main collection intersections. The distance between manholes shall not be greater than 400 feet, unless prior approval is obtained from the City. Cleanouts may be used only for special conditions and shall not be substituted for manholes.
- The minimum diameter of manholes shall be 48 inches. A minimum access diameter of 24 inches shall be provided per the City's Standard Details. The manhole depth shall not exceed 25 feet.

4.5.6 Force Main

- The Developer shall install the largest size force main that will maintain a minimum velocity of two feet per second (fps). The minimum size force main constructed within City road right-of-way or dedicated easements shall not be less than four inches in diameter.
- Force mains shall be sized to carry the full development peak flow from all connected pumping stations within the designated stations service area. Each force main system should be capable of transporting the peak flow from each pump station operating simultaneously without producing excessive pressure, i.e., not to exceed 100 feet Total Dynamic Head (TDH) anywhere in the system. Cover, as measured from finished grade to the top of the pipe, shall not be less than 36 inches.
- New force mains connecting to existing force mains shall include a plug valve at the point of connection. The distance between in-line (isolation) valves shall not exceed 2,000 feet.
- Force mains shall be designed such that the change in slope of force main requires air release valves are minimized.

4.5.7 Wastewater Lift Stations

- Wastewater lift stations shall be designed to accommodate the full development flow from all contributing areas at peak flow computed in accordance with the "Flow Criteria" set forth in Section 4.5.2.
- Wet well depth shall not exceed 30 feet.
- Wastewater lift stations should be adequate to maintain a minimum velocity of 2 feet per second in the force main.
- Pump Off level is above the minimum submergence (top of pump).
- Lift stations shall be able to bypass flows during emergency or maintenance operations.
- Adequate provision shall be made to effectively protect maintenance personnel from hazards. The design of equipment for confined space entry in accordance with OSHA and regulatory agency requirement shall be provided for all wastewater lift stations.
- Flowmeter shall be provided for master wastewater lift stations.
- Odor control is required per City's Standard Details.
- Grinder pump shall not be used for private lift station.
- Isolation valve is required where the discharging pipe has the first elbow underground leaving the lift station.

END OF SECTION

SECTION 5: SPECIFICATIONS FOR RECLAIMED WATER SYSTEMS DESIGN

5.1 General

The following specification covers the general design, review of plans and specifications, and acceptance of reclaimed water distribution systems, reclaimed water transmission main extensions, and all appurtenant items which are to be owned and maintained by City. This includes developer-built on-site reclaimed water distribution systems in residential subdivisions and commercial developments, off-site transmission main extensions to development sites, and on-site requirements for large reclaimed water users.

All improvements and modifications made to the City's reclaimed water system shall be done in accordance with plans approved by the City. Material, workmanship, and installation shall comply with Water, Wastewater and Reclaimed Water Utilities Construction Technical Specifications and Standard Details. All backflow preventer assemblies shall comply with the City of Plant City Manual of Cross-connection Control.

5.2 Plans Preparation

Reclaimed water distribution systems (on-site), reclaimed water transmission main extensions (off-site), and all appurtenant items shall be designed in accordance with the applicable regulations of City, the Florida Department of Environmental Protection (FDEP) and the standards established herein.

- Distribution System : The City shall own and maintain all portions of the reclaimed water distribution system up to the property line and including the backflow (when required), water meter, curb stop, and meter box.
- The distribution system or any portion thereof, which is to become the property and sole responsibility of the City, shall be designed and constructed within a public right-of-way or easement which may be used for said purpose. The primary feed for the distribution system shall be routed within City road right-of-way. A secondary feed may be routed within a utility easement dedicated to the City.
- Transmission System (off site): The City shall own and maintain the transmission system. The transmission main shall be designed and constructed within the public right-of-way.

5.3 Plans Review

All plans shall comply with the requirements of the Division 1, Section 2 of this Technical Manual.

5.4 Project Acceptance

Following completion of construction and testing, the Developer's Engineer of Record shall submit certified "Record" drawings and the Asset Data spreadsheet with the "as-built" information shown on the original design as outlined in Division 1, Section 2 of this Technical Manual.

5.5 System Design

The provisions of this Section set forth the general requirements for design of reclaimed water distribution systems and facilities and provide criteria for determining flow demands. The Engineer shall comply with all the requirements of the Florida Department of Environmental Protection in addition to the criteria contained herein.

5.5.1 Line Sizing Criteria

Reclaimed water distribution systems shall be designed with the necessary capacity to provide adequate volumes under sufficient pressures to supply the irrigation needs of the project area. A peaking factor of four shall be used to calculate the peak hourly flow. The design engineer shall be responsible for obtaining any additional or updated design criteria from the City's Utilities Department. When a distribution main will serve existing or future developments beyond the borders of the proposed site, the City may request oversizing.

5.5.2 Minimum Line Size

The minimum size of distribution system mains shall be four inches. Pipes shall be sized to maintain a minimum distribution main pressure of 45 psi during peak conditions. City staff will provide the pressure reading at the point(s) of connection.

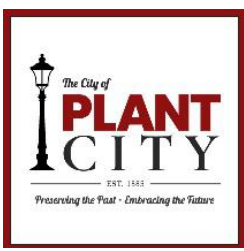
5.5.3 Depth of Cover

- Cover as measured from finished grade to top of the pipeline shall be a minimum of 36 inches for pipe diameters up to and including 12 inches.
- Depth of cover for pipes greater than 12 inches in diameter shall be a minimum of 48 inches.
- When automatic air release valves are required for pipe diameters up to and including 12 inches, the depth of cover of the entire line must be increased to a minimum of 48 inches (enough to maintain the valve vault flush with the existing or proposed grade).
- For pipe in FDOT right-of-way, City or County arterial road right-of-way, or crossing City or County arterial roads, the minimum depth of cover shall be 48 inches.

END OF SECTION

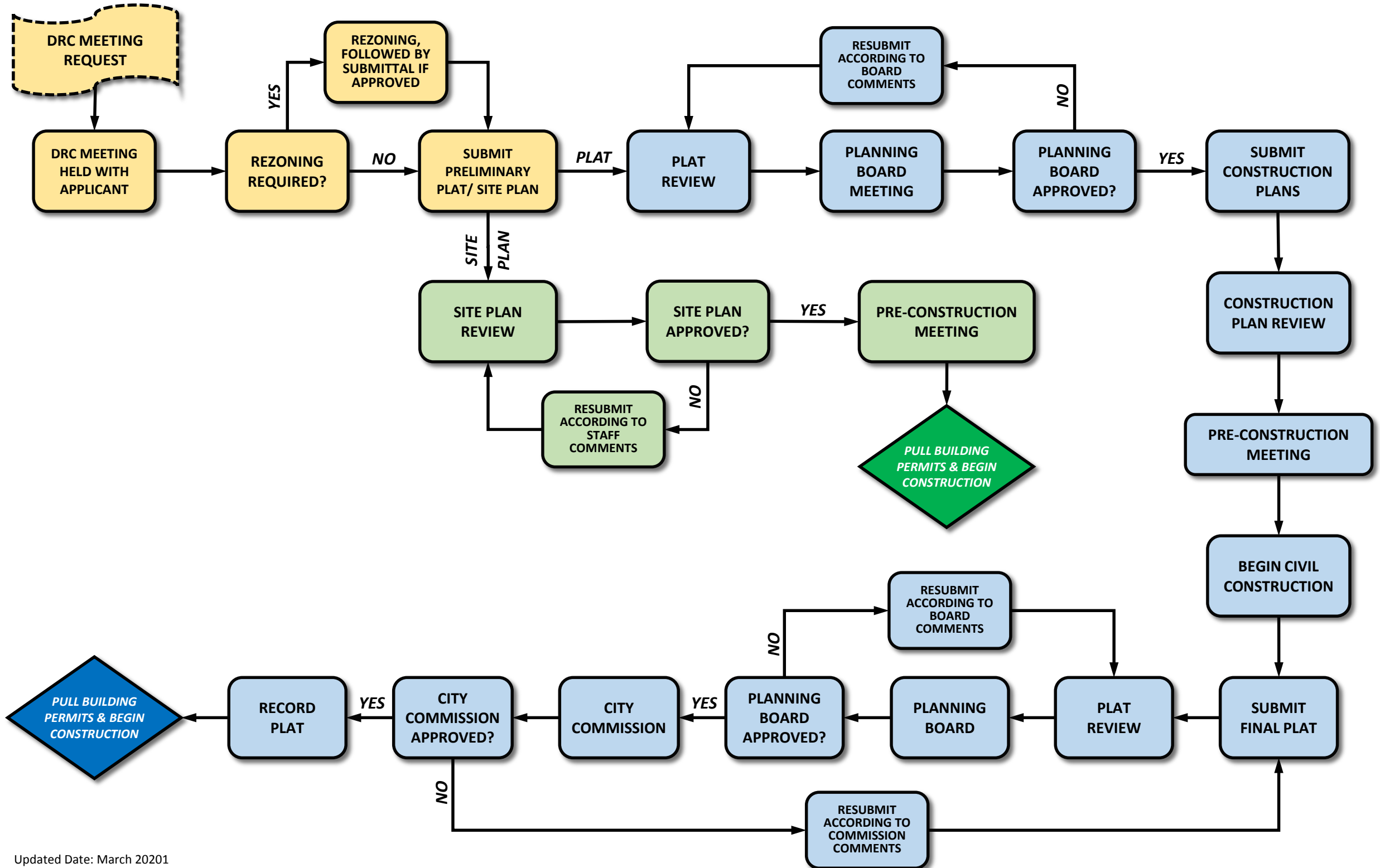
APPENDIX A

Overview of Land Development Approval Process



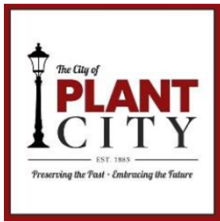
Overview of the Land Development Approval Process

City of Plant City, FL



APPENDIX B

Project Site Plan Submittal Checklist



CITY OF PLANT CITY

PROJECT SITE PLAN SUBMITTAL CHECKLIST

DATE _____

PROJECT NAME _____

PROJECT ADDRESS _____

APPLICANT AND/OR OWNER INFORMATION

NAME _____ CONTACT _____

ADDRESS _____

TELEPHONE () _____

FAX () _____

E-MAIL _____

THE FOLLOWING ITEMS ARE REQUIRED WITH SUBMITTALS

FOR OFFICE USE ONLY

DOCUMENTS	Required	REC'D	DOCUMENTS ROUTED		INITIALS
			Engineering	Planning & Zoning	
CD or Flash Drive containing ALL documents submitted (including Site Plans in PDF and AutoCAD format)	2				
Cover Letters w/All Contact Information	2				
Signed and Sealed Survey w/Legal Description (Must Be Folded to 8.5x11)	2				
Project Site Plans (24" X 36" sheets) (No Rolled plans, must be folded flat as close to 8.5x11 as possible)	4				
Application for Engineering Plan Review	1				
Concurrency Determination Application	1				
Aviation Authority Approval (if applicable)	1				
Review Fees (Paid by check or online by request)					

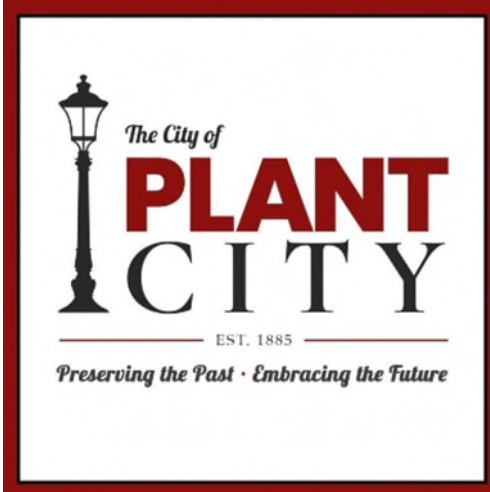
SUBMIT TO : City of Plant City
 Planning & Zoning Division
 302 W. Reynolds St. - 2nd Floor
 Plant City, FL 33563

Phone: (813) 659-4200
 Fax: (813) 659-4206
 E-mail: planning@plantcitygov.com

Incomplete submittal(s) will NOT be accepted and will be discarded after 3 days.

APPENDIX C

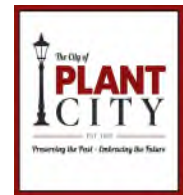
Standard Details



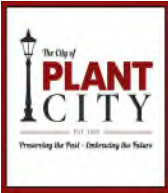
CITY OF PLANT CITY, FLORIDA

STANDARD DETAILS

Dated February 2021



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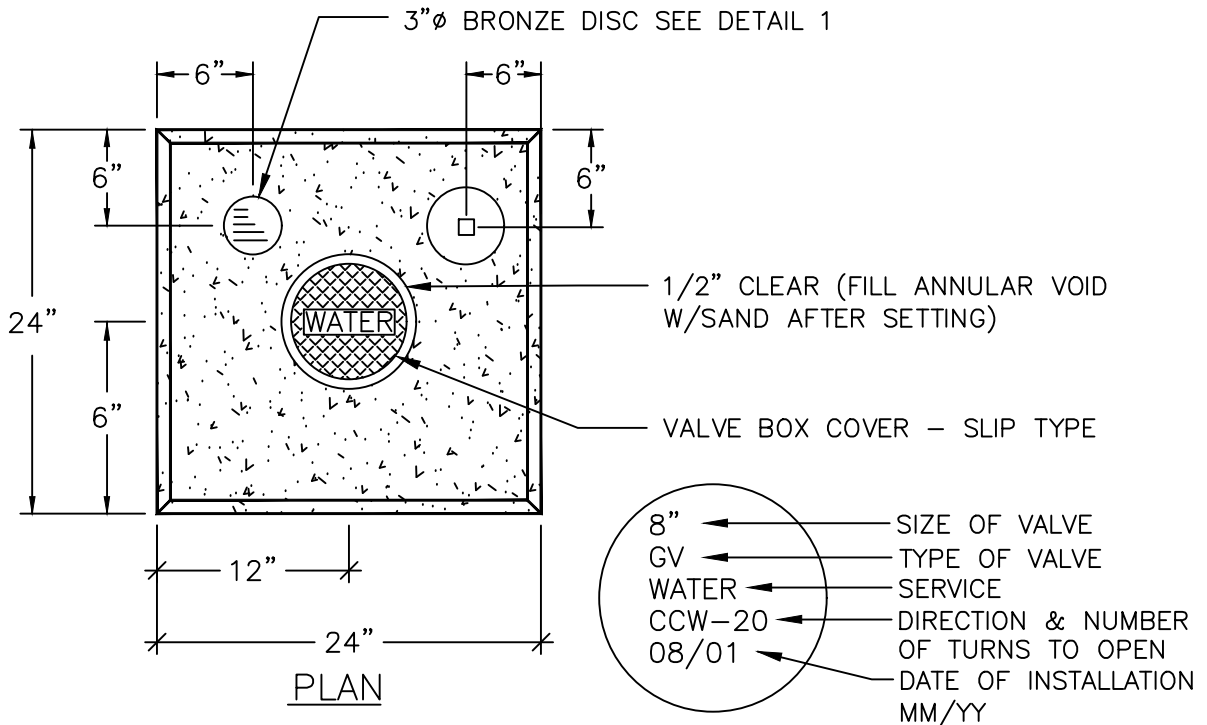
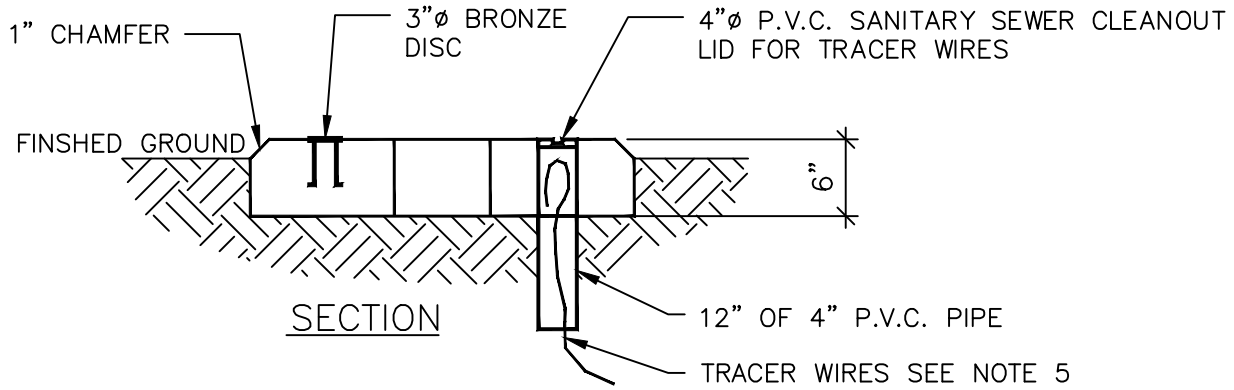


GENERAL NOTES:

1. Water, reclaimed water and sanitary sewer work shall be constructed in accordance with the latest City of Plant City standard details and specification, all applicable local and state regulatory rules and regulations and other applicable regulatory rules.
2. All water, reclaimed water and sanitary sewer construction shall be provided by a contractor qualified as required under the current Florida statute or by an underground utility contractor, licensed under the provisions of chapter 489 FS.
3. The contractor shall notify the City of Plant City at least seven (7) days prior to commencement of the construction project by calling 813-757-9288.
4. The minimum horizontal and vertical separation requirements for the water, reclaimed water and sewer construction shall conform to the latest FDEP rules.
5. The water, reclaimed water and sewer pipes shall be constructed with a minimum 36-inches cover in unpaved areas and a minimum 36-inches cover in paved areas.
6. Joint deflections for restrained and unrestrained joint pipe shall be limited to 80% of the maximum deflections published by the pipe manufacturer.
7. Unless otherwise shown, all utilities shall be within the limits of the project shall be supported and protected against damage during construction. In case when accidental damages occur, the contractor, at the contractor's expense, shall immediately repair all damages.
8. Only City of Plant City personnel can operate water, wastewater and reclaimed water valves. The contractor shall coordinate valve operation with the City personnel. For operation of utilities not owned by the City, it is the contractor's responsibility to coordinate with the appropriate utility representative.
9. Construction activities shall not cause interruptions in water, wastewater, or reclaimed water service. The contractor shall coordinate pre-approved interruptions of service with the City inspector 10 working days in advance.
10. The contractor shall submit shop drawings with detailed information as required by the specifications for all the equipment, products and appurtenances to be used during construction for approval by the City of Plant City engineering department, prior to construction commencement. Unless when shown or specified, the contractor may submit "approved equal" products for approval by the City.
11. All new valves installed shall remain closed during construction. Do not connect newly constructed water mains to any existing water mains unless cleared by FDEP and City of Plant City.
12. Valves shall be placed so that the maximum allowable length of water main required to be shutdown for repair work shall not be more than 500 feet in commercial, industrial or multi-family residential districts, and 1,000 feet in other areas.



13. The primary feed for the water distribution system for a residential or commercial subdivision shall be routed within City road right-of-way. Multiple points of connection may be required in order to minimize service outage in emergencies, repairs, etc., or to improve fire protection and water quality.
14. New or extended water mains shall be installed and connected to the existing system in a manner that avoids dead end water mains, ensures water quality, provides adequate fire protection, and service redundancy.
15. In cases where the City allows water looping to be phased and temporary dead-end mains exist, the temporary dead-end mains shall be equipped with a means to provide adequate flushing. Flushing devices should be sized to provide flows which will give a velocity of at least 2.5 feet per second in the water main being flushed. Flushing devices shall not be directly connected to any sewer. The maximum number of “residential customers” connected to a non-looped system shall be 350. No additional connections will be allowed once the City approved maximum has been reached. For additional connections and looping requirements refer to note 14.
16. The contractor shall provide for bypass pumping and/or hauling wastewater during approved interruptions of wastewater flows and connections. The contractor shall submit a bypass plan to City of Plant City engineering for approval prior to implementation.

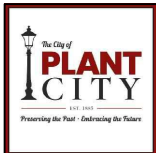


DETAIL 1

NOTES:

1. CONCRETE TO BE TYPE 1 GENERAL PORTLAND CEMENT WITH 3/4" TOP SIZE AGGREGATE AND SHALL BE CLASS B CONCRETE.
2. PROVIDE FIBER MESH REINFORCEMENT SYSTEM FOR CONCRETE
3. FIBERGLASS REINFORCED CONCRETE PAD SHALL BE POURED IN PLACE AND SHALL BE SET 1/2" ABOVE FINISHED GRADE.
4. CONCRETE VALVE JACKET COLLAR TO BE PLACED OVER ALL VALVES WHICH ARE NOT IN PAVEMENT.
5. TRACER WIRE AND ACCESS TUBE FOR ALL NON-METALLIC PIPELINES SEE NOTE WS-02.
6. FOR PAVED AREAS, CONCRETE PAD SHALL NOT BE INSTALLED.

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VALVE JACKET COLLAR DETAIL FOR UNPAVED AREAS

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SCALE: NTS

WS-01

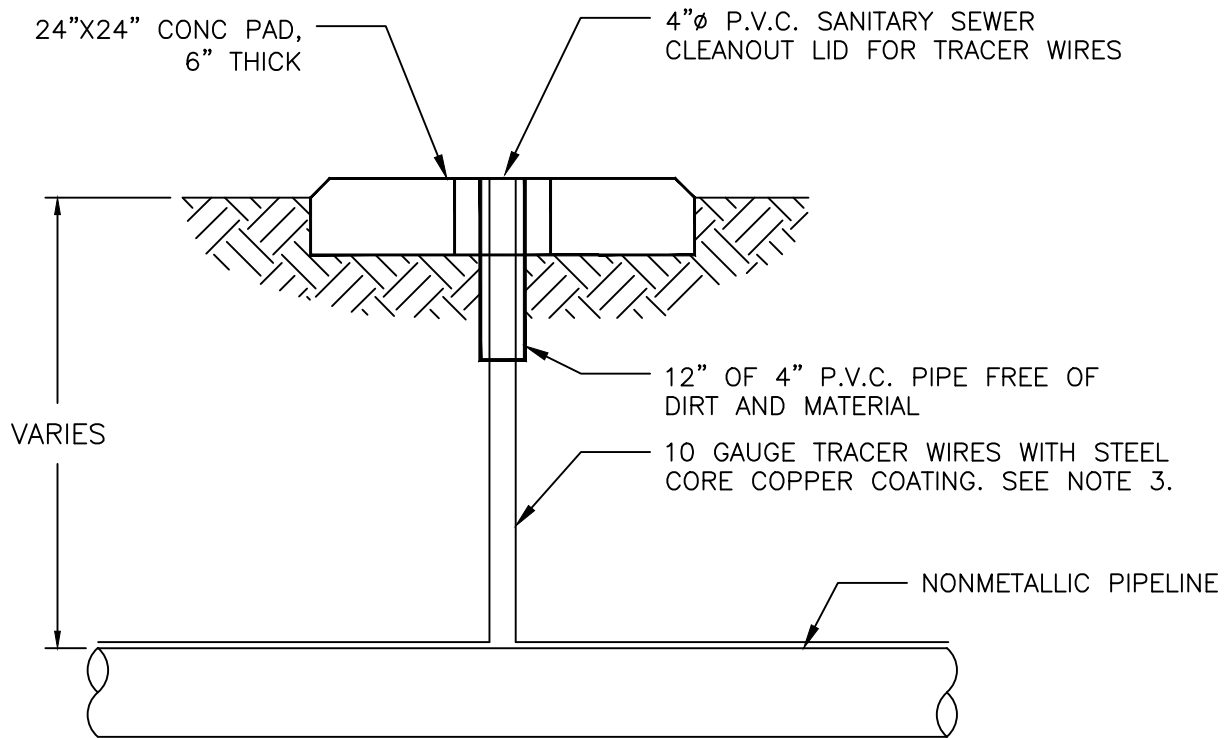
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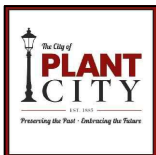
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NOTES:

1. TRACER WIRE AND ACCESS TUBE ARE REQUIRED ON ALL NONMETALLIC PIPELINE.
2. TRACER WIRES SHALL BE CONNECTED TO TOP OF PIPE. ALL SPLICES AND CONNECTIONS SHALL BE MADE WITH WATER TIGHT CONNECTORS.
3. PROVIDE 2 PAIRS OF TRACER WIRES FOR DIRECTIONAL BORING AND ONE PAIR FOR OPEN CUT PIPE INSTALLATION.
4. PLACE TRACER WIRE PAD EVERY 500FT OR AT EVERY VALVE BOX.

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TRACER WIRE DETAIL

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SCALE: NTS

WS-02

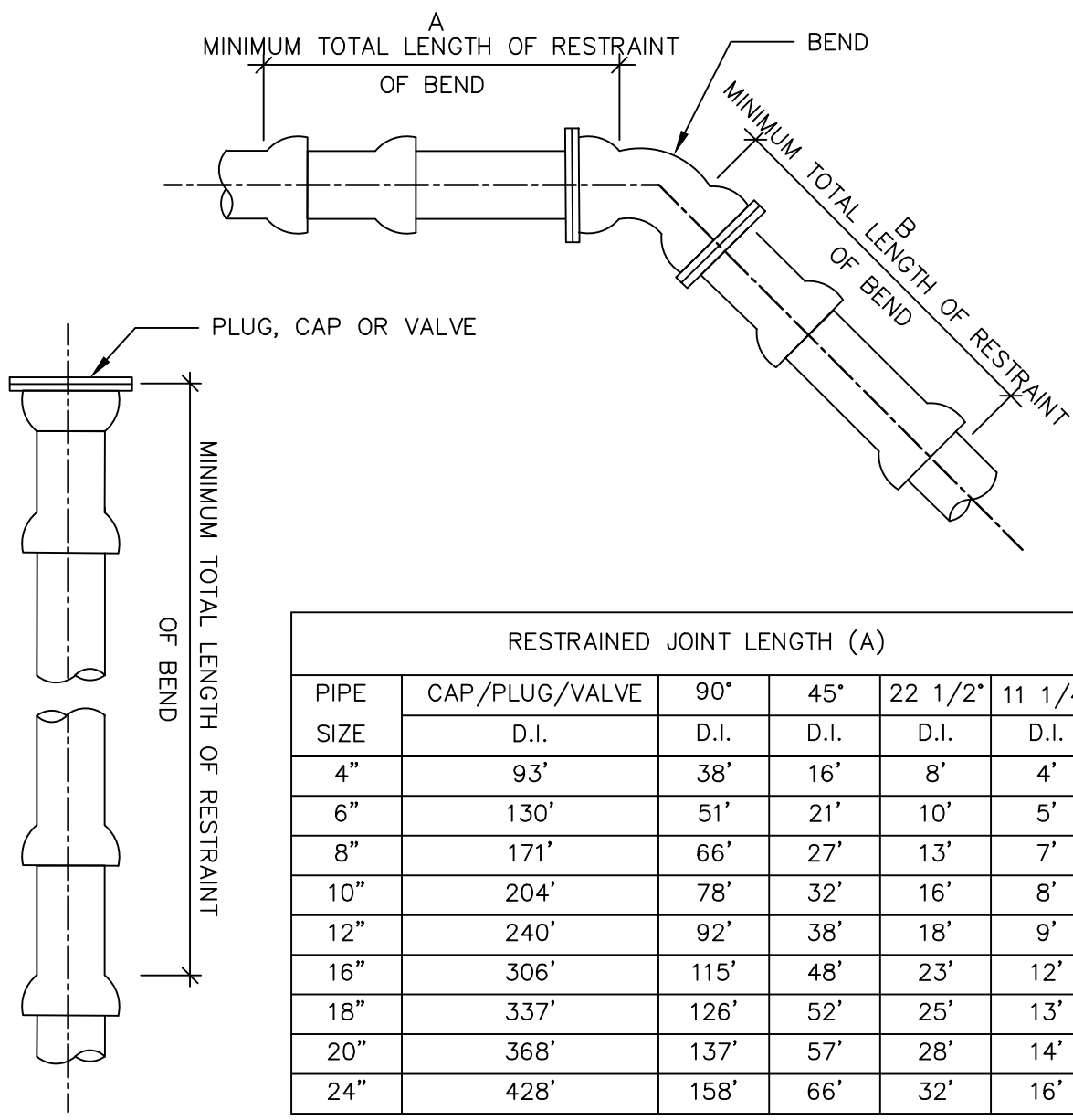
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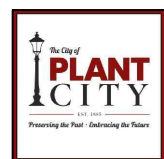


RESTRAINED JOINT LENGTH (A)					
PIPE SIZE	CAP/PLUG/VALVE	90°	45°	22 1/2°	11 1/4°
	D.I.	D.I.	D.I.	D.I.	D.I.
4"	93'	38'	16'	8'	4'
6"	130'	51'	21'	10'	5'
8"	171'	66'	27'	13'	7'
10"	204'	78'	32'	16'	8'
12"	240'	92'	38'	18'	9'
16"	306'	115'	48'	23'	12'
18"	337'	126'	52'	25'	13'
20"	368'	137'	57'	28'	14'
24"	428'	158'	66'	32'	16'

NOTES:

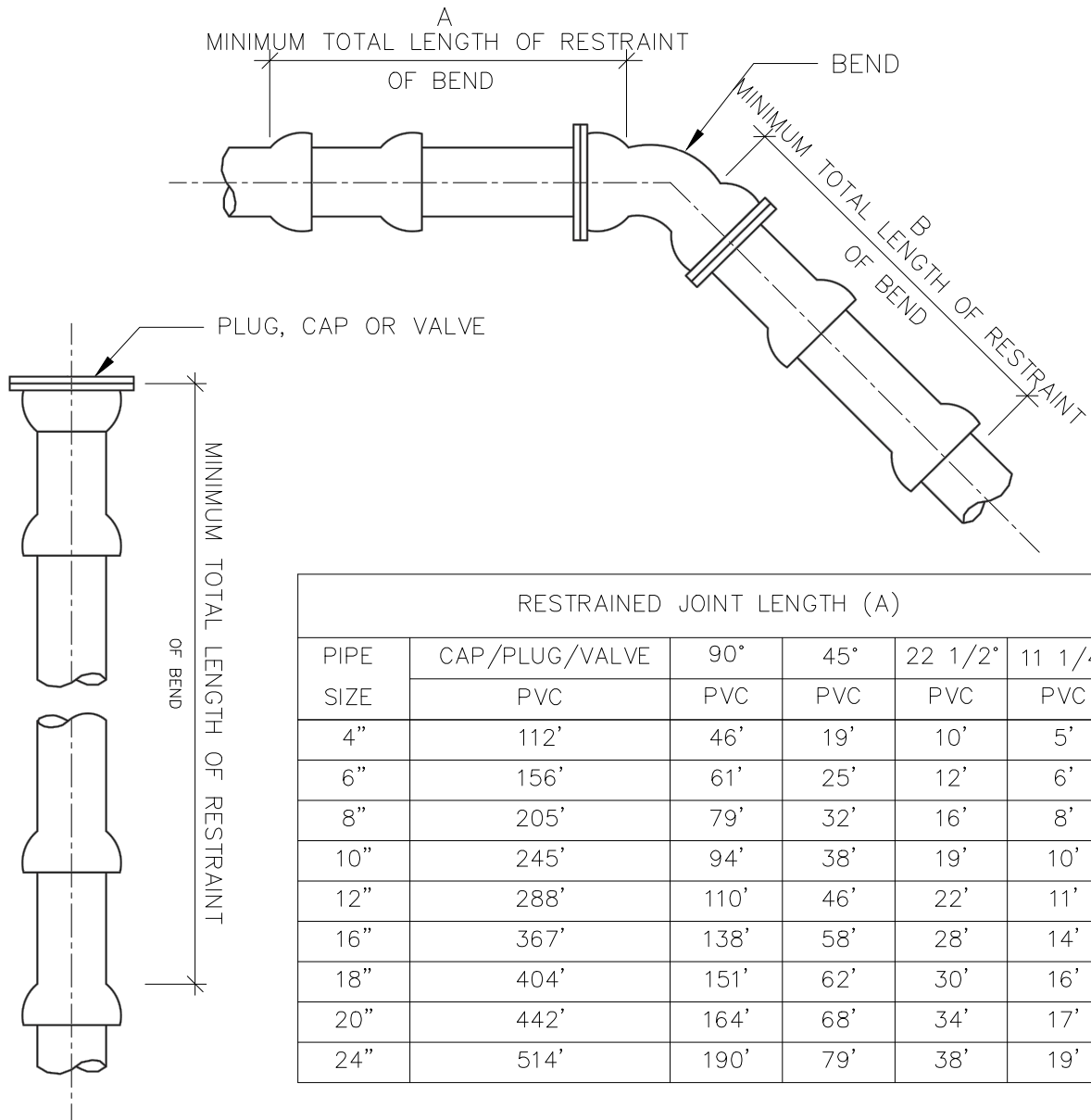
1. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING RESTRAINED JOINTS.
2. THE SCHEDULE SHOWN IS FOR THE FOLLOWING SERVICE CONDITIONS 150 psig INTERNAL PRESSURE; SOIL TYPE: SAND-SILT; 36 INCHES OF COVER AND TYPE 2 LAYING CONDITIONS.
3. RESTRAINED LENGTHS SHOWN IN TABLE ARE MINIMUM LENGTHS (IN FEET) AND ARE REQUIRED IN EACH DIRECTION FROM FITTINGS OR VALVES.
4. ENGINEER OF RECORD SHALL VERIFY ALL OF THE RESTRAINED JOINT LENGTHS AS APPLICABLE TO SPECIFIC PROJECT CONDITIONS.
5. ALL PRESSURIZED FIRE LINES SHALL BE RESTRAINED.

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RESTRAINED JOINT DETAIL FOR DUCTILE IRON PIPE (POLYWRAPPED)

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REVISION DATE				

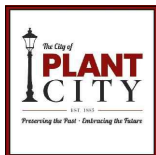


RESTRAINED JOINT LENGTH (A)					
PIPE SIZE	CAP/PLUG/VALVE	90°	45°	22 1/2°	11 1/4°
	PVC	PVC	PVC	PVC	PVC
4"	112'	46'	19'	10'	5'
6"	156'	61'	25'	12'	6'
8"	205'	79'	32'	16'	8'
10"	245'	94'	38'	19'	10'
12"	288'	110'	46'	22'	11'
16"	367'	138'	58'	28'	14'
18"	404'	151'	62'	30'	16'
20"	442'	164'	68'	34'	17'
24"	514'	190'	79'	38'	19'

NOTES:

1. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING RESTRAINED JOINTS.
2. THE SCHEDULE SHOWN IS FOR THE FOLLOWING SERVICE CONDITIONS 150 psig INTERNAL PRESSURE; SOIL TYPE: SAND-SILT; 36 INCHES OF COVER AND TYPE 2 LAYING CONDITIONS.
3. RESTRAINED LENGTHS SHOWN IN TABLE ARE MINIMUM LENGTHS (IN FEET) AND ARE REQUIRED IN EACH DIRECTION FROM FITTINGS OR VALVES.
4. ENGINEER OF RECORD SHALL VERIFY ALL OF THE RESTRAINED JOINT LENGTHS AS APPLICABLE TO SPECIFIC PROJECT CONDITIONS.
5. ALL PRESSURIZED FIRE LINES SHALL BE RESTRAINED

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RESTRAINED JOINT DETAIL FOR PVC PIPE

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ORIGINAL DRAWING 10/03/2017

SCALE: NTS

WS-04

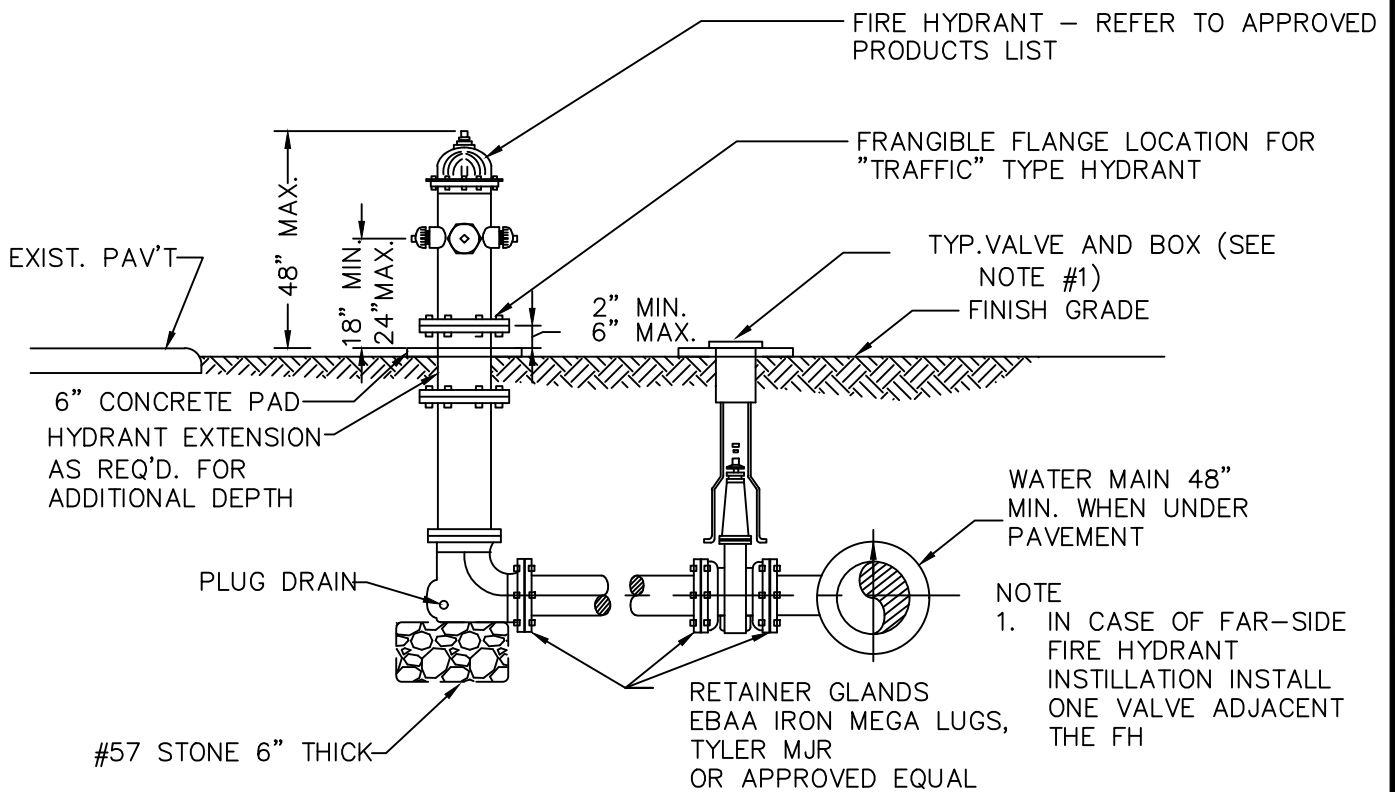
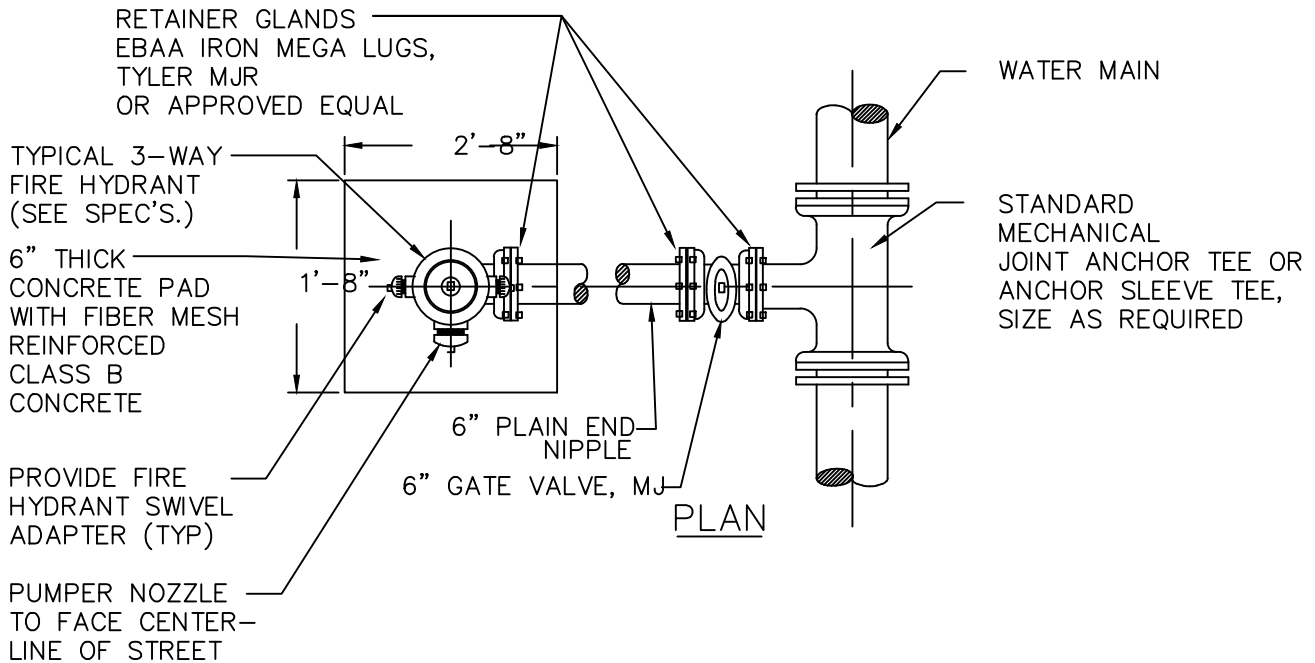
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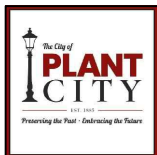
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FIRE HYDRANT INSTALLATION DETAIL

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WS-05

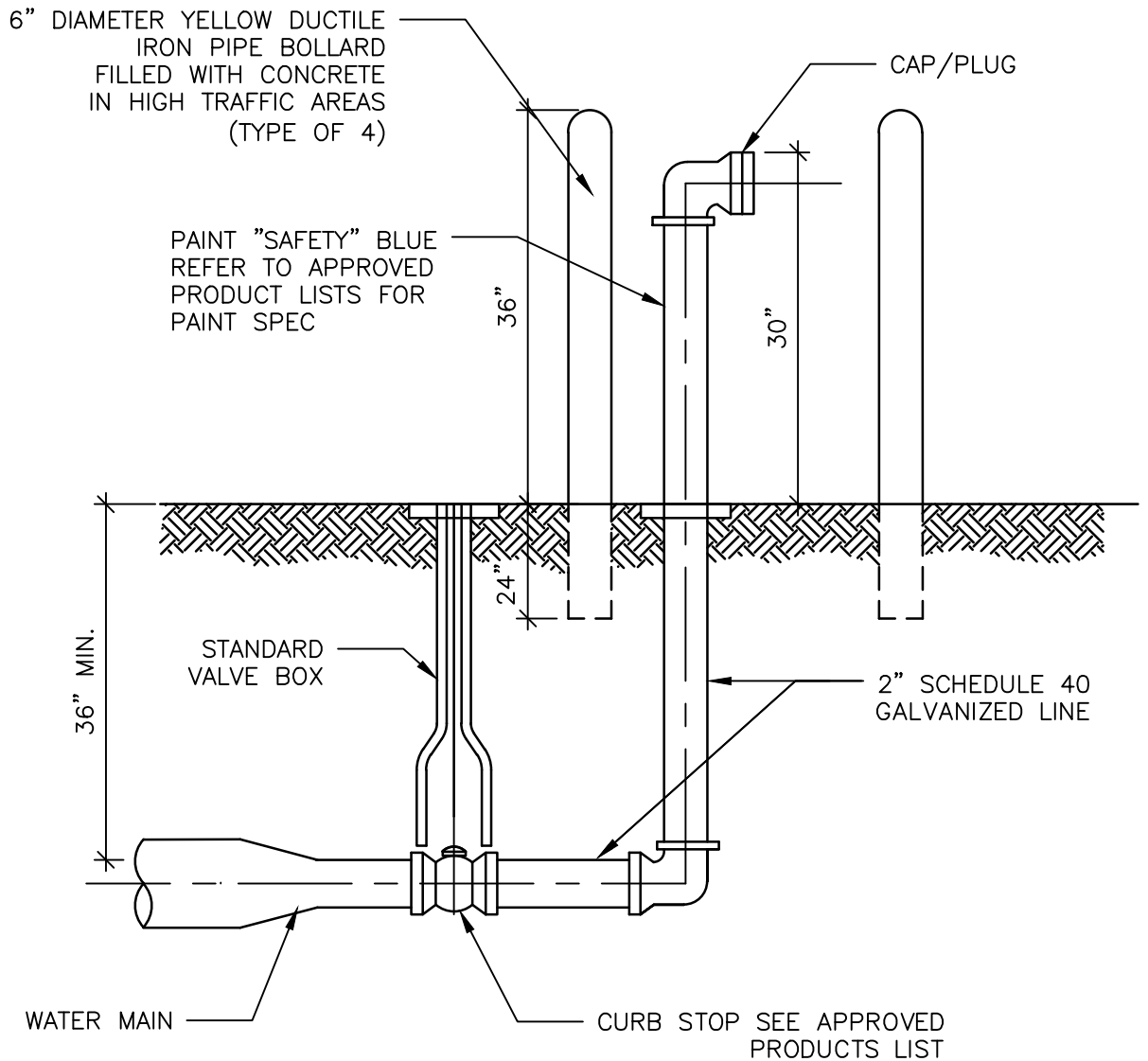
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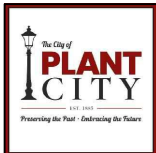
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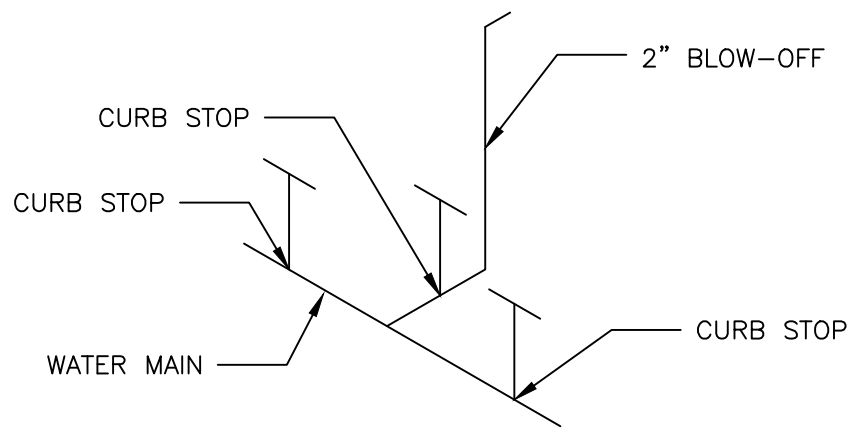
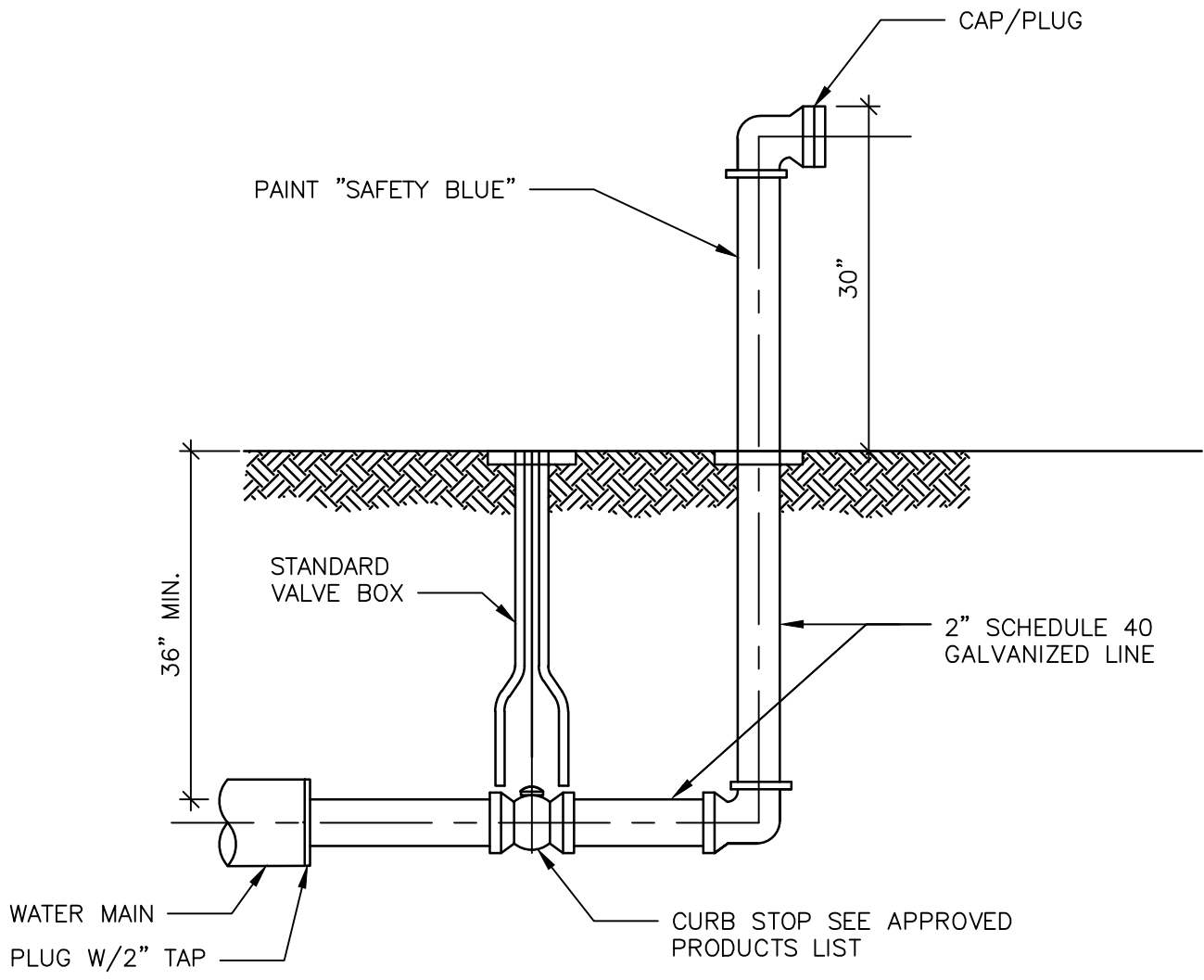


