

Mesa Standard Details & Specifications

Amendments to MAG Uniform Standard
Details & Specifications for
Public Works Construction



**MESA STANDARD DETAILS
AVAILABLE ON-LINE
WWW.MESAAZ.GOV/ENGINEERING**

EFFECTIVE DATE DECEMBER 2025

Mesa Standard Specifications

Amendments to MAG Uniform
Standard Specifications for
Public Works Construction



**MESA STANDARD DETAILS
AVAILABLE ON-LINE
WWW.MESAAZ.GOV/ENGINEERING**

EFFECTIVE DATE DECEMBER 2025



2025 City of Mesa Amendments to MAG Specifications Revisions

Item Number	Section	Subject	Change(s)
	Introduction	Adoption of MAG Specifications	Update to current MAG Specifications version.
D	107.11	Contractor's Responsibility For Utility Property And Services	Updated entire subsection with new damage prevention requirements.
RR	401.3	Temporary Traffic Control	Updated the title of the City of Mesa Temporary Traffic Control Manual
SS	401.4	Temporary Traffic Control Measures	Added text to the subsection requiring the maintenance of existing pavement markings within and adjacent to the construction area.
TT	402.3.1	Pavement Marking Layout	Added a requirement to coordinate the installation with the City inspector to allow observation by the Transportation Department
TT	402.3.3	Pavement Marking Obliteration	Included the requirement that Masterseal application be 3 times the width of the obliteration line when it is wider than the pavement marking. In addition, included the requirement that when obliteration lines are in proximity to each other, the Masterseal application also encompass the area between the obliteration lines.
CCC	610.3 (B)	Pipes 20- inches Diameter and Larger	Deleted Bar-wrapped Concrete Cylinder Pipe, AWWA C303, as an allowable material
LLL	610.9	Fire Hydrants	Updated the location and link to the approved products list

UUUU	630.3.1	Gate Valves	Updated the location and link to the approved products list
AAAAA	631.3.5	Water Services	Added a reference to the City of Mesa Standard Details

STANDARD SPECIFICATIONS
FOR PUBLIC WORKS CONSTRUCTION

The City of Mesa Standard Specifications for Public Works Construction shall be in accordance with the 2025 edition of the Uniform Standard Specifications for Public Works Construction as sponsored by the Maricopa Association of Governments (<https://azmag.gov/>), or current version, as amended as follows:

A. Subsection 102.12 – Add a new paragraph (C), to read as follows:

(C) Submission of any unit prices in the bid proposal which are unbalanced, either above or below the amount of a reasonable bid price as determined by the City Engineer, to the potential detriment of the contracting agency.

B. Subsection 105.4 – Add the following to this section:

For any apparent error or omission in the plans and specifications, such corrections by the Engineer may include adjustments in units, quantities and unit prices.

C. Subsection 106.2 - Replace the text of Subsection 106.2 with the following text (Sections 106.2.1 through 106.2.6):

106.2.1 General:

The City of Mesa (City) requires that all construction materials to be supplied, constructed, or installed in, on or across any City easements, rights-of-way or City-owned property be subject to inspection and Quality Control (QC) and Quality Assurance (QA) Testing. This requirement also applies to any materials or infrastructure that, once in-place, will be owned, operated, or maintained by the City, regardless of where they are installed. Any material rejected by the City shall be removed immediately and replaced in an acceptable manner to the City at no additional cost.

“Quality Control (QC) Testing” is testing performed to assure the materials installed comply with the requirements set forth in City standards. On City capital improvement projects, the requirements of the Contract Documents apply.

“Quality Assurance (QA) Testing” is testing performed to verify the accuracy and applicability of the QC testing results and to ascertain that the materials installed meet the specified levels of quality in accordance with City standards.

On City capital improvement projects (where the City is the Contracting Agency), the requirements of the Contract Documents apply.

For City projects, the General Contractor employed by the City shall be responsible for performing the QC testing as part of the Contract Work. For projects where the City is not the Contracting Agency (“non-City projects”), the person or entity holding the City permit for the Work (“Permittee”) is responsible for completing the requirements set forth herein, as a condition of the permit. For “non-City projects”, the verbiage of this section presumes that the Permittee either is the General Contractor performing the permit Work or that the Permittee will contractually pass the QC testing responsibility on to the Permittee’s General Contractor. Hence, the word “Contractor” is used throughout this section when speaking of the entity responsible for QC testing requirements. It shall be understood, however, for “non-City projects” these responsibilities are ultimately incumbent on the permit holder.

Requirements related to minimum QC testing, including required minimum testing frequencies, per Table 1 below. The City may also elect to perform independent QA testing for any project or permit. The City will perform QA testing at the frequency detailed in Table 1 below.

The Contractor (whether the City’s Contractor or the Permittee’s Contractor) shall provide all support necessary to safely perform QC and QA testing and sampling (i.e., shoring for

testing, trench, backfill, backhoes, motor graders, loaders, etc. to facilitate testing and sampling) at no additional cost to the City.

106.2.2 Quality Control Testing Program Requirements:

The Contractor shall establish, provide, and maintain an effective Quality Control Testing Program (QCTP). The Contractor shall develop his own program or procure the services of a consultant. In either case, the party performing the tests shall be currently certified by the AASHTO Accreditation Plan (AAP) or equivalent for soils, asphalt and concrete or other approved national accreditation services.

All testing shall be under the direction of a Professional Engineer registered in the State of Arizona, knowledgeable in Materials Testing. All test reports and forms shall be stamped by the Engineer.

All personnel performing materials sampling, collection and/or testing shall be proficient in their assigned duties and possess certification(s) commensurate with their position and responsibilities. The minimum certification(s) for each technician shall be Arizona Technical Testing Institute (ATTI), American Concrete Institute (ACI), or other nationally recognized program applicable to the project and approved by the City. All personnel performing field testing or sampling shall carry copies of their current certifications with them in the field and shall produce them upon request from the City Inspector. Failure to produce acceptable documentation of proper certification by either field personnel or the laboratory may be grounds for the City to reject testing, sampling staffing done by that entity.

Prior to the start of any construction activities in existing or proposed City rights-of-way and easements, the Contractor shall submit to the City a schedule of the proposed testing and the name of the laboratory that will perform the Work, along with appropriate certifications required herein. If the proposed schedule, laboratory or personnel are deficient, the City will notify the Contractor and Work may not proceed until the deficiency is corrected.

At any point during the project, if the City determines that the QC activities do not comply with the requirements set forth herein, the City may Order the Contractor:

- To replace ineffective or unqualified quality control personnel.
- To stop work operations until appropriate corrective action is taken.

106.2.3 Additional Written QCTP Document Required for City of Mesa Projects:

The additional requirements of this subsection (106.2.3) apply only to projects where the City is the Contracting Agency. For such projects, the Contractor shall prepare a written QCTP and shall submit it to the City as a required submittal. The Contractor shall not begin Work until the QCTP has been reviewed and accepted by the City. Resumes of all personnel that will be associated directly or indirectly with the QCTP shall be included in along with all applicable Laboratory certifications for the QCTP. The written QCTP shall include, but not be limited to, on-site/field and laboratory testing of all material delivered to the site and any existing materials or conditions pertinent to the project. The written QCTP shall include a description of the required field and construction materials laboratory tests, including required frequencies that meet the minimums established herein. The responsibilities of the engineer, project manager, supervisory personnel and each technician assigned to this project shall be included in the written QCTP. Substitutions or replacement of personnel shall require prior written approval by the City.

106.2.4 Reporting Requirements (all projects):

The Contractor shall establish a system acceptable to the City to record and report all material test results.

The QC testing shall be submitted on city template as detailed in the following table:

Concrete Sample Sheet
Native Report Sheet
Mortar Sample Sheet
Marshall Report Sheet
Grout Sample Sheet
Gyratory Report Sheet
Density Report
Core Reports

The Contractor shall submit test results to the City as soon as they are available (daily) by emailing them to the City Inspector at his/her official City email address and also emailing them to mat.lab@mesaaz.gov.

The Contractor shall also submit a weekly report to the City summarizing the testing and construction activities completed by emailing the report to the email addresses noted above. All weekly reports shall be submitted simultaneously to the Contractor, Permittee (if applicable) and City. The report shall include individual summary sheets for each utility line, structure and portion of the pavement section. Cores shall be numbered sequentially throughout the Project. Re-cores shall reference the original core by number and will contain the averaged values for thickness and density. Total pavement thickness shall be reported. Vertical location of tests for underground utilities shall indicate the depth of the excavation at the location of the test (i.e., cut to flow line [if applicable], depth to bottom or top of pipe, etc.) Density tests shall be numbered sequentially. The City will maintain a copy of the test results and weekly reports in the City's electronic files.

In addition to providing electronic copies of materials testing at intervals as cited above, the Contractor or Permittee shall provide the City with an electronic summary the test results showing the results of all of the testing completed for the permit or project. The format shall be indexed PDF. This shall be provided to the City prior to the request for Final Inspection. The Final Inspection will not be scheduled until such bound report has been received and verified by the City Inspector. The following information shall be included in the bound packets:

1. A cover letter shall be included that states that it is the registrant's opinion that the material testing has been performed in accordance with the City's latest minimum schedule of testing, that the materials were found to be in conformance with the applicable specifications, and that the tests were performed in accordance with the applicable ASTM and AASHTO procedures. The letter or the report as a whole shall bear the registrant's seal.
2. All pages shall be sequentially numbered, and a table of contents shall be provided.
3. Test results completed to-date for the project shall be included in the report, reporting at least the minimum amount of information for each test as set forth in this section.

106.2.5 Required Minimum QC Testing Frequencies:

Although minimum testing frequencies are specified herein, the Contractor and Permittee (if applicable) shall bear full responsibility for the quality of the materials and installation and may elect to perform additional testing beyond the requirements set forth herein to ensure compliance.

The following table shall be used to determine the minimum frequency and types of tests that are required under the Contractor's QCTP:

Table 1: QC and QA Testing Frequency for City and New Development

TEST	METHOD (AASHTO UNLESS OTHERWISE NOTED) CURRENT VERSION IN USE	MINIMUM REQUIRED QC FREQUENCY	MINIMUM REQUIRED QA FREQUENCY
STREET SUBGRADE			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 250 linear feet per traffic lane or portion thereof per day (notes 1 & 4)	1 per 1000 linear feet per traffic lane
CURB & GUTTER SUBGRADE OR SIDEWALK SUBGRADE			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 250 linear feet or portion thereof per day (notes 1 & 4)	1 per 1000 linear feet
STRUCTURE FOUNDATION – SUBGRADE (if required)			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 125 square feet Or 1 per isolated footer location (notes 1 & 4)	1 per 250 square feet
STRUCTURAL BACKFILL			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 1,000 cubic feet or per 2-feet of lift thickness, whichever is greater (notes 1 & 4)	1 per 4,000 cubic feet or per 2-feet of lift thickness, whichever is greater (notes 1 & 4)
EMBANKMENT			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 250 linear feet per traffic lane per 12 inches of depth or portion thereof (notes 1 & 4)	1 per 1000 linear feet per traffic lane per 12 inches of depth or portion thereof (notes 1 & 4)
TRENCH BACKFILL			
Sieve Analysis	T311	1 per soil type	1 per soil type
Moisture Density Relationship	T99 & T224	1 per soil type	1 per soil type
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 250 linear feet per 2 feet of depth or portion thereof (notes 1, 3, & 4)	1 per 1000 linear feet per 2 feet of depth or portion thereof (notes 1, 3, & 4)

TEST	METHOD (AASHTO UNLESS OTHERWISE NOTED) CURRENT VERSION IN USE	MINIMUM REQUIRED QC FREQUENCY	MINIMUM REQUIRED QA FREQUENCY
AGGREGATE BASE COURSE			
Sieve Analysis	T27	1 per source per each day's delivery	1 per source per each day's delivery
Plasticity Index	T146, T89 & T90	1 per source per each day's delivery	1 per source per each day's delivery
Moisture Density Relationship	T 99 & T224	1 per source	1 per source
In-Place Density	T191(sandcone) or T310 (nuke) (note 8)	1 per 500 linear feet per traffic lane (notes 1 & 4)	1 per 2000 linear feet per traffic lane (notes 1 & 4)
RESIDENTIAL, ARTERIAL, & RUBBERIZED ASPHALTIC CONCRETE			
Ignition Furnace Binder Calibration	T308	1 per mix design per project (note 6)	1 per mix design. (note 6)
GYRATORY ASPHALTIC CONCRETE			
Asphalt Binder Content	T308	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Percent <i>In-Lab</i> Air Voids @ Ndes	T269	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Theoretical Max Specific Gravity (Rice)	T209	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Gyratory Density	T312	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Sieve Analysis	T30	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Percent <i>In-Place</i> Air Voids	T269 or ASTM D 7227	1 per 1,000 linear feet per paving pass or 1 per each day's paving, whichever is greater (notes 5 & 7)	QC to provide 1 companion core per every 4 cores to the COM.
MARSHALL ASPHALTIC CONCRETE			
Asphalt Binder Content	T308	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Percent <i>In-Lab</i> Air Voids	T269	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Theoretical Max Specific Gravity (Rice)	T209	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Compaction of Marshall Specimens	T245	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Sieve Analysis	T30	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Bulk Specific Gravity of Marshall Specimens	T166	1 per each day's paving or 500 tons whichever is greater	1 per each day's paving or 500 tons whichever is greater
Percent <i>In-Place</i> Air Voids	T269 or ASTM D 7227	1 per 1,000 linear feet per paving pass or 1 per each day's paving, whichever is greater (notes 5 & 7)	QC to provide 1 companion core per every 4 cores to the COM.

TEST	METHOD (AASHTO UNLESS OTHERWISE NOTED) CURRENT VERSION IN USE	MINIMUM REQUIRED QC FREQUENCY	MINIMUM REQUIRED QA FREQUENCY
PORTLAND CEMENT CONCRETE			
Sampling of Concrete	T141	1 per 50 cubic yards or per placement, whichever is greater	1 per 50 cubic yards or per placement, whichever is greater
Temperature of Concrete	T309	1 per 50 cubic yards or per placement, whichever is greater	1 per 50 cubic yards or per placement, whichever is greater
Slump	T119	1 per 50 cubic yards or per placement, whichever is greater	1 per 50 cubic yards or per placement, whichever is greater
Making & Curing Concrete Specimens	T23	1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater	1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater
Compressive Strength of Concrete Specimens	T22	1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater	1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater
Percent Entrained Air Content	T152, T196, or T199	Per COM Inspector Discretion	Per COM Inspector Discretion
GROUT			
Sampling & Testing Grout	ASTM C1019	1 per day's construction or 5,000 square feet, whichever is greater	1 per day's construction or 5,000 square feet, whichever is greater
MORTAR			
Strength of Molded Masonry Cylinders & Cubes	ASTM C780 ANNEX A6	1 per day's construction or 5,000 square feet, whichever is greater	1 per day's construction or 5,000 square feet, whichever is greater
DECOMPOSED GRANITE			
Sieve Analysis	T27	1 per soil type or source	
PLAYGROUND SAND			
Sieve Analysis	T27	1 per soil type or source	

Note 1: Minimum testing frequency is based on passing tests only. Initial tests and retests that indicate noncompliance shall not be counted. The technician(s) performing the tests shall be present during the placement, moisturizing and compaction of the material. The technician(s) shall provide a written description of the Contractor's activities in the compaction of the material (e.g., depth of lift, number of passes of the compactor, type of equipment used, how the material is reacting to compaction (pumping), level or sloped surface, how the fill material is tying in with previous material, etc.). The description will be included in the daily report.

Note 2: Not Used.

Note 3: In-Place Density testing shall start at spring line for pipes 48 inches in diameter or less. Pipe with a diameter greater than 48 inches shall be tested in 2-foot increments from bottom of pipe. Laterals will be tested independently of the main line.

Note 4: The testing frequency stated will be the minimum required when continuous observation is performed by the Contractor's Quality Control Personnel. When Quality Control Personnel do not directly observe the construction process, the engineer has the option to stop Work and/or adjust the testing frequency. Any adjustments, which result in an increase in the testing frequency and/or lost time, shall be at no additional cost to the City.

Note 5: The Contractor will provide companion cored specimens at a ratio of 1:4 (one for the City to four for the Contractor), subject to a minimum of one companion core for every day of paving. The City may witness the coring and reserves the option to obtain additional specimens as it deems necessary. Re-coring for deficient thickness or compaction will be performed no later than two Working days after the original specimens are obtained. All cores are to be consecutively numbered without any duplication. Contractor shall coordinate with City inspector to mark out core location(s).

Note 6: Correction factors shall be established in strict accordance with AASHTO T308, Annex A.

Note 7: Cores shall be obtained according to MAG 321.14 and patched according to MAG 321.14 & MAG 708.

Note 8: For in-place density tests, the ratio of nuclear density tests to sand cone tests shall not exceed 10:1, unless otherwise approved by the City.

Note 9. All failing QC test results shall be recorded and reported to the City.

Note 10. Not Used.

Note 11. At City Inspectors' discretion QA frequency quantities can be modified.

106.2.6 Failing Test Results and Referee Lab:

The respective lab performing QC or QA testing shall notify the City Inspector, the Contractor, and the Permittee (if applicable) immediately if the lab determines that the material being tested is not in conformance with the required specifications. The Contractor or Permittee shall take corrective action and the materials shall be retested by the same testing laboratory that performed the tests that indicated noncompliance.

If the QA test results are not in agreement with the QC test results, the Contractor shall have the option to retain a third-party laboratory for referee tests. The Contractor shall propose third-party laboratory they would like to use for the referee tests for City approval. The third-party laboratory shall meet the same requirements as the laboratory performing the QC testing. The results of the third party shall be binding. All cost incurred by the referee testing shall be the Contractor's expense. If the Contractor elects not to retain a third party for referee testing, the City test results will prevail.

If QA and QC test results are in agreement, referee tests are not permitted or needed.

D. Subsection 107.11 – Modify the subsection to add the following:

Underground Damage Prevention: For all projects that include underground excavation as defined per ARS §40-361.21 Definition 8 or other work that could impact City utilities, the Contractor/Permittee and any Subcontractor working on the project is required to complete the City of Mesa's Energy Resources online Damage Prevention & Safety training, before beginning work. The Contractor/Permittee and Subcontractor can register and complete online training at <https://my.mesaaz.gov/energycompliance>. For assistance with online registration and testing, contact the Damage Prevention Office at 480-644-4552.

The Damage Prevention Training presentation includes background training on the various City utility systems, current City programs for locating and protecting existing utilities, a review of hazardous conditions specific to buried utility lines such as natural gas, electric, water, sewer, telecommunications, etc., and provides a forum for establishing lines of communication between appropriate City and Contractor staff before beginning work on the project.

Any Contractor/Permittee or Subcontractor employee performing excavation activities shall attend this presentation and complete any required follow-up activities.

Following completion of the presentation, the Contractor/Permittee shall provide a letter certifying compliance with this Section to the City's Engineering Inspector. To be accepted by the City, the Contractor Certification Letter must include the date(s) of the training and the names of field personnel and Subcontractors who completed the training and must specifically reference the Project Name and City Project Number or Permit Number as applicable.

Nothing in this Section or the City's Damage Prevention & Safety training shall be construed as replacing or superseding OSHA Regulations, Arizona State Law, the City's established policy for Contract Construction Safety, or other applicable regulations. The Contractor/Permittee shall maintain and have sole responsibility for safety on the job site.

E. Subsection 108.1 – Add the following subsection:

(C) Start of Work

Work shall not start until the contract has been executed by both the contractor and the City.

- F. Subsection 109.7 (A) – Replace the text of the first paragraph of the existing subsection with the following:

Contractors are advised that the City will make monthly progress payments during the course of the contract based on the Contractor's Application and Certificate of Payment together with a detailed estimate of work completed, which shall be in the form of the American Institute of Architect's (AIA's) forms G702 and G703 or City of Mesa Application for Payment form. The detailed estimate of work completed shall include all items from the bid schedule and/or schedule of values as applicable and shall include values for work completed previous to application, current work completed, previously stored materials, new stored materials, value of work completed, retention, value of work completed less retention, and amount due this request. The monthly payment cycle will start with the date of the Notice to Proceed. The City may process payments more frequently if requested by the Contractor and agreed to by the City.

The payment process functions as follows: prior to the monthly payment cycle date, the Contractor and the City's Construction Inspector shall together prepare a list of agreed upon quantities for each item of work completed and accepted during the progress payment period. The Contractor shall then submit the Application and Certificate of Payment and an invoice with the detailed estimate of work completed based on the list of agreed upon quantities to the City's Inspector for signature. The invoice shall reflect the Contractor's company name, billing information, City of Mesa project number, Project Manager information and the total amount due at time of billing. Upon receipt of these documents, the Inspector will obtain the necessary approvals and forward the Application to the appropriate City staff for payment processing. The progress payment will be processed for payment within fourteen (14) days (except final payments) after the Application for Payment has been certified and approved by the Engineer in accordance with A.R.S. §34-221.

For the purpose of definition, the City's Construction Inspectors are the "owner's designated recipients" of all pay requests. If the Contractor has any questions about the payment process, please call the City's Engineering Contract Administration. Contact information will be provided at the pre-construction meeting. All other questions shall be directed to the City Inspector assigned to the contract.

When the contract nears completion and the contract proceeds approach the limit of funds approved, the City of Mesa shall pay up to the aggregate amount approved by initial award and as revised by executed change orders, less appropriate retention, if applicable. When the final adjusting/balancing change order is written and approved, the balance of contract proceeds, if any, will be released to the Contractor. This procedure is in no way intended to delay or reduce the Contractor's right to final payment, as set forth in A.R.S. §34-221.

Note: The remaining paragraphs of the existing subsection shall remain as written.

- G. Subsection 109.8 – Add a new subsection 109.8.4, to read as follows:

109.8.4 Delays and Damages Policy:

The Contractor is advised that the City of Mesa has established a written Policy Statement for Calculating Delays and Damages. The latest revision of this Policy, dated February 27, 2013, is herewith incorporated by reference and made a part hereof. Copies of the Policy Statement may be obtained on the following City of Mesa web link: <https://www.mesaaz.gov/business/engineering/engineering-contracts> under General Conditions- Appendices (Appendix 2).

If progress in the work covered by the contract is delayed, the provisions of the Policy Statement shall come into effect.

Neither this section nor the Policy Statement shall be construed to void any provisions of this contract which require notice of delays; provides for arbitration or other procedures for settlement, or provides for liquidated damages.

- H. Subsection 301.3 – Revise Subparagraph (B) compaction requirements to read as follows and add general note to all compaction requirements:

(B) Detached sidewalks not subject to vehicular traffic 90 Percent

All compaction above shall be performed within 2 percent of the optimum moisture content.

- I. Subsection 306.1 – Add the following text to the end of this subsection:

Unless otherwise approved in writing in advance by the City Engineer, geogrid reinforcement of the subgrade shall not be used to reduce (or justify a reduction in) the pavement or aggregate base course thickness or cross-section.

- J. Subsection 310.3 – Revise subparagraph (C) to reflect 90%

- K. Subsection 310.4 – Revise the Corrective Measures in Table 310-1, Type IV and Type V to add the following:

NOTE: All lime treated ABC shall have plasticity index of Non-Plastic (NP) per City of Mesa Policy for Testing of Lime-Modified Aggregate Base to Determine Plasticity Index, latest version (available at <http://mesaaz.gov/business/engineering/policies-forms>.)

- L. Section 321 – Remove any references to Warm Mix Asphalt (WMA) Technologies.

- M. Subsection 321.1 – Add the following to the subsection:

All work shall be in accordance with the project specifications, as shown on the approved plans or as directed in writing by the Engineer.

- N. Subsection 321.5 – Delete the 1st paragraph and substitute the following:

The mix design shall be in accordance with the current East Valley Asphalt Committee criteria and be included on the current approved asphalt mixes list.

- O. Subsection 321.5 – Delete the 3rd paragraph and substitute the following:

If the contractor elects to change its source of material, the contractor shall furnish the Engineer with a new mix design that is in accordance the East Valley Asphalt Committee criteria and is included on the current approved asphalt mixes list.

- P. Subsection 321.8.4 – Modify the subsection to add the following:

Cold rolling of asphalt pavement (defined as compacting the pavement when its temperature has dropped below 185 degrees Fahrenheit) is prohibited.

- Q. Subsection 321.8.6 – Delete the 2nd paragraph and substitute the following:

Asphalt concrete mix aggregate gradation and percentage of asphalt binder shall be in accordance with Section 710 and the East Valley Asphalt Committee criteria.

- R. Subsection 321.10.2 – Delete reference to “fan drying per AASHTO T209 Section 15”.

- S. Subsection 321.10.2 – Add the following to paragraph 5 after TABLE 321-4:

Should the pavement exhibit visible signs of instability (including but not limited to: bleeding, raveling, rutting, shoving, cracking, etc.), an area the full width of paving pass(es) and no less than one city block or 660 feet in length, encompassing the limits of the affected pavement, shall be removed. The Contractor shall remove any areas of instability, regardless of binder content, as directed by the Engineer, and replace the affected material with new material meeting the specification requirements for the mix type involved. Some signs of instability may appear over time under traffic. Removal and replacement of such pavement shall be done if observed during the project and any time within the one (1) year warranty until the instability has been corrected, at no additional

cost to the City. The criteria for identifying instability of the mix due to displacement (rutting or shoving) shall be 3/8-inch movement or more of the asphalt measured with a 10-foot straight edge in any direction.

- T. Subsection 321.10.4 – Add the following after TABLE 321-6:

Asphalt pavement thickness deficiency greater than 0.50 inches shall require an 8-foot edge mill and the placement of a minimum of 1.5-inch of additional asphalt overlay at no cost to the Owner.

- U. Subsection 321.10.6 – Delete this section in its entirety.

- V. Subsection 321.10.11 – Delete this section in its entirety.

- W. Subsection 326.1 – Add the following to the subsection:

All work shall be in accordance with the project specifications, as shown on the approved plans or as directed in writing by the Engineer.

- X. Subsection 326.5 – Delete the first paragraph and substitute with the following:

The mix design shall be in accordance with the current East Valley Asphalt Committee criteria and be included on the current approved asphalt mixes list.

- Y. Subsection 326.5 – Delete the 3rd paragraph and substitute the following:

If the Contractor elects to change its source of material, the Contractor shall furnish the Engineer with a new mix design that is in accordance the East Valley Asphalt Committee criteria and is included on the current approved asphalt mixes list.

- Z. Subsection 326.8.4 – Modify the subsection to add the following:

Cold rolling of asphalt pavement (defined as compacting the pavement when its temperature has dropped below 185 degrees Fahrenheit) is prohibited.

- AA. Subsection 326.8.6 – Delete the 2nd paragraph and substitute the following:

Asphalt concrete mix aggregate gradation and percentage of asphalt binder shall be in accordance with Section 710 and the East Valley Asphalt Committee criteria.

- BB. Subsection 326.10.1 – Modify the subsection to add the following paragraph:

For all Modified Asphalt mixes, asphalt pavement acceptance criteria and penalties are defined per the East Valley Asphalt Committee's Hot Mix Asphalt Criteria.

- CC. Subsection 326.10.2 – In the 1st paragraph, delete reference to “fan drying per AASHTO T209 Section 15”.

- DD. Subsection 326.10.2 – Delete the 4th paragraph in its entirety.

- EE. Subsection 326.10.2 – Delete Table 326-4 and substitute EVAC Table 326-4 for Asphalt Binder Content Acceptance and Penalties

- FF. Subsection 326.10.2 – Delete the 5th Paragraph in its entirety.

- GG. Subsection 326.10.2 – Delete Table 326-5 in its entirety.

HH. Subsection 326.10.2 – Add the following to paragraph 5 after TABLE 326-4:

Should the pavement exhibit visible signs of instability (including but not limited to: bleeding, raveling, rutting, shoving, cracking, etc.), an area the full width of paving pass(es) and no less than one city block or 660 feet in length, encompassing the limits of the affected pavement, shall be removed. The Contractor shall remove any areas of instability, regardless of binder content, as directed by the Engineer, and replace the affected material with new material meeting the specification requirements for the mix type involved. Some signs of instability may appear over time under traffic. Removal and replacement of such pavement shall be done if observed during the project and any time within the one (1) year warranty until the instability has been corrected, at no additional cost to the City. The criteria for identifying instability of the mix due to displacement (rutting or shoving) shall be 3/8-inch movement or more of the asphalt measured with a 10-foot straight edge in any direction.

II. Subsection 326.10.4 – Add the following after TABLE 326-6:

Asphalt pavement thickness deficiency greater than 0.50 inches shall require an 8-foot edge mill and the placement of a minimum of 1.5-inch of additional asphalt overlay at no cost to the Owner.

JJ. Subsection 326.10.5.2 – Delete the 6th Paragraph in its entirety.

KK. Subsection 326.10.5.2 – Delete Table 326-8 and replace with EVAC Table 326-8.1 and Table 326-8.2.

LL. Subsection 326.10.6 – Delete this section in its entirety.

MM. Subsection 326.10.11 – Delete this section in its entirety.

NN. Subsection 340.3.9 – Modify the subsection to add the following:

Vertical displacement across joints shall not exceed 1/8 inch.

OO. Subsection 340.3.10 – Add the following immediately after the first paragraph:

Concrete work is considered deficient if any of the following conditions exist:

- (A) Misalignment, heaving or settlement that results in a discontinuity in excess of 1/8-inch over 5 feet.
- (B) Visible cracks, not contained within control joints that have opened to 1/32-inch or more.
- (C) Cracking, spalling or scaling of the concrete surface.
- (D) Gouges that expose aggregate.
- (E) Graffiti
- (F) Imprints and/or depressions causing ponding or an inconsistency in the specified finish of the concrete.
- (G) Broken or chipped edges.
- (H) Structural cracking, durability cracking, or alkali-silica reaction (ASR) cracking
- (I) Visible cracking in concrete used for architectural finishes and that negatively impacts the aesthetics, as determined by the Engineer.

PP. Subsection 340.3.10 – Replace the second paragraph with the following:

Concrete work that does not comply with tolerance requirements of this section and Section 340.3.9 shall be removed and replaced to the nearest joint. Remove and replace gutters that exceed the ponding tolerance. Concrete work that exhibits these deficiencies (except graffiti) within the one (1) year warranty period shall also be

subject to removal and replacement, to the nearest joint, at no cost to the owner. Grinding is not allowed in lieu of replacement. Any use of grinding to correct minor deficiencies shall be submitted and approved by the Engineer prior to use.

QQ. Subsection 360.1 – Add the following immediately following the 3rd paragraph:

Requirements for and guidance on the permitting, placement, spacing, construction, installation and maintenance of Small Wireless Facilities (SWF), Utility Poles, Monopoles and Wireless Support Structures in Mesa’s right-of-way are provided on the City of Mesa Right of Way Management Group web page: <https://www.mesaaz.gov/business/right-of-way-management-group>.

RR. Subsection 401.3 – Add a new sentence to read as follows:

Contractor shall use off-duty City of Mesa police officers as required by the City of Mesa Temporary Traffic Control Manual for work within the City limits.

SS. Subsection 401.4 – Add the following after the first paragraph:

In addition to other traffic control measures that may be required, existing pavement markings within and adjacent to the work zone shall also be maintained in their pre-construction condition or better. This includes refreshing or restoring pavement markings that have been degraded or removed by construction activities.

TT. Section 402 – Add new Section to read as follows:

SECTION 402

PAVEMENT MARKING

402.1 DESCRIPTION:

This work shall consist of the installation or obliteration of pavement markings within the public right-of-way. Pavement markings and removals include:

(A) Mainline (Longitudinal) Pavement Markings: Markings or striping which are typically installed or removed at a rapid speed using a mainline truck that has a driver and operator(s). The types of markings to be installed or removed will include lane lines, center lines, edge lines, gore lines and storage lines.

All Mainline waterborne paint installation will be fifteen (15) wet mils with eight (8) pounds per gallon of glass bead. All Mainline thermoplastic pavement lines will be installed at sixty (60) mils with ten (10) pounds of glass beads per one hundred (100) square feet.

(B) Shortline (Transverse) Pavement Markings: Markings or striping that are typically installed or removed using a walk behind hand cart, a handheld sprayer, or torched onto the pavement. The types of markings installed or removed include crosswalks, intersection guidelines, stop bars, bike markings, legends, arrows, raised curb painting and railroad markings. Pavement letters or numbers will include up to four (4) letters or numbers per unit (ONLY, 202N, etc.).

All Shortline thermoplastic pavement lines or markings will be installed at ninety (90) mils with ten (10) pounds of glass beads per one hundred (100) square feet.

Contractor shall refer to the current edition of the ADOT Standard Specifications for Road and Bridge Construction for material properties.

402.2 PAINT MARKING MATERIALS:

The following materials are approved for use for Mainline and Shortline markings and reflect the minimum standard to be used:

- Paint: EF series High Build Fast Dry Waterborne 985221 (White) 985222 (Yellow) or approved equal per ADOT Approved Products List Section 708 Waterborne Pavement Markings.
- Thermoplastic (extruded): Swarco Alkyd Thermoplastic (white and yellow leadfree) or approved equal per ADOT Approved Products List Section 704 Thermoplastic Pavement Marking.
- Glass Beads: Type 1, ADOT standard specification section 708 glass bead
- Preformed Thermoplastic: Ennis-Flint PreMark products or approved equal per ADOT Approved Products List Section 705 Preformed Pavement Marking.

All applied materials, thermoplastic, paint, preformed markings and glass beads will remain in the original sealed containers, where feasible, that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's name and directions of use, all of which will be plainly legible at the time of use. Any package not marked accordingly will be documented by the Contractor. Prior to commencing work, Contractor will provide documentation to a City Representative on material supplied and brand to be used for that days' work. City Representative will monitor material usage so that application rates correspond to the work performed. Legal disposal of all paint and material containers is the responsibility of the Contractor.

402.3 CONSTRUCTION:

402.3.1 Pavement Marking Layout:

The contractor shall set layout points no more than 50 feet apart along the lines to be striped, including at all transition points, beginnings, ends, breaks, and changes in the striping. The layout shall be approved by the City of Mesa prior to pavement marking installation. Installation shall be coordinated with the City of Mesa inspector to allow observation by the Transportation Department. Regular working days for the Transportation Department are Monday through Thursday.

402.3.2 Painting Equipment:

The contractor shall utilize an over-the-road, truck-mounted, high-pressure, airless spray mainline striping machine. The unit shall operate at speeds of up to twelve (12) miles per hour (mph), applying lines in two (2) colors (white or yellow) at fifteen (15) wet millimeters (mils) and shall be capable of applying clear cut lines of the width specified. The machine shall be equipped with a mechanical device capable of placing reflectorized lines with a glass bead dispenser which is capable of placing the glass beads into the paint as the paint is applied to the pavement. Truck drawn or walk behind equipment is not acceptable.

402.3.3 Pavement Marking Obliteration:

Following the obliteration of the pavement markings, the contractor shall apply 2 coats of Polymer Modified Masterseal (Seal) or equivalent (as approved by the Pavement Management Supervisor in the City of Mesa Transportation Department) to the obliterated portion of the roadway in accordance with material supplier specifications for application. The Seal will be applied at a width equal to 3 times the width of the pavement marking being obliterated. For example, a 4-inch stripe will have a 12-inch wide strip of Seal applied in the obliterated area, centered on the obliterated line. However, if the obliteration line exceeds the stripe width, the Seal must be applied at a width equal to 3 times the width of the obliteration line. When multiple obliteration lines are in proximity to each other, the Seal shall be applied to an expanded continuous area to include the area encompassing the obliteration area, as described above, and the area between the obliteration lines, as directed by the Engineer or City Inspector. For example, when a stop bar and crosswalk lines need to be obliterated, the entire area, from the stop bar to the inside crosswalk line would require the Seal. For pavement marking symbols, such as arrows or text, the Seal must cover the entire width and height of the pavement marking symbol, creating a square or rectangular treated area.

402.4 PAYMENT:

Payment will be made at the contract unit price and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work, complete in place, including disposal of surplus material as shown on the plans or as directed by the Engineer or City Inspector.

UU. Subsection 601.4.2 – At the end of paragraph 2, add a new sentence to read as follows:

Reclaimed Concrete Material, Reclaimed Asphalt Pavement, and cement or lime treated base shall not be used.

VV. Subsection 601.4.3 – At the end of paragraph 2, add the following:

Material shall be placed in lifts the height of which shall not exceed that which can be effectively compacted depending on the type of material, type of equipment, and methods used. Reclaimed Concrete Material, Reclaimed Asphalt Pavement, and cement or lime treated base shall not be used. Where CLSM is approved, material shall not come into contact with any metal surface, services, air releases, etc. The metal surface shall be protected with polyethylene wrap per Section 610.6, or other wrap as identified in Section 604.3 and Section 610.6. Native material shall not be used with Ductile Iron Pipe.

WW. Subsection 601.4.4 – At the end of paragraph 2, add a new sentence to read as follows:

Reclaimed Concrete Material, Reclaimed Asphalt Pavement, and cement or lime treated base shall not be used. Where CLSM is approved, material shall not come into contact with any metal surface, services, air releases, etc. the metal surface shall be protected with polyethylene wrap per Section 610.6, or other wrap as identified in Section 604.3 and Section 610.6. Native material shall not be used with Ductile Iron Pipe.

XX. Subsection 601.4.7 – Replace the Subsection in its entirety with the following:

Water Consolidation is not acceptable. Mechanical compaction is the only acceptable consolidation method. No exception shall be made for construction within new developments.

Drop hammer equipment similar to that used for breaking pavement or driving piles shall not be used for compacting backfill at any stage of the backfill operations.

YY. Subsection 601.7 – At the end of the paragraph, add the following:

Where Controlled Low Strength Material (CLSM) backfill is specified on the drawings or required per standard details and specifications, no additional compensation shall be given. CLSM backfill shall be included in the unit price per linear foot.

ZZ. Subsection 604.3 – Modify the sixth paragraph to include “Ductile Iron Pipe” and “any other metal pipe”

AAA. Section 610 – Delete all references to PVC water pipe.

BBB. Subsection 610.3 (A) – Replace the last sentence with the following:

All pipes shall be minimum pressure class 250 psi unless otherwise specified.

CCC. Subsection 610.3 (B) – Replace the section with the following:

Pipes 20- inches diameter and larger shall be:
Ductile Iron Pipe, minimum pressure class 250 psi

DDD. Subsection 610.4.2 – Replace the first sentence with:

Pipe joint deflection shall be limited to three (3) degrees or 67 percent of the manufacturer’s recommended maximum allowable deflection, whichever is less.

EEE. Subsection 610.4.2 – Add the following paragraphs after the first sentence of this section:

The pipe shall be laid accurately to the alignments and grades shown on the plans or established by the Engineer. All adjustment to lines and grade shall be made by scraping

away or filling in under the barrel of the pipe. Hammering on the pipe, dropping the pipe, or shimming under the pipe with rocks, blocks, or foreign material to bring the pipe to grade will not be permitted.

The pipe shall be handled and lowered into the trench by means of belt slings. The number and size of slings shall be adequate to prevent damage to the pipe.

The pipe shall be assembled and joined in accordance with the manufacturer's instructions for the type of joint used. All portions of the joints shall be thoroughly cleaned before the sections of pipe are put together. The position of the rubber gasket shall be checked with a feeler gage at each joint prior to laying the next section.

FFF. Section 610.4.4 – Add the following paragraph after the first paragraph:

Prior to placing each pipe section, the interior shall be cleaned of all foreign matter. Cleaning shall be accomplished by brushing, blowing with compressed air, washing with water, or by any combination of these methods necessary to remove all foreign matter. The pipe shall be laid with a uniform bearing under the full length of the barrel. Normally, the pipe shall be laid with the bell end pointed in the direction of installation. On grades exceeding 10 percent, the pipe shall be laid uphill.

GGG. Section 610.5.5 – Replace the subsection with the following:

Extra Protection:

Water main crossings that require extra protection from sewer mains per MAG Standard Detail 404 shall have extra protection provided as follows:

1. Encasing both the water main and sewer main in at least six (6) inches of concrete for a horizontal distance of not less than ten (10) feet beyond the point of crossing per MAG Standard Detail 404-3; or
2. Constructing, or reconstructing the crossing as follows:
 - a) Water Main:
 - (1) Use only ductile iron pipe with standard pipe lengths centered at the point of crossing requiring extra protection.
 - (2) Pipe joints shall be located a minimum of six (6) feet horizontally from the point of crossing.
 - (3) Restrain pipe joints through the area requiring extra protection per MAG Standard Detail 404-2.
 - b) Sewer Main:
 - (1) Encase the sewer main in at least six (6) inches of concrete for a horizontal distance of not less than ten (10) feet on each side of the point of crossing per MAG Standard Detail 404-3. Alternate extra protection, subject to written approval by the City of Mesa Water Resources Department and Maricopa County Environmental Services Department, may be provided on a case by case basis. Refer to MAG Specification Section 610 for potential options. Options that include either constructing or reconstructing sewer mains with ductile iron pipe are prohibited.

Methods of protection for parallel water and sewer mains requiring extra protection shall be considered on a case by case basis under the direction of the City of Mesa Water Resources Department and Maricopa County Environmental Services Department.

Methods of protection for reclaimed water mains requiring extra protection from sewer mains, or water mains requiring extra protection from reclaimed mains, shall be considered on a case by case basis under the direction of the City of Mesa Water Resources Department and Maricopa County Environmental Services Department.

HHH. Subsection 610.6.1 – Add the following sentence:

All ductile iron pipe and fittings shall be polyethylene wrapped unless approved otherwise by the City.

III. Subsection 610.6.2 – Delete all references to naturally pigmented material.

JJJ. Subsection 610.7 – Add the following paragraph to the end of this section:

Water main air release and vacuum valves shall not be constructed in driveways, sidewalks, pathways, washes or retention/detention areas unless approved in writing by the City.

KKK. Subsection 610.9 – Add the following to the end of the second paragraph:

Touch ups shall utilize the hydrant manufacturer repair kits when applicable. At minimum, a two-part system comprised of an epoxy primer base coat and polyurethane topcoat each meeting the requirements of Section 756 is required. Color shall match the factory color. Surface preparation shall comply with hydrant manufacturer recommendations.

LLL. Subsection 610.9 – Add the following paragraphs to the end of this section:

Fire hydrants shall not be constructed in driveways, sidewalks, pathways, washes or retention/detention areas unless approved in writing by the City.

The approved list of fire hydrants that are allowed by the City of Mesa is available as part of the Water Products List on-line at <https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en>. No exceptions are allowed.

MMM. Subsection 610.10 (A) – Revise as follows:

Include ductile iron per ASTM A536 as an acceptable coupling sleeve material.

NNN. Subsection 610.10 B – Revise subparagraph (B)(1) as follows:

Remove cadmium plating per ASTM B766 as a coating option.

OOO. Subsection 610.10 (B) – Revise subparagraph (B)(1) to add:

Bolts and nuts for water transmission, water production, and water supply facilities shall be per Water Resources Approved Products List.

PPP. Subsection 610.10 (D) – Add the following paragraphs to the end of the subsection:

Insulating gaskets (flange isolation kits) shall be installed at flanged joints where dissimilar metals are joined, including, but not limited to the following:

- Carbon Steel to Ductile Iron
- Carbon Steel to Cast Iron
- Carbon Steel to Stainless Steel
- Stainless Steel to Ductile Iron
- Stainless Steel to Cast Iron
- Concrete Cylinder Pipe to Ductile Iron
- Concrete Cylinder Pipe to Cast Iron
- Concrete Cylinder Pipe to Stainless Steel
- Concrete Cylinder Pipe to Carbon Steel

This requirement applies to flanged pipe, fittings, valves, tapping sleeve flanges, and other appurtenances regardless of exterior coating type. Additional flange isolation kits may be required as shown in the project drawings or specifications.

QQQ. Subsection 610.11 - Replace the fifth paragraph with the following:

When shutdown of an existing water main is necessary in order to connect to the new lines or for other construction activities, the Contractor shall make application and pay the required charges to the City. The application shall be coordinated with the City inspector and reviewed and approved by the City Water Resources Department. The application shall consist of the following:

1. Identification of Primary and Secondary Valves required to isolate the system. Sufficient restraint of existing system is not guaranteed, and the primary system shutdown may need to extend to the secondary valve locations accordingly.
2. Fire Hydrant, or other appurtenance, to be used to depressurize the main.
3. List of customers affected by the shutdowns. Include customers affected by primary shutdown and separately customers affected by secondary shutdown. Note any critical customers. Water supply to some customers, such as medical facilities, cannot be shut off at any time. Provisions to furnish a continuous supply of water so such establishments will be required.
4. Shutdown schedule and duration. Schedule shall include any required cure time for concrete thrust blocks prior to pressurization.
5. Method to protect existing system from contamination or backsurge. Any contamination of the existing system will require disinfection and bacteriological testing of the entire shutdown area.
6. Method for disinfection at time of connection.
7. Method for refilling drained pipe sections and purging trapped air. Opening of an existing system valve is not an approved method for refilling.

A conference between the Contractor's representative, Engineering Inspection, and Water Distribution personnel shall be held prior to the proposed shutdown. If a test shutdown is desired by the contractor, it must be requested in advance as part of the application process. If necessary to minimize inconvenience to customers, or due to operational requirements of a system near well sites, pump stations, or other critical system features, shutdowns may be required to be scheduled during other than normal working hours. After application approval, it shall be the Contractor's responsibility to notify all customers in advance that the water will be turned off. When possible, customers shall be notified 24 hours in advance and in no case, except in emergency, shall notification be less than 30 minutes. Notification shall be in writing, giving the reason for the shutdown and the time and duration the water service will be shut off. Applications are required to be approved at least five (5) business days in advance of the requested shutdown.

RRR. Subsection 610.11 – Add the following paragraph to the end of this section:

Fittings cut into ACP within six feet of another fitting or joint will require that existing section of pipe to be removed and replaced with ductile iron pipe.

SSS. Subsection 610.13 – Add the following paragraph:

Water meters shall not be constructed in roadways, driveways, sidewalks, washes or retention/detention areas unless approved by the City.

If water meter boxes may be subjected to vehicular traffic the box and lid shall meet AASHTO H20 loading requirements.

TTT. Subsection 610.13 – Add the following paragraphs:

Meter boxes are prohibited from being installed in roadways, driveways, washes, or retention/detention areas. When the existing meter is located in such areas, a reasonable effort shall be made to place the new service line and meter box so that the proposed location is compliant with Engineering & Design Standards Section 317.18, or as directed by the City Inspector. Approval in writing by Water Resources and the City Inspector is required, if after reasonable efforts, a meter box is required to be placed in traffic environments.

Meter boxes are permitted adjacent to or within storm water retention basins provided the meter box is not subject to storm water inundation and installed flat and level. Refer to the Engineering & Design Standards Section 317.14.6 for additional requirements.

UUU. Subsection 610.13(A) – Replace (A) with the following:

(A) Extension of existing service lines is prohibited, and service lines and meter boxes shall be abandoned or removed per City of Mesa requirements. A new parallel service line shall be run to a new meter box placed adjacent to the existing, and after testing and disinfection is complete, the existing meter will be moved to the new meter box.

VVV. Subsection 610.14 – Add the following paragraph:

All pipelines shall be left clean. Before filling any section of pipeline with water, it shall be cleaned of all dirt and debris. The Engineer shall inspect the interior of the pipeline during installation. The Contractor shall furnish the necessary lights and equipment for making the inspection.

WWW. Subsection 610.16 – Add the following paragraph:

(I) Corrosion Monitoring Test Stations: Measurement and payment for corrosion monitoring test stations shall be per each test station as furnished and installed per the plans, including all excavation, backfill, wiring, field testing, valve box and cover, and all appurtenant work. A final commissioning report shall be submitted and approved prior to final acceptance.

XXX. Add the following new Subsection:

610.17 Corrosion Monitoring Test Stations:

Corrosion test stations are required at all insulated flanged joints on water mains with diameters of 20" or greater and shall be designed and installed per the direction of a NACE- certified corrosion professional. Additional corrosion test stations may be required as shown on the project drawings and specifications.

Corrosion test station lids shall include the text "CTS Water" in raised lettering cast into or welded onto the lid. Other types of permanent identification may be considered as approved in writing by the City of Mesa Water Resources Department.

Prior to acceptance of the water main by the City, a commissioning report shall be prepared by a NACE-certified Cathodic Protection Specialist and provided to the City of Mesa Water Resources Department demonstrating satisfactory installation and test results of corrosion monitoring and protection systems as applicable.

YYY. Subsection 611.1 – Description – Add the following to the end of the paragraph 2:

and AWWA C651, latest edition.

ZZZ. Subsection 611.1 – Description- Modify paragraph 4 from "72 hours" to "3 business days"

AAAA. Subsection 611.1 – Description – Add the following sentence to the end of this subsection:

Water Main testing and sampling procedures and requirements shall conform to the Sampling Procedure for New Fire Lines and Water Mains SOP, latest revision, available online at <https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications>.

BBBB. Subsection 611.2.1 (C) – Change “48-hour” to “2 business days”

CCCC. Subsection 611.3.2 - Disinfection - Replace first and second paragraphs with the following:

The method of chlorination used shall be approved by the Contracting Agency and must conform to NSF/ANSI 60 & 61 and the AWWA C651 (Latest Version) Standards. The Contracting Agency shall determine the number and locations for sample risers. For pipe 30” diameter and smaller the method of disinfection shall be Continuous Feed Method (or as approved by Contracting Agency) per AWWA C651, latest edition. For pipe larger than 30” diameter the method of disinfection may be Continuous Feed Method or Spray Disinfection per AWWA C651, latest edition. The contractor is responsible for supplying the equipment to properly apply chlorine for the selected method of disinfection. For the continuous feed method, the minimum injected chlorine concentration shall be 25 ppm. After a 24-hour holding period in the main there shall be a measured free chlorine concentration of not less than 10 ppm. For the spray disinfection method, the minimum chlorine concentration shall be 200 ppm sprayed on all surfaces. After a minimum of 30 minutes, the main shall be filled and tested. All new valves, hydrants and other appurtenances shall be operated fully to ensure full disinfection from the chlorine solution.

DDDD. Subsection 611.3.2 (A) – Methods of Applying Chlorine- Delete this section in its entirety

EEEE. Subsection 611.3.2 (B) – Point of Application- Add the following sentence to the end of the paragraph:

All connections to the existing water system utilized for filling, flushing or chlorination shall be made through a city-provided construction meter and backflow assembly.

FFFF. Subsection 611.3.2 (C) – Rate of Application – Rename subsection “Continuous Feed Rate of Application”

GGGG. Subsection 611.3.2 (D) – Retention Period – Rename subsection “Continuous Feed Retention Period”

HHHH. Subsection 611.3.2 (D) – Modify the first sentence of paragraph 2 to remove “not to exceed 300 ppm”

IIII. Subsection 611.3.2 (E) – Short Pipe Sections/Laterals/Stubs - Replace this section in its entirety with the following:

For short pipe sections, equal to or less than one pipe length and as described in AWWA C651, Section 4.10, or where final connections to existing mains are being completed, disinfection and testing shall be per AWWA C651, latest edition, Section 4.10. When cutting into or repairing existing mains, disinfection and testing shall be per AWWA C651, latest edition, Section 4.11.

JJJJ. Subsection 611.3.3 – Final Flushing, Sampling and Testing – in paragraph 2, replace “48 hours” with “2 business days”

KKKK. Subsection 611.3.3 – Final Flushing, Sampling and Testing- Add the following after paragraph 2:

The City Mesa of Water Resources Department conducts water main sampling for bacteria tests from 7:00 a.m. to 3:00 p.m., Monday through Thursday, except holidays, and requires a minimum of two business days notice prior to said sampling. The Contractor shall schedule the required bacteria testing within this time frame. There shall be no additional payment or allotment of time to Contractor for failure to coordinate the sampling in accordance with the City’s availability (as noted herein) to perform the sampling.

If the Contractor schedules work such that sampling for bacteria tests is to be conducted on Friday, Saturday or Sunday, the Contractor may employ the services of a private laboratory to collect the samples and perform the required analytical tests. However, prior to using a private laboratory, the Contractor shall submit the laboratory's information, credentials and proposed test methods to the City for prior approval. The laboratory shall be certified by the Arizona Department of Health Services (ADHS) to perform coliform bacteria and Heterotrophic Plate Count (HPC) tests in accordance with American Water Works Association (AWWA), Standard C651-14, Disinfecting Water Mains (State certified). When a private laboratory is utilized, a State approved report from the lab shall be provided to the City Inspector and to WaterQualityVM@MesaAz.gov prior to acceptance of the project. Sampling and testing performed by the City is done at no cost to the Contractor; the Contractor shall pay all costs (without any pass through to the City) for sampling and testing by the private laboratory.

LLLL. Subsection 611.3.3 - Final Flushing, Sampling and Testing – Add the following after the 6th paragraph:

All laboratory testing shall be performed by an ADHS state certified laboratory.

MMMM. Subsection 611.4 (D) – Closed Circuit T.V. Inspection – Add the following paragraph:

Closed-Circuit TV (CCTV) inspections shall be completed in accordance with Sheet WW-7 of the Approved Products List for Wastewater.

(<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors>)

At the discretion of the Water Resources Department, or Engineering Inspector, video inspections of sewer pipeline repairs or lateral tie-ins may be required. Video inspection requirements shall be per this Section.

NNNN. Subsection 615.2 – Modify the subsection as follows:

Remove references to HPDE, SRPE, PP, and DIP pipe types. These pipe materials are not approved for use in the City of Mesa for sanitary sewers.

OOOO. Subsection 615.8 – Modify the subsection to add the following paragraph:

Sanitary Sewer taps shall utilize wye connections; tees are not allowed. Service line wye connections shall be made at angles no greater than 45 degrees vertical as measured between the horizontal plan of the sewer main and the service line.

PPPP. Section 620 – Remove Section 620 entirely and add the following section:

SECTION 620

CAST-IN-PLACE CONCRETE PIPE

620.1 GENERAL:

This specification covers cast-in-place non-reinforced concrete pipe intended for use as storm sewers or irrigation lines. The abbreviated title is CIPP. CIPP is conduit made of Portland cement concrete cast monolithically in a properly prepared trench, using equipment specifically designed for this purpose. The type of equipment to be used by the Contractor must be approved by the Engineer and the Contractor may be required to furnish evidence of the successful use of this equipment on prior work. CIPP will be placed only:

- (A) By experienced operators. The Engineer will be the sole judge as to experience level.
- (B) In the presence of the Engineer or Representative.

- (C) In ground capable of standing unsupported from the bottom of the trench to the top of the pipe without sloughing.
- (D) In fill when it can be demonstrated to the satisfaction of the Engineer that the fill will adequately support the pipe.
- (E) When allowed as an allowable storm sewer pipe material, this designation is no warranty, expressed or implied, that conditions will be suitable for the use of CIPP. Any costs incurred and/or time required to provide suitable conditions or to substitute an alternate pipe acceptable to the Engineer, in whole or part, shall be the responsibility of the Contractor. In addition, the Contractor at no additional cost to the City, shall provide the following: A Soils Report that confirms that soil conditions are adequate for CIPP installation; Engineering Analysis that indicates the hydraulic grade line for the design events is kept within the CIPP installation. The City Engineer must grant specific approval for the installation of CIPP.

620.2 MATERIALS:

620.2.1 Cement shall be ASTM C-150, Type II, low alkali as per Section 725.

620.2.2 Sand aggregate used for concrete and mortar shall conform to Section 701. Maximum size of the aggregate shall not be greater than 1/3 of the minimum wall thickness up to and including a wall thickness of 4-1/2 inches. The maximum aggregate size is 1-1/2 inches.

620.2.3 Water used for concrete and for curing the pipe shall be as per Section 725.

620.2.4 Concrete shall be Class A in accordance with Section 725. Slump shall be the minimum required for satisfactory placement of the concrete by the equipment used by the Contractor. The slump shall not exceed 3 inches.

620.2.5 Bonding mortar shall consist of two (2) or more parts of cement to three (3) parts of sand by volume.

620.3 CONSTRUCTION METHODS:

620.3.1 Excavation: The trench shall be neatly excavated with vertical sides and semi-circular bottom. The trench shall be shaped to form the bottom outside of the pipe on the alignment and to the grades specified in the plans. Departure from and return to the established grade for the finished trench and the invert of the installed pipe shall not exceed 1 inch per 10 linear feet with a maximum allowable departure of 0.10 feet. Departure from and return to specified alignment for the trench and pipe shall not exceed the allowable tolerances specified for the grade. The bottom of the trench, hereinafter known as the trench form, shall be shaped to provide full, form, and uniform support by undisturbed earth or compacted fill for at least the bottom 210 degrees of the pipe. Density of the fill shall be at least five percent (5%) greater than the natural in-place soil, but in no case less than 90 percent (90%) when tested in accordance with AASHTO T-99, Method A and T-191 or ASTM D-2922 and D-3017.

In no case shall pipe be installed in rocky, fractured or fragmented strata or if the soil consists of large cobblestones or boulders. The Contractor may substitute rubber gasket reinforced concrete pipe for CIPP in these unsuitable areas. There will be no additional payment for this substitution. In no case will expansive soils be used for backfill.

Excavated trench shall be checked for compliance with requirements for grade and alignment prior to placement of concrete. The Contractor shall submit his proposed method of grade and alignment control and checking of same for conformance with specifications to the Engineer for his approval prior to start of work. The Contractor shall supply manpower, equipment and materials, as are required, to provide and confirm compliance with grade and alignment requirements. This is a non-pay item and all costs incurred shall be included in the bid item(s) for the pipe installation.

620.3.2 Placement: At the time of concrete placement, all soil in the trench shall be adequately moistened so that water is not drawn from the freshly placed concrete. However, the trench form shall be completely free of water, mud, and debris. All forming devices, including the slipforms and hopper of the placement device, shall be thoroughly moistened. Concrete shall not be placed when temperature of the concrete exceeds 90

degrees Fahrenheit or is less than 50 degrees Fahrenheit. The soil adjacent to the trench shall be at a temperature above freezing.

The pipe shall be constructed in one placement, the entire cross-section being placed monolithically. Inside forms shall be sufficiently rigid to withstand consolidation of the fresh concrete. Placement shall be such as to produce a thoroughly consolidated homogeneous concrete mixture conforming to the test requirements of this specification. Effective consolidation means shall be applied to the fresh concrete over the entire circumference and from within the pipe shell. Consolidation means shall be capable of effectively placing and consolidating fresh concrete at production speeds. Methods of consolidating shall be capable of building up sufficient pressure to effectively bond the concrete to the surrounding earth and to keep loose sand, mud, and water out of the pipe shell.

Under no circumstances will the Contractor be allowed to continue the pipe installation if the vibrators of the cast-in-place machine are inoperable. Portable vibrators or "stingers" shall only be used to supplement internal vibrators on the machine and not as a sole source to consolidate and distribute the concrete mix.

The Contractor shall make provisions for removing sloughed material, debris and any foreign objects from trench before and during placement of concrete such that buildup of material does not occur ahead of the machine. In addition, small transverse trenches shall be dug across trench bottom, at distances not to exceed 25 linear feet, to receive soil built up and pushed ahead of the slipform.

(A) Construction Joints:

When pipe placement stops in excess of sixty (60) minutes, a construction joint shall be formed. The ends of the pipe that are to be butt contact shall be left in rough condition with a slope between 20 and 45 degrees. Number 4 reinforcing bars shall be embedded 12 inches in the previous pour and 12 inches into the next pour and shall be placed 12 inches on center for pipe 42 inches in diameter or less and shall be placed 18 inches on center for pipe diameters in excess of 42 inches. Immediately before resuming concrete placement the surface to be bonded shall be cleaned of all laitance, coatings, foreign materials, and loose or defective concrete thoroughly wetted and coated with a layer of bonding mortar (Section 620.2.5) approximately 1/4 inch thick. In lieu of the bonding mortar, neat cement paste may be thoroughly scrubbed onto the wet surface of the previously placed concrete.

For a joint that may be used for connections to another pipe or structure, a joint shall be made by squaring off the end of the pipe. An excavation shall be made along the sides and bottom of the cast-in-place pipe, for any diameter, to permit casting of a concrete collar as described above.

(B) Pipe Dimensions and Tolerances:

The internal diameter of the pipe at any point shall not be less than 95% of the nominal diameter, and the average of any four (4) measurements of the internal diameter made at 45-degree intervals shall not be less than the nominal diameter.

Pipe less than 15-inches inside diameter shall not be allowed.

For pipe with an inside diameter of 15-inches to 24-inches the minimum wall thickness shall be 2-1/2 inches. For pipe exceeding 24-inches inside diameter the minimum wall thickness shall be 1/12 of the inside diameter, plus 1-inch.

Offsets at form laps and horizontal edges shall not exceed 1/2-inch for pipe having inside diameter not greater than 42-inches; 3/4-inch for pipe having inside diameter greater than 42-inches, but not greater than 72-inches; and 1-inch for pipe having inside diameter greater than 72-inches.

(C) Pipes Placement:

It is essential that concrete placement be done in a smooth and steady manner with as few starts and stops as is possible. The Contractor shall schedule materials and operate the pipe machine at speeds and in a manner that will achieve this.

The Contractor shall provide an anchoring system for pull of the machine in a manner which will provide the least probability of causing deviations in grade and/or alignment.

Adjustments to or modifications in anchoring system when required in the opinion of the Engineer shall be made at no additional cost to the project.

620.3.3 Curing and Backfilling: The Contractor shall be responsible for proper curing of the concrete and backfilling the trench to an even grade. Final backfill and compaction shall not be started until concrete has developed a compressive strength of at least 3000 psi. The pipe shall be checked for grade, alignment and thickness prior to backfilling. Curing shall be performed in such a manner as to prevent the premature drying of the concrete. The Contractor shall use the method described below.

- (A) Polyethylene film complying with ASTM C-171, nominal thickness 0.0015 inches, shall be placed on the exposed top surface of the pipe immediately after the pipe is cast. The film shall be anchored in place with loose soil to assure continuous, adequate curing.

A humid atmosphere within the pipe, as evidenced by condensation on the interior surface, shall be maintained for at least seven (7) days following placement, except for a maximum period of 24 hours allowed for removing forms and making repairs. To prevent air drafts which may dry the pipe and to maintain a humid atmosphere inside the pipe, all openings, ends, manholes, and connector pipes shall be kept closed or securely covered, except when actual work is in progress on the inside of the pipe. The pipeline shall be partially filled with water during the curing period when work is not being performed on the inside of the pipe.

620.3.4 Repair: Immediately after removal of the forms, the inside of pipeline will be inspected for required repairs and conformance with all dimensional requirements including alignment and grade. The Engineer shall be the sole judge as to the repairability of deficiencies. The Engineer shall require removal and replacement of those sections of pipeline which the Engineer judges to be non-repairable or which is not within required dimensional tolerances including alignment and grade.

When concrete placement is done by a method requiring the use of metal inner forms, the Contractor shall schedule his work force, by extended, staggered or multiple shifts, as required, to provide for removal of forms within 4 to 6 hours of placement of concrete and start of repairing, patching and finishing of pipeline to conform with specification requirements.

When concrete placement is done by methods using pneumatically inflated inner liner, the Contractor shall schedule his work force, by extended, staggered or multiple shifts, as required, to provide for removal of the pneumatic inner liner within 12 hours of placement of concrete and start of repairing, patching and finishing of pipeline to conform with specification requirements.

All rock pockets, non-longitudinal cracks or indentations shall be cleaned out, moistened and filled with 1:2 cement grout or approved epoxy material. Except where, in the opinion of the Engineer, the width and/or length of the crack may indicate a structural deficiency, repairs shall be made as required for longitudinal cracks.

At the discretion of the Engineer, longitudinal cracks exceeding 0.01 inches in width and 12 inches in length may be cause for rejection and removal and replacement of that portion of the pipe. Subject to the approval of the Engineer, cracks may be repaired using a pressure applied epoxy compound capable of providing structural correction to the area in addition to sealing the void. A longitudinal crack shall be defined as one which has the general direction of a 30-degree angle or less with the alignment of the pipe.

Irrespective of concrete placement method, all repairs, patches and finishing shall be completed within 24 hours of concrete placement. The Contractor, prior to start of concrete placement on project shall submit a written schedule of his proposed work activities and work time schedules for the Engineer's review and approval. No time schedule requiring overtime by the Engineer's staff is authorized without specific written approval of the Engineer.

Compliance with this section is a non-pay item and any costs incurred shall be included in the bid proposal item(s) for the pipe.

620.3.5 Finishing: Except for the form offsets, the interior surface of the pipe shall be equivalent to or better than a wood float finish. Form offsets shall be trimmed so as to provide a reasonably tapered slope from surface to surface. The bottom of the pipe below the metal forms shall be finished in a workmanlike manner and shall conform to the general

circular circumference of the pipe without sags, dips and/or humps. All extraneous concrete shall be removed from the interior surface.

620.4 TESTS:

Random tests shall be made of the wall thickness at the top, bottom and sides, approximately every 100 feet, on a daily basis by probes through fresh concrete or small holes drilled through the concrete. Holes shall be properly and permanently closed and sealed, flush with the inside surface of the pipe, after measurements are made, in accordance with the requirements of the fifth paragraph of the Mesa Supplement to MAG Specifications Subsection 620.3.4, contained herein.

Test cylinders shall be prepared and tested as per Section 725. If the cylinder tests indicate that the concrete does not meet the specified strength requirements, cores shall be taken from the same section of concrete represented by the faulty test cylinder under the supervision of the Engineer.

The concrete should be at least 14 days old before the core specimens are taken. The diameter of the core specimens for the determination of compressive strength should be at least three (3) times the maximum nominal size of the coarse aggregate used and must be at least twice the maximum nominal size of coarse aggregate.

The length of the specimen, when capped, should be twice the core diameter. A core having a maximum height of less than 95 percent of its diameter before capping or a height less than its diameter after capping shall not be tested.

If cores are taken, the Contractor shall patch all core holes in such a manner that the patch will be permanent, will not leak, and will have a smooth interior finish flush with the interior surface of the pipe.

Procedures and payment for coring shall be in accordance with applicable portions of Section 725.

The Engineer will evaluate the test results and his decision as to the required corrective action shall be final.

620.5 MEASUREMENT:

Measurement of cast-in-place concrete pipe will be the number of linear feet of pipe measured horizontally along the pipe axis from end to end of pipe. At change in diameter, the measurement shall be to center of manhole or transition.

620.6 PAYMENT:

Payment will be made at the contract unit price bid per linear foot to the nearest foot for each size of pipe and shall be compensation in full for furnishing and installing the cast-in-place concrete pipe as specified including removal of obstructions, excavation, backfilling, compacting, testing, and all incidental costs not specifically covered in other items in the proposal.

QQQQ. Subsection 625.3.1 – Add the following text to the end of this Section:

All manholes shall have a minimum of 6-inches and maximum of 16-inches of chimney (adjusting rings).

All joints between shaft sections, cones and adjustment rings shall be sealed with “RAM NEK” plastic gasket, mortar, or approved equal.

When manholes are placed within asphalt paved areas, the rings and covers shall be installed per MAG Standard Detail 422.

RRRR. Subsection 626.1.1 – Replace the first sentence:

(A) Scope: All new concrete manholes and access structures shall have an internal corrosion coating applied as specified herein. Materials shall be per City of Mesa Approved Products List for Wastewater.

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors>)

SSSS. Subsection 626.1.1.B - Add:

Manhole preparation, coating products and coating application shall conform to requirements listed in the City of Mesa Approved Products List for Wastewater.

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors>)

TTTT. Subsection 627.1 - Add the following text to the end of this Section:

Coating products and application shall conform to the City of Mesa Approved Products List for Wastewater.

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors>).

UUUU. Subsection 630.3.1 – Add the following text to the end of this section:

The approved list of gate valves that are allowed by the City of Mesa is available as part of the Water Products List on-line at <https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en>. No exceptions are allowed.

Valves shall not be installed in the horizontal position.

Valves shall not be installed in vaults.

VVVV. Subsection 630.4.2 (A) – delete this subsection in its entirety and replace with the following:

(A) Fabricated Steel Tapping Sleeves shall conform to the following:

Tapping sleeves encompassed by this specification shall be epoxy coated fabricated steel conforming to AWWA C223.

Coating shall be factory applied fusion bonded, electrostatically applied, or liquid epoxy per AWWA C210 or AWWA C213. Tapping sleeves shall be fully coated: interior, exterior, and waterway.

Fabricated tapping sleeve bodies shall be carbon steel that meets or exceeds the requirements of AWWA C200.

Tapping flanges for fabricated steel tapping sleeves shall meet the requirements of AWWA C207. Flange class shall be AWWA C207 Class D ANSI 150 lb. drilling, unless otherwise specified by project specific specifications, and be recessed for tapping valve per MSS-SP 60.

Branch gaskets shall be compounded for potable water service and shall be certified to, or compliant with NSF-61 and NSF-372. Acceptable branch gasket materials are SBR, NBR, or EPDM per ASTM D2000.

Bolting shall be stainless steel per AWWA C223. Bolts and nuts shall be type 304 stainless steel per ASTM A593 and ASTM A594, respectively.

A 3/4" test connection shall be provided per AWWA C223.

Tapping sleeve shall conform to the requirements of the Safe Drinking Water Act, NSF/ANSI 61, and NSF/ANSI 372.

Size on size taps are prohibited.

Tapping sleeve installation shall be per manufacturer's installation instructions, AWWA C223, and MAG Standard Detail 340.

Tapping sleeve pressure testing shall be per MAG Specification Section 630.4.2 (C).

WWWW. Subsection 630.4.2 (B) – Add the following to the beginning of this subsection:

Stainless steel tapping sleeve design, materials, and models shall be per City of Mesa Approved Products List W-6 located at:

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en>

XXXX. Subsection 630.4.2 (B) – Modify the third paragraph to remove Viton as an approved gasket material:

YYYY. Subsection 630.4.3 – Add the following to the end of this subsection:

(A) Tapping sleeves for AWWA C303 concrete cylinder pipe (CCP) shall conform to the following:

Tapping sleeves encompassed by this specification shall be epoxy coated fabricated steel or stainless-steel conforming to AWWA C223 and MAG Standard Detail 342.

Fabricated tapping sleeve bodies and lugs shall be carbon steel that meets or exceeds the requirements of AWWA C200, or type 304 stainless steel per ASTM A240 and AWWA C220.

Coating for carbon steel tapping sleeves shall be factory applied fusion bonded, electrostatically applied, or liquid epoxy per AWWA C210 or AWWA C213. Tapping sleeves shall be fully coated: interior, exterior, and waterway. No coating is required for stainless steel tapping sleeves.

Tapping flanges for carbon steel tapping sleeves shall meet the requirements of AWWA C207. Flange class shall be AWWA C207 Class D ANSI 150 lb. drilling, unless otherwise specified by project specific specifications, and be recessed for tapping valve per MSS-SP 60.

Tapping flanges for stainless steel tapping sleeves shall meet the requirements of AWWA C207, except the material shall be type 304 stainless steel per ASTM A240. Flange class shall be AWWA C207 Class D ANSI 150 lb. drilling, unless otherwise specified by project specific specifications, and be recessed for tapping valve per MSS-SP 60.

Tapping sleeves shall be provided with grout ports.

Branch gaskets shall be compounded for potable water service and shall be certified to, or compliant with NSF-61 and NSF-372. Acceptable branch gasket materials are SBR, NBR, or EPDM per ASTM D2000.

Bolting shall be stainless steel per AWWA C223. Bolts shall be type 304 stainless steel per ASTM A593 or ASTM A193. Nuts shall be type 304 stainless steel per ASTM A594 or ASTM A194.

A 3/4" test connection shall be provided per AWWA C223.

Tapping sleeve shall conform to the requirements of the Safe Drinking Water Act, NSF/ANSI 61, and NSF/ANSI 372.

Size on size taps are prohibited.

(B) Installation and testing for tapping sleeves installed on AWWA C303 concrete cylinder pipe (CCP) shall conform to the following:

1. General Requirements:
 - a. Installation shall be performed by an approved contractor per City of Mesa Approved Products List – Water, W-7 Approved Wet Tap Contractors.
 - b. Tapping sleeves shall not be placed within 36” of any fitting, joint, coupling, or valve.
 - c. Tapping sleeve installation and testing on concrete pressure pipe shall be witnessed by a City of Mesa Engineering Construction Inspector (Inspector).
2. Design & Installation Requirements:
 - a. Thrust restraint and thrust block sizing shall be per AWWA M9 Concrete Pressure Pipe Manual of Practice. If not detailed in the project specific plans and specifications, calculations and details supporting the design shall be submitted to the City for review and approval. Thrust block material and installation shall be in conformance with MAG Specifications.
 - b. Valve blocking/support sizing shall be per project specific plans and specifications.
 - c. Installation of tapping sleeves encompassed by this specification shall conform to AWWA M9 Concrete Pressure Pipe Manual of Practice, manufacturers installation instructions, and the general requirements of MAG Standard Detail 340.
 - d. The gland gasket position shall be checked with a feeler gauge per manufacturers recommendations.
 - e. The gland gasket seal and gland cavity shall be tested for watertightness per AWWA M9 and the manufacturers recommendations. The fluid test pressure shall not exceed the pressure inside the pipe being tapped, and the duration of the test shall be per manufacturers recommendation.
 - f. Following pressure testing and acceptance by the Inspector, tapping of the pipe may be completed. The coupon removed during tapping shall be provided to the Inspector or representative of the City of Mesa Water Resources Department.
 - g. After tapping is complete the tapping valve shall be opened slightly to flush out any cuttings that remain.
 - h. Fill the space between the saddle and the gland with grout and apply a protective coat of cement mortar over the entirety of the assembly.

ZZZZ. Section 631 – Delete all references to “polyethylene pipe” from this section.

AAAAA. Subsection 631.3.5 – Revise the subsection to delete all references to tapped couplings and direct taps and add the following:

Services shall be installed per City of Mesa Design Standards, City of Mesa Standard Details and Water Approved Products List.

BBBBB. Subsection 702.1 – At the end of paragraph 4, add a new sentence to read as follows:

Reclaimed Concrete Material shall not be used within pipe embedment zones.

At the end of paragraph 5, add a new sentence to read as follows:

Reclaimed Asphalt Pavement shall not be used within pipe embedment zones.

Add a new sentence to read as follows:

Cement or Lime treated base shall not be used within pipe embedment zones.

CCCCC. Subsection 710.1 – Delete 2nd sentence in 1st paragraph and replace with the following two (2) sentences:

Mineral admixture, mineral filler and anti-stripping agent shall be included in the mixture when required by the mix design or by the Engineer. All materials shall be proportioned by weight, volume or a combination in a central mix plant in the proportions required by the mix design to provide a homogeneous and workable mass.

DDDDD. Subsection 710.1 – Add the following after TABLE 710-1:

Unless otherwise noted, all hot asphalt pavement shall meet the “Hot Asphalt Mix Criteria” latest approved version at the time of asphalt placement, as established by the East Valley Asphalt Committee. Additionally, all hot asphalt mixes provided shall be approved in writing by the East Valley Asphalt Committee prior to placement. Copies of the “Hot Asphalt Mix Criteria” are available on the City of Mesa Engineering web link:

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en>

EEEEEE. Subsection 710.2.2 – Delete last paragraph and substitute the following:

The natural sand shall not exceed 15 percent for Marshall mixes and Gyratory mixes by weight of the total aggregate for a mix.

FFFFF. Subsection 710.2.4 – Add the following to this section:

When liquid anti-stripping agents are used, the agent shall conform to the requirements of AASHTO designation R 15-89. The agent shall be added in accordance with the manufacturer’s recommended dosage rate. Other mineral filler, mineral admixture, or anti-stripping agents shall be approved by the Engineer prior to start of the mix design.

GGGGG. Section 718 - Add the following paragraph:

Unless otherwise noted on the Plans or Specifications, all Preservative Seals for asphalt concrete pavement in the City of Mesa shall be Type D in compliance with the test methods and requirements within MAG Section 718.

HHHHH. Subsection 725.2.1 – (Pozzolanic): Only Class F Pozzolanic material will be permitted in Portland cement concrete.

IIIII. Subsection 726.1 – Add the following to this subsection:

For concrete curbs, sidewalks and driveways, the contractor shall use a liquid membrane conforming to AASHTO M-148, Type 2 (White Pigmented).

JJJJJ. Subsection 750.1 - Delete section in its entirety.

KKKKK. Subsection 750.3 - Add the following paragraph:

Ductile iron pipe shall be either push-on or mechanical joint. Lug type restraining systems which rely on penetrating into the pipe wall are acceptable. Alternatively, mechanical restraining systems shall be as approved in the City of Mesa Engineering and Design Standards Manual. The approved list of Mechanical Restraint and Joint Systems that are allowed in the City of Mesa is available on-line at:

<https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en> . No exceptions are allowed.

Where flanged fittings are called for on the plans, flanges shall be integrally cast with pipe and shall comply with ANSI B16.1, Class 125. If threaded flanges are used, a minimum Class 53 ductile iron pipe is required.

LLLLL. Subsection 750.4 – Delete references to gray iron and add the following:

See Water Resources Approved Products List for approved fitting materials, configurations, and manufacturers.

MMMMM. Section 752 – Delete this section in its entirety.

NNNNN. Section 756 – In addition to the standard requirements of this Section, the following requirements shall also pertain:

Internal bronze parts shall be low-zinc (not more than seven percent (7%) zinc). There shall be two (2) hose nozzles, 2 ½-inches in diameter with National Standard Threads; and one (1) steamer connection 4 ½-inches in diameter with National Standard Threads.

The approved list of fire hydrants that are allowed by the City of Mesa is available on-line at <https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors?locale=en> . No exceptions are allowed.

OOOOO. Section 758 - Modify the section as follows:

Delete all references to AWWA C301 and AWWA C304 prestressed concrete pressure pipe.

PPPPP. Subsection 772.2 – Modify the subsection as follows:

ALL posts, rails and braces shall be Type A, unless otherwise specified on the plans or in the Special Provisions.

QQQQQ. Section 792 – Delete all reference to Lignin-Based, Organic Resin and Petroleum Resin Dust Palliatives from this section within the City of Mesa.

RRRRR. SPECIAL NOTICE REGARDING STREET EXCAVATION BACKFILLING AND PAVEMENT REPLACEMENT:

The Contractor shall be responsible for backfilling and replacing pavement in all street excavations per the latest edition of the City of Mesa’s Policy Statement for Street Trench Backfilling and Pavement Replacement. Copies of this policy statement are available on-line at:

<http://mesaaz.gov/business/engineering/policies-forms>

SPECIAL ATTENTION IS CALLED TO THE POLICY STATEMENT REQUIREMENTS FOR TRANSVERSE TRENCHES. BACKFILL IN ALL TRANSVERSE TRENCHES SHALL BE ONE-HALF (1/2) SACK CONTROLLED LOW STRENGTH MATERIAL PER MAG SECTION 728.

A cash bond, as stipulated in the policy statement, will not be required for City of Mesa contract projects, but will be required for permit construction.

SSSSS. SPECIAL NOTICE REGARDING DRIVEWAY AND SIDEWALK RAMP CUTS IN EXISTING CURB AND GUTTER SECTION:

The City of Mesa does not allow vertical, longitudinal cuts through the gutter section in order to install driveways or sidewalk ramps. In order to accomplish this work, the Contractor shall employ one of the following methods:

1. Sawcut perpendicular to the flowline through the curb and gutter section at the limits of the section to be replaced, remove, and replace in entirety; or,
2. Saw through the curb section with the sawcut having a slope towards the gutter. At the face of the curb, the sawcut shall be flush with the gutter and at the back of the curb, one (1) inch above the gutter. Horizontal curb cut shall taper from sawcut to top of curb to establish wings in accordance with the City of Mesa’s details for driveways and sidewalk ramps.

TTTTT. SPECIAL NOTICE REGARDING TECHNICAL SPECIFICATIONS FOR RUBBERIZED ASPHALTIC CONCRETE PAVEMENT:

For streets classified as “Arterial” within the City of Mesa (listed within the most current City of Mesa Transportation Plan), all new construction and overlays shall receive a

surface asphalt course of rubberized asphalt in accordance with the current East Valley Asphalt Committee criteria. Street widening and trench patches shall match the existing arterial asphalt surface type.

Other street classifications designated to receive rubberized asphalt overlays will also use the current East Valley Asphalt Committee criteria.

The materials, mix design and installation of the rubberized asphalt shall comply with MAG Section 321 and 710 as amended by the City of Mesa.

UUUUU. SPECIAL NOTICE REGARDING REQUIRED DETAILED SHOP DRAWINGS FOR SPECIALTY ITEMS:

This Special Notice applies to projects and permits that propose to use non-standard, specialty materials within City of Mesa rights-of-way or easements or for infrastructure that will be owned, operated or maintained by the City of Mesa. "Specialty materials" are defined as items, such as specialty streetlight poles, specialty streetlight fixtures or specialty street name signs, that are requested for aesthetic reasons, and which are not on the City of Mesa's Approved Products Lists or otherwise not fully in accordance with the City of Mesa's Standard Details and Specifications. For such items, detailed shop drawings, including product data sheets, must be included and shown in the permit drawings and must be approved by the City of Mesa (including approval by the City of Mesa departments that own, operate or maintain such items) during the plan review process. For the submittal of some items (such as specialty streetlight poles), the City may also require the applicant to submit detailed structural design calculations sealed by a registered professional structural engineer properly licensed to practice in the State of Arizona. City approval of shop drawings and any required supporting structural calculations must be obtained prior to permit issuance. The permittee shall ensure that the materials delivered and installed in the field are in full compliance with the shop drawings and structural calculations approved by the City. The shop drawings must be shown in and remain a part of the approved building permit plan set that is used for construction, and shall remain in the engineer's certified as-built/record drawings that the permittee is required to submit upon completion of the project.

By way of clarification: Specialty items should be discussed with the City during the planning and zoning phases of a project and should not, without prior discussion or notice, be proposed in plans submitted for review. The City typically requires execution of a development agreement with the developer during the project planning phase to set forth the requirements for the installation and maintenance of specialty items before such items may be proposed in a plan set or for a project. When specialty items are desired, the developer shall allot time for these activities in the planning phase. The City is not under any obligation to approve non-standard specialty items.

The requirements of this section do not apply to capital improvement projects contracted and administered by the City of Mesa (e.g., where the City is the contracting agency).

Mesa Standard Details

Amendments to MAG Uniform Standard
Details & Specifications for
Public Works Construction



**MESA STANDARD DETAILS
AVAILABLE ON-LINE
WWW.MESAAZ.GOV/ENGINEERING**

EFFECTIVE DATE DECEMBER 2025



2025 City of Mesa Standard Details Revisions

For 2025 City of Mesa Standard Details, all details were revised with the new number system which includes minor updates and changes.

Spec/Detail	Name	Change(s)
M-1101	STANDARDS FOR SOLID WASTE VEHICLE ACCESS	MINOR EDITS
M-1101.2	SINGLE AND DOUBLE-WIDE BIN ENCLOSURES – NOTES	MINOR EDITS
M-1101.3	THRIPLE-WIDE BIN ENCLOSURS	MINOR EDITS
M-1101.7	LARGE COMPACTOR REFUSE AREA	MINOR EDITS
M-1101.8	RESIDENTIAL SOLID WASTE	MINOR EDITS
M-1101.11	SINGLE BIN BOLLARD ENCLOSURE	NEW DETAIL
M-1200.1	14' AND 22' SPEED HUMP SPECIFICATIONS	MINOR EDITS
M-1200.2	SPEED CUSHION SPECIFICATIONS – 34' STREET	MINOR EDITS

M-1200.3	SPEED CUSHION SPECIFICATIONS – 40' STREET	MINOR EDITS
M-1200.4	SPEED CUSHION SPECIFICATIONS – 44' STREET	MINOR EDITS
M-1200.5	SPEED CUSHION SPECIFICATIONS – 48' STREET	MINOR EDITS
M-1202	TYPICAL RIGHT IN/RIGHT OUT DRIVEWAY WITH RAISED MEDIAN	MINOR EDITS
M-1203	TYPICAL STREET SECTIONS	MINOR EDITS
M-1203.2	SUBURBAN RANCH STREET SECTION	MINOR EDITS
M-1206	TYPICAL SIGNING FOR ARTERIAL AND COLLECTOR STREETS	MINOR EDITS
M-1207.6	END OF ROAD/ROAD CLOSURE SIGNAGE	NEW DETAIL
M-1211	RESIDENTIAL DRIVEWAY ENTRANCE – TYPE 1 (SIDEWALK ADJACENT TO CURB)	MINOR EDITS
M-1211.1	RESIDENTIAL DRIVEWAY ENTRANCE – TYPE 2 (DETACHED SIDEWALK)	MINOR EDITS
M-1211.2	RESIDENTIAL DRIVEWAY ENTRANCE – RETROFIT ONLY	MINOR EDITS
M-1212	COMMERCIAL, INDUSTRIAL AND APARTMENT DRIVEWAY DETAIL	MINOR EDITS
M-1212.1	TYPICAL DRIVEWAY ACCESS TO PRIVATE GATED COMMUNITY WITHOUT MAILBOX AREA	MINOR EDITS
M-1212.2	TYPICAL DRIVEWAY ACCESS TO PRIVATE GATED COMMUNITY WITH MAILBOX AREA	MINOR EDITS
M-1213	DETACHED SIDEWALK ON ARTERIAL AND COLLECTOR STREETS	MINOR EDITS
M-1214	ADA PUSH BUTTON LOCATION DETAIL	MINOR EDITS
M-1214.1	SIDEWALK RAMPS – TYPE A	MINOR EDITS

M-1214.2	SIDEWALK RAMPS – TYPE B	MINOR EDITS
M-1214.3	DUAL DIRECTIONAL SIDEWALK RAMPS	MINOR EDITS
M-1214.4	DUAL DIRECTIONAL SIDEWALK CURB RAMPS	MINOR EDITS
M-1214.5	SIDEWALK RAMPS – TYPE D	RE-LINK URL
M-1214.6	RETROFIT EXISTING RAMP WITH DETECTABLE WARNING SURFACE	MINOR EDITS
M-1215	GENERAL STRUCTURAL NOTES	NEW BUS SHELTER DETAIL
M-1215.1	SINGLE-BAY SHELTER PLAN	NEW BUS SHELTER DETAIL
M-1215.2	SINGLE-BAY SHELTER ELEVATION	NEW BUS SHELTER DETAIL
M-1215.3	SINGLE-BAY SHELTER DETAILS	NEW BUS SHELTER DETAIL
M-1215.4	SINGLE-BAY SHELTER LOCATION PLAN	NEW BUS SHELTER DETAIL
M-1215.5	NARROW SHELTER PLAN	NEW BUS SHELTER DETAIL
M-1215.6	NARROW SHELTER ELEVATION	NEW BUS SHELTER DETAIL
M-1215.7	NARROW SHELTER DETAILS	NEW BUS SHELTER DETAIL
M-1215.8	NARROW SHELTER LOCATION PLAN	NEW BUS SHELTER DETAIL
M-1215.9	TWO-BAY SHELTER PLAN	NEW BUS SHELTER DETAIL
M-1215.10	TWO-BAY SHELTER ELEVATION	NEW BUS SHELTER DETAIL
M-1215.11	TWO-BAY SHELTER ELEVATION	NEW BUS SHELTER DETAIL
M-1215.12	TWO-BAY SHELTER DETAILS	NEW BUS SHELTER DETAIL

M-1215.13	THREE-BAY SHELTER PLAN	NEW BUS SHELTER DETAIL
M-1215.14	THREE-BAY SHELTER ELEVATION	NEW BUS SHELTER DETAIL
M-1215.15	THREE-BAY SHELTER DETAILS	NEW BUS SHELTER DETAIL
M-1215.16	THREE-BAY SHELTER LOCATION PLAN	NEW BUS SHELTER DETAIL
M-1215.17	LEAN BAR AND TRASH CAN ATTACHMENT DETAILS	NEW BUS SHELTER DETAIL
M-1215.18	SHADE PANEL AND ADVERTISING PANEL CONFIGURATION	NEW BUS SHELTER DETAIL
M-1215.19	SINGLE-BAY SOLAR CONFIGURATION	NEW BUS SHELTER DETAIL
M-1215.20	SINGLE-BAY SOLAR ELEVATION	NEW BUS SHELTER DETAIL
M-1215.21	SINGLE-BAY SOLAR SECTION	NEW BUS SHELTER DETAIL
M-1215.22	TWO-BAY SOLAR CONFIGURATION	NEW BUS SHELTER DETAIL
M-1215.23	TWO-BAY SOLAR ELEVATION	NEW BUS SHELTER DETAIL
M-1215.24	TWO-BAY SOLAR SECTION	NEW BUS SHELTER DETAIL
M-1215.25	THREE-BAY SOLAR CONFIGURATION	NEW BUS SHELTER DETAIL
M-1215.26	THREE-BAY SOLAR ELEVATION	NEW BUS SHELTER DETAIL
M-1215.27	THREE-BAY SOLAR SECTION	NEW BUS SHELTER DETAIL
M-1215.28	ROOF AND FLASHING DETAILS	NEW BUS SHELTER DETAIL
M-1215.29	CONNECTOIN DETAILS	NEW BUS SHELTER DETAIL
M-1215.30	REINFORCED BUS SHELTER PAD DETAILS	NEW BUS SHELTER DETAIL

M-1215.31	BUSY PULLOUT DETAIL	NEW BUS SHELTER DETAIL
M-1216	ARTERIAL STREET INTERSECTION (4 LANES) WITH 4' RAISED MEDIANS	MINOR EDITS
M-1216.1	ARTERIAL STREET INTERSECTION (4 LANES) WITH 8' RAISED MEDIANS	MINOR EDITS
M-1216.2	ARTERIAL STREET INTERSECTION (4 LANES) WITH RAISED MEDIAN/CROSSWALK DETAIL	MINOR EDITS
M-1216.3	MEDIAN STAMPED CONCRETE/PAVER DETAIL	MINOR EDITS
M-1216.4	ARTERIAL STREET INTERSECTION (4 LANES) WITH STRIPED MEDIAN	MINOR EDITS
M-1216.5	ARTERIAL STREET INTERSECTION (6 LANES) WITH 4' RAISED MEDIANS	MINOR EDITS
M-1216.6	ARTERIAL STREET INTERSECTION (6 LANES) WITH RAISED MEDIANS	MINOR EDITS
M-1216.7	ARTERIAL STREET INTERSECTION (6 LANES) WITH STRIPED MEDIANS	MINOR EDITS
M-1216.8	TRANSITION FROM STRIPED TO 4' RAISED MEDIAN (6 LANES)	MINOR EDITS
M-1216.9	TRANSITION FROM STRIPED TO 8' RAISED MEDIAN (6 LANES)	MINOR EDITS
M-1216.10	TRANSITION FROM STRIPED TO 4' RAISED MEDIAN (4 LANES)	MINOR EDITS
M-1216.11	TRANSITION FROM STRIPED TO 8' RAISED MEDIAN (4 LANES)	MINOR EDITS
M-1216.13	TYPICAL INTERSECTION APPROACH STRIPING	MINOR EDITS
M-1216.14	TYPICAL CROSSWALK STRIPING AT SIGNALIZED INTERSECTIONS	MINOR EDITS
M-1216.15	HIGH-VISIBILITY CROSSWALKS & CHEVRON PAVEMENT MARKINGS	NEW DETAIL

M-1217.1	RIGHT TURN TRAP LANE TREATMENTS	MINOR EDITS
M-1217.3	DUAL LEFT TURN LANE EXTENSIONS	MINOR EDITS
M-1217.4	TYPICAL BIKE LANE LAYOUTS	MINOR EDITS
M-1218	DELINEATOR	MINOR EDITS
M-1224.1	ITS/TRAFFIC SIGNAL GENERAL NOTES II	MINOR EDITS
M-1224.2	ITS/TRAFFIC SIGNAL GENERAL NOTES III	MINOR EDITS
M-1225	TRAFFIC SIGNAL FULLY METERED SERVICE PEDESTAL	ADD GENERAL NOTE 12
M-1226.2	POLE, PULL BOX, FOUNDATION AND GROUNDING	MINOR EDITS
M-1227.1	CONDUIT LAYOUT FOR TRAFFIC SIGNALS	MINOR EDITS
M-1229.9	CCTV AND 360 DEGREE PANORAMIC INSTALLATION DETAIL	ADD CCTV CAMERA POLE MOUNTING DETAIL
M-1307.6	WATER MAIN VERTICAL SING-TIE CONNECTION DETAIL – NOTES	MINOR EDITS
M-1314	JOINT USE WATER AND GAS TRENCH DETAIL CITY UTILITIES ONLY	MINOR EDITS
M-1403.2	LINT INTERCEPTOR	MINOR EDITS
M-1700	ENGINEERED UTILITY BORES PERPENDICULAR TO CENTER LINE OF STREET	MINOR EDITS
M-1700.1	ENGINEERED UTILITY BORES PARALLEL TO CENTERLINE OF STREET	MINOR EDITS
M-45.02.1	BUS SHELTER WITHOUT KIOSK	REMOVED – REPLACED WITH M-1215.1 THROUGH M-1215.31
M-45.02.2	BUS SHELTER WITH KIOSK	REMOVED – REPLACED WITH M-1215.1 THROUGH M-1215.31

M-45.02.3	BUS SHELTER KIOSK DETAIL	REMOVED – REPLACED WITH M-1215.1 THROUGH M-1215.31
M-45.02.4	BUS SHELTER NOTES	REMOVED – REPLACED WITH M-1215.1 THROUGH M-1215.31
M-93.02	TRAFFIC SIGNAL FIBER OPTIC INSTALLATION	REMOVED – SEE DETAILS M-1702 (F/K/A M-66.01.1) THROUGH M-1702.16 (F/K/A M-66.10) FOR FIBER OPTIC DETAILS AND SPECIFICATIONS.
M-93.03	FIBER OPTIC TRUNK-LINE CONDUIT INSTALLATION DETAILS	REMOVED – SEE DETAILS M-1702 (F/K/A M-66.01.1) THROUGH M-1702.16 (F/K/A M-66.10) FOR FIBER OPTIC DETAILS AND SPECIFICATIONS.
M-1224.2	ITS/TRAFFIC SIGNAL GENERAL NOTES III	ITS/TRAFFIC SIGNAL FIBER OPTIC INSTALLATION NOTE ADDED TO SUPPLEMENT REMOVAL OF TWO PREVIOUS DETAILS F/KA/ M-93.02 AND M-93.03.
M-1613.2	EMITTER LOCATION - TREES	NEW DETAIL TO SUPPLEMENT M-1613

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I000 - SHEET INDEX		
M-I000	M-I.01	SHEET INDEX 1
M-I001	M-I.02	SHEET INDEX 2
M-I002	M-I.03	SHEET INDEX 3
M-I003	M-I.04	SHEET INDEX 4
M-I004	M-I.05	SHEET INDEX 5
M-I005	M-I.06	SHEET INDEX 6
M-I006	NEW DTL	SHEET INDEX 7
M-II00 - GENERAL		
M-II00	M-2	DEDICATION PLAQUE FOR CITY OF MESA FACILITIES
M-II01	M-62.01	STANDARDS FOR SOLID WASTE VEHICLE ACCESS
M-II01.1	M-62.02.1	SINGLE AND DOUBLE-WIDE BIN ENCLOSURES
M-II01.2	M-62.02.2	SINGLE AND DOUBLE-WIDE BIN ENCLOSURES - NOTES
M-II01.3	M-62.03	TRIPLE-WIDE BIN ENCLOSURES
M-II01.4	M-62.04.1	BIN ENCLOSURE SCREEN WALL, SAFETY POST AND GATE STANDARDS
M-II01.5	M-62.04.2	BIN ENCLOSURE SCREEN WALL, SAFETY POST AND GATE STANDARDS - NOTES
M-II01.6	M-62.05	STORAGE AREA SCREEN WALLS - BARREL SERVICE
M-II01.7	M-62.06	LARGE COMPACTOR REFUSE AREA
M-II01.8	M-62.07	RESIDENTIAL SOLID WASTE GUIDELINES
M-II01.9	M-62.08	BARREL COLLECTION PADS AT SMALL LOT / MULTI-LOT WITH PRIVATE DRIVES
M-II01.10	M-62.09	RESIDENTIAL SOLID WASTE BARREL MARKER
M-II02	M-53	WATER & SEWER SERVICE STANDARDS FOR RESIDENTIAL SMALL LOT/MULTI-LOT PRIVATE DRIVE DEVELOPMENTS
M-I200 - STREETS AND RIGHT-OF-WAY (ROW)		
M-I200	M-I5.01	SPEED HUMP AND SPEED CUSHION PAVEMENT MARKINGS
M-I200.1	M-I5.02	14' AND 22' SPEED HUMP SPECIFICATIONS
M-I200.2	M-I5.03	SPEED CUSHION SPECIFICATIONS - 34' STREET
M-I200.3	M-I5.04	SPEED CUSHION SPECIFICATIONS - 40' STREET

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I200.4	M-I5.05	SPEED CUSHION SPECIFICATIONS - 44' STREET
M-I200.5	M-I5.06	SPEED CUSHION SPECIFICATIONS - 48' STREET
M-I201	M-I6	RAISED MEDIAN OPENINGS
M-I202	M-I7	TYPICAL RIGHT IN/RIGHT OUT DRIVEWAY WITH RAISED MEDIAN
M-I203	M-I9.01	TYPICAL STREET SECTION
M-I203.1	M-I9.02	TYPICAL PARTIAL STREET CROSS SECTION
M-I203.2	M-I9.03	SUBURBAN RANCH STREET SECTION
M-I203.3	M-I9.04.1	STANDARD TRENCH BACKFILL DETAIL ARTERIAL, COLLECTOR & LOCAL
M-I203.4	M-I9.04.2	STANDARD TRENCH BACKFILL DETAIL - NOTES
M-I203.5	M-I9.04.3	PAVEMENT RESTORATION
M-I203.6	M-I9.05	STANDARD TRENCH BACKFILL DETAIL FOR TRENCHES WITHIN FUTURE ROADWAY PRISMS & ALLEYS
M-I203.7	M-I9.06	WATER & SEWER ACCESS PATH OUTSIDE OF CITY RIGHT-OF-WAY AND EASEMENT REQUIREMENTS
M-I204	M-20.01	10" PUBLIC STREET NAME SIGN
M-I204.1	M-20.02	12" PUBLIC STREET NAME SIGN
M-I204.2	M-20.03	DEAD END STREET COMBINATION SIGN
M-I204.3	M-20.04	DOUBLE STREET NAME SIGN
M-I205	M-21.01	14" PRIVATE STREET NAME SIGN
M-I205.1	M-21.02	16" PRIVATE STREET NAME SIGN
M-I205.2	M-21.03	STREET NAME SIGNS, ARTERIAL/COLLECTOR TO LOCAL
M-I205.3	M-21.04	STREET NAME SIGNS, LOCAL TO LOCAL
M-I205.4	M-21.05	CONVENTIONAL METRO SIGNS ADDRESSING SCHEME
M-I205.5	M-21.06	INTERNALLY ILLUMINATED STREET NAME SIGNS ADDRESSING SCHEME
M-I205.6	M-21.07	CONVENTIONAL METRO AND INTERNALLY ILLUMINATED SIGNS STANDARD LAYOUT
M-I205.7	M-21.08	CONVENTIONAL METRO AND INTERNALLY ILLUMINATED SIGNS DUAL NAME LAYOUT
M-I206	M-22.01	TYPICAL SIGNING FOR ARTERIAL AND COLLECTOR STREETS
M-I206.1	M-22.02	SIGN INSTALLATION ON STREET LIGHT POLES

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I206.2	M-22.03	TYPICAL STREET NAME SIGN INSTALLATION LOCATION
M-I207	M-23.01	OBJECT AND END OF ROAD MARKERS, CHEVRON AND DELINEATOR INSTALLATION
M-I207.1	M-23.02	STANDARD CLEARANCE FOR WARNING SIGNS
M-I207.2	M-23.03	VARIOUS SIGN INSTALLATIONS
M-I207.3	M-23.04	SIGNING FOR END OF SIDEWALK CONDITIONS
M-I207.4	M-23.06	STANDARD HANDICAP PARKING SIGN AND MARKINGS
M-I207.5	M-23.07	SIGN HEIGHTS IN PARKING LOTS
M-I207.6	NEW DTL	END OF ROAD/ROAD CLOSURE SIGNING
M-I208	M-24.01	BUSINESS NAME SIGN
M-I208.1	M-24.02	COMBINED BUSINESS NAME SIGNS
M-I208.2	M-24.03	PROJECT NOTIFICATION SIGN FOR DEVELOPMENT & NON-CITY UTILITIES
M-I209	M-25	PARKS ACCESSIBLE & VAN ACCESSIBLE PARKING SIGN
M-I211	M-40.01	RESIDENTIAL DRIVEWAY ENTRANCE - TYPE 1 (SIDEWALK ADJACENT TO CURB)
M-I211.1	M-40.02	RESIDENTIAL DRIVEWAY ENTRANCE - TYPE 2 (DETACHED SIDEWALK)
M-I211.2	M-40.03	RESIDENTIAL DRIVEWAY ENTRANCE - RETROFIT ONLY
M-I212	M-42	COMMERCIAL, INDUSTRIAL AND APARTMENT DRIVEWAY DETAIL
M-I212.1	M-42.01	TYPICAL DRIVEWAY ACCESS TO PRIVATE GATED COMMUNITY WITHOUT MAILBOX AREA
M-I212.2	M-42.02	TYPICAL DRIVEWAY ACCESS TO PRIVATE GATED COMMUNITY WITH MAILBOX AREA
M-I213	M-43	DETACHED SIDEWALK ON ARTERIAL AND COLLECTOR STREETS
M-I214	M-44.01	ADA PUSH BUTTON LOCATION DETAIL
M-I214.1	M-44.02	SIDEWALK RAMPS - TYPE A
M-I214.2	M-44.03	SIDEWALK RAMPS - TYPE B
M-I214.3	M-44.04.1	DUAL CURB DIRECTIONAL SIDEWALK RAMPS
M-I214.4	M-44.04.2	DUAL DIRECTIONAL SIDEWALK CURB RAMPS
M-I214.5	M-44.05	SIDEWALK RAMPS - TYPE D

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I214.6	M-44.06	RETROFIT EXISTING RAMP WITH DETECTABLE WARNING SURFACE
M-I215	NEW DTL	GENERAL STRUCTURAL NOTES
M-I215.1	NEW DTL	SINGLE BAY SHELTER PLAN
M-I215.2	NEW DTL	SINGLE-BAY SHELTER ELEVATION
M-I215.3	NEW DTL	SINGLE-BAY SHELTER DETAILS
M-I215.4	NEW DTL	SINGLE-BAY SHELTER LOCATION PLAN
M-I215.5	NEW DTL	NARROW SHELTER PLAN
M-I215.6	NEW DTL	NARROW SHELTER ELEVATION
M-I215.7	NEW DTL	NARROW SHELTER DETAILS
M-I215.8	NEW DTL	NARROW SHELTER LOCATION PLAN
M-I215.9	NEW DTL	TWO-BAY SHELTER PLAN
M-I215.10	NEW DTL	TWO-BAY SHELTER ELEVATION
M-I215.11	NEW DTL	TWO-BAY SHELTER DETAILS
M-I215.12	NEW DTL	TWO-BAY SHELTER LOCATION PLAN
M-I215.13	NEW DTL	THREE-BAY SHELTER PLAN
M-I215.14	NEW DTL	THREE-BAY SHELTER ELEVATION
M-I215.15	NEW DTL	THREE-BAY SHELTER DETAILS
M-I215.16	NEW DTL	THREE-BAY SHELTER LOCATION PLAN
M-I215.17	NEW DTL	LEAN BAR AND TRASH CAN ATTACHMENT DETAILS
M-I215.18	NEW DTL	SHADE PANEL AND ADVERTISING PANEL CONFIGURATION
M-I215.19	NEW DTL	SINGLE-BAY SOLAR CONFIGURATION
M-I215.20	NEW DTL	SINGLE-BAY SOLAR ELEVATION
M-I215.21	NEW DTL	SINGLE-BAY SOLAR SECTION
M-I215.22	NEW DTL	TWO-BAY SOLAR CONFIGURATION
M-I215.23	NEW DTL	TWO-BAY SOLAR ELEVATION
M-I215.24	NEW DTL	TWO-BAY SOLAR SECTION
M-I215.25	NEW DTL	THREE-BAY SOLAR CONFIGURATION
M-I215.26	NEW DTL	THREE-BAY SOLAR ELEVATION
M-I215.27	NEW DTL	THREE-BAY SOLAR SECTION
M-I215.28	NEW DTL	ROOF AND FLASHING DETAILS

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.



SHEET INDEX 2

DETAIL NO. M-1001
OLD M-1.02

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-1215.29	NEW DTL	CONNECTION DETAILS
M-1215.30	NEW DTL	REINFORCED BUS SHELTER PAD DETAILS
M-1215.31	M-45.01	BUS PULLOUT DETAIL
M-1215.32	M-45.08	BUS STOP PAD DETAIL
M-1216	M-46.01.1	ARTERIAL STREET INTERSECTION (4 LANES) WITH 4' RAISED MEDIANS
M-1216.1	M-46.01.2	ARTERIAL STREET INTERSECTION (4 LANES) WITH 8' RAISED MEDIANS
M-1216.2	M-46.01.3	ARTERIAL STREET INTERSECTION (4 LANES) - RAISED MEDIAN/CROSSWALK DETAIL
M-1216.3	M-46.01.4	MEDIAN STAMPED CONCRETE/PAVER DETAIL
M-1216.4	M-46.02	ARTERIAL STREET INTERSECTION (4 LANES) WITH STRIPED MEDIANS
M-1216.5	M-46.03.1	ARTERIAL STREET INTERSECTION (6 LANES) WITH 4' RAISED MEDIANS
M-1216.6	M-46.03.2	ARTERIAL STREET INTERSECTION (6 LANES) WITH 8' RAISED MEDIANS
M-1216.7	M-46.04	ARTERIAL STREET INTERSECTION (6 LANES) WITH STRIPED MEDIANS
M-1216.8	M-46.05.1	TRANSITION FROM STRIPED TO 4' RAISED MEDIAN (6 LANES)
M-1216.9	M-46.05.2	TRANSITION FROM STRIPED TO 8' RAISED MEDIAN (6 LANES)
M-1216.10	M-46.05.3	TRANSITION FROM STRIPED TO 4' RAISED MEDIAN (4 LANES)
M-1216.11	M-46.05.4	TRANSITION FROM STRIPED TO 8' RAISED MEDIAN (4 LANES)
M-1216.12	M-46.06	RIGHT TURN DECELERATION LANE DETAIL
M-1216.13	M-46.07.1	TYPICAL INTERSECTION APPROACH STRIPING
M-1216.14	M-46.07.2	TYPICAL CROSSWALK STRIPING AT SIGNALIZED INTERSECTIONS
M-1216.15	NEW DTL	HIGH-VISIBILITY CROSSWALKS & CHEVRON PAVEMENT MARKINGS
M-1217	M-47.01	RIGHT TURN LANE TREATMENTS
M-1217.1	M-47.02	RIGHT TURN TRAP LANE TREATMENTS
M-1217.2	M-47.03	TYPICAL APPLICATION OF PAVEMENT ARROWS
M-1217.3	M-47.04	DUAL LEFT TURN LANE EXTENSIONS
M-1217.4	M-47.05	TYPICAL BIKE LANE LAYOUTS
M-1218	M-61	DELINEATOR
M-1219	M-70	STREETLIGHT WORK PROCEDURES
M-1220	M-73.07.1	CURRENT CARRYING AND GROUNDING SPECIFICATION (1 OF 2)
M-1220.1	M-73.07.2	CURRENT CARRYING AND GROUNDING SPECIFICATION (2 OF 2)
M-1221	M-74.02.1	PULL AND JUNCTION BOX INSTALLATION SPECIFICATION

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-1221.1	M-74.02.2	PULL AND JUNCTION BOX INSTALLATION SPECIFICATION
M-1222	M-75.02.2	LIGHTING CONTROL CABINET PAD SPECIFICATION AND INSTALLATION
M-1222.1	M-75.02.3	LIGHTING CONTROL CABINET PAD SPECIFICATION AND INSTALLATION
M-1222.2	M-75.03	240V SINGLE PHASE SERVICE POD / POS / LCC & GROUNDING
M-1222.3	M-75.04	120V SINGLE PHASE SERVICE POD / POS & GROUNDING
M-1223	M-76.02	STREETLIGHT FOUNDATION INSTALLATION SPECIFICATION
M-1224	M-90.01	ITS/TRAFFIC SIGNAL GENERAL NOTES I
M-1224.1	M-90.02	ITS/TRAFFIC SIGNAL GENERAL NOTES II
M-1224.2	M-90.03	ITS/TRAFFIC SIGNAL GENERAL NOTES III
M-1224.3	M-90.04	TRAFFIC SIGNAL CONSTRUCTION PROCEDURES I
M-1224.4	M-90.05	TRAFFIC SIGNAL CONSTRUCTION PROCEDURES II
M-1225	M-91.01	TRAFFIC SIGNAL FULLY METERED SERVICE PEDESTAL
M-1226	M-92.01	TRAFFIC SIGNAL CABINET FOUNDATION
M-1226.1	M-92.02	TRAFFIC SIGNAL U.P.S. FOUNDATION
M-1226.2	M-92.03	POLE, PULL BOX, FOUNDATION AND GROUNDING
M-1227	M-93.01	TRAFFIC SIGNAL PULL BOX INSTALLATION
M-1227.1	M-93.04	CONDUIT LAYOUT FOR TRAFFIC SIGNALS
M-1228	M-94.01	BICYCLE / PEDESTRIAN POLE
M-1228.1	M-94.02	BIKE PUSH BUTTON INSTALLATION
M-1228.2	M-94.03	TRAFFIC SIGNAL POLE - TYPE "A"
M-1228.3	M-94.04	TRAFFIC SIGNAL POLES
M-1228.4	M-94.05	TRAFFIC SIGNAL POLE DETAILS
M-1228.5	M-94.05.01	MAST ARM AND ADAPTOR PLATES TO RAISE LUMINARIES ON TRAFFIC SIGNAL POLES
M-1228.6	M-94.06	TRAFFIC SIGNAL POLE NOTES
M-1228.7	M-94.07	TRAFFIC SIGNAL POLE - TYPE "ITS" 65'
M-1228.8	M-94.08	TRAFFIC SIGNAL POLE - TYPE "ITS" - NOTES
M-1228.9	M-94.09	3-ANTENNA CLAMP ASSEMBLY FOR 65' ITS POLE
M-1228.10	M-94.10	TRAFFIC SIGNAL MAST ARM MOUNT
M-1229	M-95.01	SIGNAL POLE DRILLING DETAIL
M-1229.1	M-95.02	SIGNAL HEAD ASSEMBLY
M-1229.2	M-95.03	TYPE "S" CLUSTER HEAD

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I229.3	M-95.04	TYPE "T" CLUSTER HEAD
M-I229.4	M-95.05	TYPE "S" AND "T" CLUSTER HEAD NOTES
M-I229.5	M-95.06	PUSH BUTTON STATION
M-I229.6	M-95.07	LED ILLUMINATED STREET NAME SIGN SUPPORT STRUCTURE
M-I229.7	M-95.08	LED ILLUMINATED STREET NAME SIGN DIMENSIONS
M-I229.8	M-95.09	LED ILLUMINATED STREET NAME SIGN SUPPORT STRUCTURE NOTES
M-I229.9	M-95.10	CCTV AND 360 DEGREE PANORAMIC INSTALLATION DETAIL
M-I229.10	M-95.11	VARIOUS COMMUNICATION DEVICE INSTALLATION DETAILS
M-I230	M-96.01	DETECTOR LOOP INSTALLATION DETAILS
M-I230.1	M-96.02	DETECTOR LOOP INSTALLATION NOTES
M-I230.2	M-96.03	DETECTOR LOOP LAYOUT
M-I230.3	M-96.04	DETECTOR LOOP STUBOUT
M-I230.4	M-96.05	VIDEO DETECTION CAMERA INSTALLATION
M-I231	M-97.01	25 CONDUCTOR CABLE ID CODING
M-I231.1	M-97.02	GENERAL CABLE AND WIRING NOTES
M-I231.2	M-97.03	25 CONDUCTOR CABLE #1
M-I231.3	M-97.04	25 CONDUCTOR CABLE #2
M-I231.4	M-97.06	CONDUCTORS IN TRAFFIC SIGNAL POLES
M-I232	M-99.01	PUSH BUTTON STATION SIGNS
M-I232.1	M-99.02	BICYCLE PUSH BUTTON STATION SIGNS
M-I300 - WATER		
M-I300	M-26	SUBRACTIVE METER
M-I301	M-27.01.1	4" FIRE-RATED MECHANICAL WATER METER ASSEMBLY
M-I301.1	M-27.01.2	4" FIRE-RATED MECHANICAL WATER METER ASSEMBLY - NOTES
M-I301.2	M-27.02.1	6" FIRE-RATED MECHANICAL WATER METER ASSEMBLY
M-I301.3	M-27.02.2	6" FIRE-RATED MECHANICAL WATER METER ASSEMBLY - NOTES
M-I301.4	M-27.03.1	8" FIRE-RATED MECHANICAL WATER METER ASSEMBLY
M-I301.5	M-27.03.2	8" FIRE-RATED MECHANICAL WATER METER ASSEMBLY - NOTES

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I301.6	M-27.04.1	MANIFOLDED 8" FIRE MECHANICAL WATER METER ASSEMBLY
M-I301.7	M-27.04.2	MANIFOLDED 8" FIRE MECHANICAL WATER METER ASSEMBLY - NOTES
M-I302	M-28.01.1	4" NON-FIRE-RATED MECHANICAL WATER METER ASSEMBLY
M-I302.1	M-28.01.2	4" NON-FIRE-RATED MECHANICAL WATER METER ASSEMBLY - NOTES
M-I302.2	M-28.02.1	6" NON-FIRE-RATED MECHANICAL WATER METER ASSEMBLY
M-I302.3	M-28.02.2	6" NON-FIRE-RATED MECHANICAL WATER METER ASSEMBLY - NOTES
M-I303	M-29.01	1 1/2" & 2" APPROVED WATER METERS
M-I303.1	M-29.02	PARALLEL 2" WATER METERS FOR 3" WATER SERVICES
M-I304	M-30.01	ANGLE IRON THRUST SUPPORT
M-I304.1	M-30.02	SECURITY CAGE, THREE PIECE CLAMSHELL
M-I305	M-31.01	REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2 1/2" AND LARGER
M-I305.1	M-31.02	DOUBLE CHECK VALVE BACKFLOW ASSEMBLY, 2 1/2" AND LARGER
M-I305.2	M-31.03	REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, 2" AND LESS
M-I305.3	M-31.04	DOUBLE CHECK VALVE BACKFLOW ASSEMBLY; 2" & LESS
M-I305.4	M-31.05	PRESSURE VACUUM BREAKER ASSEMBLY, 2" AND LESS
M-I305.5	M-31.06	DOUBLE CHECK VALVE ASSEMBLY FOR FIRE PROTECTION SYSTEMS
M-I305.6	M-31.07	FIRE LINES TO PRIVATE PROPERTY
M-I305.7	M-31.08	BACKFLOW INSTALLATION CRITERIA USED FOR POINT OF PLUMBING CONNECTION FOR EQUIPMENT
M-I306	M-32	GUARD POST FOR BACKFLOW PREVENTION DEVICES
M-I307	M-38.01.1	COMBINATION AIR VALVE DETAIL ABOVE GROUND
M-I307.1	M-38.01.2	COMBINATION AIR VALVE DETAIL ABOVE GROUND - NOTES
M-I307.2	M-38.02.1	COMBINATION AIR VALVE DETAIL BELOW GROUND
M-I307.3	M-38.02.2	COMBINATION AIR VALVE DETAIL BELOW GROUND - NOTES
M-I307.4	M-38.03	ARV/WV/SEWER MARKER DETAIL
M-I307.5	M-38.04.1	WATER MAIN VERTICAL SWING-TIE CONNECTION DETAIL
M-I307.6	M-38.04.2	WATER MAIN VERTICAL SWING-TIE CONNECTION DETAIL - NOTES
M-I307.7	M-38.04.3	WATER MAIN CATHODIC PROTECTION SYSTEM DETAILS

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I308	M-49.01	WATER SERVICE INSTALLATION
M-I308.1	M-49.02	WATER SERVICE INSTALLATION MATERIALS LIST
M-I308.2	M-49.03	SINGLE AND MANIFOLD WATER METER INSTALLATIONS
M-I309	M-50	WATER LINE CUT AND PLUG FOR 12" DIAMETER MAIN AND SMALLER
M-I310	M-51	WATER VALVE ABANDONMENT
M-I311	M-52	ACP TO DIP TEE CUT IN
M-I312	M-54.02	WATER SAMPLING STATION
M-I313	M-55	STEEL CASING PIPE INSTALLATION DETAIL FOR WATER MAINS
M-I314	M-58	JOINT USE WATER AND GAS TRENCH DETAIL CITY UTILITIES ONLY
<hr/>		
M-I400 - SEWER		
M-I400	M-33	FLUME VAULT STRUCTURE
M-I401	M-34	GASKETED SEWER FITTINGS
M-I402	M-35	CONTROL MANHOLE
M-I403	M-36.01.1	GREASE, OIL AND SAND INTERCEPTOR - SINGLE MANHOLE
M-I403.1	M-36.01.2	GREASE, OIL AND SAND INTERCEPTOR - TWO MANHOLES
M-I403.2	M-36.02	LINT INTERCEPTOR
M-I403.3	M-36.03	INDUSTRIAL WASTE INTERCEPTOR
M-I404	M-54.01	SEWER LINE FLUSHING ASSEMBLY
<hr/>		
M-I500 - LANDSCAPE		
M-I500	M-103.01	PLANTING NOTES
M-I501	M-103.02	TREE PLANTING DETAIL IN TURF AREAS
M-I501.1	M-103.03	TREE PLANTING IN DECOMPOSED GRANITE AREAS
M-I501.2	M-103.04	TREE PLANING ON SLOPE
M-I502	M-103.06	SHRUB PLANTING DETAIL
M-I502.1	M-103.05	ACCENT SHRUB PLANTING DETAIL
M-I502.2	M-103.07	GROUND COVER IN MASS PLANTING AREAS
M-I502.3	M-103.08	SAGUARO PLANTING DETAIL

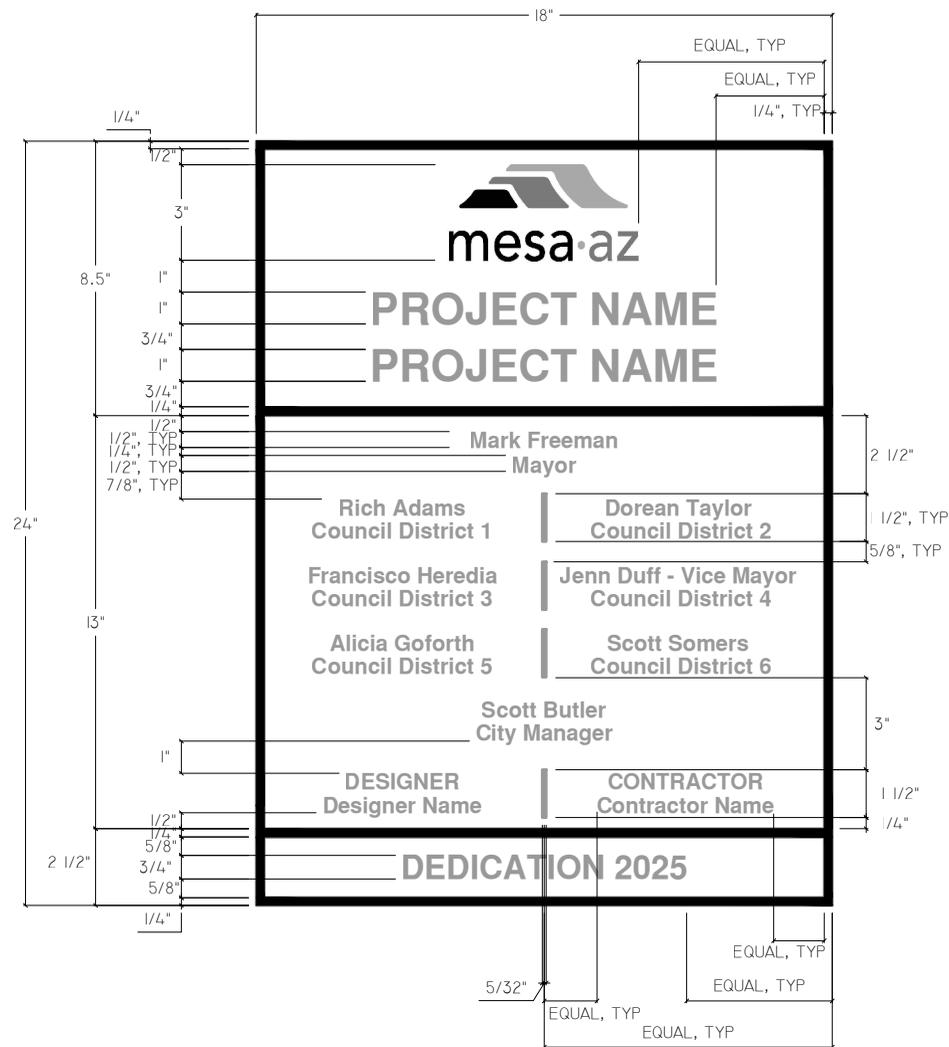
DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-I502.4	M-103.09	OCOTILLO PLANTING DETAIL
M-I503	M-102	LANDSCAPE BOULDER
M-I504	M-III.02	WALKWAY DETAIL
M-I505	M-III.03	CONCRETE TURNDOWN - TYPICAL PARK APPLICATION
M-I506	M-III.06	TYPICAL WALKWAY WITH 4" IRRIGATION TILES - FLOOD IRRIGATION APPLICATION
M-I507	M-III.07	DECOMPOSED GRANITE AT CONCRETE
M-I508	M-III.08	12" CONCRETE HEADER CURB DETAIL
M-I509	M-III.10	PLAYGROUND ADA ACCESS RAMP
M-I510	M-25	PARKS ACCESSIBLE & VAN ACCESSIBLE PARKING SIGNS
<hr/>		
M-I600 - IRRIGATION		
M-I600	M-106.04	IRRIGATION LEGEND
M-I601.1	M-104.02	SCHEMATIC IRRIGATION LAYOUT - BATTERY IRRIGATION CONTROLLER
M-I601.1	M-104.03	SCHEMATIC IRRIGATION LAYOUT - IRRIGATION WITH FLOW CONTROL
M-I601.2	M-104.04	SCHEMATIC IRRIGATION LAYOUT - STANDARD CONTROLLER WITHOUT FLOW CONTROL
M-I601.3	M-104.05	SCHEMATIC IRRIGATION LAYOUT - MOTOROLA CONTROLLER
M-I602	M-104.07	CALSENSE CONTROLLER AND ENCLOSURE
M-I602.1	M-104.08	CALSENSE SOLAR IRRIGATION CONTROLLER AND SOLAR PANEL
M-I602.2	M-104.09	MOTOROLA IRRINET M AC PEDESTAL CONTROLLER
M-I602.3	M-104.10	MOTOROLA IRRINET ACE PEDESTAL CONTROLLER
M-I602.4	M-104.11	IRRIGATION CONTROLLER SECURITY CAGE ON CONCRETE SLAB
M-I603	M-105.01	LANDSCAPE IRRIGATION REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY - 2" AND SMALLER
M-I603.1	M-105.02	LANDSCAPE IRRIGATION REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY ENCLOSURE - 2" AND SMALLER
M-I603.2	M-105.03	LANDSCAPE IRRIGATION REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY ENCLOSURE - 2 1/2" AND LARGER
M-I604	M-105.04	MASTER VALVE / FLOW SENSOR ASSEMBLY

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-1604.1	M-105.05	CALSENSE MASTER VALVE / FLOW SENSOR
M-1605	M-106.03	TYPICAL WIRE CONNECTION DETAIL
M-1606	M-105.07	LANDSCAPE IRRIGATION BRASS GATE VALVE ASSEMBLY INSTALLED WITH SOLVENT WELD PVC PIPE - 2 1/2" OR SMALLER
M-1606.1	M-105.08	LANDSCAPE IRRIGATION BRASS BALL VALVE ASSEMBLY INSTALLED WITH RUBBER RING PIPE
M-1607	M-105.06	LANDSCAPE IRRIGATION QUICK COUPLER DETAIL
M-1608	M-106.01	LANDSCAPE TRENCHING DETAIL
M-1609	M-106.02	TYPICAL LANDSCAPE IRRIGATION THRUST BLOCK DETAILS
M-1610	M-107.01	VALVE MANIFOLD DETAIL
M-1611	M-109.01.1	REMOTE CONTROL VALVE ASSEMBLY IN RIGHT-OF-WAY OR ROADWAY
M-1611.1	M-109.01.2	REMOTE CONTROL VALVE ASSEMBLY IN PARK
M-1612	M-108.01	DRIP VALVE WITH FILTER AND PRESSURE REGULATOR ASSEMBLY
M-1613	M-108.04	LANDSCAPE IRRIGATION EMITTER SCHEDULE
M-1613.1	M-108.02	DRIP SYSTEM - EMITTER DETAIL
M-1613.2	NEW DTL	EMITTER LOCATION - TREES
M-1614	M-109.02	SPRINKLER HEAD WITH SWING JOINT ASSEMBLY
M-1615	M-110.01	TREE BUBBLER ASSEMBLY
M-1616	M-108.03	DRIP SYSTEM - MANUAL FLUSH END CAP ASSEMBLY
M-1617	M-106.05	LANDSCAPE IRRIGATION FRICTION LOSS CALCULATIONS
M-1700 - DRY UTILITIES		
M-1700	M-18	ENGINEERED UTILITY BORES PERPENDICULAR TO CENTERLINE OF STREET
M-1700.1	M-18.01	ENGINEERED UTILITY BORES PARALLEL TO CENTERLINE OF STREET
M-1700.2	M-18.02	TEMPORARY POTHOLE PROTECTION IN ARTERIAL STREETS
M-1700.3	M-18.03	POTHOLE REPAIR DETAIL

DETAIL NO.	OLD	DETAIL NAME/DESCRIPTION
M-1701	M-65	SAFETY RAILING DETAILS
M-1702	M-66.01.1	FIBER OPTIC MANHOLE
M-1702.1	M-66.01.2	4' X 4' FIBER OPTIC BOTTOMLESS MANHOLE
M-1702.2	M-66.02	FIBER OPTIC MANHOLE FRAME AND COVER
M-1702.3	M-66.03	FIBER OPTIC TEST POINT DETAIL
M-1702.4	M-66.04	FIBER OPTIC VAULT/MANHOLE KNOCKOUT DETAIL
M-1702.5	M-66.05	HORIZONTAL COILED FIBER OPTIC CABLE & SPLICE CLOSURE RACKING
M-1702.6	M-66.06	VERTICAL COILED FIBER OPTIC CABLE & SPLICE CLOSURE RACKING
M-1702.7	M-66.07.1	FIBER OPTIC INSTALLATION PULL BOX
M-1702.8	M-66.07.2	MICRODUCT INSTALLATION REFERENCE NOTES
M-1702.9	M-66.07.3	STANDARD FIBER OPTIC CABLE INSTALLATION IN PULL BOX
M-1702.10	M-66.07.4	STANDARD FIBER OPTIC TRENCHING AND DUCT BANK INSTALLATION
M-1702.11	M-66.07.5	STANDARD FIBER OPTIC DUCT BANK CONFIGURATIONS
M-1702.12	M-66.08.1	BUNDLED MICRODUCT INSTALLATION IN PULL BOXES
M-1702.13	M-66.08.3	BUNDLED MICRODUCT CONDUIT INSTALLATION
M-1702.14	M-66.08.4	STANDARD BUNDLED MICRODUCT CONFIGURATION
M-1702.15	M-66.09	FIBER OPTIC CABLE SPOOL LENGTH PER JUNCTION STRUCTURE
M-1702.16	M-66.10	FIBER OPTIC MARKER POST
M-1702.17	M-66.11.01	MICRO-TRENCHING DETAILS
M-1702.18	M-66.11.02	MICRO-TRENCH DETAILS - NOTES
M-1702.19	M-66.11.03	MICRO-TRENCH DETAILS - NOTES
M-1702.20	M-66.11.04	MICRO-TRENCH DETAILS - NOTES
M-1703	M-112.01.1	SMALL WIRELESS FACILITIES ON STREETLIGHTS
M-1703.1	M-112.01.2	SMALL WIRELESS FACILITIES ON TRAFFIC SIGNALS
M-1703.2	M-112.01.3	SMALL WIRELESS FACILITIES ON CITY MONO - POLES
M-1703.3	M-112.01.4	SMALL WIRELESS FACILITIES ON PRIVATE MONO - POLES
M-1703.4	M-112.01.5	SMALL WIRELESS FACILITIES GENERAL NOTES

ALL DETAILS REVISED WITH NEW NUMBERING SYSTEM FOR 2025 PUBLICATION.



NOTES:

1. PLAQUE SHALL BE SATIN ALUMINUM RAISED AREAS WITH BLACK PEBBLE RECESSED AREAS, UNLESS OTHERWISE DIRECTED AND WITH CITY APPROVAL.
2. FONT SHALL BE HELVETICA
3. MOUNTING SYSTEM SHALL BE CONCEALED STUD SYSTEM.

CAST ALUMINUM DEDICATION PLAQUE
 SATIN ALUMINUM RAISED AREAS
 BLACK PEBBLE BACKGROUND
 BLIND STUDS FOR MOUNTING

DEDICATION PLAQUE
FOR CITY OF MESA FACILITIES

OLD
M-2

DETAIL NO.
M-1100

NOT TO SCALE

FIGURE "A" - HAMMER HEAD DRIVE

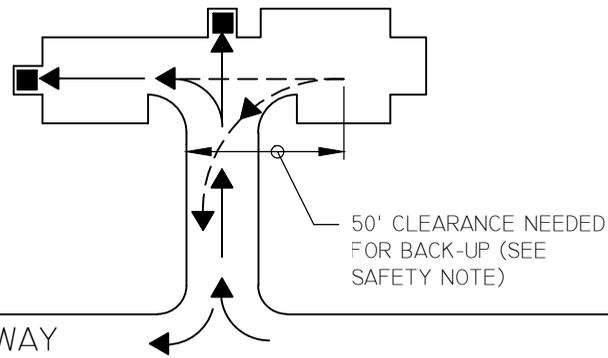
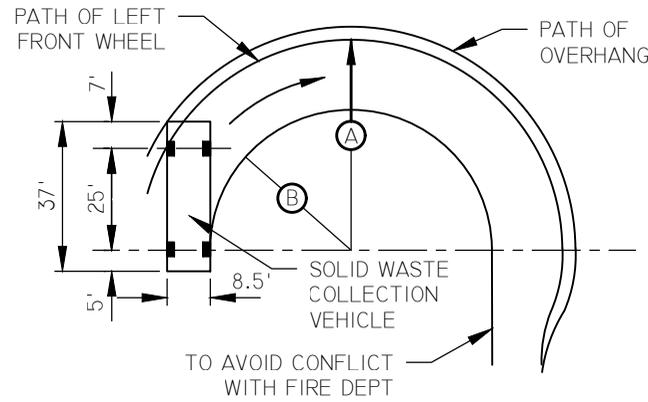


FIGURE "C" - CLEARANCE REQUIREMENTS



- Ⓐ 55' OUTER TURNING RADIUS
- Ⓑ 35' INNER TURNING RADIUS

FIGURE "D" - MAX. BIN DEVIATION

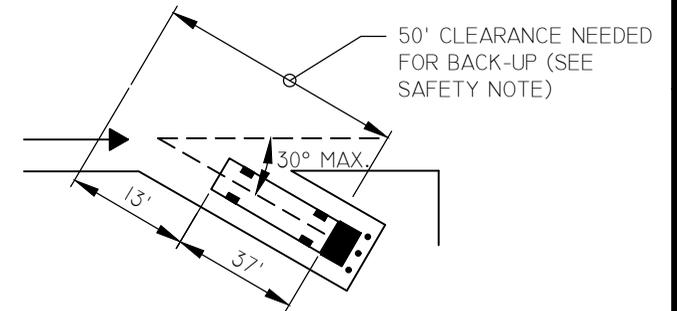
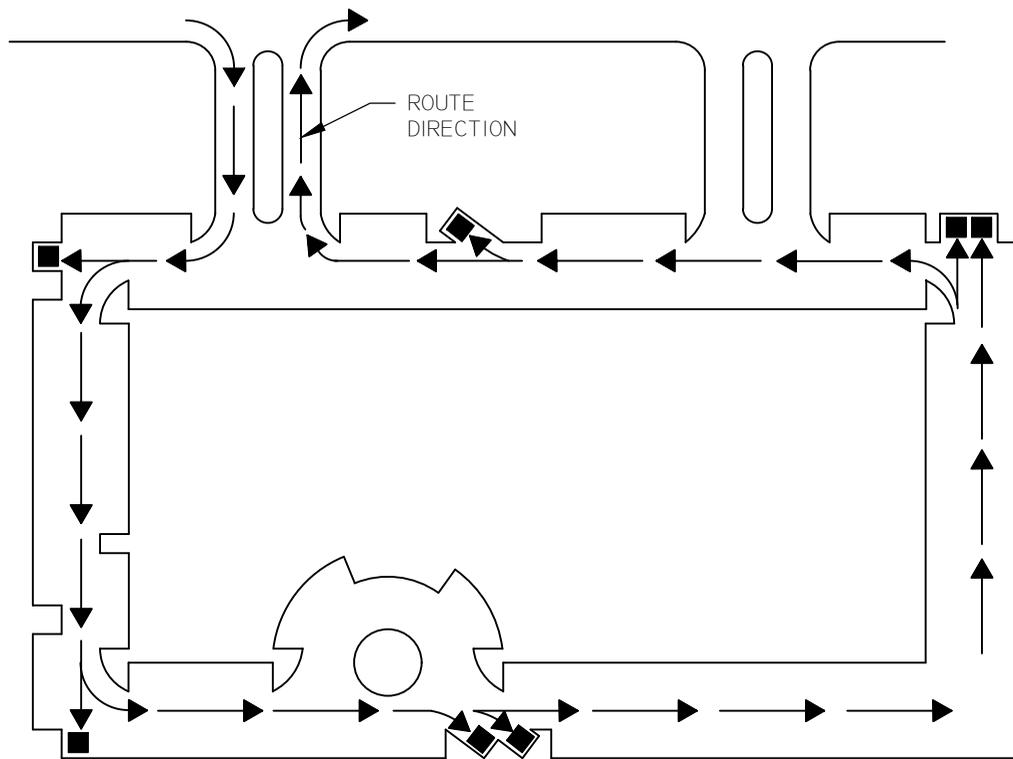


FIGURE "B" - A TYPICAL SOLID WASTE COLLECTION ROUTE



SAFETY NOTE
 ACCESS TO THE BIN SHALL BE DESIGNED TO LIMIT ANY REQUIRED BACKING OF THE SOLID WASTE COLLECTION VEHICLE TO NO MORE THAN 50 FEET. THE 50' IS MEASURED FROM THE FRONT OF THE SOLID WASTE COLLECTION VEHICLE. MAKE SURE THE AREA HAS THE PROPER TURNING RADIUS AND ACCESS AREA TO LEAVE SITE. THE VEHICLE IS APPROXIMATELY 37' LONG. SOLID WASTE COLLECTION VEHICLES WILL NOT TURN WHILE BACKING. A REQUIRED 50' CLEARANCE RECTANGLE DIMENSION IN FRONT OF EACH ENCLOSURE MUST BE SHOWN IN THE EXHIBIT.

NOTES

1. ALL CURBS ARE TO BE ALIGNED ON THE OUTSIDE OF ENCLOSURE WALLS. THE CURBS SHALL NOT INTERFERE WITH THE ROUTE OF THE SOLID WASTE COLLECTION VEHICLE.
2. IN GENERAL TERMS, ALL SOLID WASTE COLLECTION ROUTES SHALL MEET ENGINEERING DESIGN CRITERIA (STREET WIDTHS, TURNING RADII). FIGURES "A"- "C"
3. SOLID WASTE VEHICLES WEIGH APPROXIMATELY 29 TONS WHEN FULL. DRIVEWAYS MUST BE BUILT TO SUPPORT THIS WEIGHT WITHOUT DAMAGE TO DRIVE PER MESA STD DETAILS AND SPECIFICATIONS.
4. NO AWNINGS, BUILDING PROJECTIONS OR GROUND LEVEL OBSTRUCTIONS ALLOWED IN SOLID WASTE COLLECTION ROUTES. MINIMUM OVERHEAD CLEARANCE OF 14' IS REQUIRED IN DRIVE, 20' OVER BARREL SERVICE LOCATION AND 25' OVER BIN ENCLOSURE AREA FROM STEEL SAFETY POSTS BACK 50'. MINIMUM 20' GATE OPENING FOR INGRESS/EGRESS GATES.
5. ROUTES SHALL BE CLEAR OF ALL OBSTRUCTIONS (CURBS, TREES, WALLS, OVERHEAD WIRES, AND AWNINGS). ALL BIN ENCLOSURES MUST BE A MINIMUM OF 10' AWAY FROM ALL TYPES OF GATES AND AWNINGS.
6. THE COLLECTION VEHICLE SHALL TRAVEL THROUGH A SITE ONCE WITHOUT BACKTRACKING.
7. BIN ENCLOSURES ARE TO BE ANGLED NO MORE THAN 30 DEGREES FROM THE CENTER LINE OF THE SOLID WASTE COLLECTION VEHICLE ROUTE. FIGURE "D"
8. BIN ENCLOSURES SHALL BE LOCATED AWAY FROM ENTRANCES AND EXITS OR BUSINESS DRIVE-THRU'S.
9. STANDARDS FOR BIN ENCLOSURE SCREEN WALLS, SAFETY POSTS, AND GATES ARE ADDRESSED IN COM DETAIL M-1101.4 (OLD M-62.04.01).

NOT TO SCALE

DOUBLE-WIDE BIN ENCLOSURE CONFIGURATIONS

FIGURE "E"

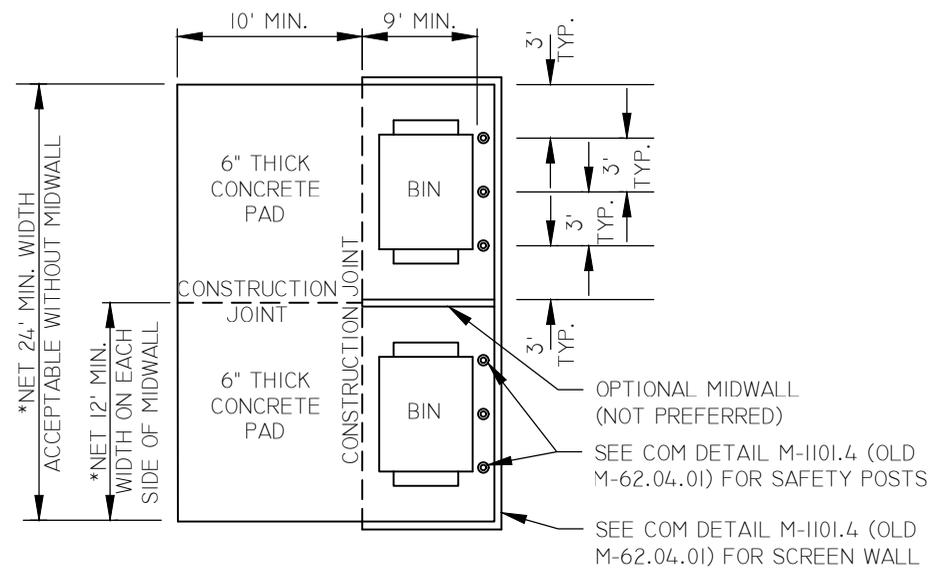


FIGURE "F"

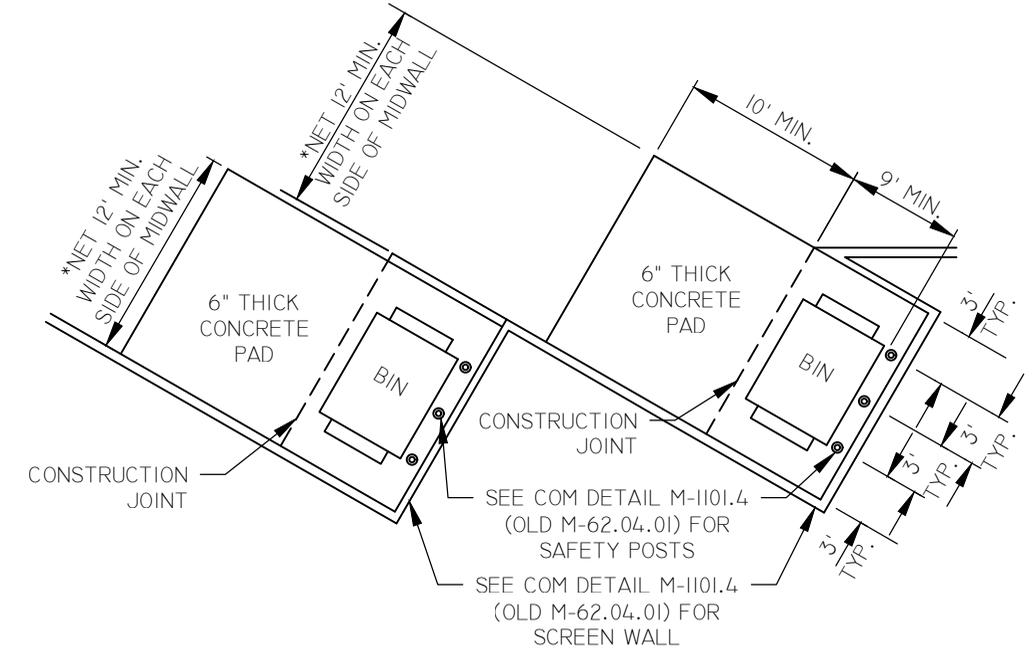
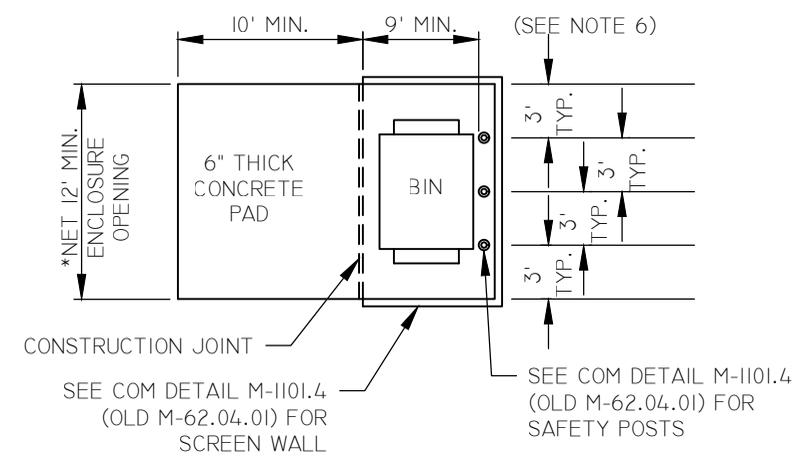


FIGURE "G" - SINGLE-WIDE BIN ENCLOSURE CONFIGURATION



* NET WIDTH IS MEASURED FROM THE MOST INNER PART OF THE ENCLOSURE

SEE COM DTL M-1101.2 (OLD M-62.02.2) FOR REFERENCED NOTES

SINGLE AND DOUBLE-WIDE BIN ENCLOSURES

DETAIL NO. M-1101.1
OLD M-62.02.1

NOT TO SCALE

NOTES - THESE NOTES ARE IN ADDITION TO THE STANDARDS FOR SOLID WASTE ACCESS

1. ALL COMMERCIAL PROPERTIES SHALL BE DESIGNED WITH ENCLOSURES TO ACCOMMODATE (I) REFUSE AND (I) RECYCLING ENCLOSURE FOR EVERY 20,000 SQUARE FEET OF BUILDING SPACE. RESTAURANTS WHICH ARE DESIGNED ON A SINGLE PAD SHALL HAVE A MINIMUM (I) REFUSE AND (I) RECYCLING ENCLOSURE. THE ENCLOSURES CAN BE SET UP AS DOUBLES OR SINGLES TO MAXIMIZE THE USE OF THE PROPERTY. EACH COMMERCIAL BUILDING REGARDLESS OF SIZE NEEDS TO HAVE ITS OWN DOUBLE ENCLOSURE. ENCLOSURES CANNOT BE ATTACHED TO ANY STRUCTURE.
2. MULTI-UNIT RESIDENTIAL DEVELOPMENTS SHALL BE DESIGNED WITH EITHER SINGLE OR DOUBLE-WIDE ENCLOSURES FOR TRASH AND AT LEAST ONE ENCLOSURE FOR RECYCLING IDENTIFIED ON THE SITE PLAN.
3. COMPACTORS ARE ENCOURAGED IN DEVELOPMENTS WHERE THE EMPLOYEES LOAD AND ACTIVATE THE COMPACTING EQUIPMENT. DEVELOPMENTS THAT ALLOW CUSTOMERS OR RESIDENTS ACCESS TO THE COMPACTING EQUIPMENT WILL NOT BE APPROVED.
4. MARICOPA COUNTY REGULATIONS (MARICOPA COUNTY ENVIRONMENTAL HEALTH CODE CHAPTER 2, SECTION 5, REGULATION 4 (A)) REQUIRE TWICE PER WEEK COLLECTION IF FOOD WASTE IS PLACED INTO CONTAINERS.
5. THE NUMBER OF BIN ENCLOSURES NEEDED DEPENDS ON THE SIZE OF THE DEVELOPMENT. TOTAL VOLUME NEEDS CAN BE CALCULATED BASED ON ONE HALF-CUBIC YARD PER LIVING UNIT PER WEEK. FOR EXAMPLE, A DEVELOPMENT WITH 240 UNITS X .5 YARDS = 120 YARDS PER WEEK OR 10 TRASH BINS (6 YARD) SERVICED TWO TIMES PER WEEK (10 X 6 X 2 = 120 YARDS).
6. SINGLE-WIDE BIN ENCLOSURES SHALL HAVE A NET ENCLOSURE OPENING OF 12 FEET BETWEEN THE GATES WHEN OPENED. FIGURE "G"
7. DOUBLE-WIDE BIN ENCLOSURES SHALL HAVE A NET ENCLOSURE OPENING OF 24 FEET WITHOUT MIDWALLS. ALTHOUGH NOT PREFERRED, DOUBLE WIDE BIN ENCLOSURES CAN BE DESIGNED WITH MIDWALLS WITH A NET ENCLOSURE OPENING OF 12 FEET ON EACH SIDE OF MIDWALL. FIGURES "E", "F"
8. GATES, HINGES, SAFETY POSTS, & MOUNTING HARDWARE SHALL BE INSTALLED SO THERE IS A MIN. 9 FOOT DEPTH CREATED WITHIN EACH ENCLOSURE.
9. GATES, HINGES AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING SO THERE IS A MINIMUM 12' WIDTH WITHIN EACH ENCLOSURE. DOUBLE ENCLOSURE GATES MUST BE ABLE TO OPEN SIMULTANEOUSLY.
10. BINS THAT ARE VISIBLE FROM A PUBLIC ROADWAY SHALL HAVE ENCLOSURE GATES THAT SCREEN THE BINS FROM PUBLIC VIEW.
11. BIN ENCLOSURES TO BE A MINIMUM OF 3 FEET FROM ANY NON-COMBUSTIBLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT; 5 FEET FROM ANY COMBUSTIBLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT (PER UNIFORM FIRE CODE 1103.2.2).
12. RESTAURANTS MUST PROVIDE A SEPARATE ENCLOSED AREA TO ACCOMMODATE THEIR GREASE TRAP. THIS DESIGNATED AREA MUST NOT INTERFERE WITH THE TRASH/RECYCLING COLLECTION.
13. SOLID WASTE ENCLOSURES MAY INCLUDE WATER CONNECTIONS & DRAINS TO FACILITATE CLEANING OF DUMPSTERS. THESE SHOULD BE LOCATED TO NOT IMPEDE THE ENCLOSURE OPENING (AND GATING IF REQUIRED). ADDITIONAL ITEMS SUCH AS LANDSCAPING CONTROL BOXES AND LIGHTING MAY BE POSITIONED ON THE OUTSIDE OF THE ENCLOSURE WALLS.
14. TREE PLANTING SHALL NOT TAKE PLACE WITHIN TEN (10) FEET OF THE BIN ENCLOSURE AND SHALL BE SPACED SO AS NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BIN DUMPING AT THE FINAL FULL GROWTH DIMENSIONS. TREE PLANTING CANNOT ENCROACH THE 50' MANEUVERABILITY AREA.
15. TRASH ENCLOSURES FOR COMMERCIAL PROPERTIES MUST BE EVENLY SPACED FOR TENANT ACCESS. TRASH ENCLOSURES FOR APARTMENT/CONDO/TOWN-HOME/MULTI-FAMILY COMPLEXES MUST BE EVENLY SPACED FOR RESIDENTIAL ACCESS.
16. A REQUIRED 50' RECTANGULAR DIMENSION IN FRONT OF EACH ENCLOSURE MUST BE SHOWN ON THE SITE PLAN. THIS AREA MUST BE FREE AND CLEAR OF ALL OBSTRUCTIONS INCLUDING TREES. THIS WILL ALLOW THE OPERATOR SAFE MANEUVERABILITY. OVERHEAD OBSTRUCTIONS MUST BE MINIMUM HEIGHT OF 25'. REFER TO MAX. BIN DEVIATION ON DETAIL M-1101.1 (OLD M-62.02.1). FIGURE "D"
17. USE OF A SAFETY POST ENCLOSURE IS SUBJECT TO APPROVAL BY THE CITY OF MESA SOLID WASTE DEPARTMENT DURING THE DESIGN PHASE OF THE PROJECT.
18. SAFETY POST ENCLOSURES, WHEN APPROVED, WILL BE DESIGNED PER COM DETAIL M-1101.4 (OLD M-62.04.01) SAFETY POST. SAFETY POSTS WILL BE SET HORIZONTALLY TO REPLICATE SCREEN WALL DIMENSIONS PER COM DETAIL M-1101.4 (OLD M-62.02.1), HAVING A MAXIMUM SPACING OF 3' FROM CENTER OF SAFETY POST TO CENTER OF SAFETY POST.

INDUSTRIAL TYPE WAREHOUSE
BUILDING ENCLOSURE REQUIREMENTS

1. BUILDINGS THAT HAVE BAYS ON ONE SIDE AND ARE NO GREATER THAN 99,999 SQ. FT. WILL NEED AT LEAST TWO SETS OF DOUBLE ENCLOSURES.
2. BUILDINGS THAT HAVE BAYS ON ONE SIDE WITH 100,000+ SQ. FT. WILL NEED TO HAVE A MINIMUM OF THREE SETS OF DOUBLE ENCLOSURES.
3. BUILDINGS THAT HAVE BAYS ON BOTH SIDES OF THE BUILDING AND ARE NO GREATER THAN 99,999 SQ. FT. REQUIRE FOUR SETS OF DOUBLE ENCLOSURES. TWO SETS ON EACH SIDE OF THE BUILDING.
4. BUILDINGS THAT HAVE BAYS ON BOTH SIDES WITH 100,000+ SQ. FT. WILL REQUIRE A MINIMUM OF SIX SETS OF DOUBLE ENCLOSURES. THREE SETS OF ENCLOSURE NEED TO BE PLACED ON EACH SIDE OF THE BUILDING.



SINGLE AND DOUBLE-WIDE BIN ENCLOSURES - NOTES

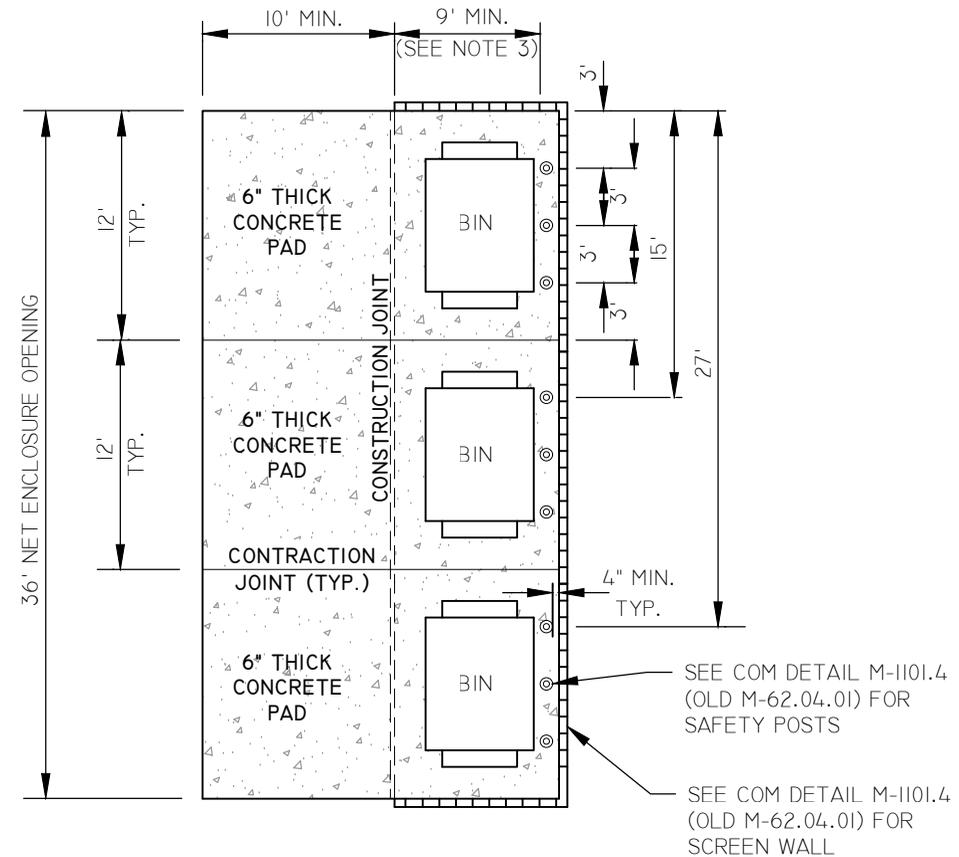
OLD
M-62.02.2

DETAIL NO.
M-1101.2

TRIPLE-WIDE BIN ENCLOSURE

NOTES - THESE NOTES ARE IN ADDITION TO THE STANDARDS FOR SOLID WASTE ACCESS

1. MULTI-UNIT RESIDENTIAL DEVELOPMENTS MAY BE DESIGNED WITH A TRIPLE-WIDE ENCLOSURE TO ACCOMMODATE RECYCLING. ADDITIONAL ENCLOSURES MAY BE NECESSARY DEPENDING ON NUMBER OF UNITS. TOTAL VOLUME NEEDS ARE ADDRESSED IN COM DETAIL M-1101.2 (OLD M-62.02.2).
2. TRIPLE-WIDE ENCLOSURES SHALL HAVE A NET ENCLOSURE OPENING OF 36 FEET AND SHALL BE DESIGNED WITHOUT MIDWALLS, GATES AND HINGES.
3. GATES, HINGES, SAFETY POSTS, AND MOUNTING HARDWARE SHALL BE INSTALLED SO THERE IS A MINIMUM 9 FOOT DEPTH CREATED WITHIN EACH ENCLOSURE.
4. CONTRACTION JOINTS MAY BE EITHER SCORED OR SAWCUT 1-INCH DEEP.
5. GATES, HINGES AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING SO THERE IS A MINIMUM 12' WIDTH CLEAR WITHIN EACH ENCLOSURE.
6. USE CLASS "A" CONCRETE AS PER SECTION 725 EXCEPT AS NOTED IN SAFETY POST DETAIL ON COM DETAIL M-1101.4 (OLD M-62.04.1).



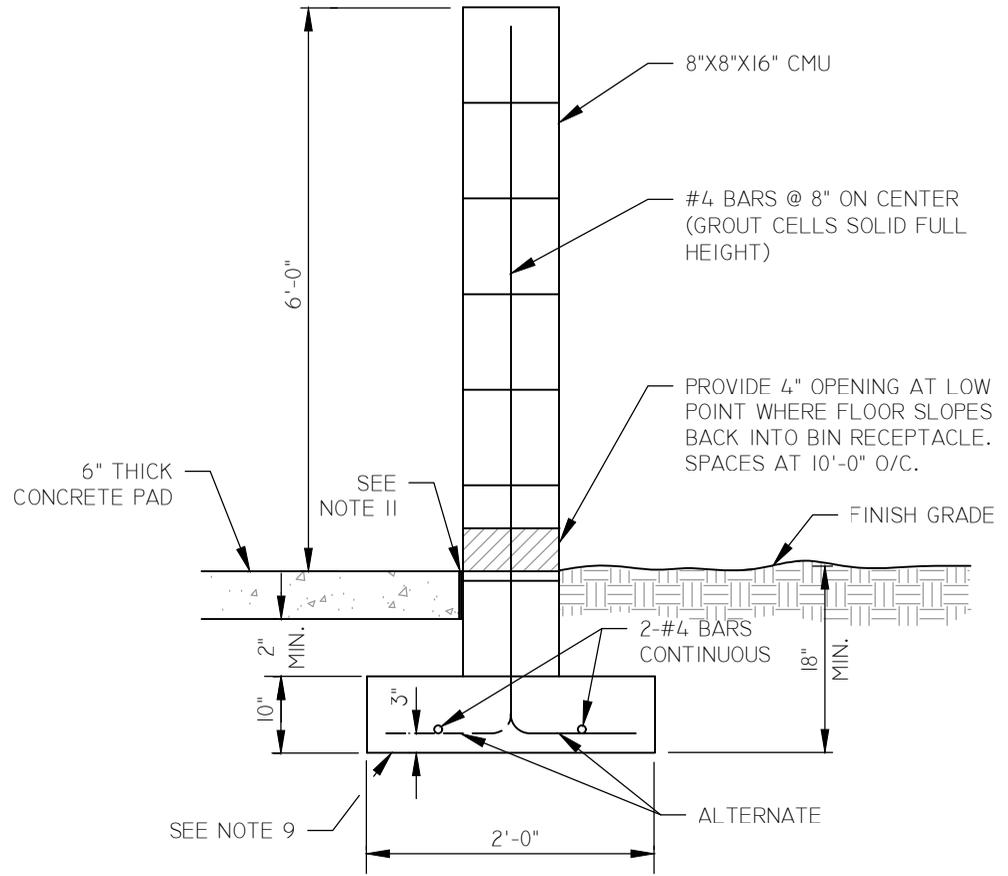
TRIPLE-WIDE BIN ENCLOSURES

OLD
M-62.03

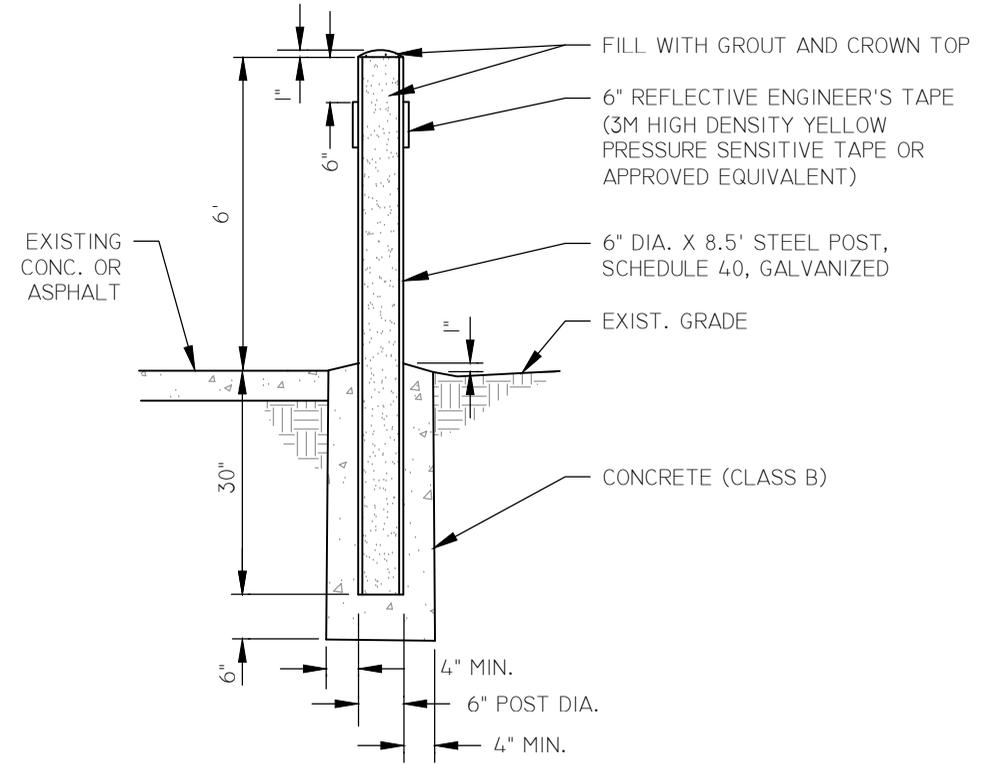
DETAIL NO.
M-1101.3

NOT TO SCALE

6-FOOT MASONRY SCREEN WALL



SAFETY POST



SEE COM DTL M-1101.5
(OLD M-62.04.2) FOR
REFERENCED NOTES

NOT TO SCALE

BIN ENCLOSURE SCREEN WALL, SAFETY POST
AND GATE STANDARDS

DETAIL NO. M-1101.4
OLD M-62.04.1

NOTES

1. TRASH AND RECYCLING BIN AREA SHALL BE SCREENED WITH A SIX FOOT (6') MASONRY WALL PER COM DETAIL M-1101.4 (OLD M-62.04.1).
2. GATES SHALL BE INSTALLED SO THERE IS A NET BIN ENCLOSURE OPENING OF 12 FEET PER BIN. GATES, HINGES, AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING.
3. EACH ENCLOSURE GATE SHALL HAVE DROP PINS INSTALLED AND HOLES DRILLED IN THE CONCRETE AT BOTH THE OPEN AND CLOSED POSITIONS TO PREVENT GATES FROM CLOSING INTO THE COLLECTION VEHICLE.
4. BIN ENCLOSURES SHALL HAVE (3) 6" DIAMETER STEEL SAFETY POSTS INSTALLED IN THE BACK OF THE ENCLOSURE ONLY PER COM DETAIL M-1101.4 (OLD M-62.04.1).
5. SAFETY POSTS SHALL HAVE A HEIGHT OF 6 FEET OR BE EQUAL TO THE HEIGHT OF THE BACK SCREEN WALL OF THE ENCLOSURE. SAFETY POSTS SHALL BE PLACED A MINIMUM OF 4" FROM THE WALL.
6. USE CLASS "A" CONCRETE AS PER SECTION 725 EXCEPT AS NOTED IN SAFETY POST DETAIL ON COM DETAIL M-1101.4 (OLD M-62.04.1).
7. STEEL REINFORCEMENT SHALL BE GRADE 40.
8. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER ASTM D-1751.
9. EXTERIOR FINISH OF 6 FOOT MASONRY SCREEN WALLS SHALL BE COORDINATED ARCHITECTURALLY WITH PRIMARY BUILDING FINISHES.
10. SOIL BELOW THE WALL FOOTER AND CONCRETE PAD SHALL BE COMPACTED TO A DEPTH OF 6 INCHES AND TO A MINIMUM DRY DENSITY OF 90% IN ACCORDANCE WITH ASTM D-2922 AND D-3017, AFTER ADJUSTMENT FOR ROCK CORRECTION.

SEE COM DTL M-1101.4
(OLD M-62.04.1) FOR
REFERENCED NOTES

BIN ENCLOSURE SCREEN WALL SAFETY POST
AND GATE STANDARDS - NOTES

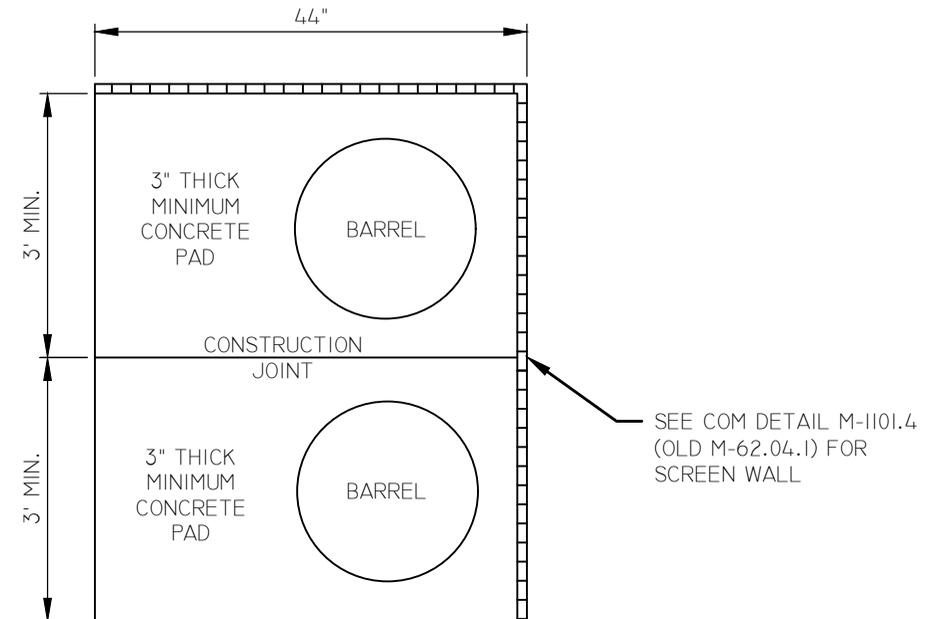
OLD
M-62.04.2

DETAIL NO.
M-1101.5

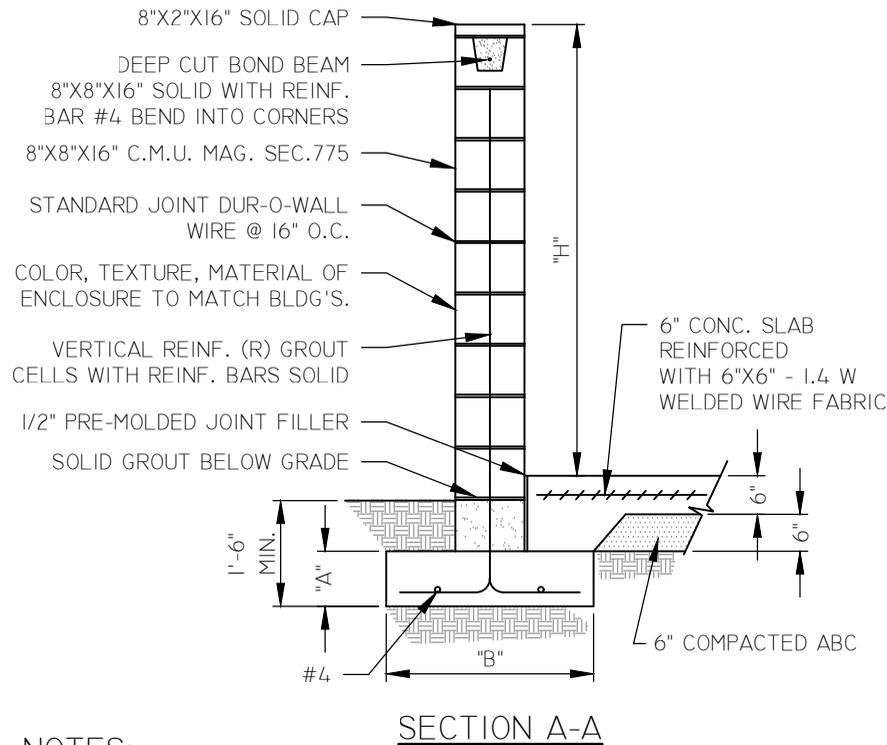
STORAGE AREA SCREEN WALLS FOR BARREL SERVICE

NOTES

1. BUSINESSES AND APARTMENTS THAT GENERATE A SMALL VOLUME OF REFUSE AND RECYCLABLES (TYPICALLY SMALL OFFICES, DUPLEXES, TRIPLEXES, AND FOURPLEXES) MAY REQUEST TO USE AUTOMATED BARREL SERVICE. PRIOR APPROVAL MUST BE MADE FROM THE SOLID WASTE DIVISION. APPROVAL WILL BE BASED ON THE NEEDS OF BUSINESS OR APARTMENTS, ROUTING OF THE STOP, AND SPECIAL CIRCUMSTANCES PERTAINING TO THE PARCEL.
2. THE NUMBER OF BARRELS WILL BE DETERMINED BY:
 - BUSINESS - THE NUMBER OF OCCUPANTS AND THE SERVICES THEY PROVIDE.
 - APARTMENTS - THE NUMBER OF UNITS.
3. STORAGE AREA SCREEN WALLS ARE REQUIRED FOR BUSINESSES AND APARTMENTS THAT UTILIZE BARREL SERVICE. THE WALL SHALL BE DESIGNED TO SCREEN THE BARRELS FROM PUBLIC VIEW.
4. THE LENGTH OF THE PAD WILL DEPEND ON THE NUMBER OF BARRELS RECOMMENDED BY THE SOLID WASTE DEPARTMENT (3' FOR EACH BARREL). THE PAD SHALL BE A MINIMUM OF 3" OF CONCRETE WITHOUT A LIFT. THIS WILL ENABLE THE CUSTOMERS TO ROLL THE BARRELS WITH MINIMUM DIFFICULTY. THE DEPTH SHALL BE 44" AND THE HEIGHT A MINIMUM OF 4'.
5. COLLECTION OF BARRELS WILL FOLLOW THE CURRENT RESIDENTIAL COLLECTION STANDARDS.



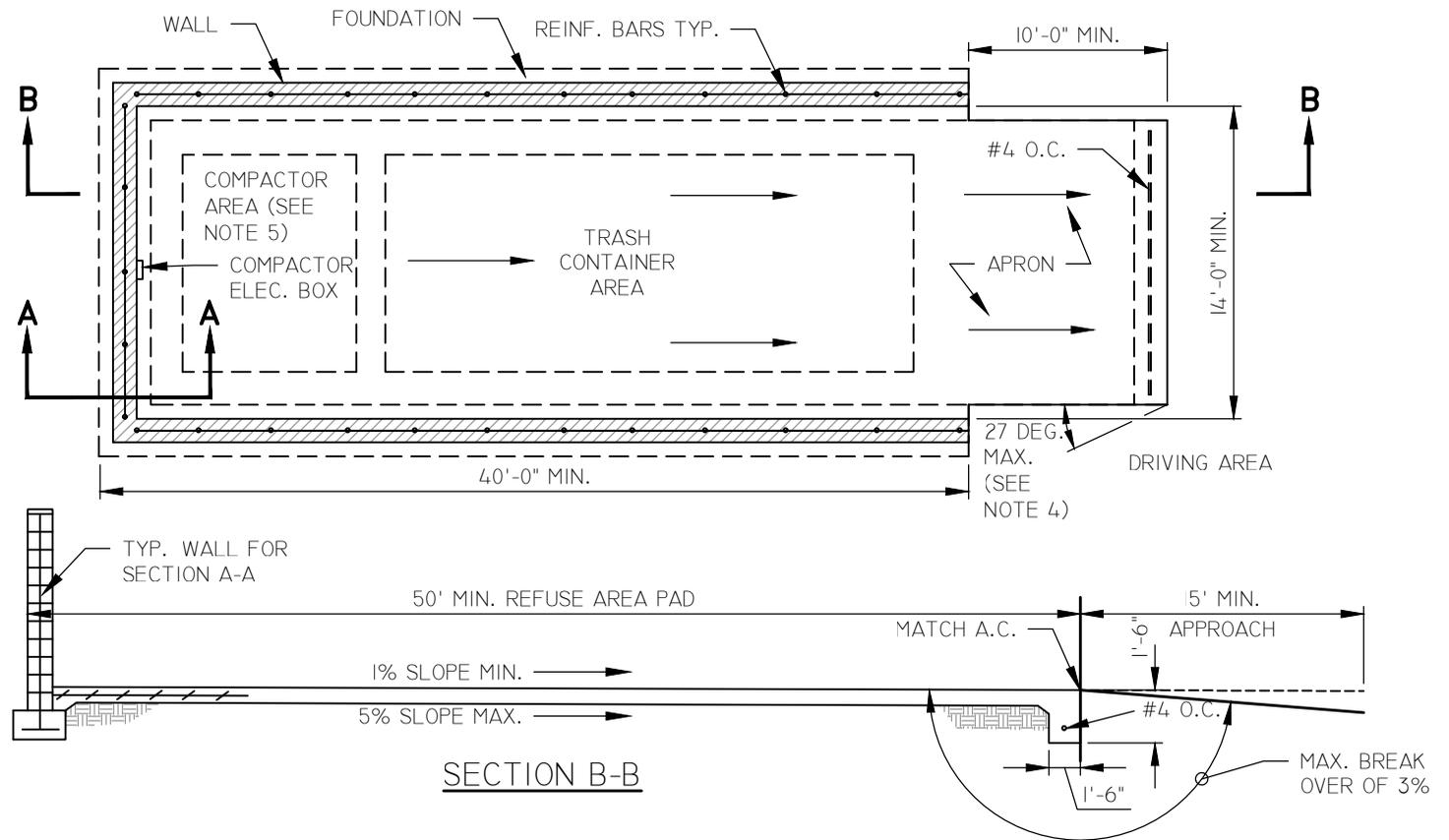
NOT TO SCALE



NOTES:

1. CONSTRUCT ENCLOSURE PER COM DETAIL M-1101.4 (OLD M-62.04).
2. ALL INTERIOR PAD DIMENSIONS ARE MINIMUMS.
3. WALL HEIGHT DETERMINED BY COMPACTOR HEIGHT (6'-0" MIN.).
4. FINAL LOCATION AND ORIENTATION TO BE DETERMINED BY THE CITY.
5. PROVIDE PEDESTRIAN ACCESS TO THIS AREA (THRU WALL)
6. CONCRETE $f_c = 3,000$ PSI
- REINFORCING $f_y = 60,000$ PSI
 $f_s = 24,000$ PSI
- MASONRY $f_m = 1,500$ PSI
7. SAFETY POSTS, WHEEL STOPS, & GUIDE RAILS SECURED TO CONCRETE SLAB, ARE REQUIRED FOR ALL ENCLOSURES. SAFETY POSTS ARE ADDRESSED IN COM DETAIL M-1101.4 (OLD M-62.04).
8. ANY DOORS PROVIDED (NOT SHOWN ON THIS DETAIL) SHALL BE SELF-CLOSING AND SELF-LATCHING.

LARGE COMPACTOR REFUSE AREA



SECTION B-B

TABLE #1

"H"	"A"	"B"	"R"
6'-0"	12"	24"	#4 @ 48"
7'-0"	12"	24"	#5 @ 48"
8'-0"	12"	24"	#5 @ 48"
9'-0"	12"	28"	#6 @ 48"
10'-0"	12"	30"	#6 @ 48"

NOT TO SCALE

9. GATES (NOT SHOWN ON THIS DETAIL) SHALL BE PROVIDED FOR SCREENING PURPOSES ACROSS THE FRONT OF THE ENCLOSURE. STANDARDS FOR GATES ARE ADDRESSED IN COM DETAIL M-1101.4 (OLD M-62.04.1).
10. GATES, HINGES, AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING.
11. ENCLOSURES SHALL HAVE A MINIMUM OPENING OF 14'.
12. REFER TO COM DETAIL M-1101 (OLD M-62.01) FOR CLEARANCE REQUIREMENTS.
13. SOME COMPACTORS MAY HAVE COMPACTOR AREA IN FRONT (PREFERRED METHOD). SELF LOADING FRONT LOAD COMPACTOR PREFERRED.

THE CITY OF MESA RESIDENTIAL SOLID WASTE GUIDELINES



RESIDENTIAL SOLID WASTE GUIDELINES

OLD
M-62.07

DETAIL NO.
M-1101.8

SUBDIVISION REQUIREMENTS FOR AUTOMATED BARREL COLLECTION

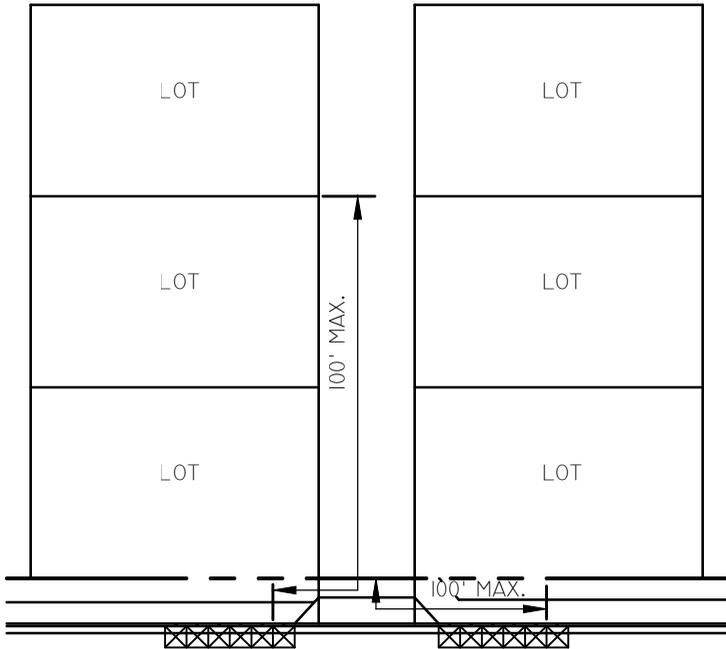
TO ENSURE THAT THE SOLID WASTE DEPARTMENT PROVIDES SAFE AND EFFICIENT RESIDENTIAL SOLID WASTE SERVICES TO OUR CUSTOMERS, THE FOLLOWING LIST HAS BEEN DEVELOPED WITH REGARD TO ALL PLANS/ZONING CHANGES:

1. ON STREET PARKING REQUIREMENTS: UNDER 30' WIDTH - NO PARKING EITHER SIDE; 30' WIDTH - PARKING ON ONE SIDE EXCEPT IN FRONT OF BARREL PLACEMENT MARKERS, AS SIGNED. COORDINATE WITH SOLID WASTE AND TRANSPORTATION TO DETERMINE WHICH SIDE OF THE STREET MAY HAVE PARKING. 34' WIDTH - NO PARKING IN FRONT OF BARREL PLACEMENT MARKERS, AS SIGNED. PLEASE BE ADVISED THAT IF THE WIDTH OF THE PROPOSED PUBLIC STREET IS LESS THAN CITY REQUIREMENTS, AND BARREL COLLECTION IS ON ONE-SIDE OF THE STREET ONLY, THEN YOU WILL NEED TO COMPLY WITH THE STANDARDS 1, 3, 4 AND 6 NOTED FOR SMALL LOT/MULTI-LOT WITH PRIVATE DRIVE BARREL COLLECTION.
2. PRIVATE STREETS MUST HAVE AN AREA FOR COLLECTION WITHOUT OBSTRUCTION AND PROVIDE A SOLID WASTE UTILITY EASEMENT.
3. PRIVATE STREETS MUST BE DESIGNED TO WITHSTAND THE WEIGHT OF 37 CUBIC YARD COLLECTION VEHICLES (APPROX. 29 TONS).
4. ALL STREETS MUST BE DESIGNED SO THAT COLLECTION VEHICLES ARE NOT REQUIRED TO BACK UP AT ANY TIME (HAMMERHEAD DRIVES AND DEAD-ENDS ARE UNACCEPTABLE).
5. PRIVATE STREETS WITH CUL-DE-SACS MUST BE DESIGNED TO MEET CITY OF MESA STANDARDS FOR CUL-DE-SAC TURNING RADII. FIGURE "C"
6. DEVELOPERS OF GATED SUBDIVISIONS MUST SUPPLY SOLID WASTE DEPARTMENT WITH A GATE CODE AND 3 REMOTES THAT MUST BE FUNCTIONAL TO OPEN ALL GATES FROM EITHER SIDE OF ENTRY AT TIME OF INSTALLATION. FAILURE TO PROVIDE GATE CODE OR REMOTE ACCESS WILL RESULT IN THE INABILITY OF RECEIVING SERVICE. ALL GATES MUST OPEN FROM THE CODE AND REMOTE PROVIDED. EXIT ONLY GATES WILL ALSO BE WIRED FOR AUTOMATIC OPENING. ALL GATES MUST REMAIN OPEN FOR A MINIMUM 30 SECONDS ONCE FULLY OPEN.
7. FOR STREETS DESIGNATED FOR CURBSIDE BARREL COLLECTION, TREE PLANTING SHALL BE SPACED SO AS NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BARREL DUMPING AT THE FINAL FULL GROWTH DIMENSIONS.
8. STREETLIGHTS WILL NEED TO BE DESIGNATED TO ACCOMMODATE THE HEIGHT OF THE SOLID WASTE COLLECTION VEHICLE. MINIMUM HEIGHT MUST BE 14'.
9. MINIMUM 14' OVERHEAD CLEARANCE (INCLUDING STREET LIGHTS) IS NEEDED FOR COLLECTION VEHICLE TO SAFELY NEGOTIATE.
10. BARREL PAD LOCATIONS SHALL BE NO MORE THAN 100' FROM UNIT UTILIZING THE PAD. DISTANCE IS MEASURED FROM THE MIDDLE OF THE BARREL PAD TO THE PARCEL. THE DISTANCE IS BASED ON WALKING DISTANCE, NOT AS A "CROW FLIES". BARRELS MUST REMAIN ON THE SAME STREET.
11. ALL STREETS FOR CURBSIDE COLLECTION MUST BE A MINIMUM OF 28' FROM FACE OF CURB TO FACE OF CURB. THIS INCLUDES ALLEYS.
12. BARREL SERVICE LOCATION CANNOT BE PLACED WITHIN 34' FROM ANY COMMUNITY EXIT GATE WHEN OPENED OR CLOSED.

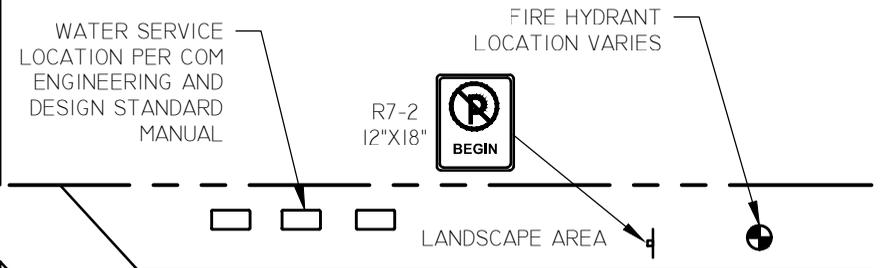
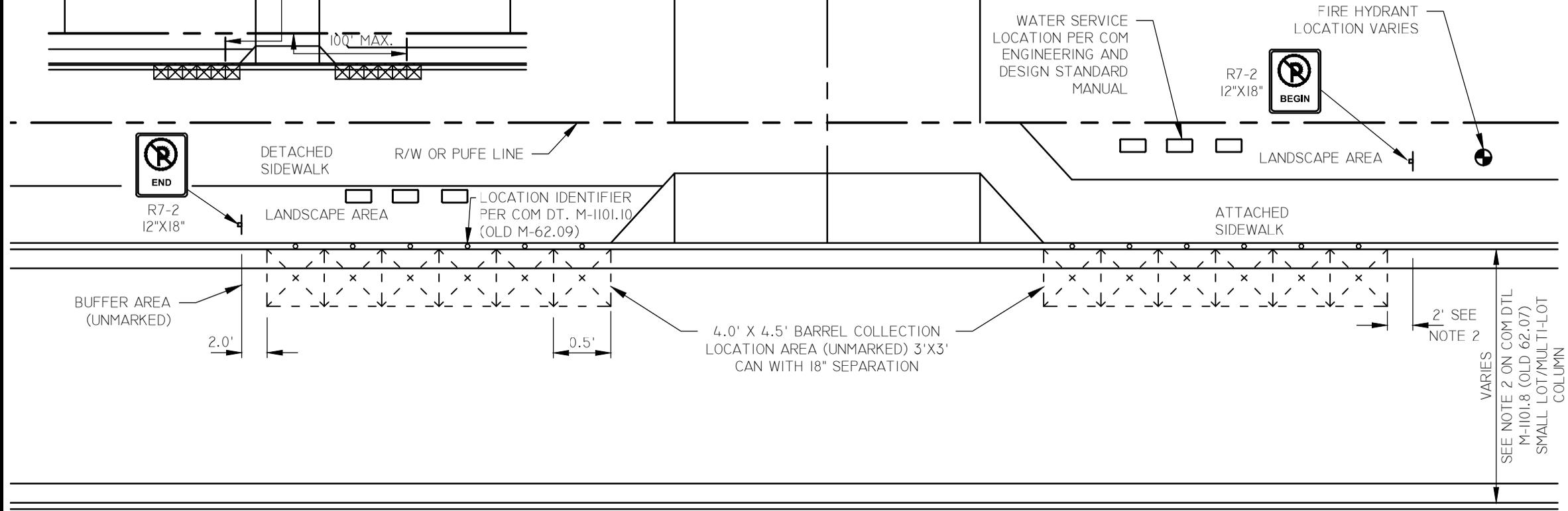
SMALL LOT/MULTI-LOT WITH PRIVATE DRIVE BARREL COLLECTION

THE COURTYARD OR CLUSTER TYPE HOME DESIGN THAT DOES NOT ALLOW FOR CURBSIDE PICKUP (IN FRONT OF CUSTOMERS HOME) OF THE SOLID WASTE AND RECYCLABLE BARRELS SHOULD MEET THE FOLLOWING CRITERIA:

1. WHERE STREET PARKING IS PROHIBITED AT ALL TIMES, EACH UNIT MUST HAVE A PREDETERMINED LOCATION FOR A MINIMUM OF 2 BARRELS PER UNIT. BARRELS SHALL HAVE A DESIGNATED LOCATION ON THE STREET WITH A PERMANENT MARKING ON THE CURBING IDENTIFYING ADDRESS OR UNIT NUMBER REFER TO M-1101.10 (OLD M-62.09). SHOW ALL BARREL LOCATIONS, WITH ADDRESSES, ON SITE PLAN. FOR VISIBILITY TRIANGLE, REFER TO LATEST VERSION OF ENGINEERING AND DESIGN STANDARDS. LOCATIONS FOR THE BARRELS SHALL BE IDENTIFIED WITH A DURABLE METAL MARKER, REFER TO M-1101.10 (OLD M-62.09).
2. ON STREET PARKING REQUIREMENTS:
 UNDER 30' WIDTH - NO PARKING EITHER SIDE
 30' WIDTH - PARKING ON ONE SIDE EXCEPT IN FRONT OF BARREL PLACEMENT MARKERS, AS SIGNED. COORDINATE WITH SOLID WASTE AND TRANSPORTATION TO DETERMINE WHICH SIDE OF ROAD MAY HAVE PARKING.
 34' WIDTH - NO PARKING IN FRONT OF BARREL PLACEMENT MARKERS, AS SIGNED.
3. BARREL MUST BE PHYSICALLY LOCATED IN SUCH A WAY THAT THE DISTANCE TO THE PARCEL IS A MAXIMUM OF 100 FEET. THE LOCATION SHOULD BE LOGICALLY PLACED SO THAT RESIDENT(S) WOULD INSTINCTIVELY KNOW THEIR PLACEMENT LOCATION.
4. PLACEMENT DESIGNATIONS SHALL NOT BE LOCATED NEAR CLUSTER MAILBOX LOCATIONS. BARRELS SHOULD HAVE A MINIMUM 54" SPACING, CENTER TO CENTER OF BARREL.
5. TREES SHALL NOT BE PLANTED WITHIN TEN (10) FEET OF THE BARREL LOCATION AREA AND SHOULD BE SPACED SO AS NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BARREL DUMPING AT THE FINAL FULL GROWTH DIMENSIONS.
6. NO STRUCTURE OF ANY KIND SHALL BE PLACED WITHIN 4' HORIZONTAL OF BARREL COLLECTION LOCATION AREAS.
7. THE REQUIRED USE OF IDENTIFIED LOCATIONS FOR INDIVIDUAL 90-GALLON CONTAINERS MUST BE INCLUDED IN THE HOMEOWNER'S CONDITIONS, COVENANTS, AND RESTRICTIONS (CC&R'S).
8. GARAGE OR STORAGE AREAS MUST HAVE ROOM TO ACCOMMODATE ONE 90-GALLON REFUSE CONTAINER, ONE 90-GALLON RECYCLING CONTAINER, AND ONE 90-GALLON GREEN WASTE CONTAINER.
9. BARREL COLLECTION LOCATION AREA SHALL NOT ENCROACH ONTO SIDEWALKS.
10. ALL STREETS FOR CURBSIDE COLLECTION MUST BE A MINIMUM OF 28' FROM FACE OF CURB TO FACE OF CURB. THIS INCLUDES ALLEYS.
11. BARRELS MUST REMAIN ON THE SAME STREET.
12. BARREL SERVICE LOCATION CANNOT BE PLACED WITHIN 34' FROM ANY COMMUNITY EXIT GATE WHEN OPENED OR CLOSED.

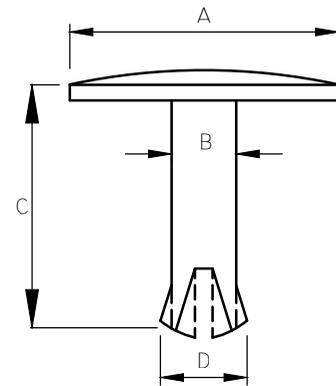


- NOTES:
- 2 BARREL COLLECTION LOCATIONS PER RESIDENTIAL UNIT ARE REQUIRED, SPLIT BETWEEN THE ALLEY DRIVEWAY, I.E. 6 RESIDENTIAL HOMES WOULD REQUIRE 12 PADS, THESE CAN BE 6 PADS EACH SIDE OF THE DRIVEWAY. ADDITIONAL UNITS WILL REQUIRE ADDITIONAL PADS.
 - LOCATION OF NO PARKING SIGN MAY NEED TO BE ADJUSTED TO ACCOUNT FOR ADJACENT FIRE HYDRANTS (15' PARKING RESTRICTION EACH SIDE), MAILBOXES, INTERSECTIONS OR OTHER OBSTRUCTIONS.
 - BARREL LOCATION AREA TO COMPLY WITH COM DETAIL M-1101.8 (OLD M-62.07).
 - FOR PARKING RESTRICTIONS, REFER TO COM DETAIL M-1101.8 (OLD M-62.07).



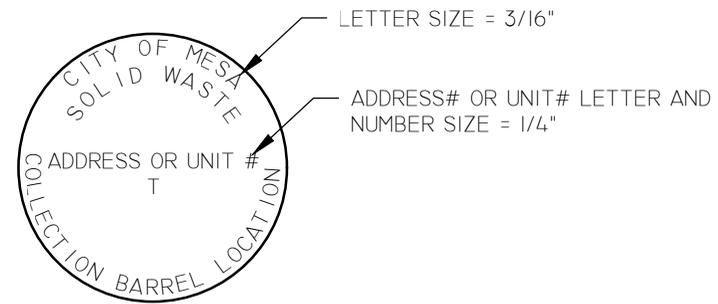
VARIABLES
SEE NOTE 2 ON COM DTL
M-1101.8 (OLD 62.07)
SMALL LOT/MULTI-LOT
COLUMN

NOT TO SCALE



A = 3.5" (89 MM)
 B = 0.72" (18 MM)
 C = 3.3125" (84 MM)
 D = 0.875" (22 MM)
 CAP THICKNESS = 3/16"
 MATERIAL: BRASS OR BRONZE

NOTE: THIS DETAIL APPLIES TO SMALL LOT/MULTI-LOT WITH PRIVATE DRIVE BARREL COLLECTION ONLY.

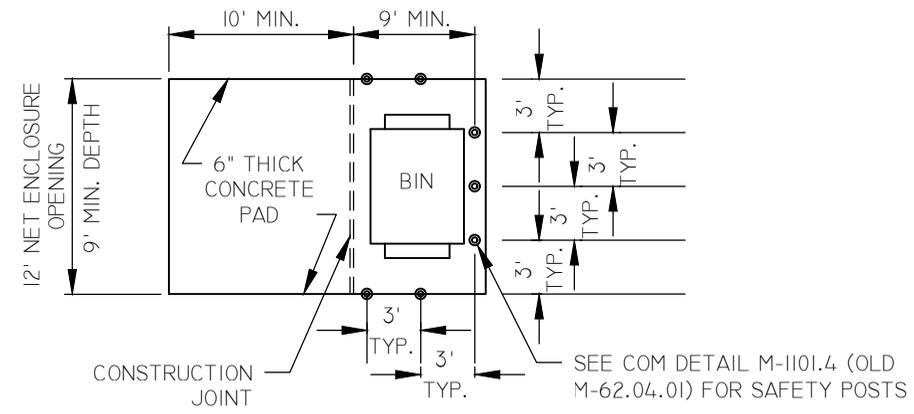


TRASH BARREL MARKER

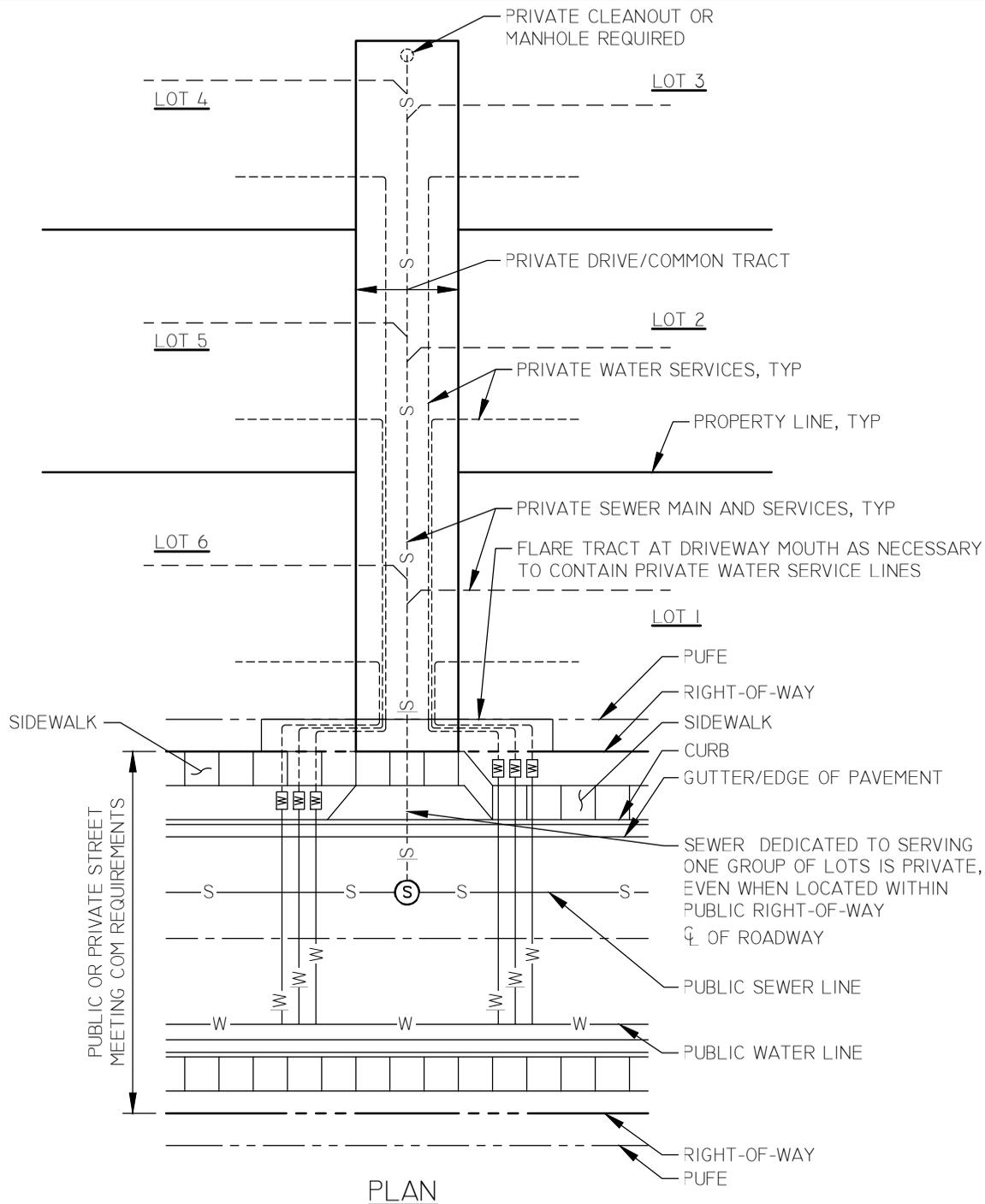


RECYCLING BARREL MARKER

NOTE: BARREL MARKERS SHALL BE PLACED AT TIME OF CONCRETE PLACEMENT.



SINGLE-WIDE BIN BOLLARD ENCLOSURE CONFIGURATION



PLAN

NOTES

1. THIS DETAIL IS APPLICABLE TO "RESIDENTIAL SMALL LOT/MULTI-LOT PRIVATE DRIVEWAY" DEVELOPMENTS, WHICH (BY DEFINITION) INCORPORATE A DEVELOPMENT PATTERN WITH SINGLE FAMILY DETACHED HOME LOTS FOCUSED AROUND A SHARED OR COMMON ACCESS DRIVE BETWEEN THE LOTS. THESE LOTS TYPICALLY SHARE ONE POINT OF ACCESS TO THE FRONTING STREET.
2. WHILE THIS DETAIL SHOWS SIX LOTS IN ONE GROUPING AROUND A COMMON DRIVE, OTHER DESIGN GROUPINGS AND NUMBERS OF LOTS WITHIN ONE GROUPING ARE POSSIBLE.
3. THE WATER MAIN, WATER SERVICES BETWEEN THE MAIN AND THE METER, AND THE WATER METERS SHALL BE LOCATED IN PUBLIC RIGHT-OF-WAY OR WITHIN THE PRIVATE STREET FRONTING THE GROUPING. THE METER AND SERVICE LINES BETWEEN THE PUBLIC MAIN AND THE METER SHALL BE PUBLIC. THE SERVICE LINES ON THE HOUSE SIDE OF THE METER SHALL BE PRIVATE.
4. THE PRIVATE WATER SERVICE LINES SHALL BE LOCATED IN COMMON TRACTS DEEDED TO THE HOMEOWNER'S ASSOCIATION (HOA) FOR COMMON PURPOSES FROM THE METER UNTIL SUCH POINT AS THE SERVICE ENTERS AN INDIVIDUAL LOT.
5. WATER SERVICE LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF 3 FEET AT THE CONNECTION TO THE MAIN AND 6 INCHES AT ALL OTHER LOCATIONS. WATER SERVICE LINES SHALL BE INSTALLED INSURING THAT THEY DO NOT CROSS EACH OTHER.
6. WATER SERVICE LINES IN COMMON TRACTS SHALL HAVE AN IDENTIFIER INDICATING WHICH LOT IT SERVES. THE IDENTIFIER SHALL BE AN UNDERGROUND WARNING TAPE BURIED 6-INCHES ABOVE THE SERVICE. THE TAPE SHALL BE IMPRINTED WITH CONTRASTING TEXT THAT IDENTIFIES THE LOT BEING SERVED AT A MAXIMUM SPACING OF SIX FEET ALONG THE SERVICE ALIGNMENT.
7. TO MINIMIZE CONGESTION, EQUAL NUMBERS OF WATER METERS SHOULD BE PLACED ON EACH SIDE OF A SHARED DRIVEWAY. REFER TO M-1308 (OLD M-49.01) & M-1308.1 (OLD M-49.02) FOR WATER SERVICE INSTALLATION.
8. THE SEWER FACILITIES DEDICATED TO SERVING ONE GROUP OF LOTS (INCLUDING MAINS & SERVICES OR PORTIONS THEREOF LOCATED IN THE STREET FRONTING THE CLUSTER) SHALL BE PRIVATE.
9. THE PRIVATE SEWER MAIN AND PRIVATE SEWER SERVICES LOCATED OUTSIDE OF RIGHT-OF-WAY SHALL BE LOCATED IN COMMON TRACTS DEEDED TO THE HOA FOR COMMON PURPOSES UNTIL SUCH POINT AS THE SERVICE ENTERS AN INDIVIDUAL LOT. SEWER LINES SHALL NOT BE PERMITTED TO CROSS ADJACENT LOTS EVEN IF A PUBLIC UTILITY EASEMENT EXISTS ON THAT LOT.
10. THE CC&R'S SHALL REQUIRE THE HOMEOWNER'S ASSOCIATION TO BE RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF PRIVATE WATER SERVICE LINES, PRIVATE SEWER MAINS AND PRIVATE SEWER SERVICES, EXCEPTING ONLY THE SEGMENTS THEREOF LOCATED ON PRIVATE LOTS.
11. FOR DETACHED SIDEWALK LOCATIONS, PLACE WATER METERS BETWEEN THE BACK OF CURB AND SIDEWALK. FOR ATTACHED SIDEWALK LOCATIONS, PLACE WATER METERS BETWEEN THE BACK OF SIDEWALK AND THE RIGHT-OF-WAY LINE. CENTER-TO-CENTER SPACING BETWEEN THE METER BOXES SHALL BE 3-FEET MINIMUM. ALSO, MAINTAIN A MINIMUM OF 6-INCHES CLEARANCE BETWEEN THE NEAREST EDGE OF THE METER BOX AND THE BACK OF CURB, EDGE OF SIDEWALK AND PROPERTY LINE.
12. ALL OTHER REQUIREMENTS FOR PRIVATE WATER AND SEWER SERVICE SHALL ADHERE TO THE LATEST ADOPTED UNIFORM PLUMBING CODE AS AMENDED BY THE CITY.

NOT TO SCALE



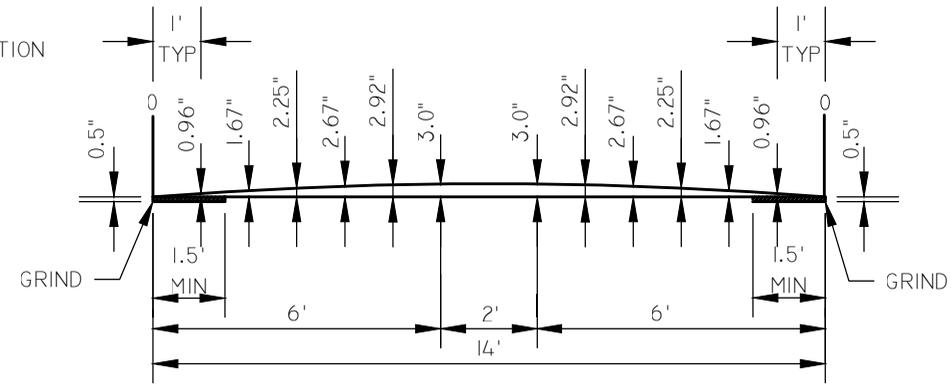
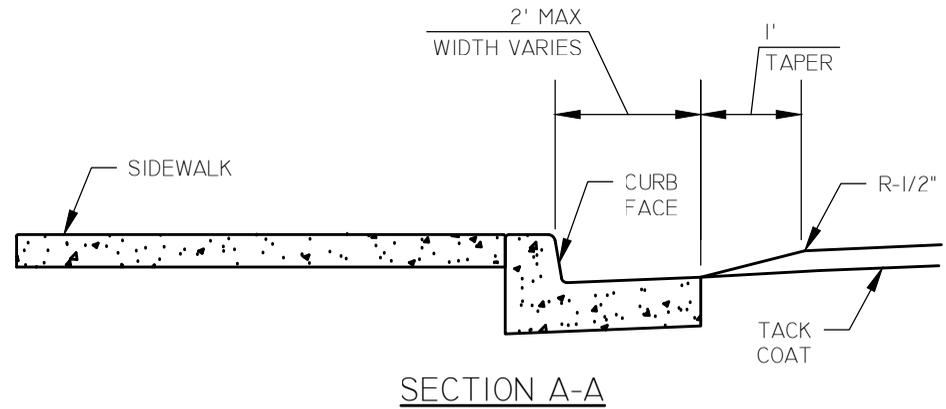
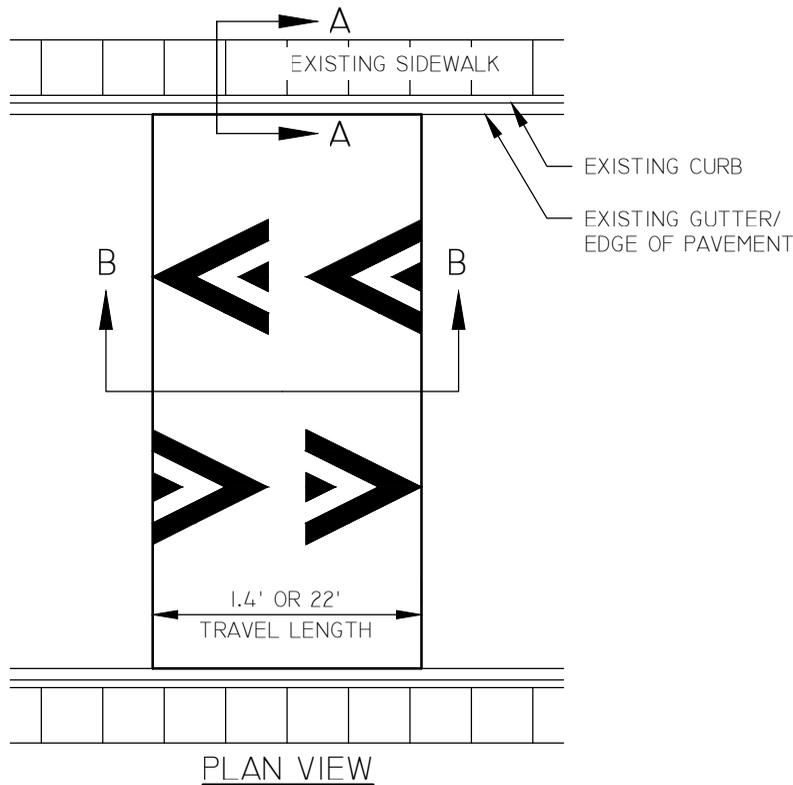
WATER & SEWER SERVICE STANDARDS FOR RESIDENTIAL SMALL LOT / MULTI-LOT PRIVATE DRIVE DEVELOPMENTS

OLD M-53

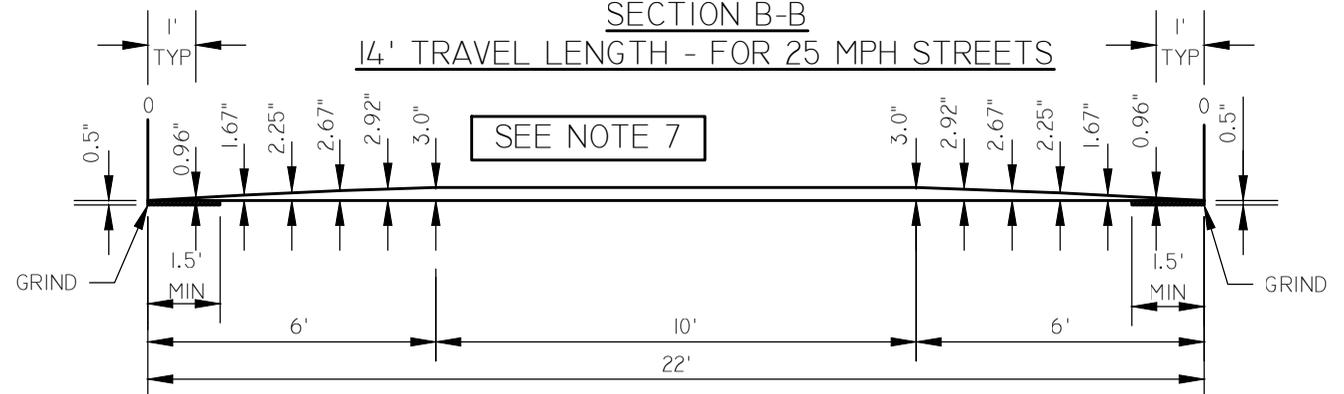
DETAIL NO. M-1102

NOTES

1. SPEED HUMPS SHALL NOT BE PLACED OVER MANHOLES, WATER VALVES, SURVEY MONUMENTS, ETC.
2. SPEED HUMPS SHALL NOT BE INSTALLED IN A LOCATION SUCH THAT DRAINAGE IS COMPROMISED.
3. SPEED HUMPS SHALL BE CONSTRUCTED WITH TYPE R-1/2" ASPHALT MIX PER THE LATEST EAST VALLEY ASPHALT (EVA) CRITERIA AND BE APPROVED BY EVA COMMITTEE. A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
4. SPEED HUMPS TO BE 3" - 3.25" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES. SEE NOTE 7 FOR HEIGHT ALLOWANCE RANGE
5. STRIPING TO BE INSTALLED PER COM DETAIL M-1200 (OLD M-15.01). BECAUSE THE WIDTHS OF STREETS VARY, SPEED HUMPS MAY REQUIRE ADDITIONAL MARKINGS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2160 FOR STREET WIDTHS GREATER THAN 40 FEET.
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
7. ALLOWANCE FOR SECTION B-B VERTICAL DIMENSIONS TO BE AN ULTIMATE 2.75" - 3.75" HEIGHT, WHILE STILL MAINTAINING THE PARABOLIC SHAPE. THE TARGET HEIGHT IS 3" - 3.25". CONTACT CITY OF MESA TRANSPORTATION DEPARTMENT FOR ASPHALT FORMING TEMPLATE.



SECTION B-B
14' TRAVEL LENGTH - FOR 25 MPH STREETS



SECTION B-B
22' TRAVEL LENGTH - FOR 30 MPH STREETS

NOT TO SCALE



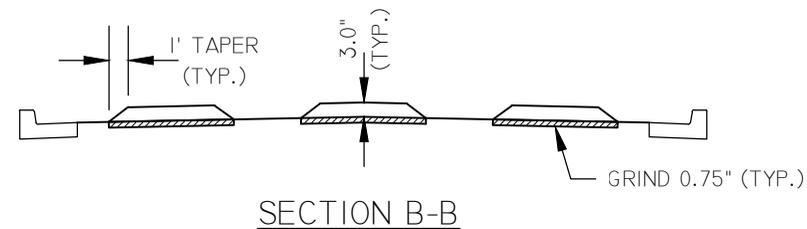
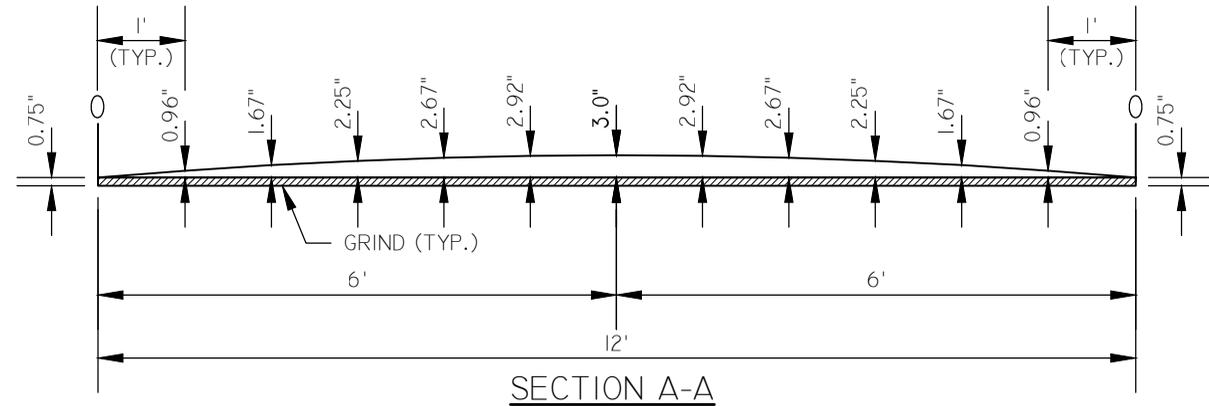
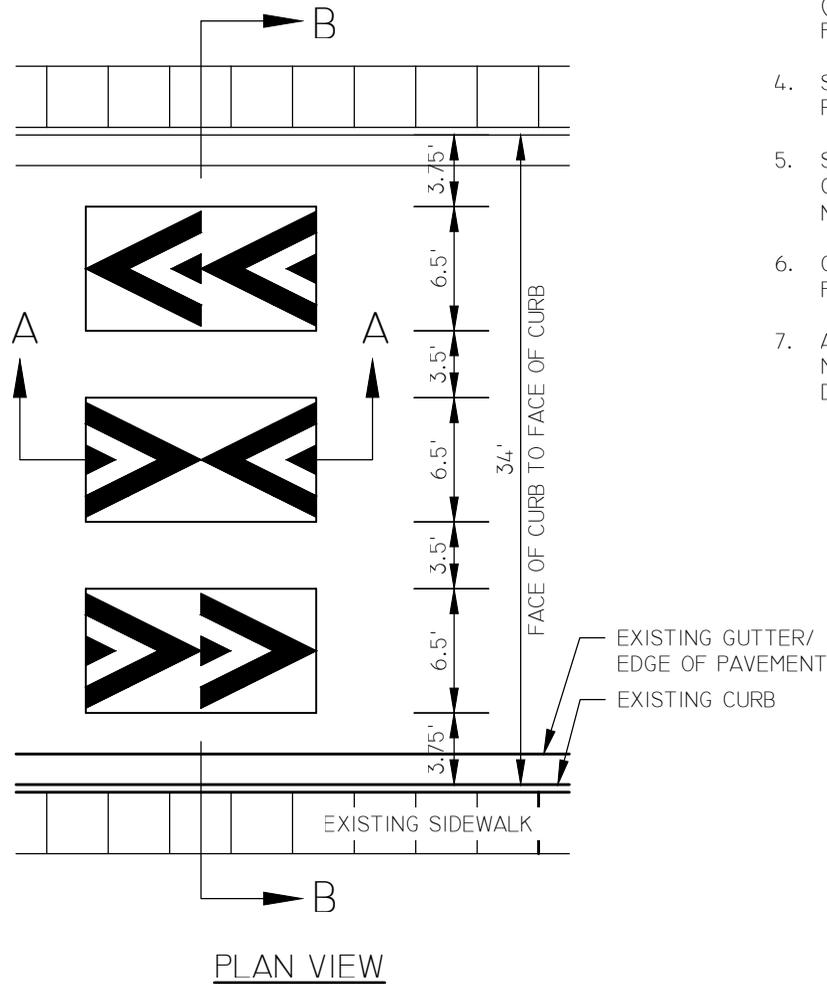
14' AND 22' SPEED HUMP SPECIFICATIONS

OLD
M-15.02

DETAIL NO.
M-1200.1

NOTES

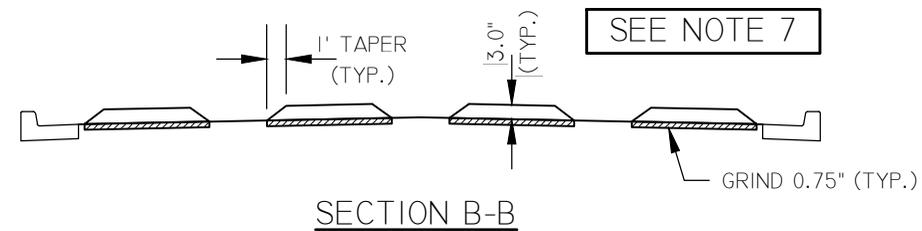
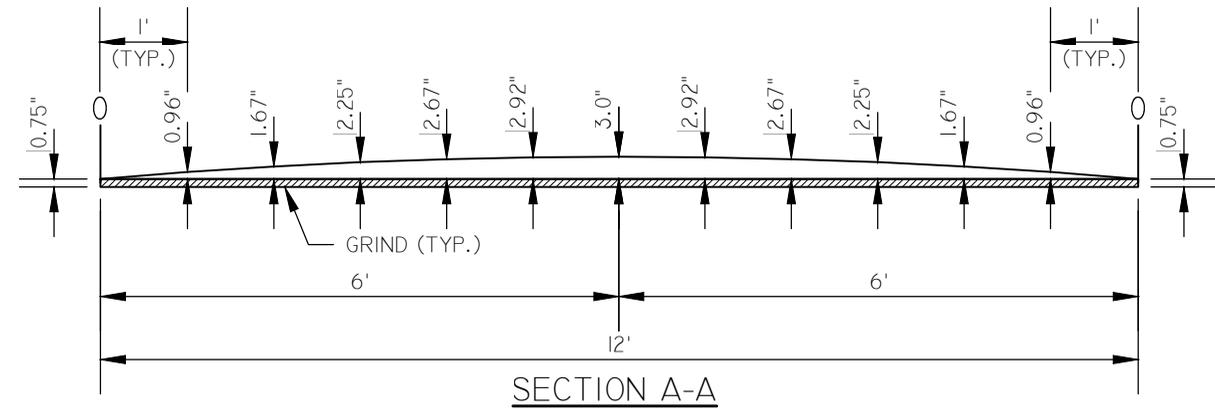
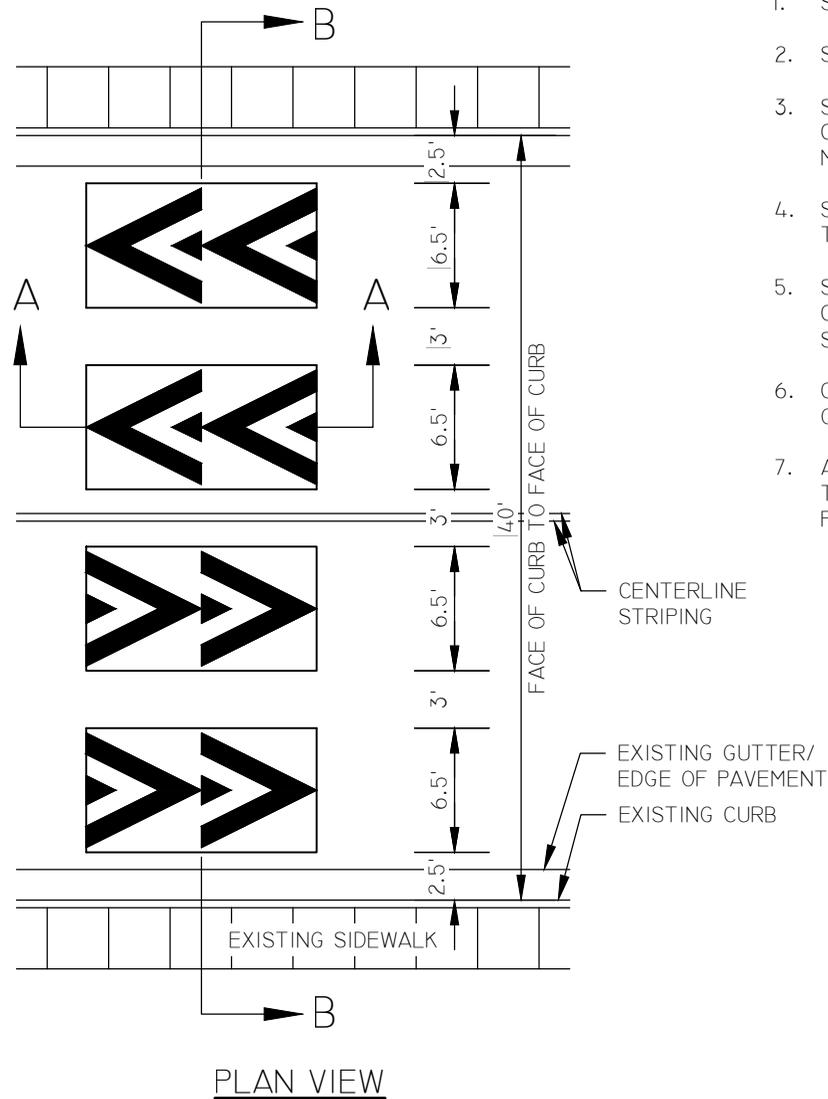
1. SPEED CUSHIONS SHALL NOT BE PLACED OVER MANHOLES, WATER VALVES, SURVEY MONUMENTS, ETC.
2. SPEED CUSHIONS SHALL NOT BE INSTALLED IN A LOCATION SUCH THAT DRAINAGE IS COMPROMISED.
3. SPEED CUSHIONS SHALL BE CONSTRUCTED WITH TYPE R-1/2" ASPHALT MIX PER THE CURRENT EAST VALLEY ASPHALT (EVA) CRITERIA AND BE APPROVED BY EVA COMMITTEE. A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
4. SPEED CUSHIONS TO BE 3" - 3.25" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES. SEE NOTE 7 FOR HEIGHT ALLOWANCE RANGE.
5. STRIPING TO BE INSTALLED PER COM DETAIL M-1200 (OLD M-15.01). BECAUSE THE WIDTHS OF STREETS VARY, THE SPEED CUSHION LAYOUT MAY REQUIRE ADJUSTMENTS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2160 FOR STREET WIDTHS NOT SPECIFIED IN COM DETAILS M-1200.2 (OLD M-15.03) THROUGH M-1200.5 (OLD M-15.06).
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
7. ALLOWANCE FOR SECTION A-A VERTICAL DIMENSIONS TO BE AN ULTIMATE 2.75" - 3.75" HEIGHT, WHILE STILL MAINTAINING THE PARABOLIC SHAPE. THE TARGET HEIGHT IS 3" - 3.25". CONTACT CITY OF MESA TRANSPORTATION DEPARTMENT FOR FORMING TEMPLATE.



NOT TO SCALE

NOTES

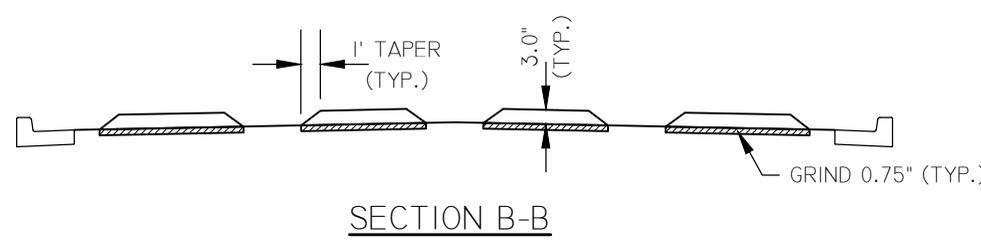
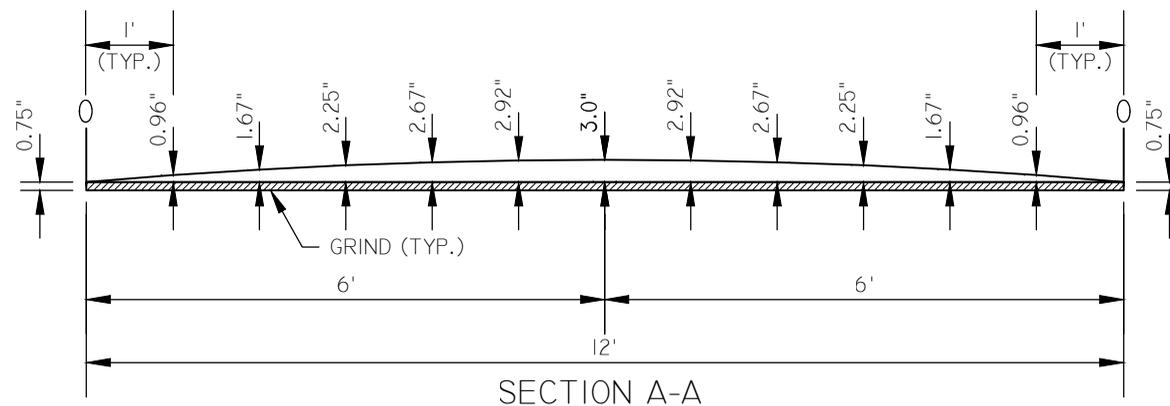
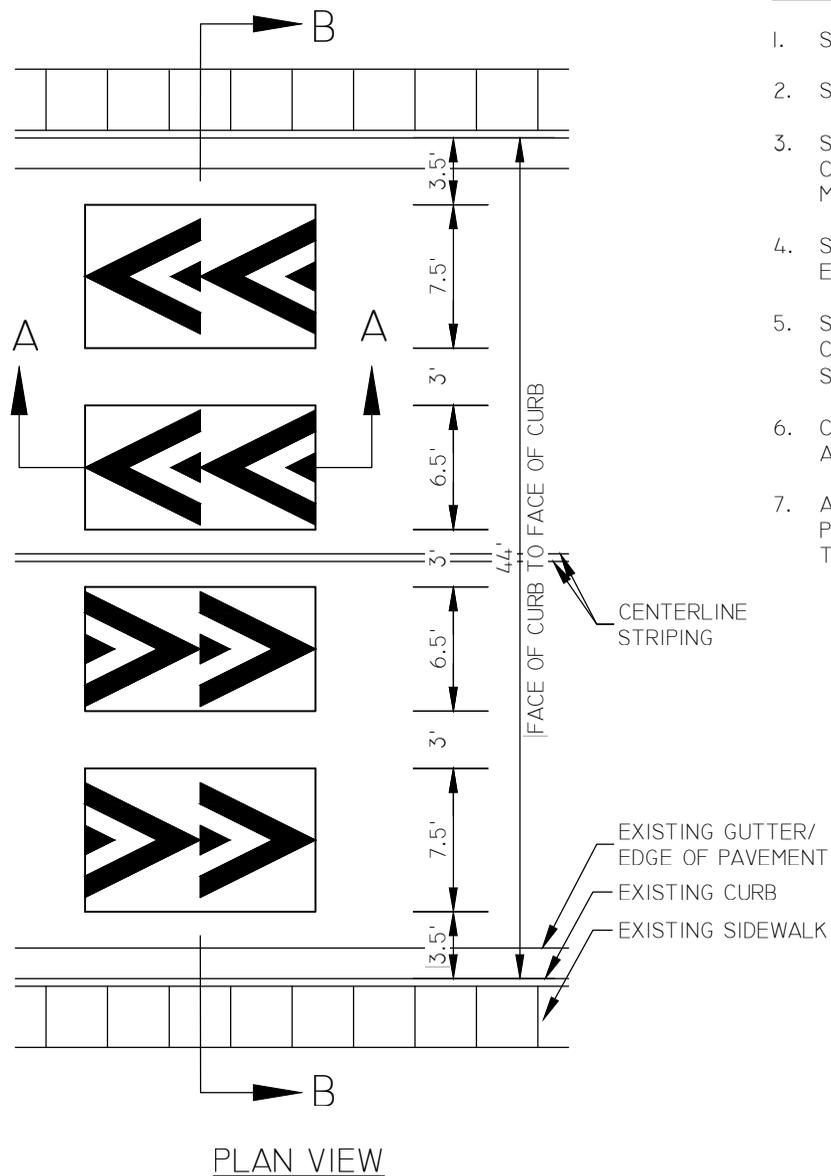
1. SPEED CUSHIONS SHALL NOT BE PLACED OVER MANHOLES, WATER VALVES, SURVEY MONUMENTS, ETC.
2. SPEED CUSHIONS SHALL NOT BE INSTALLED IN A LOCATION SUCH THAT DRAINAGE IS COMPROMISED.
3. SPEED CUSHIONS SHALL BE CONSTRUCTED WITH TYPE R-1/2" ASPHALT MIX PER THE CURRENT EAST VALLEY ASPHALT (EVA) CRITERIA AND BE APPROVED BY EVA COMMITTEE. A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
4. SPEED CUSHIONS TO BE 3" - 3.25" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES. SEE NOTE 7 FOR HEIGHT ALLOWANCE RANGE.
5. STRIPING TO BE INSTALLED PER COM DETAIL M-I200 (OLD M-I5.01). BECAUSE THE WIDTHS OF STREETS VARY, THE SPEED CUSHION LAYOUT MAY REQUIRE ADJUSTMENTS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2160 FOR STREET WIDTHS NOT SPECIFIED IN COM DETAILS M-I200.2 (OLD M-I5.03) THROUGH M-I200.5 (OLD M-I5.06).
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
7. ALLOWANCE FOR SECTION A-A VERTICAL DIMENSIONS TO BE AN ULTIMATE 2.75" - 3.75" HEIGHT, WHILE STILL MAINTAINING THE PARABOLIC SHAPE. THE TARGET HEIGHT IS 3" - 3.25". CONTACT CITY OF MESA TRANSPORTATION DEPARTMENT FOR FORMING TEMPLATE.



NOT TO SCALE

NOTES

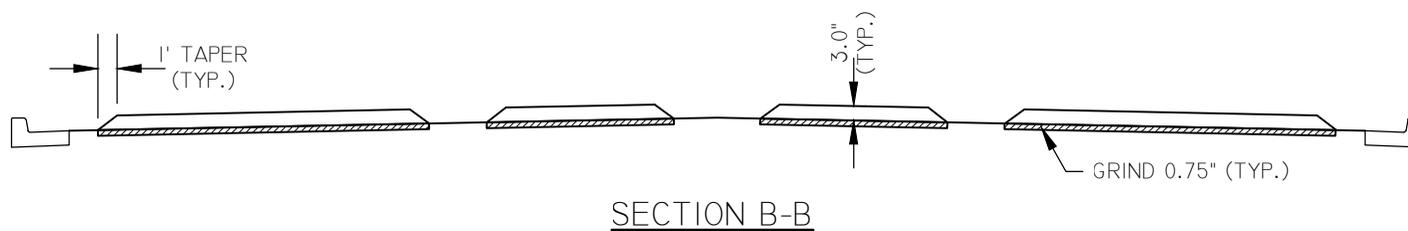
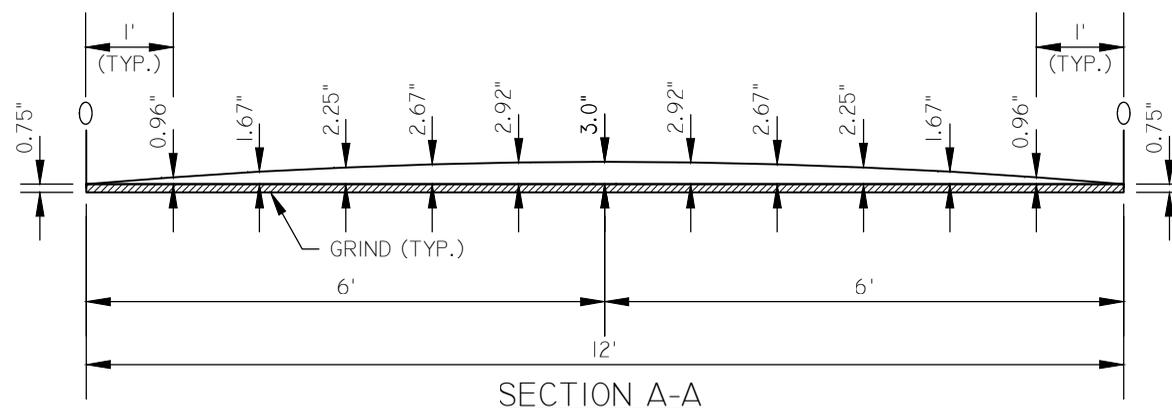
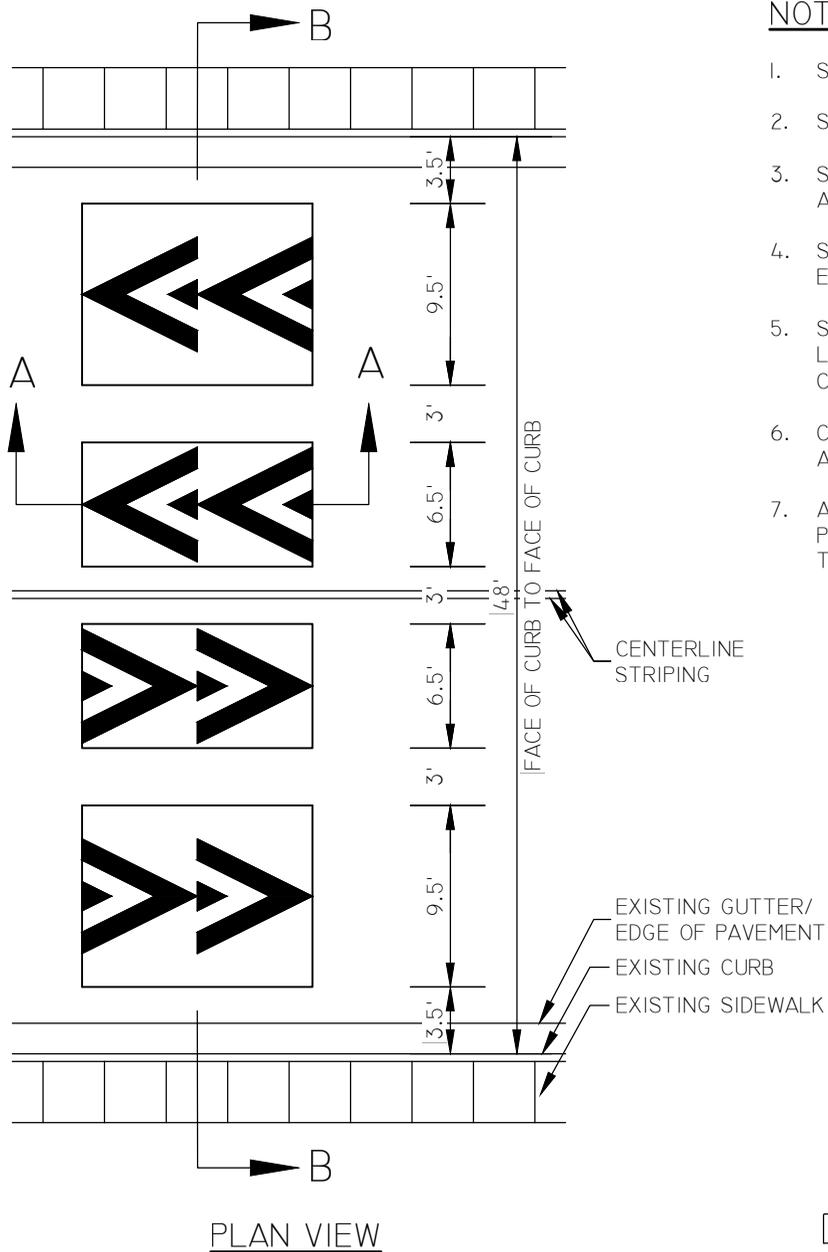
1. SPEED CUSHIONS SHALL NOT BE PLACED OVER MANHOLES, WATER VALVES, SURVEY MONUMENTS, ETC.
2. SPEED CUSHIONS SHALL NOT BE INSTALLED IN A LOCATION SUCH THAT DRAINAGE IS COMPROMISED.
3. SPEED CUSHIONS SHALL BE CONSTRUCTED WITH TYPE R-1/2" ASPHALT MIX PER THE CURRENT EAST VALLEY ASPHALT (EVA) CRITERIA AND BE APPROVED BY EVA COMMITTEE. A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
4. SPEED CUSHIONS TO BE 3" - 3.25" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES. SEE NOTE 7 FOR HEIGHT ALLOWANCE RANGE.
5. STRIPING TO BE INSTALLED PER COM DETAIL M-1200 (OLD M-15.01). BECAUSE THE WIDTHS OF STREETS VARY, THE SPEED CUSHION LAYOUT MAY REQUIRE ADJUSTMENTS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2160 FOR STREET WIDTHS NOT SPECIFIED IN COM DETAILS M-1200.2 (OLD M-15.03) THROUGH M-1200.5 (OLD M-15.06).
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
7. ALLOWANCE FOR SECTION A-A VERTICAL DIMENSIONS TO BE AN ULTIMATE 2.75" - 3.75" HEIGHT, WHILE STILL MAINTAINING THE PARABOLIC SHAPE. THE TARGET HEIGHT IS 3" - 3.25". CONTACT CITY OF MESA TRANSPORTATION DEPARTMENT FOR FORMING TEMPLATE.



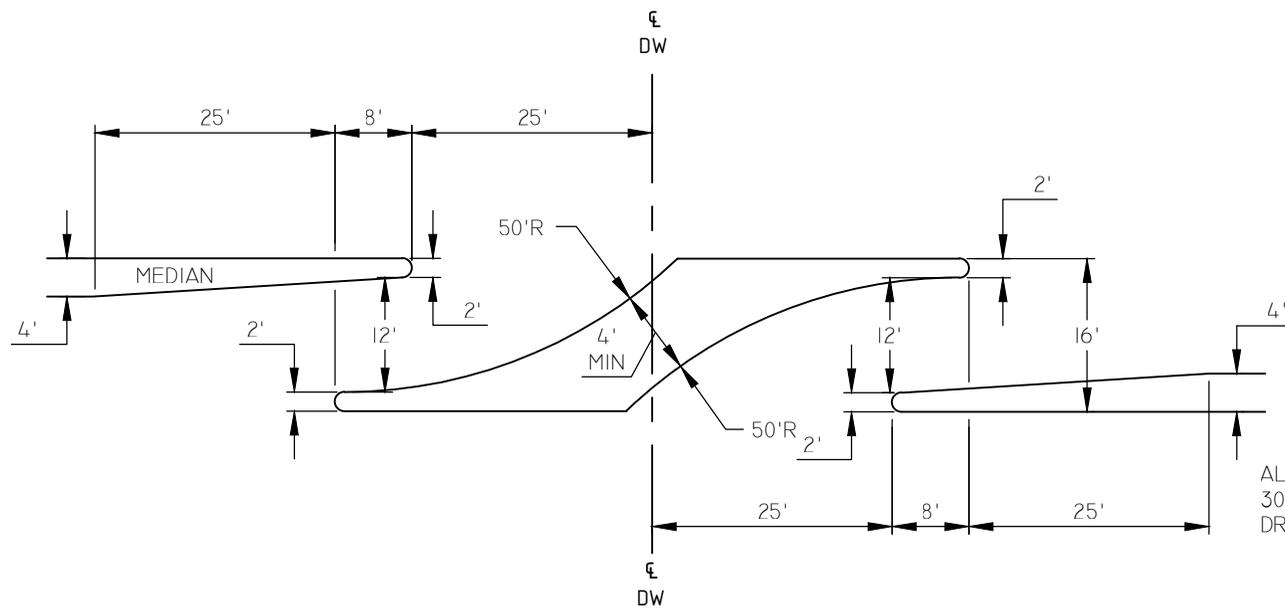
NOT TO SCALE

NOTES

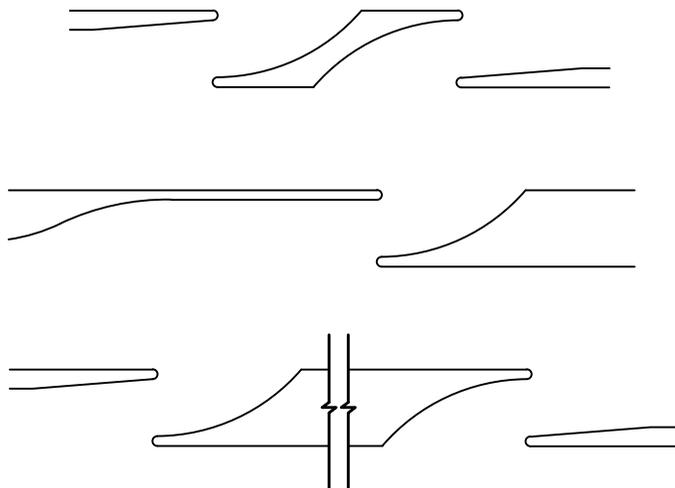
1. SPEED CUSHIONS SHALL NOT BE PLACED OVER MANHOLES, WATER VALVES, SURVEY MONUMENTS, ETC.
2. SPEED CUSHIONS SHALL NOT BE INSTALLED IN A LOCATION SUCH THAT DRAINAGE IS COMPROMISED.
3. SPEED CUSHIONS SHALL BE CONSTRUCTED WITH TYPE R-1/2" ASPHALT MIX PER THE CURRENT EAST VALLEY ASPHALT (EVA) CRITERIA AND BE APPROVED BY EVA COMMITTEE. A TACK COAT SHALL BE APPLIED PRIOR TO APPLICATION OF PAVEMENT MATERIAL.
4. SPEED CUSHIONS TO BE 3" - 3.25" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES. SEE NOTE 7 FOR HEIGHT ALLOWANCE RANGE.
5. STRIPING TO BE INSTALLED PER COM DETAIL M-1200 (OLD M-15.01). BECAUSE THE WIDTHS OF STREETS VARY, THE SPEED CUSHION LAYOUT MAY REQUIRE ADJUSTMENTS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2160 FOR STREET WIDTHS NOT SPECIFIED IN COM DETAILS M-1200.2 (OLD M-15.03) THROUGH M-1200.5 (OLD M-15.06).
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
7. ALLOWANCE FOR SECTION A-A VERTICAL DIMENSIONS TO BE AN ULTIMATE 2.75" - 3.75" HEIGHT, WHILE STILL MAINTAINING THE PARABOLIC SHAPE. THE TARGET HEIGHT IS 3" - 3.25". CONTACT CITY OF MESA TRANSPORTATION DEPARTMENT FOR FORMING TEMPLATE.



NOT TO SCALE



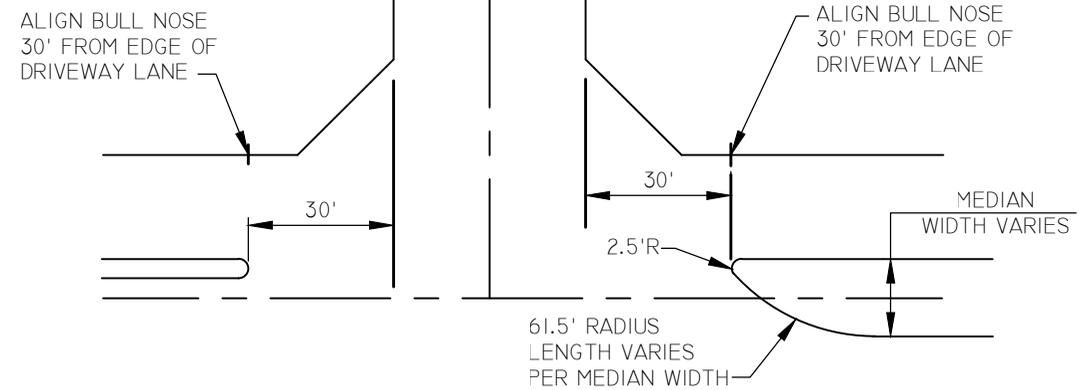
PARTIAL MEDIAN ACCESS ISLAND



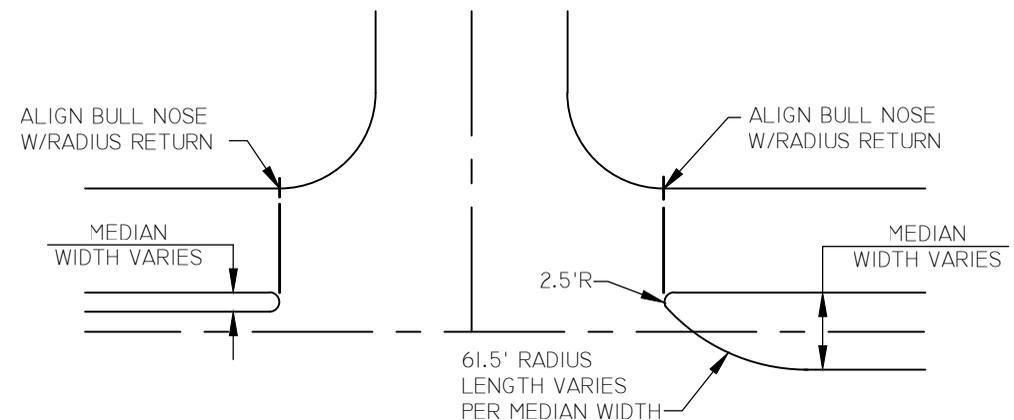
TYPICAL APPLICATIONS

NOTES

1. ENGINEER SHALL PROVIDE PROPER DRAINAGE OF THE PARTIAL MEDIAN ACCESS OPENING AS APPROVED BY THE CITY.
2. STREET LIGHTS MAY NOT BE PLACED ON THE PARTIAL MEDIAN ISLAND.
3. CL DW IS CENTERLINE OF DRIVEWAY. IN CASE OF DIVIDED DRIVEWAYS IT IS THE CENTERLINE OF THE ENTRANCE SIDE.
4. ALL DIMENSIONS ARE TO FACE OF CURB. DIMENSIONS SHOWN ARE FOR TYPICAL 16' MEDIAN.
5. USE MAG DETAIL 223 MEDIAN NOSE TRANSITION DETAIL.
6. REFER TO COM DETAIL M-1217.3 (OLD M-46.01.4), "MEDIAN STAMPED CONCRETE/PAVER DETAIL", FOR MEDIAN SECTION.

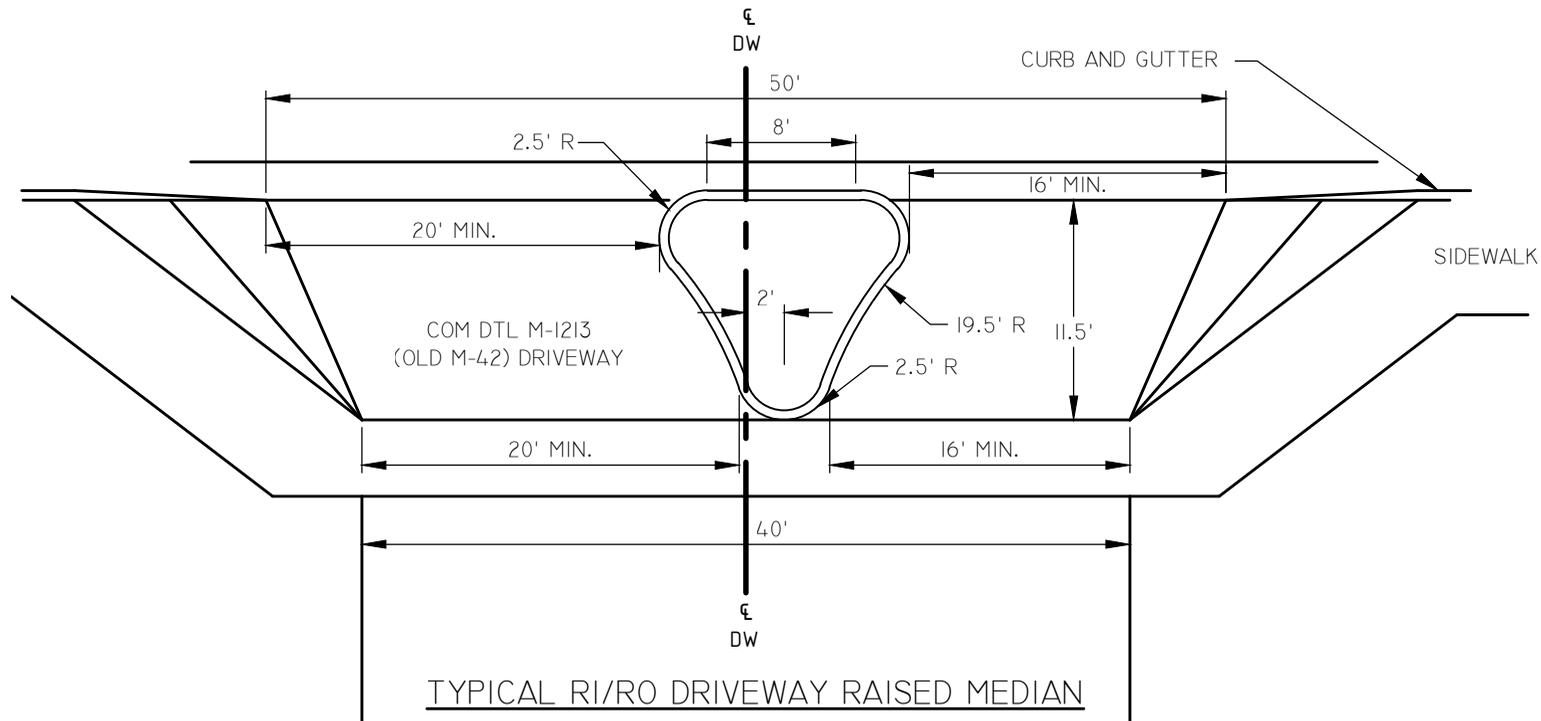


MEDIAN NOSE ALIGNMENT AT DRIVEWAY



MEDIAN NOSE ALIGNMENT AT TEE INTERSECTION

NOT TO SCALE



NOTES

1. RAISED MEDIAN TO BE BUILT WITH 6" VERTICAL CURB, UNLESS OTHERWISE APPROVED BY CITY TRAFFIC ENGINEER.
2. DRIVEWAYS INCORPORATING A RI/RO RAISED MEDIAN MUST BE 40' MIN. WIDTH.
3. CL DW IS CENTERLINE OF DRIVEWAY.
4. ALL DIMENSIONS ARE TO FACE OF CURB. ALL RADII ARE MINIMUMS ALLOWED.
5. DETAIL SHOWS TYPICAL COMMERCIAL DRIVEWAY PER COM DETAIL M-1213 (OLD M-42).
6. RAISED MEDIAN AREA TO BE LANDSCAPE OR CONCRETE PER CITY TRAFFIC ENGINEER.
7. FACE AND TOP OF RI/RO MEDIAN CURBING TO BE PAINTED WITH RETRO-REFLECTIVE YELLOW PAINT PER PAVEMENT MARKING GENERAL NOTES.

TYPICAL RIGHT IN / RIGHT OUT
DRIVEWAY WITH RAISED MEDIAN

OLD
M-17

DETAIL NO.
M-1202

NOT TO SCALE

NOTES

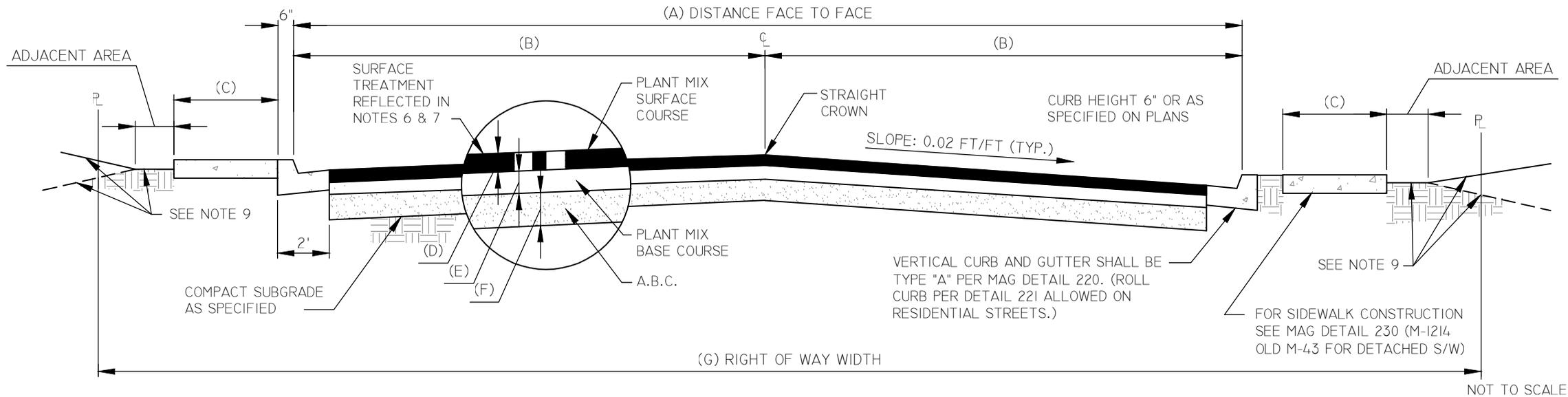
- ALL STREETS TO BE CONSTRUCTED WITH A STRAIGHT CROWN AT A 2% CROSS SLOPE.
- WHERE 10" A.B.C. IS REQUIRED, IT IS TO BE INSTALLED IN (2) TWO EQUAL LAYERS.
- A.B.C. FILL TO CONFORM TO SECTION 702 (AGGREGATE BASE).
- ASPHALT CONCRETE SHALL CONFORM TO THE CURRENT EAST VALLEY ASPHALT COMMITTEE HOT ASPHALT MIX CRITERIA, 2020 EDITION, AND BE APPROVED BY THE EAST VALLEY ASPHALT COMMITTEE (EVAC).
- ALL NEW AND REHAB ARTERIAL STREET ASPHALT SHALL BE POLYMER MODIFIED TERMINAL BLEND RUBBER (PG76-22PMTR) PER EVAC CRITERIA FOR BOTH THE SURFACE AND BASE COURSE AS DIRECTED IN THE ADJACENT TABLE.
- ALL NEW AND REHAB RESIDENTIAL, COLLECTOR AND INDUSTRIAL STREET ASPHALT SHALL BE AS NOTED IN THE ADJACENT TABLE AND MIXES USED PER THE EVAC CRITERIA. NO SURFACE TREATMENT IS REQUIRED AFTER PLACEMENT OF SURFACE COURSE, UNLESS THE NEW ASPHALT EXHIBITS SEGREGATION AND LOSS OF AGGREGATE AS DETERMINED BY THE CITY OF MESA REPRESENTATIVE. AT SUCH TIME A SURFACE TREATMENT MAY BE APPLIED PER MANUFACTURER'S SPECIFICATIONS SUCH AS THE FOLLOWING: GUARDTOP ULTRA, GUARDTOP LSTR, POLYMER MODIFIED MASTERSEAL, ONYX MASTIC SEAL, OR HIGH DENSITY MINERAL BOND.
- UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO APPLICATION OF SURFACE TREATMENT IF SURFACE TREATMENT IS REQUIRED.
- FINISH ELEVATION OF THE ADJACENT AREA SHALL BE 1" BELOW THE TOP OF SIDEWALK FOR A MINIMUM DISTANCE OF 1-FOOT. BEYOND THE 1-FOOT, THE SLOPE SHALL NOT EXCEED 6:1.
- MAX. 6:1 SLOPE ALLOWED EXCEPT WHERE AREA IMMEDIATELY ADJACENT TO R.O.W. OR SIDEWALK HAS 4' MIN. AREA AT SLOPE OF 6:1 OR LESS. THEN SLOPE BEYOND SAID 4' AREA CAN BE INCREASED TO A MAX OF 4:1. SIDEWALK WIDTHS SHOWN ON THIS DETAIL SHALL TAKE PRECEDENT OVER MAG DETAIL 230.

	ROADWAY (WIDTH)		SIDEWALK (WIDTH)	SURFACE COURSE (DEPTH) (TYPE)	BASE COURSE (DEPTH) (TYPE)	A.B.C. FILL (DEPTH)	RIGHT OF WAY (WIDTH)
	FACE TO FACE	CL TO FACE					
	(A)	(B)					
LOCAL STREET RESIDENTIAL LAND USE	34'	17'	5'	3.0" 1/2" PG70-16TR	N/A	6"	50'+8' PUFE
LOCAL STREET RESIDENTIAL LAND USE, OPTIONAL	34'	17'	5'***	3.0" 1/2" PG70-16TR	N/A	6"	50'+10' PUFE
LOCAL STREET INDUSTRIAL	40'	20'	5'	2.0" 1/2" PG70-16TR	3.0" 3/4" PG70-16TR	8"	60'+20' PUFE
LOCAL STREET COMMERCIAL	46'	23'	5'	2.0" 1/2" PG70-16TR	3.0" 3/4" PG70-16TR	8"	80'+8' PUFE
COLLECTOR STREET *	34'/40'/46'	17'/20'/23'	6'	3.5" 3/4" PG76-22PMTR OR 3/4" PG76-22PMTR W/ 15% MAX RAP	N/A	6"	80'/80'/80'+8' PUFE
MAJOR COLLECTOR STREET *	68'	34'	6'	2.0" 1/2" PG76-22PMTR OR 1/2" PG76-22PMTR W/ 15% MAX RAP	3.5" 3/4" PG76-22PMTR OR 3/4" PG76-22PMTR W/ 15% MAX RAP	10"	130'+8' PUFE
ARTERIAL STREET *	68'/72'/88'/94' ***	34'/36'/44'/47' ***	6'	2.0" A-1/2" 1/2" PG76-22PMTR OR 1/2" PG76-22PMTR W/ 15% MAX RAP	3.5" 3/4" PG76-22PMTR OR 3/4" PG76-22PMTR W/ 15% MAX RAP	10"	130'+8' PUFE ***

* DETACHED, LINEAR SIDEWALKS ARE REQUIRED. SEE DETAIL M-1214 (OLD M-43).

** USE 5' DETACHMENT

*** MAY BE WIDER AT INTERSECTIONS AND TURN LANES. SEE M-1217 (OLD M-46.01.1) THROUGH M-1217.9 (OLD M-46.05.2)



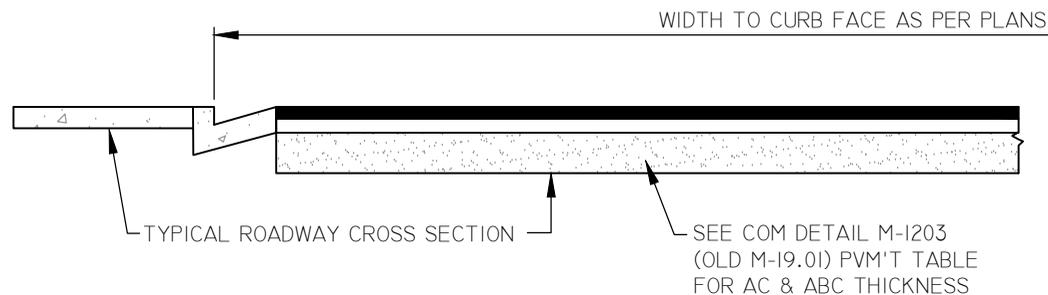
NOT TO SCALE



TYPICAL STREET SECTION

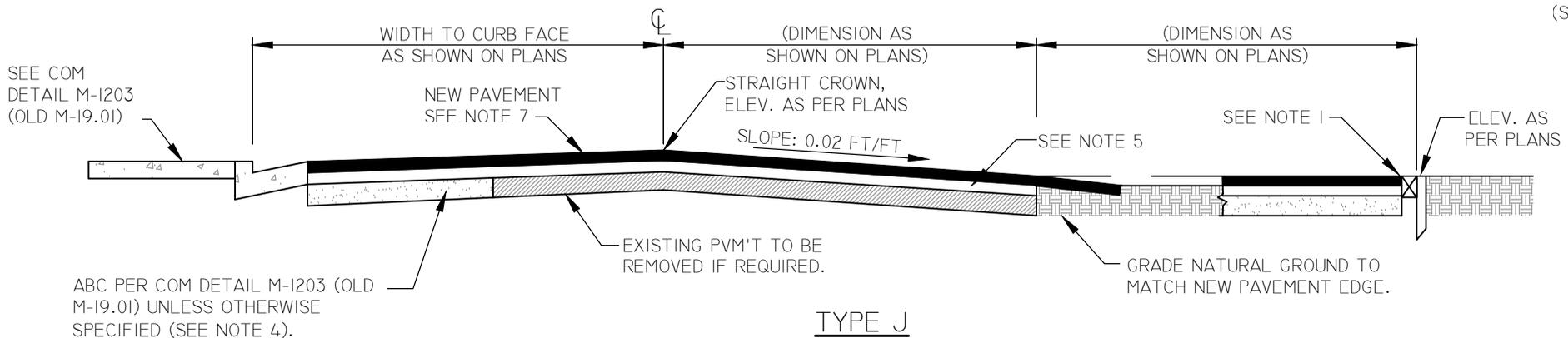
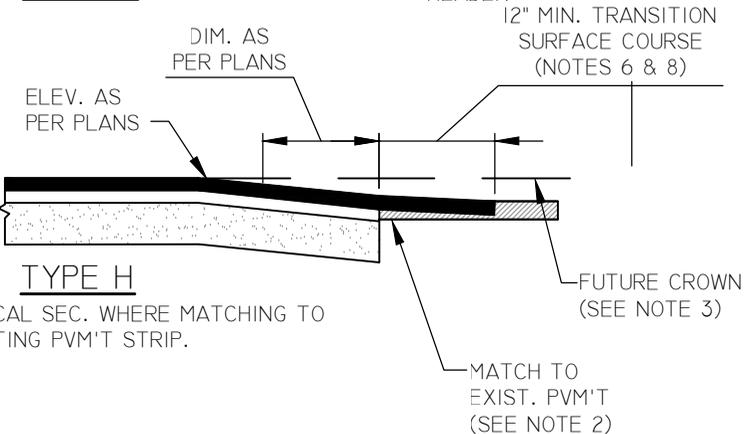
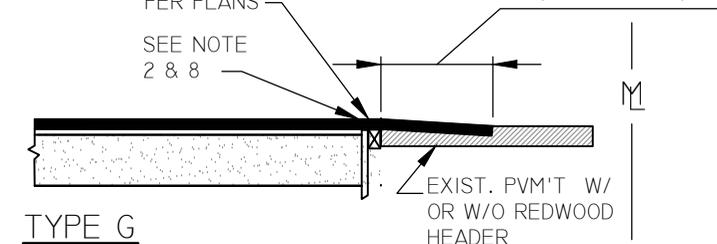
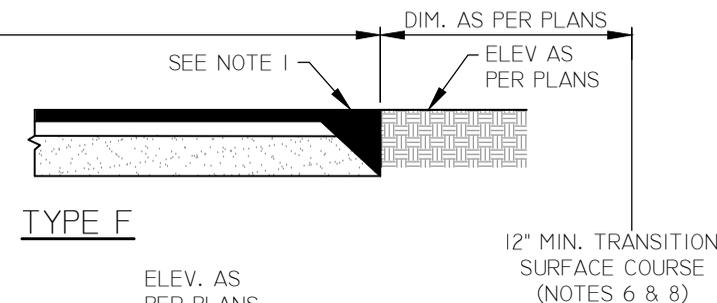
OLD
M-19.01

DETAIL NO.
M-1203



NOTES

1. THICKENED EDGE (MAG 201 TYPE 'A' OR TYPE 'B') AS REQUIRED ON CONSTRUCTION PLANS.
2. REMOVE EXISTING REDWOOD HEADER (IN SOME CASES REDWOOD HEADER MAY NOT EXIST, SAWCUT EXISTING PAVEMENT AS REQUIRED BY FIELD INSPECTOR). MATCH NEW PAVEMENT TO EXISTING AND BUTT JOINT.
3. ALL STREETS TO BE CONSTRUCTED WITH STRAIGHT CROWN OF 0.02 FT/FT.
4. WHERE 10" ABC IS REQUIRED, IT IS TO BE INSTALLED IN TWO (2) EQUAL LAYERS.
5. NEW PAVEMENT MAY REQUIRE ABC FILL OVER EXISTING PAVEMENT TO BRING NEW ROADWAY TO GRADE.
6. ONE-FOOT TRANSITION WILL APPLY TO ALL LOCAL AND COLLECTOR STREETS, MAJOR COLLECTOR, ARTERIAL, AND INDUSTRIAL/COMMERCIAL STREETS. ALL TRANSITIONS SHALL BE BUTT JOINT.
7. PLACE NEW SURFACE & BASE PAVEMENT OVER EXISTING PAVEMENT. SEE COM DETAIL M-1203 (OLD M-19.01) FOR MIN. THICKNESS.
8. WHEN THE ELEVATION OF THE NEW BASE ASPHALT DOES NOT MATCH THE EXISTING, ASPHALT AND/OR AGGREGATE BASE SHALL BE SAWCUT, REMOVED, AND REPLACED AS DIRECTED BY THE INSPECTOR TO CREATE A SMOOTH TRANSITION.



TYPICAL SEC. WHERE NEW ROADWAY TO BE CONSTRUCTED OVER EXIST. PVM'T.

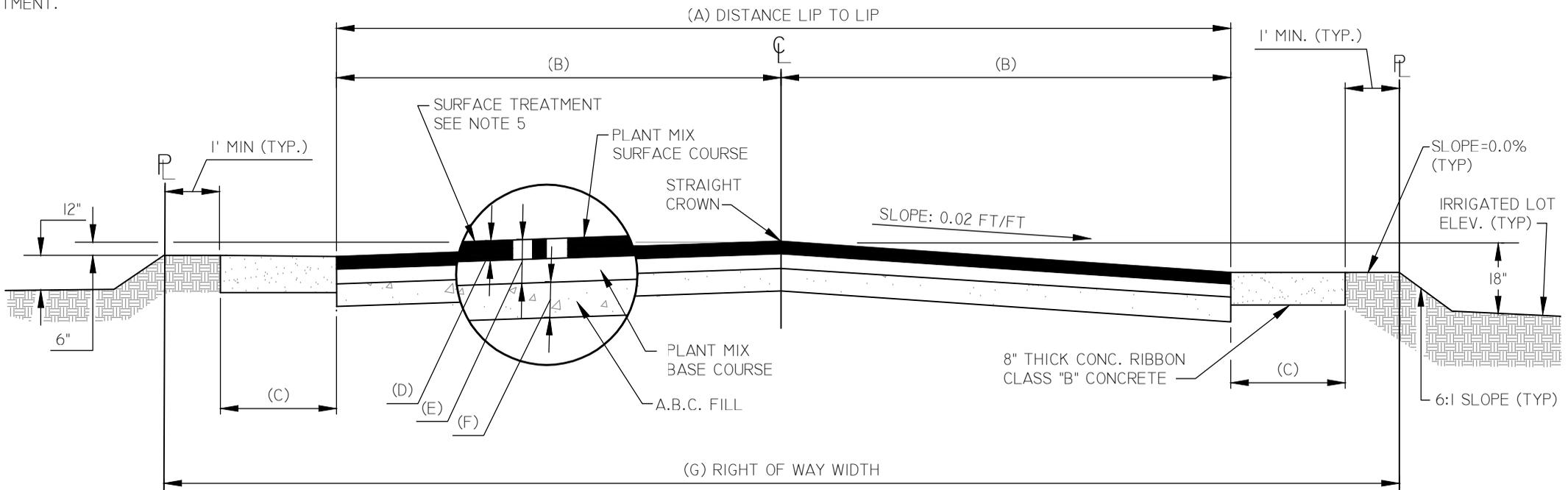
NOT TO SCALE

NOTES

1. ALL STREETS TO BE CONSTRUCTED WITH A STRAIGHT CROWN OF 0.02 FT/FT.
2. A.B.C. BASE TO CONFORM TO MAG SUBSECTION 702.2 (AGGREGATE BASE).
3. ASPHALT CONCRETE SHALL CONFORM TO THE EAST VALLEY ASPHALT CRITERIA, 2007 EDITION AND BE APPROVED BY THE EVA COMMITTEE.
4. ALL INTERSECTION RETURNS SHALL HAVE A 20-FOOT BACK OF CURB RADIUS, 4-INCH VERTICAL CURB BETWEEN RADIUS POINTS, AND A 5-FOOT TRANSITION (SIMILAR TO MAG DETAIL 221) TO RIBBON CURB.
5. SURFACE TREATMENT OF THE FINAL SURFACE COURSE FOR "R" ASPHALT MIXES SHALL BE APPLIED AS FOLLOWS:
APPLY A POLYMER MODIFIED MASTERSEAL OR EQUIVALENT MEETING COM REQUIREMENTS AT A RATE SPECIFIED BY THE PRODUCT'S MANUFACTURER BUT NO LESS THAN (2) TWO APPLICATIONS AT A RATE OF .12 GAL PER SQ YD PER INDIVIDUAL APPLICATION OR AS DIRECTED BY THE CITY REPRESENTATIVE. SEE MESA AMENDMENTS FOR SPECIFICATION AND LIST OF ACCEPTABLE PRODUCTS. EACH PRODUCT WILL REQUIRE A SUBMITTAL FOR APPROVAL PRIOR TO APPLICATION.
6. UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO APPLICATION OF SURFACE TREATMENT.

PAVEMENT TABLE

ROADWAY (WIDTH)		RIBBON (WIDTH)	A.C.SURFACE COURSE (DEPTH) (TYPE)	A.C.BASE COURSE (DEPTH) (TYPE)	A.B.C.BASE (DEPTH)	RIGHT OF WAY (WIDTH)
LIP TO LIP (A)	CL TO LIP (B)	(C)	(D)	(E)	(F)	(G)
31'	15.5'	2'	3" R-1/2" SEE NOTE 5	N/A	6"	50'



NOT TO SCALE



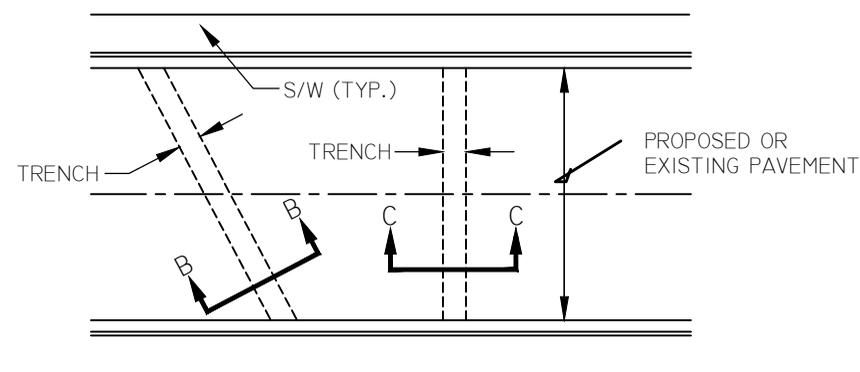
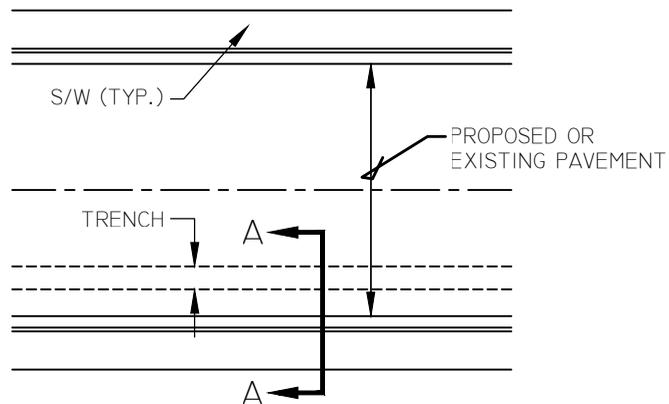
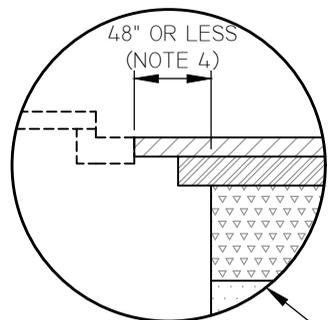
SUBURBAN RANCH STREET SECTION

OLD
M-19.03

DETAIL NO.
M-1203.2

LONGITUDINAL TRENCHES
(PARALLEL TO CL OF STREET)

TRANSVERSE TRENCHES
(NON PARALLEL TO CL OF STREET, SEE NOTE 9)



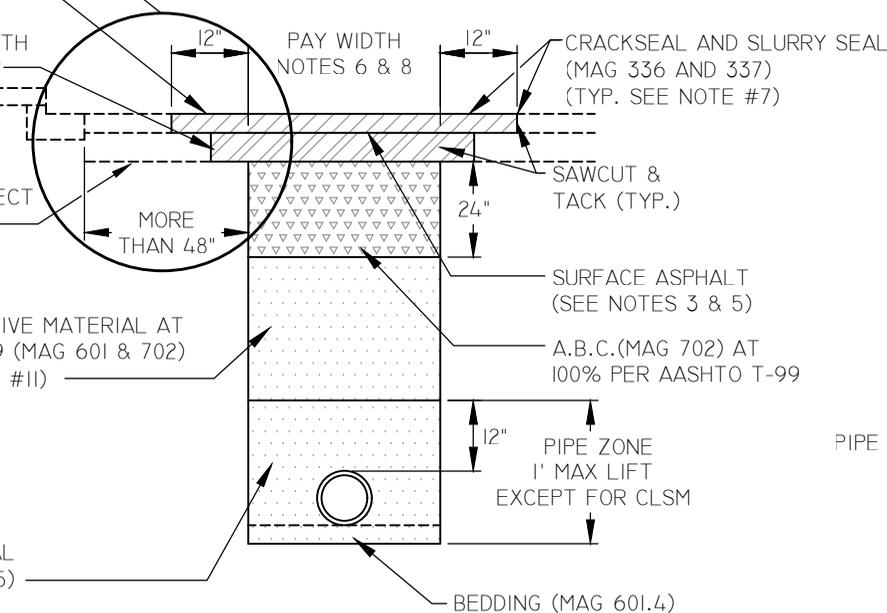
SURFACE A.C. (VARIES)
TOTAL WIDTH = PAY WIDTH
+ 12" EACH SIDE MIN.

BASE A.C. WHEN
APPLICABLE (VARIES)
TOTAL WIDTH = PAY WIDTH
BUT NOT LESS THAN 48"

A.B.C./SELECT
(VARIES)

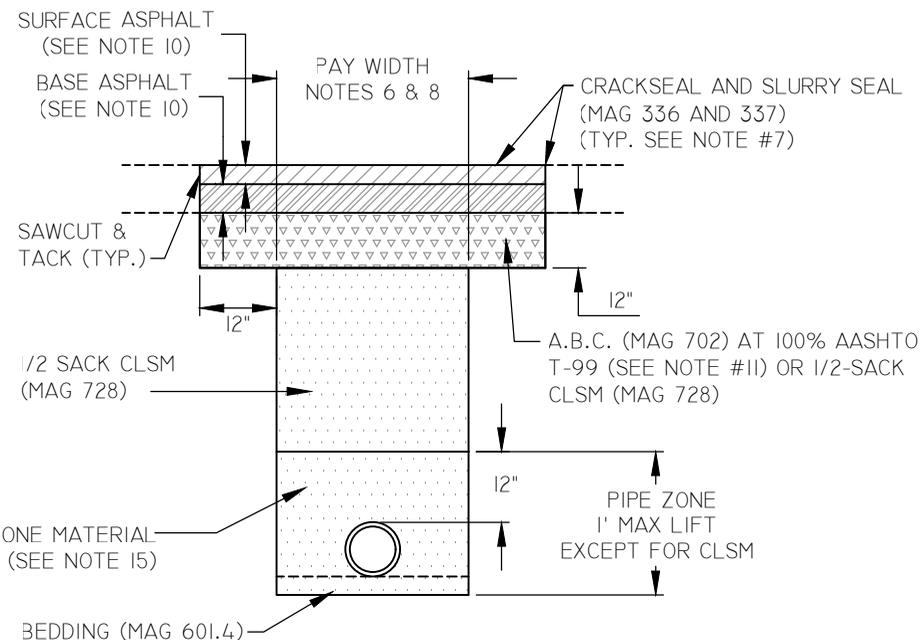
A.B.C., GRANULAR NATIVE MATERIAL AT
95% PER AASHTO T-99 (MAG 601 & 702)
1' MAX LIFT (SEE NOTE #11)

PIPE ZONE MATERIAL
(SEE NOTE 15)



LONGITUDINAL TYP. BACKFILL SEC. A-A
(TYPE "A")

NOTE: FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL
GREATER THAN 1 1/2" MAY BE USED WITH CITY APPROVAL.



TRANSVERSE TYP. BACKFILL SEC. B-B & C-C
(TYPE "B")

SEE COM DTL. M-1203.4
(OLD M-19.04.2) FOR
NOTES

NOT TO SCALE

NOTES

1. SEE LATEST POLICY STATEMENT FOR STREET TRENCH BACKFILLING AND REPLACEMENT.
2. BASE ASPHALT, OR SURFACE ASPHALT WHEN ONLY ONE COURSE IS REQUIRED, SHALL BE INSTALLED TO SURFACE OF EXISTING PAVEMENT AS AN INITIAL ASPHALT PATCH. THE THICKNESS OF THE ASPHALT SHALL BE EQUAL TO THE ADJACENT EXISTING ASPHALT BUT NOT LESS THAN THE SUM OF BOTH BASE & SURFACE COURSE ASPHALTS AS NOTED IN COM DETAIL M-1203 (OLD M-19.01). STANDARD COMPACTION REQUIREMENTS APPLY. THE TYPE OF ASPHALT CONCRETE MIX SHALL BE PER COM DETAILS M-1203 (OLD M-19.01) OR M-1203.2 (OLD M-19.03). IF THE DEPTH OF THE ASPHALT IS MORE THAN 4-INCHES, PLACEMENT SHALL BE IN TWO LIFTS AND THE PAVEMENT WIDTH SHALL BE 48" MIN.
3. AFTER THE INITIAL ASPHALT PATCH HAS BEEN SUBJECTED TO TRAFFIC FOR AT LEAST TWO (2) WEEKS BUT NOT MORE THAN TWO (2) MONTHS, MILL 1 1/2 INCHES AND REPLACE WITH SURFACE ASPHALT CONCRETE MIX. MINIMUM MILL WIDTH SHALL BE EQUAL TO THE PAY WIDTH PLUS 12-INCHES EACH SIDE (12" INTO EXISTING A.C.) EXCEPT FOR TYPE A-1 (ONE SIDE). SURFACE ASPHALT CONCRETE MIX SHALL BE R-1/2" OR A-1/2" AS NOTED IN COM DETAIL M-1203 (OLD M-19.01) UNLESS OTHERWISE STATED IN THE PLANS AND/OR SPECIAL PROVISIONS. WHEN LONGITUDINAL PATCHES ARE 6' OR WIDER, THE ASPHALT SHALL BE PLACED BY A SELF PROPELLED MECHANICAL SPREADING AND FINISHING EQUIPMENT IN ACCORDANCE WITH MAG 321.5.2(A).
4. WHEN THIS DIMENSION IS 48-INCHES OR LESS, REMOVE AND REPLACE ALL ASPHALT CONCRETE, BOTH BASE COURSE AND SURFACE COURSE, BETWEEN THE TRENCH AND THE LIP OF GUTTER.
5. AFTER SURFACE ASPHALT CONCRETE HAS BEEN PLACED, ALL MANHOLES, VALVES, STRUCTURES, ETC, SHALL BE ADJUSTED TO GRADE. WHERE REQUIRED BY ITS, TRAFFIC SIGNAL DETECTOR LOOPS SHALL BE INSTALLED BEFORE SURFACE A.C. IS PLACED.
6. MEASUREMENT FOR PAYMENT SHALL BE PER MAG SECTION 336.4 EXCEPT FOR THE PAY WIDTH. ALL PAY WIDTHS SHALL BE COMPUTED PER MAG SECTION 336.4 (A) AND AS SHOWN ON THIS DETAIL, UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIAL PROVISIONS. NOTE: NO PAYMENT WILL BE MADE FOR ADDITIONAL PAVEMENT REPLACEMENT AS A RESULT OF A WIDER TRENCH EXCAVATION.
7. SLURRY SEAL SHALL BE REQUIRED FOR STREET CUTS GREATER THAN 300 LF. PLACEMENT AND/OR IN LIEU PAYMENT SHALL BE MADE IN ACCORDANCE WITH MAG SECTION 336.2.4.1 (F) AS DETERMINED BY THE INSPECTOR.
8. THE COST OF THE TOP 12-INCHES OF A.B.C. OR CONTROLLED LOW STRENGTH MATERIAL FOR TYPE "B" AND THE TOP 24-INCHES OF A.B.C. FOR TYPE "A" AND "A-1" SHALL BE INCLUDED IN THE PAVEMENT REPLACEMENT COST. ALSO, NO ADDITIONAL PAYMENT WILL BE MADE FOR PAVEMENT REMOVAL, MILLING AND INSTALLATION OF BOTH BASE COURSE AND SURFACE COURSE PAVEMENT BEYOND THE PAY WIDTH SHOWN IN THIS DETAIL.
9. SEE MAG DETAIL 211 FOR REQUIREMENTS REGARDING THE USE OF PLATING OF TRANSVERSE TRENCHES.

10. THE TOTAL THICKNESS OF THE ASPHALT SHALL BE EQUAL TO THE ADJACENT EXISTING ASPHALT HOWEVER, NOT LESS THAN THAT SPECIFIED IN COM DETAILS M-1203 (OLD M-19.01) OR M-1203.2 (OLD M-19.03). THE THICKNESS OF THE SURFACE ASPHALT SHALL BE AS SHOWN ON COM DETAILS M-1203 (OLD M-19.01) OR M-1203.2 (OLD M-19.03). THE THICKNESS OF THE BASE ASPHALT SHALL BE THE TOTAL ASPHALT THICKNESS MINUS THE THICKNESS OF THE SURFACE ASPHALT. THE TYPE OF ASPHALT MIXES SHALL BE PER COM DETAILS M-1203 (OLD M-19.01) OR M-1203.2 (OLD M-19.03).
11. WHEN MECHANICALLY COMPACTING BACKFILL MATERIAL, THE BACKFILL MATERIAL SHALL BE WITHIN TWO (2) PERCENTAGE POINTS OF OPTIMUM AS DETERMINED BY AASHTO T-99 (STANDARD PROCTOR) AT THE TIME OF COMPACTION.
12. CLUSTERED TRENCH PATCHES, WITH FOUR FEET OF SEPARATION OR LESS, MUST BE COMBINED TO FORM ONE UNIFORM PATCH AND MEET COM DETAIL M-1203.3 (OLD M-19.04.1).
13. PAVEMENT PATCHES MUST NOT BE AN IRREGULAR SHAPE.
14. DAMAGED PAVEMENT CAUSED BY CONTRACTOR'S EQUIPMENT MUST ALSO BE INCLUDED AS PART OF THE REPAIR.
15. REFER TO PIPE ZONE MATERIALS TABLE (THIS SHEET) FOR ALLOWABLE BEDDING MATERIAL.

PIPE ZONE MATERIALS TABLE

PIPE MATERIAL	PIPE DIAMETER	BEDDING MATERIAL
PVC, HDPE, PE, VCP	< 15"	A.B.C. PER MAG STD. SPEC. 702 AND 601
PVC, HDPE, PE	> 15"	1/2 SACK C.L.S.M. UNLESS OTHERWISE SPECIFIED (MAG 728)
VCP	> 15"	1/2 SACK C.L.S.M. UNLESS OTHERWISE SPECIFIED (MAG 728) FROM BEDDING TO TOP OF PIPE. A.B.C PER MAG STD. SPEC. 702 AND 601 FOR REMAINING 12-INCHES ABOVE TOP OF PIPE.
DUCTILE IRON PIPE	ALL	A.B.C. PER MAG STD. SPEC. 702 AND 601. LIME TREATED ABC IS NOT ALLOWED FOR PIPE ZONE BACKFILL AND BEDDING
RCP, RGRCP, CCP, CIPP	ALL	A.B.C. PER MAG STD. SPEC. 702 AND 601. LIME TREATED ABC IS NOT ALLOWED FOR PIPE ZONE BACKFILL AND BEDDING

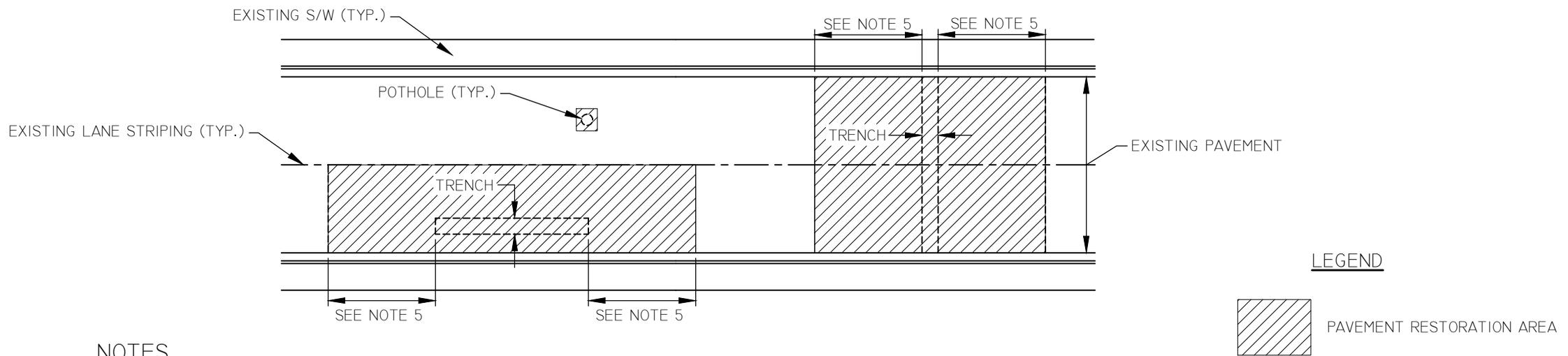
NOTES: RECLAIMED CONCRETE AND RECLAIMED PAVEMENT MATERIAL ARE NOT ALLOWED FOR PIPE ZONE BACKFILL AND BEDDING.



STANDARD TRENCH BACKFILL DETAIL - NOTES

OLD
M-19.04.2

DETAIL NO.
M-1203.4



NOTES

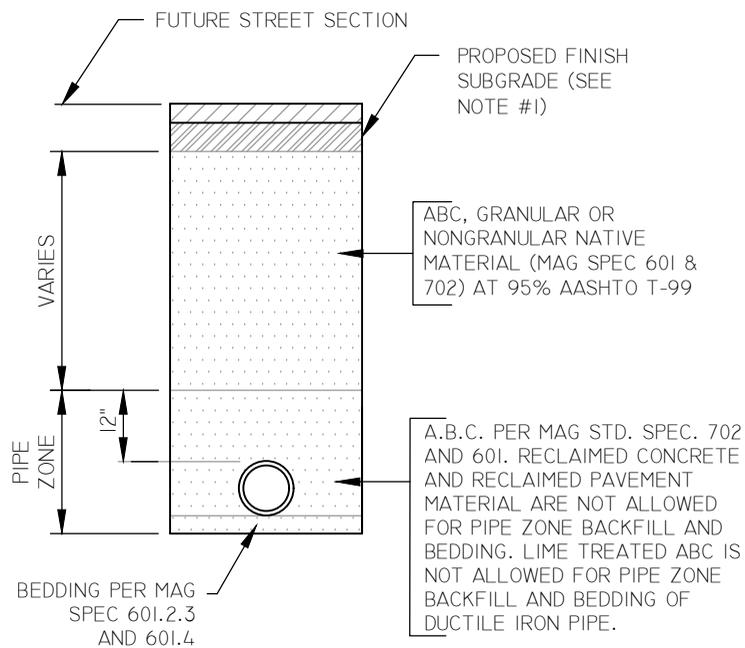
1. A PAVEMENT RESTORATION FEE IS REQUIRED IN CONNECTION WITH ANY RIGHT-OF-WAY PERMIT TO CUT INTO, EXCAVATE, BORE, TRENCH OR DISTURB STREET PAVEMENT FOR A PERIOD OF FIVE (5) YEARS AFTER THE CITY'S ACCEPTANCE OF STREET CONSTRUCTION I.E. (NEW PAVEMENT, PAVEMENT RENOVATION OR PAVEMENT RECONSTRUCTION) AT THE LOCATION OF THE PROPOSED RIGHT-OF-WAY PERMIT.
2. THE AMOUNT OF THE PAVEMENT RESTORATION FEE SHALL BE AS ESTABLISHED PER THE CITY'S FEE SCHEDULE.
3. FOR A PERIOD OF TWO (2) YEARS AFTER THE CITY'S ACCEPTANCE OF STREET CONSTRUCTION PAVEMENT CUT RESTRICTIONS ARE IN PLACE AND ARE AUTHORIZED ONLY UNDER THE FOLLOWING EXCEPTIONS: A VERIFIABLE EMERGENCY EXISTS THAT ENDANGERS LIFE OR PROPERTY; AN INTERRUPTION OF ESSENTIAL UTILITY SERVICE; UTILITY OR OTHER SERVICE FOR BUILDINGS IS REQUIRED WHERE NO OTHER FEASIBLE MEANS OF PROVIDING SUCH SERVICE EXISTS; OR A PAVEMENT CUT IS REQUIRED BY CITY, COUNTY, STATE OR FEDERAL REGULATION.
4. BETWEEN ONE (1) YEAR AND TWO (2) YEARS AFTER ACCEPTANCE, IF THE CITY ENGINEER DETERMINES THAT THE COST TO MILL AND OVERLAY IS SUBSTANTIALLY LESS THAN THE COST OF ALTERNATE ROUTING FOR PERMITTEE'S FACILITIES THE PERMITTEE MAY CHOOSE TO CUT THE PAVEMENT AND PERFORM A MILL AND OVERLAY.
5. STREET CUTS PERMITTED WITHIN ONE (1) YEAR OF CONSTRUCTION, RECONSTRUCTION OR RENOVATION SHALL REQUIRE THE MILL AND OVERLAY FOR A MINIMUM OF THE FULL WIDTH OF ALL LANES IMPACTED BY THE CUT(S) INCLUDING TO THE CURB ON OUTSIDE LANES AND A MINIMUM DISTANCE OF TWENTY-FIVE (25) FEET FOR COLLECTOR/RESIDENTIAL STREETS OR FIFTY (50) FEET FOR ARTERIAL STREETS EXTENDING FROM THE AREA OF THE CUT IN BOTH DIRECTIONS.
6. THE REQUIREMENT TO RENOVATE THE STREET BY MILL AND OVERLAY/INLAY SHALL NOT APPLY TO ONE POT HOLE SMALLER THAN TWO (2) SQUARE FEET WITHIN THE LIMITS OF THE NEW PAVEMENT SECTION.
7. POT HOLE REPAIR SHALL BE PER COM DETAIL M-1700.3 (OLD M-18.03).
8. TRENCH REPAIR SHALL BE PER COM DETAIL M-1203.3 (OLD M-19.04.1).
9. PAVEMENT CUT AND MILL & OVERLAY LIMITS WILL BE APPROVED BY THE CITY INSPECTOR.
10. THE PAVEMENT RESTRICTION APPLIES TO ALL PROJECTS, INCLUDING PUBLIC AND PRIVATE PROJECTS.
11. ALL STRIPING IMPACTED BY PAVEMENT RESTORATION SHALL BE REPLACED PER CITY OF MESA'S ENGINEERING & DESIGN STANDARDS MANUAL SECTION 204.3.
12. DETECTOR LOOPS LOCATED WITHIN THE PAVEMENT RESTORATION LIMITS SHALL BE REPLACED PER COM DETAILS M-1231 (OLD M-96.01) THROUGH M-1231.3 (OLD M-96.04).
13. WHEN THE ROADWAY IS DISTURBED FOR ANY WORK FUNCTION, THE RESTORATION SHALL INCLUDE THE FULL LANE WIDTH AND A MINIMUM LENGTH IN BOTH VERTICAL DIRECTIONS (FROM THE POINT OF DISTURBANCE), TO RESTORE CONTINUITY TO THE EXISTING ROADWAY AS DETERMINED BY THE CITY OF MESA. THE METHOD OF RESTORATION SHALL FOLLOW THE MESA STANDARD DETAILS AND MESA DESIGN STANDARDS. ANY REQUEST FOR ALTERING THIS OR PROPOSED ALTERNATIVE RESTORATION, SHALL BE APPROVED BY TRANSPORTATION'S PAVEMENT MANAGEMENT SUPERVISOR PRIOR TO BEGINNING THE RESTORATION WORK.

NOT TO SCALE

PAVEMENT RESTORATION

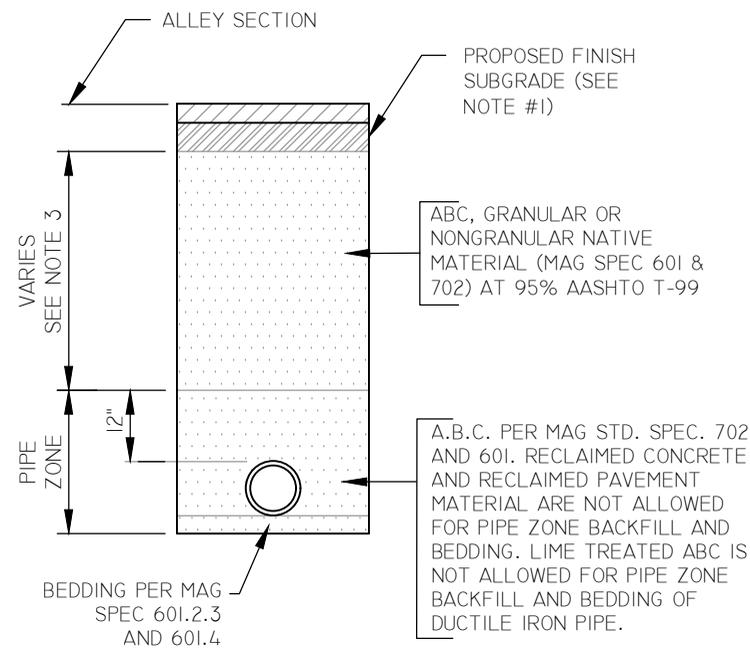
OLD
M-19.04.3

DETAIL NO.
M-1203.5



NOTE:
FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL
GREATER THAN 1 1/2 INCHES MAY BE USED WITH CITY APPROVAL.

FUTURE PAVED ROADWAY SECTION
(NTS)



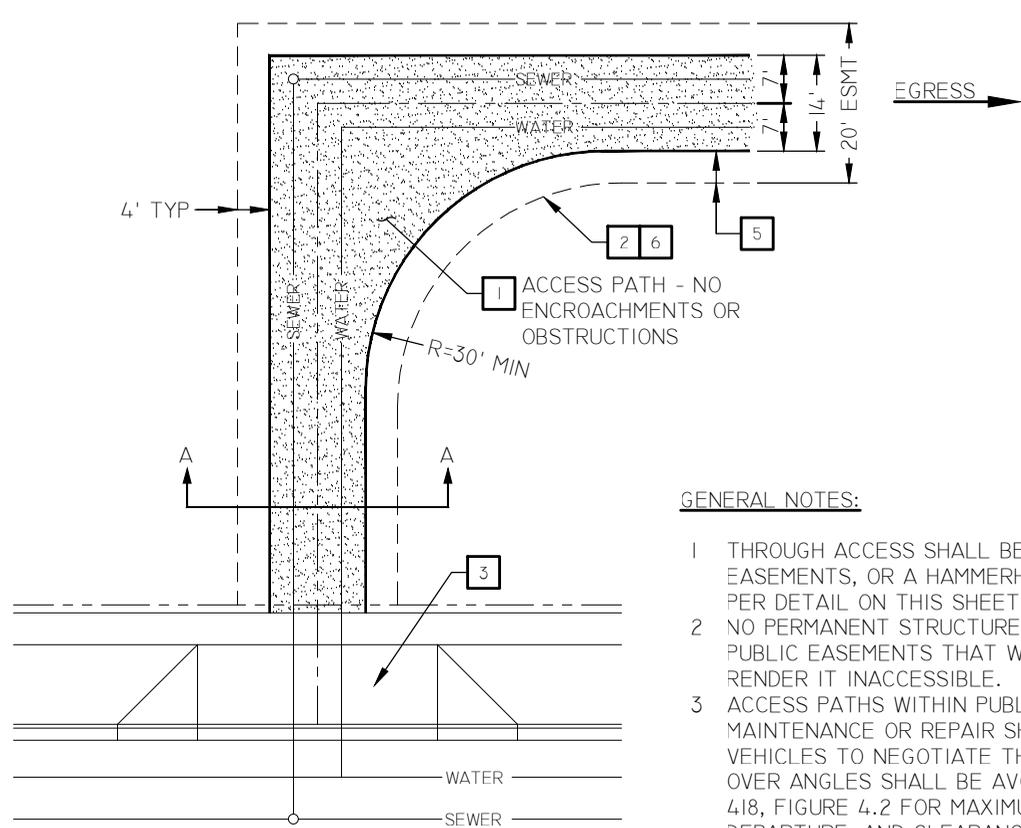
NOTE:
FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL
GREATER THAN 1 1/2 INCHES MAY BE USED WITH CITY APPROVAL.

ALLEY SECTION
(NTS)

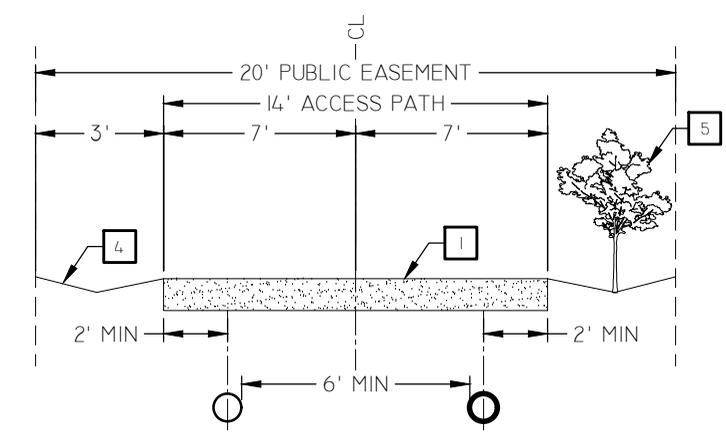
NOTES

1. WHEN STREET OR ALLEY ELEVATIONS ARE UNKNOWN, THE PROPOSED FINISH SUBGRADE WILL BE THE ADJACENT EXISTING GROUND ELEVATION OR AS OTHERWISE DIRECTED BY THE ENGINEER.
2. WHEN MECHANICALLY COMPACTING BACKFILL MATERIAL, THE MOISTURE CONTENT OF THE BACKFILL MATERIAL SHALL BE WITHIN TWO (2) PERCENTAGE POINTS OF OPTIMUM AS DETERMINED BY AASHTO T-99 STANDARD PROCTOR) AT THE TIME OF COMPACTION.
3. FUTURE ROADWAY PRISMS ARE THOSE WHERE PAVING DOES NOT CURRENTLY EXIST, AND WHERE A ROADWAY SUBGRADE HAS NOT BEEN COMPACTED AND ACCEPTED.
4. FOR TELECOMMUNICATION OR COAX INSTALLATIONS, DEPTH OF NATIVE MATERIAL SHALL BE A MINIMUM OF 24"

NOT TO SCALE



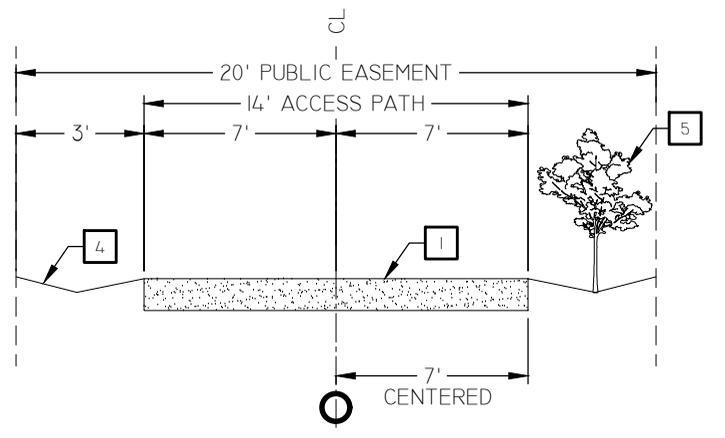
ACCESS PATH DETAIL



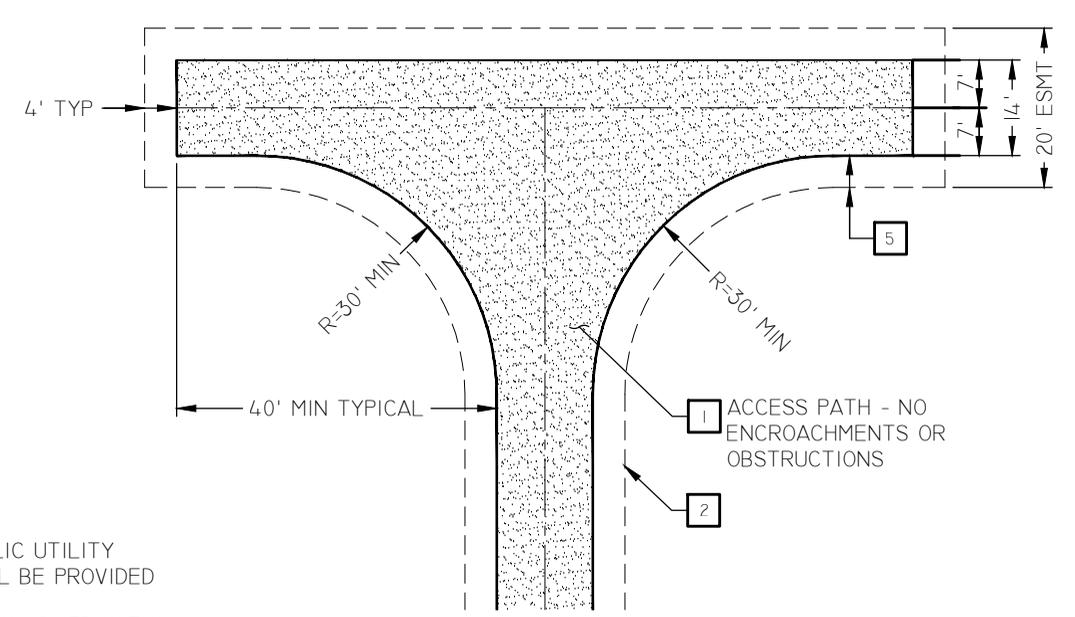
SECTION A-A WATER & SEWER

GENERAL NOTES:

- 1 THROUGH ACCESS SHALL BE PROVIDED FOR ALL PUBLIC UTILITY EASEMENTS, OR A HAMMERHEAD TURN AROUND SHALL BE PROVIDED PER DETAIL ON THIS SHEET.
- 2 NO PERMANENT STRUCTURES OR PLANTING WILL BE ALLOWED WITHIN PUBLIC EASEMENTS THAT WOULD OBSTRUCT THE EASEMENT AND RENDER IT INACCESSIBLE.
- 3 ACCESS PATHS WITHIN PUBLIC EASEMENTS UTILIZED FOR UTILITY MAINTENANCE OR REPAIR SHALL BE DESIGNED TO ALLOW CITY VEHICLES TO NEGOTIATE THE PATH. EXCESSIVE SLOPES OR BREAK OVER ANGLES SHALL BE AVOIDED. SEE DESIGN STANDARDS SECTION 418, FIGURE 4.2 FOR MAXIMUM ALLOWABLE BREAKOVER, APPROACH, DEPARTURE, AND CLEARANCE REQUIREMENTS. SEE KEYNOTE 1 FOR SLOPE REQUIREMENTS.



SECTION A-A WATER OR SEWER

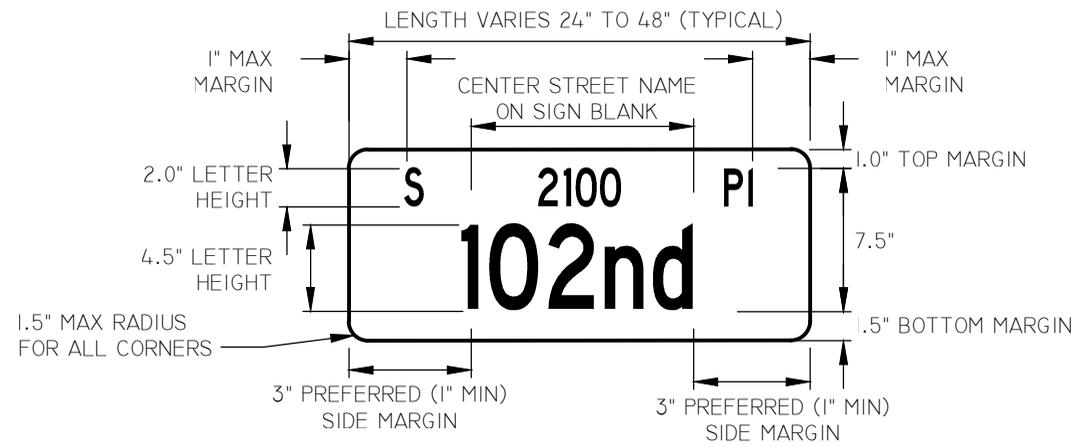


HAMMERHEAD DETAIL

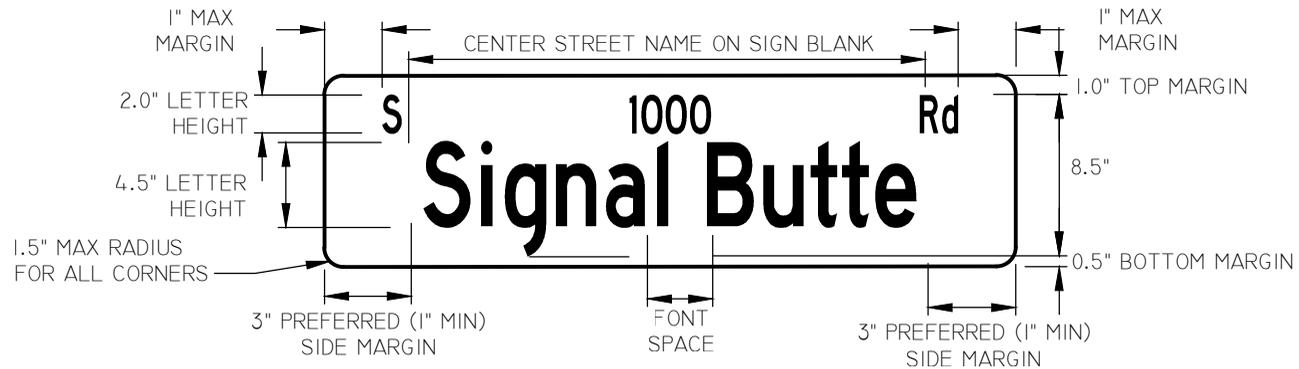
KEY NOTES:

- 1 ALL WEATHER 14' MINIMUM WIDE ACCESS PATH CONSTRUCTED OF 6" THICK COMPACTED STABILIZED DECOMPOSED GRANITE ON 95% COMPACTED SUBGRADE PER MAG SPEC 205, 211, & 301, CAPABLE OF WITHSTANDING 80,000 GVW SERVICE VEHICLES. THE ACCESS PATH SHALL BE FREE OF OBSTRUCTIONS, AND NO PLANTING WILL BE PERMITTED WITHIN THE LIMIT OF THE PATH. MAXIMUM ALLOWABLE SLOPES: LONGITUDINAL 10%, CROSS SLOPE 5%.
- 2 PUBLIC EASEMENT SHALL BE 20' MINIMUM WIDTH AND SHALL MEET THE REQUIREMENTS OF SECTIONS 106, 316, AND 418 OF THE CITY OF MESA ENGINEERING AND DESIGN STANDARDS.
- 3 COMMERCIAL DRIVEWAY PER COM DETAIL M-1213 (OLD M-42). MOUNTABLE CURB CAPABLE OF WITHSTANDING 80,000 GVW VEHICLES MAY BE ALLOWED ON A CASE BY CASE BASIS WHEN APPROVED IN WRITING BY THE CITY OF MESA.
- 4 GRADED LANDSCAPE AREA. PROVIDE POSITIVE DRAINAGE THAT WILL PREVENT EROSION OF THE ACCESS PATH.
- 5 GROUND COVER AND/OR TREES LOCATED OUTSIDE OF THE ACCESS PATH AREA SHALL NOT ENCRANCH INTO OR OVERHANG INTO THE ACCESS PATH. TREES OR OTHER PLANTING THAT ENCRANCH INTO THE PATH ZONE MAY BE SUBJECT TO REMOVAL AT THE OWNER'S EXPENSE PER MESA DESIGN STANDARDS SECTION 106.4.
- 6 WALL OR STRUCTURE FOOTINGS PLACED AT THE EDGE OF THE PUBLIC EASEMENT SHALL NOT BE PLACED SUCH THAT THESE STRUCTURES WILL BE UNDERMINED OR DAMAGED IN THE EVENT THAT THE CITY NEEDS TO EXCAVATE TO THE UTILITIES WITHIN THE EASEMENT.

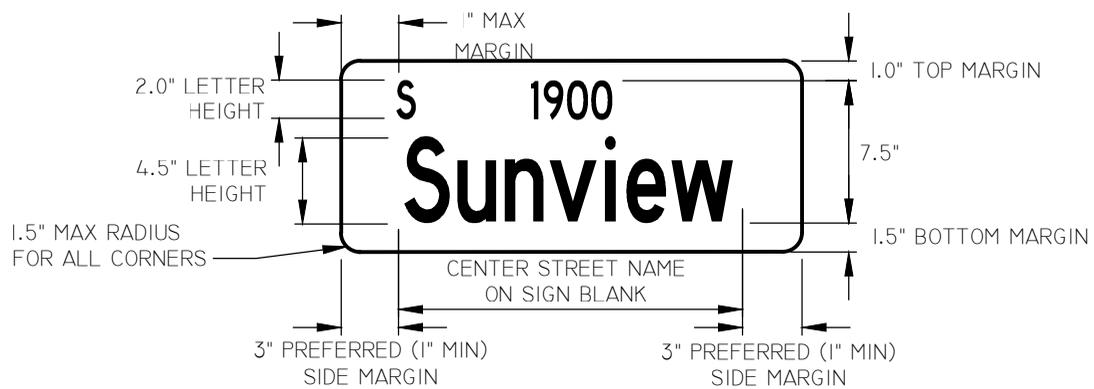
NOT TO SCALE



10" PUBLIC STREET NAME SIGNS - WITH SUFFIX



10" PUBLIC STREET NAME SIGNS - WITH SUFFIX

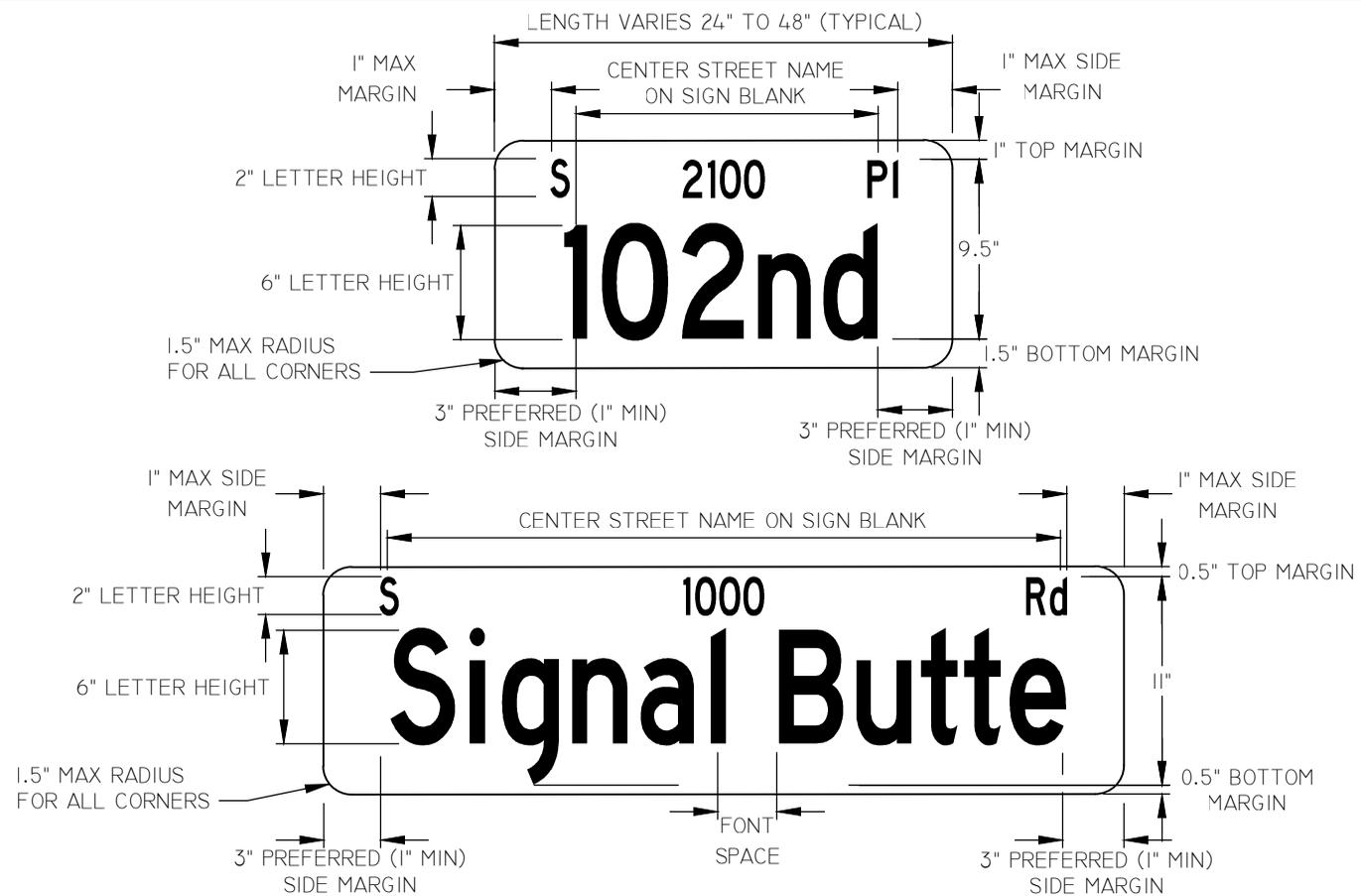


10" PUBLIC STREET NAME SIGN - WITHOUT SUFFIX

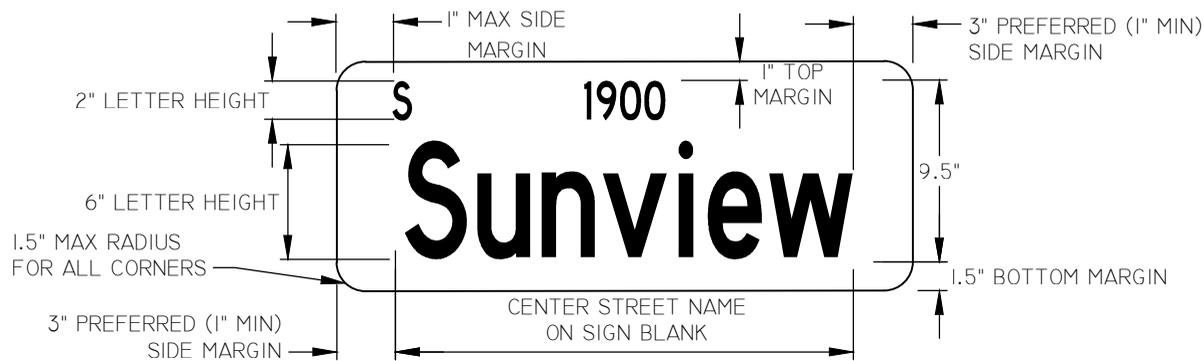
NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE PRISMATIC SHEETING OR APPROVED EQUAL.
2. ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1177 GREEN ELECTRO CUT FILM OR APPROVED EQUAL.
3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A GREEN TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS, THE GREEN BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A GREEN BACKGROUND.
4. LETTER FONT SHALL BE INITIAL UPPER AND LOWER-CASE HWY-C.
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
6. 10" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48");
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING;
 - BE 0.125" THICK WITH 1" MINIMUM ROUNDED CORNERS.
7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STRETDIRECTORY/STRETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
9. USE THIS SIGN FOR PUBLIC STREETS WITH A SPEED LIMIT OF 25 MPH.

NOT TO SCALE



12" PUBLIC STREET NAME SIGNS - WITH SUFFIX



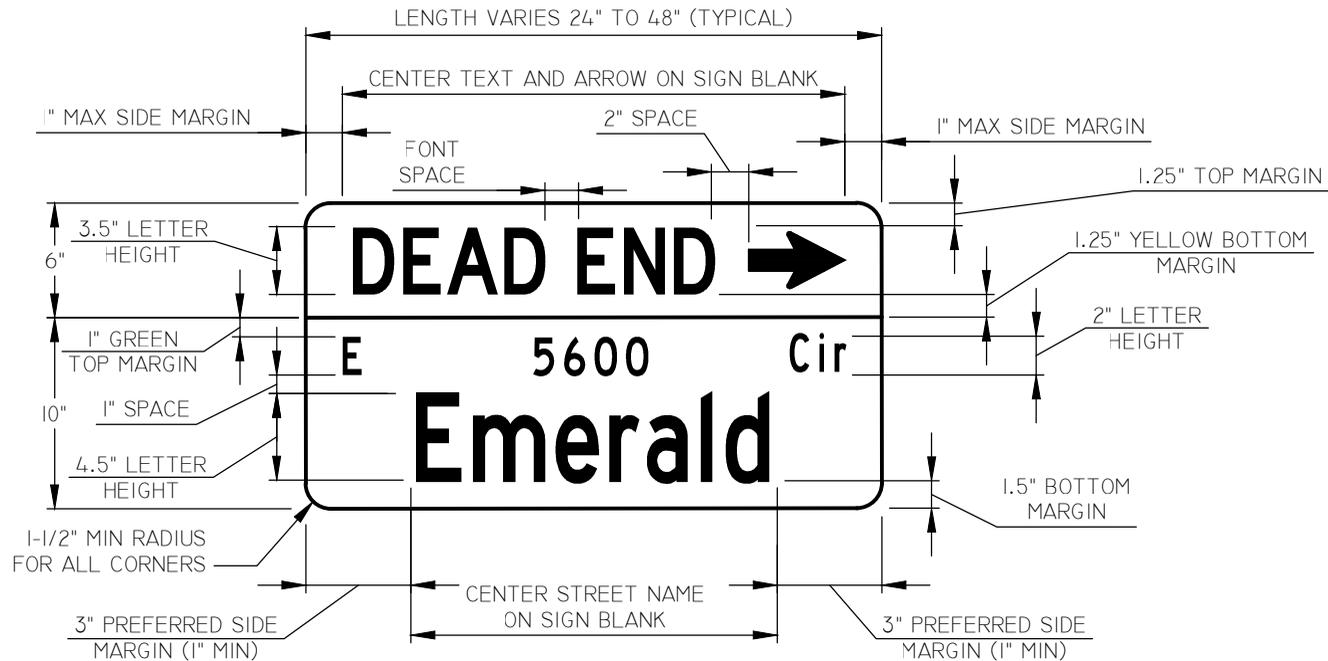
12" PUBLIC STREET NAME SIGN - WITHOUT SUFFIX

NOTES

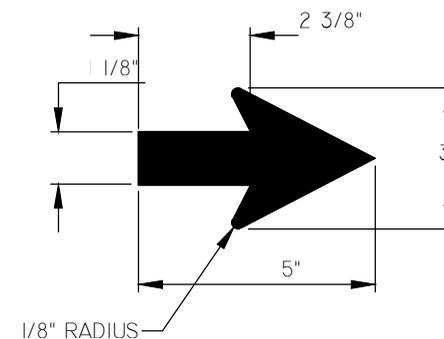
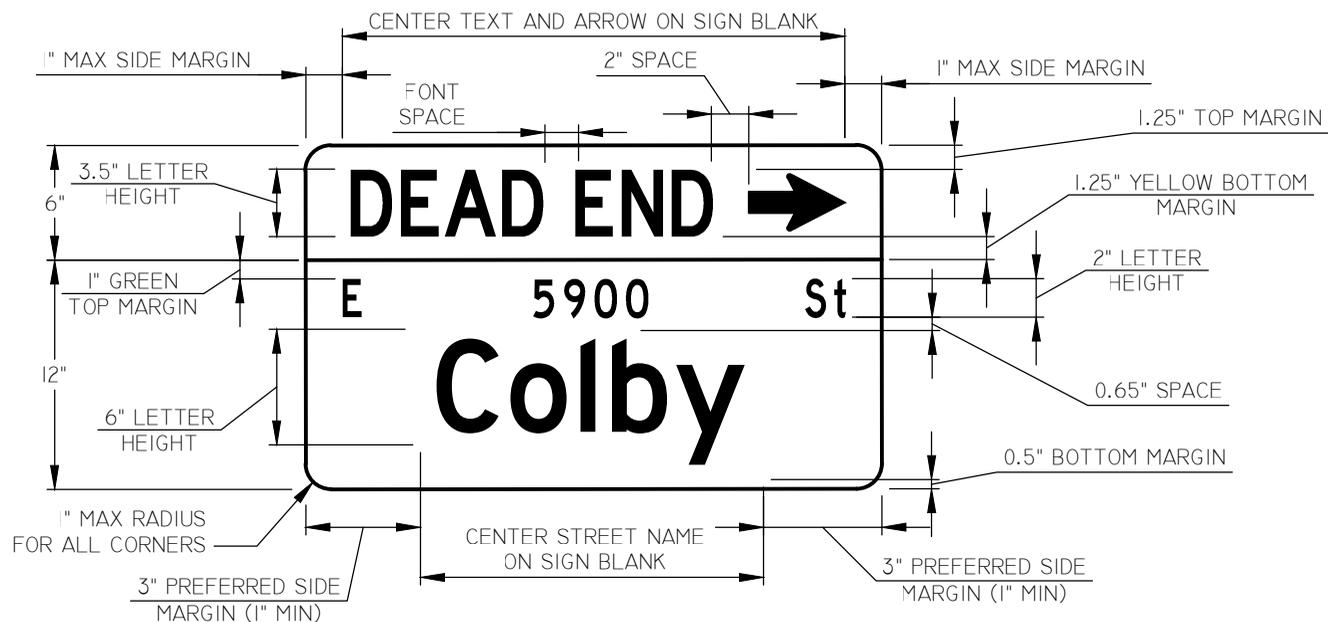
- ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE XI 3M #4090 WHITE DG CUBED SHEETING OR APPROVED EQUAL. ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1177 GREEN ELECTRO CUT FILM OR APPROVED EQUAL.
- THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A GREEN TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS, THE GREEN BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A GREEN BACKGROUND.
- LETTER FONT SHALL BE INITIAL UPPER AND LOWER-CASE HWY-C.
- SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH
- 12" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48");
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING;
 - BE 0.125" THICK WITH 1" MINIMUM ROUNDED CORNERS.
- STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STRETDIRECTORY/STRETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
- ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
- USE THIS SIGN FOR PUBLIC STREETS WITH A SPEED LIMIT OF 30 MPH OR GREATER.

NOT TO SCALE

DEAD END WITH 10" PUBLIC STREET NAME COMBINATION SIGN



DEAD END WITH 12" PUBLIC STREET NAME COMBINATION SIGN

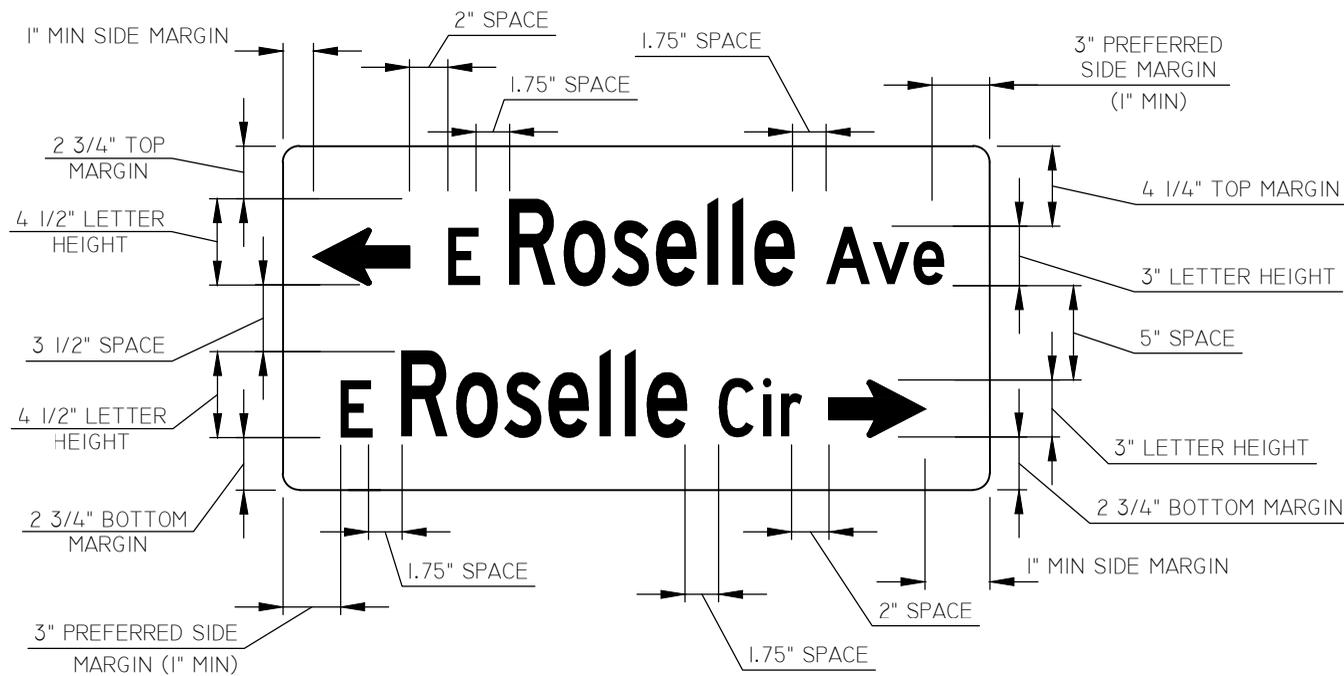


BLACK ARROW

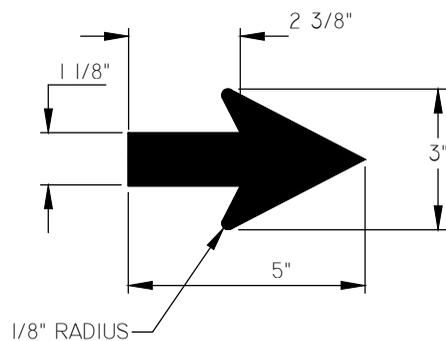
NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE AND YELLOW PRISMATIC SHEETING OR APPROVED EQUAL.
2. ALL ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1177 GREEN ELECTRO CUT (EC) FILM AND 3M #7725-12 BLACK EC FILM OR APPROVED EQUAL.
3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE LOWER 10"/12" PORTION OF THE SIGN BLANK AND YELLOW SHEETING TO THE TOP 6" PORTION OF THE SIGN BLANK. ON TOP OF THE WHITE SHEETING A GREEN TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS THE GREEN BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN THE LOWER PORTION OF THE SIGN HAVING A WHITE LEGEND AND A GREEN BACKGROUND. ON TOP OF THE YELLOW SHEETING, THE BLACK "DEAD END" AND BLACK ARROW ARE APPLIED. THUS, THE TOP PORTION OF THE SIGN WILL HAVE A YELLOW BACKGROUND AND A BLACK LEGEND.
4. LETTER FONT SHALL BE INITIAL UPPER AND LOWER-CASE HWY-C FOR THE LOWER PORTION OF THE SIGN (STREET NAME) AND UPPER-CASE HWY-C FOR THE UPPER PORTION OF THE SIGN ("DEAD END" AND ARROW).
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
6. 16"/18" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48");
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING;
 - BE 0.125" THICK WITH 1" MINIMUM ROUNDED CORNERS.
7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STRETDIRECTORY/STRETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
9. 10" OR 12" STREET NAME SIGN DETERMINED PER COM DETAILS M-1204 (OLD M-20.01) & M-1204.1 (OLD M-20.02).

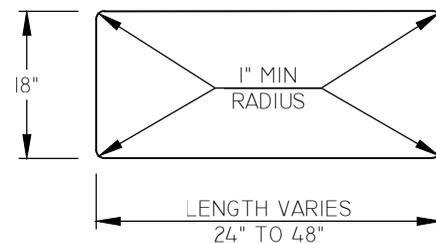
NOT TO SCALE



DOUBLE STREET NAME SIGN



WHITE ARROW



DETAIL "A"
BLANK DIMENSIONS

NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE PRISMATIC SHEETING OR APPROVED EQUAL.
2. ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1177 GREEN ELECTRO CUT FILM OR APPROVED EQUAL.
3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A GREEN TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS, THE GREEN BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A GREEN BACKGROUND.
4. LETTER FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HWY-C.
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
6. 18" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS PER DETAIL "A";
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE I200 CONVERSION COATING;
 - BE 0.125" THICK WITH ROUNDED CORNERS PER DETAIL "A".
7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA WEBSITE ([HTTPS://APPS.MESA AZ.GOV/STREETDIRECTORY/STREETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.

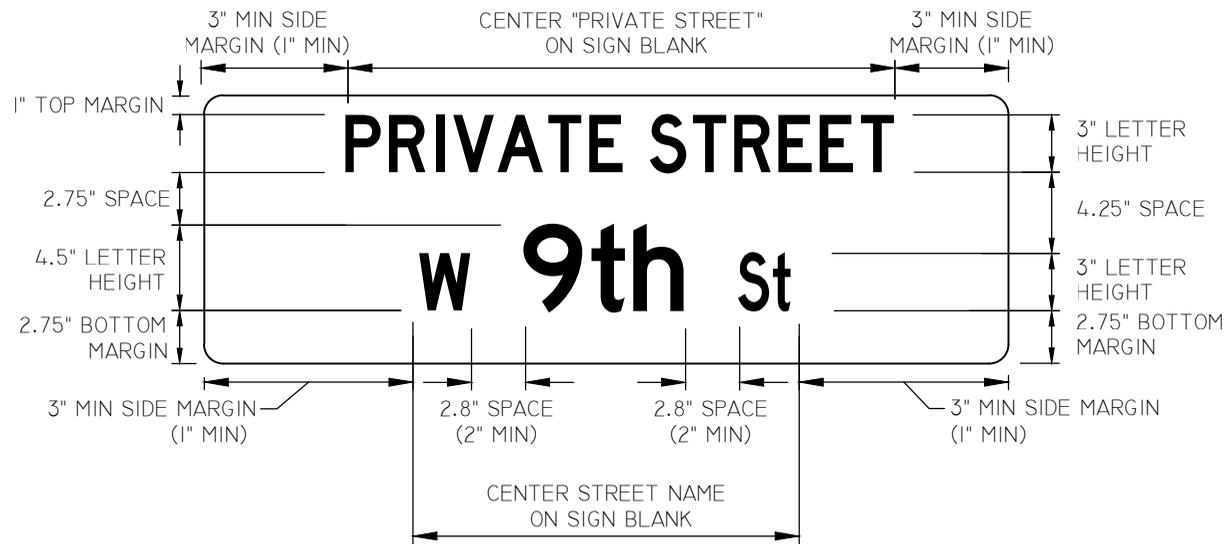
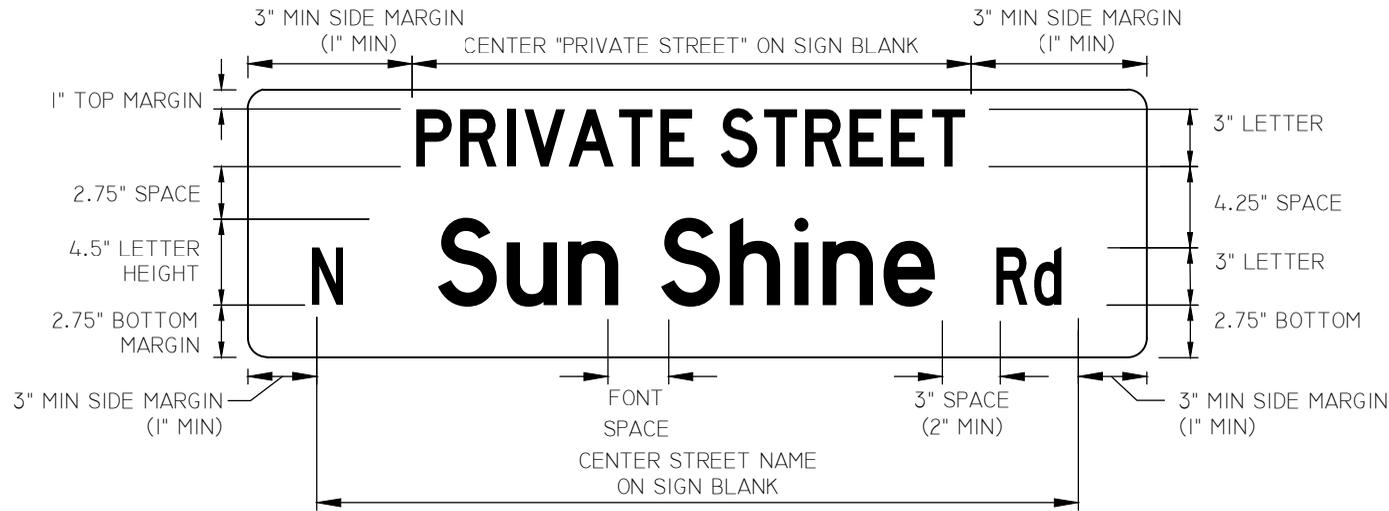
NOT TO SCALE

OLD
M-20.04

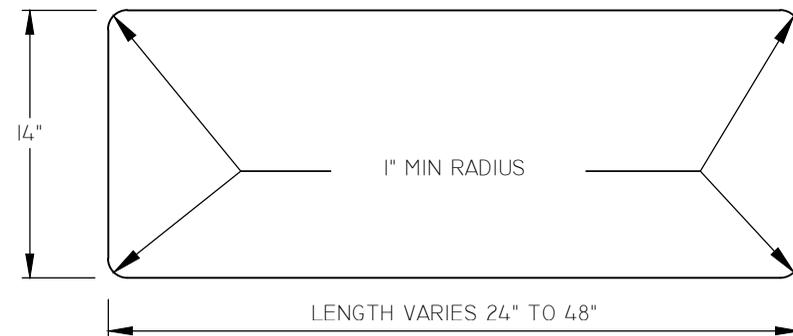
DETAIL NO.
M-1204.3

NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE IV WIDE ANGLE PRISMATIC SHEETING OR APPROVED EQUAL.
2. ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1175 BLUE ELECTRO CUT FILM OR APPROVED EQUAL.
3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A BLUE TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS, THE BLUE BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A BLUE BACKGROUND.
4. LETTER FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HIGHWAY GOTHIC "C".
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
6. 14" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS PER DETAIL "A";
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING;
 - BE 0.125" THICK WITH ROUNDED CORNERS PER DETAIL "A".
7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA'S WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STREETSDIRECTORY/STREETSDIRECTORY](https://apps.mesaaz.gov/streetsdirectory/streetsdirectory)).
8. WHERE A PRIVATE STREET INTERSECTS A PUBLIC STREET, THE SIGN FOR THE PUBLIC STREET SHALL BE PER COM DETAIL M-1204 (OLD M-20.01).
9. ALTERNATE BACKGROUND COLORS AND/OR LETTER FONTS MAY BE APPROVED BY THE CITY TRAFFIC ENGINEER.
10. ALL PRIVATE STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
11. USE THIS SIGN FOR PRIVATE STREETS WITH A SPEED LIMIT OF 25 MPH.