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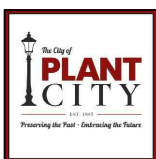
TYPICAL 2" BLOWOFF DETAIL

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ORIGINAL DRAWING	10/03/2017	SCALE: NTS	WS-06A
REVISION DATE			PAGE NO.
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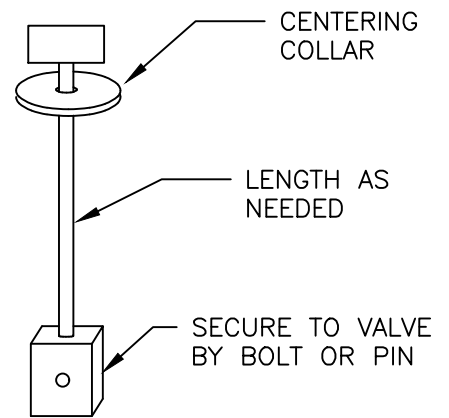
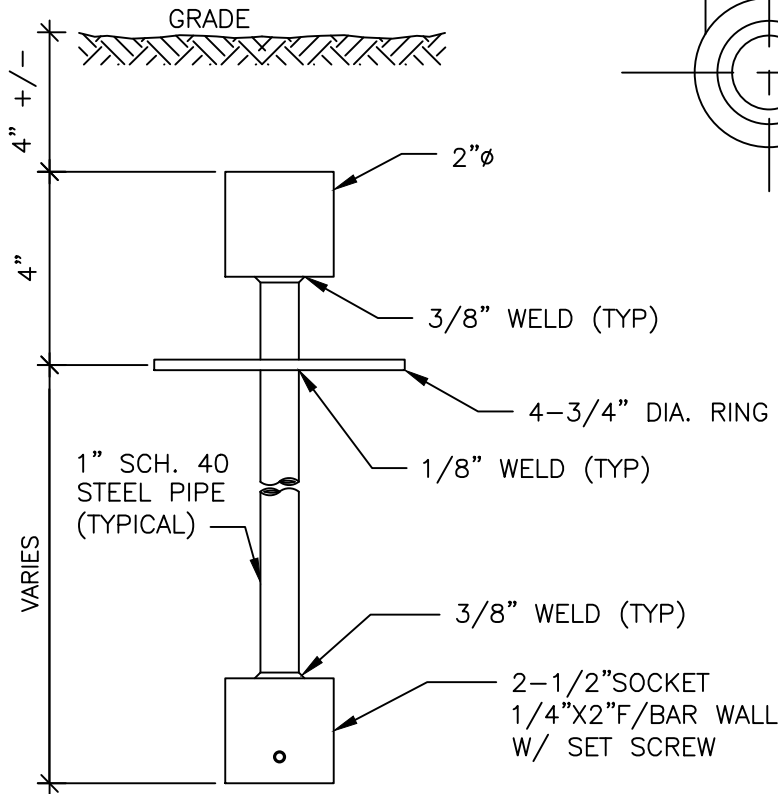
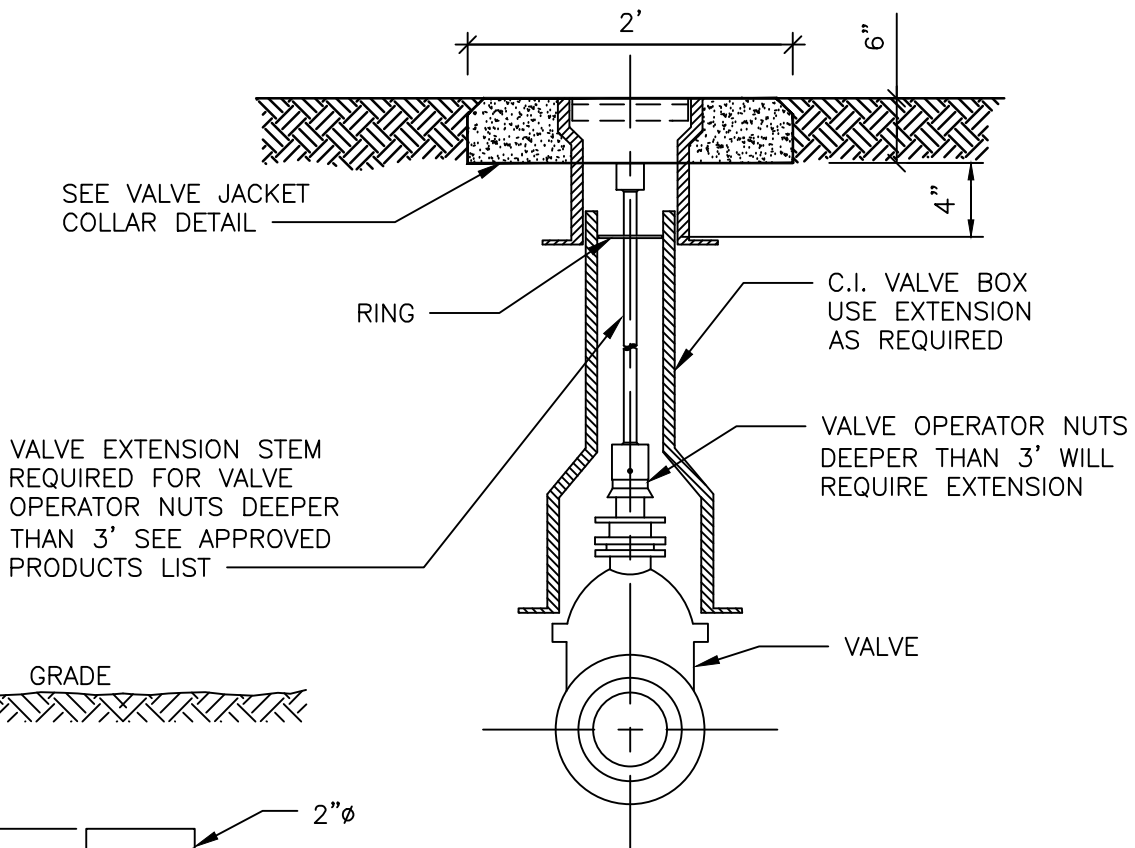
SCHEMATIC ISO REFERENCE DETAIL

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TYP. 2" BLOW OFF VALVE DETAIL
 FOR FUTURE PIPELINE EXPANSION

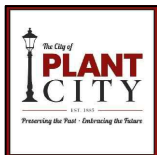
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REVISION DATE			WS-06B
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VALVE EXTENSION
ISO REFERENCE

VALVE EXTENSION DETAIL

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TYP. CI. VALVE BOX AND VALVE EXTENSION DETAIL

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

WS-07

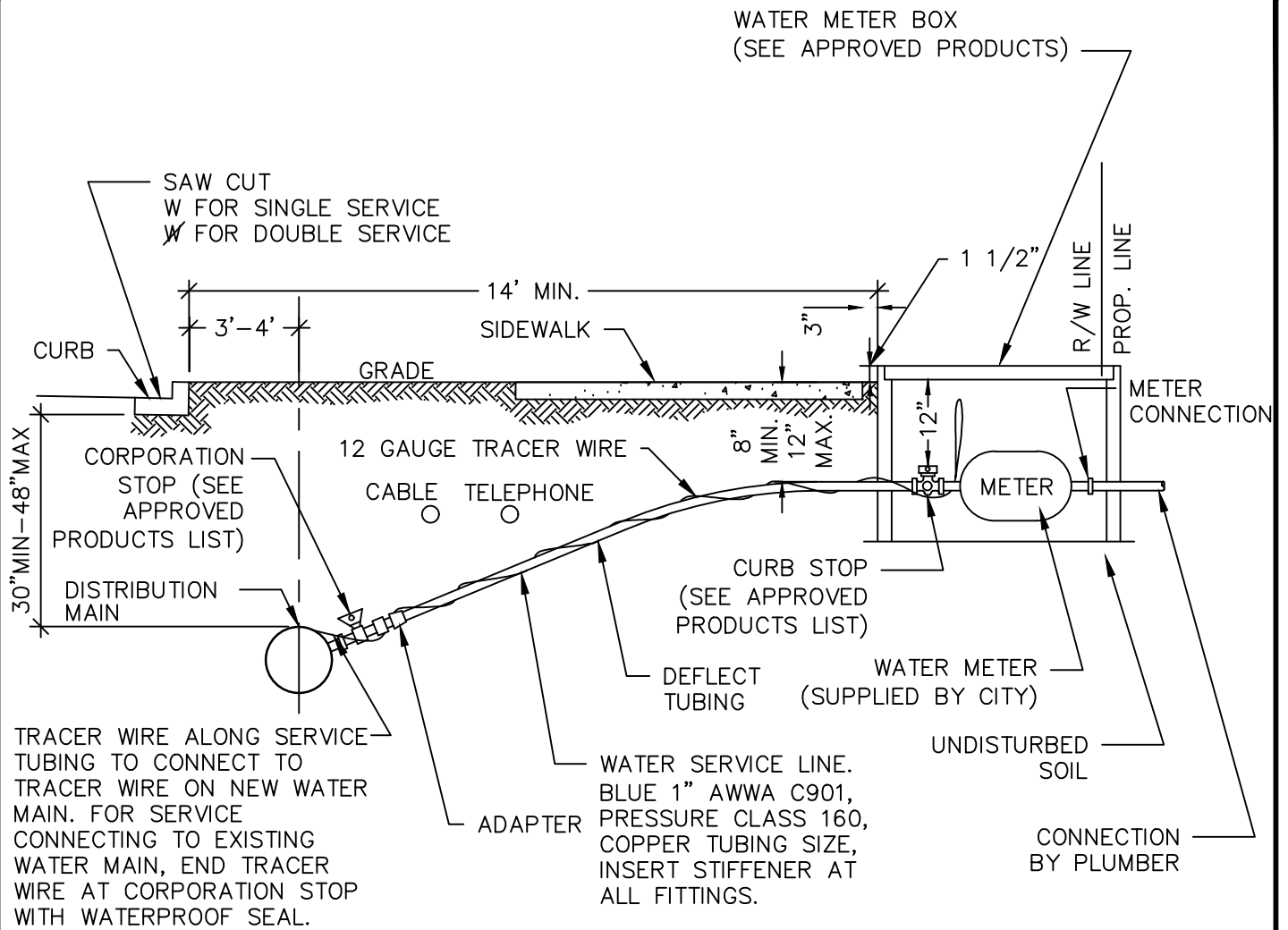
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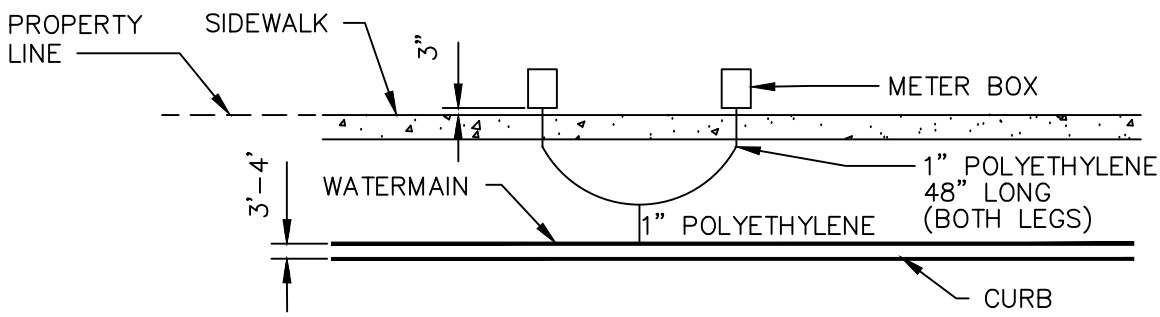
10

REVISION DATE



TRACER WIRE ALONG SERVICE TUBING TO CONNECT TO TRACER WIRE ON NEW WATER MAIN. FOR SERVICE CONNECTING TO EXISTING WATER MAIN, END TRACER WIRE AT CORPORATION STOP WITH WATERPROOF SEAL.

WATER SERVICE LINE. BLUE 1" AWWA C901, PRESSURE CLASS 160, COPPER TUBING SIZE, INSERT STIFFENER AT ALL FITTINGS.



NOTE:

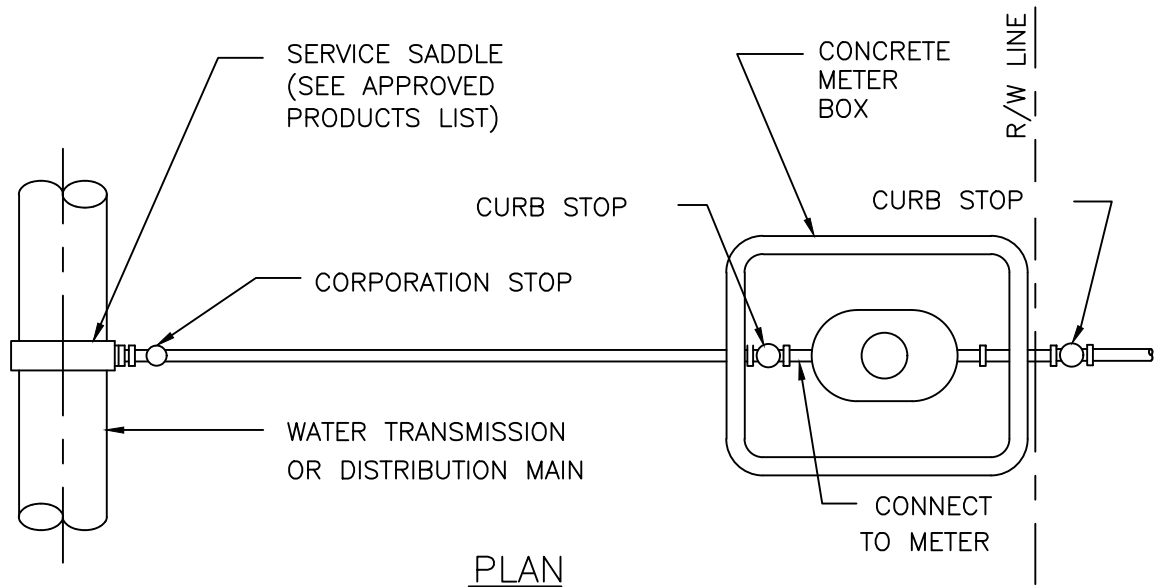
1. FOR THE LONG SIDE SERVICES, INSTALL THE 1" POLYETHYLENE LINE INSIDE A 2" HDPE SLEEVE UNDERNEATH THE CROSSING PAVEMENT.

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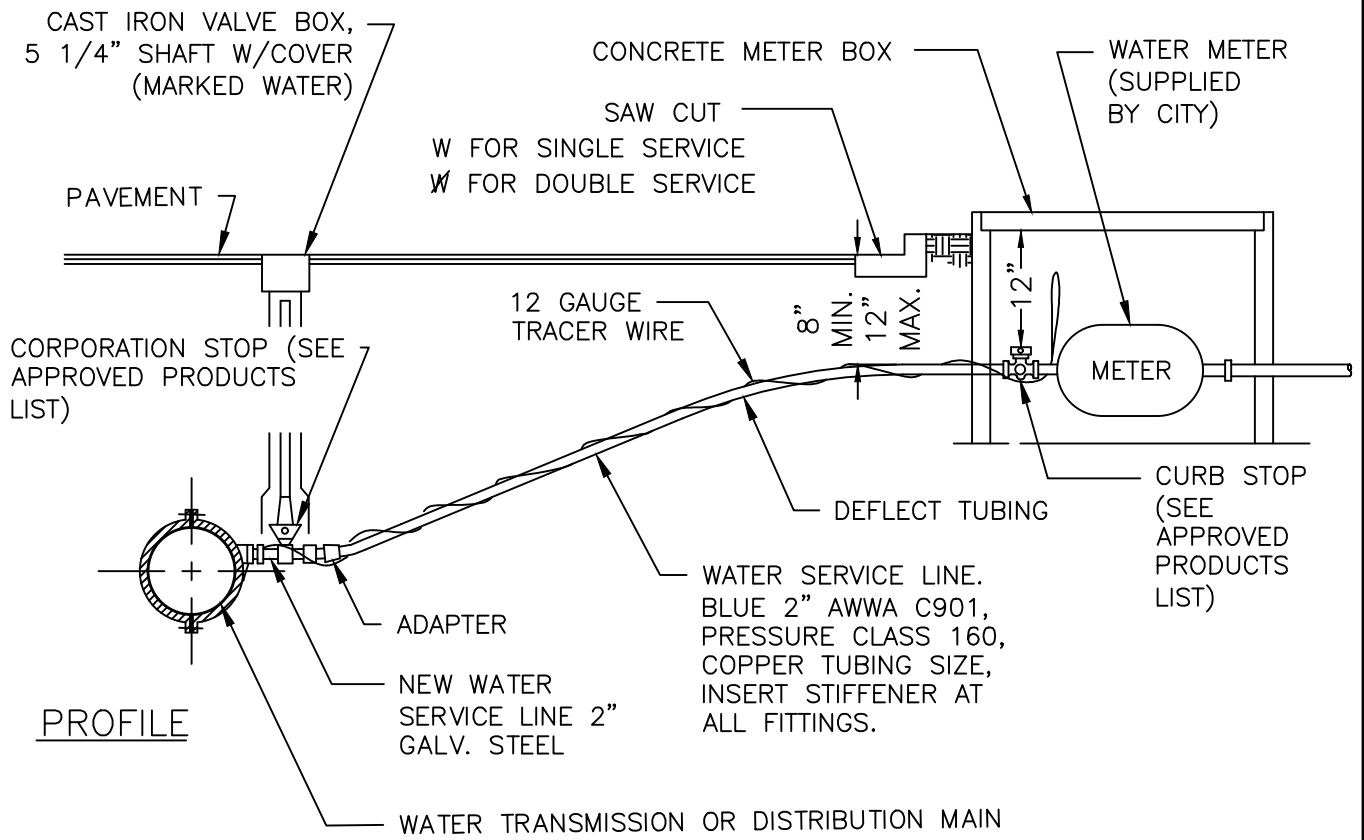


3/4" - 1" WATER SERVICE CONNECTION DETAIL

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
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REVISION DATE			PAGE NO.
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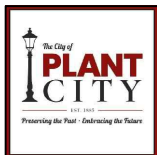


PLAN



PROFILE

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2" WATER SERVICE CONNECTION DETAIL

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WS-09

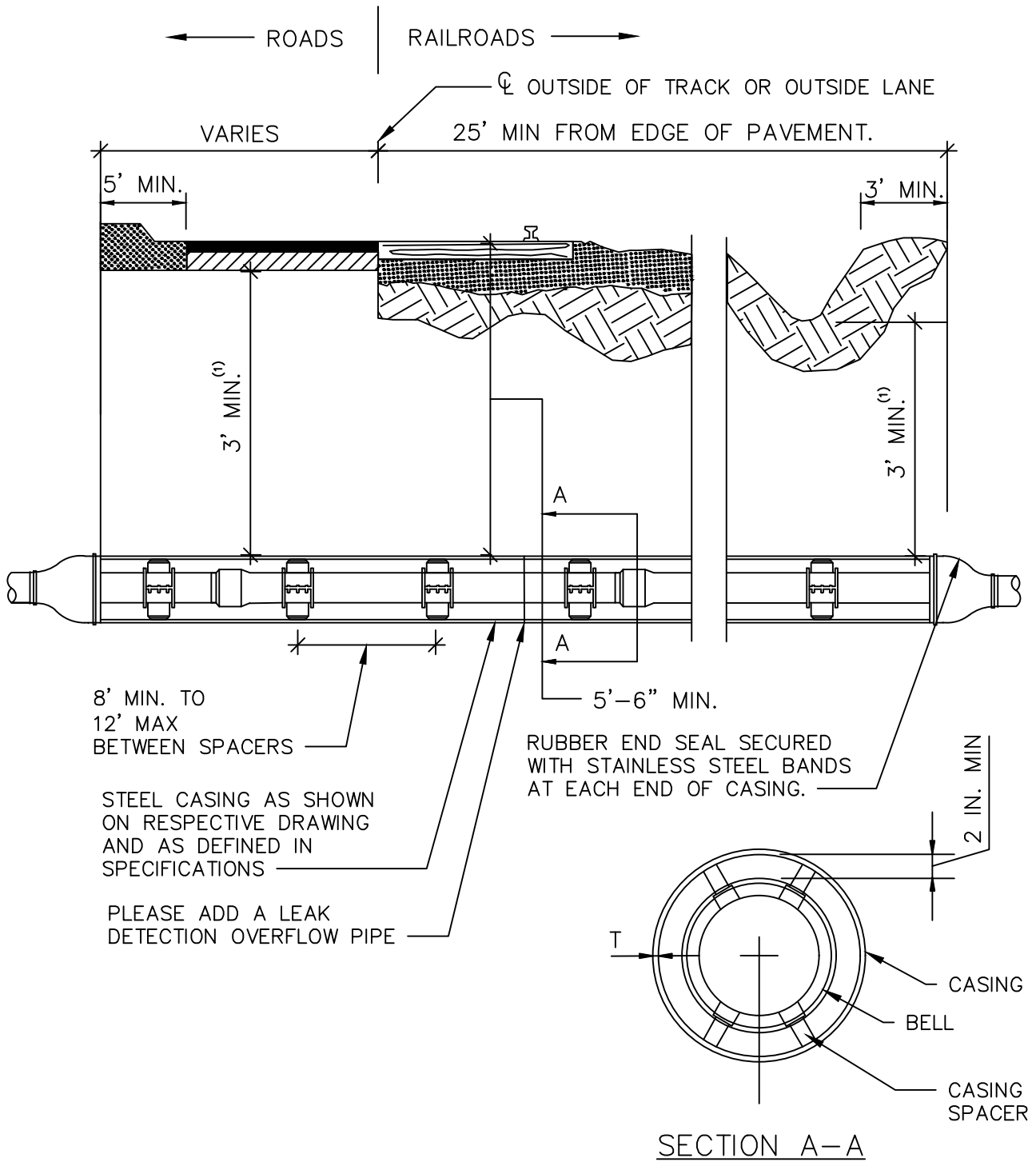
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PRESSURE MAIN TO BE RESTRAINED WITH MANUFACTURERS RESTRAINED JOINTS THROUGH CASING. USE (3) SS CASING SPACER CENTERED ON EACH PIPE LENGTH.

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CASING DETAILS JACK & BORE

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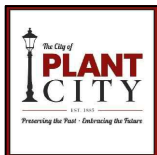
MINIMUM CASING SIZE AND THICKNESS (INCHES)

D.I.P. M.J.	-	4	6	-	8	10	12	14	16	18	20	-	24	30	36	42	48
PVC	4	6	-	8	10	12	-	-	-	-	-	-	-	-	-	-	-
STEEL CASING PIPE	12	14	16	18	20	24	24	30	30	30	36	36	42	48	54	60	66
WALL THICKNESS (T) ROADS	.188	.25	.25	.25	.25	.25	.25	.312	.312	.312	.375	.375	.5	.5	.5	.5	.5
WALL THICKNESS (T) R.R.	.188	.188	.219	.25	.281	.312	.312	.406	.406	.406	.469	.469	.562	.625	.719	.781	.875

NOTES:

1. VERTICAL DIMENSIONS TYPICAL FOR CASINGS.
2. STEEL CASING PIPE SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-200 AND ASTM A-139, GRADE B.
3. WHEN CASING IS INSTALLED WITHOUT BENEFIT OF A PROVOCATIVE COATING, AND SAID CASING IS NOT CATHODICALLY PROTECTED, THE WALL THICKNESS SHOWN SHALL BE INCREASED TO THE NEAREST STANDARD SIZE WHICH IS A MINIMUM OF 0.063" GREATER THAN THE THICKNESS SHOWN EXCEPT FOR DIAMETERS LESS THAN 12.75 IN.
4. FOR REFERENCE ONLY.

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CASING DETAILS JACK & BORE

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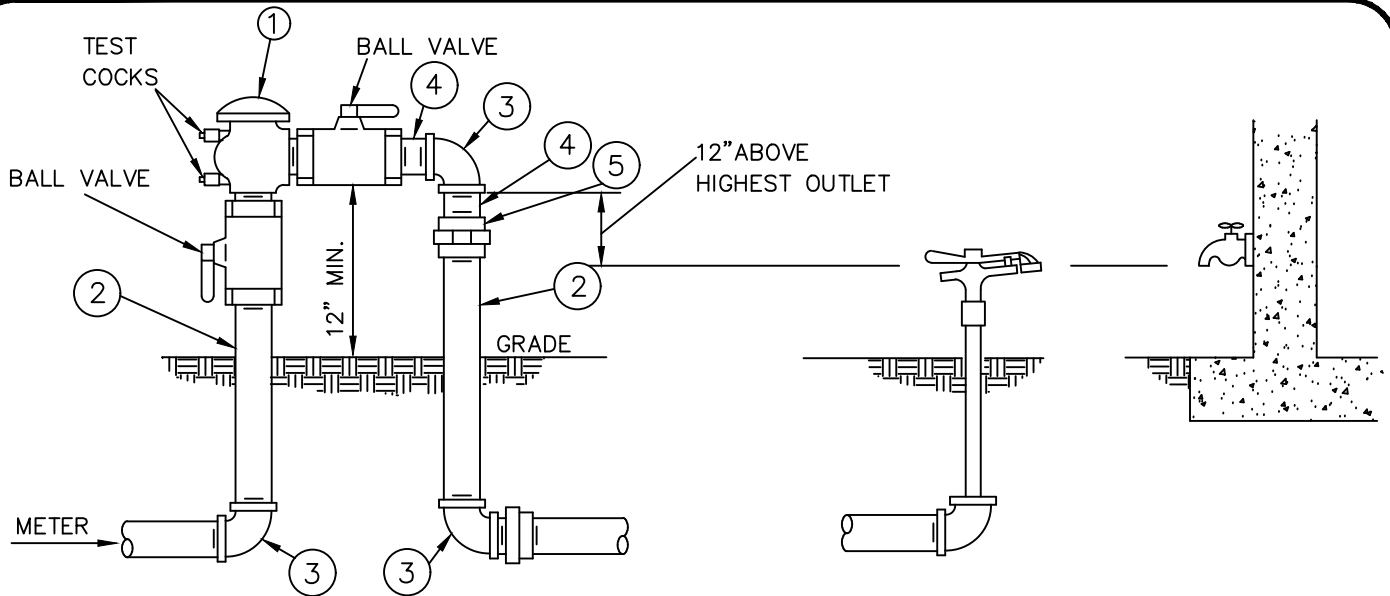
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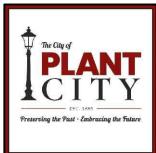
FOR RESIDENTIAL AND COMMERCIAL LAWN IRRIGATION SYSTEMS

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	PRESSURE VACUUM BREAKER ASSEMBLY
2	2	RISERS – GALVANIZED. SCHEDULED 40 PVC FOR RESIDENTIAL ONLY
3	3	ELBOW 90 DEGREE – GALVANIZED. SCHEDULED 40 PVC FOR RESIDENTIAL ONLY
4	2	4" NIPPLES – BRASS OR GALVANIZED
5	1	UNION – GALVANIZED OR STAINLESS STEEL

NOTES

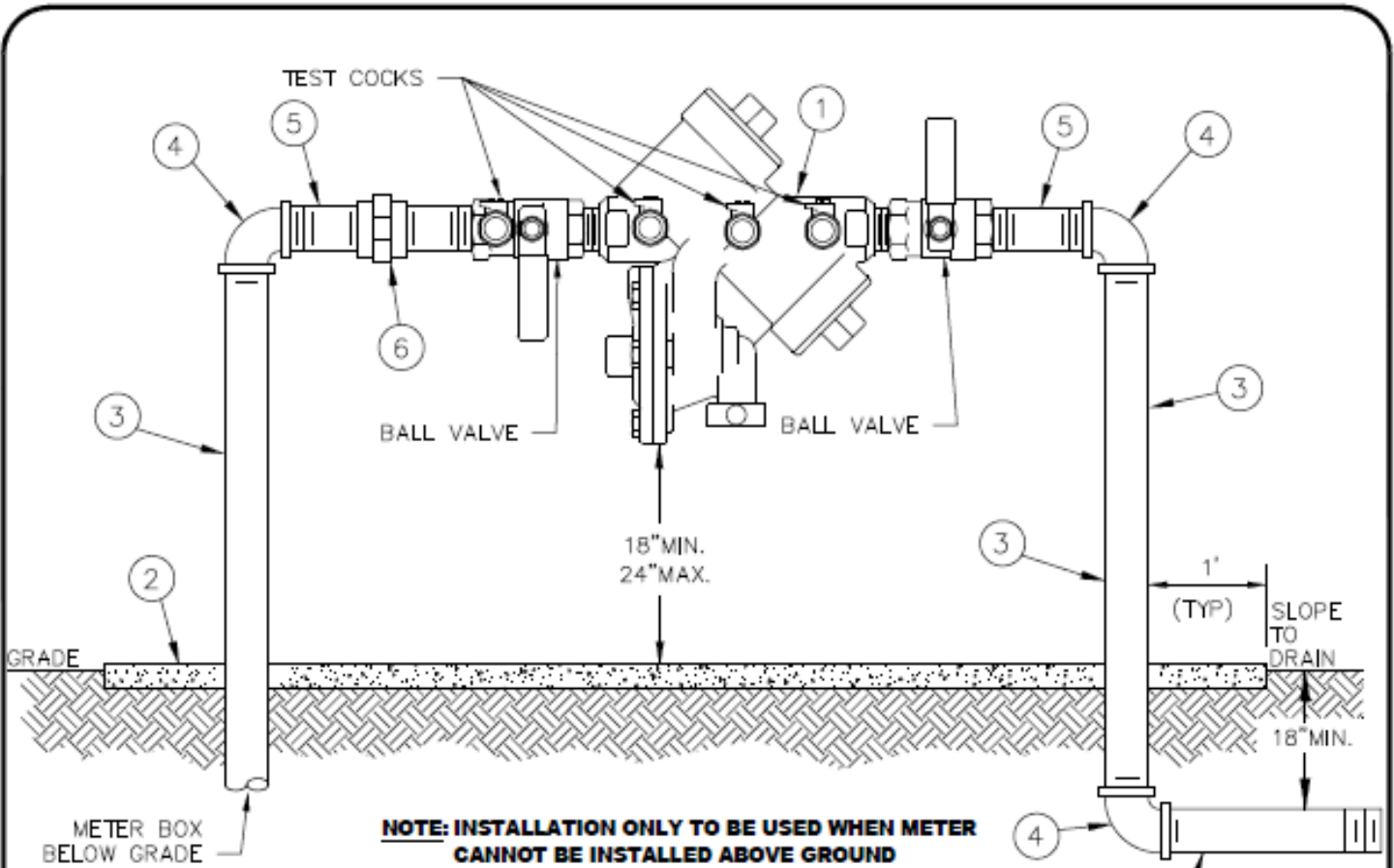
1. FIELD ADJUST AND CUT ITEM #2 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION. FOR COMMERCIAL CUSTOMERS ONLY.
3. THE PRESSURE VACUUM BREAKER (P.V.B.) CANNOT BE INSTALLED WHERE IT WILL BE SUBJECT TO BACK PRESSURE.
4. EACH P.V.B. SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. THE P.V.B. SHALL BE INSTALLED 12" ABOVE HIGHEST SPRINKLER HEAD OR OUTLET (NOT TO EXCEED 48" IN HEIGHT).
7. RESIDENTIAL EXEMPT FROM CONCRETE SLAB.
8. ALL RESIDENTIAL PRESSURE VACUUM BREAKERS SHALL BE INSTALLED WITH P.V.C. SCH 40 OR GALVANIZED PIPE.

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PRESSURE VACUUM BREAKER BACKFLOW PREVENTION ASSEMBLY FOR IRRIGATION
 1/2" TO 2" SERVICE

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NOTE: INSTALLATION ONLY TO BE USED WHEN METER CANNOT BE INSTALLED ABOVE GROUND

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	2	RISERS - GALVANIZED OR BRASS
4	3	ELBOW 90 DEGREE - GALVANIZED OR BRASS
5	3	4" NIPPLE - BRASS OR GALVANIZED
6	1	UNION - GALVANIZED, OR STAINLESS STEEL

NOTES:

1. FIELD ADJUST AND CUT ITEM #3 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

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REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY SINGLE SERVICE
3/4" TO 2"

ORIGINAL DRAWING 10/03/2017

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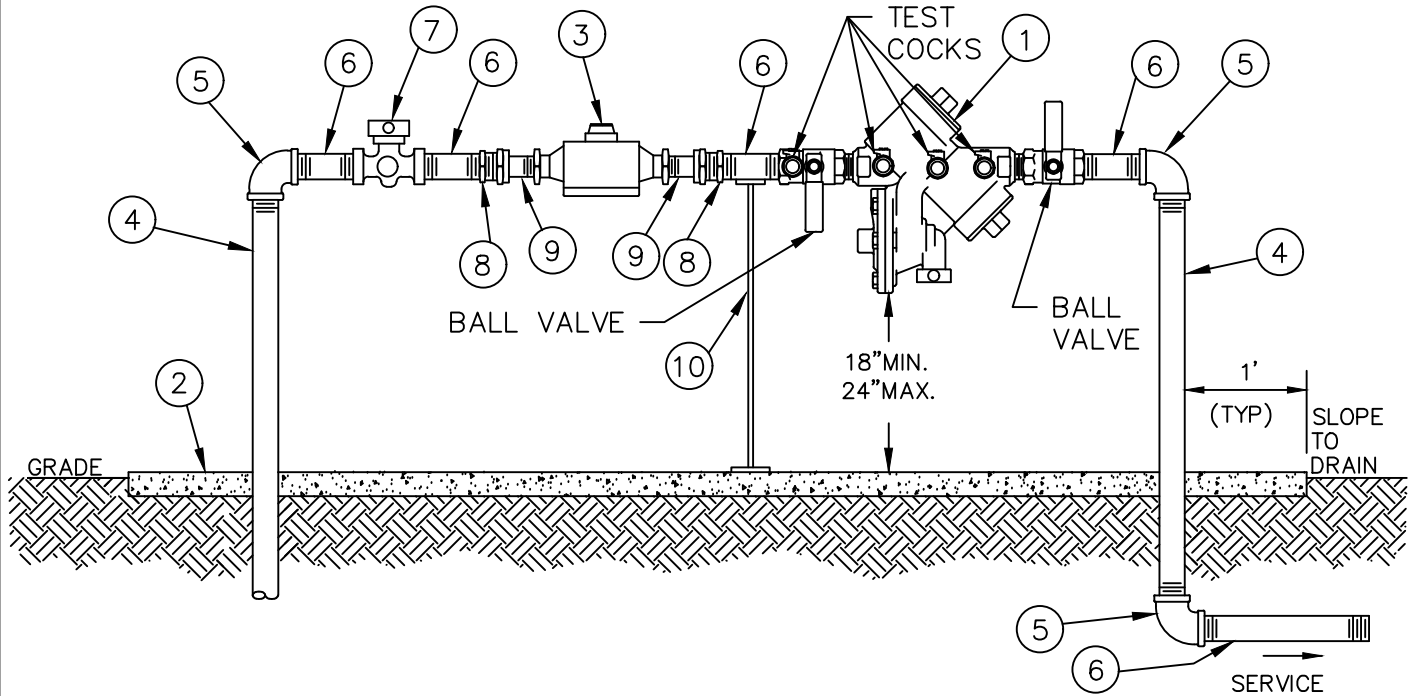
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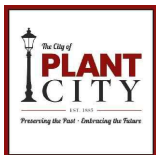


MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	AMR BADGER WATER METER
4	2	RISERS - GALVANIZED OR BRASS
5	3	ELBOWS - GALVANIZED OR BRASS
6	5	4" NIPPLES - BRASS OR GALVANIZED
7	1	CURBSTOP WITH WING LOCK
8	2	BRASS SPUDS ADAPTORS
9	2	BRASS SPUDS - METER CONNECTIONS
10	1	ADJUSTABLE PIPE SUPPORT

NOTES:

1. FIELD ADJUST AND CUT ITEM #4 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. ONLY PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY APPROVED LIST OF BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

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ABOVE GROUND METER INSTALLATION SINGLE SERVICE
 WITH BACKFLOW PREVENTION ASSEMBLY
 $\frac{3}{4}$ " TO 2"

ORIGINAL DRAWING 10/03/2017

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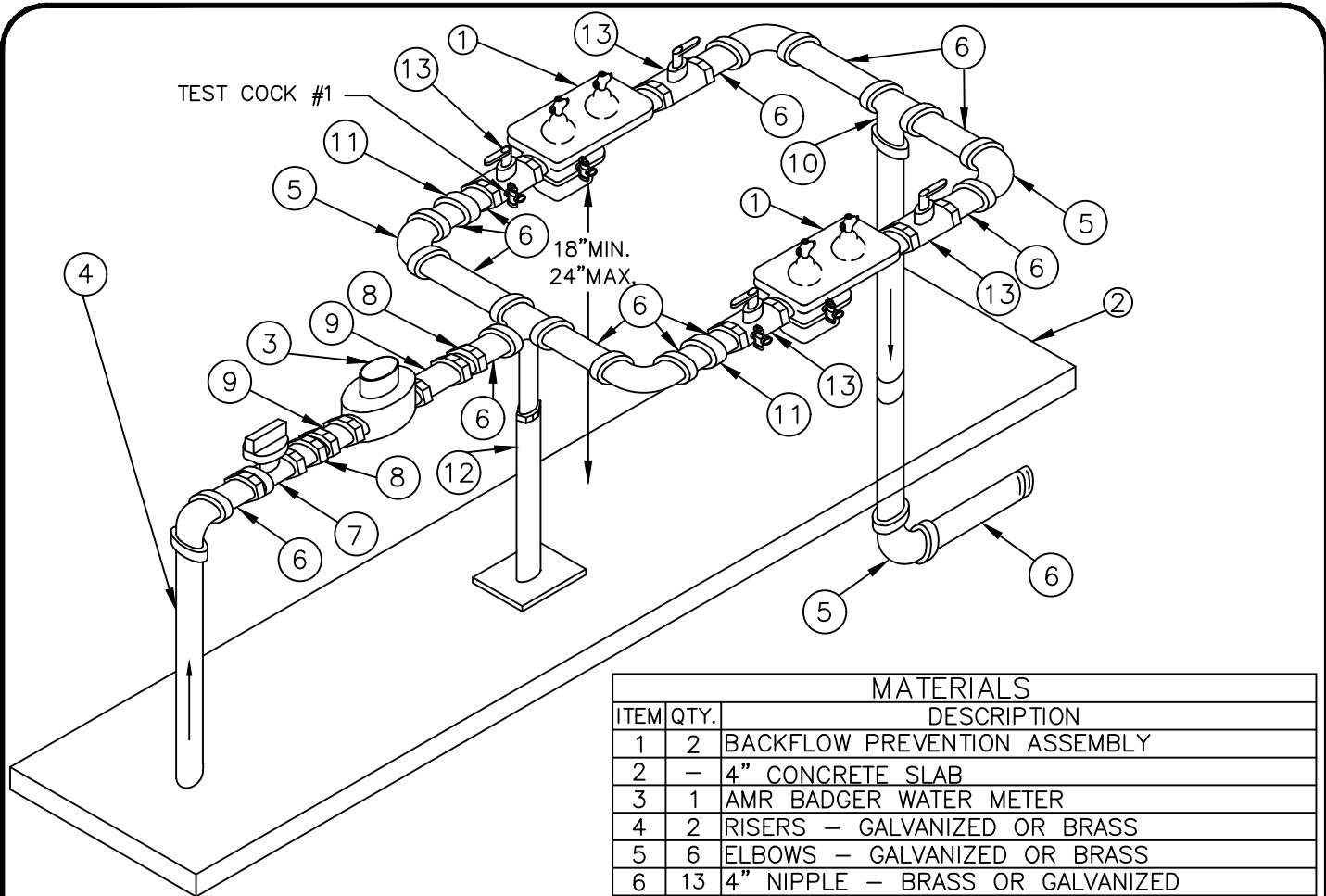
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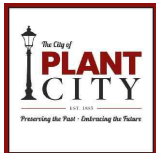


MATERIALS		
ITEM	QTY.	DESCRIPTION
1	2	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	AMR BADGER WATER METER
4	2	RISERS - GALVANIZED OR BRASS
5	6	ELBOWS - GALVANIZED OR BRASS
6	13	4" NIPPLE - BRASS OR GALVANIZED
7	1	CURBSTOP WITH WING LOCK
8	2	BRASS SPUD ADAPTORS
9	2	BRASS SPUDS - METER CONNECTIONS
10	2	TEE- GALVANIZED OR BRASS
11	2	UNIONS-DIELECTRIC
12	1	ADJUSTABLE PIPE SUPPORT
13	4	BALL VALVE

NOTES:

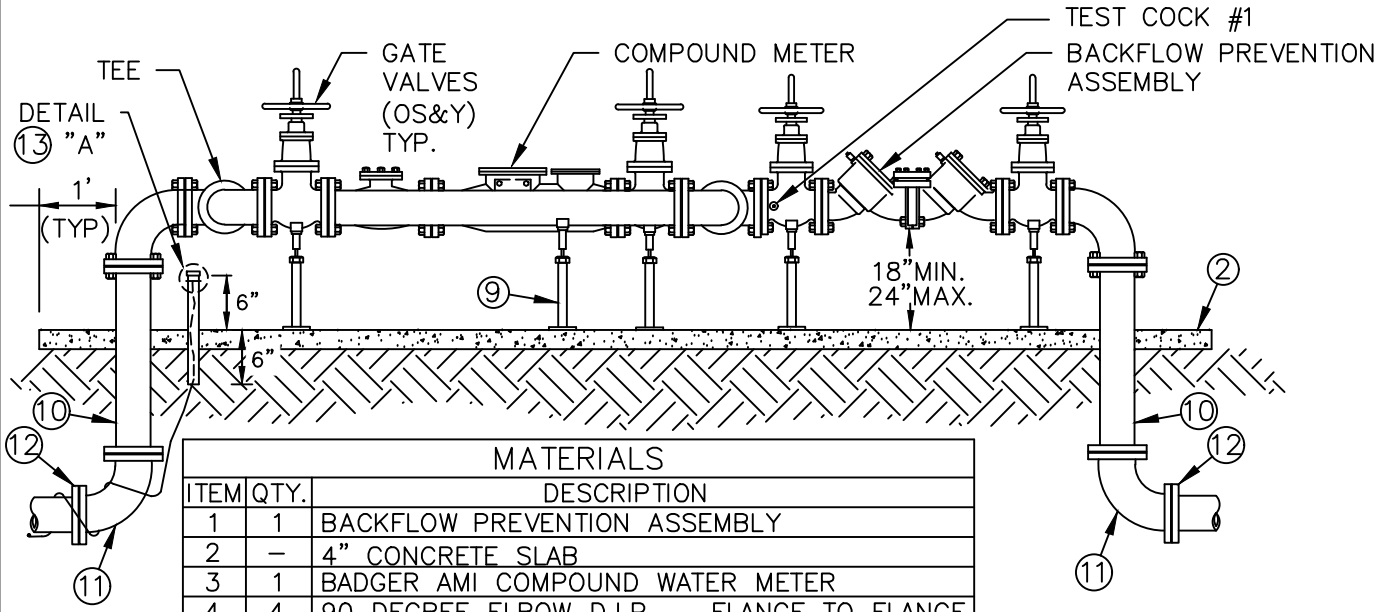
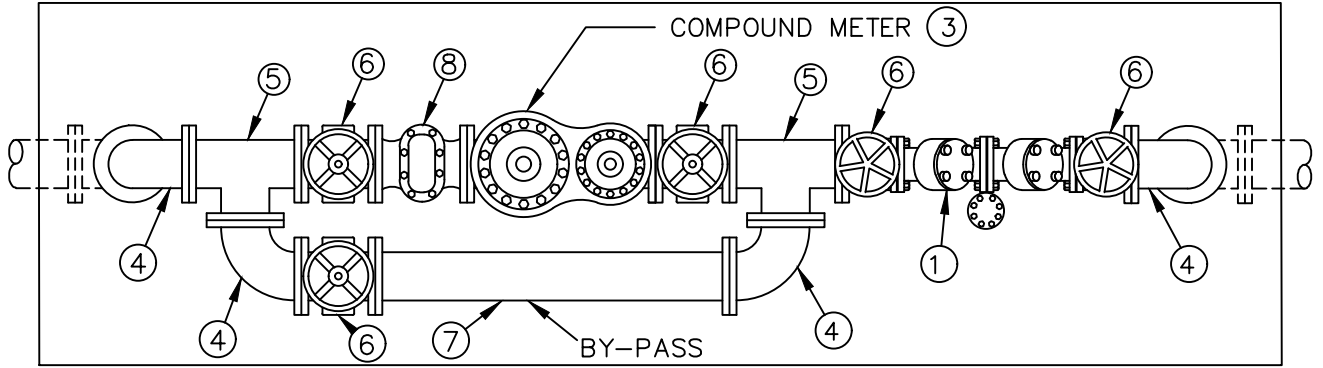
1. FIELD ADJUST AND CUT ITEM #4 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
4. ONLY PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
7. PARALLEL SYSTEMS ARE REQUIRED FOR FACILITIES WHERE UNINTERRUPTED WATER SERVICE IS MANDATORY.
8. PARALLEL SYSTEMS ARE HIGHLY RECOMMENDED WHERE THERE WILL BE ANY SIGNIFICANT HARDSHIP IMPARTED TO THE FACILITY OR RESIDENTS OF THE FACILITY IF THE POTABLE WATER SERVICE IS INTERRUPTED.

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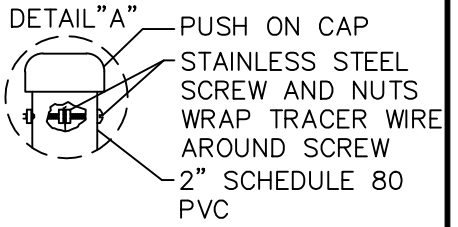


ABOVE GROUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY, PARALLEL INSTALLATION
 3/4" TO 2"

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
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REVISION DATE			PAGE NO.
REVISION DATE			18



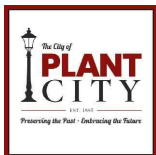
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	BADGER AMI COMPOUND WATER METER
4	4	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
5	2	TEE - FLANGE TO FLANGE
6	5	GATE VALVE C.I. (OS&Y)
7	1	BY - PASS PIPE D.I.P. FLANGE TO FLANGE
8	1	STRAINER - FLANGE TO FLANGE
9	5	ADJUSTABLE PIPE SUPPORTS
10	2	RISERS - D.I.P. - C51 FLANGE TO FLANGE
11	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
12	4	MEGALUG RETAINER GLANDS
13	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



NOTES:

- ORDER TO FIT ITEM #10 TO THE PROPER LENGTH.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION
- ALL FITTINGS ABOVE GROUND TO BE FLANGED.
- PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY BLUE.
- SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
- ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
- BY-PASS MUST HAVE AN ADJUSTABLE PIPE SUPPORT.

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COMPOUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY
 3" TO 10" WATER SERVICE

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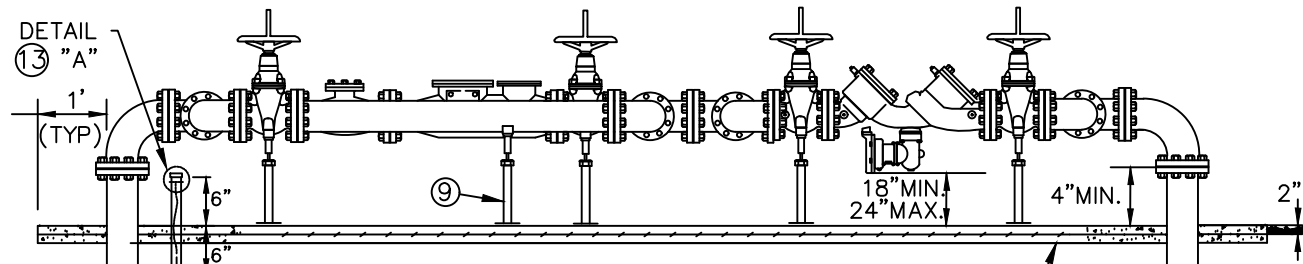
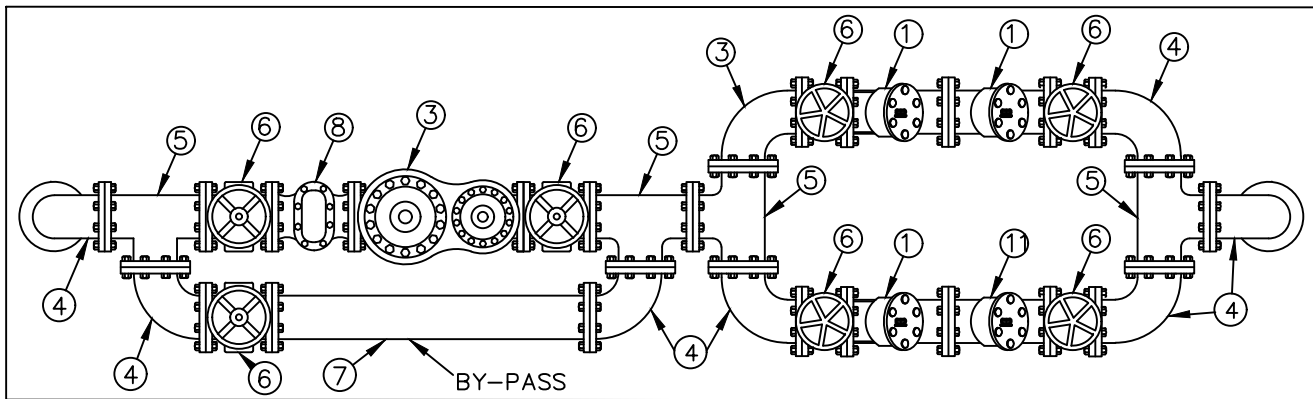
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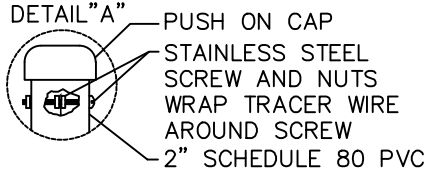
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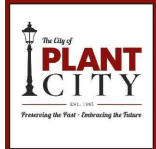


MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BACKFLOW PREVENTION ASSEMBLY
2	-	4" CONCRETE SLAB
3	1	BADGER AMI COMPOUND WATER METER
4	8	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
5	4	TEE - FLANGE TO FLANGE
6	7	GATE VALVE C.I. (OS&Y)
7	1	BY-PASS PIPE D.I.P. FLANGE TO FLANGE
8	1	STRAINER - FLANGE TO FLANGE
9	5	ADJUSTABLE PIPE SUPPORTS
10	2	RISERS - D.I.P. - C51 FLANGE TO FLANGE
11	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
12	4	MEGALUG RETAINER GLANDS
13	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



- NOTES:**
- ORDER TO FIT ITEM #10 TO THE PROPER LENGTH.
 - CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
 - ALL FITTINGS ABOVE GROUND TO BE FLANGED.
 - PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY BLUE.
 - SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
 - BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
 - ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
 - BY-PASS MUST HAVE AN ADJUSTABLE PIPE SUPPORT.
 - PARALLEL SYSTEMS ARE REQUIRED FOR FACILITIES WHERE UNINTERRUPTED WATER SERVICE IS MANDATORY.
 - PARALLEL SYSTEMS ARE HIGHLY RECOMMENDED WHERE THERE WILL BE ANY SIGNIFICANT HARDSHIP IMPARTED TO THE FACILITY OR RESIDENTS OF THE FACILITY IF THE POTABLE WATER SERVICE IS INTERRUPTED.