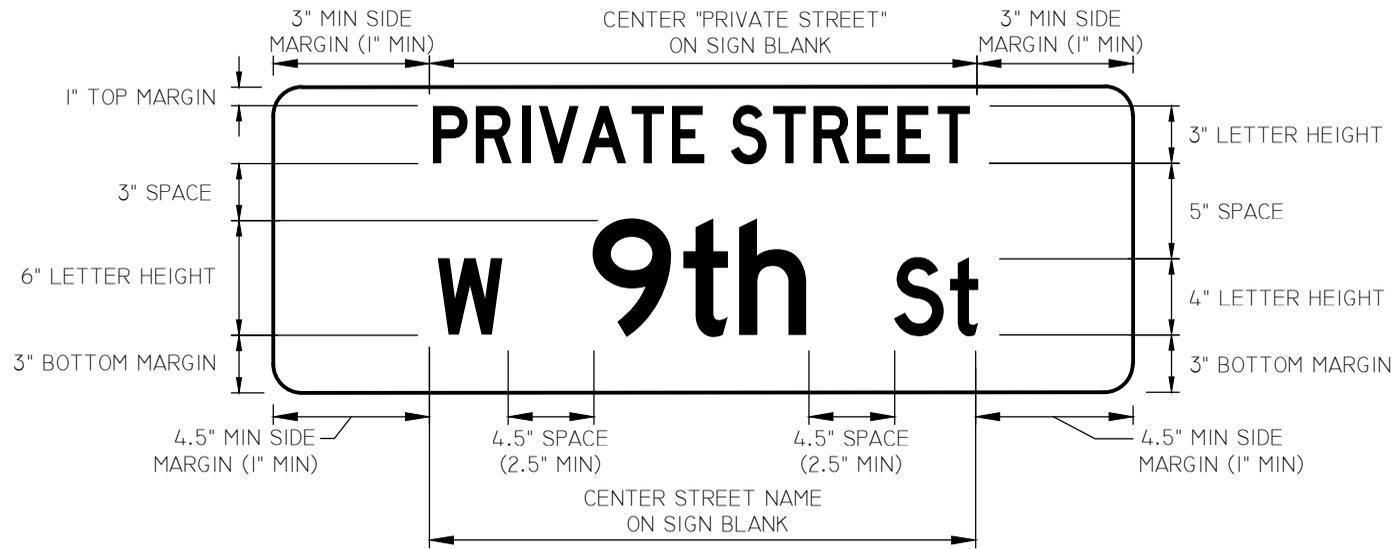
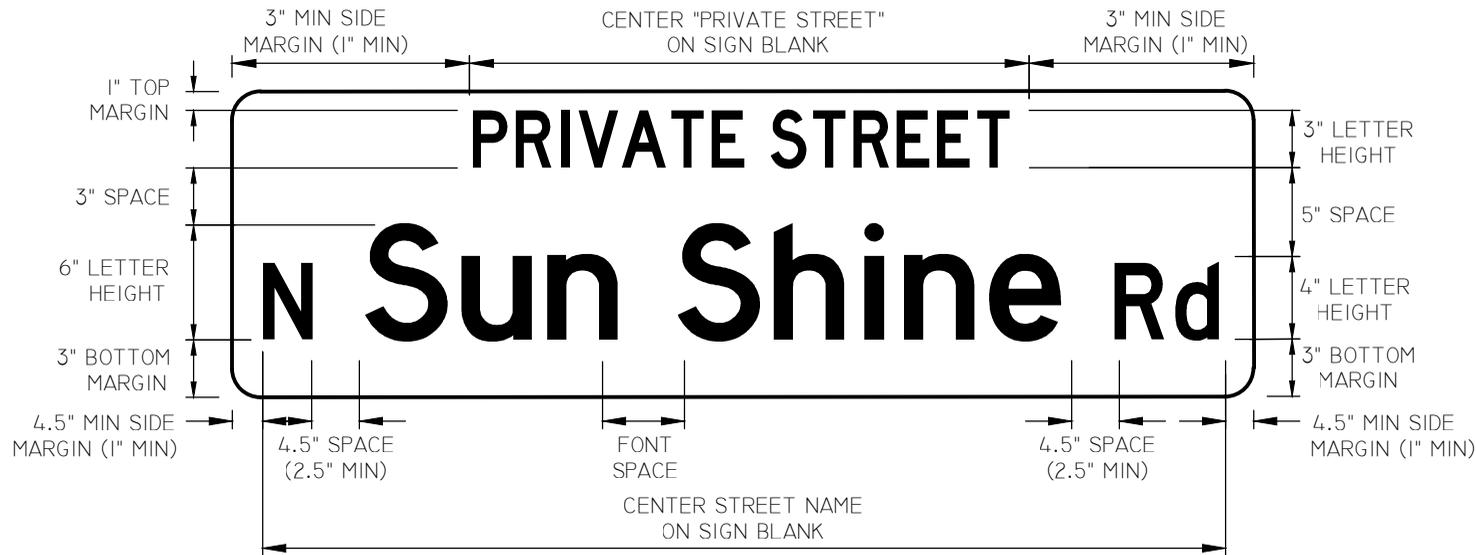


14" PRIVATE STREET NAME SIGNS



DETAIL "A" - BLANK DIMENSIONS

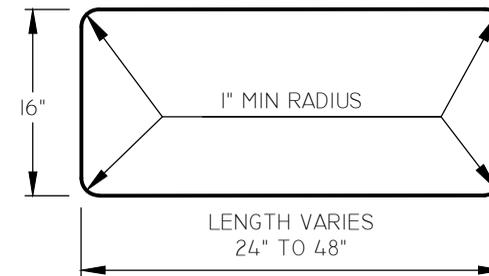
NOT TO SCALE



16" PRIVATE STREET NAME SIGNS

NOTES

- ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE-SENSITIVE ASTM TYPE XI 3M #4090 WHITE DG CUBED SHEETING OR APPROVED EQUAL.
- ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1175 BLUE ELECTRO CUT FILM OR APPROVED EQUAL.
- THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A BLUE TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THUS, THE BLUE BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A BLUE BACKGROUND.
- LETTER FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HIGHWAY GOTHIC "C".
- SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
- 16" SIGN BLANKS SHALL:
 - HAVE DIMENSIONS PER DETAIL "A";
 - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING;
 - BE 0.125" THICK WITH ROUNDED CORNERS PER DETAIL "A".
- STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA'S WEBSITE ([HTTPS://APPS.MESA·AZ.GOV/STRETDIRECTORY/STRETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
- WHERE A PRIVATE STREET INTERSECTS A PUBLIC STREET, THE SIGN FOR THE PUBLIC STREET SHALL BE PER COM DETAIL M-1204.1 (OLD M-20.02).
- ALTERNATE BACKGROUND COLORS AND/OR LETTER FONTS MAY BE APPROVED BY THE CITY TRAFFIC ENGINEER.
- ALL PRIVATE STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWING AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
- USE THIS SIGN FOR PRIVATE STREETS WITH A SPEED LIMIT OF 30 MPH OR GREATER.

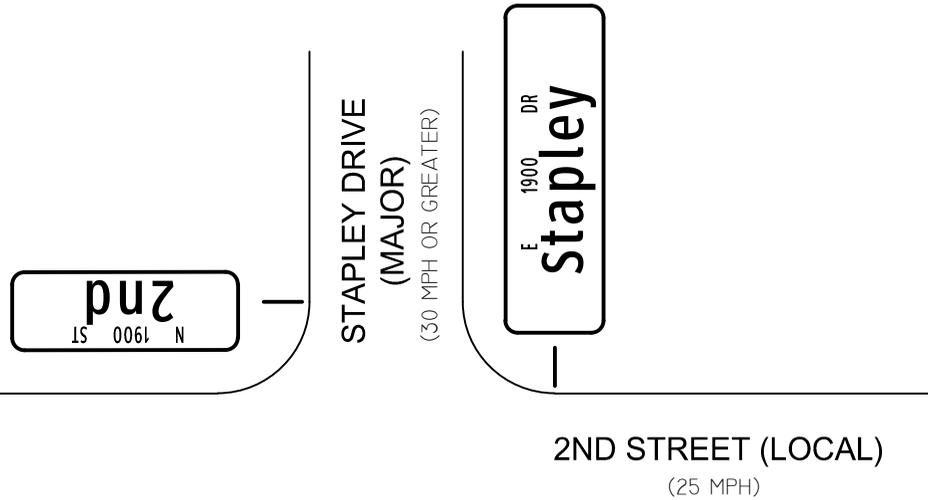


DETAIL "A" - BLANK DIMENSIONS

NOT TO SCALE

NOTES

- SEE COM DETAIL M-1206.2 (OLD M-22.03) FOR STREET NAME SIGN POLE LOCATION AT INTERSECTIONS.
- PUBLIC STREET NAME SIGNS SHALL BE FURNISHED AND INSTALLED BY THE CITY UNLESS COM APPROVES OTHERWISE.

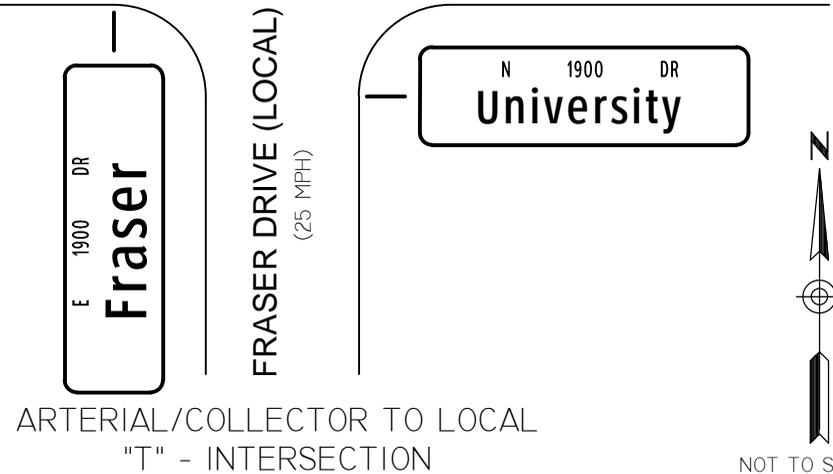


ARTERIAL/COLLECTOR TO LOCAL
4-WAY INTERSECTION



TYPICALLY, THE STREET NAME FOR THE THROUGH STREET IS NOT POSTED AT "T"-TYPE INTERSECTIONS WHERE THE STEM OF THE "T" IS A DEAD END, CUL-DE-SAC, OR HAS NO OTHER OUTLET.

"T" - INTERSECTION WITH
CUL-DE-SAC/DEAD ENDS/
NO OUTLET



NOT TO SCALE



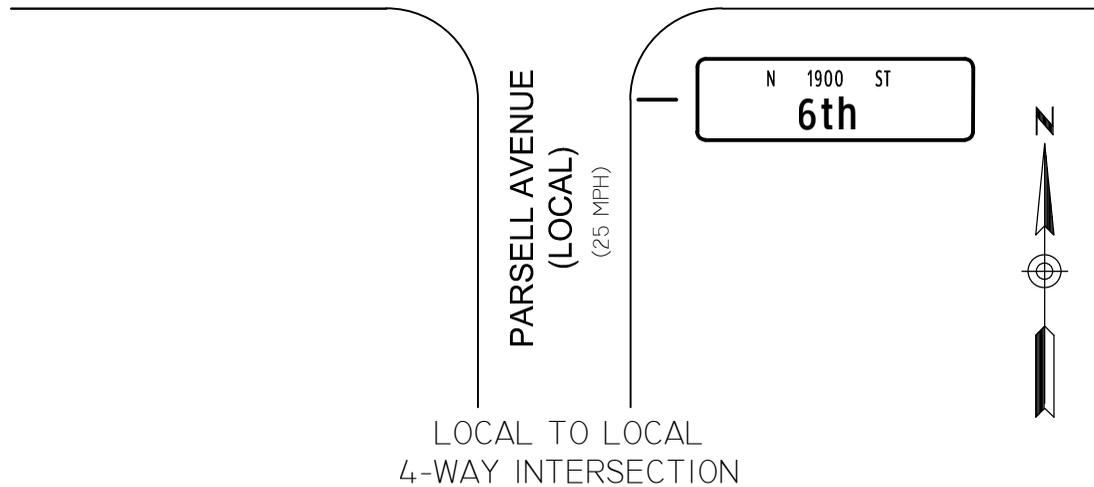
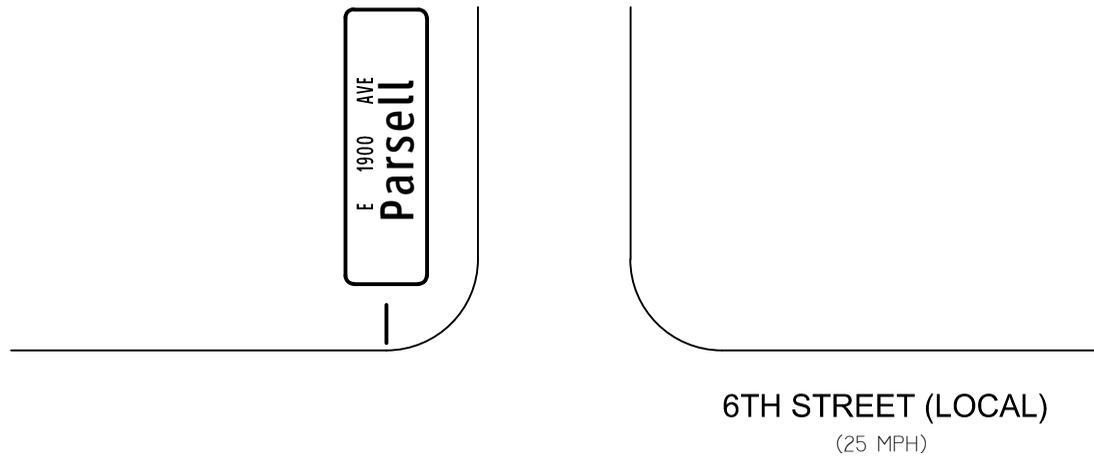
BROWN ROAD (MAJOR)
(30 MPH OR GREATER)

JULY CIRCLE (LOCAL)
(25 MPH)



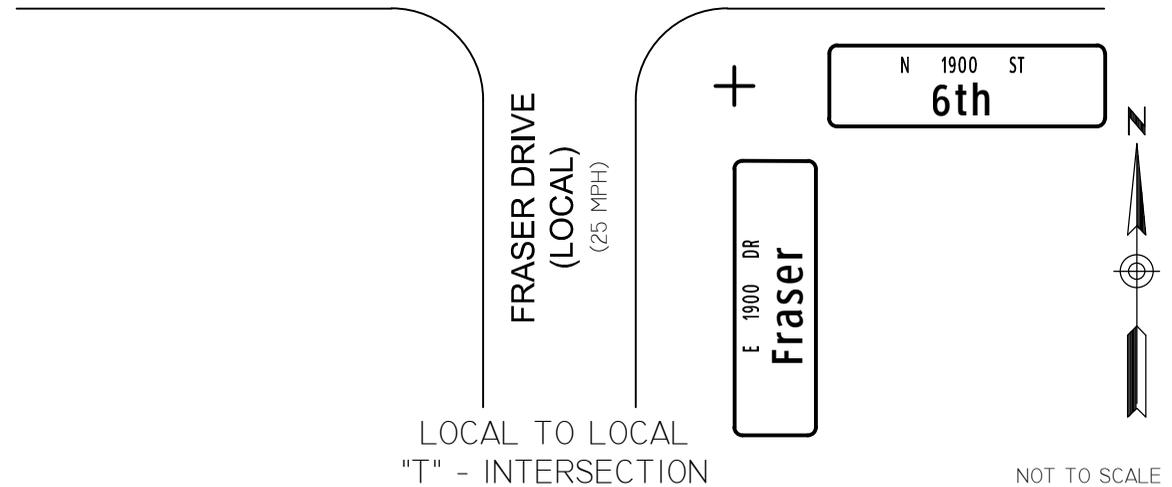
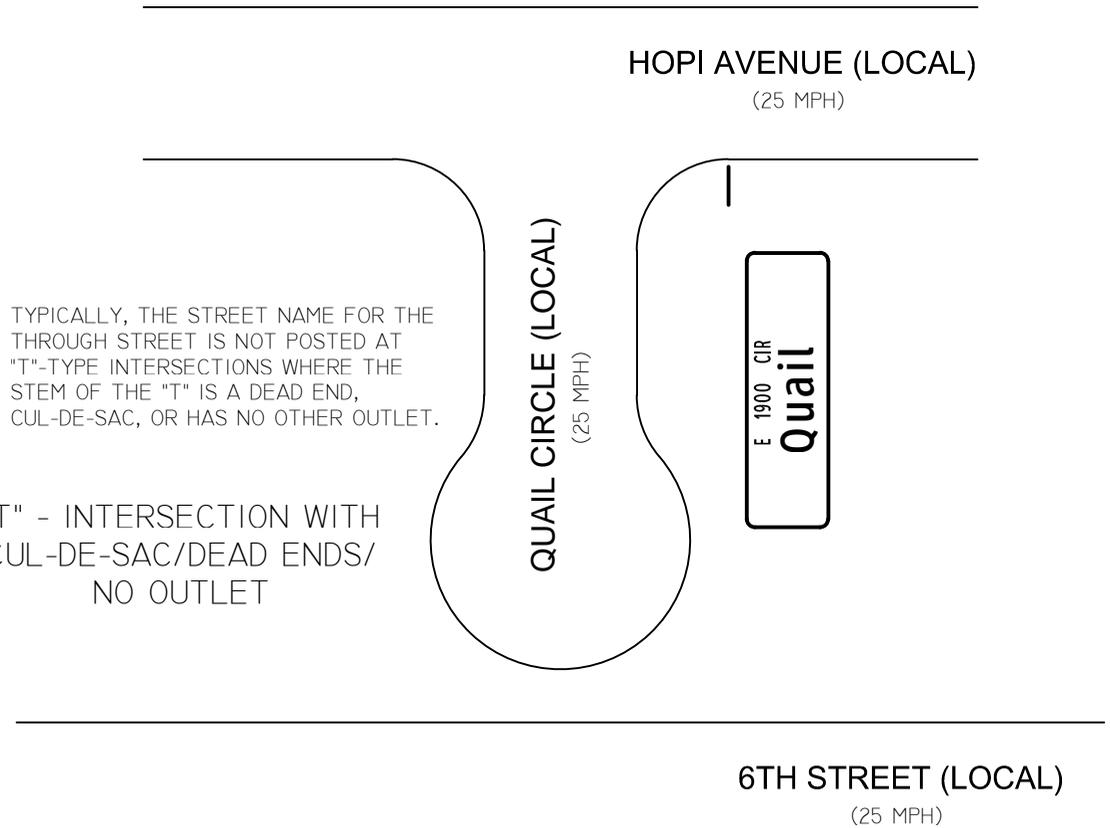
NOTES

1. SEE COM DETAIL M-1206.2 (OLD M-22.03) FOR STREET NAME SIGN POLE LOCATION AT INTERSECTIONS.
2. PUBLIC STREET NAME SIGNS SHALL BE FURNISHED AND INSTALLED BY THE CITY UNLESS COM APPROVES OTHERWISE.
3. STREET NAME SIGNS PER M-1204 (OLD M-20.01).



TYPICALLY, THE STREET NAME FOR THE THROUGH STREET IS NOT POSTED AT "T"-TYPE INTERSECTIONS WHERE THE STEM OF THE "T" IS A DEAD END, CUL-DE-SAC, OR HAS NO OTHER OUTLET.

"T" - INTERSECTION WITH CUL-DE-SAC/DEAD ENDS/ NO OUTLET



NOT TO SCALE



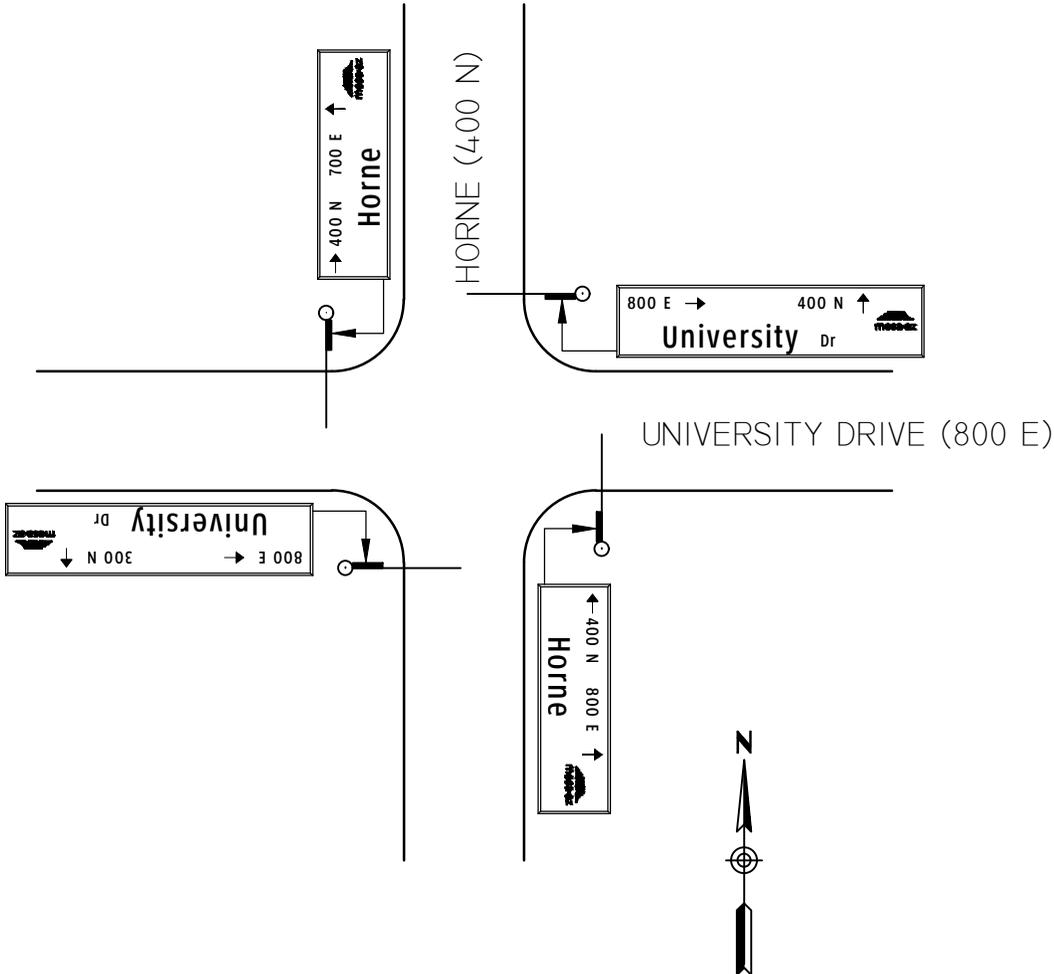
STREET NAME SIGNS, LOCAL TO LOCAL

OLD
M-21.04

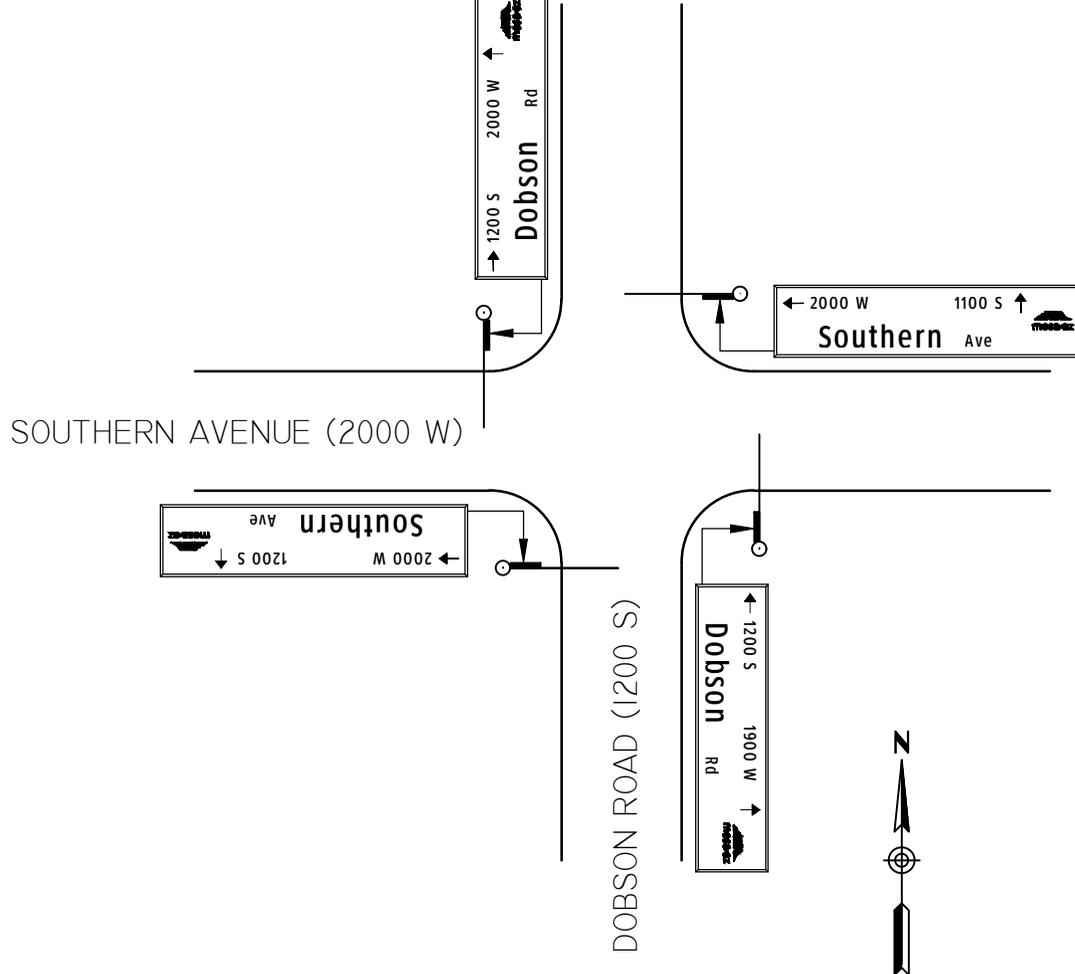
DETAIL NO.
M-1205.3

NOTE

- I. SEE COM DETAILS M-1205.6 (OLD M-21.07) & M-1205.7 (OLD M-21.08) FOR SIGN LAYOUT INFORMATION.

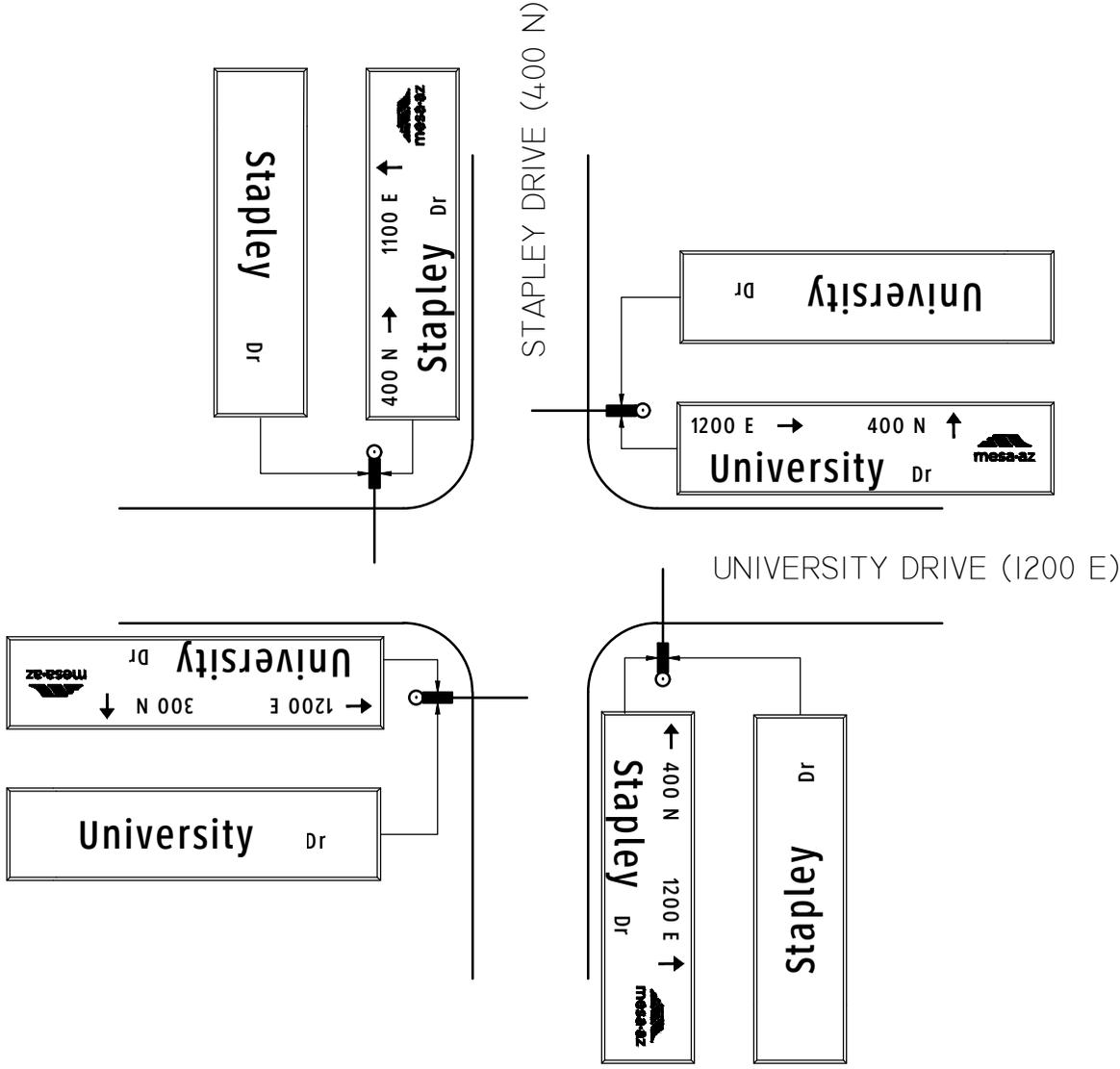


NORTHEAST AREA EXAMPLE



SOUTHWEST AREA EXAMPLE

NOT TO SCALE



NOTES

1. SEE COM DETAILS M-I205.6 (OLD M-21.07) AND M-I205.7 (OLD M-21.08) FOR SIGN LAYOUT INFORMATION.
2. SEE COM DETAILS M-I229.6 (OLD M-95.07) THROUGH M-I229.8 (OLD M-95.09) FOR SUPPORT STRUCTURE, SIGN, AND INSTALLATION DETAILS.

INTERNALLY ILLUMINATED STREET NAME SIGNS

NOT TO SCALE



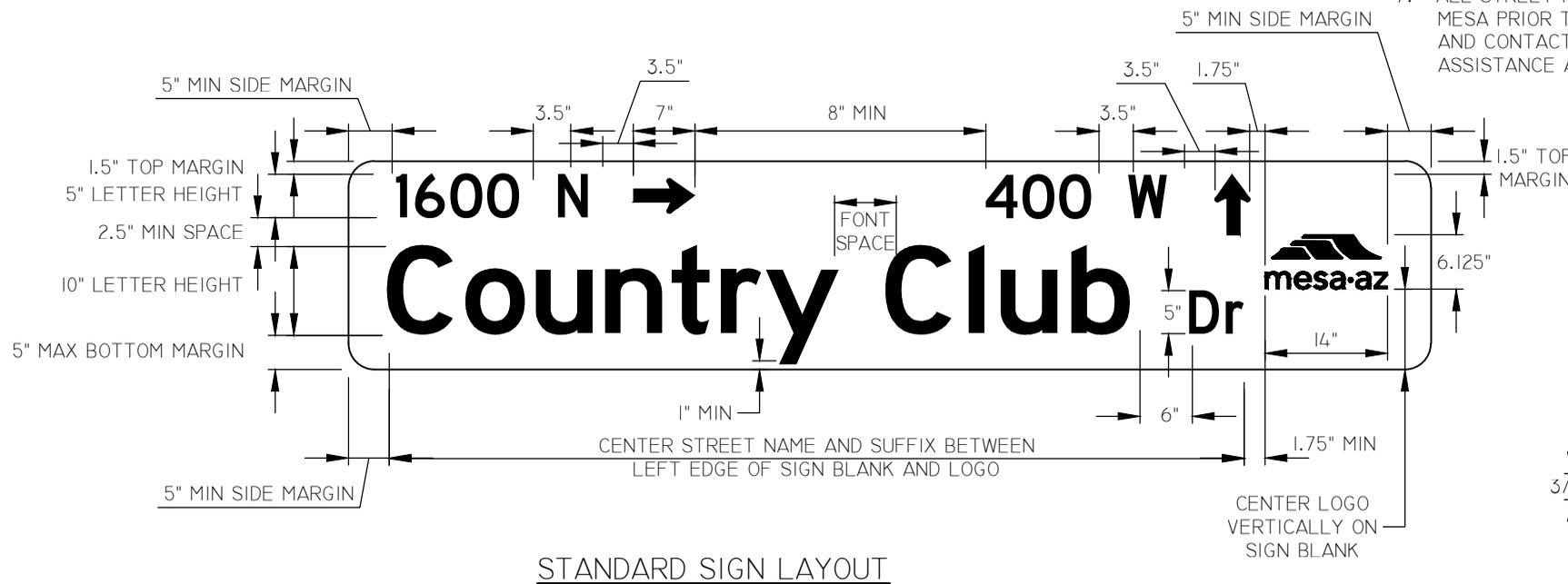
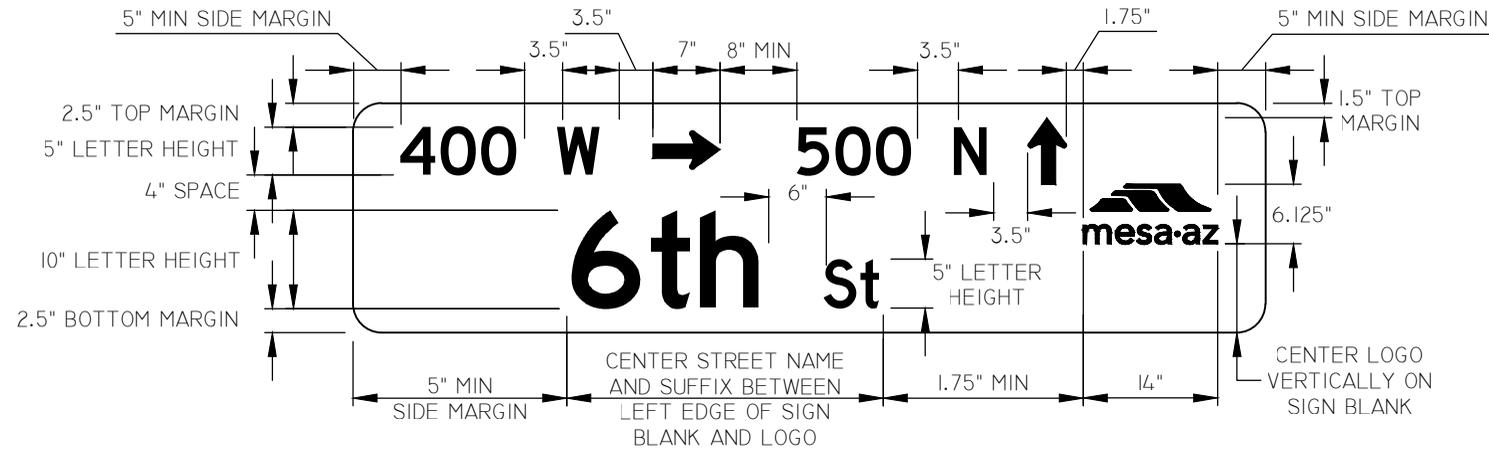
INTERNALLY ILLUMINATED STREET NAME SIGNS
ADDRESSING SCHEME

OLD
M-21.06

DETAIL NO.
M-1205.5

NOTES

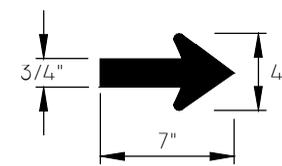
1. SEE COM DETAILS M-1205.4 (OLD M-21.05) AND M-1205.5 (OLD M-21.06) FOR ADDRESSING SCHEMES.
2. SEE COM DETAIL M-1229.6 (OLD M-95.07) FOR INSTALLATION DETAILS FOR INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS).
3. LETTERS, NUMBERS, ARROWS, AND LOGO SHALL BE WHITE ON A GREEN BACKGROUND, FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HIGHWAY GOTHIC "D".
4. FOR IISNS WITH FRAMES, MARGINS SHALL BE INCREASED TO PROVIDE THE SAME VIEWABLE SIGN AREA AS A CONVENTIONAL METRO SIGN.
5. FOR STREET NAMES WITH DESCENDING STROKES, A MINIMUM (VIEWABLE) BOTTOM MARGIN OF 1" IS REQUIRED, MEASURED FROM THE DESCENDING LETTER TO THE BOTTOM EDGE OF THE SIGN BLANK.
6. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA'S WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STRETDIRECTORY/STRETDIRECTORY](https://apps.mesaaz.gov/stretdirectory/stretdirectory)).
7. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.



STANDARD SIGN LAYOUT



BLANK DIMENSIONS (METRO)
VIEWABLE DIMENSIONS (IISNS)

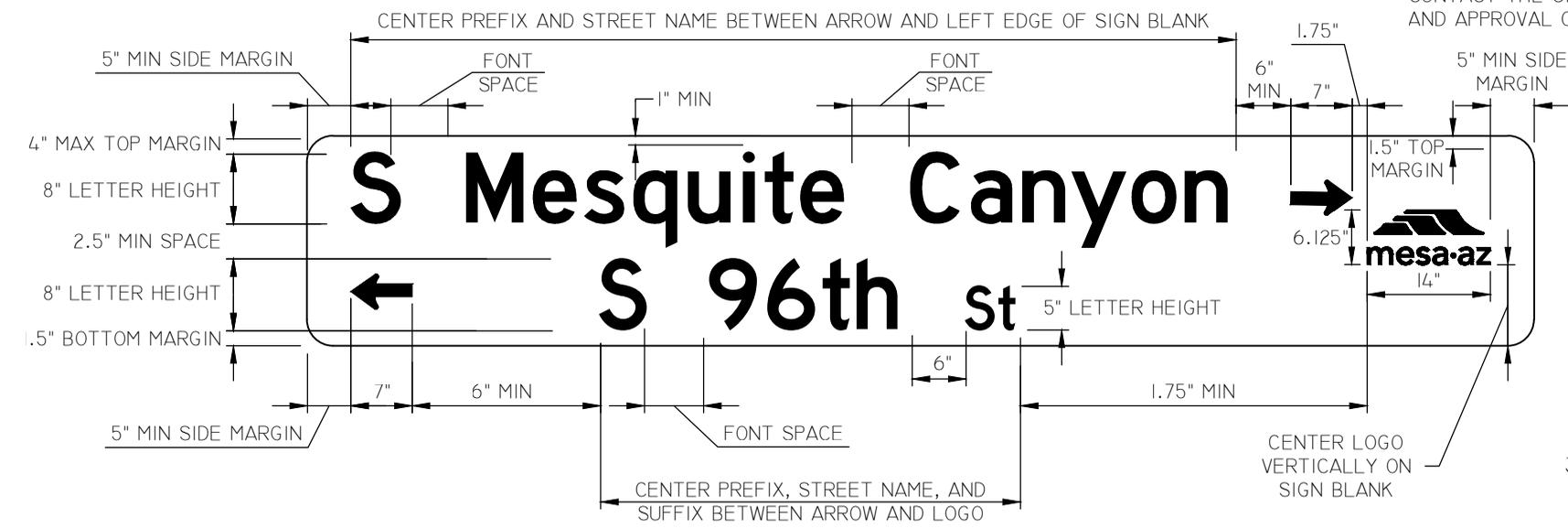
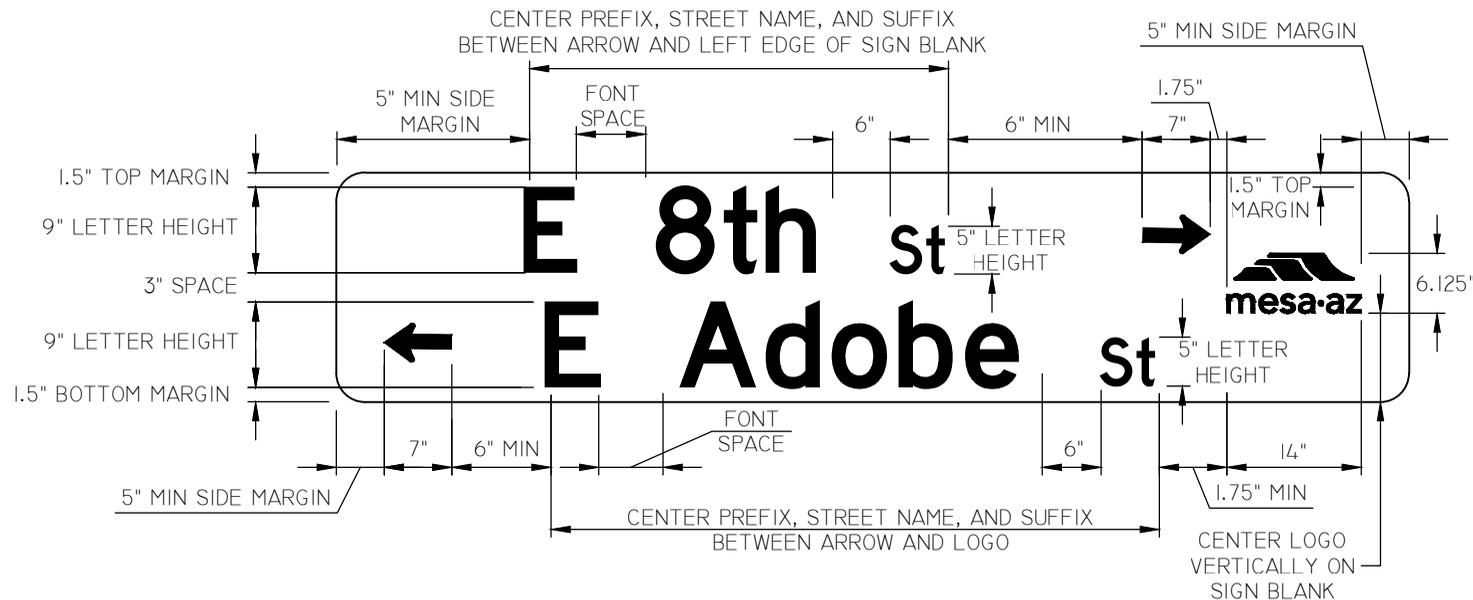


WHITE ARROW (TYP)



WHITE LOGO (TYP)

NOT TO SCALE



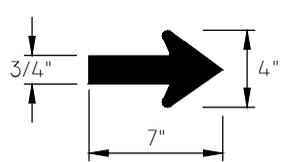
DUAL NAME SIGN LAYOUT

NOTES

1. SEE COM DETAILS M-1205.4 (OLD M-21.05) AND M-1205.5 (OLD M-21.06) FOR ADDRESSING SCHEMES.
2. SEE COM DETAIL M-1229.6 (OLD M-95.07) FOR INSTALLATION DETAILS FOR INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS).
3. LETTERS, NUMBERS, ARROWS, AND LOGO SHALL BE WHITE ON A GREEN BACKGROUND, FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HIGHWAY GOTHIC "D".
4. FOR IISNS WITH FRAMES, MARGINS SHALL BE INCREASED TO PROVIDE THE SAME VIEWABLE SIGN AREA AS A CONVENTIONAL METRO SIGN.
5. FOR STREET NAMES WITH ASCENDING OR DESCENDING STROKES, A MINIMUM (VIEWABLE) TOP OR BOTTOM MARGIN OF 1" IS REQUIRED, MEASURED FROM THE ASCENDING OR DESCENDING LETTER TO THE EDGE OF THE SIGN BLANK.
6. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET DIRECTORY REPORT" AVAILABLE ON THE CITY OF MESA'S WEBSITE ([HTTPS://APPS.MESAAZ.GOV/STREETSDIRECTORY/STREETSDIRECTORY](https://apps.mesaaz.gov/streetsdirectory/streetsdirectory)).
7. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO FABRICATION AND INSTALLATION. SUBMIT SHOP DRAWINGS AND CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.



BLANK DIMENSIONS (METRO)
VIEWABLE DIMENSIONS (IISNS)



WHITE ARROW (TYP)

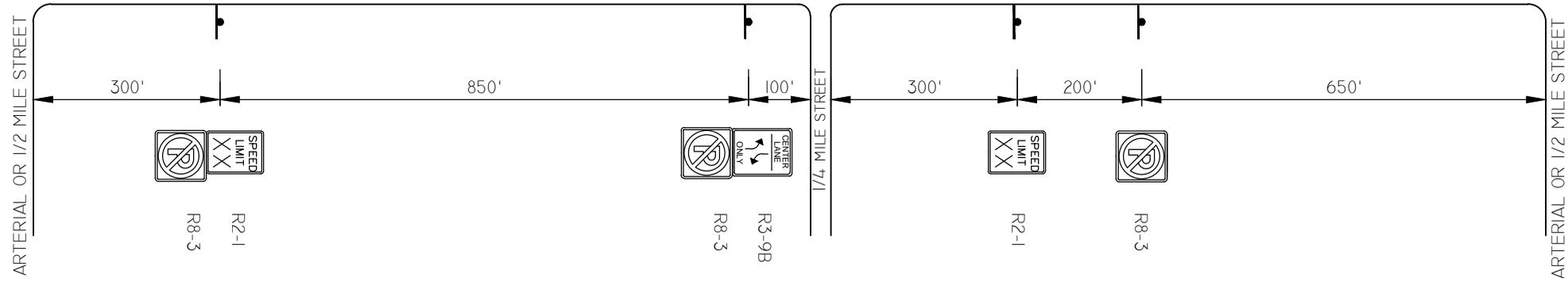


WHITE LOGO (TYP)

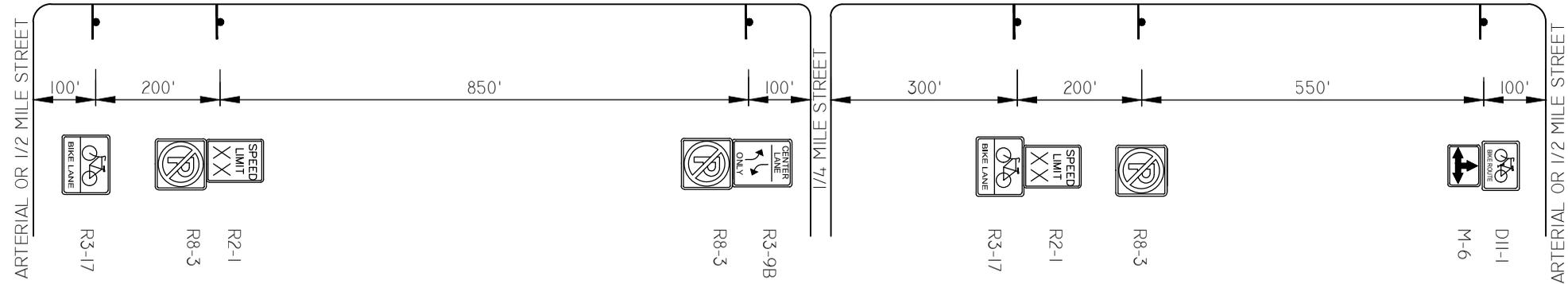
NOT TO SCALE

NOTES

- USE STREET LIGHT POLES FOR SIGN MOUNTING WHERE POSSIBLE.
 - 200' MINIMUM DISTANCE BETWEEN SIGNS PREFERRED.
 - BUS STOP SIGNS TYPICALLY +/- 100' FROM ARTERIAL, 1/4 MILE OR 1/2 MILE STREET INTERSECTION. SEPARATE R8-3 IS NOT NEEDED WHERE NO PARKING SYMBOL IS ON BUS STOP SIGN.
 - DISTANCES ARE APPROXIMATE.
- SIGN SIZES TO BE PER LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
 - GO TO [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/BIKE-PEDESTRIAN-PROGRAM](https://www.mesaaz.gov/resident-resources/streets-transportation/bike-pedestrian-program) FOR BIKE ROUTE INFORMATION.
 - GO TO [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/STREET-PLANNING#SECTION-4](https://www.mesaaz.gov/resident-resources/streets-transportation/street-planning#section-4) FOR THE LATEST SPEED LIMIT MAP.



WITHOUT BIKE LANES

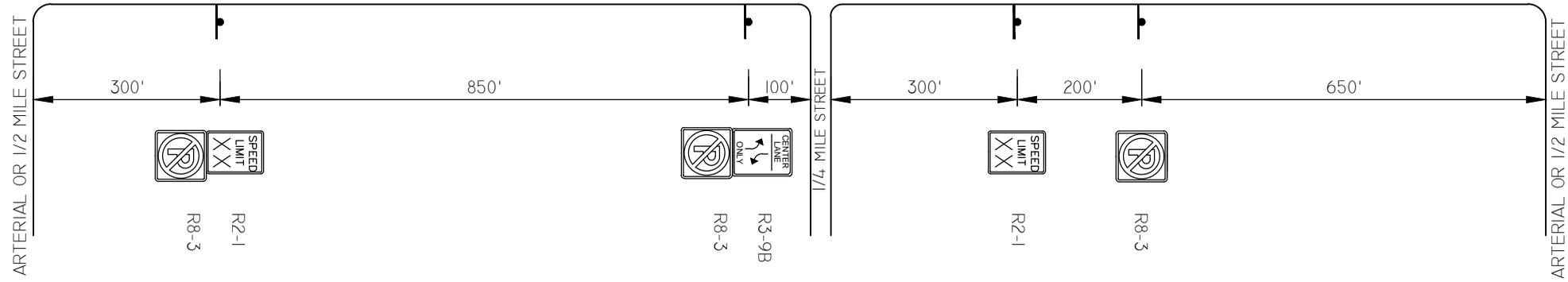


WITH BIKE LANES

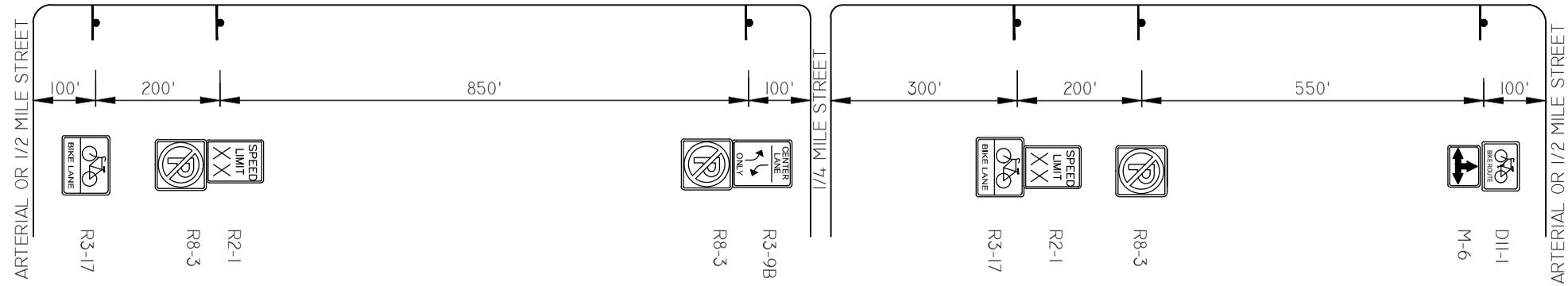
NOT TO SCALE

NOTES

- USE STREET LIGHT POLES FOR SIGN MOUNTING WHERE POSSIBLE.
 - 200' MINIMUM DISTANCE BETWEEN SIGNS PREFERRED.
 - BUS STOP SIGNS TYPICALLY +/- 100' FROM ARTERIAL, 1/4 MILE OR 1/2 MILE STREET INTERSECTION. SEPARATE R8-3 IS NOT NEEDED WHERE NO PARKING SYMBOL IS ON BUS STOP SIGN.
 - DISTANCES ARE APPROXIMATE.
- SIGN SIZES TO BE PER LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
 - GO TO [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/BIKE-PEDESTRIAN-PROGRAM](https://www.mesaaz.gov/resident-resources/streets-transportation/bike-pedestrian-program) FOR BIKE ROUTE INFORMATION.
 - GO TO [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/STREET-PLANNING#SECTION-4](https://www.mesaaz.gov/resident-resources/streets-transportation/street-planning#section-4) FOR THE LATEST SPEED LIMIT MAP.

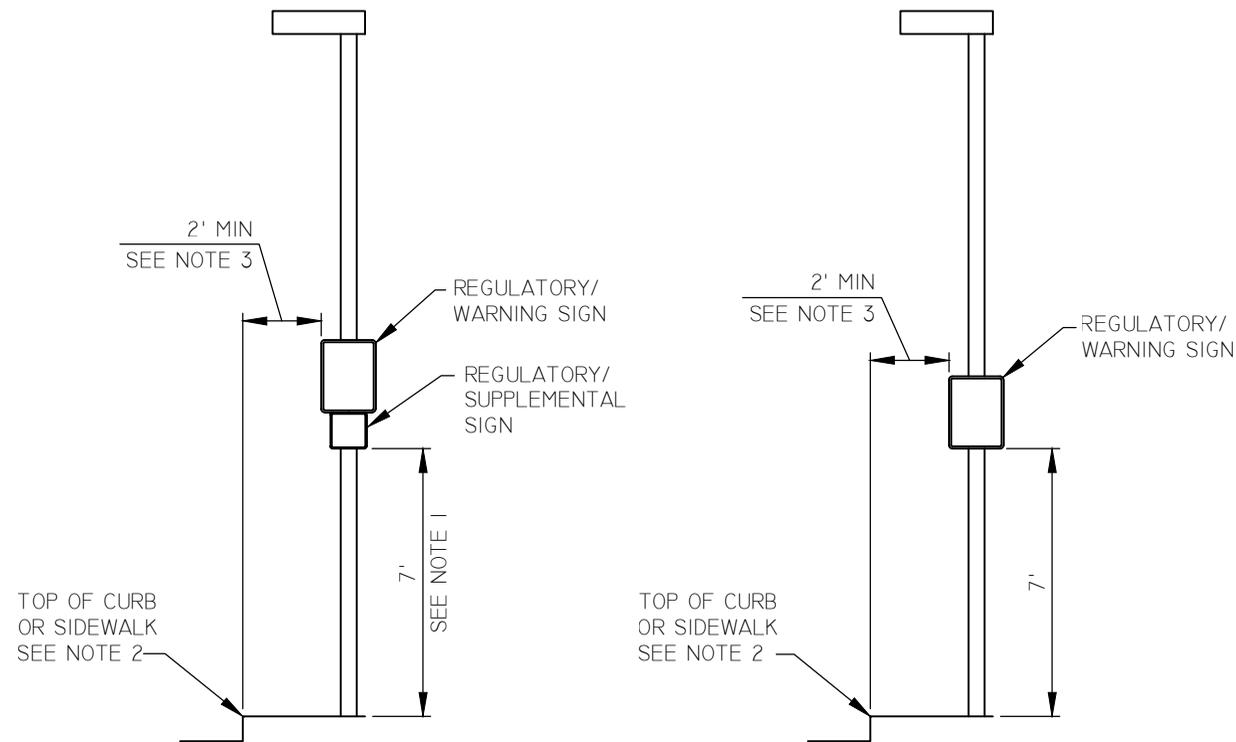


WITHOUT BIKE LANES



WITH BIKE LANES

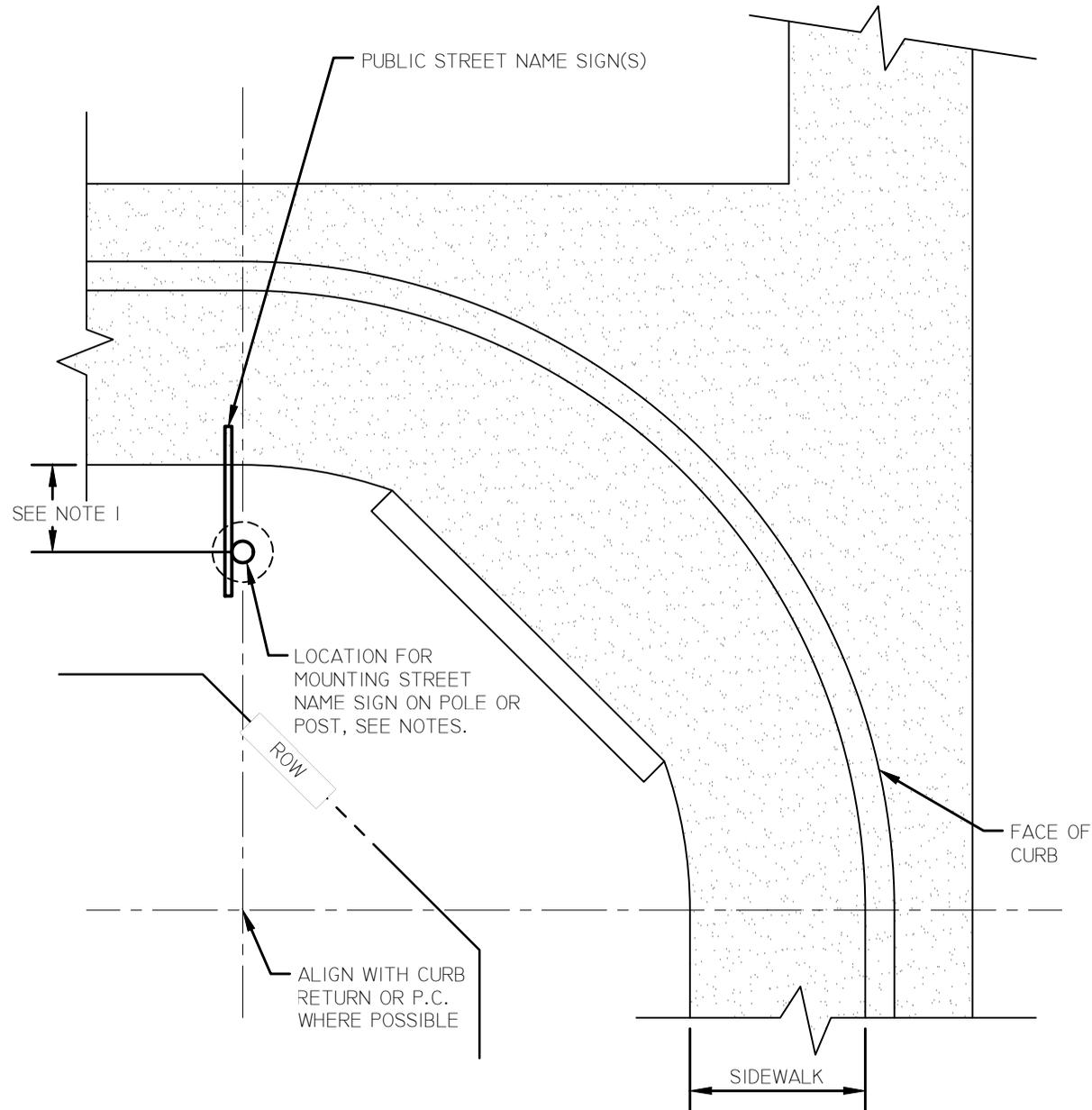
NOT TO SCALE



NOTES

1. THE MINIMUM MOUNTING HEIGHT SHALL BE 7 FEET.
2. IN CASES WHERE CURBS OR SIDEWALKS DO NOT EXIST, HEIGHT OF SIGNS SHALL BE MEASURED FROM ROAD SURFACE.
3. A MINIMUM OFFSET OF 1 FOOT MAY BE USED FROM EDGE OF ROADWAY TO NEAR EDGE OF SIGN, WHERE SIDEWALK WIDTH IS LIMITED OR WHERE EXISTING POLES ARE CLOSE TO THE CURB.
4. SIGN SIZES TO BE PER LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
5. SIGNS SHALL BE SECURED WITH BANDING ON ALL ORNAMENTAL STYLE POSTS OR STREETLIGHT POLES USING 3/4" X 0.030" STAINLESS STEEL STRAP AND FLARED LEG BRACKET WITH A CENTER HOLD THREADED 5/16" X 1" STAINLESS STEEL BOLT WITH STAINLESS STEEL FLAT WASHER AND SPLIT LOCK WASHER FOR EVERY ASSEMBLY. THE HARDWARE THAT COMES WITH THE STRAPS WILL NOT BE ACCEPTED UNLESS IT MEETS THESE REQUIREMENTS.
6. SIGNS ON OTHER POLE TYPES CAN BE SECURED WITH BANDING AND HARDWARE APPROVED BY THE CITY OF MESA TRANSPORTATION DEPARTMENT OR SECURED USING 2 STAINLESS STEEL 5/16" X 18 HEX HEAD BOLTS WITH A FLAT WASHER, SPLIT LOCK WASHER AND AN OFFSET FLAT WASHER BETWEEN THE SIGN AND THE POLE TAPER AS NEEDED. POLE TO BE TAPPED AND SIZED FOR THE BOLT, SELF-DRILLING OR SELF-TAPPING BOLTS ARE ACCEPTABLE, BUT REQUIRES ADVANCED REVIEW AND APPROVAL FROM THE CITY OF MESA SIGN SHOP (480-644-3175). ONLY BANDING IS APPROVED FOR ORNAMENTAL STREETLIGHT POLES.
7. ALL PROPOSED SIGN LOCATIONS AND MOUNTING HARDWARE MUST BE APPROVED BY THE CITY OF MESA TRANSPORTATION DEPARTMENT PRIOR TO INSTALLATION.

NOT TO SCALE



PUBLIC STREET NAME SIGN LOCATED BEHIND SIDEWALK

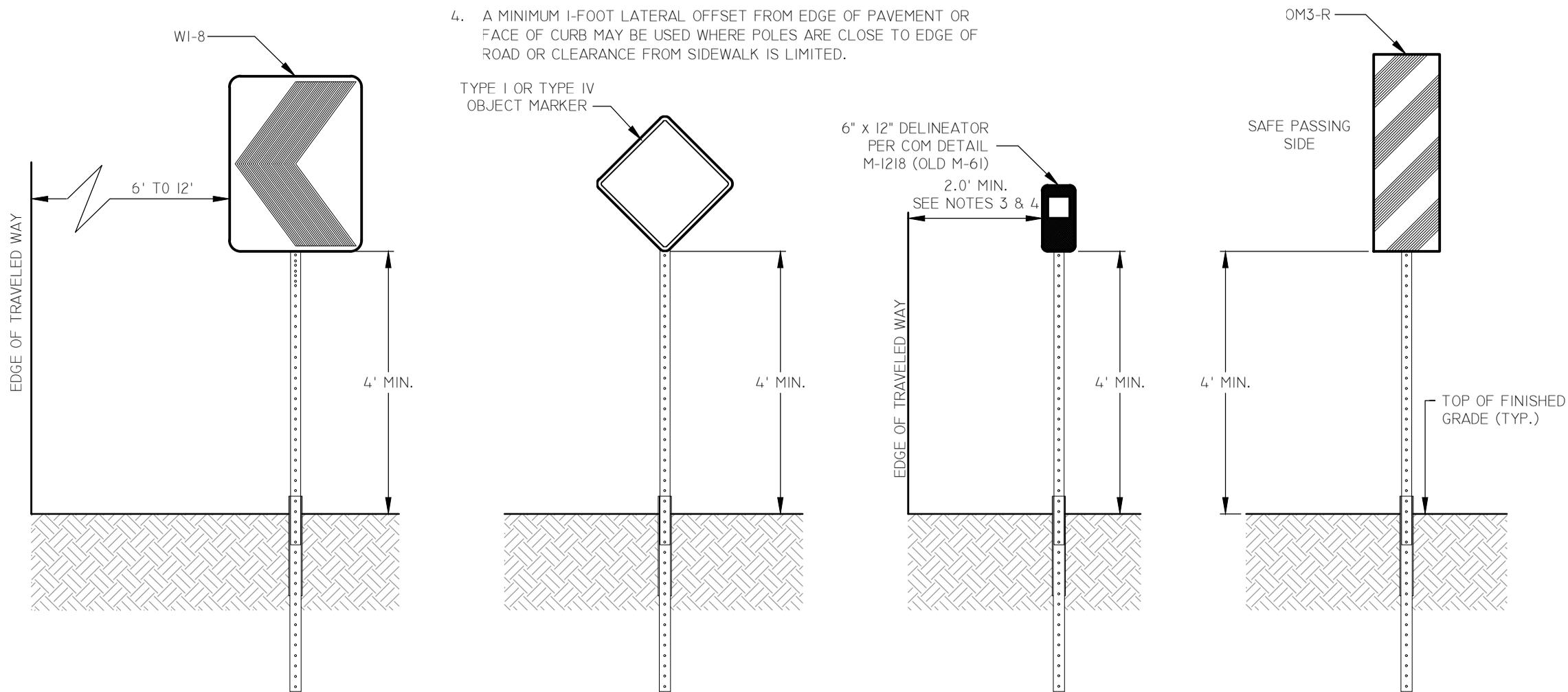
NOTES

1. HORIZONTAL LOCATIONS OF PUBLIC STREET NAME SIGN(S) SHALL TYPICALLY BE WITHIN A COM RIGHT-OF-WAY OR P.U.F.E. AT:
 - 1'-6" TO 3'-0" FROM BACK OF SIDEWALK
 - OR 6'-0" TO 8'-6" FROM EDGE OF PAVEMENT WHERE SIDEWALK DOES NOT EXIST
 - AND WITH 3'-0" MIN. CLEARANCE FROM A HYDRANT
 LOCATIONS SHALL BE VERIFIED BASED ON COM TRANSPORTATION REQUIREMENTS & REQUIRED CLEARANCES FROM UNDERGROUND UTILITIES.
2. STREET NAME SIGN(S) SHALL BE MOUNTED ON A TRAFFIC SIGNAL POST OR STREET LIGHT WHEREVER POSSIBLE. SIGN(S) SHALL OTHERWISE BE FASTENED TO A SQUARE TUBING POST INSTALLED PER COM DETAIL M-1210 (OLD M-39).
3. SEE APPLICABLE DETAILS FOR STREET NAME SIGN INSTALLATION:
 - M-1205.2 (OLD M-21.03): ARTERIAL/COLLECTOR TO LOCAL
 - M-1205.3 (OLD M-21.04): LOCAL TO LOCAL
 - M-1205.4 (OLD M-21.05) AND M-1205.5 (OLD M-21.06) FOR INSTALLATION ON TRAFFIC SIGNAL POST
4. THE MINIMUM MOUNTING HEIGHT FOR STREET NAME SIGNS SHALL BE 9.5 FEET.
5. STREET LIGHT POLE INSTALLATION REQUIREMENTS:
 - SINGLE STREET NAME SIGN - USE A KC 500 BRACKET CANTILEVER (OR APPROVED EQUIVALENT) WITH A 12 INCH BLADE HOLDER FLAGGED AT 90 DEGREES.
 - STACKING 2 STREET NAME SIGNS ON SAME POLE - USE A KC 500 BRACKET (OR APPROVED EQUIVALENT) WITH A 12 INCH CROSS HOLDER BRACKET FLAGGED AT A 45 DEGREE ANGLE, THAT FACES TOWARDS THE STREET.
5. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OR IF CONTRACTOR HAS INSTALLATION QUESTIONS.

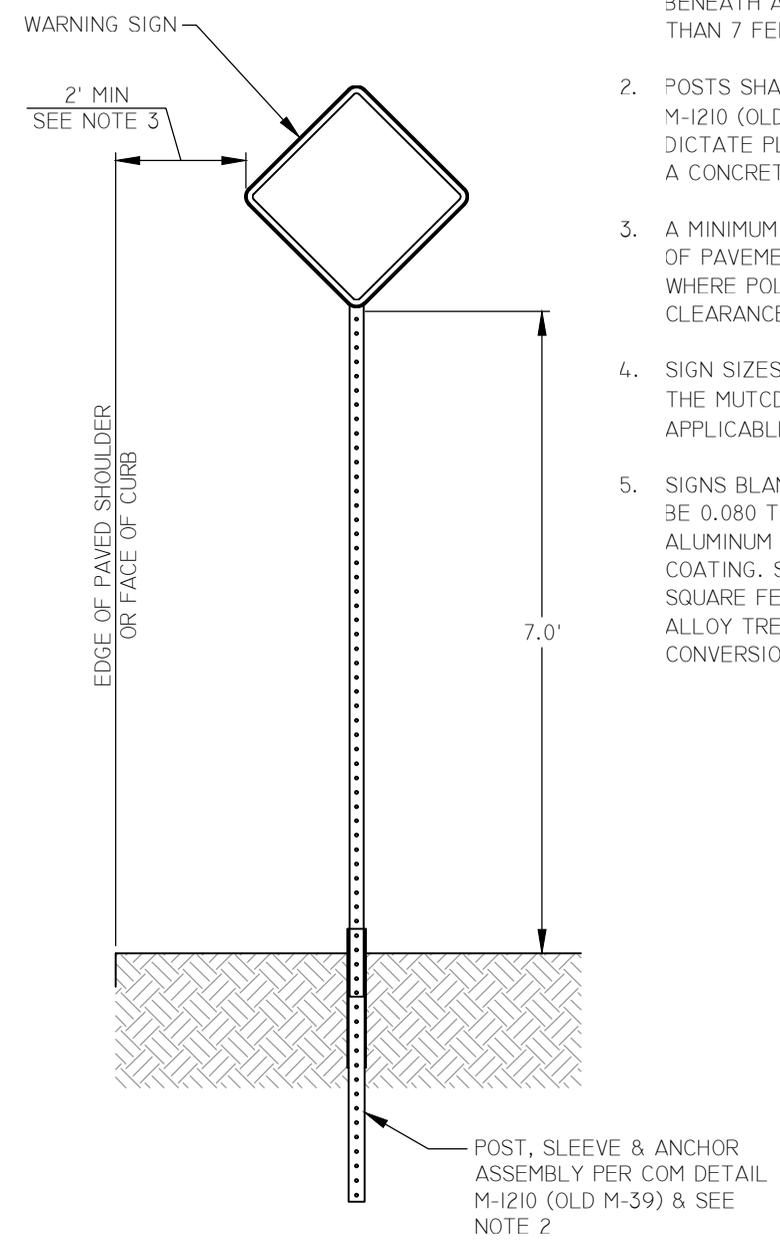
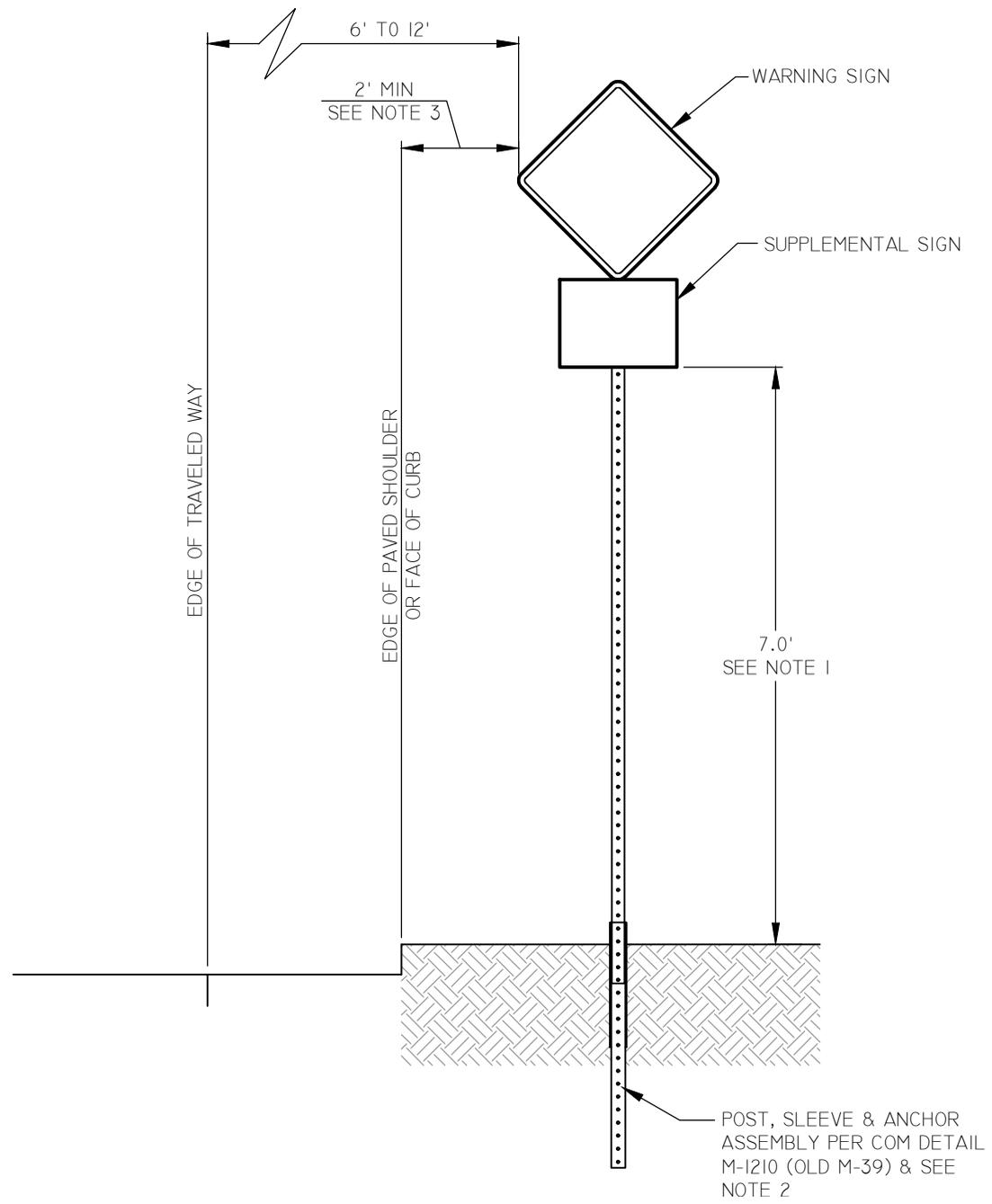
NOT TO SCALE

NOTES

1. WHERE CURBS OR SIDEWALKS DO NOT EXIST, HEIGHT OF SIGNS SHALL BE MEASURED FROM THE EDGE OF TRAVELED WAY.
2. POSTS SHALL BE INSTALLED PER COM DETAIL M-I210 (OLD M-39). A CLASS 'C' CONCRETE BASE MAY BE REQUIRED WHERE DETERMINED BY THE CITY.
3. A STANDARD 2-FOOT LATERAL OFFSET FROM EDGE OF SIGN TO EDGE OF ROAD SHALL BE USED UNLESS OTHERWISE NOTED. SEE COM DETAIL M-I206.1 (OLD M-22.02) FOR LATERAL OFFSET DIMENSIONING.
4. A MINIMUM 1-FOOT LATERAL OFFSET FROM EDGE OF PAVEMENT OR FACE OF CURB MAY BE USED WHERE POLES ARE CLOSE TO EDGE OF ROAD OR CLEARANCE FROM SIDEWALK IS LIMITED.
5. SIGN SIZES TO BE PER THE LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
6. SIGNS BLANKS 16 SQUARE FEET OR LESS SHALL BE 0.080 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING. SIGNS BLANKS GREATER THAN 16 SQUARE FEET SHALL BE 0.125 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING. DELINEATORS SHALL COMPLY WITH DETAIL M-I218 (OLD M-61).



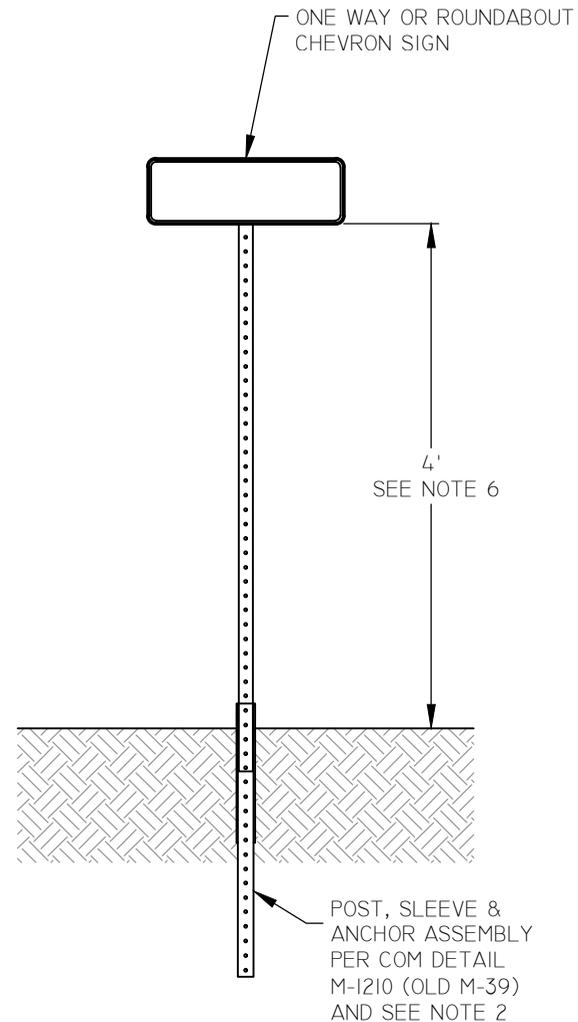
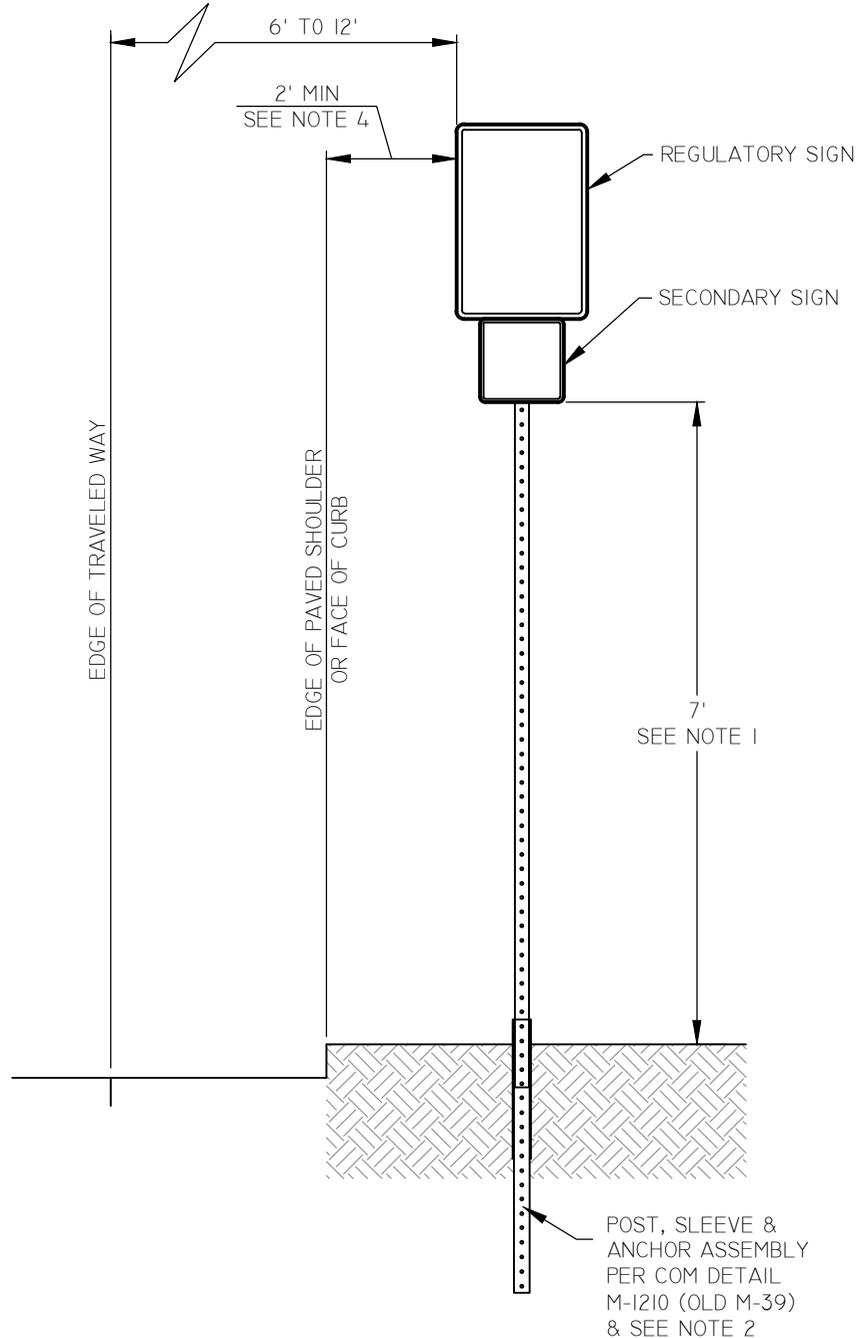
NOT TO SCALE



NOTES

1. HEIGHT OF SUPPLEMENTAL SIGN MOUNTED BENEATH ANOTHER SIGN SHALL NOT BE LESS THAN 7 FEET.
2. POSTS SHALL BE INSTALLED PER COM DETAIL M-1210 (OLD M-39). SOME SOIL CONDITIONS MAY DICTATE PLACING THE POST DEEPER OR REQUIRE A CONCRETE BASE, AS DETERMINED BY THE CITY.
3. A MINIMUM 1-FOOT LATERAL OFFSET FROM EDGE OF PAVEMENT OR FACE OF CURB MAY BE USED WHERE POLES ARE CLOSE TO EDGE OF ROAD OR CLEARANCE FROM SIDEWALK IS LIMITED.
4. SIGN SIZES TO BE PER THE LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
5. SIGNS BLANKS 16 SQUARE FEET OR LESS SHALL BE 0.080 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING. SIGN BLANKS GREATER THAN 16 SQUARE FEET SHALL BE 0.125 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING.

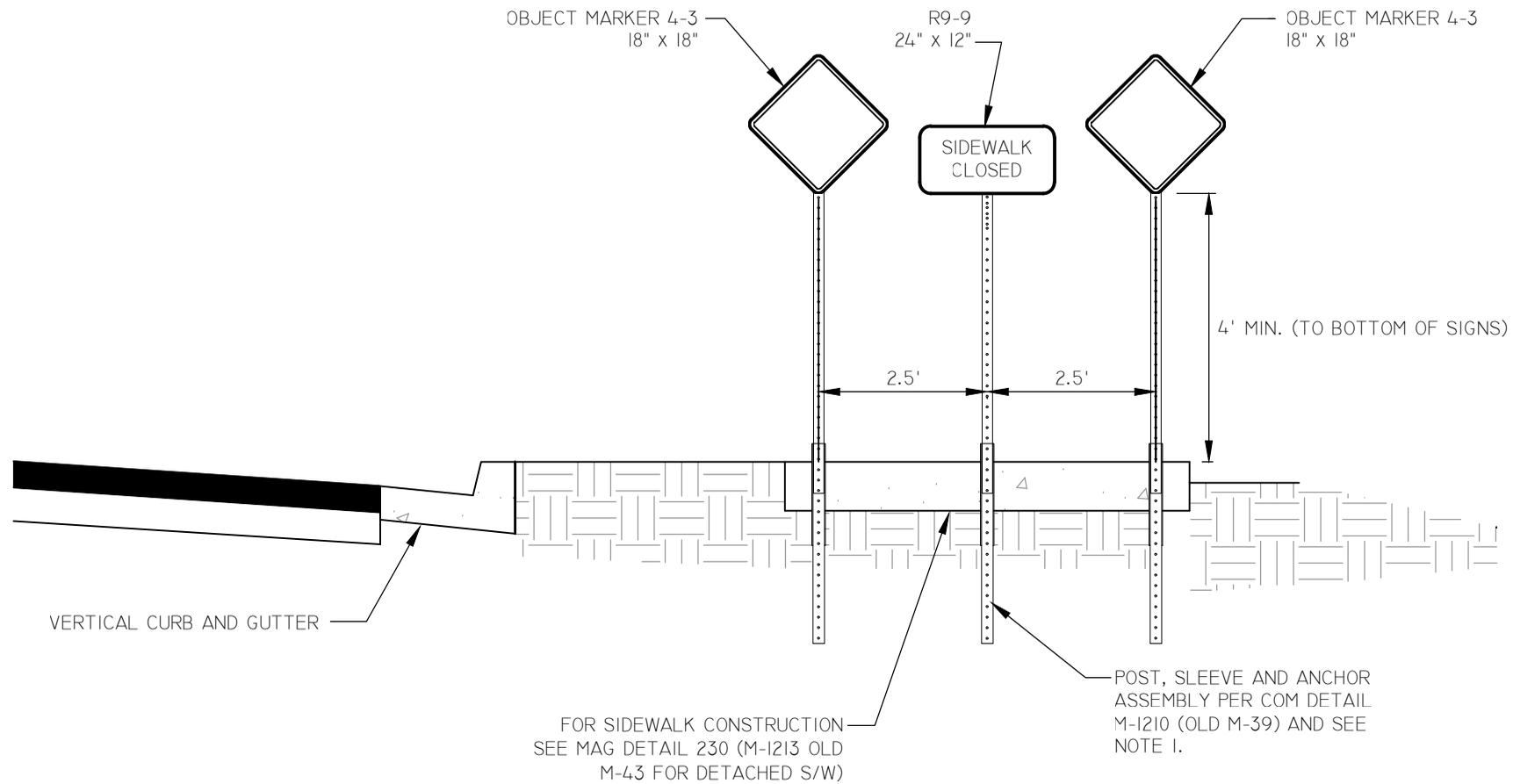
NOT TO SCALE



NOTES

1. HEIGHT OF SECONDARY SIGN MOUNTED BENEATH ANOTHER SIGN SHALL NOT BE LESS THAN 7-FEET.
2. POSTS SHALL BE INSTALLED PER COM DETAIL M-1210 (OLD M-39). SOME SOIL CONDITIONS MAY DICTATE PLACING THE POST DEEPER OR REQUIRE A CONCRETE BASE, AS DETERMINED BY THE CITY.
3. SEE COM DETAIL M-1206 (OLD M-22.01) FOR DISTANCE PLACEMENT OF SIGNS ON ARTERIAL STREETS.
4. A MINIMUM 1-FOOT LATERAL OFFSET FROM EDGE OF PAVEMENT OR FACE OF CURB MAY BE USED WHERE POLES ARE CLOSE TO EDGE OF ROAD OR CLEARANCE FROM SIDEWALK IS LIMITED.
5. SIGN SIZES TO BE PER THE LATEST EDITION OF THE MUTCD INCLUDING ARIZONA SUPPLEMENT (IF APPLICABLE).
6. MOUNTING HEIGHT SHALL BE 7' WHEN A DIRECTIONAL SIGN IS INSTALLED ON FAR SIDE OF AN APPROACH, SUCH AS AT A TEE INTERSECTION.
7. SIGNS BLANKS 16 SQUARE FEET OR LESS SHALL BE 0.080 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING. SIGN BLANKS GREATER THAN 16 SQUARE FEET SHALL BE 0.125 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING.

NOT TO SCALE



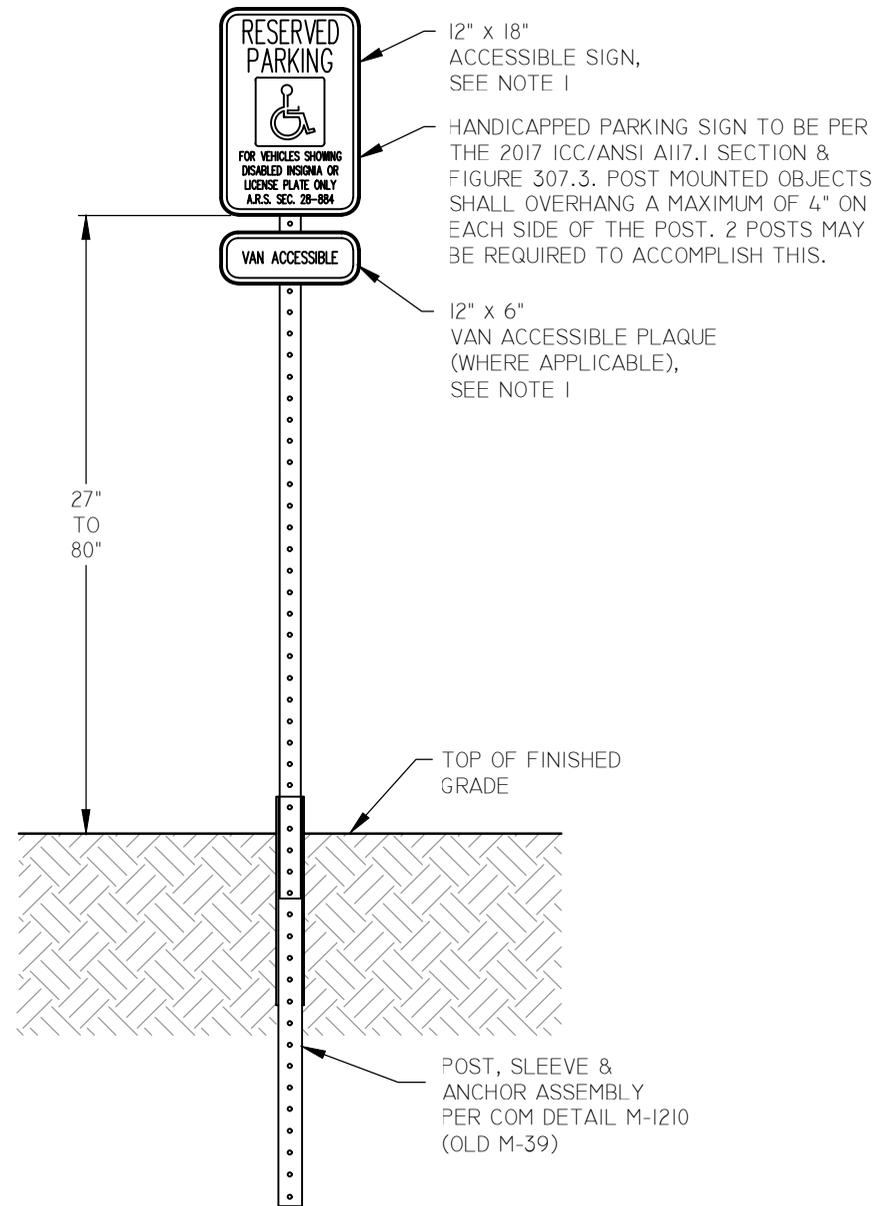
NOTES

1. POSTS SHALL BE INSTALLED PER COM DETAIL M-1210 (OLD M-39). SOME SOIL CONDITIONS MAY DICTATE PLACING THE POST DEEPER OR REQUIRE A CONCRETE BASE, AS DETERMINED BY THE CITY.
2. SIGNS BLANKS 16 SQUARE FEET OR LESS SHALL BE 0.080 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING.

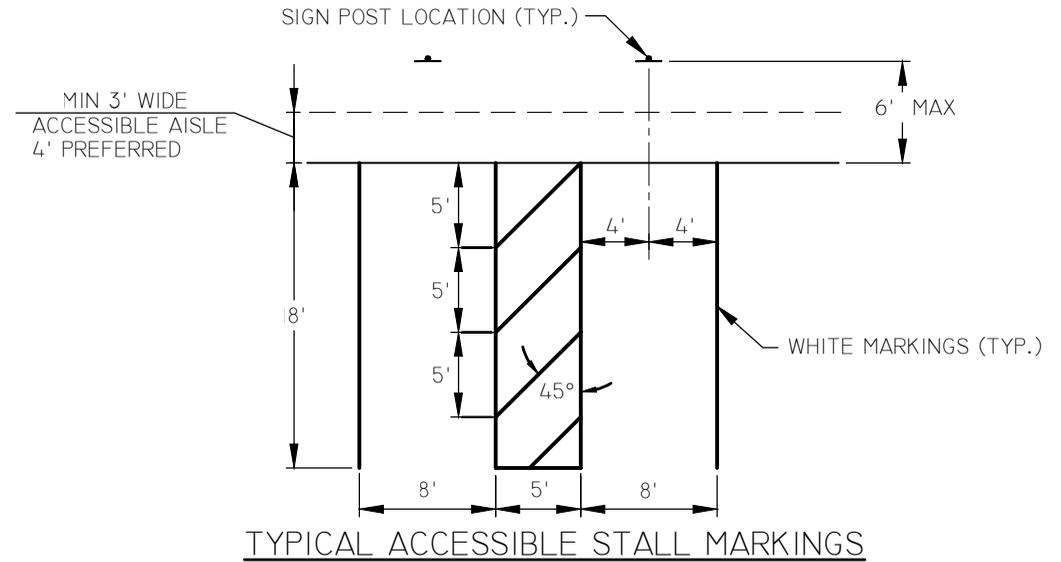
NOT TO SCALE

NOTES

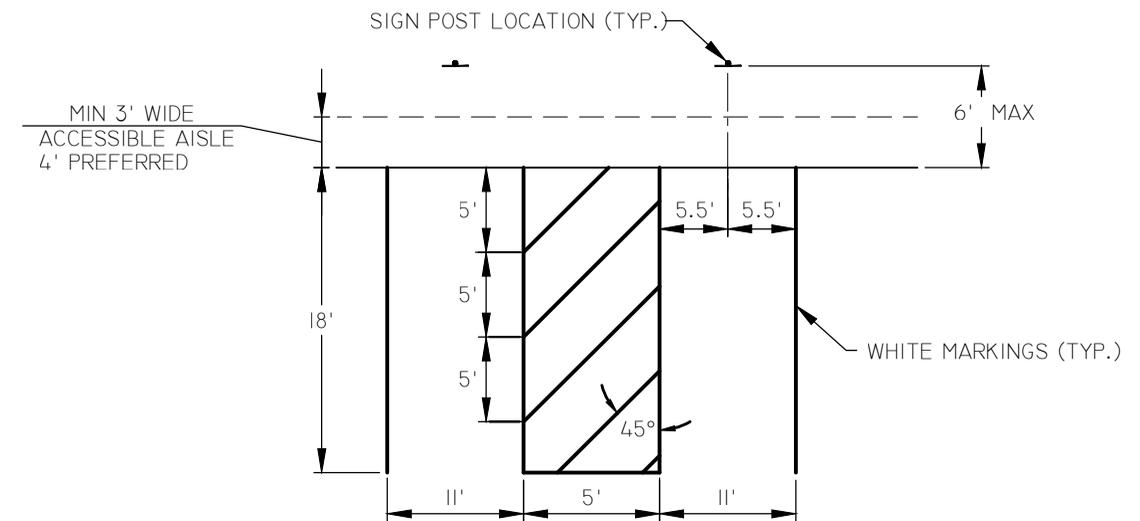
1. SEE COM DETAIL M-1209 (OLD M-25) FOR ACCESSIBLE SIGN DETAILS.
2. AN ACCESSIBLE SIGN IS REQUIRED FOR EACH ACCESSIBLE PARKING SPACE.



ACCESSIBLE SIGN HEIGHT AND INSTALLATION

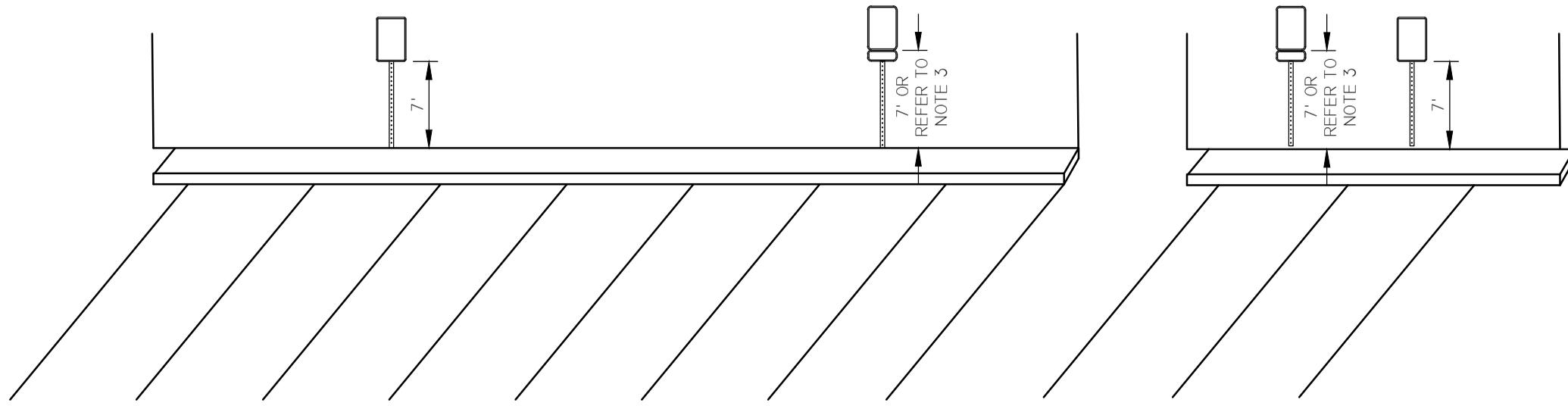


TYPICAL ACCESSIBLE STALL MARKINGS



VAN ACCESSIBLE STALL MARKINGS

NOT TO SCALE



AREA SIGNING

SINGLE STALL SIGNING

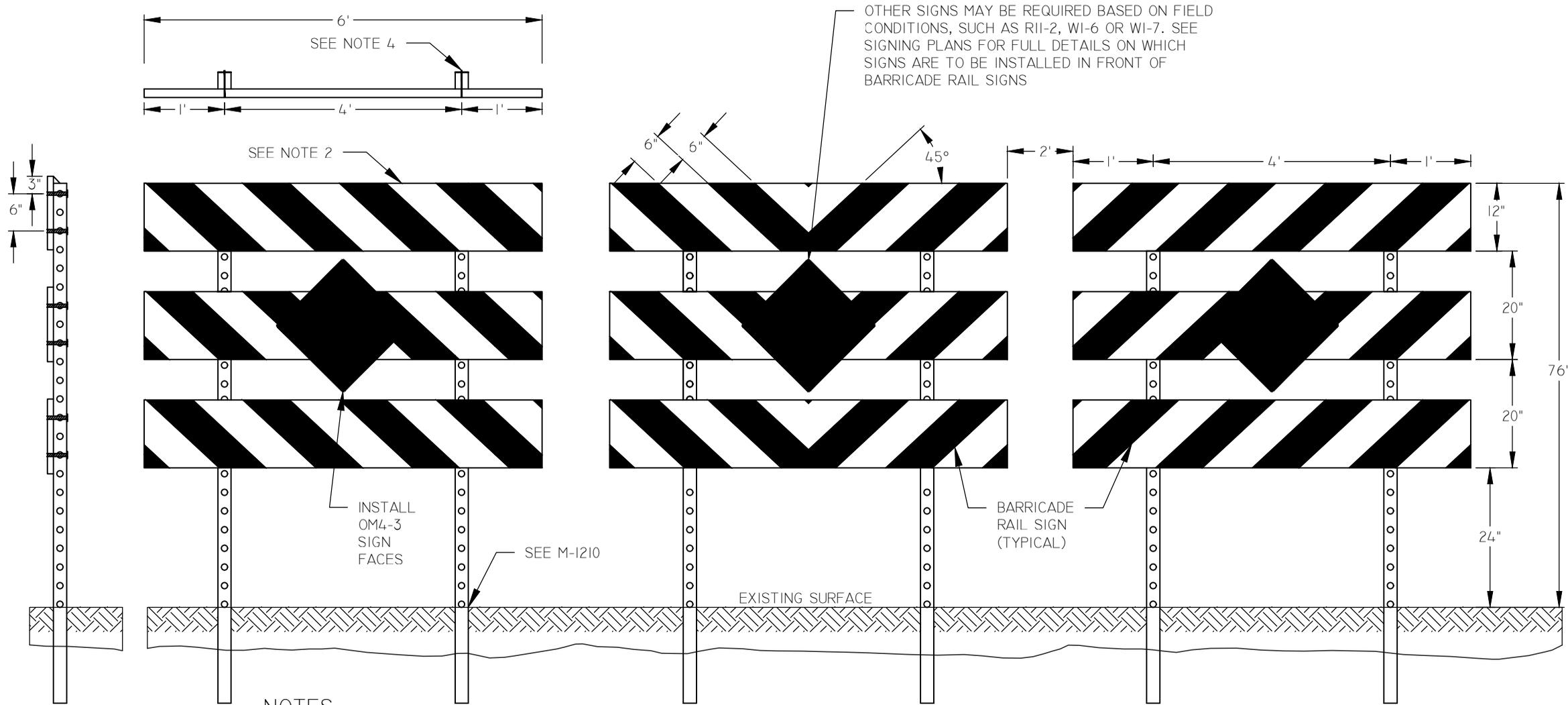
NOTES

1. EXCEPT FOR HANDICAP PARKING SIGNS, ALL SIGNS SHALL BE MOUNTED AT A HEIGHT OF 7 FEET AS MEASURED FROM THE BOTTOM OF THE SIGN.
2. IN CASES WHERE CURBS OR SIDEWALKS DO NOT EXIST, HEIGHT OF SIGNS SHALL BE MEASURED FROM ROAD SURFACE.
3. SEE COM DETAIL M-1207.4 (OLD M-23.06) FOR MOUNTING HEIGHT DETAILS FOR HANDICAP PARKING SIGNS.

NOT TO SCALE

DETAIL NO.
M-1207.5

OLD
M-23.07



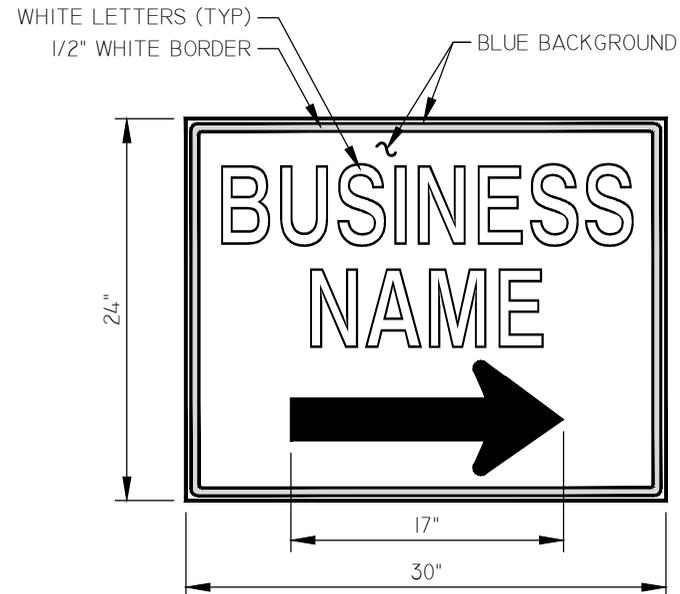
NOTES

1. SEE COM STANDARD DETAIL M-1210 (OLD M-39) FOR SQUARE PERFORATED POST, FOUNDATION DETAILS AND HARDWARE REQUIREMENTS USED TO ATTACH BARRICADE RAILS AND SIGN TO SQUARE PERFORATED POST.
2. BARRICADE RAIL MARKINGS SHALL BE ALTERNATE RED AND WHITE TYPE XI RETROREFLECTIVE STRIPES (SLOPING DOWNWARD IN THE DIRECTION TRAFFIC IS TO PASS OR STOP). DIRECTION OF RAIL MARKINGS SHALL BE DETAILED ON THE SIGNING PLANS.
3. USE 12" X 6" X 0.125 GAUGE ALUMINUM FOR BARRICADE RAIL SIGNS.
4. THE NUMBER OF TYPE 3 BARRICADES SHALL VARY TO OBTAIN THE DESIGNATED TOTAL BARRICADE WIDTH SHOWN ON THE PLANS.

NOT TO SCALE

NOTES

1. CONTRACTOR SHALL PROVIDE DOUBLE-FACED "BUSINESS NAME" SIGNS FOR ALL BUSINESSES IMPACTED BY CONSTRUCTION. USE OF THESE SIGNS SHALL BE TEMPORARY AND LIMITED TO CONSTRUCTION.
2. "BUSINESS NAME" MAY BE A SHOPPING CENTER OR PLAZA NAME. COORDINATE NAME ON SIGN WITH CITY PUBLIC RELATIONS REPRESENTATIVE AND BUSINESS OWNER.
3. SIGN CRITERIA:
 - A. SIGN SHALL BE DOUBLE-FACED WITH BOTH ARROWS POINTING THE SAME DIRECTION.
 - B. LETTERING SHALL BE 5" HIGH, SERIES "C", HIGHWAY GOTHIC.
 - C. LETTERING, 17" ARROW AND 1/2" BORDER SHALL BE WHITE WITH A BLUE BACKGROUND, REFLECTIVE ENGINEERING GRADE SHEETING.
 - D. SIGN SHALL BE MOUNTED ON TEMPORARY/MOVEABLE CONSTRUCTION SIGN BASE & POST SO THAT THE TOP OF THE SIGN WILL BE 7 FEET FROM THE BOTTOM OF THE STAND.
4. LOCATION OF THE SIGN SHALL BE COORDINATED BY CONTRACTOR AND CITY PUBLIC RELATIONS REPRESENTATIVE.
5. A SIGN MUST BE VISIBLE BY TRAFFIC FROM EACH DIRECTION. IF SIGN IS PLACED WITHIN TEMPORARY TRAFFIC CONTROL, CONTRACTOR SHALL OBTAIN APPROVAL BY TRAFFIC BARRICADING COORDINATOR FOR THE PROPOSED LOCATION(S) PRIOR TO INSTALLATION.



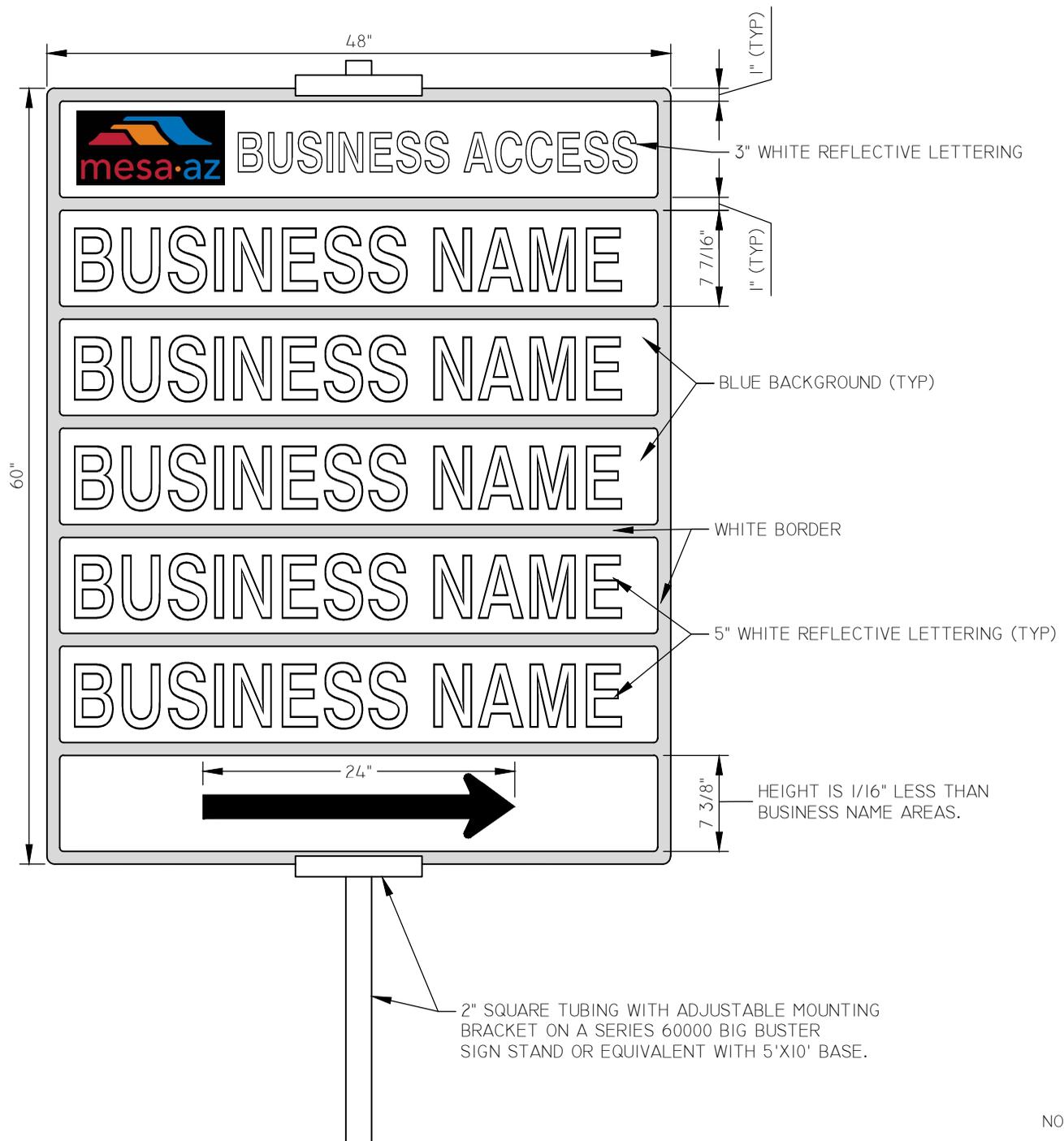
BUSINESS NAME SIGN

OLD
M-24.01

DETAIL NO.
M-1208

NOTES

1. CONTRACTOR SHALL PROVIDE DOUBLE-FACED "BUSINESS NAME" SIGNS FOR ALL BUSINESSES IMPACTED BY CONSTRUCTION. USE OF THESE SIGNS SHALL BE TEMPORARY AND LIMITED TO CONSTRUCTION.
2. "BUSINESS NAME" MAY BE A SHOPPING CENTER OR PLAZA NAME. COORDINATE NAME ON SIGN WITH CITY PUBLIC RELATIONS REPRESENTATIVE AND BUSINESS OWNER.
3. SIGN CRITERIA:
 - A. SIGN SHALL BE DOUBLE-FACED WITH BOTH ARROWS POINTING SAME DIRECTION.
 - B. LETTERING SHALL BE 5" HIGH, SERIES "C", HIGHWAY GOTHIC FOR BUSINESS NAMES AND 3" HIGH FOR "BUSINESS ACCESS" TEXT.
 - C. LETTERING, 24" ARROW, AND 1" BORDER SHALL BE WHITE WITH A BLUE BACKGROUND, REFLECTIVE ENGINEERING GRADE SHEETING.
 - D. SIGN SHALL BE MOUNTED ON A TEMPORARY/MOVABLE CONSTRUCTION SIGN BASE AND POST SO THAT THE TOP OF THE SIGN WILL BE 5 1/2 FEET FROM THE BOTTOM OF THE STAND. (SERIES 60000 BIG BUSTER SIGN STAND OR EQUIVALENT).
4. LOCATION OF THE SIGN SHALL BE COORDINATED BY CONTRACTOR AND CITY PUBLIC RELATIONS REPRESENTATIVE.
5. A SIGN MUST BE VISIBLE BY TRAFFIC FROM EACH DIRECTION. IF SIGN IS PLACED WITHIN TEMPORARY TRAFFIC CONTROL, CONTRACTOR SHALL OBTAIN APPROVAL BY TRAFFIC BARRICADING COORDINATOR FOR THE PROPOSED LOCATION(S) PRIOR TO INSTALLATION.



COMBINED BUSINESS NAME SIGNS

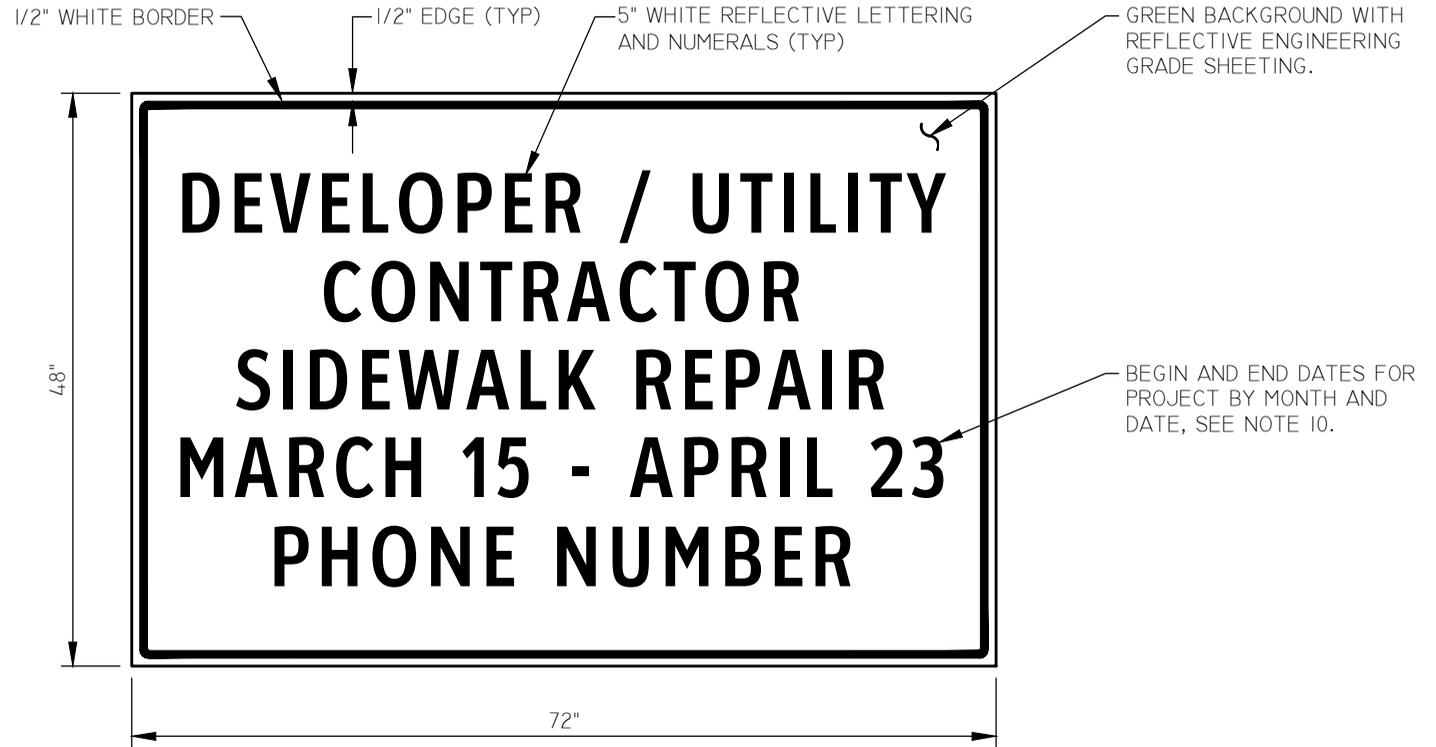
OLD
M-24.02

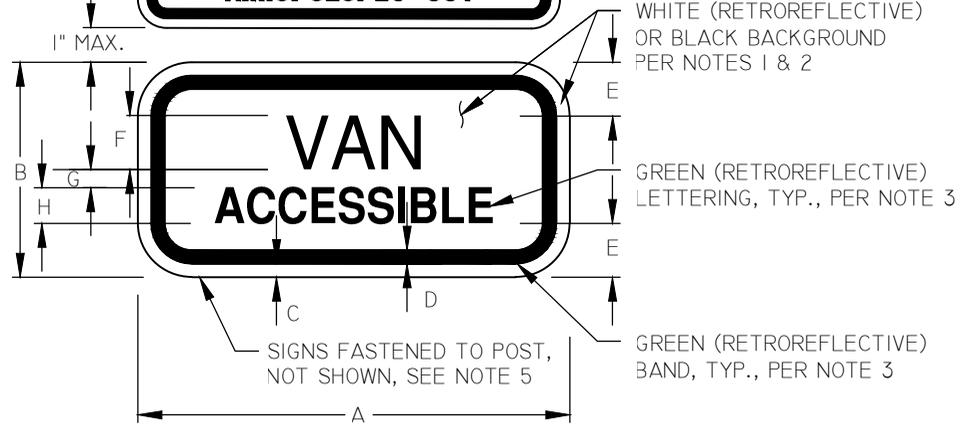
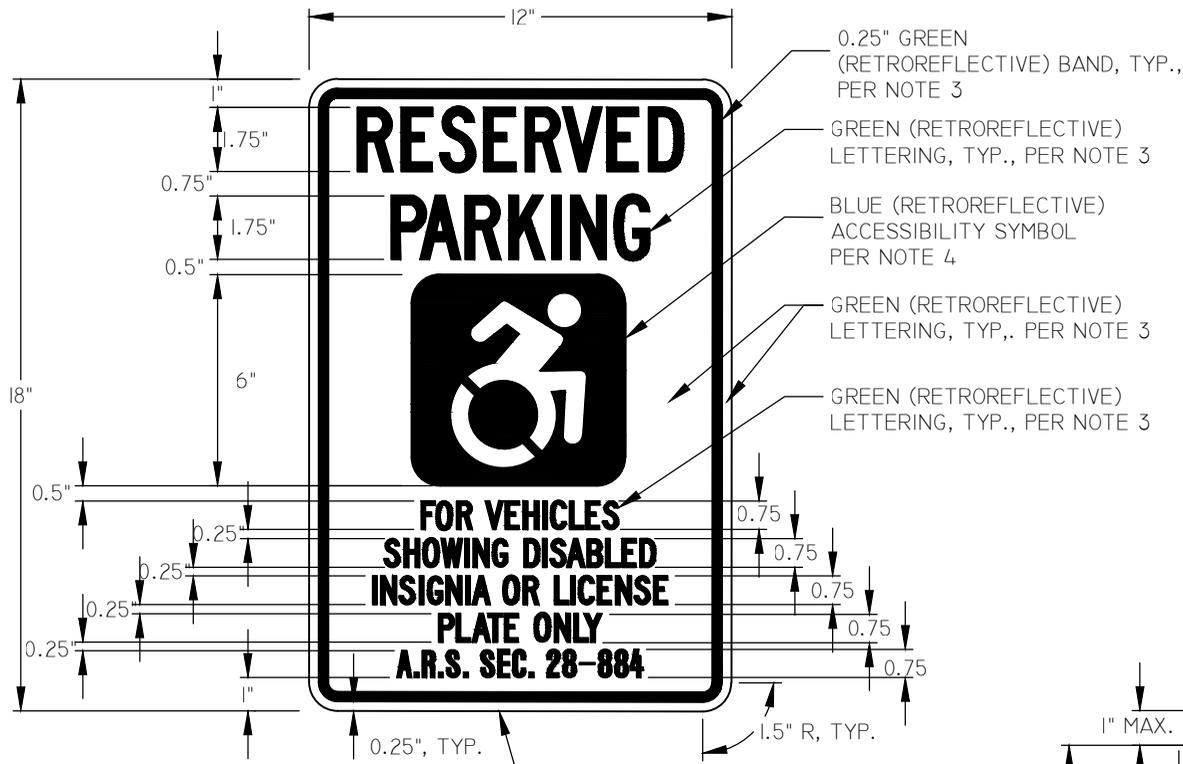
DETAIL NO.
M-1208.1

NOT TO SCALE

NOTES

- I. CONTRACTOR SHALL FURNISH AND INSTALL PROJECT NOTIFICATION SIGN WHEN PROJECT DURATION IS ONE (1) WEEK OR LONGER.
2. ALL WORK IN CITY RIGHT-OF-WAY OR EASEMENTS REQUIRE NOTIFICATION SIGNS TO BE PLACED ADJACENT TO CONSTRUCTION SITES THREE DAYS BEFORE COMMENCEMENT OF WORK.
3. ALL SIGNS MUST CONTAIN THE FOLLOWING INFORMATION; COMPANY NAME, OWNER/DEVELOPER, GENERAL DESCRIPTION OF WORK, COMPLETION DATE, AND A CONTACT PHONE NUMBER IN WHICH CALLS WILL BE RETURNED WITHIN TWENTY-FOUR (24) HOURS.
4. A MINIMUM 4'X 6' SIZE SIGN LARGE ENOUGH TO CONTAIN INFORMATION IS REQUIRED.
5. A SIGN MUST BE VISIBLE BY TRAFFIC FROM EACH DIRECTION.
6. THIS DETAIL IS FOR PRIVATE DEVELOPMENT AND NON-CITY UTILITIES. CITY PROJECTS WILL FOLLOW PROJECT SPECIFIC PROVISIONS.
7. FOR HORIZONTAL PROJECTS, THE PROJECT IDENTIFICATION SIGN SHALL BE PLACED AT BOTH ENDS OF THE PROJECT, UNLESS OTHERWISE DIRECTED BY THE CITY INSPECTOR OR TRAFFIC BARRICADING COORDINATOR.
8. FOR VERTICAL PROJECTS, ONE PROJECT IDENTIFICATION SIGN SHALL BE PLACED AT THE MAIN CONSTRUCTION ENTRANCE TO THE SITE, UNLESS OTHERWISE DIRECTED BY THE CITY INSPECTOR OR TRAFFIC BARRICADING COORDINATOR.
9. CONTRACTOR SHALL OBTAIN CITY INSPECTOR OR TRAFFIC BARRICADING COORDINATOR APPROVAL FOR THE PROPOSED LOCATION(S) OF THE SIGNS PRIOR TO INSTALLING THEM.
10. IF PROJECT SCHEDULE EXTENDS BEYOND CALENDAR YEAR END, SHOW DATE BY MONTH AND YEAR.
- II. SIGN MUST BE REMOVED THREE DAYS AFTER FINAL INSPECTION.





VAN ACCESSIBLE SIGN VARIATIONS										
A	B	C	D	E	F	G	H	J	K	L
12	6	0.375	0.438	1.5	1.5 D	0.5	1 D	1.871	3.859	1.5
18	9	0.375	0.438	2.25	2 D	1	1.5 D	2.493	5.784	1.5

PARKING APPLICATION COLORS:

LEGEND -GREEN (RETROREFLECTIVE) OR BLACK

BACKGROUND -WHITE (RETROREFLECTIVE)

DIRECTIONAL APPLICATION COLORS:

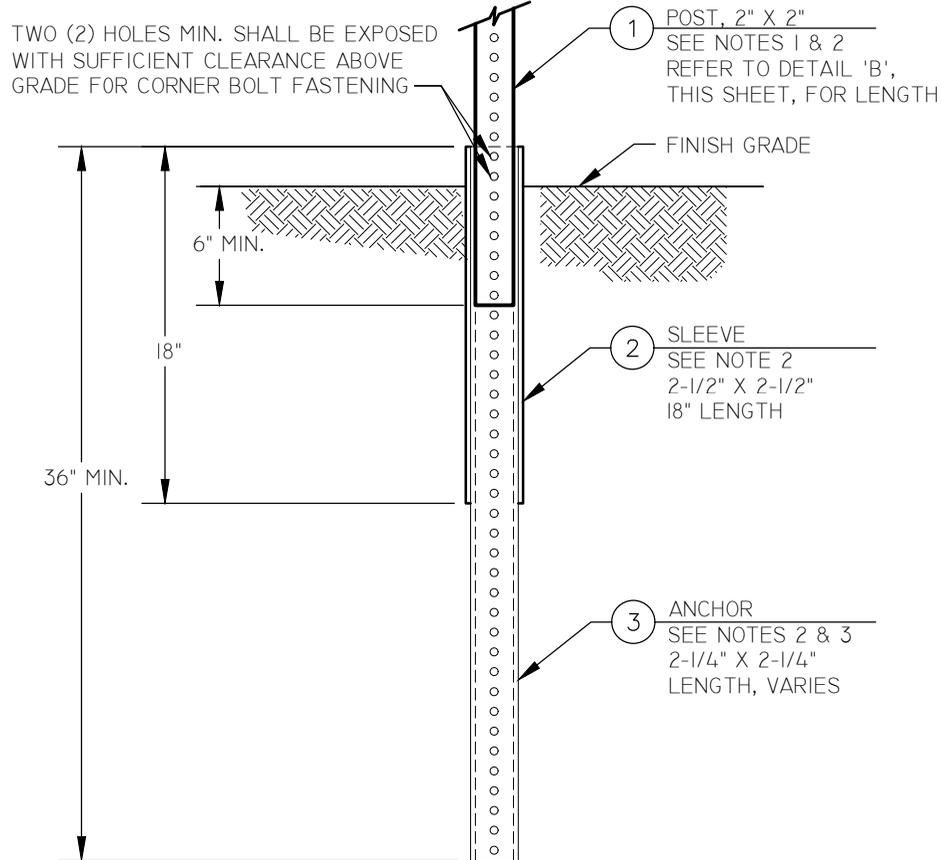
LEGEND -WHITE (RETROREFLECTIVE)

BACKGROUND -BLUE (RETROREFLECTIVE)

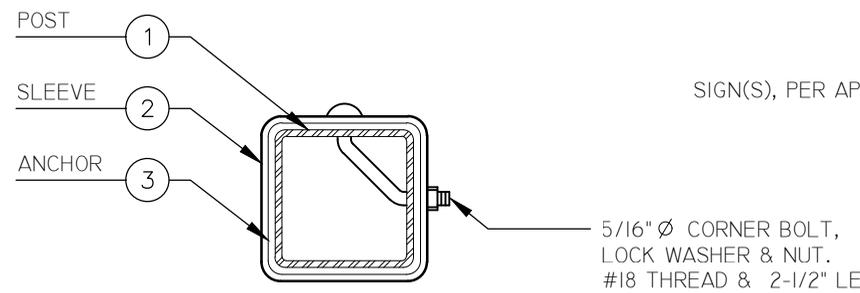
NOTES

- SIGN BLANK MATERIAL SHALL BE WHITE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE PRISMATIC REFLECTIVE SHEETING OR APPROVED EQUAL.
- FILM SHALL BE RETROREFLECTIVE ELECTRO-CUT AND APPLIED OVER THE WHITE SHEETING TO CREATE THE COLORED BORDER, TEXT AND LEGEND. THE FILM SHALL BE TRANSPARENT ACRYLIC, PRESSURE SENSITIVE MATERIAL BY 3M OR APPROVED EQUAL AND BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM.
- ALL LETTERING AND BORDER BANDS SHALL BE A SERIES 'C' GREEN RETROREFLECTIVE COLOR.
- THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE WHITE (RETROREFLECTIVE) ON A 5" X 5" BLUE (RETROREFLECTIVE) FIELD WITH 1/2" RADIUS CORNERS.
- SIGN(S) SHALL BE LOCATED AND FASTENED ON A SQUARE TUBULAR POST, PER COM DETAIL M-1210 (OLD M-39), AS SHOWN AND DIMENSIONED ON COM DETAIL M-1207.4 (OLD M-23.06).
- TO BE USED ON NON-FEDERALLY FUNDED PARKS PROJECTS.

NOT TO SCALE



ELEVATION A - ANCHOR, SLEEVE & POST

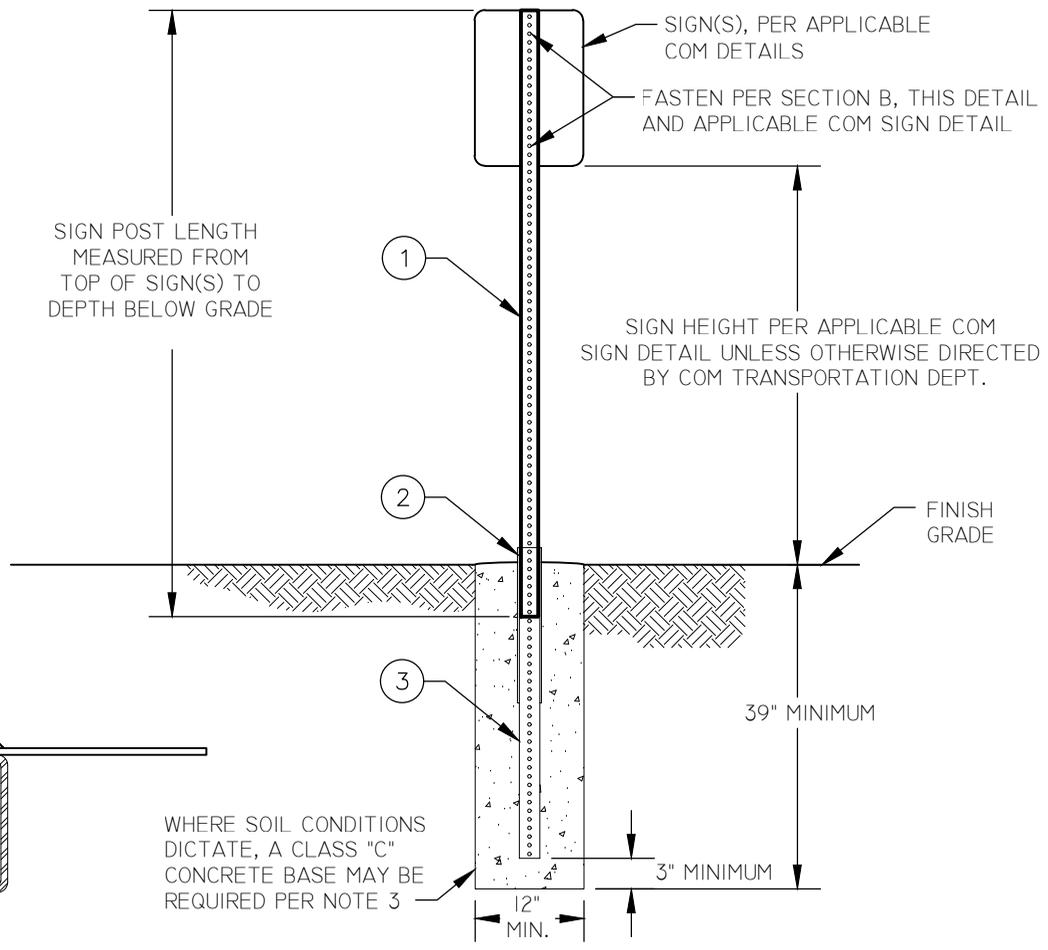


SECTION A - ANCHOR, SLEEVE & POST

DETAIL A - ANCHOR, SLEEVE & POST ASSEMBLY

NOTES

1. WHEN TOTAL AREA OF SIGNAGE EXCEEDS 2,000 SQ. IN., AN ADDITIONAL POST IS REQUIRED.
2. ANCHOR, SLEEVE AND POST SHALL BE 12 GAUGE GALVANIZED STEEL SQUARE TUBING.
3. SOIL CONDITIONS DICTATE MINIMUM ANCHOR DEPTH AND STABILIZATION:
 - WHERE SOIL CONDITIONS ALLOW, AS DETERMINED BY THE CITY, THE POST ANCHOR SHALL BE INSTALLED IN UNDISTURBED COMPACTED NATIVE SOIL TO A MINIMUM DEPTH OF 34" USING A MECHANICAL DRIVER. THE MECHANICAL DRIVER SHALL INCLUDE A DRIVING HEAD TO PREVENT DEFORMATION AND HOLD THE POST, SLEEVE AND ANCHOR ASSEMBLY IN ALIGNMENT.
 - WHERE SOIL CONDITIONS DICTATE, AS DETERMINED BY THE CITY, THE POST, SLEEVE AND ANCHOR ASSEMBLY SHALL BE EMBEDDED IN CLASS "C" CONCRETE PER MAG SECTION 725 AND AS SHOWN. TAPE OVER ANCHOR BOTTOM AND HOLES PRIOR TO CONCRETE PLACEMENT.
4. LATERAL CLEARANCES FROM POST(S) PER APPLICABLE SIGN DETAIL AND AS DETERMINED BY THE CITY.

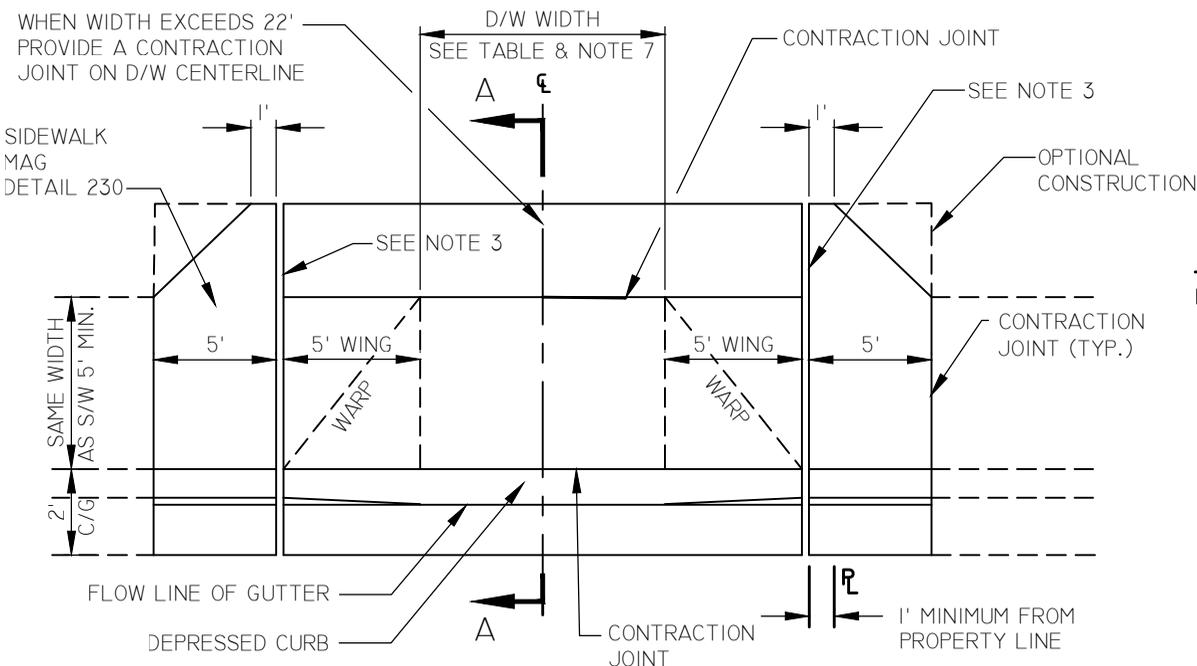


ELEVATION B - SIGN ASSEMBLY

SECTION B - SIGN FASTENING

DETAIL B - POST & SIGN ASSEMBLY

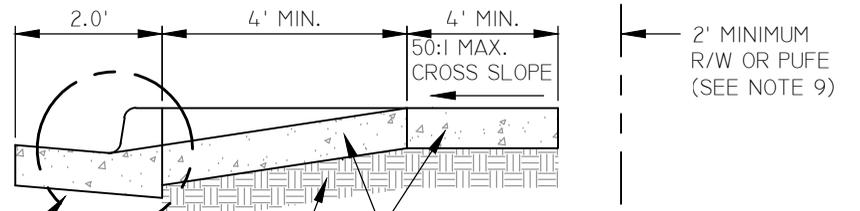
NOT TO SCALE



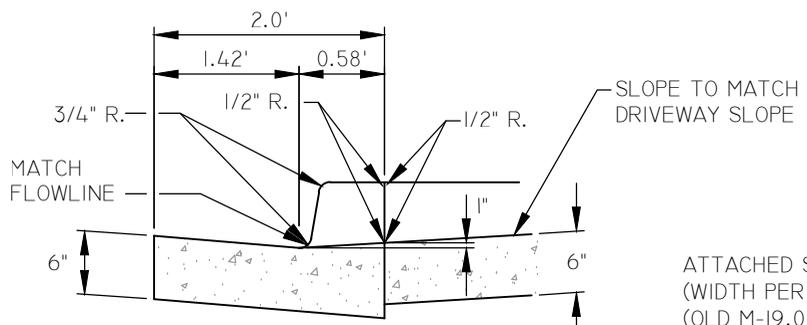
CARPORT/GARAGE	1 CAR	2 CAR	3 CAR
DRIVEWAY WIDTH	12'-16' 16' MIN. ON ARTERIAL STREET	16'-26'	26'-29'

NOTES

- EXPANSION JOINT MATERIAL SHALL BE SECURED IN PLACE PRIOR TO POURING CONCRETE AND SHALL COMPLETELY SEPARATE THE DRIVEWAY SLAB FROM THE SIDEWALK, EXTENDING FROM THE SURFACE TO THE SUBGRADE. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751.
- REFER TO MAG DETAIL 230 FOR CONTRACTION AND EXPANSION JOINT DETAILS.
- DRIVEWAYS GREATER THAN 29' IN WIDTH REQUIRE CITY APPROVAL. UTILITY AND PROPERTY LINE CONFLICTS SHALL BE CONSIDERED FOR ALL DRIVEWAY INSTALLATIONS.
- WHEN INSTALLING A DRIVEWAY IN EXISTING SIDEWALK AND/OR CURB, THE FOLLOWING NOTES APPLY:
 - REMOVE CURB PORTION ONLY WHEN CONSTRUCTING NEW DEPRESSION IN EXISTING CURB & GUTTER. EXISTING CURB SHALL BE REMOVED BY SAWCUTTING CURB HORIZONTALLY TO GRADES AS SHOWN IN DETAIL "A". DAMAGED GUTTER SHALL BE REMOVED AND REPLACED WHERE DIRECTED BY ENGINEER.
 - SIDEWALK MUST BE SAWCUT TO FULL DEPTH OR REMOVED TO NEXT EXPANSION JOINT.
- THE BACK OF R/W OR PUFFE SHALL EXTEND 2' MINIMUM BEYOND THE BACK OF SIDEWALK BEHIND THE DRIVEWAY APPROACH UNLESS OTHERWISE APPROVED BY THE CITY.
- WHEN WINGS OF TWO DRIVEWAYS ARE SEPARATED BY A DISTANCE OF 15' OR LESS, THE SIDEWALK SHALL CONTINUE STRAIGHT BETWEEN THE DRIVEWAYS AS NOTED IN DETAIL "B".
- FOR RESIDENTIAL SMALL LOT/MULTI-LOT PRIVATE DEVELOPMENTS, MINIMUM DRIVEWAY WIDTH SHALL BE 24' ON A LOCAL STREET. USE COM DETAIL M-1212 (OLD M-42) FOR DRIVEWAYS ON COLLECTOR OR ARTERIAL STREETS.
- INCREASED CONCRETE THICKNESS AND/OR ABC MAY BE REQUIRED DEPENDING ON DRIVEWAY USE.

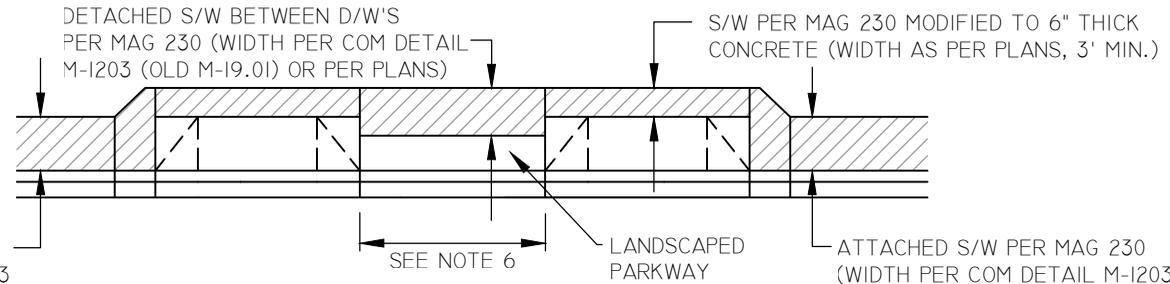


SECTION "A"- "A"



DETAIL "A"

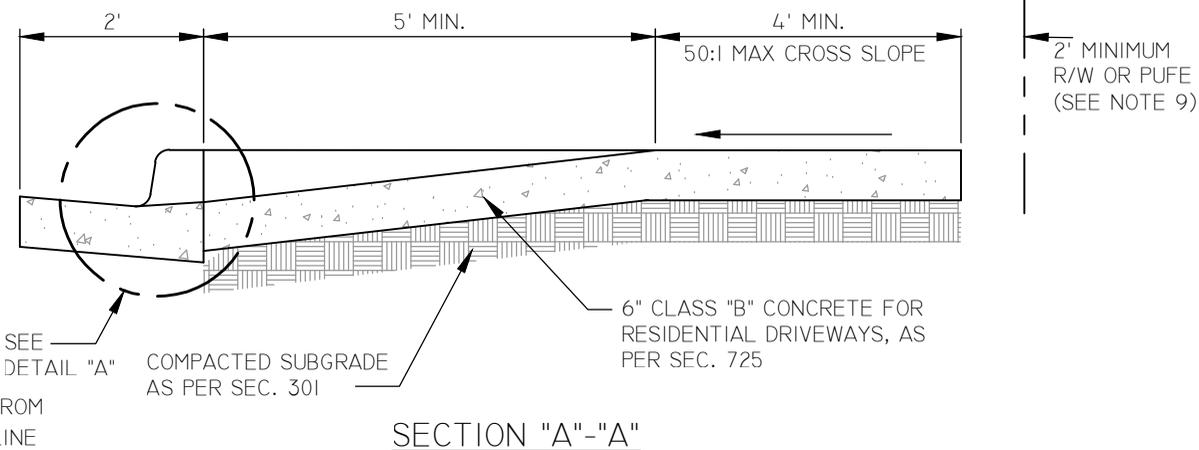
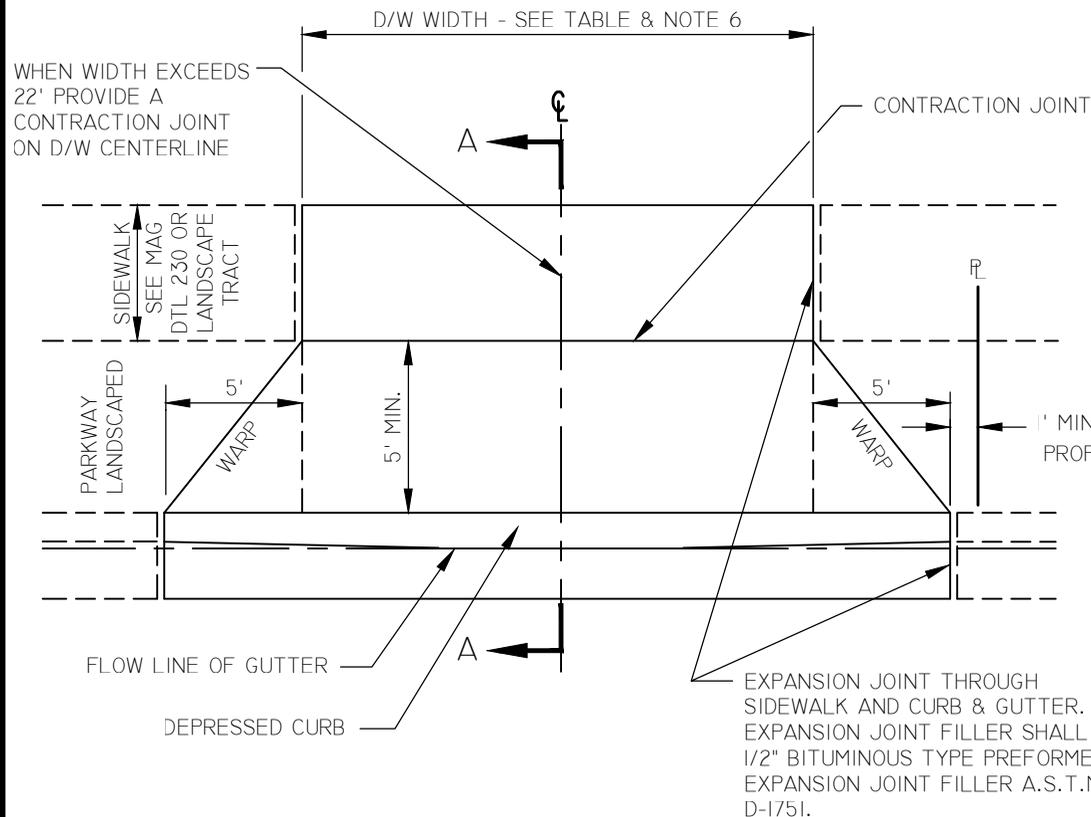
ATTACHED S/W PER MAG 230 (WIDTH PER COM DETAIL M-1203 (OLD M-19.01) OR PER PLANS, 4' MIN.)



DETAIL "B"

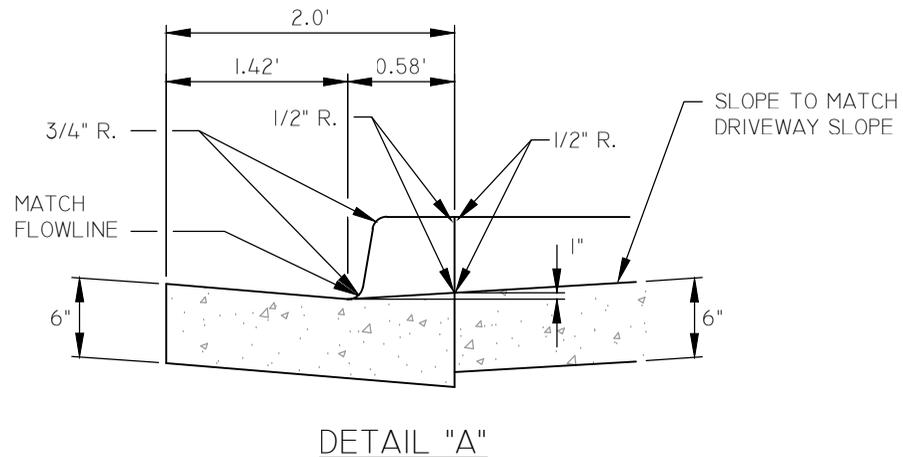
(ADJACENT DRIVEWAYS SEPARATED BY 15' OR LESS)

NOT TO SCALE



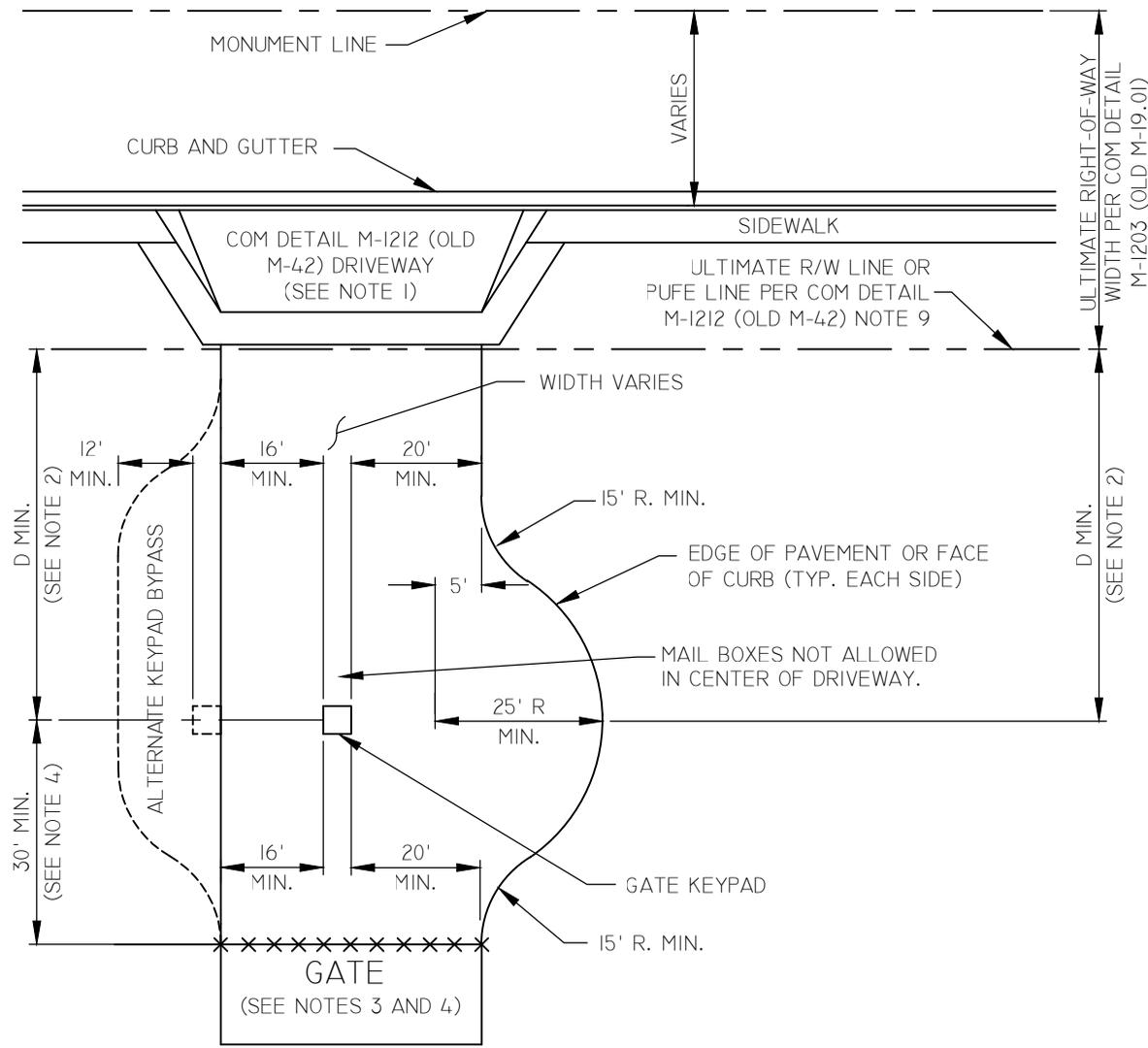
NOTES

- EXPANSION JOINT MATERIAL SHALL BE SECURED IN PLACE PRIOR TO POURING CONCRETE AND SHALL COMPLETELY SEPARATE THE DRIVEWAY SLAB FROM THE SIDEWALK, EXTENDING FROM THE SURFACE TO THE SUBGRADE. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-1751.
- REFER TO MAG DETAIL 230 FOR CONTRACTION AND EXPANSION JOINT DETAILS.
- DRIVEWAYS GREATER THAN 29' IN WIDTH REQUIRE CITY APPROVAL. UTILITY AND PROPERTY LINE CONFLICTS SHALL BE CONSIDERED FOR ALL DRIVEWAY INSTALLATIONS.
- WHEN INSTALLING A DRIVEWAY IN EXISTING SIDEWALK AND/OR CURB, THE FOLLOWING NOTES APPLY:
 - REMOVE CURB PORTION ONLY WHEN CONSTRUCTING NEW DEPRESSION IN EXISTING CURB & GUTTER. EXISTING CURB SHALL BE REMOVED BY SAWCUTTING CURB HORIZONTALLY TO GRADES AS SHOWN IN DETAIL A. DAMAGED GUTTER SHALL BE REMOVED AND REPLACED WHERE DIRECTED BY ENGINEER.
 - SIDEWALK MUST BE SAWCUT TO FULL DEPTH OR REMOVED TO NEXT EXPANSION JOINT.
- THE BACK OF R/W OR PUFE SHALL EXTEND 2' MINIMUM BEYOND THE BACK OF SIDEWALK BEHIND THE DRIVEWAY APPROACH, UNLESS OTHERWISE APPROVED BY THE CITY.
- FOR RESIDENTIAL SMALL LOT/MULTI-LOT PRIVATE DRIVE DEVELOPMENTS, MINIMUM DRIVEWAY WIDTH SHALL BE 24' ON A LOCAL STREET. USE COM DETAIL M-1212 (OLD M-42) FOR DRIVEWAYS ON COLLECTOR OR ARTERIAL STREETS.



CARPORIT/GARAGE	1 CAR	2 CAR	3 CAR
DRIVEWAY WIDTH	12'-16' 16' MIN. ON ARTERIAL STREET	16'-26'	26'-29'

NOT TO SCALE

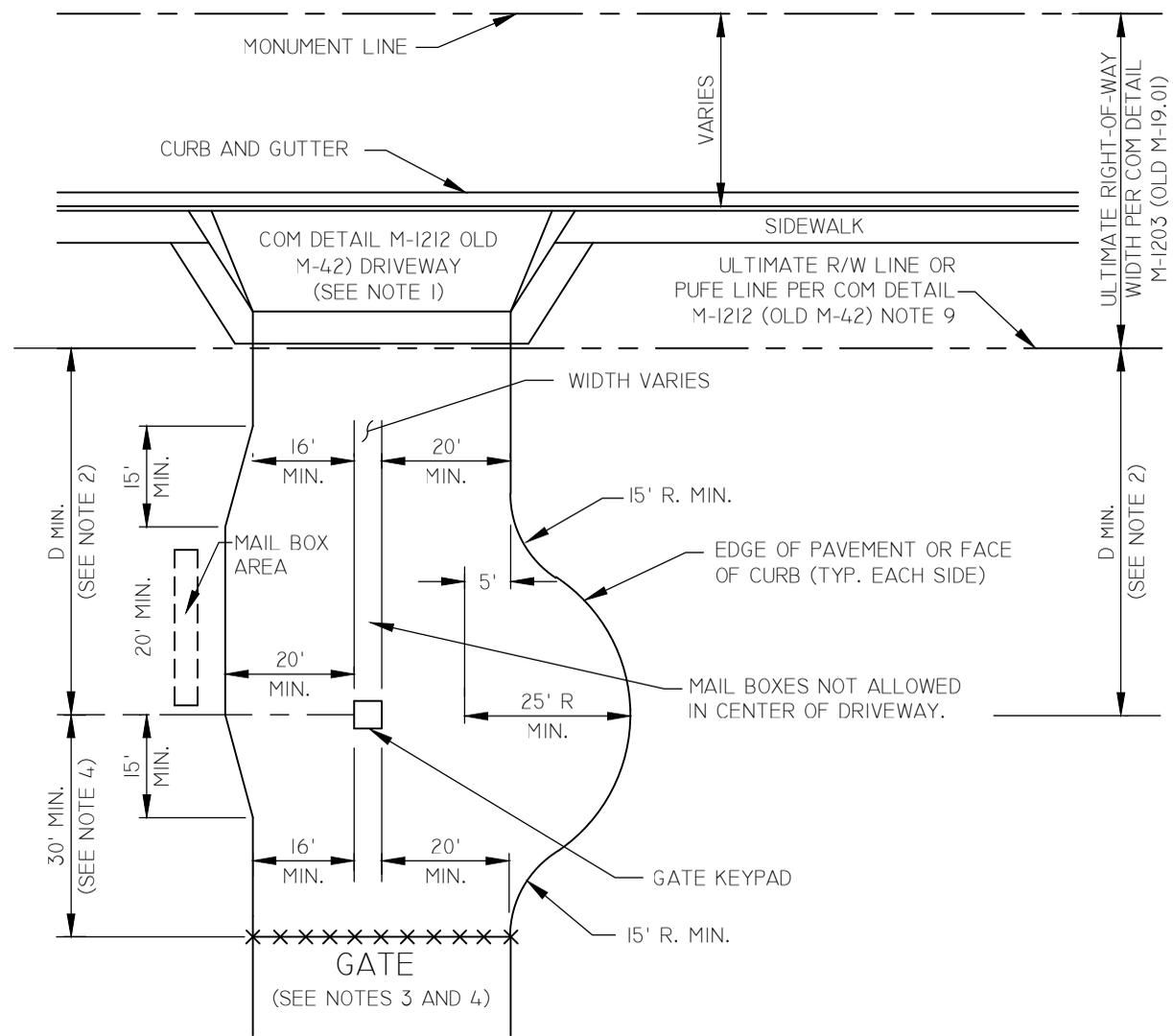


NOTES

- DRIVEWAY PER COM DETAIL M-1212 (OLD M-42). DOUBLE DRIVEWAY MAX. WIDTH = 60'.
- D MIN. FROM ULTIMATE R/W LINE PER COM DETAIL M-1203 (OLD M-19.01) TO CENTERLINE OF GATE KEYPAD. D MIN. VARIES IN ACCORDANCE WITH THE TYPE OF DEVELOPMENT (RESIDENTIAL OR NON-RESIDENTIAL) AND THE NUMBER OF UNITS IN THE DEVELOPMENT AS SHOWN BELOW:

RESIDENTIAL UNITS	D MIN.
LESS THAN 25	20'
25 TO 100	40'
101 TO 150	60'
151 TO 200	80'
GREATER THAN 200	100'
<hr/>	
NON-RESIDENTIAL UNITS	D MIN.
ANY NUMBER OF UNITS	60'
- GATE INSTALLED AT BEGINNING OF 15' RADIUS.
- 30' MIN. DIMENSION FROM CENTERLINE OF GATE KEYPAD TO FACE OF GATE.
- WHERE EXISTING CONDITIONS DEEM IT NECESSARY TO REQUEST A DESIGN EXCEPTION OF THE GATED ACCESS, THIS STANDARD MAY BE MODIFIED BY THE CITY TRAFFIC ENGINEER AND/OR CITY ENGINEER.
- MINIMUM WIDTH OF MEDIAN SHALL BE 4 FEET. IF RAISED MEDIAN INSTALLED TO R/W LINE, THEN FOLLOW COM DETAIL M-1212 (OLD M-42). IF ON-SITE RAISED MEDIAN EXTENDS TO DRIVEWAY, INGRESS MINIMUM WIDTH MUST COMPLY WITH DETAIL M-1212 (OLD M-42) - 20' MIN.
- THE ALTERNATE KEYPAD BYPASS WILL ONLY BE ALLOWED WHEN THE NUMBER OF RESIDENTIAL UNITS IS OVER 100 AND/OR A MIN. 60' D IS PROVIDED.

NOT TO SCALE



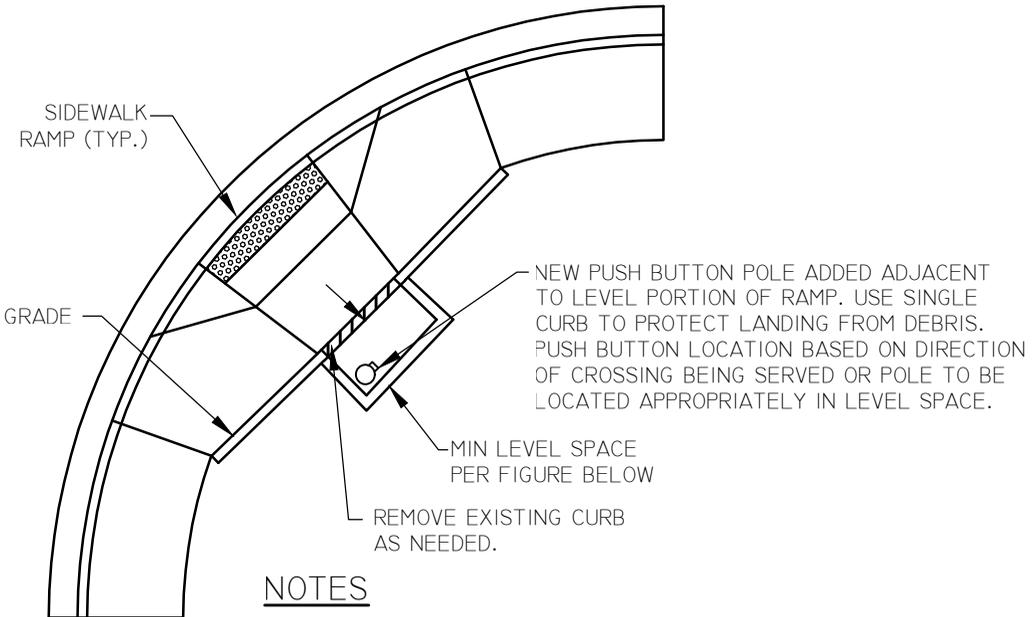
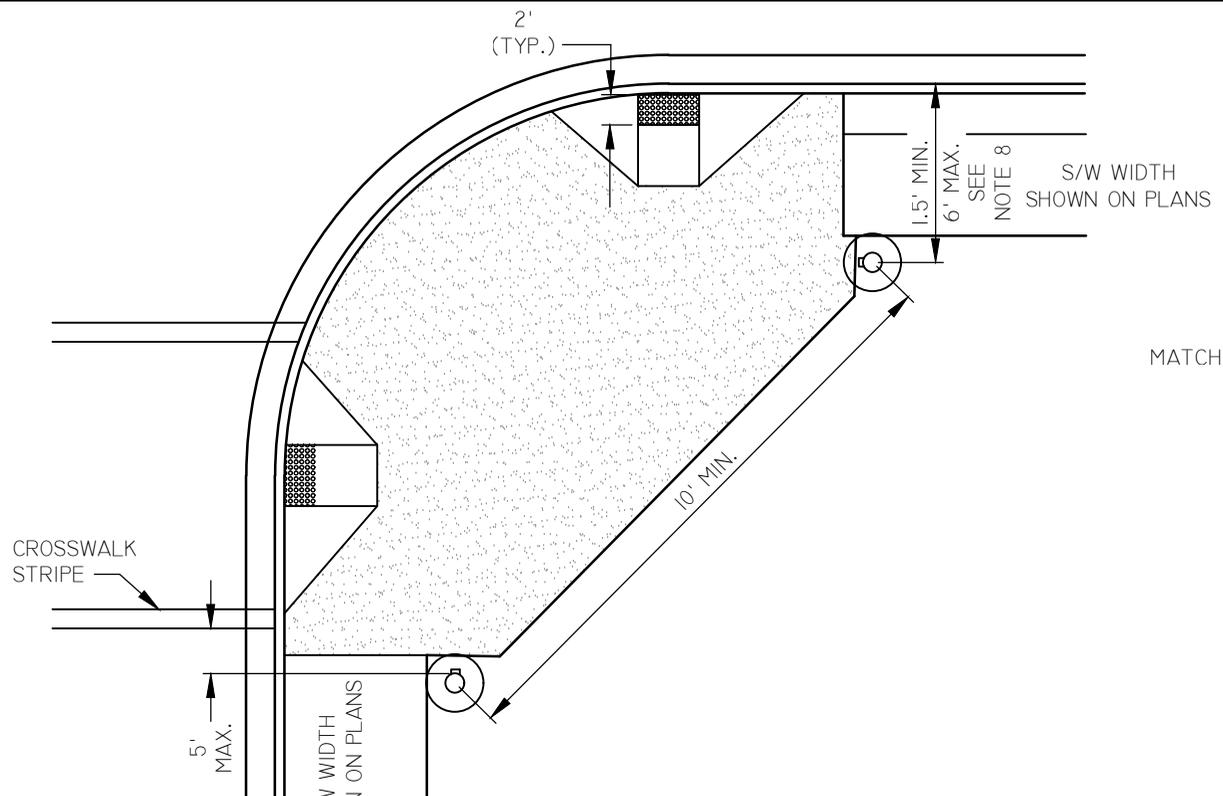
NOTES

1. DRIVEWAY PER COM DETAIL M-1212 (OLD M-42). DOUBLE DRIVEWAY MAX. WIDTH = 60'.
2. D MIN. FROM ULTIMATE R/W LINE PER COM DETAIL M-1203 (OLD M-19.01) TO CENTERLINE OF GATE KEYPAD. D MIN. VARIES IN ACCORDANCE WITH THE TYPE OF DEVELOPMENT (RESIDENTIAL OR NON- RESIDENTIAL) AND THE NUMBER OF UNITS IN THE DEVELOPMENT AS SHOWN BELOW:

RESIDENTIAL UNITS	D MIN.
LESS THAN 25	20'
25 TO 100	40'
101 TO 150	60'
151 TO 200	80'
GREATER THAN 200	100'
NON-RESIDENTIAL UNITS	D MIN.
ANY NUMBER OF UNITS	60'

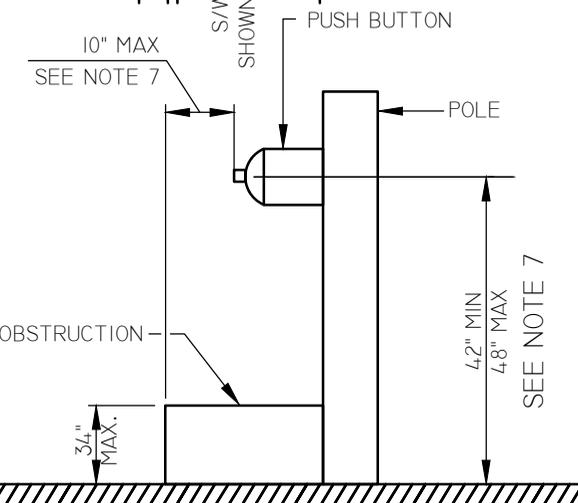
3. GATE INSTALLED AT BEGINNING OF 15' RADIUS.
4. 30' MIN. DIMENSION FROM CENTERLINE OF GATE KEYPAD TO FACE OF GATE.
5. WHERE EXISTING CONDITIONS DEEM IT NECESSARY TO REQUEST A DESIGN EXCEPTION OF THE GATED ACCESS, THIS STANDARD MAY BE MODIFIED BY THE CITY TRAFFIC ENGINEER AND/OR CITY ENGINEER.
6. MINIMUM WIDTH OF MEDIAN SHALL BE 4 FEET. IF RAISED MEDIAN INSTALLED TO R/W LINE, THEN FOLLOW DETAIL M-1212 (OLD M-42).

NOT TO SCALE

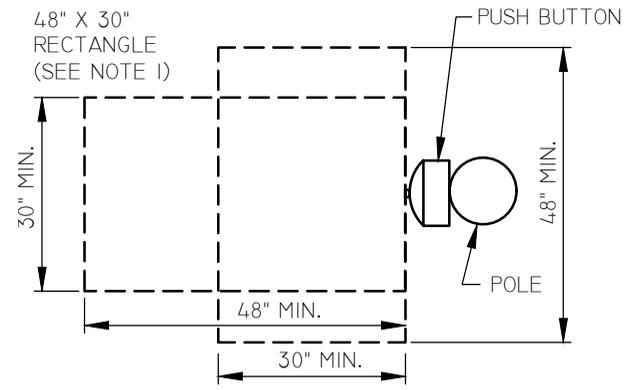


NOTES

1. THE CONCRETE ACCESS PAD SHALL PROVIDE A MINIMUM 30"x48" CONCRETE SURFACE ADJACENT TO THE ADA PUSH BUTTON AS SHOWN.
2. THE TYPICAL DETAILS SHOWN ON THIS SHEET MAY REQUIRE MODIFICATIONS TO ACCOMMODATE EXISTING FIELD CONDITIONS AS DIRECTED BY THE CITY INSPECTOR.
3. TOP OF POLE FOUNDATION SHALL MATCH CONCRETE ACCESS PAD/RAMP.
4. SEE COM DETAIL M-1229.5 (OLD M-95.06) FOR ADA PUSH BUTTON DETAIL.
5. TWO PEDESTRIAN PUSH BUTTONS ON A CORNER SHALL BE SEPARATED BY A MINIMUM OF 10 FEET.
6. MAXIMUM DISTANCE BETWEEN PEDESTRIAN PUSH BUTTON FACE AND ACCESSIBLE APPROACH SHALL BE 10 INCHES.
7. IF THE OBSTRUCTION EXTENDS BEYOND THE 10" DISTANCE, THE MAX PUSH BUTTON HEIGHT IS REDUCED TO 46". HOWEVER, THE OBSTRUCTION DISTANCE SHALL BE 24" MAX WITH A 46" PUSH BUTTON HEIGHT.
8. IF 6' CLEARANCE IS NOT FEASIBLE, CLEARANCE CAN EXTEND UP TO 10' MAX FROM BACK OF SIDEWALK, SUBJECT TO CITY APPROVAL.