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COMPOUND METER SINGLE SERVICE WITH BACKFLOW PREVENTION ASSEMBLY PARALLEL INSTALLATION
 3" TO 10" WATER SERVICE

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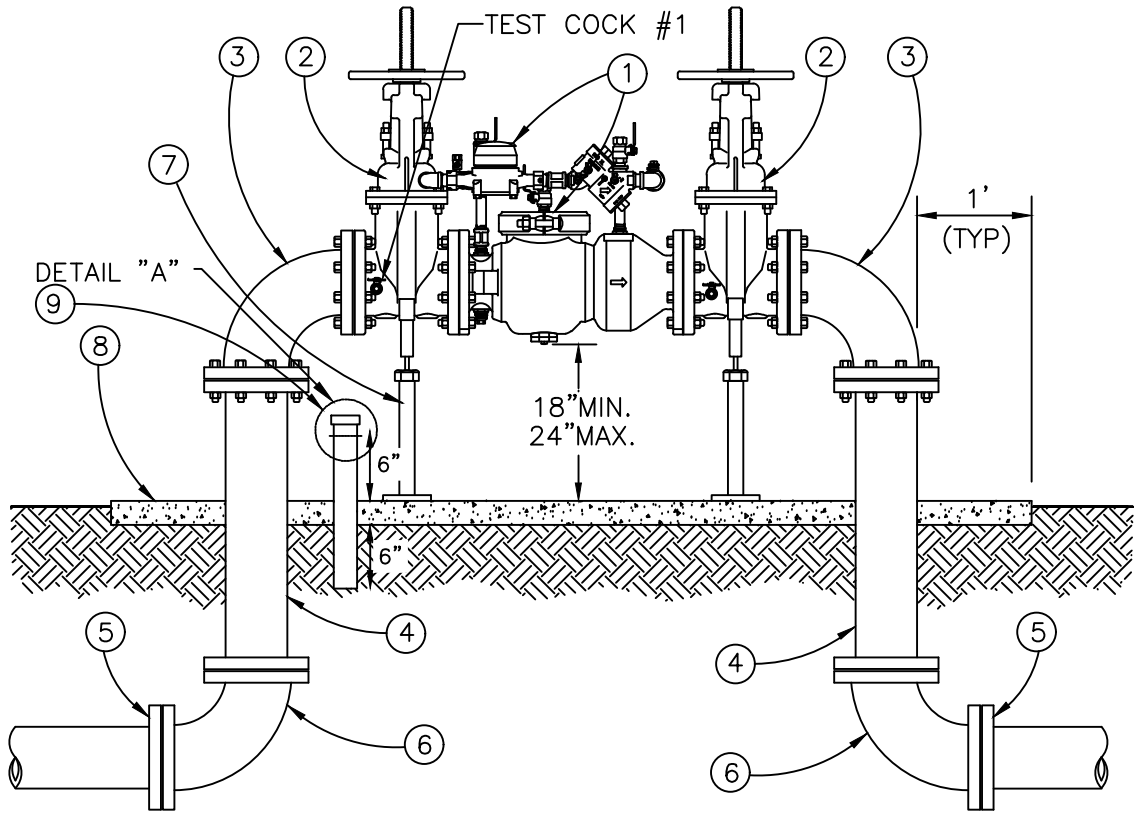
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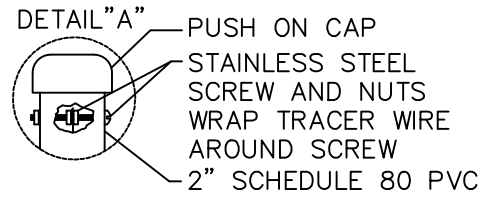
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DOUBLE CHECK DETECTOR ASSEMBLY (DCDA) TO BE USED ON FIRE SYSTEMS ONLY WITH NO TANKS, ADDITIVES OR ANOTHER WATER SOURCE

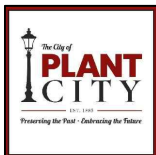
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	DCDA BACKFLOW PREVENTION ASSEMBLY WITH METER
2	2	GATE VALVE (OS & Y)
3	2	90 DEGREE ELBOW, DIP-FLANGE TO FLANGE
4	2	RISERS, DIP-C51 FLANGE TO FLANGE
5	4	MEGALUG RETAINER GLANDS
6	2	90 DEGREE ELBOW, DIP - FLANGE TO MJ
7	2	ADJUSTABLE PIPE SUPPORTS
8	*	4" CONCRETE SLAB
9	1	PIPE TRACER WIRE ASSEMBLY (SEE DETAIL A)



NOTES:

1. ORDER TO FIT ITEM #4 TO PROPER LENGTH.
2. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED INCLUDING THE RISERS.
3. ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
4. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
8. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.
9. ALL PIPING AND VALVES SHALL BE PAINTED FIRE SAFETY RED.

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LOW HAZARD DOUBLE DETECTOR CHECK BACKFLOW ASSEMBLY 3" TO 10" WATER SERVICE FOR FIRE SYSTEMS

ORIGINAL DRAWING 10/03/2017

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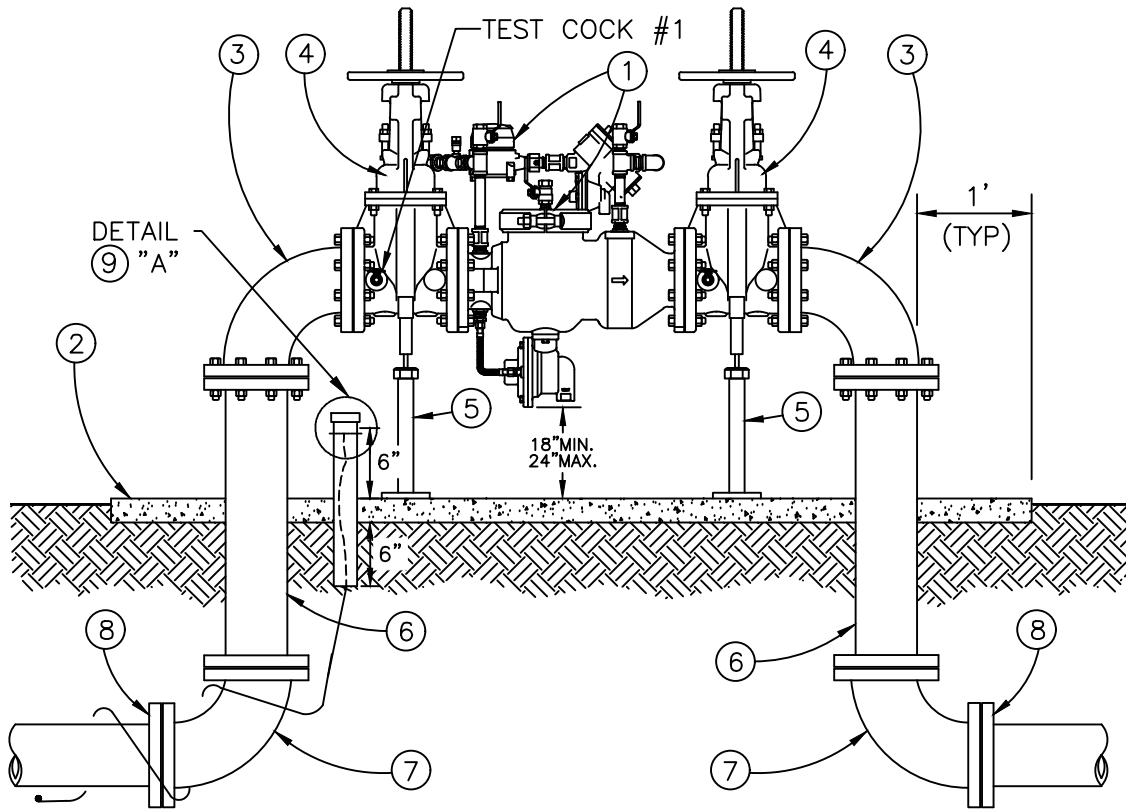
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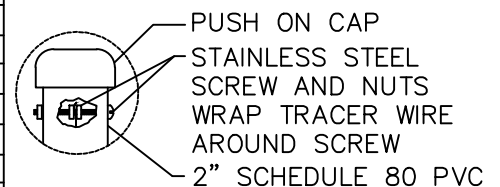


REDUCE PRESSURE DETECTOR ASSEMBLY (RPDA) TO BE USED ON FIRE SYSTEMS ONLY WITH TANKS, ADDITIVES OR CONNECTIONS TO ANOTHER WATER SOURCE.

MATERIALS

ITEM	QTY.	DESCRIPTION
1	1	RPDA BACKFLOW PREVENTION ASSEMBLY WITH METER
2	2	4" CONCRETE SLAB
3	2	90 DEGREE ELBOW, DIP-FLANGE TO FLANGE
4	2	(GATE VALVE, C.I. (OS&Y)
5	2	ADJUSTABLE PIPE SUPPORTS
6	2	RISERS, DIP-C51 FLANGE TO FLANGE
7	2	90 DEGREE ELBOW, DIP - FLANGE TO MJ
8	2	MEGALUG RETAINER GLANDS
9	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"

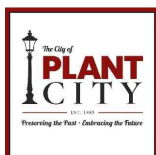
DETAIL "A"



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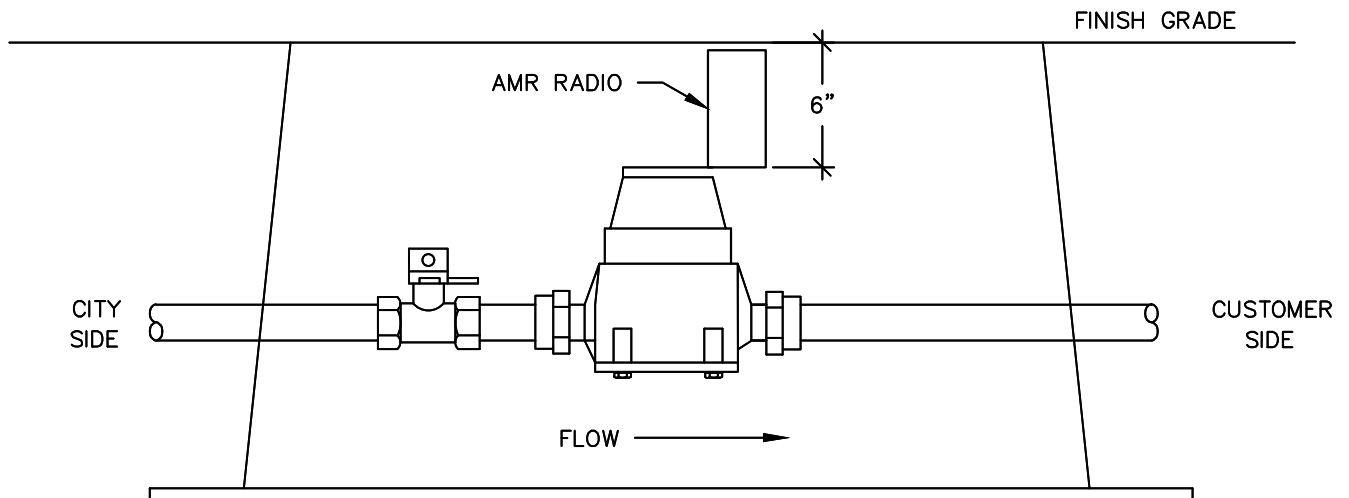
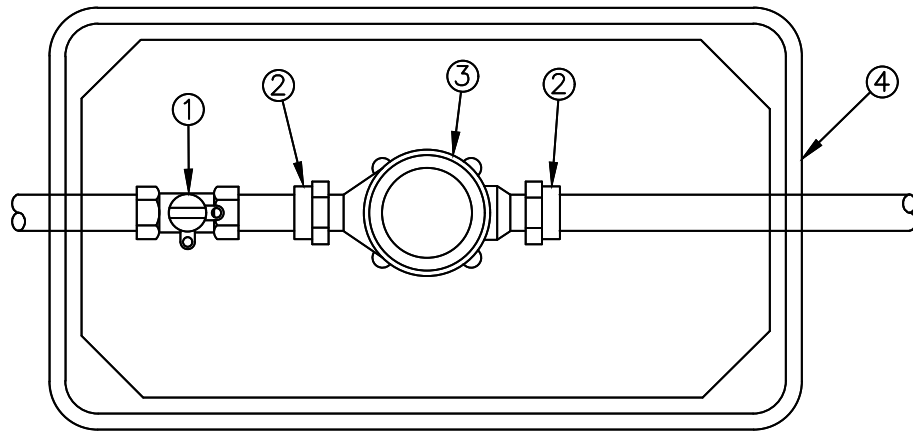
- ORDER TO FIT #6 TO THE PROPER LENGTH.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
- ALL FITTINGS ABOVE GROUND INCLUDING RISER TO BE FLANGED.
- PIPE, FITTINGS AND VALVES TO BE PAINTED SAFETY RED.
- SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA SAFETY YELLOW.

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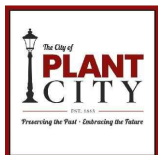
HIGH HAZARD BACKFLOW ASSEMBLY 3" TO 10" WATER SERVICE FOR FIRE SYSTEMS

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MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	3/4" CURB STOP
2	2	3/4" X 2" METER CONNECTIONS
3	1	5/8" BADGER AMR RECLAIMED WATER METER
4	1	PLASTIC WATER METER BOX W/COVER

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RESIDENTIAL WATER METER SERVICE FOR
 HOMES SINGLE SERVICE: 3/4", 1"

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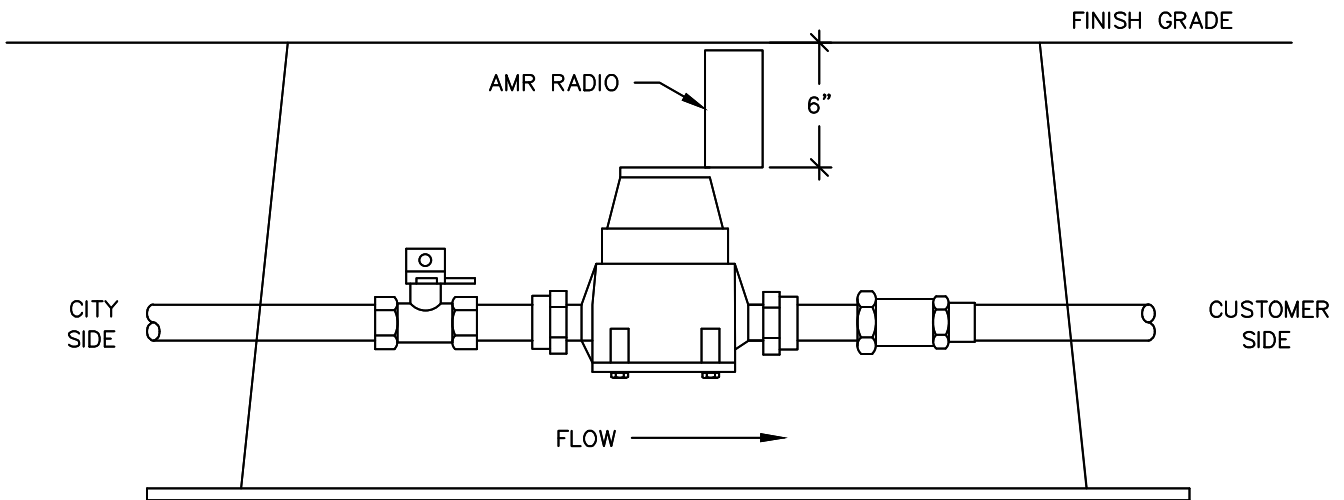
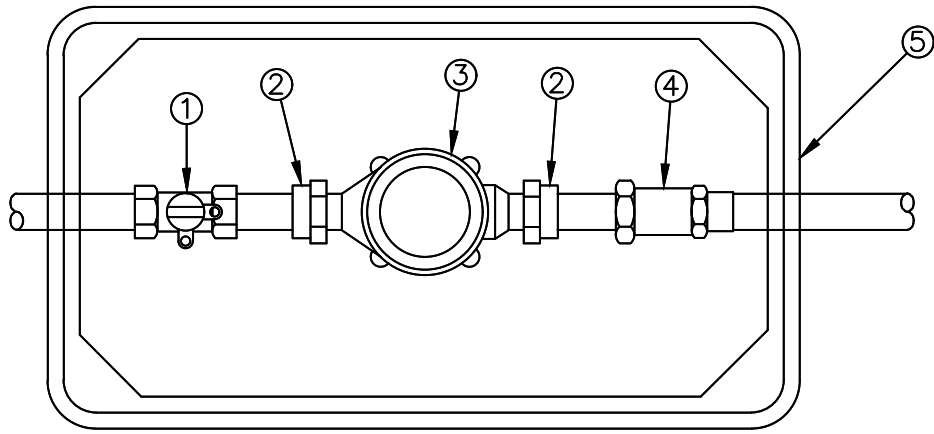
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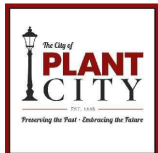
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MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	3/4" CURB STOP
2	2	3/4" X 2" METER CONNECTIONS
3	1	5/8" BADGER AMR WATER METER
4	1	3/4" WILKINS DUAL CHECK VALVE MODEL 700XL
5	1	13"W X 24"L X 15"H PLASTIC METER BOX W/COVER

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POTABLE WATER METER INSTALLATION WITH DUAL CHECK VALVE FOR RESIDENTIAL CUSTOMER WITH RECLAIMED WATER

ORIGINAL DRAWING 10/03/2017

BY:BJG

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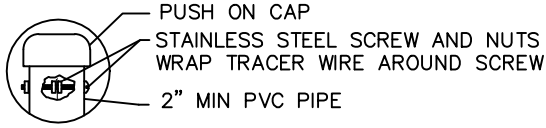
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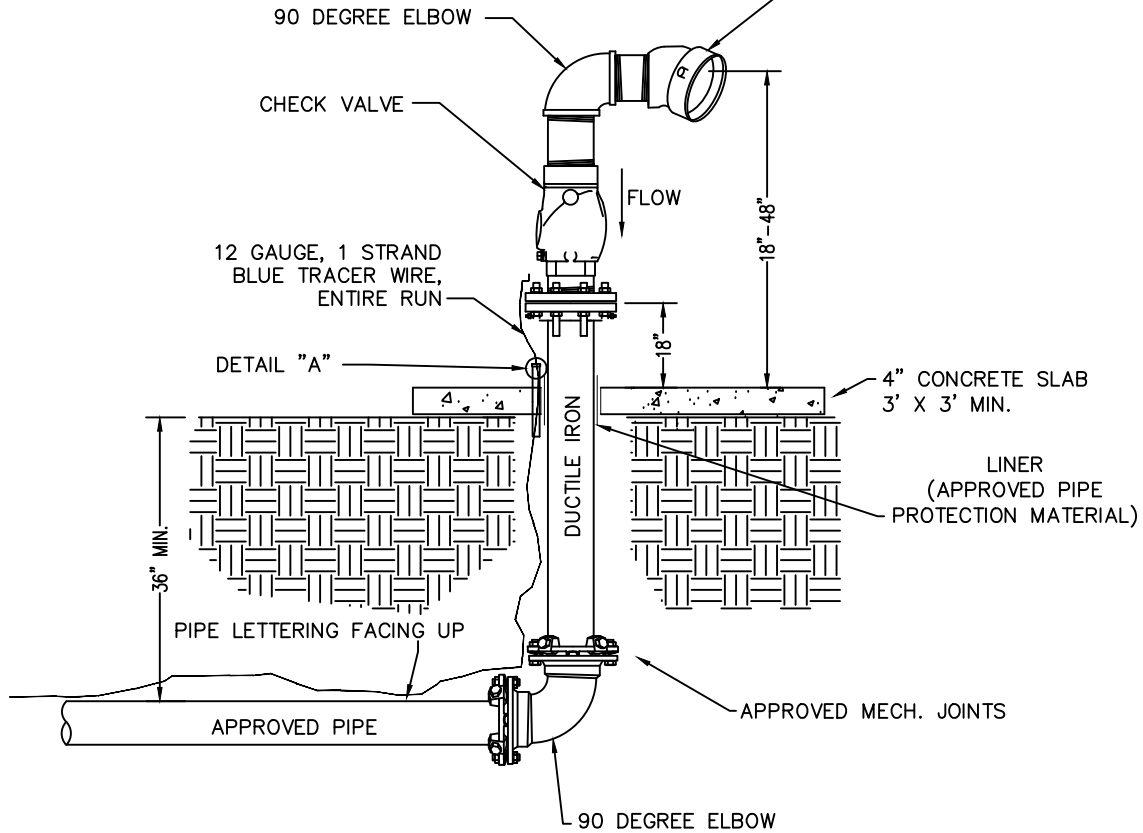
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DETAIL "A"



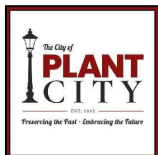
4" X 4" 30 DEGREE DOWNTURN
STORZ CONNECTION WITH CAP FOR
6" SUPPLY PIPE OR 2.5" SIAMESE
CONNECTION FOR 4" SUPPLY PIPE



NOTES:

1. ALL PRESSURIZED FIRE LINES SHALL BE 100% RESTRAINED.
2. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS PAINTED OSHA APPROVED SAFETY YELLOW.
3. FDC PIPING UP TO HOSE FITTING SHALL BE PAINTED FIRE SAFETY RED.
4. POSTED FDC SIGNAGE REQUIRED AS DETERMINED BY THE AHJ.
5. ALL MATERIAL AND INSTALLATION SHALL CONFORM TO AWWA AND NFPA STANDARDS.
6. ALL BELOW GROUND RESTRAINING FASTENERS SHALL BE COATED WITH APPROVED CORROSION-RETARDING MATERIAL.

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REMOTE FDC ASSEMBLY DETAIL

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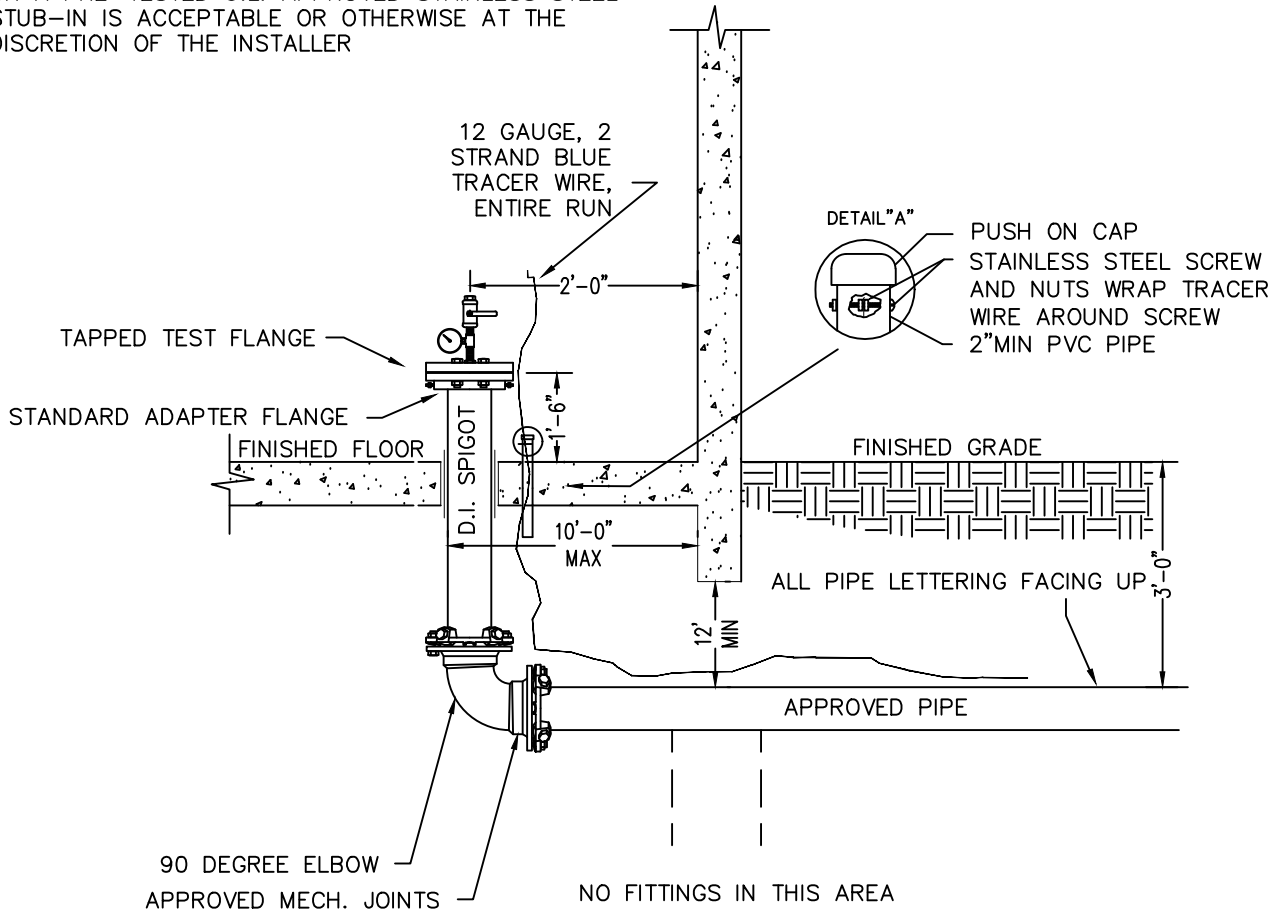
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TOP VIEW



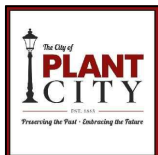
CONNECTIONS CAN BE GROOVED OR THREADED OR A PRE-TESTED U.L. APPROVED STAINLESS STEEL STUB-IN IS ACCEPTABLE OR OTHERWISE AT THE DISCRETION OF THE INSTALLER



NOTES:

1. ALL PRESSURIZED FIRE LINES SHALL BE 100% RESTRAINED.
2. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS PAINTED OSHA APPROVED SAFETY YELLOW.
3. ALL MATERIAL AND INSTALLATION SHALL CONFORM TO AWWA AND NFPA STANDARDS.
4. ALL BELOW GROUND RESTRAINING FASTENERS SHALL BE COATED WITH APPROVED CORROSION-RETARDING MATERIAL.

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FIRE RISER LEAD-IN DETAIL

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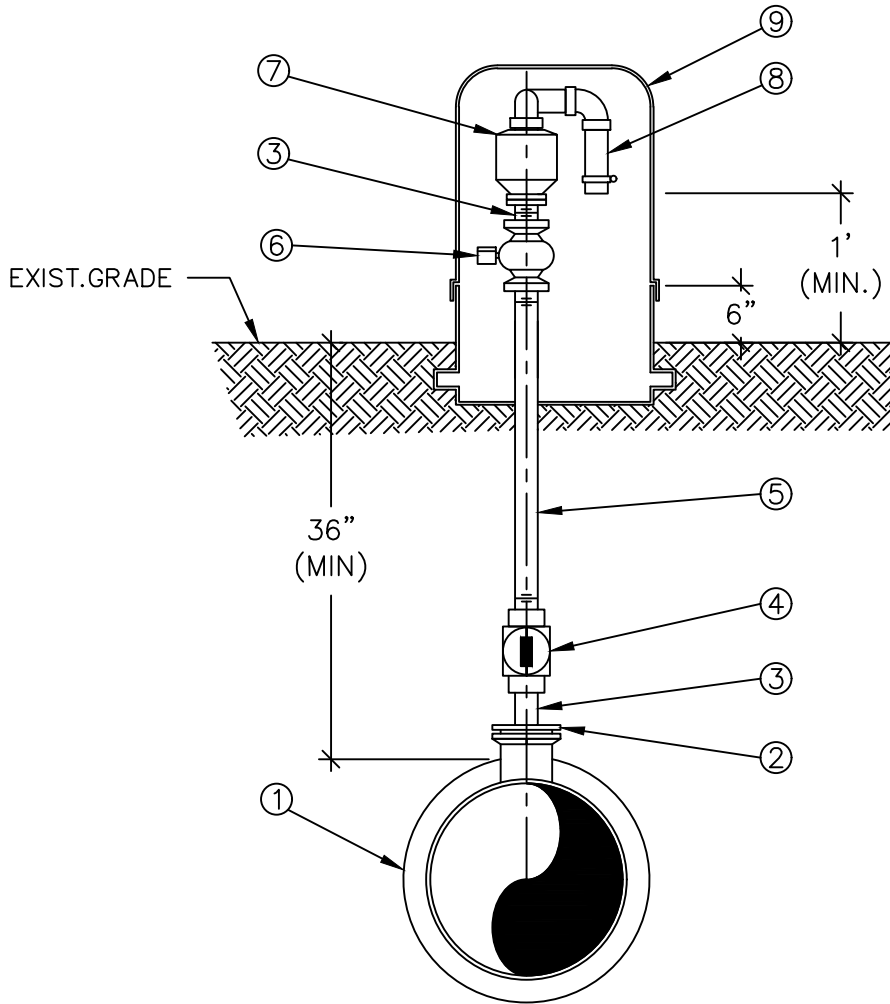
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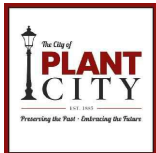


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 4"
2.	4" PLUG (TAPPED FOR 2" NIPPLE NPT)
3.	2"X4" NIPPLE (304 SS)
4.	2" CORPRATION STOP (BRASS)
5.	2" PIPE (304 SS OR BRASS)
6.	2" GATE VALVE W/2" OPERATING NUT (IRON BODY)
7.	2" AIR RELEASE VALVE(ARI D-040 SS)
8.	ARV DISCHARGE PIPE (SEE NOTES)
9.	ARV ENCLOSURE (VENTED & LOCKABLE)

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. ARV ENCLOSURE SHALL BE FRP AND SHALL BE BLUE IN COLOR.
3. ARV DISCHARGE PIPE SHALL BE DOWNWARD FACING AND THE OPENING SHALL BE SCREENED.

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AIR RELEASE VALVE DETAIL FOR POTABLE WATER

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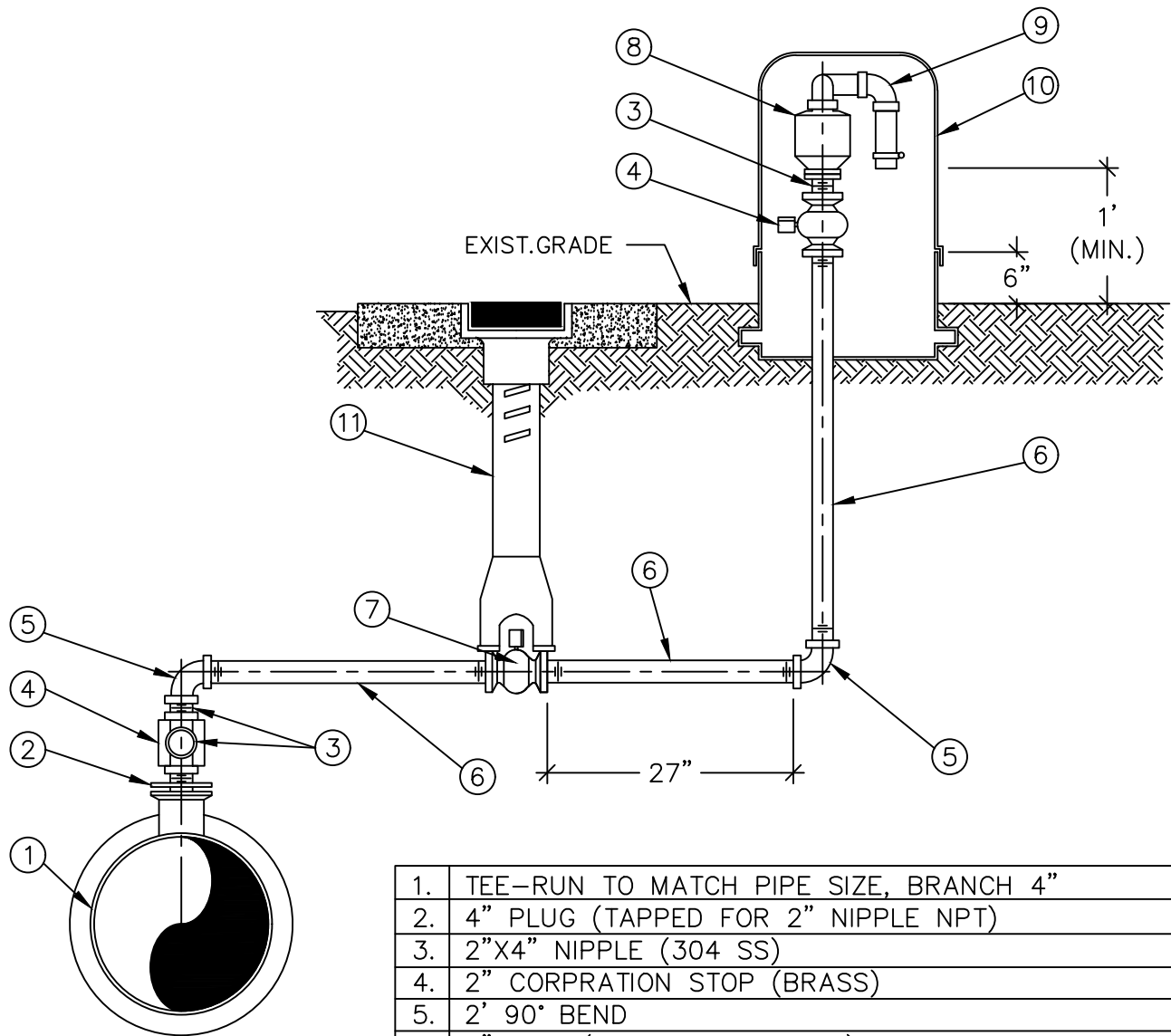
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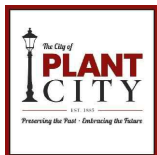


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 4"
2.	4" PLUG (TAPPED FOR 2" NIPPLE NPT)
3.	2"X4" NIPPLE (304 SS)
4.	2" CORPRATION STOP (BRASS)
5.	2' 90° BEND
6.	2" PIPE (304 SS OR BRASS)
7.	2" GATE VALVE W/2" OPERATING NUT (IRON BODY)
8.	2" AIR RELEASE VALVE(ARI D-040 SS)
9.	ARV DISCHARGE PIPE (SEE NOTES)
10.	ARV ENCLOSURE (VENTED & LOCKABLE)
11.	DI VALVE BOX W/CONC. COLLAR

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. ARV DISCHARGE PIPE SHALL BE DOWNWARD FACING AND THE OPENING SHALL BE SCREENED.
3. ARV ENCLOSURE SHALL BE FRP AND SHALL BE BLUE IN COLOR.

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OFFSET AIR RELEASE VALVE DETAIL FOR
 POTABLE WATER

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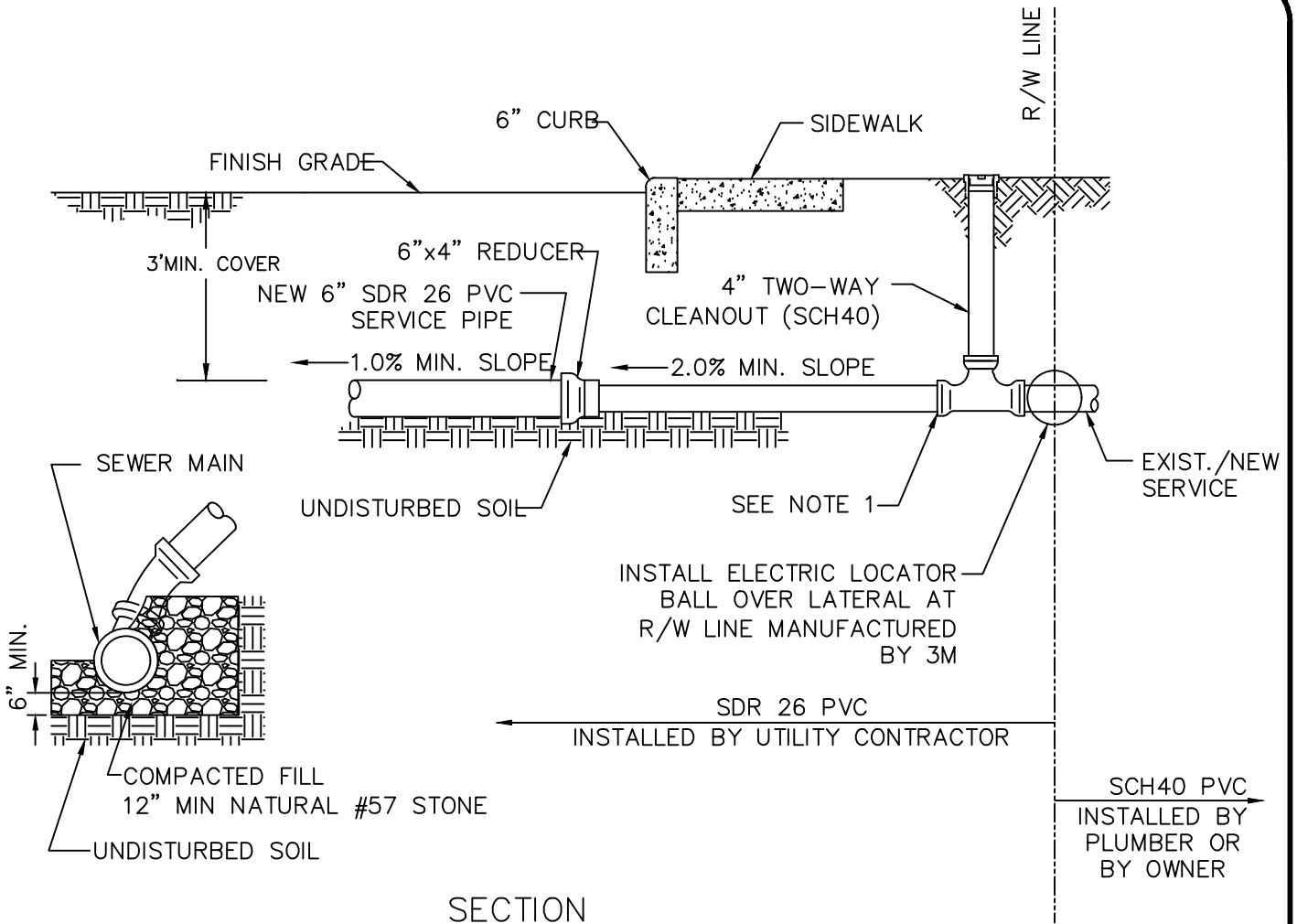
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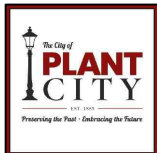


SECTION

NOTES

1. CONNECT 4" SDR 26 PIPE TO CLEANOUT WITH SEWER HUB X DWV SPIGOT ADAPTER AS MANUFACTURED BY MULTI FITTINGS MODEL #040342.
2. PROVIDE APPROVED STOPPER OR HOUSE CONNECTION WITH APPROVED TRANSITION COUPLING
3. LENGTH OF SERVICE PIPE VARIES AT EACH SERVICE CONNECTION AND SHALL BE PROVIDED AS REQUIRED. TERMINATE SERVICE AT LOCATION DIRECTED BY THE ENGINEER
4. CONTRACTOR TO INSTALL 4" PVC PLUG AT PROPERTY LINE ADJACENT TO ELECTRIC LOCATOR BALLS

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TYPICAL SERVICE CONNECTION

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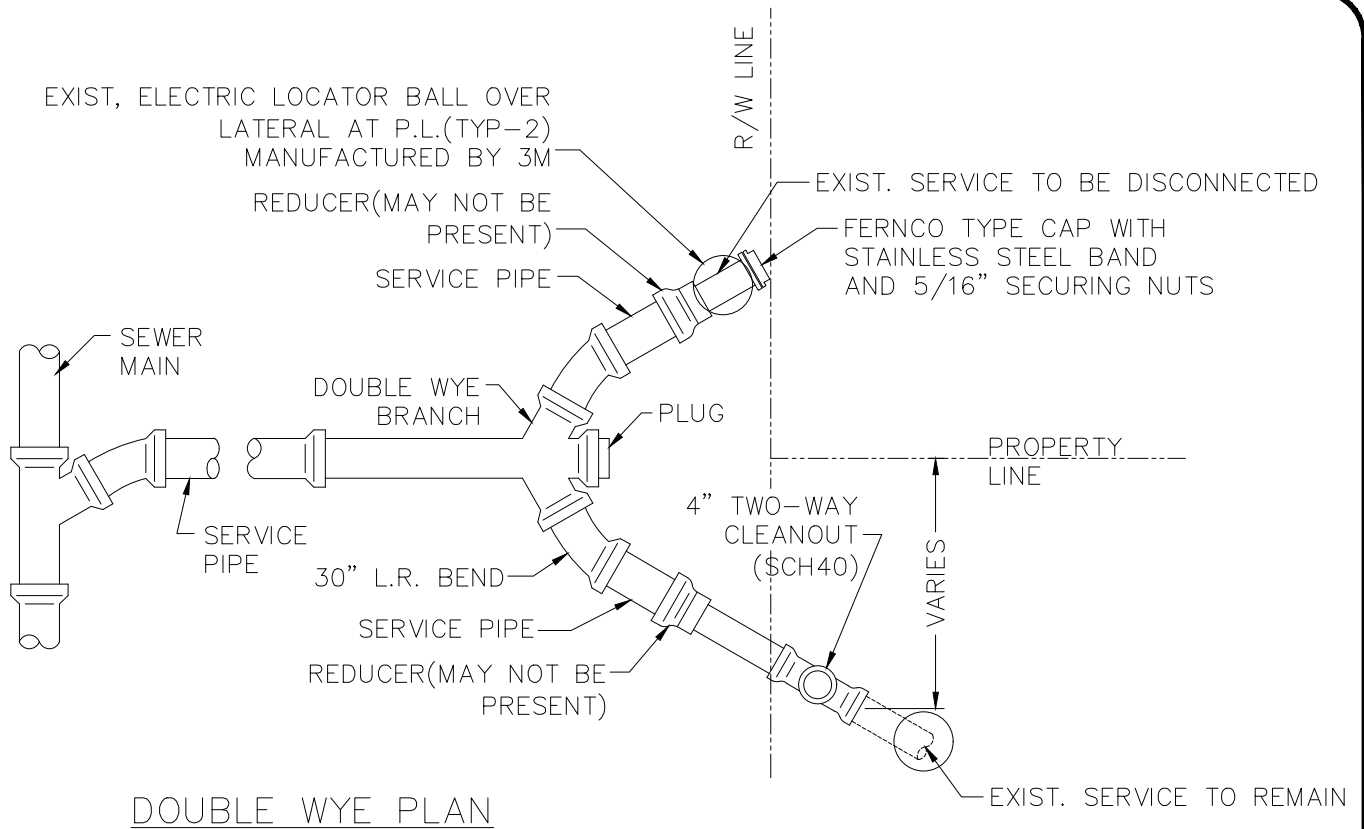
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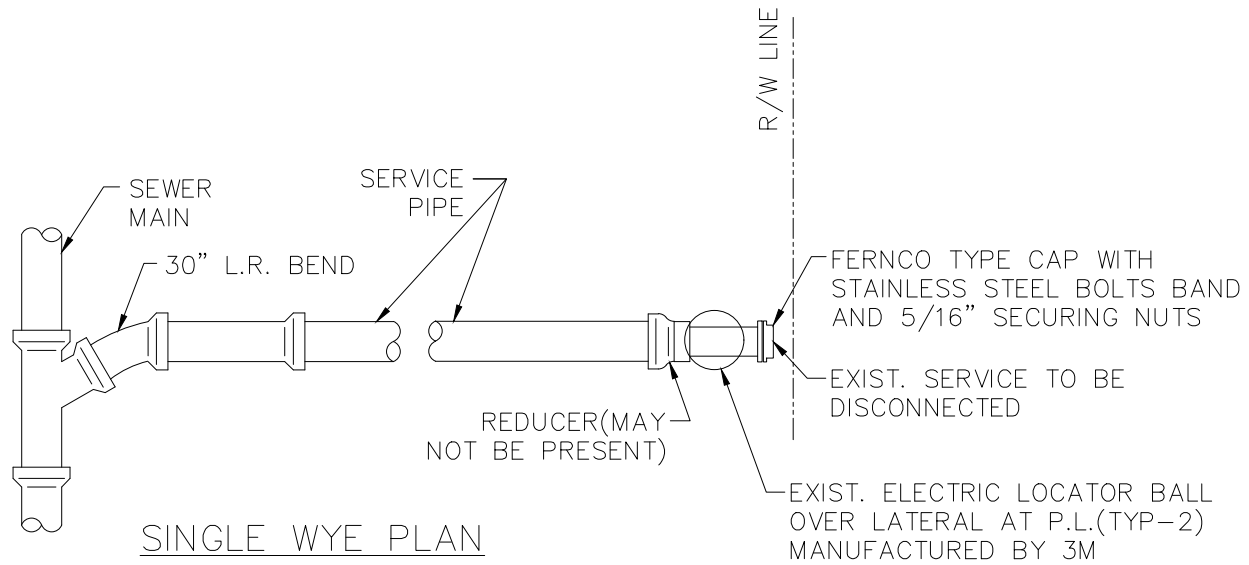
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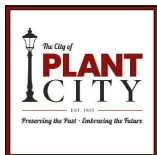
DOUBLE WYE PLAN

NOTE:
SERVICE TO BE CAPPED AS CLOSE TO R/W LINE AS POSSIBLE



SINGLE WYE PLAN

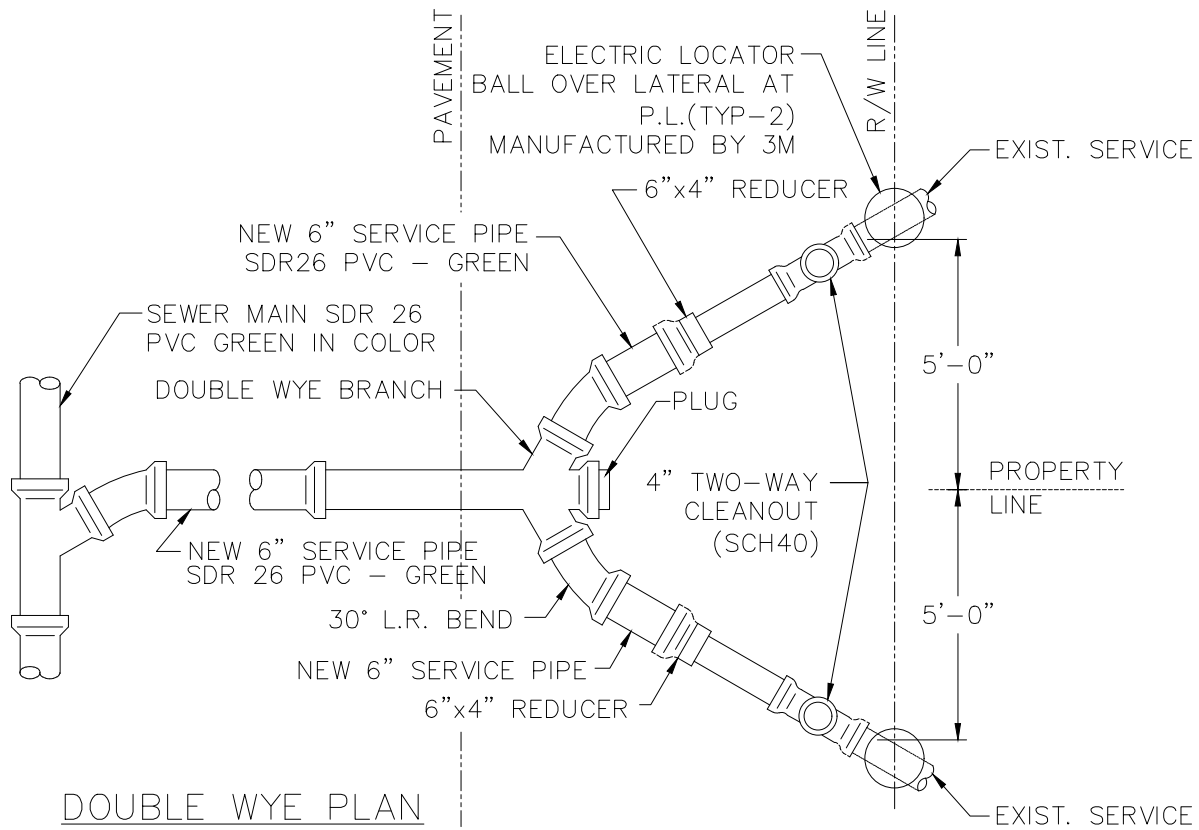
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SEWER SERVICE LATERAL DISCONNECTION DETAILS