PEDESTRIAN PUSH BUTTON LOCATION REQUIREMENTS

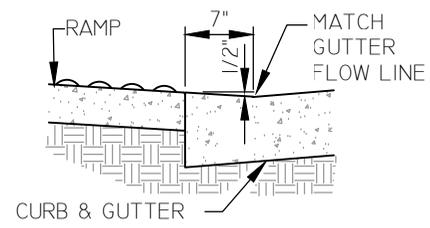
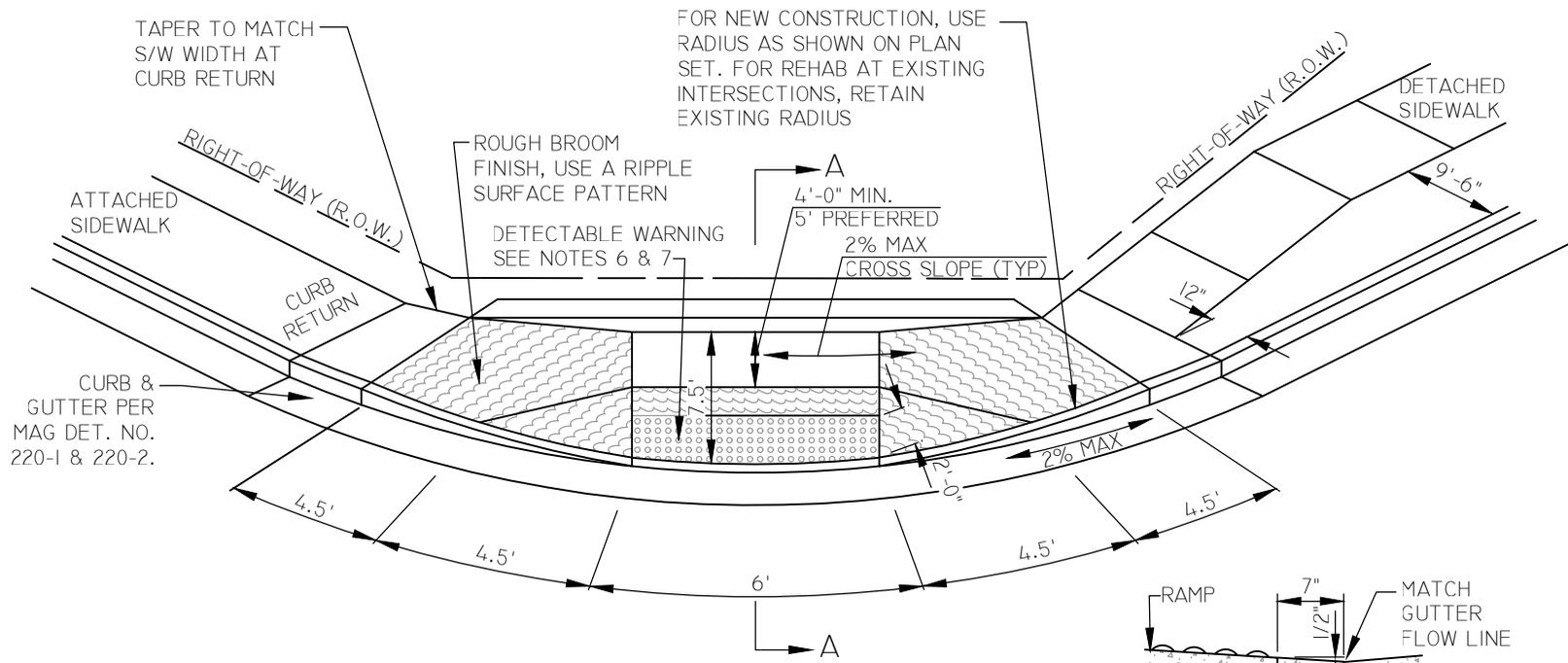


MIN LEVEL (2% MAX) SPACE REQUIRED ADJACENT TO PUSH BUTTON

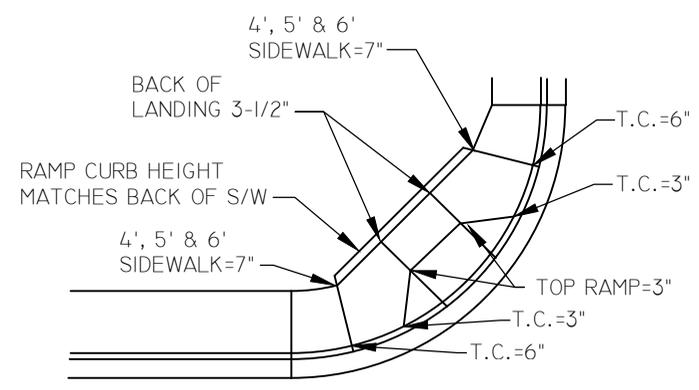
NOT TO SCALE

NOTES

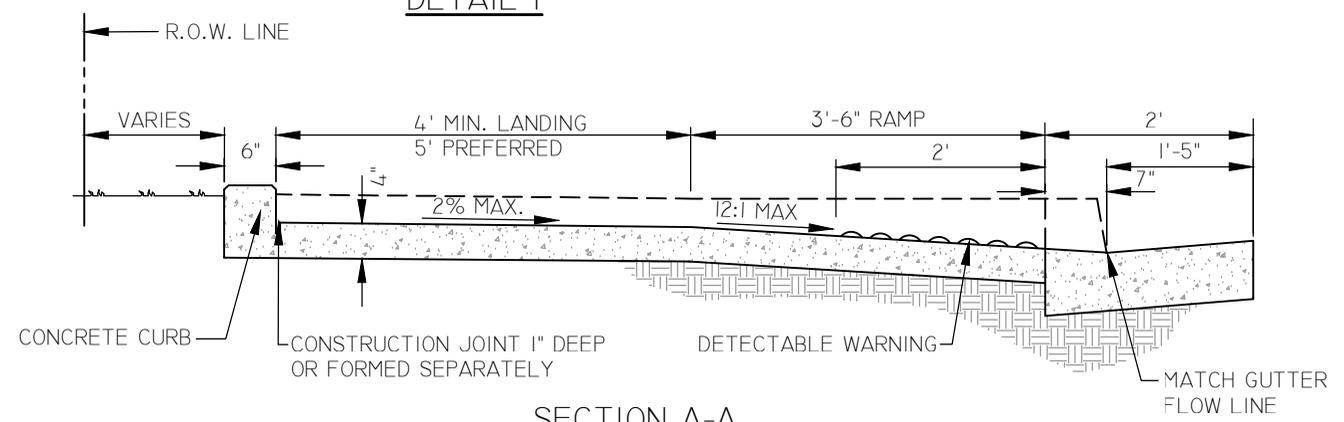
1. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO THE GUTTER AND ARE LOCATED RADIALLY. GUTTER EL.=0.
2. CLASS 'B' CONC. CONSTRUCTION PER MAG SECTION 725.
3. REHABILITATION OR RETROFITTING EXISTING CORNERS MAY REQUIRE MODIFYING THIS RAMP. MODIFICATIONS MAY BE MADE AS OUTLINED IN THE CITY OF MESA ENGINEERING AND DESIGN STANDARDS.
4. TWO PEDESTRIAN PUSH BUTTONS ON A CORNER SHALL BE SEPARATED BY A MINIMUM OF 10 FEET.
5. MAXIMUM DISTANCE BETWEEN PEDESTRIAN PUSH BUTTON FACE & ACCESSIBLE APPROACH SHALL BE 10 INCHES.
6. STANDARD COLOR OF DETECTABLE WARNING SHALL BE RED (FEDERAL COLOR NO. 20109 OR EQUIVALENT). STANDARD COLOR SHALL BE USED UNLESS OTHERWISE DIRECTED.
7. ONLY THOSE PRODUCTS LISTED ON THE CITY OF MESA'S APPROVED LIST OF DETECTABLE WARNING PRODUCTS (TRUNCATED DOMES) MAY BE USED. NO SUBSTITUTIONS ARE PERMITTED. THE APPROVED LIST IS AVAILABLE ON THE ENGINEERING WEB SITE AT [HTTPS://WWW.MESAAZ.GOV/BUSINESS-DEVELOPMENT/ENGINEERING/APPROVED-PRODUCTS-EQUIPMENT-CONTRACTORS](https://www.mesaaz.gov/business-development/engineering/approved-products-equipment-contractors).



DETAIL I



CONTROL ELEVATIONS

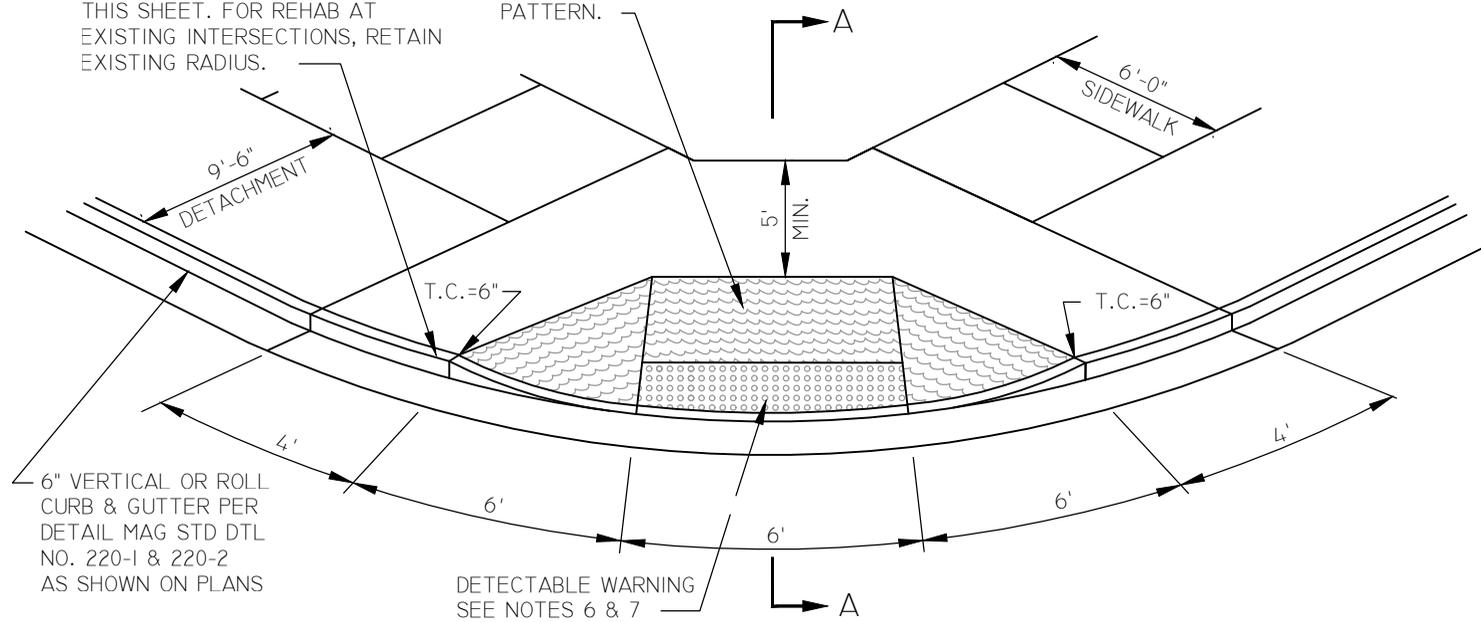


SECTION A-A

NOT TO SCALE

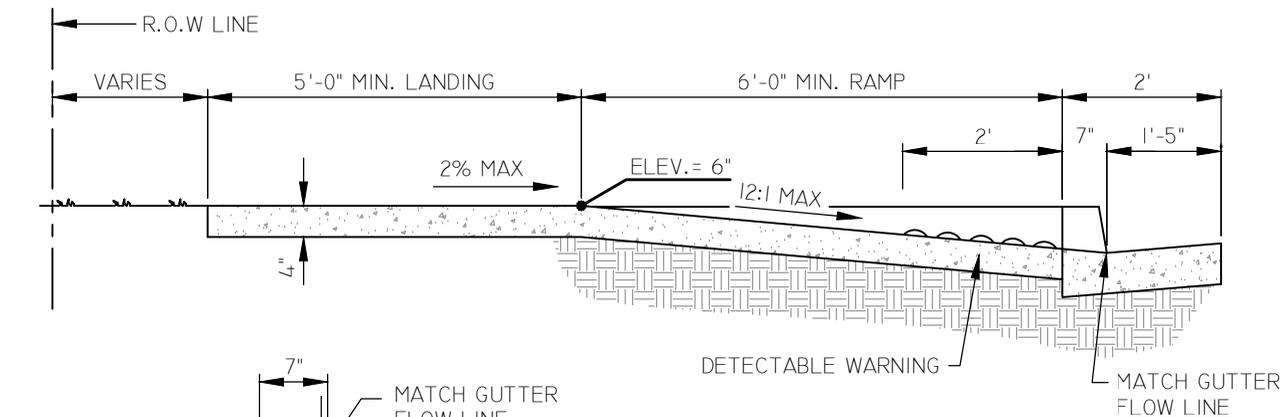
FOR NEW CONSTRUCTION, USE RADIUS AS SHOWN ON TABLE ON THIS SHEET. FOR REHAB AT EXISTING INTERSECTIONS, RETAIN EXISTING RADIUS.

ROUGH BROOM FINISH, USE A RIPPLE SURFACE PATTERN.

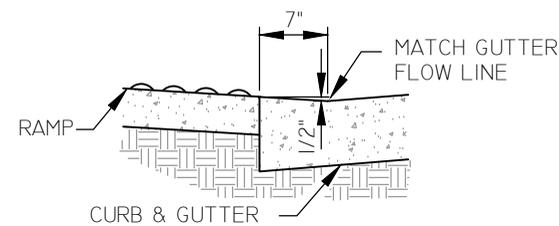


NOTES

1. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO THE GUTTER AND ARE LOCATED RADIALLY. GUTTER EL.=0.
2. CLASS 'B' CONC. CONSTRUCTION AS PER MAG SECTION 725.
3. REHABILITATION OR RETROFITTING EXISTING CORNERS MAY REQUIRE MODIFYING THIS RAMP. MODIFICATIONS MAY BE MADE AS OUTLINED IN THE CITY OF MESA ENGINEERING AND DESIGN STANDARDS.
4. TWO PEDESTRIAN PUSH BUTTONS ON A CORNER SHALL BE SEPARATED BY A MINIMUM OF 10 FEET.
5. MAXIMUM DISTANCE BETWEEN PEDESTRIAN PUSH BUTTON FACE & ACCESSIBLE APPROACH SHALL BE 10 INCHES.
6. STANDARD COLOR OF DETECTABLE WARNING SHALL BE RED (FEDERAL COLOR NO. 20109 OR EQUIVALENT). STANDARD COLOR SHALL BE USED UNLESS OTHERWISE DIRECTED.
7. ONLY THOSE PRODUCTS LISTED ON THE CITY OF MESA'S APPROVED LIST OF DETECTABLE WARNING PRODUCTS (TRUNCATED DOMES) MAY BE USED. NO SUBSTITUTIONS ARE PERMITTED. THE APPROVED LIST IS AVAILABLE ON THE ENGINEERING WEB SITE AT [HTTPS://WWW.MESAAZ.GOV/BUSINESS-DEVELOPMENT/ENGINEERING/APPROVED-PRODUCTS-EQUIPMENT-CONTRACTORS.](https://www.mesaaz.gov/business-development/engineering/approved-products-equipment-contractors)

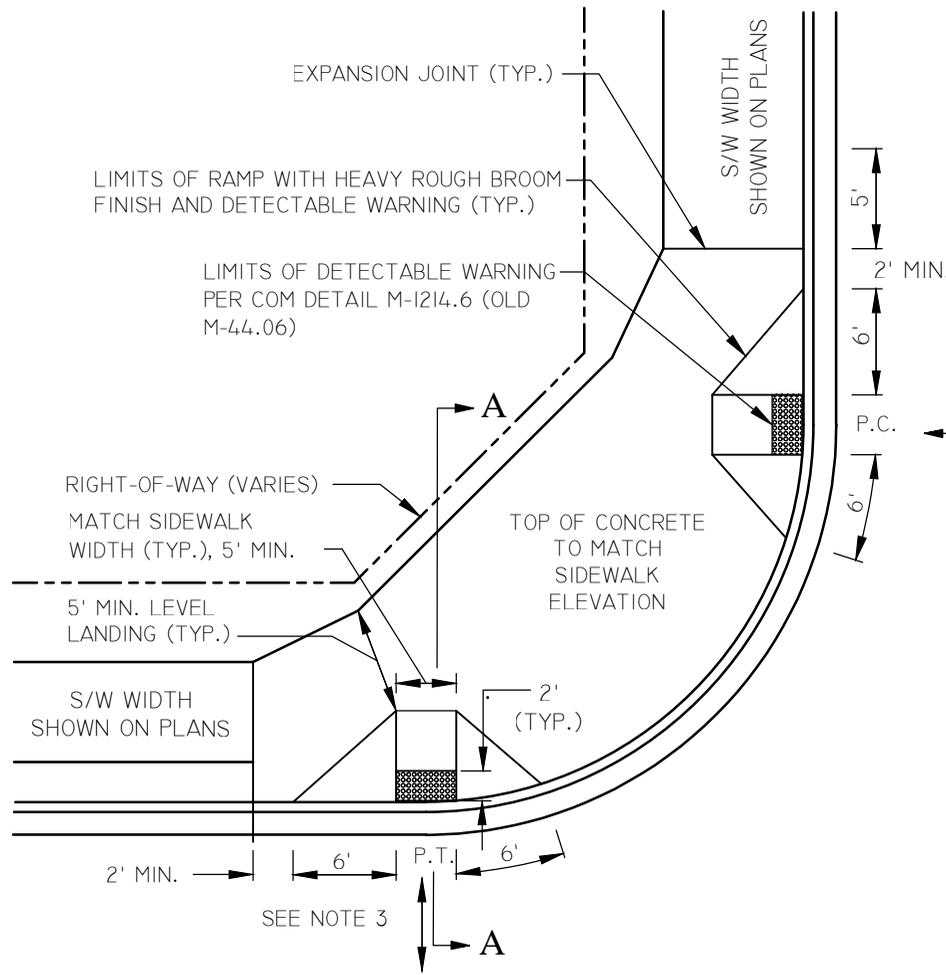


SECTION A-A

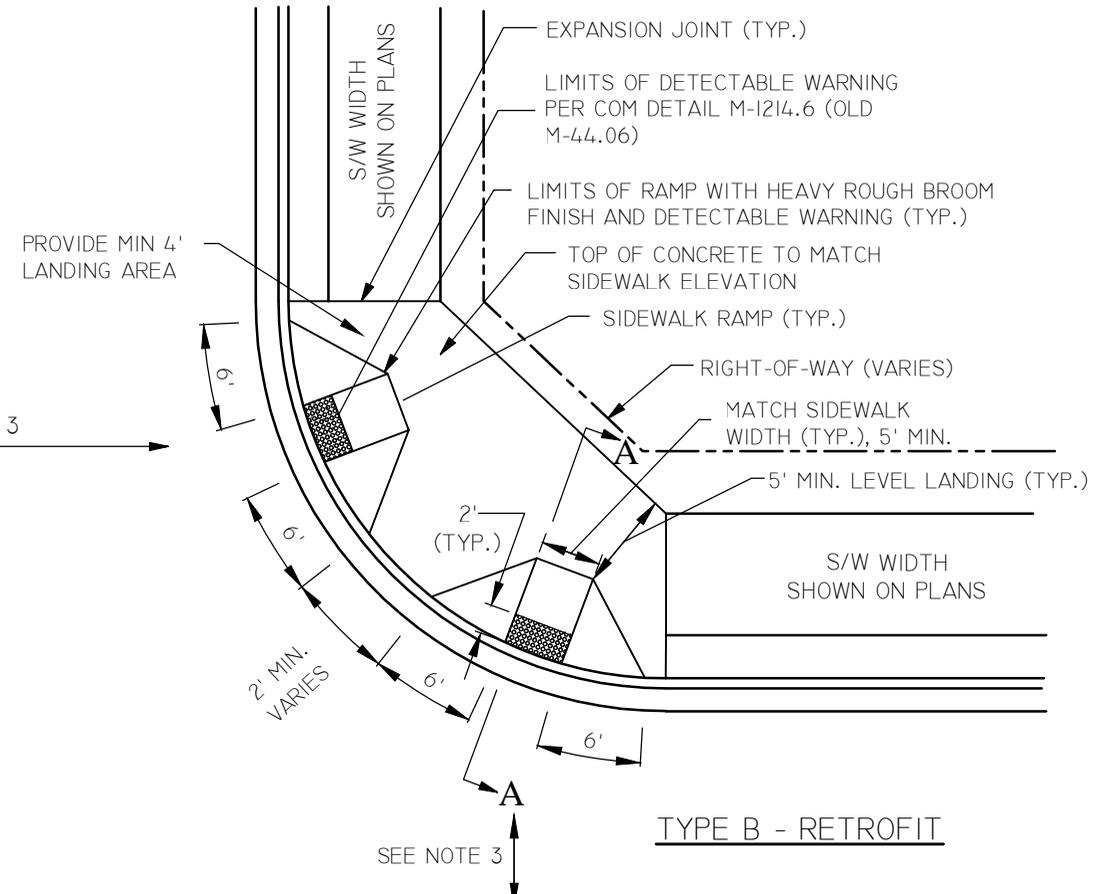


DETAIL I

NOT TO SCALE

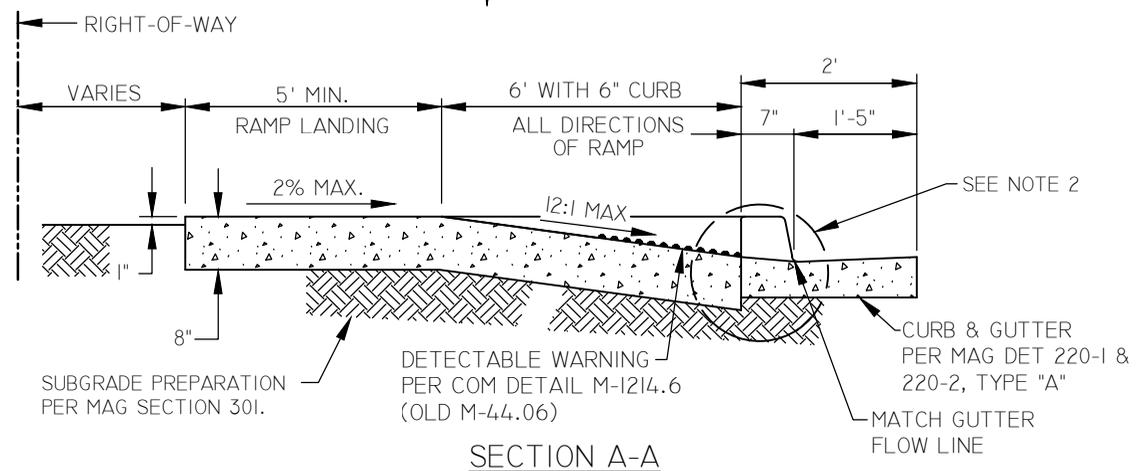


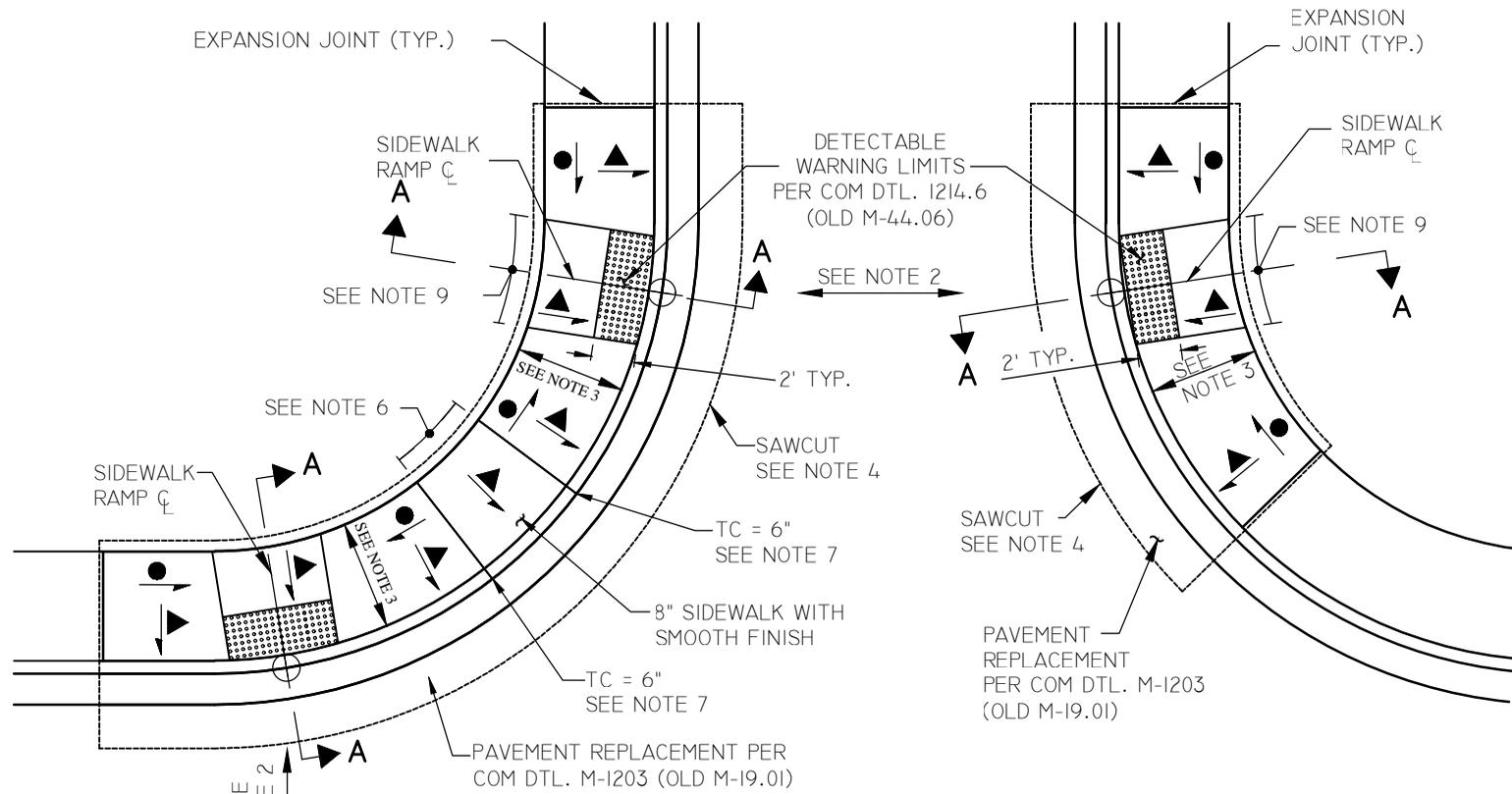
TYPE A - PREFERRED DEVELOPMENT



TYPE B - RETROFIT

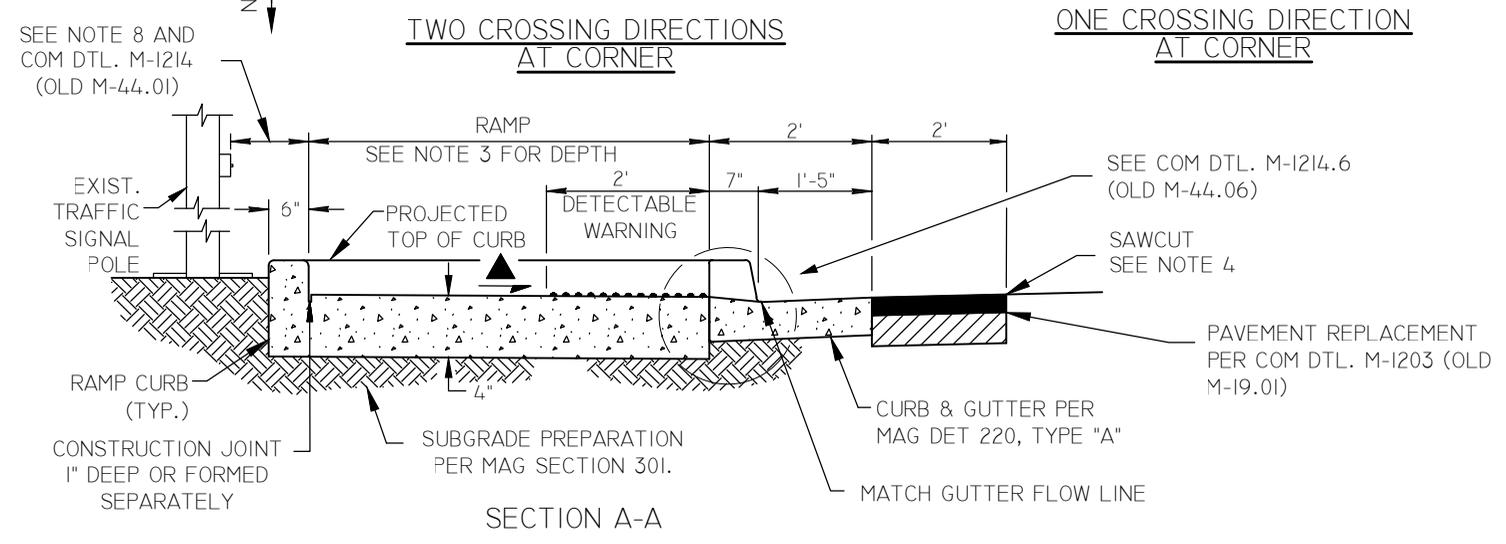
- NOTES:**
1. ALL CONCRETE TO BE CLASS "B", MAG SECTION 725.
 2. FOR SLOPING TRANSITION FROM RAMP TO CURB, SEE COM DETAIL M-1214.6 (OLD M-44.06).
 3. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED PERPENDICULAR TO THE CURB AT THE RAMP CONTROL POINT. CROSSWALKS SHALL BE ALIGNED PERPENDICULAR TO THE STREET CENTERLINE AS MUCH AS POSSIBLE.
 4. SEE PLANS FOR LOCATION OF SIDEWALK RAMP CENTERLINE.
 5. NEW RESIDENTIAL IS REQUIRED TO USE TYPE A.
 6. TYPE B REQUIRES A MINIMUM OF A 25' RADIUS.





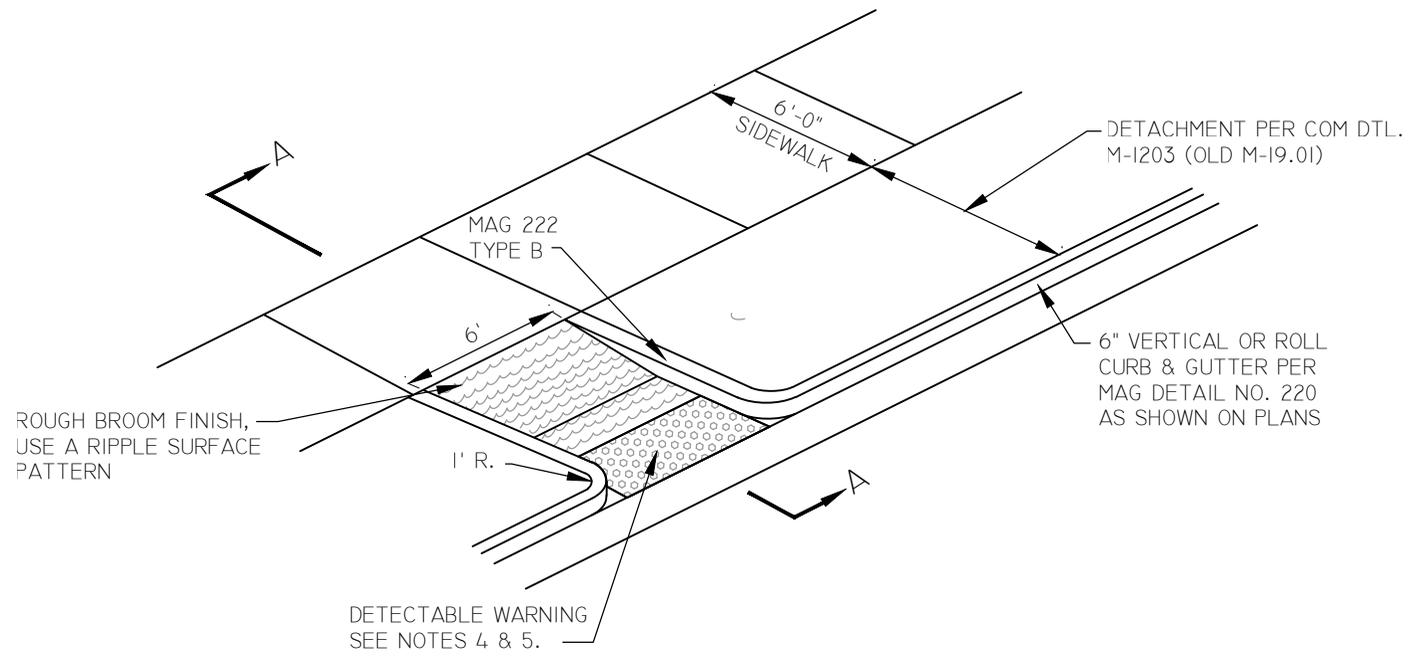
NOTES

1. ALL CONCRETE TO BE CLASS "B", MAG SECTION 725.
2. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED PERPENDICULAR TO THE CURBLINE AT THE RAMP CONTROL POINT. CROSSWALKS SHALL BE ALIGNED PERPENDICULAR TO THE STREET CENTERLINE AS MUCH AS POSSIBLE.
3. RAMP DEPTH SHALL MATCH SIDEWALK WIDTH, 5' MINIMUM, AS MEASURED RADIALLY FROM BACK OF CURB TO THE FACE OF RAMP CURB.
4. WHEN A CONCRETE APRON EXISTS THE SAWCUT MAY BE MADE IN THE APRON 2' FROM BACK OF EXISTING CURB.
5. SEE PLANS FOR LOCATION OF SIDEWALK RAMP CENTERLINE.
6. MINIMUM 4' LONG LEVEL AREA REQUIRED BETWEEN RAMPS, 8" THICK.
7. CURB HEIGHT MAY BE DECREASED TO 4" FOR SPACE LIMITED AREAS PROVIDED THE RAMP SLOPE IS A MAXIMUM 12:1 AND THE MINIMUM 4' LONG LEVEL AREA BETWEEN RAMPS IS MAINTAINED.
8. REFER TO COM DETAIL M-1214 (OLD M-44.01) FOR POLE PLACEMENT. EACH RAMP RETROFIT REQUIRES A SITE SPECIFIC ASSESSMENT AND FIELD REVIEW BY THE DESIGN ENGINEER TO ENSURE FUNCTIONAL DESIGN.
9. RAMP WIDTH SHALL MATCH SIDEWALK OR PATH WIDTH, 5' MINIMUM AS MEASURED AT BACK OF RAMP ALONG RAMP CURB.
10. RAMP SHALL HAVE HEAVY ROUGH BROOM FINISH.
11. PAYMENT LIMITS INCLUDE FULL RAMP DETAIL INCLUDING PORTION BEYOND CURB RETURN.



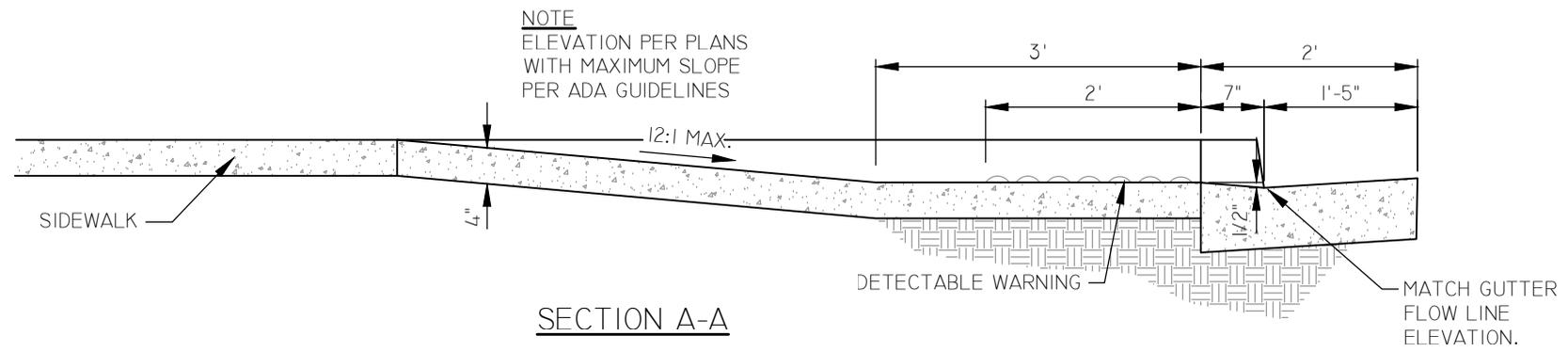
LEGEND

- RAMP CONTROL POINT (TYP.) SEE PLANS
- 12:1 MAXIMUM SLOPE, 15:1 DESIRED SLOPE
- 2% MAXIMUM SLOPE, 1.5% MINIMUM SLOPE

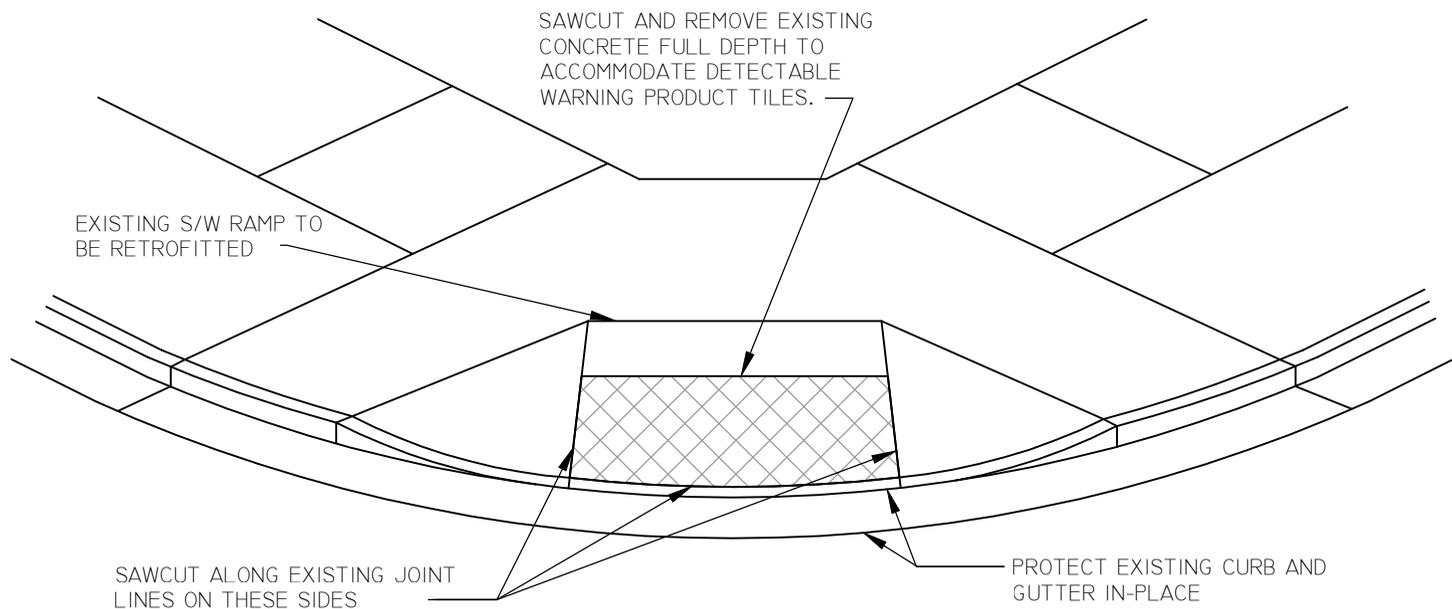


NOTES

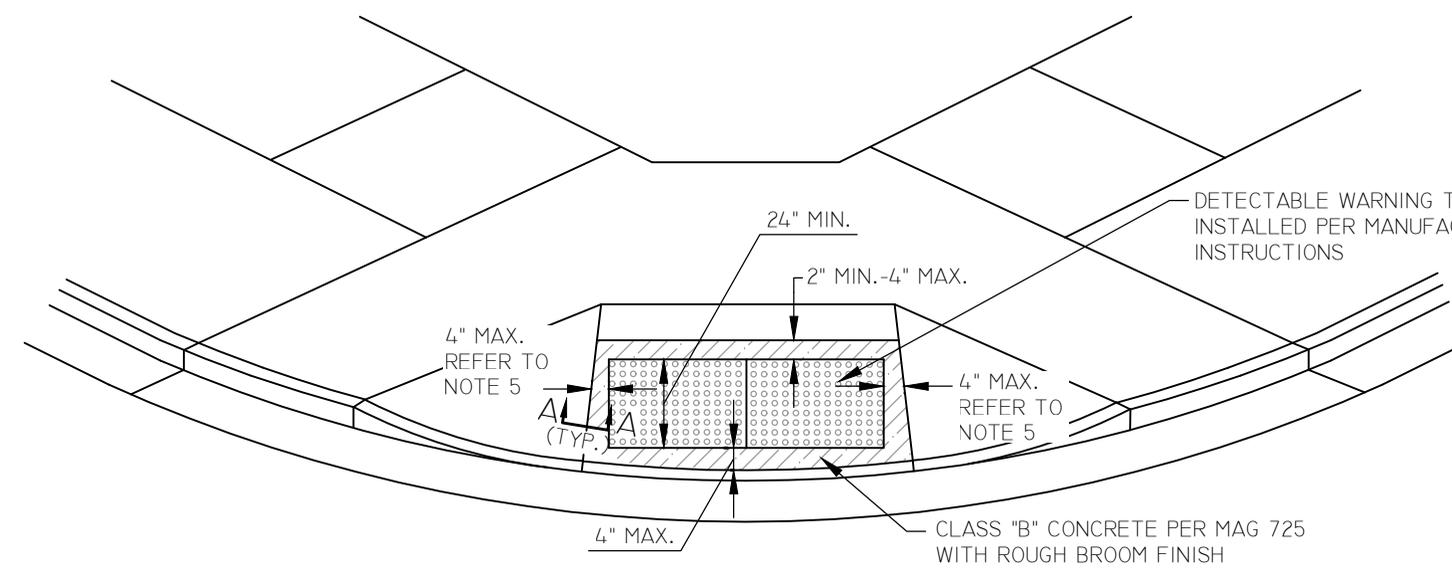
1. TYPE 'D' RAMP TO BE USED AT MID-BLOCK AND "T" INTERSECTIONS.
2. CLASS 'B' CONCRETE PER MAG SECTION 725.
3. MAXIMUM DISTANCE BETWEEN PEDESTRIAN PUSH BUTTON FACE & ACCESSIBLE APPROACH SHALL BE 10 INCHES.
4. STANDARD DETECTABLE WARNING COLOR SHALL BE RED (FEDERAL COLOR NO. 20109 OR EQUIVALENT). STANDARD COLOR SHALL BE USED UNLESS OTHERWISE DIRECTED.
5. ONLY THOSE PRODUCTS LISTED ON THE CITY OF MESA'S APPROVED LIST OF DETECTABLE WARNING PRODUCTS (TRUNCATED DOMES) MAY BE USED. NO SUBSTITUTIONS ARE PERMITTED. THE APPROVED LIST IS AVAILABLE ON THE ENGINEERING WEB SITE AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS-DEVELOPMENT/ENGINEERING/APPROVED-PRODUCTS-EQUIPMENT-CONTRACTORS](https://www.mesaz.gov/business-development/engineering/approved-products-equipment-contractors)



NOT TO SCALE



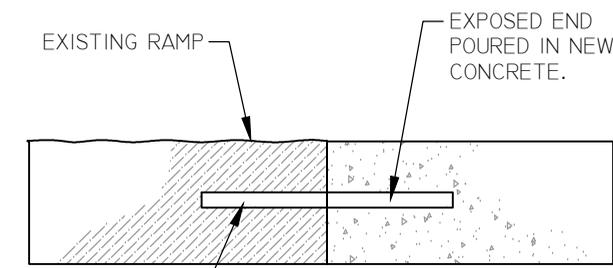
DEMOLITION PLAN



INSTALLATION PLAN

NOTES

1. THIS DETAIL SHALL BE USED ONLY TO ADD DETECTABLE WARNING SURFACES TO EXISTING RAMPS THAT OTHERWISE ALREADY COMPLY WITH ADA REQUIREMENTS. IF THE RAMP DOES NOT OTHERWISE COMPLY WITH ADA, MODIFICATION OR FULL REPLACEMENT PER OTHER SIDEWALK RAMP DETAILS IN MESA'S STD DETAILS BOOK WILL BE REQUIRED.
2. THE NEW CONCRETE AND THE SURFACE OF THE DETECTABLE WARNING TILES ARE TO BE INSTALLED FLUSH WITH THE SURROUNDING CONCRETE ON ALL SIDES & EDGES SO AS TO CREATE NO TRIP HAZARDS. ONLY THE DOMES THEMSELVES SHALL PROTRUDE ABOVE SAID PLANE.
3. FOR A LIST OF THE TRUNCATED DOME PRODUCTS THAT ARE ACCEPTABLE FOR USE WITH THIS DETAIL, REFER TO THE CITY OF MESA'S APPROVED PRODUCT LIST AVAILABLE AT [HTTPS://WWW.MESAAZ.GOV/BUSINESS-DEVELOPMENT/ENGINEERING/APPROVED-PRODUCTS-EQUIPMENT-CONTRACTORS](https://www.mesaaz.gov/business-development/engineering/approved-products-equipment-contractors)
4. COLOR OF TILES SHALL BE COLONIAL RED (FEDERAL COLOR NO. 20109 OR EQUIVALENT) UNLESS OTHERWISE DIRECTED BY THE CITY.
5. CENTER TRUNCATED DOME TILES WITHIN LANDING AREA LEFT-TO-RIGHT.



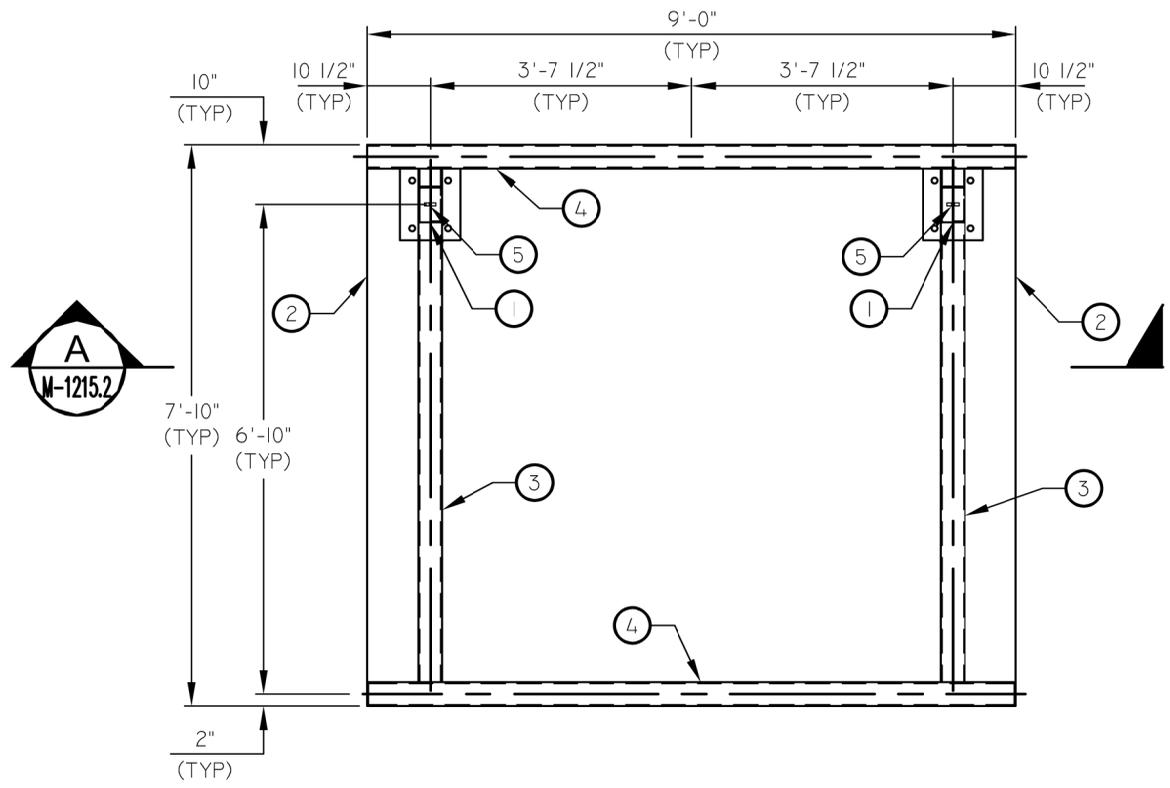
DRILL AND EPOXY GROUT IN-PLACE #4 REBAR AT MID-SLAB DEPTH AT 2" ON-CENTER, OVER THE ENTIRE PERIMETER WHERE NEW AND EXISTING CONCRETE MEET. MINIMUM EMBED IN BOTH SLABS SHALL BE 3-INCHES.

SECTION A-A

NOT TO SCALE

NOTES

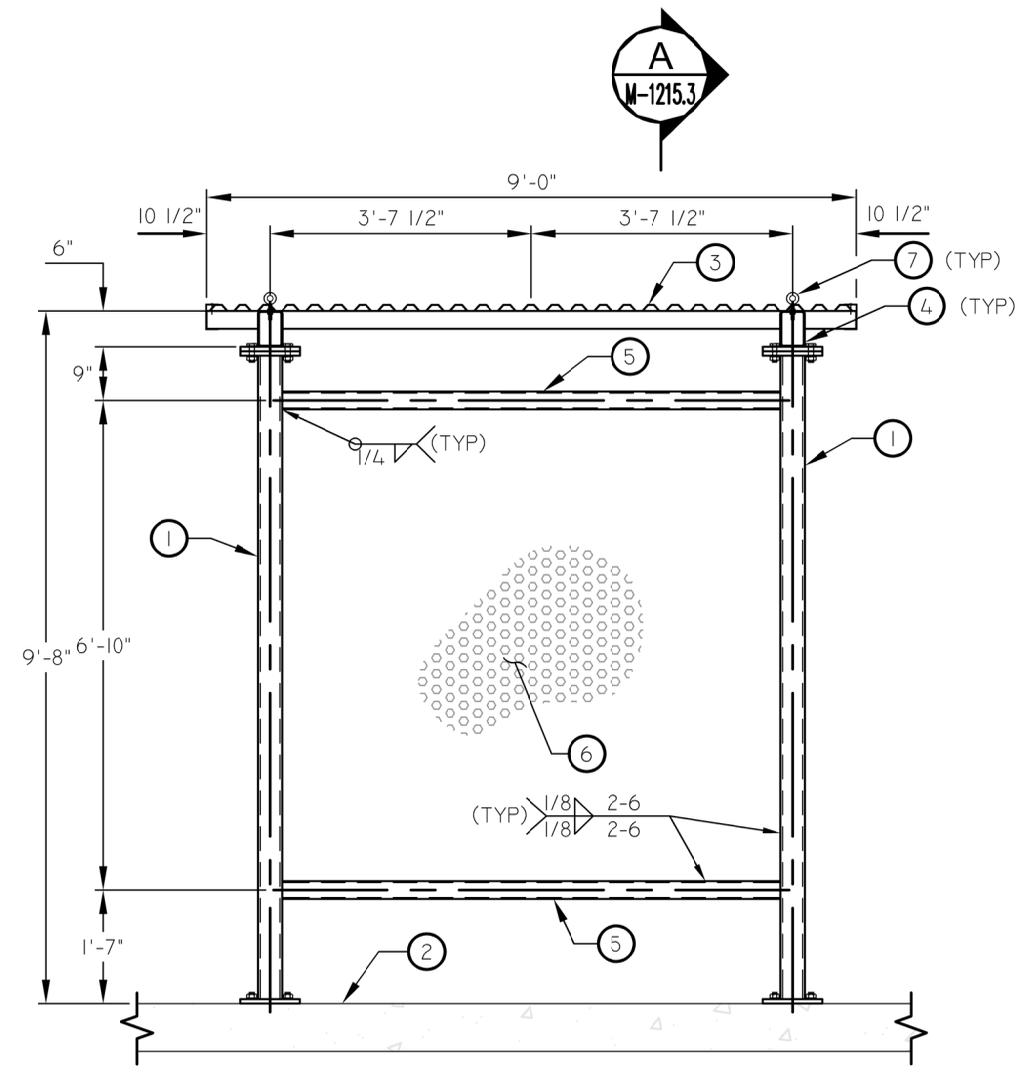
- ① HSS6x4x1/4"
- ② CORRUGATED METAL ROOF
- ③ HSS6x4x1/4"
- ④ HSS4x3x1/4"
- ⑤ 1/2" SCREW EYE BOLT



① SINGLE-BAY SHELTER PLAN
— NOT TO SCALE

NOTES

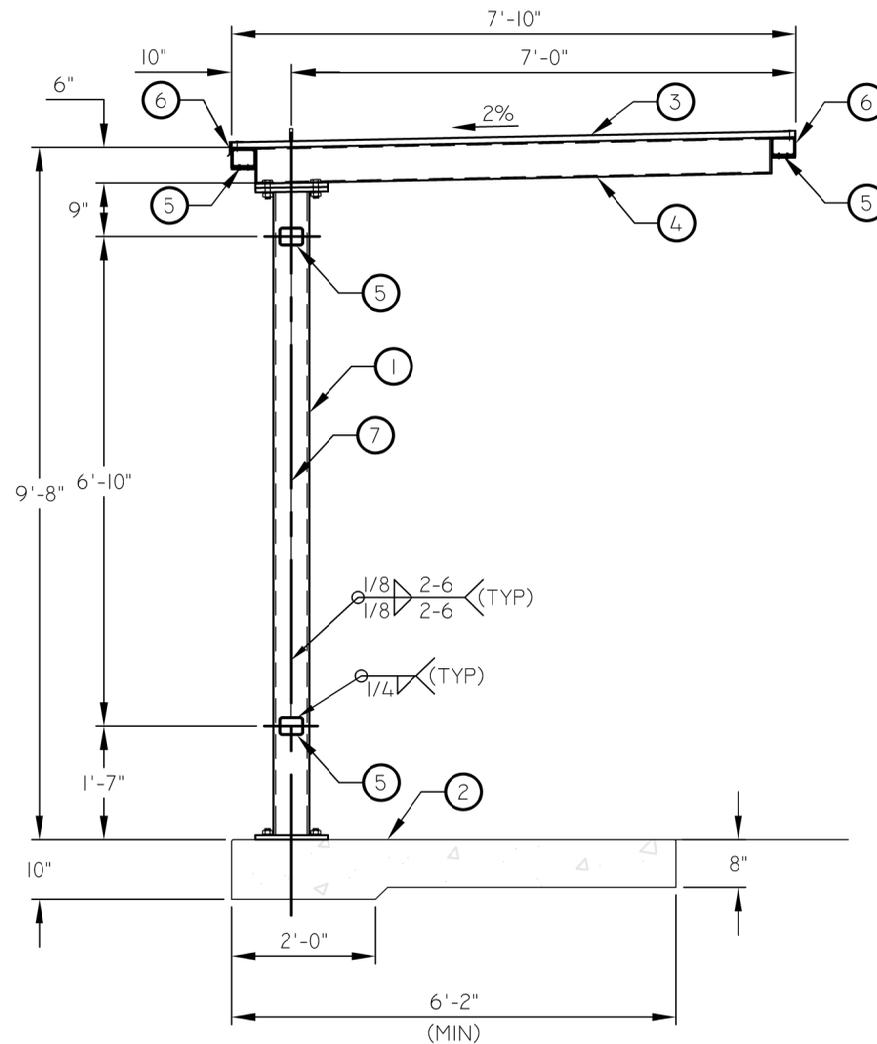
- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS
- ③ CORRUGATED METAL ROOF
- ④ HSS6X4X1/4"
- ⑤ HSS4X3X1/4"
- ⑥ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)
- ⑦ 1/2" SCREW EYE BOLT



A SINGLE-BAY SHELTER ELEVATION
M-1215.1 NOT TO SCALE

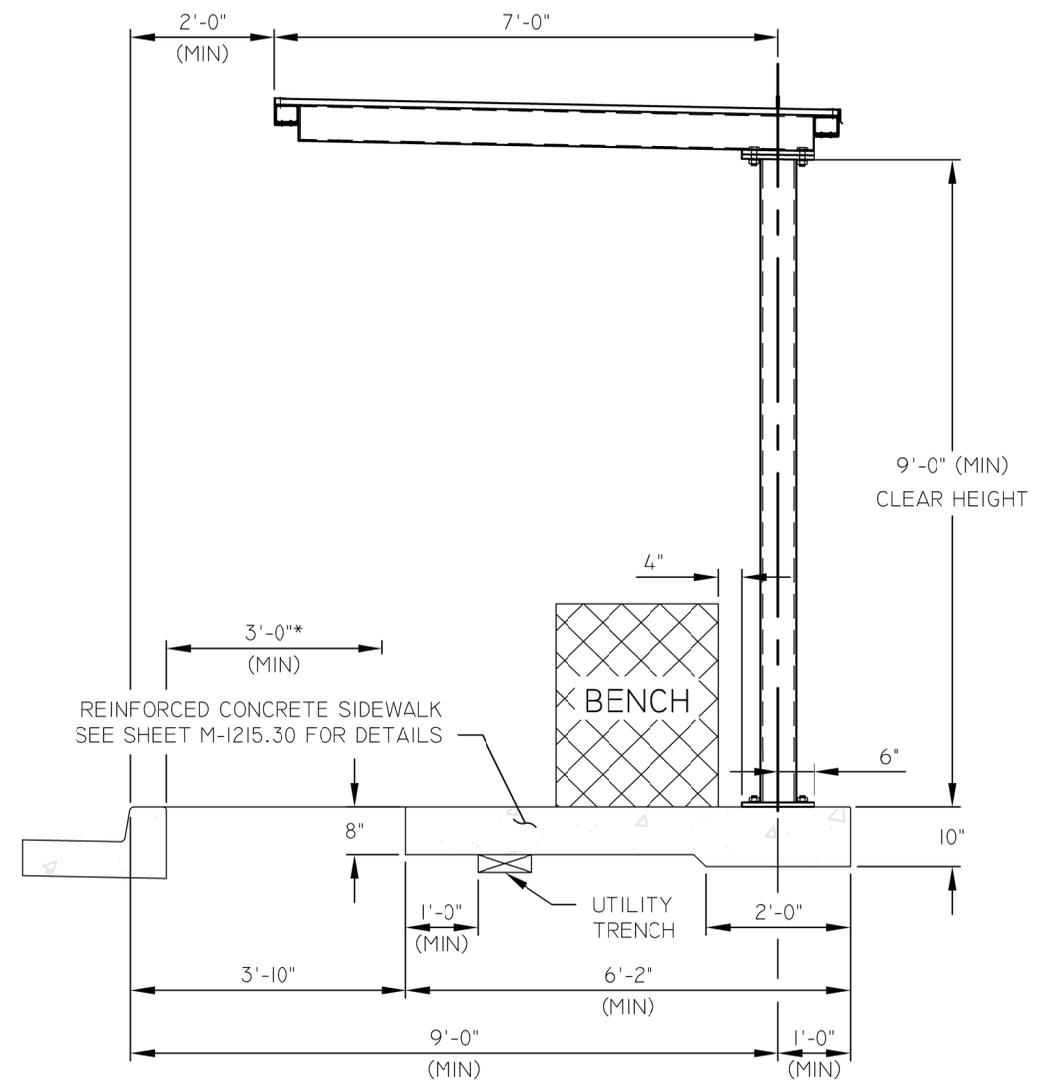
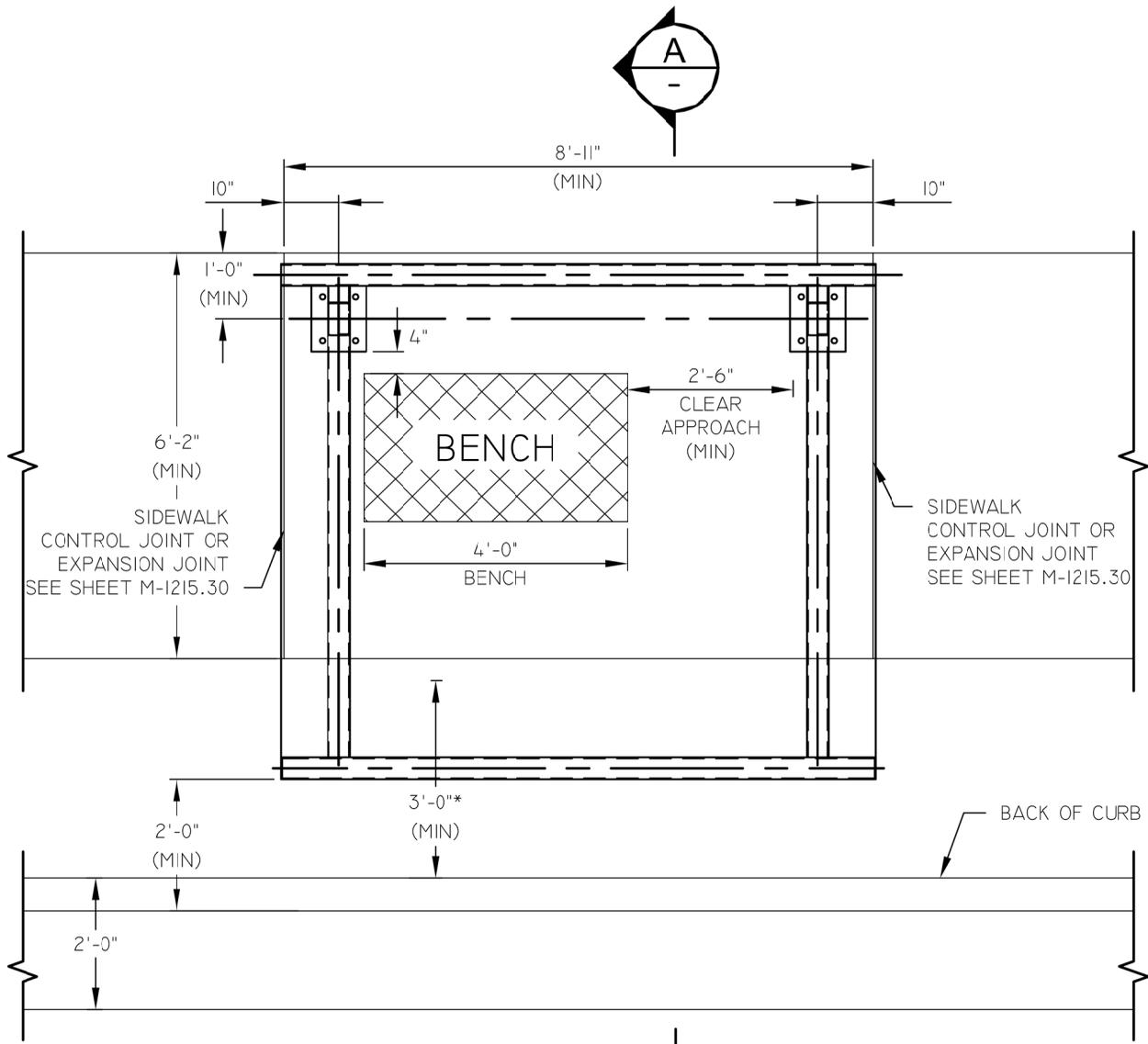
NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS AND M-1215.4 FOR LAYOUT
- ③ CORRUGATED METAL ROOF
- ④ HSS6X4X1/4"
- ⑤ HSS4X3X1/4"
- ⑥ FLASHING, SEE SHEET M-1215.28 FOR DETAILS
- ⑦ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)



A SINGLE-BAY SECTION
M-1215.2 NOT TO SCALE

*3'-0" MINIMUM CLEARANCE REQUIRED FROM EDGE OF SIDEWALK TO ANY OBSTRUCTION, INCLUDING BENCHES, TRASH CANS, LEAN BARS, OR BASE PLATES.

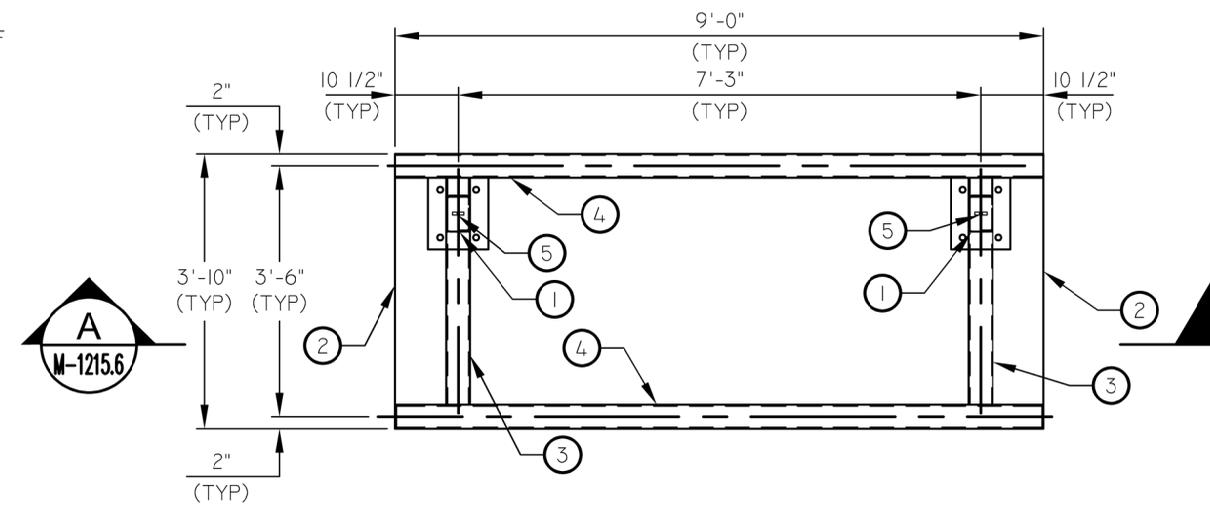


1 SINGLE-BAY SHELTER LOCATION PLAN
SCALE: 3/8" = 1'-0"

A A A SINGLE-BAY SHELTER SECTION
M-1215.12 M-1215.16 NOT TO SCALE

NOTES

- ① HSS6x4x1/4"
- ② CORRUGATED METAL ROOF
- ③ HSS6x4x1/4"
- ④ HSS4x3x1/4"
- ⑤ 1/2" SCREW EYE BOLT



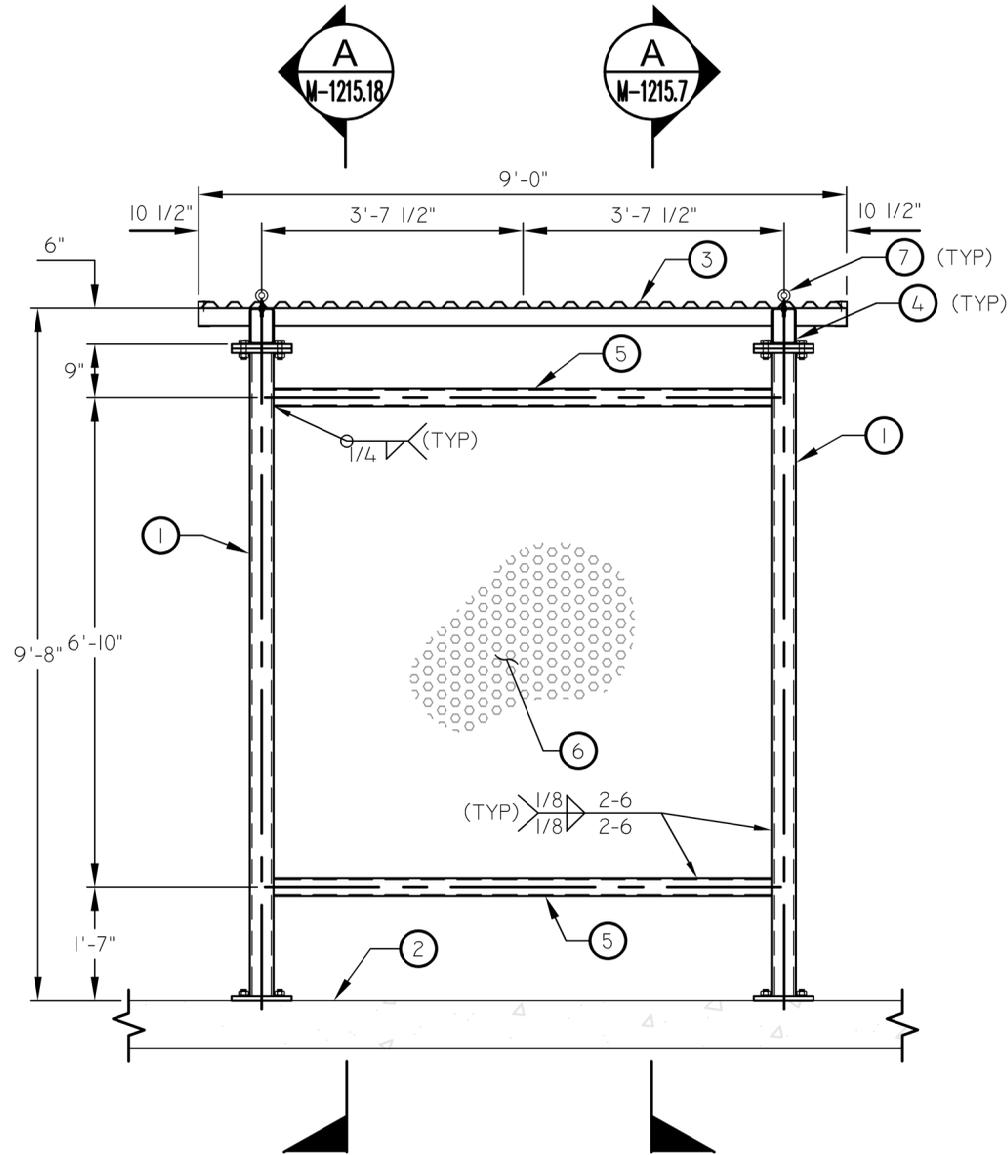
① NARROW SINGLE-BAY SHELTER PLAN
 - NOT TO SCALE

NARROW SHELTER PLAN

DETAIL NO.	OLD
M-1215.5	---

NOTES

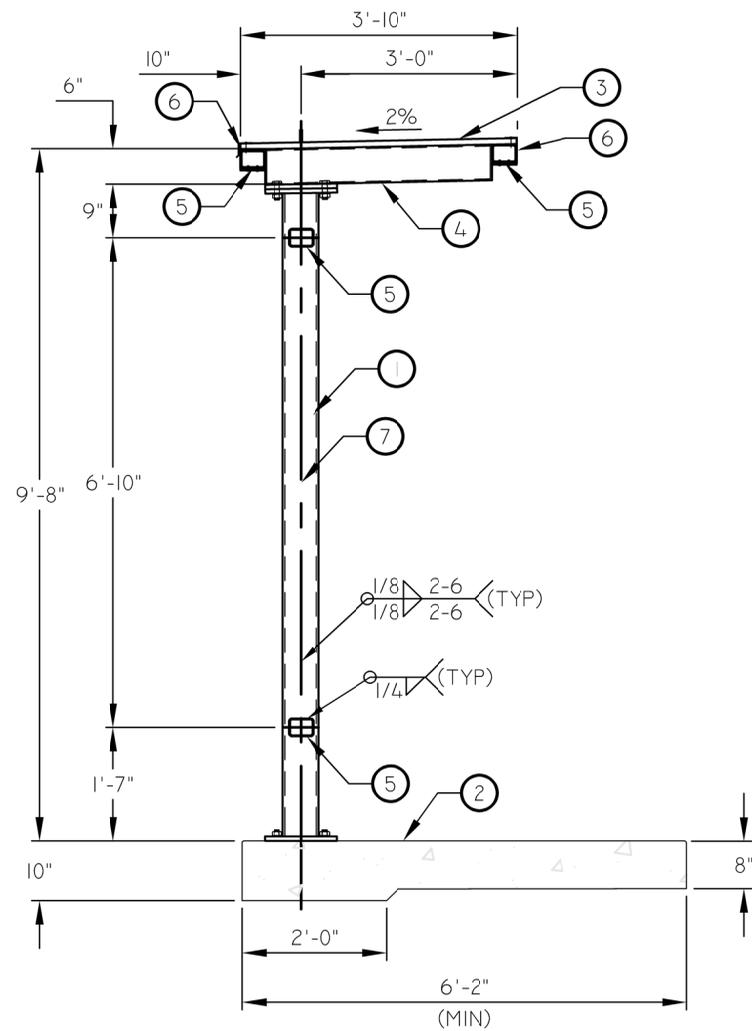
- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS
- ③ CORRUGATED METAL ROOF
- ④ HSS6X4X1/4"
- ⑤ HSS4X3X1/4"
- ⑥ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)
- ⑦ 1/2" SCREW EYE BOLT



A NARROW SINGLE-BAY SHELTER ELEVATION
M-1215.5 NOT TO SCALE

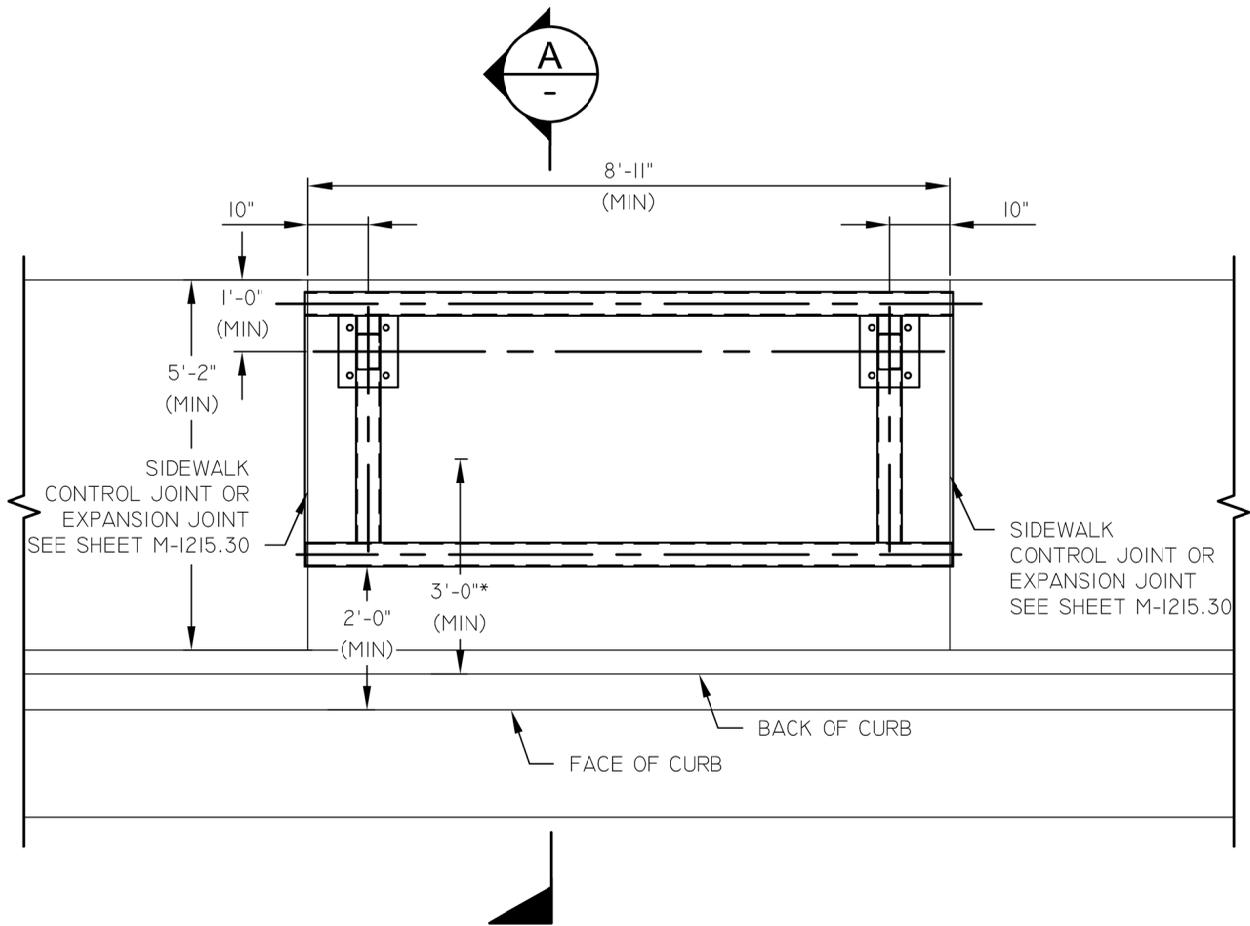
NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS AND M-1215.8 FOR LAYOUT
- ③ CORRUGATED METAL ROOF
- ④ HSS6x4x1/4"
- ⑤ HSS4x3x1/4"
- ⑥ FLASHING, SEE SHEET M-1215.8 FOR DETAILS
- ⑦ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)

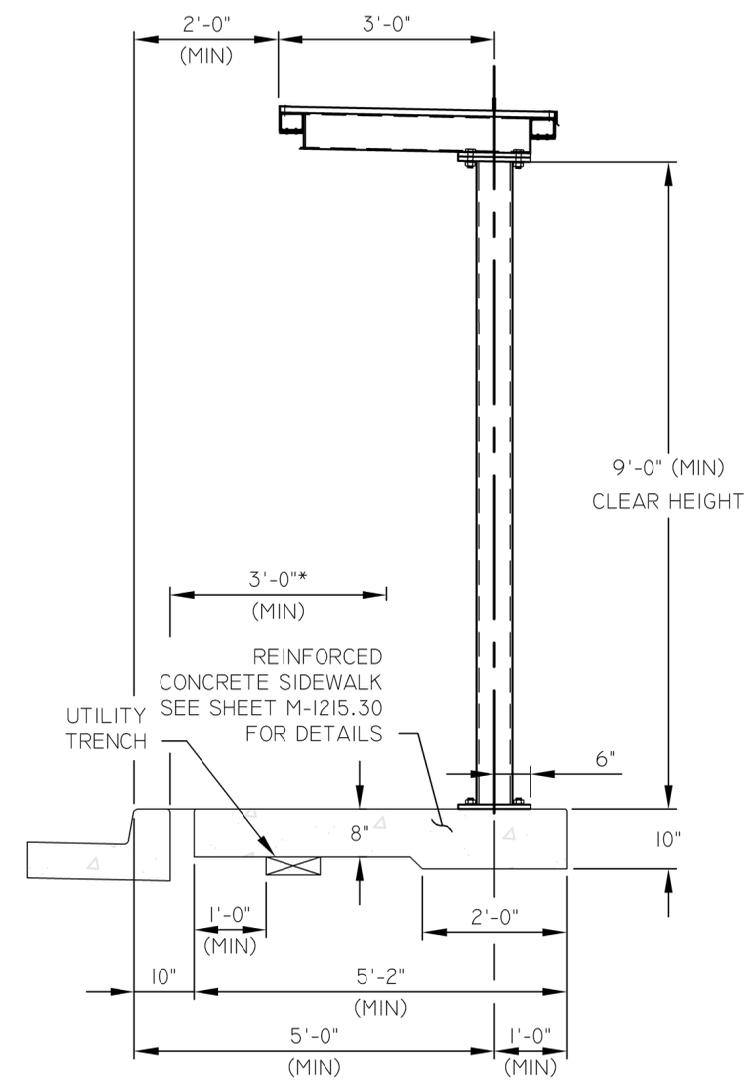


A NARROW SINGLE-BAY SECTION
 N-1215.6 NOT TO SCALE

*3'-0" MINIMUM CLEARANCE REQUIRED FROM EDGE OF SIDEWALK TO ANY OBSTRUCTION, INCLUDING BENCHES, TRASH CANS, LEAN BARS, OR BASE PLATES.



1 NARROW SINGLE-BAY SHELTER LOCATION PLAN
NOT TO SCALE



A NARROW SINGLE-BAY SHELTER SECTION
NOT TO SCALE

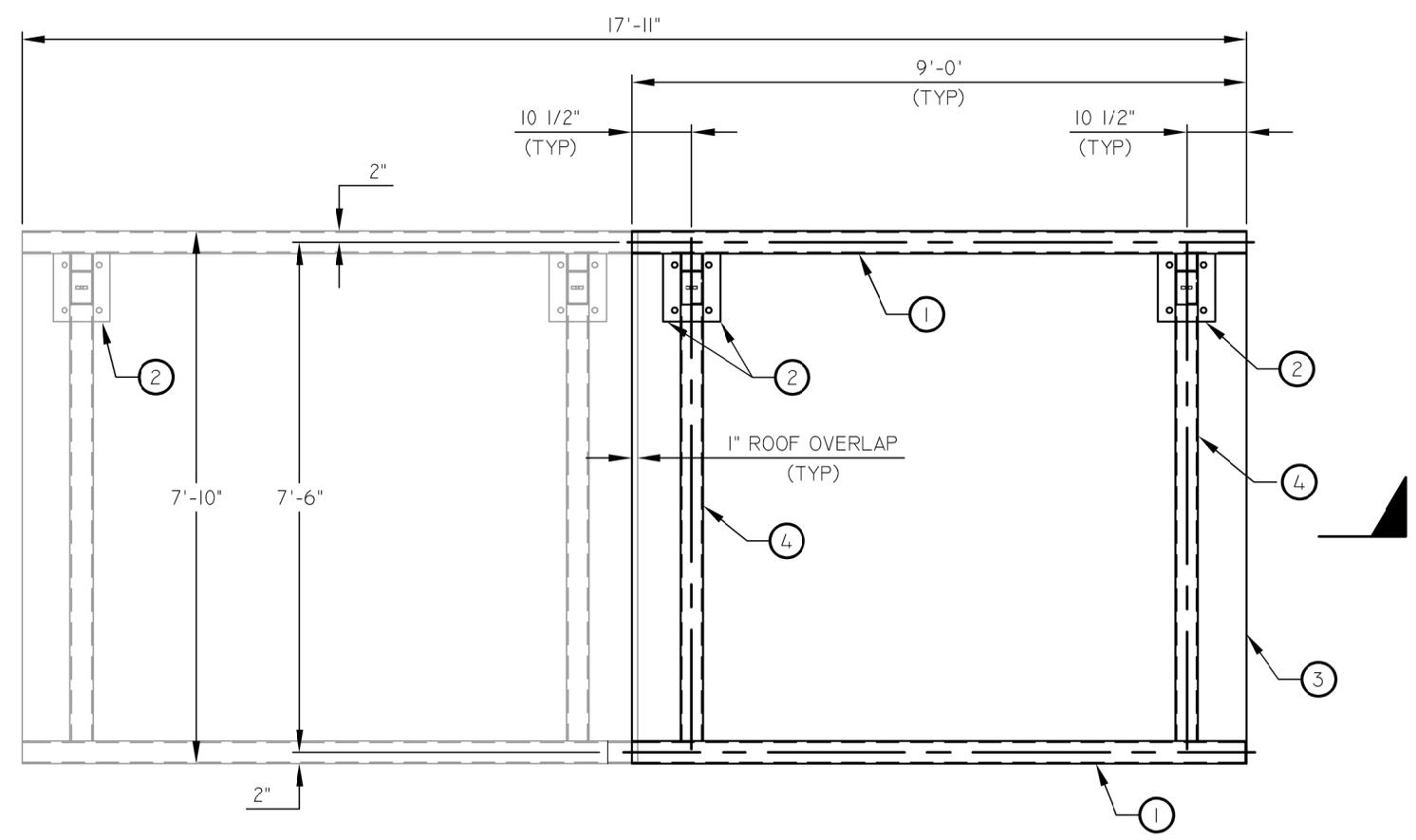
NARROW SHELTER LOCATION PLAN

OLD ---

DETAIL NO. M-1215.8

NOTES

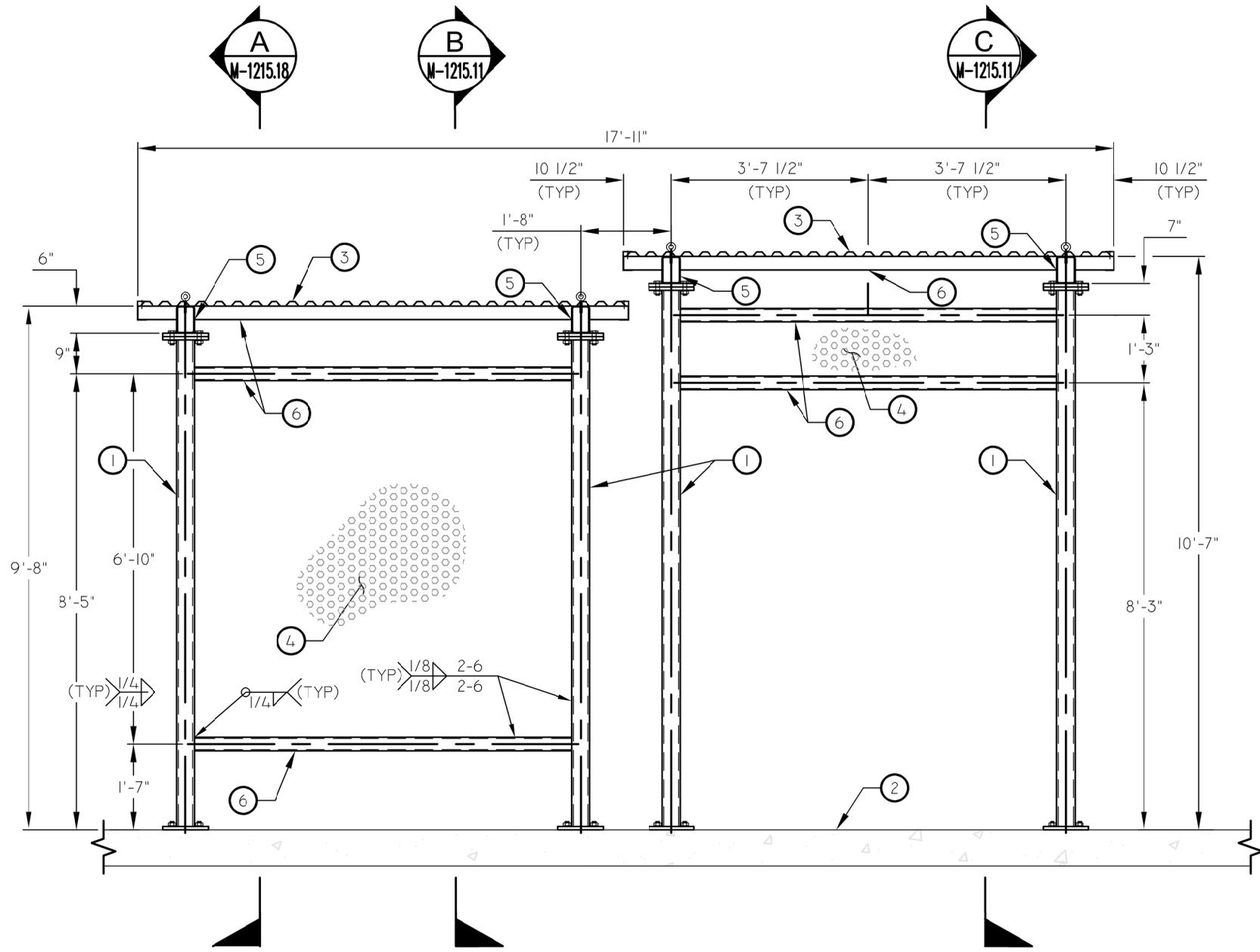
- ① HSS4x3x1/4"
- ② BASE PLATE,
SEE SHEET M-1215.29 FOR DETAILS
- ③ LIMITS OF CORRUGATED METAL ROOF (TYP)
- ④ HSS6x4x1/4"



① TWO-BAY SHELTER PLAN
- NOT TO SCALE

NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS AND M-1215.2 FOR LAYOUT
- ③ CORRUGATED METAL ROOF (TYP)
- ④ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)
- ⑤ HSS6x4x1/4"
- ⑥ HSS4x3x1/4"



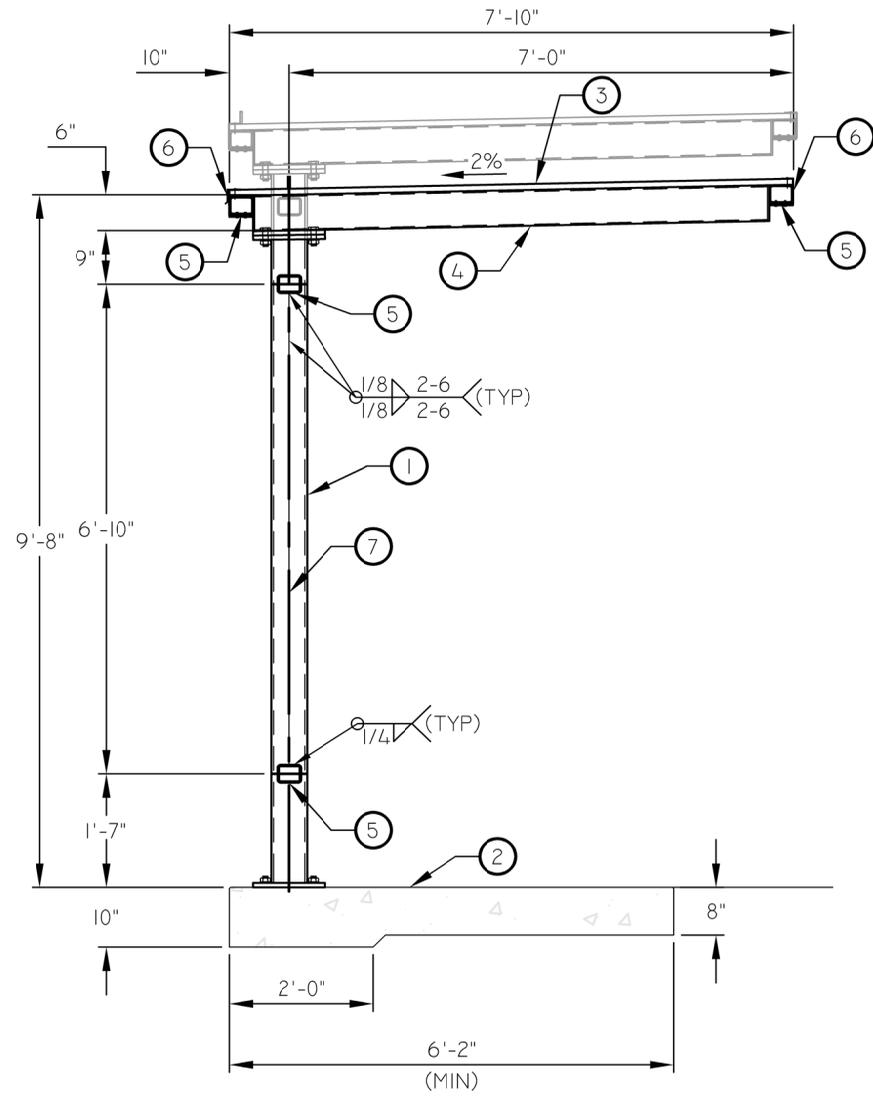
TWO-BAY SHELTER ELEVATION

A TWO-BAY SHELTER ELEVATION
M-1215.9 NOT TO SCALE

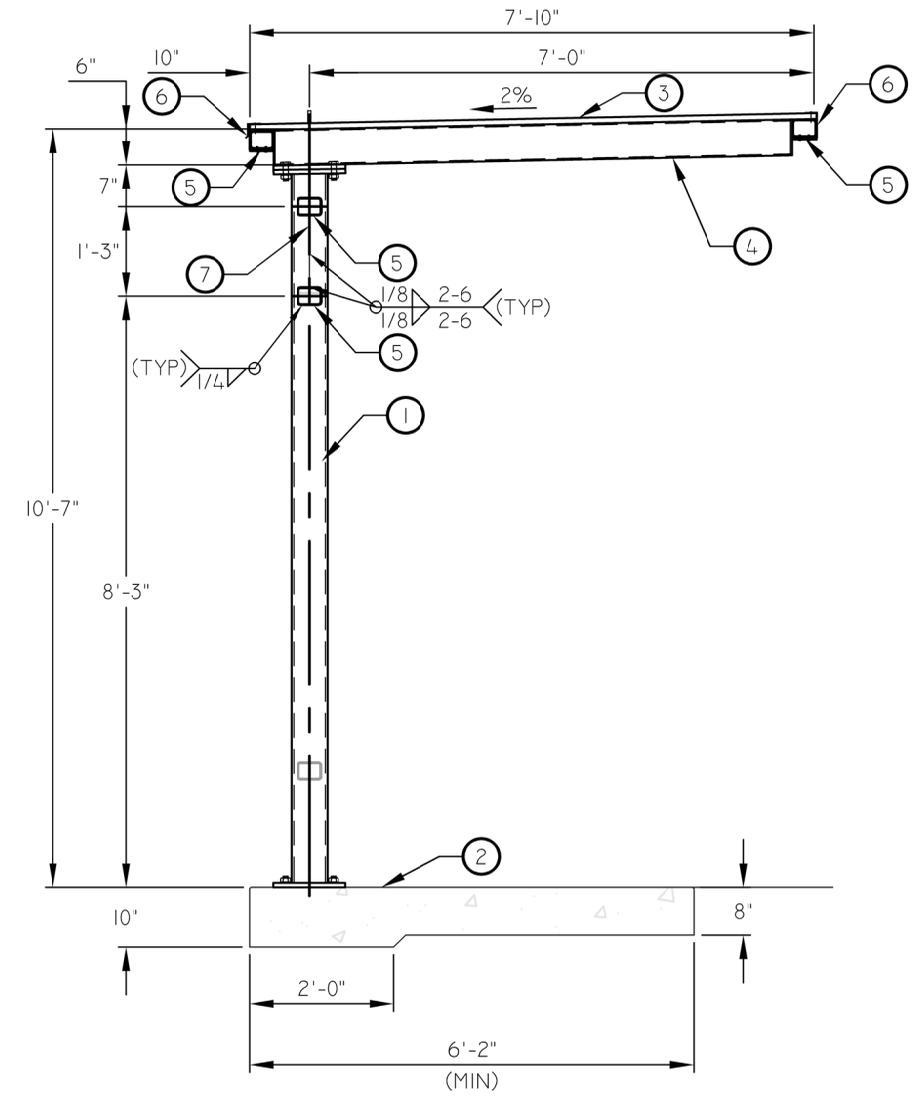
OLD	---
DETAIL NO.	M-1215.10

NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS
- ③ CORRUGATED METAL ROOF
- ④ HSS6X4X1/4"
- ⑤ HSS4X3X1/4"
- ⑥ FLASHING, SEE SHEET M-1215.28 FOR DETAILS
- ⑦ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)

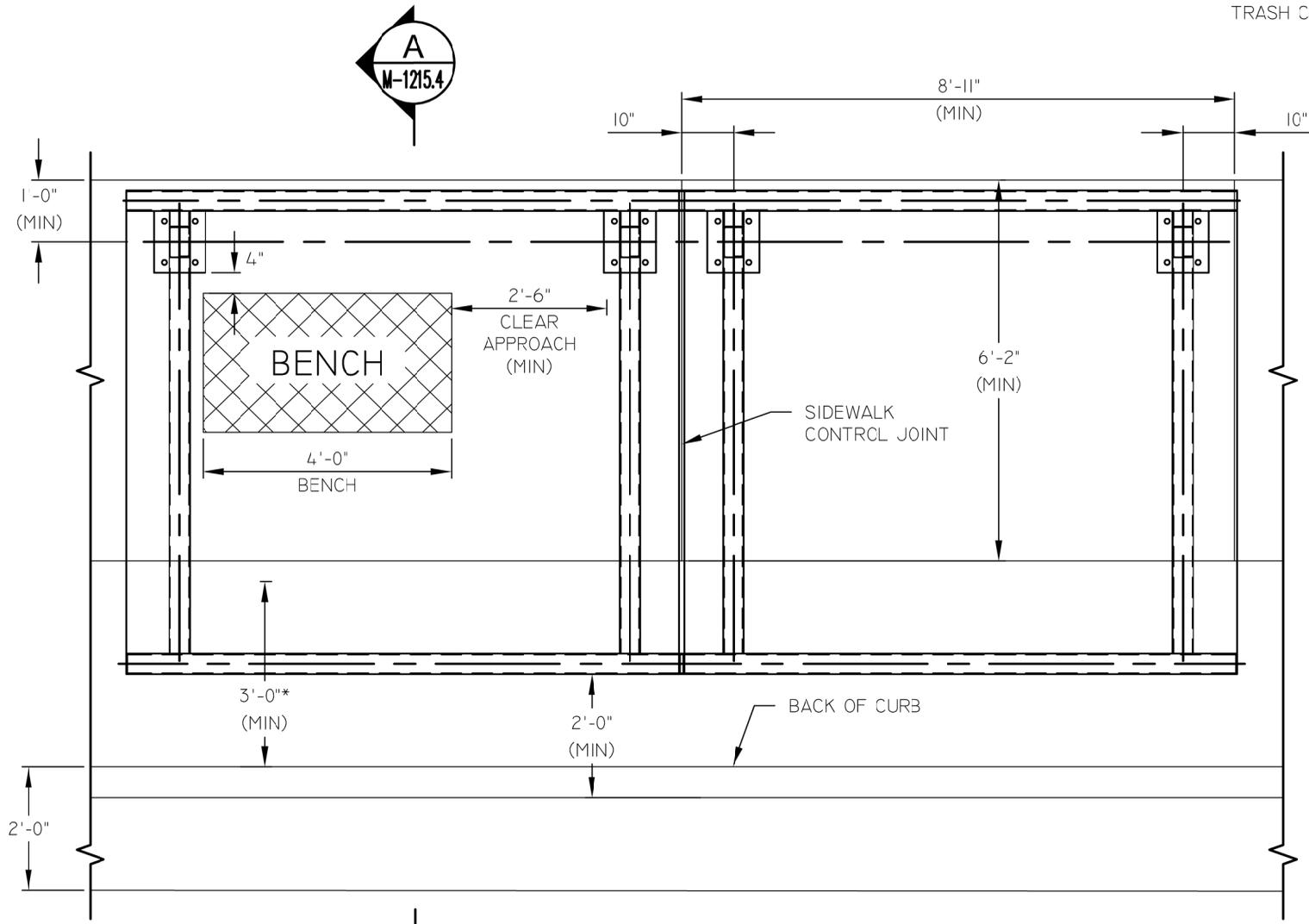


B TWO-BAY SHELTER SECTION
M-1215.10 NOT TO SCALE



C TWO-BAY SHELTER SECTION
M-1215.10 NOT TO SCALE

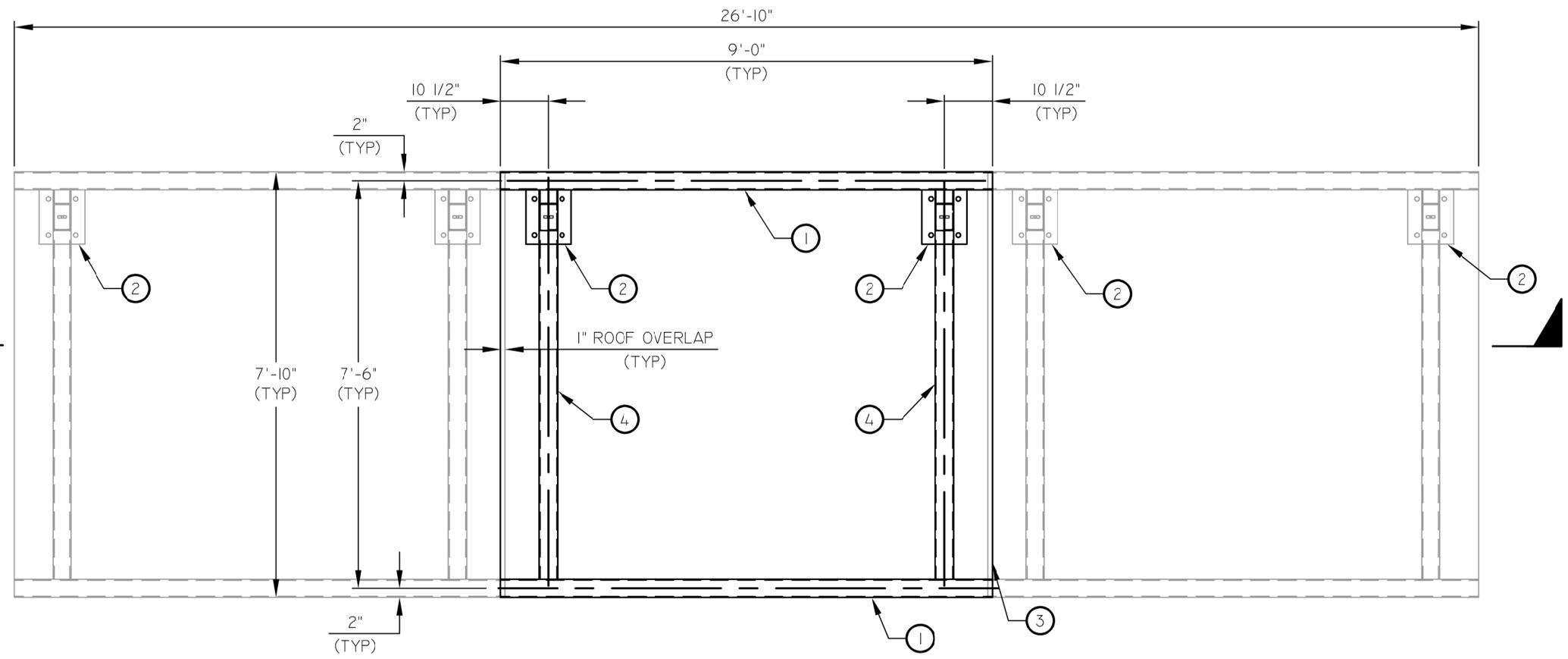
*3'-0" MINIMUM CLEARANCE REQUIRED FROM EDGE OF SIDEWALK TO ANY OBSTRUCTION, INCLUDING BENCHES, TRASH CANS, LEAN BARS, OR BASE PLATES.



1 TWO-BAY SHELTER LOCATION PLAN
 - NOT TO SCALE

NOTES

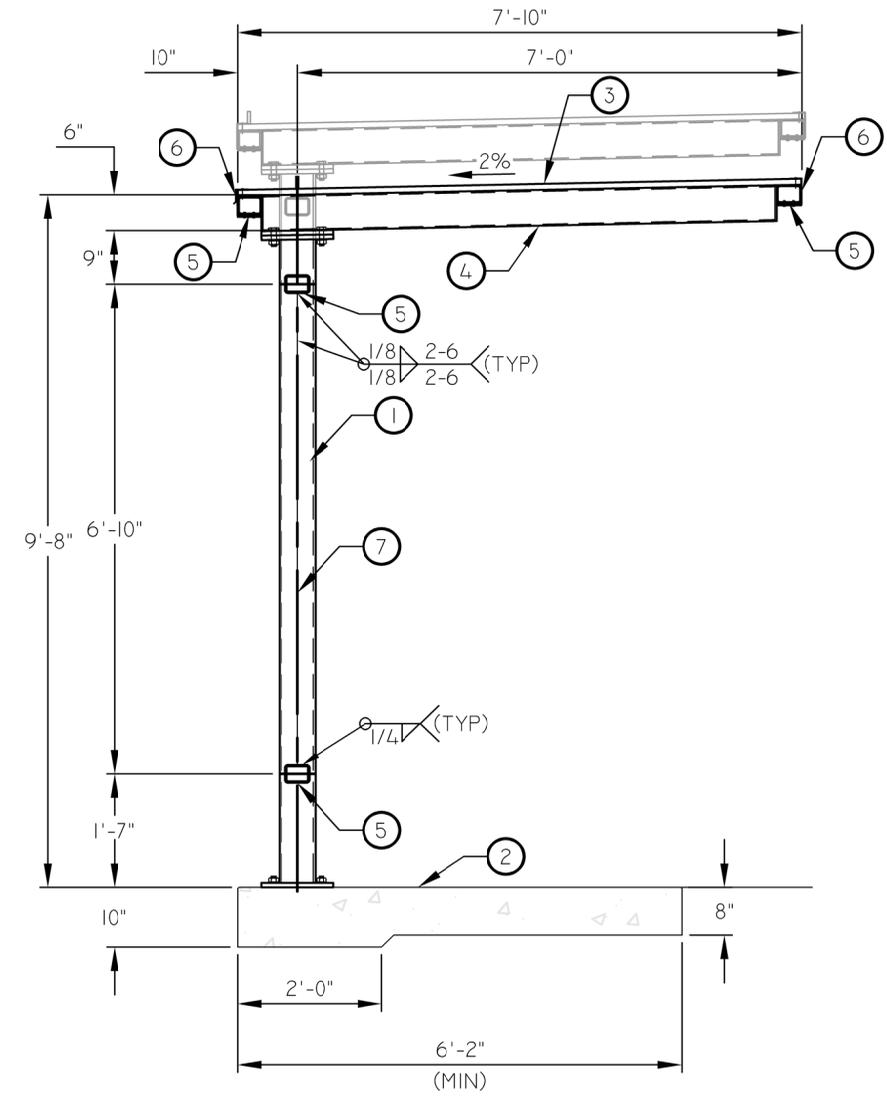
- ① HSS4x3x1/4"
- ② BASE PLATE, SEE SHEET M-1215.29 FOR DETAILS
- ③ LIMITS OF CORRUGATED METAL ROOF (TYP)
- ④ HSS6x4x1/4"



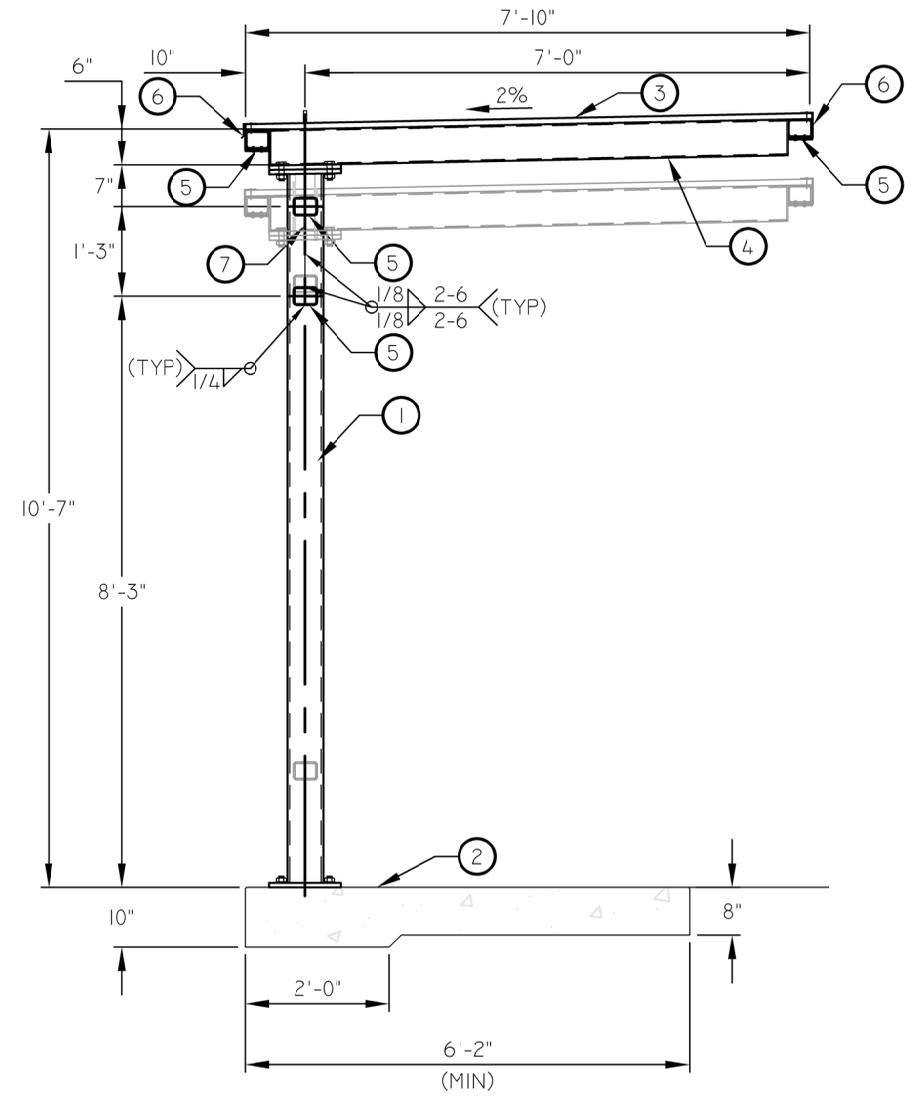
① THREE-BAY SHELTER PLAN
- NOT TO SCALE

NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS
- ③ CORRUGATED METAL ROOF
- ④ HSS6X4X1/4"
- ⑤ HSS4X3X1/4"
- ⑥ FLASHING, SEE SHEET M-1215.28 FOR DETAILS
- ⑦ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)



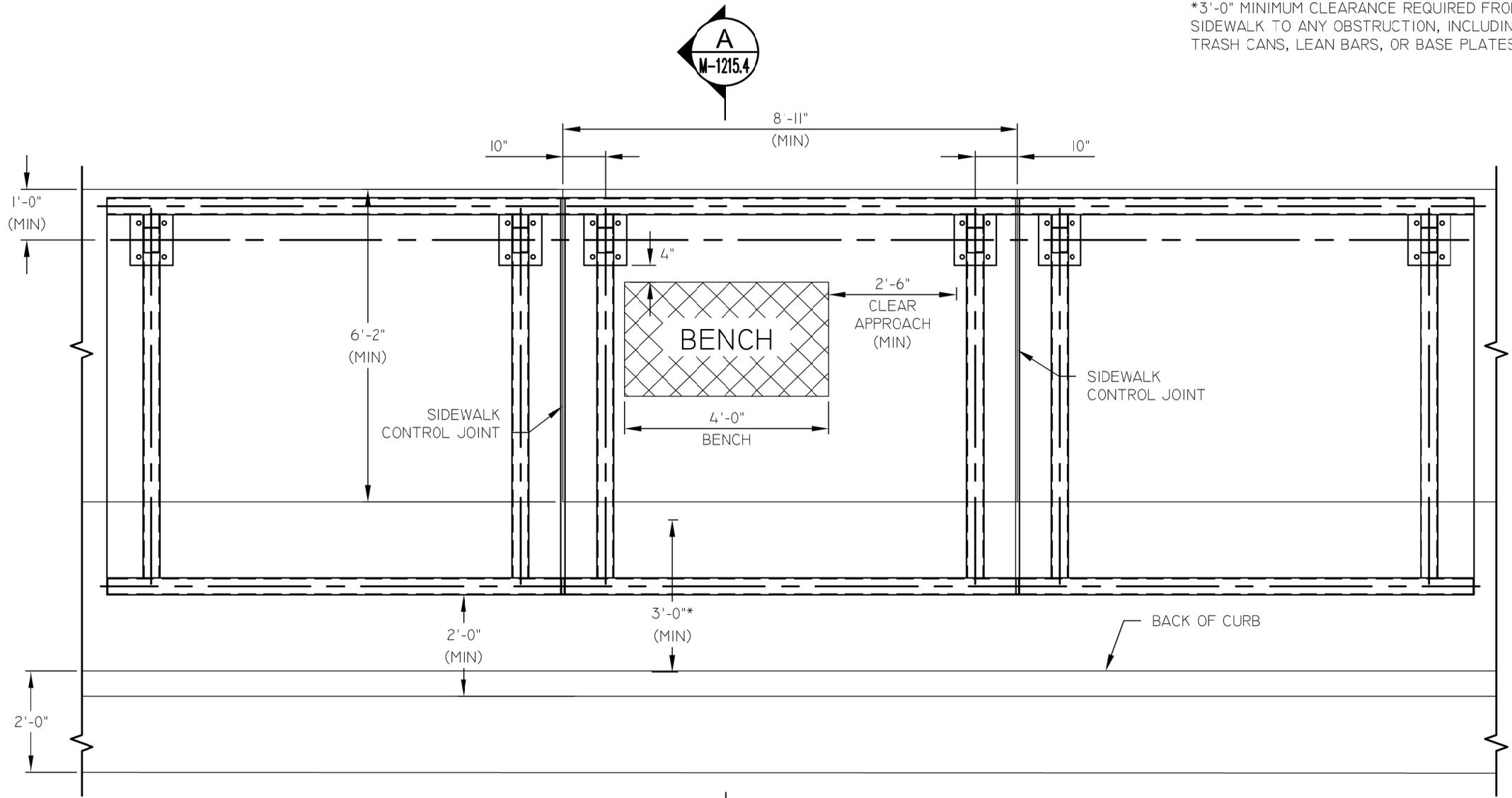
B THREE-BAY SHELTER SECTION
 M-1215.14 NOT TO SCALE



C THREE-BAY SHELTER SECTION
 M-1215.14 NOT TO SCALE

OLD	---
DETAIL NO.	M-1215.15

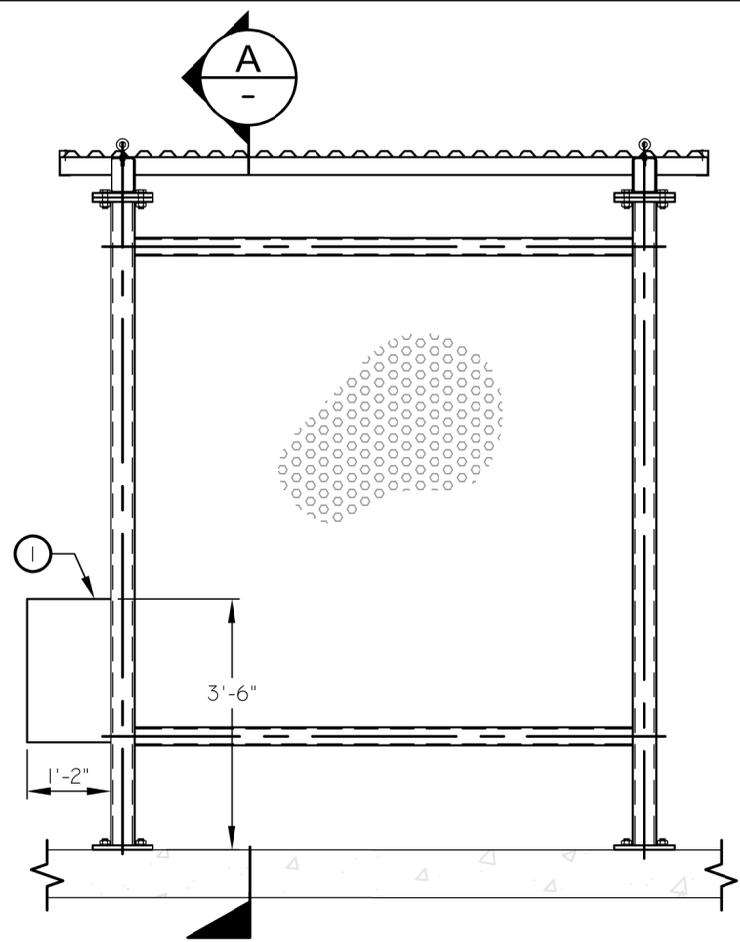
*3'-0" MINIMUM CLEARANCE REQUIRED FROM EDGE OF SIDEWALK TO ANY OBSTRUCTION, INCLUDING BENCHES, TRASH CANS, LEAN BARS, OR BASE PLATES.



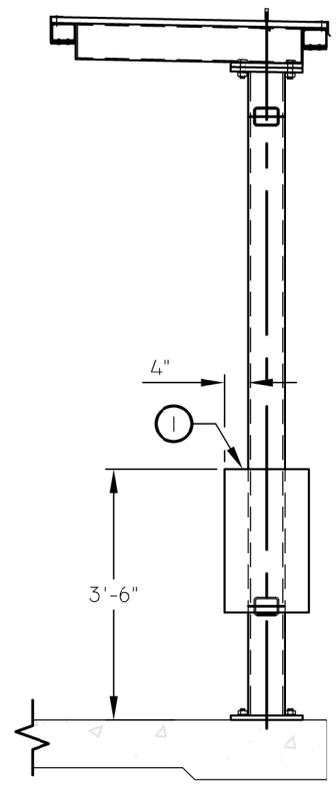
THREE-BAY SHELTER LOCATION PLAN

1 THREE-BAY SHELTER LOCATION PLAN
 - NOT TO SCALE

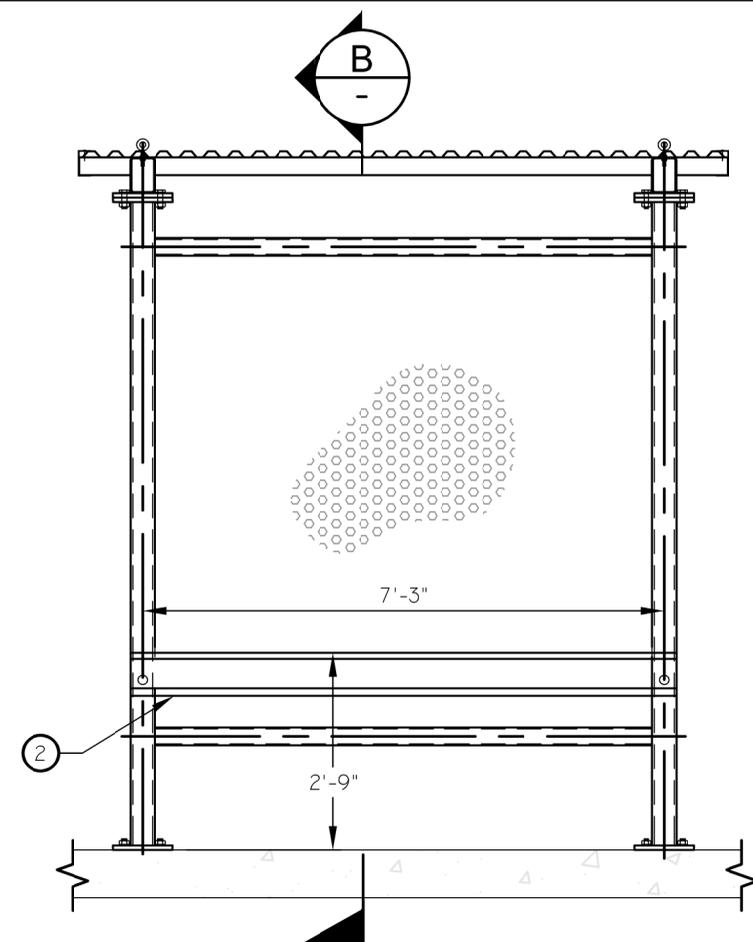
OLD	---
DETAIL NO.	M-1215.16



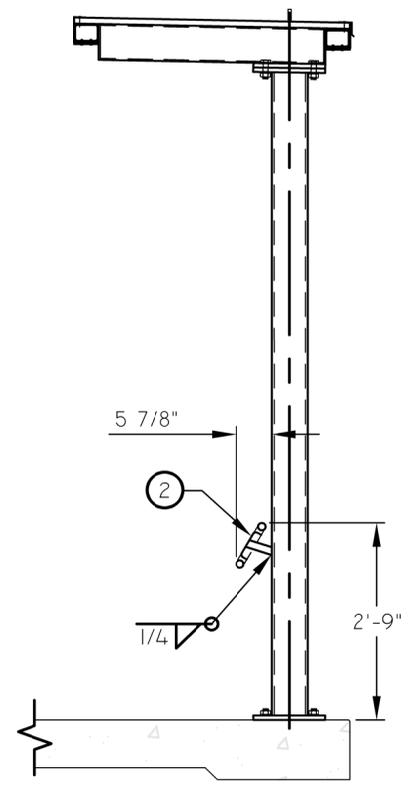
1 TRASH CAN ATTACHMENT
NOT TO SCALE



A TRASH CAN ATTACHMENT SECTION
NOT TO SCALE



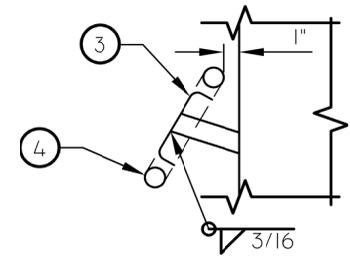
2 LEAN BAR ELEVATION
NOT TO SCALE



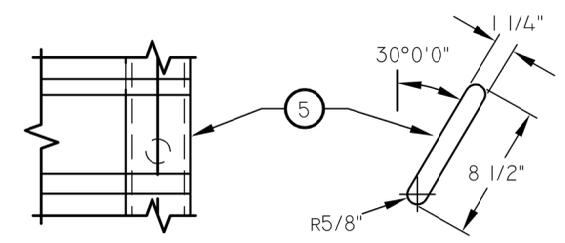
B LEAN BAR SECTION
NOT TO SCALE

NOTES

- ① 10 GALLON STEEL TRASH RECEPTACLE BY ARIZONA CORRECTIONAL INDUSTRIES OR APPROVED EQUAL, MOUNTED PER MANUFACTURER RECOMMENDATIONS
- ② LEAN BAR, CONSTRUCTED AND ATTACHED AS SHOWN
- ③ BENT 14 GA. SHEET STEEL BENT BAR
- ④ 1-1/4" SCH. 40 STEEL PIPE REST BAR
- ⑤ 14 GA. SHEET STEEL END CAP



3 LEAN BAR SECTION DETAIL
NOT TO SCALE



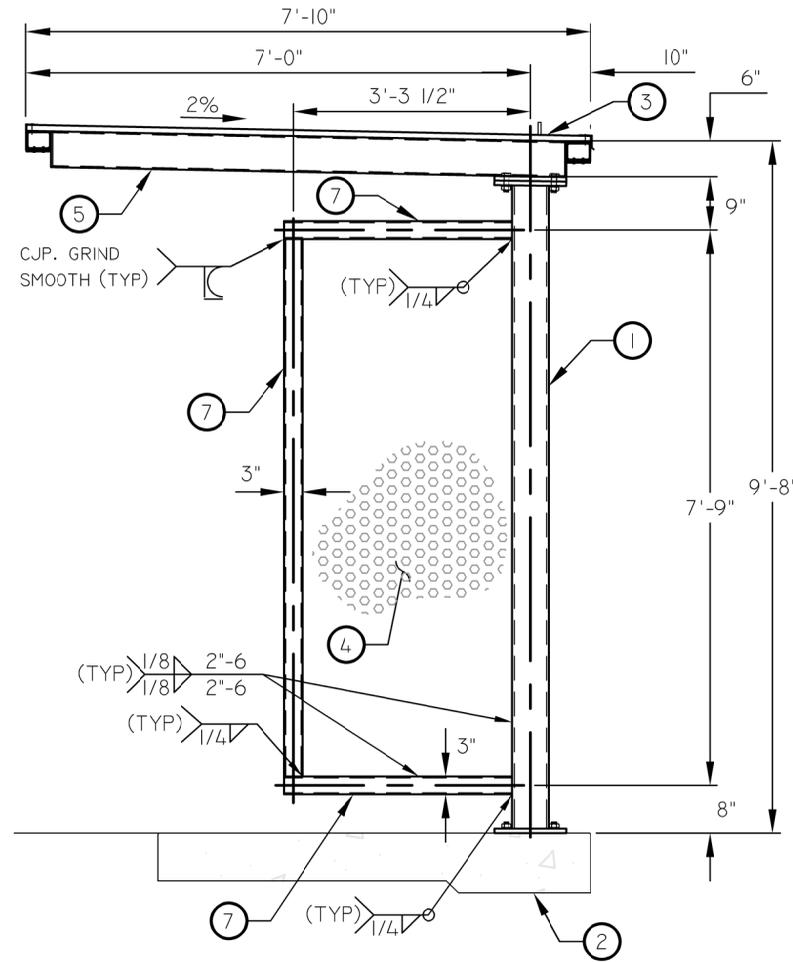
4 LEAN BAR END CAP DETAIL
NOT TO SCALE

OLD ---

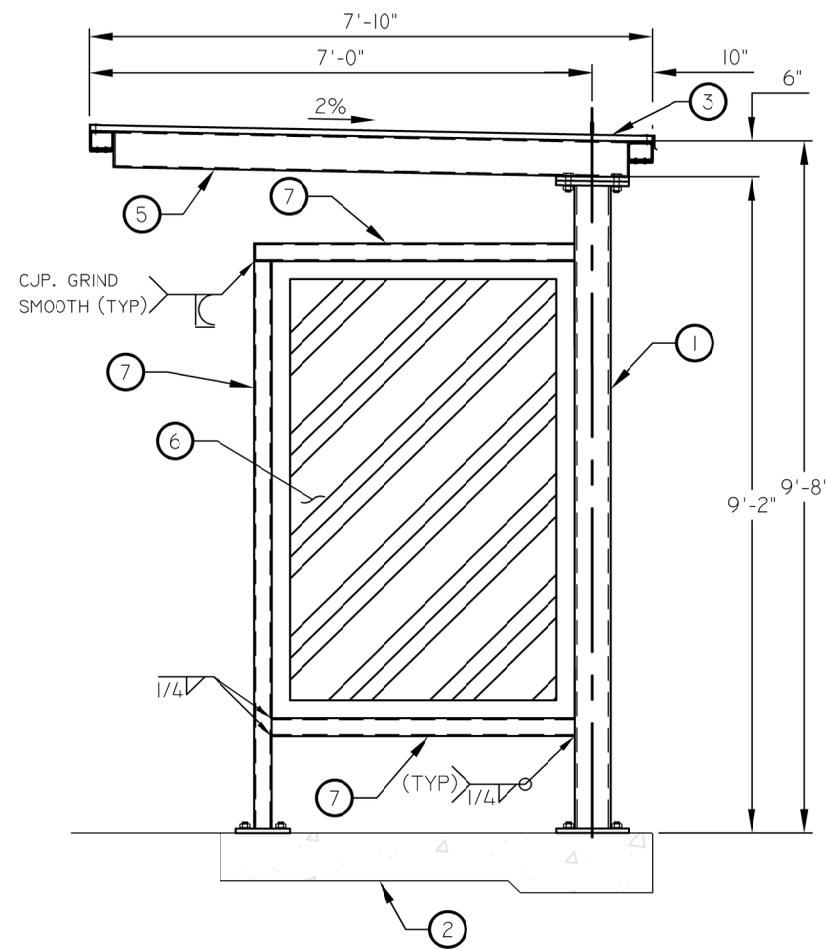
DETAIL NO. M-1215.17

NOTES

- ① HSS6x4x1/4"
- ② REINFORCED CONCRETE SIDEWALK, SEE SHEET M-1215.30 FOR DETAILS AND M-1215.16 FOR LAYOUT
- ③ CORRUGATED METAL ROOF
- ④ PERFORATED STEEL PANEL - 16 GA. - 50% SHADE - 3/8" HOLE WITH 1/2" STAGGER, PAINT TO MATCH FRAME (MCNICHOLS ITEM #1638121648 OR APPROVED EQUAL)
- ⑤ HSS6X4X1/4"
- ⑥ ADVERTISING PANEL, SEE SHEET M-45.02.3 FOR ATTACHMENT DETAILS
- ⑦ HSS4X3X1/4"



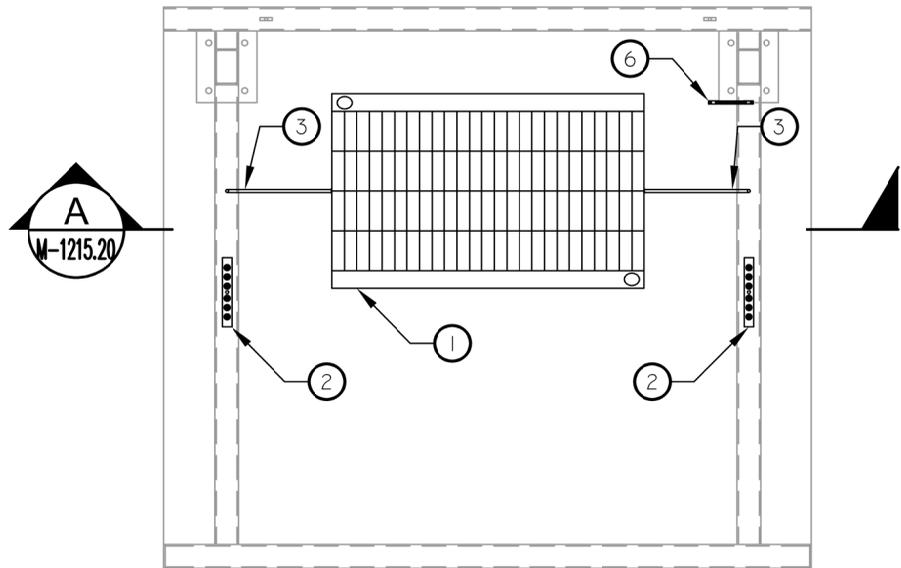
A A A SHADE PANEL OPTION SECTION
M-1215.6 M-1215.10 M-1215.14 NOT TO SCALE



A A A ADVERTISING PANEL OPTION SECTION
M-1215.6 M-1215.10 M-1215.14 SCALE: 3/8" = 1'-0"

NOTES

- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10' COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.

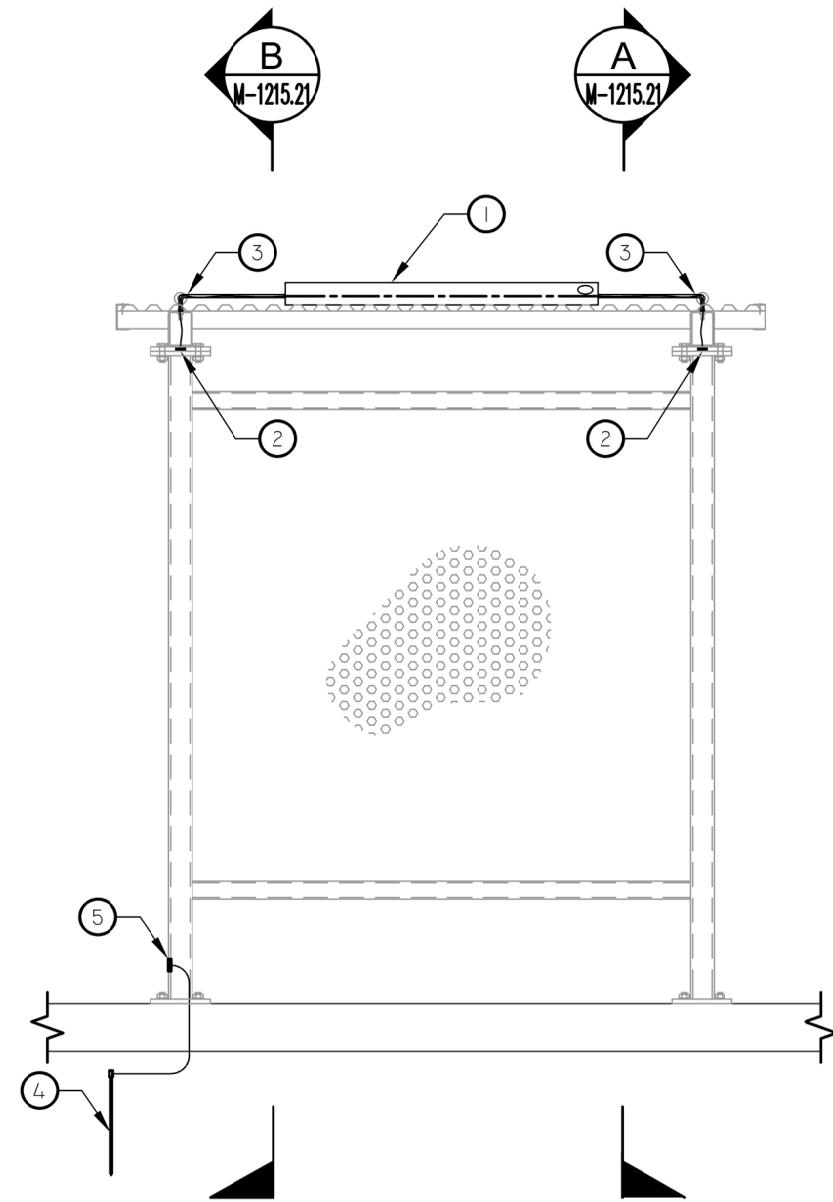


① SINGLE-BAY SHELTER SOLAR CONFIGURATION
- NOT TO SCALE

DETAIL NO.	M-1215.19
OLD	---

NOTES

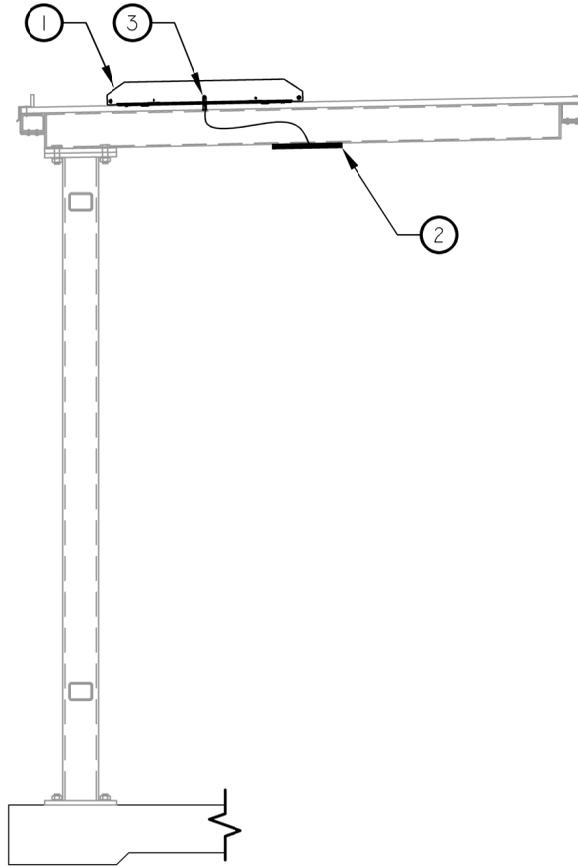
- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10' COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.



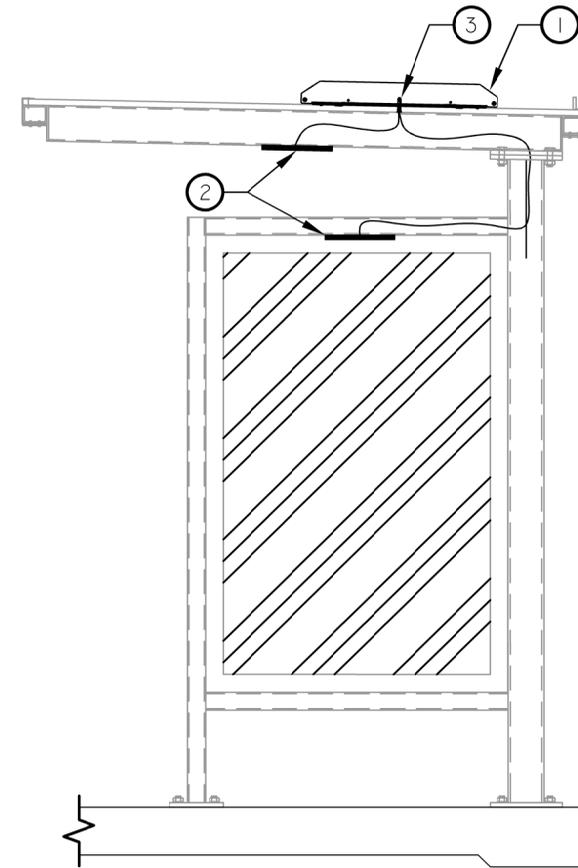
A SINGLE-BAY SINGLE-BAY SHELTER SOLAR ELEVATION
M-1215.19 NOT TO SCALE

NOTES

- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.



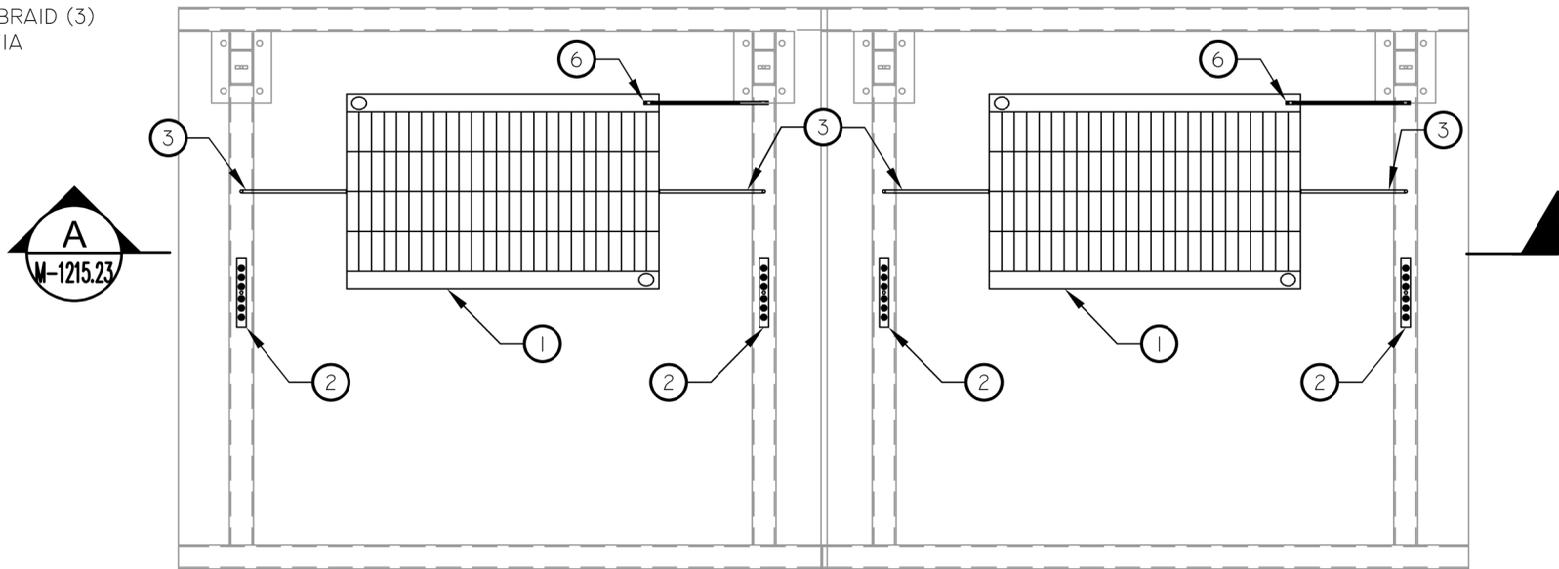
A SINGLE-BAY SOLAR SECTION
M-1215.20 NOT TO SCALE



B ADVERTISING PANEL OPTION SECTION
M-1215.20 NOT TO SCALE

NOTES

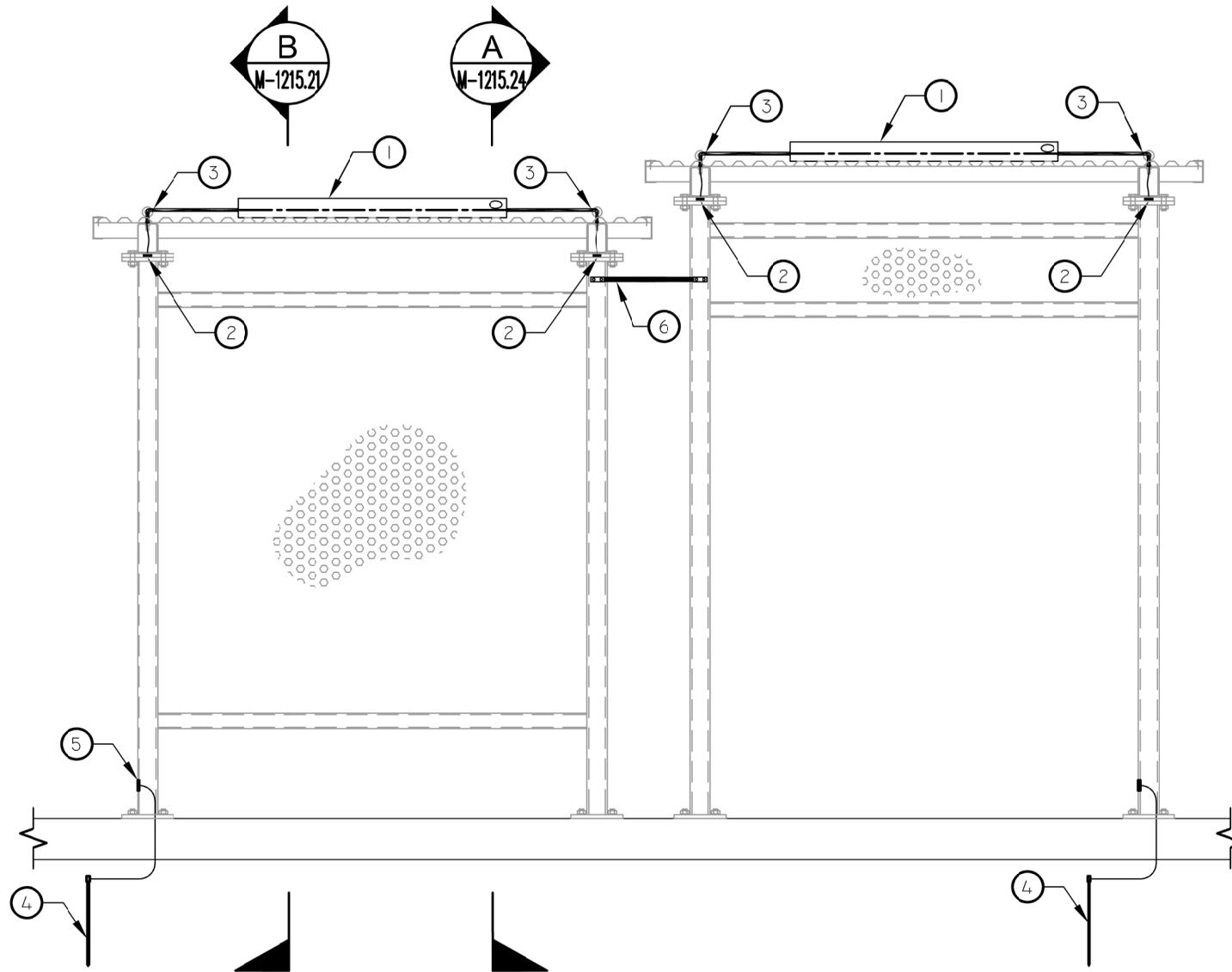
- ① RMS-170 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10' COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.



① TWO-BAY SHELTER SOLAR CONFIGURATION
SCALE: 3/8" = 1'-0"

NOTES

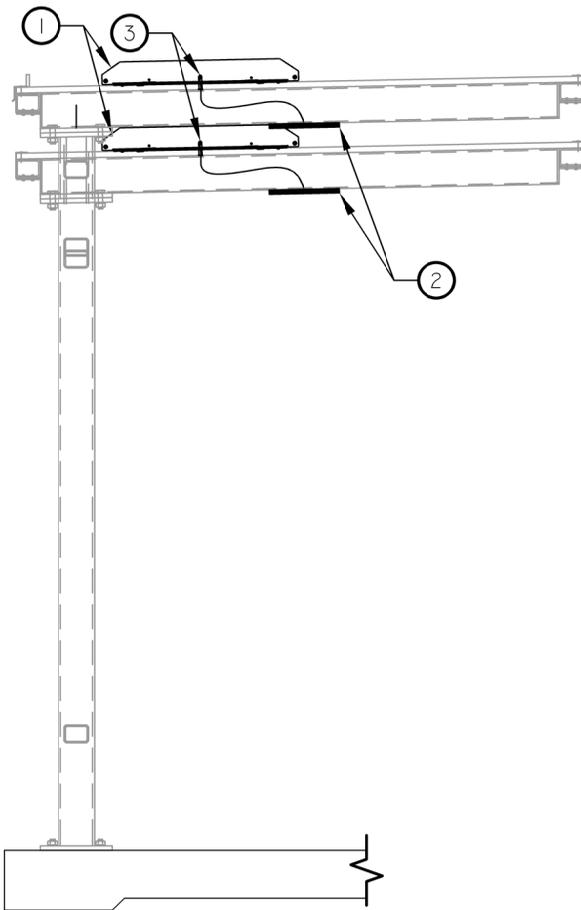
- ① RMS-170 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10" COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.



A TWO-BAY SHELTER SOLAR ELEVATION
M-1215.22 NOT TO SCALE

NOTES

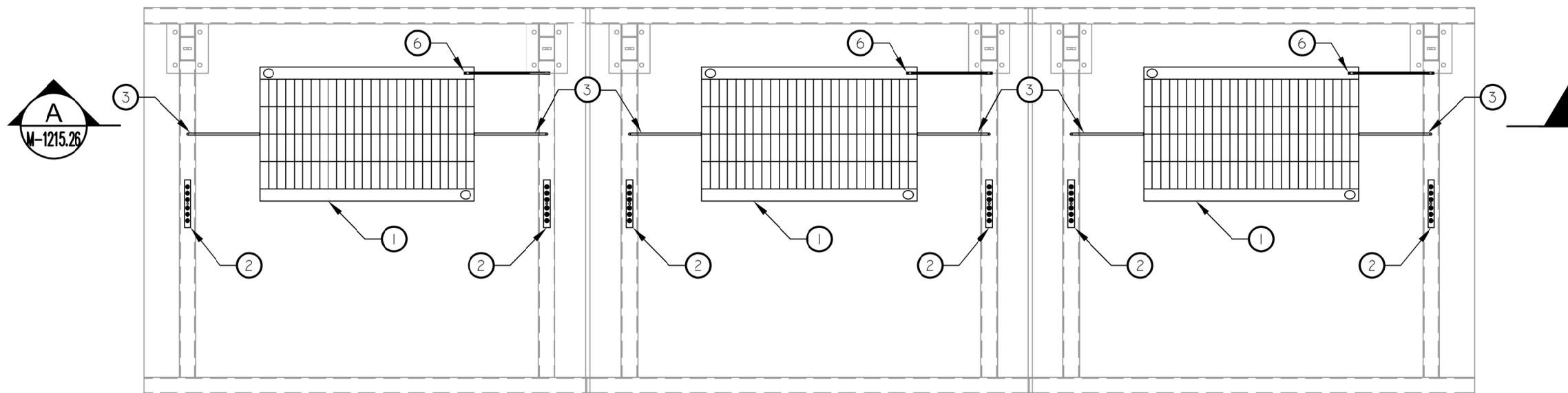
- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.



A TWO-BAY SHELTER SOLAR SECTION
M-1215.23 NOT TO SCALE

NOTES

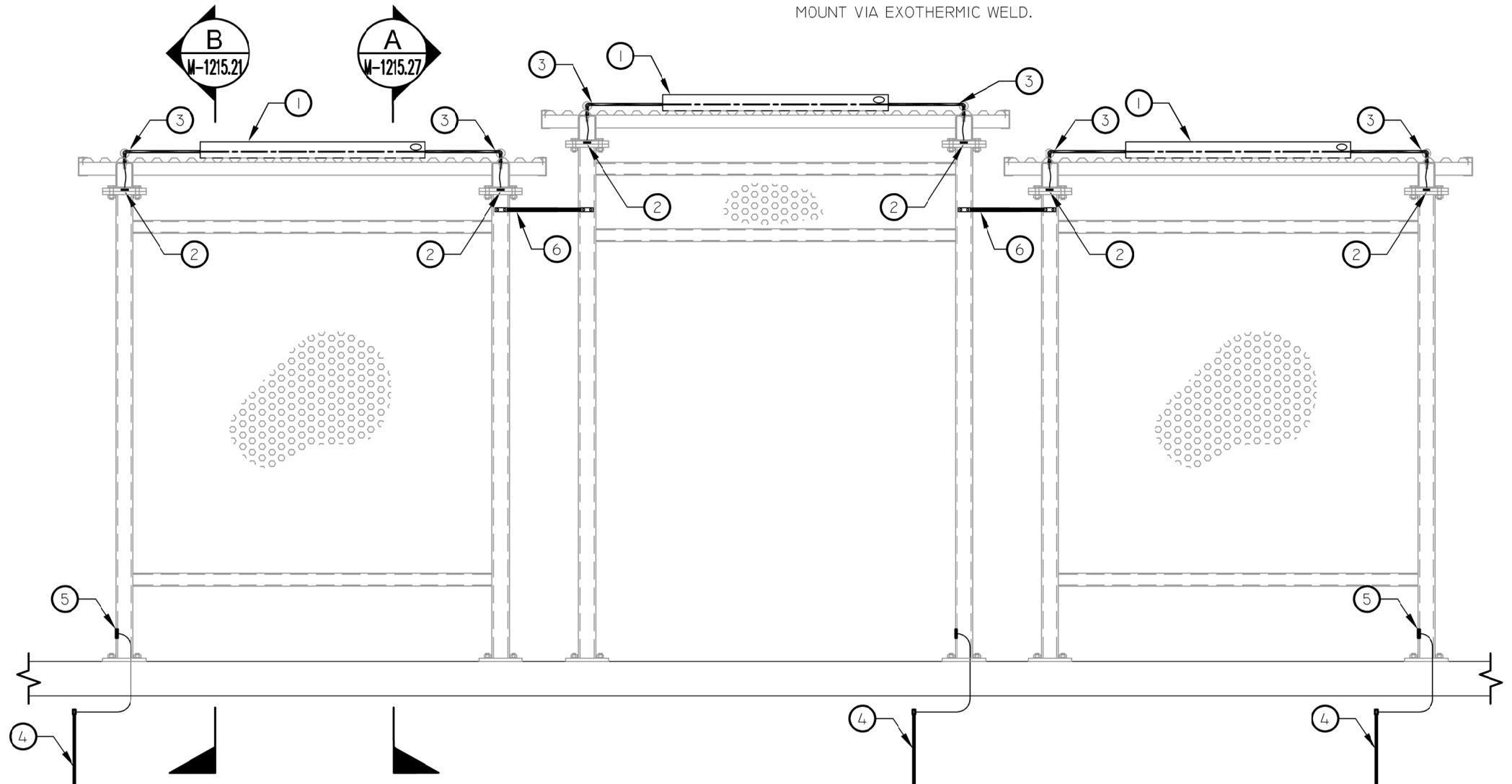
- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS, (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10' COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.



① THREE-BAY SHELTER SOLAR CONFIGURATION
- NOT TO SCALE

NOTES

- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.
- ④ 3/4" X 10' COPPER CLAD GROUND ROD WITH #6 CU BOND TO GROUND LUG.
- ⑤ PROVIDE GROUNDING LUG IN CHANNEL INTERIOR FOR GROUND WIRE CONNECTION. MOUNT VIA EXOTHERMIC WELD.
- ⑥ PROVIDE TINNED COPPER FLAT BRAID (3) STRAPS AND BOND TOGETHER VIA EXOTHERMIC WELDS.



A **THREE-BAY SHELTER SOLAR ELEVATION**
M-1215.25 NOT TO SCALE



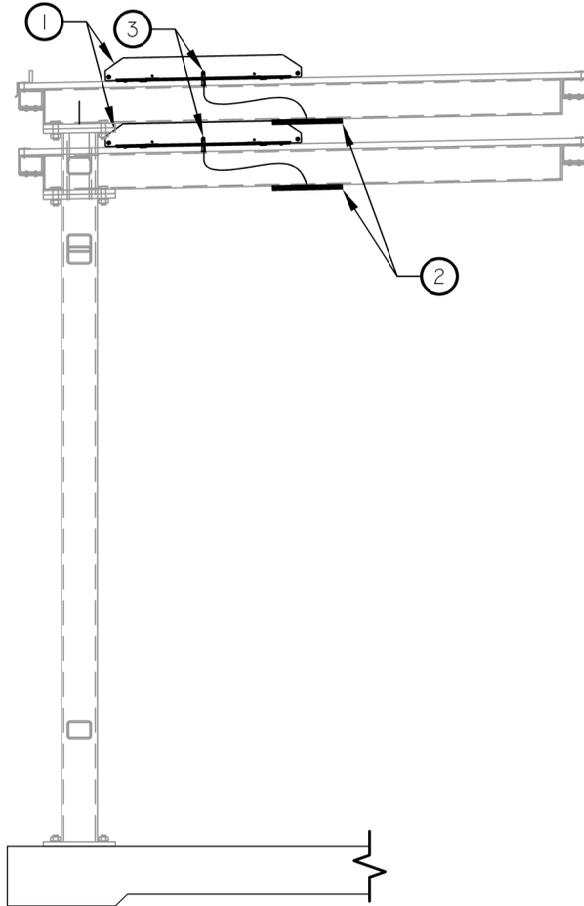
THREE-BAY SOLAR ELEVATION

OLD ---

DETAIL NO.
M-1215.26

NOTES

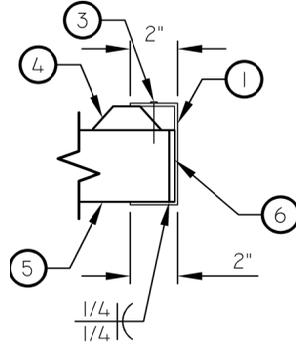
- ① RMS-I70 SOLAR ARRAY MOUNTED TO ROOF STRUCTURE
- ② USL02 LINEAR MODULE LED FIXTURE
- ③ 1/2" EMT CONDUIT AND FITTINGS. (2) #12 AWG CU XHHW CONDUCTORS AND (1) #12 AWG CU GROUND TO EACH FIXTURE.



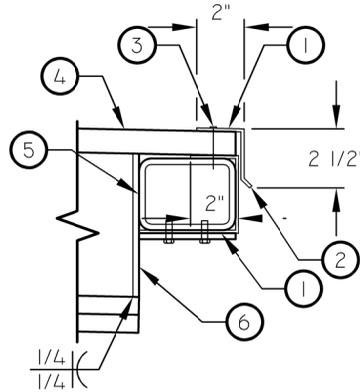
A THREE-BAY SHELTER SOLAR SECTION
M-1215.26 NOT TO SCALE

NOTES

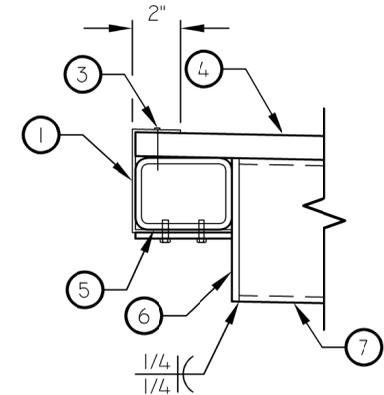
- ① 26 GA. MIN. METAL FLASHING AS SHOWN
- ② DRIP EDGE
- ③ METAL ROOF FASTENER
- ④ CORRUGATED METAL ROOF
- ⑤ HSS4X3X1/4"
- ⑥ 1/4" CAP PLATE
- ⑦ HSS6X4X1/4"



① SIDE FLASHING DETAIL
— NOT TO SCALE



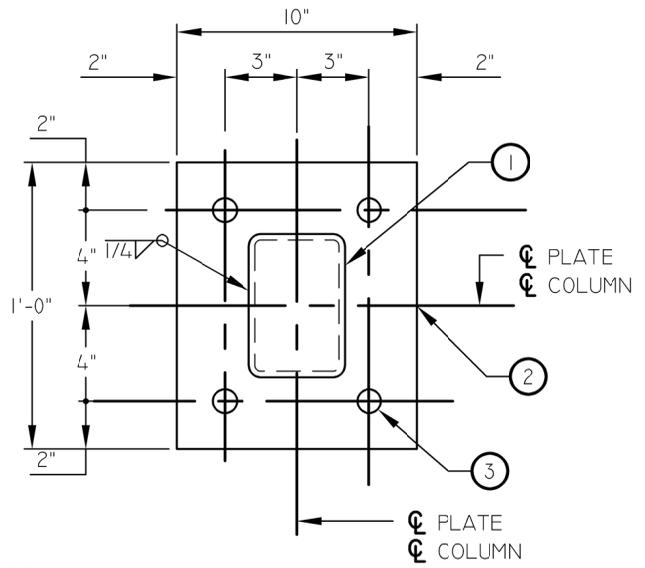
② BACK FLASHING DETAIL
— NOT TO SCALE



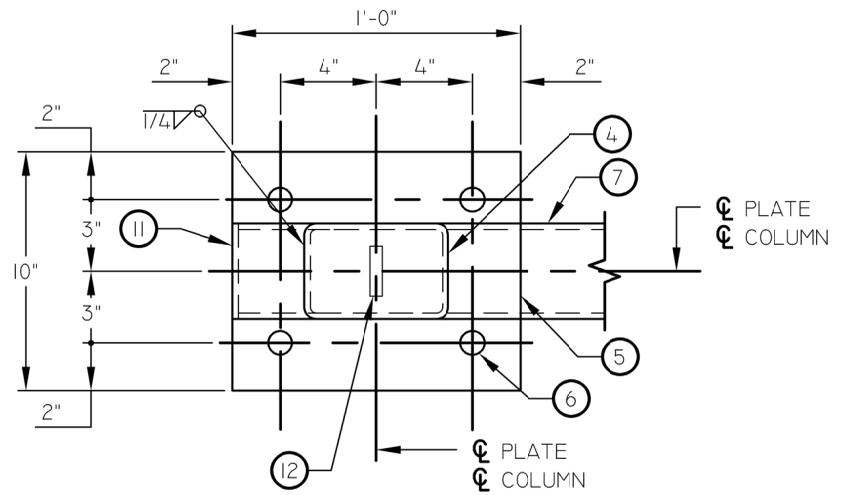
③ FRONT FLASHING DETAIL
— NOT TO SCALE

NOTES

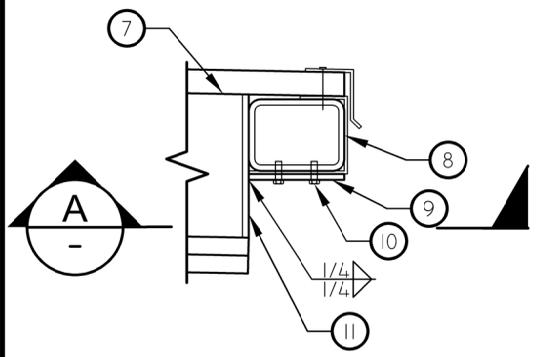
- ① HSS6X4X1/4"
- ② 3/4" THICK BASE PLATE
- ③ 3/4" HILTI KWIK BOLT TZ2 ANCHORS OR APPROVED EQUAL(TYP)
- ④ HSS6X4X1/4" BEYOND
- ⑤ (2)-3/4" THICK PLATE
- ⑥ 3/4"Ø ASTM A325 BOLTS (TYP)
- ⑦ HSS6X4X1/4"
- ⑧ HSS4X3X1/4"
- ⑨ 4X4X1/4" THICK PLATE
- ⑩ (4)-1/4" HOLLO-BOLT OR APPROVED EQUAL
- ⑪ 1/4" CAP PLATE, SEE DETAIL 4 THIS SHEET
- ⑫ 1/2" SCREW EYE BOLT



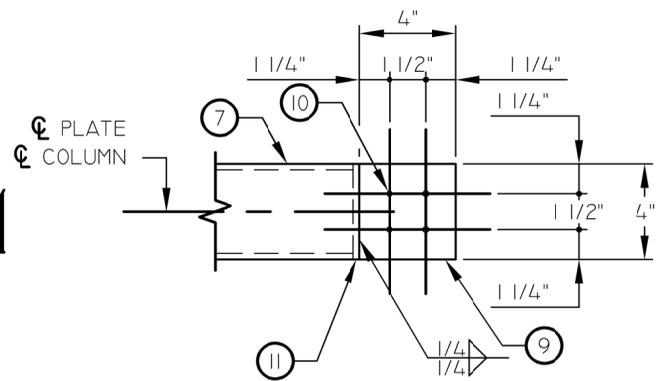
① SINGLE COLUMN BASE PLATE
- NOT TO SCALE



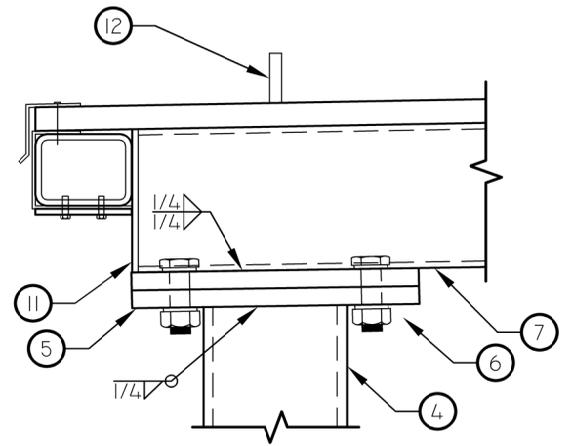
② COLUMN TO BEAM CONNECTION
- NOT TO SCALE



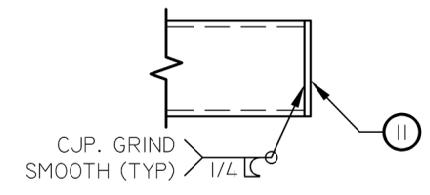
③ BEAM CONNECTION
- NOT TO SCALE



A BEAM CONNECTION SECTION
- NOT TO SCALE



④ BEAM CONNECTION SECTION
- NOT TO SCALE

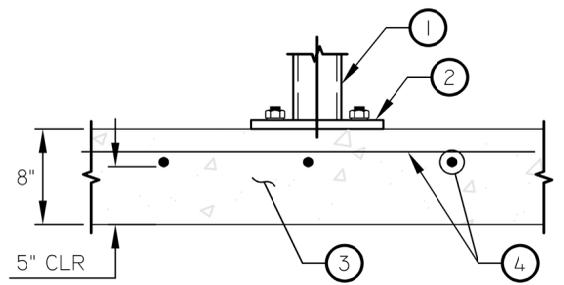


⑤ TYPICAL CAP PLATE DETAIL
- NOT TO SCALE

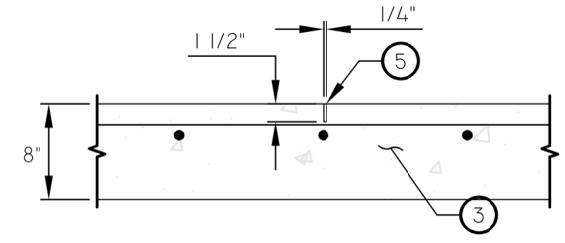
NOTES

- ① HSS6x4x1/4"
- ② BASE PLATE, SEE DETAIL ON SHEET M-1215.29
- ③ MAG CLASS AA REINFORCED CONCRETE SIDEWALK, SEE LOCATION PLANS FOR LIMITS
- ④ #5@12"
- ⑤ SAWCUT WITH JOINT SEALANT
- ⑥ EXISTING SIDEWALK
- ⑦ 1/2" BITUMINOUS JOINT FILLER
- ⑧ CONCRETE BUS SHELTER PADS CONSTRUCTED TO MEET THIS STANDARD WILL BE STAMPED WITH "M-1215" ALONG WITH THE CONTRACTOR'S STAMP

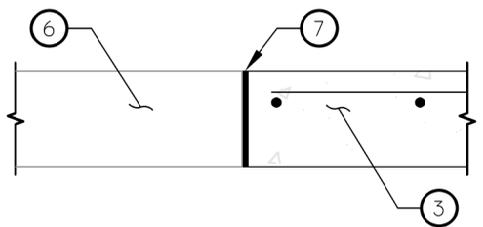
SEE SHEETS M-1215.4, M-1215.8, M-1215.12, AND M-1215.16 FOR REINFORCED SIDEWALK LIMITS AND JOINT LOCATIONS



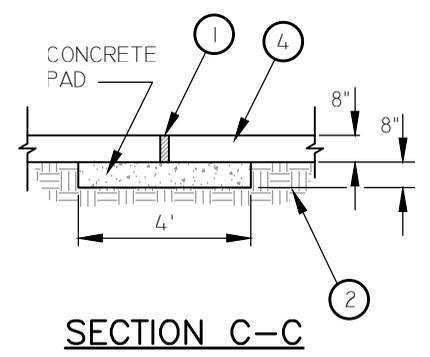
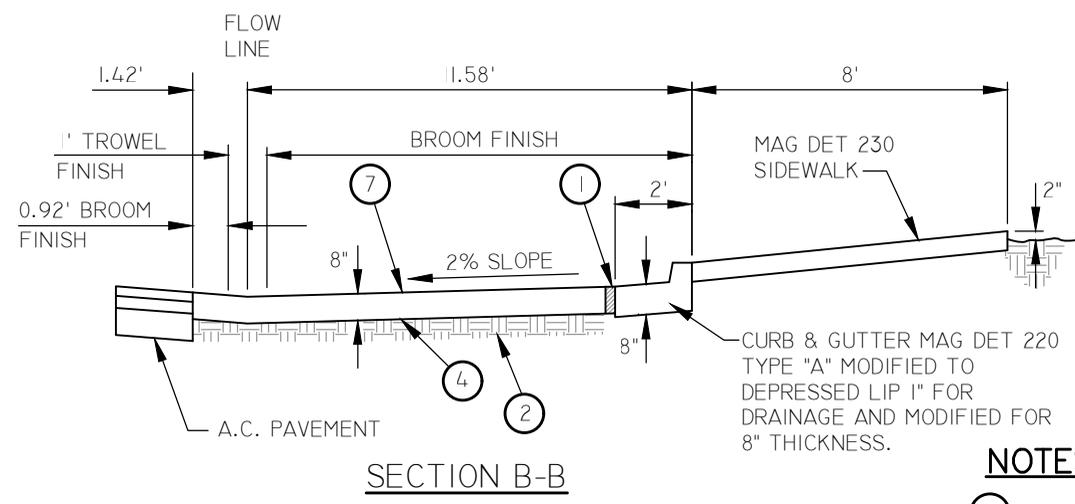
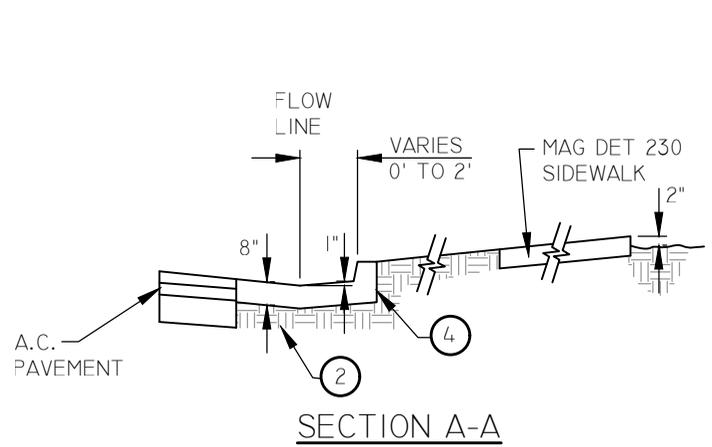
① TYPICAL REINFORCED SIDEWALK DETAIL
- NOT TO SCALE



② TYPICAL CONTROL JOINT DETAIL
- NOT TO SCALE

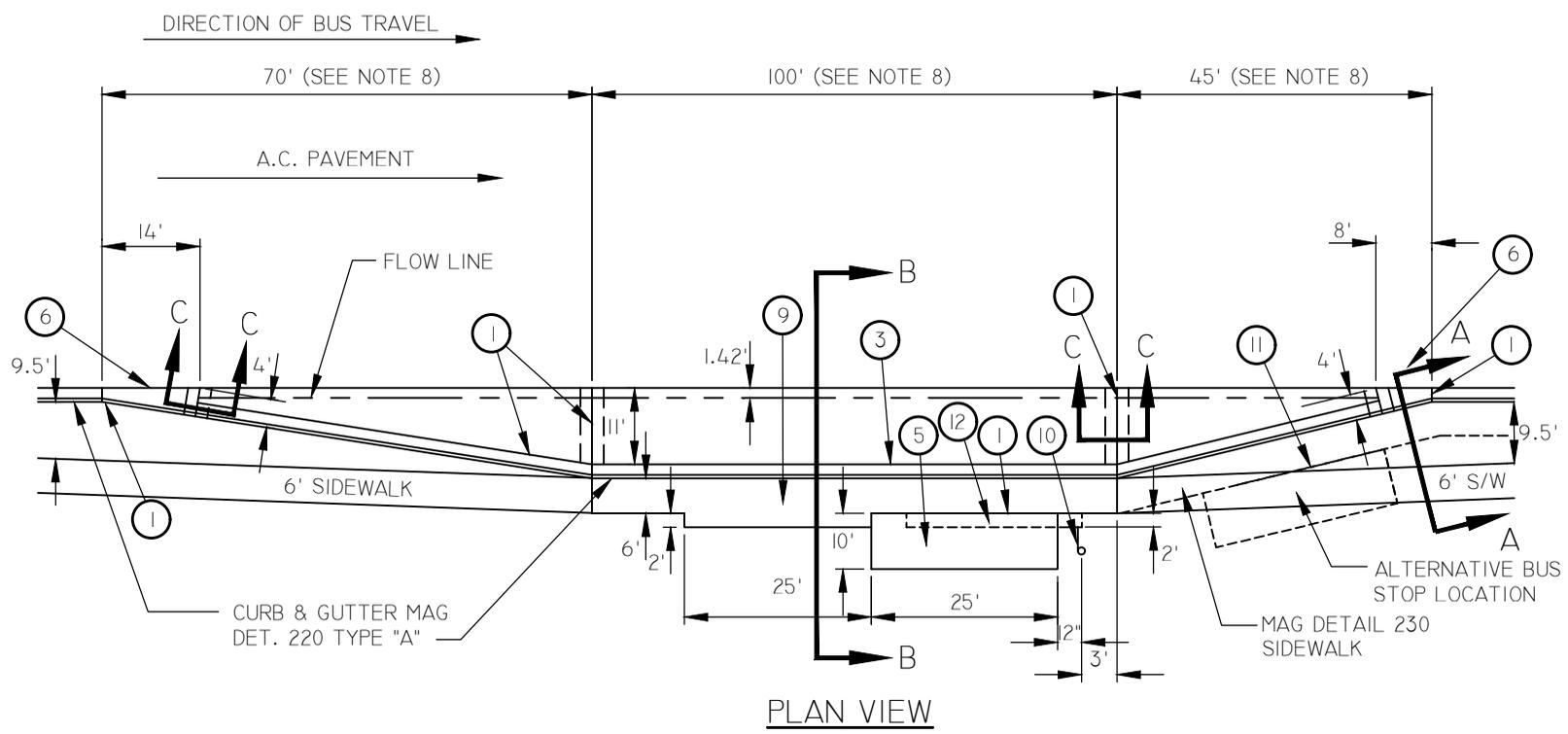


③ TYPICAL EXPANSION JOINT DETAIL
- NOT TO SCALE

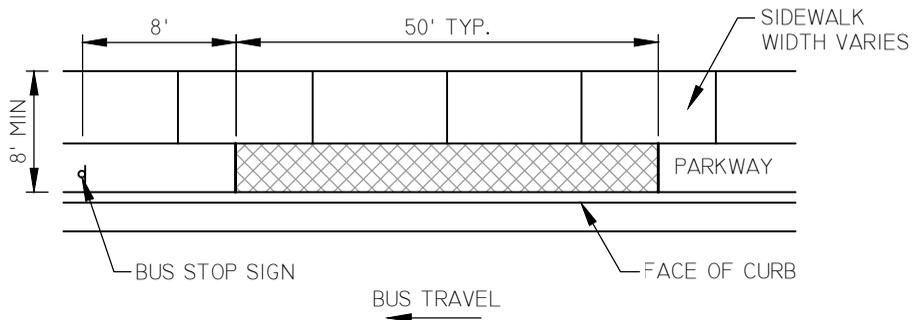


NOTES

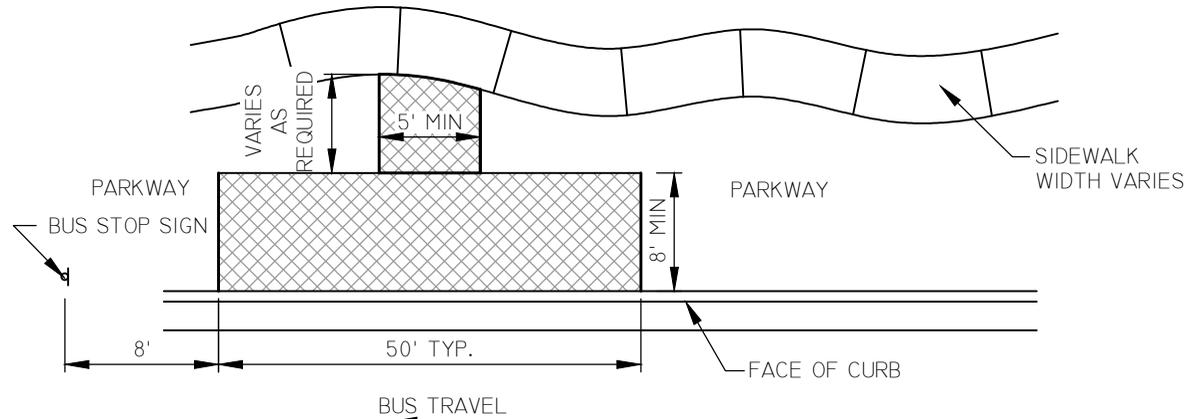
- ① 1/2" BITUMINOUS PREFORMED EXPANSION JOINT FILLER, ASTM D-1751 PER MAG SECTION 729.
- ② SUBGRADE PREPARATION PER MAG SECTION 301.
- ③ CONTRACTION JOINTS IN THE BUS PULLOUT PAVEMENT SHALL MATCH THOSE IN THE CURB.
- ④ CONCRETE SHALL BE CLASS "A" PER MAG SECTION 725.
- ⑤ BUS SHELTER PAD AND SHELTER PER COM DETAILS M-1215 THROUGH M-1215.30 IF REQUIRED BY PLANS. BUS SHELTERS SHALL NOT BE PLACED WITHIN SIGHT VISIBILITY TRIANGLES OF ADJACENT STREET INTERSECTIONS OR DRIVEWAYS.
- ⑥ PAVEMENT TRANSITION. (SEE SECTION A-A)
- ⑦ CROSS SLOPE SHALL BE 2% UNLESS OTHERWISE NOTED ON PLANS.
- ⑧ BUS PULLOUT DIMENSIONS MAY BE REVISED UPON WRITTEN APPROVAL OF THE CITY.
- ⑨ WHEELCHAIR PAD. CONSTRUCT PER MAG DETAIL 230.
- ⑩ BUS STOP SIGN
- ⑪ ALTERNATE SHELTER PAD LOCATION.
- ⑫ ALTERNATIVE WHEELCHAIR PAD LOCATION. CONSTRUCT PER MAG DETAIL 230.