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REVISION DATE			

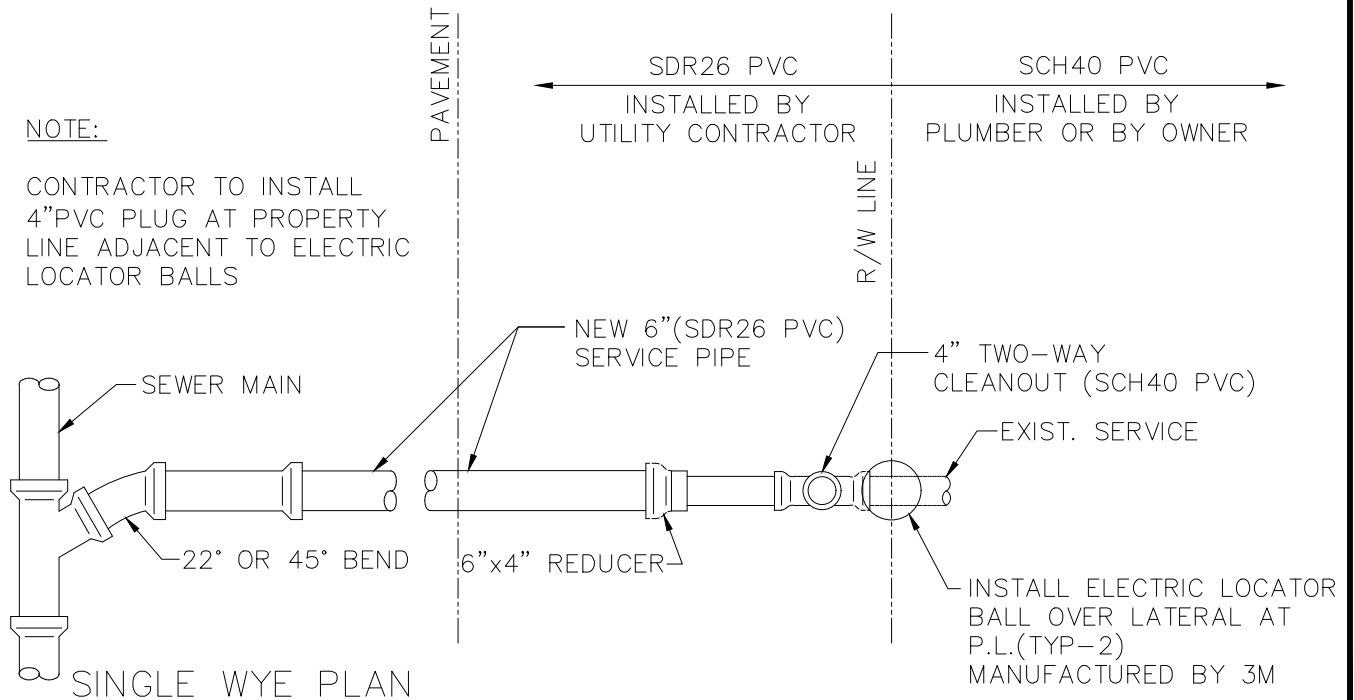
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DOUBLE WYE PLAN

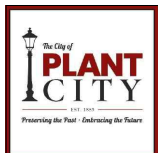
NOTE:

CONTRACTOR TO INSTALL
4" PVC PLUG AT PROPERTY
LINE ADJACENT TO ELECTRIC
LOCATOR BALLS



SINGLE WYE PLAN

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SEWER SERVICE LATERAL DETAILS

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-03

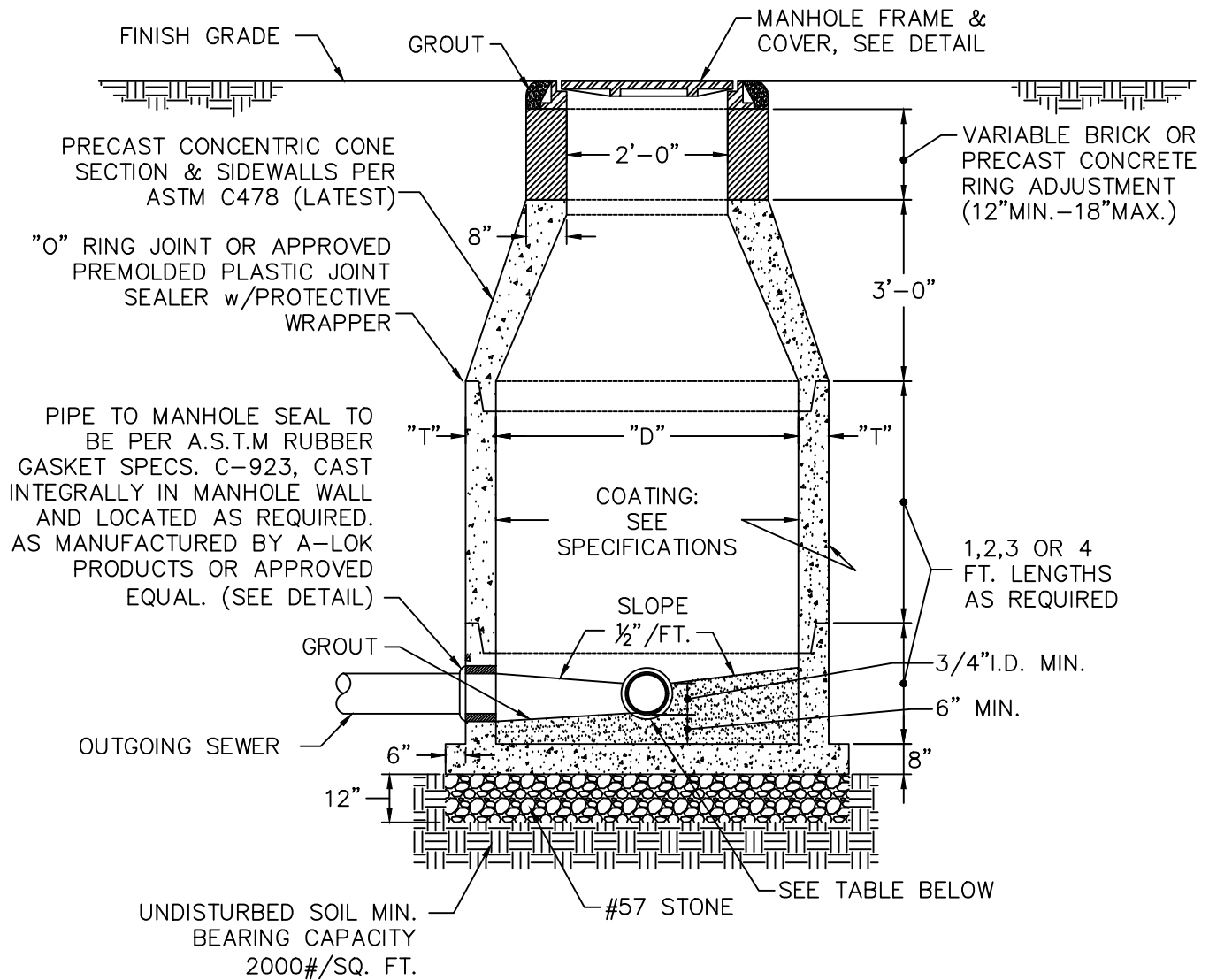
REVISION DATE

PAGE NO.

REVISION DATE

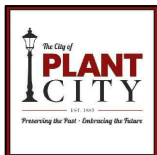
31

REVISION DATE



SCHEDULE OF MANHOLE DIMENSIONS		
LARGEST PIPE IN MANHOLE	"D" INSIDE DIAMETER	"T" WALL THICKNESS PRECAST
8" - 15"	4' - 0"	8"
18" - 24"	5' - 0"	8"
30" - 38"	6' - 0"	8"
42" AND OVER	NOMINAL PIPE DIA. + 3' - 0"	SUBMIT RECOMMENDED THICKNESS TO ENGR. FOR APPROVAL

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SECTION - PRECAST CONCRETE MANHOLE - CONCENTRIC

ORIGINAL DRAWING 10/03/2017

REVISION DATE

REVISION DATE

REVISION DATE

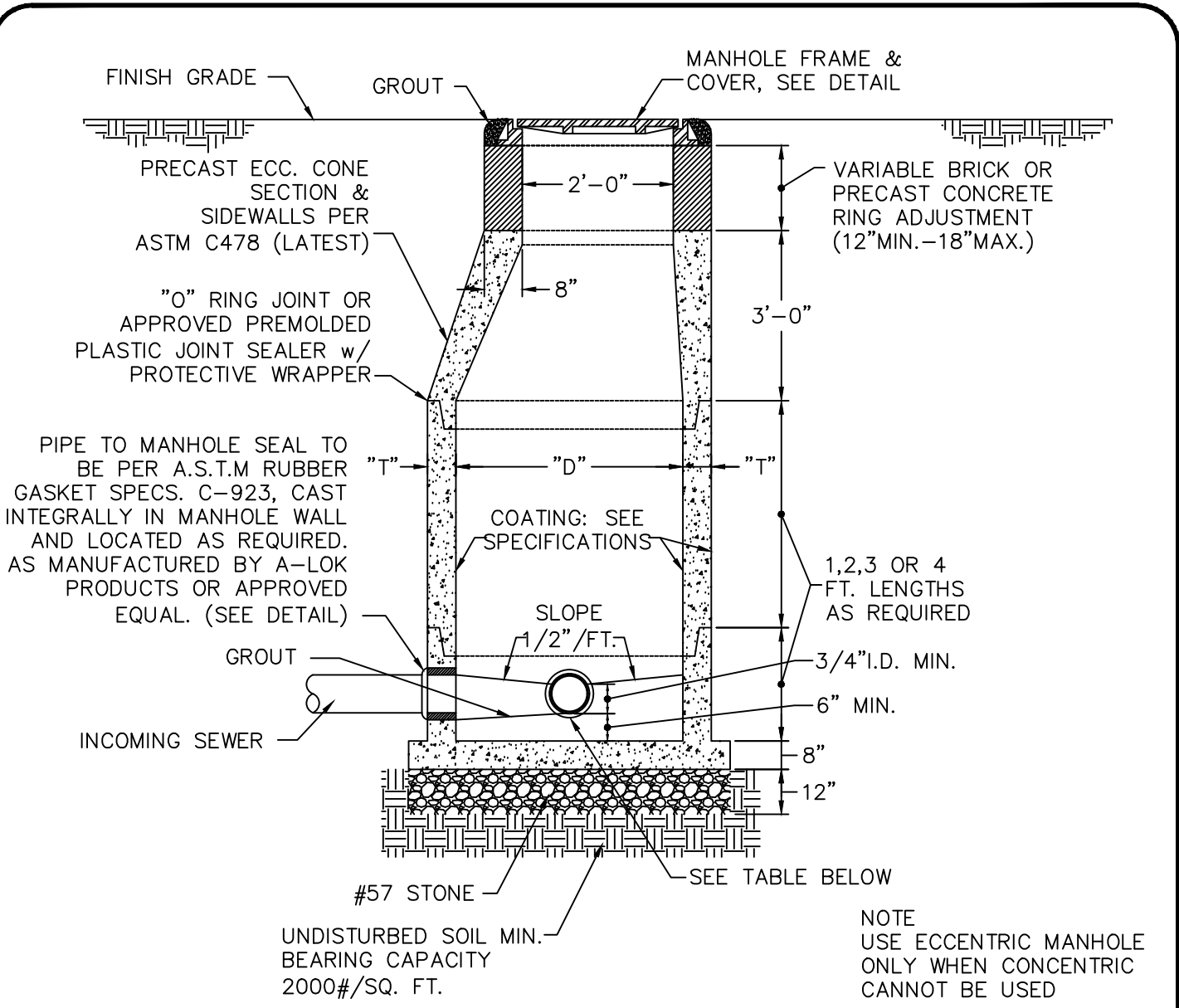
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DRAWING NO.

SS-04

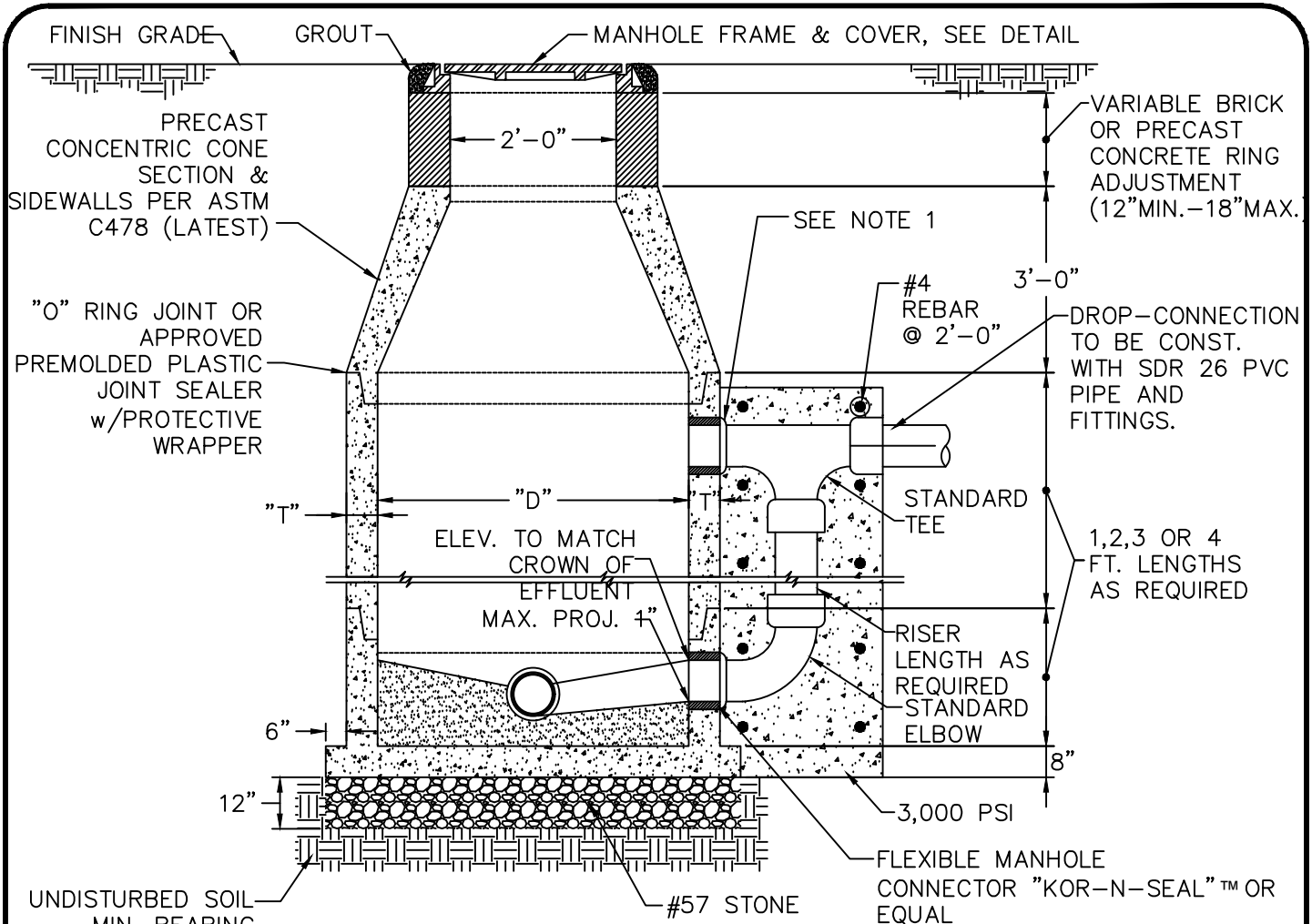
PAGE NO.

32



SCHEDULE OF MANHOLE DIMENSIONS		
LARGEST PIPE IN MANHOLE	"D" INSIDE DIAMETER	"T" WALL THICKNESS PRECAST
8"-15"	4'-0"	8"
18"-24"	5'-0"	8"
30"-38"	6'-0"	8"
42" AND OVER	NOMINAL PIPE DIA. + 3'-0"	SUBMIT RECOMMENDED THICKNESS TO ENGR. FOR APPROVAL

City of Plant City 1802 Spooner Drive Plant City, FL 33563 Phone: (813) 757-9288 	SECTION - PRECAST CONCRETE MANHOLE - ECCENTRIC		DRAWING NO.
	ORIGINAL DRAWING 10/03/2017	SCALE: NTS	SS-05
	REVISION DATE		PAGE NO.
	REVISION DATE		33
	REVISION DATE		



NOTE:
 1. PIPE TO MANHOLE SEAL TO BE PER A.S.T.M RUBBER GASKET SPECS. C-923, CAST INTEGRALLY IN MANHOLE WALL AND LOCATED AS REQUIRED. AS MANUFACTURED BY A-LOK PRODUCTS OR APPROVED EQUAL. (SEE DETAIL)

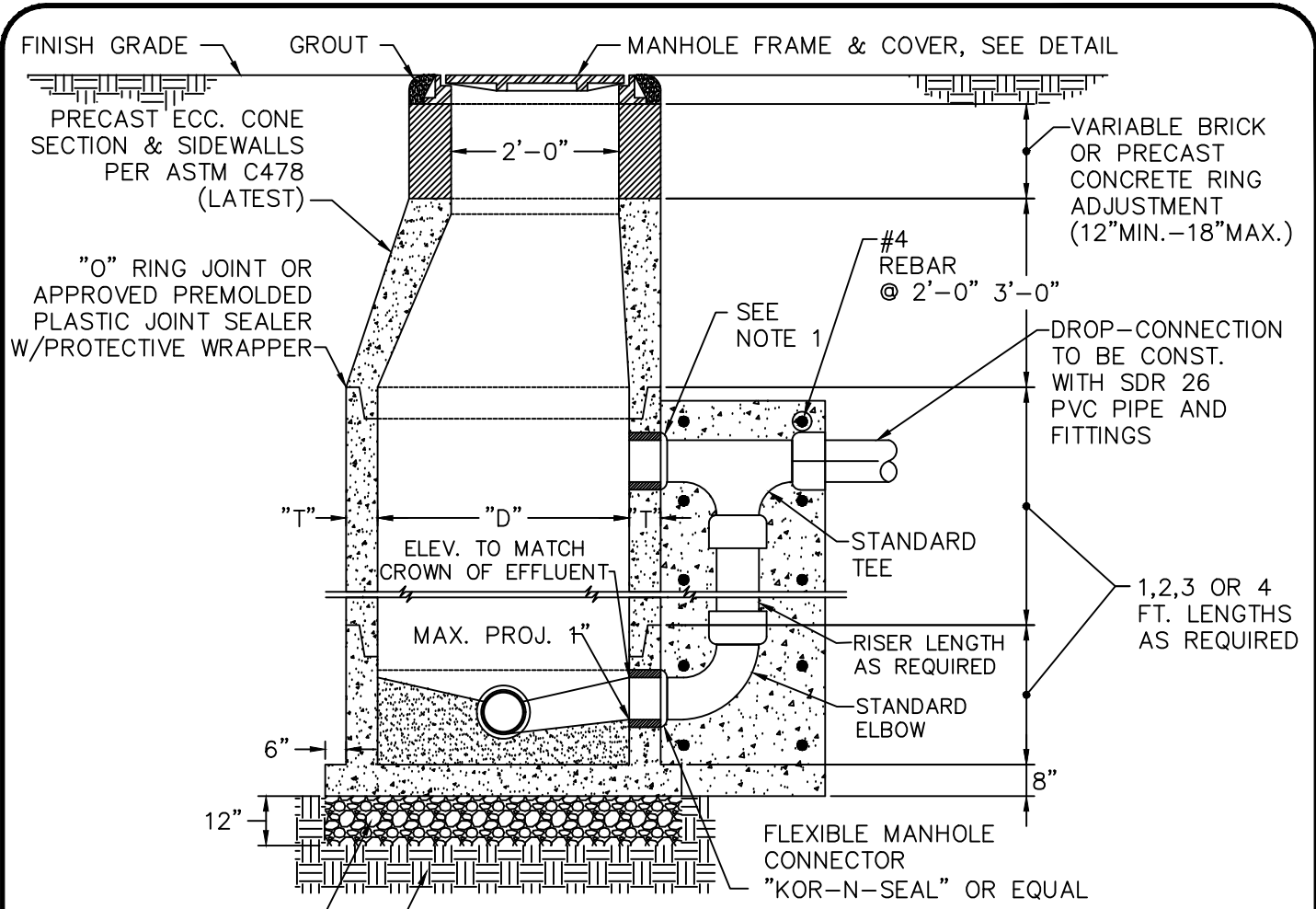
SCHEDULE OF MANHOLE DIMENSIONS		
LARGEST PIPE IN MANHOLE	"D" INSIDE DIAMETER	"T" WALL THICKNESS PRECAST
8"-15"	4'-0"	8"
18"-24"	5'-0"	8"
30"-38"	6'-0"	8"
42" AND OVER	NOMINAL PIPE DIA. + 3'-0"	SUBMIT RECOMMENDED THICKNESS TO ENGR. FOR APPROVAL

DROP MANHOLE DETAIL

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SECTION – PRECAST CONCRETE DROP MANHOLE – CONCENTRIC		DRAWING NO.
ORIGINAL DRAWING	10/03/2017	SS-06
REVISION DATE		PAGE NO.
REVISION DATE		34
REVISION DATE		

SCALE: NTS



UNDISTURBED SOIL MIN. BEARING CAPACITY 2000#/SQ. FT.

NOTE:
 1. PIPE TO MANHOLE SEAL TO BE PER A.S.T.M RUBBER GASKET SPECS. C-923, CAST INTEGRALLY IN MANHOLE WALL AND LOCATED AS REQUIRED. AS MANUFACTURED BY A-LOK PRODUCTS OR APPROVED EQUAL. (SEE DETAIL)

SCHEDULE OF MANHOLE DIMENSIONS		
LARGEST PIPE IN MANHOLE	"D" INSIDE DIAMETER	"T" WALL THICKNESS PRECAST
8"-15"	4'-0"	8"
18"-24"	5'-0"	8"
30"-38"	6'-0"	8"
42" AND OVER	NOMINAL PIPE DIA. + 3'-0"	SUBMIT RECOMMENDED THICKNESS TO ENGR. FOR APPROVAL

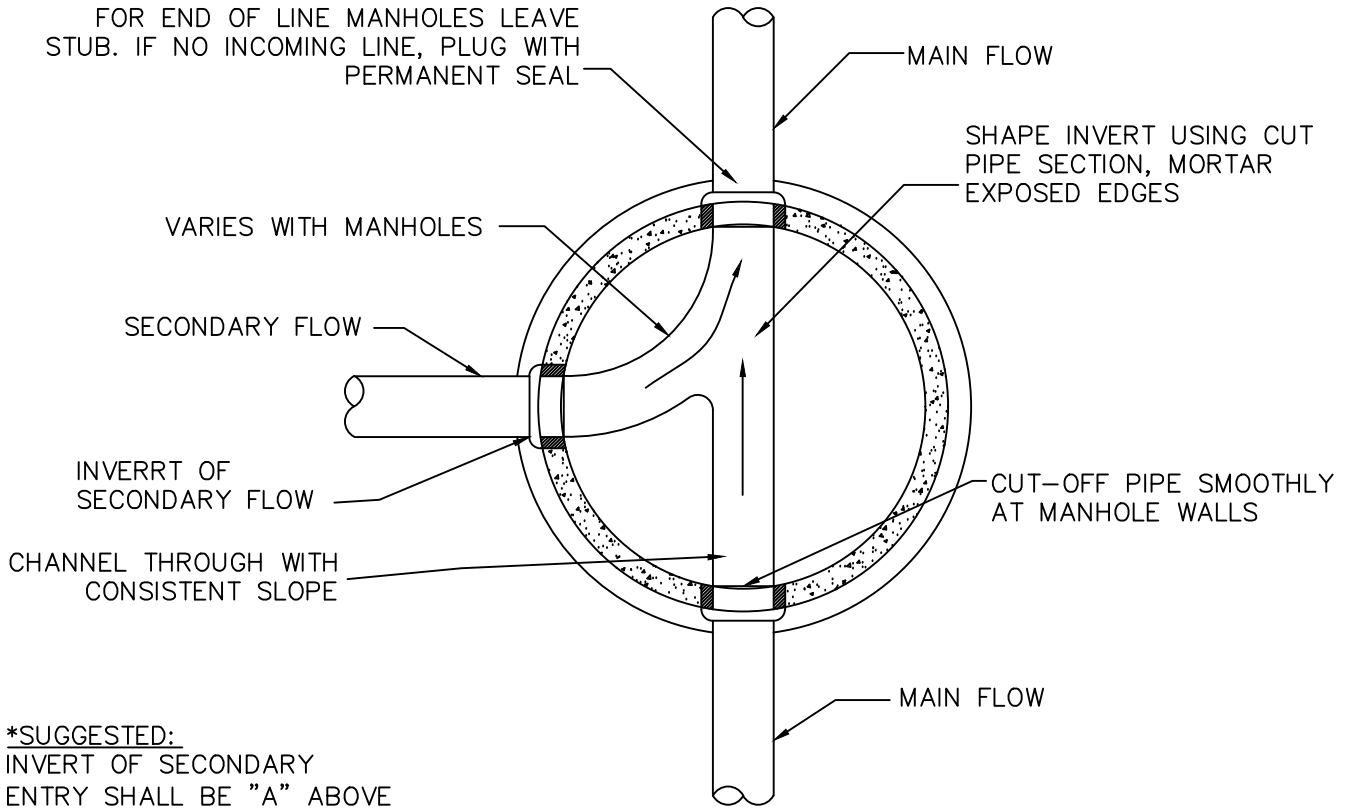
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SECTION - PRECAST CONCRETE DROP MANHOLE - ECCENTRIC

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.	SS-07
REVISION DATE			PAGE NO.	
REVISION DATE				
REVISION DATE				35

FOR END OF LINE MANHOLES LEAVE STUB. IF NO INCOMING LINE, PLUG WITH PERMANENT SEAL

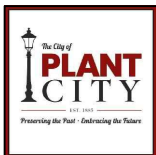


*SUGGESTED:
 INVERT OF SECONDARY ENTRY SHALL BE "A" ABOVE INVERT OF FLOW THRU PIPE

"A"	FLOW THRU PIPE SIZE
4"	8"
5"	10"
6"	12"
10"	16"

NOTE:
 PRECAST MANHOLE SECTIONS TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C478 4000 PSI CONC. TYPE II CEMENT

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TYPICAL PRECAST CONCRETE MANHOLE INVERTS

TYPICAL PRECAST CONCRETE MANHOLE INVERTS			DRAWING NO.
ORIGINAL DRAWING	10/03/2017	SCALE: NTS	SS-08
REVISION DATE			PAGE NO.
REVISION DATE			36
REVISION DATE			

RAISED LETTERS (CITY OF PLANT CITY) IN THIS AREA. 1 3/4" HIGH FLUSH WITH TOP OF COVER

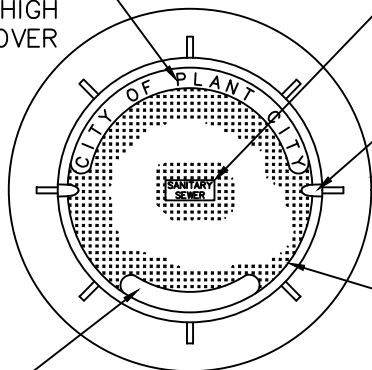
RAISED LETTERS (SANITARY SEWER), 1" HIGH, FLUSH WITH TOP OF COVER

2- CONCEALED PICK HOLES REQUIRED

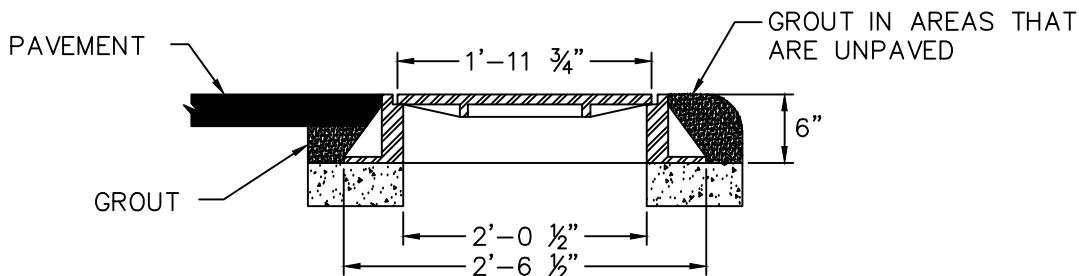
MANHOLE FRAME AND COVER - SEE APPROVED PRODUCTS LIST

FRAME AND COVER SHALL BE MACHINED OR GROUND AT ALL BEARING SURFACES SO AS TO SEAT FIRMLY AND PREVENT ROCKING

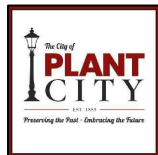
RAISED LETTERS (YEAR) IN THIS AREA, 1 3/4" HIGH, FLUSH WITH TOP OF COVER



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MANHOLE FRAME AND COVER DETAIL

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-09

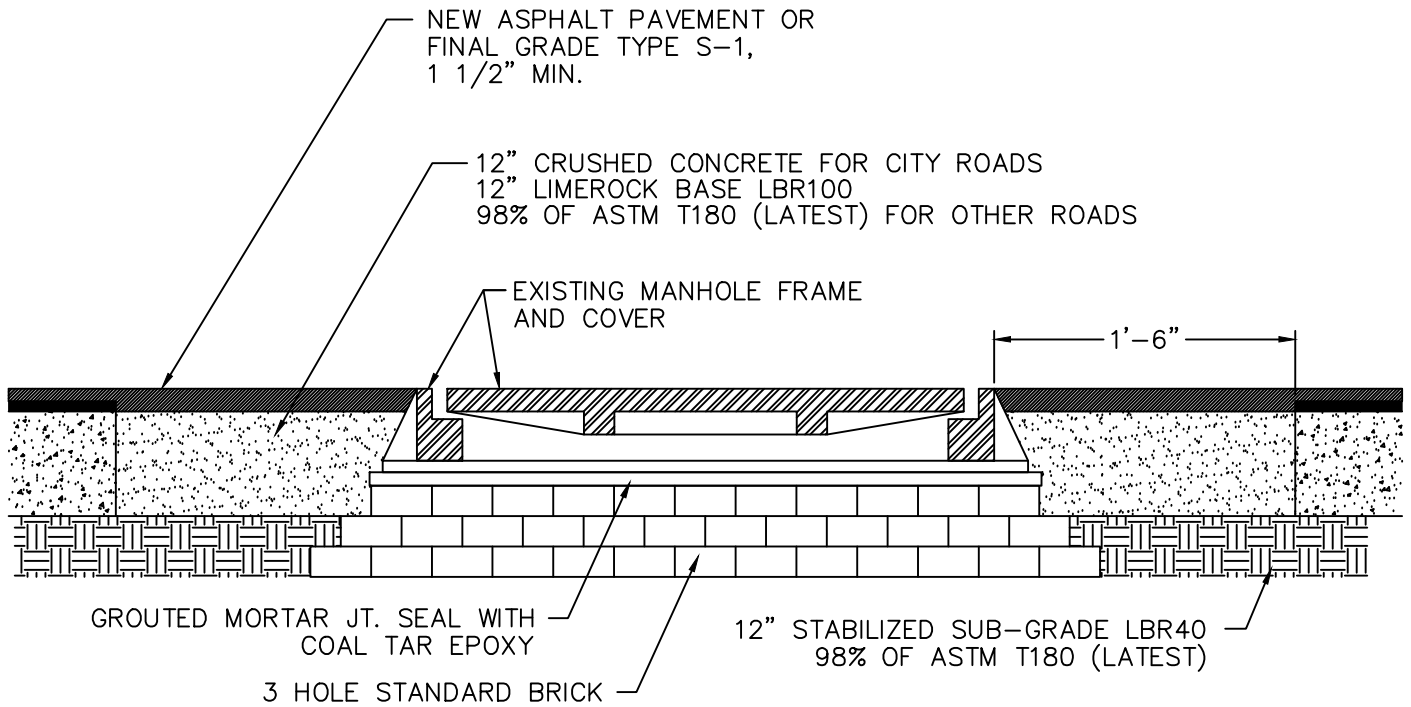
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PAGE NO.

REVISION DATE

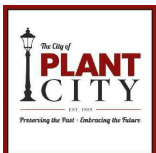
37

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NOTE
CITY WILL PROVIDE TENSILE
STRENGTH OF MORTAR

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MANHOLE ADJUSTMENT DETAIL

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-10

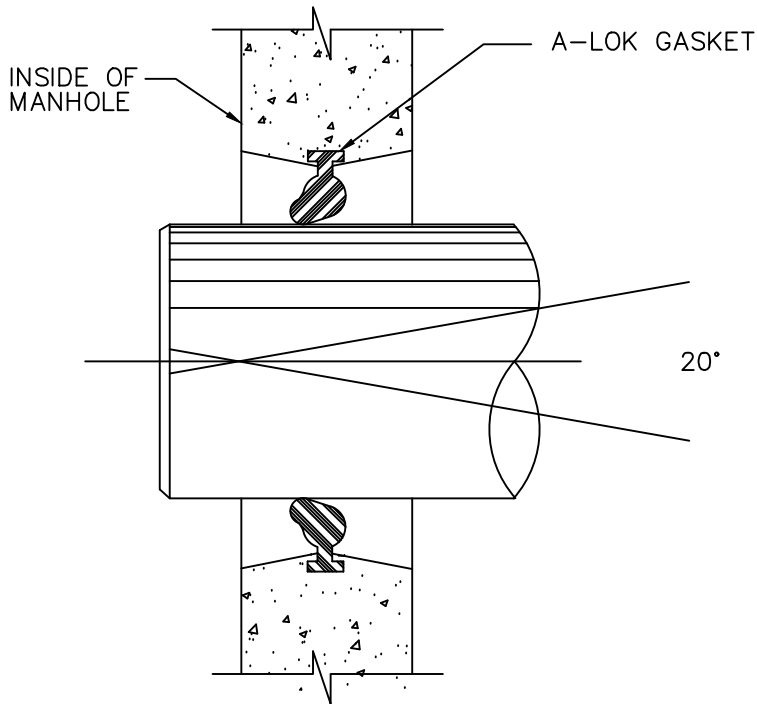
REVISION DATE

PAGE NO.

REVISION DATE

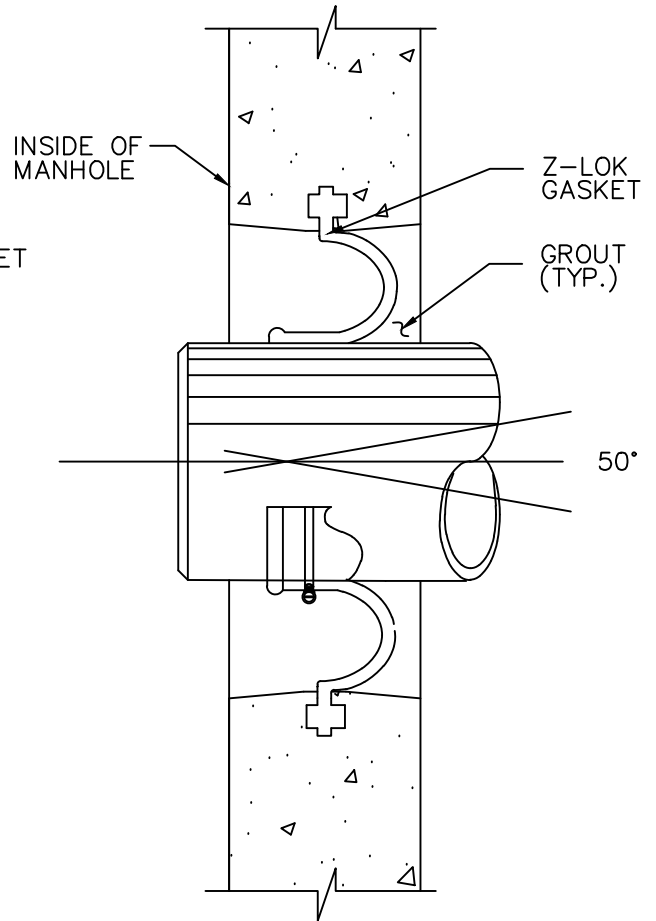
38

REVISION DATE



PIPE TO
MANHOLE SEAL

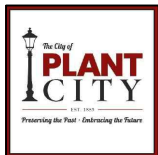
A-LOK GASKET PER A.S.T.M. RUBBER GASKET SPECS. C923, CAST INTEGRALLY IN MANHOLE WALL AND LOCATED AS REQUIRED. JOINT ALLOWS 10° OMNIDIRECTIONAL DEFLECTION.



PIPE TO
MANHOLE SEAL

Z-LOK GASKET PER A.S.T.M. RUBBER GASKET SPECS. C923, CAST INTEGRALLY IN MANHOLE WALL AND LOCATED AS REQUIRED. JOINT ALLOWS 25° OMNIDIRECTIONAL DEFLECTION.

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A - LOK, Z - LOK MANHOLE SEAL GASKET DETAIL

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-11

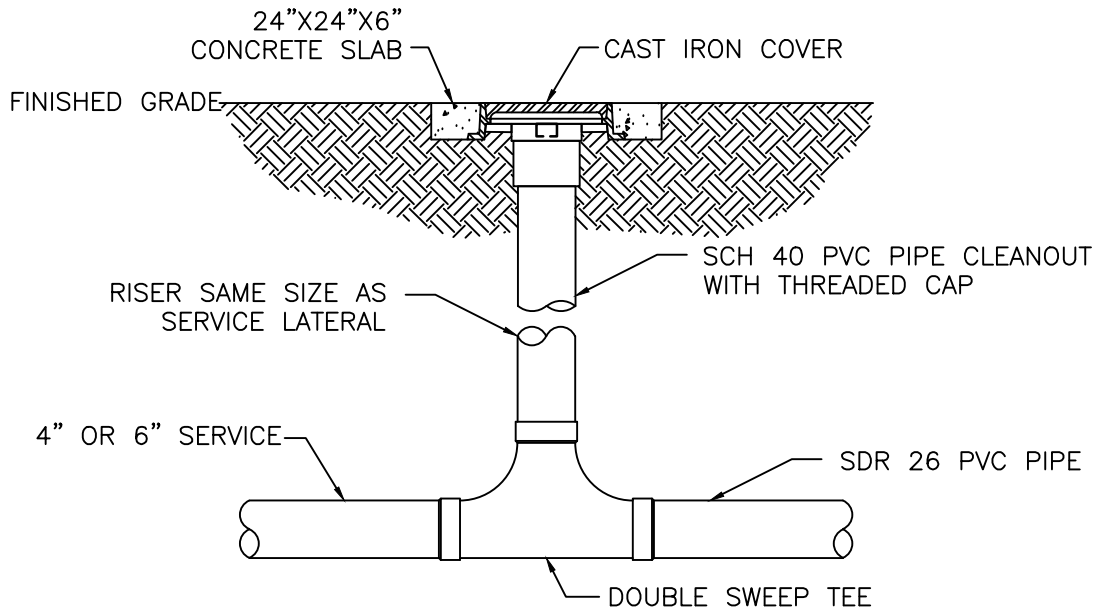
REVISION DATE

PAGE NO.

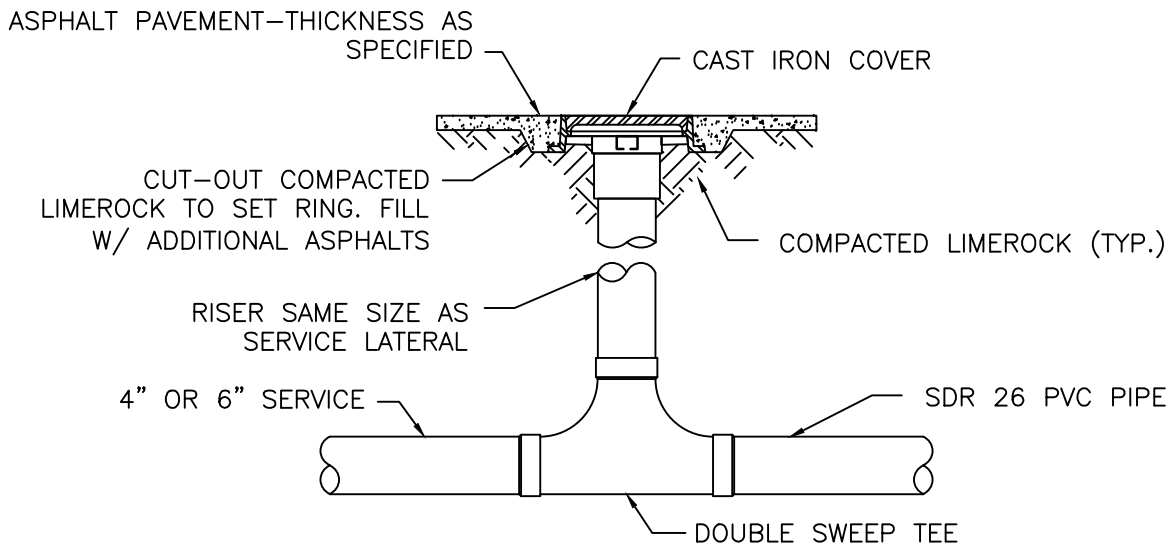
REVISION DATE

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REVISION DATE

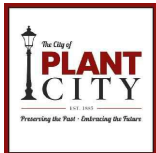


INLINE CLEANOUT



CLEANOUT FOR ASPHALT PAVED AREAS

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CLEANOUT DETAILS

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-12

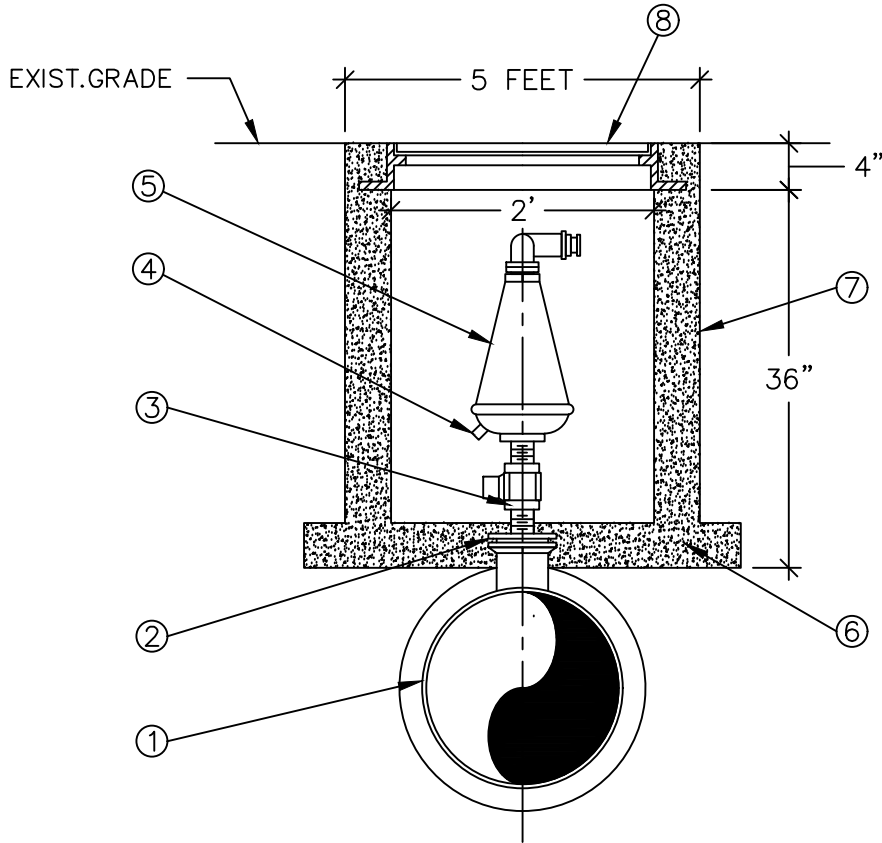
REVISION DATE

PAGE NO.

REVISION DATE

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REVISION DATE

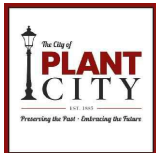


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 6"
2.	6" PLUG (TAPPED FOR 3" NIPPLE)
3.	3"X3" NIPPLE (304 SS) (2 REQUIRED)
4.	3" BALL VALVE(BRONZE)
5.	3" AIR RELEASE VALVE(ARI D-040 SS)
6.	#57 STONE
7.	CONC VALVE BOX
8.	18"X18" COVER ASSEMBLY (H-20 LOAD RATED)

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. COVER SHALL BE MARKED "ARV-WASTEWATER".
3. PROVIDE 2" MINIMUM CLEARANCE BETWEEN BOTTOM OF STRUCTURE AND TOP OF PIPE.

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AIR RELEASE VALVE DETAIL FOR WASTEWATER

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

SS-13

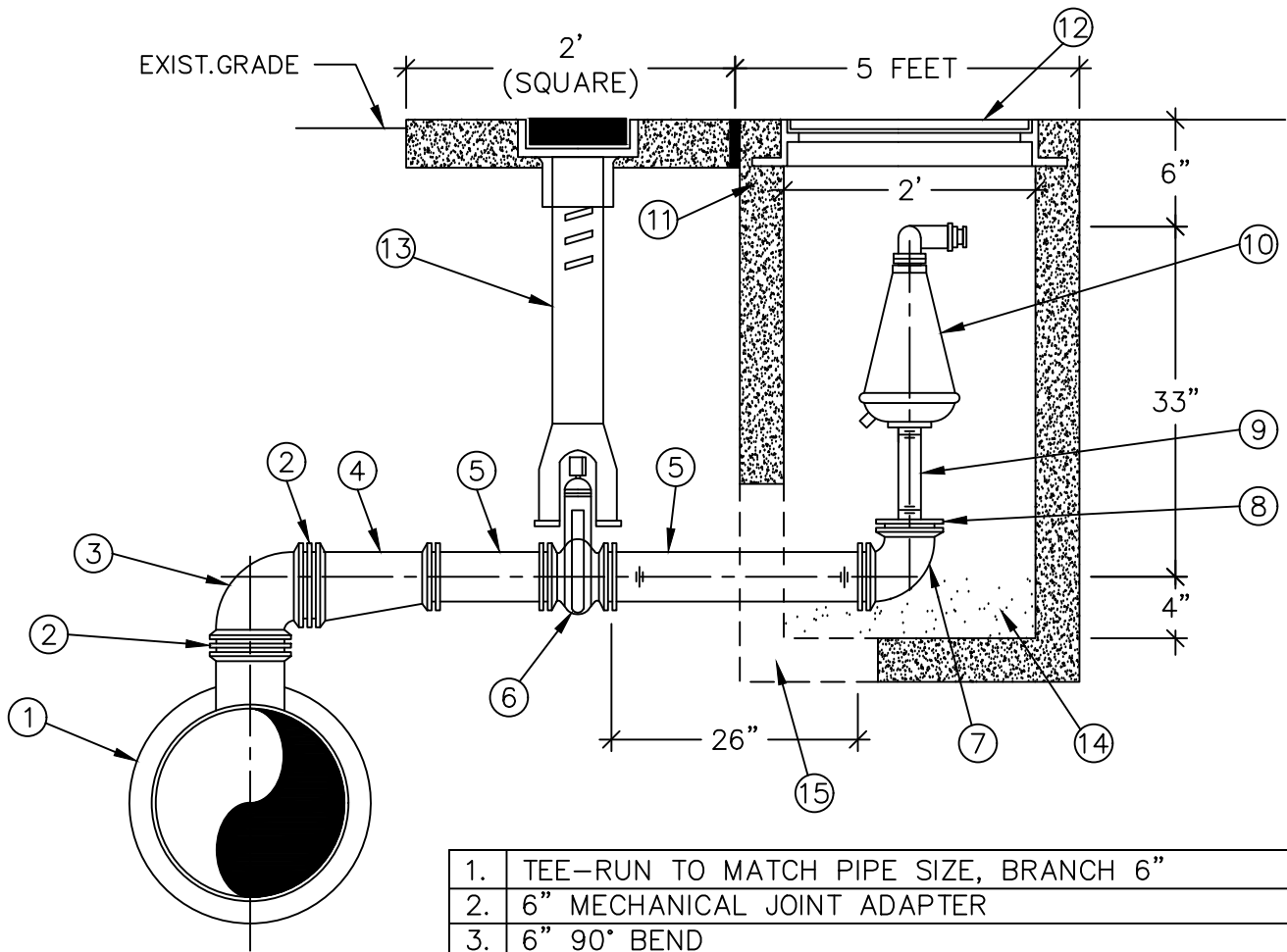
REVISION DATE

PAGE NO.

REVISION DATE

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REVISION DATE

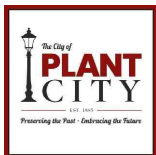


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 6"
2.	6" MECHANICAL JOINT ADAPTER
3.	6" 90° BEND
4.	6" REDUCER (ECCENTRIC)
5.	4" DIP
6.	4" PLUG VALVE (WASTEWATER)
7.	4" 90° BEND
8.	4" PLUG (TAPPED FOR 3" NIPPLE)
9.	3"X6" NIPPLE (304 SS)
10.	3" AIR RELEASE VALVE (ARI D-025 SS)
11.	CONC VALVE BOX
12.	18"X18" COVER ASSEMBLY (H-20 LOAD RATED)
13.	DI VALVE BOX W/CONC COLLAR
14.	#57 STONE
15.	CUT OUT FOR PIPE INSTALLATION

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. CUT OUT IN VALVE BOX SHALL BE 8" WIDE.
3. COVER SHALL BE MARKED "ARV-WASTEWATER".

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OFFSET AIR RELEASE VALVE DETAIL FOR WASTEWATER

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

DRAWING NO.

SS-14

REVISION DATE

PAGE NO.