NOT TO SCALE

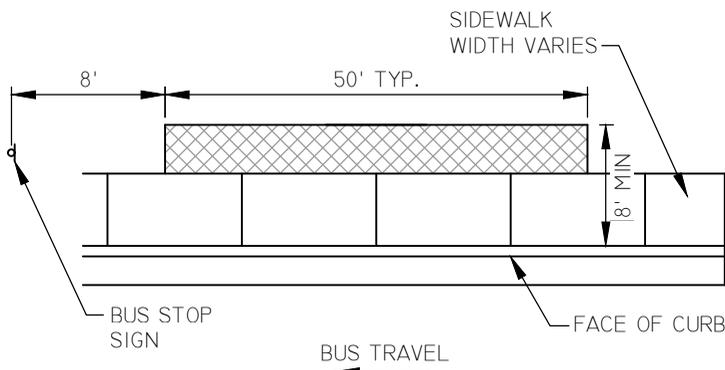


MINIMUM BOARDING AREA DETACHED SIDEWALK

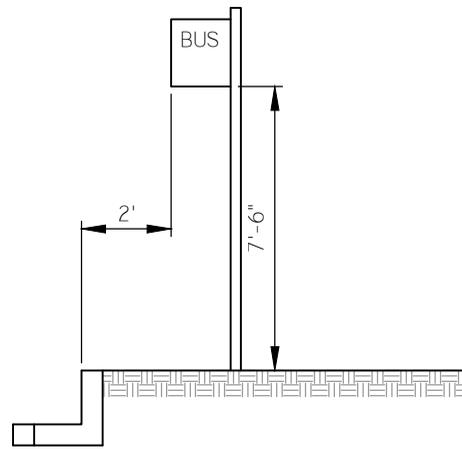


MINIMUM BOARDING AREA MEANDERING SIDEWALK OR NO SIDEWALK

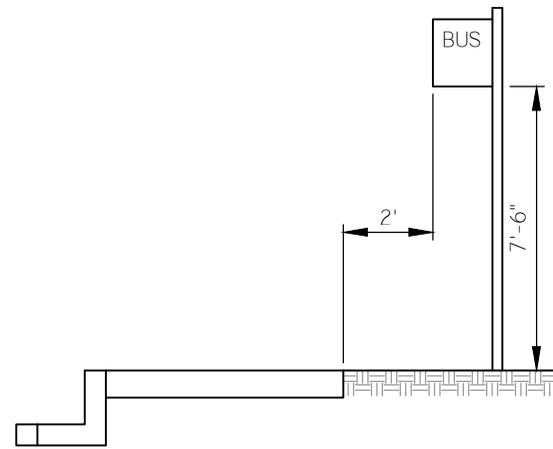
NOTE: CONCRETE PAD SHOULD MATCH M-1215.31 TO ALLOW FOR POSSIBLE FUTURE SHELTER INSTALLATION.



MINIMUM BOARDING AREA



STANDARD SIGN INSTALLATION
BEHIND CURB AND GUTTER



STANDARD SIGN INSTALLATION
BEHIND SIDEWALK

ADDITIONAL WIDENING (AS NEEDED) PER MAG 230

NOT TO SCALE

GENERAL BUS SHELTER NOTES

ALL UNITS ARE PREFABRICATED AND WELDING IS PERFORMED WITHIN MANUFACTURER'S SHOP. ONLY BASE ANCHORAGE IS PERFORMED IN THE FIELD.

DESIGN CRITERIA

2018 INTERNATIONAL BUILDING CODE WITH CITY OF MESA AMENDMENTS.

WIND DESIGN DATA

BASIC DESIGN WIND SPEED, $V = 102$ MPH
RISK CATEGORY = II
COMPONENTS AND CLADDING PRESSURE, $Q_1 = 18.45$ PSF

EARTHQUAKE DESIGN DATA

RISK CATEGORY = II
SEISMIC IMPORTANCE FACTOR = 1.0
 $S_S = 0.188G$
 $S_I = 0.067G$
 $S_{DS} = 0.201G$
 $S_{D1} = 0.107G$
SEISMIC DESIGN CATEGORY, $SDC = B$
BASIC SEISMIC FORCE-RESISTING SYSTEM = STEEL ORDINARY CANTILEVER COLUMN SYSTEMS
RESPONSE MODIFICATION COEFFICIENT, $R = 1.25$

SOIL DESIGN DATA

SOIL DESIGN DATA BASED ON CONSERVATIVE PRESUMPTIVE VALUES PER 2018 IBC.

ALLOWABLE BEARING PRESSURE, $P_B = 1,500$ PSF
SLIDING FRICTION COEFFICIENT, $M = 0.25$

CONCRETE

CONCRETE SHALL BE MAG CLASS AA.

AT LOCATIONS WHERE CONCRETE IS CAST AGAINST EARTH, REINFORCING SHALL HAVE 3" CLEAR COVER. AT ALL OTHER LOCATIONS, REINFORCING SHALL HAVE 2" CLEAR COVER UNLESS NOTED OTHERWISE.

ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4".

FINISHES NOTES:

ALL VISIBLE PARTS AND VISIBLE FACES SHALL BE POWDER COATED. POWDER COAT FINISH SHALL HAVE 3-5 MIL THICKNESS AND MUST MEET AAMA 2605 STANDARDS.

ALL NON-VISIBLE PARTS, CONNECTIONS, FASTENERS, ETC. THAT ARE NOT PAINTED SHALL BE HOT DIP GALVANIZED PER ASTM A153.

STRUCTURAL ELEMENTS AND FRAMING WILL BE POWDER COATED RAL 5007 BRILLIANT BLUE SHADE SCREENS AND CORRUGATED ROOF WILL BE POWDER COATED RAL 7038 AGATE GREY UNLESS OTHERWISE SPECIFIED BY THE CITY.

STEEL

PLATES SHALL CONFORM TO ASTM A572 GR. 50.

HSS RECTANGULAR MEMBERS SHALL CONFORM TO ASTM A500, GRADE C (50 KSI).

PROVIDE MINIMUM 1/8" THICK CAP PLATE AT ENDS OF ALL HSS MEMBERS.

ALL BOLTS EXCEPT 1/4" BOLTS SHALL CONFORM TO ASTM A325.

1/4" BOLTS SHALL CONFORM TO ASTM F593.

ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 55.

STEEL WELDING SHALL COMPLY WITH (AWS) AMERICAN WELDING SOCIETY STANDARDS (DI.1) AND SHALL BE COMPLETED BY CERTIFIED WELDERS.

CORRUGATED METAL ROOF

CORRUGATED METAL ROOF SHALL BE 20 GA. GRADE 50 STEEL, RIB HEIGHT = 1.5", RIB WIDTH = 6.0" ON CENTER.

CORRUGATED METAL ROOF SEALANT SHALL BE TITEBOND WEATHERMASTER METAL ROOF SEALANT OR APPROVED EQUAL. USE BEAD MASTIC ON ALL OVERLAPS.

CORRUGATED METAL ROOF FASTENERS SHALL BE PROVIDED PER MANUFACTURERS RECOMMENDATIONS. ALL FASTENERS SHALL BE WATERPROOF SEALED.

METHOD OF FASTENING ROOF, ROOF METAL FLASHING, AND WATERPROOFING ROOF FASTENERS SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

BENCH NOTES:

BENCH WILL BE POWDER COATED RAL 7038 AGATE GREY, UNLESS OTHERWISE SPECIFIED BY THE CITY.

BENCH SHOWN IN PLANS IS BASED ON PARIS CNB-20X2S-CSTM, OR APPROVED EQUAL SITE FURNISHINGS, DIMENSIONS 4'-0"x2'-3"x2'-10".

CLEAR SPACING REQUIREMENTS PER ADA R404. PER ADA 305.6, CLEAR APPROACH SHALL BE 30"x48" MINIMUM ADJOINING BENCH. PER ADA R212.5, CLEAR APPROACH SHALL NOT OVERLAP THE AREA WITHIN 1.5' FROM THE FRONT EDGE OF THE BENCH.

REINFORCING

REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, $F_y = 60,000$ PSI.

CONCRETE SHELTER PAD REQUIRES #5 REBAR AT 12" CENTERS FOR REINFORCEMENT, SEE DETAIL M-1215.30

TRASH RECEPTACLE NOTES:

TRASH CAN (NOT SHOWN IN PLANS) WILL ALSO BE REQUIRED AT ALL STANDARD BUS SHELTERS. PREFERRED RECEPTACLE IS ARIZONA CORRECTIONAL INDUSTRIES (ACI) MPPRI001 WITH HARD PLASTIC LINER AND NO RAIN HAT, OR APPROVED EQUAL. NARROW SHELTERS (DETAIL M-1215.17) WILL REQUIRE 10 GALLON ATTACHED TRASH CANS POWDER COATED IN RAL 5007 BRILLIANT BLUE, PREFERRED RECEPTACLE FOR THIS APPLICATION IS ALSO MANUFACTURED BY ACI. TRASH RECEPTACLES WILL BE POWDER COATED RAL 7038 AGATE GREY UNLESS OTHERWISE SPECIFIED BY THE CITY.



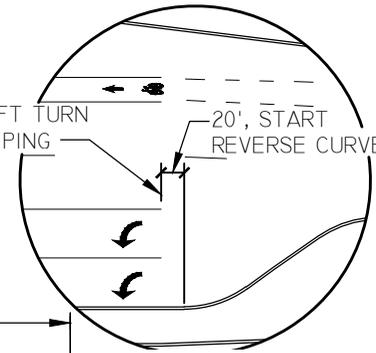
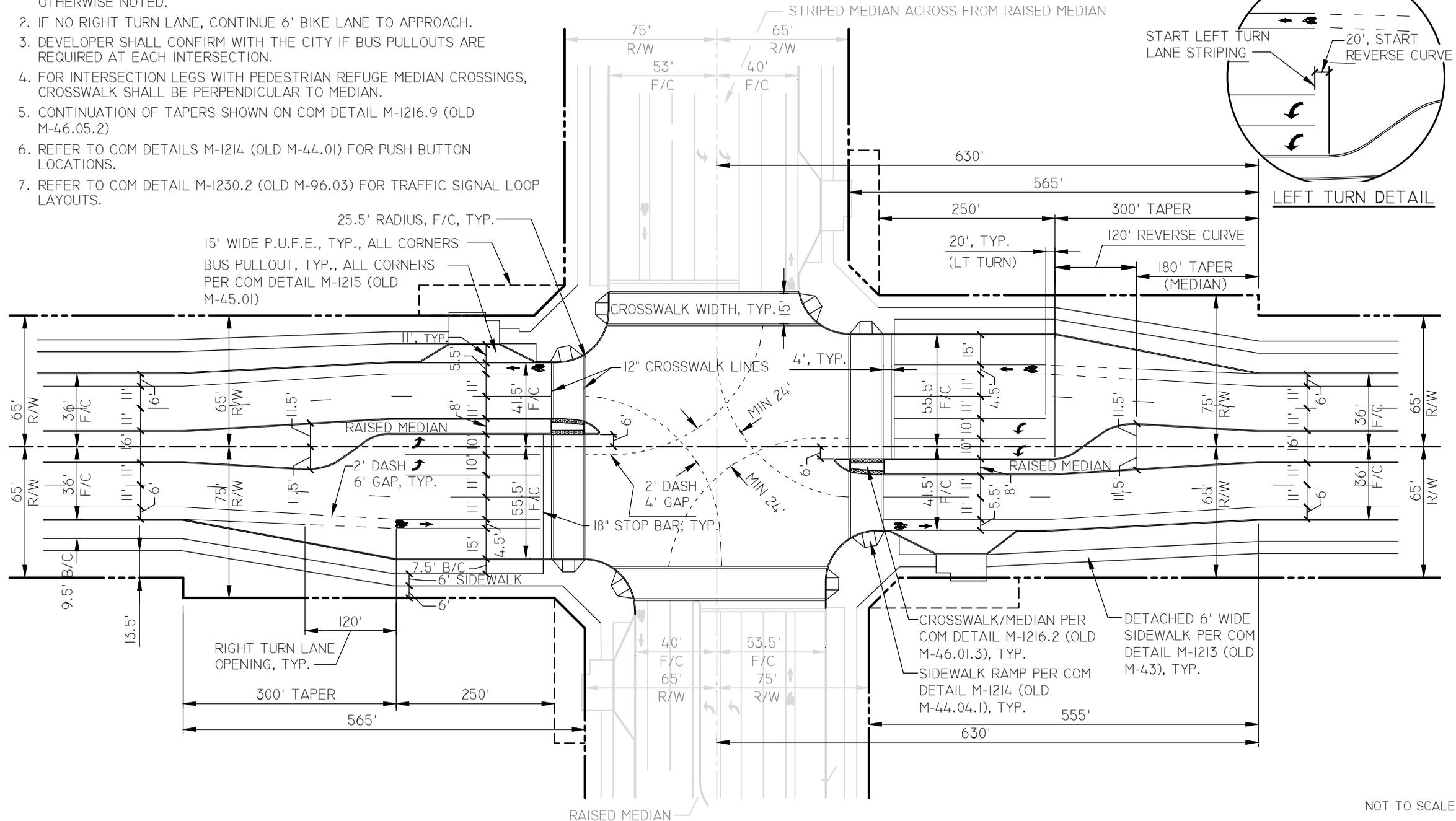
GENERAL STRUCTURAL NOTES

OLD ---

DETAIL NO.
M-1215

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIAN CROSSINGS, CROSSWALK SHALL BE PERPENDICULAR TO MEDIAN.
5. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-1216.9 (OLD M-46.05.2)
6. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSH BUTTON LOCATIONS.
7. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.

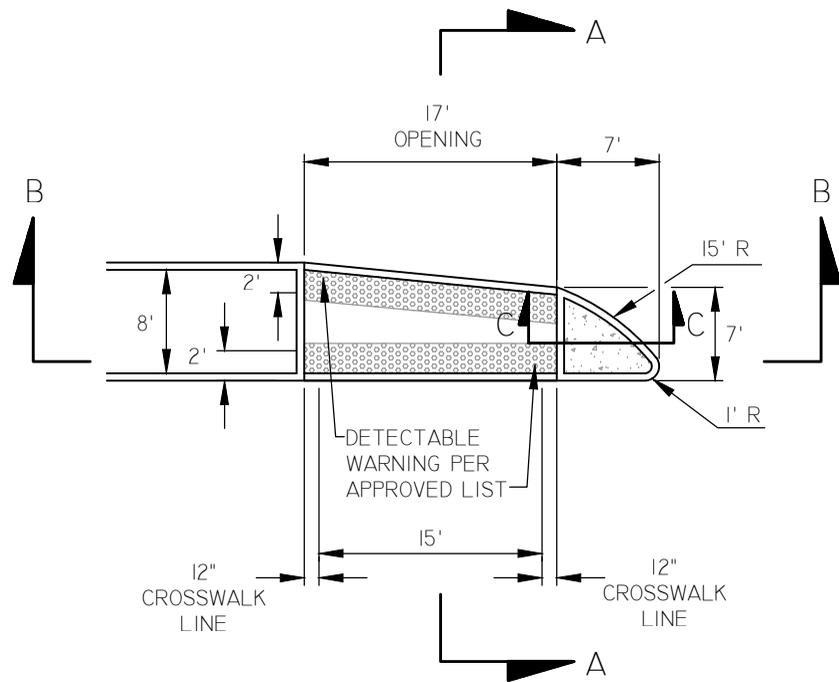


**ARTERIAL STREET INTERSECTION (4 LANES)
WITH 8' RAISED MEDIANS**

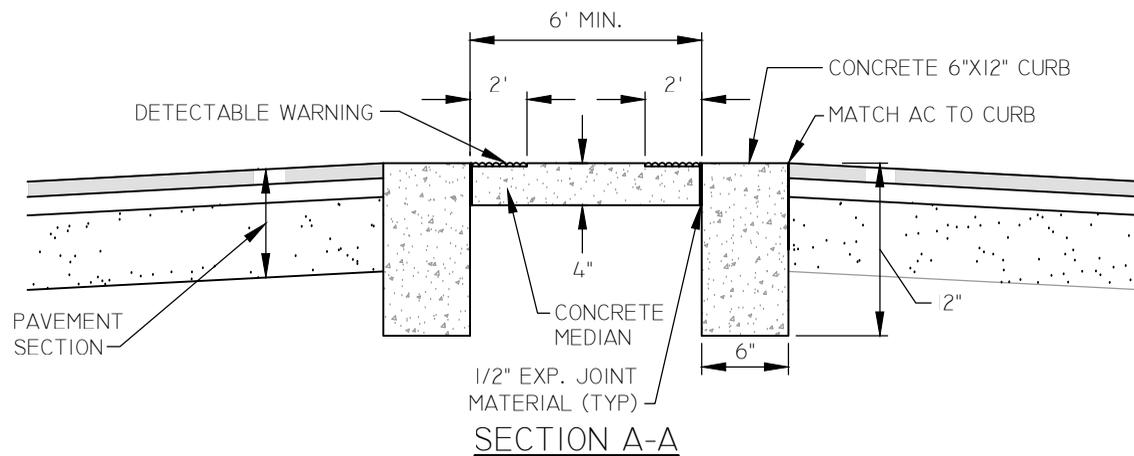
OLD
M-46.01.2

DETAIL NO.
M-1216.1

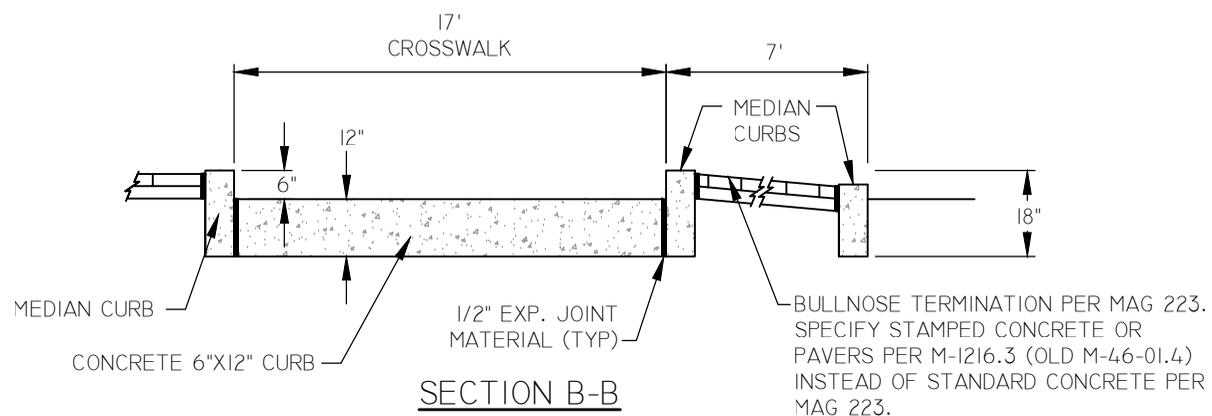
NOT TO SCALE



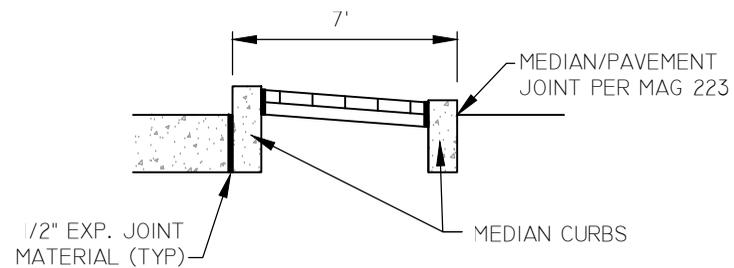
CROSSWALK/MEDIAN DETAIL



SECTION A-A

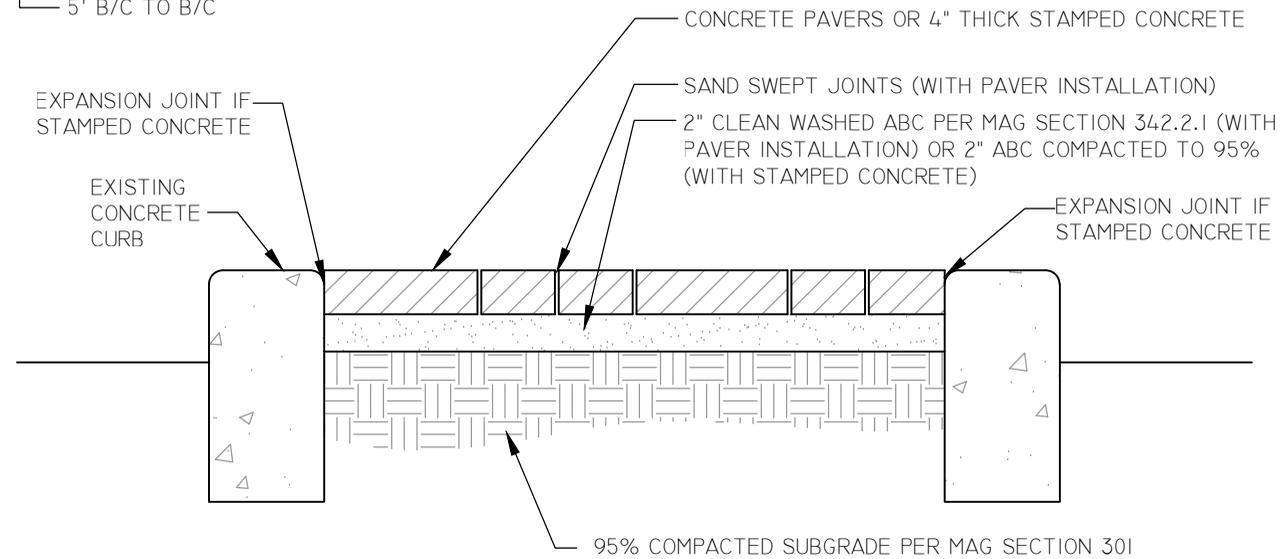
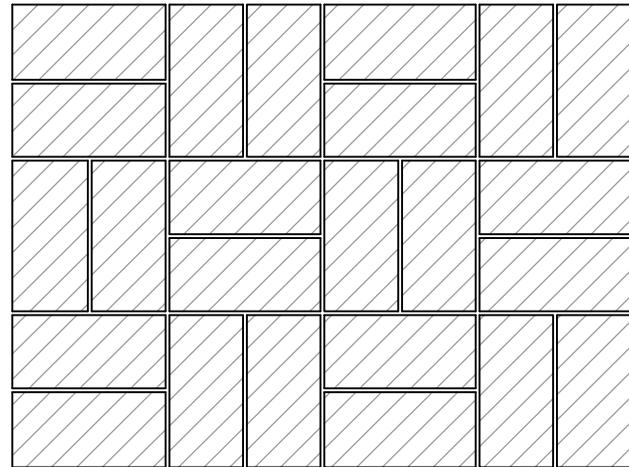
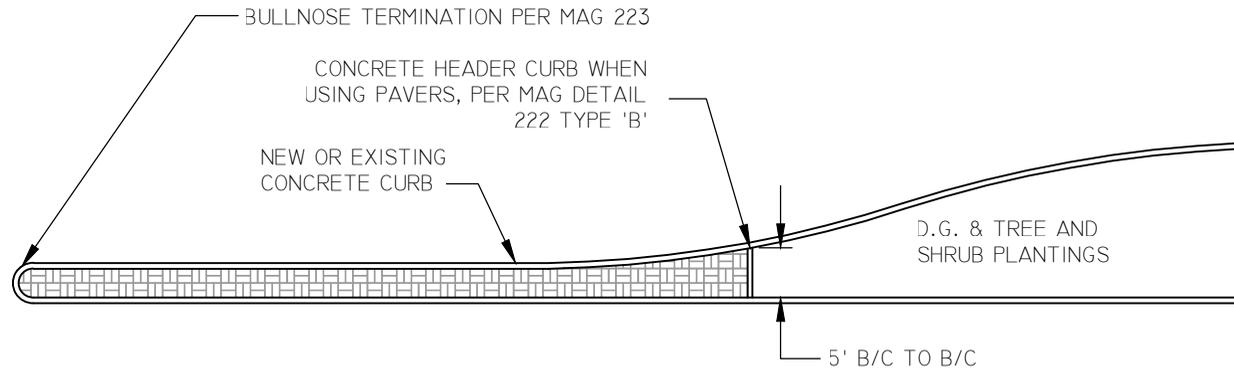


SECTION B-B



SECTION C-C

NOT TO SCALE



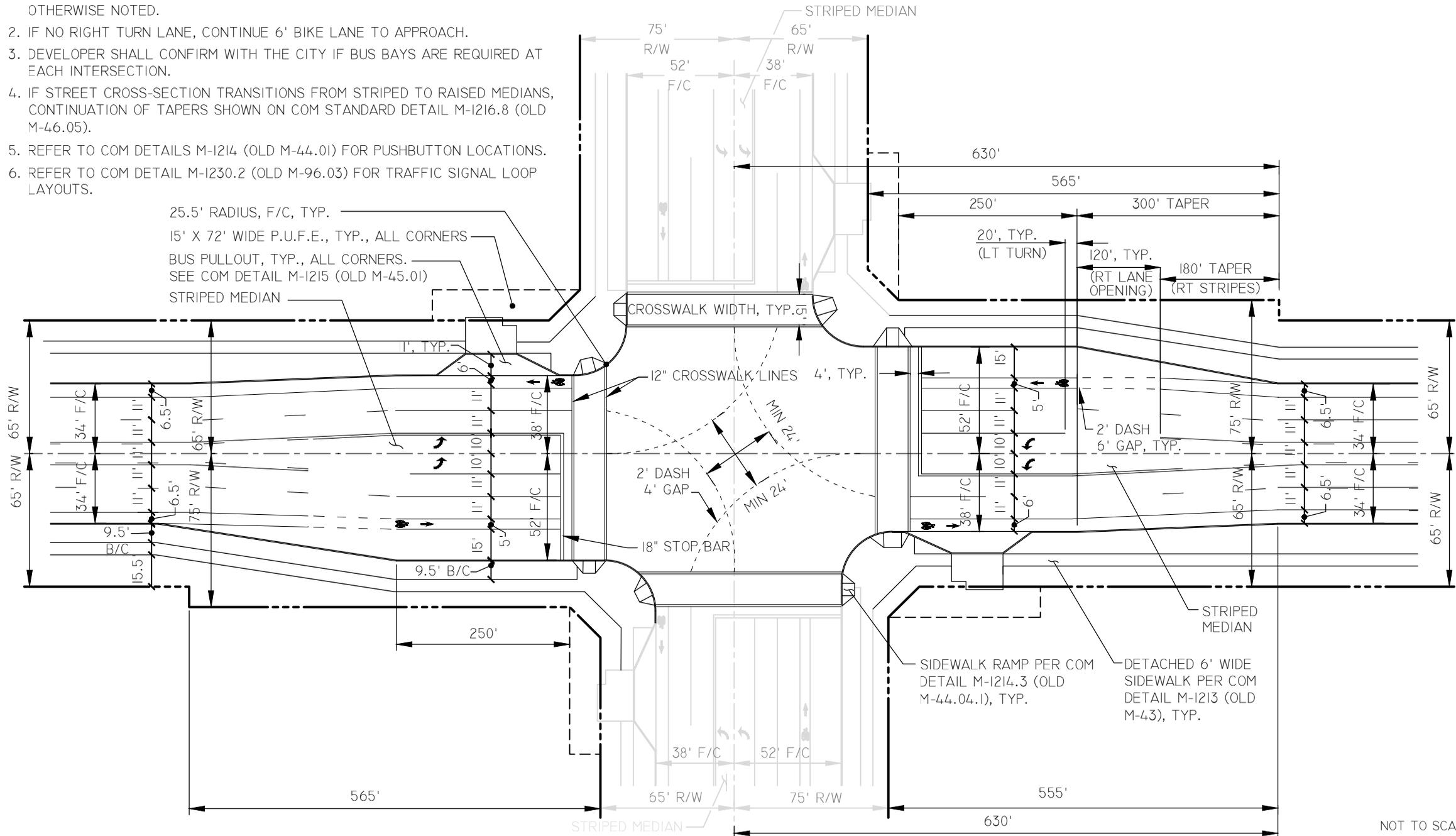
NOTES

1. SHOP DRAWING REQUIREMENT: CONTRACTOR TO SUBMIT PAVER MANUFACTURER'S CERTIFICATE LETTER OF COMPLIANCE WITH RELATED PERFORMANCE STANDARDS LISTED.
2. CONTRACTOR SHALL ADJUST ALL EXISTING AND NEW BOXES TO NEW FINISH GRADE OF BRICK PAVERS OR STAMPED CONCRETE. (N.P.I.)
3. HOLLAND STONE I, MANUFACTURED BY "PAVESTONE" 4-1/8" X 8-1/4" X 3-1/8" THICK, OAKS BLEND COLOR CONCRETE PAVERS IN A BASKET WEAVE PATTERN (SEE MAG SPECIFICATIONS SECTION 342).
4. CLASS B STAMPED CONCRETE IN A SMOOTH BASKET WEAVE PATTERN OR MATCH EXISTING PATTERN FINISH, DAVIS COLORS INTEGRAL COLOR-BRICK RED #160 (SEE MAG SPECIFICATIONS SECTION 725 FOR CONCRETE AND SECTION 340 FOR JOINTS AND EDGES).

NOT TO SCALE

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS BAYS ARE REQUIRED AT EACH INTERSECTION.
4. IF STREET CROSS-SECTION TRANSITIONS FROM STRIPED TO RAISED MEDIANS, CONTINUATION OF TAPERS SHOWN ON COM STANDARD DETAIL M-1216.8 (OLD M-46.05).
5. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
6. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.



**ARTERIAL STREET INTERSECTION (4 LANES)
WITH STRIPED MEDIANS**

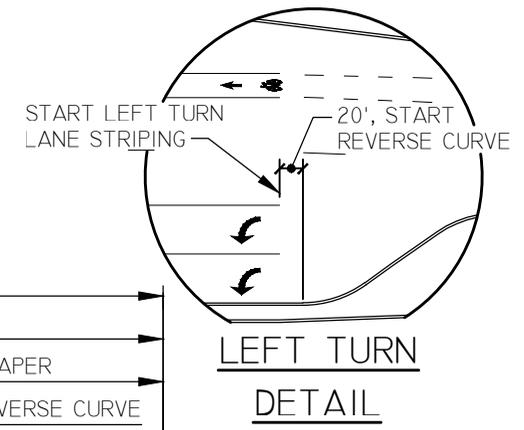
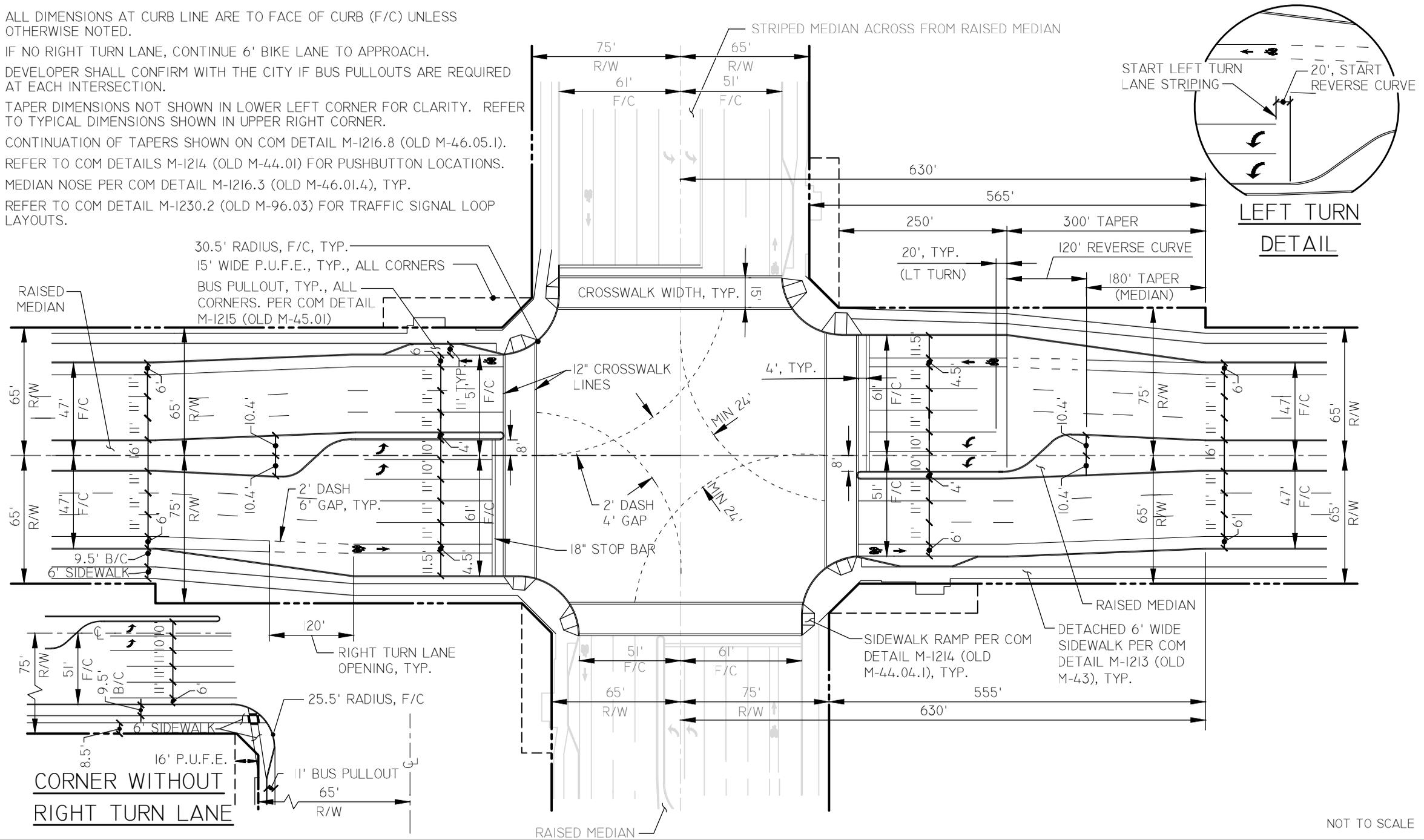
OLD
M-46.02

DETAIL NO.
M-1216.4

NOT TO SCALE

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. TAPER DIMENSIONS NOT SHOWN IN LOWER LEFT CORNER FOR CLARITY. REFER TO TYPICAL DIMENSIONS SHOWN IN UPPER RIGHT CORNER.
5. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-1216.8 (OLD M-46.05.1).
6. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
7. MEDIAN NOSE PER COM DETAIL M-1216.3 (OLD M-46.01.4), TYP.
8. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.



ARTERIAL STREET INTERSECTION (6 LANES)
WITH 4' RAISED MEDIANS

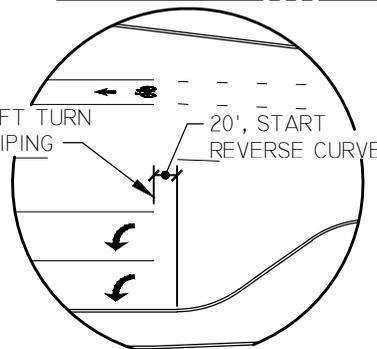
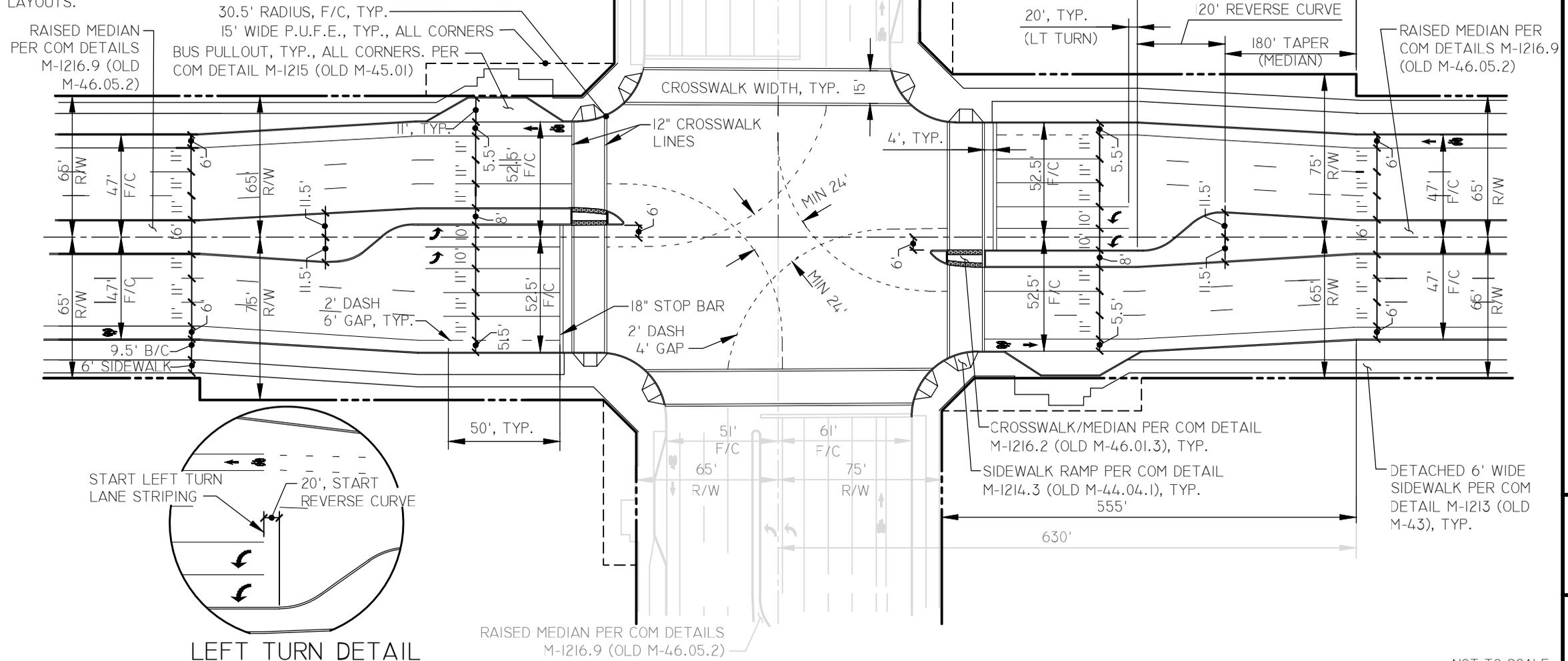
OLD
M-46.03.1

DETAIL NO.
M-1216.5

NOT TO SCALE

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIAN CROSSINGS, CROSSWALK SHALL BE PERPENDICULAR TO MEDIAN.
5. TAPER DIMENSIONS NOT SHOWN IN LOWER LEFT CORNER FOR CLARITY. REFER TO TYPICAL DIMENSIONS SHOWN IN UPPER RIGHT CORNER.
6. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-1216.9 (OLD M-46.05.2)
7. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
8. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.



LEFT TURN DETAIL



**ARTERIAL STREET INTERSECTION (6 LANES)
WITH 8' RAISED MEDIANS**

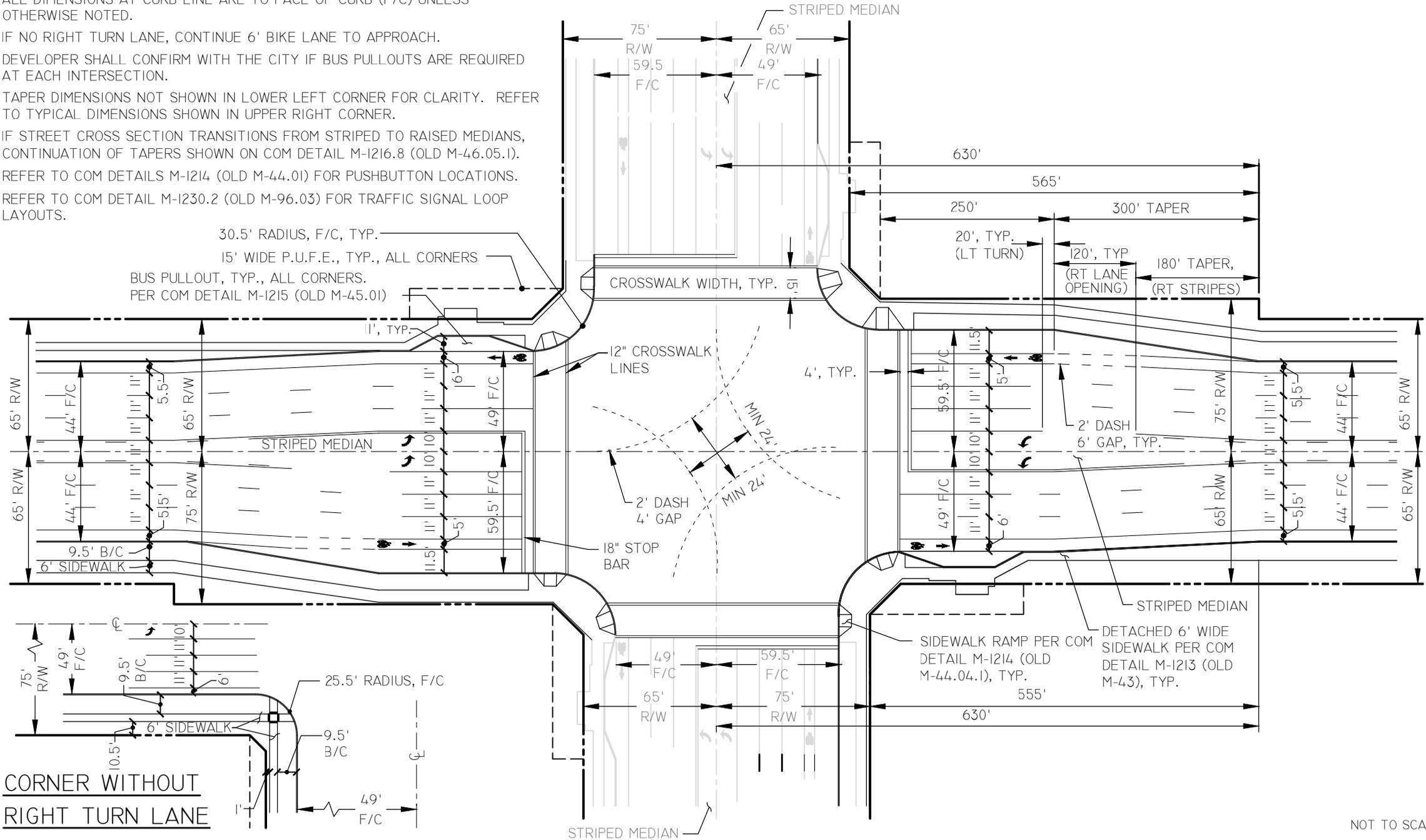
OLD
M-46.03.2

DETAIL NO.
M-1216.6

NOT TO SCALE

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. TAPER DIMENSIONS NOT SHOWN IN LOWER LEFT CORNER FOR CLARITY. REFER TO TYPICAL DIMENSIONS SHOWN IN UPPER RIGHT CORNER.
5. IF STREET CROSS SECTION TRANSITIONS FROM STRIPED TO RAISED MEDIANS, CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-1216.8 (OLD M-46.05.1).
6. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
7. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.



**CORNER WITHOUT
RIGHT TURN LANE**



**ARTERIAL STREET INTERSECTION (6 LANES)
WITH STRIPED MEDIANS**

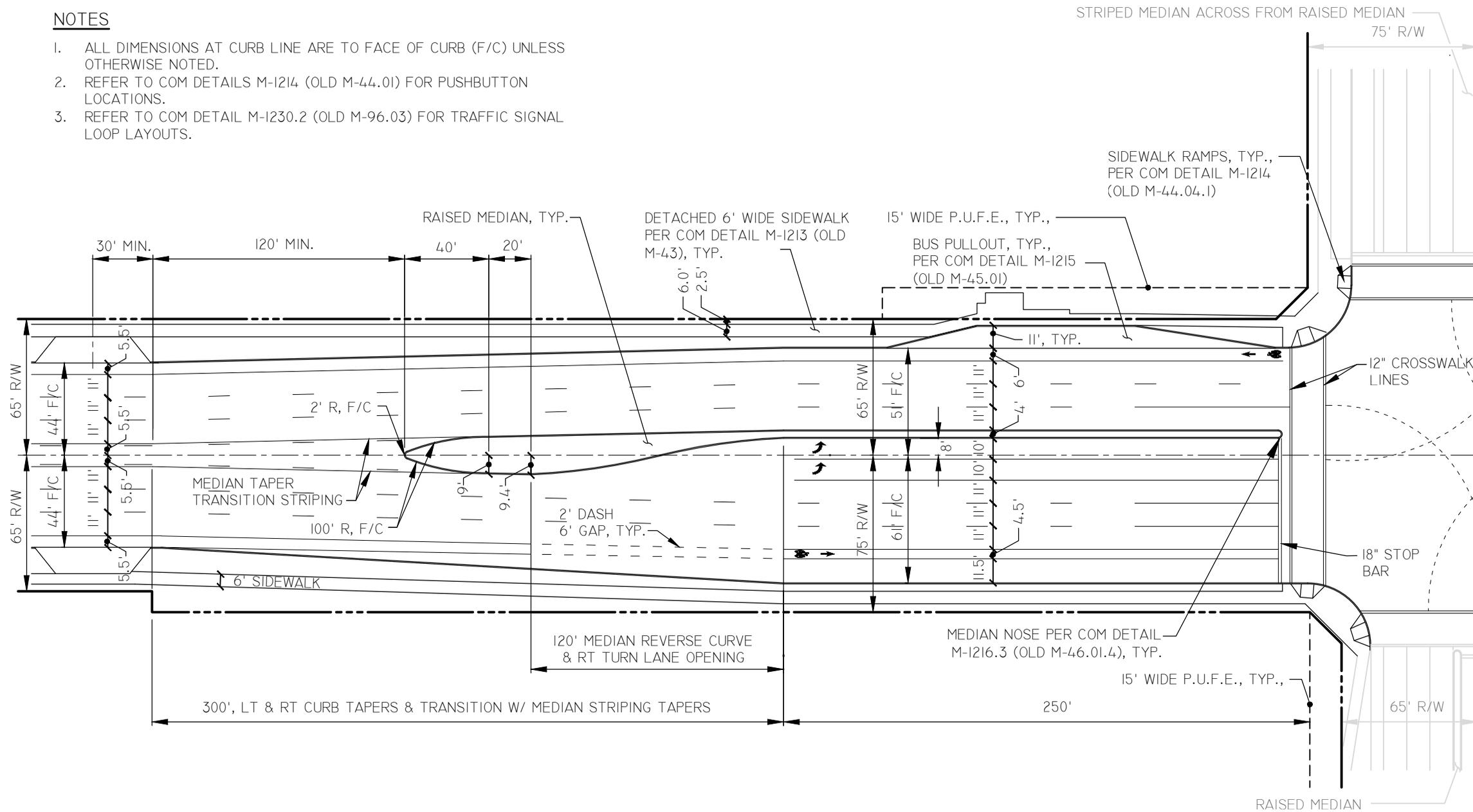
OLD
M-46.04

DETAIL NO.
M-1216.7

NOT TO SCALE

NOTES

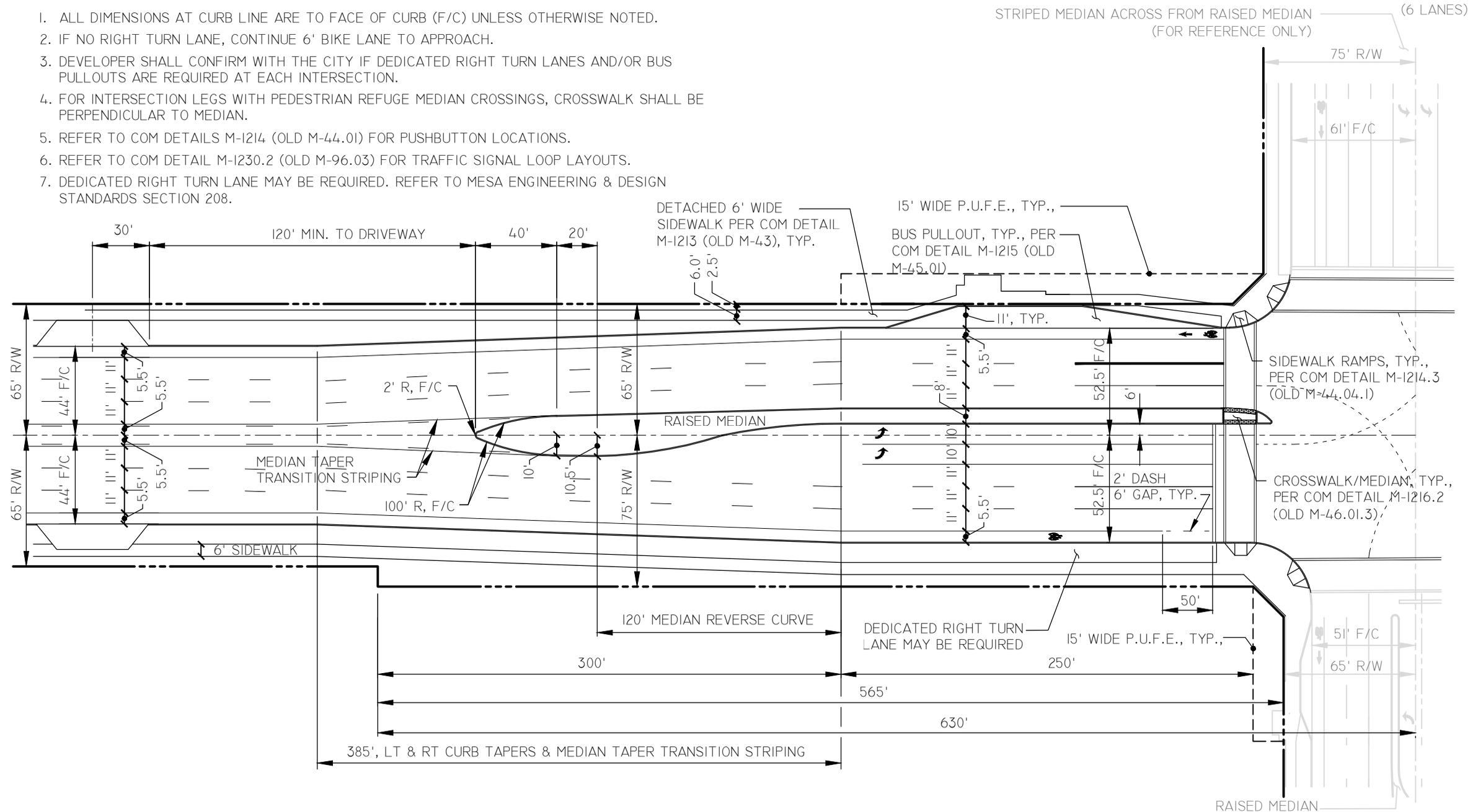
1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
3. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.



NOT TO SCALE

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF DEDICATED RIGHT TURN LANES AND/OR BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIAN CROSSINGS, CROSSWALK SHALL BE PERPENDICULAR TO MEDIAN.
5. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
6. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.
7. DEDICATED RIGHT TURN LANE MAY BE REQUIRED. REFER TO MESA ENGINEERING & DESIGN STANDARDS SECTION 208.



NOT TO SCALE



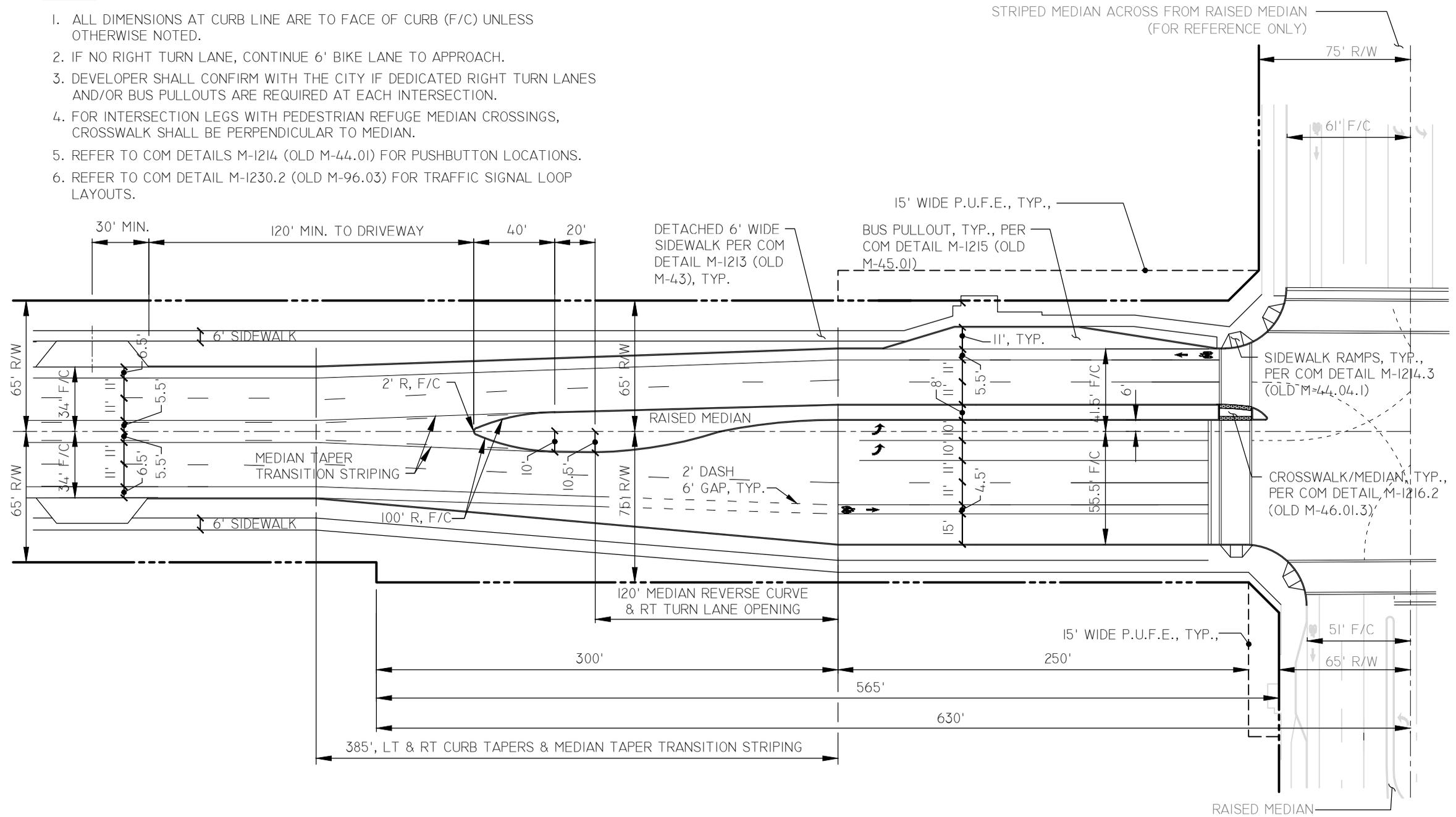
TRANSITION FROM STRIPED TO 8' RAISED MEDIAN (6 LANES)

OLD
M-46.05.2

DETAIL NO.
M-1216.9

NOTES

1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF DEDICATED RIGHT TURN LANES AND/OR BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIAN CROSSINGS, CROSSWALK SHALL BE PERPENDICULAR TO MEDIAN.
5. REFER TO COM DETAILS M-1214 (OLD M-44.01) FOR PUSHBUTTON LOCATIONS.
6. REFER TO COM DETAIL M-1230.2 (OLD M-96.03) FOR TRAFFIC SIGNAL LOOP LAYOUTS.

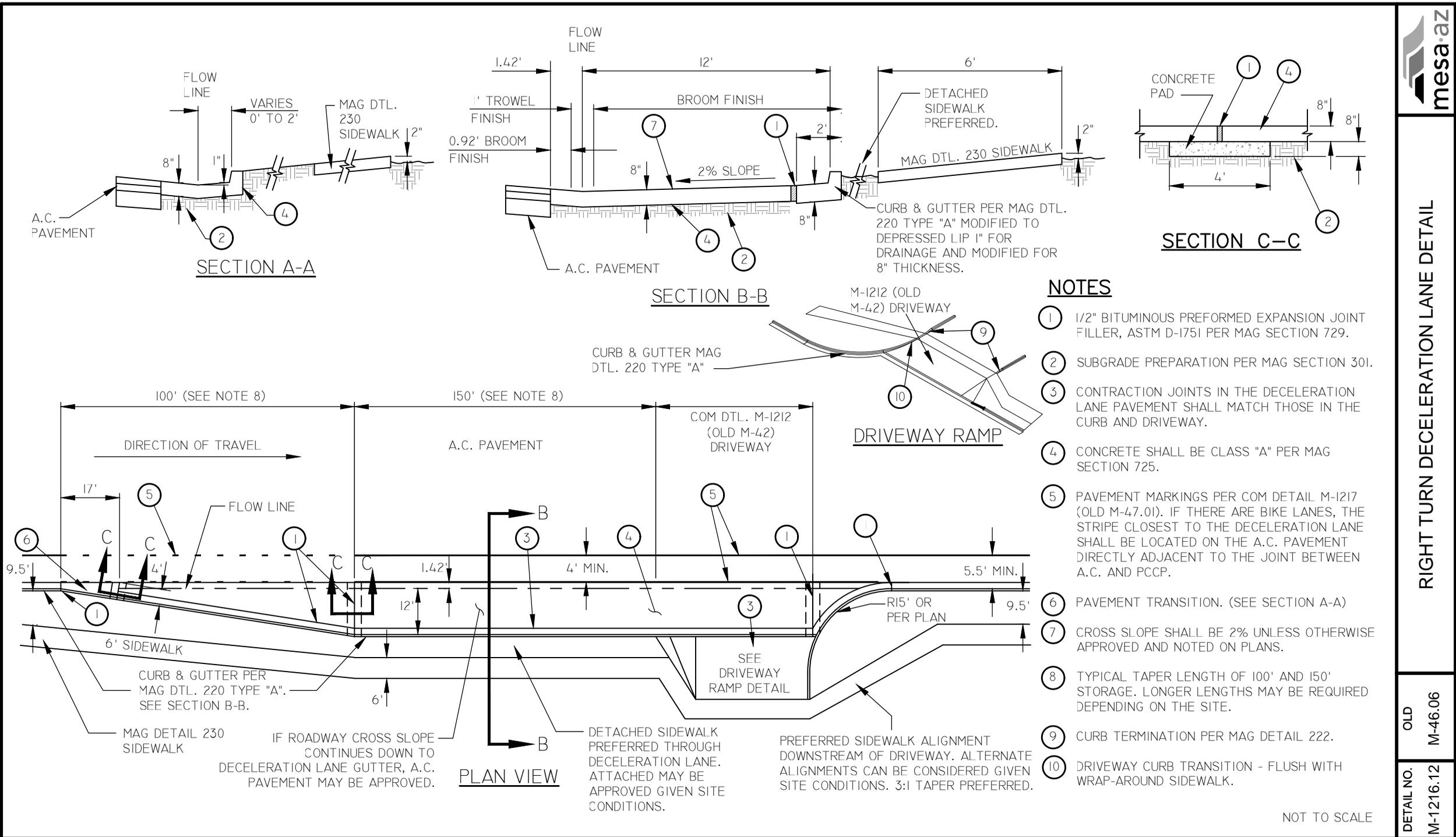


**TRANSITION FROM STRIPED TO 8'
RAISED MEDIAN (4 LANES)**

OLD
M-46.05.4

DETAIL NO.
M-1216.11

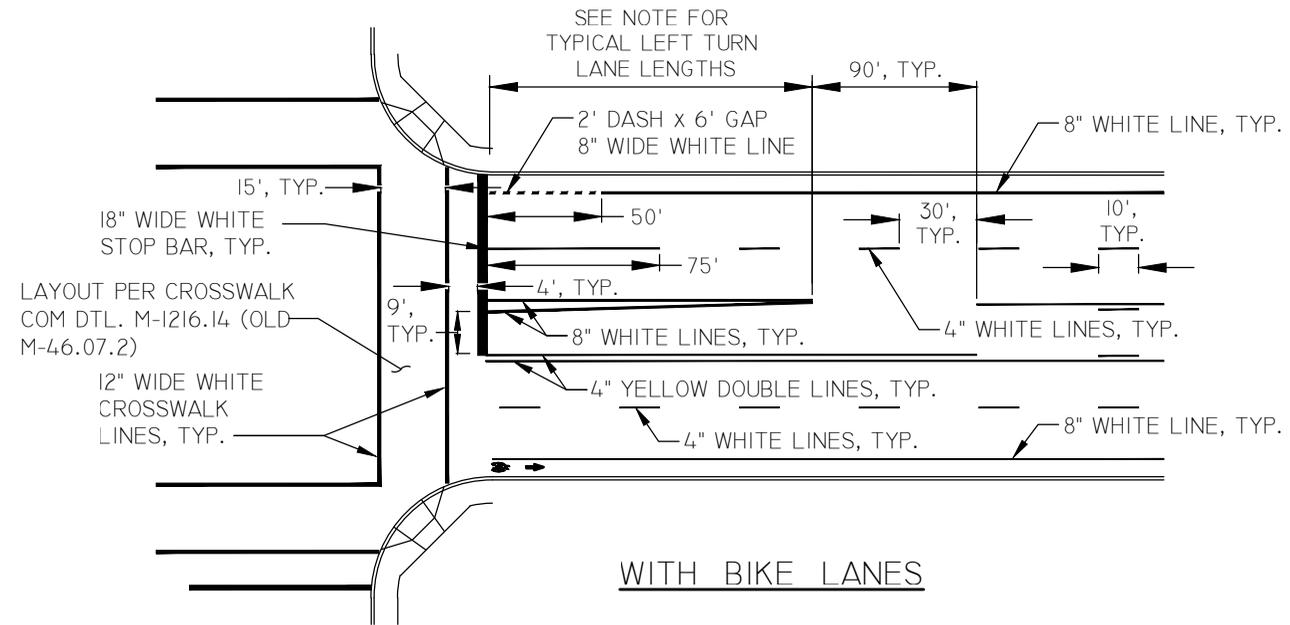
NOT TO SCALE



NOTES

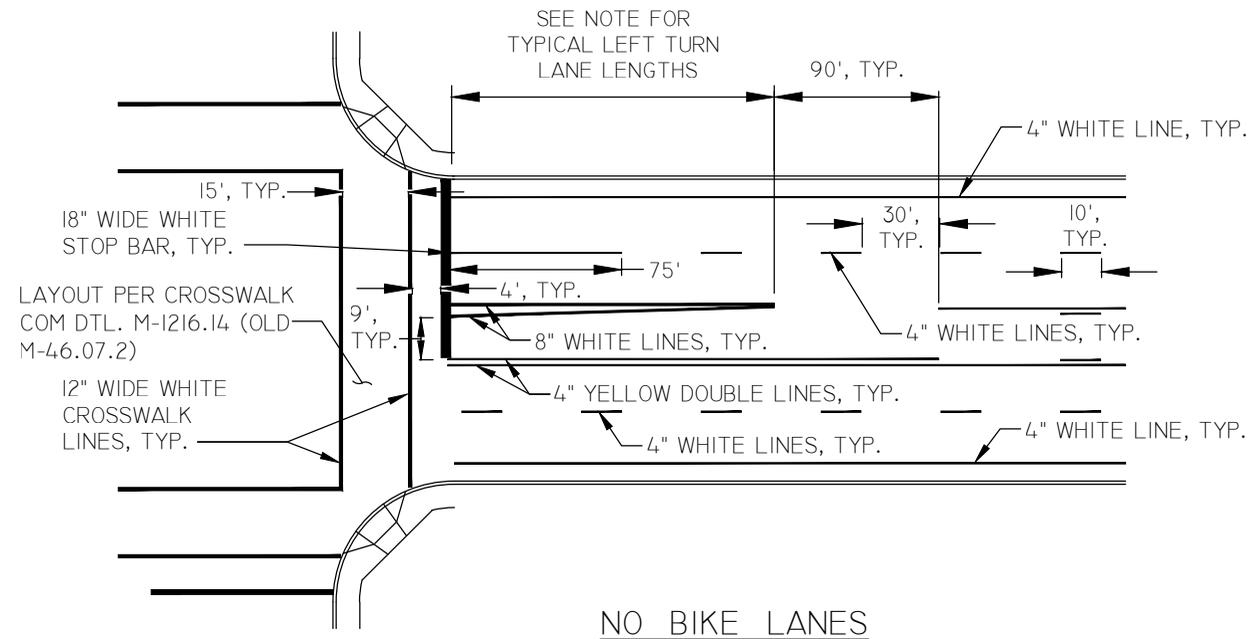
- 1 1/2" BITUMINOUS PREFORMED EXPANSION JOINT FILLER, ASTM D-1751 PER MAG SECTION 729.
- 2 SUBGRADE PREPARATION PER MAG SECTION 301.
- 3 CONTRACTION JOINTS IN THE DECELERATION LANE PAVEMENT SHALL MATCH THOSE IN THE CURB AND DRIVEWAY.
- 4 CONCRETE SHALL BE CLASS "A" PER MAG SECTION 725.
- 5 PAVEMENT MARKINGS PER COM DETAIL M-1217 (OLD M-47.01). IF THERE ARE BIKE LANES, THE STRIPE CLOSEST TO THE DECELERATION LANE SHALL BE LOCATED ON THE A.C. PAVEMENT DIRECTLY ADJACENT TO THE JOINT BETWEEN A.C. AND PCCP.
- 6 PAVEMENT TRANSITION. (SEE SECTION A-A)
- 7 CROSS SLOPE SHALL BE 2% UNLESS OTHERWISE APPROVED AND NOTED ON PLANS.
- 8 TYPICAL TAPER LENGTH OF 100' AND 150' STORAGE. LONGER LENGTHS MAY BE REQUIRED DEPENDING ON THE SITE.
- 9 CURB TERMINATION PER MAG DETAIL 222.
- 10 DRIVEWAY CURB TRANSITION - FLUSH WITH WRAP-AROUND SIDEWALK.

NOT TO SCALE

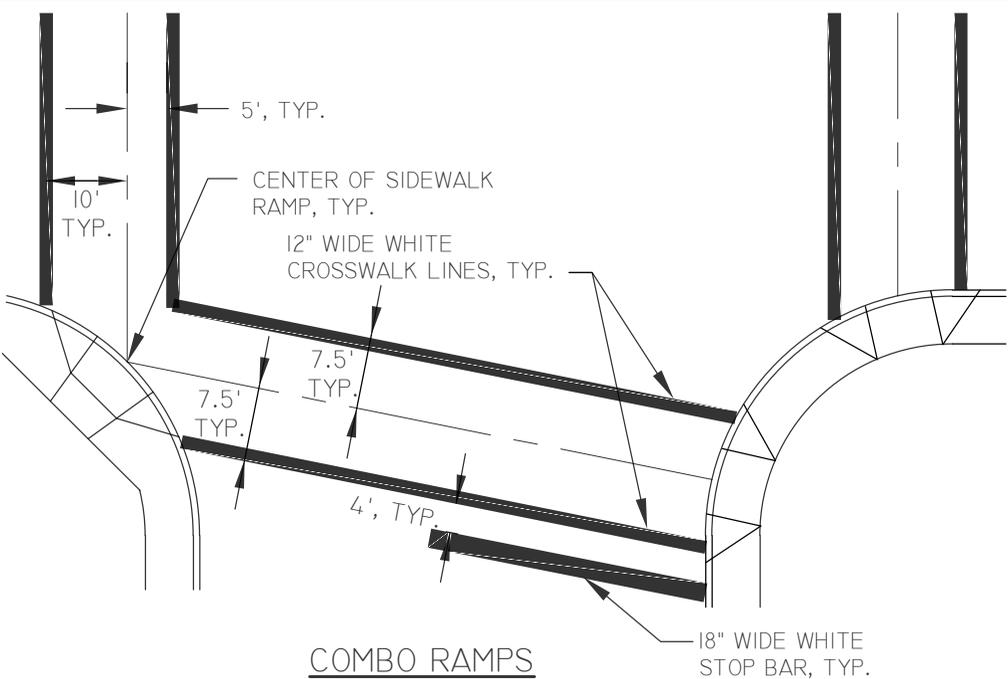


NOTE:

LEFT TURN LANE LENGTH MAY VARY TO SUIT SPECIFIC CONDITIONS. USE 200' TYPICAL ON ARTERIAL STREETS AND 100' TYPICAL ON NON-ARTERIAL STREETS.

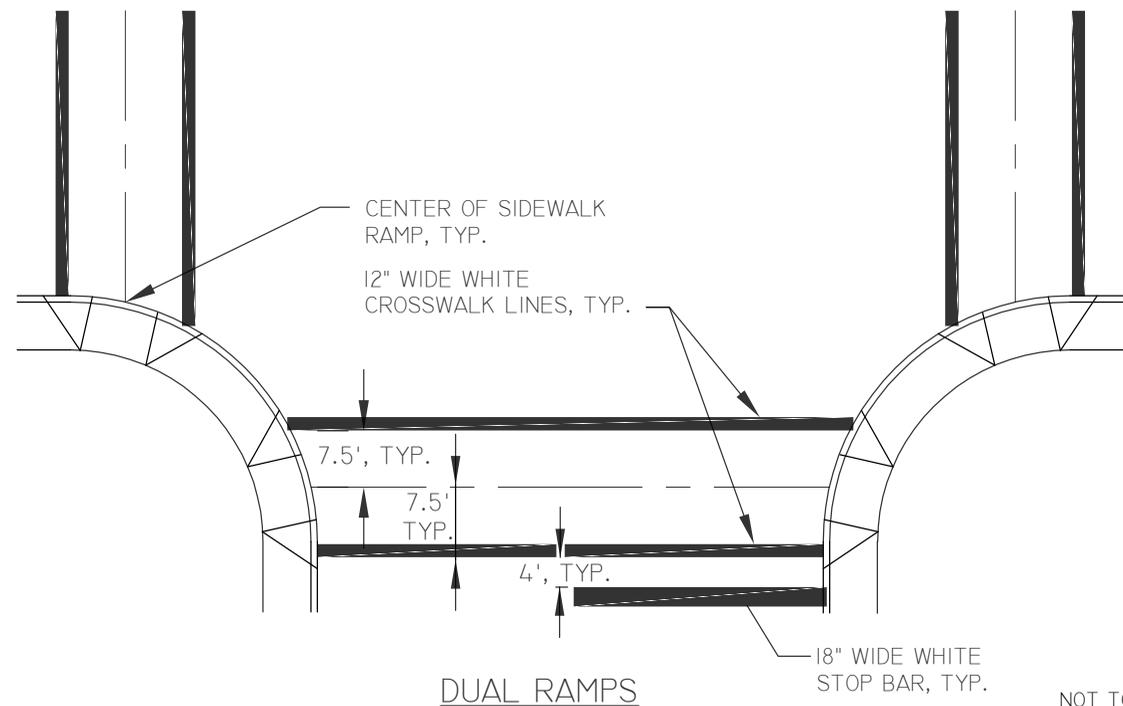
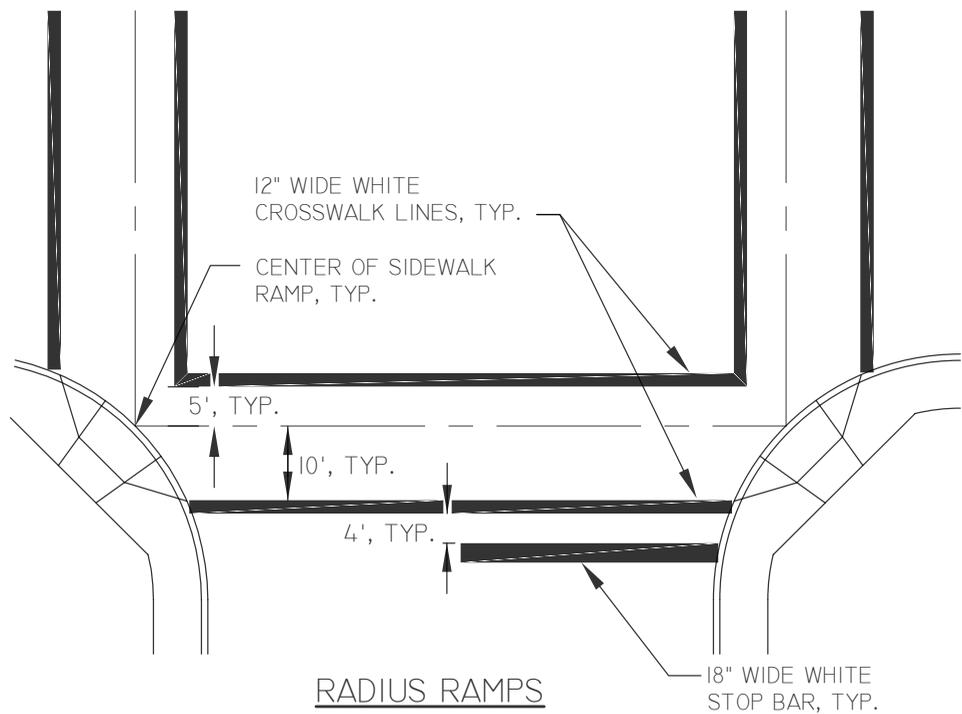


NOT TO SCALE



NOTES

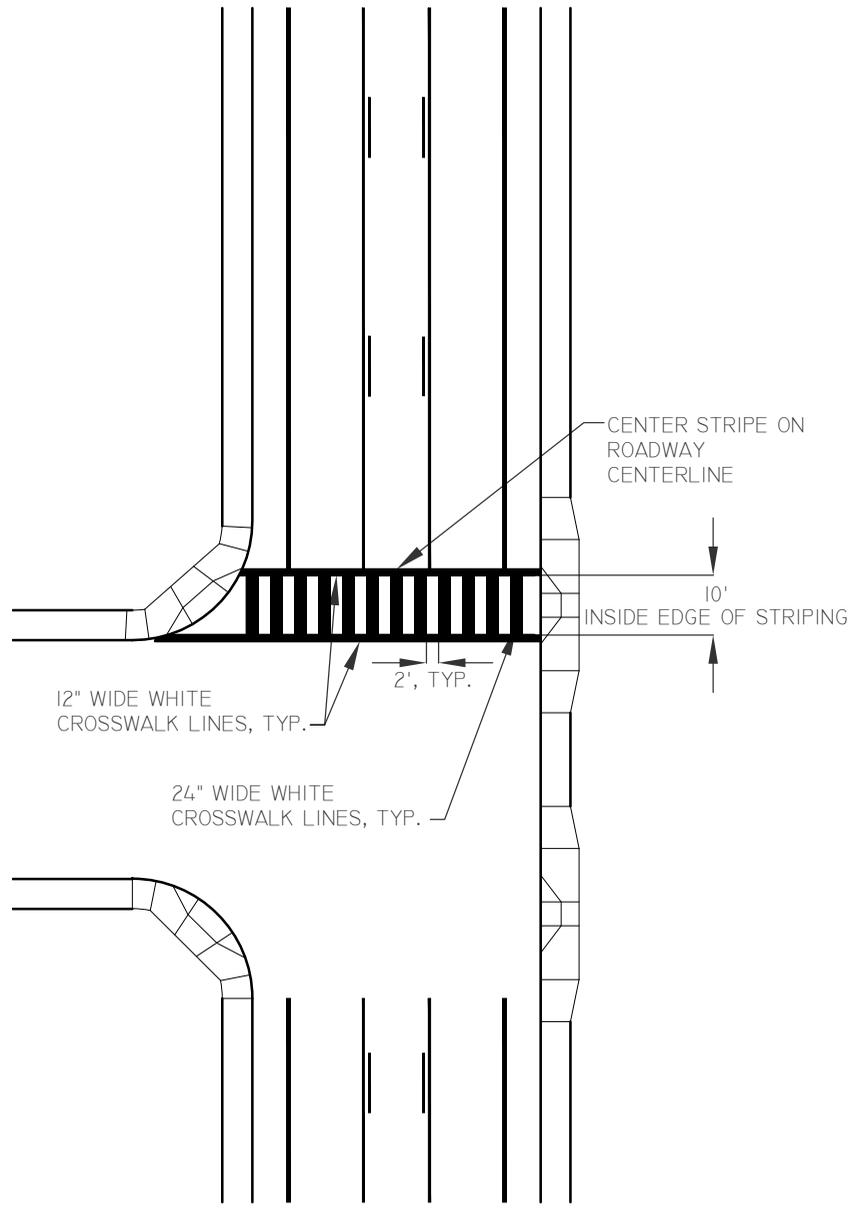
1. ALL CROSSWALKS SHALL BE 15' WIDE.
2. ALL STOP BARS AND CROSSWALKS SHALL BE 90 MIL THICK EXTRUDED ALKYD THERMOPLASTIC MARKING MATERIAL.
3. THE APPLICABLE CROSSWALK DETAIL IS TO BE SHOWN ON ALL PAVEMENT MARKING PLANS.
4. INSPECTION OF THE CROSSWALK LAYOUT BY TRAFFIC ENGINEERING SHALL BE REQUESTED BY THE ENGINEERING INSPECTOR ON BEHALF OF THE STRIPING CONTRACTOR. CROSSWALKS SHALL NOT BE STRIPED UNTIL LAYOUT IS APPROVED BY TRAFFIC ENGINEERING.
5. ALL DIMENSIONS ARE TO THE INSIDE EDGE OF STRIPING.



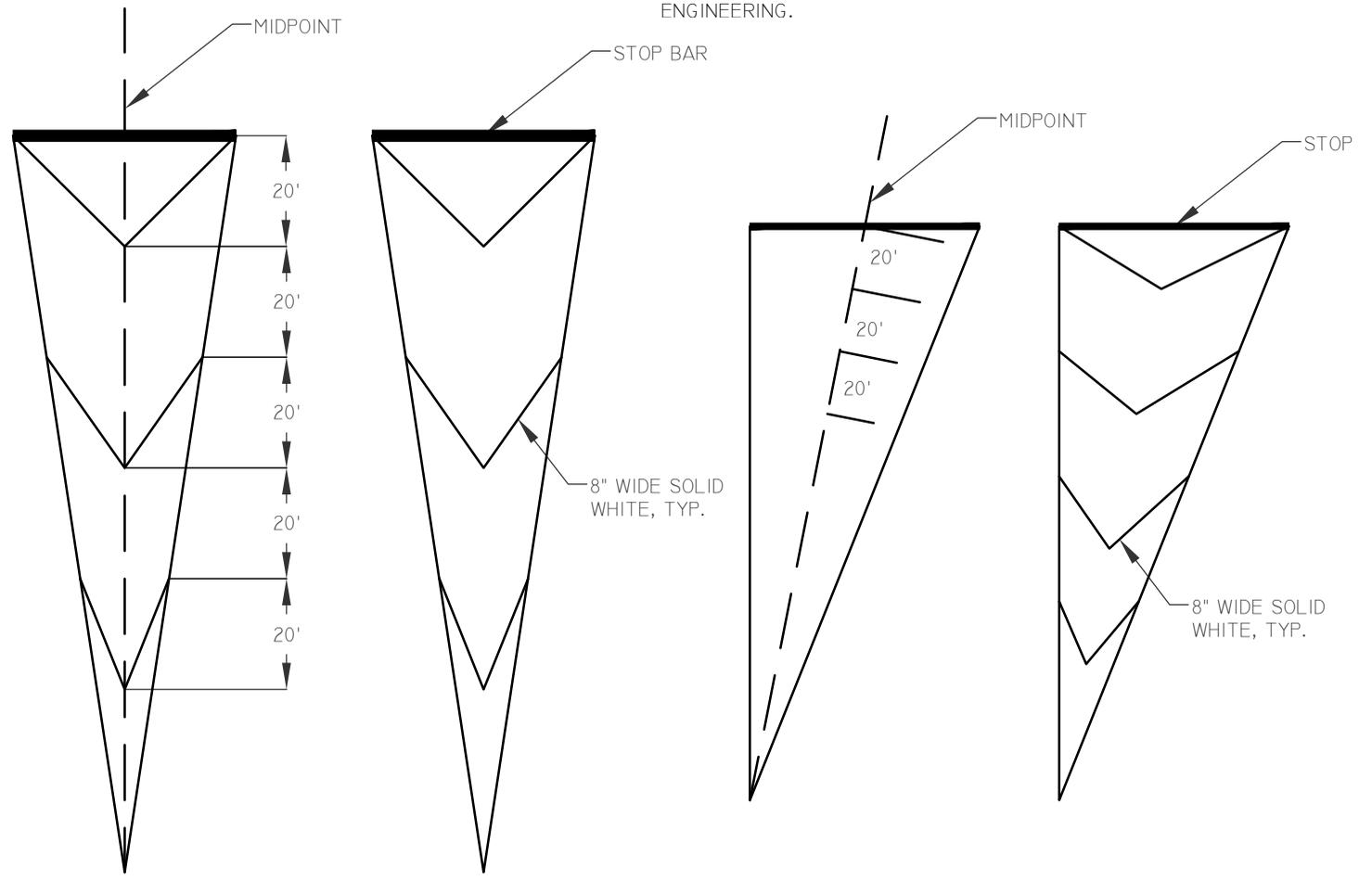
NOT TO SCALE

NOTES

1. HIGH-VISIBILITY CROSSWALK AND CHEVRON PAVEMENT MARKINGS TO ONLY BE INSTALLED WHEN WARRANTED AND APPROVED BY THE CITY TRAFFIC ENGINEER.
2. ALL STOP BARS AND CROSSWALKS SHALL BE 90 MIL THICK EXTRUDED ALKYD THERMOPLASTIC MARKING MATERIAL.
3. INSPECTION OF THE CROSSWALK AND/OR CHEVRON LAYOUT BY TRAFFIC ENGINEERING SHALL BE REQUESTED BY THE ENGINEERING INSPECTOR ON BEHALF OF THE STRIPING CONTRACTOR. CROSSWALKS SHALL NOT BE STRIPED UNTIL LAYOUT IS APPROVED BY TRAFFIC ENGINEERING.



HIGH-VISIBILITY CROSSWALK

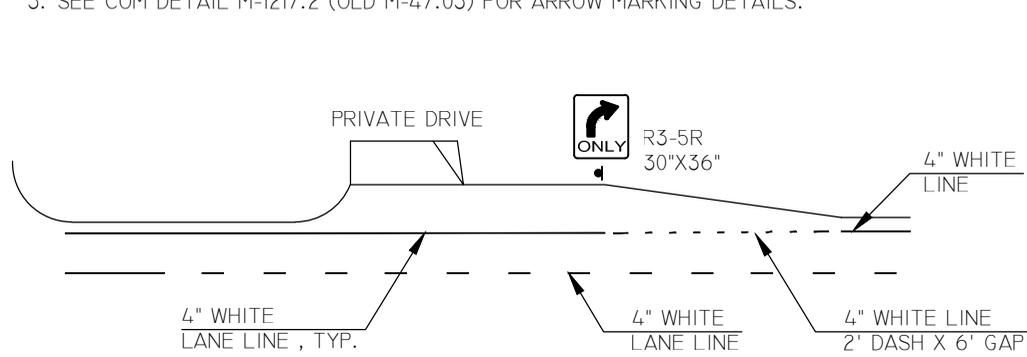


CHEVRON PAVEMENT MARKINGS

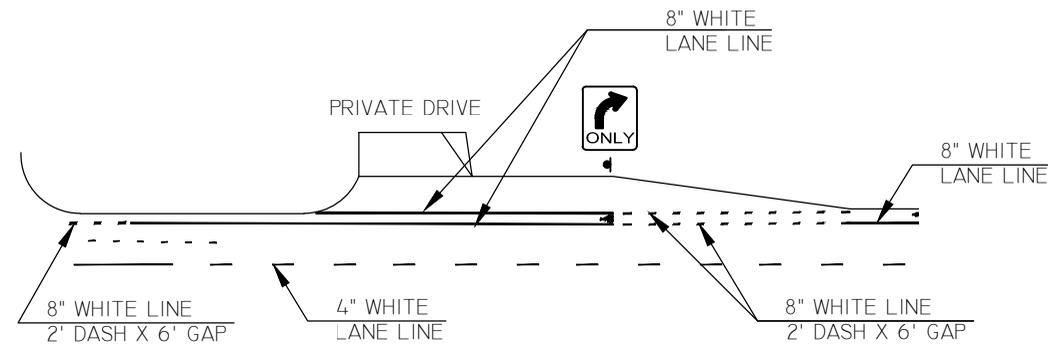
NOT TO SCALE

NOTES

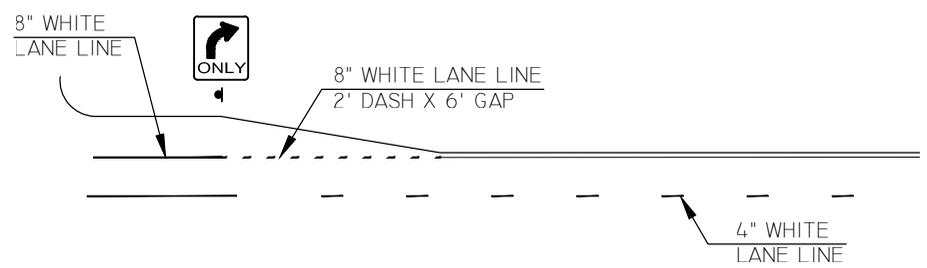
1. R3-5R AT ALL RIGHT TURN LANES.
2. INSTALL CARROT FOR EXTRA WIDE RIGHT TURN LANES (18' OR MORE). FOR LANES WIDER THAN 20', INSTALL CARROT AND "ARROW" PAVEMENT MARKING.
3. SEE COM DETAIL M-1217.2 (OLD M-47.03) FOR ARROW MARKING DETAILS.



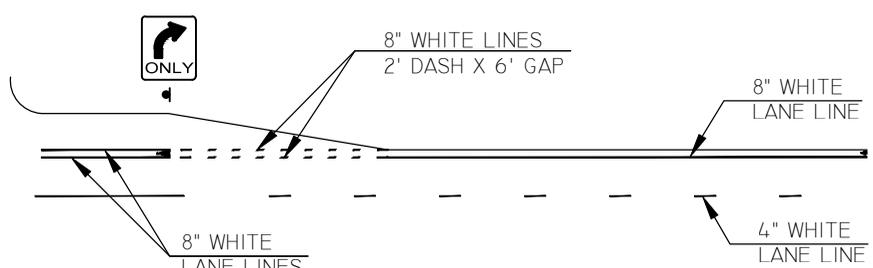
NO BIKE LANES



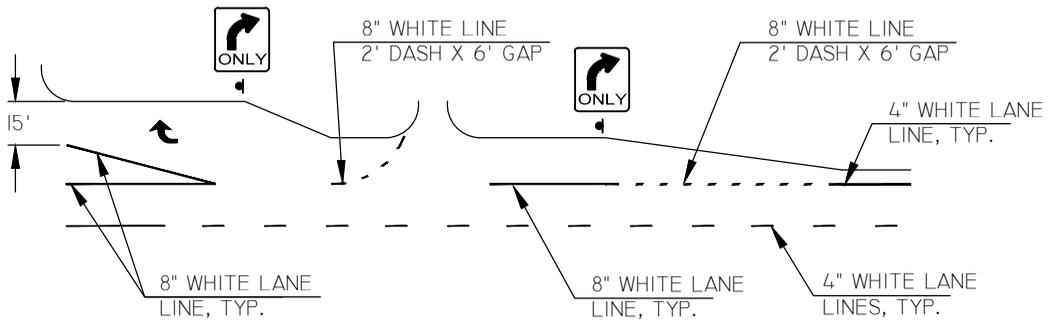
WITH BIKE LANES



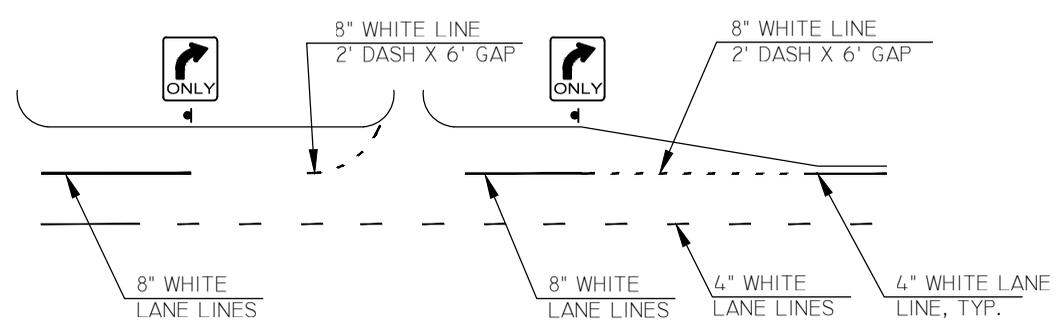
NO BIKE LANES



WITH BIKE LANES

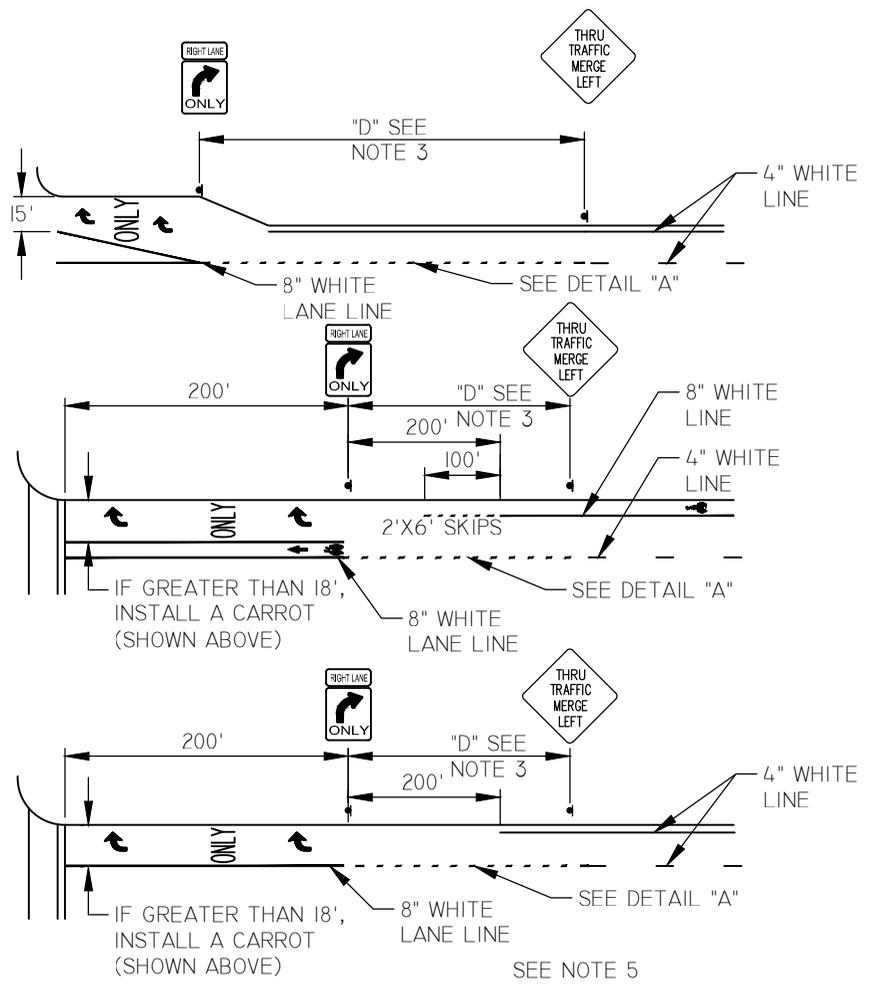


NO BIKE LANES



NO BIKE LANES

NOT TO SCALE

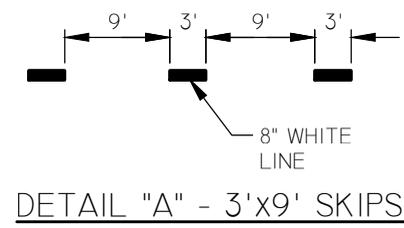


DESIGN SPEED (MPH)	D (FT)
20	175
25	250
30	325
35	400
40	475
45	550
50	625
55	700
60	775

EXCERPT FROM MUTCD CURRENT EDITION (AZ SUPPLEMENT), TABLE 2C-3 CONDITION A

NOTES

1. INSTALL R3-5R AND R3-5FP PLAQUE AT ALL RIGHT TURN TRAP LANES.
2. INSTALL ARROW AND "ONLY" PAVEMENT MARKINGS AT ALL RIGHT TURN TRAP LANES.
3. DISTANCE FOR "D" PER TABLE 2C-4 OF THE AZ SUPPLEMENT TO THE MUTCD, 2009 EDITION. "GUIDELINES FOR ADVANCE PLACEMENT OF WARNING SIGNS", USE CONDITION A.
4. SEE COM DETAIL M-1217.2 (OLD M-47.03) FOR ARROW AND "ONLY" MARKING DETAILS.
5. ADDITIONAL SETS OF PAVEMENT ARROWS AND R3-5R SIGNS AND PLAQUES MAY BE USED WHEN TRAP LANES OCCUR AT NON-ARTERIAL STREETS, AND ELSEWHERE, ON THE BASIS OF AN ENGINEERING STUDY.



AT YY ST

AT SIGNAL



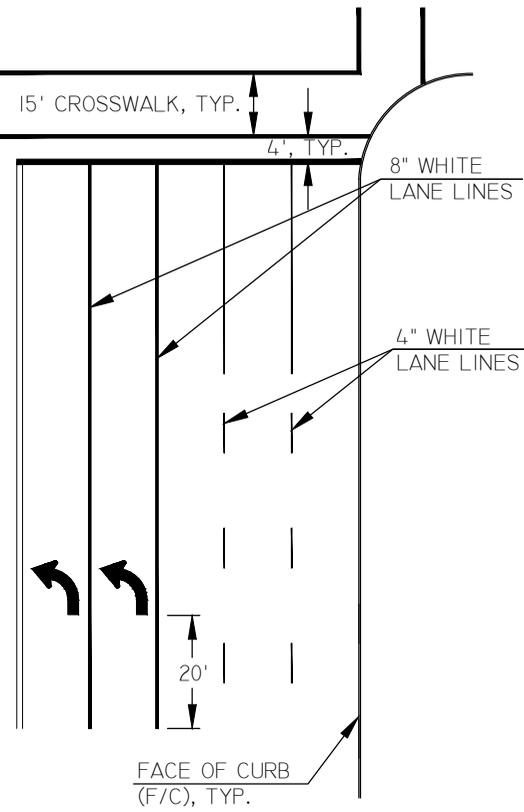
W9-101L 36"x36"
ADOT ARIZONA
MANUAL OF
APPROVED SIGNS



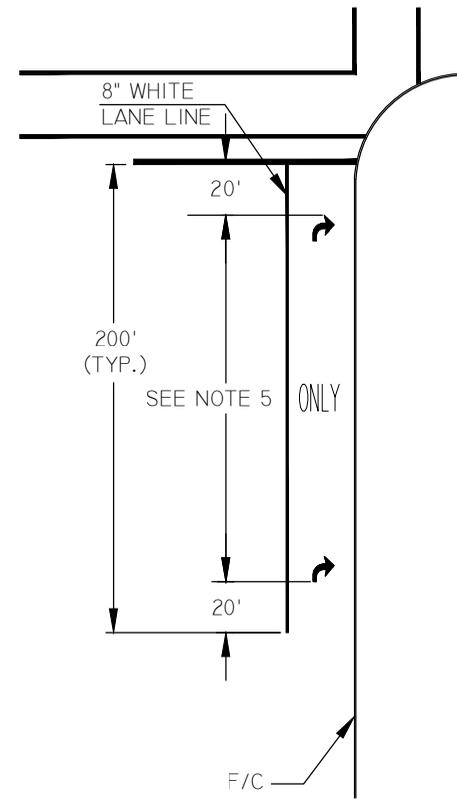
R3-5FP
30"x12"

R3-5R
30"x36"

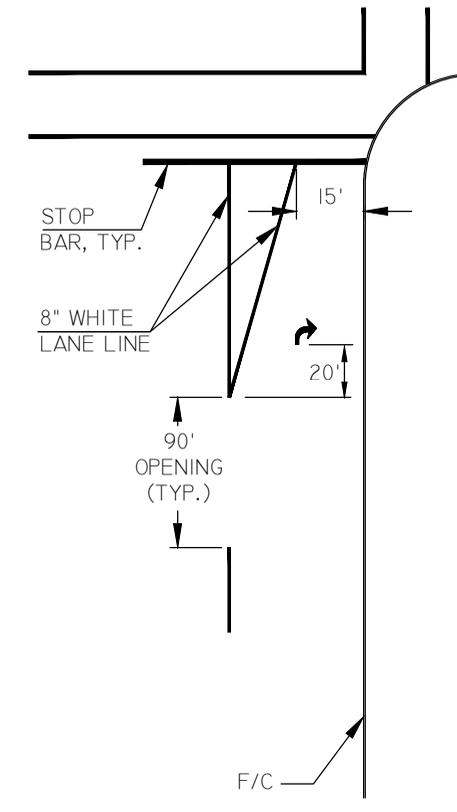
NOT TO SCALE



DUAL LEFT TURN LANES



TRAP RIGHT TURN LANES

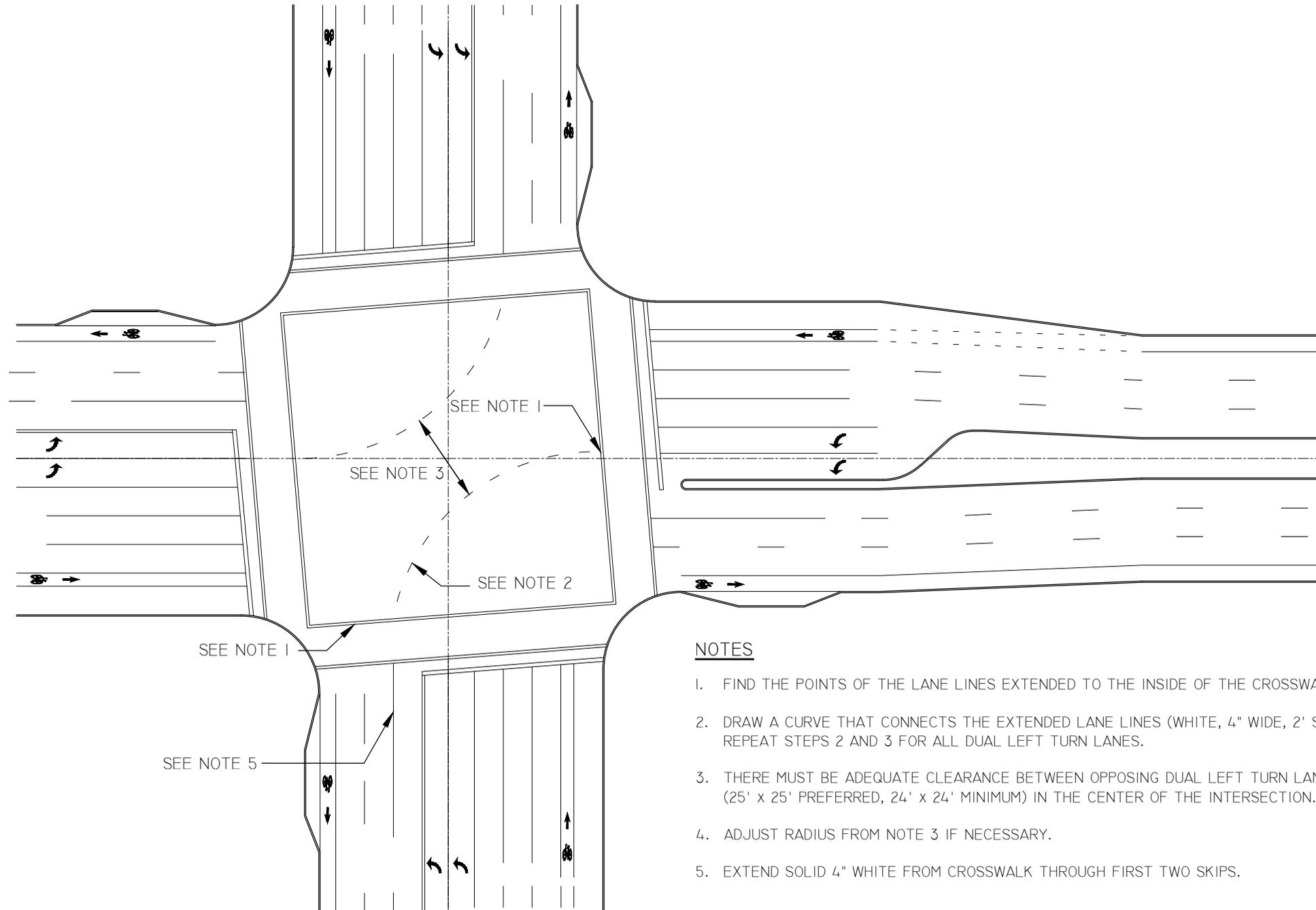


RIGHT TURN LANES
20' WIDE OR MORE

NOTES

1. INSTALL LEFT ARROWS 20' BEYOND BEGINNING OF LEFT TURN BAYS.
2. DO NOT INSTALL "ONLY" WORD MARKING IN LEFT TURN LANES UNLESS SPECIFIED.
3. DO NOT INSTALL LEFT ARROWS IN SINGLE LEFT TURN LANES UNLESS SPECIFIED.
4. INSTALL RIGHT ARROW IN WIDE RIGHT TURN LANES (AT LEAST 20' WIDE). SEE COM DETAILS M-1217 (OLD M-47.01), M-1217.1 (OLD M-47.02) FOR "RIGHT TURN TREATMENTS".
5. INSTALL COMBINATION ARROW-"ONLY"-ARROW IN TRAP RIGHT TURN LANES. THE FIRST ARROW SHOULD BE 20' FROM THE BEGINNING OF THE TURN LANE. THE SECOND ARROW SHOULD BE 20' IN FRONT OF STOP BAR (OR CURB RETURN AT UNSIGNALIZED LOCATIONS). THE "ONLY" SHOULD BE PLACED MID WAY BETWEEN THE ARROWS.
6. "ONLY" LEGEND AND ARROW MARKING PER MUTCD LATEST EDITION.
7. ALL SYMBOLS AND WORD LEGENDS SHALL BE TYPE IV 90 MIL PREFORMED THERMOPLASTIC PER ADOT STANDARD SPECIFICATIONS SECTION 705 UNLESS OTHERWISE NOTED.

NOT TO SCALE



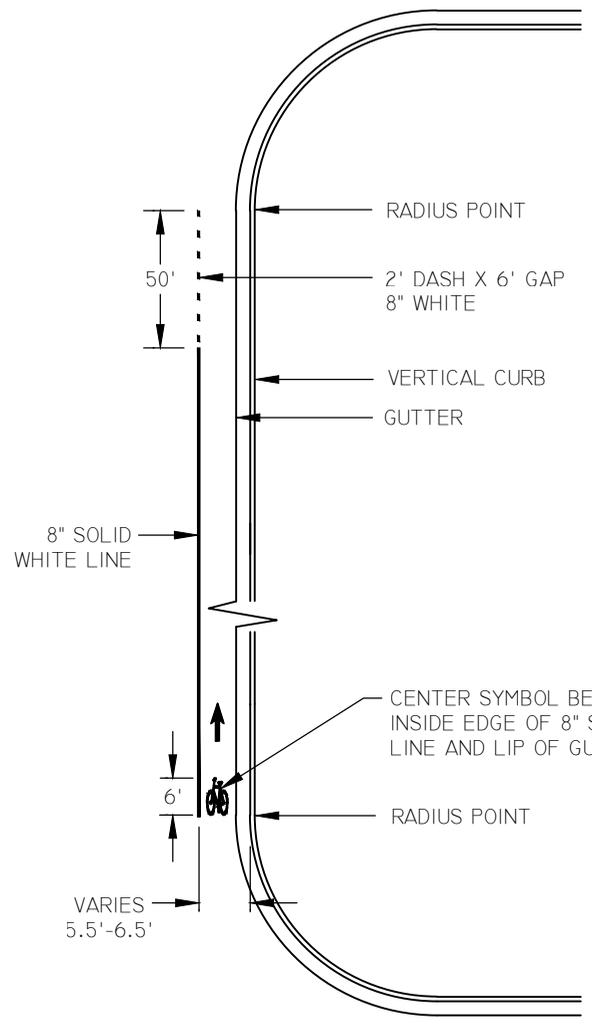
NOTES

1. FIND THE POINTS OF THE LANE LINES EXTENDED TO THE INSIDE OF THE CROSSWALK LINE.
2. DRAW A CURVE THAT CONNECTS THE EXTENDED LANE LINES (WHITE, 4" WIDE, 2' SOLID/4' GAP). REPEAT STEPS 2 AND 3 FOR ALL DUAL LEFT TURN LANES.
3. THERE MUST BE ADEQUATE CLEARANCE BETWEEN OPPOSING DUAL LEFT TURN LANES (25' x 25' PREFERRED, 24' x 24' MINIMUM) IN THE CENTER OF THE INTERSECTION.
4. ADJUST RADIUS FROM NOTE 3 IF NECESSARY.
5. EXTEND SOLID 4" WHITE FROM CROSSWALK THROUGH FIRST TWO SKIPS.

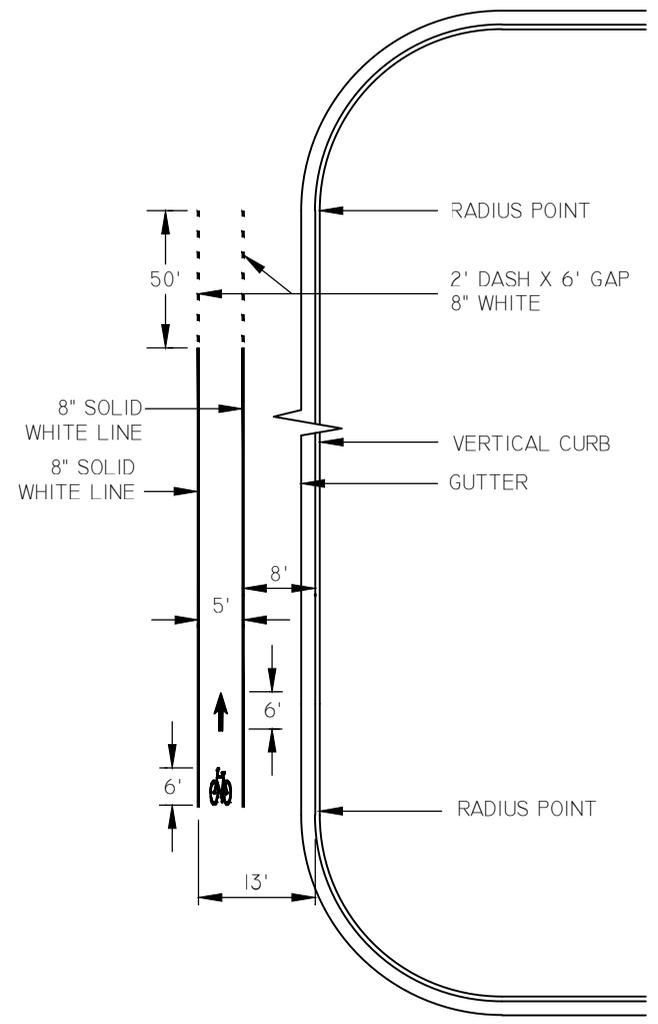
NOT TO SCALE

OLD
M-47.04

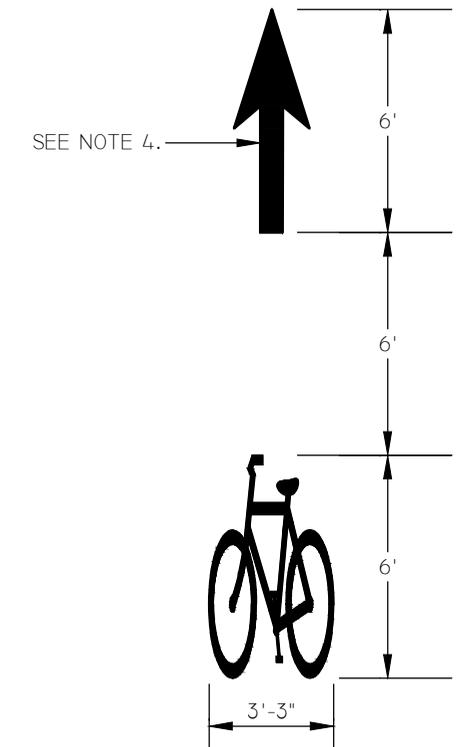
DETAIL NO.
M-1217.3



TYPICAL BIKE LANE LAYOUT



TYPICAL LAYOUT FOR SHARED BIKE/PARKING LANES



BIKE RIDER DETAIL

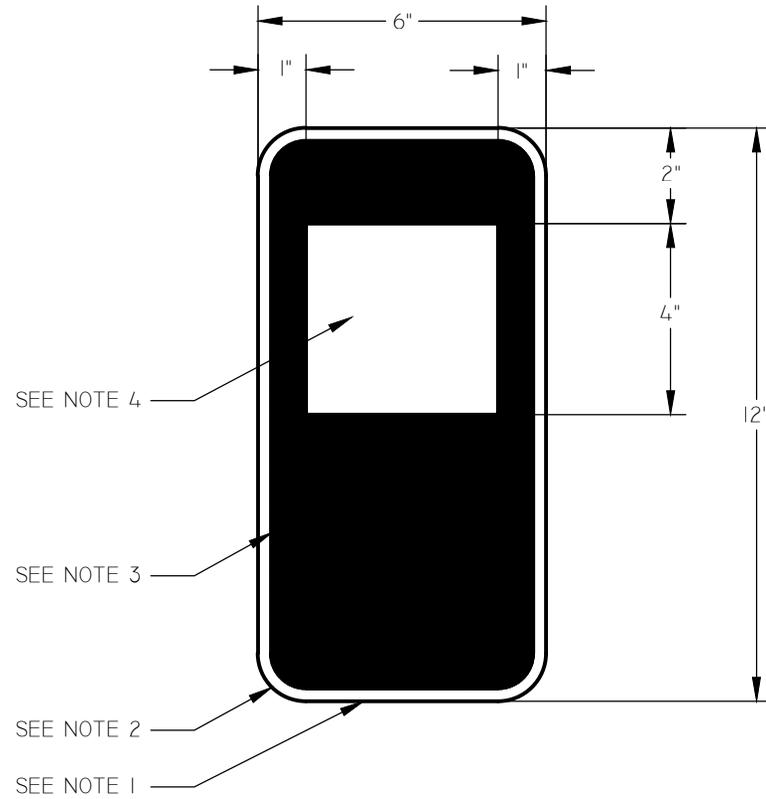
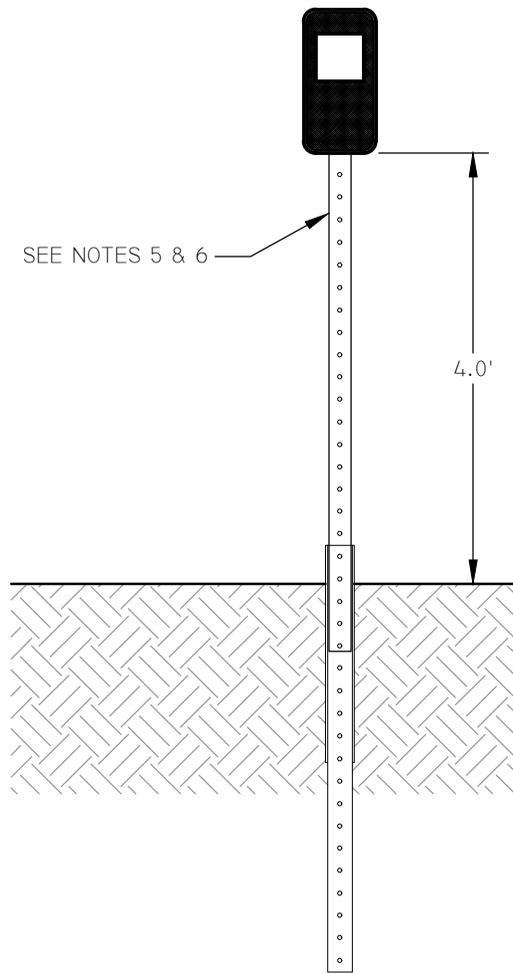
NOTES

1. INSTALL BIKE LANE MARKINGS AFTER EACH INTERSECTION. SEE STD. DETAIL SERIES M-1216 AND M-1217 FOR SYMBOL INSTALLATION LOCATIONS.
2. SYMBOL SPACING NOT TO EXCEED 1000 FT.
3. BIKE SYMBOL FACES TOWARDS TRAFFIC.
4. ARROWS INSTALLED ONLY AT LOCATIONS APPROACHING PUBLIC STREET INTERSECTIONS WHERE THE BIKE LANE IS LOCATED BETWEEN GENERAL-PURPOSE LANES FOR MOTOR VEHICLE MOVEMENTS AND DEPARTING PUBLIC STREET INTERSECTIONS. SEE STD. DETAIL SERIES M-1216 AND M-1217 FOR SCENARIOS WHERE THE ARROW IS INSTALLED. ARROWS MAY BE REQUIRED FOR OTHER LOCATIONS AS REQUIRED BY THE CITY TRAFFIC ENGINEER.
5. ALL LEGENDS AND SYMBOLS SHALL BE APPLIED IN TYPE IV 90 MILL PREFORMED THERMOPLASTIC PER ADOT STANDARD SPECIFICATIONS SECTION 705.

NOT TO SCALE

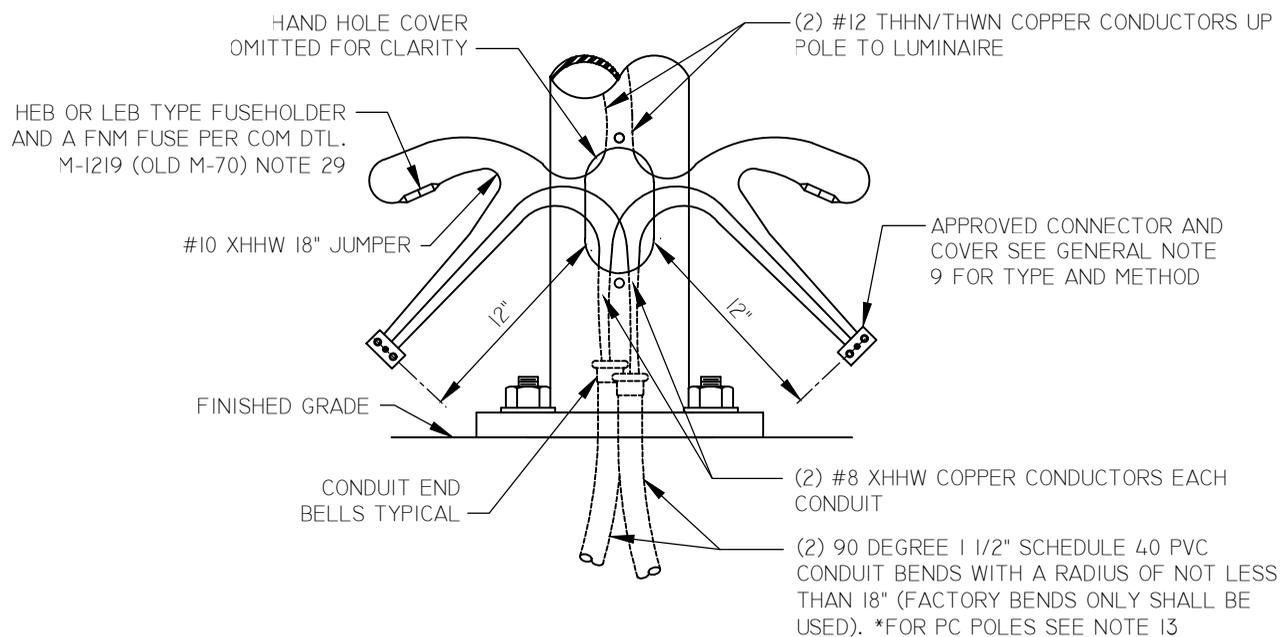
NOTES

1. PANEL SHALL BE FABRICATED FROM 0.063" THICK 3004-H14, 5052-H-38, OR 6061-T6 ALUMINUM ALLOY ETCHED ON BOTH SIDES.
2. CORNERS OF PANEL SHALL BE ROUNDED WITH A 1" RADIUS.
3. PANEL BACKGROUND SHALL BE BLACK.
4. DELINEATOR MARKING SHALL BE A 4" x 4" WHITE HIGHLY REFLECTIVE MARKING.
5. SIGN SHALL BE LOCATED PER COM DETAIL M-1207 (OLD M-23.01).
6. POST SHALL BE INSTALLED PER COM DETAIL M-1210 (OLD M-39).

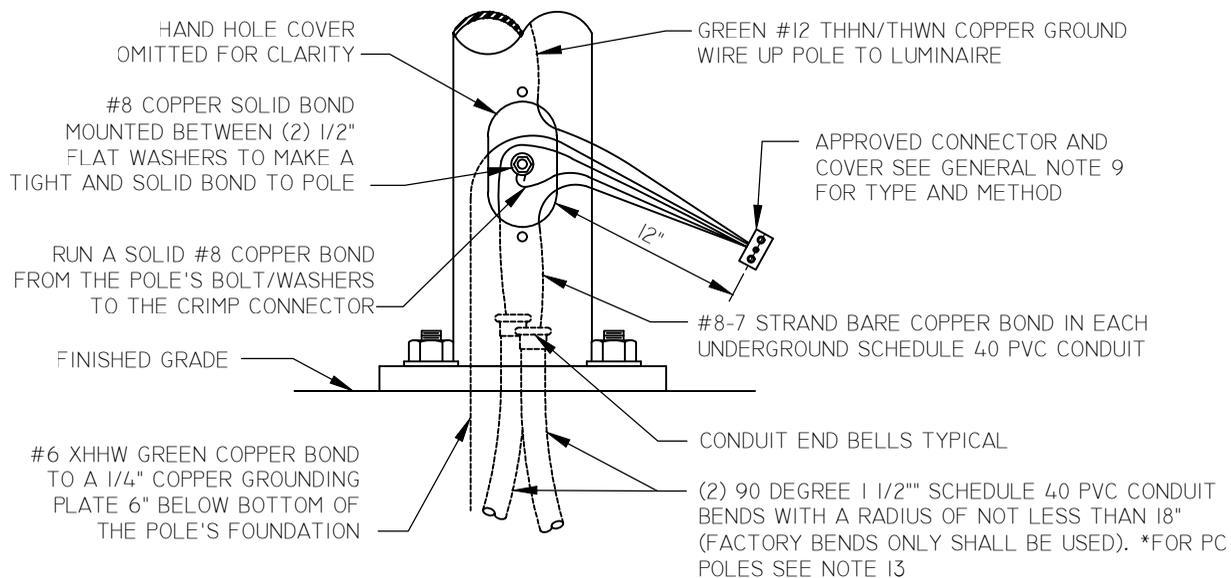


NOT TO SCALE

1. ALL WORKMANSHIP, MATERIAL AND INSTALLATION SHALL COMPLY WITH THE MAG UNIFORM STANDARD DETAILS AND SPECIFICATIONS AS AMENDED BY THE CITY OF MESA, THE CITY OF MESA ENGINEERING DESIGN STANDARDS AND THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRIC CODE.
 2. THE CITY OF MESA REQUIRES AT LEAST ONE IMSA LEVEL I ROADWAY LIGHTING OR TRAFFIC SIGNAL TECHNICIAN ON SITE DURING ALL PHASES OF ANY STREETLIGHT WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE VERIFICATION OF CURRENT CERTIFICATION. IF A JOB SITE IS INSPECTED AND A CERTIFIED TECHNICIAN IS NOT ON SITE, THE JOB WILL BE SHUT DOWN. THIS SAME REQUIREMENT ALSO APPLIES TO LIGHTING WITHIN PARKING LOTS CONSTRUCTED, OWNED OR MAINTAINED BY THE CITY OF MESA.
 3. CONTRACTOR SHALL SUBMIT A LIST CONTAINING NAMES AND QUALIFIED STATUS OF PERSONNEL THAT WILL BE ON THE IMMEDIATE JOB SITE TO THE INSPECTOR PRIOR TO STARTING ANY TYPE OF CONSTRUCTION. ANY CHANGE IN THIS LIST WILL REQUIRE IMMEDIATE NOTIFICATION TO THE INSPECTOR.
 4. DURING THE CONSTRUCTION OR WARRANTY PERIOD, IF THE CONTRACTOR FAILS TO OR IS UNABLE TO COMPLY WITHIN TWO (2) WORKING DAYS OF A REQUEST OF THE INSPECTOR OR IF A STREETLIGHT OUTAGE MAKES IT NECESSARY FOR CITY FORCES TO DO WORK THAT IS NORMALLY THE CONTRACTOR'S RESPONSIBILITY, THE CITY WILL BE JUSTIFIED IN BILLING THE CONTRACTOR. A SEPARATE BILLING SHALL COVER EACH INCIDENT REQUIRING WORK BY CITY FORCES. THE AMOUNT OF EACH BILLING SHALL BE EITHER \$350.00 OR THE ACTUAL ACCUMULATED CHARGES FOR EMPLOYEES' TIME, MATERIALS, AND EQUIPMENT, WHICHEVER IS GREATER. EMPLOYEES' TIME WILL BE BILLED AT EACH INDIVIDUAL'S HOURLY RATE PLUS THE APPLICABLE CITY OVERHEAD RATE.
 5. INSPECTIONS SHALL BE REQUESTED BY THE ELECTRICAL CONTRACTOR IN ACCORDANCE WITH THE FOLLOWING LIST:
 - * BEFORE STARTING PROJECT (PRE-JOB INSPECTION).
 - * BEFORE FILLING PULL BOX HOLES WITH AGGREGATE.
 - * BEFORE BACKFILLING TRENCH AND COVERING CONDUIT.
 - * WHEN THE POLE FOUNDATIONS ARE DUG, ANCHOR BOLTS, GROUND WIRE AND GROUND PLATE ARE READY AND IN PLACE, PRIOR TO POURING CONCRETE.
 - * BEFORE PULLING WIRE-(SEE NOTE 16 THIS PAGE)
 - * BEFORE INSTALLATION OF FIXTURES, AND PHOTOCCELL.
 - * BEFORE MAKING SPLICES.
 - * WHEN PROJECT IS COMPLETED. IF NECESSARY, A LIST OF DISCREPANCIES WILL BE SUBMITTED TO THE CONTRACTOR FOR CORRECTIVE ACTION.
- FAILURE TO HAVE THESE ITEMS INSPECTED AND APPROVED BEFORE PROCEEDING WILL RESULT IN REJECTION OF THE WORK DONE, AND REMOVAL OF ALL SUCH WORK WILL BE REQUIRED.
6. ALL STREETLIGHTS SHALL BE CONNECTED TO THE PERMANENT POWER SUPPLY BY THE AGENCY SUPPLYING POWER. STREETLIGHT SYSTEMS WILL NOT BE ACCEPTED UNTIL THE SYSTEM HAS BEEN ENERGIZED AND FULLY OPERATIONAL FOR A MINIMUM ONE-HOUR TEST PERIOD AT RATED VOLTAGE.
 7. WHERE A LIGHTING CONTROL CABINET IS UTILIZED, STREETLIGHT CIRCUITS SHALL BE 240 VOLT. WHERE A CABINET IS NOT USED, STREETLIGHT CIRCUITS SHALL BE 120 VOLT. ALL SERVICES SHALL BE 120/240 VOLT. ALL CONTROL CIRCUITS SHALL BE 120 VOLT.
 8. BEFORE DISCONNECTING ANY EXISTING STREETLIGHTS, THE NEW LIGHT SYSTEM SHALL BE WORKING OR TEMPORARY LIGHTING INSTALLED. EXISTING STREETLIGHTS TO BE REMOVED AND NEW STREETLIGHTS SHALL NOT OPERATE AT THE SAME TIME.
 9. POLES HAVING MULTIPLE LUMINAIRES SHALL HAVE TWO (2) CONDUCTORS AND ONE (1) BOND WIRE PER LUMINAIRE. THE CONDUCTORS SHALL BE MARKED AS PAIRS AT THE HANDHOLE.
 10. ALL UNDERGROUND CIRCUIT CONDUCTORS SHALL BE BLACK, UNLESS OTHERWISE NOTED.
 11. WHERE STREETLIGHTS OR CIRCUITS ARE 120 VOLT, ONE CONDUCTOR SHALL BE UN-FUSED AND BE EITHER WHITE OR MARKED WHITE, AS REQUIRED.
 12. ALL CIRCUIT CONDUCTORS IN UNDERGROUND CONDUIT SHALL BE XHHW/XHHW-2 INSULATION, MIN. #8-7 STRAND EXCEPT PHOTOCCELL CIRCUIT SHALL BE TRAY CABLE (SEE NOTE 13 THIS PAGE)
 13. THE TRAY CABLE [PRIORITY PWC02LII XHHW-2 CONDUCTORS, CPE JACKET, 600VOLTS] FRPC 14/3 (COLORS : BLACK-RED-WHITE) OR EQUIVALENT. RUN UNDERGROUND FROM THE LIGHTING CONTROL CABINET TO THE HANDHOLE OF THE PHOTO CELL LIGHT POLE, SHALL BE CONTINUOUS & WITHOUT SPLICES. FROM THE HANDHOLE UP, 3 CONDUCTORS OF #14AWG THHN OR EQUIVALENT WILL BE SPLICED WITH BUTT SPLICES (NO WIRE NUTS) TO THE TERMINAL BLOCK OF THE PHOTOCCELL CONTROLLED LUMINAIRE. BUTT SPLICES SHALL BE INSULATED AND THE CRIMP TYPE.
 14. MINIMUM DEPTH FROM TOP OF CURB OR ROADWAY TO TOP OF CONDUIT SHALL BE TWENTY-FOUR (24) INCHES. MAXIMUM DEPTH SHALL BE FORTY-EIGHT (48) INCHES, UNLESS OTHERWISE APPROVED.
 15. UNDERGROUND WIRING SHALL BE INSTALLED IN SCHEDULE 40 RIGID PVC CONDUIT, UL APPROVED FOR ABOVE GROUND AND UNDERGROUND USE WITH 90 DEGREE C WIRE. WHERE TWENTY-FOUR (24) INCHES COVER IS NOT POSSIBLE, GALVANIZED RIGID STEEL CONDUIT (G.R.S.), SHALL BE USED. G.R.S. CONDUIT SHALL BE DOUBLE WRAPPED WITH 20-MIL TAPE TO SIX (6) INCHES PAST THE THREADED METAL COUPLING. COMPRESSION COUPLINGS ARE NOT ALLOWED. PRIOR APPROVAL IS NEEDED FOR ANY DESIGN USING G.R.S. CONDUIT.
 16. ALL CONDUITS SHALL BE BLOWN OUT USING 90-PSI AIR PRESSURE AND TO BE MANDRELLED BEFORE PULLING WIRE.
 17. A TWO-PIECE EXPANSION JOINT COUPLING SHALL BE INSTALLED IN PVC CONDUIT RUNS AT INTERVALS NOT TO EXCEED 100 FEET.
 18. ALL FORTY-FIVE (45) AND NINETY (90) DEGREE BENDS OF CONDUIT SHALL HAVE A RADIUS OF NOT LESS THAN EIGHTEEN (18) INCHES. FACTORY BENDS ONLY SHALL BE USED.
 19. ALL JOINTS BETWEEN PVC CONDUIT, COUPLINGS & FITTING SHALL BE PREPARED WITH PURPLE PRIMER AND CEMENTED TOGETHER WITH GRAY PVC CEMENT.
 20. THE CONDUIT LOCATIONS SHOWN ON PLAN ARE DIAGRAMMATIC REPRESENTATIONS ONLY. CONTRACTOR IS TO INSTALL CONDUIT TO AVOID CONFLICTS. THE CONTRACTOR MAY AT HIS OPTION BORE FOR THE PLACEMENT OF CONDUIT PER COM DETAIL M-1700 (OLD M-18). ALL CONDUITS SHALL BE PLACED WITHIN EXISTING RIGHT-OF-WAY UNLESS OTHERWISE APPROVED.
 21. STREETLIGHT CONDUITS SHOULD BE INSTALLED PRIOR TO RESIDENTIAL DRIVEWAY INSTALLATIONS. IF STREETLIGHT CONDUIT IS INSTALLED AFTER RESIDENTIAL DRIVEWAY INSTALLATION, CONTRACTOR SHALL BORE CONDUIT UNDER DRIVEWAY. MEANDERING THE CONDUIT BEHIND THE ENTRANCE WILL NOT BE PERMITTED.
 22. BACKFILL REQUIREMENTS FOR ALL TRENCHES SHALL CONFORM TO ARTICLE 300 OF THE N.E.C., SECTION 601 OF THE UNIFORM STANDARD SPECIFICATIONS, AND DETAIL M-1203.3 (OLD M-19.04) OF THE MESA STANDARD DETAILS FOR STREET TRENCH BACKFILL AND PAVEMENT REPLACEMENT.
 23. WITH THE EXCEPTION OF DETACHED SIDEWALKS, PULL BOXES SHALL BE INSTALLED (SEE COM DETAILS M-1221 (OLD M-74.02.1) AND M-1221.1 (OLD M-74.02.2) FIVE (5) FEET (CENTER TO CENTER) BETWEEN STREETLIGHT POLES AND PULL BOXES.
 24. PHOTO CELL RECEPTACLE SHALL BE POSITIONED ON LUMINAIRE SO THAT WHEN INSTALLED THE PHOTOCCELL WILL FACE NORTH.
 25. ALL SHORTING CAPS TO BE LOW PROFILE TYPE. NO HIGHER THAN 1-1/2" ABOVE SOCKET.
 26. ALL PHOTO CELL CIRCUIT CONDUIT MUST BE 1-1/2" OR LARGER (TO INCLUDE CONDUIT STUBBING UP AT PHOTO CELL LIGHT POLE).
 27. ALL RESIDENTIAL AND COLLECTOR CONDUIT SHALL BE 1-1/2" CONDUIT
 28. ALL ARTERIAL CONDUIT SHALL BE 2", 1-1/2" CONDUIT FROM PULL BOX TO POLE.
 29. FUSING FOR HPS LUMINAIRE SHALL BE 5AMP FNM. LED LUMINAIRE TO BE FUSED ACCORDING TO WATTAGE USAGE.
 30. ALL NON GALVANIZED POLES SHALL HAVE INTERIOR POLE COATED WITH AMERCOAT 78HB OR APPROVED EQUIVALENT FROM BASE TO TOP OF HAND HOLE. (5 MILS)



RESIDENTIAL CURRENT CARRYING DETAIL

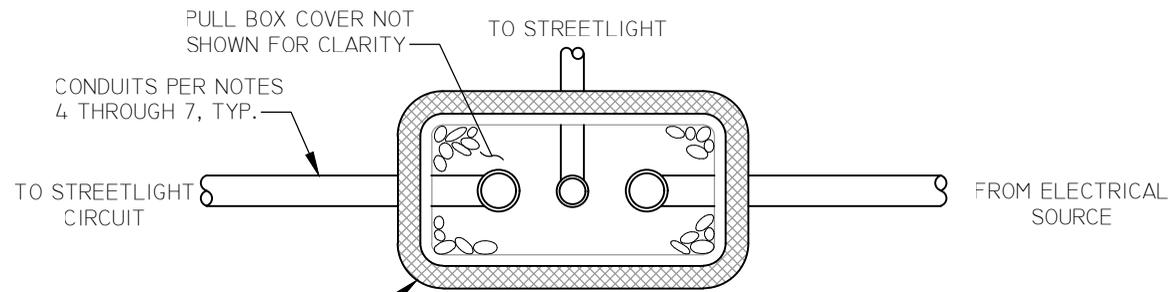


RESIDENTIAL GROUNDING DETAIL

NOTES:

1. ALL POLES SHALL BE WIRED USING TWO (2) #12 BLACK THHN/THWN 90 DEGREE C STRANDED COPPER CONDUCTORS, 600 VOLT NEC APPROVED (PER LUMINAIRE); AND ONE (1) GREEN #12 THHN/THWN 90 DEGREE C STRANDED COPPER GROUND WIRE, 600 VOLT NEC APPROVED (PER LUMINAIRE). WIRES SHALL RUN FROM THE LUMINAIRE TO A MINIMUM OF TWELVE (12) INCHES BELOW POLE HAND HOLE FOR TERMINATION.
2. ALL STREETLIGHT CONDUCTORS AND BOND WIRES SHALL BE COPPER. ALUMINUM SHALL NOT BE ALLOWED.
3. TWO (2) CONDUCTORS (PER LUMINAIRE) SHALL BE INSTALLED IN PVC CONDUIT FROM HAND HOLE TO PULL BOX.
4. ALL CURRENT CARRYING CONDUCTORS IN CONDUIT SHALL BE INSULATED WITH XHHW INSULATION. MIN. #8
5. ALL PVC CONDUIT RUNS SHALL CONTAIN A MINIMUM #8-7 STRANDED BARE BOND.
6. ALL CONDUCTORS AND BOND WIRES SHALL BE STRANDED, EXCEPT FOR THE SOLID #8 BOND WIRE THAT RUNS FROM THE POLE'S BOLT/WASHER TO THE CRIMP CONNECTOR. THE BOND WIRE IN THE CONCRETE FOUNDATION SHALL BE A #6 XHHW GREEN INSULATED COPPER STRANDED WIRE.
7. ALL POLE FOUNDATIONS SHALL HAVE A FOURTEEN (14) INCH COPPER GROUNDING PLATE PER COM DETAILS M-1220 (OLD M-73.07.1) AND M-1220.1 (OLD M-73.07.2).
8. EACH LUMINAIRE SHALL BE FUSED BEHIND THE POLE'S HAND HOLE COVER USING A HEB, OR LEB TYPE FUSE HOLDER WITH RUBBER INSULATING BOOTS. ACCORDING TO COM DETAIL M-1219 (OLD M-70) NOTE 29.
9. ALL SPLICES, INCLUDING GROUNDS AND BONDS, SHALL BE DONE WITH A GEL CAP STUB SPLICE KIT, # GELCAP -SL- 2/0-3 HOLE, OTHER GEL CAP PRODUCTS OF APPROPRIATE SIZE, OR APPROVED EQUAL.
10. WIRE PULLING COMPOUND SHALL BE USED WHEN PULLING WIRE IF NEEDED.
11. EACH CONDUIT RUN INTO A PULL BOX OR LIGHTING CONTROL CABINET SHALL HAVE AN END BELL, AND A MINIMUM OF THIRTY-SIX (36) INCHES OF SLACK IN THE WIRE FROM END BELL TO END BELL IN THE SAME PULL BOX.
12. CONDUIT END BELLS SHALL BE INSTALLED BEFORE PULLING WIRE.
13. ALL CONDUIT CONTAINING PC CIRCUIT SHALL HAVE 14-3 FRTC FROM CABINET TO P.C. POLE WITHOUT A SPLICE.

NOT TO SCALE



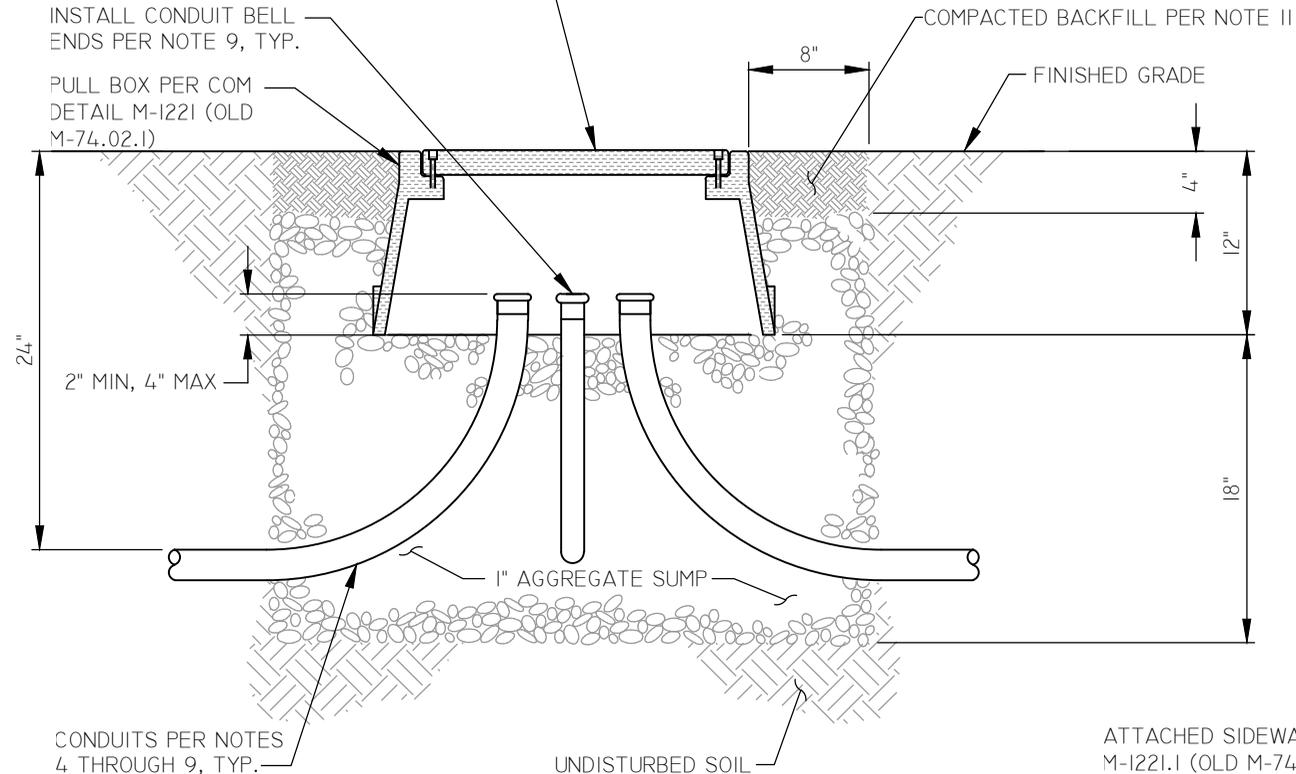
PLAN VIEW

PULL BOX PER APPLICABLE SPECIFICATION NOTED ON COM DETAIL M-1221 (OLD M-74.02.1)

PULL BOX COVER MARKED "STREETLIGHTS" PER COM DETAIL M-1221 (OLD M-74.02.1)

INSTALL CONDUIT BELL ENDS PER NOTE 9, TYP.

PULL BOX PER COM DETAIL M-1221 (OLD M-74.02.1)

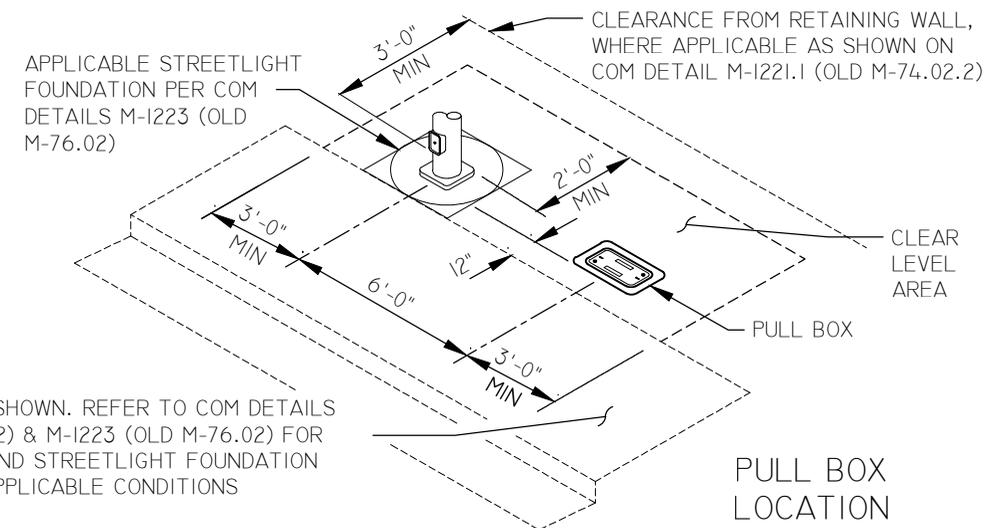


SECTION

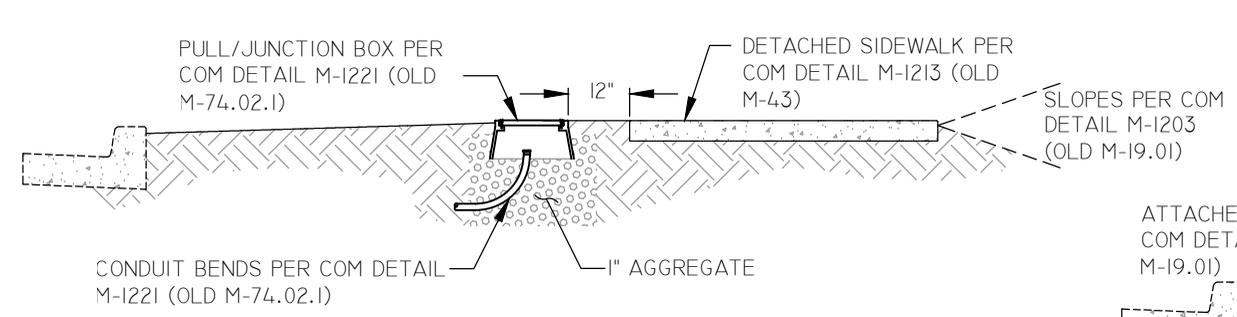
ATTACHED SIDEWALK SHOWN. REFER TO COM DETAILS M-1221.1 (OLD M-74.02.2) & M-1223 (OLD M-76.02) FOR JUNCTION/PULL BOX AND STREETLIGHT FOUNDATION INSTALLATIONS PER APPLICABLE CONDITIONS

INSTALLATION NOTES

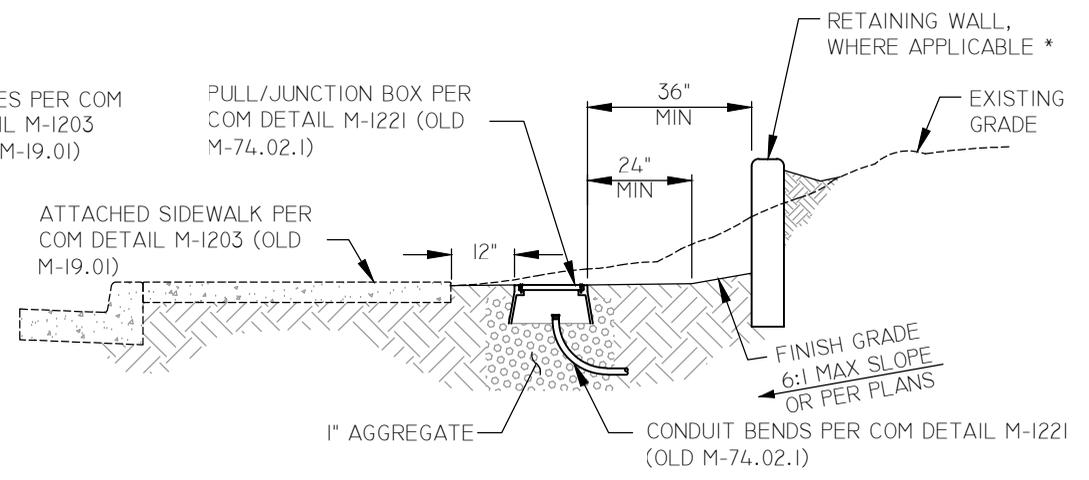
1. PULL/JUNCTION BOXES SHALL BE LOCATED CENTERED PER COM DETAIL DIMENSIONS FROM A STREETLIGHT POLE AS SHOWN BELOW, UNLESS OTHERWISE DETERMINED BY CITY FORCES.
2. PULL/JUNCTION BOXES INSTALLED ALONG A SIDEWALK SHALL BE 12" FROM SIDEWALK WITH MATCHING GRADE UNLESS OTHERWISE DETERMINED BY CITY FORCES.
3. PULL/JUNCTION BOXES SHALL BE INSTALLED IN COMPLIANCE FOR SIDEWALK OR MEDIAN CONDITIONS SHOWN ON COM DETAIL M-1221.1 (OLD M-74.02.2).
4. ALL CONDUIT SHALL BE SCHEDULE 40 P.V.C. MANUFACTURED WITH A FACTORY 90 DEGREE BEND AND A RADIUS OF NOT LESS THAN 18".
5. ARTERIAL CIRCUITS SHALL ONLY USE 2" CONDUIT.
6. NON-ARTERIAL/RESIDENTIAL CIRCUITS SHALL ONLY USE 1-1/2" CONDUIT.
7. THE CONNECTION TO A STREETLIGHT SHALL USE 1-1/2" CONDUIT.
8. CONDUITS SHALL BE INSTALLED TO APPROXIMATE CENTERS OF PULL AND JUNCTION BOXES.
9. CONDUIT BELL ENDS SHALL HAVE PRIMER, GLUED AND INSTALLED BEFORE PULLING WIRE.
10. 1" AGGREGATE SHALL BE INSTALLED IN DRAINAGE SUMP AS SHOWN.
11. BACKFILL SHALL CONSIST OF EXCAVATED MATERIALS AND SHALL BE COMPACTED PER MAG STANDARD SPECIFICATION 601.



NOT TO SCALE

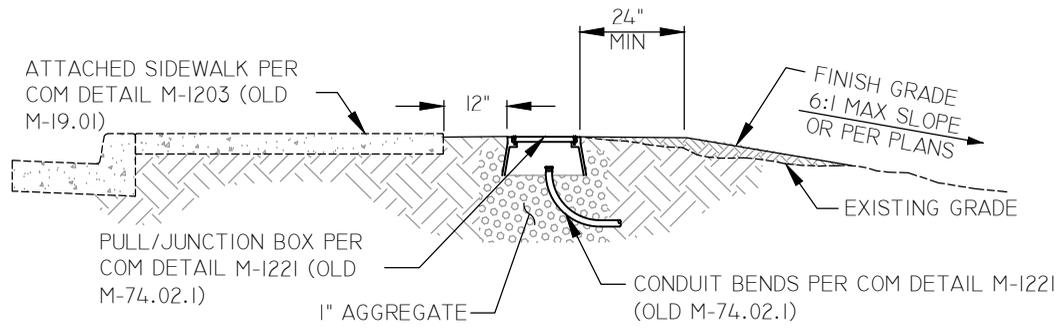


INSTALLATION AT DETACHED SIDEWALK

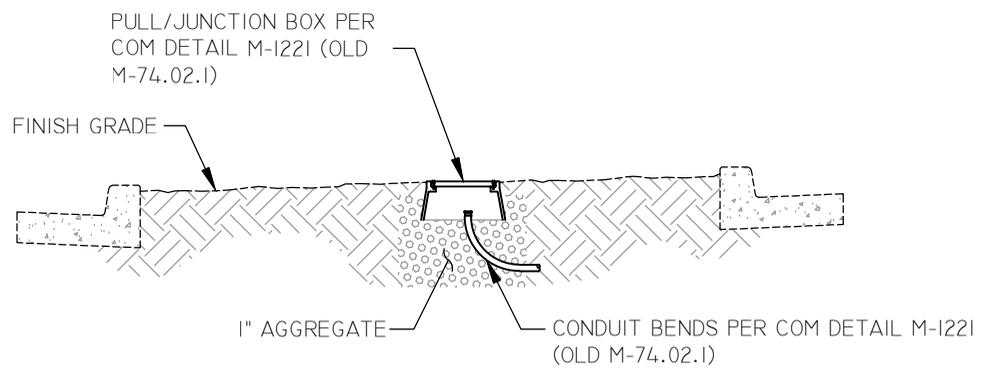


INSTALLATION AT SIDEWALK TO UPWARD SLOPE

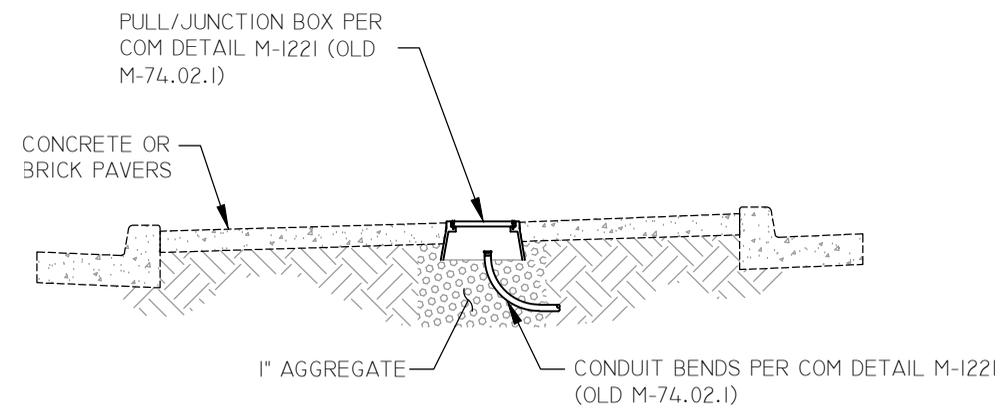
- *NOTE** A RETAINING WALL:
- IS REQUIRED IN AREAS OF FLOOD IRRIGATION
 - IS REQUIRED WHERE A NEW 6:1 UPWARD SLOPE WILL NOT MEET THE EXISTING GRADE
 - SHALL BE LOCATED FOR 36" MIN. CLEARANCE FROM LCC CABINET
 - SHALL HAVE A DEPTH OF 10" MIN. BELOW SIDEWALK GRADE
 - HAVE A SMOOTH TROWELED FINISH AND 1/2" RADIUS CHAMFERS ALONG TOP EDGES
 - BE BACKFILLED WITH EXCAVATED MATERIALS AND COMPACTED PER MAG STANDARD SPECIFICATION 601.
 - SHALL EXTEND A MINIMUM OF 6-FEET EITHER SIDE OF THE PULL BOX.



INSTALLATION AT SIDEWALK TO DOWNWARD SLOPE



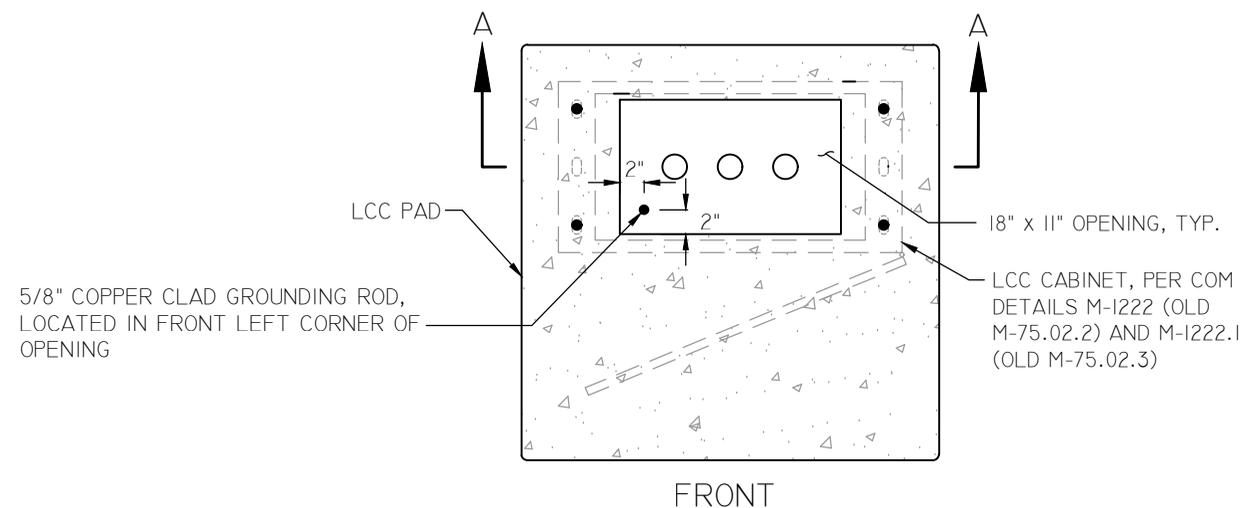
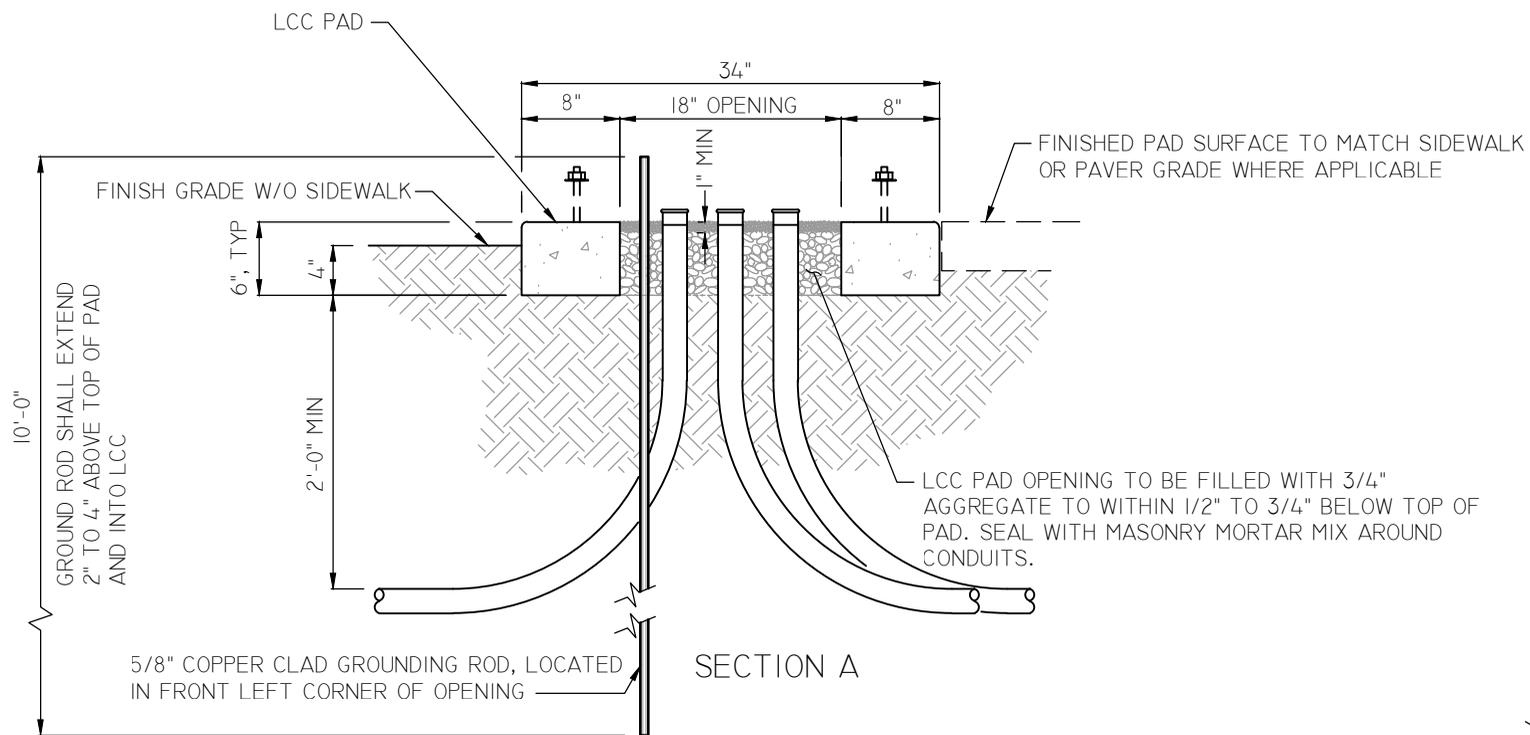
INSTALLATION IN UNPAVED MEDIAN



INSTALLATION IN PAVED MEDIAN

PULL/JUNCTION BOX AND INSTALLATION CONDITIONS

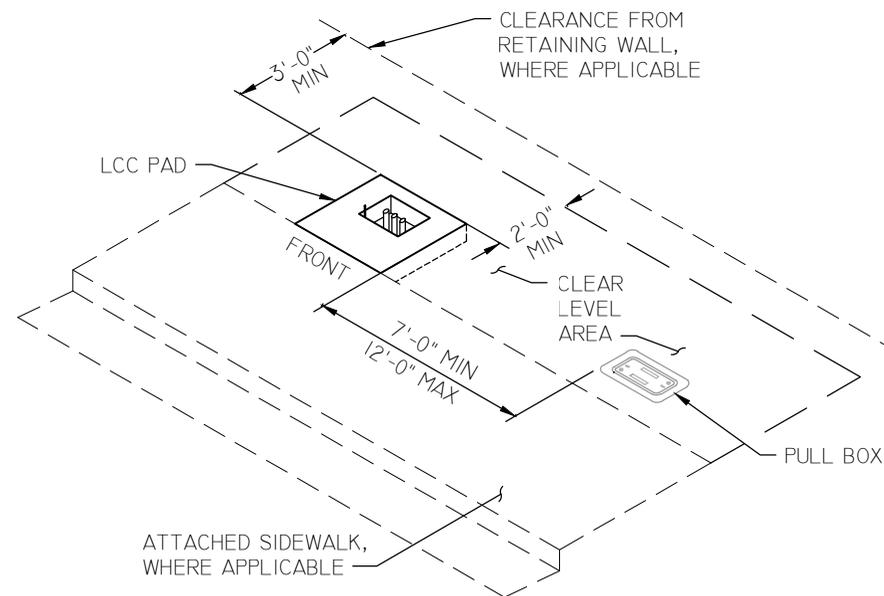
NOT TO SCALE



LCC PAD, GROUNDING ROD & CONDUIT INSTALLATION

INSTALLATION NOTES

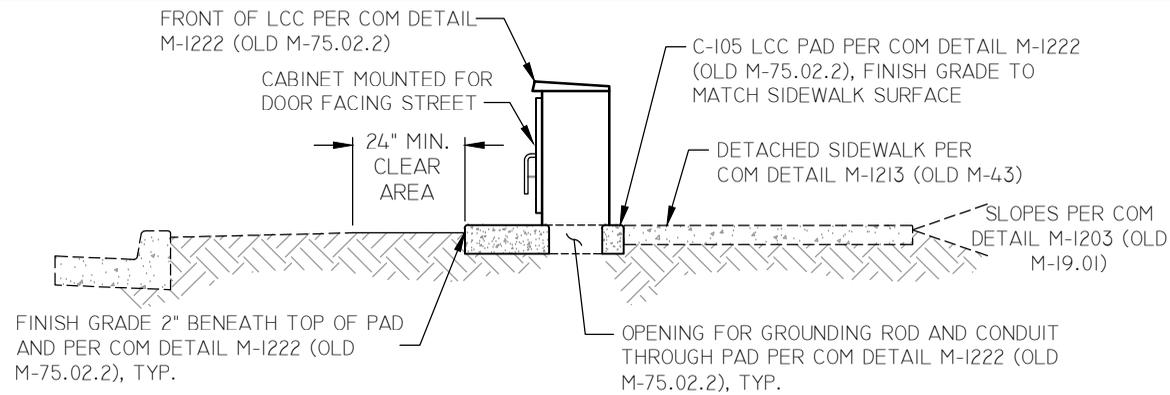
1. LOCATE LIGHTING CONTROL CABINET (LCC) PAD PER REQUIREMENTS OF 240 VOLT SERVICE SCHEMATIC ON COM DETAIL M-1222.2 (OLD M-75.03) AND PER APPLICABLE CONDITION ON COM DETAIL M-1222.1 (OLD M-75.02.3).
2. 5/8" COPPER CLAD GROUNDING ROD SHALL BE INSTALLED AS SHOWN AND CONNECTED FROM GROUNDING ROD IN POINT OF SERVICE (P.O.S.) PULL BOX AS PER NOTES ON COM DETAIL M-1222.2 (OLD M-75.03).
3. ALL CONDUIT SHALL BE 2" SCHEDULE 40 PVC AND INCLUDE A 90° BEND WITH RADIUS OF NOT LESS THAN 18" (ONLY FACTORY BENDS SHALL BE USED).
4. CONDUIT END BELLS SHALL BE INSTALLED BEFORE PULLING WIRE.
5. BACKFILL SHALL BE WITH EXCAVATED MATERIALS AND THOROUGHLY COMPACTED PER MAG STANDARD SPECIFICATION 601.
6. AGGREGATE/GROUT SHALL BE INSTALLED AS SHOWN.



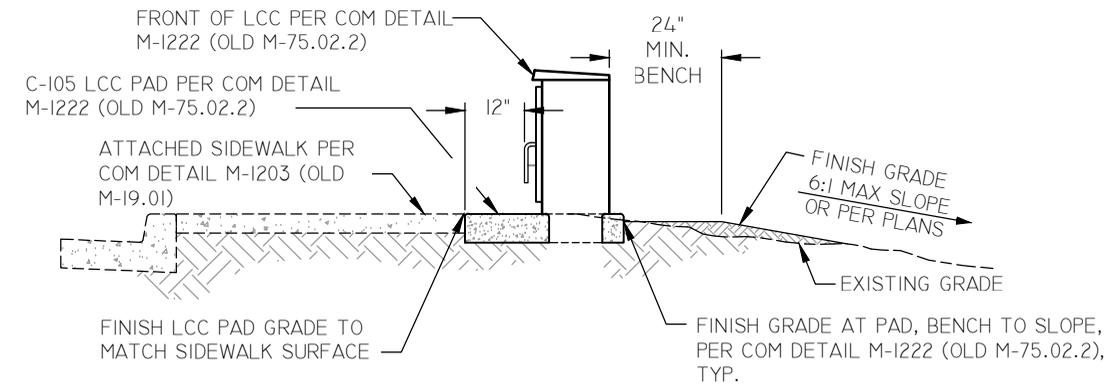
PAD & LCC PAD LOCATION

REFER TO COM DETAIL M-1222.1 (OLD M-75.02.3)
FOR INSTALLATIONS PER APPLICABLE CONDITIONS

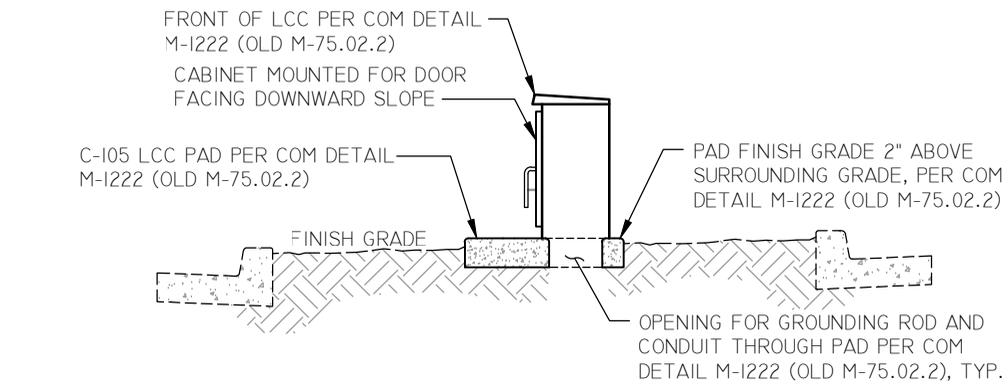
NOT TO SCALE



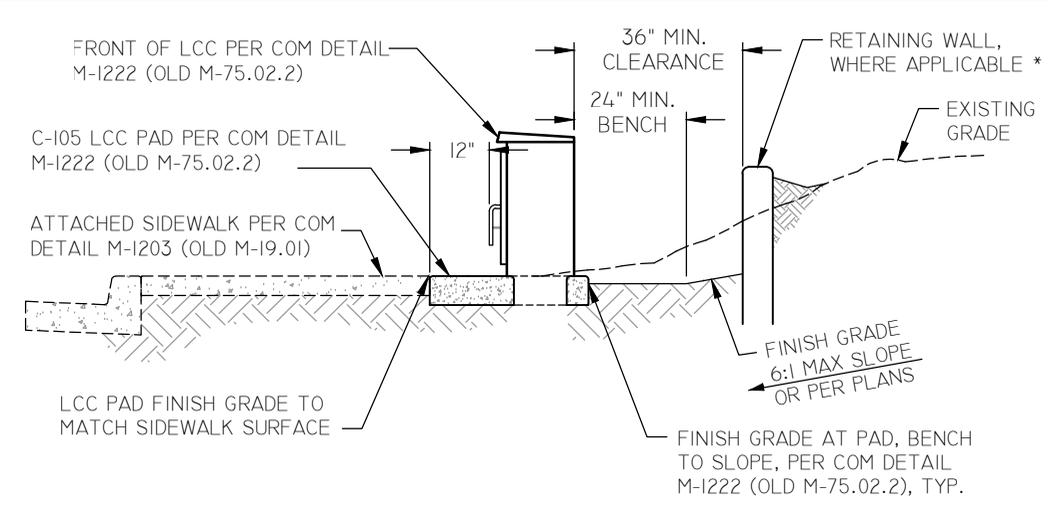
INSTALLATION AT DETACHED SIDEWALK



INSTALLATION AT SIDEWALK TO UPWARD SLOPE

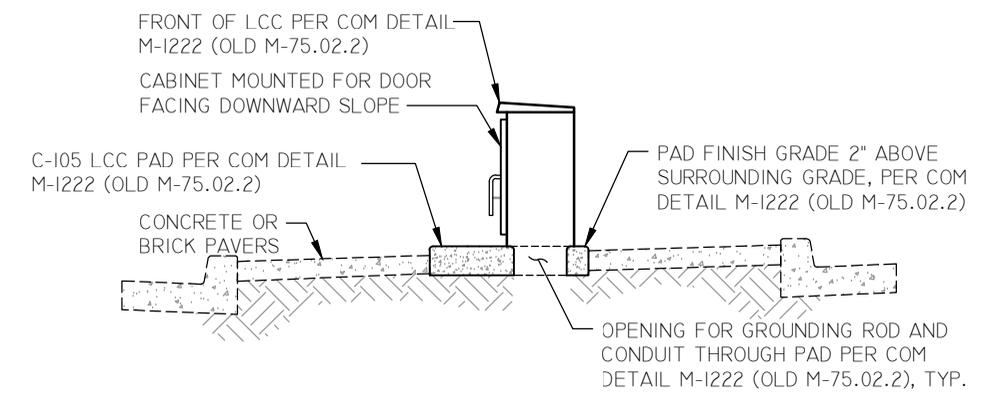


INSTALLATION IN UNPAVED MEDIAN



INSTALLATION AT SIDEWALK TO DOWNWARD SLOPE

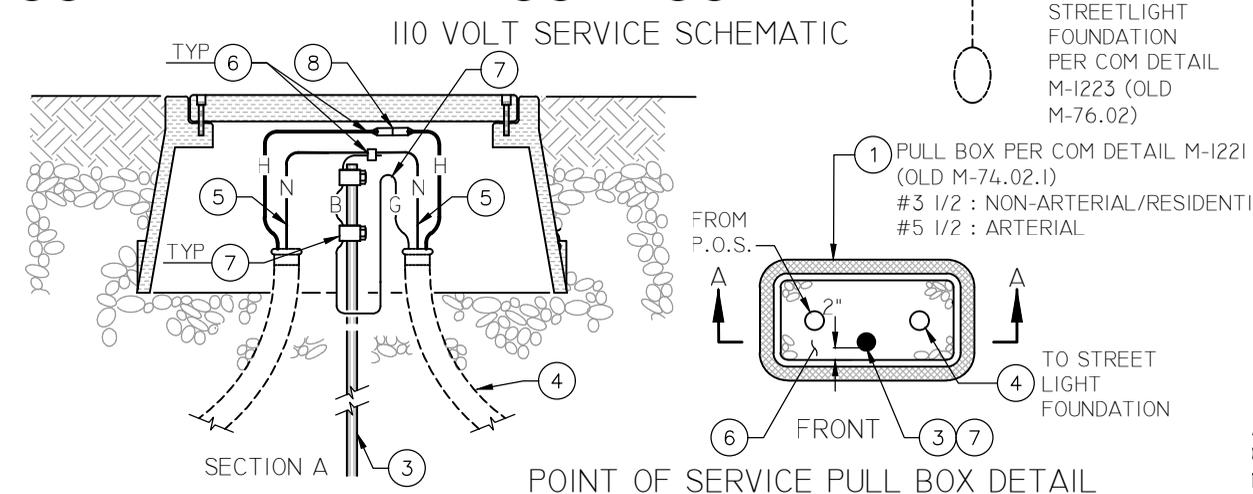
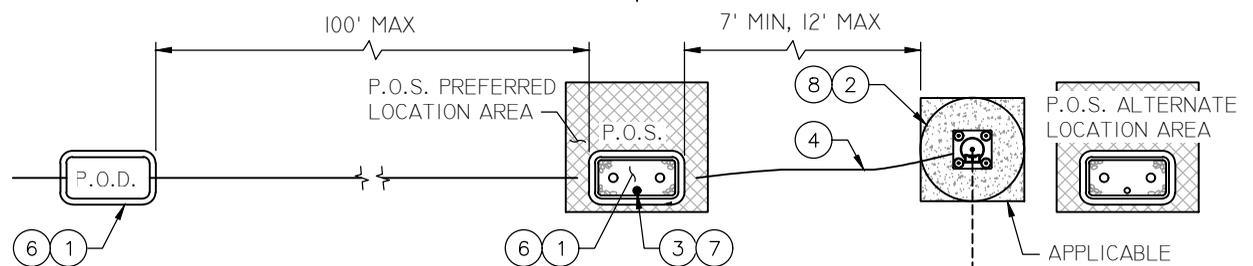
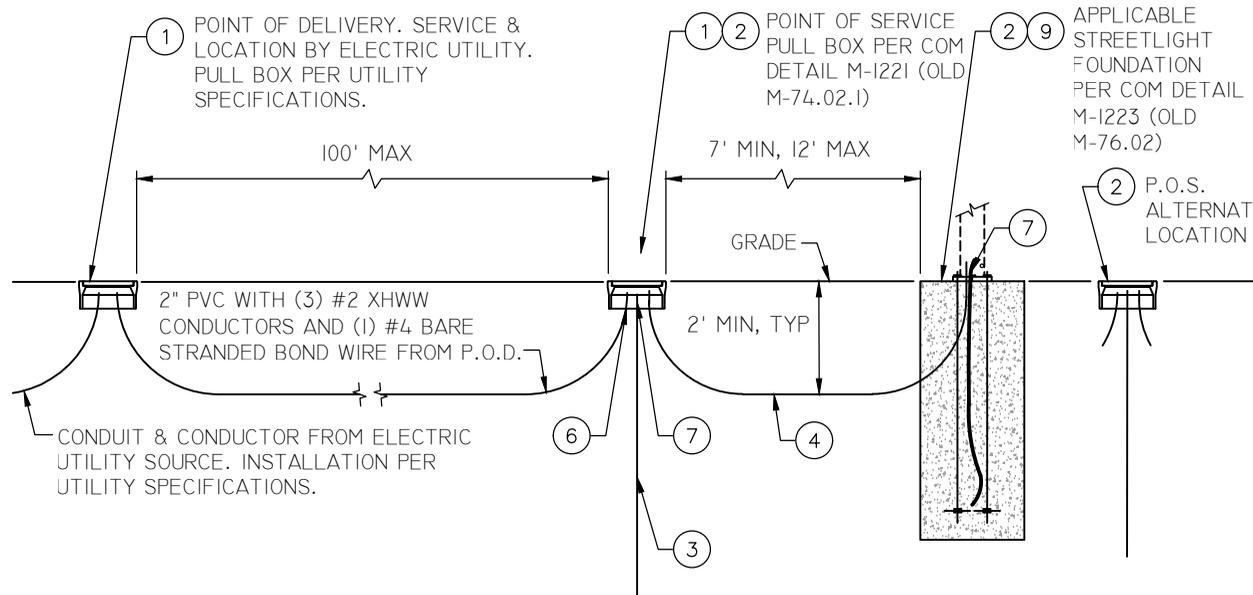
- * NOTE
- A RETAINING WALL:
- IS REQUIRED IN AREAS OF FLOOD IRRIGATION
 - IS REQUIRED WHERE A NEW 6:1 UPWARD SLOPE WILL NOT MEET THE EXISTING GRADE
 - SHALL BE LOCATED FOR 36" MIN. CLEARANCE FROM LCC CABINET
 - SHALL HAVE A DEPTH OF 10" MIN. BELOW SIDEWALK GRADE
 - HAVE A SMOOTH TROWELED FINISH AND 1/2" RADIUS CHAMFERS ALONG TOP EDGES
 - BE BACKFILLED WITH EXCAVATED MATERIALS AND COMPACTED PER MAG STANDARD SPECIFICATION 601.
 - SHALL EXTEND A MINIMUM OF 6-FEET EITHER SIDE OF THE CABINET.



INSTALLATION IN PAVED MEDIAN

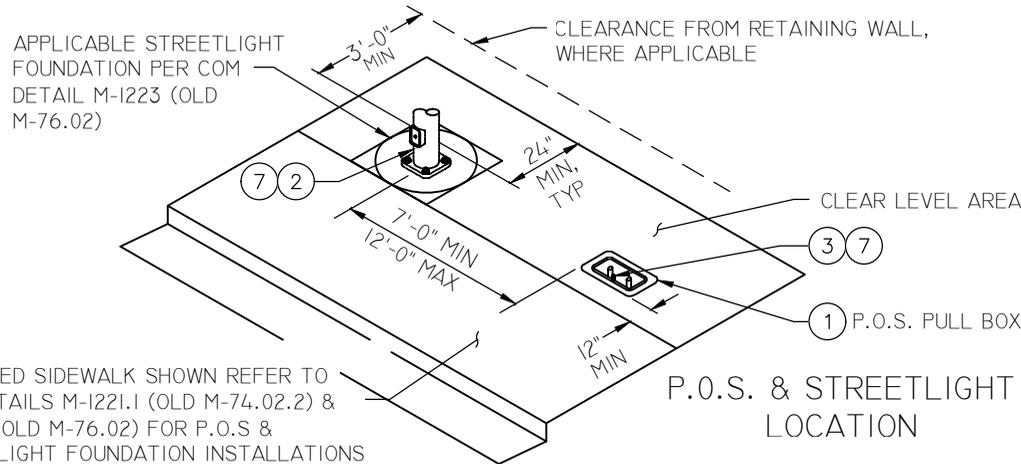
LIGHTING CONTROL PAD & CABINET INSTALLATION CONDITIONS

NOT TO SCALE



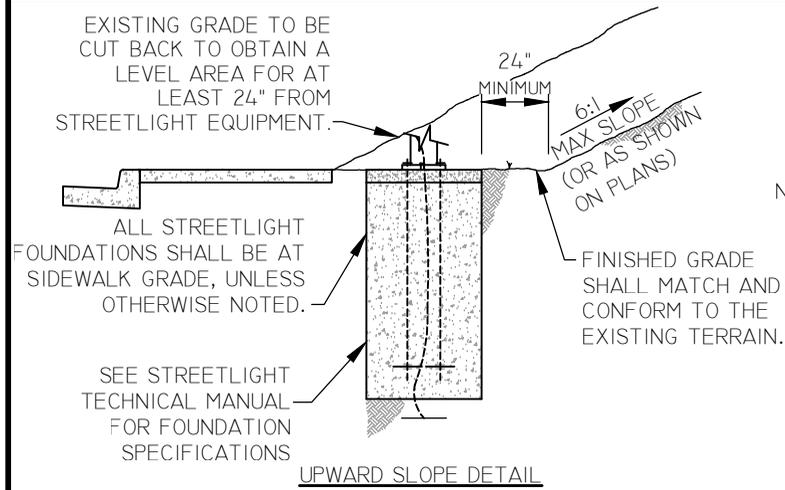
INSTALLATION NOTES

- 1 THE POINT OF DELIVERY (P.O.D.) AND POINT OF SERVICE (P.O.S.) PULL BOXES SHALL BE INSTALLED AT THE SAME TIME AND LOCATED PER SCHEMATICS AND DETAILS SHOWN. THE P.O.S. SHALL BE CONFIGURED PER POINT OF SERVICE PULL BOX DETAIL SHOWN IN LOWER LEFT.
- 2 THE STREETLIGHT POLE SHALL BE LOCATED BETWEEN 7' AND 12' FROM THE P.O.S. PULL BOX. WHEREVER POSSIBLE, THE P.O.S. PULL BOX SHALL BE LOCATED IN AN AREA BETWEEN THE UTILITY'S P.O.D. PULL BOX AND THE STREETLIGHT. OTHERWISE, THE P.O.S. PULL BOX MAY BE LOCATED WITHIN THE ALTERNATE AREA SHOWN. IN EITHER INSTANCE, THE P.O.S. PULL BOX SHALL BE LOCATED NO FURTHER THAN 100' FROM THE UTILITY'S P.O.D.
- 3 A 10' LONG, 5/8" COPPER CLAD GROUNDING ROD SHALL BE INSTALLED IN THE P.O.S. PULL BOX. THE GROUNDING ROD IN THE P.O.S. PULL BOX SHALL EXTEND 2" TO 4" ABOVE BASE OF PULL BOX.
- 4 THE P.O.S. AND THE STREETLIGHT FOUNDATION SHALL BE CONNECTED BY ONE (1) 1 1/2" PVC SCHEDULE 40 CONDUIT WITH TWO (2) #8 XHHW MINIMUM CONDUCTORS AND (1) #8 BARE STRANDED BOND (B) WIRE.
- 5 THE NEUTRAL CONDUCTOR (N) SHALL BE WHITE OR MARKED WITH WHITE TAPE FOR A MINIMUM OF 6" ALONG THE CONDUCTOR AND AWAY FROM A POINT OF CONNECTION.
- 6 2' TO 3'± ADDITIONAL WIRE SHALL BE LOOPED WITHIN P.O.D. & P.O.S. PULL BOXES. SEE APPROVED LIST.
- 7 24-INCH LONG GROUND (G) AND BOND (B) TAILS SHALL BE PROVIDED AT THE P.O.S. AND EACH STREETLIGHT FOR CONNECTIONS TO THE NEUTRAL CONDUCTORS AND GROUNDING, AS REQUIRED PER COM DETAILS M-1220 (OLD M-73.07.1) & M-1220.1 (OLD M-73.07.2). ALL SPLICES, GROUNDS AND BONDS SHALL BE DONE WITH A GEL CAP STUB SPLICE KIT #GELCAP SL-2/0-03 HOLE OR APPROVED EQUAL. APPROVED GROUNDING ROD CLAMPS SHALL BE DEDICATED AND ACCESSIBLE AT THE P.O.S.
- 8 A WATER PROOF FUSE HOLDER WITH A 30 AMP FUSE SHALL BE INSTALLED ON THE HOT CONDUCTOR (H) FROM THE UTILITY SERVICE.
- 9 A MAXIMUM OF THREE STREETLIGHTS CONNECTED FROM THE P.O.S. ARE ALLOWABLE.

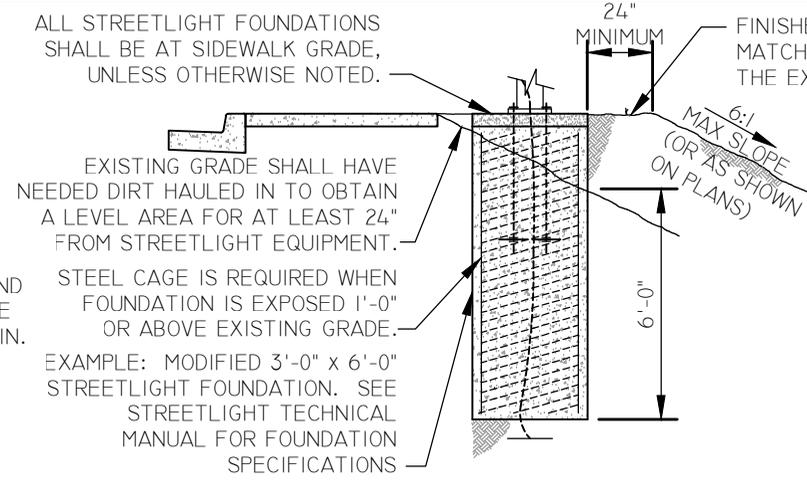


ATTACHED SIDEWALK SHOWN REFER TO COM DETAILS M-1221.1 (OLD M-74.02.2) & M-1223 (OLD M-76.02) FOR P.O.S. & STREETLIGHT FOUNDATION INSTALLATIONS

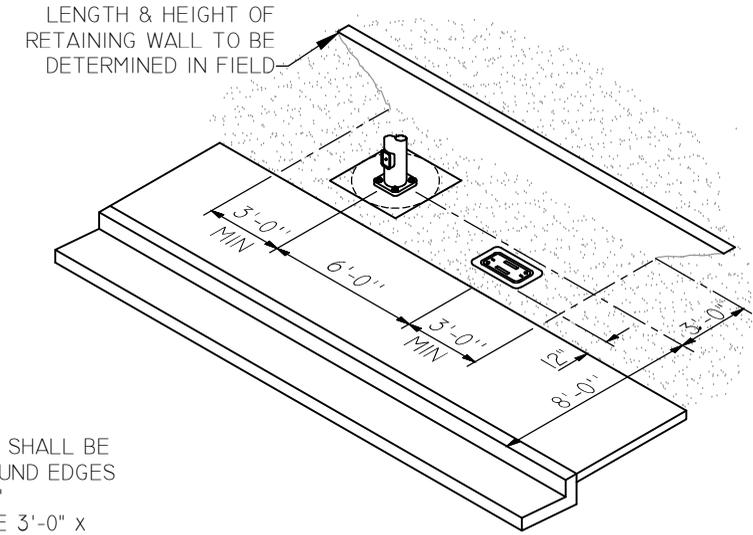
NOT TO SCALE



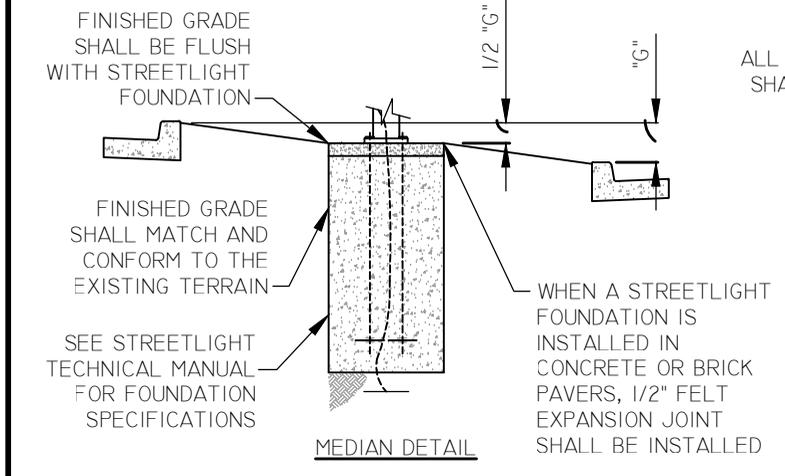
UPWARD SLOPE DETAIL



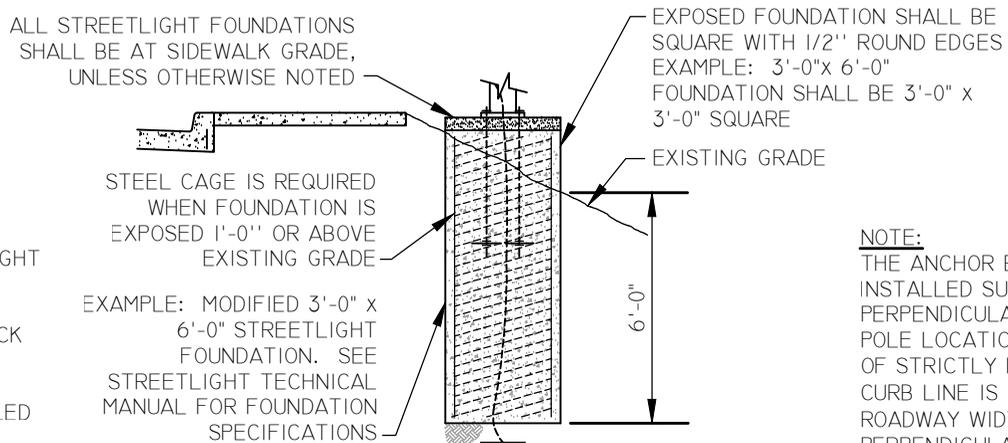
DOWNWARD SLOPE WITH FILL DETAIL



RETAINING WALL DETAIL



MEDIAN DETAIL



DOWNWARD SLOPE WITHOUT FILL DETAIL

NOTE:
THE ANCHOR BOLTS, POLE BASE PLATE AND THE POLE ITSELF SHALL BE INSTALLED SUCH THAT THE CENTERLINE OF THE STREETLIGHT ARM IS PERPENDICULAR TO THE ADJACENT ROADWAY BACK OF CURB LINE AT THE POLE LOCATION WITH A TOLERANCE OF 1.0-DEGREE IN EITHER DIRECTION OF STRICTLY PERPENDICULAR. AN EXCEPTION WILL OCCUR WHERE THE CURB LINE IS CONSTRUCTED ON A TAPER (SUCH AS AT A CHANGE IN ROADWAY WIDTH), IN WHICH CASE, THE ARM SHALL BE INSTALLED PERPENDICULAR TO ROADWAY CENTERLINE.

INSTALLATION NOTES:

1. SPECIAL FOUNDATION INSTALLATIONS SHALL BE CONSTRUCTED FOLLOWING THE CITY OF MESA STREETLIGHT FOUNDATION SPECIFICATION UNLESS NOTED OTHERWISE.
2. THE DEPTH OF FOUNDATION SHALL BE MEASURED FROM THE LOWEST PART OF THE EXISTING GRADE.
3. EXPOSED FOUNDATION SHALL BE SQUARE WITH 1/2" ROUND EDGES.
4. STEEL CAGE IS REQUIRED WHEN FOUNDATION IS EXPOSED 1'-0" OR ABOVE EXISTING GRADE.
5. ALL FINISHED STREETLIGHT POLE FOUNDATIONS & CONTROLLER PADS SHALL BE AT SIDEWALK GRADE AND ADJACENT TO SIDEWALK UNLESS NOTED. STREETLIGHT PULL BOXES SHALL BE AT SIDEWALK GRADE AND 12" FROM SIDEWALK UNLESS OTHERWISE NOTED. INSTALL #20LB FELT BETWEEN BACK OF SIDEWALK AND FOUNDATION.
6. WHEN STREETLIGHT EQUIPMENT (POLES, FOUNDATIONS, PULL BOXES, AND CONTROLLER CABINETS) IS INSTALLED IN AN UPWARD SLOPE SECTION, A RETAINING WALL SHALL BE INSTALLED OR THE GRADE SHALL BE CUT BACK TO OBTAIN A LEVEL AREA FOR AT LEAST 24" FROM STREETLIGHT EQUIPMENT. THE SLOPE OF THE FINISHED GRADE SHALL NOT EXCEED A 6:1 SLOPE AND SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.
7. WHEN STREETLIGHT EQUIPMENT (POLES, FOUNDATIONS, PULL BOXES, AND CONTROLLER CABINETS) IS INSTALLED IN A DOWNWARD SLOPE SECTION, NEEDED DIRT SHALL BE HAULED IN TO OBTAIN A LEVEL AREA FOR AT LEAST 24" FROM THE STREETLIGHT EQUIPMENT. THE SLOPE OF THE FINISHED GRADE SHALL NOT EXCEED A 6:1 SLOPE AND SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.
8. RETAINING WALL SHALL BE INSTALLED IN ALL AREAS THAT CANNOT BE CUT BACK TO OBTAIN A LEVEL AREA FOR AT LEAST 24" FROM STREETLIGHT EQUIPMENT, IN AREAS THAT THE FINISHED GRADE WILL EXCEED A 6:1 SLOPE, AND IN AREAS THAT USE FLOOD IRRIGATION.
9. RETAINING WALL SHALL HAVE A FOUNDATION 10" BELOW SIDEWALK GRADE.
10. RETAINING WALL SHALL HAVE A TROWELED SMOOTH FINISH WITH 1/2" ROUND EDGES.
11. BACKFILL WITH EXCAVATED MATERIALS AND THOROUGHLY TAMP PER MAG STANDARD 601.
12. SEE COM STREETLIGHT TECHNICAL MANUAL FOR FOUNDATION SPECIFICATIONS AT THE FOLLOWING LOCATION: [HTTPS://WWW.MESA.AZ.GOV/RESIDENTS/STREETS-TRANSPORTATION/STREETLIGHTS-SIGNS-STRIPING](https://www.mesaaz.gov/residents/streets-transportation/streetlights-signs-striping)

NOT TO SCALE

DESCRIPTION

- IT IS THE PURPOSE OF THIS DOCUMENT TO PROVIDE THE GENERAL INFORMATION NECESSARY TO DEFINE THE VARIANCES OF WORK ON TRAFFIC SIGNALS BETWEEN ADOT SPECIFICATIONS & STANDARDS AND THE CITY OF MESA SPECIFICATIONS & STANDARDS.

SPECIFICATIONS AND STANDARDS INCORPORATED IN THIS DOCUMENT

- MESA STANDARD DETAILS AMENDMENT TO THE UNIFORM STANDARD DETAILS: CURRENT. SEE "CITY OF MESA" WEB SITE (WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS)
- FOR ITS/TRAFFIC SIGNALS APPROVED PRODUCT SPECIFICATIONS, SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATIONS.
- ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION: CURRENT.
- ADOT TRAFFIC SIGNALS & LIGHTING CURRENT HIGHWAYS STANDARD DRAWINGS.
- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, TRAFFIC CONTROL SYSTEMS, STANDARDS PUBLICATION: TS2-2003 VER 2.06.
- INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC., WIRE AND CABLE SPECIFICATIONS: CURRENT.
- MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS: USDOT/FHWA: CURRENT.
- AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS: 1994.

ENGINEERING

- THE CITY OF MESA TRANSPORTATION DIRECTOR ACTING BY AND UNDER THE AUTHORITY OF THE ORDINANCES OF THE CITY OF MESA; AN ASSISTANT OR OTHER REPRESENTATIVE DULY AUTHORIZED BY THE TRANSPORTATION DIRECTOR TO ACT FOR HIM.

FOUNDATIONS

- A 5/8" - TEN FOOT COPPER GROUND ROD SHALL BE INSTALLED IN ANY CABINET FOUNDATION, SERVICE PEDESTAL AND UPS (PEDESTAL) FOUNDATION BEFORE CONCRETE IS POURED.
- ANY SIGNAL APPURTENANCE THAT IS SUBJECT TO BEING INSTALLED ON A SLOPE MAY REQUIRE A RETAINING WALL AT THE ENGINEER'S DISCRETION.
- ANY POLE THAT HAS A PEDESTRIAN PUSH BUTTON STATION ON IT AND THE STATION IS NOT DIRECTLY NEXT TO THE SIDEWALK, SHALL HAVE AN ACCESS PAD INSTALLED TO MEET THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT. THIS PAD IS ADDITIONAL SIDEWALK BETWEEN EXISTING SIDEWALK AND THE POLE BASE. PAD PLACEMENT SHALL BE AS SHOWN ON PLANS OR AS APPROVED BY THE INSPECTOR PER COM DETAIL M-1214 (OLD M-44.01).
- ALL POLE FOUNDATIONS SHALL MATCH BACK OF SIDEWALK, AS SHOWN IN COM DETAIL M-1226.2 (OLD M-92.03).

CONDUIT

- SCHEDULE 40 PVC CONDUITS PLACED IN CABINETS, PULL BOXES, AND FOUNDATIONS SHALL HAVE END BELLS INSTALLED BEFORE PULLING IN WIRE OR CABLE.
- ALL SCHEDULE 40 PVC OR HDPE SDR-II SHALL BE GRAY UNLESS OTHERWISE SPECIFIED ON PLANS.
- ALL CONDUITS SHALL HAVE AS A MINIMUM ONE GREEN #8 THHN/THWN COPPER STRANDED BOND WIRE AND 2500 LB MULE TAPE PULLED INTO CONDUITS WITH A MINIMUM OF 3 (THREE) FEET OF SLACK ABOVE THE TOP OF THE PULL BOX.
- CAP ALL UNUSED AND FUTURE CONDUITS WITH A TYCO (JACKMOON EXPANDABLE) PVC PLUG. CAP ALL FIBER FILLED CONDUITS WITH A TYCO FIBER OPTIC SIMPLEX PLUG.

PULL BOXES & VAULTS

- IF CALLED FOR ON THE PLANS THE CONTRACTOR SHALL SUPPLY THE PULL BOX(S). SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.
- REFER TO COM DETAIL M-1702 (OLD M-66.01.1) & M-1702.1 (OLD M-66.01.2) FOR 4' X 4' X 4' VAULT DETAILS.
- REFER TO COM DETAIL M-1702.2 (OLD M-66.02), FOR ROUND LID, IT SHALL READ "CITY OF MESA FIBER OPTIC".

CONTROLLER CABINET ASSEMBLY

- UNLESS OTHERWISE NOTED ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE CONTROLLER CABINET. SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.
- CONTROLLER CABINET ORIENTATION SHALL BE VERIFIED BY THE CITY INSPECTOR.

ELECTRICAL SERVICE PEDESTALS

- IF CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE TRAFFIC SIGNAL ELECTRICAL SERVICE PEDESTAL. SEE "CITY OF MESA" WEB SITE * FOR APPROVED SUPPLIERS.

U.P.S. (UN-INTERRUPTABLE POWER SUPPLY)

- IF CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE TRAFFIC SIGNAL U.P.S. ASSEMBLY. SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.

* - [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/TRAFFIC-SIGNAL-OPERATION-MAINTENANCE](https://www.mesaaaz.gov/resident-resources/streets-transportation/traffic-signal-operation-maintenance)

VIDEO DETECTION SYSTEMS

1. IF CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE TRAFFIC SIGNAL VIDEO DETECTION SYSTEM. SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.

CLOSED CIRCUIT TELEVISION SYSTEMS

1. IF CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE CLOSED CIRCUIT TELEVISION SYSTEM. SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.

POLES

1. REFER TO COM DETAILS M-1228 (OLD M-94.01), M-1228.2 (OLD M-94.03), M-1228.3 (OLD M-94.04), M-1228.4 (OLD M-94.05), M-1228.6 (OLD M-94.06) FOR CITY OF MESA POLES AND MAST ARMS (OTHER POLES AND MAST ARMS ARE PER ADOT SPECIFICATIONS, EXCEPT AS NOTED).
2. ALL SUPPORTS SHALL BE DESIGNED TO MEET OR EXCEED AASHTO 1994, 80 MPH WIND LOAD REQUIREMENTS.
3. ALL POLES AND MAST ARMS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED ON PLANS.
4. PUSH BUTTON POLES (BIKE AND PEDESTRIAN) SHALL BE II GAUGE STEEL AS SHOWN ON COM DETAIL M-1228 (OLD M-94.01).

LUMINAIRES

1. ALL LUMINAIRES SHALL BE PER CITY OF MESA STANDARD DETAILS.
2. ALL LUMINAIRES ON SIGNAL POLES SHALL BE I20 VAC.

PAINTING

1. ALL METAL EXTERIOR SURFACES OF TRAFFIC SIGNALS, PEDESTRIAN SIGNALS, PUSH BUTTON STATIONS, AND FRAMEWORK SHALL BE PRE-TREATED AND ELECTROSTATIC POWDER COATED SEMI-GLOSS BLACK.

MOUNTING ASSEMBLIES FOR VEHICULAR AND PEDESTRIAN INDICATIONS

1. ALL MOUNTING ASSEMBLIES SHALL BE BRONZE AND FULLY ASSEMBLED.
2. REFER TO COM DETAIL M-1229 (OLD M-95.01) FOR MOUNT PLACEMENT.
3. AS AN ADDENDUM TO ADOT TS 10-1, NO LOCK RINGS SHALL BE PERMITTED ON ANY PART OF THE MOUNT. LOWER ELBOWS SHALL HAVE 72 TEETH SERRATIONS 1/16" HIGH CAST INTO THE ELBOW SO AS TO BE A ONE PIECE UNIT.
4. THE UPPER ELBOW SHALL BE THREADED 1 1/2" NPT. THE SIGNAL HEAD SIDE SHALL HAVE A FLANGE OF AT LEAST 3/8" TO ENSURE THE HEAD, METAL WASHER, AND RUBBER GASKET ARE NOT DISTORTED WHEN SECURED.
5. ALL PIPE THREADS WHETHER INTERNAL OR EXTERNAL, SHALL BE OF THE TAPERED TYPE.
6. ALL PIPE SHALL BE SCHEDULE 40 (0.145" WALL THICKNESS).
7. HORIZONTAL ARM LENGTH SHALL BE 15" UPPER AND 14.5" LOWER.
8. TYPE VII MOUNTS SHALL HAVE HORIZONTAL ARM LENGTH 24" UPPER AND 23.5" LOWER.

VEHICLE SIGNAL INDICATIONS

1. ALL INDICATIONS SHALL BE LIGHTING EMITTING DIODE (LED). SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.
2. TRAFFIC SIGNAL HEADS SHALL BE MADE OF POLYCARBONATE MATERIAL.
3. INDICATION/VISOR DOORS SHALL BE EASILY REMOVED, WITHOUT HAVING TO DRIVE OUT RETAINING HINGE PINS.

4. TUNNEL VISORS SHALL BE 12" LONG FOR 12" HEADS. THEY SHALL BE MADE OF ALUMINUM. THEY SHALL BE ATTACHED TO THE SIGNAL HEAD BY SCREWS THROUGH 90 DEGREE RIGHT ANGLE MOUNTING TABS.
5. BACKPLATES WITH 5" BORDERS SHALL BE USED ON ALL 12 INCH HEADS. ALL BACKPLATES SHALL BE LOUVERED ALUMINUM. ALL BACKPLATES SHALL BE ONE PIECE ALUMINUM EXCEPT FOR TYPE "S" CLUSTER HEADS WHICH SHALL HAVE NO MORE THAN 3 SECTIONS TOTAL.
6. MAST ARM SIGNAL HEADS SHALL BE SUPPLIED WITH ADOT TYPE II MOUNTS. THE MOUNTS SHALL BE OF THE OFFSET "DOG LEG" TYPE. MOUNTS SHALL HAVE CAST IN SERRATIONS. SERRATED LOCKING RINGS WILL NOT BE PERMITTED. MOUNTS SHALL BE MADE OF BRONZE.
7. ALL BODY WASHERS ON HEADS SHALL BE AS SHOWN ON COM DETAIL M-1229.1 (OLD M-95.02).
8. FOR CLUSTER HEADS, REFER TO COM DETAIL M-1229.2 (OLD M-95.03) FOR CITY OF MESA TYPE "S" HEAD (5 SECTION CLUSTER).
9. ALL SIGNAL HEAD ASSEMBLIES SHALL BE GUARANTEED BY THEIR MANUFACTURER FOR A MINIMUM OF FIVE (5) YEARS.
10. ALL HEADS ARE TO BE FULLY ASSEMBLED AND READY FOR INSTALLATION. VISORS MAY BE PACKAGED AND SHIPPED SEPARATELY.



* - [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/TRAFFIC-SIGNAL-OPERATION-MAINTENANCE](https://www.mesaaz.gov/resident-resources/streets-transportation/traffic-signal-operation-maintenance)

PEDESTRIAN INDICATIONS

- 1. ALL INDICATIONS SHALL BE LIGHT EMITTING DIODE (LED) INTERNATIONAL WALKING PERSON/HAND SYMBOL COUNTDOWN PEDESTRIAN SIGNALS SHALL BE FURNISHED AND INSTALLED PER COM SPECIFICATIONS. SEE "CITY OF MESA" WEB SITE * FOR CURRENT SPECIFICATION.
- 2. PEDESTRIAN HEAD ASSEMBLIES SHALL BE GUARANTEED BY THEIR MANUFACTURER FOR A MINIMUM OF FIVE (5) YEARS.
- 3. ALL LEADS SHALL HAVE FULLY INSULATED TERMINALS.
- 4. PEDESTRIAN INDICATIONS SHALL HAVE Z-CRATE VISORS INSTALLED.

PUSH BUTTONS

- 1. ALL PUSH BUTTON STATIONS SHALL BE AS SHOWN ON COM DETAIL M-1229.5 (OLD M-95.06).
- 2. FOR SIGNS, REFER TO COM DETAIL M-1232 (OLD M-99.01).
- 3. FOR MOUNTING, REFER TO COM DETAIL M-1229 (OLD M-95.01).
- 4. FOR BIKE PUSH BUTTON INSTALLATION, REFER TO COM DETAIL M-1228.1 (OLD M-94.02).
- 5. ALL PUSH BUTTON STATIONS SHALL BE GUARANTEED BY THEIR MANUFACTURER FOR A MINIMUM OF FIVE (5) YEARS.
- 6. PUSH BUTTONS MUST BE LOCATED NEXT TO A LEVEL LANDING PAD (30" X 48" MINIMUM). "LEVEL" IS DEFINED AS HAVING A SLOPE LESS THAN 2%. THE PUSH BUTTONS MUST BE WITHIN 10 INCH REACH OF THE LEVEL LANDING PAD AND MUST BE WITHIN 5 FEET OF THE CROSSWALK LINE. PUSH BUTTONS MUST BE LOCATED WITHIN 6 FEET (PREFERRED) OR 10 FEET (MAXIMUM) FROM THE CURB. TWO PUSH BUTTONS ON THE SAME CORNER SHOULD BE SEPARATED BY AT LEAST 10 FEET.

* - [HTTPS://WWW.MESA.AZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/TRAFFIC-SIGNAL-OPERATION-MAINTENANCE](https://www.mesaaz.gov/resident-resources/streets-transportation/traffic-signal-operation-maintenance)

INTERNALLY ILLUMINATED STREET NAME SIGNS

- 1. IF CALLED FOR ON THE PLANS, THE CONTRACTOR SHALL SUPPLY THE TRAFFIC SIGNAL INTERNALLY ILLUMINATED STREET NAME SIGN(S). SEE "CITY OF MESA" WEB SITE * FOR APPROVED SUPPLIERS.

EMERGENCY VEHICLE PREEMPTION

- 1. EVP CABLE SHALL BE INSTALLED UNSPLICED FROM CONTROLLER CABINET TO THE RED SECTION OF THE DESIGNATED HEAD. LEAVE 3' CABLE COILED IN THE RED SECTION OF SIGNAL HEAD AND 10' INSIDE CONTROL CABINET. INSTALL EVP SENSORS ON SIGNAL HEADS WITH A 1 1/2" TO 3/4" BELL REDUCER AND 3/4" X 6" NIPPLE. COORDINATE WORK WITH TRAFFIC SIGNAL INSPECTOR.

ITS/TRAFFIC SIGNAL FIBER OPTIC INSTALLATIONS

- 1. IF FIBER OPTIC INSTALLATIONS IS REQUIRED, SEE COM DETAILS M-1702 (OLD M-66.01.1) THROUGH M-1702.17 (OLD M-66.11.01).



CONTRACTOR'S RESPONSIBILITY

1. ALL WORK IS TO BE ACCOMPLISHED IN ACCORDANCE WITH CITY OF MESA SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.
2. THE CITY OF MESA REQUIRES AT LEAST TWO INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION (IMSA) CERTIFIED TRAFFIC SIGNAL TECHNICIANS ON SITE DURING ALL PHASES OF ANY TRAFFIC SIGNAL WORK. ONE TECHNICIAN MUST AT LEAST BE A LEVEL II. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE VERIFICATION OF CERTIFICATION. IF A JOB SITE IS INSPECTED AND A CERTIFIED TECHNICIAN IS NOT ON SITE, A STOP WORK ORDER WILL BE ISSUED. TEMPORARY AND CONTRACT EMPLOYEES DO NOT SATISFY THIS REQUIREMENT.
3. CONTRACTOR SHALL SUBMIT A LIST CONTAINING NAMES AND QUALIFIED STATUS OF PERSONNEL THAT WILL BE ON THE IMMEDIATE JOB SITE TO THE ENGINEER OR THEIR REPRESENTATIVE PRIOR TO STARTING ANY TYPE OF CONSTRUCTION. ANY CHANGE IN THIS LIST WILL REQUIRE IMMEDIATE NOTIFICATION TO THE ENGINEER OR THEIR REPRESENTATIVE.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY TRAFFIC SIGNAL EQUIPMENT DAMAGE TO THE ENGINEERING INSPECTOR. DAMAGE TO ANY TRAFFIC SIGNAL EQUIPMENT SUCH AS CONTROLLER CABINET AND EQUIPMENT, DETECTION LOOPS, PULL BOXES, CONDUIT, POLES, MAST ARMS, HEADS OR RELATED EQUIPMENT AS A RESULT OF THE CONTRACTOR'S WORK, IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE AS REQUIRED BY THE CITY. A CITY OF MESA TRAFFIC SIGNAL TECHNICIAN SHALL INSPECT THESE REPAIRS.
 - A. A TRAFFIC SIGNAL CANNOT BE DARK OR IN FLASH FOR MORE THAN TWO HOURS.
 - B. A LOSS OF COMMUNICATION SHALL BE REPAIRED WITHIN 24 HOURS.
 - C. DETECTOR LOOPS SHALL BE REPLACED IN TWO WEEKS UNLESS OTHERWISE APPROVED BY THE ITS GROUP AND ENGINEER INSPECTOR, AGREE IN WRITING THAT THE WORK SCHEDULE REQUIRES ADJUSTMENT OF THIS TIME FRAME.
5. DURING TRAFFIC SIGNAL INSTALLATION, MAINTENANCE, OR REPAIR, ANY UNUSED AND/OR INACTIVE SIGNAL HEADS SHALL BE PROPERLY COVERED WITH APPROVED TRAFFIC SIGNAL HEAD COVER. THE USE OF TRASH BAGS, BURLAP AND/OR TAPE IS NOT ACCEPTABLE.
6. GROUNDING AND BONDING OF ALL ELECTRICAL SYSTEMS SHALL BE MAINTAINED ACCORDING TO NATIONAL ELECTRICAL CODE (NEC) ARTICLE 250 DURING ALL PHASES OF INSTALLATION, MAINTENANCE OR REPAIR.

IF THE CONTRACTOR CANNOT RESPOND OR MAKE THE REPAIRS WITHIN THE ABOVE NOTED TIME FRAME, THE CITY OF MESA TRAFFIC SIGNAL GROUP WILL MAKE THE NECESSARY REPAIRS AND CHARGE THE CONTRACTOR USING A "REPAIR ORDER FORM". THE AMOUNT OF EACH REPAIR SHALL BE EITHER \$350.00 OR THE ACTUAL ACCUMULATED CHARGE FOR EMPLOYEES' TIME, MATERIALS AND EQUIPMENT, WHICHEVER IS GREATER. EMPLOYEES' TIME WILL BE BILLED AT EACH INDIVIDUAL'S HOURLY RATE PLUS THE APPLICABLE CITY OVERHEAD RATE. ANY MATERIALS USED WILL BE BILLED AT COST. EQUIPMENT RATES WILL BE BASED ON THE MOST RECENT SCHEDULE OF EQUIPMENT RENTAL RATES FOR FORCE ACCOUNT WORK, AS APPROVED BY THE ARIZONA DEPARTMENT OF TRANSPORTATION.

THE CONTRACTOR IS ADVISED THAT ANY COSTS RELATED TO REPAIR OR REPLACEMENT OF DAMAGED TRAFFIC SIGNAL EQUIPMENT AS A RESULT OF THE CONTRACTOR'S WORK SHALL BE BORNE BY THE CONTRACTOR.

IF THERE IS A TRAFFIC SIGNAL PROBLEM (I.E. INDICATION OUTAGE, KNOCKDOWNS, UTILITY POWER OUTAGES, ETC) AND IS NOT A DIRECT RESULT OF THE CONTRACTOR OR SUB-CONTRACTOR'S WORK, A TRAFFIC SIGNAL TECHNICIAN SHALL BE CALLED TO RESPOND. IF IT IS DETERMINED THE CONTRACTOR OR SUB-CONTRACTOR'S WORK CAUSED THE TRAFFIC SIGNAL MALFUNCTION, THE CONTRACTOR, THROUGH A "REPAIR ORDER FORM", SHALL PAY ALL THE COSTS OF REPAIRS.

IF THE TRAFFIC SIGNAL FIBER OPTIC CABLE IS DAMAGED AS A RESULT OF A PROJECT. THE TRAFFIC SIGNAL FIBER OPTIC CABLE SHALL BE REPLACED IN THE INCREMENT FOR WHICH IT WAS ORIGINALLY INSTALLED AS DIRECTED BY THE ITS ENGINEER. NO NEW SPLICE POINTS WILL BE INTRODUCED INTO THE SYSTEM.

QUALITY

CONTRACTOR IS RESPONSIBLE FOR QUALITY AND SHALL PERFORM WORK IN A PROFESSIONAL, NEAT AND WORKMANLIKE MANNER. THE CITY OF MESA INSPECTION TEAM WILL MAKE THE DETERMINATION IF THE WORK PERFORMED MEETS THAT CRITERIA AND MAY REQUEST THAT THE WORK BE REDONE IF IT HAS NOT.

WARRANTY

1. CONTRACTOR SHALL WARRANTY WORKMANSHIP FOR A PERIOD OF 12 MONTHS FROM DATE OF ACCEPTANCE.
2. EQUIPMENT WARRANTIES WILL BE GIVEN TO THE CITY OF MESA TRAFFIC SIGNALS WORKGROUP AT THE TIME OF ACCEPTANCE OF THE PROJECT.

WORK PROCEDURES

1. CONTRACTOR SHALL WORK WITH THE ASSIGNED TRAFFIC SIGNAL TECHNICIAN FOR INSPECTIONS, MATERIAL, AND OTHER JOB RELATED PROBLEMS.
2. CONTRACTOR INSPECTION AND MATERIAL REQUESTS SHALL BE SUBMITTED 24 HOURS PRIOR TO THE INSPECTION OR MATERIAL PICK-UP.
3. INSPECTIONS INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
 - A.) BEFORE STARTING PROJECT.
 - B.) BEFORE BACKFILLING TRENCHES AND BORE PITS AND BEFORE COVERING CONDUIT.
 - C.) BEFORE FILLING PULL BOX HOLES WITH AGGREGATE.
 - D.) BEFORE PULLING TRAFFIC SIGNAL AND OR FIBER OPTIC CABLE.
 - E.) WHEN POLE FOUNDATIONS ARE READY TO BE POURED WITH CONCRETE.
 - F.) WHILE POURING FOUNDATIONS.
 - G.) WHEN PROJECT IS COMPLETED (PROJECT IS COMPLETE WHEN FINAL INSPECTION IS APPROVED AND BILL HAS BEEN SUBMITTED).
4. ALL TRAFFIC SIGNAL HEAD ASSEMBLIES SHALL BE INSPECTED BY THE COM INSPECTOR PRIOR TO THE INSTALLATION BY THE CONTRACTOR.



WORKSITE SAFETY

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH THE CITY OF MESA TRAFFIC BARRICADE MANUAL FOR ANY WORK INSIDE THE CITY LIMITS AND ACQUIRE ANY TEMPORARY TRAFFIC CONTROL PERMITS REQUIRED FOR THE PROJECT.
2. CONTRACTOR SHALL PROVIDE APPROVED WORKSITE BARRICADING AND OTHER SAFETY MEASURES AS NECESSARY TO PROTECT THE PUBLIC FROM TRENCHES AND OTHER WORK SITE HAZARDS DURING WORKING AND NON-WORKING HOURS.
3. CONTRACTOR SHALL BARRICADE ALL CONCRETE FOUNDATIONS WITH A TYPE I OR TYPE II LIGHTED BARRICADE UNTIL POLE IS SET.
4. CONTRACTOR SHALL NOT LEAVE ANY CONSTRUCTION MATERIAL IN THE ROADWAY, ON THE SIDEWALK, OR AT ANY OTHER LOCATION THAT MAY IMPEDE SAFE VEHICLE AND PEDESTRIAN MOVEMENT.
5. CONTRACTOR SHALL LEAVE A SECURE AND SAFE CONSTRUCTION SITE WHEN FINISHED WITH WORK FOR THE DAY. A SAFE CONSTRUCTION SITE IS THE CONTRACTOR'S RESPONSIBILITY.
6. EMPLOYEES OF THE CONTRACTOR SHALL USE REASONABLE SAFETY PROCEDURES WHILE WORKING. REASONABLE SAFETY PROCEDURES SHALL INCLUDE, BUT NOT BE LIMITED TO THE USE OF, SAFETY HATS, GLOVES, GOGGLES, REFLECTIVE VESTS, AND A SAFETY HARNESS WHEN WORKING IN A BUCKET TRUCK.

TRAFFIC SIGNAL ACTIVATION REQUIREMENTS

THE PURPOSE OF THESE REQUIREMENTS IS TO MINIMIZE ANY DELAY AND POTENTIAL ISSUES ON THE DAY OF ACTIVATION.

THE CITY OF MESA TRANSPORTATION DEPT. RESERVES THE RIGHT TO CANCEL AT ANY TIME.

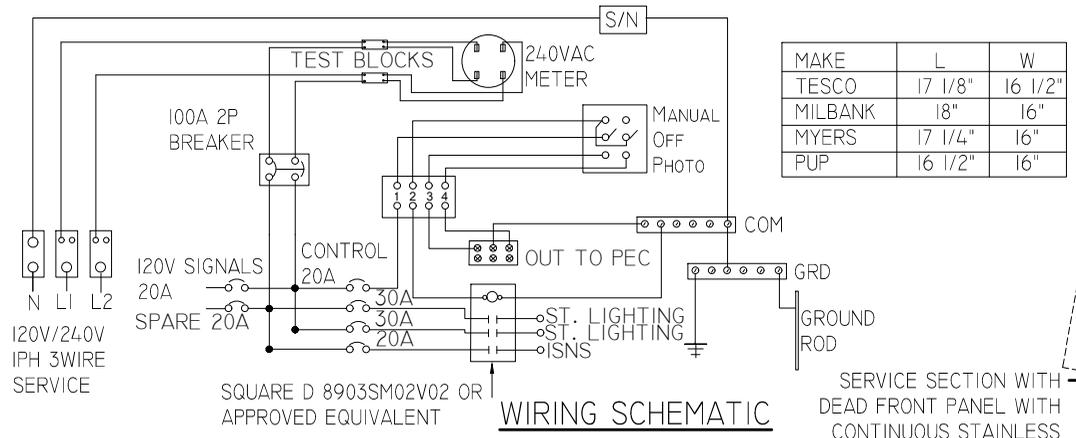
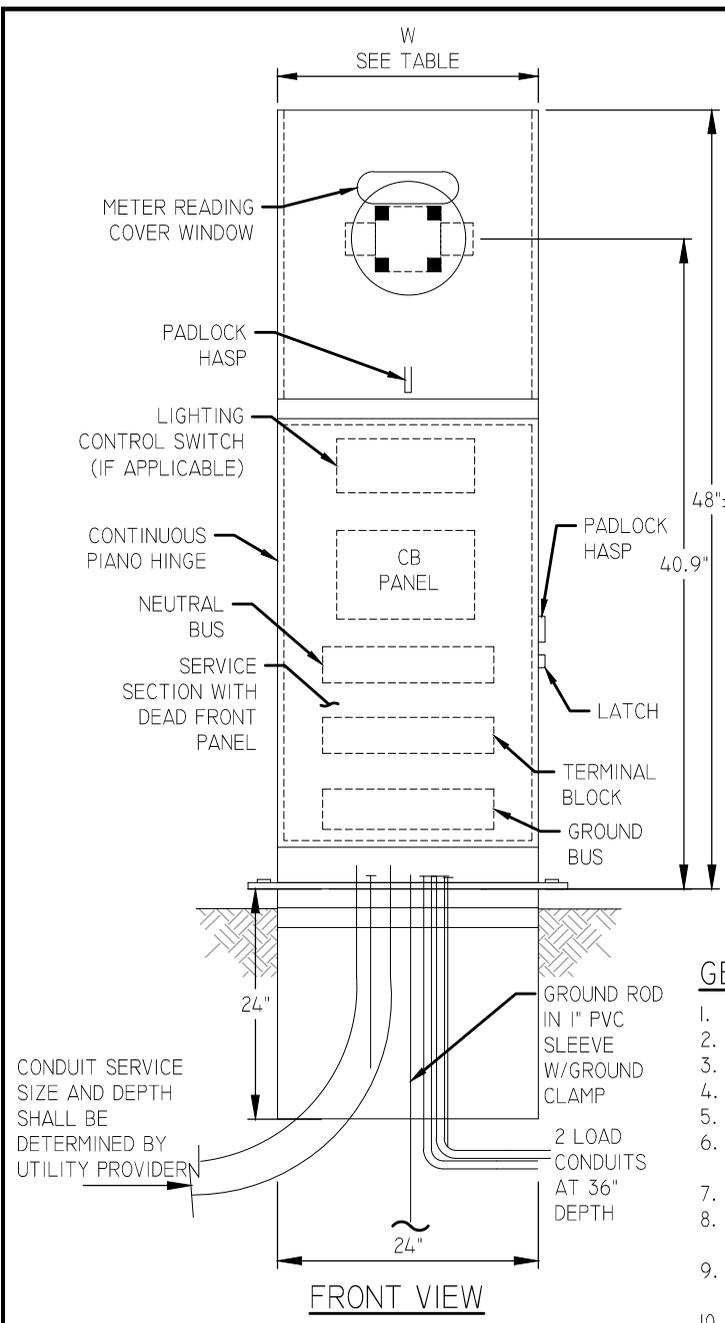
1. TRAFFIC SIGNAL ACTIVATION SHALL BE SCHEDULED TWO WEEKS IN ADVANCE.
2. TRAFFIC SIGNAL ACTIVATION SHALL OCCUR MONDAY - THURSDAY
3. FOLLOWING ITEMS SHALL BE 100% COMPLETE BEFORE REQUEST TO ACTIVATE TRAFFIC SIGNAL
 - A. UTILITY POWER
 - B. ITS COMMUNICATIONS INCLUDES CCTV.
 - C. SIGNAL HEADS PLUMB AND PROPERLY AIMED.
 - D. WIRE TERMINATIONS (INCLUDES FIELD INDICATIONS)
 - E. ELECTRICAL GROUNDING
 - F. VEHICLE AND PEDESTRIAN DETECTION
 - G. UNINTERRUPTIBLE POWER SUPPLY
4. ALL ASSOCIATED/RELATED STRIPING, INCLUDING STOP BARS AND CROSSWALKS, MUST BE INSTALLED CONCURRENTLY WITH THE SIGNAL ACTIVATION.



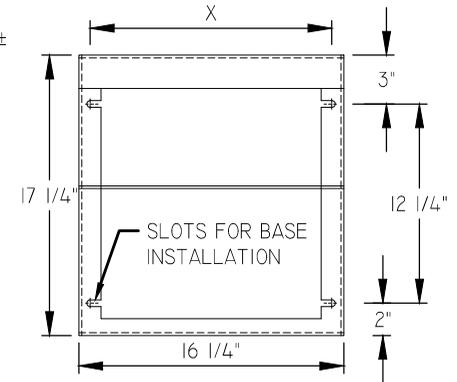
TRAFFIC SIGNAL CONSTRUCTION PROCEDURES II

OLD
M-90.05

DETAIL NO.
M-1224.4



MAKE	L	W
TESCO	17 1/8"	16 1/2"
MILBANK	18"	16"
MYERS	17 1/4"	16"
PUP	16 1/2"	16"

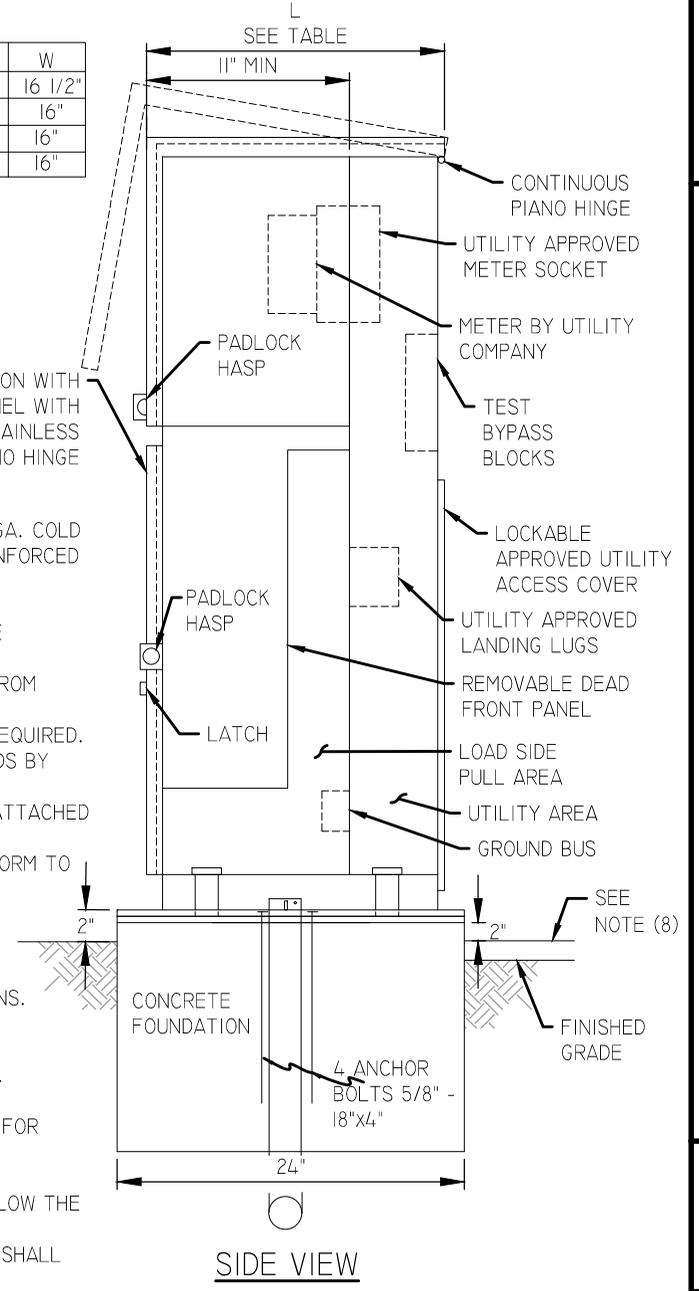


ENCLOSURE CONSTRUCTION NOTES

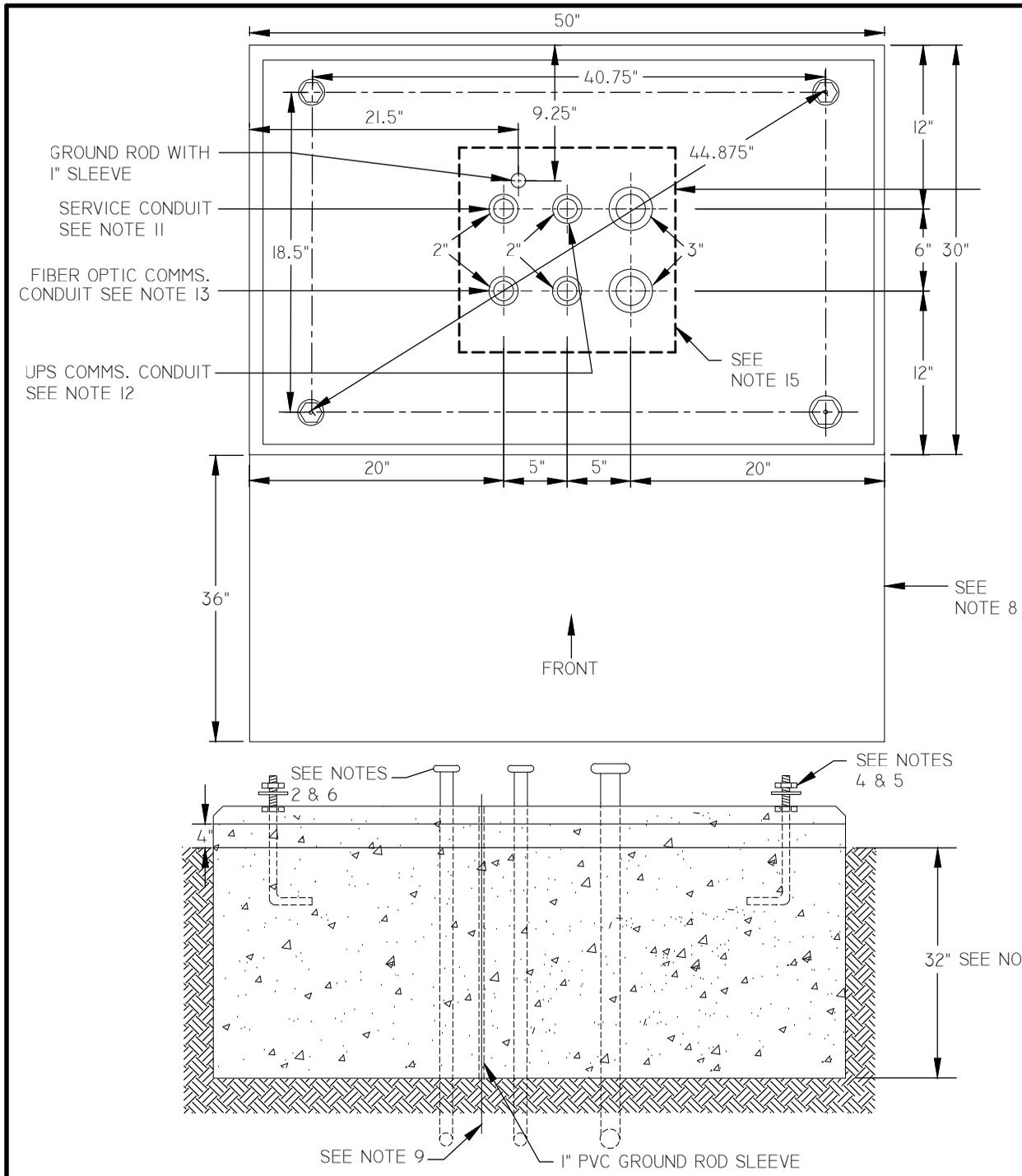
1. FABRICATED FROM .125 ALUM AND INTERIOR 14 GA. COLD ROLLED STEEL ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION WILL BE NEMA 3R RAIN TIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES WILL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS WILL NOT BE VISIBLE FROM OUTSIDE OF ENCLOSURE.
5. PHENOLIC NAMEPLATES WILL BE PROVIDED AS REQUIRED.
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.

GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS.
2. SEE PLANS FOR CONDUIT SIZE, LOCATION, AND QUANTITY.
3. UNSTABLE SOIL MAY REQUIRE A DEEPER FOUNDATION: SEE ADOT SPECIFICATIONS.
4. ANCHOR BOLTS SHALL BE GALVANIZED STEEL, 5/8" x 18" x 4", COMPLETE WITH NUTS AND WASHERS.
5. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 1" AND A MAXIMUM OF 1 1/2" ABOVE FOUNDATION.
6. CONDUIT SHALL PROJECT A MINIMUM OF 2" AND A MAXIMUM OF 4" ABOVE THE FOUNDATION, EXCEPT FOR CONDUIT FOR GROUND ROD, WHICH SHALL BE FLUSH.
7. USE SILICONE CAULK TO SEAL GAP BETWEEN CABINET AND FOUNDATION.
8. A RAISED PCC PAD 24" x 4" x 24" SHALL BE PLACED IN FRONT OF CABINET. PAD SHALL BE SET 2" BELOW THE FOUNDATION ELEVATION. SLOPE PAD AWAY FROM CABINET.
9. ALL CABINET FOUNDATIONS SHALL HAVE A 5/8" INCH x 10 FOOT BONDED GROUND ROD. GROUND ROD SHALL BE INSTALLED BEFORE FOUNDATION IS POURED.
10. LIGHTING CONTACTOR SHALL BE INSTALLED IN ALL PEDESTALS PER WIRING SCHEMATIC.
11. ALL PEDESTAL ASSEMBLIES SHALL BE RATED FOR 10KAIC.
12. METER ADDRESS TAG SHALL MEET UTILITY COMPANY STANDARDS. ADDRESS TAG SHALL BE 0.020 GA BLACK ALUMINUM, 4" X 1" WITH PILOT HOLES FOR MOUNTING. FONT SHALL BE 0.28" UPPER CASE ROMAN FONT

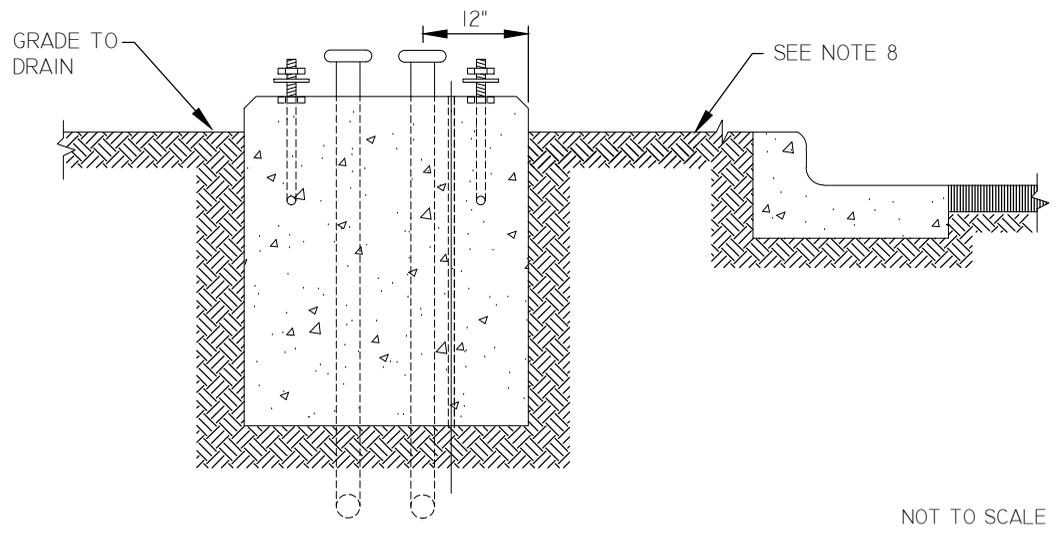


NOT TO SCALE

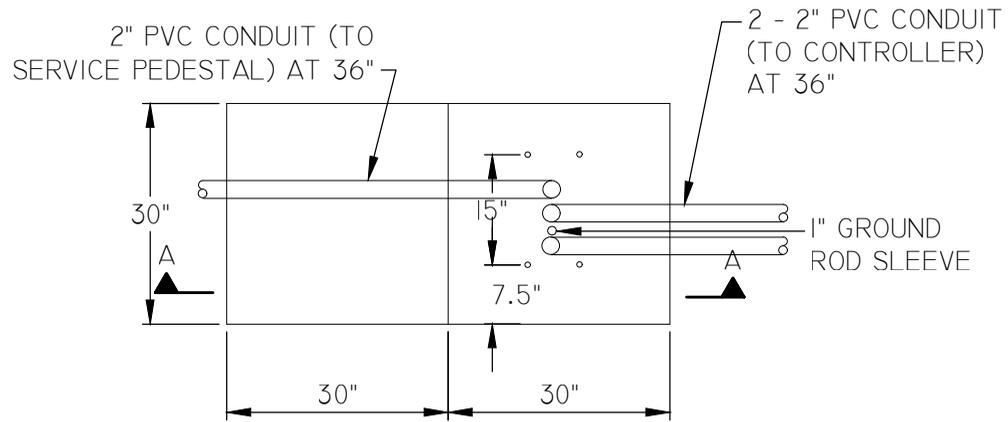


GENERAL NOTES

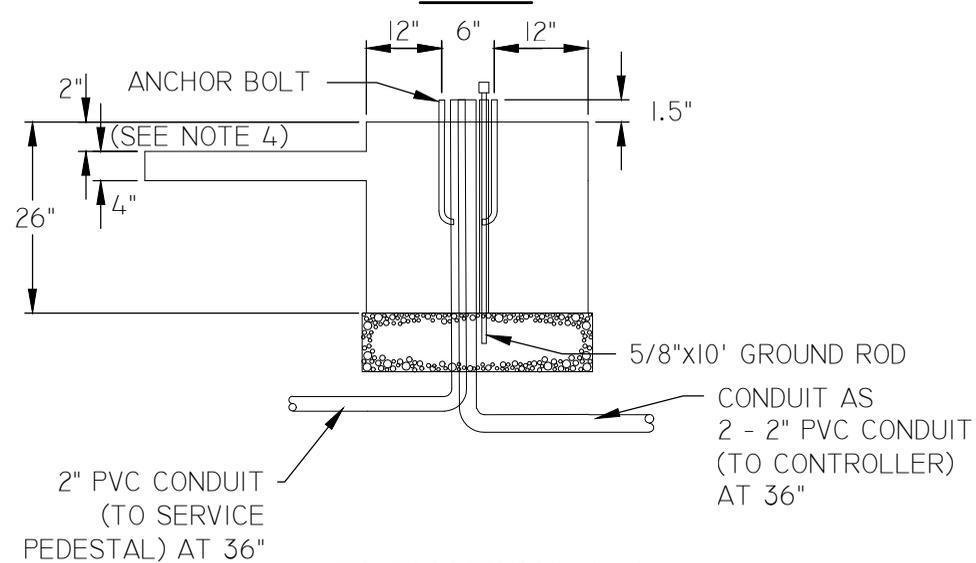
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS.
2. SEE PLANS FOR CONDUIT SIZE, LOCATION, AND QUANTITY.
3. UNSTABLE SOIL MAY REQUIRE A DEEPER FOUNDATION: SEE ADOT SPECIFICATIONS.
4. ANCHOR BOLTS SHALL BE GALVANIZED STEEL, 3/4" x 11" x 5", COMPLETE WITH NUTS AND WASHERS.
5. ANCHOR BOLTS SHALL PROJECT A MINIMUM OF 1" AND A MAXIMUM OF 1 1/2" ABOVE FOUNDATION.
6. CONDUIT SHALL PROJECT A MINIMUM OF 2" AND A MAXIMUM OF 4" ABOVE THE FOUNDATION, EXCEPT FOR CONDUIT FOR GROUND ROD, WHICH SHALL BE FLUSH WITH SURFACE.
7. USE SILICONE CAULK TO SEAL GAP BETWEEN CABINET AND FOUNDATION.
8. IN UNPAVED AREAS A RAISED PCC PAD 36" x 4' x 50" SHALL BE PLACED IN FRONT AND REAR OF CABINET. PAD SHALL BE SET 2" BELOW THE FOUNDATION ELEVATION AND BE 4" THICK. SLOPE PAD AWAY FROM CABINET.
9. ALL CABINET FOUNDATIONS SHALL HAVE A 5/8 INCH x 10 FOOT BONDED GROUND ROD. GROUND ROD SHALL BE INSTALLED BEFORE FOUNDATION IS POURED.
10. 2" SPARE(S) PVC CONDUITS SHALL BE INSTALLED IN THE FOUNDATIONS. STUB OUT A MINIMUM OF 3' AND CAP THE ENDS. TRAFFIC SIGNAL INSPECTOR SHALL DETERMINE ORIENTATION OF SPARE CONDUITS.
11. 2" CONDUIT IS DESIGNATED FOR ELECTRICAL SERVICE.
12. 2" CONDUIT IS DESIGNATED FOR UPS COMMUNICATIONS/ CONTROL CABLE.
13. 2" CONDUIT IS DESIGNATED FOR FIBER OPTIC COMMUNICATIONS CABLE AND SHALL BE RUN TO THE NEAREST TRAFFIC SIGNAL FIBER OPTIC PULL BOX LOCATION OR AS DIRECTED BY THE ITS INSPECTOR.
14. 3" CONDUITS WILL BE DIRECTED TO MAIN SIGNAL PULL BOX. SPARE CONDUIT(S) SHALL BE SCRIBED IN THE CONCRETE TO DENOTE THE DIRECTION. DIRECTION TO BE DETERMINED BY THE INSPECTOR.
15. ALL CONDUITS SHALL BE CENTERED AND INSTALLED INSIDE THE 17" X 15" AREA, AS SHOWN.



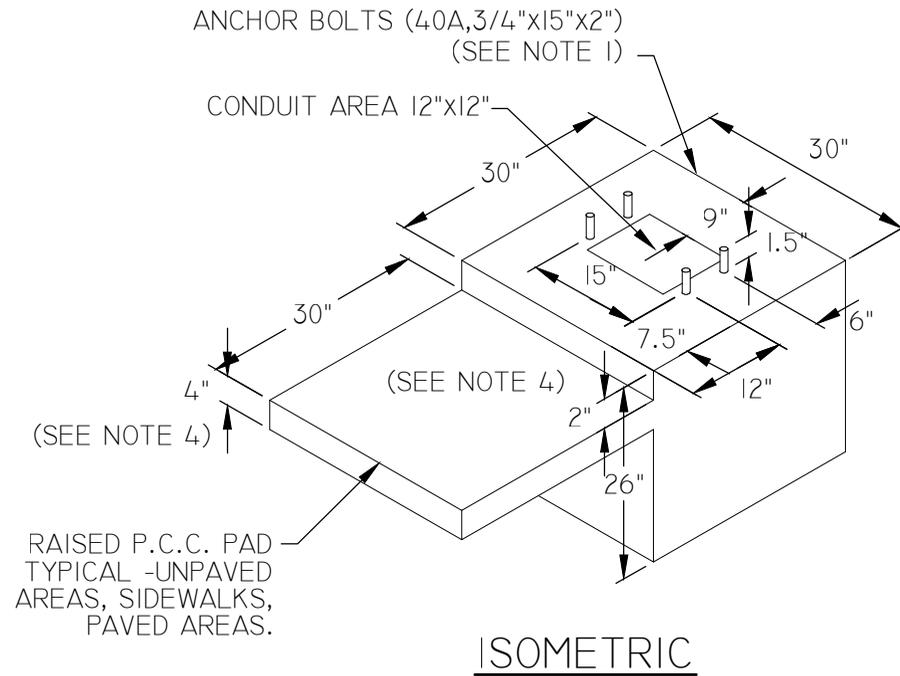
NOT TO SCALE



PLAN



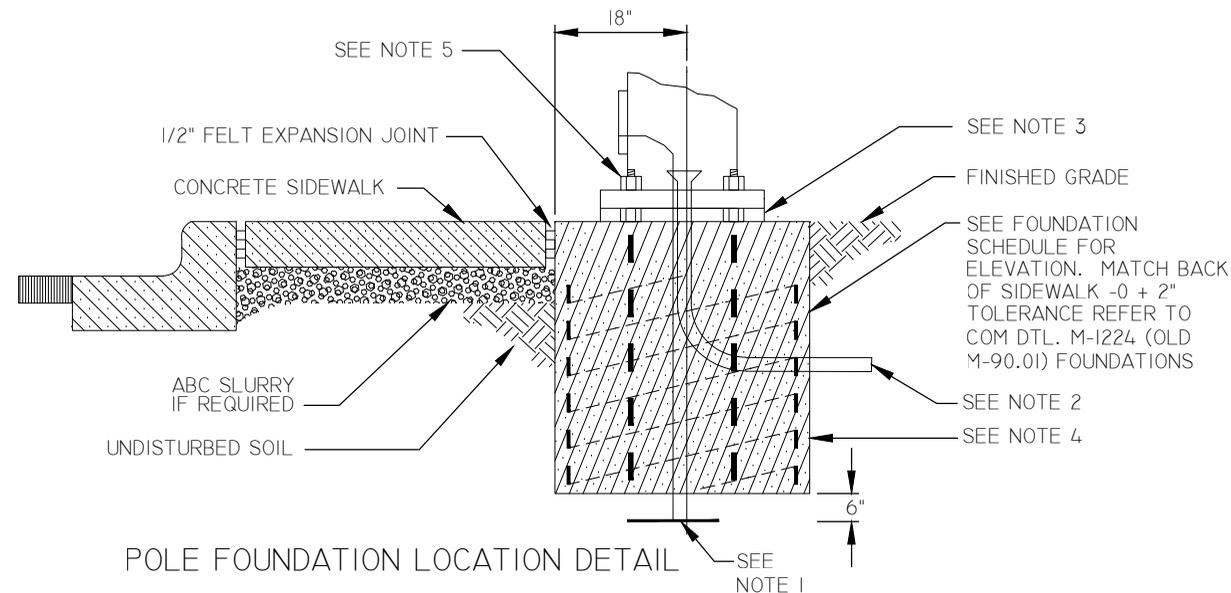
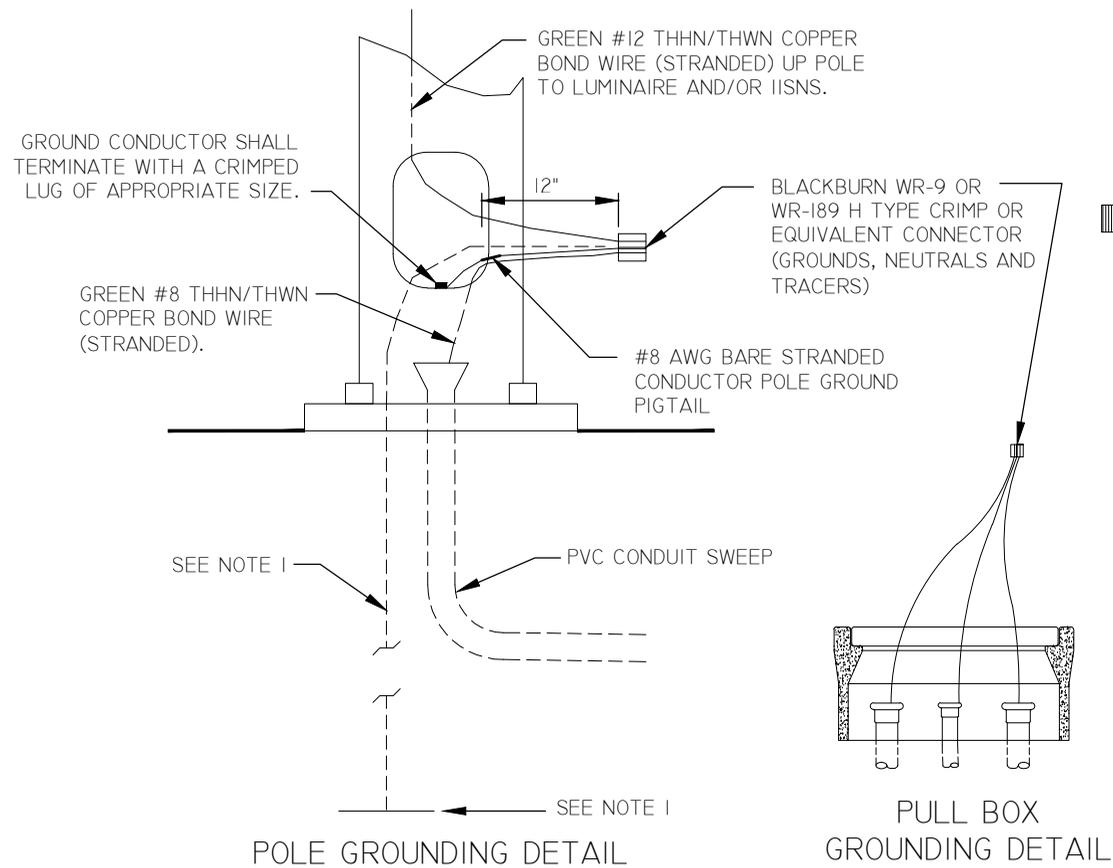
ELEVATION A-A



GENERAL NOTES

1. ALL CONDUITS AND ANCHOR BOLTS SHALL BE RIGIDLY INSTALLED BEFORE CONCRETE IS PLACED.
2. TOP OF PAD TO BE SLOPED TO DRAIN.
3. A CLEAR SILICONE SEALANT SHALL BE APPLIED ALONG THE OUTSIDE EDGES OF THE CABINET WHERE IT ABUTS TO THE CONCRETE PAD.
4. 4" IS NOMINAL DIMENSION. 2"x4" FORMS ARE ACCEPTABLE EXCEPT WHERE OTHERWISE NOTED OR DIRECTED (EXPOSED CONCRETE SURFACES SHALL BE FORMED BY OTHER MEANS FOR AN ACCEPTABLE FINISHED APPEARANCE).

NOT TO SCALE



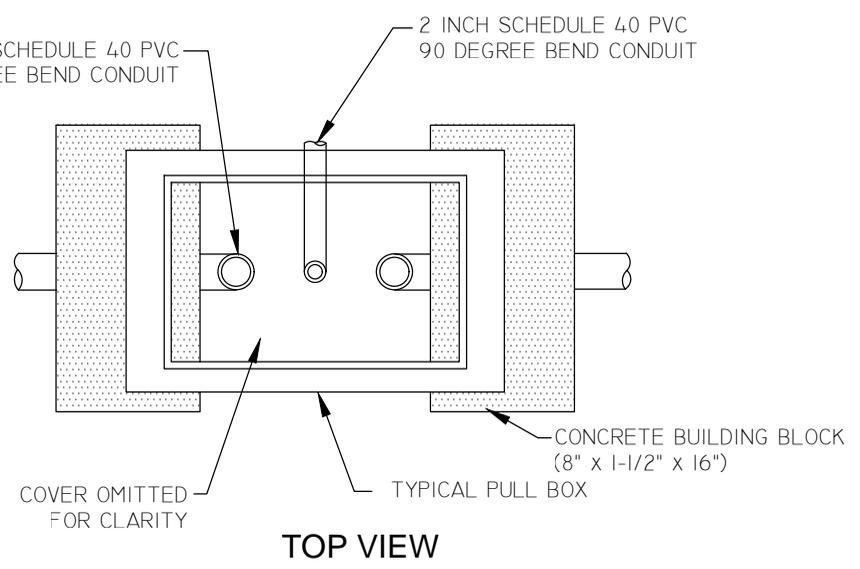
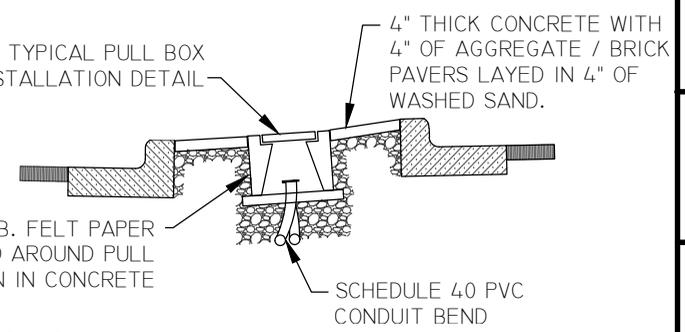
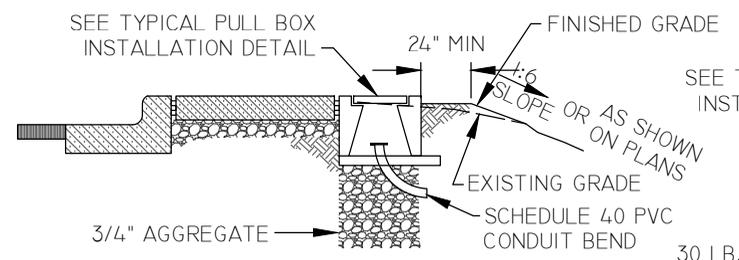
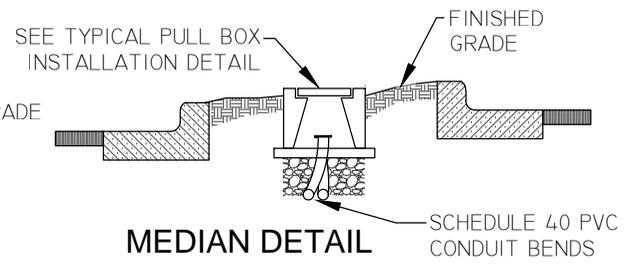
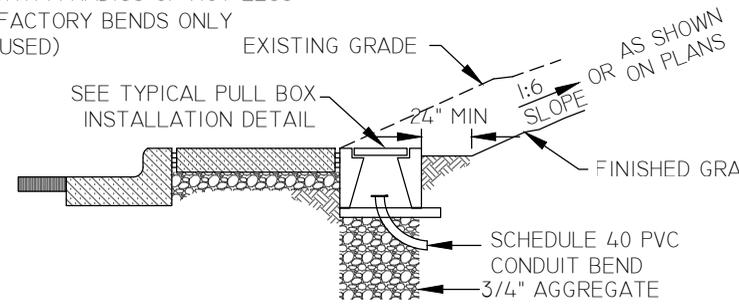
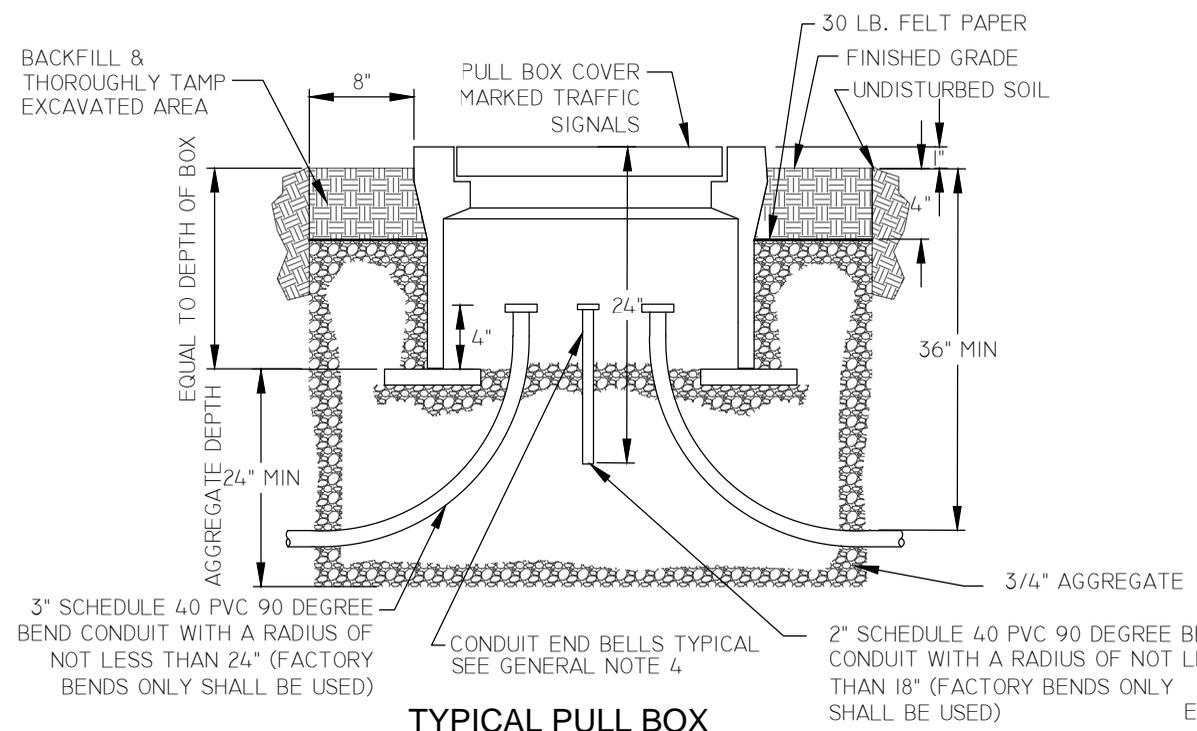
GENERAL NOTES

1. A #6 AWG XHHW INSULATED COPPER STRANDED BOND WIRE WITH A 14" COPPER GROUNDING PLATE (SEE SL-74.02 FOR PLATE DETAIL OR A 25' COIL OF #4 COPPER BARE BOND (SOLID OR STRANDED) COVERED WITH 6" FILL DIRT. SL-74.02 CAN BE FOUND AT THE FOLLOWING ADDRESS: [HTTPS://WWW.MESAAZ.GOV/RESIDENTS/STREETS-TRANSPORTATION/STREETLIGHTS-SIGNS-STRIPING](https://www.mesaz.gov/residents/streets-transportation/streetlights-signs-striping)
2. SCHEDULE 40 PVC 90 DEGREE CONDUIT BEND (SEE POLE DETAILS FOR CONDUIT SIZE) WITH A RADIUS OF NOT LESS THAN 18" (FACTORY BENDS ONLY). CONDUIT SHALL PROJECT MINIMUM OF 2" AND A MAXIMUM OF 4" ABOVE THE FOUNDATION AT 36" DEPTH.
3. THE LEVELING NUTS SHALL BE INSTALLED ON TOP OF CONCRETE POLE BASE. SPACE BETWEEN CONCRETE POLE BASE AND POLE BASE AROUND LEVELING NUTS SHALL BE GROUTED WITH A WEEP HOLE. THE WEEP HOLE SHALL BE CONSTRUCTED OF 1/2" COTTON ROPE AND BE ORIENTED ON THE OPPOSITE SIDE OF THE POLE FROM THE STREET. SEE ADOT SPECIFICATIONS FOR GROUT.
4. CONCRETE FOUNDATIONS SHALL BE VIBRATED WITH A MECHANICAL VIBRATOR DURING CONCRETE POUR.
5. FOR J, K, Q, AND R POLES, THE ANCHOR BOLTS SHALL PROJECT 8 INCHES ABOVE THE FOUNDATION. ANCHOR BOLTS SHALL HAVE A MINIMUM 2 FULL THREADS ABOVE NUTS ON ALL POLES.

NOT TO SCALE

GENERAL NOTES

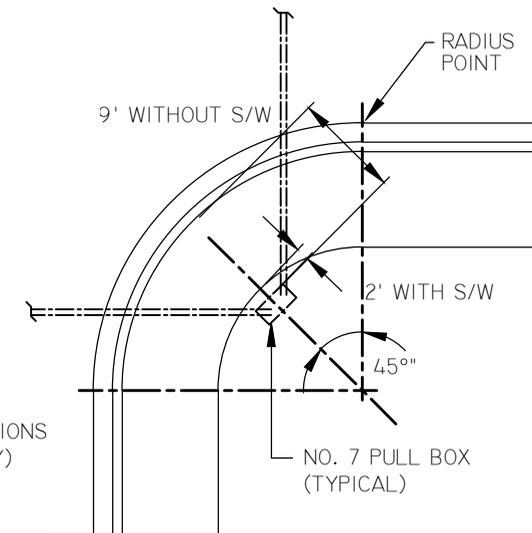
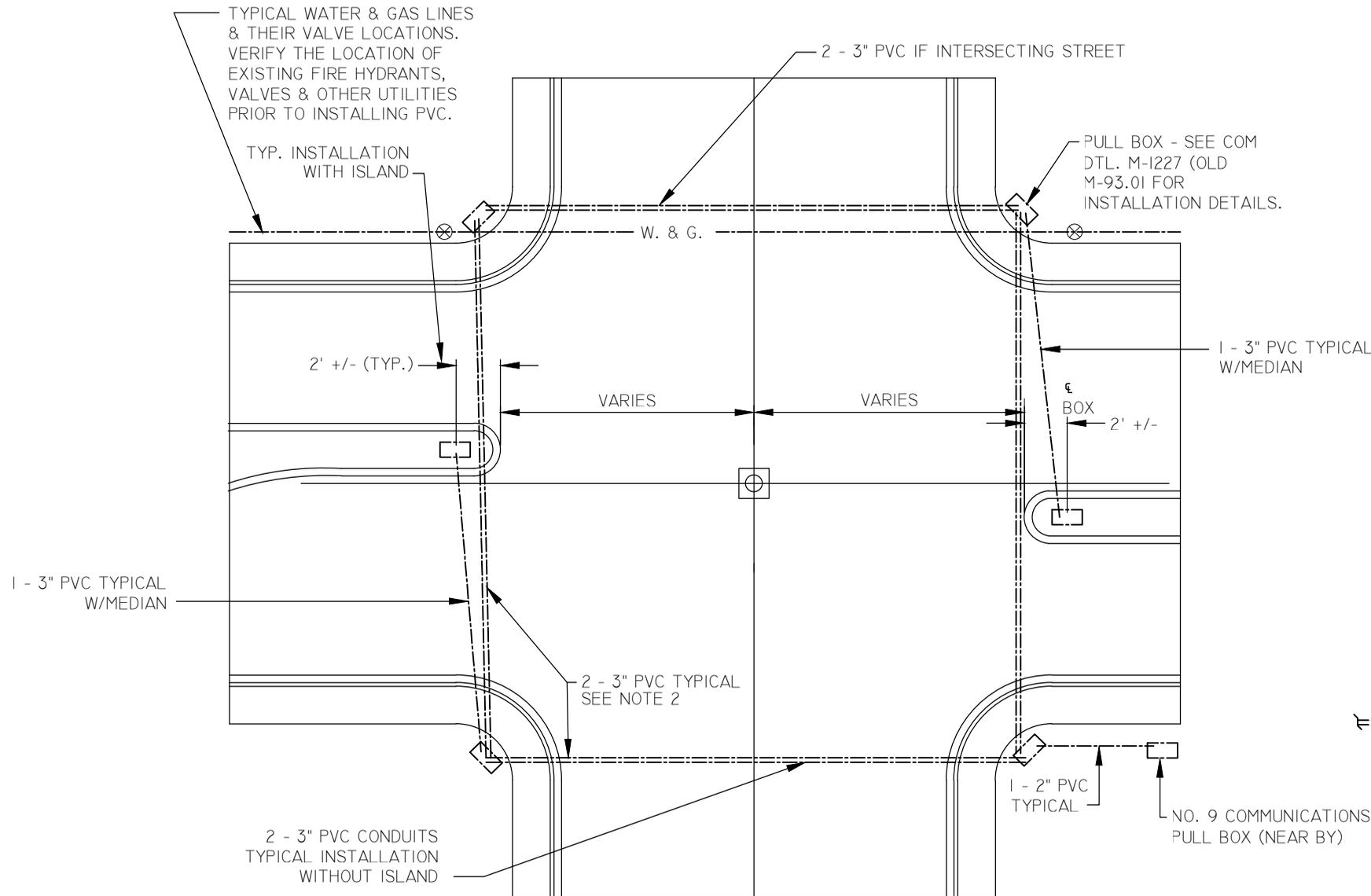
1. ALL FINISHED TRAFFIC SIGNAL EQUIPMENT (POLE FOUNDATIONS, PULL BOXES, AND CONTROLLER CABINET PADS) SHALL BE AT BACK OF SIDEWALK GRADE, UNLESS OTHERWISE NOTED ON PLANS.
2. WHEN TRAFFIC SIGNAL EQUIPMENT (POLES, PULL BOXES, AND CONTROLLER CABINETS) ARE INSTALLED IN A UPWARD SLOPE SECTION, THE PROJECT ENGINEER SHALL DESIGN A RETAINING WALL OR CUT BACK EXISTING GRADE TO OBTAIN A LEVEL AREA FOR AT LEAST 24 INCHES FROM THE TRAFFIC SIGNAL EQUIPMENT. THE SLOPE OF THE FINISHED GRADE SHALL NOT EXCEED A 6:1 SLOPE AND SHALL MATCH AND CONFORM TO EXISTING TERRAIN.
3. WHEN TRAFFIC SIGNAL EQUIPMENT (POLES, PULL BOXES, AND CABINETS) ARE INSTALLED IN A DOWNWARD SLOPE SECTION, NEEDED DIRT SHALL BE HAULED IN TO OBTAIN A LEVEL AREA FOR AT LEAST 24 INCHES FROM THE TRAFFIC SIGNAL EQUIPMENT THE SLOPE OF THE FINISHED GRADE SHALL NOT EXCEED A 6:1 SLOPE AND SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.
4. CONDUIT END BELLS SHALL BE INSTALLED BEFORE PULLING WIRE.
5. BACKFILL WITH EXCAVATED MATERIALS AND THOROUGHLY TAMP PER MAG STANDARD 601.
6. FINISH GRADE SHALL BE 1" DOWN FROM TOP OF BOX. ANY PAVEMENT OR SIDEWALK SHALL BE FLUSH WITH TOP OF BOX.
7. FOR GROUNDING REQUIREMENTS REFER TO COM DTL. M-1226.2 (OLD M-92.03).



NOT TO SCALE

GENERAL NOTES

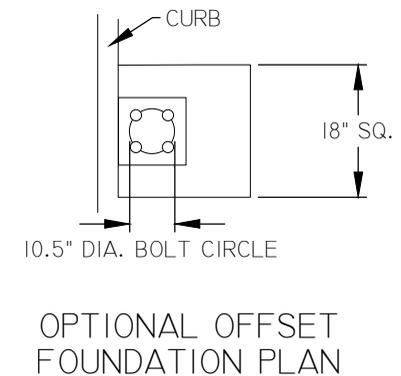
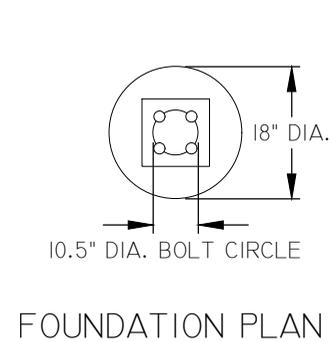
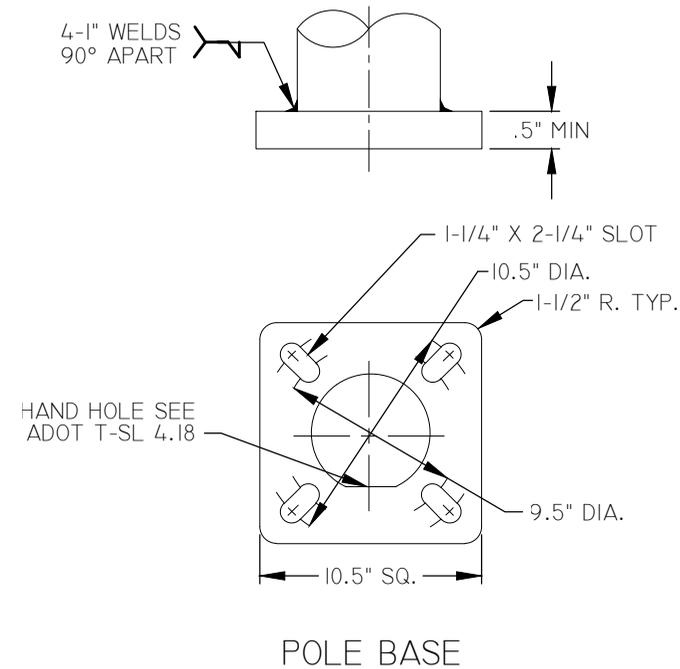
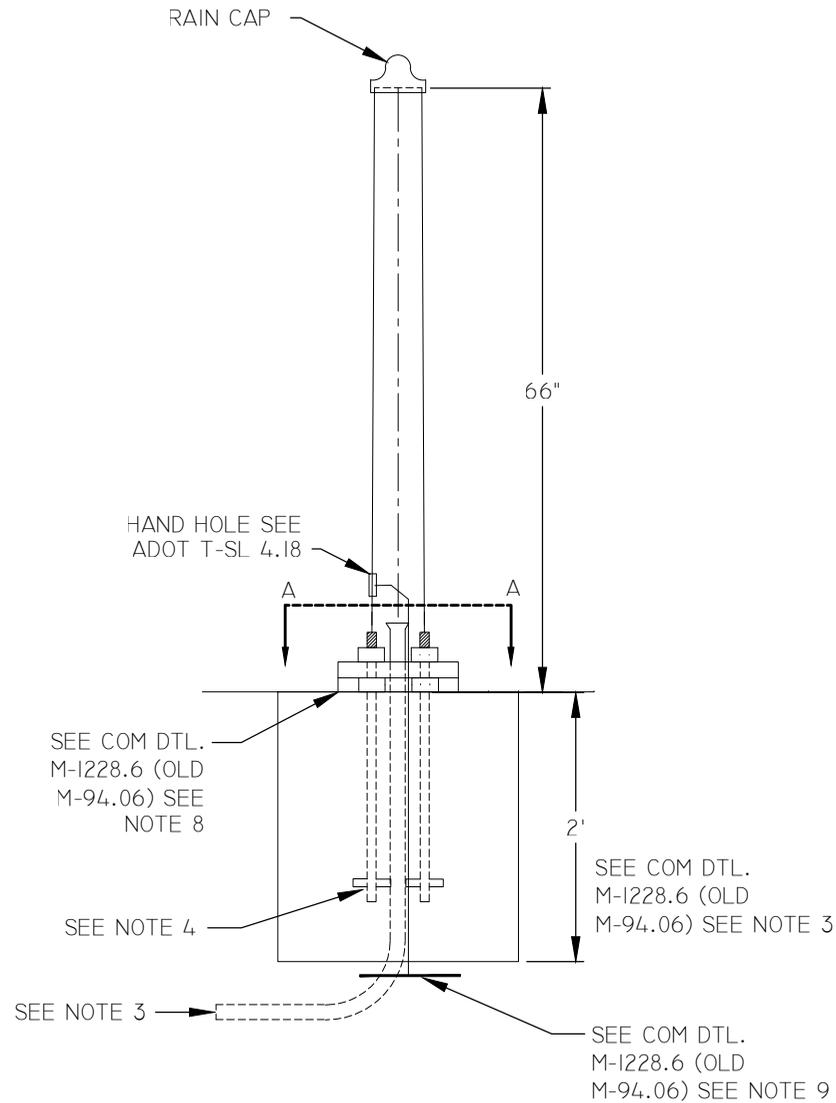
1. INSTALL GREEN #8 THHN/THWN STRANDED COPPER WIRE FULL LENGTH INSIDE OF CONDUIT WITH THREE FEET (3') EXTENDING ABOVE CONDUIT.
2. ALL BONDS SHALL BE SPLICED TOGETHER FOR LOCATING PURPOSES.
3. GRAY PVC SCHEDULE 40 ELECTRICAL CONDUIT SHALL BE USED FOR OPEN TRENCH ONLY. GRAY HDPE SDR-II SHALL BE USED FOR GUIDED BORE APPLICATIONS ONLY AND MAY BE USED FOR OPEN TRENCH.
4. DEPTH OF PVC INSTALLATION SHALL BE 36" MINIMUM (TYPICAL) BELOW LIP OF GUTTER AND RUN IN A HORIZONTAL PLANE FROM PULL BOX TO PULL BOX.
5. IF A NUMBER 9 PULL BOX EXISTS NEARBY A NUMBER 7 PULL BOX FOR A FUTURE SIGNALS, CONNECT THE TWO PULL BOXES WITH A 2" CONDUIT.



NOT TO SCALE

BIKE/PEDESTRIAN POLE GENERAL NOTES

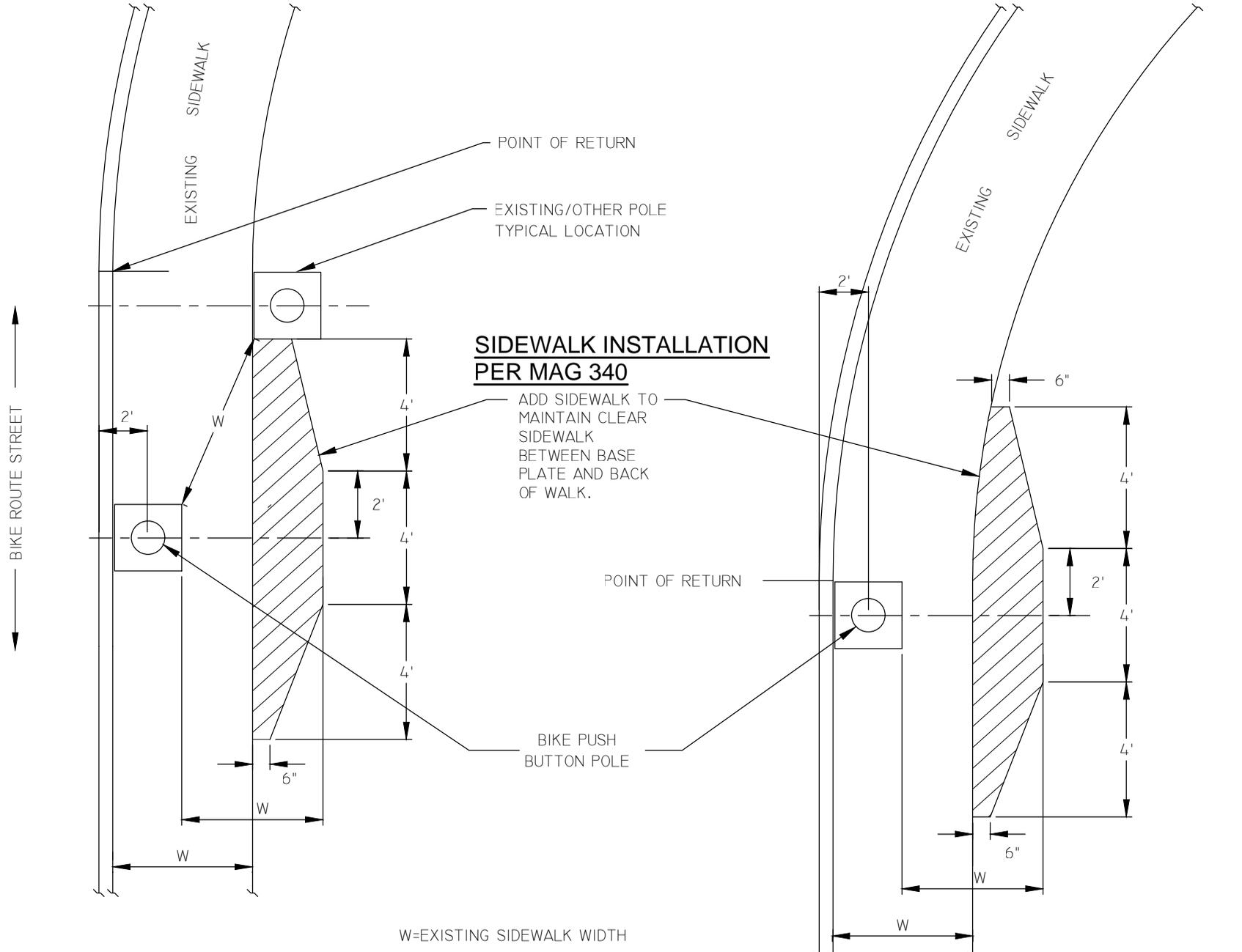
1. ALL DIMENSIONS ARE IN ENGLISH UNITS.
2. ALL BIKE/PEDESTRIAN POLES MAY BE OF THE STRAIGHT OR TAPERED TYPE, WALL THICKNESS SHALL NOT EXCEED .125". POLE O.D. SHALL BE 4.5".
3. INSTALL A SINGLE 2" PVC CONDUIT IN FOUNDATION AT 36" DEPTH.
4. ANCHOR BOLTS SHALL BE 1" X 12", EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS, TWO FLAT WASHERS (1/8" THICK) AND ANCHOR PLATE SIZE OF 3/4" X 2-3/4" X 2-3/4".
5. ANCHOR BOLTS SHALL PROJECT 3-1/2" ABOVE THE FINISHED SIDEWALK.
6. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE 4" ABOVE THE POLE BASE STATING THE MANUFACTURER'S NAME, COM POLE TYPE AND DATE MANUFACTURED.



NOT TO SCALE

**FIGURE A
INSTALLATION NEAR ANOTHER POLE**

**FIGURE B
SOLO INSTALLATION**



GENERAL NOTES

1. BOTTOM OF BASE PLATE TO BE FLUSH WITH TOP OF SIDEWALK.
2. INSTALL BIKE PUSH BUTTON FOR BICYCLISTS WITH BICYCLE/PEDESTRIAN POLE 2' BEHIND FACE OF CURB.
3. PUSH BUTTON SHALL FACE CURB.
4. PUSH BUTTON STATION SHALL BE AS DESCRIBED ON COM DETAIL M-1224.2 (OLD M-90.03).
5. PUSH BUTTON STATION PLACARD SHALL BE AS SHOWN ON COM DETAIL M-1232.1 (OLD M-99.02).
6. FOR PUSH BUTTON STATION INSTALLATION REFER TO COM DETAIL M-1229.5 (OLD M-95.06).
7. REFER TO COM DETAIL M-1228 (OLD M-94.01) FOR FOUNDATION DETAILS.
8. FOR SIDEWALK CONSTRUCTION REFER TO MAG STANDARD DETAIL 230.

NOT TO SCALE

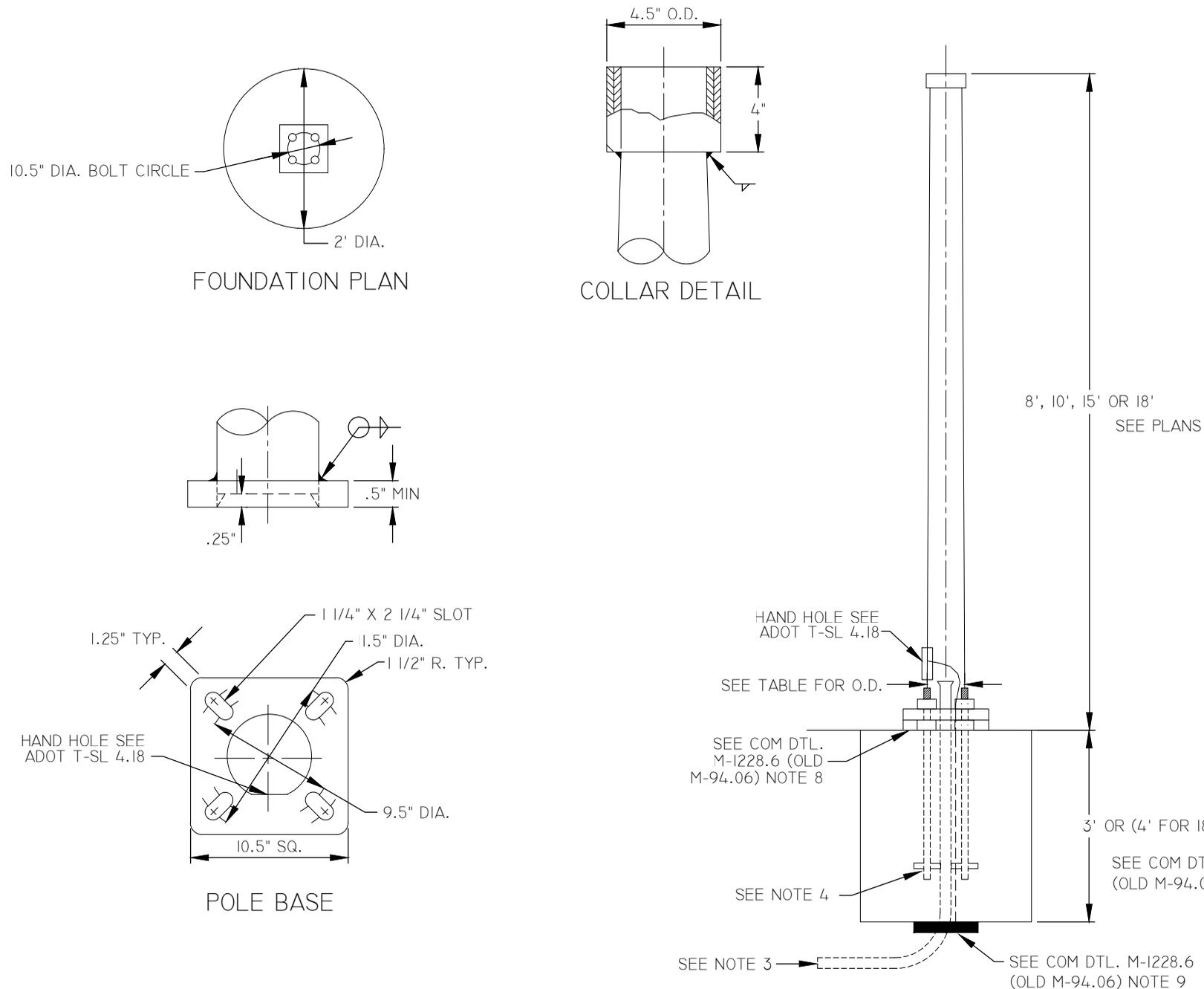
"A" POLE GENERAL NOTES

1. ALL DIMENSIONS ARE IN ENGLISH UNITS.
2. ALL 8' OR 10' "A" POLES MAY BE OF THE TAPERED OR STRAIGHT TYPE, WALL THICKNESS SHALL NOT EXCEED .125". POLE GREATER THAN 10' SHALL BE STRAIGHT WALL TYPE. STRAIGHT WALL POLES SHALL ALSO HAVE A SCHEDULE 40 COLLAR WELDED TO THE POLE PER THE COLLAR DETAIL.
3. INSTALL A SINGLE 2" PVC CONDUIT IN FOUNDATION AT 36" DEPTH.
4. SEE ADOT T-SL 4.28 DETAIL FOR ANCHOR BOLT DETAILS. ANCHOR BOLTS SHALL BE 1" X 35", EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS, TWO FLAT WASHERS (1/8" THICK) AND ANCHOR PLATE SIZE OF 3/4" X 2 3/4" X 2 3/4".
5. ANCHOR BOLTS SHALL PROJECT 3 1/2" ABOVE THE FINISHED SIDEWALK.

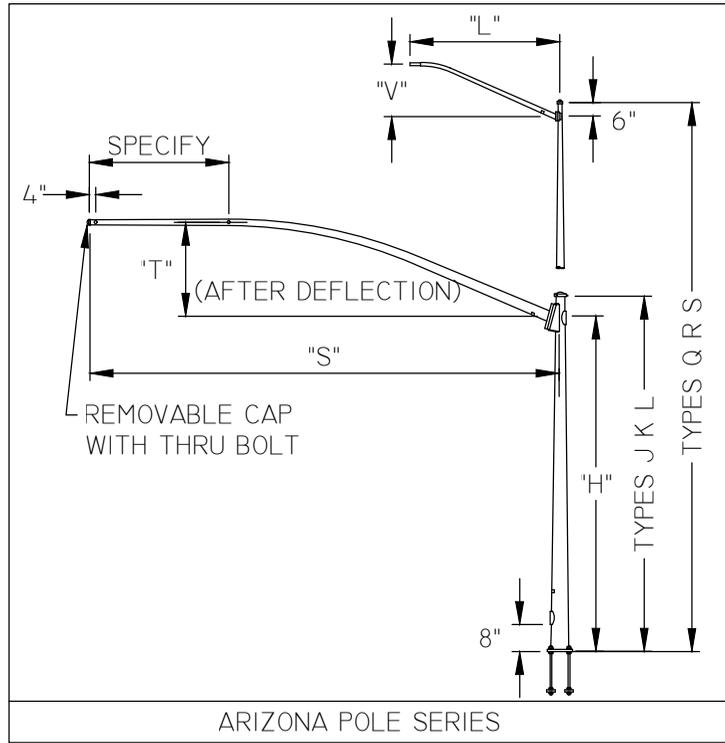
TAPERED POLE DIAMETER TABLE

HEIGHT	BASE	TOP
8'-0"	5.2"	4.1"
10'-0"	5.5"	4.1"

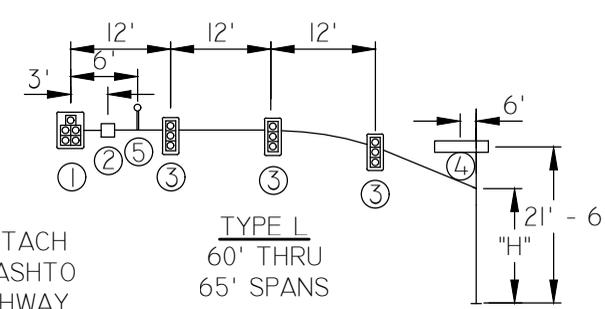
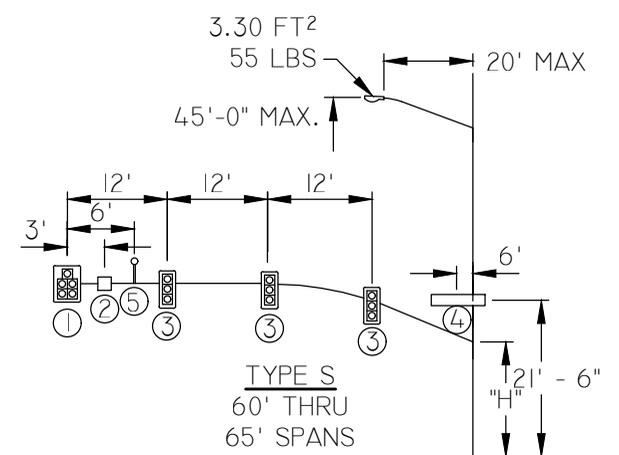
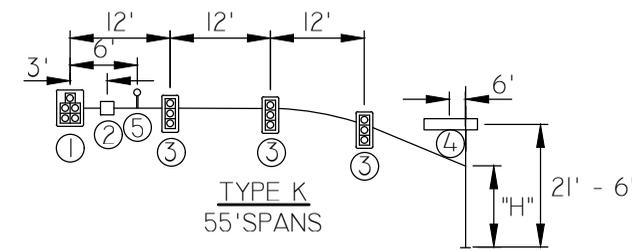
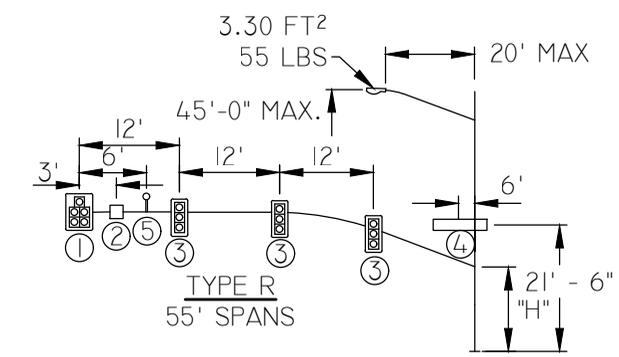
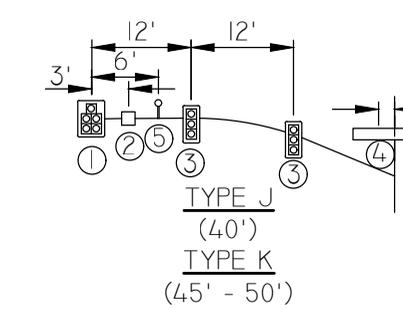
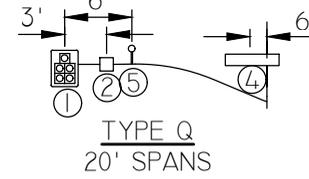
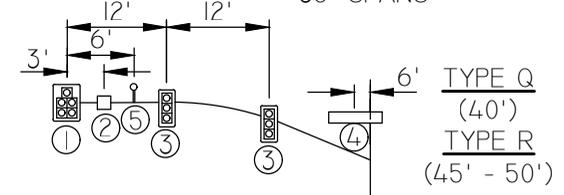
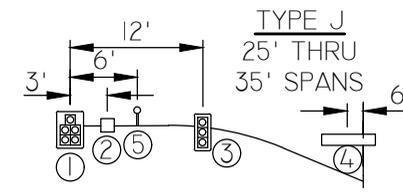
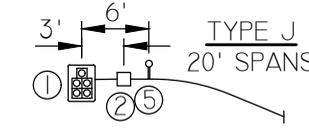
NOTE 15' & 18' "A" POLES- STRAIGHT ONLY



NOT TO SCALE



DEVICE	DESCRIPTION	PROJ. AREA (FT ²)	WEIGHT (LBS)
① SIGNAL	5 SECTION SIGNAL W/ BACKPLATES	15.55	53
② SIGN	DIRECTIONAL SIGN	7.50	25.0
③ SIGNAL	12"- 3 SECTION W/ BACKPLATES	8.24	39
④ SIGN	STREET NAME SIGN	25.00	300.0
⑤ CAMERA	VIDEO DETECTION CAMERA W/ 1' RISER	1.00	15



MAX. LOADING INFORMATION

NOT TO SCALE

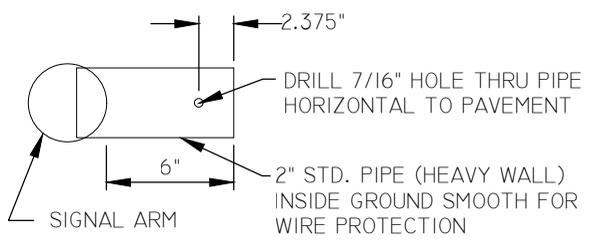
*POLE MANUFACTURER TO PROVIDE ARIZONA PE STAMPED SUBMITTAL DRAWINGS AND POLE CALCULATIONS.

*POLE AND MAST ARM SIZED BY MANUFACTURER BASED ON LOADING AND DESIGN CRITERIA.

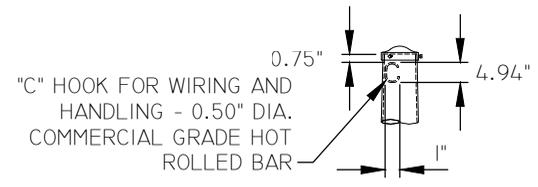
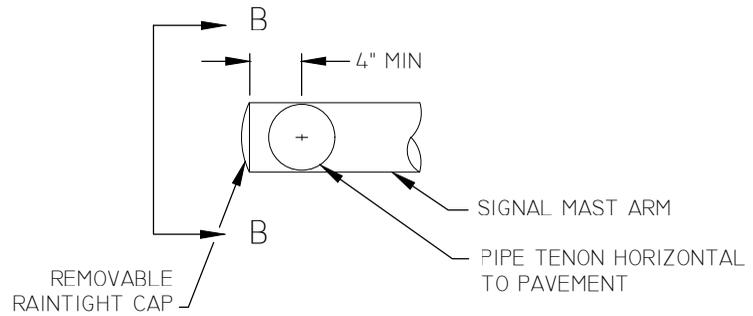
REFER TO COM DETAILS M-1228.4 (OLD M-94.05) AND M-1228.6 (OLD M-94.06) SPECIFIC TRAFFIC SIGNAL POLE DETAILS AND TRAFFIC SIGNAL POLE TABLES AND GENERAL NOTES

DESIGN CRITERIA

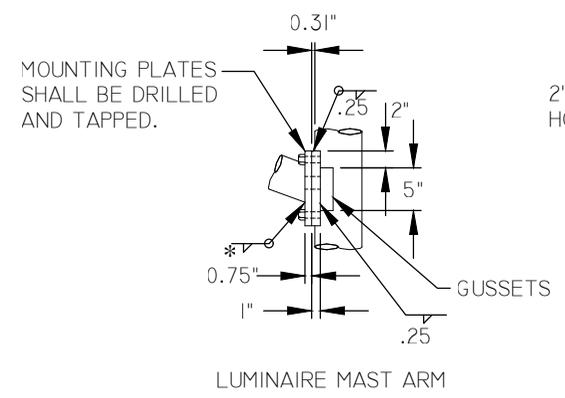
DESIGNED TO WITHSTAND PRESSURES EQUIVALENT TO 80 MPH ISOTACH WIND VELOCITY. WITH A 1.3 GUST FACTOR, AS DEFINED BY THE AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS", 1994.



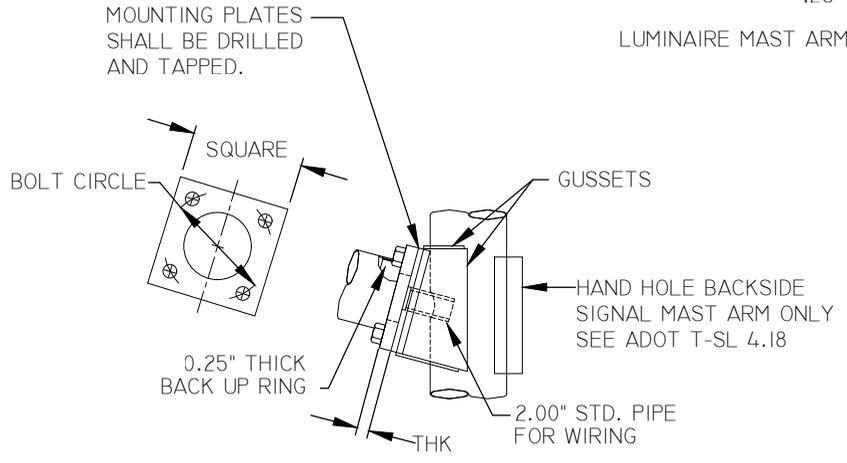
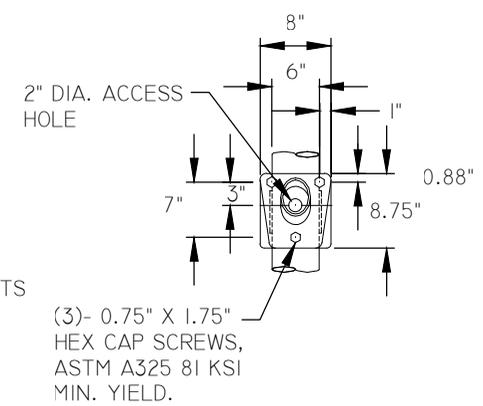
END OF SIGNAL MAST ARM TENON VIEW



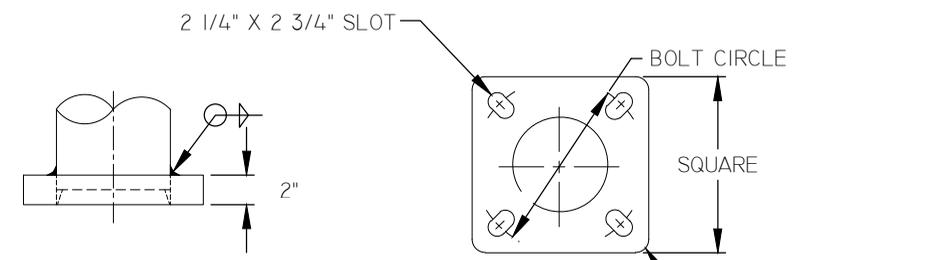
TOP OF TRAFFIC SIGNAL POLE



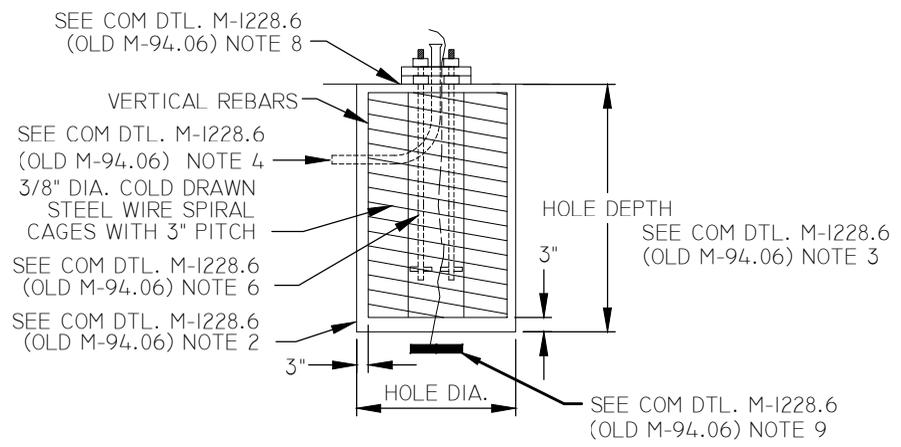
LUMINAIRE MAST ARM



SIGNAL MAST ARM

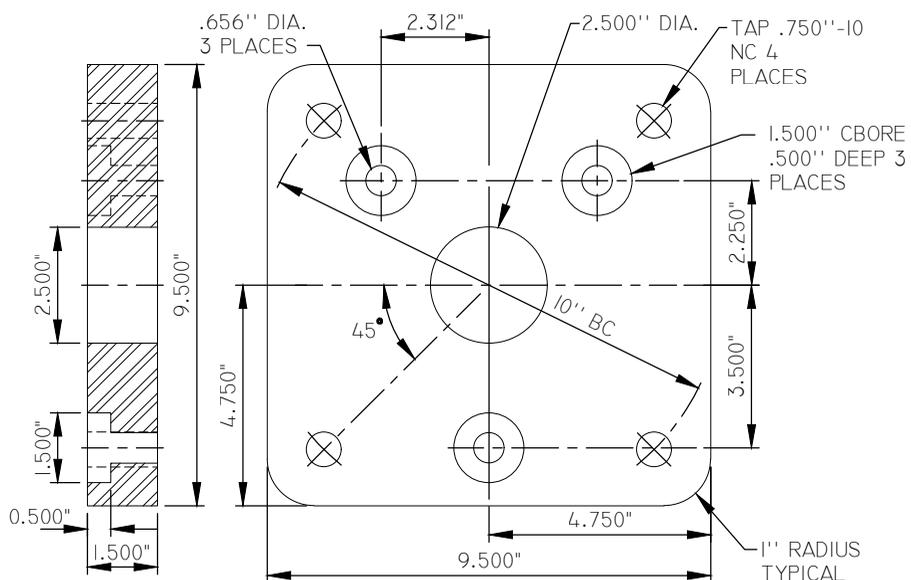


POLE BASE

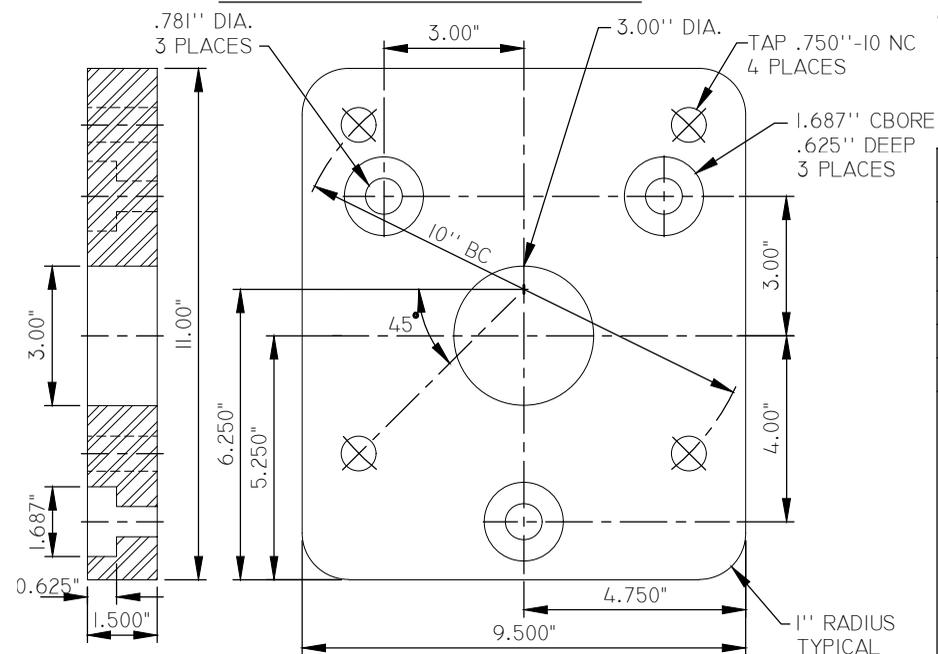


FOUNDATIONS

NOT TO SCALE



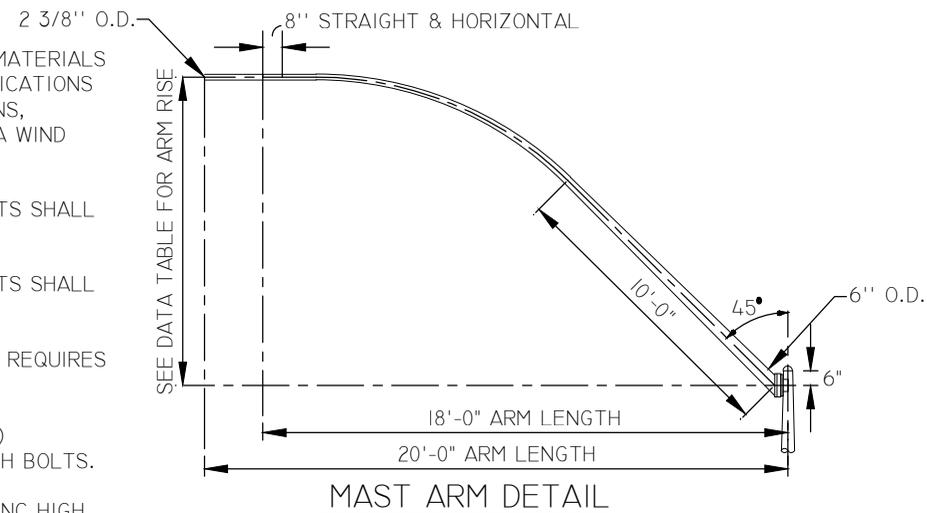
AP-101 ADAPTOR PLATE DETAIL
SMALL BOLT PATTERN



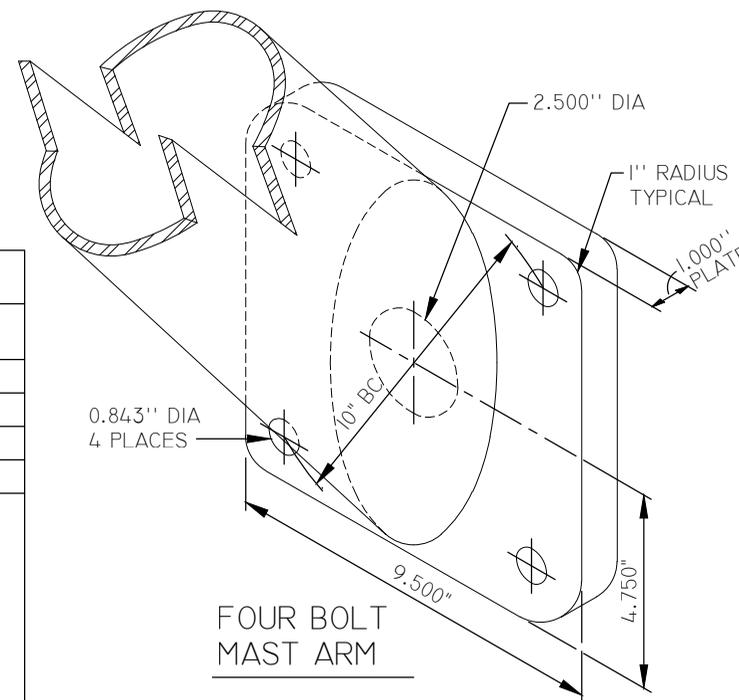
AP-102 ADAPTOR PLATE DETAIL
LARGE BOLT PATTERN

GENERAL NOTES:

1. THE MAST ARM DESIGN, ADAPTOR PLATE, AND MATERIALS SHALL CONFORM TO ASSHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS BASED ON A WIND SPEED OF 80 MILES PER HOUR.
2. THE MAST ARM, ADAPTOR PLATE, AND ALL PARTS SHALL BE STEEL.
3. THE MAST ARM, ADAPTOR PLATE, AND ALL PARTS SHALL BE HOT DIPPED GALVANIZED PER MAG STD. 771.
4. ADAPTOR PLATE AP-101 (SMALL BOLT PATTERN) REQUIRES THREE 5/8"x2"-11 NC HIGH STRENGTH BOLTS.
5. ADAPTOR PLATE AP-102 (LARGE BOLT PATTERN) REQUIRES THREE 3/4"x2"-10 NC HIGH STRENGTH BOLTS.
6. THE MAST ARM REQUIRES FOUR 3/4"x2 1/2" 10 NC HIGH STRENGTH BOLTS.
7. LOCTITE #262 OR EQUAL SHALL BE APPLIED TO ALL BOLTS.
8. A METAL TAG SHALL BE PERMANENTLY ATTACHED ON THE BOTTOM OF THE MAST ARM NEAR THE BASE STATING THE MANUFACTURER'S NAME, COM ARM #, ARM LENGTH, AND ARM RISE.



MAST ARM DETAIL



**FOUR BOLT
MAST ARM**

DATA TABLE				
ARM #	ARM LENGTH	ARM RISE	ARM O.D. AT LUMINAIRE	ARM O.D. AT FLANGE
TS-101	18'-0"	12'-6"	2 3/8"	6"
TS-102	20'-0"	12'-6"	2 3/8"	6"
TS-103	18'-0"	10'-6"	2 3/8"	6"
TS-104	20'-0"	10'-6"	2 3/8"	6"

NOTES:

- ① ARM #'S TS-101 & TS-102 ARE TO BE USED WITH ADAPTOR PLATE TO RAISE LUMINAIRE ON TRAFFIC SIGNAL POLE 28'-0" TO 40'-0".
- ② ARM #'S TS-103 & TS-104 ARE TO BE USED WITH ADAPTOR PLATE TO RAISE LUMINAIRE ON TRAFFIC SIGNAL POLE 30'-0" TO 40'-0".
- ③ ARM #'S TS-103 & TS-104 ARE TO BE USED WITH ADAPTOR PLATE (AP-102) TO RAISE LUMINAIRE ON TRAFFIC SIGNAL POLE PER COM DETAIL M-1228.5 (OLD M-94.05.01) 35'-0" TO 45'-0".

NOT TO SCALE

POLE TYPE	POLE TUBE	POLE BASE				SIGNAL MAST ARM			
	LENGTH (FT)	SQUARE (IN)	BOLT CIRCLE (IN)	THK. (IN)	HOLE/SLOT SIZE (IN)	SQUARE (IN)	BOLT CIRCLE (IN)	THK. (IN)	HOLE/SLOT SIZE (IN)
J / JMOD	15.0/22.17	18.00	17.00-18.00	2.00	2.25 X 2.75	13.00	13.00	1.50	
K / KMOD	15.0/22.17	18.00	17.50-18.00	2.00	2.25 X 2.50	15.00	15.00	1.75	
Q	35.00	18.00	17.00-18.00	2.00	2.25 X 2.75	13.00	13.00	1.50	
R	35.00	18.00	17.50-18.00	2.00	2.25 X 2.50	15.00	15.00	1.75	
L / LMOD	15.0/22.17	23.00	23.00	2.00	2.25	20.00	20.00	2.00	
S	35.00	23.00	23.00	2.00	2.25	20.00	20.00	2.00	

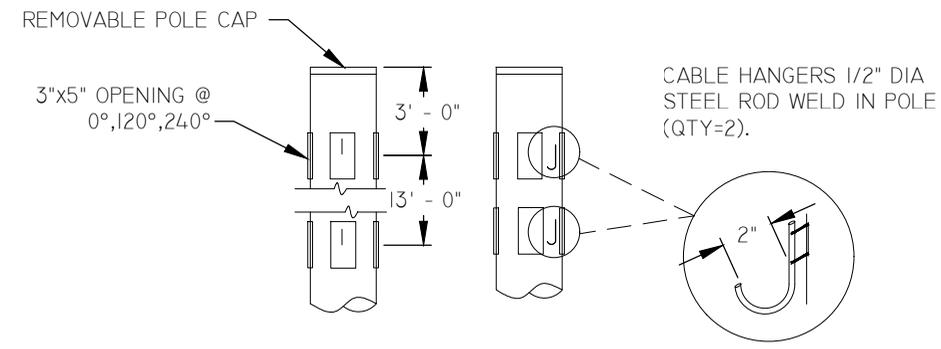
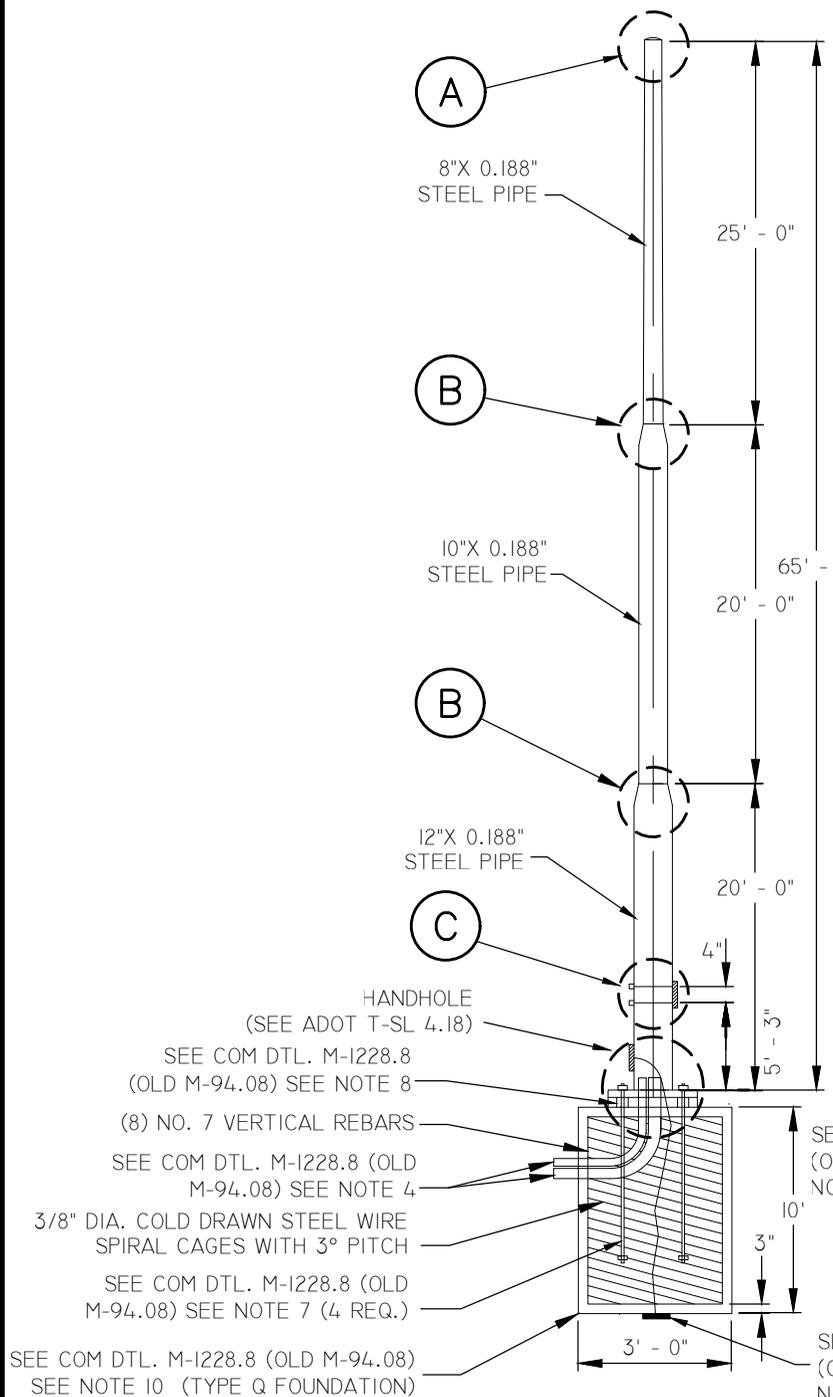
SIGNAL ARM DATA			
TYPE	ARM SPAN "S" (FT)	RISE "T" (FT)	ARM MOUNTING HEIGHT "H" (FT)
J & Q	20	7.00	14.00
	25	7.00	14.00
	30	7.00	14.00
	35	7.00	14.00
	40	7.00	14.00
K & R	45	7.00	14.00
	50	7.00	14.00
	55	7.00	14.00
L & S	60	7.00	14.00
	65	7.00	14.00

LUMINAIRE ARM DATA	
ARM SPAN "L" (FT)	RISE "V" (FT)
18	5.75
18 (TS-103)	10.50
20	5.75
20 (TS-104)	10.50

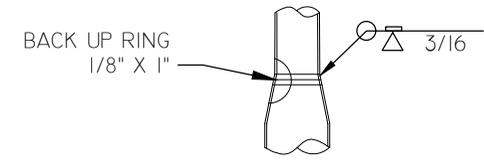
POLE	FOUNDATIONS		ANCHOR BOLT INFO		REBAR INFO	
	HOLE DIAMETER	HOLE DEPTH	BOLT DIAMETER	BOLT LENGTH	REBAR QUANTITY	REBAR SIZE
J	3'	10'	2"	70"	8	#7
K	3'	10'	2"	70"	8	#7
Q	3'	10'	2"	70"	8	#7
R	3'	10'	2"	70"	8	#7
L	4'	17'	2"	70"	12	#9
S	4'	17'	2"	70"	12	#9

TRAFFIC SIGNAL POLE GENERAL NOTES

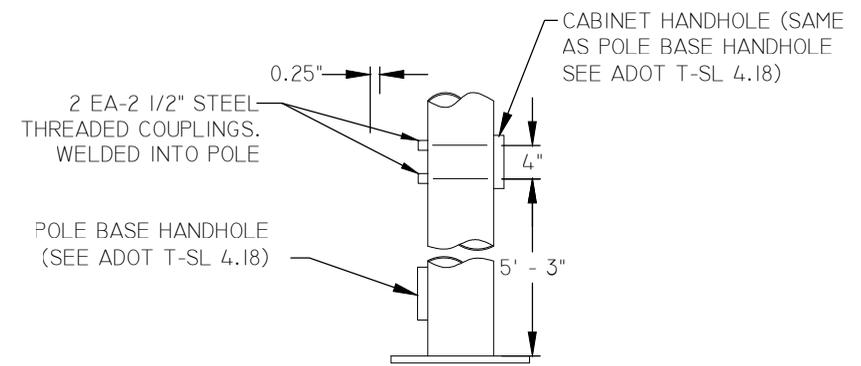
- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF MESA SPECIFICATIONS.
- THE FOUNDATION HOLE SHALL BE AUGERED AND CLASS "A" CONCRETE (3,000 PSI PER MAG STANDARD 725) POURED AGAINST UNDISTURBED COMPACTED EARTH.
- UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION; SEE ADOT SPECIFICATIONS, ROAD AND BRIDGE CONSTRUCTION, SECTION 731-3.01.
- INSTALL 1 - 3" PVC CONDUIT IN FOUNDATION AT 36" DEPTH.
- CONDUIT SHALL PROJECT A MINIMUM OF 4 INCHES ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 6 INCHES.
- SEE ADOT T-SL 4.28 DETAIL FOR ANCHOR BOLT DETAILS. ANCHOR BOLT INFORMATION CAN BE FOUND IN CHART BY POLE TYPE. EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS, TWO FLAT WASHERS (1/4" THICK) AND ANCHOR PLATE SIZE OF 1 1/2" X 5 1/2" X 5 1/2".
- ANCHOR BOLTS SHALL PROJECT 8 INCHES ABOVE THE FOUNDATION.
- THE LEVELING NUTS SHALL BE INSTALLED ON TOP OF CONCRETE POLE BASE. SPACE BETWEEN CONCRETE POLE BASE AND POLE BASE AROUND LEVELING NUTS SHALL BE GROUTED WITH A WEEP HOLE. THE WEEP HOLE SHALL BE CONSTRUCTED OF 1/2" COTTON ROPE AND BE ORIENTED ON THE OPPOSITE SIDE OF THE POLE FROM THE STREET. SEE ADOT SPECIFICATIONS, ROAD AND BRIDGE CONSTRUCTION, SECTION 731- 3.01.
- GROUNDING AS SHOWN ON COM DETAIL M-1226.2 (OLD M-92.03) NOTE I SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED AND CONNECTED TO POLE GROUNDING SCREW IN THE HAND HOLE.
- FINISH TO BE GALVANIZED UNLESS OTHERWISE SPECIFIED ON PLANS.
- CITY OF MESA SIGNAL POLES SHALL HAVE A HAND HOLE AND J-HOOK MANUFACTURED AND INSTALLED OPPOSITE THE SIGNAL MAST ARM PLATE (ADOT T-SL 4.18).
- FOUR 1.25" - 7UNC HIGH-STRENGTH CONNECTING BOLTS (ASTM-A354 GR. BC) ARE REQUIRED FOR 20'-55' SIGNAL MAST ARMS. FOUR 1.5" - 6UNC HIGH-STRENGTH CONNECTING BOLTS (ASTM-A325 GR. BC) ARE REQUIRED FOR 60'-65' SIGNAL MAST ARMS.
- ALL SIGNAL MAST ARMS SHALL BE OF ONE PIECE CONSTRUCTION.
- A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURER'S NAME, COM POLE TYPE AND DATE MANUFACTURED.
- MANUFACTURER TO SUPPLY STRUCTURAL SHOP DRAWINGS AND CALCULATIONS SEALED BY REGISTERED ARIZONA STRUCTURAL ENGINEER.



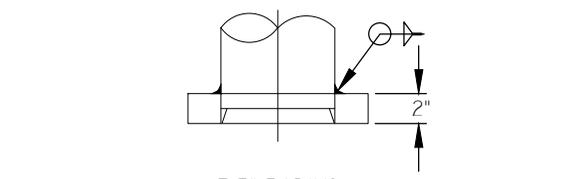
A POLE TOP DETAIL



B CONNECTION DETAIL



C HANDHOLE DETAIL (FOR CCTV CABINET)



POLE BASE

NOT TO SCALE

GENERAL NOTES

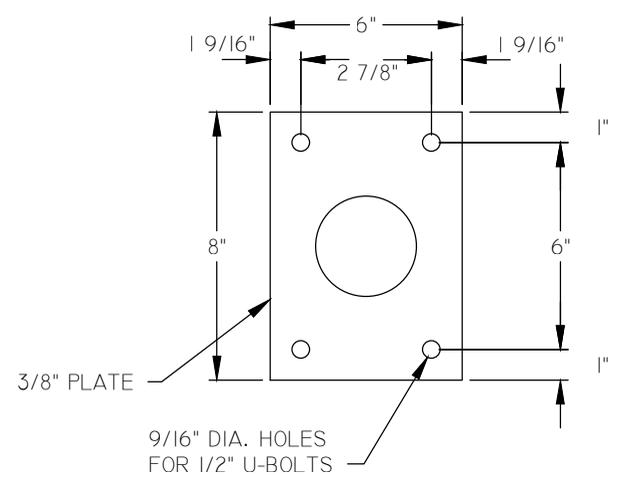
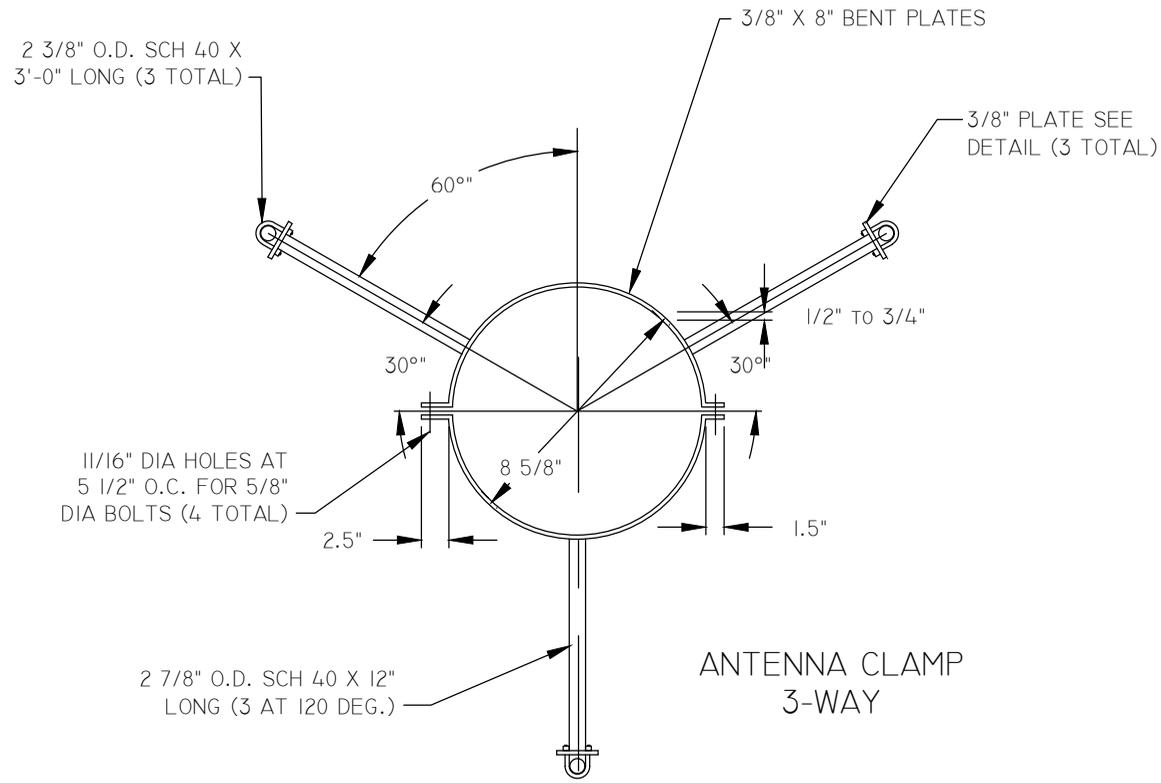
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE ADOT STANDARDS SPECIFICATIONS, SECTION 731.
2. THE FOUNDATION HOLE SHALL BE AUGERED AND CLASS "A" CONCRETE (3000 PSI PER MAG STANDARD 725) POURED AGAINST UNDISTURBED COMPACTED EARTH.
3. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION: SEE ADOT SPECIFICATIONS. ROAD AND BRIDGE CONSTRUCTION SECTION 731-3.01).
4. INSTALL 1 - 3" AND 1 - 2" PVC CONDUIT IN FOUNDATION AT 36" DEPTH.
5. CONDUIT SHALL PROJECT A MINIMUM OF 4 INCHES ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 6 INCHES.
6. SEE ADOT STD DRAWING T-SL 4.28 DETAIL FOR ANCHOR BOLT DETAILS. ANCHOR BOLTS SHALL BE 2" X 70". EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS, TWO FLAT WASHERS (1/4" THICK) AND ANCHOR PLATE SIZE OF 1 1/2" X 5 1/2" X 5 1/2".
7. ANCHOR BOLTS SHALL PROJECT 8 INCHES ABOVE THE FOUNDATION.
8. THE LEVELING NUTS SHALL BE INSTALLED ON TOP OF CONCRETE POLE BASE. SPACE BETWEEN CONCRETE POLE BASE AND POLE BASE AROUND LEVELING NUTS SHALL BE GROUTED WITH A WEEP HOLE. THE WEEP HOLE SHALL BE CONSTRUCTED OF 1/2" COTTON ROPE AND BE ORIENTED ON THE OPPOSITE SIDE OF THE POLE FROM THE STREET, SEE ADOT SPECIFICATIONS ROAD AND BRIDGE CONSTRUCTION SECTION 731-3.01.
9. GROUNDING AS SHOWN ON COM DETAIL M-1226.2 (OLD M-92.03) NOTE 1 SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED AND CONNECTED TO POLE GROUNDING SCREW IN THE HAND POLE.
10. THE POLE SHAFT MATERIAL SHALL HAVE MINIMUM YIELD STRENGTH OF 42 KSI.
11. ALL OTHER PIPE AND PLATE SHALL HAVE MINIMUM WELD STRENGTH OF 36 KSI.
12. WELDING SHALL CONFORM TO AWS D1.1 (LATEST EDITION).
13. DEFLECTION AT THE TOP OF THE POLE SHALL BE NO MORE 1.5" AT 30 MPH WIND.
14. FINISH TO BE GALVANIZED PER ASTM A123 UNLESS OTHERWISE SPECIFIED ON PLANS.
15. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURE'S NAME. COM POLE TYPE AND DATE MANUFACTURED.
16. SEE COM DETAIL M-1228.9 (OLD M-94.09) FOR ANTENNA CLAMP ASSEMBLY.
17. ALL SUPPORTS SHALL BE DESIGNED TO WITHSTAND 80 MPH WINDS PER AASHTO SPECIFICATIONS.



TRAFFIC SIGNAL POLE - TYPE "ITS" - NOTES

OLD
M-94.08

DETAIL NO.
M-1228.8



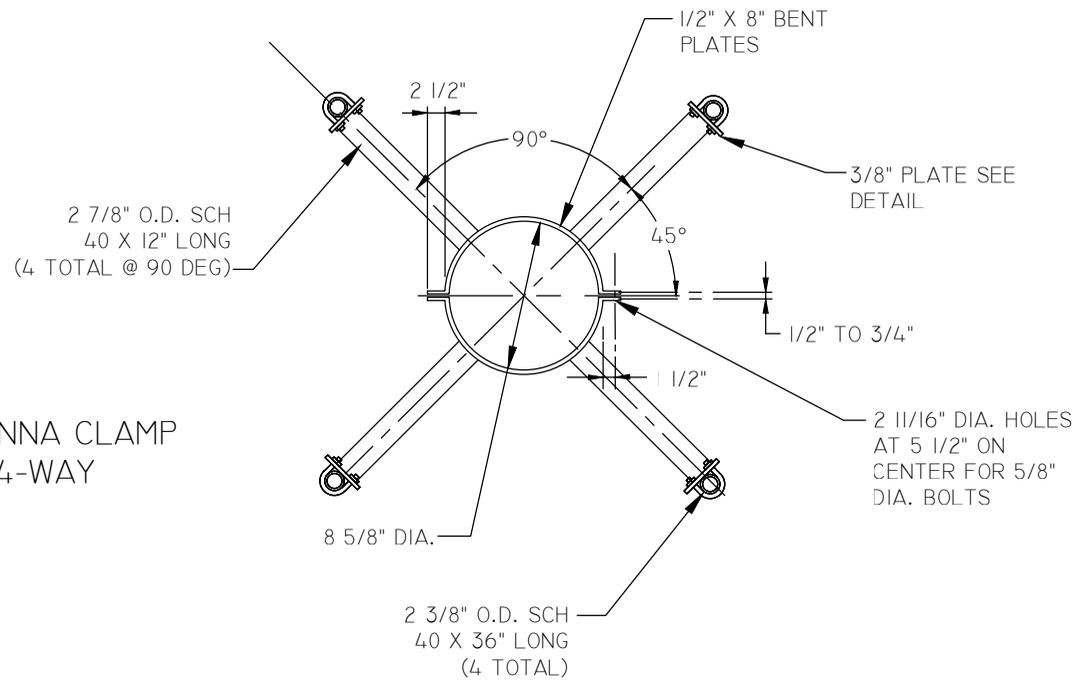
ANTENNA ATTACHMENT PLATE

GENERAL NOTES

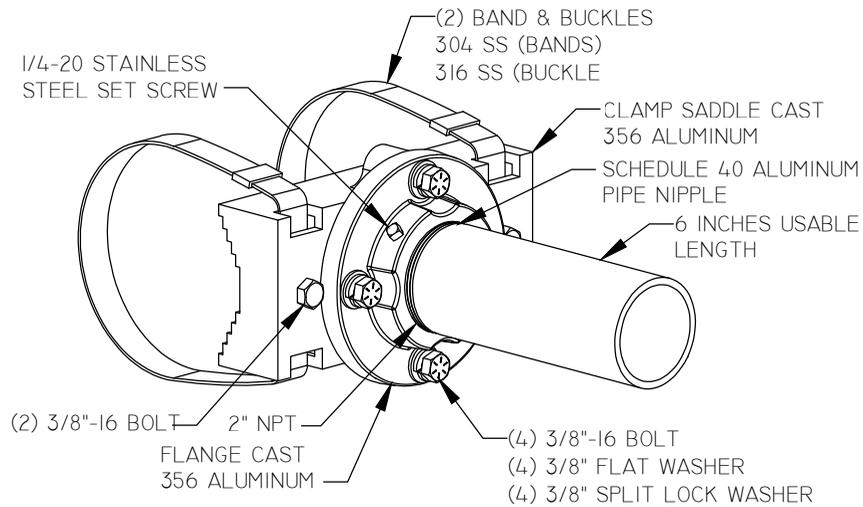
1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE ADOT STANDARD SPECIFICATIONS, SECTION 731.
2. FINISH TO BE GALVANIZED PER ASTM A123 UNLESS OTHERWISE SPECIFIED ON PLANS.
3. ALL SUPPORTS SHALL BE DESIGNED TO WITHSTAND 80 MPH WINDS PER AASHTO SPECIFICATIONS.
4. SEE COM DETAIL M-1228.7 (OLD M-94.07) FOR ITS POLE, 65'.

FURNISH WITH EACH CLAMP ASSEMBLY	
QTY	ITEM
4	5/8" DIA. X 2 1/2" HHMB W/NUTS AND WASHERS (GALVANIZED)
3	2 3/8" O.D. X 3'-0" SCH 40 STD PIPE (GALVANIZED)
6	1/2" NUTS (GALVANIZED)
24	1/2" WASHERS (GALVANIZED)

ANTENNA CLAMP 4-WAY



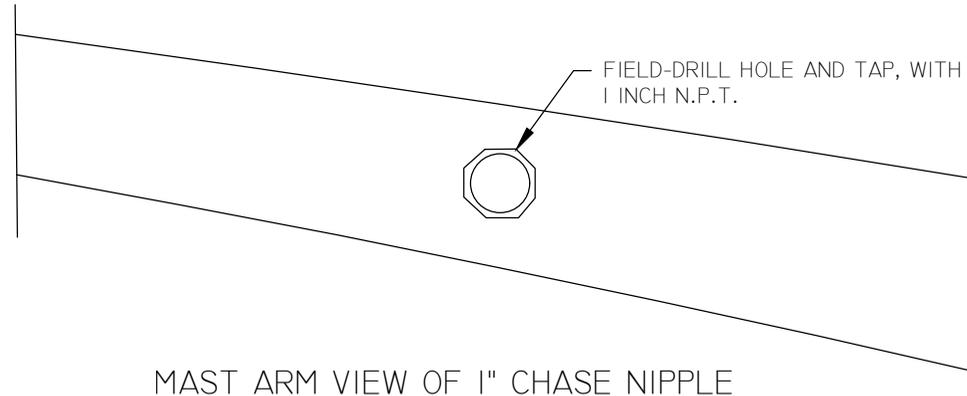
NOT TO SCALE



BAND LENGTH	MAST ARM DIA.
29"	2" - 7"
42"	8" - 11"
59"	12" - 17"

NOTES

1. YELLOW ZINC DICHROMATE PLATED FASTENERS, STAINLESS STEEL HARDWARE AVAILABLE.



MAST ARM VIEW OF 1" CHASE NIPPLE

GENERAL NOTES

A 1-1/8" HOLE SHALL BE DRILLED INTO THE SIDE OF THE MAST ARM AT THE APPROPRIATE LOCATION AND THEN TAPPED WITH A 1" PIPE TAP. A STANDARD 1" CHASE NIPPLE SHALL BE INSTALLED IN THE OPENING. (TO PROTECT THE STRUCTURAL INTEGRITY OF THE MAST ARM, THIS PROCESS IS NECESSARY).

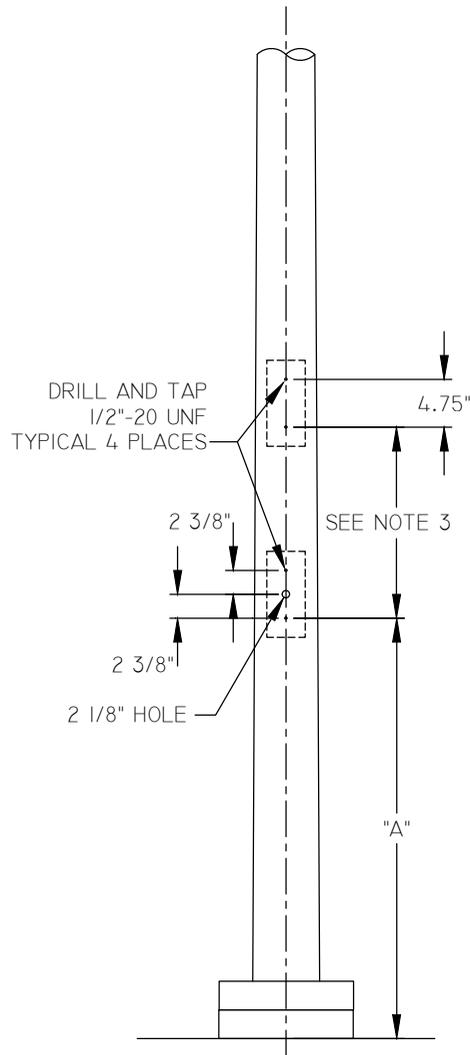
A SKY BRACKET SB-59 TENON CLAMP SHALL BE INSTALLED OVER THE 1" CHASE NIPPLE. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

THE SET SCREW SHALL BE SECURELY TIGHTENED AGAINST THE PIPE NIPPLE. ONCE THE SIGNAL HEAD IS INSTALLED, THE 3/8" HOLE FOR THE SAFETY BOLT SHALL BE DRILLED AND THE SAFETY BOLT INSTALLED AND SECURED.