REVISION DATE

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REVISION DATE

MECHANICAL NOTES

1. ALL PUMPING STATION PIPING SHALL BE FLANGED 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.
2. THE CONTRACTOR SHALL PROVIDE A WATER SERVICE, CURB STOP AND 3/4" HOSE BIBB TO POINT INDICATED ON PLANS.
3. THE CONTRACTOR SHALL INSURE THAT A NAME PLATE SHALL BE FURNISHED FOR EACH PUMP INDICATING THE CAPACITY, TDH, SPEED AND EFFICIENCY. PUMPS SHALL BE CAPABLE OF PASSING 3" SOLIDS.
4. CHECK VALVES SHALL BE OF THE OUTSIDE WEIGHTED LEVER TYPE. HINGE PIN SHALL BE 3/4" MIN.
5. USE ECCENTRIC PLUG VALVES IN PUMP STATION PIPING (DEZURIK OR APPROVED EQUAL). WET WELL HATCH SHALL BE ALUMINUM FRAME AND COVER AND SHALL BE EQUIPPED WITH HATCH SAFETY NET. COVER SHALL BE SINGLE DOOR TYPE WITH AUTOMATIC HOLD-OPEN ARM AND PADLOCK STAPLE. COVER SHALL OPEN TOWARDS THE PUMP DISCHARGE PIPING AND HAVE A MINIMUM LOAD BEARING OF 300 LBS. PER SQUARE FOOT. ALL HARDWARE SHALL BE 316 STAINLESS STEEL.
7. AIR VALVES SHALL BE PER CITY OF PLANT CITY SPECIFICATIONS.
8. PIPE TRACER WIRE HOUSING SHALL BE LOCATED IN THE CONCRETE SLAB INSIDE THE LIFT STATION FENCE.
9. THE CONTRACTOR SHALL PROVIDE A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY ON THE WATER SERVICE LINE, MOUNTED BEFORE THE HOSE BIBB PER CITY'S STANDARD DETAILS.

GENERAL NOTES

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
2. ALL ABOVE GROUND PIPING, VALVES AND FITTINGS SHALL BE COATED PER CITY SPECIFICATIONS.
3. THE INSIDE AND OUTSIDE SURFACES OF THE REINFORCED CONCRETE WET WELL SHALL BE COATED PER CITY SPECIFICATIONS.
4. FORCE MAIN SHALL HAVE 36" MINIMUM COVER.
5. ALL CONSTRUCTION AND EQUIPMENT SHALL BE IN ACCORDANCE WITH CITY OF PLANT CITY DESIGN AND CONSTRUCTION STANDARDS.
6. INSTALL ANCHOR BOLTS BEFORE GROUT IS POURED.
7. ANCHOR BOLTS TO EXTEND INTO BASE 7" AND SET WITH TYPE II NON-SHRINK SHALL BE 316 STAINLESS STEEL.
8. ALL HARDWARE INSIDE WET WELL FOR BASE PLATE, HATCH COVER, GUIDE RAILS, ETC., SHALL BE 316 STAINLESS STEEL.
9. THE DESIGN ENGINEER MUST PROVIDE CALCULATIONS FOR THE DESIGN OF THE STRUCTURE FOR LATERAL EARTH LOADS & UPLIFT.

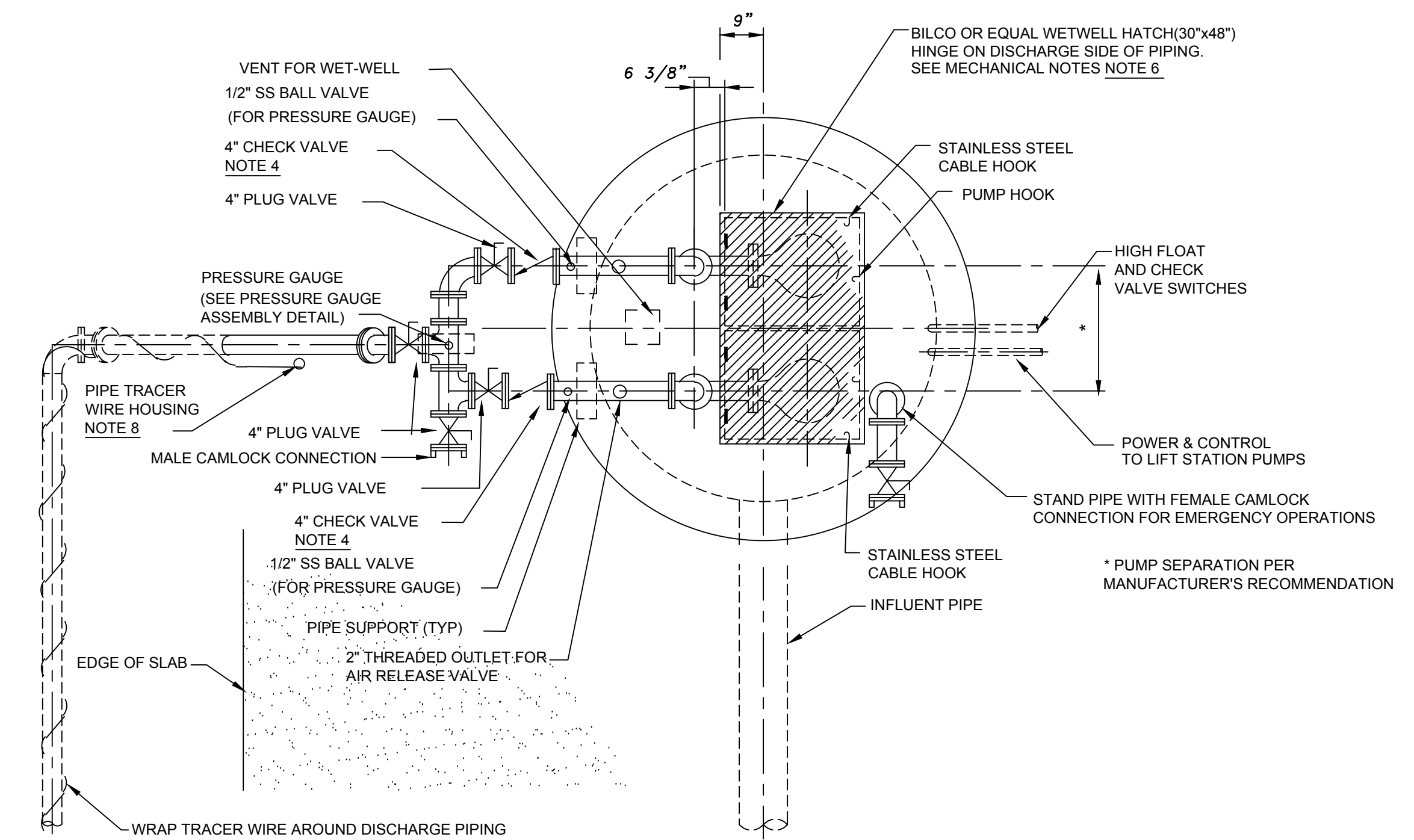
PUMP INFORMATION	
STA ADDRESS	_____
MODEL	_____
IMPELLER	_____
AMP	_____
VOLTS	_____
	____ G.P.M. @ _____ FT. TDH

THE ABOVE PUMP INFORMATION SHALL BE SUPPLIED BY THE PUMP MANUFACTURER AND FASTENED TO THE INSIDE OF THE CONTROL PANEL DOOR USING ALUMINUM STICK-ON DECAL.

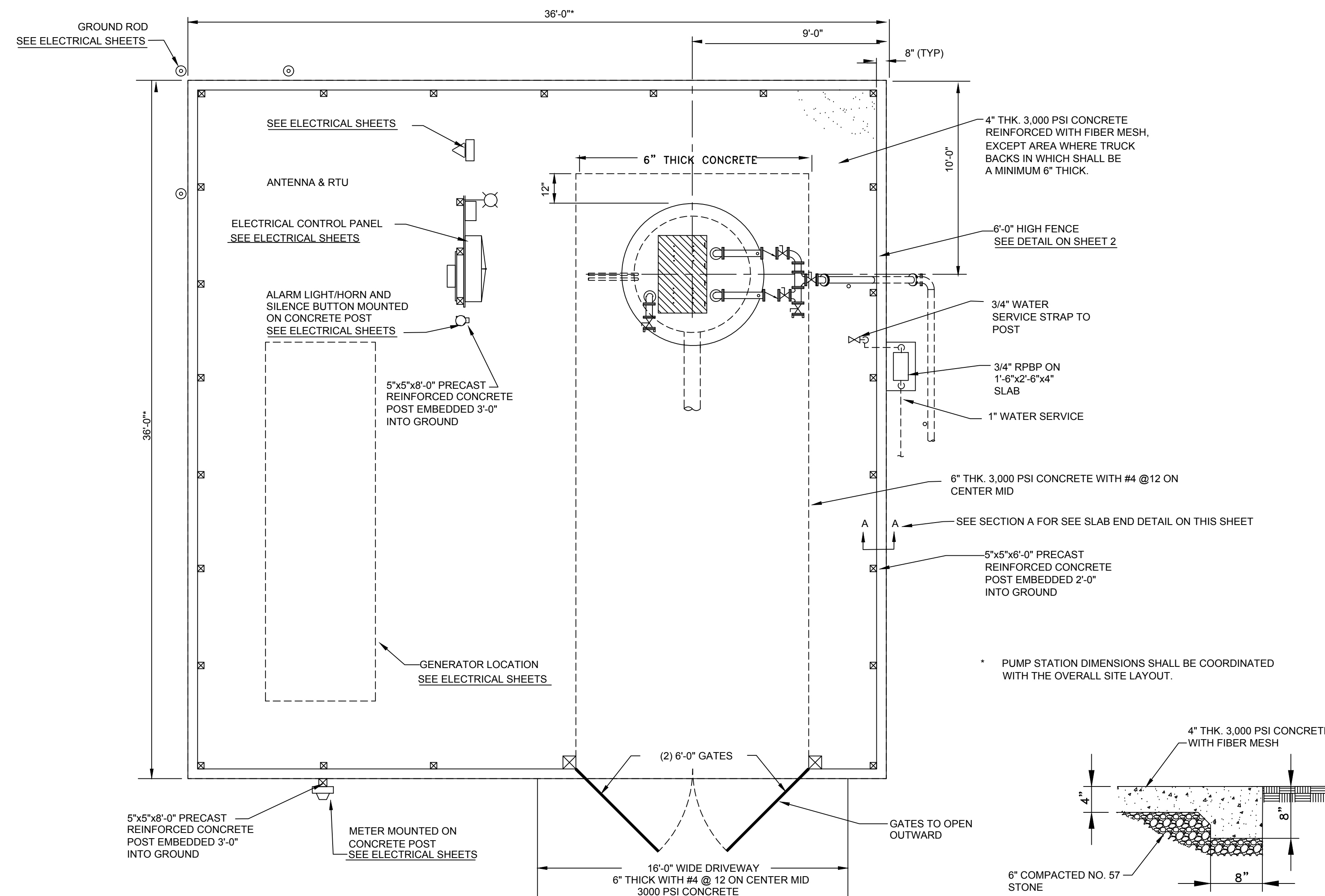
PUMP INFORMATION

LIQUID LEVEL REGULATIONS

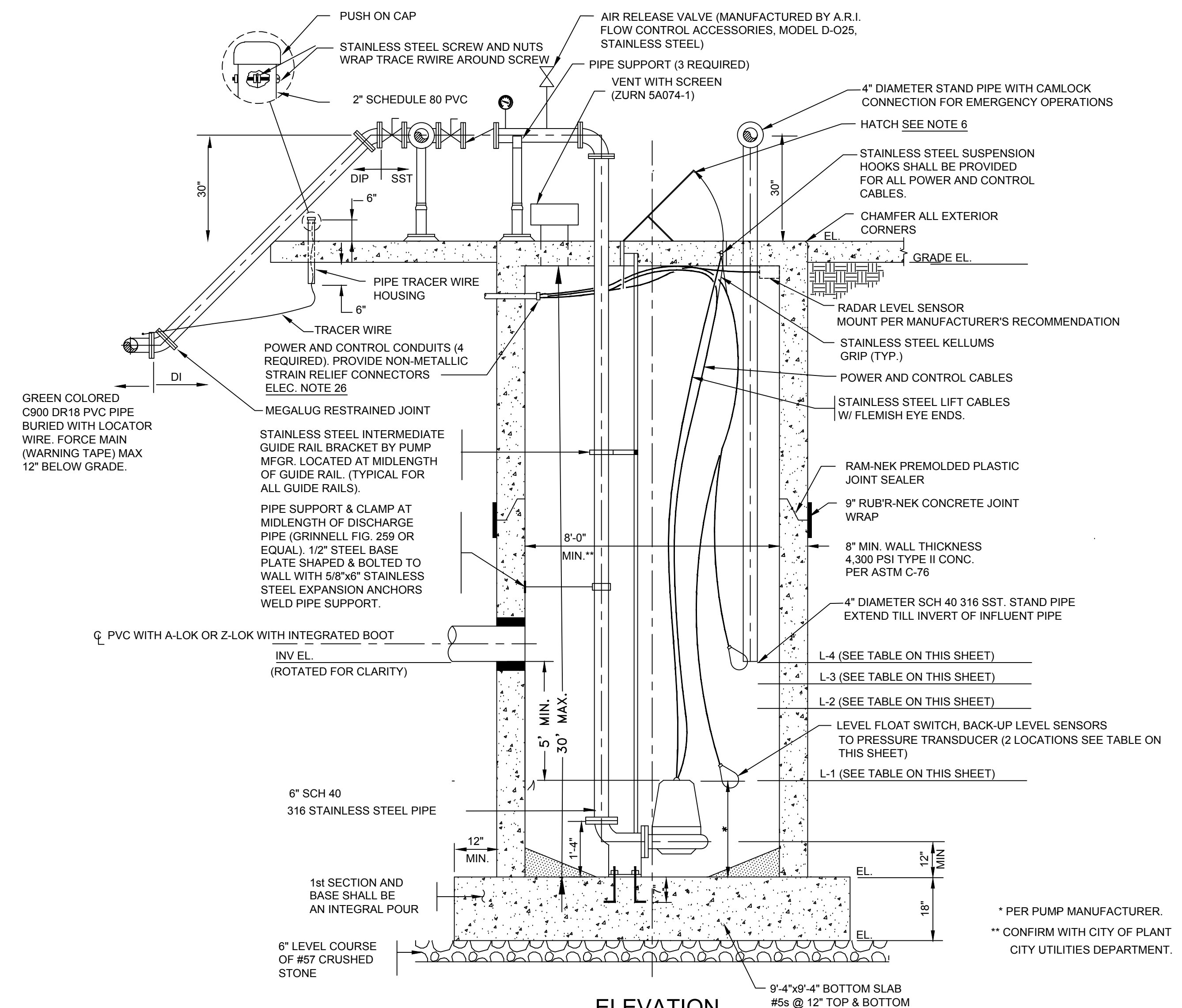
LEVEL	NORMAL OPERATION/ TRANSDUCER LEVEL	EMERGENCY/FLOAT LEVEL
L-1	PUMPS OFF EL	PUMPS OFF EL
L-2	LEAD PUMP ON EL	N/A
L-3	LAG PUMP ON EL	N/A
L-4	ALARM EL	PUMP ON EL



PLAN



PUMP STATION SITE PLAN

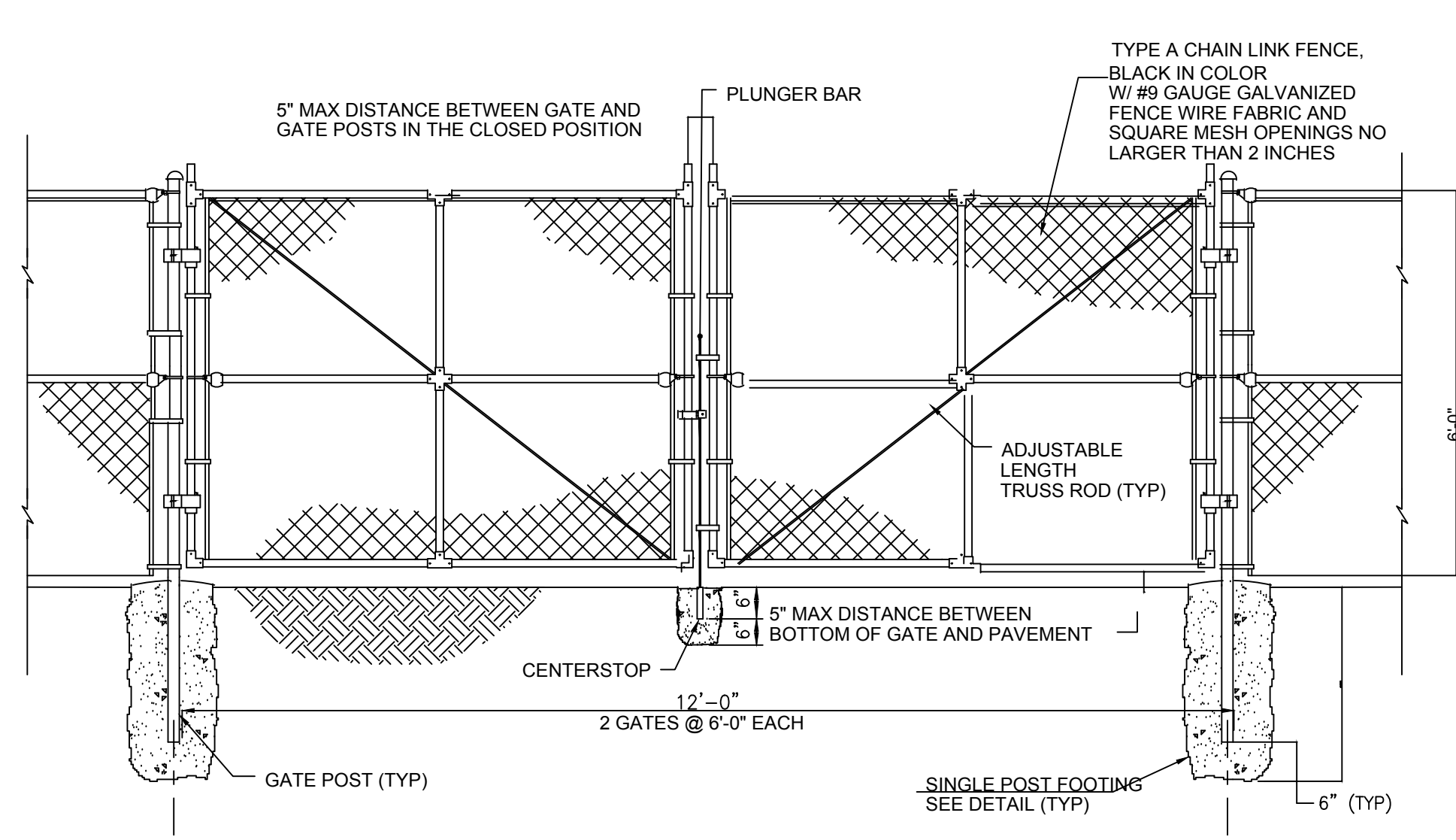


ELEVATION

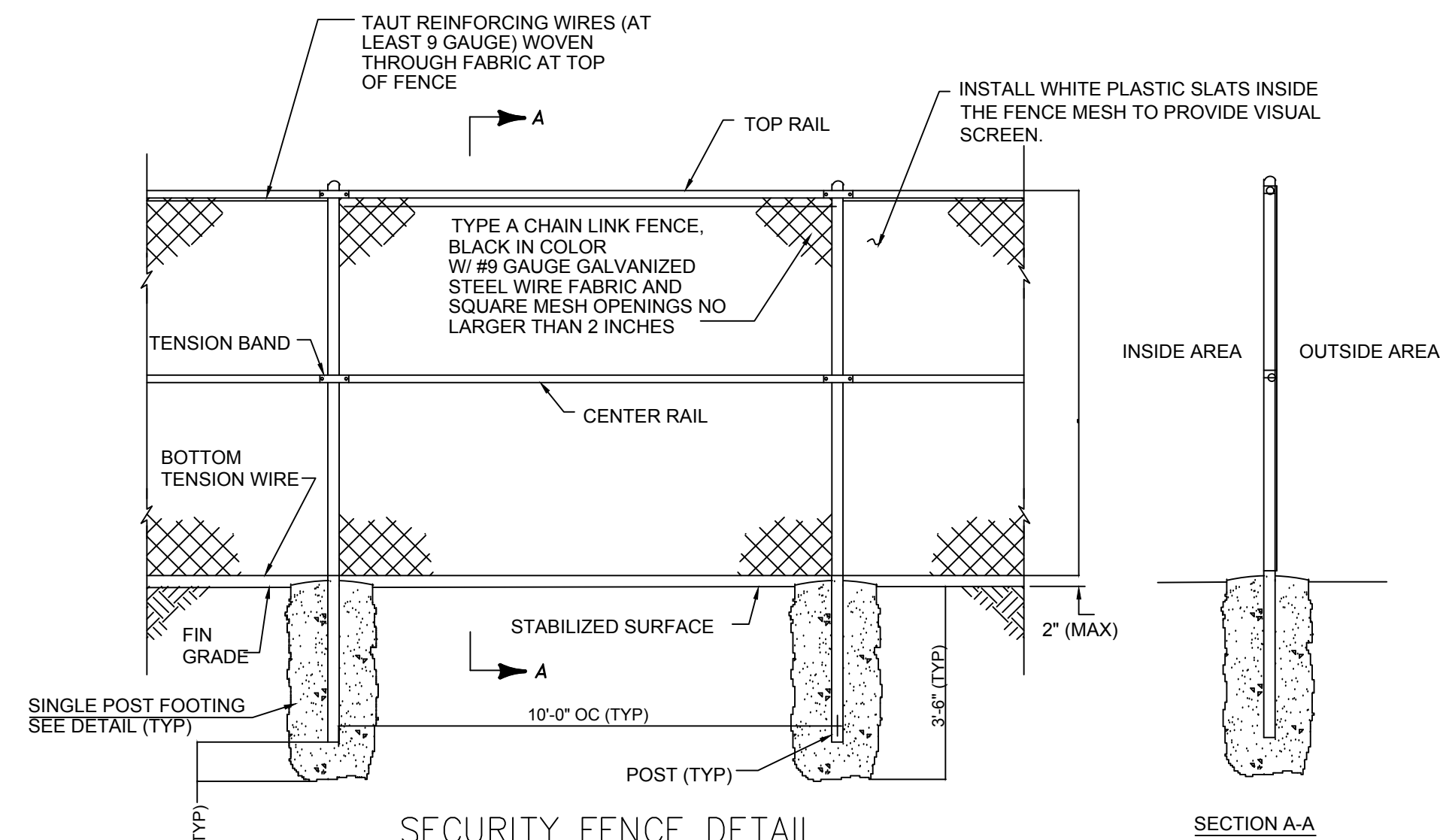
- SECTION A-A**
- NOTES:
1. PROVIDE SAW CUT CONSTRUCTION JOINTS AT 12'-0" MAX.
 2. CONCRETE SLAB SHALL REST ON UNDISTURBED SOIL OR COMPACTED SELECT FILL, PLACED IN 6-INCH LIFTS AND COMPACTED TO 98% OF THE MODIFIED PROCTOR.
 3. SELECT FILL SHALL BE WELL GRADED, CRUSHED AGGREGATE, FREE OF ORGANIC MATERIAL.

NOTE: REFER TO CITY STANDARD SPECIFICATIONS FOR ANY INFORMATION NOT COVERED ON THE LIFT STATION DETAILS.

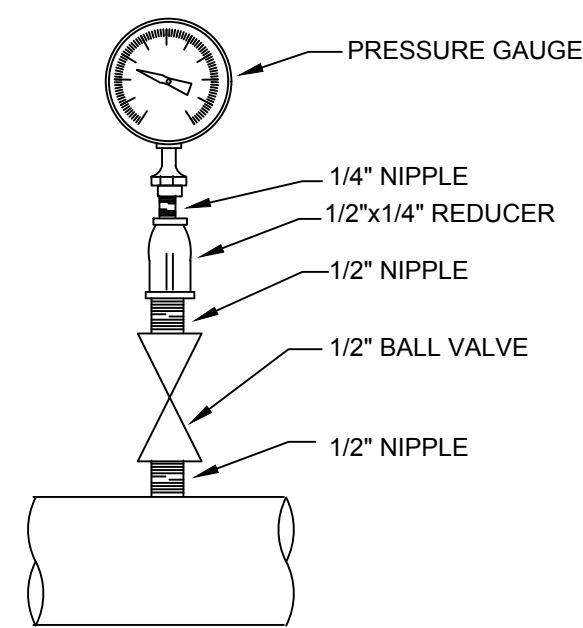
<p>City of Plant City 1802 Spooner Drive Plant City, FL 33563 Phone: (813) 757-9288</p>	<p>Lift Station Layout</p> <p>All changes to this drawing are to be highlighted so any proposed change can be readily found.</p>	<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>BY</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td></td> <td>8-15-20</td> <td>REVISED STANDARD</td> </tr> </tbody> </table>	BY	DATE	DESCRIPTION		8-15-20	REVISED STANDARD	<p>DRAWN BY: _____ DATE: _____</p> <p>DESIGN BY: _____ DATE: _____</p> <p>CHECKED BY: _____ DATE: _____</p>	<p>PROJECT: Plant City, Florida</p> <p>Lift Station Details</p>	<p>SHEET 1 OF 4</p> <p>JOB NO. _____</p>
		BY	DATE	DESCRIPTION							
	8-15-20	REVISED STANDARD									
<p>1/5/2021 12:49 PM</p>	<p>LS Mech Detail Sheet 1.dwg</p>	<p>SCALE: AS NOTED</p>	<p>PER PUMP MANUFACTURER. ** CONFIRM WITH CITY OF PLANT CITY UTILITIES DEPARTMENT.</p>	<p>NOTE: REFER TO CITY STANDARD SPECIFICATIONS FOR ANY INFORMATION NOT COVERED ON THE LIFT STATION DETAILS.</p>	<p>97</p>						



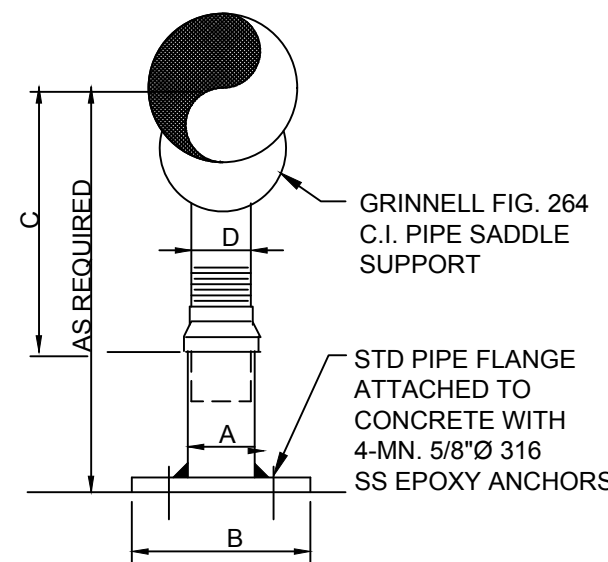
NTS **DOUBLE SWING GATE DETAIL**



NTS **SECURITY FENCE DETAIL**



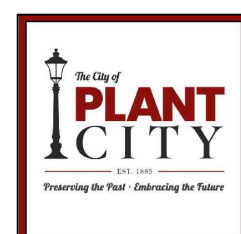
PRESSURE GAUGE ASSEMBLY DETAIL
NOT TO SCALE



STANCHION PIPE SUPPORT DETAIL
NOT TO SCALE

PIPE SIZE	A	B	C		D
			MIN.	MAX.	
4	3	9	9-1/4	14	2-1/2
5	3	9	10	14-3/4	2-1/2
6	3	9	10-1/2	15-1/4	2-1/2
8	3	9	11-3/4	16-1/2	2-1/2
10	3	9	13-1/2	18-1/4	2-1/2

- PIPE SUPPORT NOTES:**
1. ALL HARDWARE, FLANGE, ANGLE, PIPES AND COUPLING SHALL BE 316 SS. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, KOR-FUND LORPAD 40 UNDER SUPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
 2. FOR BASE, HEIGHT AND FLANGE DIMENSIONS, SEE TABLE ABOVE. ALL DIMENSIONS IN INCHES.



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Lift Station Layout

All changes to this drawing are to be highlighted so any proposed change can be readily found.

REVISIONS

BY	DATE	DESCRIPTION
	5-15-18	REVISED STANDARD

DRAWN BY: _____ DATE: _____
DESIGN BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

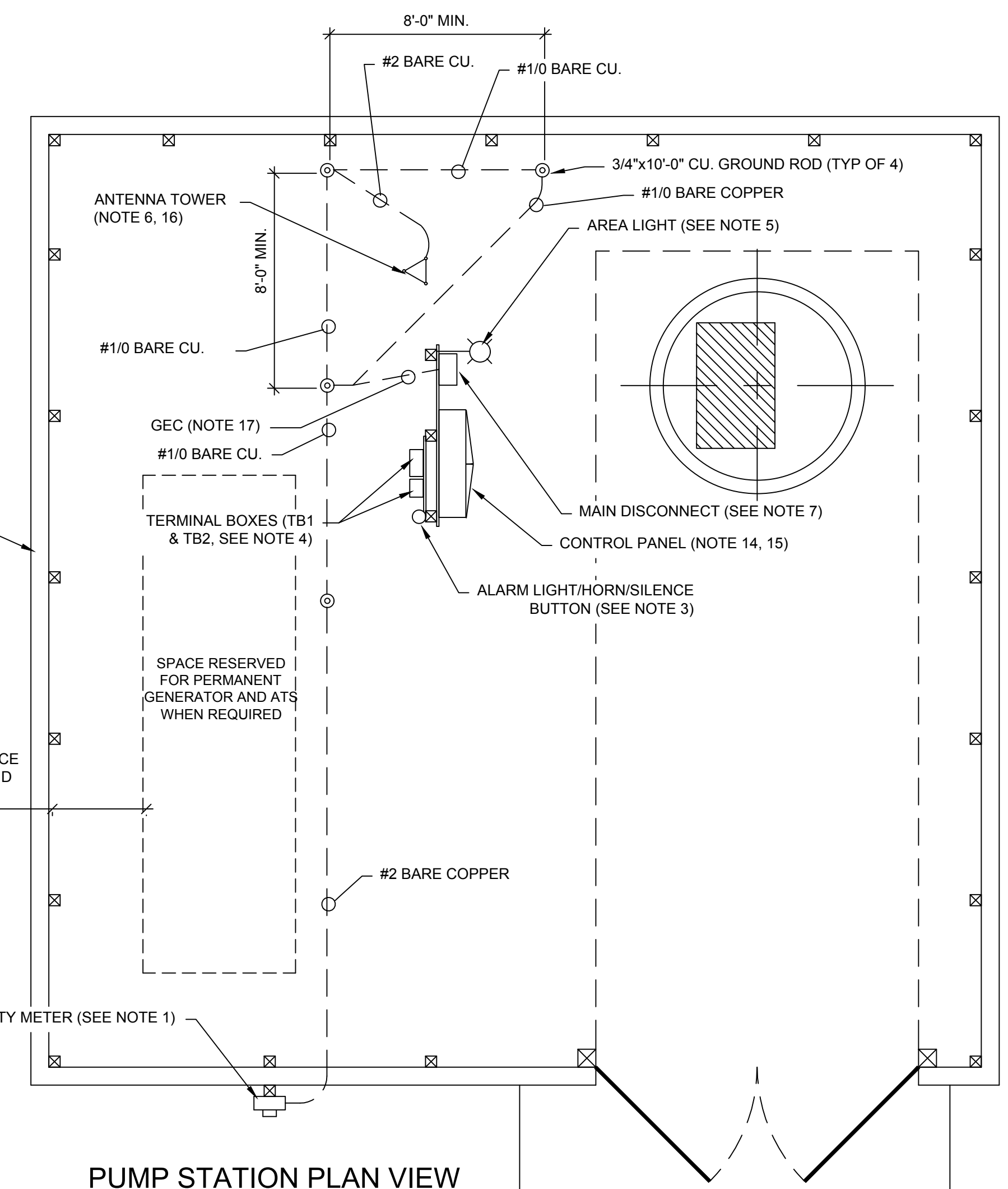
SCALE: AS NOTED

PROJECT:
Plant City, Florida
Lift Station Details

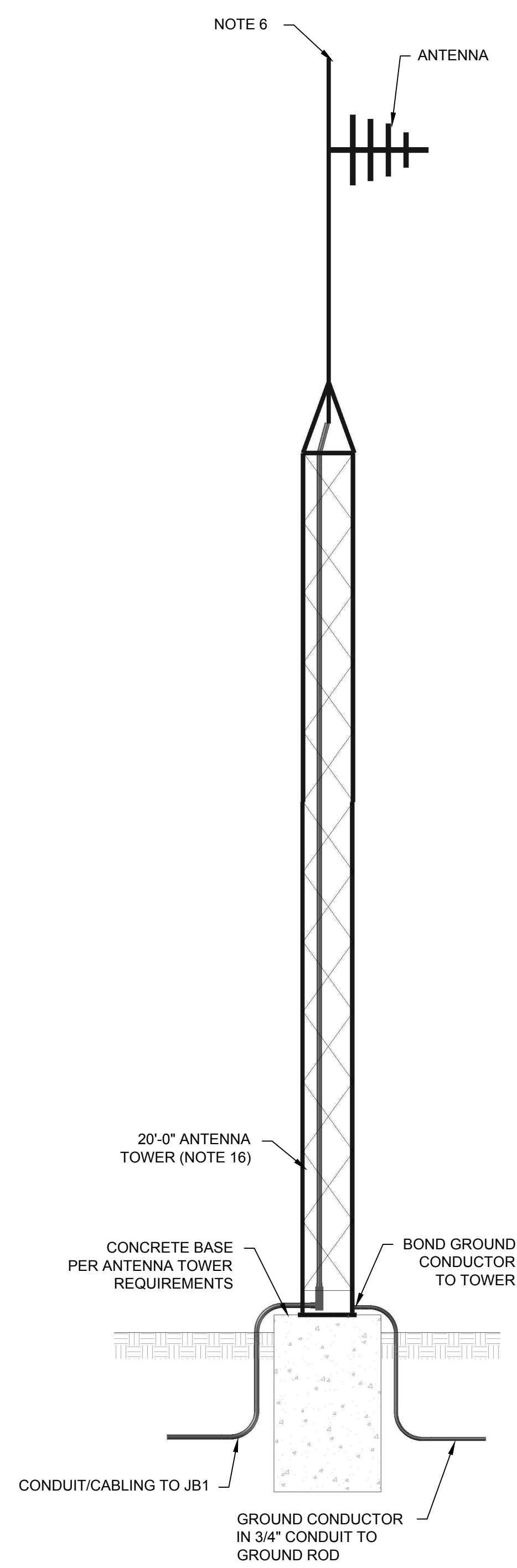
SHEET
2 OF 4
JOB NO.

NOTES:

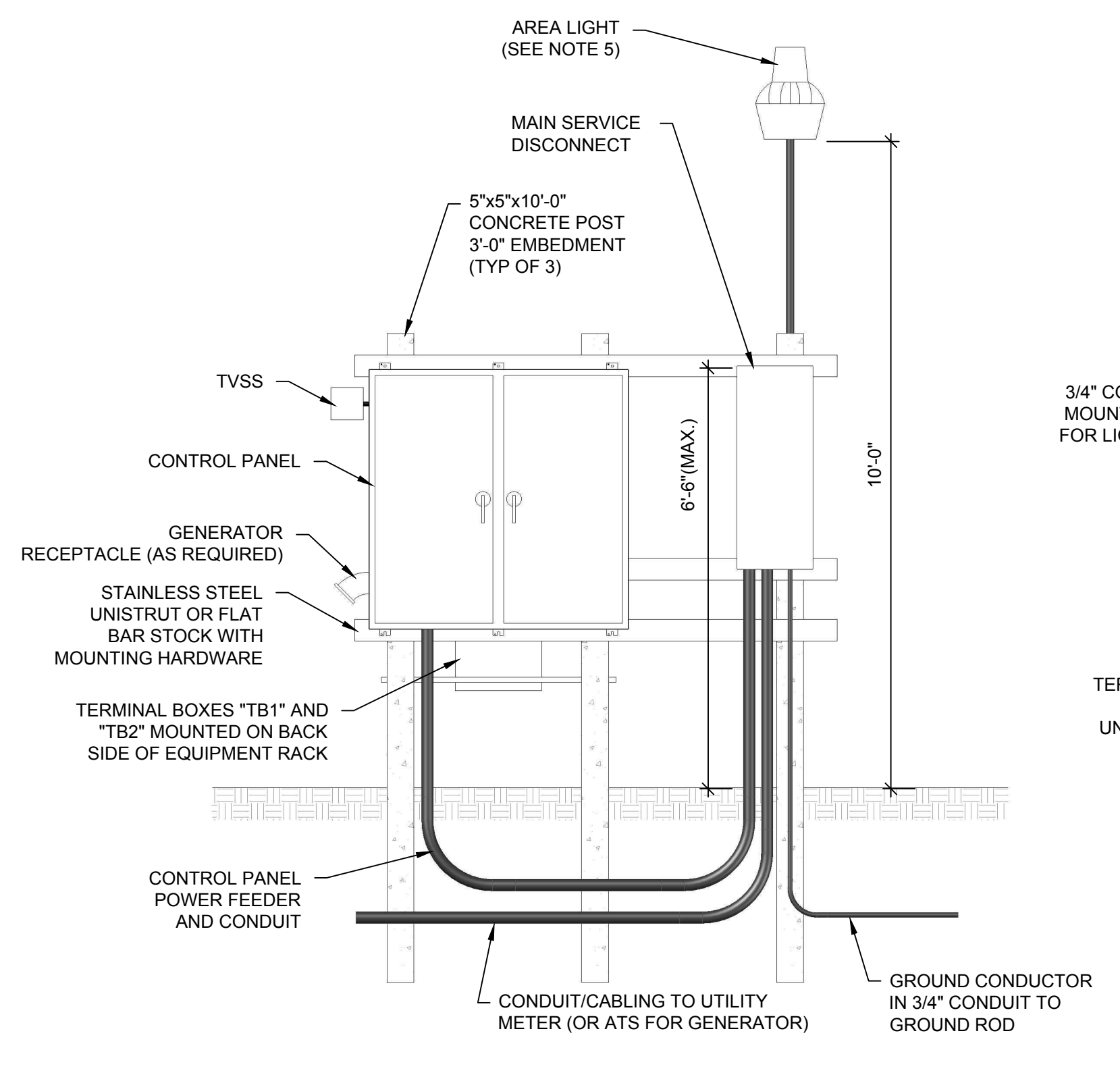
- PROVIDE METER BASE MOUNTED ON PRE-CAST CONCRETE POST. METER SHALL BE APPROVED BY THE LOCAL UTILITY COMPANY. COORDINATE ALL REQUIREMENTS PRIOR TO ROUGH-IN. IN THE CASE OF A HIGH-LEG DELTA SERVICE, TERMINATE THE HIGH LEG IN THE FAR RIGHT (L3) POSITION AND IDENTIFY WITH ORANGE TAPE.
- WHERE AN OVERHEAD SERVICE IS REQUIRED, COORDINATE LOCATION, GUYING AND ATTACHMENTS WITH THE ELECTRIC COMPANY. TERMINATE RISER CONDUIT WITH WEATHERHEAD. FORM DRIP LOOP IN SERVICE CONDUCTOR.
- ALARM LIGHT/HORN SHALL BE BENJAMIN KP-5021-120 OR APPROVED EQUAL. MOUNT UNIT ON TOP OF PRE-CAST CONCRETE POST WITH NEMA 4 SILIENCE SWITCH MOUNTED ON POST BELOW. PROVIDE ENGRAVED NAMEPLATE "ALARM SILIENCE-PLEASE CALL 757-9172" AT SILIENCE SWITCH.
- TERMINAL BOXES (TB1 & TB2) SHALL BE NEMA 4X, 316 STAINLESS STEEL. PROVIDE SEPARATE TERMINAL BLOCKS FOR TERMINATION OF POWER AND CONTROL WIRING. TERMINAL BLOCKS SHALL BE OF A DESIGN THAT ELIMINATES ACCIDENTAL ARCING BETWEEN TWO TERMINALS. PROVIDE SEAL FITTINGS IN CONDUIT BETWEEN WETWELL AND TB1 PER NEC ARTICLE 501.15. PROVIDE ADDITIONAL SEAL FITTINGS BETWEEN TB1, TB2 AND THE CONTROL PANEL. PROVIDE A SOLID BARRIER IN JUNCTION BOX BETWEEN NON-INTRINSICALLY SAFE CIRCUITS AND INTRINSICALLY SAFE CIRCUITS. PROVIDE INTRINSICALLY SAFE GROUND FOR TB2.
- AREA LIGHT FIXTURE SHALL BE 4900 LUMEN LED AREA LIGHT, ROADWAY TYPE 3 DISTRIBUTION, OPEN BOTTOM ACRYLIC OPTICS, SOLID STATE PHOTO CONTROL, AMERICAN ELECTRIC CAT #LNH2 LU4 MVOLT R3 BA PCSS OR APPROVED EQUIVALENT.
- PROVIDE A STREAMER RETARDING AIR TERMINAL, LIGHTNING MASTER CORP. MODEL NO. PP-32M, OR APPROVED EQUAL, SECURED TO POLE WITH A CAST BRONZE PARAPET AIR TERMINAL BASE AND EXPANSION ANCHORS 6" BELOW POLE TOP AND CONNECT TO GROUND GRID WITH COPPER CONDUCTOR HAVING 28 STRANDS OF 17 GAUGE WIRES. SECURE CONDUCTOR TO POLE WITH COPPER CLIPS AND EXPANSION ANCHORS AT 3'-0" MAX. SPACING.
- PROVIDE AN ENCLOSED CIRCUIT BREAKER IN A NEMA 4X STAINLESS STEEL ENCLOSURE. IN THE CASE OF A HIGH-LEG DELTA SERVICE, TERMINATE HIGH LEG AT TOP IN MIDDLE POSITION AND IDENTIFY WITH ORANGE TAPE. SEE NOTE 4.
- MAIN SERVICE DISCONNECT, CONTROL PANEL AND COMPONENTS, CONDUIT, BOXES, SEALS AND WIRING SHALL BE SIZED TO CONFORM TO THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE.
- PROVIDE ENGRAVED NAMEPLATES, OF LAMINATED TWO-COLOR PHENOLIC PLASTIC HAVING WHITE LETTERS, FOR ALL COMPONENTS ON DEAD-FRONT AND BACK PLATE. NAMEPLATES SHALL BE ATTACHED WITH STAINLESS STEEL SCREWS. ALIGN PLATES ON CENTER OF EQUIPMENT BEING MARKED.
- POWER CONDUCTORS SHALL BE COLOR CODED TO IDENTIFY PHASES, NEUTRAL AND GROUND, USING PLASTIC, SELF-SEALING TAPE.
- ALL CONTROL AND INSTRUMENTATION WIRING SHALL BE COLOR-CODED AS INDICATED AND SHALL BE TAGGED OR LABELED WITH WIRE NUMBERS INDICATED. ALL CONTROL PANEL WIRING SHALL BE STRANDED.
- ALL CONDUIT CONNECTIONS TO PANEL AND ENCLOSURES SHALL BE MADE WITH WATERTIGHT HUBS.
- ALL CONDUIT SHALL BE INCREASED TO THE NEXT LARGER TRADE SIZE ABOVE THE MINIMUM SIZE REQUIRED TO ENABLE FUTURE UPGRADES WHEN POSSIBLE.
- THE CONTROL PANEL SHALL CONTAIN POWER AND CONTROL COMPONENTS AS SPECIFIED IN THE CITY STANDARD SUBMERSIBLE LIFT STATION SPECIFICATION INCLUDING BUT NOT LIMITED TO GENERATOR RECEPTACLE, MOLDED CASE CIRCUIT BREAKERS, NEMA RATED MOTOR STARTERS WITH MOLDED CASE CIRCUIT BREAKERS AND OVERLOAD RELAYS, CONTROL POWER TRANSFORMERS (277/480 VOLT SYSTEMS ONLY), CONTROL RELAYS, INDICATING LIGHTS, FUSES, CURRENT TRANSFORMERS AND AMMETERS, DUPLEX RECEPTACLE (GFCI), PHASE MONITOR, MOTOR SEAL FAILURE CONTROL (SFM), AND TELEMETRY CONTROL UNIT (TCU). SERVICE VOLTAGE SHALL BE 120/240 VOLT, 3 PHASE, 60 HERTZ UNLESS OTHERWISE APPROVED BY CITY.
- CONTROL PANEL SHALL BE NEMA 3R, GASKETED, 316 STAINLESS STEEL WITH CLEAR LEXAN DEAD-FRONT PANEL, 3 POINT LATCH AND PADLOCKABLE HANDLE. PROVIDE CUT-OUT IN DEAD-FRONT PANEL FOR TCU PER MANUFACTURER'S RECOMMENDATION. CONTROL PANEL EXTERIOR SHALL BE PAINTED WHITE ENAMEL. THE CONTROL PANEL SHALL INCLUDE AN ALUMINUM PLAN HOLDER ON THE INSIDE OF THE FRONT COVER.
- 20'-0" LIGHTWEIGHT TUBULAR GALVANIZED STEEL TOWER. PROVIDE ALL TOWER SECTIONS, BASE ATTACHMENT AND CONNECTION HARDWARE AS NECESSARY FOR A COMPLETE INSTALLATION. ANTENNA MOUNTING SHALL ALLOW FOR ROTATION ADJUSTMENT AT GRADE.
- PROVIDE A GROUNDING ELECTRODE CONDUCTOR (GEC) SIZED PROPERLY PER THE CURRENT ACCEPTED VERSION OF THE NATIONAL ELECTRIC CODE.



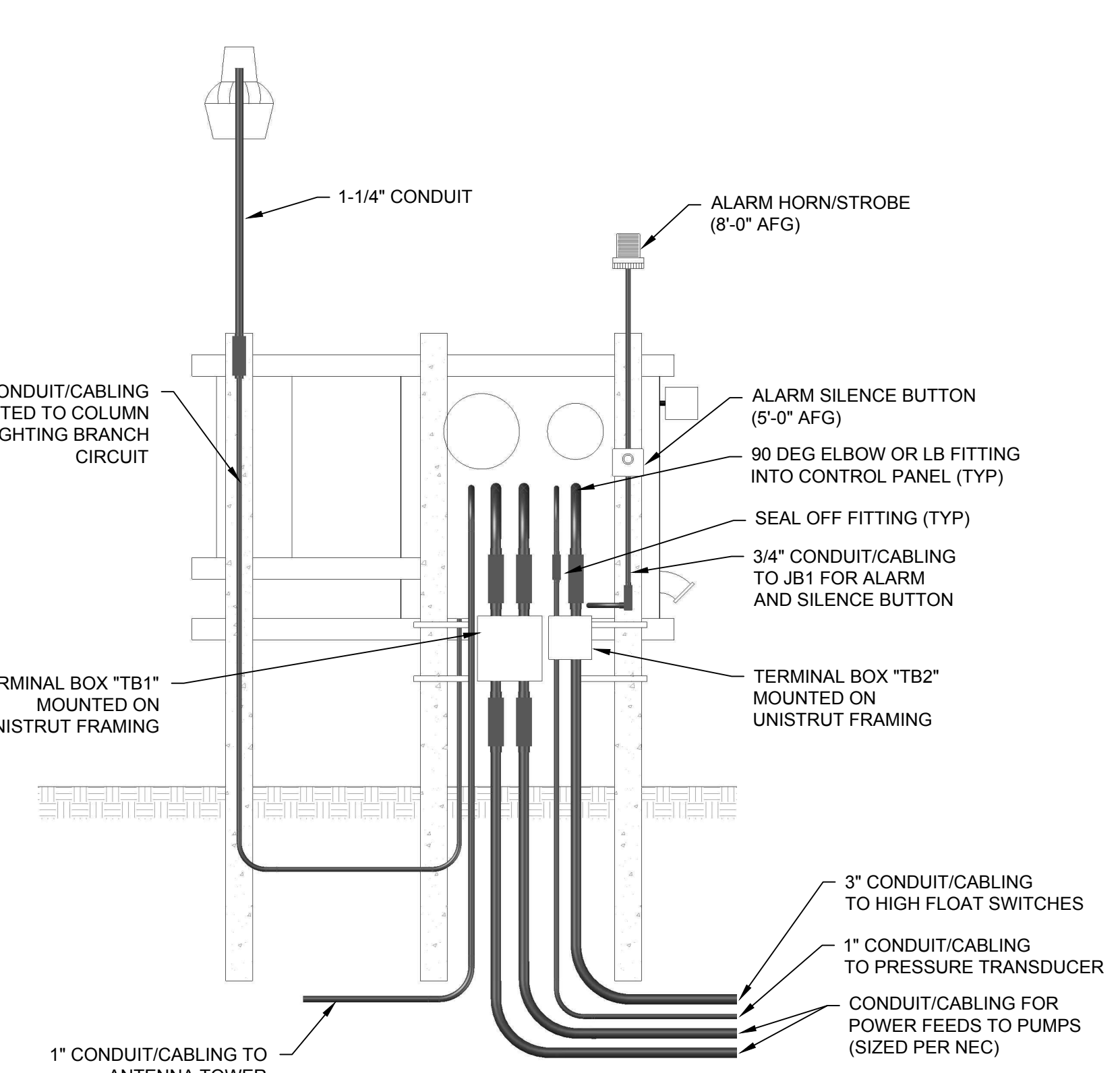
PUMP STATION PLAN VIEW



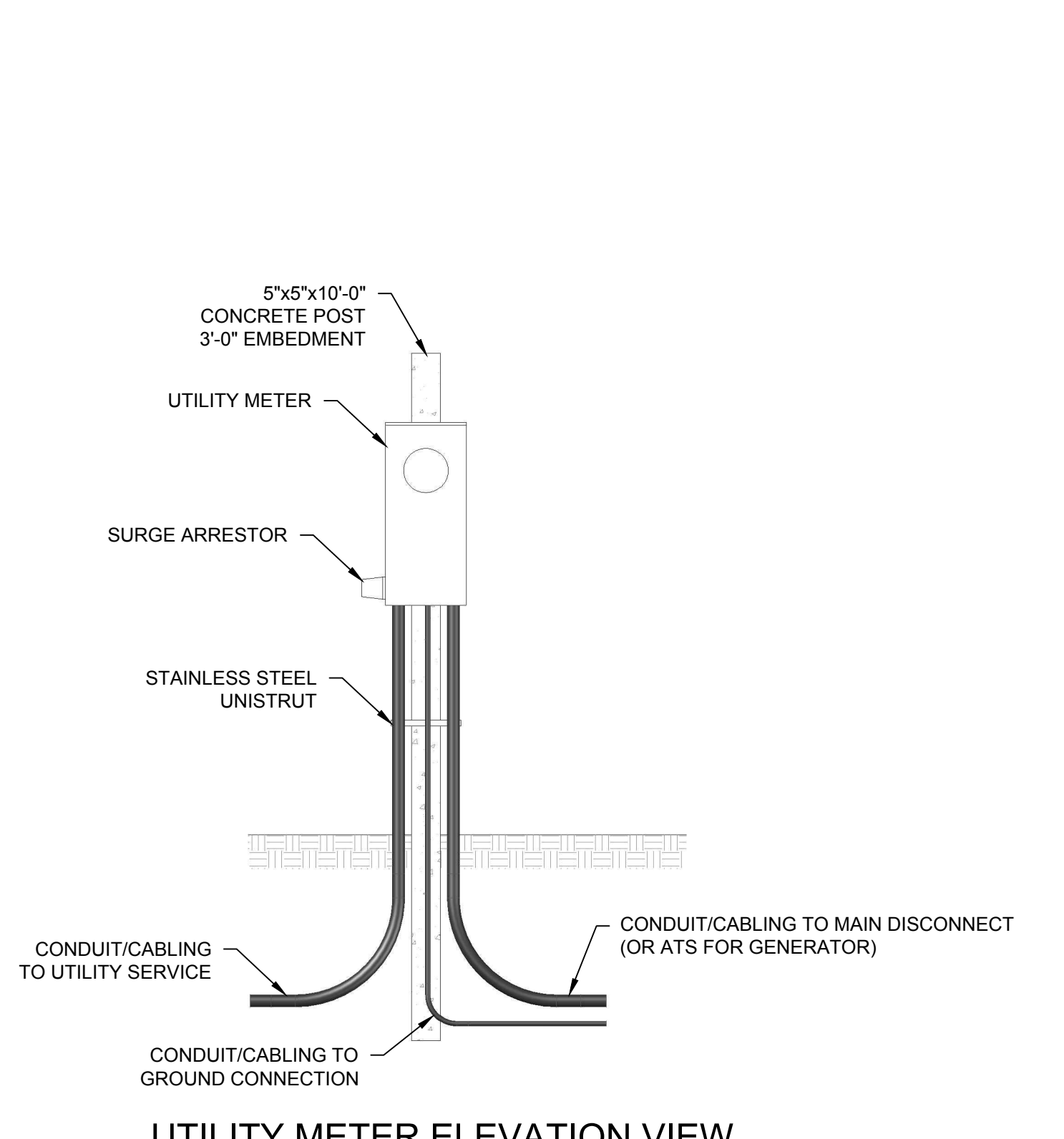
ANTENNA/RTU ELEVATION VIEW



EQUIPMENT RACK FRONT ELEVATION VIEW

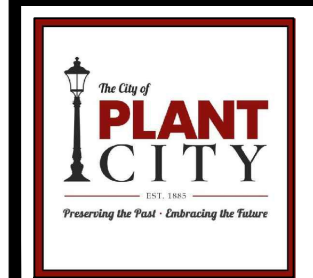


EQUIPMENT RACK REAR ELEVATION VIEW



UTILITY METER ELEVATION VIEW

NOTE: REFER TO CITY STANDARD SPECIFICATIONS FOR ANY INFORMATION NOT COVERED ON THE LIFT STATION DETAILS.