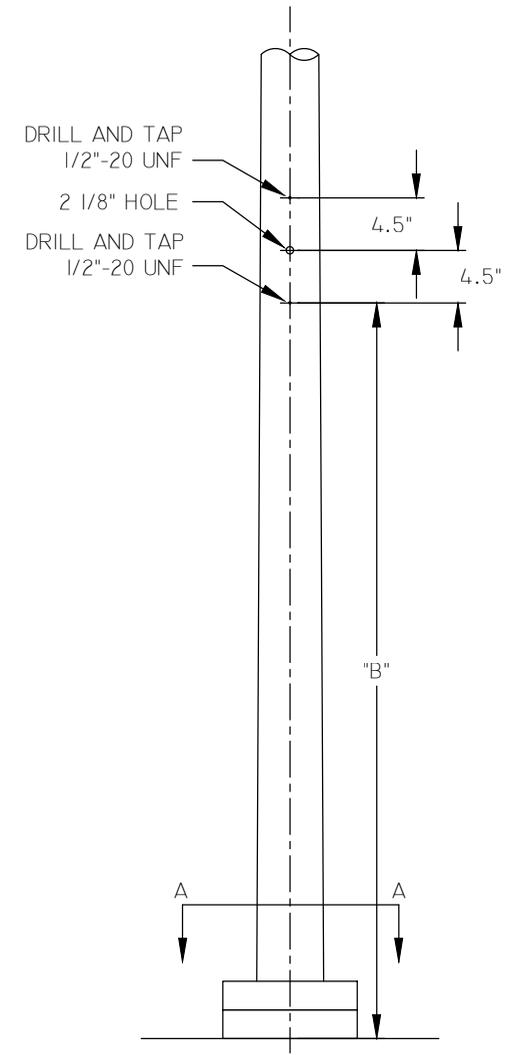
NOT TO SCALE

OLD
M-94.10

DETAIL NO.
M-1228.10

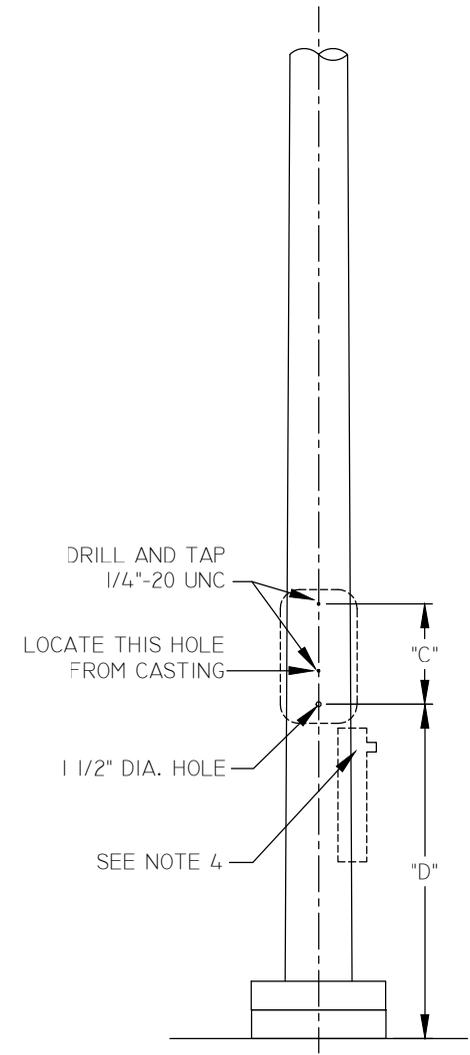


POLE PLATE
DRILLING DETAIL



SIDE MOUNT
DRILLING DETAIL

COM STANDARD SADDLE MOUNT ON ALL
POLES UNLESS NOTED OTHERWISE



DRILLING DETAIL

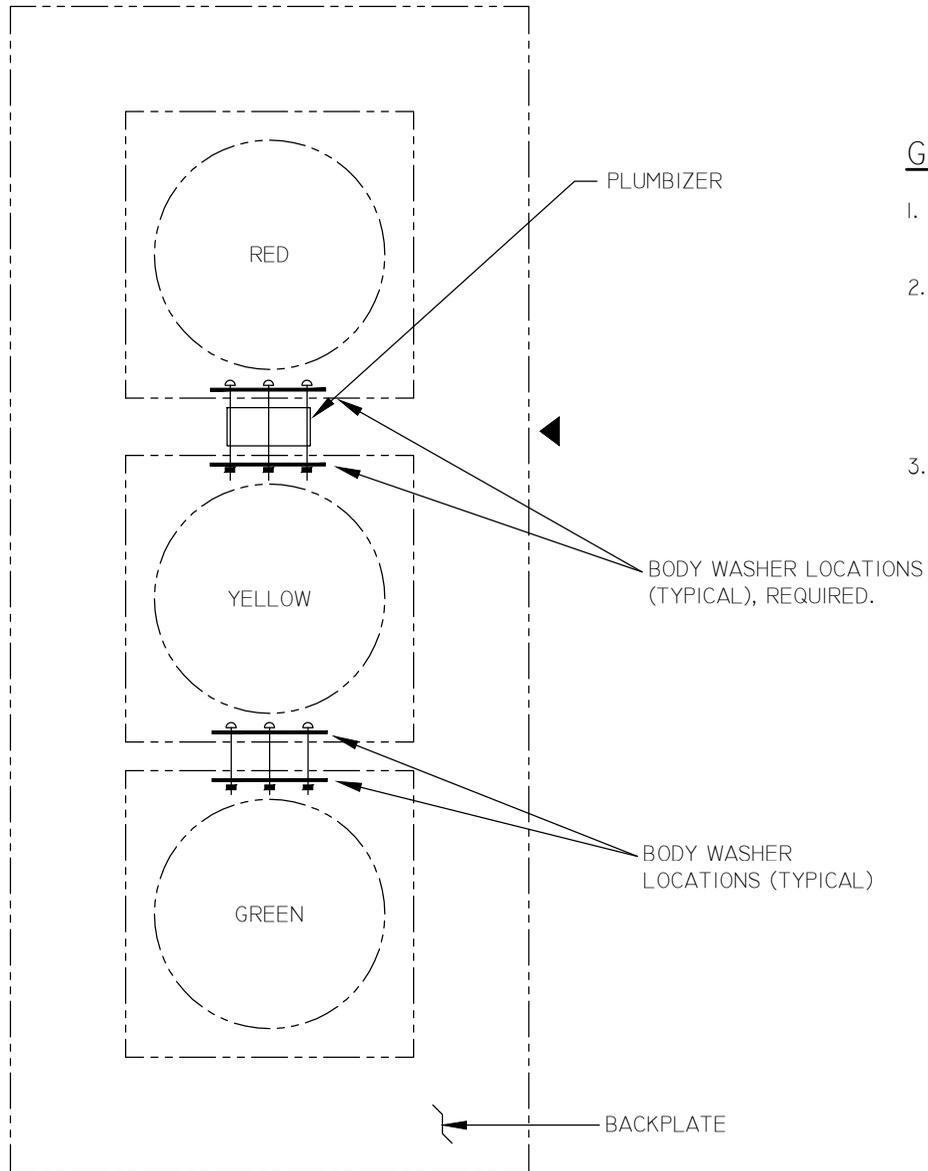
GENERAL NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. DRILLING OF POLE TO BE ORIENTED AS DIRECTED BY THE ENGINEER IN THE FIELD. CONTRACTOR SHALL LAYOUT POLE WITH INSPECTOR PRIOR TO DRILLING FOR MOUNTS.
3. TOP MOUNTING HOLES TO BE FIELD DRILLED IN ORDER TO ALLOW FOR MANUFACTURING VARIATIONS.
4. WHEN TWO PUSH BUTTON STATIONS ARE MOUNTED ON A SMALL DIAMETER POLE, THE LOWER CASTING SHALL HAVE ITS BUTTON ON TOP.
5. ON "A" POLES THE HAND HOLE SHALL BE ORIENTED TO FACE THE NEAREST SIDEWALK (AWAY FROM ROADWAY), OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

ITEM	DIM "A"	DIM "B"
COUNTDOWN PED SIGNAL	87"	87"
ILLUMINATED MESSAGE	87"	
TERMINAL COMPARTMENT	125"	125"
STANDARD SIGNAL	125"	125"
F	125"	125"
FY	125"	115"
Q	125"	125"

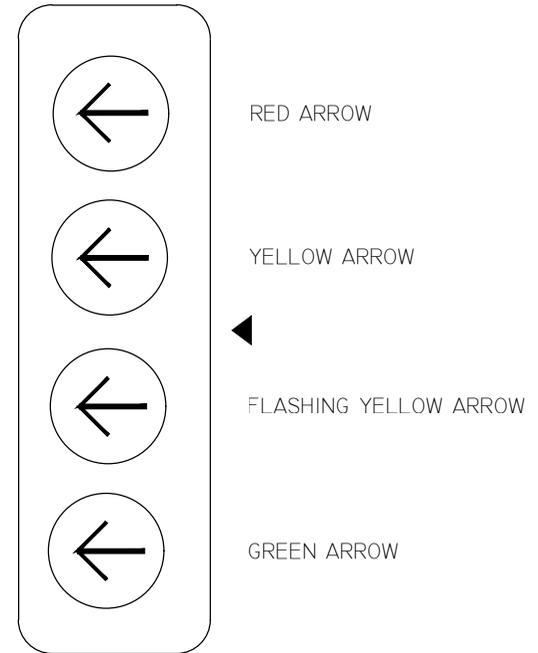
ITEM	DIM "C"	DIM "D"
ADA PEDESTRIAN BUTTON	11-3/8"	42"
BIKE BUTTON	11-3/8"	36"

NOT TO SCALE

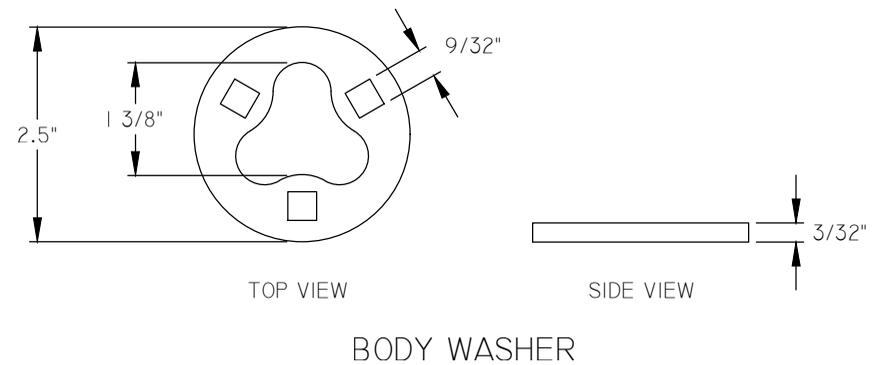
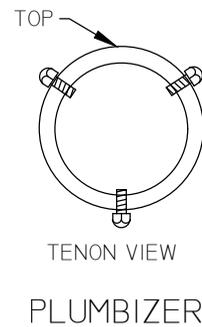


GENERAL NOTES

1. HEADS SHALL BE DESIGNED TO WITHSTAND 80 MPH WINDS.
2. BODY WASHERS SHALL BE USED BETWEEN ALL HEAD SECTIONS. BODY WASHERS SHALL BE OF THE TYPE SHOWN. ROUND CENTER HOLE WASHERS ARE NOT ACCEPTABLE. WASHERS SHALL BE MADE OF STAINLESS STEEL OR ZINC PLATED STEEL.
3. ALL SIGNAL INDICATIONS SHALL BE L.E.D.



FLASHING YELLOW ARROW "FY"
SIGNAL HEAD CONFIGURATION



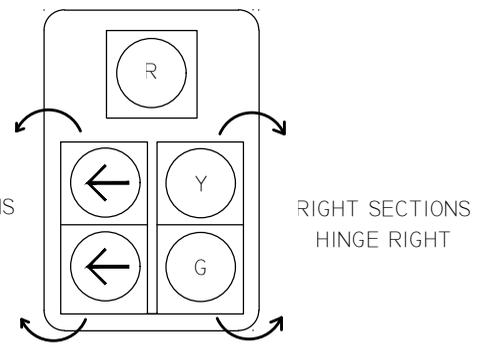
◀ INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.

NOT TO SCALE

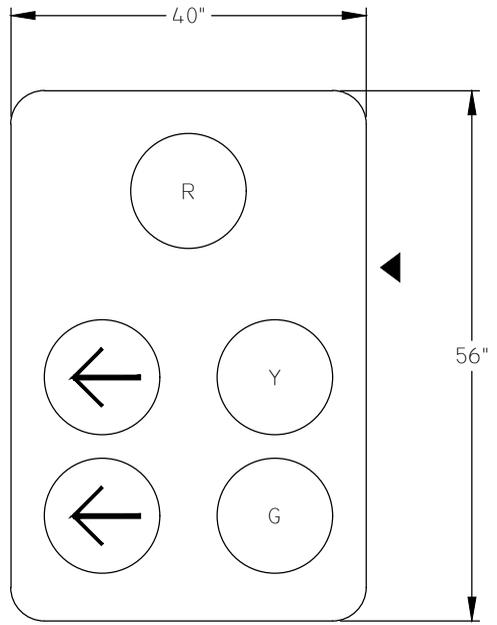
TYPE "S" CLUSTER HEAD

OLD
M-95.03

DETAIL NO.
M-1229.2

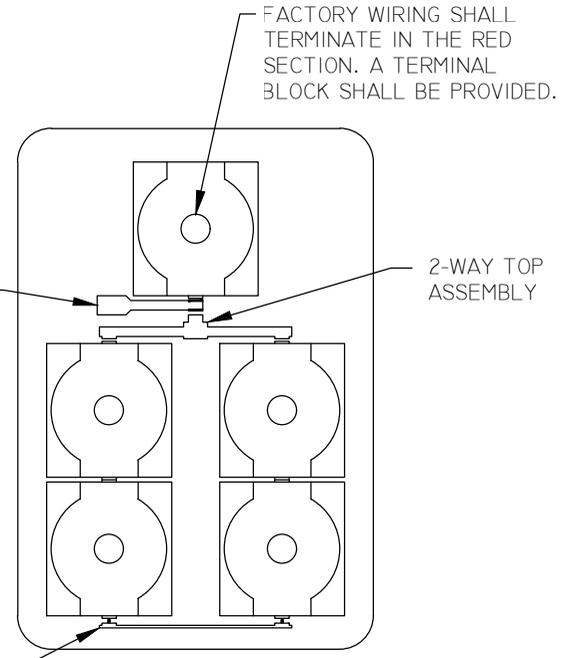


FRONT VIEW
SEE NOTE #9 ON COM
DTL. M-1229.4 (OLD
M-95.05)

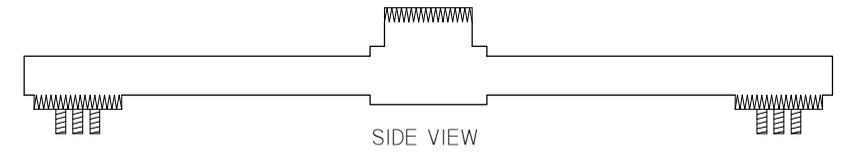


FRONT VIEW

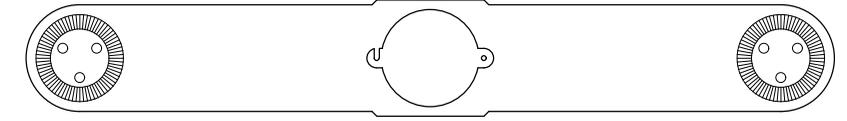
HEAD ASSEMBLY



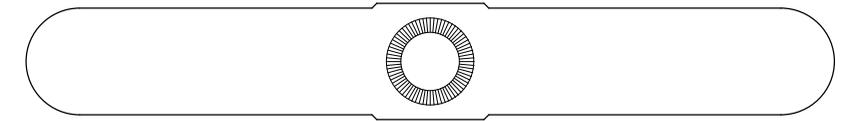
BACK VIEW



SIDE VIEW



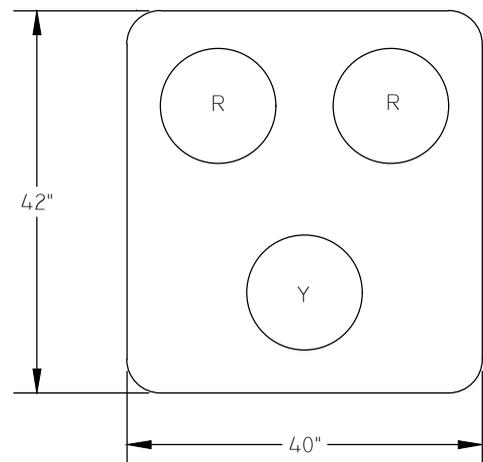
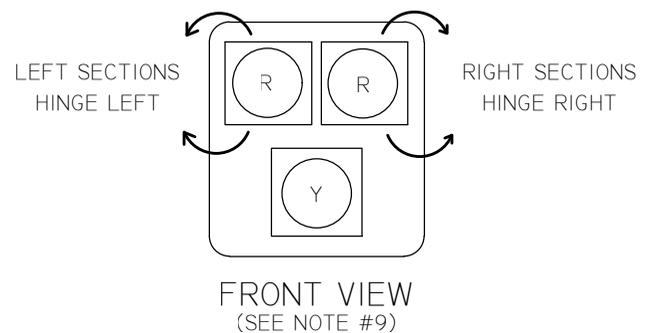
BOTTOM VIEW



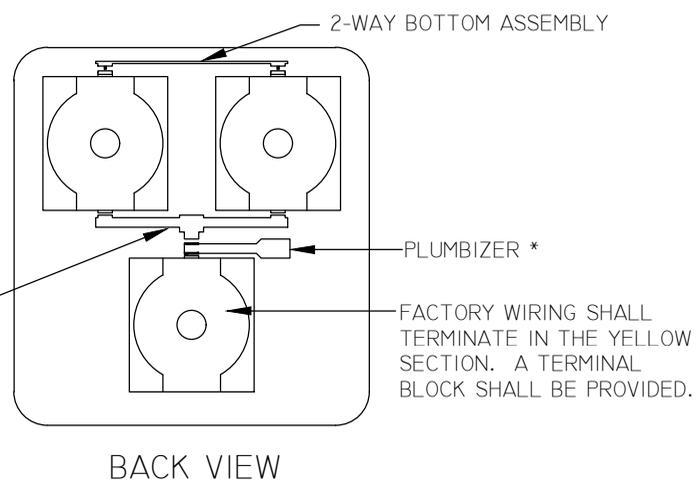
TOP VIEW
2-WAY TOP ASSEMBLY

◀ INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.

NOT TO SCALE

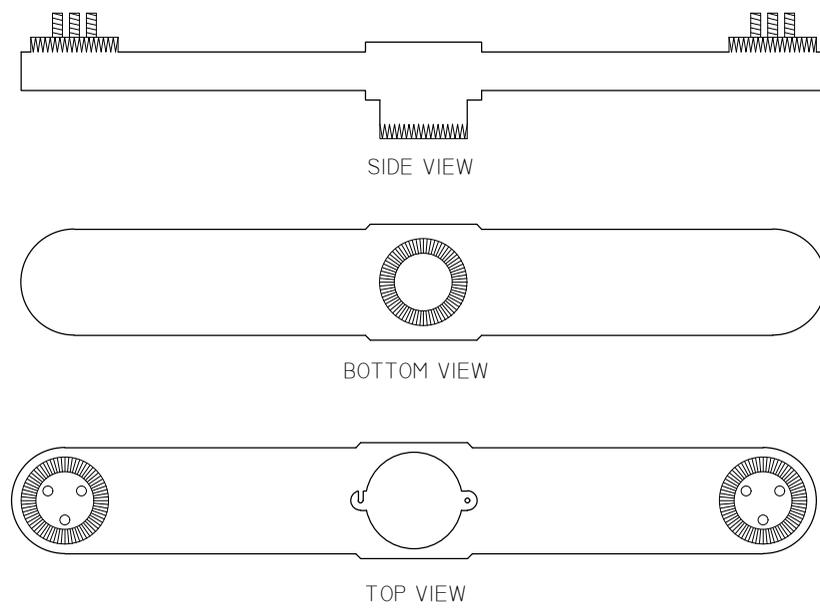


HEAD ASSEMBLY



* PLUMBIZER- WILL NOT BE USED FOR POLE (SIDE) MOUNT LOCATIONS), A TYPE V MOUNT SHALL BE USED.

◀ INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.



TYPE "T" CLUSTER HEAD

OLD
M-95.04

DETAIL NO.
M-1229.3

NOT TO SCALE

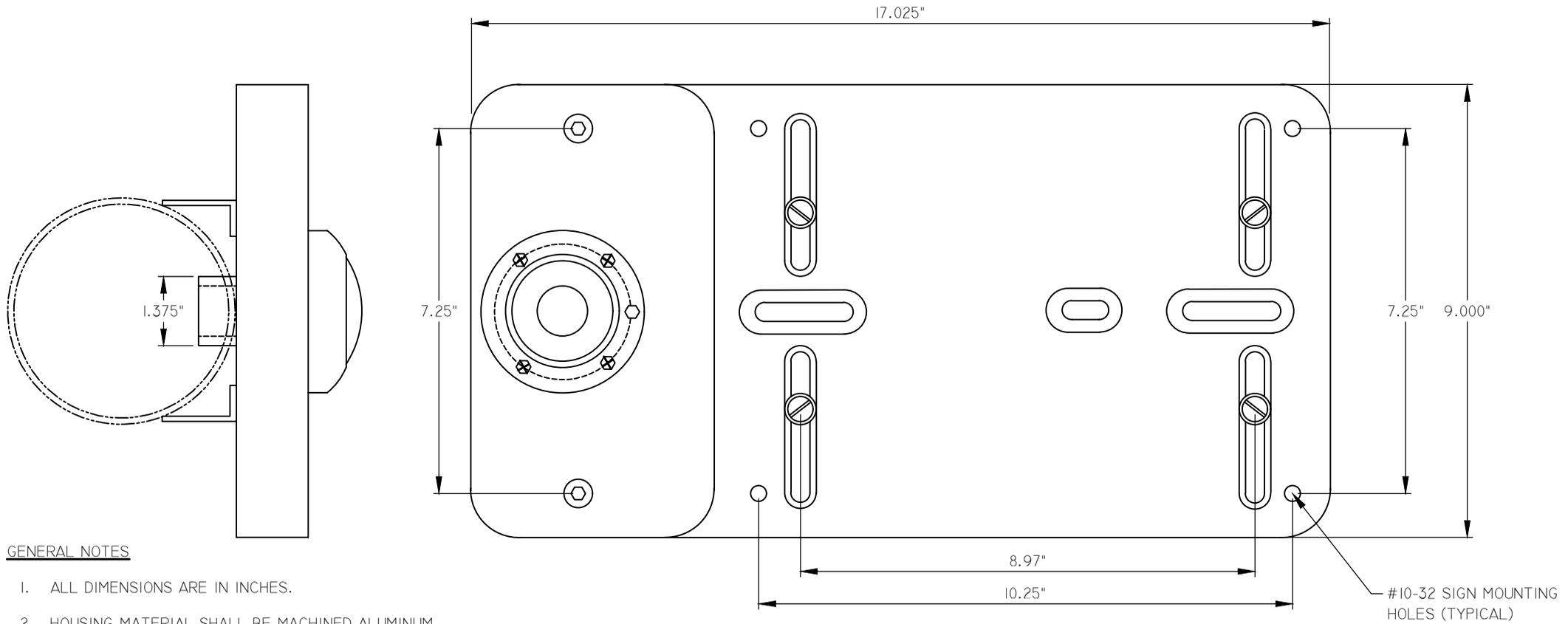
GENERAL NOTES

1. ALL DIMENSIONS SHOWN ARE NOMINAL AND ARE IN INCHES.
2. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS.
3. "DOG LEG" PLUMBIZER TO BE PROVIDED. STRAIGHT PLUMBIZER IS NOT TO BE USED.
4. BACKPLATES SHALL BE CONSTRUCTED WITH NO OPEN GAPS BETWEEN BACKING PLATE SECTIONS OR NEXT TO HEAD. BACKPLATES SHALL BE MADE OF NO MORE THAN THREE PIECES.
5. HEADS SHALL BE FACTORY PRE-WIRED. THE NEUTRAL WIRE SHALL BE LOOPED BETWEEN THE TWO SIDES OF THE SIGNAL HEAD AND ONLY ONE NEUTRAL SHALL BE BROUGHT OUT TO THE TERMINAL BLOCK. WIRE SHALL BE 16 AWG THW PER ADOT 733-2.04.
6. STACKED WASHERS OR SPACERS SHALL NOT BE USED ON TOP OF THE 2-WAY TOP ASSEMBLY. THE 2-WAY TOP ASSEMBLY SHALL BE BUILT WITH SUFFICIENT TOP CLEARANCE SO THAT THE PLUMBIZER CAN BE PARALLEL OR PERPENDICULAR TO THE BACKPLATE.
7. ALL SIGNAL INDICATIONS SHALL BE L.E.D.
8. YELLOW AND GREEN INDICATIONS OF A 5-SECTION HEAD AND THE DOUBLE DOOR RED INDICATIONS IN THE "T" HEAD SHALL OPEN IN OPPOSITE DIRECTIONS, "SUICIDE DOORS".

TYPE "S" AND "T" CLUSTER HEAD NOTES

OLD
M-95.05

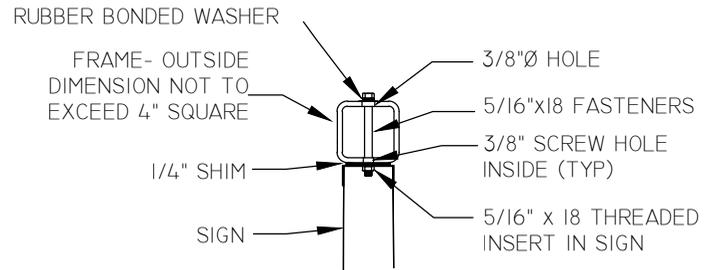
DETAIL NO.
M-1229.4



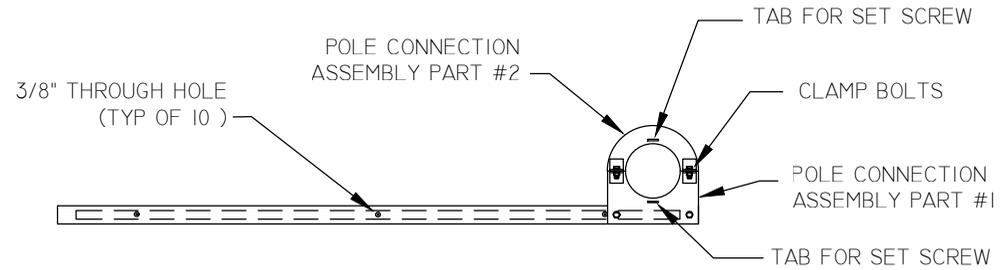
GENERAL NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. HOUSING MATERIAL SHALL BE MACHINED ALUMINUM.
3. POLE INSTALLATION BOLTS (2 EACH, BRASS 1/4"-20 X 1), FLAT WASHERS AND SIGN SCREWS SHALL BE FURNISHED WITH UNIT AND STORED INSIDE ADA COVER.
4. BUTTON DOOR MUST BE MACHINED TO ACCEPT A STANDARD BUTTON, 3" IN DIAMETER, FOUR 10-32 THREADED HOLES, STARTING AT 45 DEGREES FROM THE TOP ON A 2.605" BOLT CIRCLE, AND A 1" HOLE WITH CLOSE NIPPLE IN THE CENTER FOR THE WIRING TO PASS THROUGH. CAMPBELL MPS 400H (HOUSING) AND CAMPBELL 400P (PUSH BUTTON DOOR) OR EXACT APPROVED EQUIVALENT.
5. PUSH BUTTON COVER SHALL BE RAIN AND DUST PROOF.
6. PAINT SHALL BE PER COM DETAIL M-1224.1 (OLD M-90.02)
7. SEE COM DETAIL M-1232 (OLD M-99.01) AND M-1232.1 (OLD M-99.02) FOR PUSH BUTTON STATION SIGNS.

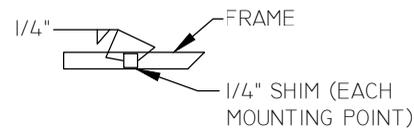
NOT TO SCALE



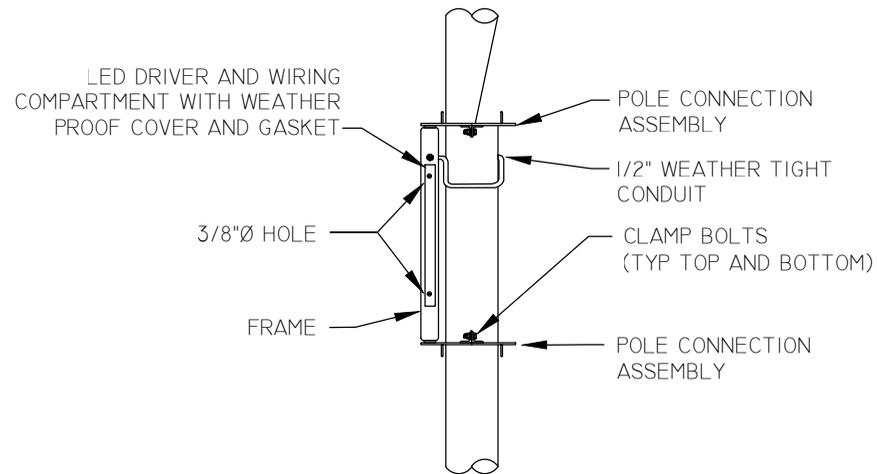
SIGN TO FRAME CONNECTION



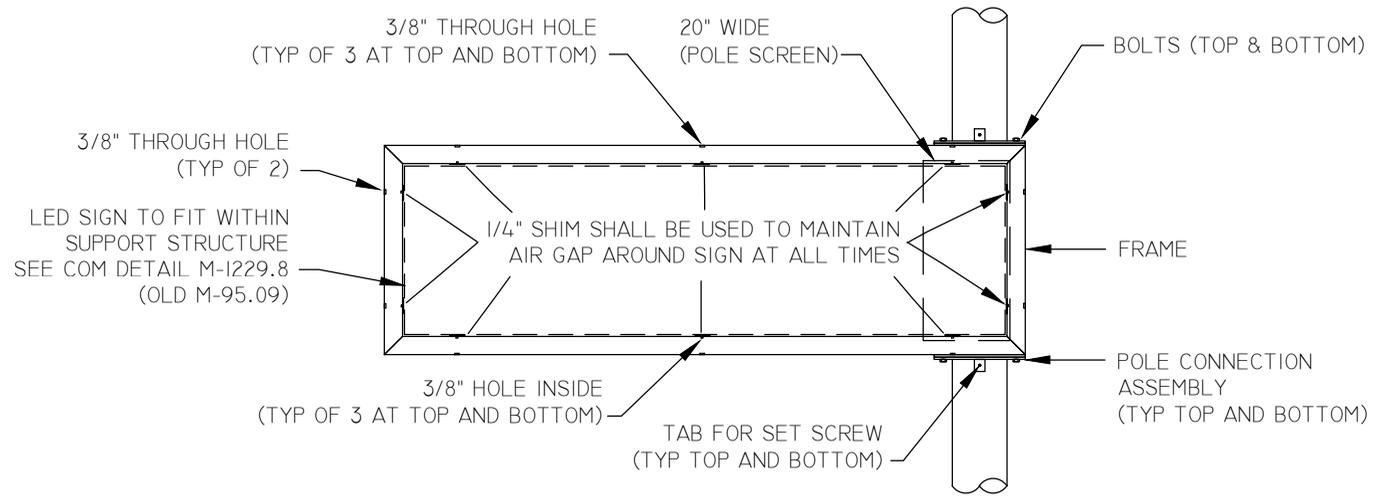
TOP VIEW



SHIM DETAIL



SIDE VIEW



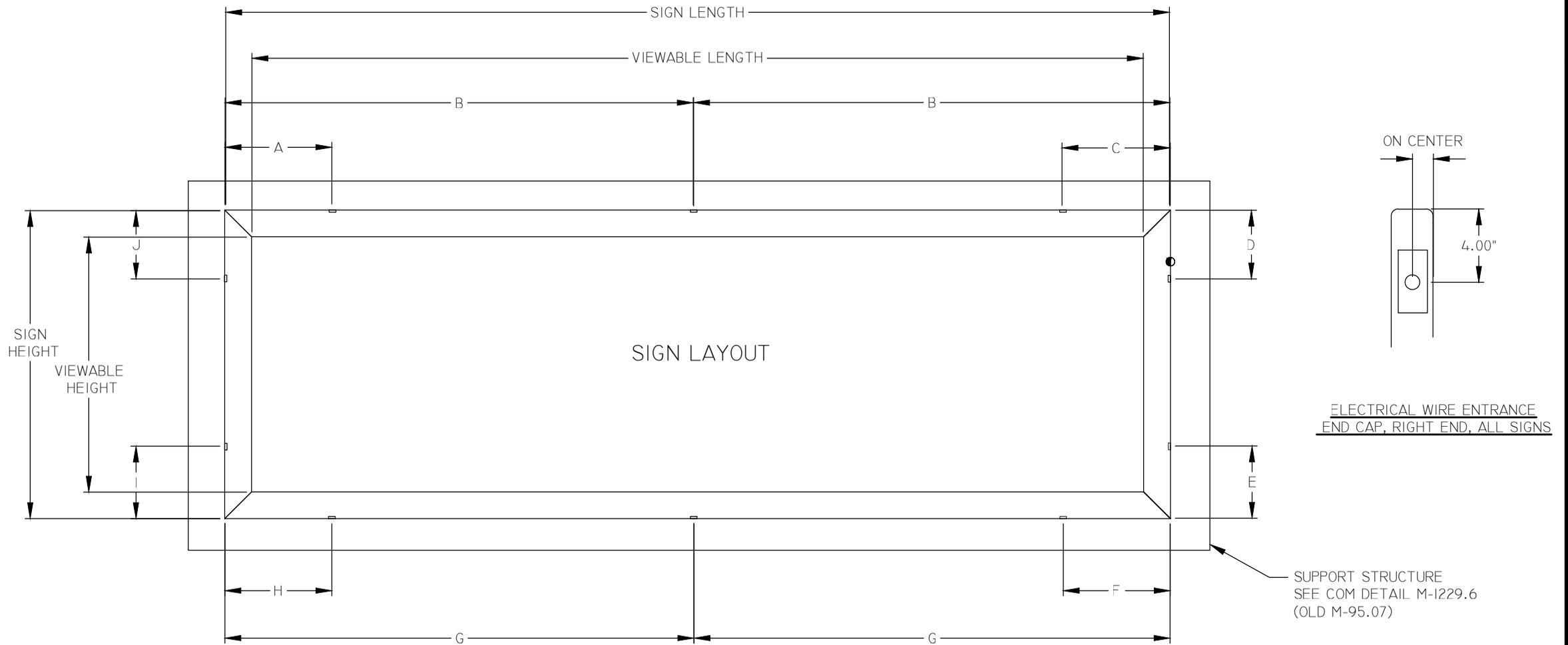
ELEVATION

NOT TO SCALE

LED ILLUMINATED STREET NAME
SIGN SUPPORT STRUCTURE

OLD
M-95.07

DETAIL NO.
M-1229.6



SIGN SIZE	SIGN DIMENSIONS				CONNECTION POINT DIMENSIONS (MEASURED FROM CORNER)										SIGN WEIGHT (LBS)
	SIGN LENGTH (SL)	VIEWABLE LENGTH (VL)	SIGN HEIGHT (SH)	VIEWABLE HEIGHT (VH)	A	B	C	D	E	F	G	H	I	J	
6'	75.375"	68.10"	28.4375"	24.50"	18.00"	-	18.00"	7.00"	7.00"	18.00"	-	18.00"	7.00"	7.00"	83
8'	99.375"	92.10"	28.4375"	24.50"	18.00"	49.687"	18.00"	7.00"	7.00"	18.00"	49.687"	18.00"	7.00"	7.00"	106
10'	123.375"	116.10"	28.4375"	24.50"	18.00"	61.687"	18.00"	7.00"	7.00"	18.00"	61.687"	18.00"	7.00"	7.00"	129

* VENDOR TO SUBMIT TOTAL WEIGHT OF SIGN ASSEMBLY (NOT TO EXCEED 350 LBS)

NOT TO SCALE

OLD
M-95.08

DETAIL NO.
M-1229.7

GENERAL NOTES

1. SIGN LEGEND LAYOUT SHALL BE PER COM DETAILS M-I205.4 (OLD M-21.05), M-I205.5 (OLD M-21.06), M-I205.6 (OLD M-21.07) AND M-I205.7 (OLD M-21.08).
2. APPROVED VENDORS MAY BE FOUND AT THE CITY OF MESA WEBSITE*.

CONSTRUCTION

1. THE SUPPORT STRUCTURE FOR THE SIGN MAY BE CONSTRUCTED OF STEEL OR ALUMINUM. STEEL SHALL BE POWDER COATED SILVER/ALUMINUM WITH UV INHIBITORS AND WITH 10 YEAR LONGEVITY FINISH OR APPROVED EQUAL.
2. MOUNTING POINT DIMENSIONS MUST BE STRICTLY ADHERED TO. NO DEVIATION ALLOWED.
3. SUPPORT FRAME MAY NOT EXCEED 4" SQUARE AND SHOULD BE KEPT TO A MINIMUM.
4. SHOP DRAWINGS ARE TO BE SEALED AND SIGNED BY A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF ARIZONA UNLESS SEALED SHOP DRAWINGS ARE ON FILE AND VENDOR IS ON APPROVED LIST.
5. MOUNTING HEIGHT TO BE 18'-6" (MIN) FROM THE TOP OF POLE BASE TO THE BOTTOM OF SIGN.

WIRING NOTES

1. A BUSHED OPENING MADE ONLY LARGE ENOUGH TO ACCEPT THE WIRING FROM THE ILLUMINATED SIGN SHALL BE PROVIDED, 4" FROM THE INSIDE TOP OF THE FRAME PER THE DRAWING. A WEATHERPROOF COVER AND GASKET SHALL BE PROVIDED ON THE SIDE OF THE SIGN FRAME AND TO HOUSE THE LED DRIVERS AND FOR SPLICING. A 1/2" NPT THREADED HOLE SHALL BE PROVIDED ON THE BACK OF THE FRAME TO ATTACH 1/2" SEAL TIGHT CONDUIT FROM THE FRAME STRUCTURE AND INTO A 1/2" NPT THREADED HOLE IN THE POLE. 90 DEGREE WEATHER TIGHT CONNECTORS SHALL BE USED.
2. WIRING FROM THE TERMINAL COMPARTMENT ON THE SIDE OF THE SIGN TO THE FUSE HOLDER IN THE PULL BOX SHALL BE #12 STRANDED THHN/THWN BLACK, WHITE AND GREEN. A BUCHANNAN MODEL 65U FUSE HOLDER WITH A 3 AMP FUSE SHALL BE INSTALLED IN THE PULL BOX.
3. THE ILLUMINATED SIGN LED POWER SUPPLY SHALL BE PHILLIPS/ADVANCED CLASS II.

* - [HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/TRAFFIC-SIGNAL-OPERATION-MAINTENANCE](https://www.mesaaz.gov/resident-resources/streets-transportation/traffic-signal-operation-maintenance)

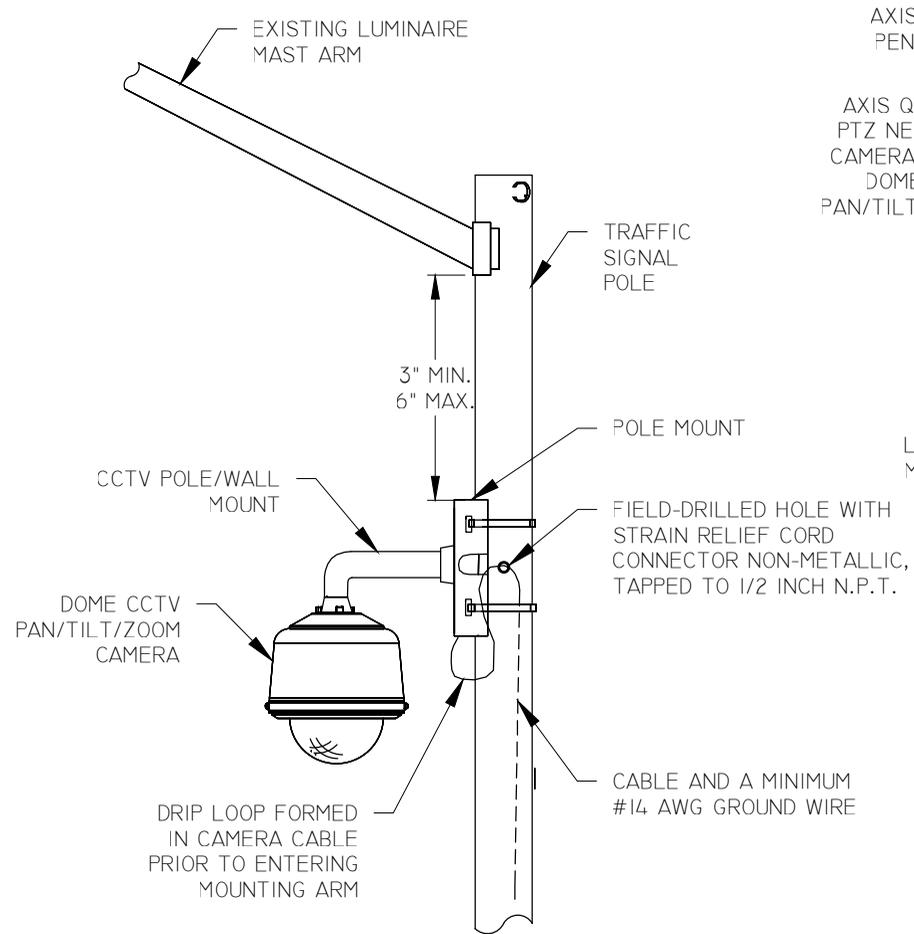
WARRANTY

1. A MANUFACTURER'S ID TAG SHALL BE PLACED ON THE LOWER RIGHT CORNER AND ON THE SIDE OF THE SIGN FRAME SUPPORT STRUCTURE. IT SHALL BE MADE OF METAL AND SHALL BE PERMANENTLY ENGRAVED WITH THE MANUFACTURER'S NAME, DATE OF MANUFACTURE, SERIAL NUMBER, VOLTAGE AND AMPERAGE REQUIREMENTS. IT SHALL BE PERMANENTLY ATTACHED.
2. THE ILLUMINATED STREET NAME SIGN ASSEMBLY SHALL CARRY A 10 YEAR WARRANTY. SIGN FACES WILL BE WARRANTED AGAINST FADING, CRACKING, BUBBLING, DELAMINATION, DISCOLORATION. SUBSTRATE AND SHEETING MATERIAL MUST BE COMPATIBLE AND BE WARRANTED AGAINST FAILURE.
3. SIGN FACES SHALL BE EVENLY LIT AND MUST BE VISIBLE FROM AT LEAST 400' AWAY. DARK SPOTS CAUSED BY LED FAILURE SHALL BE SERVICED TO ELIMINATE SUCH DARK SPOTS DURING THE WARRANTY PERIOD AT NO CHARGE TO THE CITY.
4. LED DRIVERS SHALL BE WARRANTED FOR 5 YEARS MINIMUM. INSTALLATION DATE MUST BE ON THE DRIVER IN PERMANENT INK.

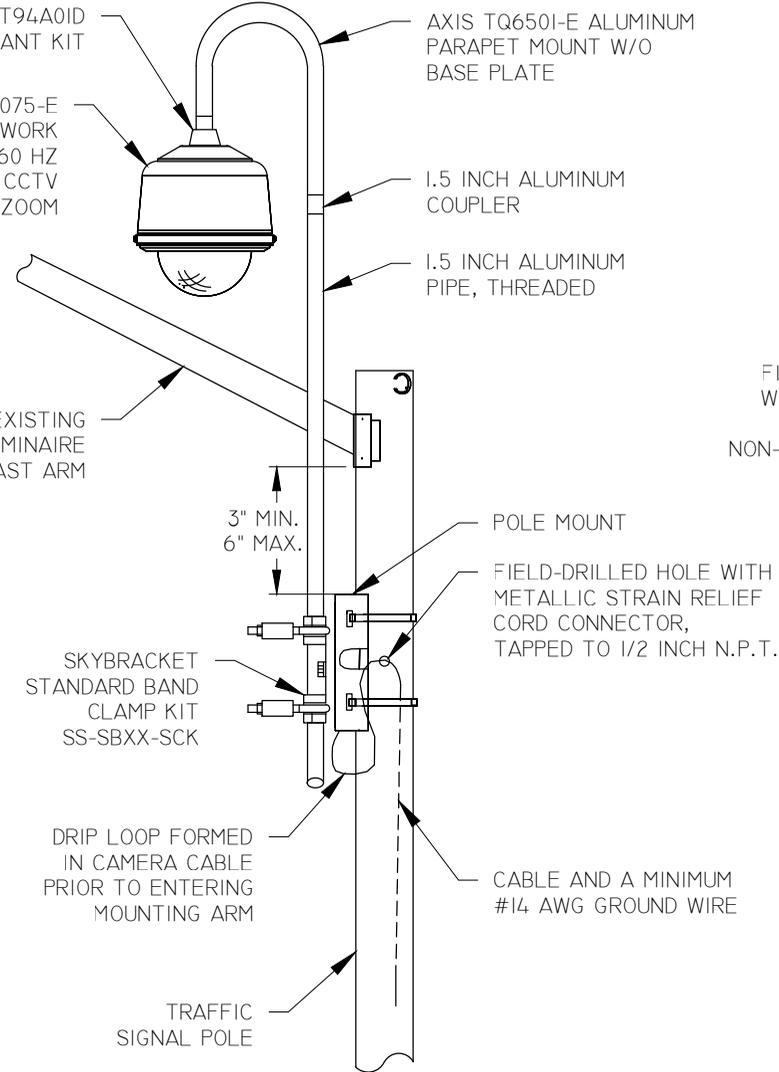
MATERIALS

1. FOR APPROVED SIGN SHEETING MATERIALS, PLEASE REFER TO THE WEB SITE FOR AN UPDATED MATERIALS LIST AT:
[HTTPS://WWW.MESAAZ.GOV/RESIDENT-RESOURCES/STREETS-TRANSPORTATION/TRAFFIC-SIGNAL-OPERATION-MAINTENANCE](https://www.mesaaz.gov/resident-resources/streets-transportation/traffic-signal-operation-maintenance)

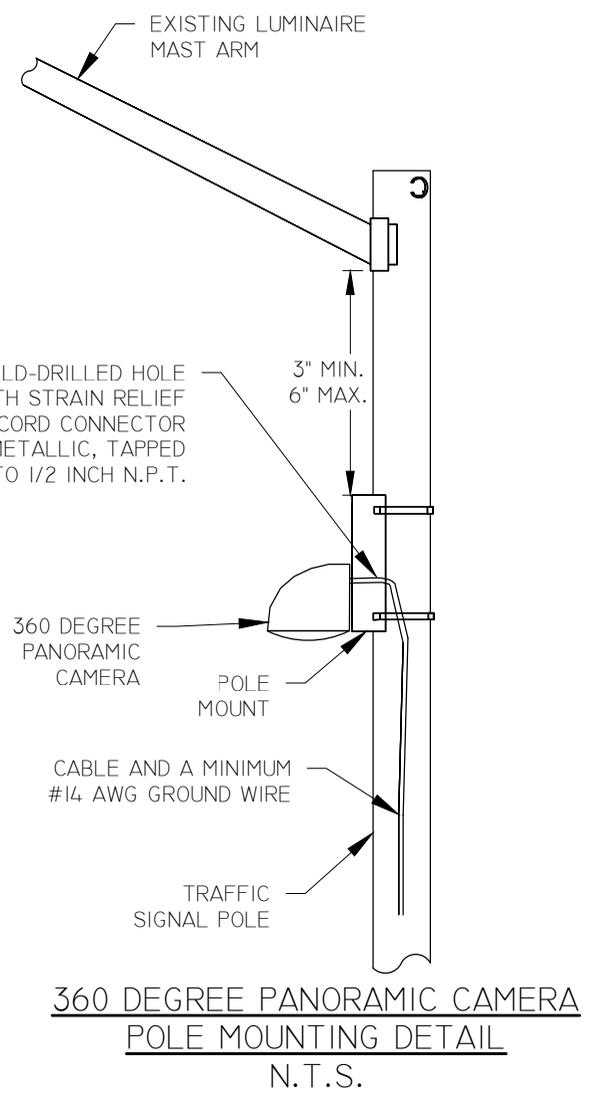
NOT TO SCALE



**CCTV CAMERA
POLE MOUNTING DETAIL**
N.T.S.

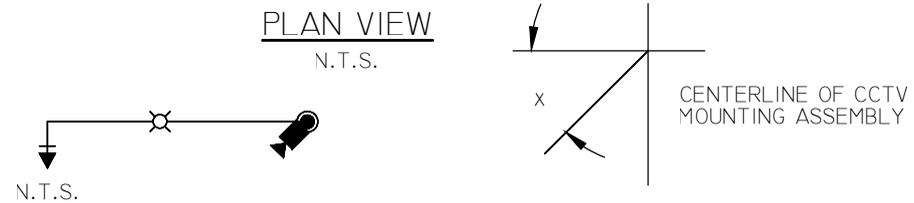


**CCTV CAMERA
POLE MOUNTING DETAIL**
N.T.S.



**360 DEGREE PANORAMIC CAMERA
POLE MOUNTING DETAIL**
N.T.S.

PLAN VIEW
N.T.S.



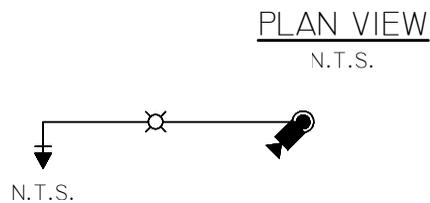
X = THE ROTATION OF THE CCTV CAMERA SHALL BE ALIGNED TO POINT AT THE TRAFFIC SIGNAL POLE ON THE DIAGONALLY OPPOSITE CORNER, UNLESS OTHERWISE INSTRUCTED BY THE CITY.

NOTE: ADD ANTI-SEIZE ON ALL THREADS

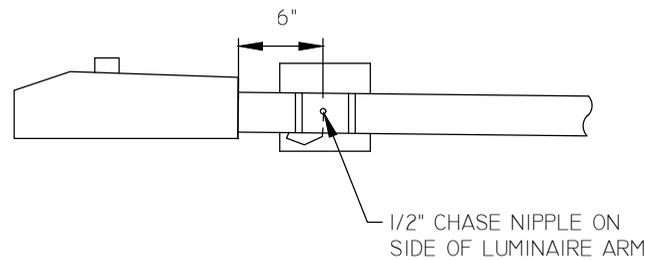
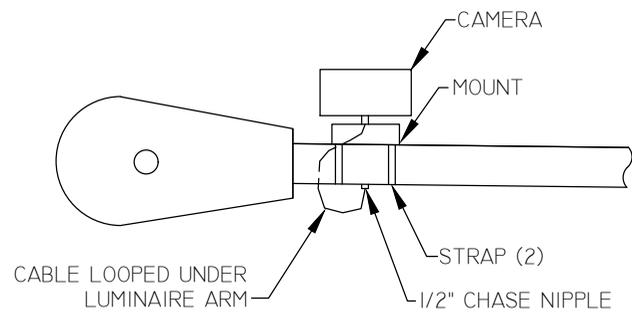
GENERAL NOTES:

1. THE CCTV CABLE SHALL RUN UNSPLICED FROM THE CCTV TO THE CABINET. THE CABLE SHALL BE NO LONGER THAN 100M (328 FEET).
2. INSTALLATION SHALL BE ACCORDING TO MANUFACTURER SPECIFICATIONS AND SHALL CARRY A ONE YEAR INSTALLATION WARRANTY OF PARTS AND LABOR.

NOT TO SCALE



X = THE ROTATION OF THE CCTV CAMERA SHALL BE ALIGNED TO POINT AT THE TRAFFIC SIGNAL POLE ON THE DIAGONALLY OPPOSITE CORNER, UNLESS OTHERWISE INSTRUCTED BY THE CITY.

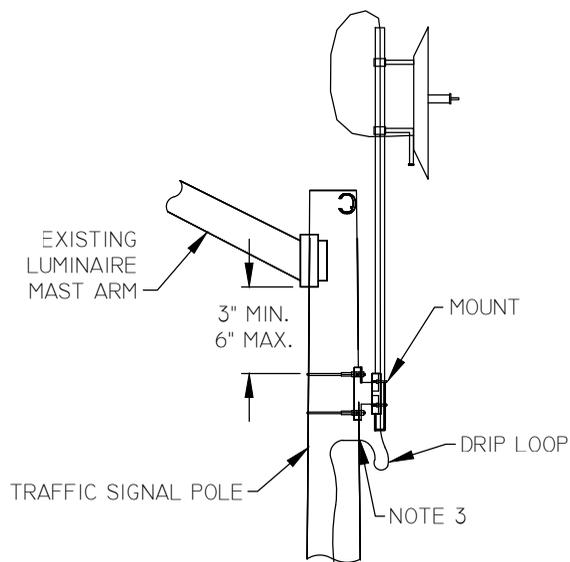


FIXED CAMERA INSTALL

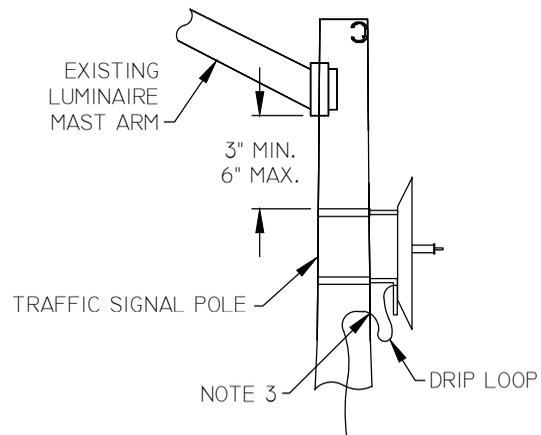
GENERAL NOTES:

1. THE CCTV CABLE SHALL RUN UNSPLICED FROM THE CCTV TO THE CABINET. THE CABLE SHALL BE NO LONGER THAN 100M (328 FEET).
2. INSTALLATION SHALL BE ACCORDING TO MANUFACTURER SPECIFICATIONS AND SHALL CARRY A ONE YEAR INSTALLATION WARRANTY OF PARTS AND LABOR.

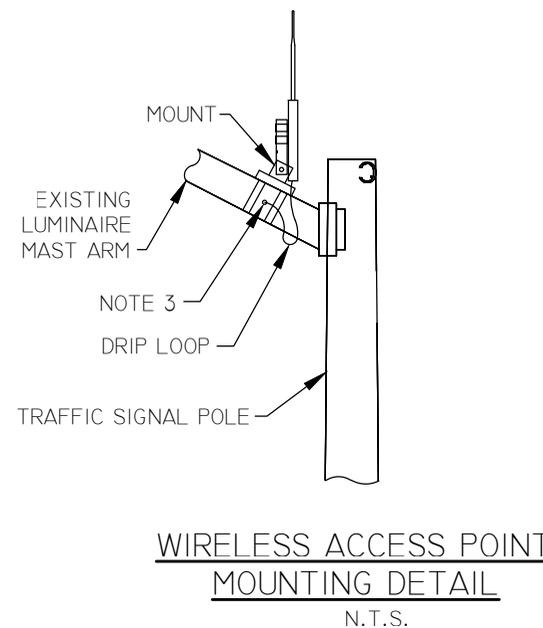
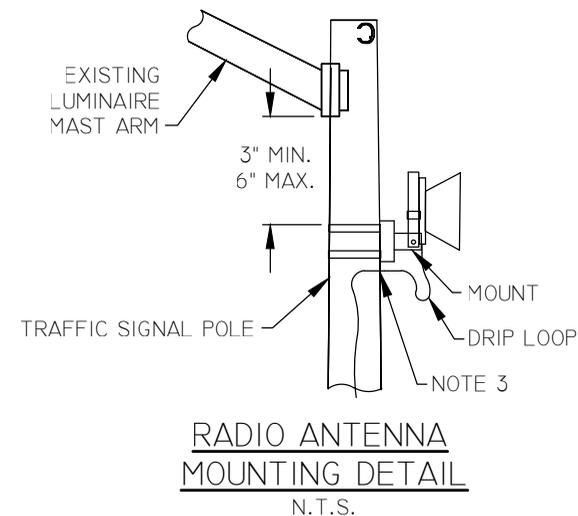
NOT TO SCALE



ANTENNA MOUNTING DETAIL
ON RISER
N.T.S.



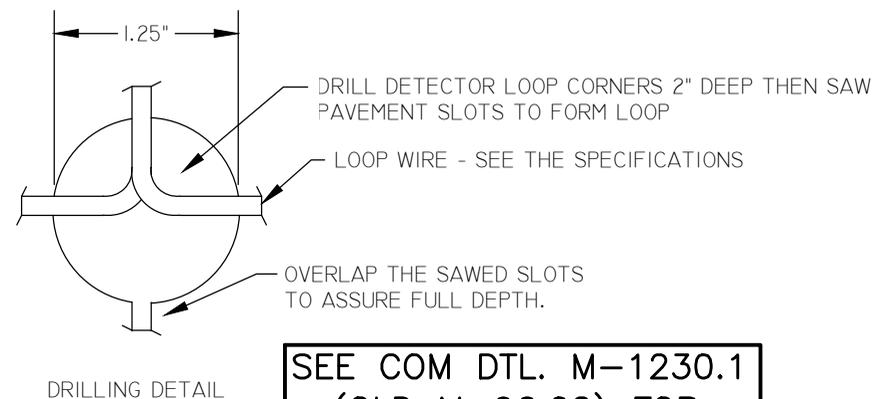
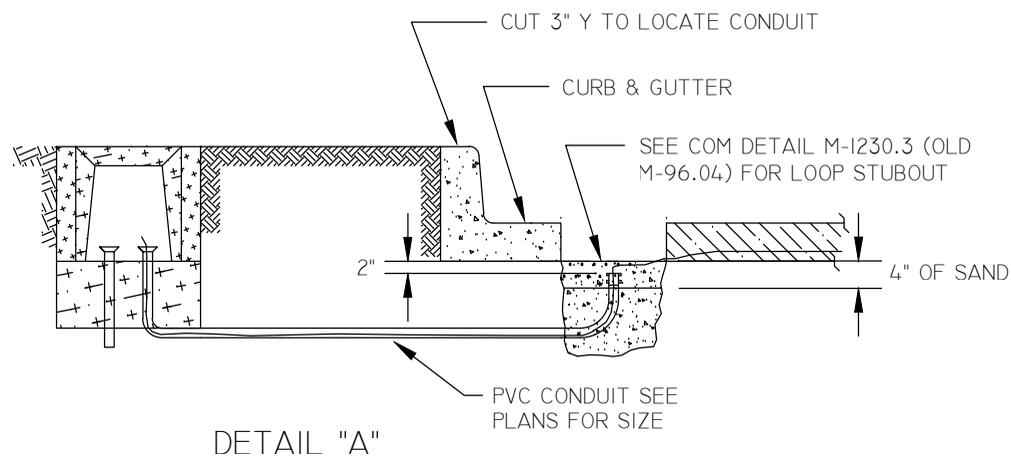
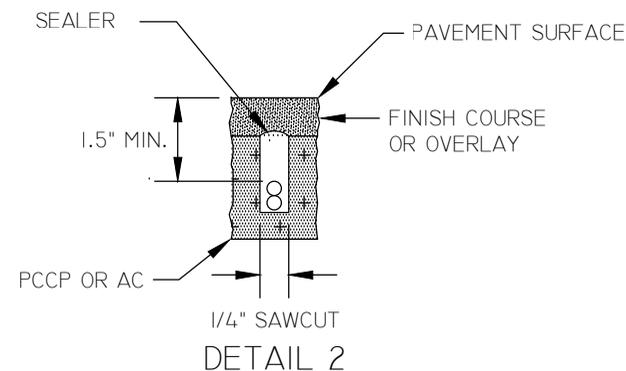
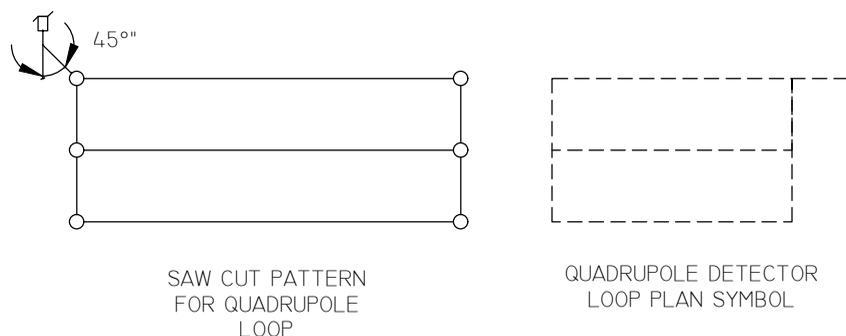
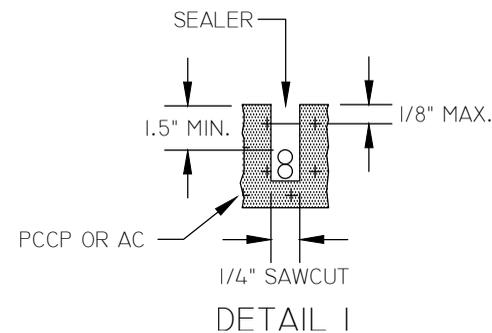
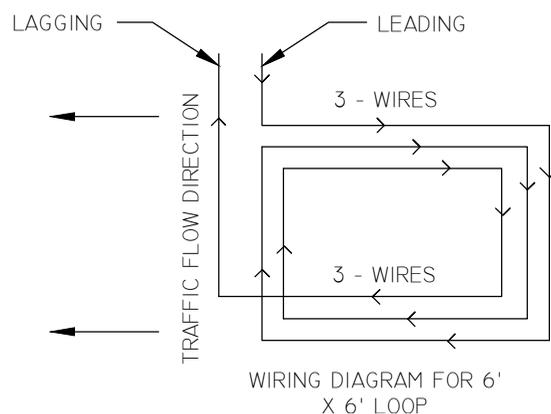
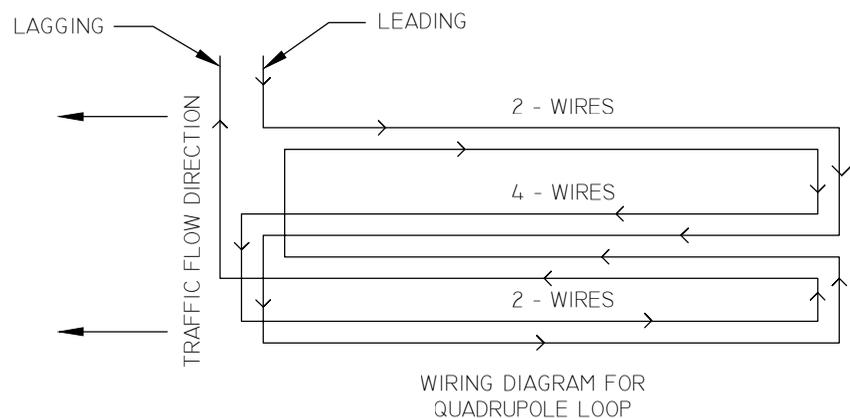
ANTENNA MOUNTING DETAIL
DIRECT TO POLE
N.T.S.



GENERAL NOTES:

1. THE CABLE SHALL RUN UNSPLICED FROM THE RADIO/ANTENNA TO THE CABINET. THE CABLE SHALL BE NO LONGER THAN 100M (328 FEET).
2. INSTALLATION SHALL BE ACCORDING TO MANUFACTURER SPECIFICATIONS AND SHALL CARRY A ONE YEAR INSTALLATION WARRANTY OF PARTS AND LABOR.
3. CABLE ENTRY HOLES SHALL BE FIELD-DRILLED WITH STRAIN RELIEF CORD CONNECTOR METAL STRAIN RELIEF, TAPPED TO 1/2 INCH N.P.T.

NOT TO SCALE

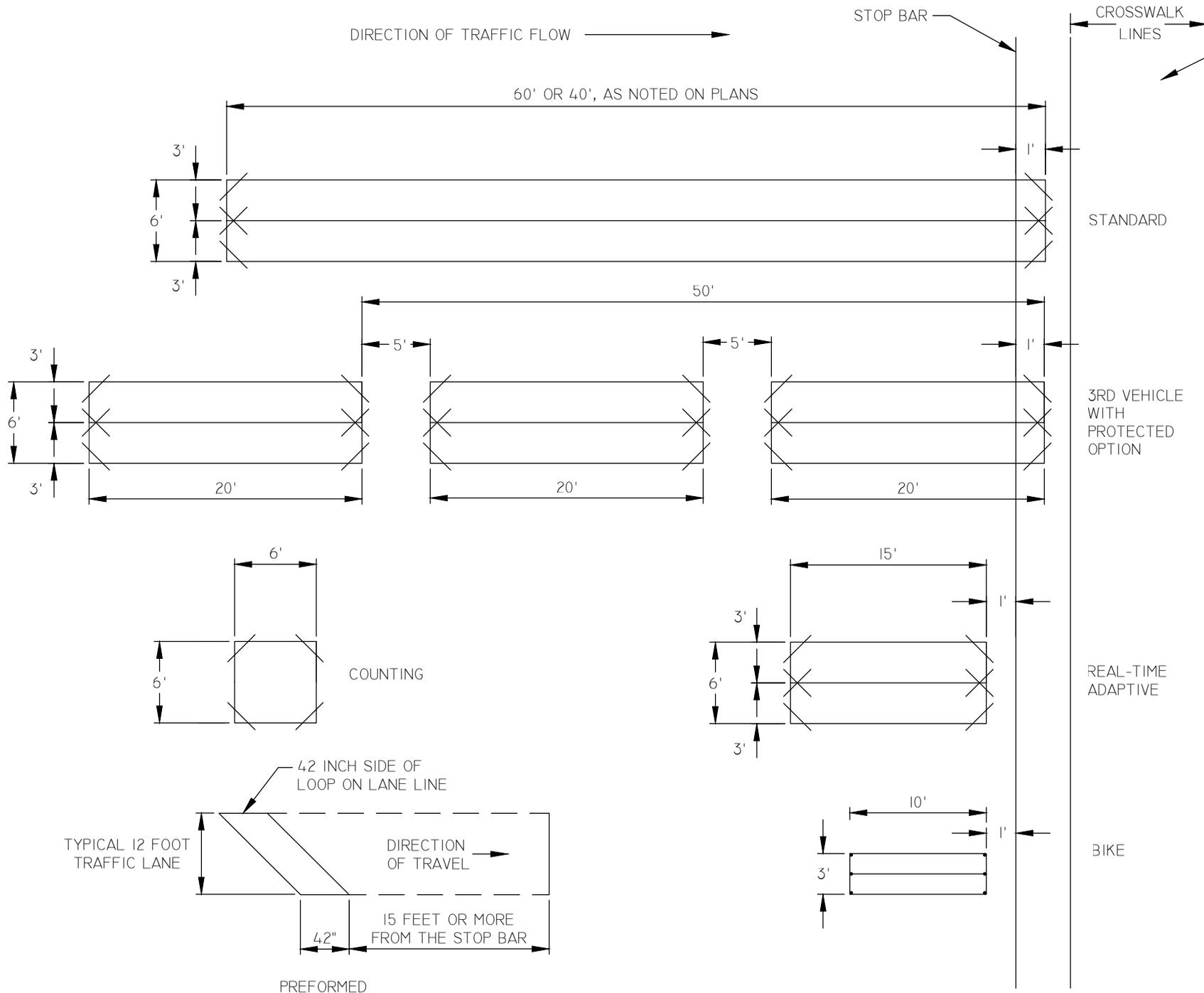


SEE COM DTL. M-1230.1 (OLD M-96.02) FOR REFERENCED NOTES

NOT TO SCALE

GENERAL NOTES FOR COM DETAIL M-1230 (OLD M-96.01)

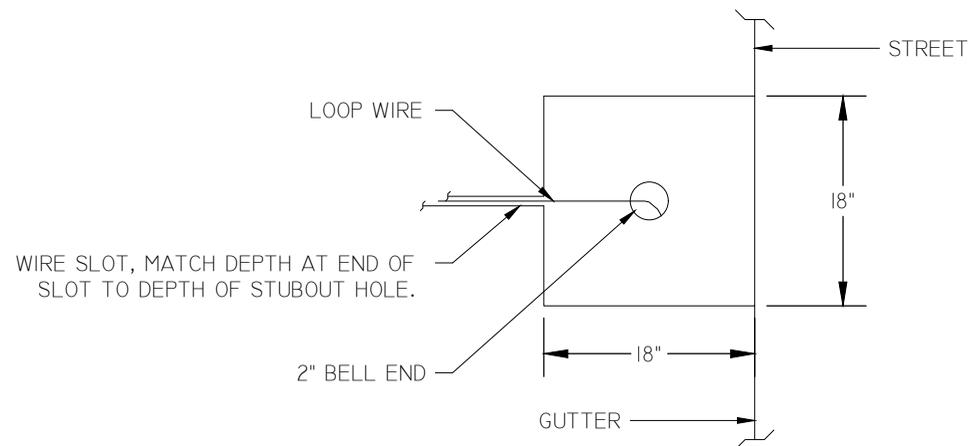
1. ALL DIMENSIONS ARE IN INCHES.
2. ALL DETECTOR LOOPS SHALL BE INSTALLED AS SHOWN ON THE PROJECT PLANS, CITY OF MESA STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER.
3. ANY DETECTOR LOOP THAT DOES NOT MEET THE DETECTOR LOOP INSTALLATION FIELD TEST REQUIREMENT SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY. SEE NOTE 21.
4. ON ALL PROJECTS WHERE NEW PAVEMENT IS TO BE INSTALLED, THE DETECTOR LOOPS SHALL BE INSTALLED IN THE BASE COURSE.
5. ALL SAW CUTS REQUIRE 1 1/2" COVER MINIMUM.
6. CITY OF MESA WILL ACCEPT EITHER CORE DRILL OR 45 DEGREE SAW CUT CORNERS.
7. BLOW OUT ALL SAW CUTS BEFORE INSTALLING THE LOOP WIRE. AFTER BLOWING OUT SAW CUTS, CLEAN SILT FROM ROADWAY SURFACE SO THAT NO LAYER OF DEBRIS EXISTS AND ALL PAINTED LANE LINES ARE CLEARLY VISIBLE.
8. ALL DETECTOR LOOPS SHALL BE GIVEN A CONTINUITY AND INSULATION TEST BY THE CONTRACTOR BEFORE AND AFTER PLACING THE FINAL PAVING OR PLACING THE SEALER IN THE SAW CUTS.
9. LOOP WIRE USED IN THE ROADWAY DETECTION SHALL BE IMSA SPECIFICATION #51-5-1984. THE ENCASING TUBE COLOR SHALL BE ORANGE.
10. NUMBER OF LOOP TURNS SHALL BE AS SHOWN UNLESS OTHERWISE SPECIFIED.
11. ASPHALT SAWCUTS SHALL BE SEALED (FILLED) WITH 3M LOOP SEALANT, HOT APPLIED RUBBERIZED SEALANT, OR BREWER COTE (INDUCTIVE COLD POUR, SINGLE COMPONENT LOOP SEALANT) TO 1/8" BELOW PAVEMENT SURFACE.
12. CONCRETE SAWCUTS SHALL BE SEALED (FILLED) WITH 3M BONDO #575 OR #577 LOOP SEALANT, TO 1/8" BELOW CONCRETE SURFACE.
13. ALL LEAD-IN CABLE IS TO BE PLACED IN CONDUIT (LOOP STUB OUTS) TO CROSS UNDER CURB AND GUTTER TO PULL BOX. CONDUIT IS TO BE 2" SCHEDULE 40 PVC.
14. ALL LOOP WIRE SHALL BE TWISTED AT THE RATE OF TWO TURNS PER FOOT FROM THE LOOP STUB OUT INTO THE PULL BOX.
15. LOOP STUB OUT HOLE AT GUTTER LIP IS TO BE FILLED AS SHOWN ON COM DETAIL M-1230.3 (OLD M-96.04).
16. THE LEADING WIRE FOR EACH LOOP SHALL BE TAGGED WITH WHITE TAPE TO DIFFERENTIATE BETWEEN THE LEADING AND LAGGING END OF THE WIRE.
17. WHEN MORE THAN ONE LOOP IS INSTALLED IN THE SAME DIRECTION, LEAD IN WIRES SHALL BE IDENTIFIED IN THE PULL BOX AS FOLLOWS: CURB TO MEDIAN; FRONT TO BACK
 - 1 BLACK TAPE = CURB LANE
 - 2 BLACK TAPES = MIDDLE LANE(S)
 - 3 BLACK TAPES = LEFT THRU LANE
 - 4 BLACK TAPES = FRONT 6' x 20' LOOP
 - 5 BLACK TAPES = MIDDLE 6' X 20' LOOP
 - 6 BLACK TAPES = BACK 6' X 20' LOOP
18. WHEN HOOKING UP MULTIPLE LOOPS TO THE SAME PHASE, THE LAGGING WIRE FROM ONE LOOP SHALL BE CONNECTED TO THE NEXT LANE'S LEADING WIRE.
19. DETAIL 1 SHOWS INSTALLATION IN EXISTING PAVEMENT AND DETAIL 2 SHOWS INSTALLATION IN BASE COURSE.
20. WITHIN 3 DAYS OF COMPLETION OF DETECTOR LOOP INSTALLATION, THE CONTRACTOR SHALL SCHEDULE FINAL FIELD TEST WITH THE TRAFFIC SIGNAL INSPECTOR. UPON PASSING FINAL FIELD TEST, DETECTOR LOOPS SHALL BE CONNECTED AND MADE TO OPERATE BY THE CONTRACTOR.
21. DETECTOR LOOP INSTALLATION FIELD TEST; BEFORE AND AFTER THE SAW CUT SEALANT HAS BEEN INSTALLED, THE CONTRACTOR SHALL PERFORM AN INSULATION RESISTANCE-TO-GROUND TEST. THE INSULATION RESISTANCE-TO-GROUND SHALL BE AT LEAST 100 MEGOHMS WHEN MEASURED AT A VOLTAGE BETWEEN 400 AND 600 VOLTS DC.
22. ALL NEW TRAFFIC SIGNAL INSTALLATIONS WILL HAVE THE DETECTOR LOOP INSTALLATION FIELD TEST CONDUCTED AND PASSED AT THE CABINET. THE FIELD TEST WILL BE CONDUCTED OVER THE ENTIRE LOOP CIRCUITRY; LOOP LEAD-IN WIRE AND LOOP WIRE INSTALLATION.
23. ANY EXISTING LOOP REPLACEMENT, THE CONTRACTOR SHALL CONFIRM THE LOOP STUB OUT LOCATION PRIOR TO CUTTING/INSTALLING LOOPS, AND WILL ALSO CONFIRM THE CONDUIT BETWEEN THE LOOP STUB OUT AND THE PULL BOX.



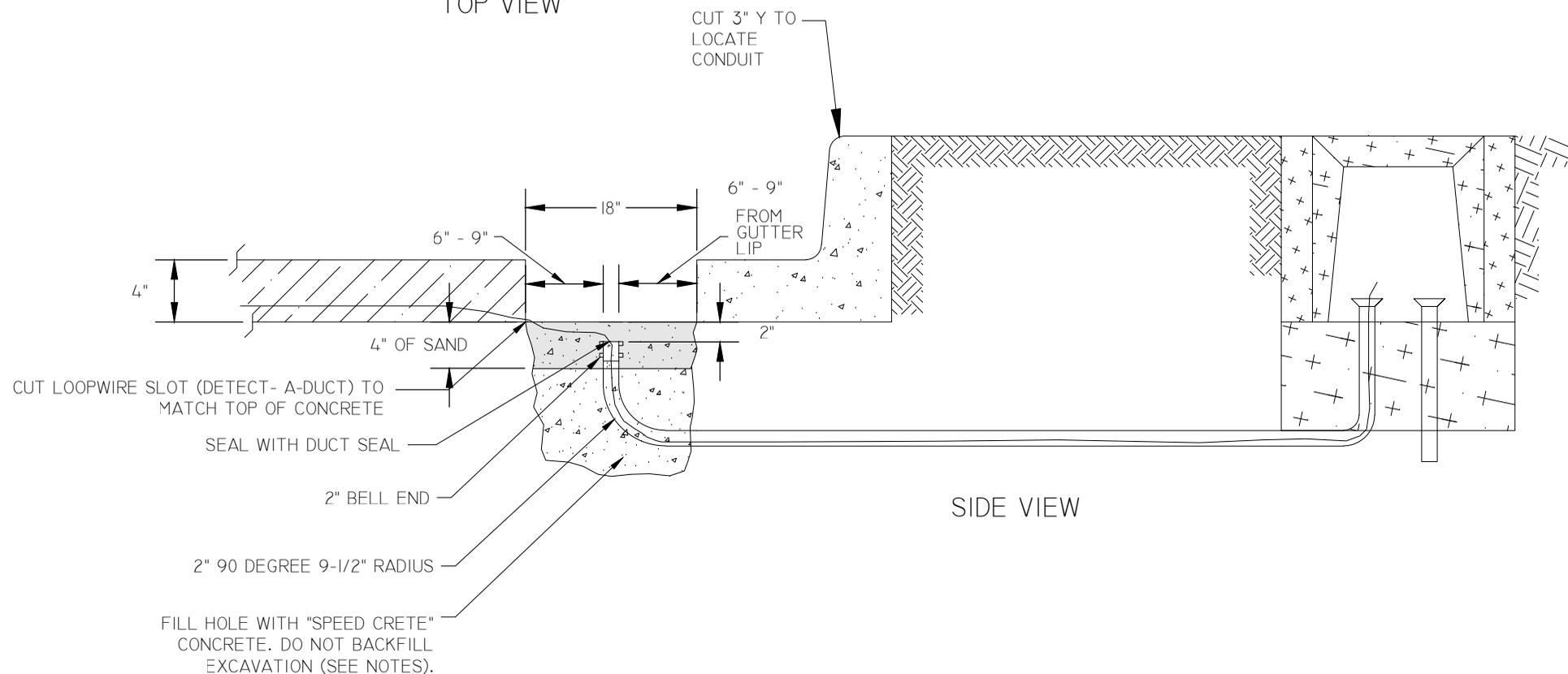
GENERAL NOTES

1. ALL DIMENSIONS ARE IN FEET.
2. VEHICLE DETECTOR LOOP(S) SHALL BE LOCATED IN THE CENTER OF THE TRAVEL LANE UNLESS OTHERWISE NOTED ON PLANS.
3. BICYCLE DETECTOR LOOP(S) SHALL BE LOCATED IN THE CENTER OF THE BICYCLE LANE UNLESS OTHERWISE NOTED ON PLANS.
4. BICYCLE DETECTOR LOOP CORNERS SHALL BE CORE DRILLED.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE LAYOUT OF THE LOOPS. LAYOUT SHALL BE APPROVED BY THE TRAFFIC SIGNALS GROUP BEFORE SAW CUTTING AND PLACEMENT OF THE FINAL LIFT.
6. SEE COM DETAIL M-1230 (OLD M-96.01) FOR DETECTOR LOOP INSTALLATION DETAILS.
7. PREFORMED BIKE LOOP LOCATION TO BE INSTALLED WILL BE DETERMINED BY THE PLANS AND/OR THE INSPECTOR.

NOT TO SCALE



TOP VIEW



SIDE VIEW

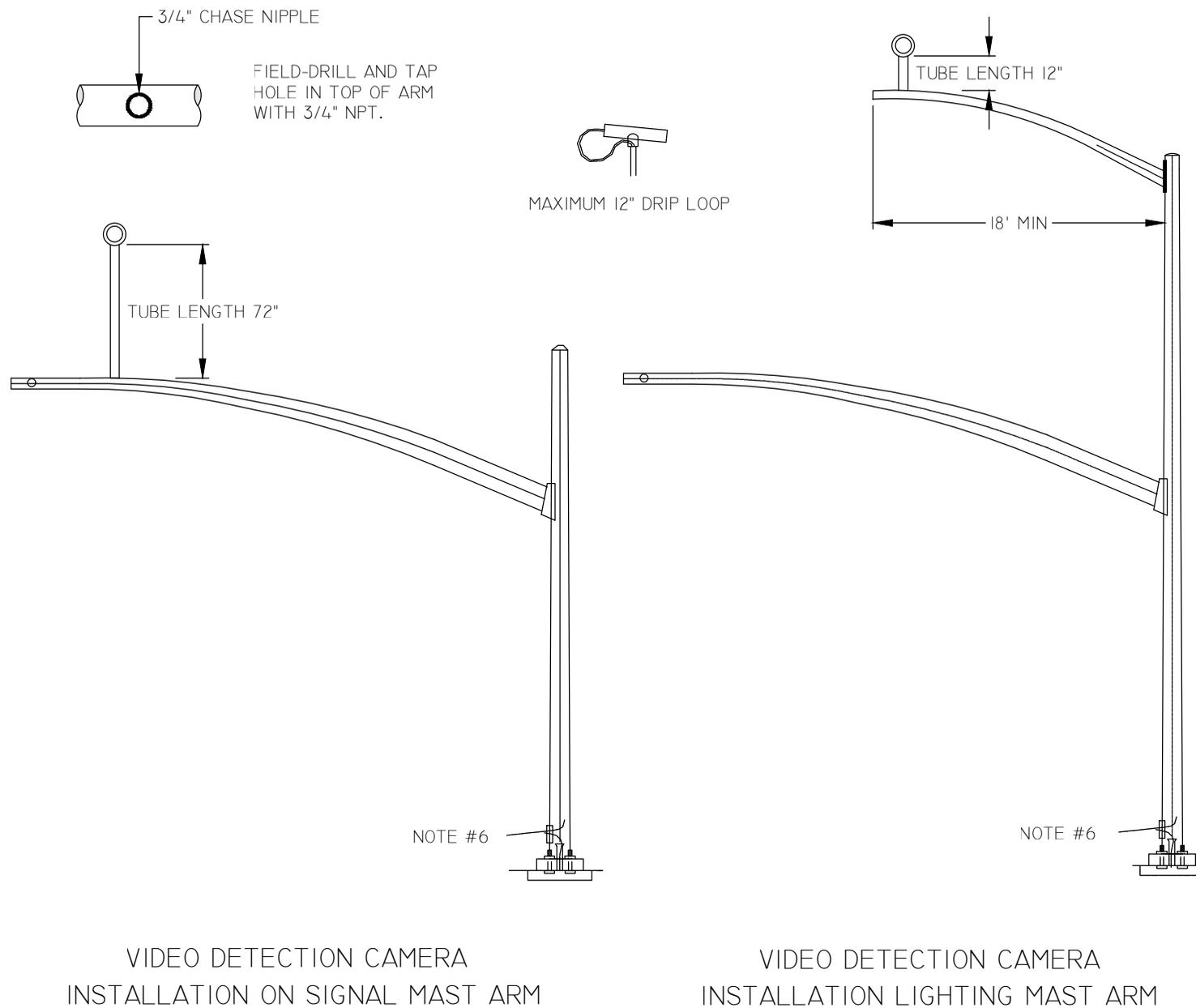
GENERAL NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. CONDUIT END SHALL BE SEALED WITH DUCT SEAL.
3. COVER EXPOSED WIRE WITH JUST ENOUGH SAND TO PROTECT FROM UPM COLD PATCH.
4. UPM COLD PATCH SHALL BE COMPACTED IN TWO LIFTS WITH A MACHINE PLATE TAMPER. LEAVE UPM 1/4" ABOVE OF ROADWAY SURFACE.
5. EXCAVATION SHALL BE FILLED WITH "SPEED CRETE." NO OTHER BACKFILL MATERIAL SHALL BE USED.

NOT TO SCALE

GENERAL NOTES

1. VIDEO DETECTION SYSTEM CABLE SHALL BE ATTACHED TO THE STRAIN RELIEF SUPPORT HOOK LOCATED AT THE TOP OF THE POLE (INSIDE). CABLE SHALL BE SUPPORTED WITH FACTORY CABLE STRAIN RELIEF DEVICE.
2. VDS-CABLE SHALL BE OF 1-PIECE AND EXTEND FROM THE CAMERA TO THE HAND HOLE, AND A DRIP LOOP SHALL BE FORMED AT THE BASE OF THE CAMERA.
3. VDC INSTALL NEEDS TO BE APPROVED BY THE ITS/TRAFFIC SIGNAL GROUP PRIOR TO INSTALLING.
4. MOUNTING BRACKET SHALL BE SUPPLIED BY THE VIDEO DETECTION CAMERA MANUFACTURER OR CONTRACTOR TO PROVIDE A SKY BRACKET SB59 ACM-74 FOR SIGNAL MAST ARM INSTALLATION.
5. CAMERA MOUNTING LOCATION TO BE DETERMINED BY INSPECTOR.
6. SPLICES SHALL BE MADE WITH 3M SCOTCH LOCK 314 INSULATION DISPLACEMENT CONNECTORS.

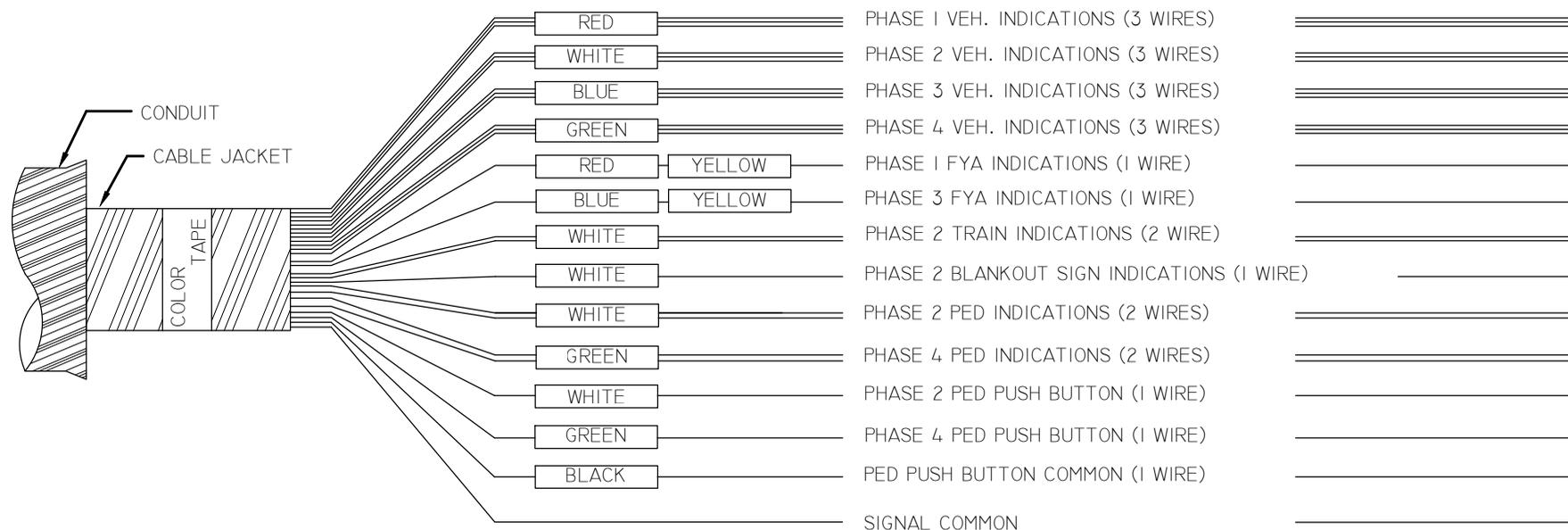


VIDEO DETECTION CAMERA
INSTALLATION ON SIGNAL MAST ARM

VIDEO DETECTION CAMERA
INSTALLATION LIGHTING MAST ARM

NOT TO SCALE

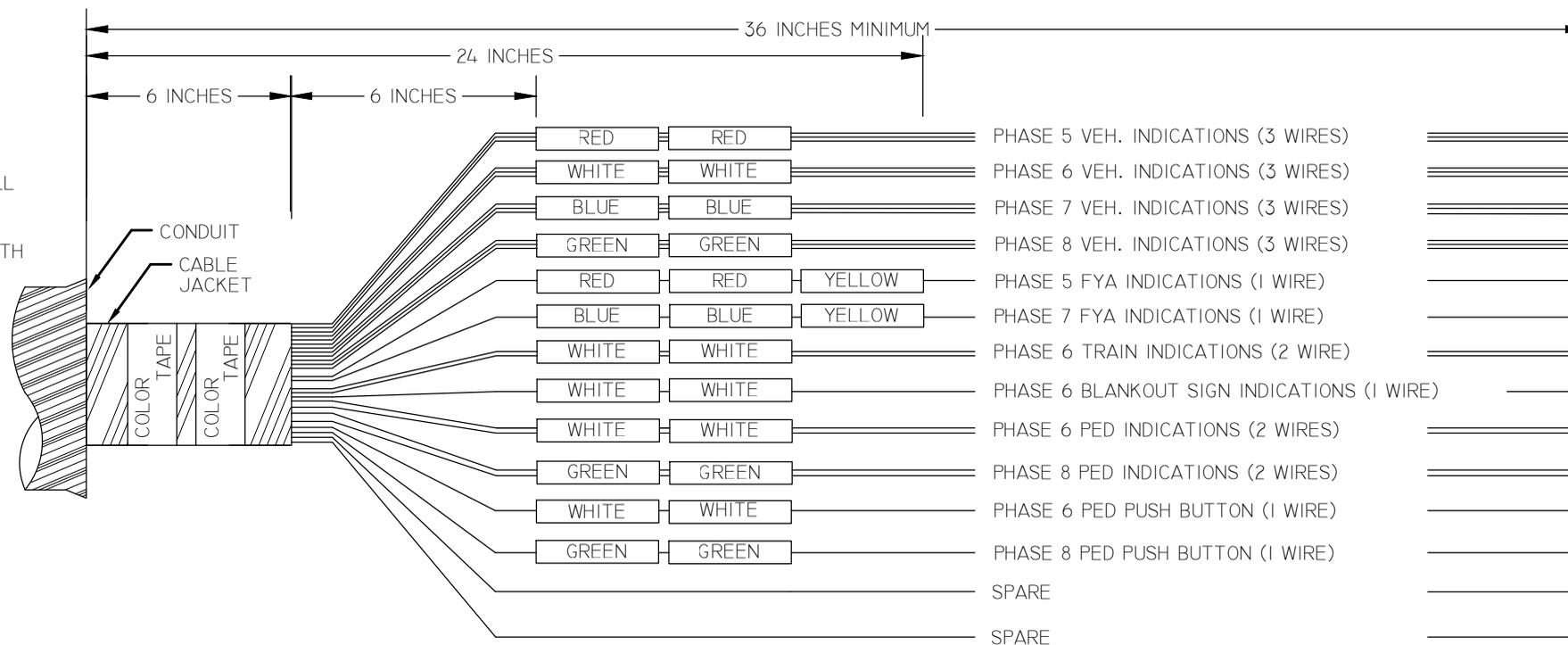
PHASES 1 - 4
(ONE TAPE)



COLOR TAPE

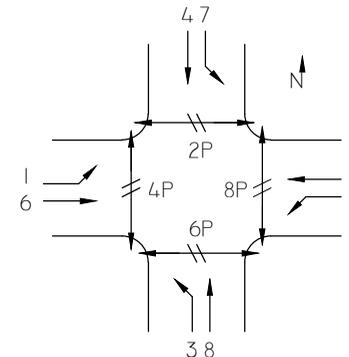
1. E/W RUNS SHALL BE MARKED WITH WHITE TAPE.
2. N/S RUNS SHALL BE MARKED WITH GREEN TAPE.
3. TRAFFIC SIGNAL CABINET RUN SHALL BE MARKED WITH RED TAPE.
4. MEDIAN RUNS SHALL BE MARKED WITH YELLOW TAPE.

PHASES 5 - 8
(TWO TAPES)



GENERAL NOTES

1. IN CIRCUITS WHERE THE VOLTAGE DOES NOT EXCEED 600 VOLTS AC, SPLICES SHALL BE MADE UTILIZING APPROVED WING NUT WIRE CONNECTORS. SOLDERED CONNECTIONS SHALL NOT BE PERMITTED THE INSULATION FOR THE SPLICE SHALL CONSIST OF BLACK 3M SCOTCH 33+ ELECTRICAL TAPE AND COMPLETE SUBMERSION IN "SCOTCH KOTE".
2. ALL ELECTRIC SERVICE SPLICES IN PULL BOXES SHALL BE MADE USING HOMAC "FLOOD SEAL" RUBBERIZED ALUMINUM BAR SPLICE KIT PART #RAB4C OR APPROVED EQUAL.
3. IMSA CABLE FOR EACH MAST ARM MOUNTED SIGNAL HEAD SHALL BE CONTINUOUS WITHOUT SPLICING FROM THE TERMINAL BLOCKS IN THE MAST ARM HEAD TO THE PULL BOX AT THE BASE OF THE POLE.
4. ALL CONDUCTORS IN PULL BOXES AND CONTROLLER CABINETS SHALL BE TAGGED TO IDENTIFY THEIR PHASE NUMBER WITH COLOR CODED MARKING TAPE AS PER CITY OF MESA PHASING CODES IN COM DETAILS M-1231 (OLD M-97.01), M-1231.2 (OLD M-97.03), M-1231.3 (OLD M-97.04) AND M-1231.4 (OLD M-97.06). EACH TAPE SHALL BE WRAPPED AROUND THE APPROPRIATE CONDUCTORS FOUR (4) TIMES [FOR VEHICLE INDICATION, PED INDICATION, AND PED PUSH BUTTON STATION WIRING TYPES AND COLOR CODES (FROM PULLBOX TO POLE) REFER TO ADOT STANDARD SPECIFICATION "CONDUCTOR TABLE" ADOT 732-2.01(A)].
5. ALL CONDUCTORS IN PULL BOXES SHALL BE INSTALLED IN A NEAT MANNER. WIRES SHALL NOT BE "TANGLED".
6. ALL SPARE CONDUCTORS IN THE IMSA CABLE SHALL BE TAPED INDIVIDUALLY WITH BLACK VINYL ELECTRICAL TAPE, SCOTCH COATED AND COILED UP IN THE BOTTOM OF THE PULL BOX.
7. NEUTRAL CONDUCTORS SHALL BE CRIMPED. GROUNDING CONDUCTORS SHALL BE CRIMPED. SEE COM DETAIL M-1226.2 (OLD M-92.03).
8. EACH SIGNAL MAST ARM PLUMBIZER SHALL HAVE A MINIMUM OF EIGHTEEN (18) INCHES OF WIRE EXTENDING OUT TO ALLOW FOR CONNECTING IN THE SIGNAL HEAD.
9. ALL MAST ARM HEAD WIRING SHALL BE TAGGED IN THE PULL BOX AS FOLLOWS:
 - OUTSIDE HEAD = 1 YELLOW TAPE
 - MIDDLE HEAD = 2 YELLOW TAPES
 - INSIDE HEAD = 3 YELLOW TAPES
10. STREETLIGHT LUMINAIRES ON SIGNAL POLES SHALL BE WIRED PER CITY OF MESA STANDARD DETAILS.
11. STREETLIGHT CIRCUIT WIRING SHALL BE #8 AWG, XHHW STRANDED BLACK IN MAIN CONDUIT RUNS, WITH THE NEUTRAL IDENTIFIED WITH WHITE MARKING TAPE ON THE ENDS. TRAY CABLE SHALL USED FROM THE METER PEDESTAL TO THE CLOSEST P.E.C. (PHOTOCELL). STREETLIGHTS CIRCUITS SHALL BE TAPED TOGETHER WITH BLACK TAPE TO KEEP THEM SEPARATE FROM THE TRAFFIC SIGNAL CIRCUITS.
12. IISNS CIRCUIT WIRING SHALL BE TAPED TOGETHER WITH ORANGE TAPE TO KEEP SEPARATE FROM THE TRAFFIC SIGNAL CIRCUITS.
13. IN ALL TRAFFIC SIGNAL CONDUITS A GREEN #8 THHN/THWN STRANDED COPPER BOND WIRE SHALL BE USED.
14. ALL ELECTRICAL BLACK AND COLORED TAPE SHALL BE SCOTCH 33+.
15. ALL STRANDED SIGNAL CABLE SHALL HAVE INSULATED CRIMP STYLE FORK TERMINALS WHEN LANDED UNDER A TERMINAL SCREW. INSULATED CRIMP STYLE PIN TERMINALS SHALL BE INSTALLED WHEN TERMINATED UNDER A PRESSURE TERMINAL. (SOLDERING THE CONDUCTOR END IS ALSO ACCEPTABLE)



STANDARD 8 PHASE LAYOUT
SEE PLANS FOR CORRECT PHASING SEQUENCE

CABLE #1, ONE TAPE WRAP
CONDUCTORS WITHIN CABLE PHASE CODING

VEHICULAR INDICATIONS

PHASE	TAPE ID COLORS	INTERVAL	WIRE COLORS	INDICATIONS
1	RED	EBLT	RED, ORANGE, GREEN	RED, YELLOW, GREEN
2	WHITE	WB	RED W/BLACK, ORANGE W/BLACK, GREEN W/BLACK	RED, YELLOW, GREEN
3	BLUE	NBLT	RED W/WHITE, BLUE W/WHITE, GREEN W/WHITE	RED, YELLOW, GREEN
4	GREEN	SB	RED W/GREEN, ORANGE W/RED, BLUE W/RED	RED, YELLOW, GREEN
1 FYA	RED, YELLOW	EBLT	YELLOW W/RED	FYA PHASE 1
3 FYA	BLUE, YELLOW	NBLT	YELLOW W/BLUE	FYA PHASE 3

LRT INDICATIONS

PHASE	TAPE ID COLORS	INTERVAL	WIRE COLORS	INDICATIONS
2 TRAIN	WHITE	WB	BROWN, BROWN W/WHITE	HORZ BAR, VERT BAR
2 B.O. SIGN	WHITE	WB	ORANGE W/ GREEN	BLANKOUT SIGN

PEDESTRIAN INDICATIONS

PHASE	TAPE ID COLORS	WIRE COLORS	INDICATIONS
2 PED	WHITE	BLACK, BLUE	DON'T WALK, WALK
4 PED	GREEN	BLACK W/WHITE, BLUE W/BLACK	DON'T WALK, WALK

PEDESTRIAN PUSH BUTTONS

PHASE	TAPE ID COLORS	WIRE COLOR
2 PUSH BUTTON	WHITE	WHITE W/ RED
4 PUSH BUTTON	GREEN	BLACK W/ RED
PUSH BUTTON COMMON	BLACK	WHITE W/ BLACK
SIGNAL COMMON		WHITE

MARKING TAPE PER PHASES
 Ø1 = 1 RED TAPE
 Ø2 = 1 WHITE TAPE
 Ø3 = 1 BLUE TAPE
 Ø4 = 1 GREEN TAPE

25 CONDUCTOR CABLE #1

OLD
M-97.03

DETAIL NO.
M-1231.2

CABLE #2, TWO TAPE WRAPS
CONDUCTORS WITHIN CABLE PHASE CODING

VEHICULAR INDICATIONS

PHASE	TAPE ID COLORS	INTERVAL	WIRE COLORS	INDICATIONS
5	2 RED	WBLT	RED, ORANGE, GREEN	RED, YELLOW, GREEN
6	2 WHITE	EB	RED W/BLACK, ORANGE W/BLACK, GREEN W/BLACK	RED, YELLOW, GREEN
7	2 BLUE	SBLT	RED W/WHITE, BLUE W/WHITE, GREEN W/WHITE	RED, YELLOW, GREEN
8	2 GREEN	NB	RED W/GREEN, ORANGE W/RED, BLUE W/RED	RED, YELLOW, GREEN
5 FYA	2 RED, 1 YELLOW	WBLT	YELLOW W/RED	FYA PHASE 5
7 FYA	2 BLUE, 1 YELLOW	SBLT	YELLOW W/BLUE	FYA PHASE 7

LRT INDICATIONS

PHASE	TAPE ID COLORS	INTERVAL	WIRE COLORS	INDICATIONS
6 TRAIN	2 WHITE	EB	BROWN, BROWN W/WHITE	HORZ BAR, VERT BAR
6 B.O. SIGN	2 WHITE	EB	ORANGE W/ GREEN	BLANKOUT SIGN

PEDESTRIAN INDICATIONS

PHASE	TAPE ID COLORS	WIRE COLORS	INDICATIONS
6 PED	2 WHITE	BLACK, BLUE	DON'T WALK, WALK
8 PED	2 GREEN	BLACK W/WHITE, BLUE W/BLACK	DON'T WALK, WALK

PEDESTRIAN PUSH BUTTONS

PHASE	TAPE ID COLORS	WIRE COLORS
6 PUSH BUTTON	2 WHITE	WHITE W/ RED
8 PUSH BUTTON	2 GREEN	BLACK W/ RED
SPARE		WHITE
SPARE		WHITE W/ BLACK

MARKING TAPE PER PHASES Ø5 = 2 RED TAPE Ø6 = 2 WHITE TAPE Ø7 = 2 BLUE TAPE Ø8 = 2 GREEN TAPE
--

25 CONDUCTOR CABLE #2

OLD
M-97.04

DETAIL NO.
M-1231.3

7 CONDUCTOR, 5 CONDUCTOR, AND 2 CONDUCTOR

OUTSIDE MAST ARM & TYPE "Q" HEADS

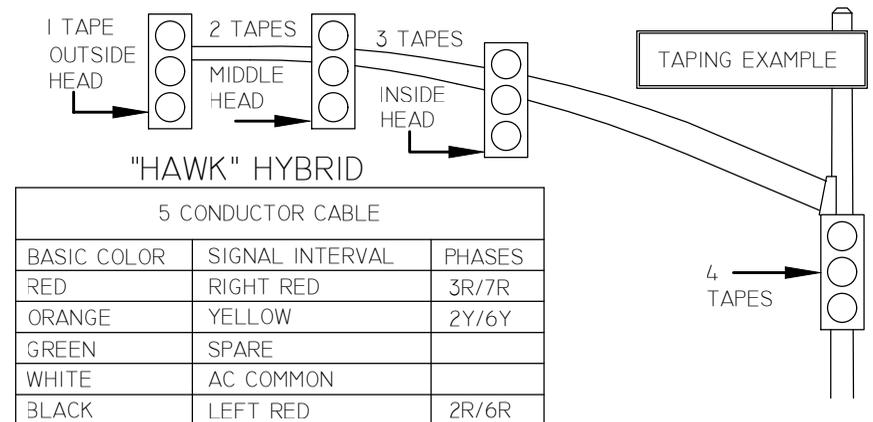
7 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED
ORANGE	YELLOW
GREEN	GREEN
BLACK	YELLOW ARROW
BLUE	GREEN ARROW
WHITE	VEHICLE COMMON
WHITE/BLACK	SPARE

TYPE "F" SIGNAL HEADS INSIDE & SIDEMOUNT

5 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED
ORANGE	YELLOW
GREEN	GREEN
WHITE	VEHICLE COMMON
BLACK	SPARE

FLASHING YELLOW HEADS "FY"

7 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED ARROW
ORANGE	YELLOW ARROW
GREEN	GREEN ARROW
BLACK	FL YELLOW ARROW
BLUE	SPARE
WHITE	VEHICLE COMMON
WHITE/BLACK	SPARE



5 CONDUCTOR CABLE		
BASIC COLOR	SIGNAL INTERVAL	PHASES
RED	RIGHT RED	3R/7R
ORANGE	YELLOW	2Y/6Y
GREEN	SPARE	
WHITE	AC COMMON	
BLACK	LEFT RED	2R/6R

ALL CABLES SHALL BE TAGGED AS TO THEIR ASSIGNED PHASE IN THE PULL BOX.

GENERAL NOTES

- ALL IMSA CABLE IS PULLED CONTINUOUS (NO SPLICING) FROM THE TERMINAL COMPARTMENT IN EACH SIGNAL HEAD, PED HEAD, OR PUSH BUTTON STATION TO THE PULL BOX AT THE BASE OF THE POLE.
- CABLE SHALL BE UTILIZED AS FOLLOWS:
 2 CONDUCTOR = ALL PUSH BUTTON STATIONS
 5 CONDUCTOR = ALL 3-SECTION SIGNAL HEADS AND PED HEADS (1 EACH)
 7 CONDUCTOR = ALL OUTBOARD MAST ARM AND TYPE "Q" SIGNAL HEADS
 7 CONDUCTOR = ALL DOUBLE PEDESTRIAN HEADS
- IMSA CABLE FOR EACH MAST ARM MOUNTED SIGNAL HEAD SHALL BE CONTINUOUS WITHOUT SPLICING FROM THE TERMINAL BLOCKS IN THE MAST ARM HEAD TO THE PULL BOX AT THE BASE OF THE POLE.
- YELLOW ID TAPE SHALL BE APPLIED 6" ABOVE PVC END BELLS ON IMSA CABLE JACKET.
- ALL CABLE SHALL BE TAGGED IN THE PULL BOX WITH YELLOW TAPE AS FOLLOWS:

MAST ARM VEHICLE INDICATIONS		
HEAD	CONDUCTORS	TAPE(S)
OUTSIDE	7	1
NEXT INSIDE	5	2
NEXT INSIDE	5	3
NEXT INSIDE	5	4
NEXT INSIDE...	5	5...
ETC	5	ETC...

POLE MOUNT VEHICLE INDICATIONS	
HEAD	TAPE(S)
SAME PHASE AS MAST ARM HEADS	NEXT #
DIFFERENT PHASE FROM MAST ARM	NONE

- IMSA CABLES FOR PEDESTRIAN HEADS SHALL BE IDENTIFIED IN PULL BOXES USING BROWN TAPE IN ADDITION TO STANDARD PHASE ID TAPING.

DOUBLE PEDESTRIAN HEADS

7 CONDUCTOR CABLE		
BASIC COLOR	SIGNAL INTERVAL	PED PHASING
RED	DON'T WALK	4 & 8
ORANGE	SPARE	
GREEN	WALK	4 & 8
BLACK	DON'T WALK	2 & 6
BLUE	WALK	2 & 6
WHITE	COMMON	PED COMMON
WHITE/BLACK	SPARE	

PEDESTRIAN HEADS

5 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	DON'T WALK
ORANGE	SPARE
GREEN	WALK
WHITE	PEDESTRIAN COMMON
BLACK	SPARE

PUSH BUTTON

2 CONDUCTOR CABLE	
BASIC COLOR	PUSH BUTTON STATION
BLACK	PUSH BUTTON
WHITE	PUSH BUTTON COMMON

LRT BLANKOUT

5 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	SPARE
ORANGE	SPARE
GREEN	SPARE
WHITE	NEUTRAL
BLACK	LOAD

LRT TRAIN

5 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	HORIZONTAL BAR
ORANGE	SPARE
GREEN	VERTICAL BAR
WHITE	NEUTRAL
BLACK	SPARE

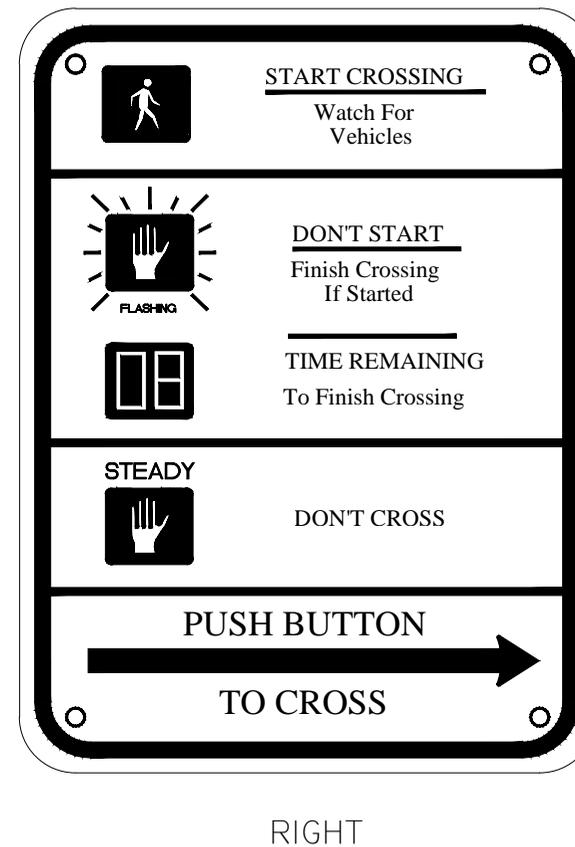
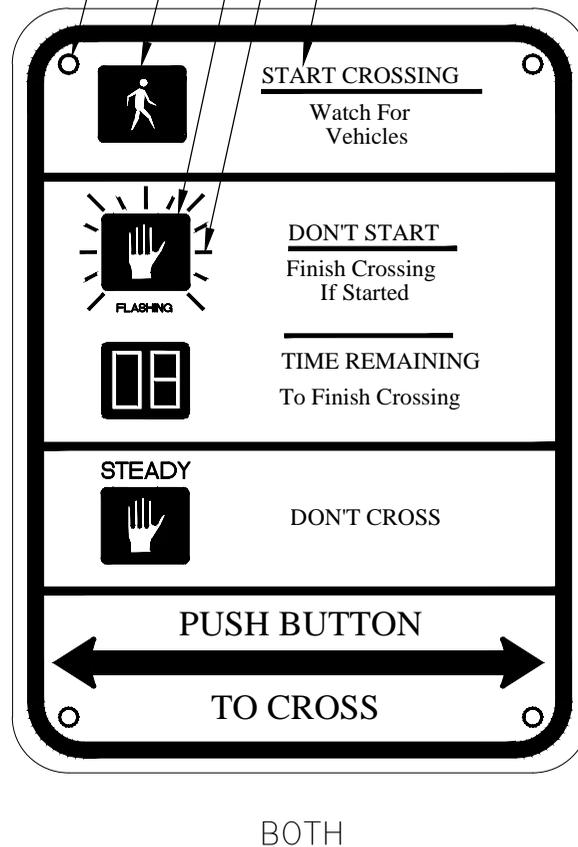
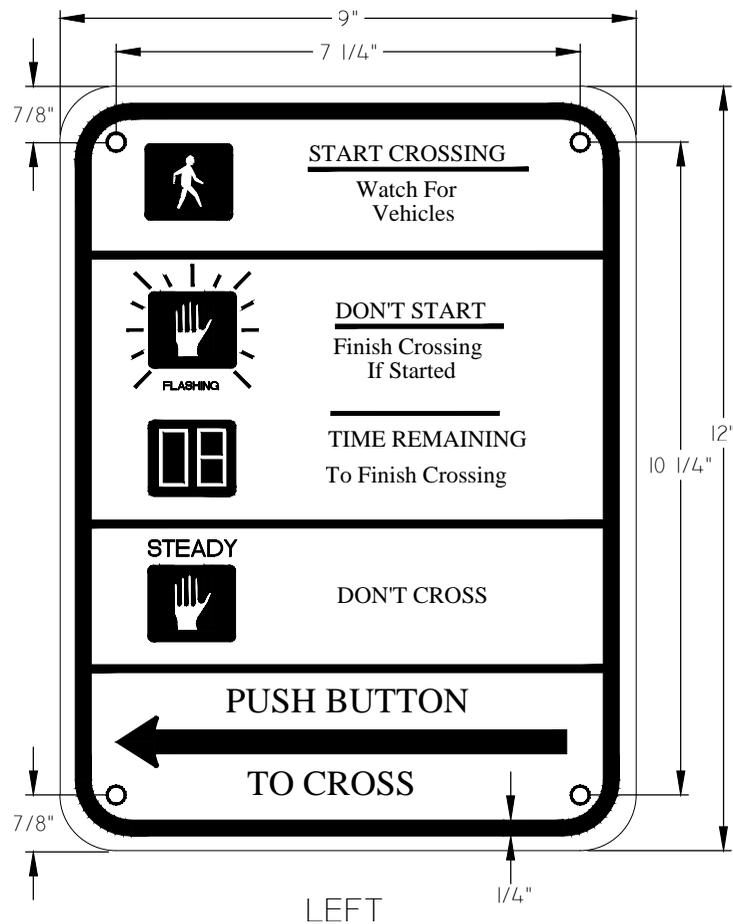
DOUBLE LRT TRAIN

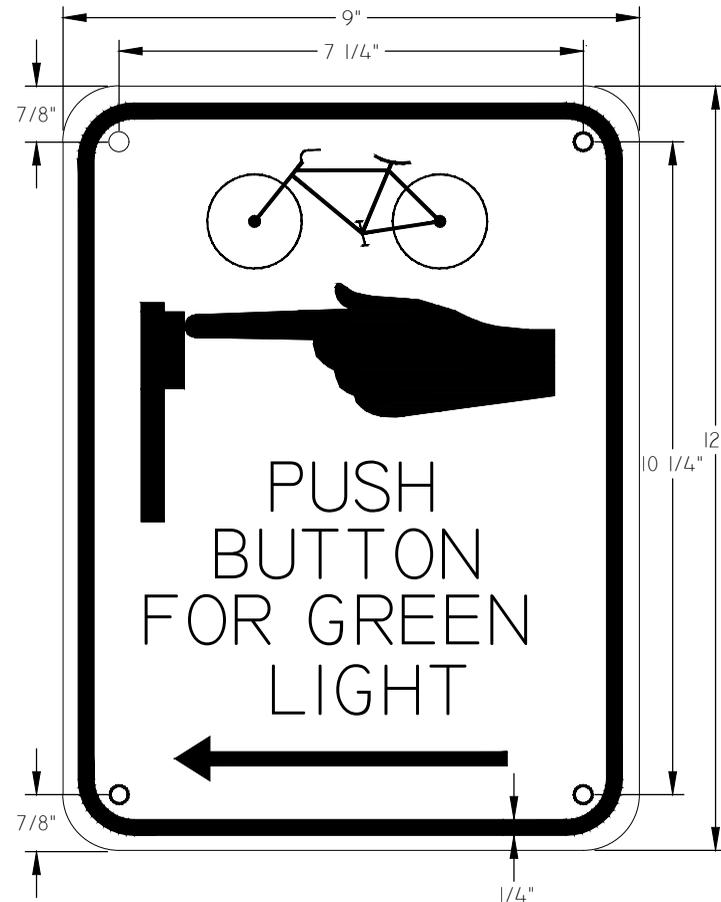
7 CONDUCTOR CABLE		
BASIC COLOR	SIGNAL INTERVAL	PHASES
RED	HORIZONTAL BAR	2 / 4
ORANGE	SPARE	
GREEN	VERTICAL BAR	2 / 4
BLACK	HORIZONTAL BAR	6 / 8
BLUE	VERTICAL BAR	6 / 8
WHITE	NEUTRAL	
WHITE/BLACK	SPARE	

NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. MATERIAL SHALL BE 20 GAUGE STEEL WITH PORCELAIN ENAMEL.

- BRASS GROMMETS IN HOLES FOR #12 BOLTS
- "WALKING PERSON" IN LUNAR WHITE
- "HAND" IN PORTLAND ORANGE
- PORTLAND ORANGE RAYS
- "START CROSSING," "DON'T START," AND "DON'T CROSS" IN BOLD LETTERS

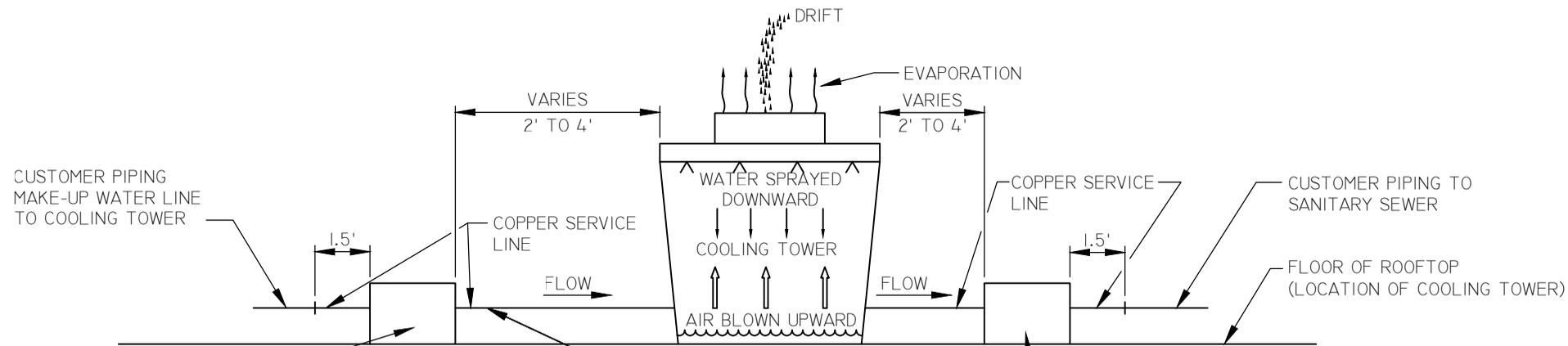




TYPICAL DIMENSIONS
R10-26

NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. MATERIAL SHALL BE 20 GAUGE STEEL WITH PORCELAIN ENAMEL.

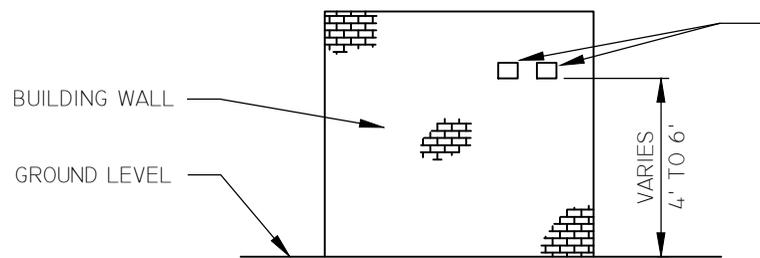


INFLUENT METER: COPPER SERVICE LINE MUST MATCH METER SIZE, WITH LOCKING WINGS AND METER BOX AND COVER PER COM DETAILS M-1308 (OLD M-49.01) AND M-1308.1 (M-49.02). METER MUST BE NO HIGHER THAN 4 FEET FROM FLOOR OF COOLING TOWER LOCATION. INSTALL VERTICAL OFFSET TO ACHIEVE 4-INCH RISE IN PIPING DOWNSTREAM OF INFLUENT METER. ELECTRICAL WIRING FOR GROUND LEVEL METER READOUT DEVICE INSTALLED IN SCHEDULE 40 PVC TO REMOTE READOUT LOCATION.

INSTALL REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, SIZE MATCH TO METER. REFER TO COM DETAIL M-1305.7 (OLD M-31.08)

EFFLUENT METER: COPPER SERVICE LINE MUST MATCH METER SIZE, WITH LOCKING WINGS AND METER BOX AND COVER PER COM DETAILS M-1308 (OLD M-49.01) AND M-1308.1 (OLD M-49.02). METER MUST BE NO HIGHER THAN 4 FEET FROM FLOOR OF COOLING TOWER LOCATION. INSTALL VERTICAL OFFSET TO ACHIEVE 4-INCH RISE IN PIPING DOWNSTREAM OF EFFLUENT METER. ELECTRICAL WIRING FOR GROUND LEVEL METER READOUT DEVICE INSTALLED IN SCHEDULE 40 PVC TO REMOTE READOUT LOCATION.

METER PLACEMENT AT COOLING TOWER



GROUND LEVEL METER READOUT DEVICES FOR COMMERCIAL SITES
 -WITH RESTRICTED PUBLIC ACCESS, SHALL BE LOCATED ON PERIMETER WALLS ADJACENT TO PUBLIC STREETS TO FACILITATE METER READER ACCESS.
 -WITH UNRESTRICTED PUBLIC ACCESS, MAY BE LOCATED ON EXTERIOR BUILDING WALLS THAT WILL ACCOMMODATE METER READER ACCESS VIA THE PUBLIC PARKING LOT OR FIRE LANES.

GROUND LEVEL METER READOUT DEVICE PLACEMENT

NOTES

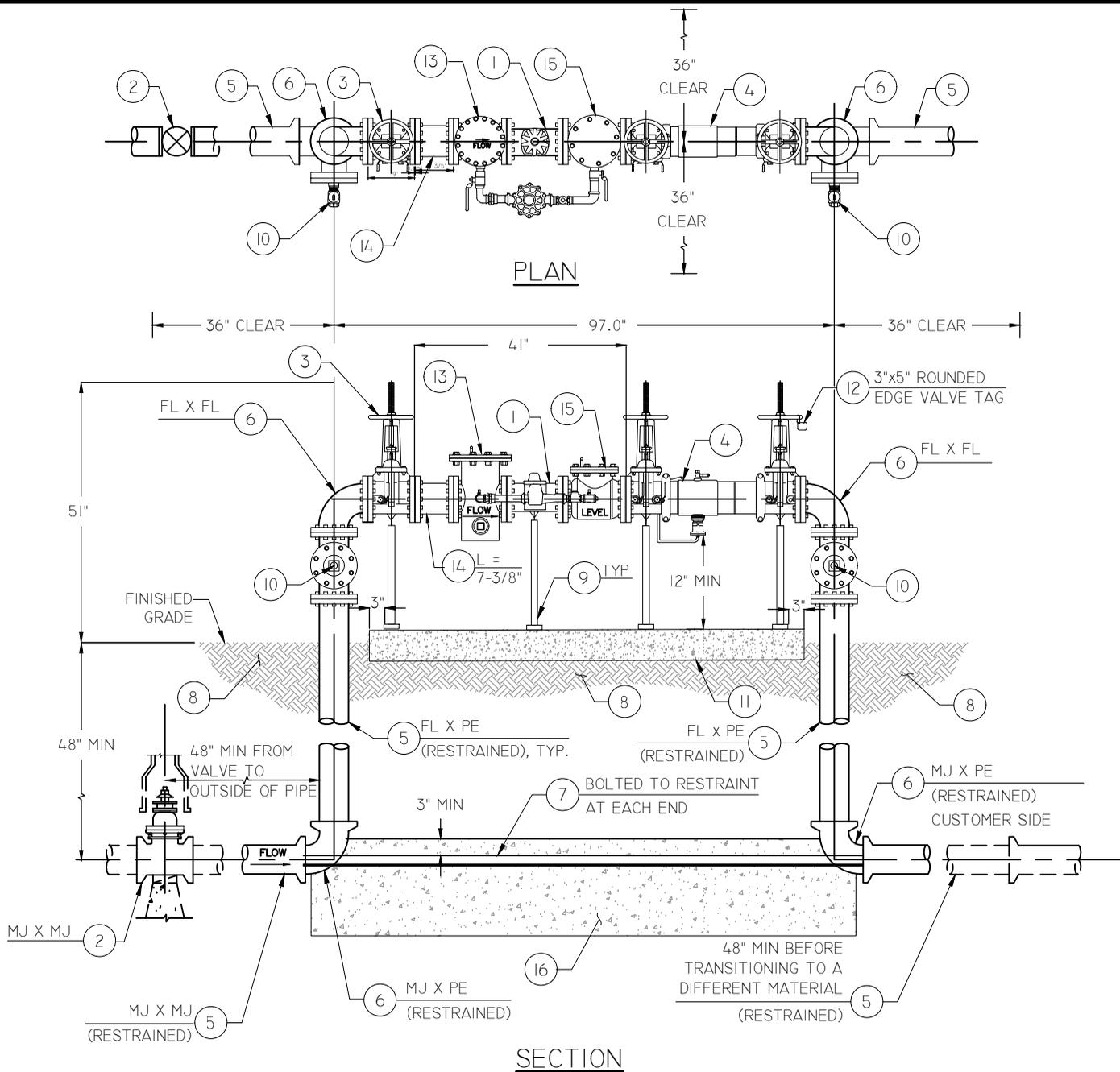
1. PRIOR TO THE APPROVAL AND INSTALLATION OF SUBTRACTIVE METERS, CALCULATIONS SHALL BE PROVIDED TO THE WATER RESOURCES DEPARTMENT ESTABLISHING PROPOSED METER SIZES PER CITY OF MESA ENGINEERING AND DESIGN STANDARDS 317.25.
2. BUILDING SAFETY DIVISION PLUMBING AND ELECTRICAL PERMITS REQUIRED FOR INSTALLATION.
3. INFLUENT AND EFFLUENT METERS MUST BE ACCESSIBLE TO CITY STAFF DURING REGULAR BUSINESS HOURS WITHOUT SPECIAL ARRANGEMENTS OR EQUIPMENT FOR ACCESS.
4. INSTALLATION OF PERMANENT BYPASS AT THE EFFLUENT METER IS PROHIBITED.

NOT TO SCALE

SUBTRACTIVE METER

OLD
M-26

DETAIL NO.
M-1300



METER ASSEMBLY KEY NOTES

- ① 4" SINGLE BADGER FSAA-01 (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
- ② WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392, TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESA AZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
- ③ OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
- ④ INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 13 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
- ⑤ DIP PIPE.
- ⑥ DIP 90° ELBOW.
- ⑦ 2"x2"x1/4" ANGLE IRON THRUST RESTRAINT PER COM DTL M-1304 (OLD M-30.01).
- ⑧ FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
- ⑨ ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
- ⑩ DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.
- ⑪ CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" x 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX SLOPE IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL M-1304.1 (OLD M-30.02).
- ⑫ STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
- ⑬ STRAINER.
- ⑭ DIP SPOOL.
- ⑮ CHECK VALVE.
- ⑯ MINIMUM 16" THICK CONTINUOUS CLASS B CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.

SEE COM DTL M-1301.1 (OLD M-27.01.2) FOR REFERENCED NOTES

NOT TO SCALE

NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED IN TABLE BELOW.
2. DETAIL IS USED WHERE HIGH CONSTANT FLOWS ARE REQUIRED FOR A COMBINATION FIRE/DOMESTIC SERVICE. NOT SUITABLE FOR LOW FLOW APPLICATIONS.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS](https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications).
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES THE PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL I40, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372, BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 372.

APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
FIRE-RATED MECHANICAL	METER
	STRAINER
	CHECK VALVE

METER DATA TABLE			
FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY LENGTH	MIN FLOW	MAX FLOW
4"	41"	2.5 GPM	1000 GPM

SEE COM DTL. M-1301 (OLD M-27.01.1)



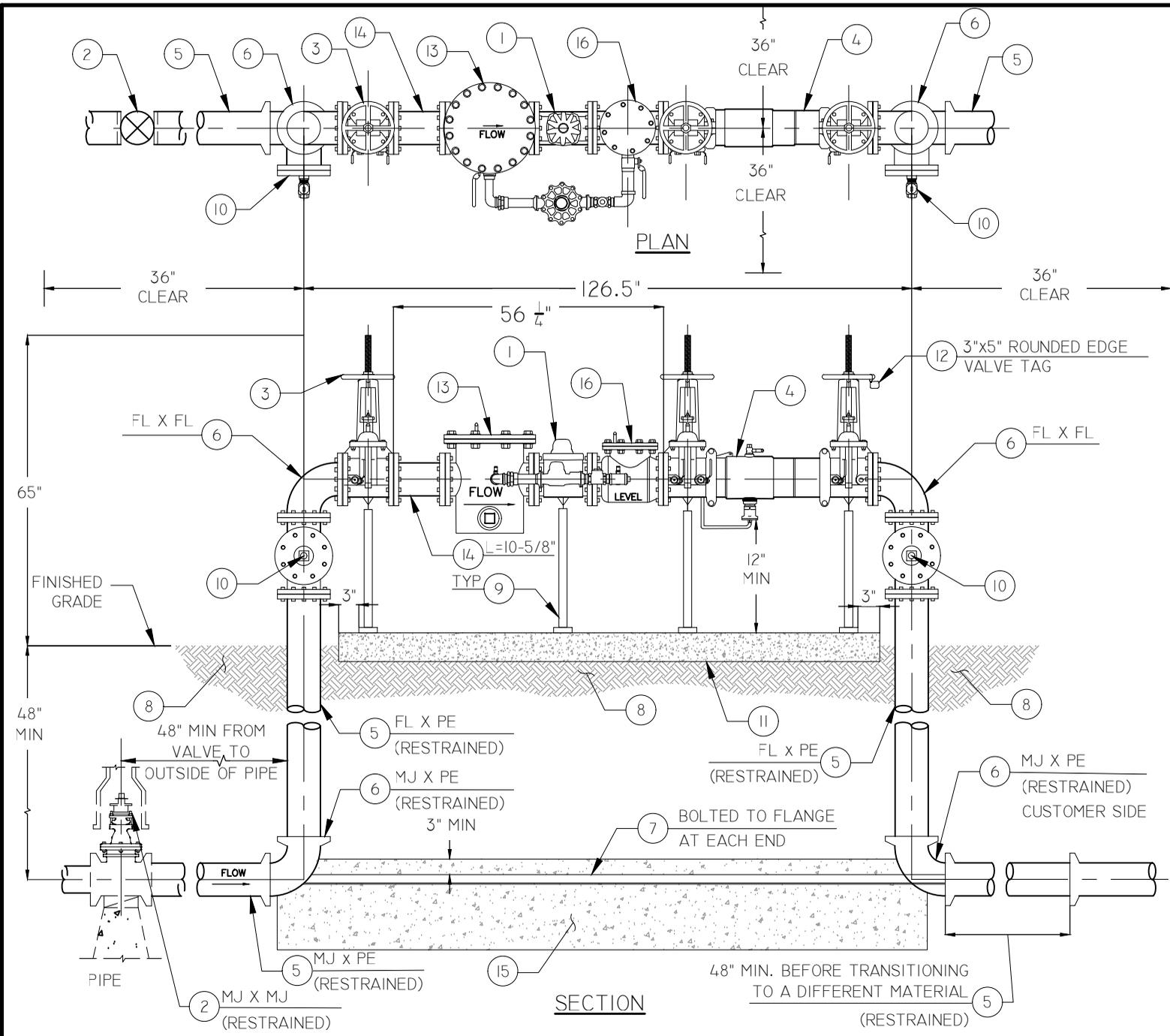
**4" FIRE-RATED MECHANICAL WATER
METER ASSEMBLY - NOTES**

OLD
M-27.01.2

DETAIL NO.
M-1301.1

METER ASSEMBLY KEY NOTES

- ① 6" SINGLE BADGER FSAA-01 (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTENANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
- ② WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392 TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
- ③ OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
- ④ INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 13 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
- ⑤ DIP PIPE.
- ⑥ DIP 90° ELBOW.
- ⑦ 2"x2"x1/4" ANGLE IRON RESTRAINT PER COM DTL M-1304 (OLD M-30.01)
- ⑧ FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
- ⑨ ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
- ⑩ DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE. 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.
- ⑪ CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL M-1304.1 (OLD M-30.02).
- ⑫ STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
- ⑬ STRAINER.
- ⑭ DIP SPOOL.
- ⑮ MINIMUM 16" THICK CLASS B CONTINUOUS CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.
- ⑯ CHECK VALVE.



SEE COM DTL. M-1301.3 (OLD M-27.02.2) FOR REFERENCED NOTES

NOT TO SCALE

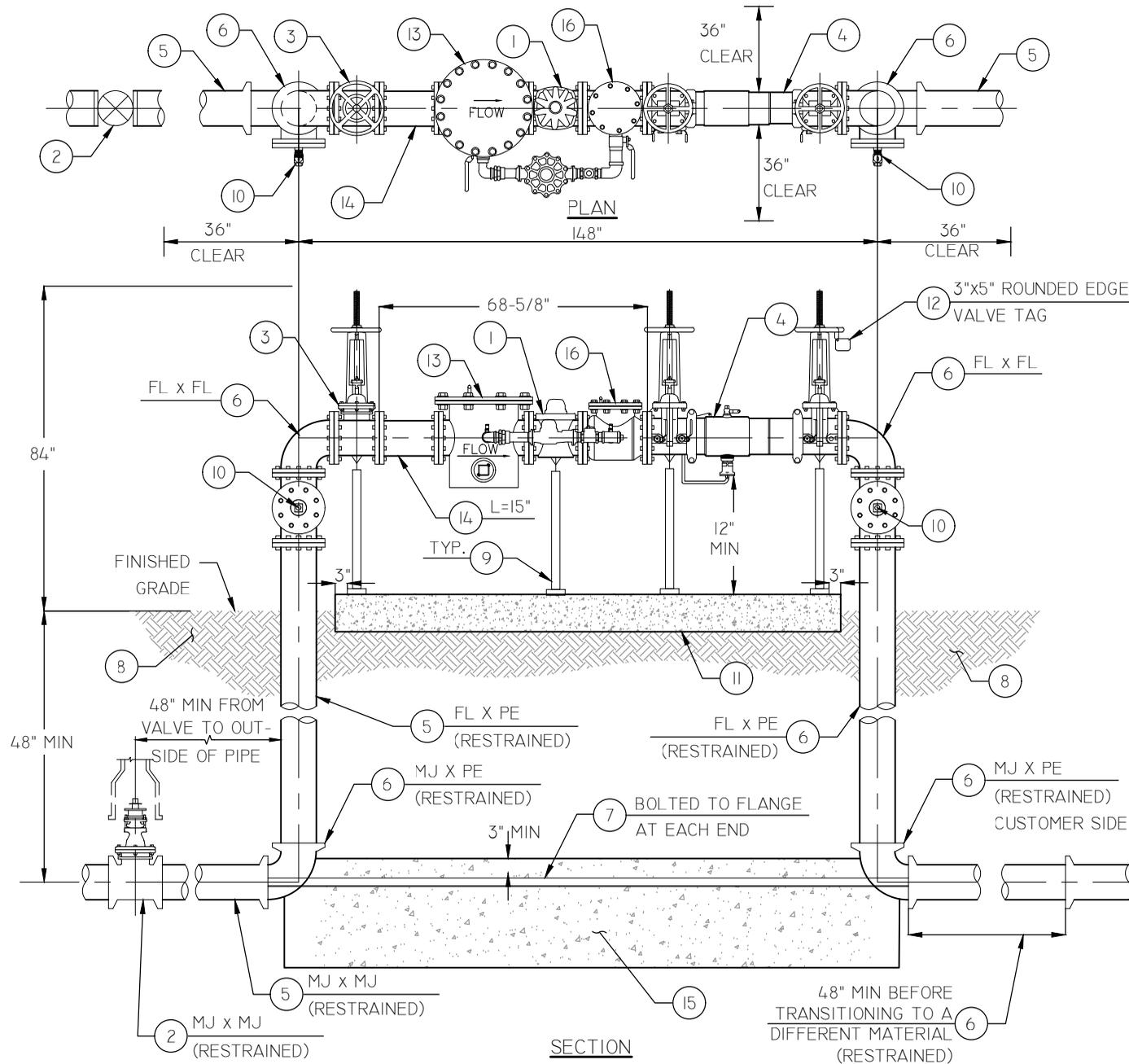
NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED IN TABLE BELOW.
2. DETAIL IS USED WHERE HIGH CONSTANT FLOWS ARE REQUIRED FOR A COMBINATION FIRE/DOMESTIC SERVICE. NOT SUITABLE FOR LOW FLOW APPLICATIONS.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS.](https://www.mesaaz.gov/business/engineering/mesa-standard-detail-specifications)
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL I40, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES, FITTINGS, AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372. BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 375.

APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
FIRE-RATED MECHANICAL	METER
	STRAINER
	CHECK VALVE

METER DATA TABLE			
FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY LAY LENGTH	MIN FLOW	MAX FLOW
6"	56-1/4"	2.5 GPM	2000 GPM

SEE COM DTL. M-1301.2
(OLD M-27.02.1)



- ### METER ASSEMBLY KEY NOTES
- 1 8" SINGLE BADGER FSAA-01 (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTENANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
 - 2 WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392 TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESAA7.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaa7.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
 - 3 OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
 - 4 INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 13 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
 - 5 DIP PIPE.
 - 6 DIP 90° ELBOW.
 - 7 2"x2"x1/4" ANGLE IRON THRUST RESTRAINT PER COM DTL M-1304 (OLD M-30.01).
 - 8 FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
 - 9 ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
 - 10 DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE. 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.
 - 11 CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL M-1304.1 (OLD M-30.02).
 - 12 STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
 - 13 STRAINER.
 - 14 DIP SPOOL.
 - 15 MINIMUM 16" THICK CLASS B CONTINUOUS CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.
 - 16 CHECK VALVE.

SEE COM DTL. M-1301.5 (OLD M-27.03.2) FOR REFERENCED NOTES

NOT TO SCALE

NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED IN TABLE BELOW.
2. DETAIL IS USED WHERE HIGH CONSTANT FLOWS ARE REQUIRED FOR A COMBINATION FIRE/DOMESTIC SERVICE. NOT SUITABLE FOR LOW FLOW APPLICATIONS.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS](https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications).
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL 140, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES, FITTINGS, AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372, BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 372.

APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
FIRE-RATED MECHANICAL	METER
	STRAINER
	CHECK VALVE

METER DATA TABLE			
FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY	MIN FLOW	MAX FLOW
8"	68 5/8"	2.5 GPM	3500 GPM

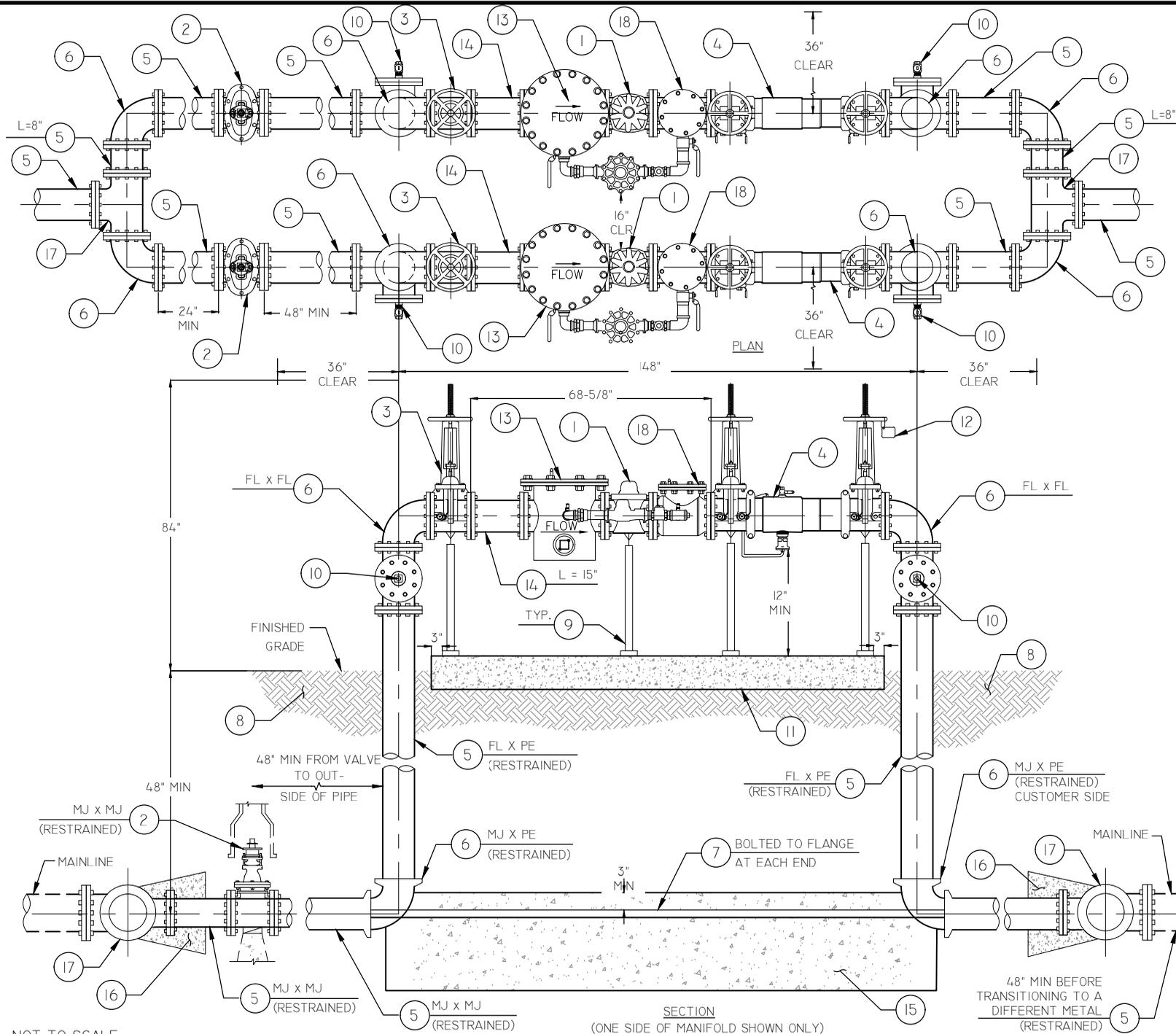
**SEE COM DTL. M-1301.4
(OLD M-27.03.1)**



**8" FIRE-RATED MECHANICAL WATER
METER ASSEMBLY - NOTES**

OLD
M-27.03.2

DETAIL NO.
M-1301.5



METER ASSEMBLY KEY NOTES

- 1 8" SINGLE BADGER FSAA-01 (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTENANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
- 2 WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392 TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
- 3 OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
- 4 INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 13 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
- 5 DIP PIPE.
- 6 DIP 90° ELBOW.
- 7 2"x2"x1/4" ANGLE IRON THRUST RESTRAINT PER COM DTL. M-1304 (OLD M-30.01).
- 8 FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
- 9 ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
- 10 DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE. 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.
- 11 CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL. M-1304.1 (OLD M-30.02).
- 12 STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
- 13 STRAINER.
- 14 DIP SPOOL.
- 15 MINIMUM 16" THICK CONTINUOUS CLASS B CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.
- 16 CONCRETE THRUST BLOCK PER MAG STD DTL 380.
- 17 DIP TEE 8X8.
- 18 CHECK VALVE.

SEE COM DTL. M-1301.7 (OLD M-27.04.2) FOR REFERENCED NOTES

NOT TO SCALE

NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED BELOW.
2. DETAIL IS USED WHERE HIGH CONSTANT FLOWS ARE REQUIRED FOR A COMBINATION FIRE/DOMESTIC SERVICE. NOT SUITABLE FOR LOW FLOW APPLICATIONS.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESA AZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS.](https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications)
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN THE WATER METER ASSEMBLY (WMA) AND OTHER OBJECTS SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL I40, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES, FITTINGS, AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372, BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 372.

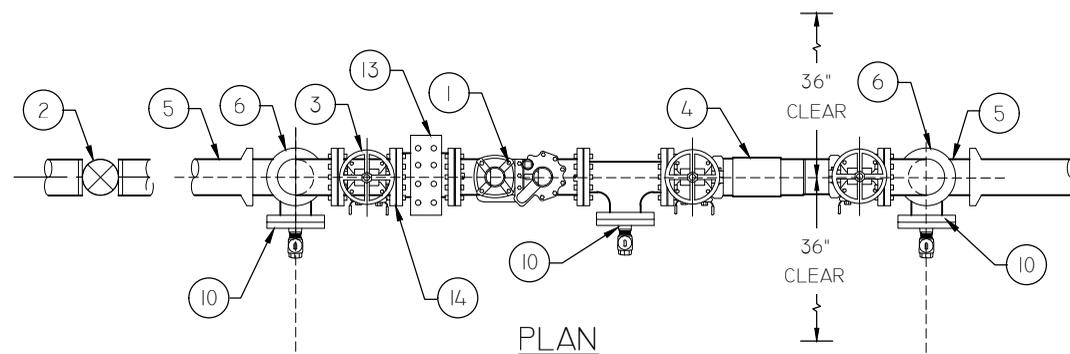
APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
FIRE-RATED MECHANICAL	METER
	STRAINER
	CHECK VALVE

METER DATA TABLE			
FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY LENGTH	MIN FLOW	MAX FLOW
8"	68 5/8"	2.5 GPM	7000 GPM

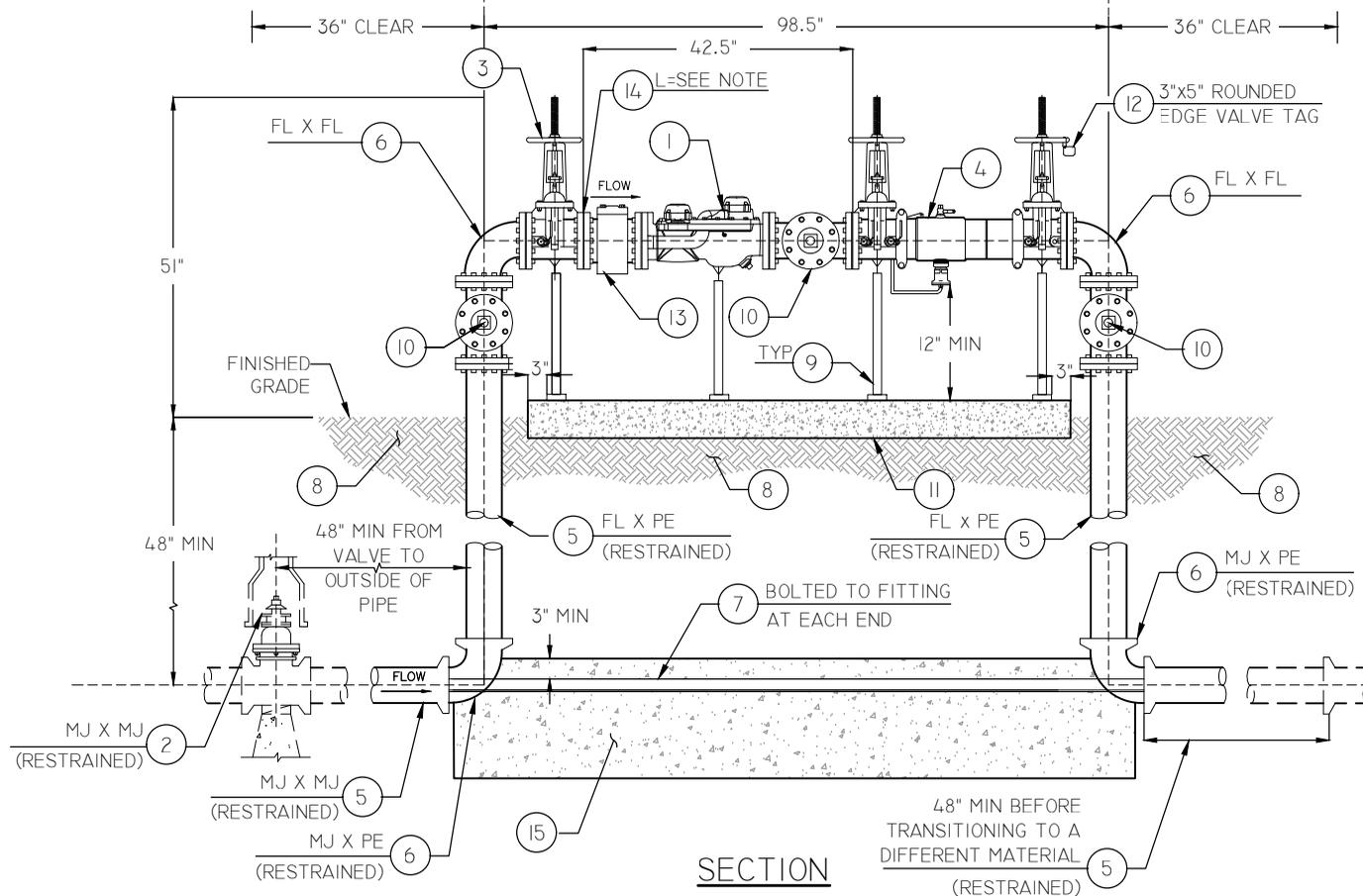
SEE COM DTL. M-1301.6
(OLD M-27.04.1)

METER ASSEMBLY KEY NOTES

- ① 4" SINGLE BADGER RECORDALL COMPOUND SERIES (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTENANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
- ② WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392, TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESA AZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
- ③ OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
- ④ INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 12 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
- ⑤ DIP PIPE.
- ⑥ DIP 90° ELBOW.
- ⑦ 2"x2"x1/4" ANGLE IRON THRUST RESTRAINT PER COM DTL M-1304 (OLD M-30.01).
- ⑧ FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
- ⑨ ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
- ⑩ DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.
- ⑪ CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX SLOPE IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL. M-1304.1 (OLD M-30.02).
- ⑫ STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
- ⑬ STRAINER. SEE CITY OF MESA APPROVED PRODUCTS LIST- WATER FOR APPROVED MODELS.
- ⑭ DIP SPACER, NO SPACER FOR 9" LONG STRAINER, L=1-1/2" FOR 7-1/2" LONG STRAINER.
- ⑮ MINIMUM 16" THICK CONTINUOUS CLASS B CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.



PLAN



SECTION

SEE COM DTL. M-1302.1 (OLD M-28.01.2) FOR REFERENCED NOTES

NOT TO SCALE

NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED IN TABLE BELOW.
2. DETAIL IS USED WHERE FIRE PROTECTION IS PROVIDED BY SEPARATE FACILITIES SUCH AS FIRE LINE DETECTORS OR A DIRECT FIRE LINE TO THE PROPERTY AND TYPICALLY FOR SITES SUCH AS HOTELS, MOTELS, INSTITUTIONS, FACTORIES, SCHOOLS, APARTMENT BUILDINGS, OFFICE BUILDINGS, ETC.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS](https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications).
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN THE WATER METER ASSEMBLY (WMA) AND OTHER OBJECTS SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL 140, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES, FITTINGS, AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372, BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 372.

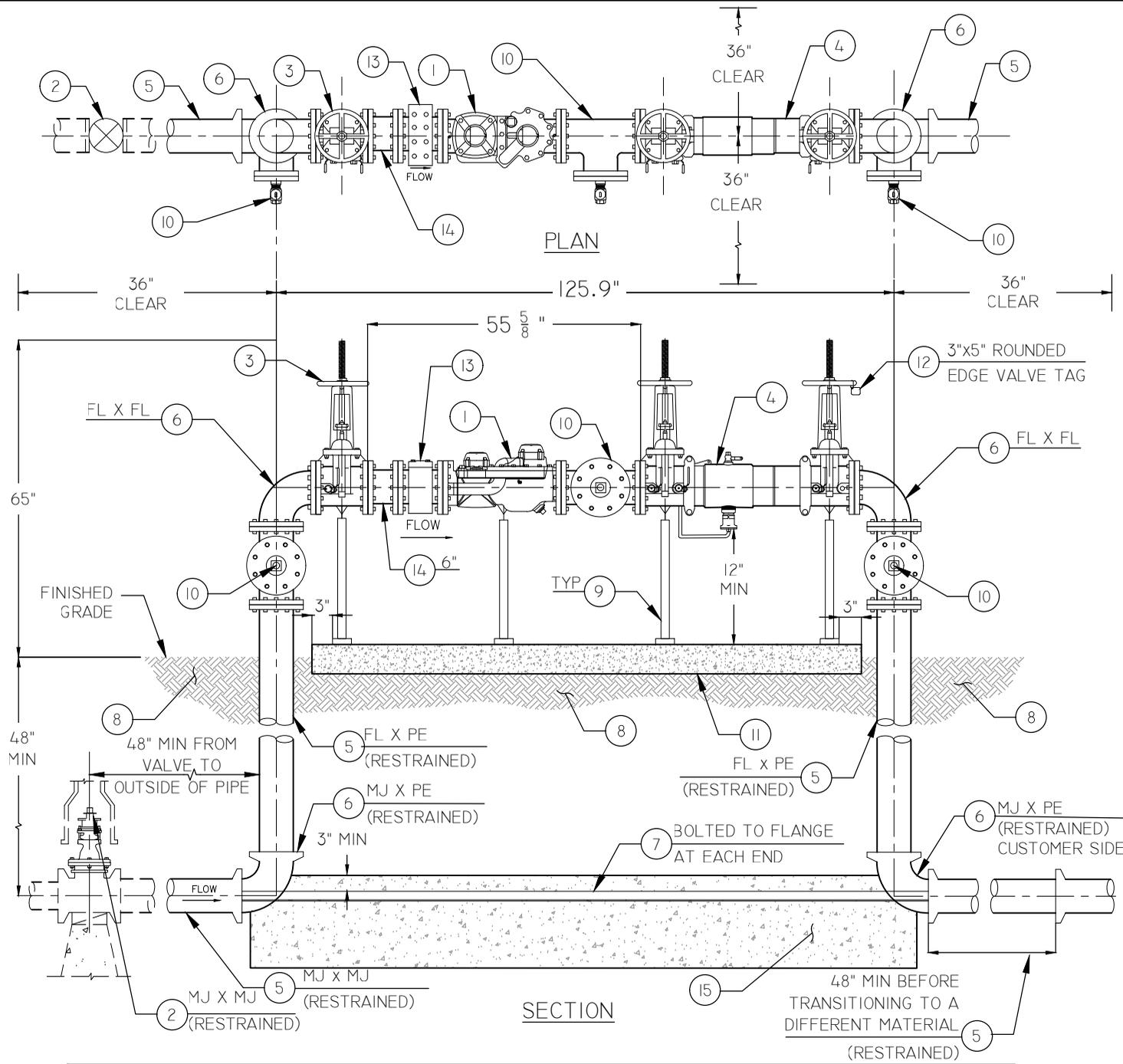
APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
NON-FIRE-RATED MECHANICAL	METER

METER DATA TABLE			
NON-FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY LENGTH	MIN FLOW	MAX FLOW
4"	42-1/2"	0.75 GPM	800 GPM

SEE COM DTL. M-1302
(OLD M-28.01.1)

METER ASSEMBLY KEY NOTES

- ① 6" SINGLE BADGER RECORDALL® COMPOUND SERIES (OR APPROVED EQUIVALENT) MECHANICAL METER. THE METER AND LISTED APPURTENANCES SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8 WEEKS FOR DELIVERY.
- ② WHERE A SINGLE DEDICATED VALVE FOR THE METER ASSEMBLY DOES NOT ALREADY EXIST, INSTALL A GATE VALVE AND VALVE BOX & COVER PER MAG DETAILS 301 AND 391 & 392 TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES ([HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)).
- ③ OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGE BY FLANGE GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS & Y RISING STEMS.
- ④ INSTALL BACKFLOW PREVENTION ASSEMBLY (BPA). THE BPA WILL BE EQUIPPED WITH OS & Y SHUT-OFF VALVES AS AN INTEGRAL PART OF THE APPROVED UNIT. CONTACT CITY OF MESA BACKFLOW PREVENTION AT (480) 644-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 13 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.
- ⑤ DIP PIPE.
- ⑥ DIP 90° ELBOW.
- ⑦ 2"x2"x1/4" ANGLE IRON THRUST RESTRAINT PER COM DTL. M-1304 (OLD M-30.01).
- ⑧ FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL (2% MAX SLOPE IN ANY DIRECTION) AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.
- ⑨ ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. SECURE SUPPORT BASE TO CONCRETE WITH WEDGE ANCHORS, 1/2" DIA X 4" MINIMUM LENGTH, TWO ANCHORS MINIMUM PER BASE. ONE SUPPORT REQUIRED PER EACH METER AND VALVE IN THE METER ASSEMBLY.
- ⑩ DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE AND 2" FORD B-II-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP. NON-LOOPED SYSTEMS ONLY.
- ⑪ CLASS B CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN. GRADE TO DRAIN 2% MAX SLOPE IN ANY DIRECTION. IF CAGE IS REQUIRED, CONCRETE BASE SHALL BE PER COM DTL. M-1304.1 (OLD M-30.02).
- ⑫ STAINLESS STEEL OR ANODIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #16 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.
- ⑬ STRAINER. SEE CITY OF MESA APPROVED PRODUCTS LIST-WATER FOR APPROVED MODELS.
- ⑭ DIP SPOOL.
- ⑮ MINIMUM 16" THICK CLASS B CONTINUOUS CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING 2"x2"x1/4" ANGLE IRON AS SHOWN. CONCRETE SHALL NOT COVER TOP FLANGE OF 90° ELBOW.



SEE COM DTL. M-1302.1 (OLD M-28.02.2) FOR REFERENCED NOTES

NOT TO SCALE

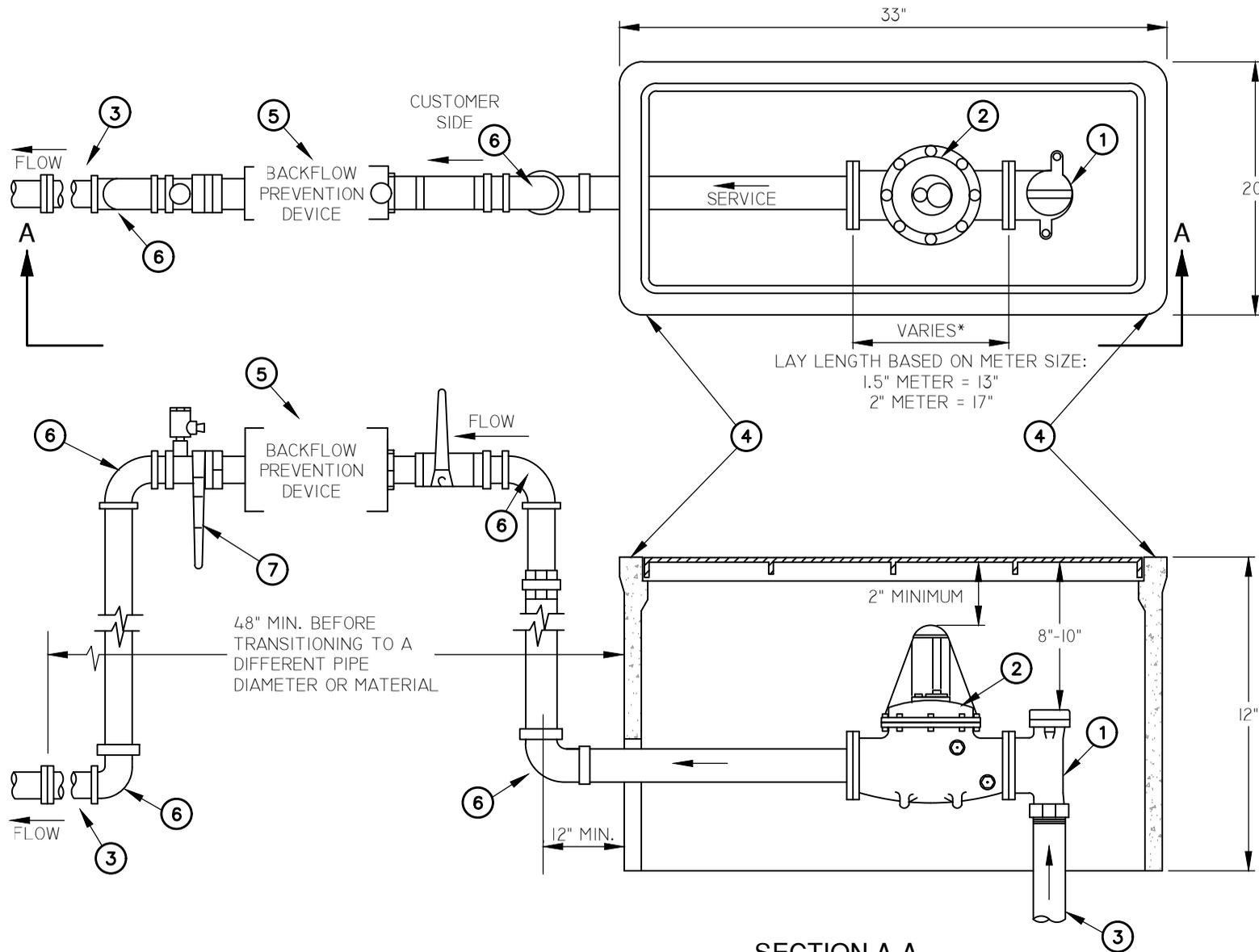
NOTES

1. THE MAX CONTINUOUS FLOW FOR THIS METER SHALL NOT EXCEED FLOW LISTED BELOW.
2. DETAIL IS USED WHERE FIRE PROTECTION IS PROVIDED BY SEPARATE FACILITIES SUCH AS FIRE LINE DETECTORS OR A DIRECT FIRE LINE TO THE PROPERTY AND TYPICALLY FOR SITES SUCH AS HOTELS, MOTELS, INSTITUTIONS, FACTORIES, SCHOOLS, APARTMENT BUILDINGS, OFFICE BUILDINGS, ETC.
3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS, WASHERS, AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 304 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN (RAL#1019). DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, BACKFLOW TEST PLUGS, OR STAINLESS STEEL BOLTS AND NUTS ON FLANGES ABOVE-GROUND. SOME BACKFLOW ASSEMBLY BODIES ARE ALSO STAINLESS STEEL AND ARE ALSO NOT TO BE PAINTED. FOLLOW MANUFACTURER RECOMMENDATIONS. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS](https://www.mesaaz.gov/business/engineering/mesa-standard-details-specifications).
5. CITY OF MESA LARGE WATER METERS (4" AND LARGER) SHALL BE LOCATED IN AN AREA ADJACENT TO OR IMMEDIATELY ACCESSIBLE FROM A PERMANENT VEHICULAR ACCESS ROAD, BUT NOT IN A TRAFFIC AREA.
6. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
7. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.
8. SCREENING (SECURITY CAGE) SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).
9. A 36-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.
10. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.
11. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT SERVICES DEPARTMENT AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES. CUSTOMER SHALL PROVIDE BACKFLOW ASSEMBLY, LABOR FOR ASSEMBLY, AND ALL PARTS NOT SPECIFICALLY LISTED BELOW. CITY OF MESA PROVIDES PARTS LISTED BELOW.
12. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480](https://www.mesaaz.gov/home/showdocument?id=5480) PRIOR TO THE REQUEST FOR FINAL INSPECTION.
13. WHEN REQUIRED, BOLLARDS SHALL BE INSTALLED PER MAG STANDARD DETAIL 140, TYPE I. THE CITY INSPECTOR WILL VERIFY/DIRECT WHETHER BOLLARDS ARE REQUIRED.
14. ALL PIPES AND APPURTENANCES SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER.
15. ALL COMPONENTS IN CONTACT WITH POTABLE WATER SHALL BE NSF/ANSI 61 AND NSF/ANSI 372. BRASS OR BRONZE COMPONENTS, COATINGS, ETC. SHALL BE LOW LEAD PER NSF/ANSI 372.

APPURTENANCES SUPPLIED BY CITY OF MESA	
METER TYPE	APPURTENANCES
NON-FIRE-RATED MECHANICAL	METER

METER DATA TABLE			
NON-FIRE-RATED MECHANICAL			
METER SIZE	METER ASSEMBLY LENGTH	MIN FLOW	MAX FLOW
6"	55-5/8"	1.5 GPM	1500 GPM

SEE COM DTL. M-1302.2
(OLD M-28.02.1)



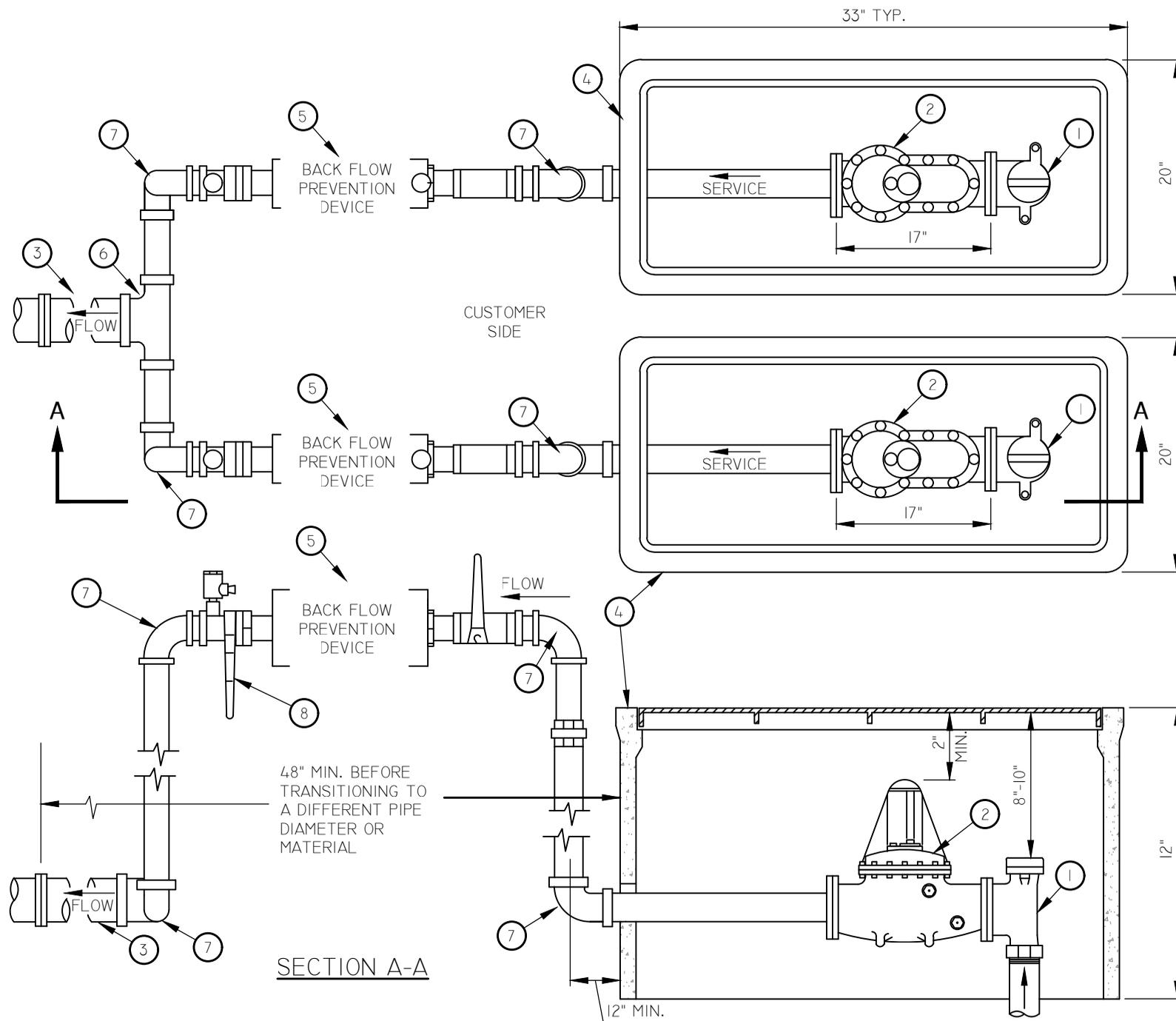
LIST OF MATERIALS

- ① 1 1/2" OR 2" ANGLE METER VALVE (LOCKING TYPE) - CITY SIDE OF INLET SERVICE LINE. (SEE COM DETAIL M-1308.1 OLD M-49.02)
- ② CITY OF MESA WILL PROVIDE AND INSTALL WATER METER. SEE NOTE 3 BELOW.
- ③ TYPE K COPPER (SEE COM DETAIL M-1308.1 OLD M-49.02).
- ④ WATER METER BOX AND LID ASSEMBLY PER APPROVED PRODUCTS LIST.
- ⑤ CITY APPROVED BACKFLOW PREVENTION ASSEMBLY PER COM DETAILS M-1305.2 (OLD M-31.03), OR M-1305.4 (OLD M-31.05) (DEPENDING ON THE TYPE OF DEVELOPMENT).
- ⑥ 2" COPPER 90° BEND SOLDERED.
- ⑦ ATTACH STAINLESS STEEL OR ANODIZED ALUMINUM TAG AT VALVE. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.

NOTES

1. TOP OF WATER METER SHALL BE A MINIMUM OF 2" BELOW UNDERSIDE OF COVER.
2. METERS SHALL NOT BE INSTALLED IN DRIVEWAYS OR IN A LOCATION INACCESSIBLE FOR MAINTENANCE.
3. ALL METERS SHALL BE OBTAINED FROM THE CITY OF MESA.
4. SEE COM DETAILS M-1308 THROUGH M-1308.2 (OLD M-49.01 THROUGH M-49.03) FOR INSTALLATION.
5. WATER METER SIZES 1 1/2" AND 2" MAY BE REDUCED ONE SIZE FROM AN EXISTING WATER SERVICE AND VALVE IF ADEQUATE TO SUPPLY THE FIXTURE COUNT DEMAND UPON APPROVAL OF DEVELOPMENT SERVICE BUILDING INSPECTION. THE PARTY REQUESTING THE REDUCTION SHALL BE RESPONSIBLE FOR THE COST OF INSTALLING AN APPROVED ADAPTER BETWEEN THE EXISTING SERVICE VALVE AND THE INLET OF THE WATER METER AND A MINIMUM OF 48" OF METER SIZE APPROVED PIPING DOWNSTREAM OF THE WATER METER. WHERE BACKFLOW PREVENTION IS REQUIRED THE BACKFLOW DEVICE MUST BE THE SAME SIZE AS THE REQUESTED WATER METER. THE LENGTH OF THE BACKFLOW PREVENTER AND ITS METER SIZE PIPING SHALL BE COUNTED AS PART OF THE REQUIRED 48" PIPING REDUCTION.
6. WATER METER BOX SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 6- FEET FROM TREES.