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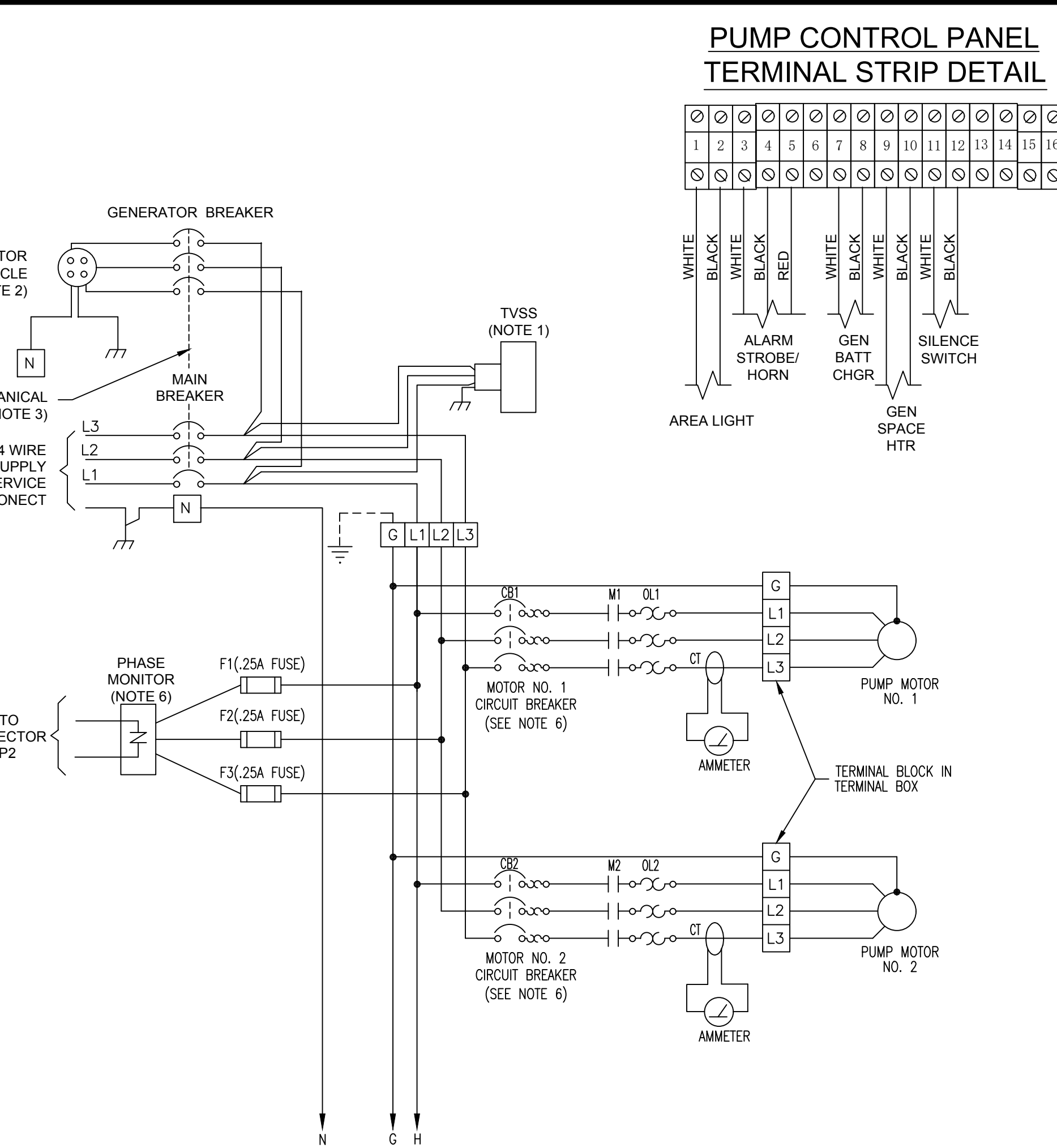
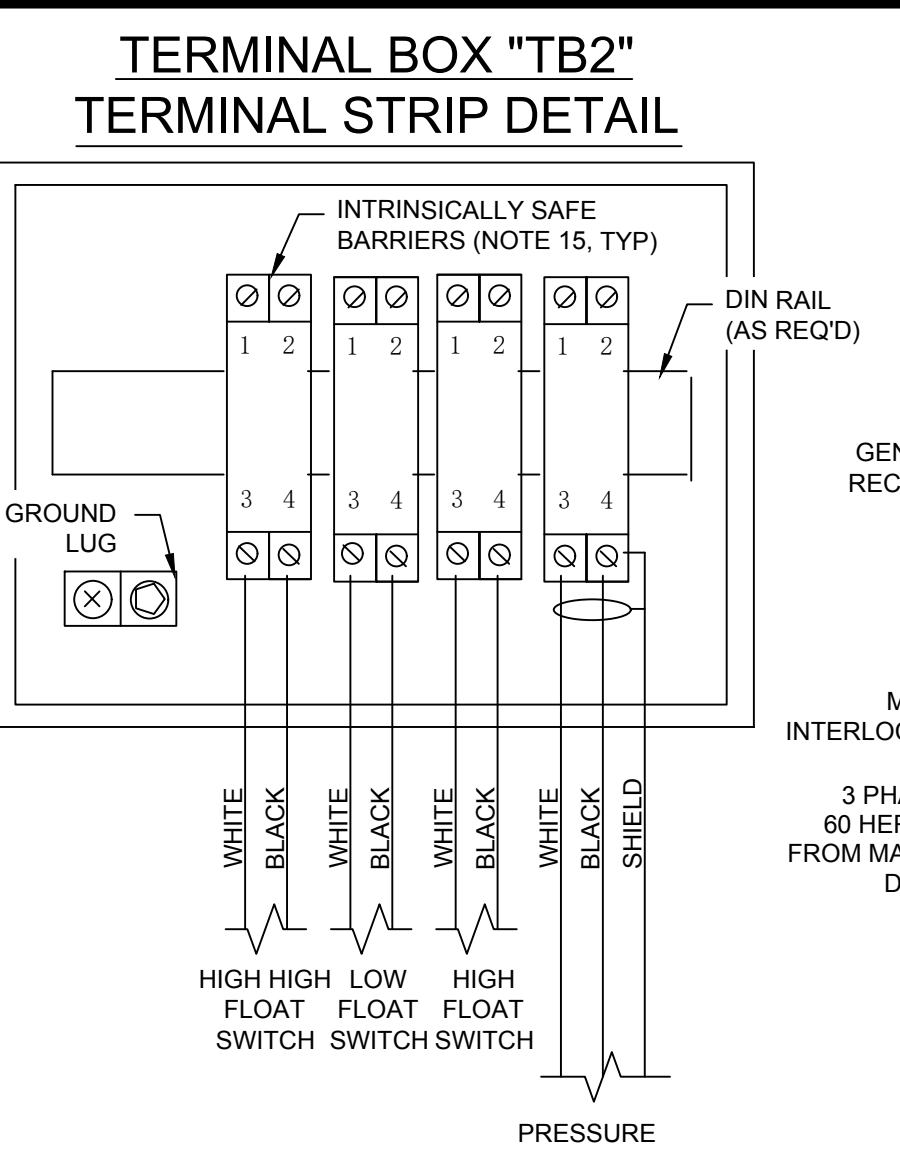
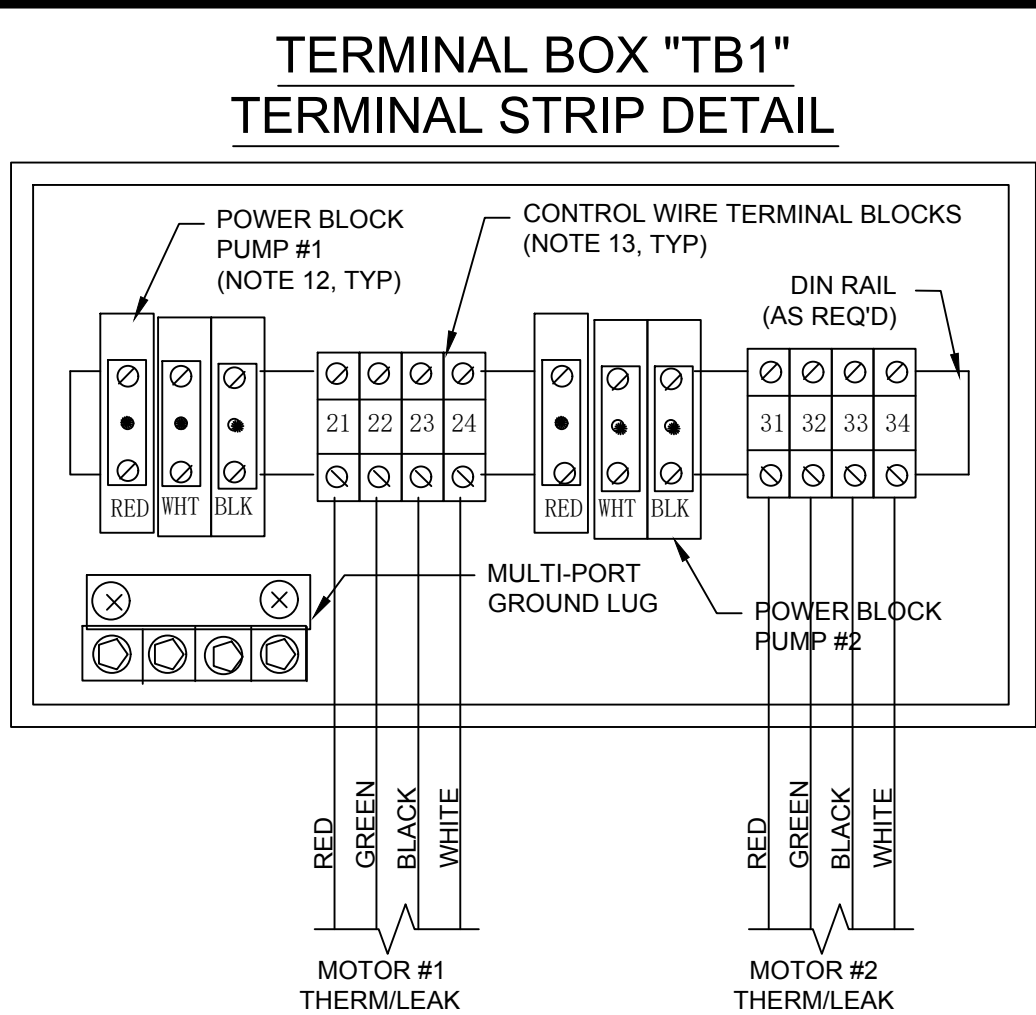
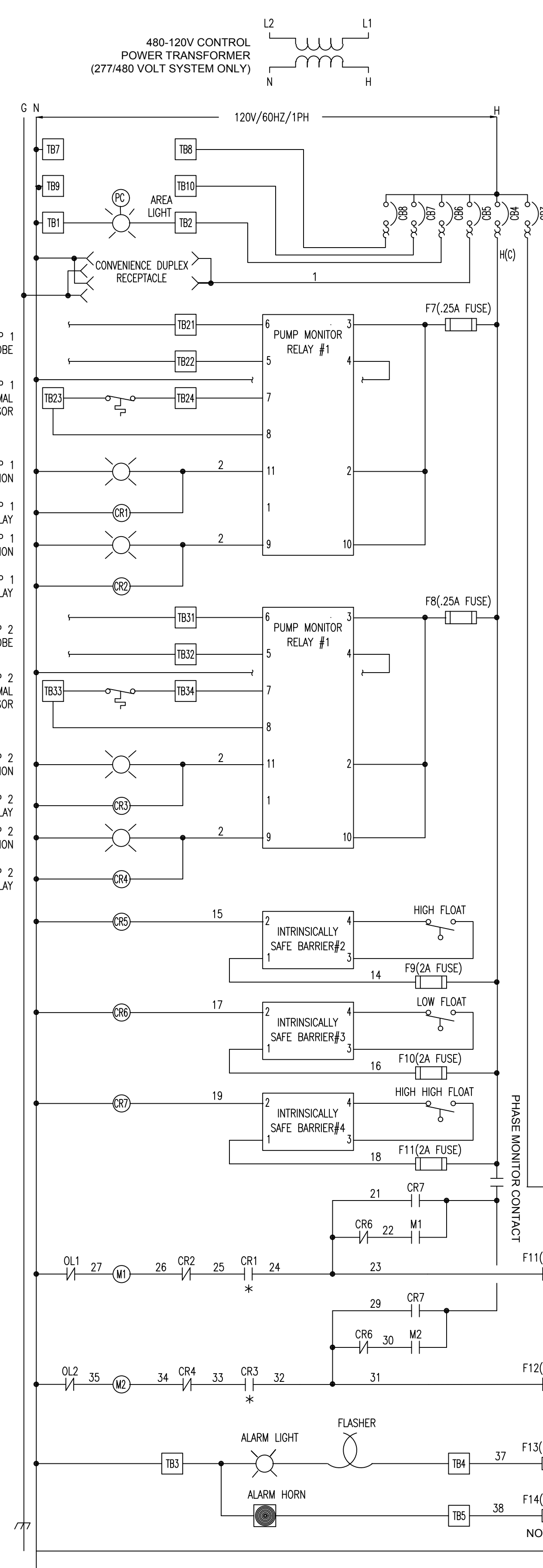
Electrical Plans and Details

All changes to this drawing are to be highlighted so any proposed change can be readily found.

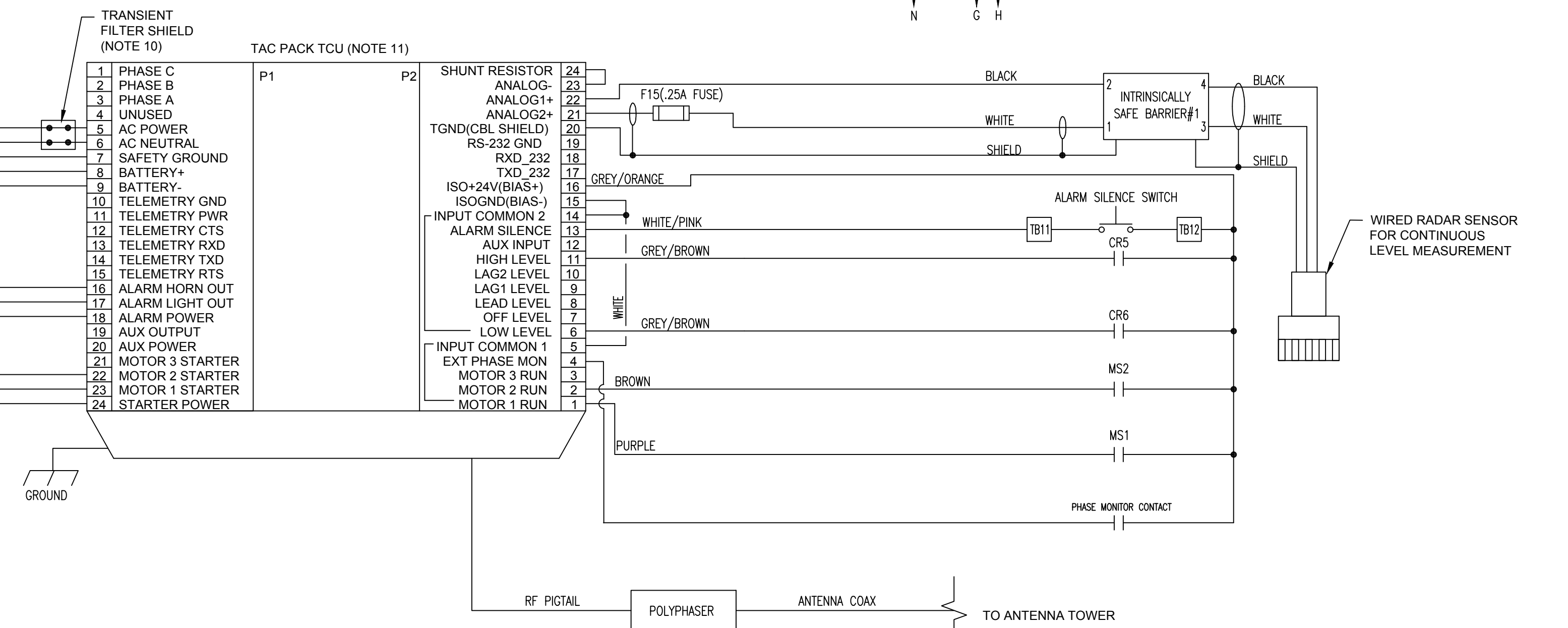
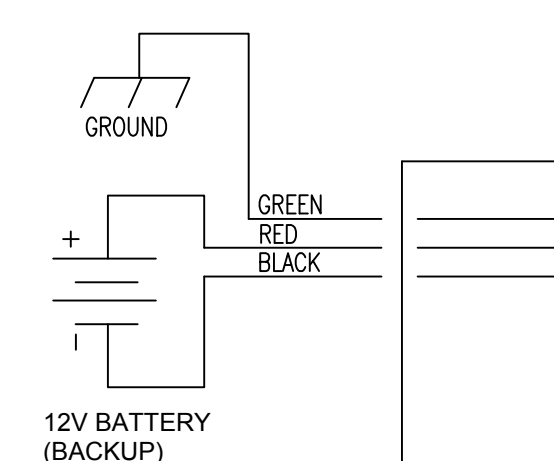
REVISIONS	
BY	DESCRIPTION
5-18-18	REVISED STANDARD

DRAWN BY:	DATE:
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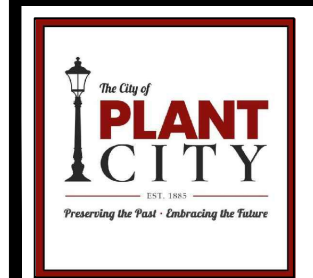
SCALE: AS NOTED	PROJECT:	SHEET
	Plant City, Florida	3 OF 4
	Lift Station Details	JOB NO.



* CONTACT CONFIGURATION SHOWN FOR THERMAL OVERLOAD CONDITION.



- NOTES:
- TRANSIENT VOLTAGE SURGE SUPPRESSOR SHALL BE ADVANCED PROTECTION TECHNOLOGIES XDS SERIES SUITABLE FOR THE SERVICE VOLTAGE. CONNECT TO CONTROL PANEL WITH WATERTIGHT HUB.
 - GENERATOR RECEPTACLE SHALL BE A RUSSELLSTOLL CATALOG NO. 3134-72.
 - MECHANICAL INTERLOCK SHALL CONSIST OF A SLIDE BAR OR WALKING BEAM, ACCESSIBLE FROM FRONT OF DEAD-FRONT PANEL, BUT INTACT ON BREAKERS WITH DEAD-FRONT OPEN, WHICH WILL PERMIT BOTH BREAKERS TO BE IN THE "OFF" POSITION BUT ONLY ONE BREAKER TO BE IN THE "ON" POSITION AT A TIME.
 - FUSES SHALL BE THE SLOW BLOW TYPE.
 - FLOAT SWITCH SHALL BE A NON-MERCURY ELEMENT TYPE.
 - POWER MONITOR SHALL COME EQUIPPED WITH MINIMUM QTY TWO (2) NC CONTACTS.
 - ALL WIRING WITHIN CONTROL PANEL SHALL BE NO LARGER THAN #16 AWG AND ENCLOSED IN WIRING DUCT. MINIMUM SPACING BETWEEN DUCT AND OTHER COMPONENTS SHALL BE 2".
 - STARTERS SHALL BE SIZED ONE SIZE ABOVE THE REQUIRED SIZE TO ENABLE FUTURE UPGRADES.
 - STRAIN RELIEF CONNECTORS SHALL BE NYLON, MAX-LOC BY WOODHEAD INDUSTRIES, RANGER BY THOMAS AND BETTS OR APPROVED EQUAL. PROVIDE 2 ADDITIONAL CONDUITS FOR PUMPS HAVING SEPARATE POWER AND CONTROL CABLES.
 - THE SYSTEM SHALL INCLUDE A TRANSIENT FILTER SHIELD (TFS001) BY DATA FLOW SYSTEMS, INC., AT THE TCU AND THE RTU.
 - TCU SHALL BE THE TAC PACK TCU ASSEMBLY (TCU001 W/ RADIO) PROVIDED BY DATA FLOW SYSTEMS.
 - POWER DISTRIBUTION BLOCKS SHALL BE BUSSMAN MODEL #16201-3 OR APPROVED EQUIVALENT.
 - CONTROL TERMINAL BLOCKS SHALL BE SQUARE D MODEL #908GR6 OR APPROVED EQUIVALENT.
 - VEGA MODEL VEGAPULS C 11 OR APPROVED EQUIVALENT.
 - INTRINSICALLY SAFE BARRIER, MTL 7700 SERIES OR APPROVED EQUIVALENT. CONFIGURED FOR ANALOG OR DISCRETE SIGNAL AS REQUIRED.



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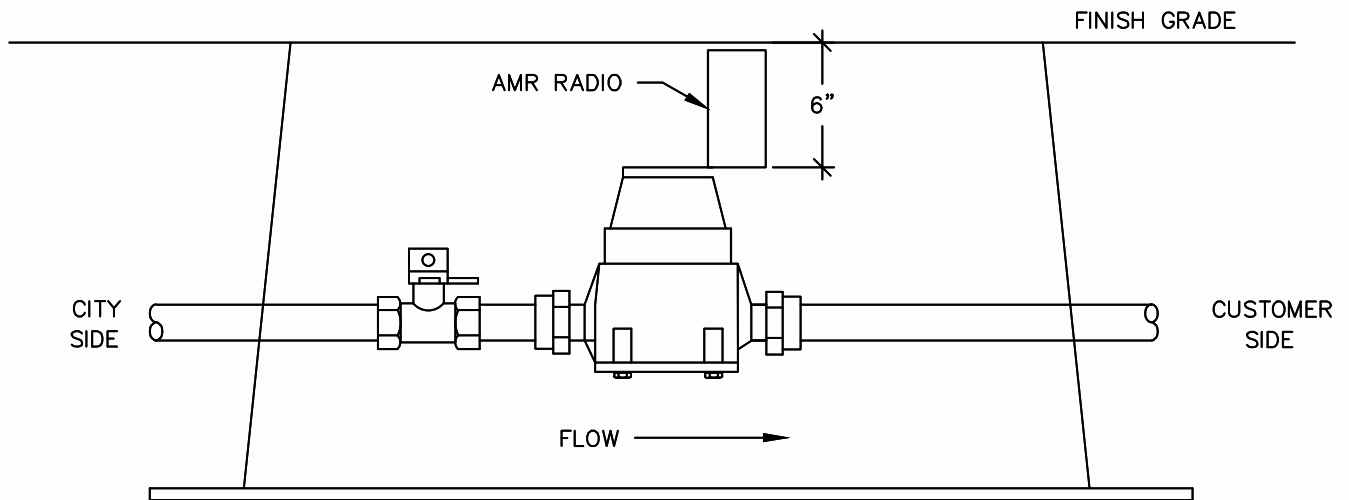
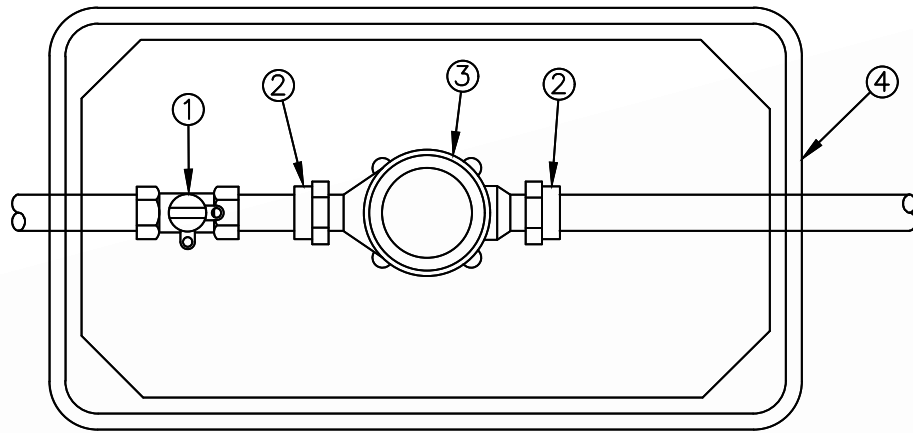
Controls and Wiring Diagrams

All changes to this drawing are to be highlighted so any proposed change can be readily found.

REVISIONS	
BY	DATE
	5-18-18
	REVISED STANDARD

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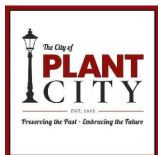
PROJECT:	SHEET
Plant City, Florida	4 OF 4
Lift Station Details	JOB NO.



MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	3/4" CURB STOP
2	2	3/4" X 2" METER CONNECTIONS
3	1	5/8" BADGER AMR RECLAIMED WATER METER
4	1	PLASTIC RECLAIMED WATER METER BOX W/COVER

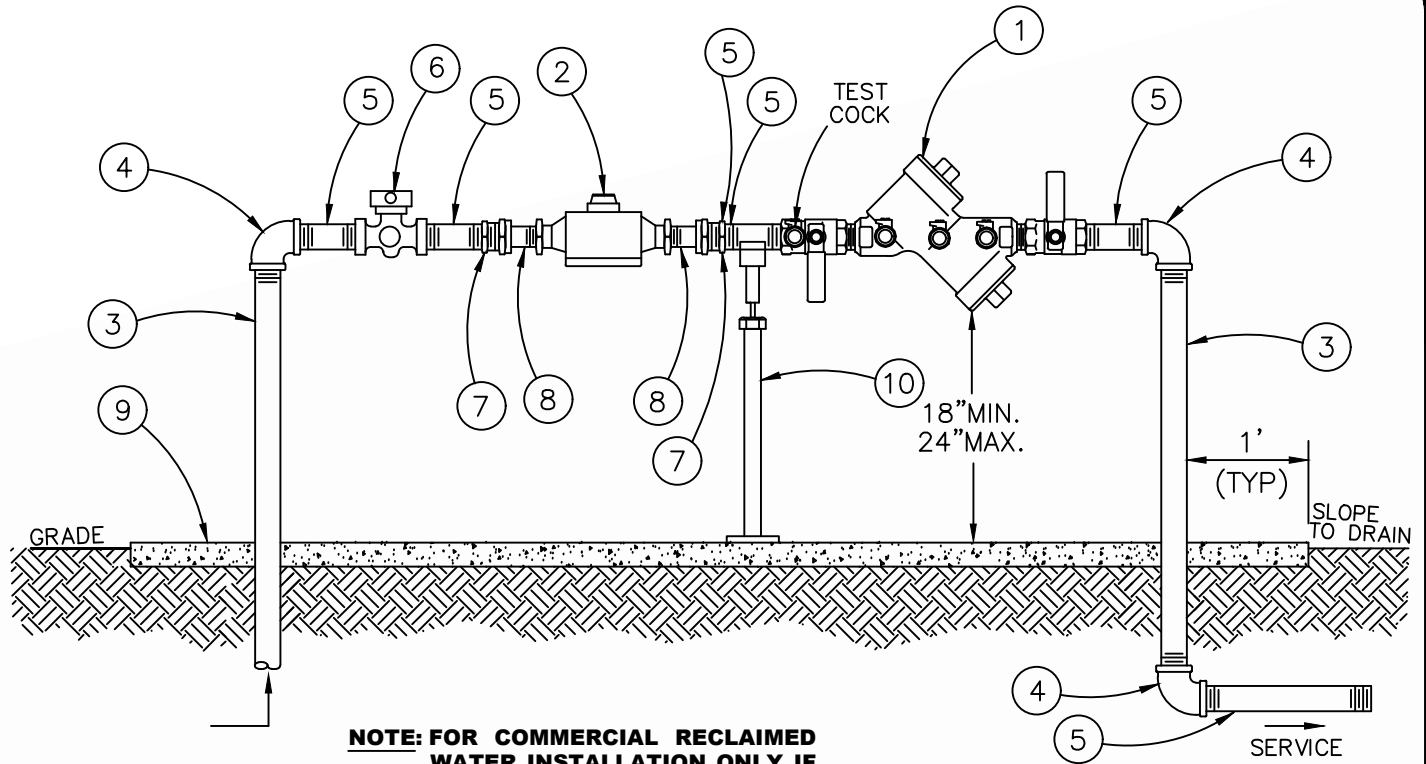
RESIDENTIAL RECLAIMED WATER CUSTOMERS ONLY

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RECLAIMED WATER METER SERVICE FOR HOMES
 SINGLE SERVICE: 3/4", 1"

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
REVISION DATE			RS-1
REVISION DATE			PAGE NO.
REVISION DATE			47



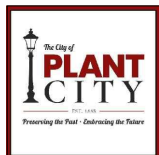
NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE ADDED TO THE CUSTOMER'S SYSTEM.

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY
2	1	BADGER AMR RECLAIMED WATER METER
3	2	RISERS - GALVANIZED OR BRASS
4	3	ELBOWS - GALVANIZED OR BRASS
5	5	4" NIPPLES - BRASS OR GALVANIZED
6	1	CURBSTOP WITH WING LOCK
7	2	BRASS SPUD ADAPTORS
8	2	BRASS SPUDS - (METER CONNECTIONS)
9	-	CONCRETE SLAB 4"
10	1	ADJUSTABLE PIPE SUPPORT

NOTES:

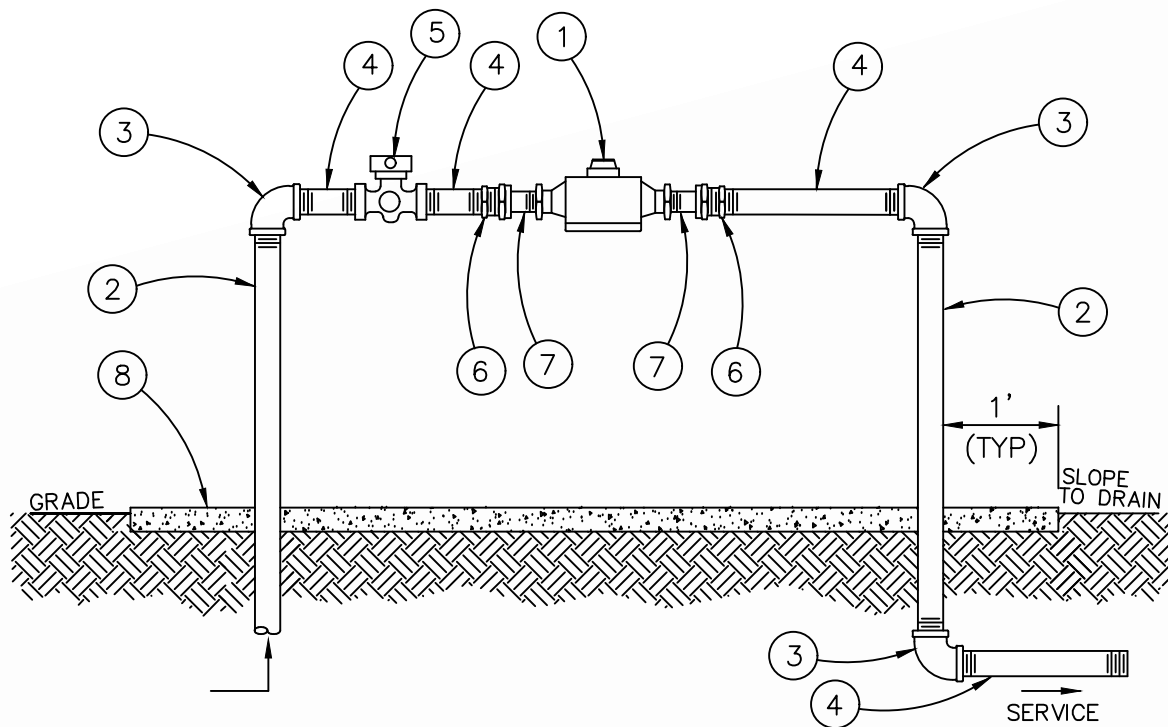
1. FIELD ADJUST AND CUT ITEM #3 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. PIPE AND FITTINGS TO BE PAINTED SAFETY BLUE.
4. BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.

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ABOVE GROUND RECLAIMED WATER METER INSTALLATION
 SINGLE SERVICE WITH DOUBLE CHECK BACKFLOW ASSEMBLY
 1-1/2" TO 2"

ORIGINAL DRAWING	10/03/2017	SCALE: NTS	DRAWING NO.
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REVISION DATE			PAGE NO.
REVISION DATE			48



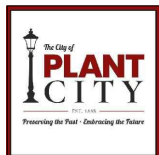
NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE NOT ADDED TO THE CUSTOMER'S SYSTEM.

MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	BADGER AMR RECLAIMED WATER METER
2	2	RISERS - GALVANIZED OR BRASS
3	3	ELBOWS - GALVANIZED OR BRASS
4	4	4" NIPPLES - BRASS OR GALVANIZED
5	1	CURBSTOP WITH WING LOCK
6	2	BRASS SPUD ADAPTORS
7	2	BRASS SPUDS - (METER CONNECTIONS)
8	-	CONCRETE SLAB 4"

NOTES:

1. FIELD ADJUST AND CUT ITEM #2 TO THE PROPER LENGTH.
2. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
3. PIPE AND FITTINGS TO BE PAINTED PANTONE PURPLE.
4. BACKFLOW ASSEMBLY SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO FACILITATE INSPECTION AND SERVICING: A MINIMUM OF 12" FROM ANY STRUCTURES OR OBSTACLES.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.

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ABOVE GROUND RECLAIMED WATER METER
 INSTALLATION SINGLE SERVICE
 1-1/2" TO 2"

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ORIGINAL DRAWING 10/03/2017

SCALE: NTS

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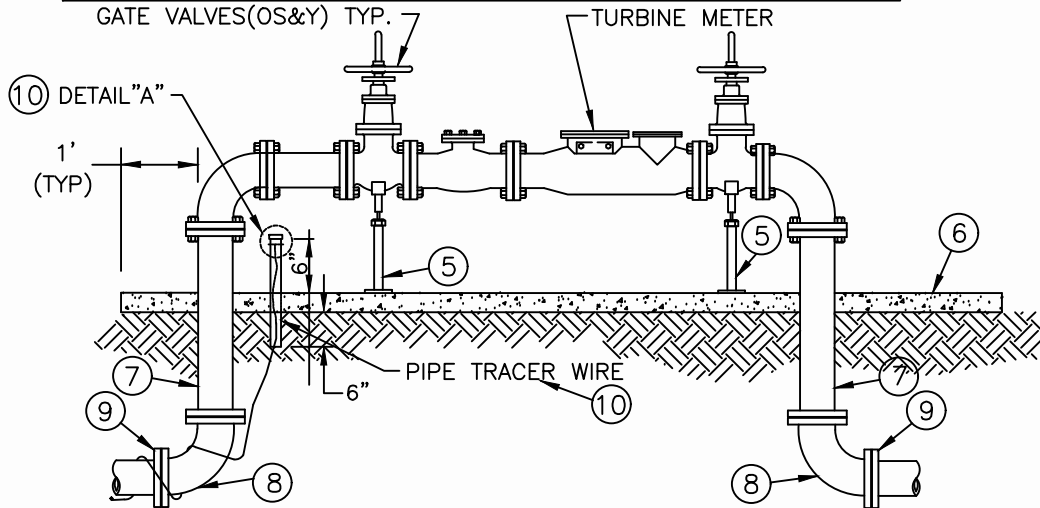
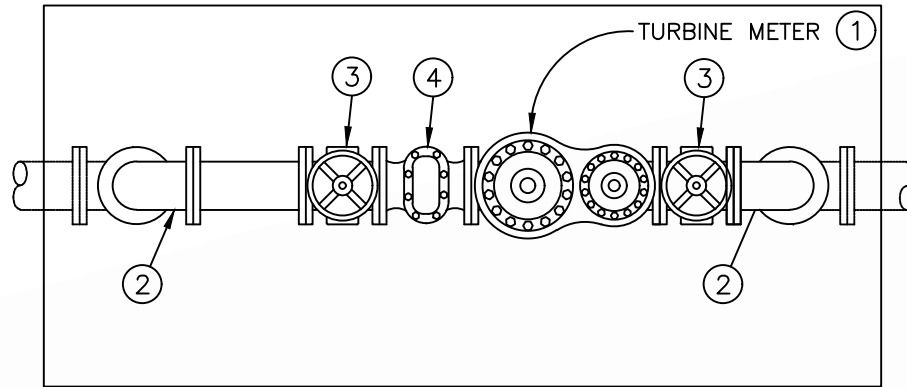
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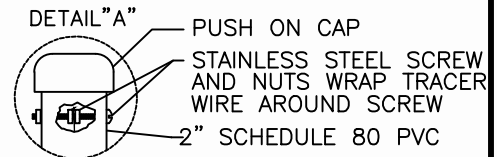
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REVISION DATE



NOTE: FOR COMMERCIAL RECLAIMED WATER INSTALLATION ONLY IF CHEMICALS ARE NOT ADDED TO THE CUSTOMER'S SYSTEM.

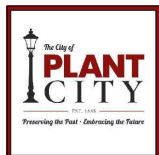
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	AMI TURBINE RECLAIMED WATER METER
2	2	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
3	2	GATE VALVE C.I. (OS&Y)
4	1	STRAINER - FLANGE TO FLANGE
5	2	ADJUSTABLE PIPE SUPPORTS
6	*	4" CONCRETE SLAB
7	2	RISERS - D.I.P. - FLANGE TO FLANGE ORDER TO FIT
8	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
9	2	MEGALUG RETAINER GLANDS
10	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



NOTES:

- ORDER TO FIT ITEM #7 TO PROPER LENGTH.
- ALL FITTINGS ABOVE GROUND SHALL BE FLANGED.
- ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
- CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION IN ALL DIRECTIONS.
- BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
- PIPE AND FITTINGS TO BE PAINTED: PANTONE PURPLE

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AMI TURBINE RECLAIMED WATER METER
INSTALLATION SINGLE SERVICE
3" TO 10" RECLAIMED WATER SERVICE

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

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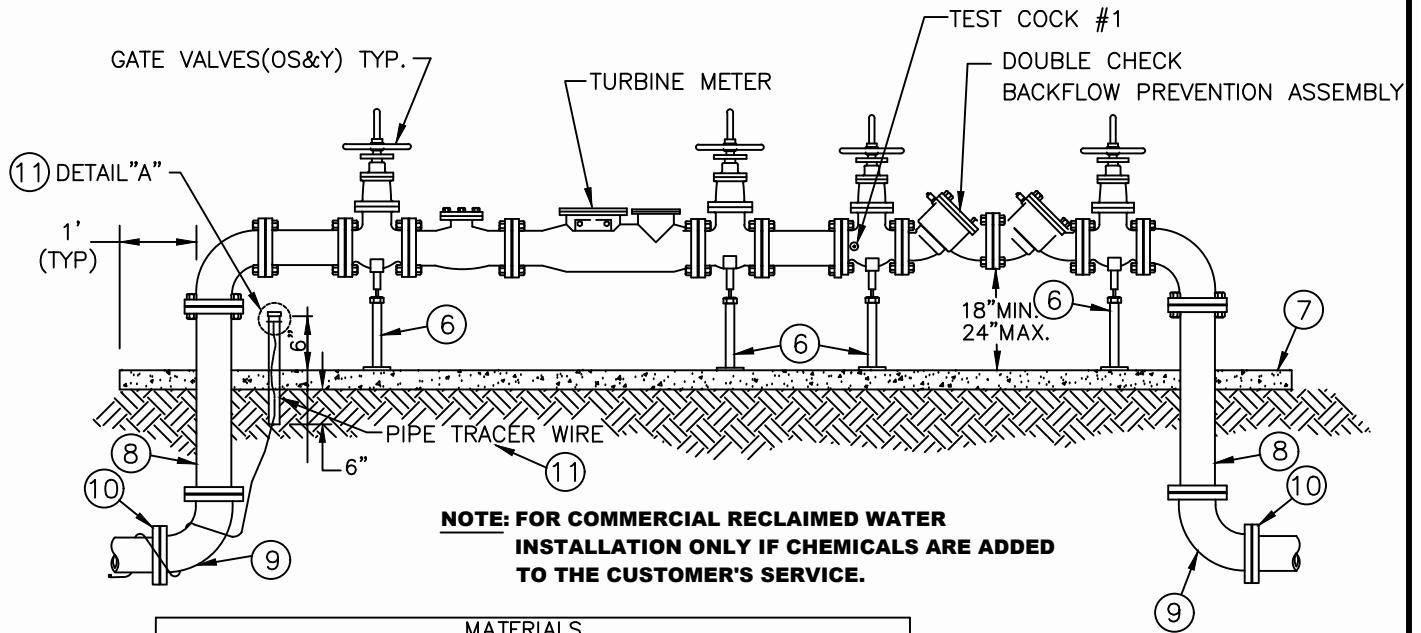
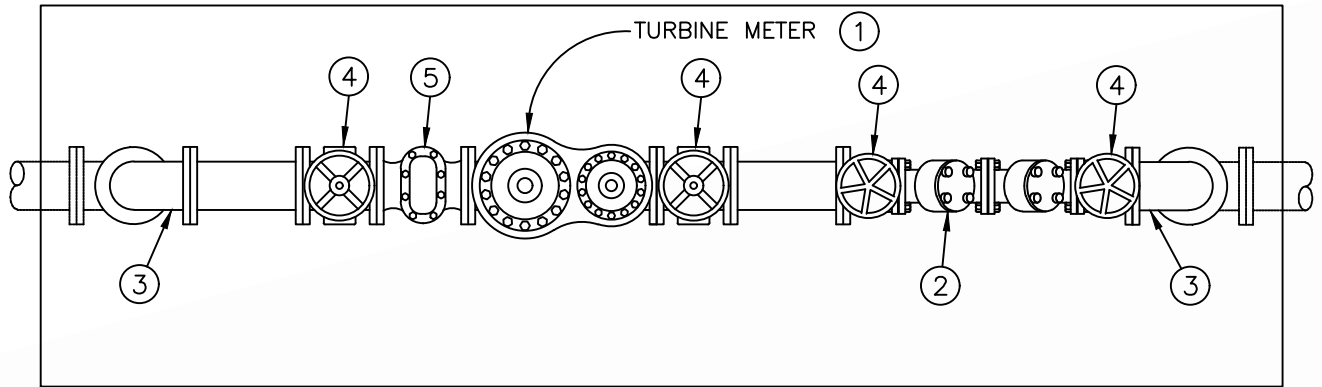
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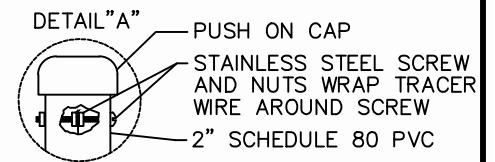
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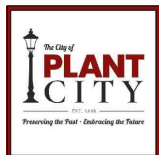
MATERIALS		
ITEM	QTY.	DESCRIPTION
1	1	AMR TURBINE RECLAIMED WATER METER
2	1	DOUBLE CHECK BACKFLOW PREVENTION ASSEMBLY
3	2	90 DEGREE ELBOW D.I.P. - FLANGE TO FLANGE
4	4	GATE VALVE C.I. (OS&Y)
5	1	STRAINER - FLANGE TO FLANGE
6	4	ADJUSTABLE PIPE SUPPORTS
7	*	4" CONCRETE SLAB
8	2	RISERS - D.I.P. - FLANGE TO FLANGE ORDER TO FIT
9	2	90 DEGREE ELBOW, D.I.P. - FLANGE TO MJ
10	2	MEGALUG RETAINER GLANDS
11	1	PIPE TRACER WIRE ASSEMBLY - SEE DETAIL "A"



NOTES:

1. ORDER TO FIT ITEM #8 TO PROPER LENGTH.
2. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED.
3. ALL PIPE SUPPORTS SHALL BE ADJUSTABLE.
4. CONCRETE SLAB SHALL BE 4" THICK AND EXTEND 12" MINIMUM AROUND ENTIRE INSTALLATION.
5. SEE CITY OF PLANT CITY LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES.
6. BOLLARDS AS REQUIRED IN HIGH TRAFFIC AREAS, PAINTED OSHA APPROVED SAFETY YELLOW.
7. PIPE AND FITTINGS TO BE PAINTED: PANTONE PURPLE.

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**AMI TURBINE RECLAIMED WATER METER INSTALLATION
SINGLE SERVICE WITH DOUBLE CHECK BACKFLOW PREVENTION
ASSEMBLY 3" TO 10" RECLAIMED WATER SERVICE**

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

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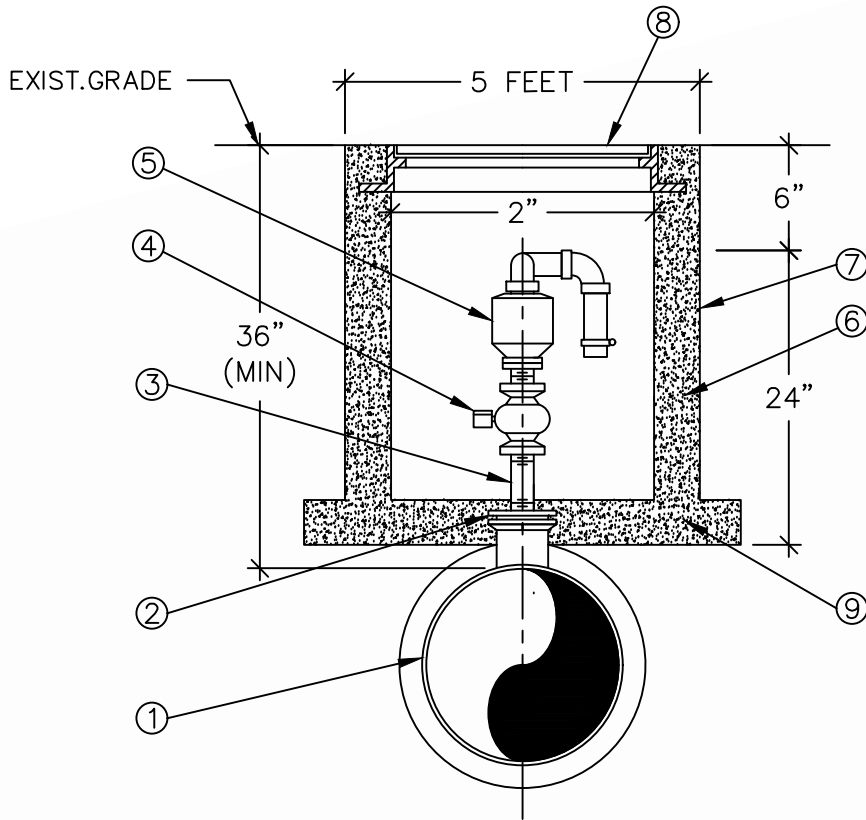
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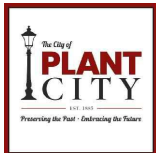


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 4"
2.	4" PLUG (TAPPED FOR 2" NIPPLE NPT)
3.	2"X8" NIPPLE (304 SS)
4.	2" GATE VALVE W/2" OPERATING NUT (IRON BODY)
5.	2" AIR RELEASE VALVE(ARI D-040 SS)
6.	ARV DISCHARGE PIPE (SEE NOTES)
7.	CONC VALVE BOX
8.	18"X18" COVER ASSEMBLY (H-20 LOAD GRATED)
9.	#57 STONE

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. COVER SHALL BE MARKED "ARV-RECLAIMED WATER".
3. ARV DISCHARGE PIPE SHALL BE DOWNWARD FACING AND THE OPENING SHALL BE SCREENED.
4. PROVIDE MINIMUM 2" CLEARANCE BETWEEN BOTTOM OF STRUCTURE TOP OF PIPE.

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AIR RELEASE VALVE DETAIL FOR RECLAIMED WATER

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SCALE: NTS

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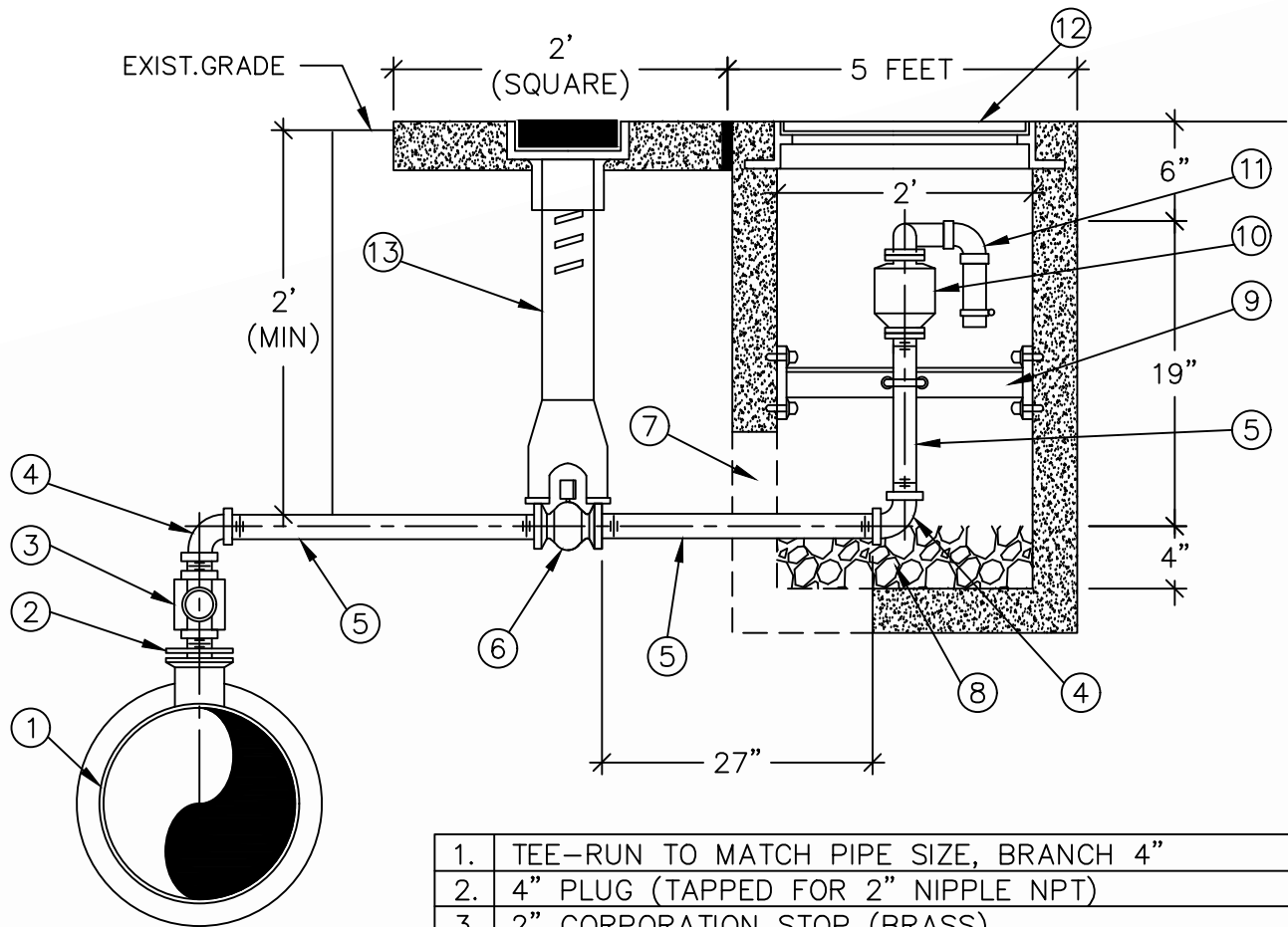
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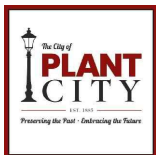


1.	TEE-RUN TO MATCH PIPE SIZE, BRANCH 4"
2.	4" PLUG (TAPPED FOR 2" NIPPLE NPT)
3.	2" CORPORATION STOP (BRASS)
4.	2' 90° BEND
5.	2" PIPE (GSP)
6.	2" GATE VALVE W/2" OPERATING NUT (IRON BODY)
7.	CUT OUT FOR PIPE INSTALLATION
8.	#57 STONE
9.	PIPE SUPPORT BRACKET W/U BOLT (304 SS)
10.	2" AIR RELEASE VALVE(ARI D-040 SS)
11.	ARV DISCHARGE PIPE (SEE NOTES)
12.	18"X18" COVER ASSEMBLY (H-20 LOAD RATED)
13.	DI VALVE BOX W/CONC. COLLAR

NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT.
2. CUT OUT IN VALVE BOX SHALL BE 6" WIDE.
3. COVER SHALL BE MARKED "ARV-RECLAIMED WATER".
4. ARV DISCHARGE PIPE SHALL BE DOWNWARD FACING AND THE OPENING SHALL BE SCREENED..

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OFFSET AIR RELEASE VALVE DETAIL FOR RECLAIMED WATER

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RS-7

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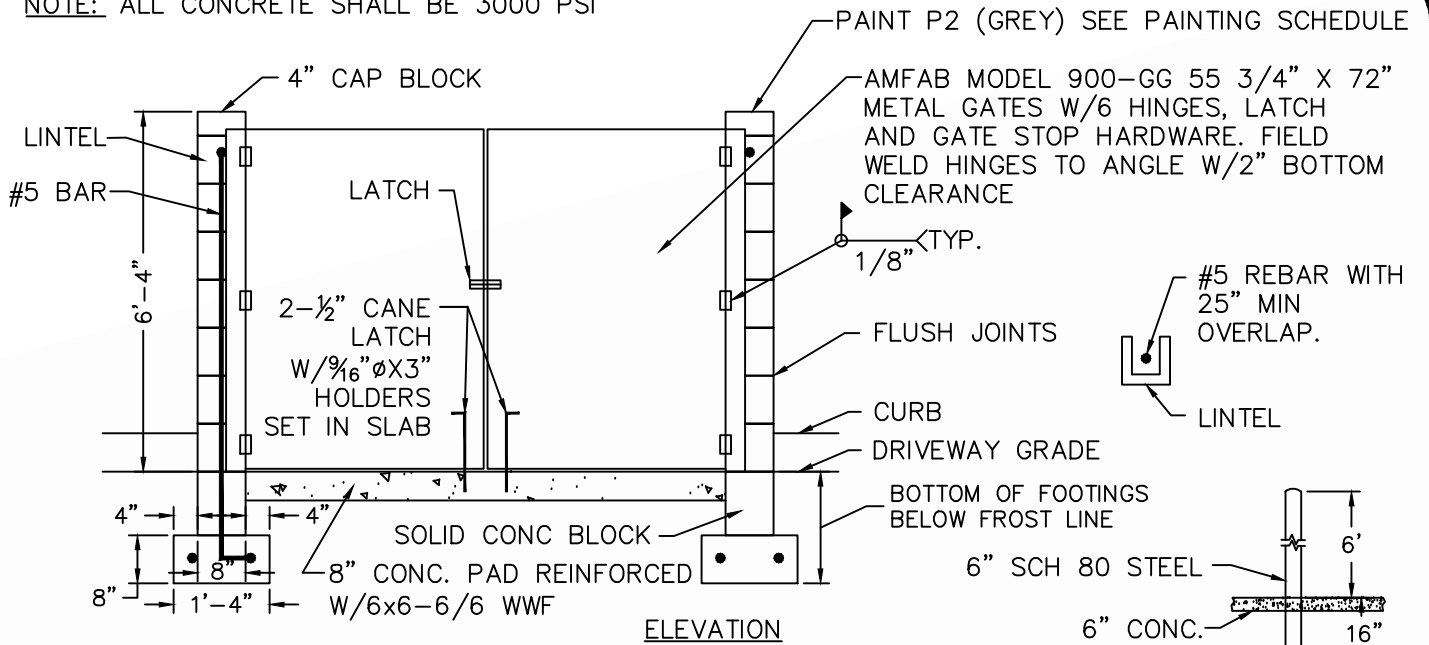
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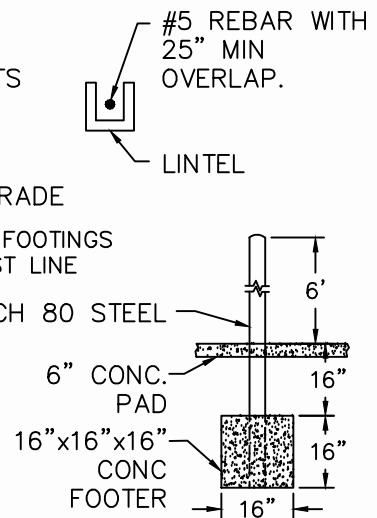
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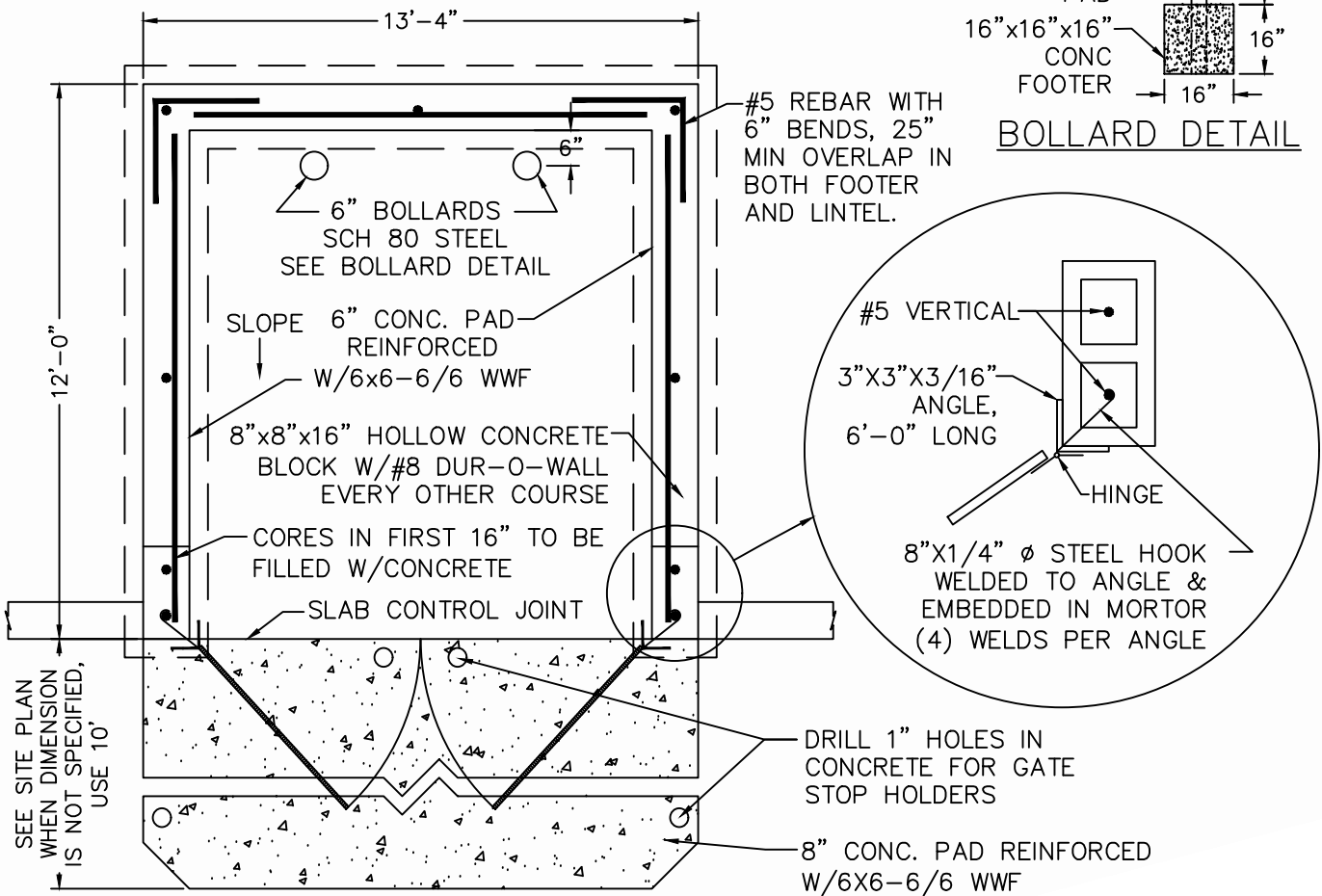
NOTE: ALL CONCRETE SHALL BE 3000 PSI



ELEVATION



BOLLARD DETAIL

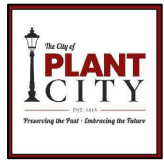


SEE SITE PLAN WHEN DIMENSION IS NOT SPECIFIED, USE 10'

DRILL 1" HOLES IN CONCRETE FOR GATE STOP HOLDERS

8" CONC. PAD REINFORCED W/6X6-6/6 WWF

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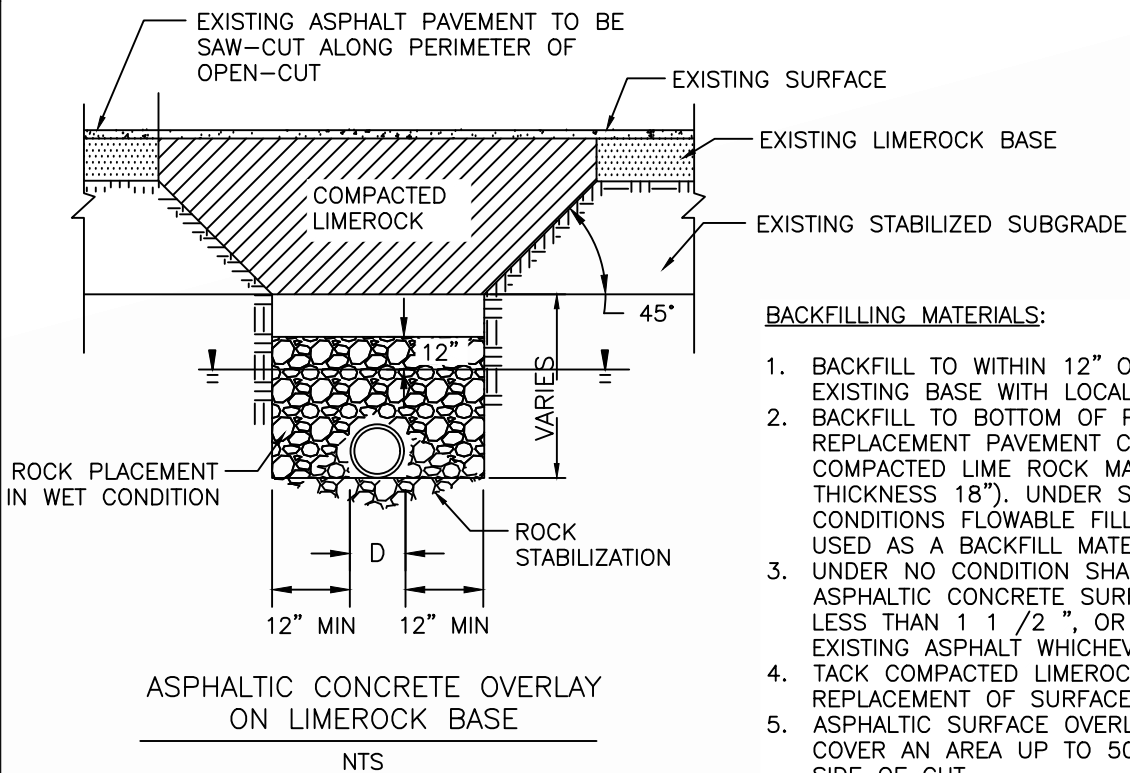
DUMPSTER PAD AND ENCLOSURE

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ORIGINAL DRAWING	10/03/2017
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MS-01
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BACKFILLING MATERIALS:

1. BACKFILL TO WITHIN 12" OF BOTTOM OF EXISTING BASE WITH LOCAL SUBGRADE MATERIAL.
2. BACKFILL TO BOTTOM OF PROPOSED REPLACEMENT PAVEMENT COURSE WITH COMPACTED LIME ROCK MATERIAL. (MINIMUM THICKNESS 18"). UNDER SITE SPECIFIC CONDITIONS FLOWABLE FILL (150 PSI) MAY BE USED AS A BACKFILL MATERIAL.
3. UNDER NO CONDITION SHALL REPLACEMENT ASPHALTIC CONCRETE SURFACE THICKNESS BE LESS THAN 1 1/2", OR THE THICKNESS OF EXISTING ASPHALT WHICHEVER IS GREATER.
4. TACK COMPACTED LIMEROCK PRIOR TO REPLACEMENT OF SURFACE COURSE.
5. ASPHALTIC SURFACE OVERLAY IS REQUIRED TO COVER AN AREA UP TO 50 FEET FROM EITHER SIDE OF CUT.
6. MILLING AND RESURFACING WILL BE REQUIRED TO MAINTAIN THE EXISTING PROFILE OF THE ROAD WITH CURB AND GUTTER SECTION.
7. FLOWABLE FILL MAY BE USED WITH WRITTEN APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.

WET CONDITION BACKFILLING:

1. ROCK SHALL BE PLACED TO AN ELEVATION OF 12" ABOVE THE EXISTING WATER LEVEL AND UNDER PIPE TO STABILIZE PIPE.
2. WELL POINTS MAY BE USED IN LEU OF ROCK IF STABLE AND DRY DITCH CAN BE ACCOMPLISHED BY WELL POINTS.
3. GEOTEXTILE FABRIC SEPARATION BARRIER.

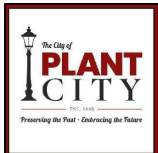
BACKFILLING PROCEDURES:

- STAGE 1 ADEQUATE FILL SHALL BE PLACED AND COMPACTED BENEATH THE HAUNCHES OF THE PIPE OR CONDUIT IN SUCCESSIVE 6" LAYERS OF COMPACTED THICKNESS.
- STAGE 2 FILL SHALL BE PLACED AND COMPACTED ALONG THE SIDES OF THE PIPE OR CONDUIT AND TO A POINT AT LEAST ONE FOOT ABOVE THE TOP OF THE PIPE OR CONDUIT IN 6" LAYERS OF COMPACTED THICKNESS.
- STAGE 3 THE REMAINDER OF THE TRENCH SHALL BE BACKFILLED AND COMPACTED WITH SUITABLE OR DESIGNATED MATERIAL IN SUCCESSIVE 6" LAYERS OF COMPACTED THICKNESS.

NOTES:

THE BACKFILL OF ALL THREE STAGES SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T -180. THE CITY'S INSPECTOR WILL DETERMINE LOCATIONS FOR ANY DENSITIES OBTAINED. IN LOCATIONS WHERE NO VEHICLE LOADS ARE ANTICIPATED (I.E.: BEYOND THE LIMITS OF PRESENT OR FUTURE PAVEMENT AREAS) THE THIRD STAGE BACKFILL SHALL BE COMPACTED TO A FIRMNESS EQUAL TO THAT OF THE SOIL ADJACENT TO THE TRENCH. NO HIGHLY PLASTIC OR SATURATED MATERIAL MAY BE USED IN BACKFILLING OPERATION.

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TRENCHING AND PAVEMENT REPLACEMENT DETAIL

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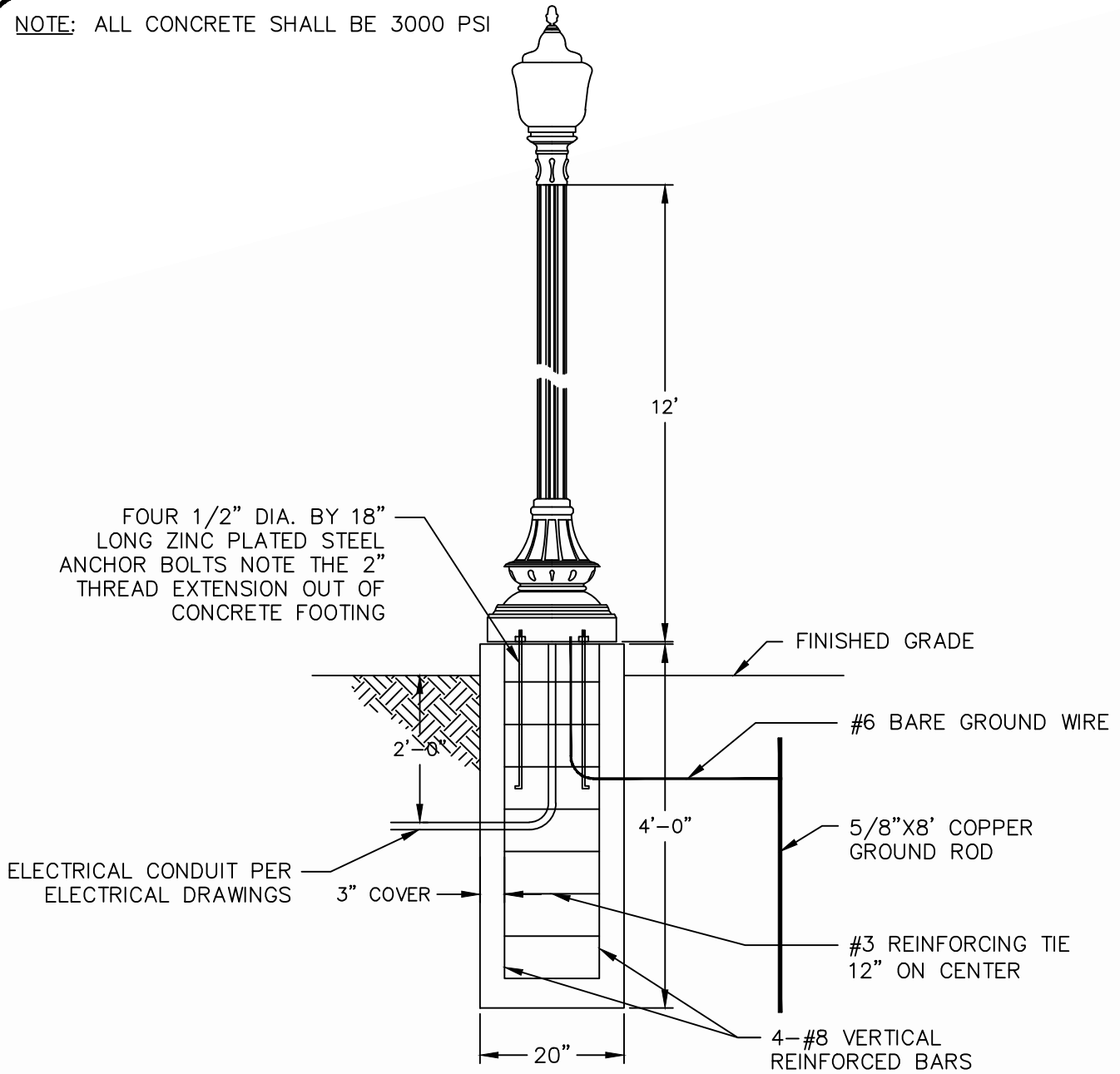
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NOTE: ALL CONCRETE SHALL BE 3000 PSI

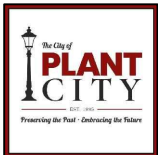


STERNBERG LIGHT & BASE DETAIL
N.T.S.

NOTE:

DECORATIVE POST WITH AUTHENTIC POLYCARBONATE (LEXAN) STREET GLOBE AND LIGHT EMITTING DIODE (LED) LAMP. THE HEADS AND LAMPS MUST BE DESIGNED FOR VERTICAL USE AND NOT GO OUT UNDER VIBRATORY LOADING. COLOR TO BE DETERMINED BY THE CITY.

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STERNBERG LIGHT

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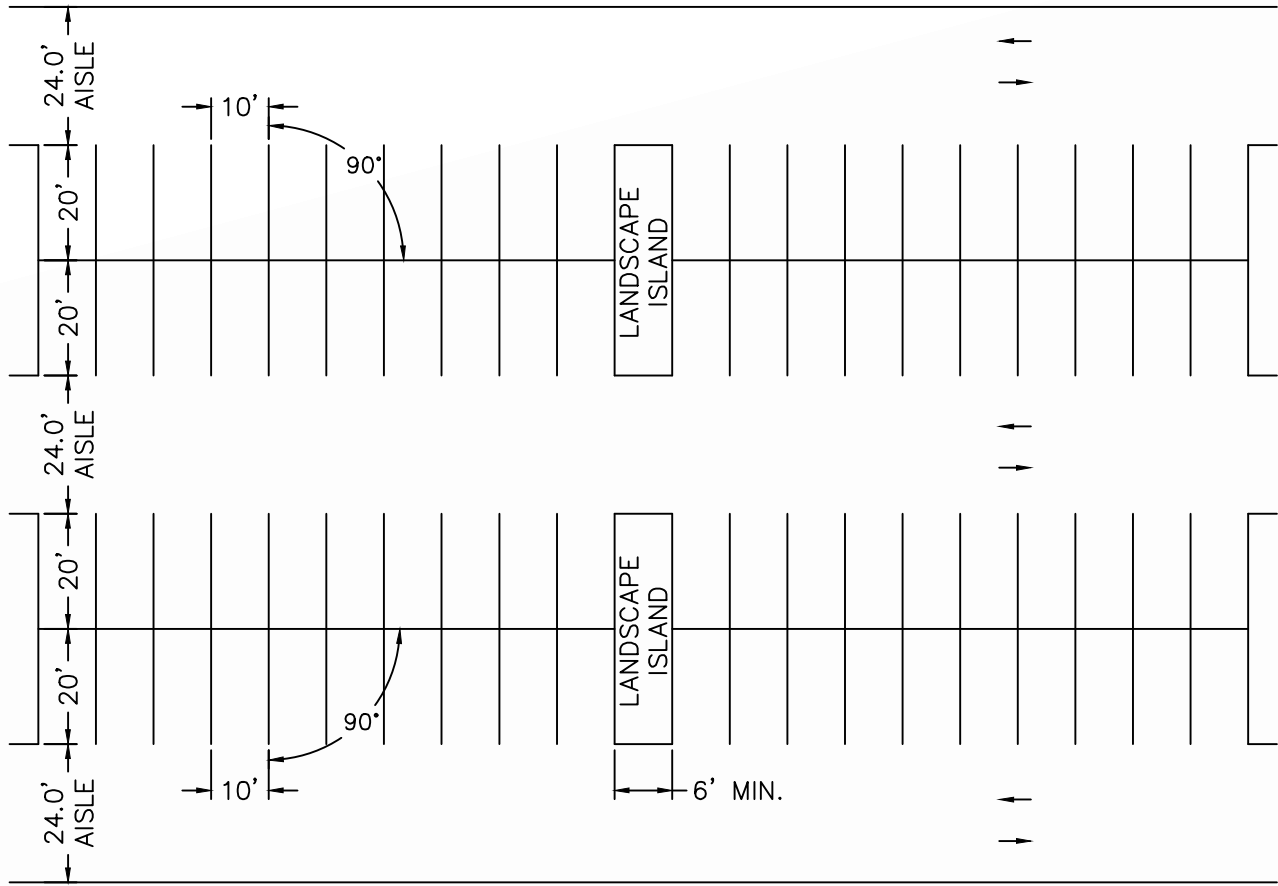
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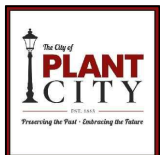


STRIPPING 4" WIDE THERMOPLASTIC WHITE. ARROWS PER FDOT DETAIL THERMOPLASTIC.

GENERAL NOTES:

1. ALL PARKING LANE MARKINGS SHALL BE 4" WHITE F.D.O.T. INDEX #17346
2. REFER TO CHAPTER 316, FLORIDA STATUTES, FOR LAWS GOVERNING PARKING SPACES.
3. LANDSCAPED ISLANDS TO MEET CODE, PLACE APPROXIMATELY EVERY 10 SPACES AND AT END OF EACH ROW, LANDSCAPE PLANS SUBJECT TO REVIEW BY PLANNING DIVISION.
4. FOR COMPACT SPACES PLEASE SEE CODE REQUIREMENTS.

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90° PARKING STANDARDS

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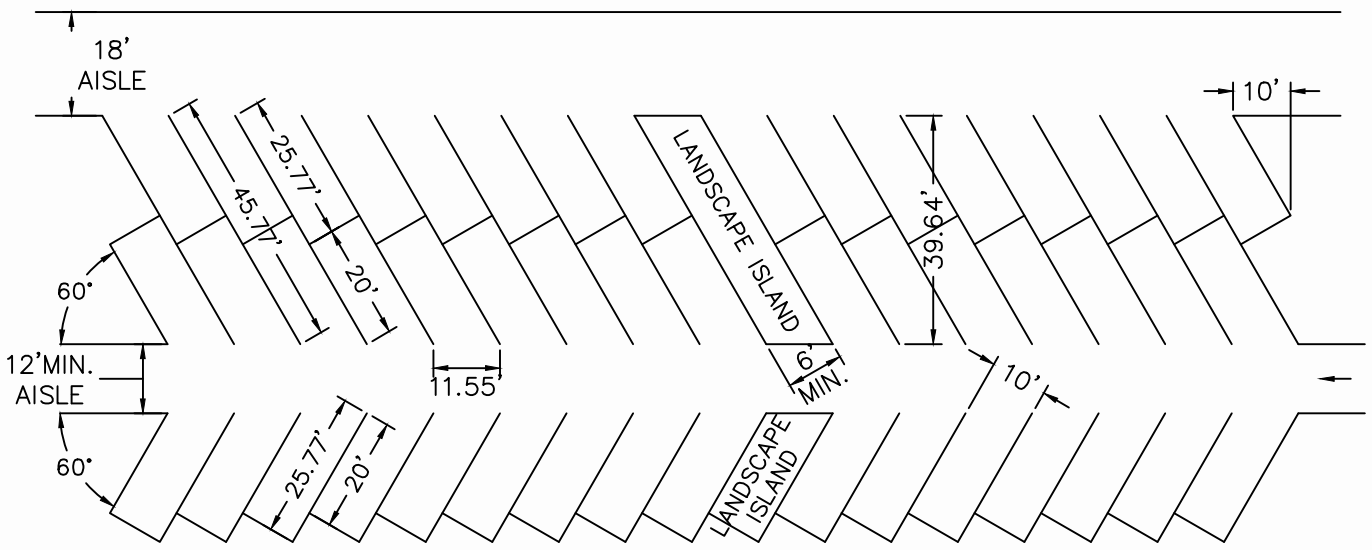
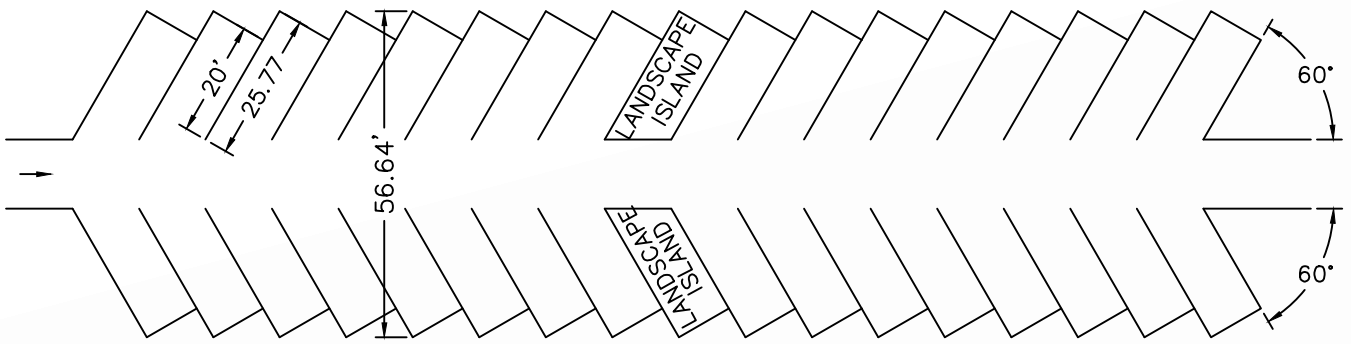
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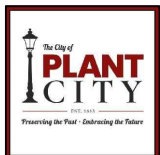
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GENERAL NOTES:

1. ALL PARKING LANE MARKINGS SHALL BE 4" THERMOPLASTIC WHITE F.D.O.T. INDEX #17346.
2. REFER TO CHAPTER 316, FLORIDA STATUTES, FOR LAWS COVERING PARKING SPACES.
3. LANDSCAPED ISLANDS TO MEET CODE, PLACE APPROXIMATELY EVERY 10 SPACES AND AT END OF EACH ROW, LANDSCAPE PLANS SUBJECT TO REVIEW BY PLANNING DIVISION.
4. FOR COMPACT SPACES PEASE SEE CODE REQUIREMENTS.

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60° PARKING STANDARDS

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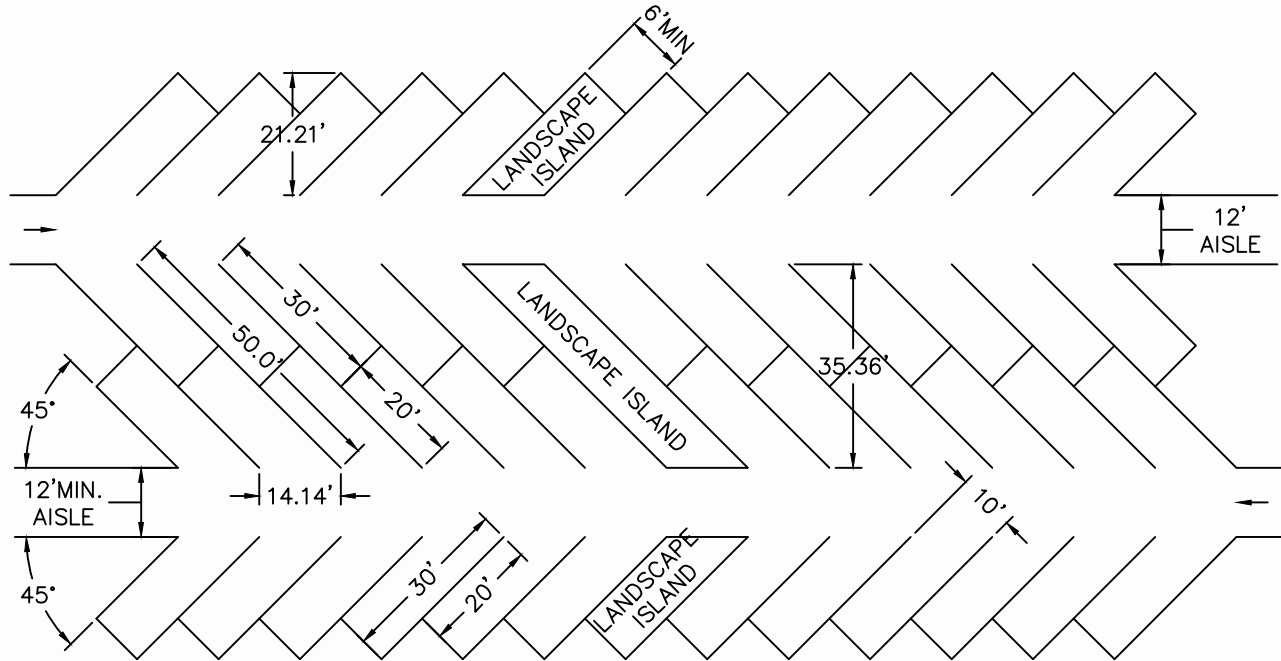
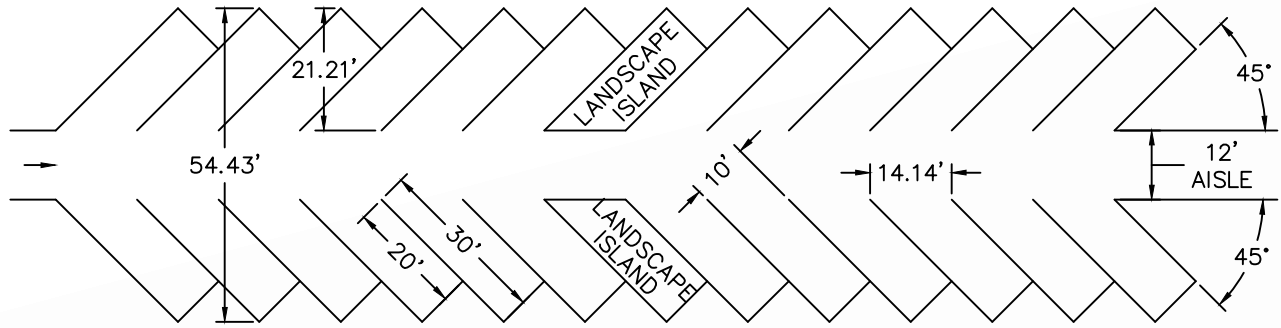
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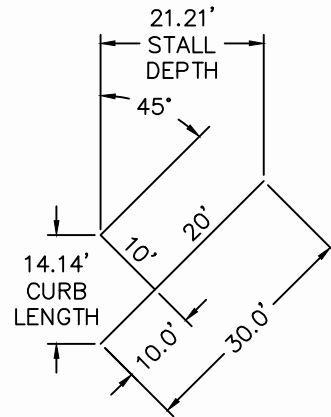
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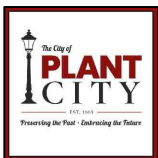


GENERAL NOTES:

1. ALL PARKING LANE MARKINGS SHALL BE 4" THERMOPLASTIC WHITE F.D.O.T. INDEX #17346.
2. REFER TO CHAPTER 316, FLORIDA STATUTES, FOR LAWS GOVERNING PARKING SPACES.
3. LANDSCAPED ISLANDS TO MEET CODE, PLACE APPROXIMATELY EVERY 10 SPACES AND AT END OF EACH ROW, LANDSCAPE PLANS SUBJECT TO REVIEW BY PLANNING DIVISION.

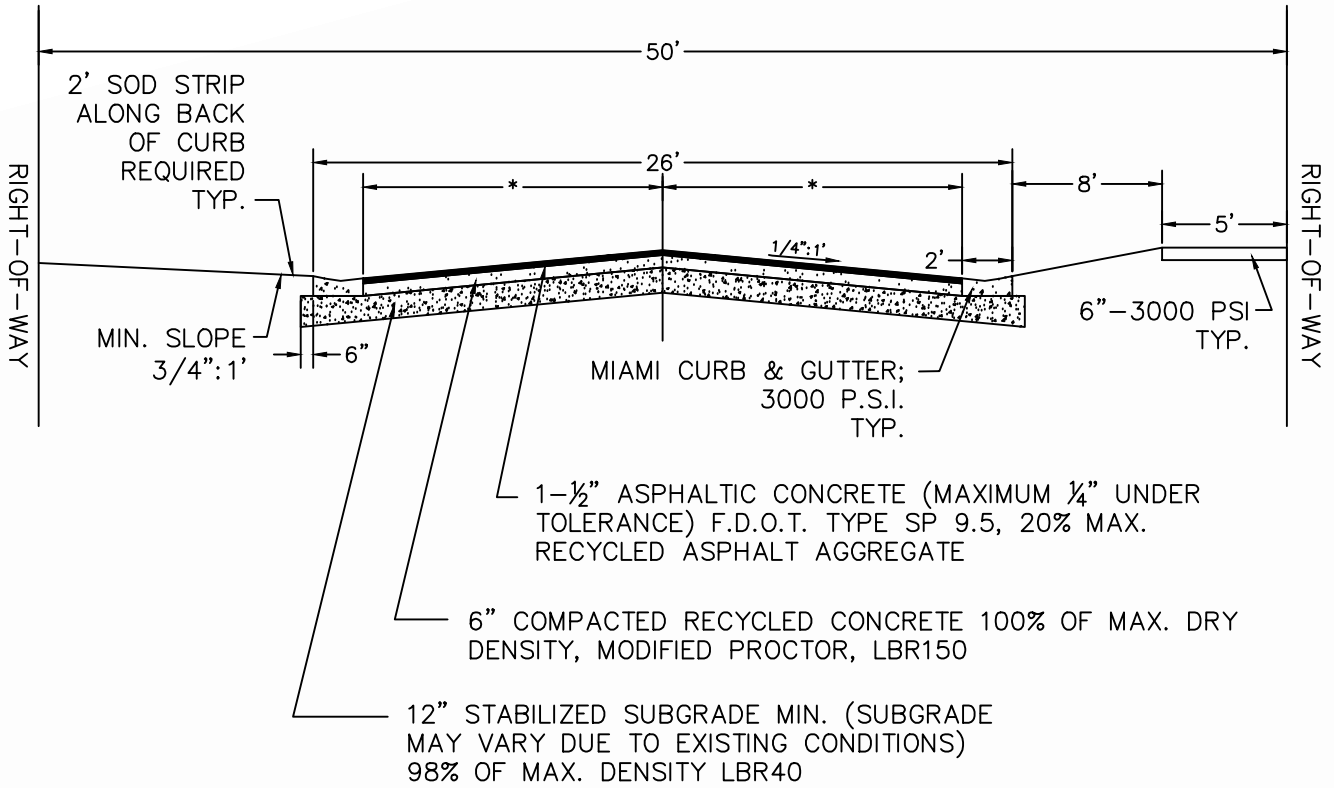


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45° PARKING STANDARDS

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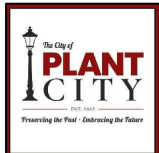


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. SIDEWALK ON ONE SIDE OF LOCAL STREET LOCATED FOR CONNECTIVITY. ALL SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS.
4. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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RESIDENTIAL ROADWAY STANDARD

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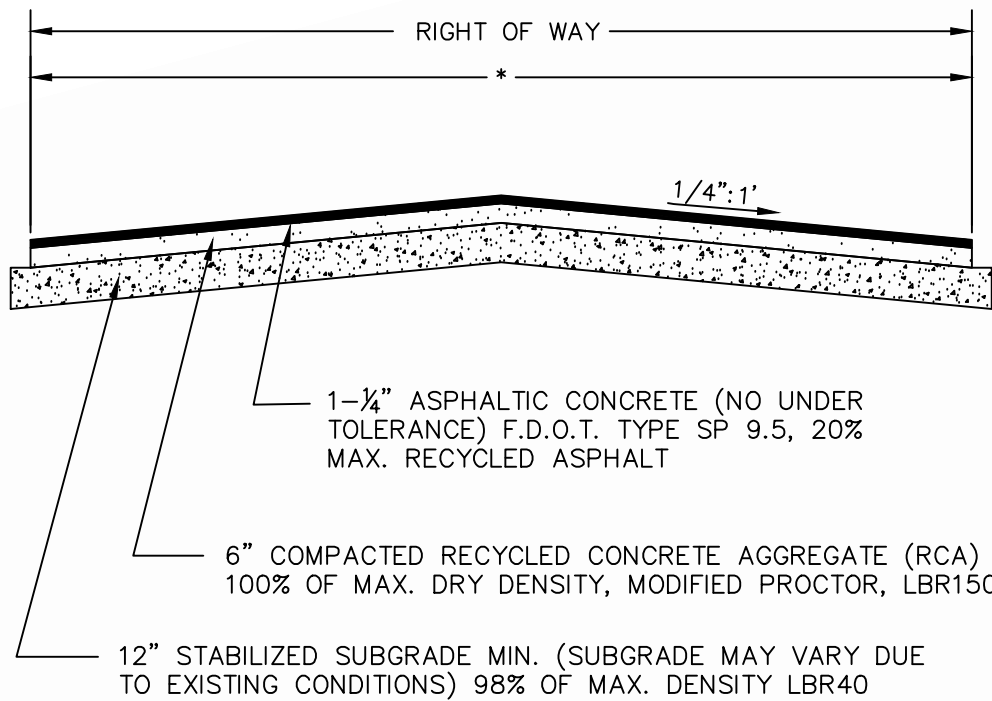
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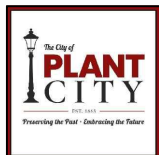


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. DESIGN MUST ACCOMMODATE ADEQUATE DRAINAGE TO ROUTE WATER AWAY FROM HOMES/LOTS TO THE STORM WATER SYSTEM/PONDS. ROADWAY MAY BE INVERTED.
4. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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ALLEY ACCESS ROADWAY STANDARD

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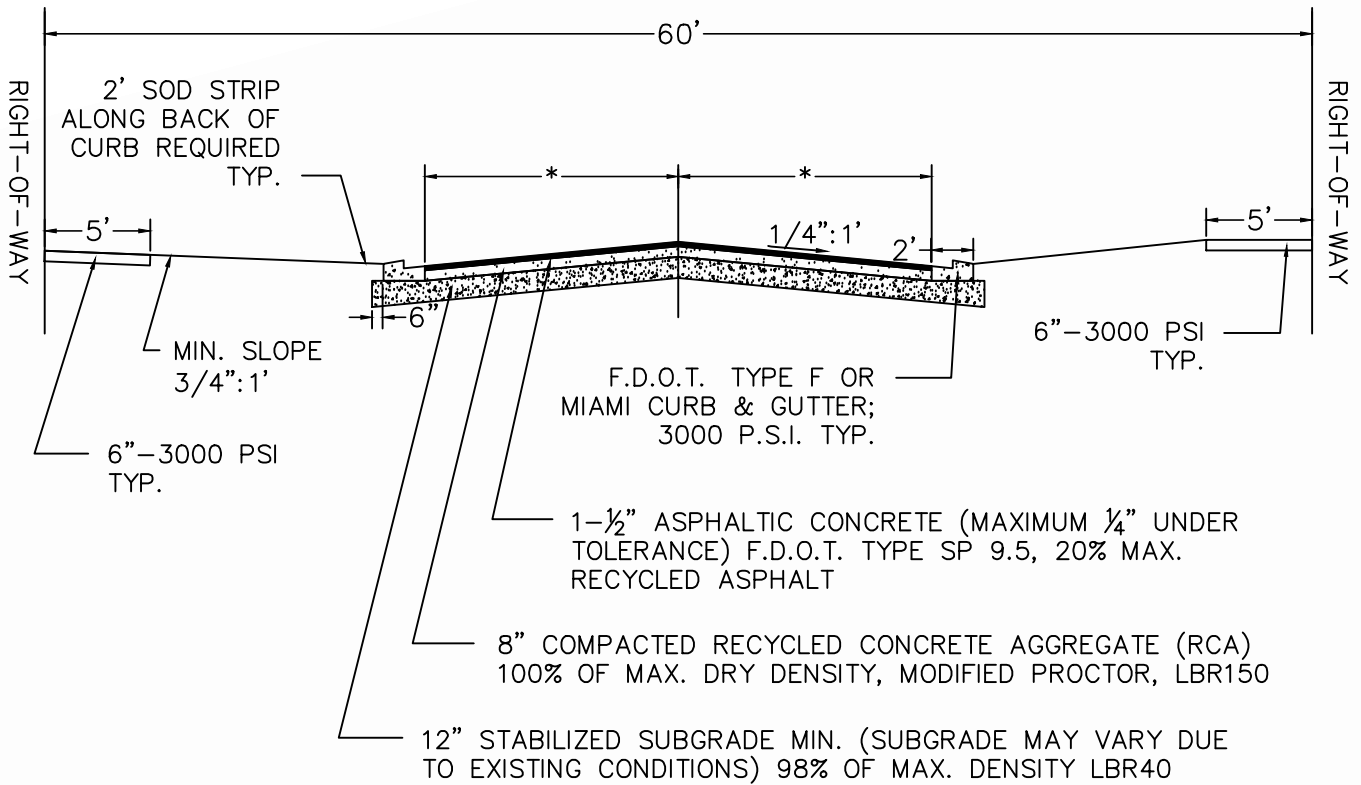
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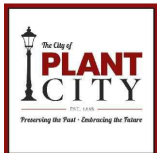


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. ALL SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS. LOCATION AND WIDTH OF SIDEWALKS SHALL COMPLY WITH ALL ZONING CODES.
4. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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RESIDENTIAL COLLECTOR ROADWAY STANDARD

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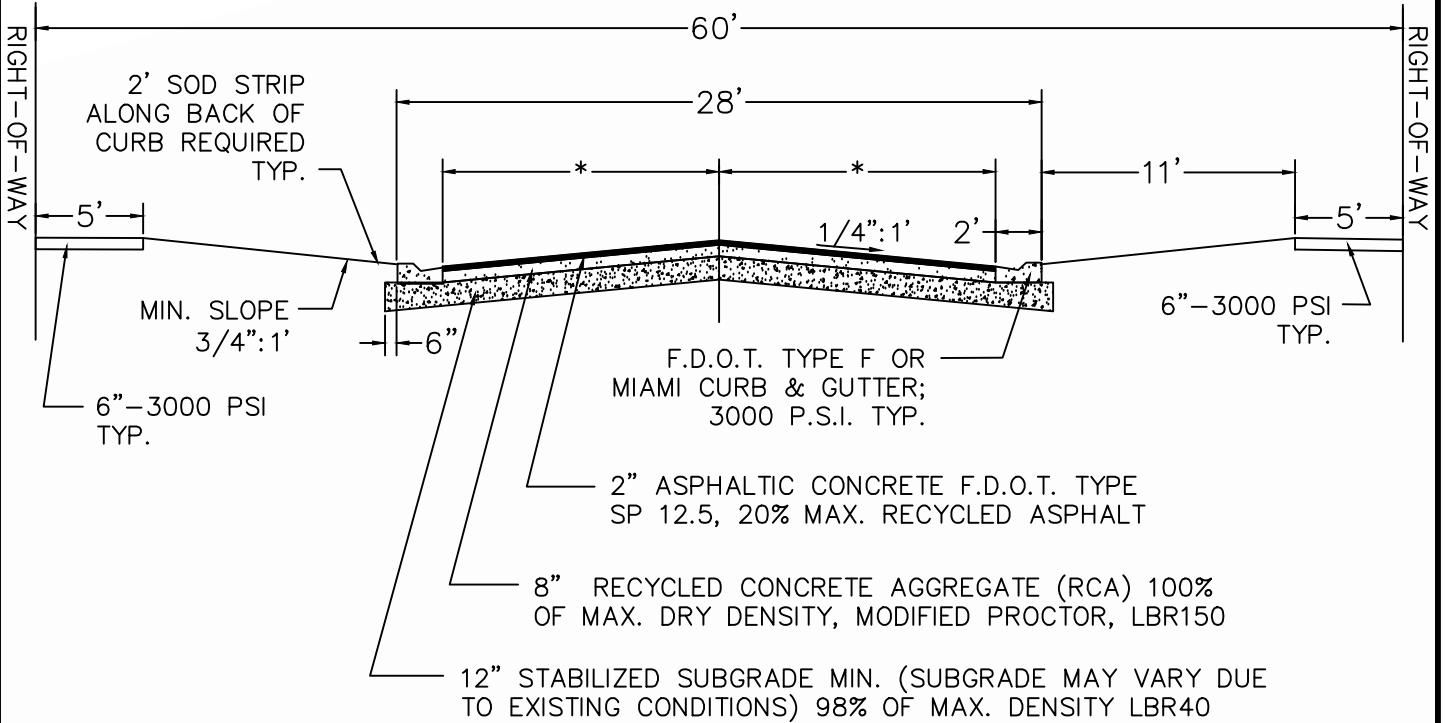
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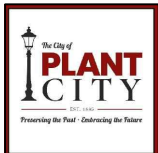
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NOTES:

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COMMERCIAL ROADWAY STANDARD

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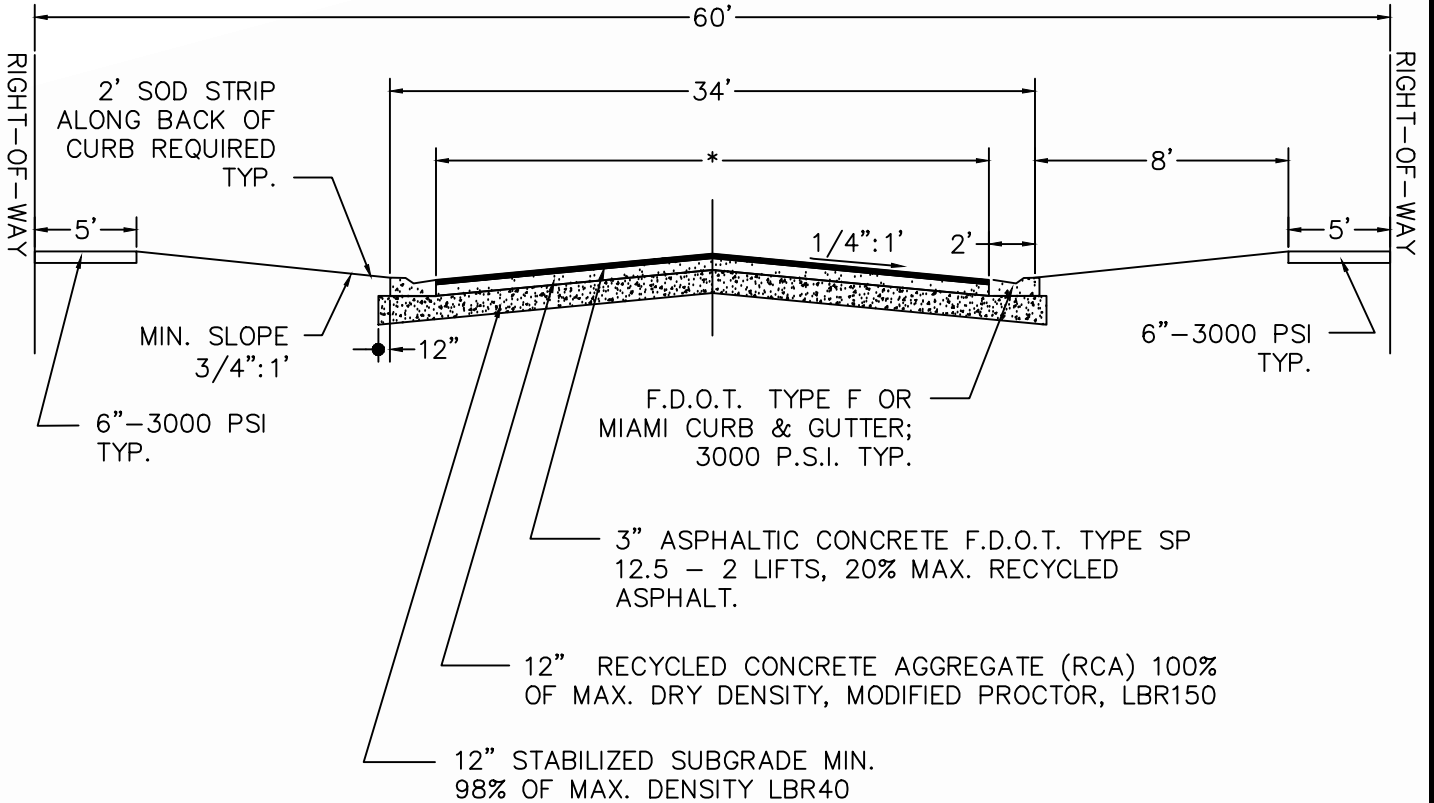
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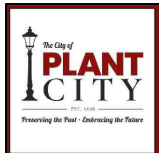


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

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2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. ALL SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS. LOCATION AND WIDTH OF SIDEWALKS SHALL COMPLY WITH ALL ZONING CODES.
4. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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INDUSTRIAL ROADWAY STANDARD

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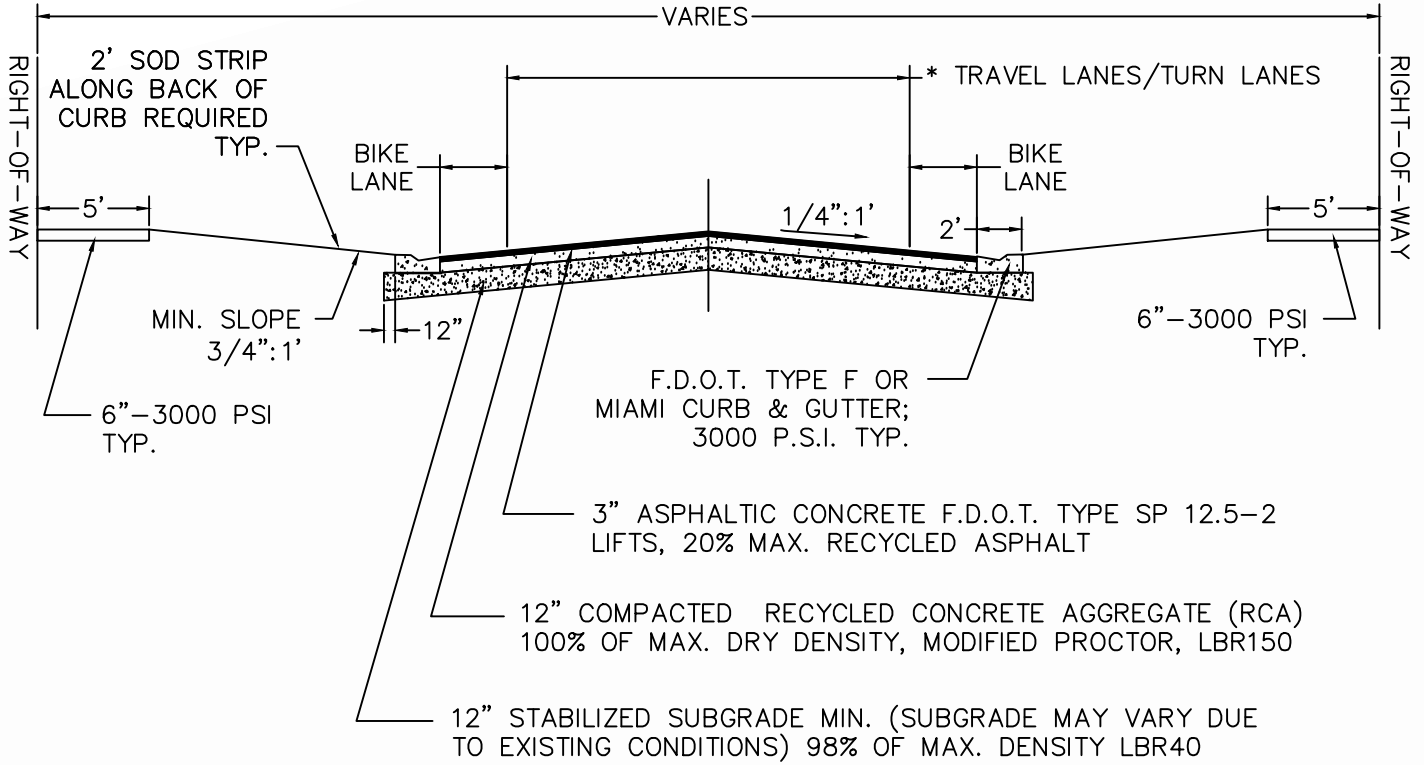
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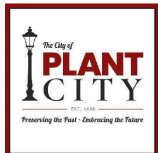


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. ALL SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS. LOCATION AND WIDTH OF SIDEWALKS SHALL COMPLY WITH ALL ZONING CODES.
4. WIDTH OF BIKE LANE AS SPECIFIED BY F.D.O.T. BIKE LANE REQUIREMENTS.
5. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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ARTERIAL/MAJOR COLLECTOR ROADWAY STANDARD

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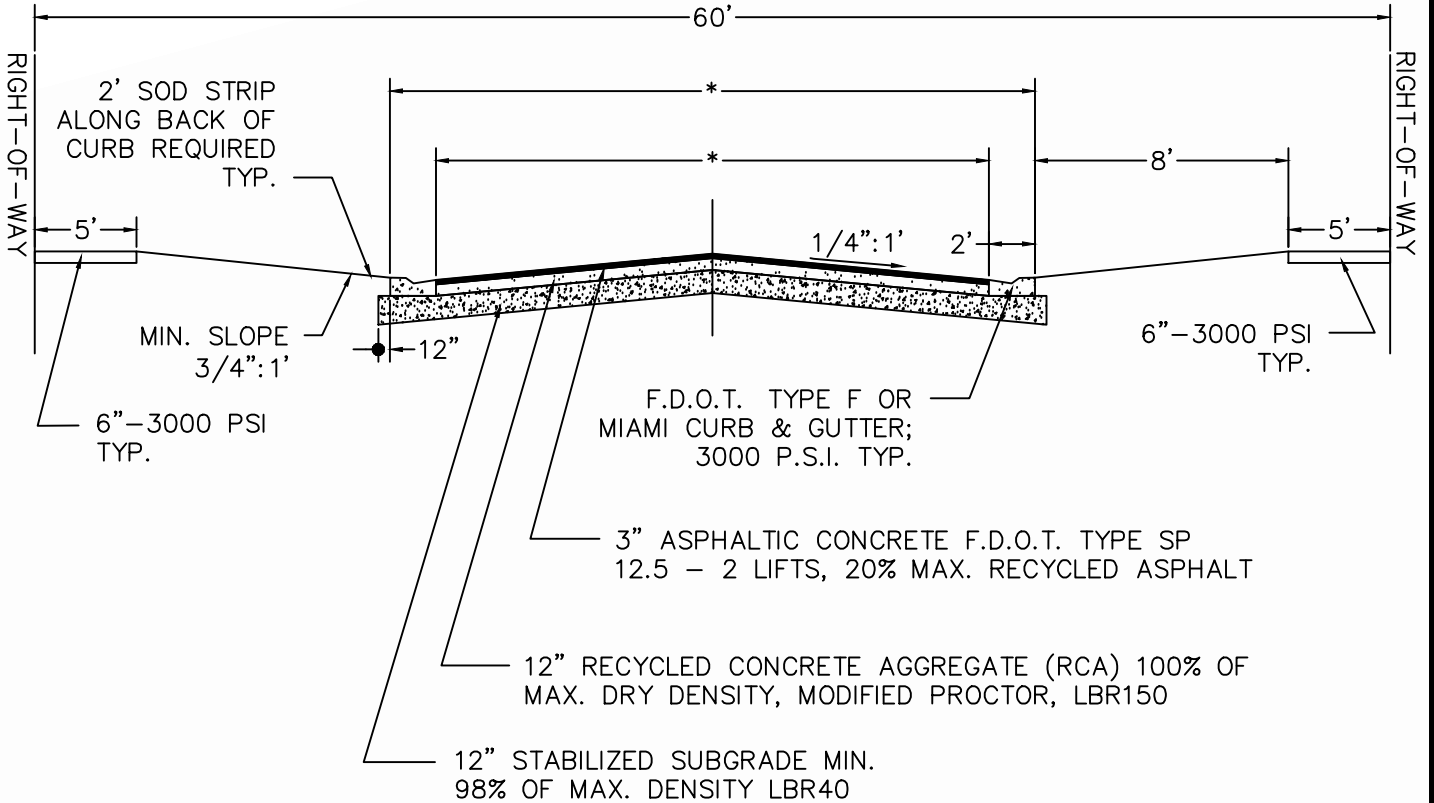
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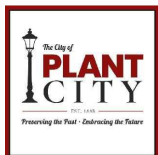


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

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HEAVY INDUSTRIAL ROADWAY STANDARD

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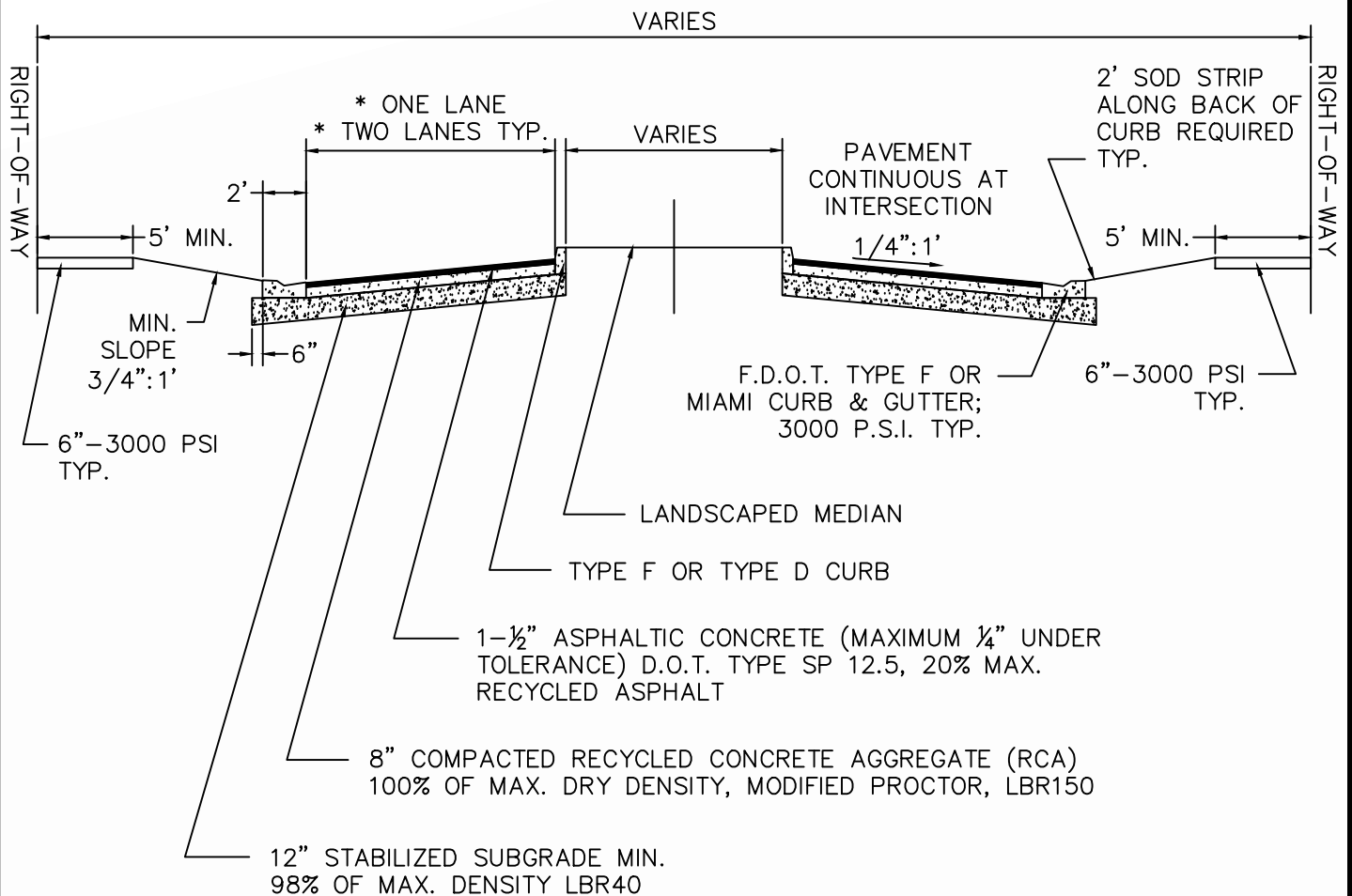
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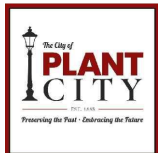


* LANE WIDTHS SHALL BE IN ACCORDANCE WITH THE FLORIDA GREENBOOK.

NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
2. ALL UNDERGROUND UTILITIES MUST BE INSTALLED PRIOR TO PREPARATION OF SUBGRADE FOR PAVEMENT.
3. BIKE LANES EACH SIDE IF SEPARATE BICYCLE FACILITIES ARE NOT PROVIDED.
4. ALL SIDEWALKS SHALL COMPLY WITH ADA REQUIREMENTS. LOCATION AND WIDTH OF SIDEWALKS SHALL COMPLY WITH ALL ZONING CODES.
5. RECYCLED CONCRETE AGGREGATE (RCA) SHALL MEET FDOT SPECIFICATION SECTION 911, BASE AND STABILIZED BASE MATERIALS.

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RESIDENTIAL COLLECTOR-DIVIDED ROADWAY STANDARD

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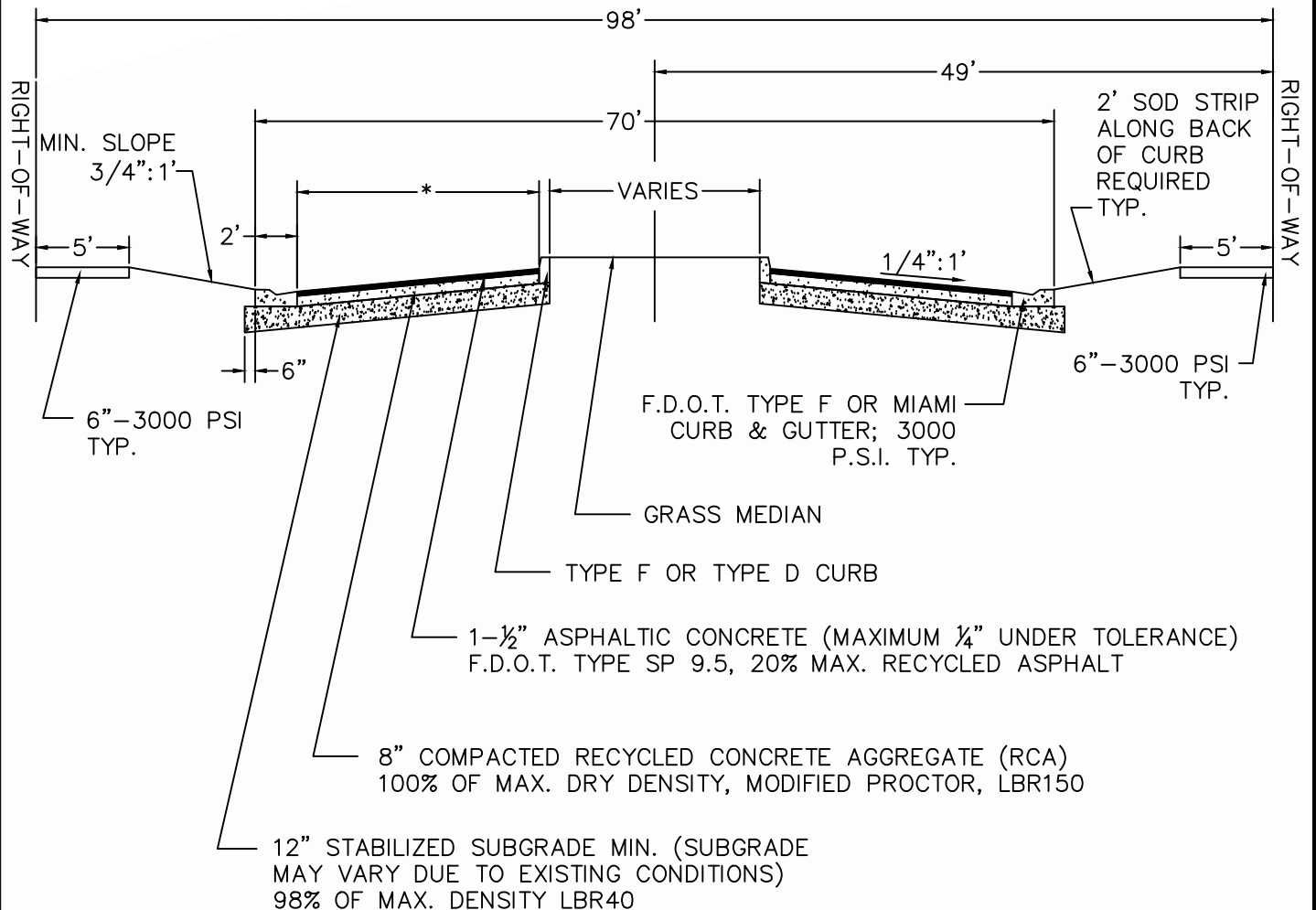
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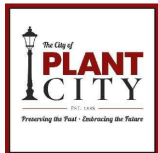
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NOTES:

1. ALL CONSTRUCTION AND MATERIALS SHALL MEET CITY STANDARDS.
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COLLECTOR ROADWAY STANDARD

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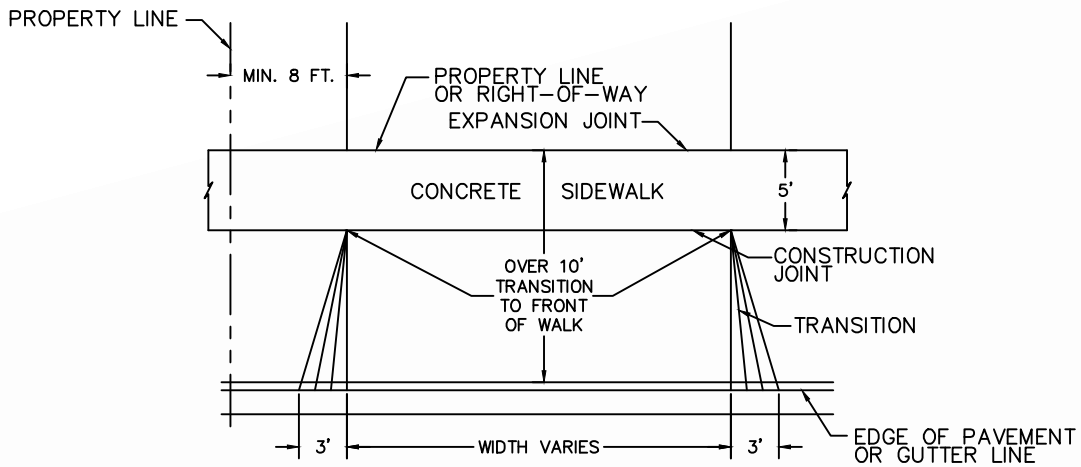
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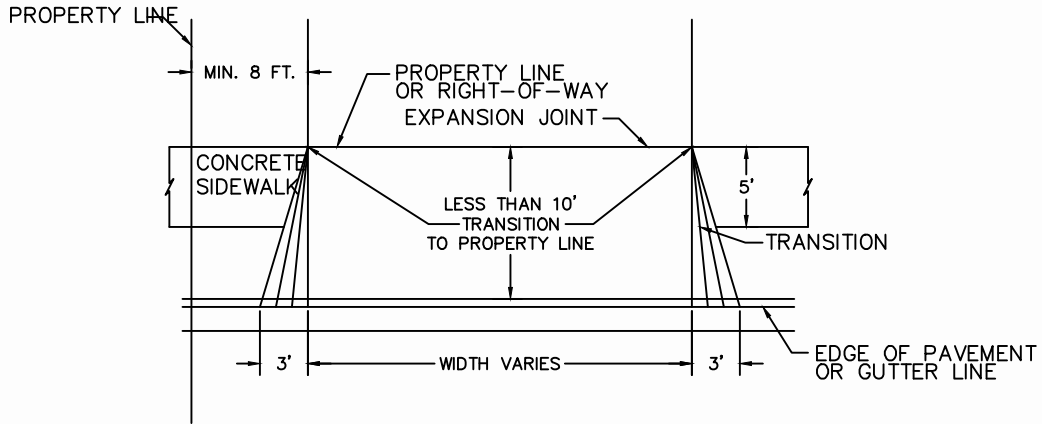
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REVISION DATE



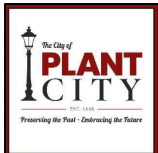
ALL DRIVEWAYS BETWEEN EDGE OF PAVEMENT AND RIGHT-OF-WAY LINE SHALL BE A MINIMUM OF SIX(6) INCH THICK 3000 PSI CONCRETE WITH NO WIRE MESH



RESIDENTIAL DRIVEWAY	MINIMUM WIDTH	MAXIMUM WIDTH	FLARE
	10'	24'	3'

COMMERCIAL DRIVEWAYS – SEE CITY OF PLANT CITY MUNICIPAL CODE AND FDOT DESIGN STANDARD INDEX 515 FOR COMMERCIAL DRIVEWAYS.

City of Plant City
1802 Spooner Drive
Plant City, FL 33563
Phone: (813) 757-9288



DRIVEWAY CONSTRUCTION

DRAWING NO.

ORIGINAL DRAWING 10/03/2017

SCALE: NTS

PS-13

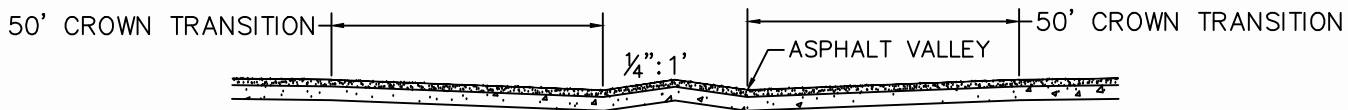
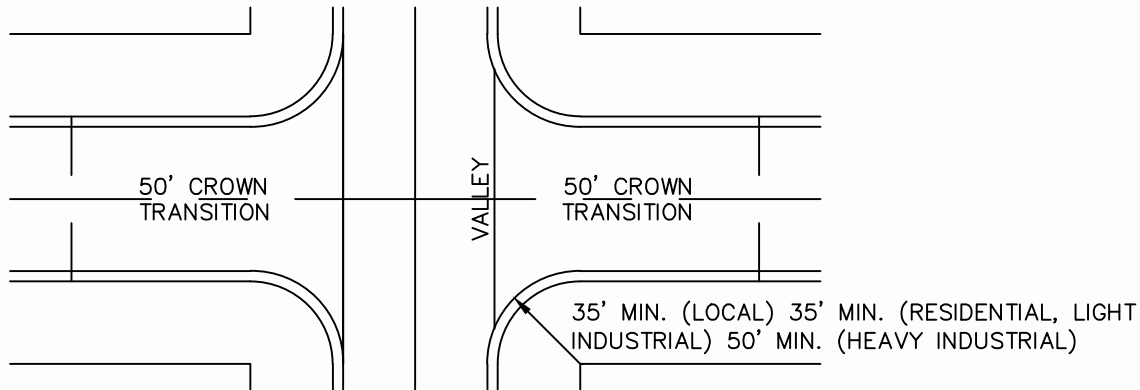
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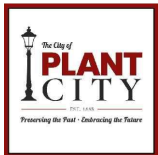
REVISION DATE

69

REVISION DATE



City of Plant City
 1802 Spooner Drive
 Plant City, FL 33563
 Phone: (813) 757-9288



TYPICAL VALLEY GUTTER SECTION

DRAWING NO.

ORIGINAL DRAWING	10/03/2017		SCALE: NTS	PS-14
REVISION DATE				PAGE NO.
REVISION DATE				70
REVISION DATE				



Approved Products List

City of Plant City Utilities Department		Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Pipes	Ductile Iron Pipe (Specify the pressure rating in the submittal)	Yes	Yes		Yes*	Clow Water Systems Company		*Ceramic Epoxy Lining is required for Wastewater Applications.	
		Yes	Yes		Yes*	American Cast Iron Pipe Co.		*Ceramic Epoxy Lining is required for Wastewater Applications.	
		Yes	Yes		Yes*	McWane Cast Iron Pipe Company		*Ceramic Epoxy Lining is required for Wastewater Applications.	
		Yes	Yes		Yes*	U.S. Pipe and Foundry Co.		*Ceramic Epoxy Lining is required for Wastewater Applications.	
	Thermoplastic Process Pipe	Polyvinyl Chloride Pipe (PVC) ASTM D1785		Yes		Yes	JM Eagle		For Plumbing and service connections
				Yes		Yes	Spears Manufacturing Company		For Plumbing and service connections
				Yes		Yes	North American Pipe		For Plumbing and service connections
				Yes		Yes	Diamond Plastics Corp.		For Plumbing and service connections
		Polyvinyl Chloride Pipe (PVC) AWWA C900 (Specify the pressure rating in the submittal)	Yes	Yes	Yes	Yes	JM Eagle		
			Yes	Yes	Yes	Yes	National Pipe and Plastic		
			Yes	Yes	Yes	Yes	North American Pipe		
			Yes	Yes	Yes	Yes	Diamond Plastics Corp.		
		Polyvinyl Chloride Pipe (PVC) AWWA C905 (Specify the pressure rating in the submittal)	Yes	Yes	Yes*	Yes	JM Eagle		* For Gravity Sewers, AWWA C905 pipe is required for pipe sizes greater than 14" in diameter.
			Yes	Yes	Yes*	Yes	North American Pipe		* For Gravity Sewers, AWWA C905 pipe is required for pipe sizes greater than 14" in diameter.
			Yes	Yes	Yes*	Yes	Diamond Plastics Corp.		* For Gravity Sewers, AWWA C905 pipe is required for pipe sizes greater than 14" in diameter.
					Yes		JM Eagle		For Gravity Sewers 4" - 12" in diameter.
		Polyvinyl Chloride Pipe (PVC) ASTM D 3034 (Specify the pressure rating in the submittal)			Yes		Spears Manufacturing Company		For Gravity Sewers 4" - 12" in diameter.
					Yes		North American Pipe		For Gravity Sewers 4" - 12" in diameter.
					Yes		Diamond Plastics Corp.		For Gravity Sewers 4" - 12" in diameter.
			Yes		Yes		JM Eagle		For Gravity Sewers 4" - 12" in diameter.
High Density Polyethylene Pipe	HDPE PE4710 AWWA C901/C906	Yes	Yes		Yes	Performance Pipe	DriscoPlex® Pipe	Typically used for installations with Horizontal Directional Drilling. Use pipe with blue stripes for Potable Water applications and use pipe with purple stripes for Reclaimed Water applications.	
		Yes	Yes		Yes	JM Eagle			



Approved Products List

City of Plant City Utilities Department		Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Valves	Air-Release and Combination Air Valve	Yes	Yes			VAL-MATIC	45	Air Release Valve	
		Yes	Yes			GA Industries	920	Air Release Valve	
			Yes			A.R.I. Flow Control	D-040	Combination Air Valve	
					Yes	VAL-MATIC	48ASV-HC	Fusion bonded epoxy coated interior and exterior	
					Yes	A.R.I. Flow Control	D-025	Combination Air Valve	
	Check Valve	Swing	Yes	Yes		Yes	DeZurik/APCO	CVS 6000/6000A	Lever and Weight Type
			Yes	Yes		Yes	American Flow Control	50-SC Series	Lever and Weight Type
			Yes	Yes		Yes	Kennedy Valve Company	Style 106/1106	Lever and Weight Type
	Gate Valve	4"-12" Resilient- Seated AWWA C509 or C515	Yes	Yes			American Flow Control	2500 Series	
			Yes	Yes			Clow	Series F-6100	
			Yes	Yes			Mueller	Series A-2360	
		16" and Above Resilient-Seated AWWA C515	Yes	Yes			American Flow Control	2500 Series	
			Yes	Yes			Clow	Series F-6100	
			Yes	Yes			Mueller	Series A-2361	



Approved Products List

City of Plant City Utilities Department		Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Valves	Plug Valve	Eccentric				Yes	DeZurik	Series PEF or PEC	
						Yes	Val-Matic	5600 or 5800 (FLG)	
						Yes	Val-Matic	5700 or 5900 (MJ)	
						Yes	Henry Pratt	Ballcentric	
	Curb Stops		Yes	Yes			Muller	B20200	
			Yes	Yes			Ford	B11233W	
	Corporation Stops		Yes	Yes			Muller	H15008	
			Yes	Yes			Ford F	1000	
	Valve Stem Alignment		Yes	Yes		Yes	EMMA Sales LLC	BoxLoc	Refer to <i>CPC Standard Details WS-07</i> for requirement
	Valve Boxes	Slip Type	Yes	Yes		Yes	Tyler Union		
Yes			Yes		Yes	Sigma			




Approved Products List

City of Plant City Utilities Department		Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
		Joint Restraints	Ductile Iron Pipe Push-on Joint Restraints	DIP-DIP	Yes	Yes		Yes	EBAA Iron Company
Yes	Yes					Yes	Sigma	One-Lok SLDEH	
Yes	Yes					Yes	Star Pipe Products	StarGrip 3100S	
PVC Pipe Push- On Joint Restraints	PVC-PVC		Yes	Yes		Yes	EBAA Iron Company	1600 Megalug®	Restraint for AWWA C900 Push-on Joint Pipe
			Yes	Yes		Yes	EBAA Iron Company	2800 Megalug®	Restraint for AWWA C905 Push-on Joint Pipe
			Yes	Yes		Yes	Sigma	PV-LOK™	
			Yes	Yes		Yes	Star Pipe Products	Series 1000C	
DIP MJ Joint Restraints	Restrain DIP to mechanical joint fittings, pipe and appurtenances.		Yes	Yes		Yes	EBAA Iron Company	1100 Megalug®	All restrained joint system shall be pressure rated to the same as Ductile Iron pipe and fittings. All components of the restrained system shall meet or exceed the requirements of the latest edition of ANSI/AWWA C-111/A21.21.11 standard.
			Yes				TYLER MJR	TUFGRIP	
			Yes	Yes		Yes	Sigma	OneLok Series SLD/SLDE	
			Yes	Yes		Yes	Star Pipe Products	Star Grip Series 3000	
PVC MJ Joint Restraints	Restrain PVC to mechanical joint fittings, pipe and appurtenances.		Yes	Yes		Yes	EBAA Iron Company	2000PV Megalug®	
			Yes	Yes		Yes	Sigma	OneLok Series SLCE	
			Yes	Yes		Yes	Star Pipe Products	Star Grip Series 4000	



Approved Products List

City of Plant City Utilities Department	Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Backflow Prevention Backflow Prevention Assemblies & Devices (For Plant City owned & maintained assets)	Reduced Pressure Assemblies (RP)	Yes				Apollo	4ALF	0.75" to 2"
		Yes				Watts	LF919	0.75" to 2"
		Yes				Watts	LF909OSY	3" to 10"
		Yes				Wilkins	975XL2	0.75" to 2"
		Yes				Wilkins	375AST	3" to 10"
	Reduced Pressure Detector Assemblies (RPDA) For City water fire systems with NO tanks, additives, or connections to another source of water	Yes				Watts	909RPDA	3" to 10"
		Yes				Wilkins	375ASTDA	2.5" to 10"
	Double Check Valve Assemblies (DCVA)	Yes				Watts	LF719	0.75" to 2"
		Yes				Watts	LF709OSY	3" to 10"
		Yes				Wilkins	950XLT2	0.75" to 2"
		Yes				Wilkins	350AST	3" to 10"
		Yes				Wilkins	350XL	0.75" to 2"
	Double Check Detector Assemblies (DCDS) For City water fire systems with NO tanks, additives, or connections to another source of water	Yes				Watts	LF709OSY	3" to 10"
		Yes				Wilkins	350ASTDA	3" to 10"
	Pressure Vacuum Breaker Assemblies (PVB) Irrigation Only	Yes				Watts	LF800M4	0.75" to 2"
		Yes				Watts	LF900M4FR	0.75" to 2"
	Dual Check Valve (DUC)	Yes				Wilkins	700XL	0.75" to 1" (For residential potable water service if reclaimed water is available)
	Paint	Yes				TNEMEC	1028 Enduratone	True Blue Safety (Sherwin-Williams is acceptable.)
		Yes				TNEMEC	1029 Enduratone	06SF CDY APL RED/SFTY (Sherwin-Williams is acceptable.)

		Approved Products List							
		City of Plant City Utilities Department	Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes
Meter Box	Meter Box	Meter Box Body	Yes	Yes			Oldcastle	1118-BCF	Item# 11182500
		Lid	Yes				Oldcastle	FL12D Black	Item# 02001368
		Lid		Yes			Oldcastle	FL12D Purple	Item# 02001368 S0154441-13
Fire Hydrants	Fire Hydrants		Yes				American	American-Darling B-84-B-250	304 Stainless Steel required on hydrant external and bonnet internal hardware and extension kit hardware.
			Yes				American	Waterous Pacer 250	304 Stainless Steel required on hydrant external and bonnet internal hardware and extension kit hardware.
			Yes				US Pipe Company	US Metropolitan 94	304 Stainless Steel required on hydrant external and bonnet internal hardware and extension kit hardware.
		Paint	Yes				TNEMEC	2H-BV57	"Safety Yellow"
Flushing	Automatic Flushing Systems		Yes				KUPFERLE	Eclipse #9400	Flow rates of up to 200 gallons per minute
			Yes				or Equal		



Approved Products List

City of Plant City Utilities Department		Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Manhole Structure	Exterior Coatings and Linings	New Manhole	Yes	Yes	Yes	Yes	Sherwin-Williams	Epoxy Tar Coating	
			Yes	Yes	Yes	Yes	ConSeal	Acrylic Coating CS-55	
	Interior Coatings and Linings	New Manhole			Yes	Yes	ConSeal	Acrylic Coating CS-55	
					Yes	Yes	TENEMEC	Vinester 120- 5001	
					Yes	Yes	SEWPERCOAT	SEWPER- COAT	
					Yes	Yes	GML Coatings	Green Monster	
		Rehabbed Manhole			Yes	Yes	ConSeal	Acrylic Coating CS-55	
					Yes	Yes	SEWPERCOAT	SEWPER- COAT	
					Yes	Yes	GML Coatings	Green Monster	
					Yes	Yes	Strong Company	Strong-Seal	
Manhole	Ring and Cover	ARV Manhole		Yes		Yes	US FOUNDRY	USF 170-E	Ordering information must include: "CITY OF PLANT CITY" and " WATER", "RECLAIMED WATER", or "SANITARY SEWER" and "ARV" embossed in the lid.
		Sanitary Sewer Manhole			Yes		US FOUNDRY	USF 170-E	Manhole in traffic areas and grass medians. "SANITARY SEWER" embossed in the lid.
					Yes*		US FOUNDRY	USF 170-EK	*For Historical District (Coordinates with Utilities Department)
					Yes		US FOUNDRY	USF 170-X	Manhole in sidewalk areas (non-skid, no vehicle traffic, pedestrian traffic design)



Approved Products List

		City of Plant City Utilities Department	Potable Water	Reclaimed Water	Wastewater (Gravity)	Wastewater (Force Main and Lift Station)	Manufacturer	Part Name / Model Number	Notes	
Lift Station	Pump	Submersible				Yes	Vaughan			
						Yes	HCP Pumps America			
						Yes	Barnes			
	Generator					Yes	Tradewinds			
	Wet Well	Hatch					Yes	BILCO		Wet Well Hatch shall be aluminum frame and cover and shall be equipped with hatch safety net.
		Coating and Lining					Yes*	SEWPERCOAT	SEWPER-COAT	*For the wet well depth less than 18ft.
							Yes	GML Coatings	Green Monster	
	Instrumentation	Radar Level Sensor					Yes	VEGA	VEGAPULS C11	
	Electrical	Enclosure					Yes	Hoffman		Powder Coated White.
							Yes	or Equal		Powder Coated White.
		Relay					Yes*			* LED Indicator is required.
		Main Breaker					Yes	SQD		

APPENDIX D

Asset Data Spreadsheets



City of Plant City Asset Data Table

Note to User

Provide a unique ID for each utility and type, numbered sequentially along the pipe run (including changes in direction) from start to finish. Then branches and services of the same utility type can be numbered. A unique ID should match the record drawing for identification. It is recommended that each utility (Water, Sewer, and Reclaimed Water) numbering format be distinguishable from the other. All sections applicable to a given project are filled out in their entirety and submitted as part of the record drawing submittal package. Users should insert additional lines as needed and use a separate spreadsheet file for each water, sewer, and reclaimed water utility system.

Submittal Date	
Collection Date	
Project Name	
Project Number	
Project Location	
Project Type	
Public or Private	
Spatial Reference	
Horizontal Datum	
Vertical Datum	

Engineer of Record/Company	Name, Email, Company name
Registration Number	
Surveyor Name/Company	Name, Email, Company name
Surveyor License	
Contractor	Name, Email, Company name

The final project acceptance by the City will be contingent upon receipt of the completed assetdata table. Please contact the City's Utilities Department for the latest assetdata table spreadsheet.

*Dated March 2021

APPENDIX E

Application for Engineering Plan Review Section D

SECTION D

GENERAL REQUIREMENTS FOR SITE WATER AND SEWER

If No or N/A is selected for any of the items listed herein, please indicate on a separate sheet the reasons for making said selection.

Yes	No	N/A	Requirement
			Existing and proposed water supply and/or distribution system shown.
			Existing and proposed sanitary sewer system shown.
			Horizontal and vertical alignments shown graphically in the plan for existing and proposed sanitary sewer collection system.
			Plans show water and/or sewer main materials, sizes and dimensioned locations.
			Locations of valves, hydrants, manholes, tees wyes and laterals indicated in plans.
			Are conflict structures proposed? (Note: Generally not accepted)
			Utility crossings shown as bored, not open cut.
			Minimum cover of 36" provided.
			All sanitary manholes are A-Lok, Z-Lok or equivalent.
			All water and sewer piping to be dedicated to the City is shown within the Right-of-Way.
			In ground grease trap proposed for commercial facilities with a stove, oven or dishwasher. (Minimum size 750 gallons)

SPECIFIC REQUIREMENTS FOR WATER DISTRIBUTION

Yes	No	N/A	Requirement								
			Commercial or Industrial water meter over 3" designed with a bypass.								
			Ductile Iron pipe Class 51 with cement mortar lining in accordance with ANSI/AWWA C104/A21.4								
			PVC pipe C-900 Blue Class 200 DR 14								
			#12 AWG copper locator wire wrapped around PVC pipe tied to valves, hydrants, etc.								
			Bends deflecting 22 1/2° or more are restrained using mega lugs or equivalent.								
			All dead end water lines restrained and are equipped with blowoffs.								
			Valves greater than 3' deep have extensions to within six inches from top of valve box.								
			Individual services shall be PVC in accordance with Plant City Standards.								
			Valves and roadway boxes provided at all branch connections (2 valves per tee, 3 valves on a cross).								
			Trunk lines designed to carry residual pressure of 22 pounds during fire demand conditions.								
			Design flow based upon a Water Equivalent Residential Connection of 350 gallons per day or 125 gallons per capita per day, whichever is greater.								
			Peak flow factor is based upon the following: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Average Daily Flow (MGD)</th> <th>Peak Factor</th> </tr> </thead> <tbody> <tr> <td>0.5 or less</td> <td>2.75</td> </tr> <tr> <td>0.5-1.0</td> <td>2.25</td> </tr> <tr> <td>1.0 and greater</td> <td>1.50</td> </tr> </tbody> </table>	Average Daily Flow (MGD)	Peak Factor	0.5 or less	2.75	0.5-1.0	2.25	1.0 and greater	1.50
Average Daily Flow (MGD)	Peak Factor										
0.5 or less	2.75										
0.5-1.0	2.25										
1.0 and greater	1.50										
			All water lines are looped.								
			Pressure and Leak testing to be done in accordance with AWWA standards.								
			Chlorinating and Sampling to be in accordance with AWWA standards.								
			All items designed, installed and specified according to City of Plant City specifications.								
			Hillsborough County Health Department forms completed and attached.								
			When service lines are proposed beneath City streets, the service line is installed in a schedule 40 color coded blue PVC sleeve.								

GENERAL REQUIREMENTS FOR SANITARY SEWER

Yes	No	N/A	Requirement										
			Design flow based upon 350 gallons per day per residential unit or 140 gallons per capita per day.										
			Peak flow factor is based upon the following: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Average Daily Flow (MGD)</th> <th>Peak Factor</th> </tr> </thead> <tbody> <tr> <td>0.5 or less</td> <td>3.0</td> </tr> <tr> <td>0.5-1.0</td> <td>2.5</td> </tr> <tr> <td>1.0 to 1.5</td> <td>2.0</td> </tr> <tr> <td>1.5 and greater</td> <td>1.5</td> </tr> </tbody> </table>	Average Daily Flow (MGD)	Peak Factor	0.5 or less	3.0	0.5-1.0	2.5	1.0 to 1.5	2.0	1.5 and greater	1.5
Average Daily Flow (MGD)	Peak Factor												
0.5 or less	3.0												
0.5-1.0	2.5												
1.0 to 1.5	2.0												
1.5 and greater	1.5												
			Sewer is designed with a uniform slope and alignment between manholes.										
			The minimum drop through manholes is .1'.										
			Inside drops in manholes and wetwells do not exceed 2' from the pipe invert to the manhole channel invert, (wetwells 2' from invert to low water elevation) channel provided.										
			Existing manholes have exposed brick coated with ½ inch minimum thickness of cement mortar.										

SPECIFIC REQUIREMENTS FOR SANITARY SEWER GRAVITY SYSTEMS

Yes	No	N/A	Requirement
			8" minimum sanitary sewer collection system pipe.
			Connections between collection systems made with outside drops.
			Minimum lateral size is 6".
			PVC pipe SDR26 conforming to ASTM D3034.
			Minimum cover of 36" provided.
			Minimum velocity of 2.0 feet per second.
			Sewers designed to carry peak flow at 50% capacity.
			Hillsborough County Environmental Protection Commission forms are completed and attached.
			Manholes are spaced no greater than 400' and at the end of each line.
			Final inspection and televising in accordance with City of Plant City specifications.
			All items designed, installed and specified according to City of Plant City specifications.

SPECIFIC REQUIREMENTS FOR SANITARY SEWER LIFT STATIONS AND FORCE MAINS

Yes	No	N/A	Requirement
			A 12' wide concrete driveway in a dedicated Right-of-Way has been provided as access to the lift station.
			Lift station is enclosed with a fence and gate and designed to City of Plant City Standards.
			Pump station is located outside of the 100-year flood plain.
			Minimum operating velocity of force main equal to 2.0 fps.
			Maximum operating velocity of force main equal to 5.0 fps.
			PVC force main shall be brown in color and installed with #12 locator wire.
			PVC pipe in accordance with City of Plant City specifications for force main design.
			Hazen-Williams "C" factor of 150 used for hydraulic design of force main.
			Wet Wells are designed according to the following: a) Cycle time for each pump is not less than 5 minutes nor is the average cycle time greater than 30 minutes. b) High water alarm elevation set 1' below the invert of the lowest incoming sewer line invert. c) Volume between high water alarm overflow is equal to two hours storage at peak flow. d) Safety factor of 2 used for buoyancy calculation. e) Finished floor has a minimum 10% slope. f) Wet well has a PVC or equivalent liner. g) Low water level set a minimum of 3 inches above top of pumps.
			Lift station has a minimum of two pumps, submersible type.
			3 pumps and an automatic generator to be supplied for flows greater than 500 gpm.
			All repump stations shall have a backup generator.
			Air release valves installed at high points in force main.
			Manhole at transition from force main to gravity main located as far away from homes as possible.
			Transition manhole is lined with PVC or equivalent liner.
			Hillsborough County Environmental Protection Commission forms are completed and attached.
			Final inspection and televising in accordance with City of Plant City specifications.
			All items designed, installed and specified according to City of Plant City specifications.
			Minimum 50' X 50' parcel dedicated to the City for lift station. (Only for lift stations dedicated to the City)