NOT TO SCALE



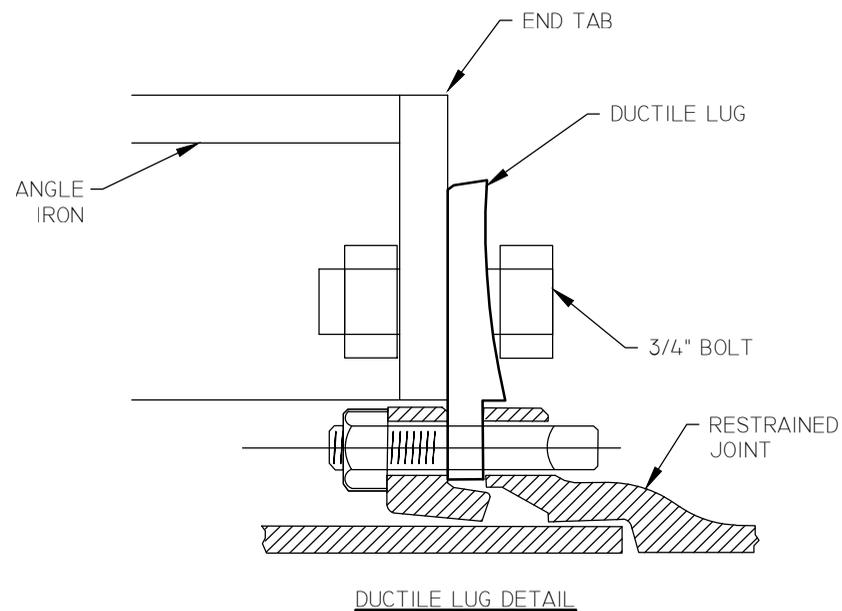
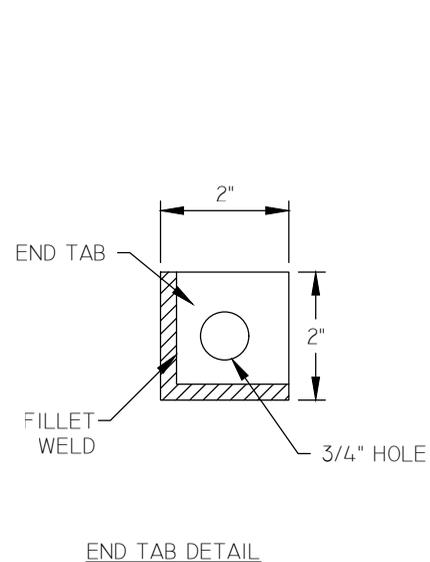
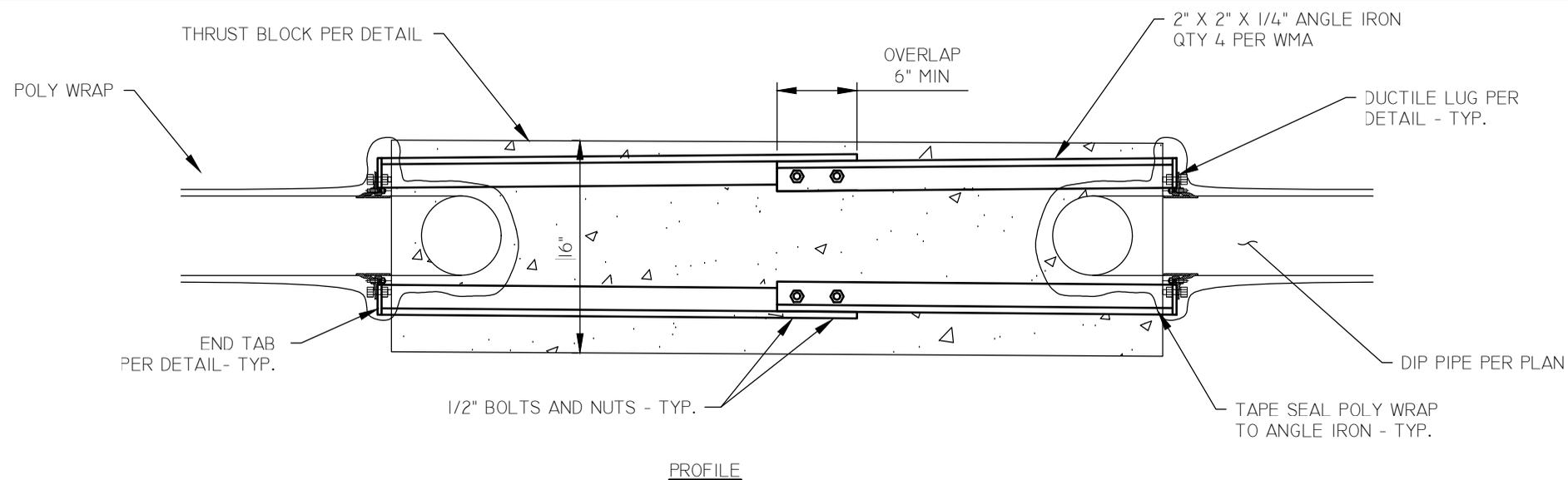
LIST OF MATERIALS

- ① 2" ANGLE METER VALVE (LOCKING TYPE) - CITY SIDE OF INLET SERVICE LINE. (SEE COM DETAIL M-1308.1 OLD M-49.02).
- ② CITY OF MESA WILL PROVIDE AND INSTALL WATER METER. SEE NOTE 3 BELOW.
- ③ 3" DIA. TYPE K COPPER WATER SERVICE PIPE. (SEE COM DETAIL M-1308.1 OLD M-49.02)
- ④ WATER METER BOX AND COVER PER COM DETAIL M-1303 (OLD M-29.01).
- ⑤ CITY-APPROVED BACKFLOW PREVENTION ASSEMBLY PER COM DETAILS M-1305.2 (OLD M-31.03).
- ⑥ 2"X3"X2" COPPER TEE SOLDERED
- ⑦ 2" COPPER 90° BEND SOLDERED
- ⑧ ATTACH STAINLESS STEEL OR ANODIZED ALUMINUM TAG AT VALVE. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.

NOTES

1. TOP OF WATER METER SHALL BE A MINIMUM OF 2" BELOW UNDERSIDE OF COVER.
2. METERS SHALL NOT BE INSTALLED IN DRIVEWAYS OR IN A LOCATION INACCESSIBLE FOR MAINTENANCE.
3. ALL METERS SHALL BE OBTAINED FROM THE CITY OF MESA.
4. SEE COM DETAILS M-1303 (OLD M-29.01) AND M-1308 THROUGH M-1308.2 (OLD M-49.01 THROUGH M-49.03) FOR INSTALLATION.
5. PRIOR TO THE APPROVAL AND INSTALLATION OF PARALLEL 2" WATER METERS, CALCULATIONS SHALL BE PROVIDED TO THE WATER RESOURCES DEPARTMENT ESTABLISHING PROPOSED METER SIZES PER CITY OF MESA ENGINEERING AND DESIGN STANDARDS 317.25

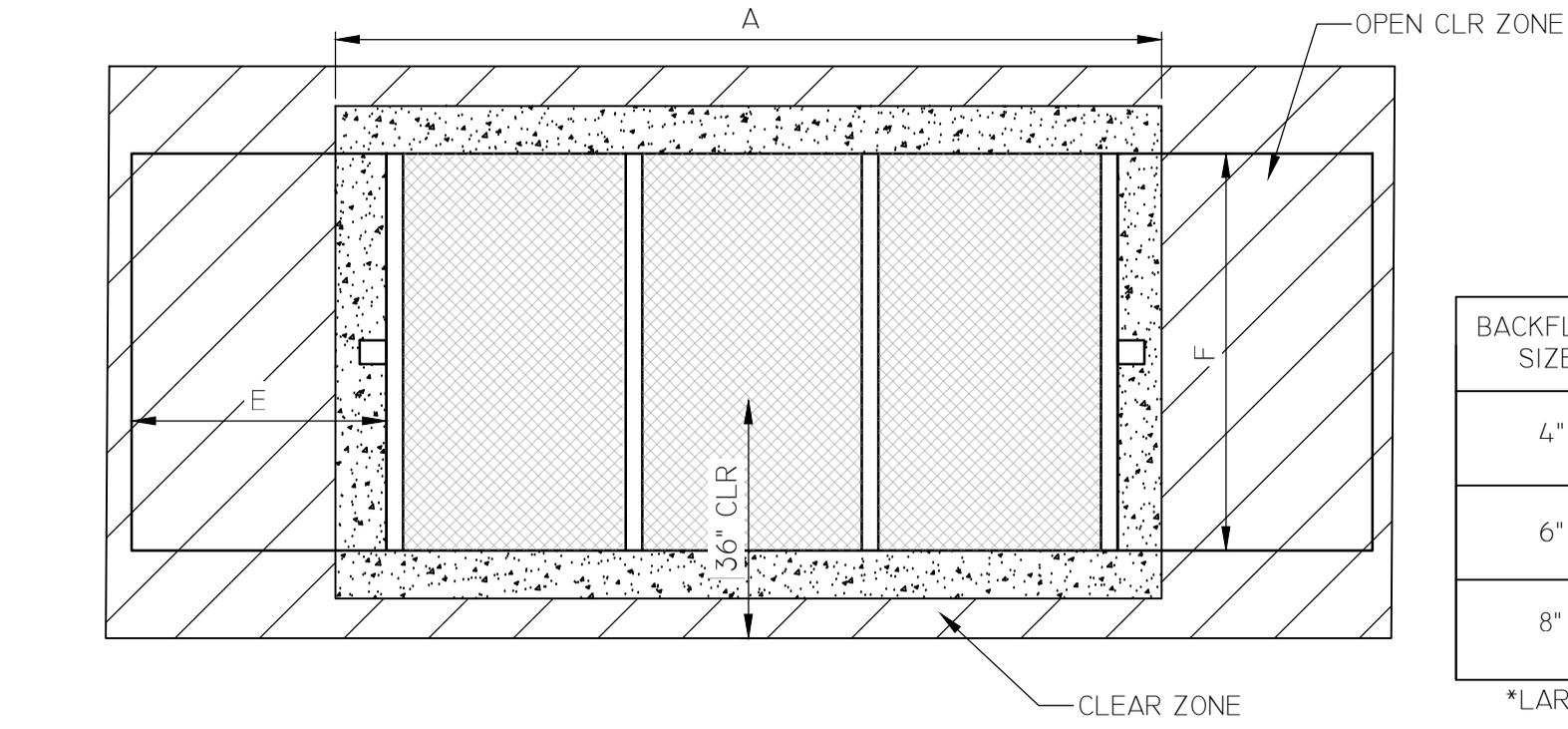
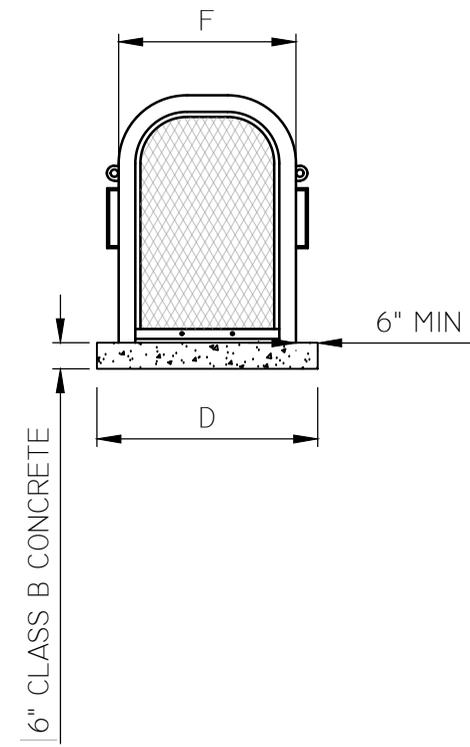
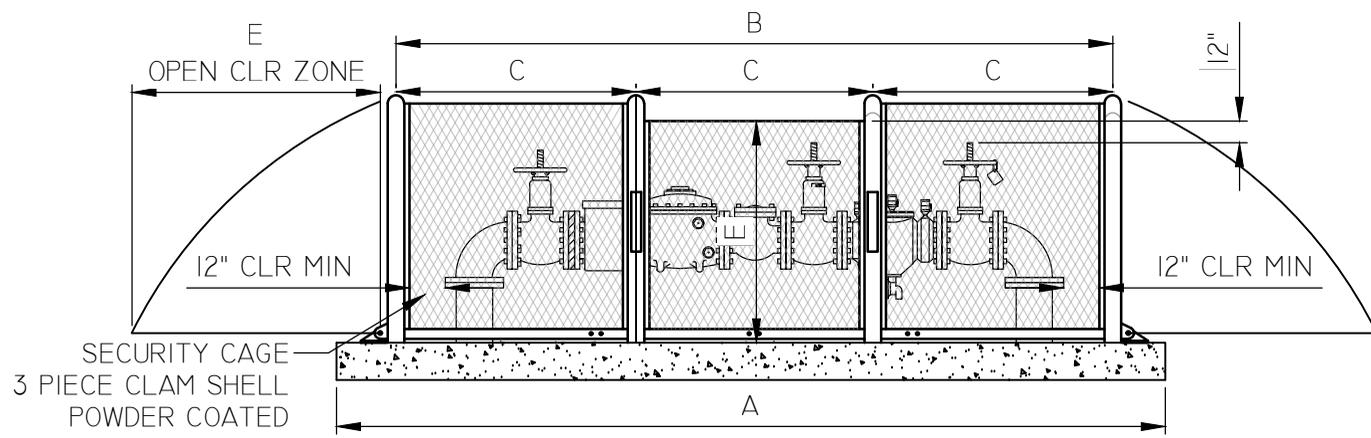
NOT TO SCALE



NOTES:

1. CONTRACTOR SHALL CUT ANGLE IRON FINAL LENGTH AND DRILL BOLT HOLES IN FIELD.
2. ANGLE IRON THRUST SUPPORTS DO NOT REQUIRE COATING OR PAINT.
3. THRUST BLOCK SHALL NOT COVER BOLTS.

NOT TO SCALE



BACKFLOW SIZE	A	B	C	D	E	F
4"	139"	127"	47"	60"	63"	48"
6"	169"	157"	*43"	66"	77"	54"
8"	192"	180"	*48"	72"	96"	60"

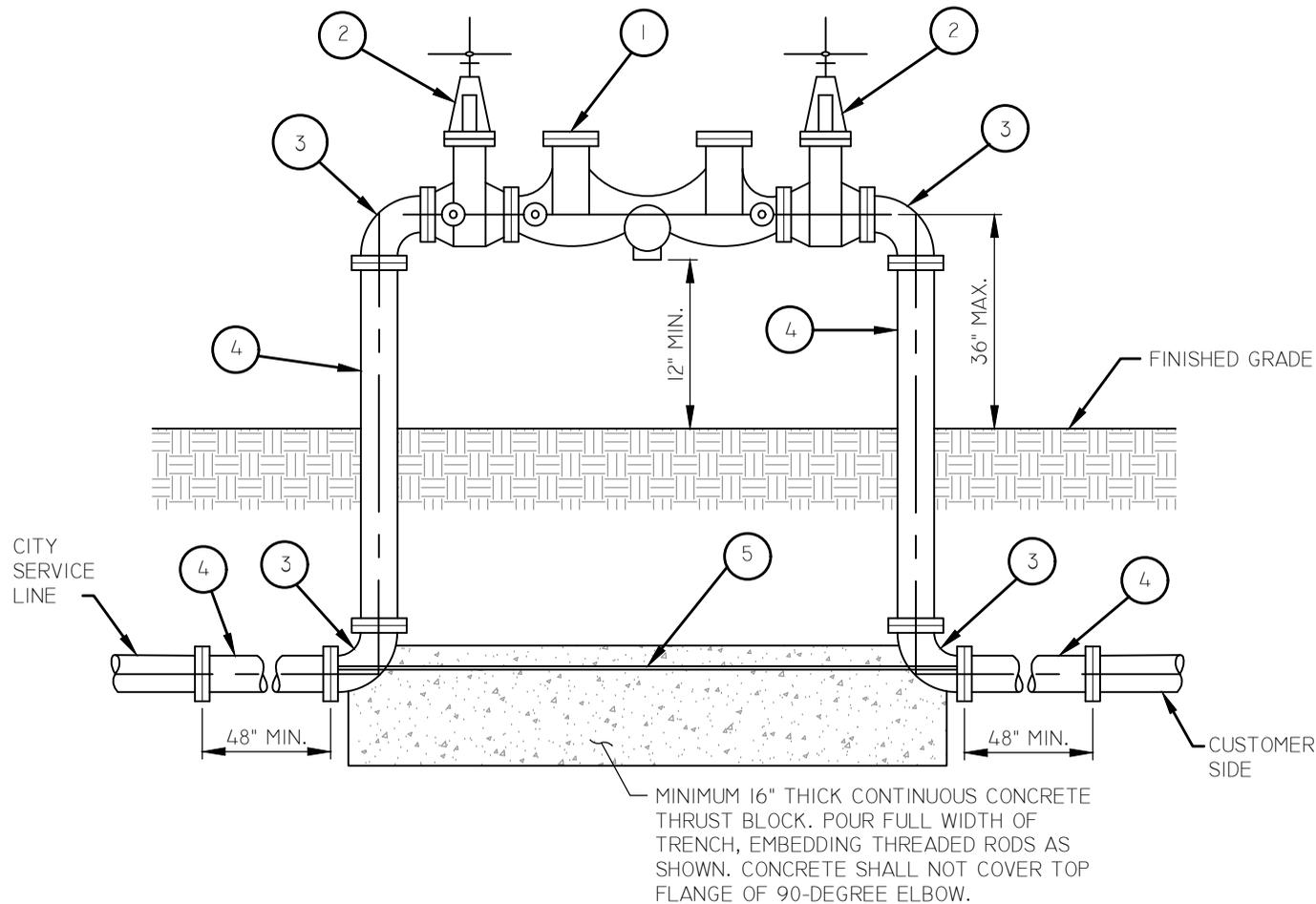
*LARGER METER WILL BE 4 PIECE CLAM SHELL

NOT TO SCALE

SECURITY CAGE, THREE PIECE CLAMSHELL

OLD
M-30.02

DETAIL NO.
M-1304.1



REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

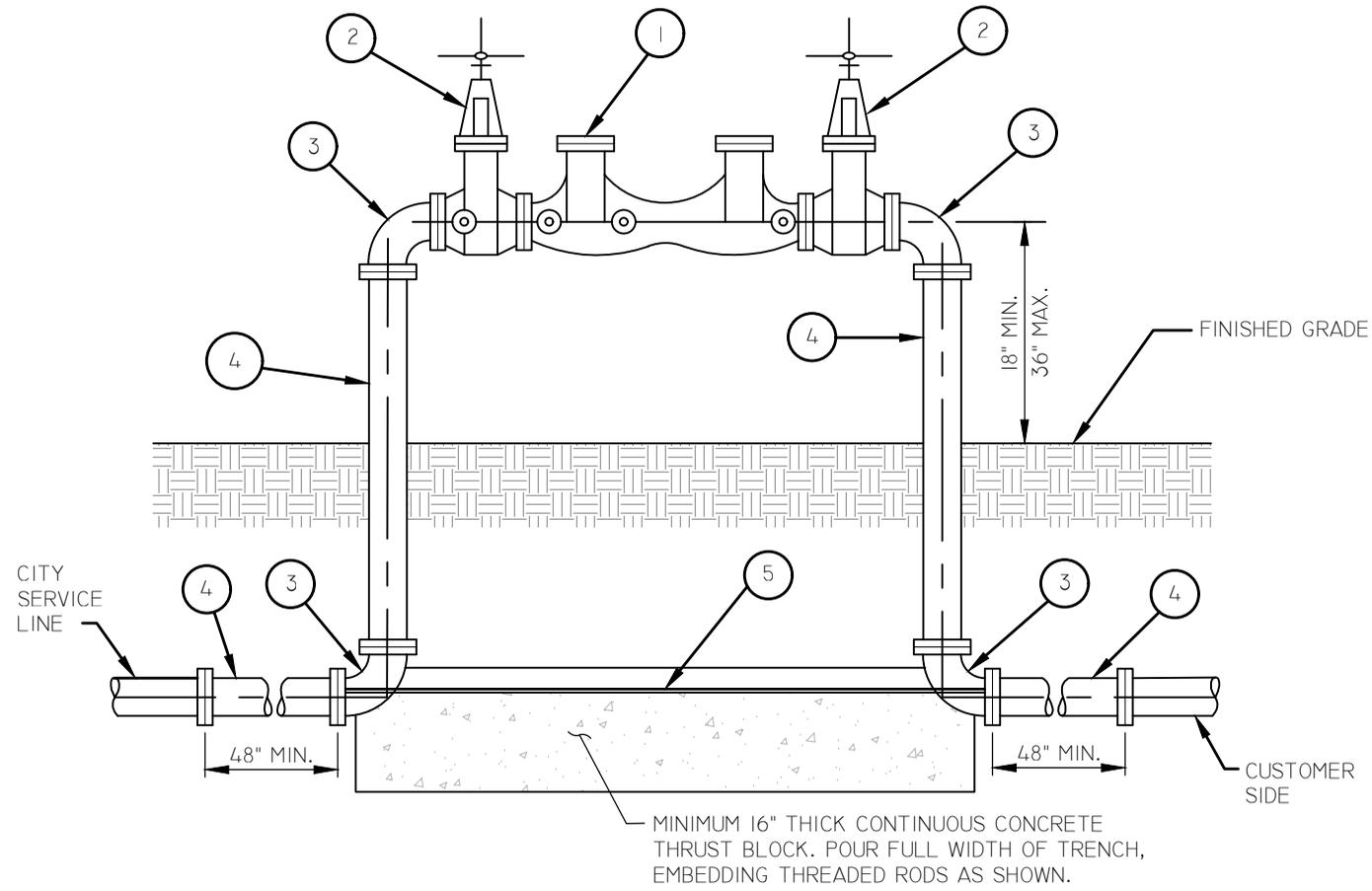
LIST OF MATERIALS

- | | |
|--|---|
| <p>1 APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.</p> <p>2 RESILIENT SEATED GATE VALVE. O.S. & Y. (FIRE LINE CONNECTION) N.R.S. (NON FIRE LINE)</p> <p>3 90° ELL. FLANGED D.I.P. 2 1/2" THROUGH 10"</p> | <p>4 PIPE SPOOL. COPPER 2.5"- 3" OR FLANGE BY FLANGE D.I.P. 4"- 10".</p> <p>5 ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN, TYPICAL BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.</p> |
|--|---|

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL.
 2. ALL BACKFLOW PREVENTIVE DEVICES SHALL BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" OF THE UNIVERSITY OF SOUTHERN CALIFORNIA AND THE CITY OF MESA WATER RESOURCES DEPARTMENT.
 3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462](https://www.mesaaz.gov/home/showdocument?id=5462), PRIOR TO THE REQUEST FOR FINAL INSPECTION.
 4. BACKFLOW ASSEMBLIES SHALL BE PAINTED LIGHT TAN OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE, STAINLESS STEEL BODY, OR ANY BRASS PARTS OF THE ASSEMBLY.
 5. INSTALL BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
 6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL M-1306 (OLD M-32).
 7. FINISHED GRADE UNDER THE BACKFLOW ASSEMBLY SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
 8. BACKFLOW ASSEMBLIES ON FIRE LINES MAY REQUIRE TAMPER SWITCHES ON THE SHUT OFF VALVES. CONTACT CITY OF MESA FIRE PREVENTION FOR SPECIFIC REQUIREMENTS.
 9. PROVIDE 24-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES.
 10. THIS DETAIL IS INTENDED FOR HIGH HAZARD DOMESTIC AND LANDSCAPE SERVICE PROTECTION. IT ALSO APPLIES TO DEDICATED FIRE LINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.
- II. SCREENING (SECURITY CAGE) SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOT TO SCALE



DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

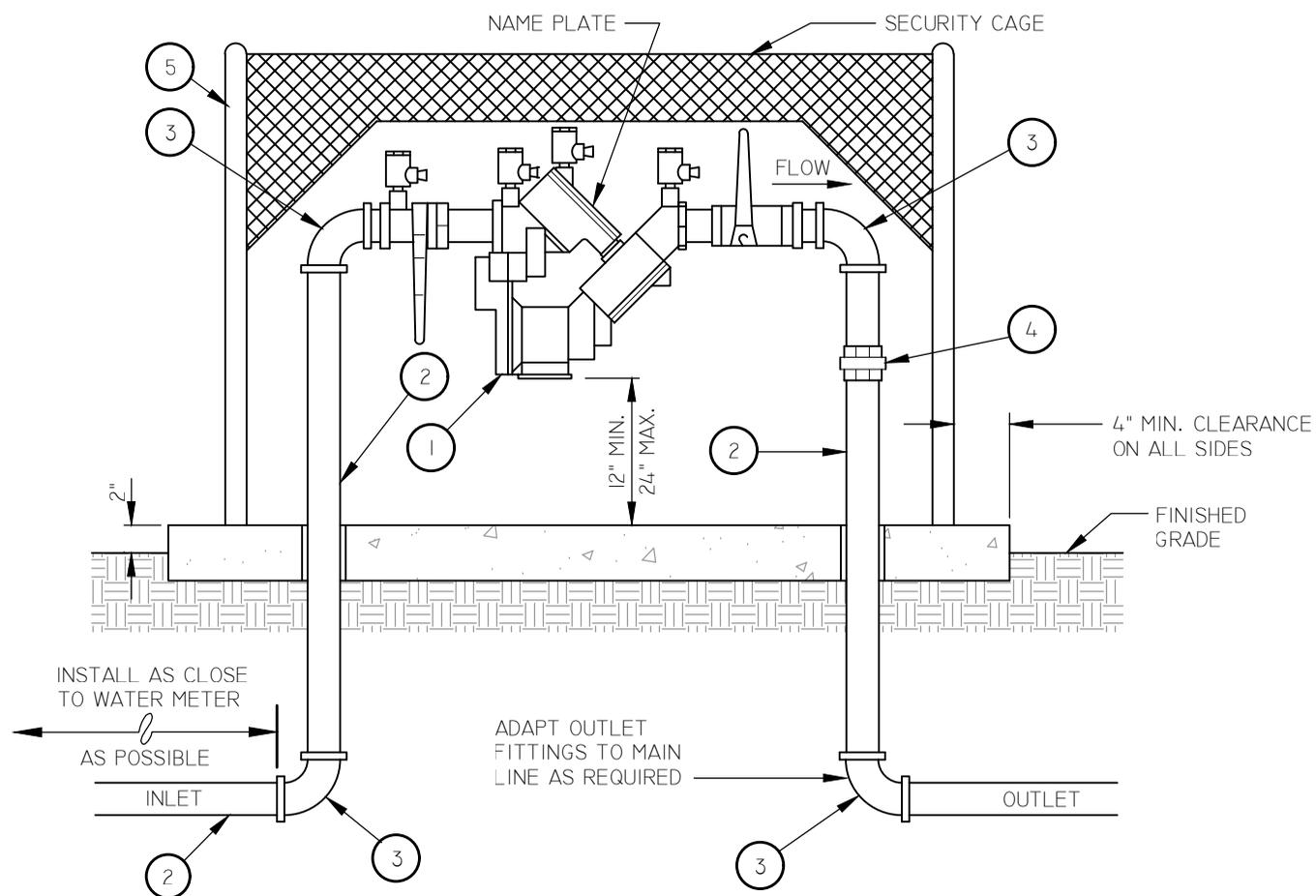
LIST OF MATERIALS

- | | |
|--|---|
| <p>1 APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.</p> <p>2 RESILIENT SEATED GATE VALVE. O.S. & Y. (FIRE LINE CONNECTION) N.R.S. (NON FIRE LINE)</p> <p>3 90° ELL. FLANGED D.I.P. 2 1/2" THROUGH 10"</p> | <p>4 PIPE SPOOL. COPPER 2.5"- 3' OR FLANGE BY FLANGE D.I.P. 4"- 10".</p> <p>5 ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN, TYPICAL BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BLOT DIAMETER FOR CONNECTING FLANGES.</p> |
|--|---|

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL.
2. ALL BACKFLOW PREVENTIVE DEVICES SHALL BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" OF THE UNIVERSITY OF SOUTHERN CALIFORNIA AND THE CITY OF MESA WATER RESOURCES DEPARTMENT.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462](https://mesaz.gov/home/showdocument?id=5462), PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. BACKFLOW ASSEMBLIES SHALL BE PAINTED LIGHT TAN OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE, STAINLESS STEEL BODY, OR ANY BRASS PARTS OF THE ASSEMBLY.
5. INSTALL A BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL M-1306 (OLD M-32).
7. FINISHED GRADE UNDER THE BACKFLOW ASSEMBLIES SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
8. VALVE HAND WHEELS SHALL BE LOCKED IN THE OPEN POSITION WITH A PADLOCK AND CHAIN. FIRE PROTECTION ASSEMBLIES MAY BE ELECTRONICALLY MONITORED IN ACCORDANCE WITH NFPA 72.
9. PROVIDE 24-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES.
10. THIS DETAIL IS INTENDED FOR LOW HAZARD DOMESTIC SERVICE PROTECTION AND FIRE LINES WITH EXTERIOR ASSEMBLIES. A REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY MUST BE INSTALLED IF CHEMICAL ADDITIVES ARE INJECTED ANYWHERE DOWNSTREAM OR AN AUXILIARY WATER SOURCE IS CONNECTED.
11. SCREENING (SECURITY CAGE) SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOT TO SCALE



REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

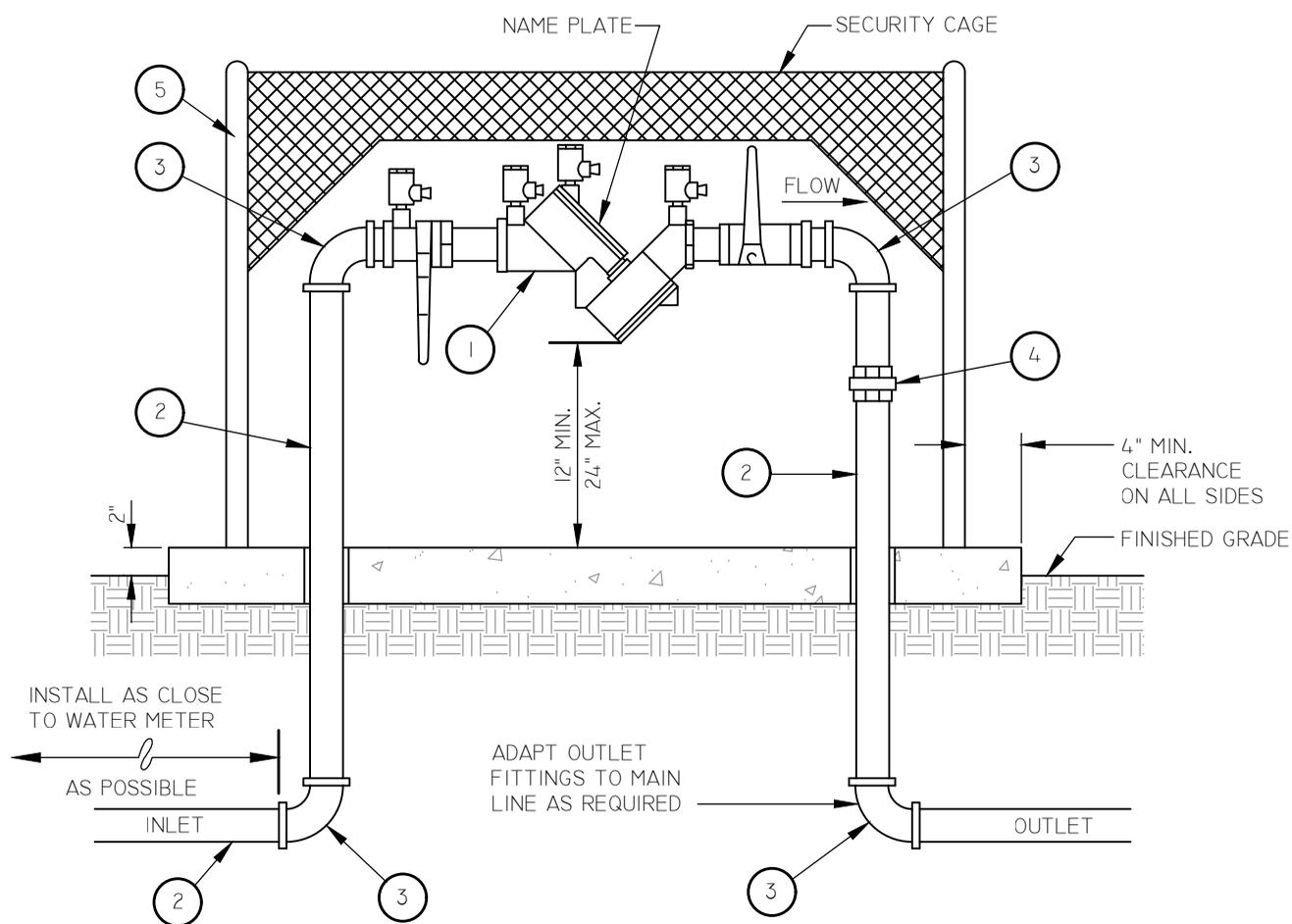
LIST OF MATERIALS

- 1 APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY, BALL VALVES INCLUDED
- 2 TYPE "L" COPPER PIPE, 3/4" THROUGH 2" FROM THE METER TO THE ASSEMBLY.
- 3 90° ELL, COPPER, 3/4" THROUGH 2"
- 4 PIPE UNION, BRASS OR COPPER
- 5 BACKFLOW ASSEMBLY CAGE FOR 1.5" AND 2".

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL.
2. ALL BACKFLOW PREVENTIVE DEVICES SHALL BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" OF THE UNIVERSITY OF SOUTHERN CALIFORNIA AND THE CITY OF MESA WATER RESOURCES DEPARTMENT.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462](https://www.mesaaz.gov/home/showdocument?id=5462), PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDERED ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 96). THE FLUX SHALL BE TYPE OA FOR GENERAL SOLDERING ON COPPER.
5. INSTALL A BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
6. FINISHED GRADE UNDER THE BACKFLOW ASSEMBLY SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
7. PROVIDE 12-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES OR LANDSCAPE VEGETATION.
8. FOR OUTSIDE INSTALLATIONS, BACKFLOW ASSEMBLY AND COPPER PIPE SHALL BE PAINTED DARK GREEN. THE NAME PLATE IS NOT TO BE PAINTED.
9. BACKFLOW ASSEMBLIES INSTALLED ON A CONCRETE PAD WILL HAVE THE COPPER PIPE WRAPPED OR SLEEVED WHERE IT PENETRATES THE CONCRETE.
10. SCREENING (SECURITY CAGE) SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)
11. COPPER, BRASS, AND BRONZE FITTINGS, AND SOLDER IN CONTACT WITH POTABLE WATER SHALL BE NO-LEAD AND NSF-61 AND NSF-372 CERTIFIED.
12. CAGE COMBINATION LOCKS SHALL BE PROVIDED BY THE CONTRACTOR FOR EACH CAGE. THE COMBINATION SHALL BE PROVIDED TO THE ENGINEERING INSPECTOR AND WATER RESOURCES DEPARTMENT.

NOT TO SCALE



DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

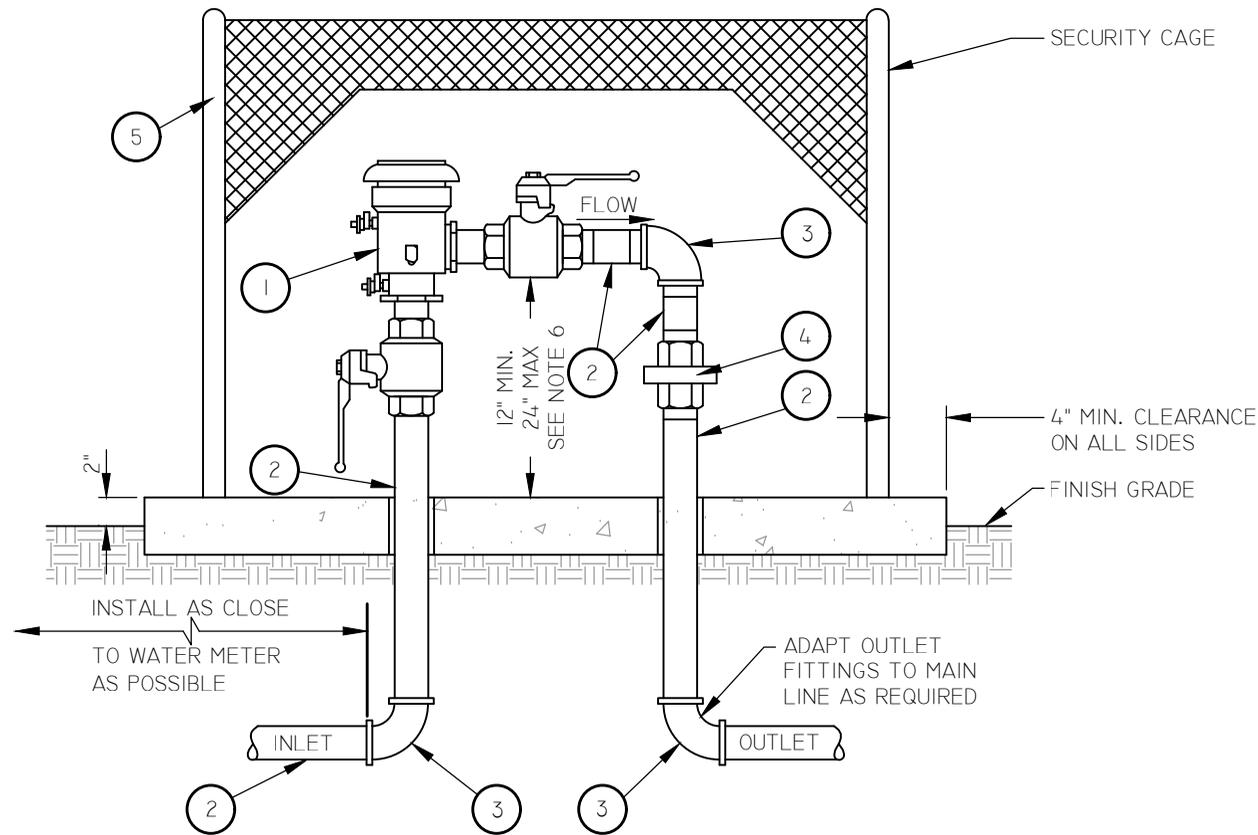
LIST OF MATERIALS

- 1 APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY, BALL VALVES INCLUDED
- 2 TYPE "L" COPPER PIPE, 3/4" THROUGH 2" FROM THE METER TO THE ASSEMBLY
- 3 90° ELL, COPPER, 3/4" THROUGH 2"
- 4 PIPE UNION, BRASS OR COPPER
- 5 BACKFLOW ASSEMBLY CAGE FOR 1.5" AND 2"

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL.
2. ALL BACKFLOW PREVENTIVE DEVICES SHALL BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" OF THE UNIVERSITY OF SOUTHERN CALIFORNIA AND THE CITY OF MESA WATER RESOURCES DEPARTMENT.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462](https://www.mesaz.gov/home/showdocument?id=5462), PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 96). THE FLUX SHALL BE TYPE OA FOR GENERAL SOLDERING ON COPPER.
5. INSTALL A BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
6. FINISHED GRADE UNDER THE BACKFLOW ASSEMBLY SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
7. PROVIDE 12-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES OR LANDSCAPE VEGETATION.
8. FOR OUTSIDE INSTALLATIONS, BACKFLOW ASSEMBLY AND COPPER PIPE SHALL BE PAINTED DARK GREEN. THE DEVICE NAME IS NOT TO BE PAINTED.
9. BACKFLOW ASSEMBLIES INSTALLED ON A CONCRETE PAD WILL HAVE THE COPPER PIPE WRAPPED OR SLEEVED WHERE IT PENETRATES THE CONCRETE.
10. SCREENING (SECURITY CAGE) SHALL BE AS REQUIRED BY CITY OF MESA PLANNING DIVISION. (NOT SHOWN)
11. COPPER, BRASS, AND BRONZE FITTINGS, AND SOLDER IN CONTACT WITH POTABLE WATER SHALL BE NO-LEAD AND NSF-61 AND NSF-372 CERTIFIED.
12. COMBINATION LOCKS SHALL BE PROVIDED BY THE CONTRACTOR FOR EACH CAGE. THE COMBINATION SHALL BE PROVIDED TO THE ENGINEERING INSPECTOR AND WATER RESOURCES DEPARTMENT.

NOT TO SCALE



PRESSURE VACUUM BREAKER ASSEMBLY

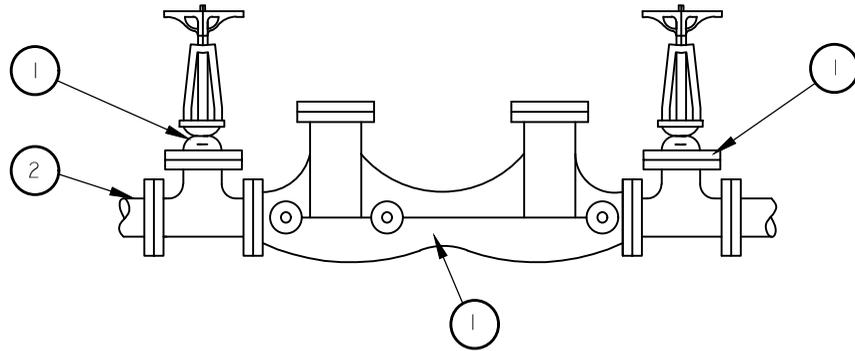
LIST OF MATERIALS

- ① APPROVED PRESSURE VACUUM BREAKER ASSEMBLY, BALL VALVES INCLUDED.
- ② TYPE "L" COPPER PIPE, 3/4" THROUGH 2" FROM METER TO ASSEMBLY.
- ③ 90° ELL, COPPER, 3/4" THROUGH 2".
- ④ PIPE UNION, BRASS OR COPPER.
- ⑤ BACKFLOW ASSEMBLY CAGE FOR 1.5" AND 2".

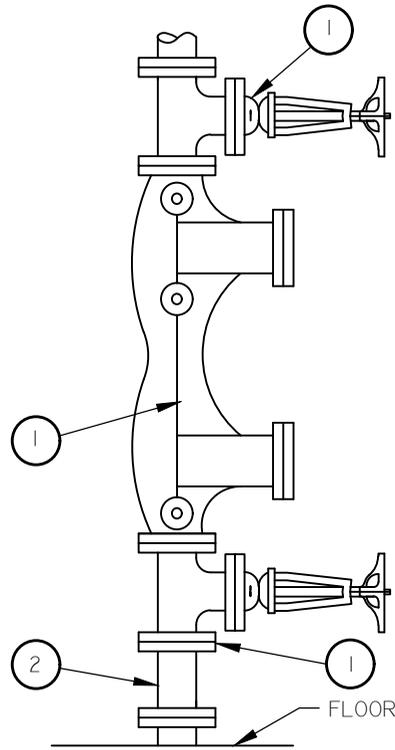
NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL.
2. ALL BACKFLOW PREVENTIVE DEVICES SHALL BE APPROVED BY THE "FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH" OF THE UNIVERSITY OF SOUTHERN CALIFORNIA AND THE CITY OF MESA WATER RESOURCES DEPARTMENT.
3. THE BACKFLOW ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: [HTTPS://WWW.MESA.AZ.GOV/HOME/SHOWDOCUMENT?ID=5462](https://www.mesaaz.gov/home/showdocument?id=5462), PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, AND SN 96). THE FLUX SHALL BE TYPE OA FOR GENERAL SOLDERING ON COPPER.
5. INSTALL A BRASS PIPE PLUG IN EACH TEST COCK ON THE ASSEMBLY.
6. PRESSURE VACUUM BREAKERS MUST BE INSTALLED AT LEAST 12-INCHES ABOVE ALL DOWNSTREAM PIPING AND THE HIGHEST OUTLET ON THE SYSTEM. IF THIS DISTANCE EXCEEDS 24-INCHES, A REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY MUST BE UTILIZED. SEE COM DETAIL M-1305.2 (OLD M-31.03).
7. FINISHED GRADE UNDER THE BACKFLOW ASSEMBLY SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY.
8. PROVIDE 12-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES OR LANDSCAPE VEGETATION.
9. FOR OUTSIDE INSTALLATIONS, BACKFLOW ASSEMBLIES AND COPPER PIPE SHALL BE PAINTED DARK GREEN. THE DEVICE NAME IS NOT TO BE PAINTED.
10. BACKFLOW ASSEMBLIES INSTALLED ON A CONCRETE PAD WILL HAVE THE COPPER PIPE WRAPPED OR SLEEVED WHERE IT PENETRATES THE CONCRETE.
11. SCREENING (SECURITY CAGE) SHALL BE AS REQUIRED BY CITY OF MESA PLANNING DIVISION. (NOT SHOWN)
12. COPPER, BRASS, AND BRONZE FITTINGS, AND SOLDER IN CONTACT WITH POTABLE WATER SHALL BE NO-LEAD AND NSF-61 AND NSF-372 CERTIFIED.
13. CAGE COMBINATION LOCKS SHALL BE PROVIDED BY THE CONTRACTOR FOR EACH CAGE. THE COMBINATION SHALL BE PROVIDED TO THE ENGINEERING INSPECTOR AND WATER RESOURCES DEPARTMENT.

NOT TO SCALE



HORIZONTAL ORIENTATION



VERTICAL ORIENTATION

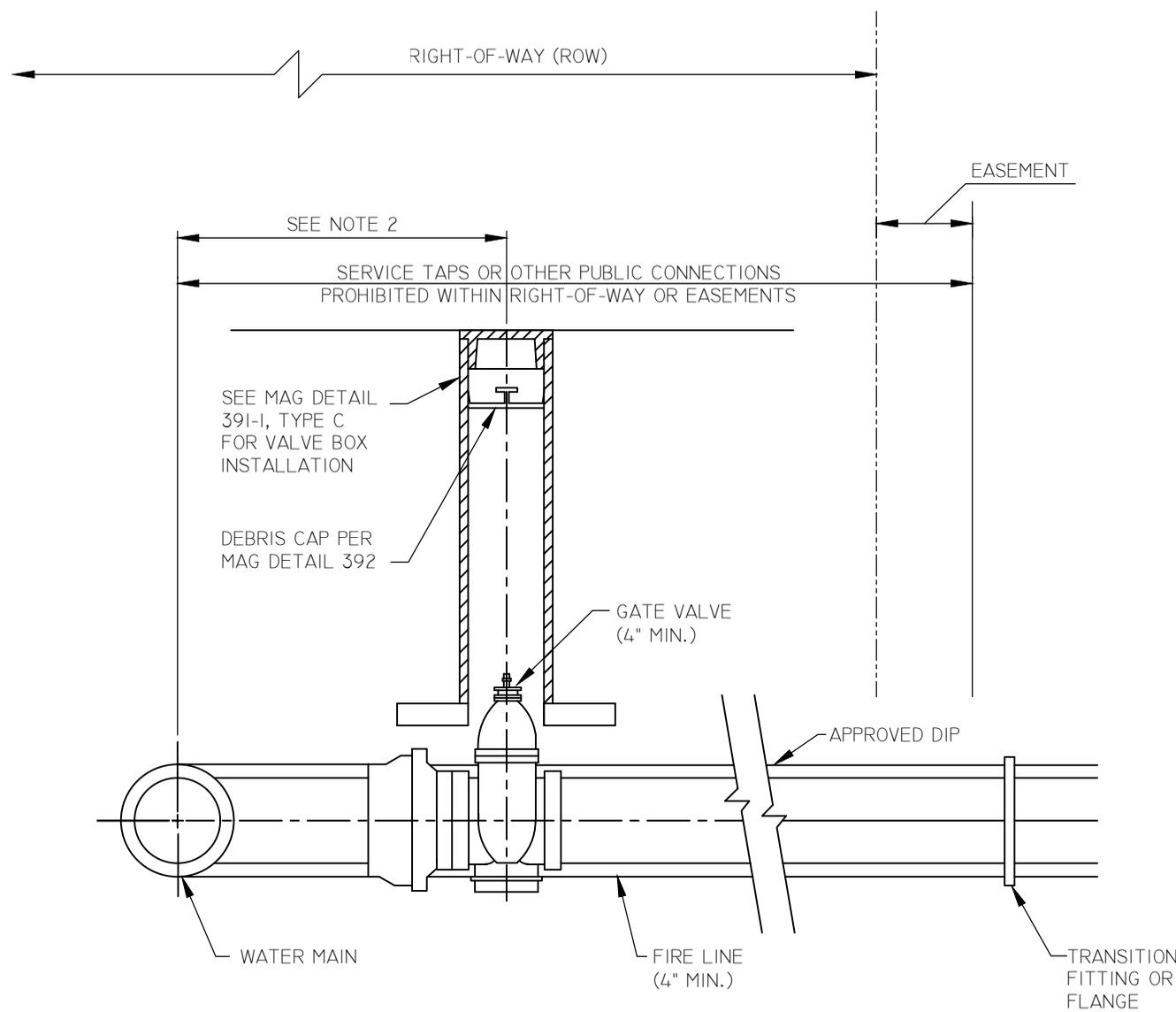
LIST OF MATERIALS

- ① DOUBLE CHECK VALVE ASSEMBLY SHALL BE USCFCCHR APPROVED AND EITHER U.L. LISTED OR FM APPROVED.
- ② SUPPLY PIPE MATERIALS AND INSTALLATION SHALL COMPLY WITH NFPA 13. PIPE IN ROW SHALL BE DUCTILE IRON.

NOTES

1. ASSEMBLY SHALL BE TESTED FOR PROPER OPERATION PER COM REQUIREMENTS BY A CERTIFIED TESTER RECOGNIZED BY THE CITY BEFORE A FINAL APPROVAL IS ISSUED.
2. CONTACT CITY OF MESA WATER QUALITY BACKFLOW AT (480) 644-6462 WITH MAKE AND MODEL OF BACKFLOW ASSEMBLY FOR APPROVAL. FIND THE LATEST CERTIFIED TESTERS LIST AT: [HTTPS://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480.](https://www.mesaaaz.gov/home/showdocument?id=5480)
3. CONTACT COM BUILDING SAFETY DIVISION, FIRE PLAN REVIEW FOR FIRE PREVENTION CODE REQUIREMENTS.
4. PROVIDE 12-INCH MINIMUM CLEARANCE BETWEEN ASSEMBLY PIPING & STRUCTURES.
5. LOCATION OF ASSEMBLY SHALL BE AS APPROVED BY BUILDING INSPECTIONS.
6. THIS DETAIL IS FOR INTERIOR FIRE RISER APPLICATIONS ONLY. EXTERIOR ASSEMBLIES SHALL BE INSTALLED PER COM DETAIL M-1305.1 (OLD M-31.02).
7. THIS DETAIL DOES NOT APPLY TO FIRE SYSTEMS THAT USE ADDITIVES, OR THAT HAVE CONNECTIONS TO AUXILIARY WATER. A FIRE SYSTEM OF THIS TYPE WILL REQUIRE THE INSTALLATION OF A REDUCED PRESSURE BACKFLOW ASSEMBLY.

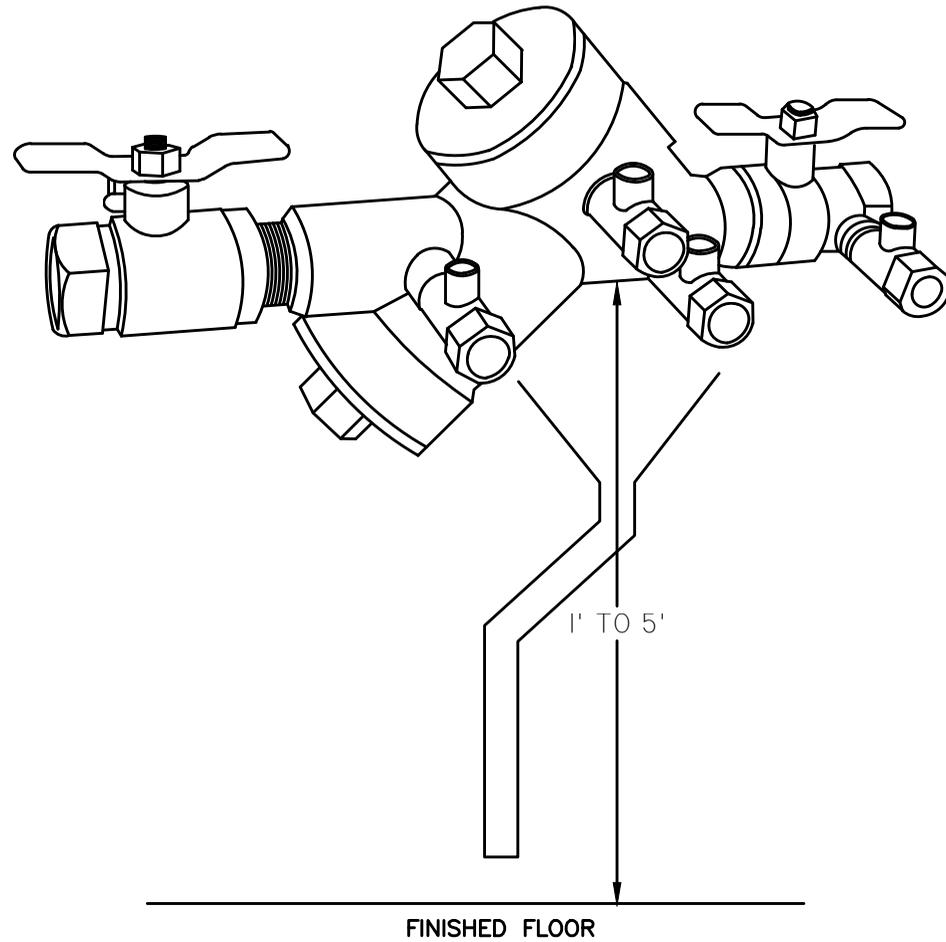
NOT TO SCALE



NOTES

1. AN APPROVED VALVE BOX ASSEMBLY WITH "DEBRIS CAP" SHALL BE INSTALLED ON ALL FIRE LINES PER MAG DETAIL 391-I, TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST AT: [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors), FOR APPROVED VALVES AND VALVE BOXES.
2. VALVES SHALL BE INSTALLED AS NEAR AS PRACTICAL TO POINT OF TAKE-OFF FROM MAIN.
3. VALVES SHALL MEET OR EXCEED REQUIREMENTS OF MAG SECTION 630 AS AMENDED BY THE CITY OF MESA AND SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 200 PSIG. VALVE SHALL BE A GATE VALVE WITH A 2" SQUARE OPERATING NUT AND DESIGNED TO PREVENT CLOSURE IN LESS THAN FIVE (5) SECONDS FROM FULL OPEN POSITION.
4. VALVES SHALL BE SAME SIZE AS FIRE LINE. IN NO CASE SHALL THE VALVE BE SMALLER THAN 4". ON FIRE LINES SMALLER THAN 4", THE LINE SHALL NOT BE REDUCED TO SMALLER THAN 4" UNTIL BEYOND THE RIGHT-OF-WAY OR EASEMENT IF AN EASEMENT EXISTS.
5. THE PORTION OF FIRE LINE LOCATED IN AN EASEMENT OR ROW SHALL BE APPROVED DIP ONLY. OWNER MAY INSTALL OTHER SUITABLE FIRE LINE MATERIALS APPROVED BY THE BUILDING SAFETY DEPT. FOR LINE BEYOND EASEMENT OR ROW. IN THIS CASE, AN APPROVED TRANSITION FITTING OR FLANGE SHALL BE INSTALLED BEYOND THE ROW OR EASEMENT IF AN EASEMENT EXISTS. DIP PIPE AND FITTINGS SHALL BE PER WATER RESOURCES APPROVED PRODUCTS LIST, SEE [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors).
6. OWNER OF FIRE LINE SHALL BE RESPONSIBLE FOR LOCATING, REPAIRING, REPLACING, MOVING, OR MODIFYING TRANSITION FITTING AND ALL PIPING BEYOND THE EASEMENT OR ROW.
7. THE CITY SHALL BE RESPONSIBLE FOR LOCATING, REPAIRING, REPLACING, MOVING, OR MODIFYING THE FIRE LINE AND ANY FIRE HYDRANTS LOCATED IN THE EASEMENT OR ROW.
8. ALL PIPE AND FITTINGS UP TO THE ON SITE BACKFLOW PREVENTER OR FIRE RISER ROOM SHALL BE PRESSURE TESTED AND DISINFECTED PER AWWA C651, MAG SPECIFICATION SECTION 611, AND MESA AMENDMENTS TO MAG SPECIFICATION SECTION 611.
9. SERVICE LINE TAPS OR OTHER PUBLIC CONNECTIONS TO FIRE LINES ARE PROHIBITED.

NOT TO SCALE



NOTES

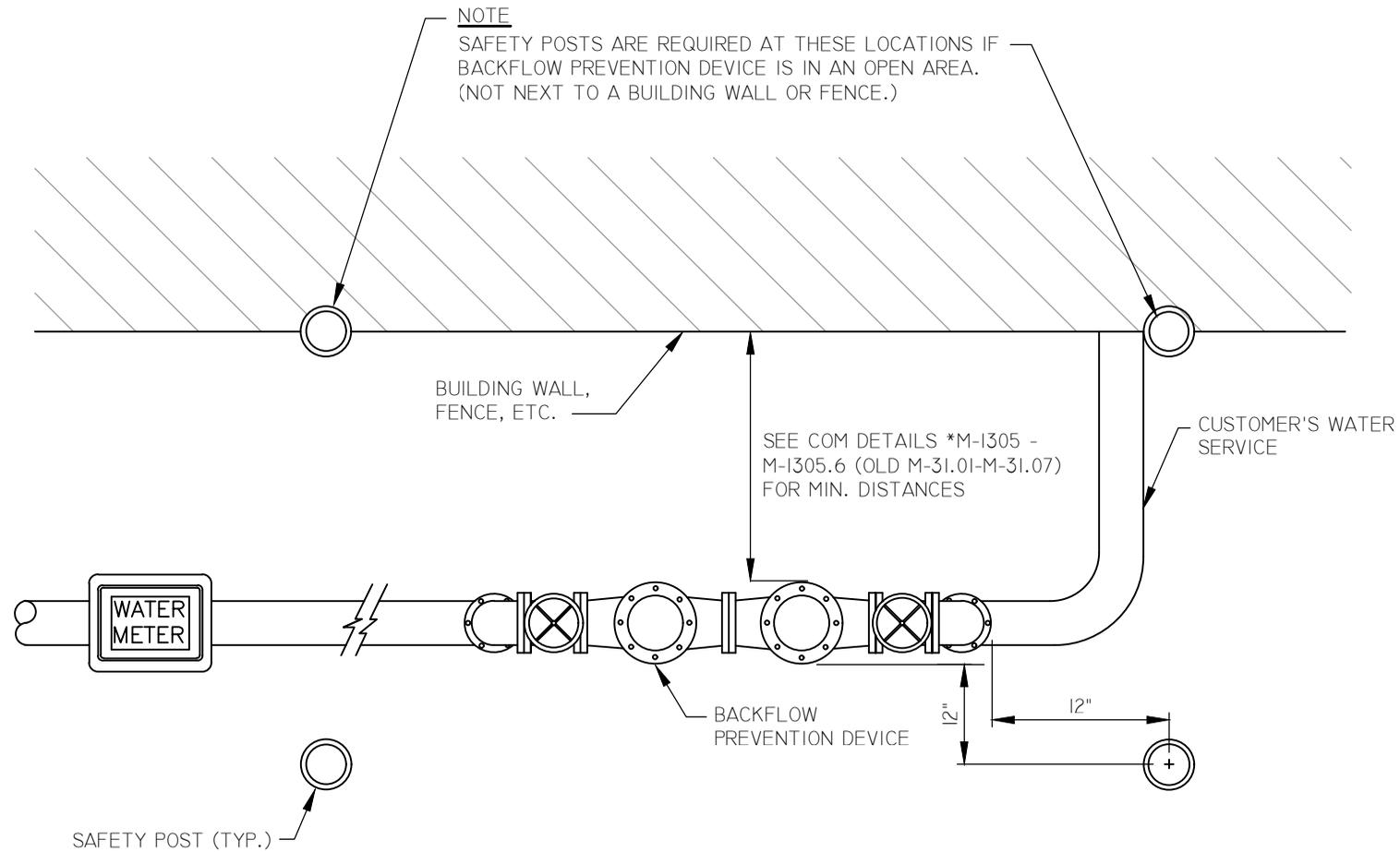
1. CONTACT CITY OF MESA WATER QUALITY BACKFLOW FOR APPROVED BACKFLOW ASSEMBLIES AT 480-644-6462.
2. GO TO [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors) FOR A LIST OF TESTERS RECOGNIZED BY THE CITY OF MESA TO SCHEDULE A TEST FOR THE ASSEMBLY PRIOR TO A REQUEST FOR FINAL INSPECTION.
3. BACKFLOW ASSEMBLY SHALL BE INSTALLED BETWEEN ONE TO FIVE FEET (1'-5') ABOVE THE FINISHED FLOOR AND ACCESSIBLE FOR TESTING AND SERVICE.
4. ADEQUATE AIR GAPPED DRAINAGE PIPING TO CARRY CONTINUOUS DISCHARGE OF WATER.
5. COPPER AND BRASS FITTING AND PIPE ARE PROHIBITED DOWNSTREAM OF A REDUCED PRESSURE BACKFLOW ASSEMBLY USED TO ISOLATE CARBONATORS (SODA DISPENSERS).
6. ALL TEST COCKS MUST BE EQUIPPED WITH APPROPRIATE TEST FITTING AND CAPS.

NOT TO SCALE

NOTE

SAFETY POSTS SHALL BE 4" DIAMETER, 48" HEIGHT PER MAG DETAIL I40, TYPE I.

- * M-1305 (OLD M-31.01)
- M-1305.1 (OLD M-31.02)
- M-1305.2 (OLD M-31.03)
- M-1305.3 (OLD M-31.04)
- M-1305.4 (OLD M-31.05)
- M-1305.5 (OLD M-31.06)
- M-1305.6 (OLD M-31.07)



SAFETY POST FOR BACKFLOW PREVENTION DEVICES
PLAN VIEW

NOT TO SCALE

INSTALLATION NOTES:

- 1 GUARDSHACK MODEL GS-2 LIFT OFF ENCLOSURE WITH LOCK SHIELD, OR APPROVED EQUAL. ENCLOSURE SHALL BE POWDER COATED AND COLOR SHALL BE WOODLAND TAN. INSTALLATION HARDWARE FOR WET CONCRETE INSTALLATION SHALL BE PROVIDED BY THE MANUFACTURER.
- 2 8" THICK MAG CLASS A CONCRETE PAD WITH 6" X 6" 10 GAUGE WELDED STEEL WIRE MESH REINFORCEMENT. SEE PLAN FOR PAD SIZE AND REINFORCEMENT DEPTH.
- 3 8" CAST IRON FRAME AND COVER PER MAG STANDARD DETAIL 270. LID SHALL BE STAMPED 'WATER'. RISER PIPE SHALL BE 10" PVC SDR-35. SEE PLAN FOR DIMENSIONS.
- 4 2" FLANGED COMBINATION VALVE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER. FLANGE BOLTS AND NUTS SHALL BE 304 STAINLESS STEEL PER ASTM A193 AND A194. VENT PIPE SHALL BE 2" NPT THREADED GALVANIZED PIPE AND FITTINGS WITH INSECT SCREEN.
- 5 2" SLIP THROUGH (UNTHREADED) BRONZE OR COPPER FLANGE SOLDERED TO COPPER PIPE FOR EMBEDDED SUPPORT. NO JOINTS BETWEEN ARV FLANGE AND BURIED ELBOW.
- 6 2" LEAD FREE PACK JOINT CTS CURB STOP. FORD B44-777-NL, OR APPROVED EQUAL.
- 7 10" PVC SDR-35 RISER PIPE WITH CUT OUTS FOR PIPE. SEE PLAN FOR DIMENSIONS.
- 8 2" NSF-61/372 LEAD FREE TYPE K HARD COPPER TUBING. ALL JOINTS UNDER CONCRETE OR ASPHALT SHALL BE BRAZED. PROVIDE A CONTINUOUS SLOPE UP FROM PIPE TO ARV ASSEMBLY WITH NO DIPS OR HIGH POINTS IN THE TUBING THAT WILL TRAP AIR.
- 9 2" NSF-61/372 LEAD FREE WROT COPPER 90° ELBOW. ALL JOINTS UNDER CONCRETE OR ASPHALT SHALL BE BRAZED.
- 10 2" SERVICE SADDLE AND CORP STOP INSTALLED IN THE VERTICAL POSITION PER CITY OF MESA DETAIL M-1308 (OLD M-49.01) AND APPROVED PRODUCTS LIST SHEET W-8.
- 11 2" NSF-61/372 LEAD FREE CLASS 150 MINIMUM COPPER OR BRONZE CAST FLANGE BRAZED TO COPPER TUBING.
- 12 2" NSF-61 SCHEDULE 40 GALVANIZED STEEL VENT PIPE.
- 13 2" NSF-61 150 LB GALVANIZED MALLEABLE IRON FITTING.
- 14 2" GOOSENECK VENT CAP WITH FNPT THREAD. SEE APL W-5 FOR APPROVED MODELS.
- 15 INTEGRAL LOCK SHIELD AND EMBEDDED CONCRETE ANCHORS PROVIDED BY MANUFACTURER. TWO CAGE LOCKS, MODEL 2130, TO BE PROVIDED BY WATER RESOURCES.
- 16 CLEAN GRAVEL SUMP. SEE PLAN FOR MINIMUM DIMENSIONS.
- 17 COPPER TUBING IN CONCRETE SHALL BE DOUBLE WRAPPED WITH 2" 20 MIL ADHESIVE PVC TAPE WRAP, ORBIT BRAND, OR APPROVED EQUAL. WRAP SHALL EXTEND A MINIMUM OF 1" ABOVE TO 1" BELOW THE PAD.

GENERAL NOTES:

- 1 ALL PIPE, FITTINGS, VALVES, AND OTHER ITEMS IN CONTACT WITH POTABLE WATER SHALL BE NSF-61 AND NSF-372 CERTIFIED OR COMPLIANT FOR USE IN POTABLE WATER SYSTEMS.
- 2 UNLESS OTHERWISE INDICATED ON THE DRAWING, ALL DIMENSIONS SHOWN ARE MINIMUM.
- 3 THE ARV SERVICE LINE SHALL BE INSTALLED WITH A GRADUAL SLOPE UP FROM THE PIPELINE TO THE ARV AND SHALL HAVE NO DIPS OR VERTICAL REALIGNMENTS THAT HAVE THE POTENTIAL TO TRAP AIR IN THE LINE. IF THE LINE CANNOT BE RUN WITH A CONSTANT UPWARD SLOPE TO THE ARV THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER FOR GUIDANCE.
- 4 THE ARV VENT PIPE GOOSENECK SHALL BE SUFFICIENTLY FAR ENOUGH AWAY, AND BELOW THE TOP OF THE ARV, TO PREVENT ANY WATER DISCHARGING FROM THE VENT PIPE TO DISCHARGE DIRECTLY ONTO THE ARV ASSEMBLY.
- 5 THE INTENT OF THE CONCRETE EMBEDDED FLANGE IS FOR VERTICAL SUPPORT OF THE ARV. THERE SHALL BE NO PIPE JOINTS BETWEEN THE ARV CONNECTING FLANGE AND THE BURIED ELBOW BENEATH THE CONCRETE PAD.
- 6 SUBGRADE PREPARATION SHALL BE PER MAG SPECIFICATION SECTION 301. MINIMUM ALLOWABLE STANDARD COMPACTION SHALL BE 95%.
- 7 PER CITY OF MESA ENGINEERING DESIGN STANDARDS SECTION 317.13 THE INTENT OF THIS DETAIL IS TO COVER INSTALLATION OF COMBINATION VALVES INSTALLED ON POTABLE WATER DISTRIBUTION MAINS 16" AND SMALLER IN DIAMETER. FOR OTHER APPLICATIONS REFER TO THE DESIGN STANDARDS FOR GUIDANCE.

SEE COM DTL. M-1307 (OLD M-38.01.1)



COMBINATION AIR VALVE DETAIL
ABOVE GROUND - NOTES

OLD
M-38.01.2

DETAIL NO.
M-1307.1

NOT TO SCALE

INSTALLATION NOTES:

- 1 OLDCASTLE DURALITE MODEL 2436-36 ANSI/SCTE TIER 15 LOAD RATED POLYOLEFIN STRAIGHT WALL ENCLOSURE WITH DURALITE FLUSH SOLID LID, OR APPROVED EQUAL. MINIMUM DESIGN DIMENSIONS SHALL BE 24" X 36" X 36" DEEP. INSTALL PER OLDCASTLE UNDERGROUND ENCLOSURE INSTALLATION GUIDE FOR PLASTIC AND POLYMER ENCLOSURES.
- 2 6" x 8" x 16" SOLID CMU BLOCK FOR ARV SUPPORT. CMU BLOCK SHALL BE CENTERED BELOW THE ARV INLET.
- 3 FIELD CUT ENCLOSURE PENETRATIONS FOR INLET AND VENT PIPING. AT PIPE PENETRATIONS INSTALL 2" ORENCO EPDM RUBBER GROMMET, OR APPROVED EQUAL. THE INLET PENETRATION MAY BE CUT OUT IN A 'MOUSE HOLE' CONFIGURATION.
- 4 2" FLANGED COMBINATION VALVE PER CITY OF MESA APPROVED PRODUCTS LIST - WATER. FLANGE BOLTS AND NUTS SHALL BE 304 STAINLESS STEEL PER ASTM A193 AND A194. VENT PIPE SHALL BE 2" NPT THREADED GALVANIZED PIPE AND FITTINGS WITH INSECT SCREEN.
- 5 2" SHIELDED STAINLESS STEEL COUPLING WITH RUBBER SLEEVE. FEROCO PROFLEX 3000-22, OR APPROVED EQUAL.
- 6 2" LEAD FREE PACK JOINT CTS CURB STOP. FORD B44-777-NL WITH HS-4 OR HB-67S HANDLE, OR APPROVED EQUAL.
- 7 2" CXFXC NPT LEAD FREE CAST BRONZE TEE WITH COUNTERSINK THREADED BRASS PLUG.
- 8 2" NSF-61/372 LEAD FREE TYPE K HARD COPPER TUBING. ALL JOINTS UNDER CONCRETE OR ASPHALT SHALL BE BRAZED. PROVIDE A CONTINUOUS SLOPE UP FROM PIPE TO ARV ASSEMBLY WITH NO DIPS OR HIGH POINTS IN THE TUBING THAT WILL TRAP AIR.
- 9 2" NSF-61/372 LEAD FREE WROT COPPER 90° ELBOW. ALL JOINTS UNDER CONCRETE OR ASPHALT SHALL BE BRAZED.
- 10 2" SERVICE SADDLE AND CORP STOP INSTALLED IN THE VERTICAL POSITION PER COM DETAIL M-1308 (OLD M-49.01) AND APPROVED PRODUCTS LIST SHEET W-8.
- 11 2" NSF-61/372 LEAD FREE CLASS 150 MINIMUM COPPER OR BRONZE CAST FLANGE BRAZED TO COPPER TUBING. A FLANGE ISOLATION KIT SHALL BE PROVIDED PER WATER APL W-21.
- 12 2" NSF-61 SCHEDULE 40 GALVANIZED STEEL VENT PIPE.
- 13 2" NSF-61 150 LB GALVANIZED MALLEABLE IRON FITTING.
- 14 2" GOOSENECK VENT CAP WITH MNPT THREAD. SEE WATER APL W-5 FOR APPROVED MODELS.
- 15 3/4" MINUS CRUSHED ANGULAR STONE MECHANICALLY COMPACTED TO 95% MINIMUM.
- 16 ENCLOSURE EXCAVATION AND BACKFILL ZONE SHALL BE A MINIMUM OF 12" AROUND ALL SIDES OF THE ENCLOSURE PER OLDCASTLE UNDERGROUND ENCLOSURE INSTALLATION GUIDE. USE HAND TAMPING TOOLS ONLY TO PREVENT DEFORMATION OF THE ENCLOSURE.
- 17 INSTALL BOLLARDS PER MAG STANDARD DETAIL 140, TYPE I, IN AREAS WITH POTENTIAL OF VEHICULAR TRAFFIC. SEE GENERAL NOTE 3 FOR MORE INFORMATION.
- 18 INSTALL 4" THICK, 12" SQUARE, MAG CLASS A CONCRETE VENT PIPE SUPPORT PAD.

GENERAL NOTES:

- 1 PER CITY OF MESA ENGINEERING DESIGN STANDARDS SECTION 317.13 THE INTENT OF THIS DETAIL IS TO COVER INSTALLATION OF COMBINATION VALVES INSTALLED ON POTABLE WATER DISTRIBUTION MAINS 16" AND SMALLER IN DIAMETER. FOR OTHER APPLICATIONS REFER TO THE DESIGN STANDARDS FOR GUIDANCE.
- 2 THIS DETAIL IS INTENDED FOR BELOW GROUND ARV INSTALLATIONS AS APPROVED BY THE WATER RESOURCES DEPARTMENT ON A CASE BY CASE BASIS. THE NORMAL INSTALLATION OF WATER DISTRIBUTION ARVS SHALL BE ABOVE GROUND PER COM DETAIL M-1307 (OLD M-38.1.1) AND M-1307.1 (OLD M-38.01.2).
- 3 THIS DETAIL IS INTENDED FOR USE IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC, NORMALLY IN LANDSCAPE AREAS BEHIND ROADWAY CURBING. IF INSTALLED IN ROADWAY RIGHT OF WAY WHERE THERE IS NO CURBING, INSTALL FOUR TYPE I BOLLARDS PER MAG STANDARD DETAIL 140. SEE THIS DETAIL FOR MINIMUM DISTANCE REQUIREMENTS.
- 4 ALL PIPE, FITTINGS, VALVES, AND OTHER ITEMS IN CONTACT WITH POTABLE WATER SHALL BE NSF-61 AND NSF-372 CERTIFIED OR COMPLIANT FOR USE IN POTABLE WATER SYSTEMS.
- 5 UNLESS OTHERWISE INDICATED ON THE DRAWING, ALL DIMENSIONS SHOWN ARE MINIMUM.
- 6 THE ARV SERVICE LINE SHALL BE INSTALLED WITH A GRADUAL SLOPE UP FROM THE PIPELINE TO THE ARV AND SHALL HAVE NO DIPS OR VERTICAL REALIGNMENTS THAT HAVE THE POTENTIAL TO TRAP AIR IN THE LINE. IF THE LINE CANNOT BE RUN WITH A CONSTANT UPWARD SLOPE TO THE ARV THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER FOR GUIDANCE.
- 7 SUBGRADE SCARIFICATION AND PREPARATION SHALL BE PER MAG SPECIFICATION SECTION 301. MINIMUM ALLOWABLE STANDARD COMPACTION SHALL BE 95%.
- 8 BRACING AND COVER SHALL BE INSTALLED IN THE ENCLOSURE PRIOR TO BACKFILLING AND COMPACTING PER OLDCASTLE UNDERGROUND PLASTIC AND POLYMER ENCLOSURE INSTALLATION GUIDE.

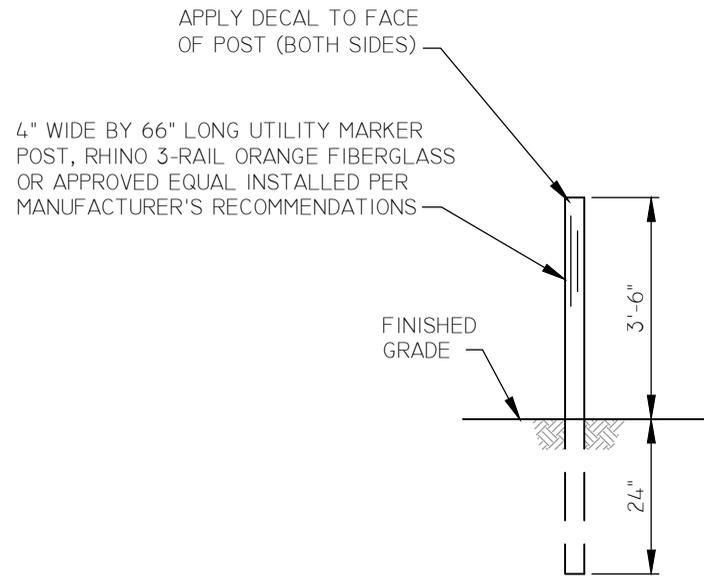
NOT TO SCALE



COMBINATION AIR VALVE DETAIL
BELOW GROUND - NOTES

OLD
M-38.02.2

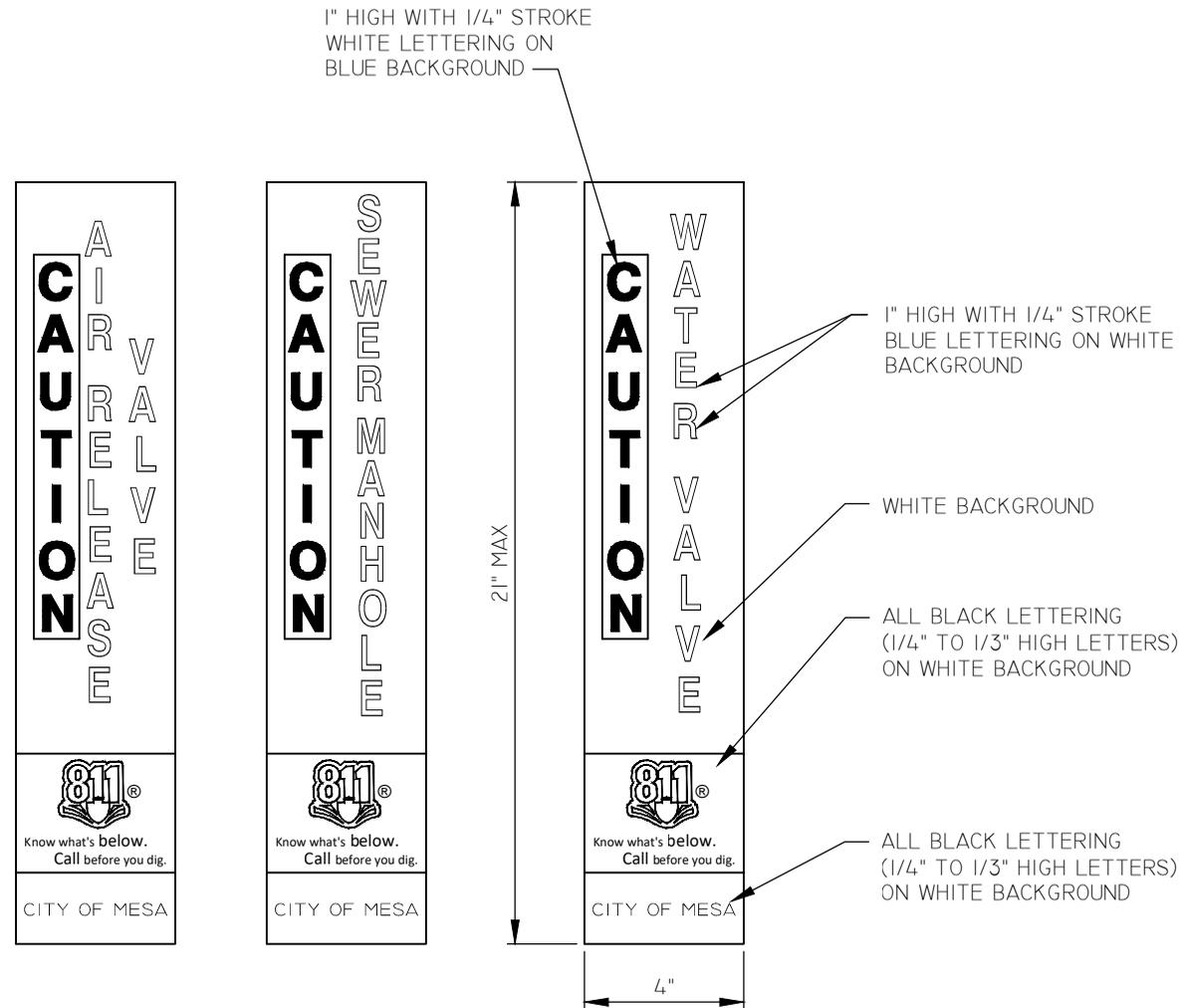
DETAIL NO.
M-1307.3



POST

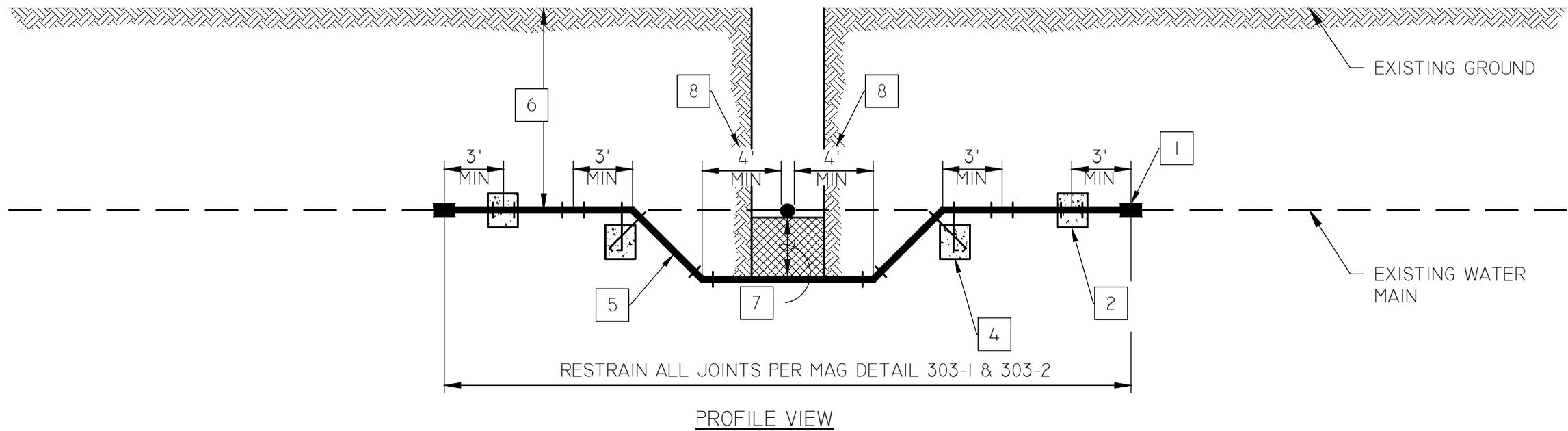
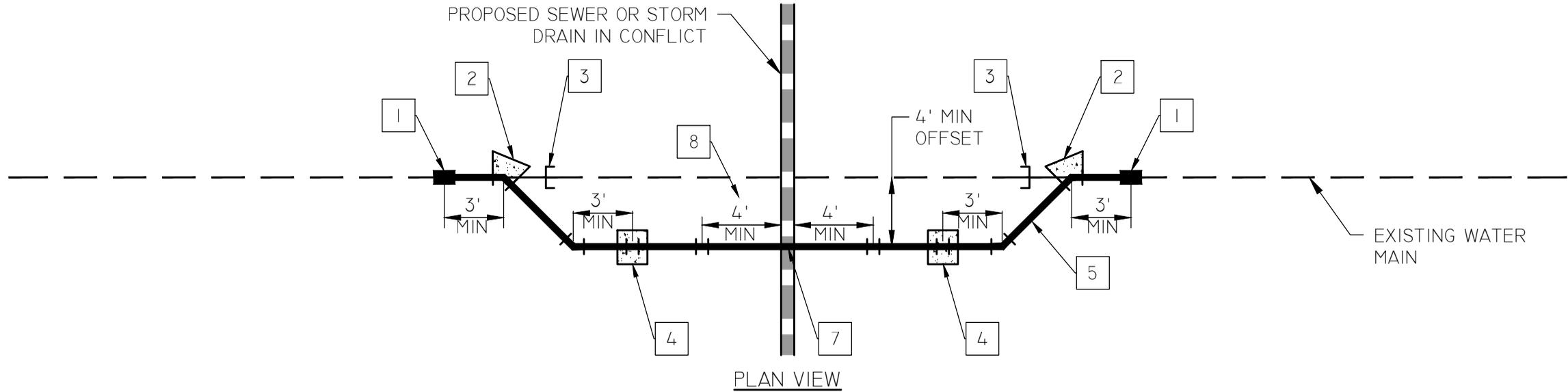
NOTES

1. PLACE MARKERS WHERE SHOWN ON THE PLANS.
2. MARKERS NOT TYPICALLY REQUIRED IN DEVELOPED OR PAVED AREAS.
3. MANHOLE MARKERS ARE ONLY REQUIRED ALONG UNPAVED ACCESS PATHS FOR PUBLIC SEWER MAINS.
4. MANHOLE MARKERS SHALL BE PLACED AT THE EDGE OF THE ACCESS PATH, PERPENDICULAR TO THE MANHOLE.



DECAL

NOT TO SCALE



NOT TO SCALE

INSTALLATION NOTES:

1. CONNECT TO EXISTING PIPE UTILIZING AN APPROVED COUPLING OR FITTING PER THE APPROVED PRODUCTS LIST FOR WATER. SEE TESTING AND DISINFECTION NOTES.
2. INSTALL THRUST BLOCK PER MAG STANDARD DETAIL 380. DRY BLOCKING USING SOLID CMU BRICK MAY BE USED PRIOR TO POURING CONCRETE TO LIMIT SHUTDOWN DURATION, UNDER THE DIRECTION OF THE INSPECTOR AND/OR FIELD COORDINATOR. THE EXISTING PIPE SHALL BE CONSIDERED UNRESTRAINED FOR THE PURPOSE OF RESTRAINT DESIGN.
3. CUT EXISTING MAIN AND INSTALL DUCTILE IRON CAP OR FILL THE ENDS OF THE ABANDONED PIPE WITH A MINIMUM OF 24 INCHES OF CONCRETE.
4. INSTALL ANCHOR BLOCK PER MAG STANDARD DETAIL 381.
5. INSTALL POLYWRAPPED DUCTILE IRON PIPE PER THE APPROVED PRODUCTS LIST FOR WATER AND MAG SPECIFICATION SECTIONS 610 AND 611, AND MESA AMENDMENTS TO MAG SPECIFICATIONS. RESTRAIN ALL JOINTS PER MAG 303-1 & 303-2.
6. FOR MINIMUM ALLOWABLE DEPTH SEE DESIGN STANDARDS SECTION 316.12.
7. FOR SEWER CROSSINGS EXTRA PROTECTION PER MAG STANDARD DETAIL 404 SHALL BE PROVIDED. FOR STORM DRAIN SEPARATION, SEE MESA DESIGN STANDARD SECTION 316.17.
8. IF THE CROSSING UTILITY IS SEWER, ENCASE ON EACH SIDE OF THE CROSSING PER MAG STANDARD DETAIL 404.

TESTING AND DISINFECTION NOTES:

1. ALL PIPE AND FITTINGS SHALL BE DISINFECTED PER AWWA C651, CITY OF MESA STANDARDS AND SPECIFICATIONS, MAG SPECIFICATION 611, AND MESA AMENDMENTS TO MAG SPECIFICATION 611.
2. FLUSHING AND HYDROSTATIC TESTING SHALL BE PER MAG SPECIFICATION SECTION 611 AND MESA AMENDMENTS TO MAG SPECIFICATION 611. UNDER NO CIRCUMSTANCES SHALL EXISTING PIPE OR VALVES BE INCLUDED IN PRESSURE TESTING.
3. FINAL CONNECTIONS TO THE EXISTING PIPE SHALL BE PERFORMED ONLY AFTER DISINFECTION AND TESTING HAS BEEN COMPLETED AND APPROVED BY THE CITY OF MESA INSPECTOR AND WATER QUALITY SUPERVISOR. PER AWWA C651, FINAL CONNECTIONS 20 FEET IN LENGTH OR LESS MAY BE DISINFECTED BY SPRAYING OR SWABBING WITH 1% SOLUTION. CONNECTIONS GREATER THAN 20 FEET IN LENGTH SHALL BE DISINFECTED PER AWWA C651, SECTION 4.10.2.

GENERAL NOTES:

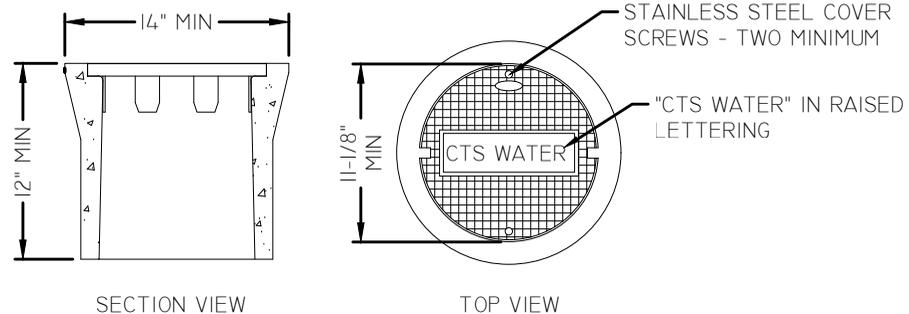
1. THIS DETAIL ONLY APPLIES TO REALIGNMENTS OF PIPE WITH DIAMETERS 12 INCHES OR SMALLER. FOR SIZES LARGER THAN 12 INCHES, ANCHOR AND THRUST BLOCK SIZING CALCULATIONS AND DETAILS SHALL BE SUBMITTED TO THE CITY. THE DETAILS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A REGISTERED ENGINEER.
2. SYSTEM SHUTDOWN AND ISOLATION FOR FINAL CONNECTIONS SHALL BE SCHEDULED THROUGH THE CITY INSPECTOR. SHUTDOWN REQUESTS SHALL BE SUBMITTED PER THE REQUIREMENTS OF THE "STANDARD OPERATING GUIDELINE - TESTING, DISINFECTION, SHUTDOWN, AND TIE IN".
3. WHEN CUSTOMERS ARE AFFECTED, ALL SHUTDOWN DURATIONS FOR FINAL TIE INS SHALL BE LIMITED TO FOUR HOURS OR LESS. THE CONTRACTOR SHALL BE PREPARED TO PERFORM THE CONNECTION WITHIN THE AGREED TO SHUTDOWN DURATION. SOME CUSTOMERS CANNOT BE TAKEN OUT OF SERVICE IN ANY CIRCUMSTANCES. FOR MORE INFORMATION REFER TO MAG SPECIFICATION SECTION 610.11.
4. ALL WATER USED FOR FILLING AND FLUSHING SHALL BE PROVIDED THROUGH A CITY PROVIDED HYDRANT METER AND BACKFLOW PREVENTER. UNDER NO CIRCUMSTANCES SHALL AN EXISTING SYSTEM VALVE BE OPENED TO FILL OR FLUSH PIPES.
5. TEMPORARY RESTRAINED CAPS OR PLUGS WITH BLOWOFFS SHALL BE INSTALLED TO FACILITATE PRESSURE TESTING AND DISINFECTION. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE THE GAP DISTANCE BETWEEN THE PLUG AND CONNECTION POINT TO THE EXISTING MAIN. GAPS GREATER THAN 20 FEET, OR ONE STICK OF PIPE ARE NOT ALLOWED WITHOUT WRITTEN APPROVAL FROM THE WATER RESOURCES DEPARTMENT.

NOT TO SCALE

CATHODIC CABLE WIRE COLOR SCHEDULE				
STRUCTURE TYPE	TAG CODE	INSULATION COLOR	CABLE TYPE	GAUGE (AWG)
NEW PIPE	PIPE	BLACK	HMWPE	PER PLANS
EXISTING PIPE	ISOL	WHITE	HMWPE	PER PLANS
ANODE	ANOD	RED	HMWPE	PER PLANS
REF ELECTRODE	REF	YELLOW	HMWPE	PER PLANS
CASING	CAS	WHITE W/BLUE TAPE	HMWPE	PER PLANS

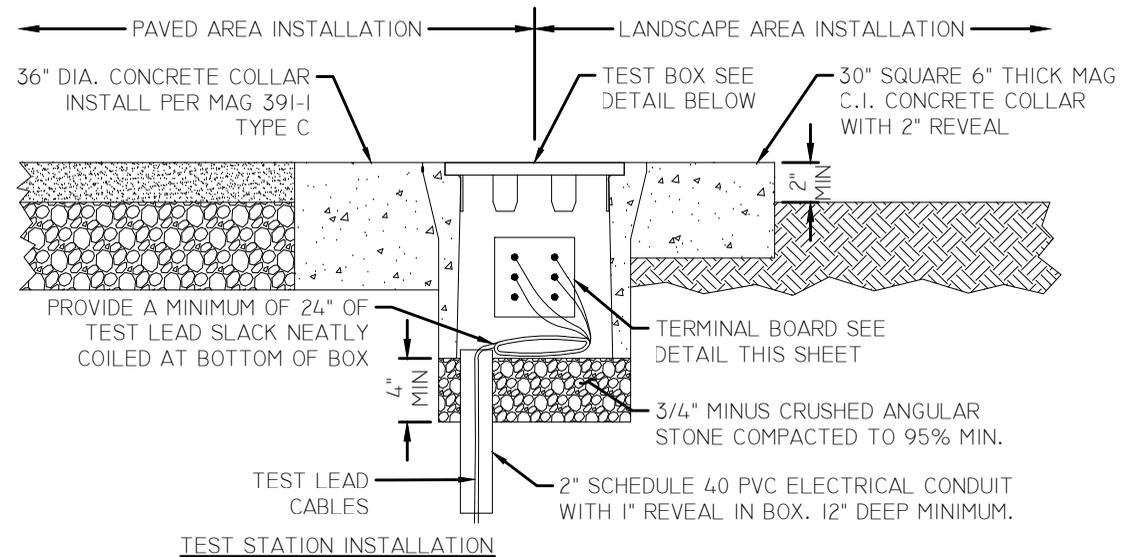
- NOTES:
- ALL HMWPE CABLE SHALL BE SUITABLE FOR BURIED SERVICE AND SHALL BE RATED FOR 600V DC.
 - STRANDED COPPER CONDUCTOR SHALL CONFORM TO ASTM B-8 AND INSULATION SHALL BE IN ACCORDANCE WITH ASTM D1248.
 - DUAL JACKETED HALAR/HMWPE OR KYNAR/HMWPE CABLE SHALL BE PROVIDED FOR ADDITIONAL CHEMICAL RESISTANCE SUCH AS IN DEEP WELL ANODE APPLICATIONS, OR AS INDICATED BY THE PROJECT SPECIFIC PLANS AND SPECIFICATIONS.
 - WARNING TAPE SHALL BE PROVIDED FOR BURIED CABLES. WARNING TAPE WIDTH SHALL BE 3" MINIMUM, AND SHALL BE IMPRINTED WITH "CAUTION CATHODIC PROTECTION CABLE BURIED BELOW". INSTALL 18" BELOW FINISH GRADE.
 - CABLE INSULATION COLORS SHALL BE AS INDICATED IN THE TABLE. CASING CABLES SHALL BE WHITE WITH BLUE VINYL TAPE, 3M SUPER 33+ SCOTCH BRAND OR APPROVED EQUAL, AT 6" INTERVALS WITHIN THE TEST STATION.

CATHODIC PROTECTION CABLING



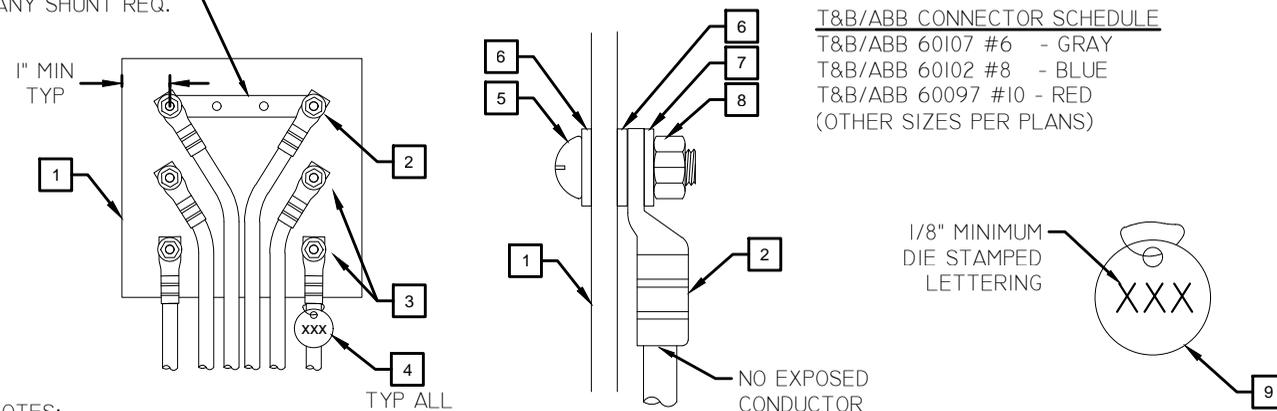
- NOTES:
- TEST BOX SHALL BE CHRISTY G05 AASHTO H20 TRAFFIC RATED REINFORCED CONCRETE BOX WITH STEEL FRAME. MINIMUM DIAMETER SHALL BE 14" WITH 11-1/8" DIAMETER CAST IRON SCREW DOWN LID.
 - COVER SHALL BE IMPRINTED WITH "CTS WATER" IN RAISED LETTERING.
 - STAINLESS STEEL COVER SCREWS SHALL BE PROVIDED AND INSTALLED.

TEST BOX DETAIL



TEST STATION INSTALLATION

SEE PLANS FOR ANY SHUNT REQ.



T&B/ABB CONNECTOR SCHEDULE

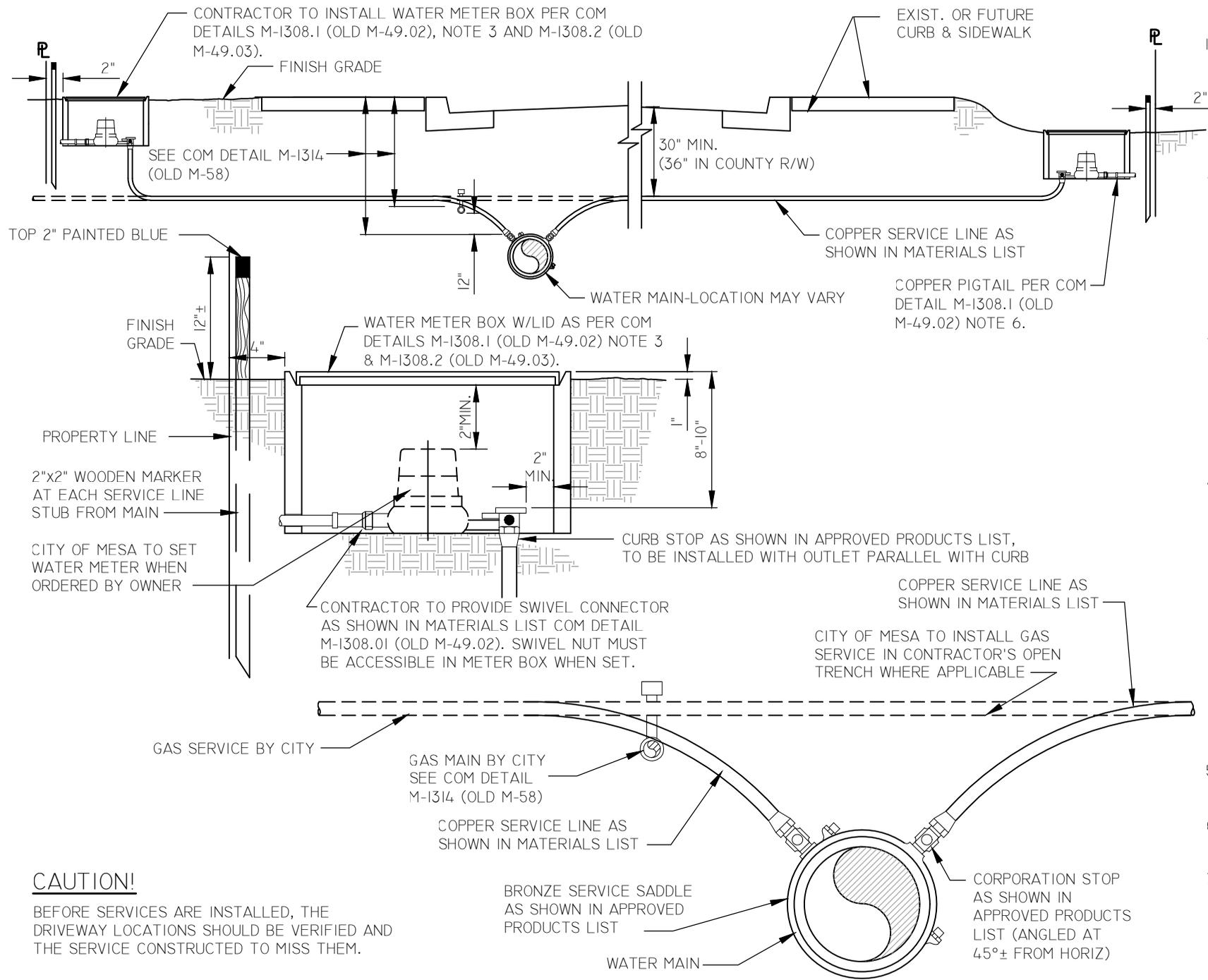
T&B/ABB 60107 #6	- GRAY
T&B/ABB 60102 #8	- BLUE
T&B/ABB 60097 #10	- RED

(OTHER SIZES PER PLANS)

- NOTES:
- GRADE L/LE MICARTA LINEN PHENOLIC RESIN TERMINAL BOARD, OR APPROVED EQUAL - 5" X 5" X 1/4".
 - ALUMINUM COMPRESSION CONNECTOR: THOMAS & BETTS (T&B/ABB) ONE HOLE LUG, OR APPROVED EQUAL, COLOR KEYED. LUGS SHALL ONLY BE INSTALLED USING AN APPROPRIATE CRIMP TOOL, T&B25S OR T&B45S, OR APPROVED EQUAL. PLIERS OR OTHER SUCH TOOLS SHALL NOT BE USED.
 - LUG CONFIGURATION AND COUNT PER PLANS AND SPECIFICATIONS. CENTER OF LUGS SHALL BE A MINIMUM OF 1" FROM TERMINAL BOARD EDGE, TYPICAL.
 - BRASS IDENTIFICATION TAGS SHALL BE AFFIXED TO EACH CABLE WITH NYLON WIRE TIES.
 - 1" X 1/4" BRASS MACHINE SCREW. LONGER SCREWS MAY BE NEEDED FOR MULTIPLE ANODE LEADS.
 - BRASS WASHER
 - BRASS LOCK WASHER
 - BRASS HEX NUT. CARE SHOULD BE TAKEN TO NOT OVER TIGHTEN.
 - 18 GAUGE BRASS ID TAG - 1" DIAMETER WITH 3/16" HOLE & 1/8" MIN. LETTERING. C.H. HANSON OR APPROVED EQUAL, WITH NYLON WIRE TIE. SEE CABLING TABLE FOR REQUIRED ID CODES. ID CODES SHALL BE DIE STAMPED & CENTERED ON TAG.

TERMINAL BOARD DETAIL

NOT TO SCALE



NOTES

1. ENGINEER TO SET "BLUE TOPS" FOR ALL WATER METER BOXES TO MATCH BACK OF SIDEWALK GRADE OR TOP OF CURB GRADE IF CURB ONLY. INSTALL TOP OF SERVICE CURB STOP 8" MIN. TO 10" MAX. BELOW "BLUE TOP", EXCEPT FOR SPECIAL CONDITIONS (IRRIG., LARGE METER, ETC.).
2. SERVICE EXTENSIONS MAY BE ALLOWED ON A CASE BY CASE BASIS WITH PRIOR WRITTEN APPROVAL FROM THE WATER RESOURCES DEPARTMENT. WHEN APPROVED, CONNECTIONS TO EXISTING SERVICES LINES SHALL BE MADE USING SOLDERED OR BRAZED FITTINGS. ALL FITTINGS UNDER CONCRETE OR PAVEMENT SHALL BE BRAZED. EXTENSION OF NON-COPPER SERVICES WILL NOT BE ALLOWED.
3. NORMAL INSTALLATION OF WATER METERS AND BOXES SHALL BE PERPENDICULAR TO THE CENTER LINE OF THE STREET WHERE POSSIBLE. HOWEVER, WHEN A SINGLE METER IS INSTALLED IN A SUBDIVISION WITH PARALLEL PLACED METERS AND BOXES, THE NEW METER AND BOX MAY BE INSTALLED THE SAME AS THE REST OF THE SUBDIVISION (PARALLEL).
4. WATER METER SIZES 1", 1 1/2" AND 2" MAY BE REDUCED ONE SIZE FOR AN EXISTING WATER SERVICE AND VALVE IF ADEQUATE TO SUPPLY THE FIXTURE COUNT DEMAND UPON APPROVAL OF DEVELOPMENT SERVICE BUILDING INSPECTION. THE PARTY REQUESTING THE REDUCTION SHALL BE RESPONSIBLE FOR THE COST OF INSTALLING AN APPROVED ADAPTER BETWEEN THE EXISTING SERVICE VALVE AND THE INLET OF THE WATER METER AND A MINIMUM OF 48" OF METER SIZE APPROVED PIPING DOWNSTREAM OF THE WATER METER. WHERE BACKFLOW PREVENTION IS REQUIRED THE BACKFLOW DEVICE SIZE MUST BE EQUAL TO THE REQUESTED WATER METER SIZE. THE LENGTH OF THE BACKFLOW PREVENTER AND ITS METER SIZE PIPING SHALL BE COUNTED AS PART OF THE REQUIRED 48" PIPING REDUCTION.
5. METER AND ALL FITTINGS TO BE CENTERED IN BOX AND ACCESSIBLE.
6. WATER METER BOX SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 6- FEET FROM TREES.
7. FOR NEW CONSTRUCTION WATER RESOURCES WILL NOT SET A METER IF THE METER BOX IS FOUND TO BE MISSING OR DAMAGED.

CAUTION!

BEFORE SERVICES ARE INSTALLED, THE DRIVEWAY LOCATIONS SHOULD BE VERIFIED AND THE SERVICE CONSTRUCTED TO MISS THEM.

NOT TO SCALE

MATERIALS LIST	SERVICE LINE SIZES			
	3/4"	1"	1 1/2"	2"
SERVICE SADDLE ¹ (WITH I.P. THREADS)	SEE APPROVED PRODUCTS LIST		SEE APPROVED PRODUCTS LIST	
CORPORATION STOP (BALL STYLE) (WITH I.P. THREADS)	SEE APPROVED PRODUCTS LIST		SEE APPROVED PRODUCTS LIST	
CURB STOP WITH LOCKING WINGS (BALL STYLE)	SEE APPROVED PRODUCTS LIST			
OUTLET METER COUPLING	SEE APPROVED PRODUCTS LIST			
SERVICE LINE	COPPER ² (TYPE K-SOFT)	COPPER ² (TYPE K-SOFT)	COPPER ² (TYPE K-HARD)	COPPER ² (TYPE K-HARD)
METER LAY LENGTH	7.5 INCHES	10.75 INCHES	13 INCHES	17 INCHES
<p>¹ SINGLE-STRAP SERVICE SADDLES ARE PERMITTED ON WATER MAINS 8" AND SMALLER. DOUBLE-STRAP SERVICE SADDLES ARE REQUIRED ON WATER MAINS LARGER THAN 8". SERVICE SADDLES SHALL BE ALL-BRASS AND HAVE I.P. THREADS. SERVICE SADDLES PER APPROVED PRODUCTS LIST.</p> <p>² ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY WITH ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 96). THE FLUX SHALL BE TYPE OA FOR GENERAL SOLDERING ON COPPER. SOLDER SHALL BE NO LEAD AND CERTIFIED TO NSF-61 AND NSF-372.</p> <p>³ BOLTS, WASHERS AND NUTS USED TO CONNECT 1.5" AND 2" WATER METER FLANGES SHALL BE 316 GRADE STAINLESS STEEL WITH THREADS COATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.</p>				

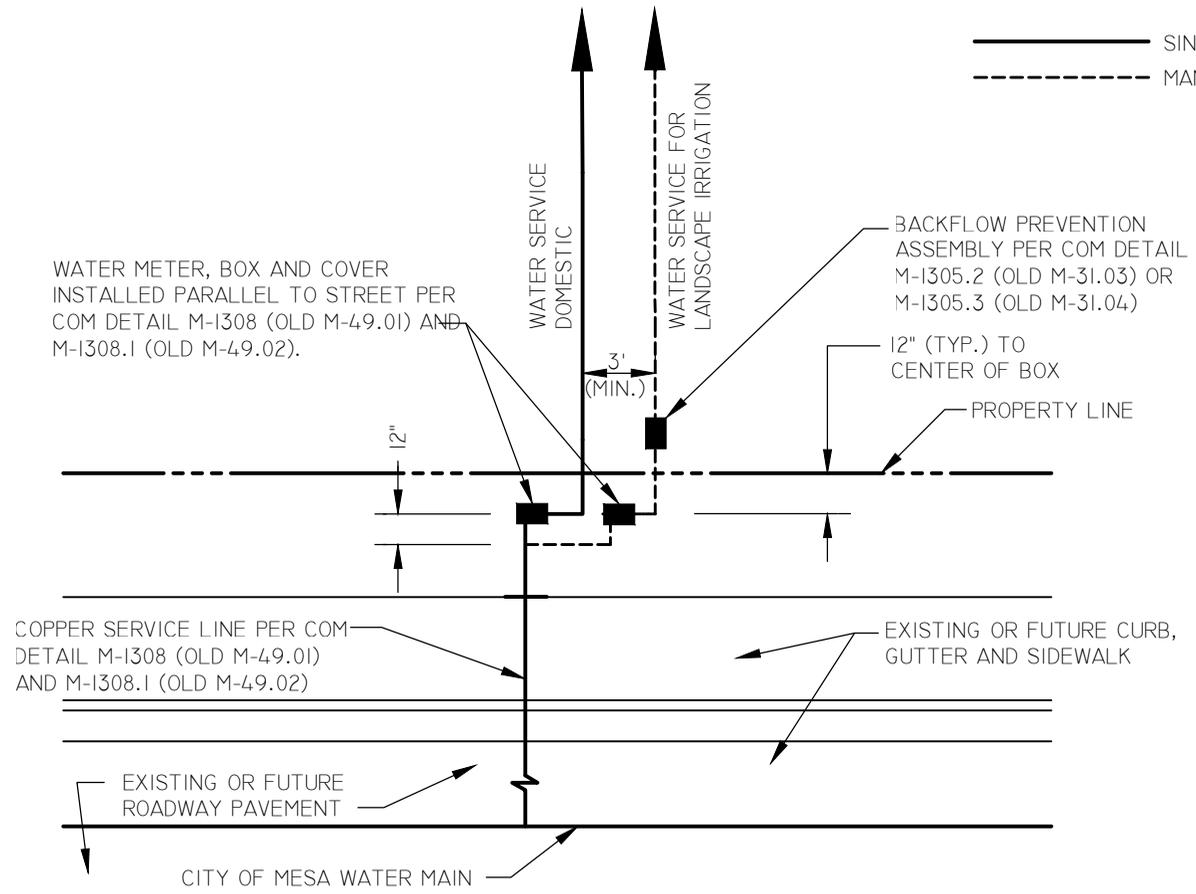
NOTES:

1. CITY OF MESA DOES NOT ALLOW FLARED-TYPE CONNECTIONS ON THE CITY SIDE OF THE METER.
2. THE ONLY ACCEPTABLE METHOD OF CONNECTION TO A MAIN IS BY STRAP STYLE SERVICE SADDLE PER APPROVED PRODUCT LIST. TAPPED COUPLINGS OR SLEEVES ARE PROHIBITED FOR SERVICE LINE CONNECTIONS.
3. SEE APPROVED PRODUCTS LIST FOR WATER METER BOX AND LID.
4. SEE COM DETAIL M-1303 (OLD M-29.01) FOR 1-1/2" AND 2" WATER METERS.
5. BRANCHES BEFORE THE METER ARE NOT ALLOWED; I.E. ONLY ONE METER PER SERVICE TAP EXCEPT FOR LANDSCAPE METERS AS SHOWN IN COM DETAIL M-1308.2 (OLD M-49.03).
6. FOR 3/4" AND 1" SERVICES, AN 18" (MINIMUM) COPPER "PIGTAIL" IS REQUIRED ON THE CUSTOMER'S SIDE OF METER BEFORE CHANGING TO OTHER MATERIAL. FOR 1-1/2" & 2" SERVICES, A MINIMUM OF 4 FEET COPPER "PIGTAIL" ON CUSTOMER'S SIDE IS REQUIRED BEFORE CHANGING TO OTHER MATERIAL.
7. WATER SERVICE LINES REDUCING DOWN ONE SIZE (2" TO 1-1/2", 1-1/2" TO 1", 1" TO 3/4") SHALL REDUCE DOWN A MINIMUM OF 48" PRIOR TO THE FACE OF THE WATER BOX.
8. FOR WATER METER RELOCATIONS OR REPLACEMENTS WHERE EXISTING WATER SERVICE LINES ON THE CUSTOMER'S SIDE OF METER WILL REMAIN-IN-PLACE, THE PIPE MATERIAL BETWEEN THE COPPER "PIGTAIL" REQUIRED IN NOTE 6 AND THE POINT OF RECONNECTION TO THE CUSTOMER'S SERVICE LINE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: IF CUSTOMER'S EXISTING SERVICE LINE IS COPPER, COPPER PIPE OR TUBING PER THE CURRENT VERSION OF IPC AS ADOPTED BY CITY OF MESA SHALL BE USED. FOR ALL OTHER EXISTING MATERIAL TYPES, ONLY COPPER OR PVC COMPLYING WITH IPC MAY BE USED.
9. ALL TUBING, FITTINGS, VALVES, AND SOLDER IN CONTACT WITH POTABLE WATER SHALL BE NO LEAD, AND CERTIFIED TO NSF-61 AND/OR NSF-372 STANDARDS, AS APPLICABLE.
10. INSULATING CORPORATION STOPS, IF SPECIFIED IN THE PROJECT PLANS OR SPECIFICATIONS, SHALL BE PER WATER APL W-8. THE CORP STOP AND COPPER SERVICE LINE SHALL BE TAPE WRAPPED TO A MINIMUM OF THREE FEET BEYOND THE VALVE AND THE DUCTILE IRON MAIN SHALL BE POLYWRAPPED PER MAG SPECIFICATION 610. PIPE WRAP TAPE SHALL BE PER WATER APL W-8.
11. CLSM SLURRY SHALL NOT COME INTO CONTACT WITH COPPER PIPE AND FITTINGS, OR BRONZE OR BRASS SADDLES OR VALVES. IF SLURRY IS UTILIZED FOR BACKFILL, THE SERVICE LINES, CORP STOPS, AND SADDLES SHALL BE POLYWRAPPED OR TAPED PER MAG SPECIFICATION SECTION 610.6.

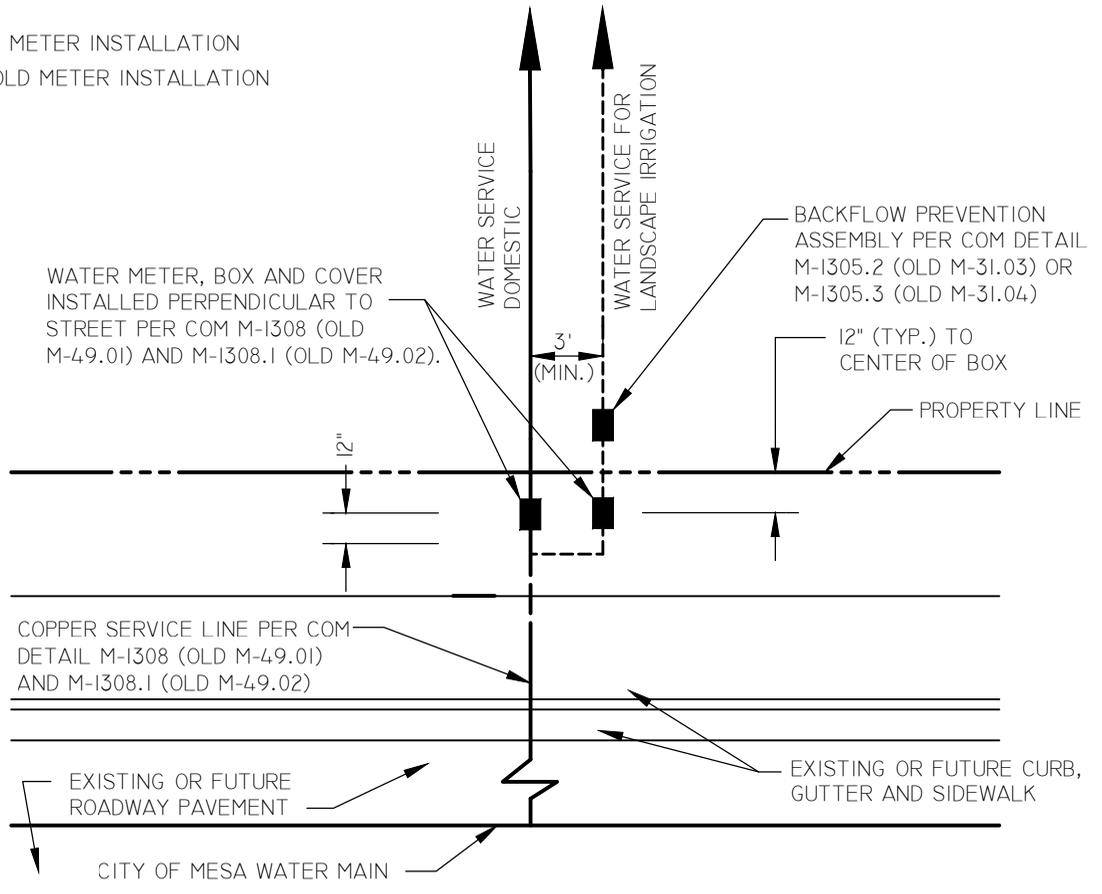
NOTES:

1. SERVICE LINE BETWEEN WATER METERS AND WATER MAIN SHALL BE COPPER PER COM DETAIL M-1308 (OLD M-49.01) AND M-1308.1 (OLD M-49.02).
2. NORMAL INSTALLATION OF SERVICE LINES, WATER METERS AND BOXES SHALL BE PERPENDICULAR TO THE CENTER LINE OF THE STREET. HOWEVER, WHEN A SINGLE METER IS INSTALLED IN A SUBDIVISION WITH PARALLEL PLACED METERS & BOXES, THE NEW METER AND BOX MAY BE INSTALLED THE SAME AS THE REST OF THE SUBDIVISION (PARALLEL).
3. BACKFLOW PREVENTION DEVICES MAY ALSO BE REQUIRED ON LINES FOR IRRIGATION & DOMESTIC METERS FOR COMMERCIAL USE. REFER TO THE "ENGINEERING & DESIGN STANDARDS" MANUAL FOR REQUIREMENTS.
4. WHEN TWO METERS ARE ON THE SAME SERVICE LINE, THE SERVICE LINE SHALL BE ONE SIZE LARGER THAN THE LARGEST METER.

———— SINGLE METER INSTALLATION
 - - - - - MANIFOLD METER INSTALLATION

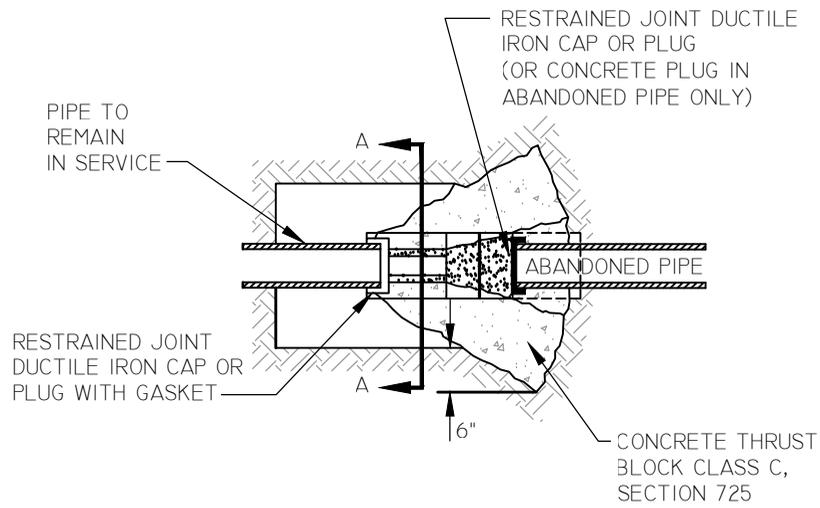


PLAN VIEW - PARALLEL INSTALLATION

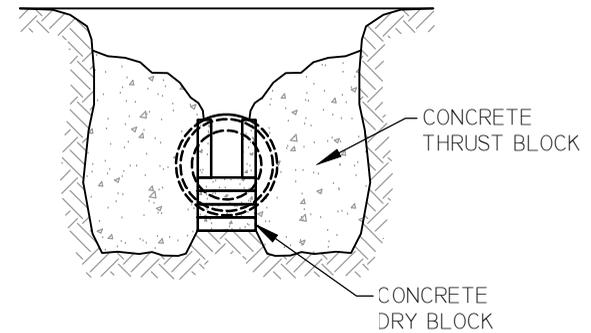


PLAN VIEW - PERPENDICULAR INSTALLATION

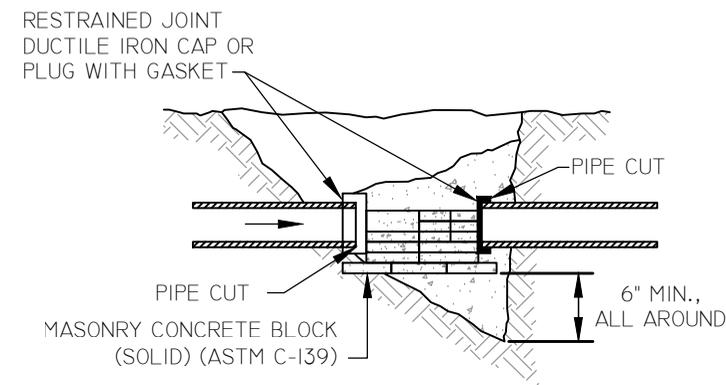
NOT TO SCALE



PLAN VIEW



VIEW A-A

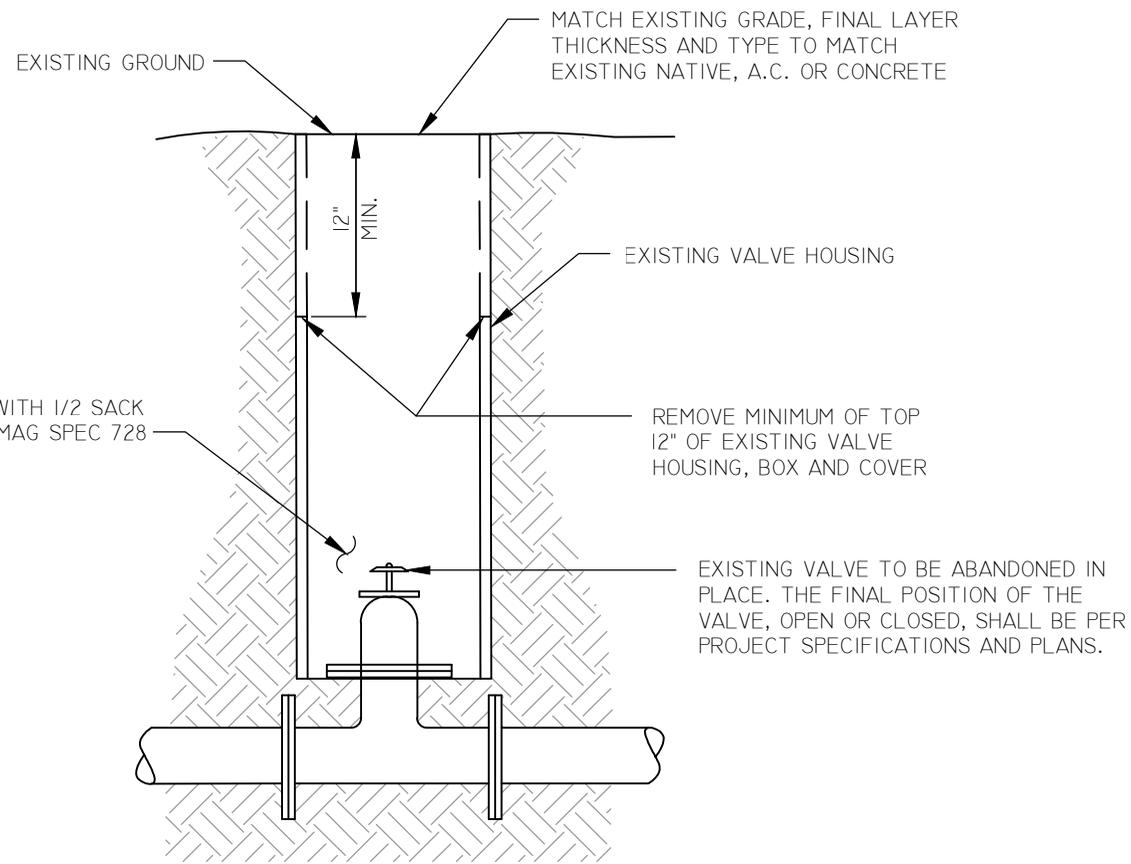


PROFILE VIEW

WATER LINE CUT AND PLUG NOTES:

1. CAP AND PLUGS MUST BE ADEQUATELY "DRY BLOCKED".
2. DRY BLOCKS SHALL BE STANDARD SIZE SOLID MASONRY CONCRETE BLOCKS. (ASTM C-139)
3. THE QUANTITY AND ARRANGEMENT OF THE BLOCKING MUST WITHSTAND LINE PRESSURE BY HOLDING THE CAP OR PLUG IN POSITION.
4. DRY BLOCKING SHALL BE PROPERLY SHIMMED TIGHT AND SECURE AGAINST THE CAP BEFORE LINE PRESSURE IS RESTORED.
5. CONCRETE THRUST BLOCKS SHALL NOT BE POURED UNTIL LINE PRESSURE IS RESTORED AND THE CAP OR PLUG IS INSPECTED FOR LEAKAGE.
6. CONCRETE SHALL NOT BE POURED OVER ANY PORTION OF THE ABANDONED PIPE.
7. MINIMUM THRUST BLOCK AREA PER MAG DETAIL 380.
8. WHERE A 4" OR LARGER LINE IS SPECIFIED TO BE ABANDONED, THE CUT AND PLUG SHOULD OCCUR AT THE SUPPLY MAIN TO AVOID CREATING AN UNUSED DEADEND LINE.
9. ANY SERVICE OR WATER LINE SMALLER THAN 4" (SPECIFIED TO BE ABANDONED) SHALL BE ABANDONED WITH A CUT AND PLUG AT THE SUPPLY MAIN.

NOT TO SCALE

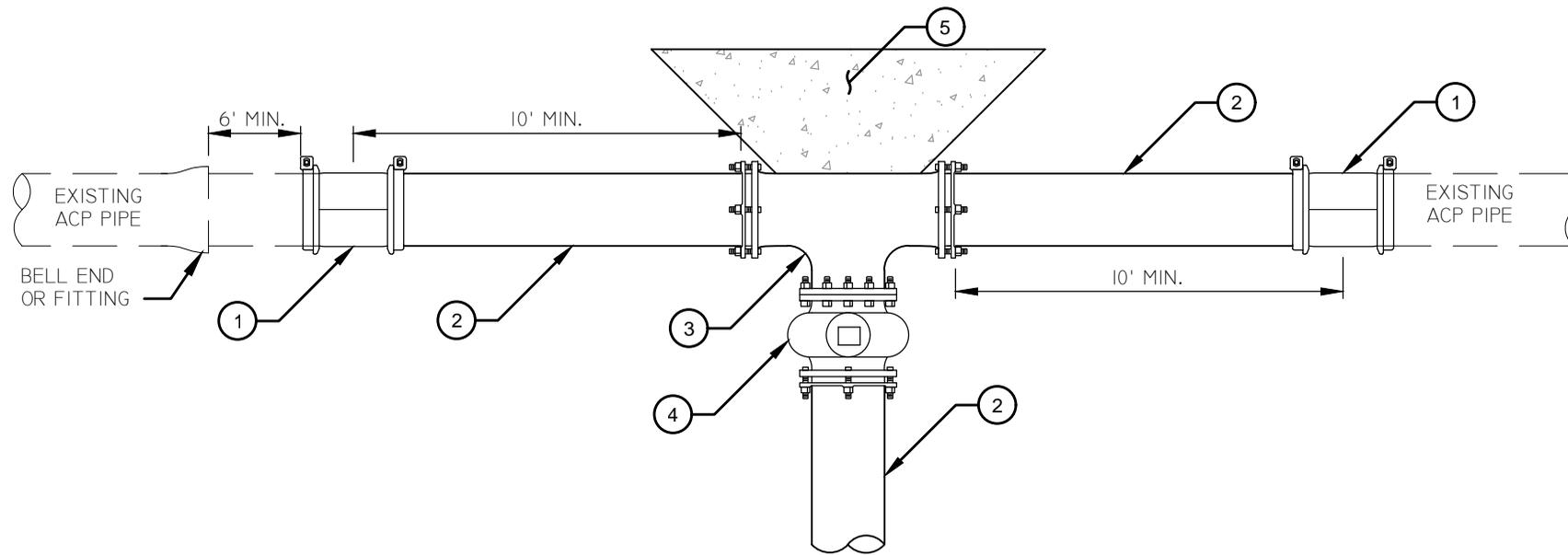


VALVE ABANDONMENT

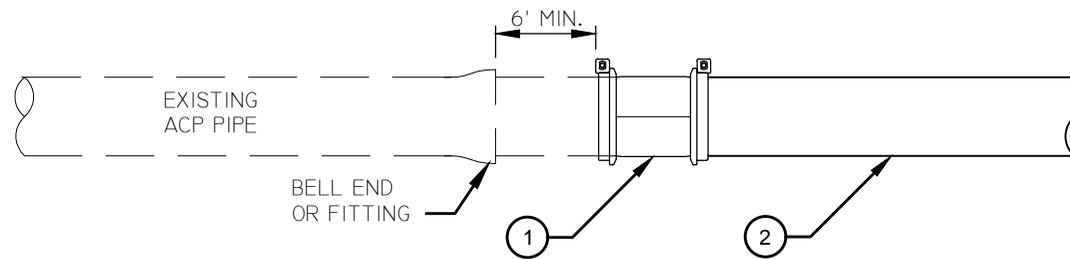
NOTES

1. FOR ABANDONING A LATERAL VALVE LOCATED DIRECTLY ON A TEE OR OUTLET, CAP THE FLANGED END OF THE VALVE.
2. FOR ABANDONING A SLIP-ON VALVE, REMOVE THE EXISTING VALVE AND CAP THE END OF THE REMAINING SECTION OF PIPE THAT WAS CONNECTED TO THE VALVE.
3. REFER TO COM DETAIL M-1309 (OLD M-50) FOR SPECIFIC REQUIREMENTS FOR CUT AND PLUG.

NOT TO SCALE



DUCTILE IRON PIPE TEE CUT IN DETAIL FOR EXISTING ACP PIPE



IN-LINE DUCTILE IRON PIPE TO ACP CONNECTION DETAIL

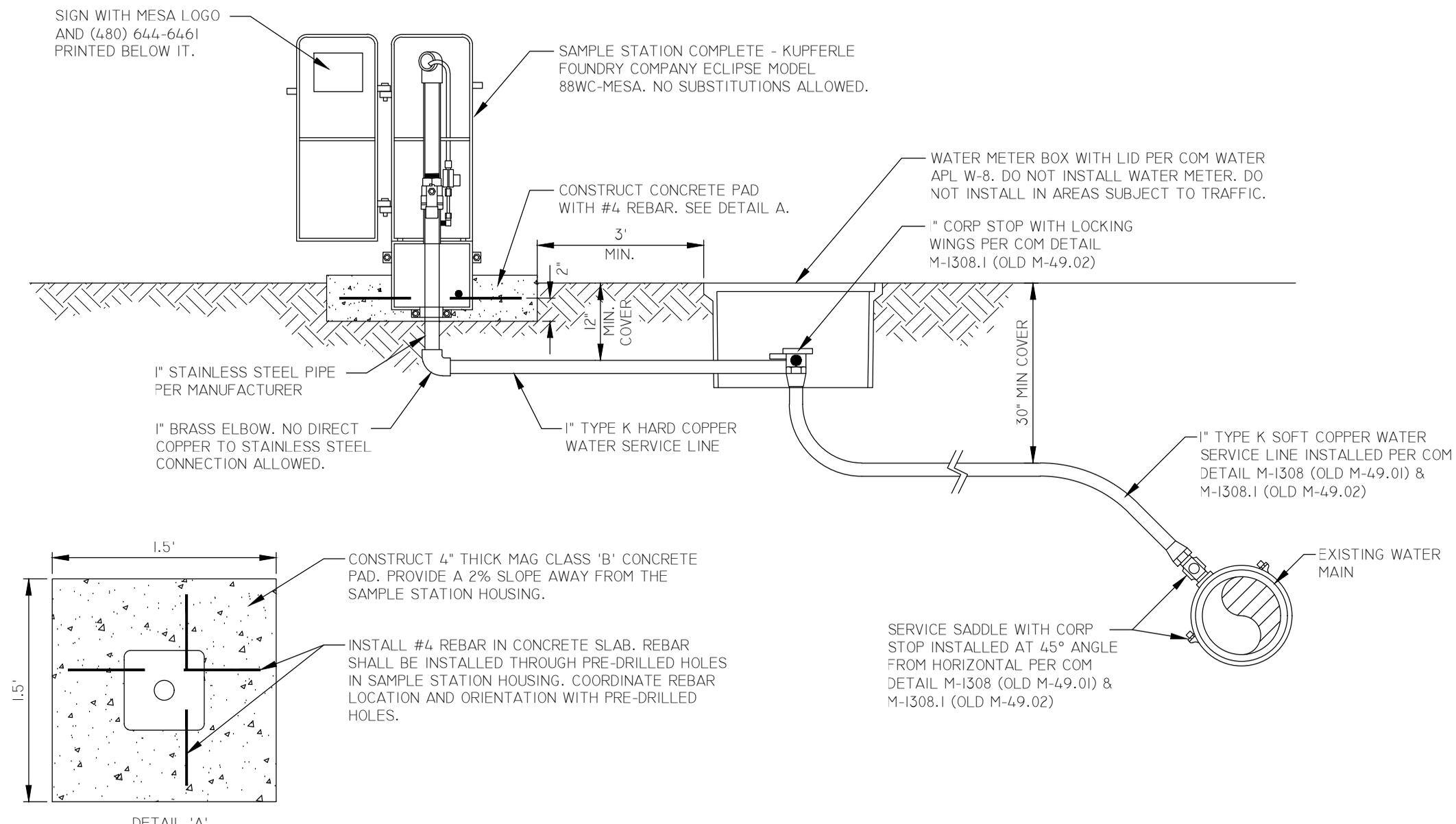
INSTALLATION NOTES:

- ① HIGH RANGE FLEXIBLE COUPLING PER CITY OF MESA APPROVED PRODUCTS LIST.
- ② NEW DIP WATER PIPE.
- ③ MJ X MJ X FL DIP TEE.
- ④ FL X MJ GATE VALVE.
- ⑤ THRUST BLOCKING PER MAG STANDARD DETAIL 380.

NOTES:

- 1. INSTALLATION AND CORROSION PROTECTION PER MAG SPECIFICATION SECTION 600.
- 2. ALL JOINTS TO BE RESTRAINED PER MAG STANDARDS. ENGINEER TO EVALUATE EACH CUT IN CONDITION TO DETERMINE THE NECESSITY FOR ADDITIONAL THRUST BLOCKING ALONG THE EXISTING ACP PIPE.
- 3. ALL FITTINGS, VALVES, AND PIPE SHALL MEET CITY OF MESA SPECIFICATIONS, DETAILS, AND APPROVED PRODUCTS LIST.

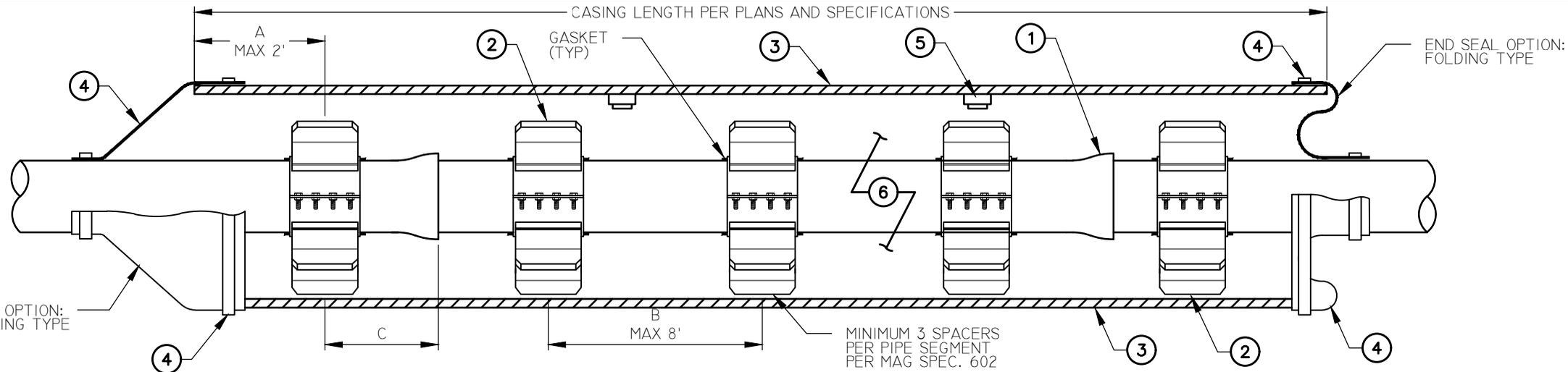
NOT TO SCALE



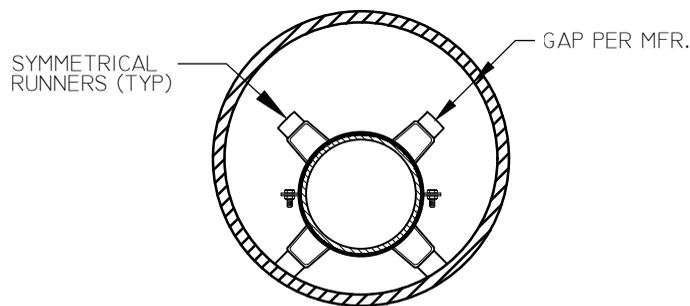
WATER SAMPLING STATION

OLD
M-54.02

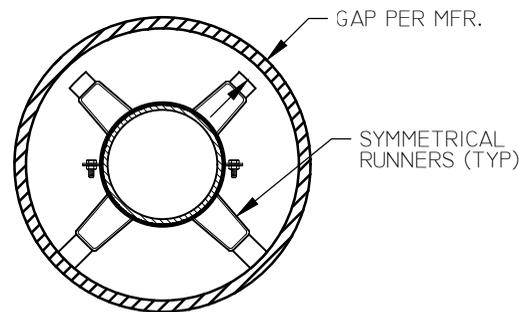
DETAIL NO.
M-1312



CASING INSTALLATION PROFILE VIEW



SECTION VIEW
STANDARD POSITION



SECTION VIEW
CENTERED POSITION

DIMENSION NOTES:

- A. CASING END TO SPACER DISTANCE SHALL BE PER MANUFACTURER RECOMMENDATION, MAXIMUM 2'.
- B. SPACER SEPARATION DISTANCE SHALL BE PER MANUFACTURER RECOMMENDATION. THE MAXIMUM SEPARATION DISTANCE SHALL BE 8', AND A MINIMUM NUMBER OF THREE SPACERS SHALL BE INSTALLED PER PIPE SEGMENT PER MAG SPECIFICATION SECTION 602.
- C. JOINT TO SPACER DISTANCE PER MANUFACTURER RECOMMENDATION.

INSTALLATION NOTES:

- ① RESTRAINED JOINT CARRIER PIPE PER CITY OF MESA APPROVED PRODUCTS LIST.
- ② STAINLESS STEEL CASING SPACERS PER CITY OF MESA APPROVED PRODUCTS LIST. INSTALL THREE PER PIPE MINIMUM.
- ③ STEEL CASING LENGTH, DIAMETER, MATERIAL, AND FABRICATION SHALL BE PER MAG SPECIFICATION SECTION 602 AND APPROVED PROJECT PLANS AND SPECIFICATIONS.
- ④ CASING END SEAL WITH STAINLESS STEEL RETAINING BANDS PER CITY OF MESA APPROVED PRODUCTS LIST.
- ⑤ STEEL CASING 37" I.D. OR LARGER SHALL BE INSTALLED WITH GROUT CONNECTIONS. GROUT CONNECTIONS AND GROUTING SHALL BE PER MAG SPECIFICATION 602.
- ⑥ ANNULAR SPACE BETWEEN CASING AND CARRIER PIPE SHALL BE LEFT EMPTY PER MAG SPEC. 602, UNLESS OTHERWISE INDICATED IN PROJECT PLANS AND SPECIFICATIONS.
- ⑦ CONTRACTOR TO REFER TO CITY OF MESA STANDARD DETAILS M-1203.3 (OLD M-19.04.1) AND M-1203.4 (OLD M-19.04.2) FOR OPEN TRENCH INSTALLATIONS OF CASING PIPES FOR BACKFILL AND PAVEMENT REPAIR REQUIREMENTS.

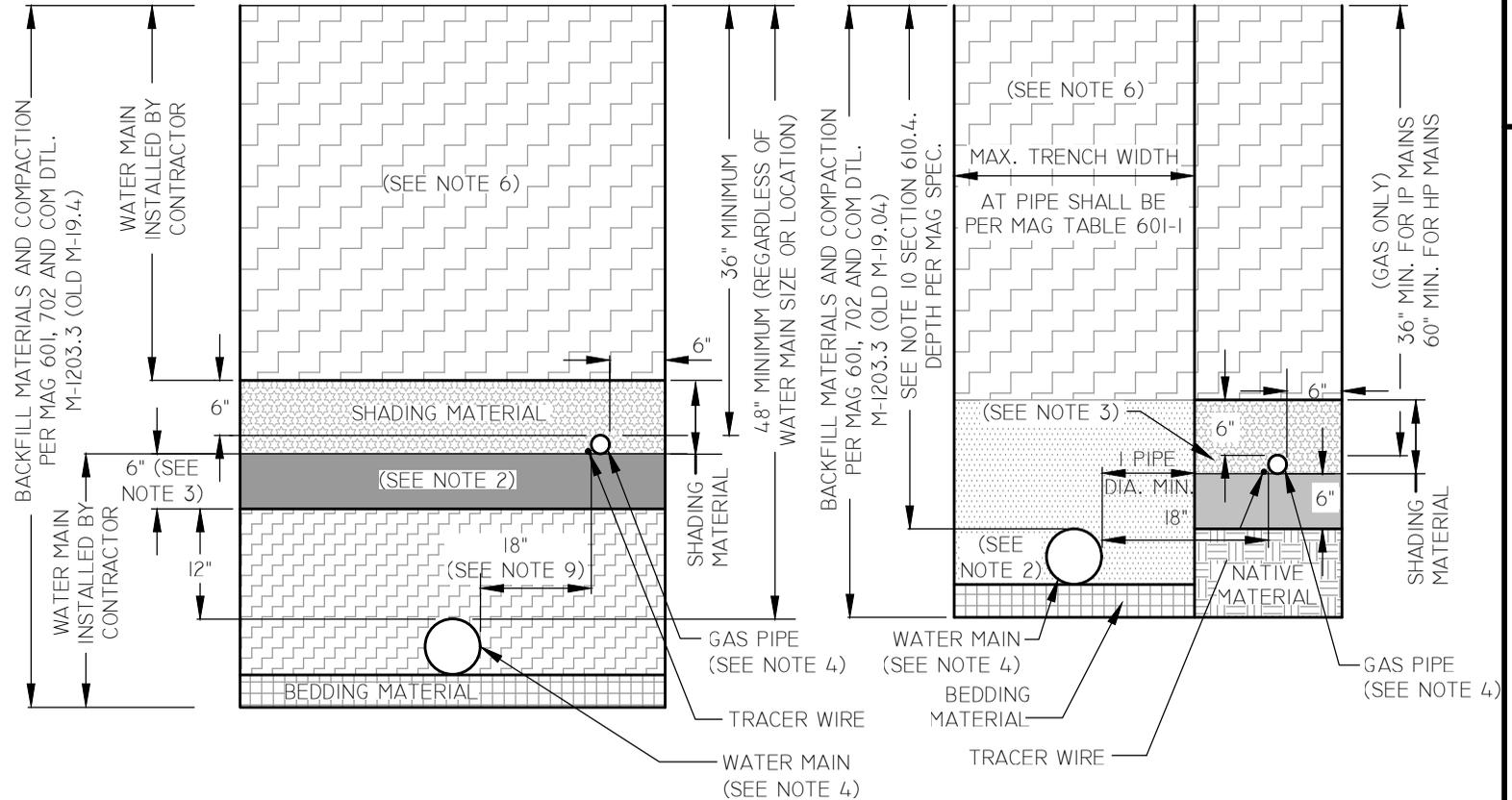
GENERAL NOTES:

- THE INTENT OF THIS DETAIL IS TO PROVIDE GUIDANCE FOR GENERAL CASING INSTALLATION FOR DUCTILE IRON PIPE WATER MAINS AND IS NOT INTENDED TO COVER CONCRETE CYLINDER PIPE OR INSTALLATIONS WITH SPECIAL REQUIREMENTS SUCH AS GAS MAINS, LIGHT RAIL, ETC.
- CATHODIC PROTECTION REQUIREMENTS SHALL BE PER APPROVED PROJECT PLANS AND SPECIFICATIONS.
- CASING THICKNESS AND DESIGN SHALL BE PER MAG SPECIFICATION SECTION 602, MANUFACTURER'S RECOMMENDATION, AND PROJECT PLANS AND SPECIFICATIONS.
- RESTRAINED LENGTH IN CASINGS SHALL NOT BE CONSIDERED AS PART OF THE RESTRAINT LENGTH FOR THRUST CALCULATION PURPOSES.
- ACCEPTABLE CARRIER PIPE INSTALLATION POSITIONS ARE STANDARD AND CENTERED, AS SHOWN ABOVE..
- CARE MUST BE EXERCISED TO AVOID METAL TO METAL CONTACT BETWEEN THE CARRIER AND CASING PIPE.
- INSTALLATION SHALL CONFORM TO AWWA M41.

NOT TO SCALE

NOTES

- GAS PIPE SHALL HAVE A MINIMUM OF 36" COVER AS MEASURED FROM WHICHEVER IS LOWER, FINISHED GRADE OF PAVEMENT OR NATURAL GROUND, UNLESS OTHERWISE NOTED. "BLUE TOPS" MAY BE REQUESTED TO VERIFY COVER AS REQUIRED PER NOTE 1 OF COM DETAIL M-1308 (OLD M-49.1).
- AFTER THE WATER MAIN HAS BEEN INSTALLED, THE WATER MAIN CONTRACTOR SHALL INSTALL BEDDING MATERIAL OR SOIL FREE OF ROCKS OR DEBRIS THAT WILL PASS THROUGH A 3/8" SCREEN AS INSPECTED AND APPROVED BY THE CITY OF MESA GAS ENGINEER TO PROVIDE A LEVEL UNIFORM BEARING SURFACE FOR THE INSTALLATION OF THE GAS PIPE. THE CITY OF MESA OR ITS GAS LINE CONTRACTOR WILL FURNISH AND INSTALL THE GAS PIPE AND TRACER WIRE AFTER THE WATER MAIN HAS BEEN INSTALLED.
- SHADING MATERIAL ADJACENT TO THE CITY OF MESA GAS PIPE SHALL BE SELECT SANDY TYPE SOIL FREE OF ROCKS OR DEBRIS THAT WILL PASS THROUGH A 3/8" SCREEN AS INSPECTED AND APPROVED BY CITY OF MESA GAS INSPECTION PERSONNEL. UNLESS OTHERWISE APPROVED BY THE CITY OF MESA, THE CITY OF MESA OR ITS GAS LINE CONTRACTOR SHALL FURNISH ALL SHADING MATERIAL AND INSTALL THE SHADING MATERIAL FROM THE BOTTOM OF THE GAS PIPE TO 6" ABOVE THE TOP OF THE GAS PIPE.
- SEE CONSTRUCTION PLANS FOR WATER MAIN AND GAS PIPE SIZES.
- WHERE WATER AND GAS ARE INSTALLED IN A JOINT TRENCH, THE WATER MAIN CONTRACTOR SHALL ADJUST BOTH WATER AND GAS VALVE HOUSING BOXES TO FINISHED GRADE ACCORDING TO THE APPLICABLE STANDARD DETAIL. ALSO, THE WATER MAIN CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN ALL NECESSARY BARRICADING, STEEL PLATING AND TRENCH SHORING REQUIRED DURING GAS INSTALLATION.
- THE WATER MAIN CONTRACTOR SHALL COMPLETE ALL BACKFILL TO FINISHED GRADE AFTER THE GAS PIPE INSTALLATION IS COMPLETED.
- A MINIMUM OF 12" OF SEPARATION SHALL BE MAINTAINED BETWEEN GAS PIPE, WATER MAIN AND OTHER UNDERGROUND FACILITIES WHEN OVERCROSSING OR UNDERCROSSING.
- TRENCH DETAIL 'A' SHALL BE USED FOR NEW DEVELOPMENT INSTALLATIONS AND TRENCH DETAIL 'B' SHALL BE USED FOR RETROFIT INSTALLATIONS UNLESS OTHERWISE SPECIFIED AND/OR APPROVED BY THE CITY OF MESA INSPECTOR.
- AT A MINIMUM GAS LINE INSTALLATION SHALL MAINTAIN 18-INCH HORIZONTAL SEPARATION FROM THE OUTSIDE DIAMETER OF THE WATER MAIN.
- ACCEPTANCE OF JOINT TRENCH INSTALLATION SHALL BE ON A CASE BY CASE BASIS AND APPROVAL IN WRITING FROM WATER RESOURCES AND ENERGY RESOURCES IS REQUIRED.



TRENCH DETAIL 'A'
(PREFERRED FOR NEW DEVELOPMENT)

TRENCH DETAIL 'B'
(PREFERRED FOR RETROFIT)

LEGEND

- INSTALLED BY THE CITY OR ITS GAS LINE CONTRACTOR
- GAS BEDDING MATERIAL INSTALLED BY CONTRACTOR/DEVELOPER'S CONTRACTOR

- ALL WATER MAINS IN ARTERIALS, MAJOR COLLECTORS, OR AS DIRECTED BY THE CITY ENGINEER SHALL HAVE A MINIMUM COVER OF 48-INCHES OVER THE TOP OF THE PIPE. WATER MAINS IN OTHER LOCATIONS SHALL HAVE A MINIMUM COVER OVER THE TOP OF THE PIPE AS FOLLOWS:
 - 36-INCHES FOR MAINS SMALLER THAN 12-INCHES
 - 48-INCHES FOR 12-INCH MAINS.
- THIS DETAIL ONLY APPLIES TO WATER MAINS WITH DIAMETERS 12 INCHES AND UNDER. ACCEPTABILITY OF JOINT-USE TRENCHES FOR WATER MAINS LARGER THAN 12-INCHES IN DIAMETER WILL BE EVALUATED ON AN INDIVIDUAL BASIS.

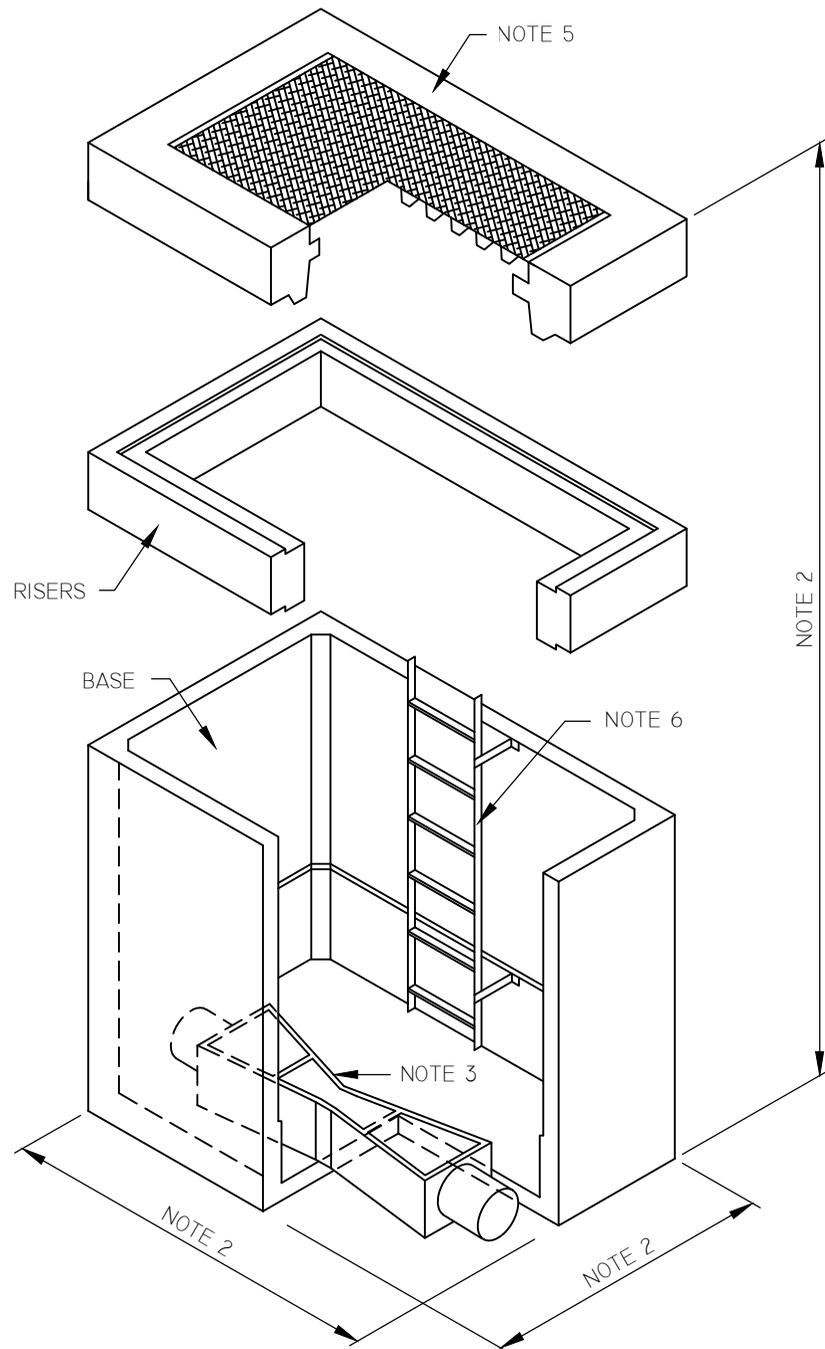
NOT TO SCALE



JOINT USE WATER AND GAS TRENCH DETAIL
CITY UTILITIES ONLY

OLD
M-58

DETAIL NO.
M-1314

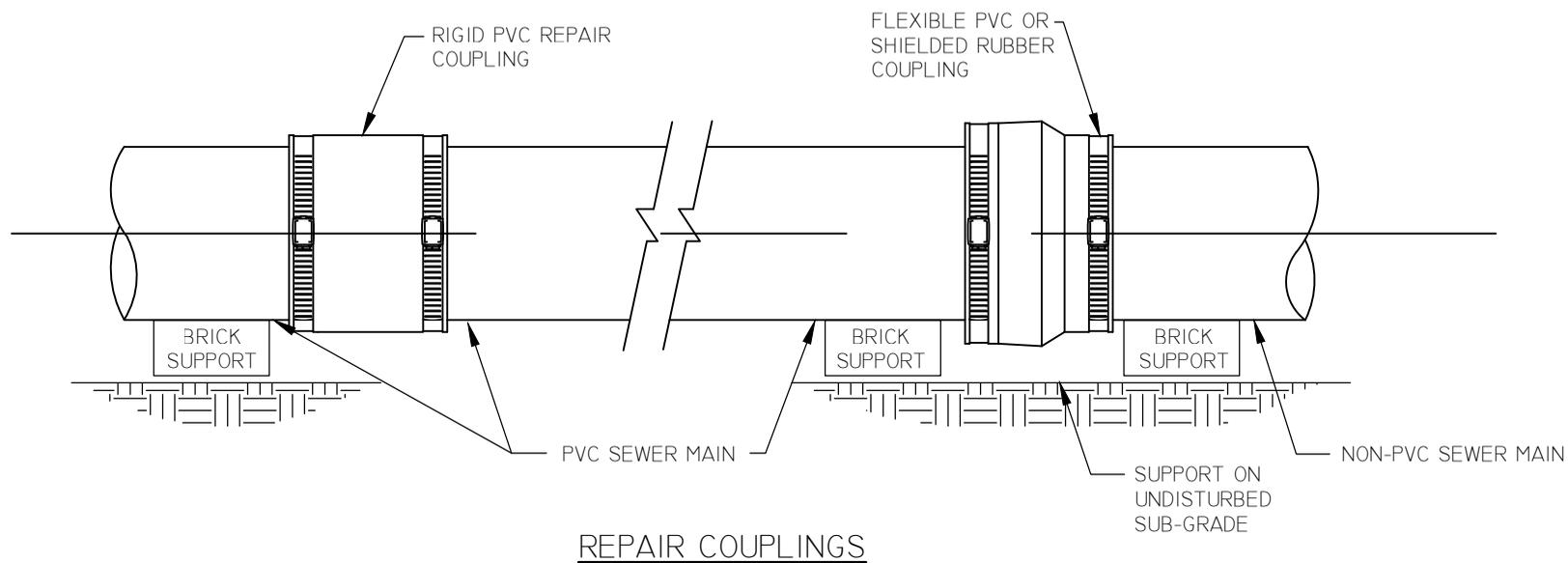


NOTES

1. VAULT SHALL BE INSTALLED ONLY IN NON-TRAFFIC AREAS.
2. THE SIZE OF THE VAULT SHALL BE DETERMINED BY THE SIZE OF THE PRIMARY MEASURING DEVICE.
3. THE SELECTION OF TYPE AND SIZE OF A PRIMARY MEASURING DEVICE SHALL BE APPROVED BY THE CITY OF MESA INDUSTRIAL PRETREATMENT SECTION.
4. VAULT SHALL BE A PRE-CAST CONCRETE FLUME VAULT BY UTILITY VAULT CO., SMITH PRECAST, OR EQUAL. LIFTING INSERTS AND ACCESS DOORS INSTALLED BY PRE-CAST MANUFACTURER.
5. ACCESS DOORS SHALL BE HINGED, FLUSH MOUNTED WITH RECESSED LIFTING HANDLES AND SHALL HAVE PENTAHEAD LOCKING BOLTS WITH A RECESSED AREA FOR SECURING THE VAULT WITH A PADLOCK AND SHALL BE TORSION ASSISTED. THE ACCESS DOORS SHALL HAVE A CLEAR OPENING OF NOT LESS THAN 36" X 60".
6. LADDER SHALL BE A MINIMUM OF 1.5 FEET WIDE. LADDER AND ALL LADDER HARDWARE SHALL BE FIBERGLASS OR STAINLESS STEEL.
7. WHEN REQUIRED FOR THE PURPOSE OF OBTAINING MONTHLY CITY OF MESA WASTEWATER SERVICE CHARGE INFORMATION, THE SECONDARY MEASURING DEVICE SHALL BE A PULSAR OPEN CHANNEL MONITOR. MODEL TYPE TO BE APPROVED BY THE CITY OF MESA'S INDUSTRIAL PRETREATMENT SECTION.

NOTES

1. PVC TYPE COUPLINGS SHALL BE USED FOR ALL REPAIRS ON PVC SEWER LINES.
2. SHIELDED RUBBER TYPE COUPLINGS MAY BE USED ONLY WHEN REPAIRING OTHER TYPES OF SEWER LINES, SUCH AS CLAY, DUCTILE IRON, OR TRANSITIONS FROM PVC TO OTHER TYPE PIPE.
3. APPROVED GASKETED SEWER FITTINGS INCLUDE FERNCO AND MULTI FITTINGS, INC.
4. BACKFILL MATERIAL FROM THE BOTTOM OF THE EXCAVATION TO THE SPRING LINE OF THE PIPE SHALL BE PLACED TO PROVIDE FULL SUPPORT FOR THE PIPE. BACKFILL THAT IS USED FOR THIS PURPOSE SHALL BE GRANULAR PER MAG SECTION 601.4.6; BE PLACED AT A MOISTURE CONTENT SUCH THAT IT IS SEMI-FLOWABLE; BE LOW-SHRINK AND REQUIRE MINIMAL COMPACTION EFFORT. MATERIALS ALLOWED INCLUDE CONTROLLED LOW STRENGTH MATERIAL (CLSM) PER MAG SECTION 728, PORTLAND CEMENT PER MAG SECTION 725, ABC SLURRY OR PEA GRAVEL.
5. APPROPRIATELY SIZED ADDITIONAL BRICK SUPPORT SHALL BE PROVIDED ON EACH CONNECTING PIPE REGARDLESS OF SIZE. BRICK SUPPORTS SHALL ALIGN THE FLOW LINE OF EACH CONNECTING PIPE AND BE PLACED ON UNDISTURBED SUB-GRADE.

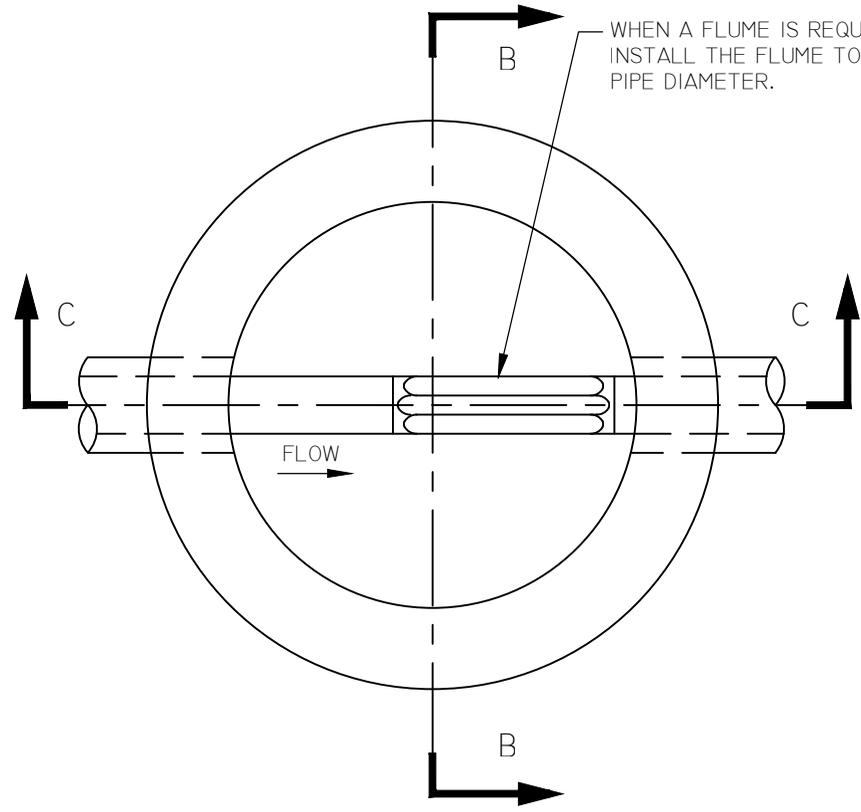


REPAIR COUPLINGS

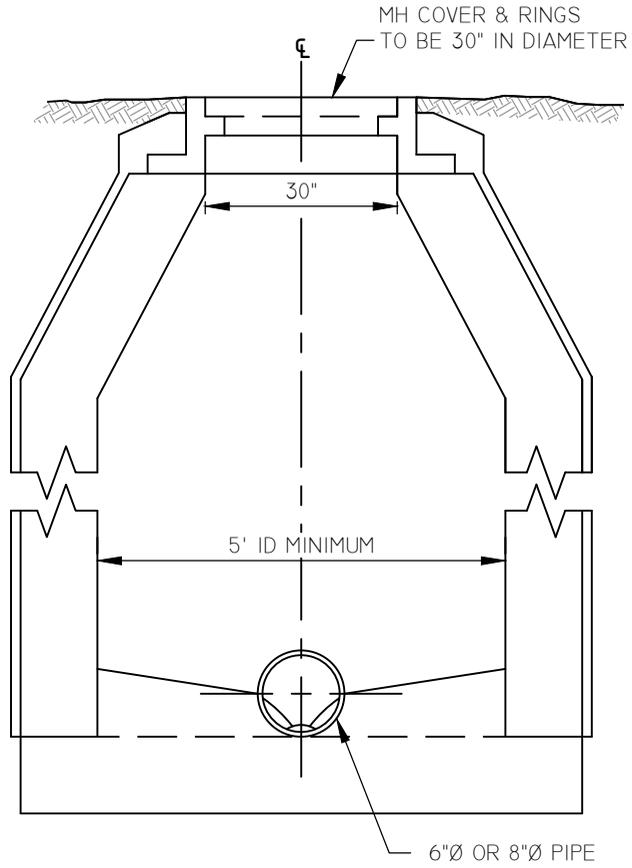
NOT TO SCALE

NOTES

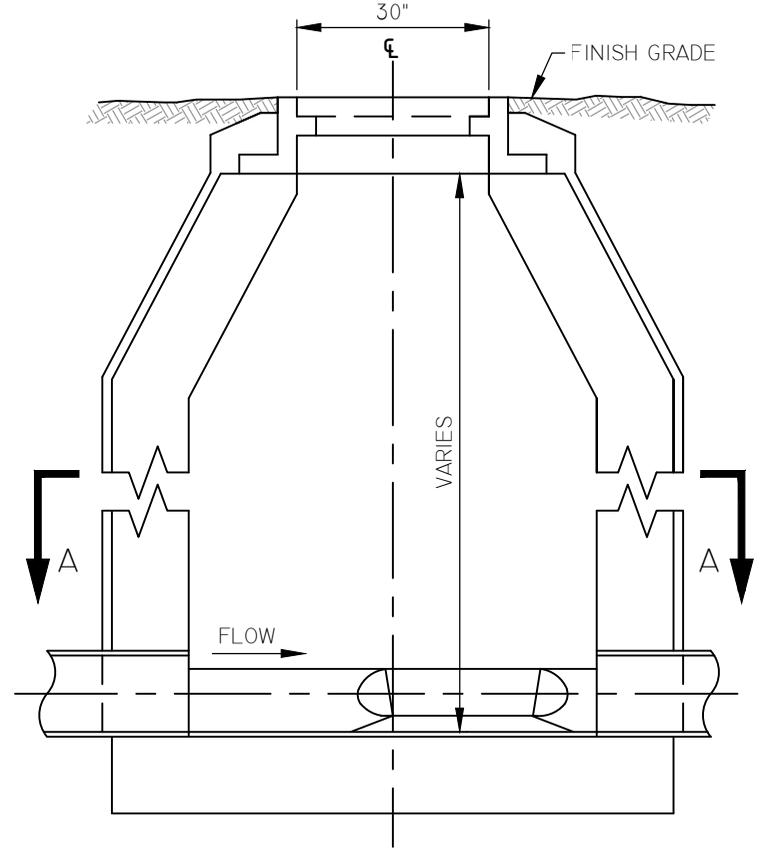
1. THIS CONTROL MANHOLE PLAN SHALL BE USED FOR 6" AND 8" DIAMETER SEWERS AND NOT EXCEED 0.8 CU FT PER SECOND FLOW. LARGER SEWERS REQUIRE SPECIAL DESIGN.
2. ONLY ONE INLET AND OUTLET PIPE SHALL BE CONSTRUCTED THROUGH CONTROL MANHOLE. THE NEAREST JUNCTION BETWEEN THE INLET PIPE AND OTHER CONNECTING SEWERS SHOULD BE LOCATED A MINIMUM OF SIX FEET UPSTREAM.
3. CONSTRUCT MANHOLE ON STRAIGHT RUN OF SEWER PIPE. FLOW SHALL BE STRAIGHT THROUGH AS SHOWN.
4. ALL MANHOLE CONSTRUCTION SHALL BE PER MAG DETAIL 420 AND 424 EXCEPT AS REQUIRED ON THIS DETAIL. ECCENTRIC CONICAL TOPS ARE ALLOWABLE.
5. WHEN THE INDUSTRIAL WASTE SECTION REQUIRES THE INSTALLATION OF A PRIMARY FLOW MEASUREMENT DEVICE, THE SELECTION OF THE TYPE OF FLUME MUST BE BASED ON THE EXISTING SITE CONFIGURATION, THE NATURE OF THE FLOW, AND THE RANGE OF EXPECTED FLOWS. DOCUMENTATION OF THE METHOD USED TO DETERMINE THE TYPE AND SIZE OF FLUME MUST BE SUBMITTED TO THE INDUSTRIAL WASTE SECTION FOR WRITTEN APPROVAL PRIOR TO CONSTRUCTION.



SECTION A-A

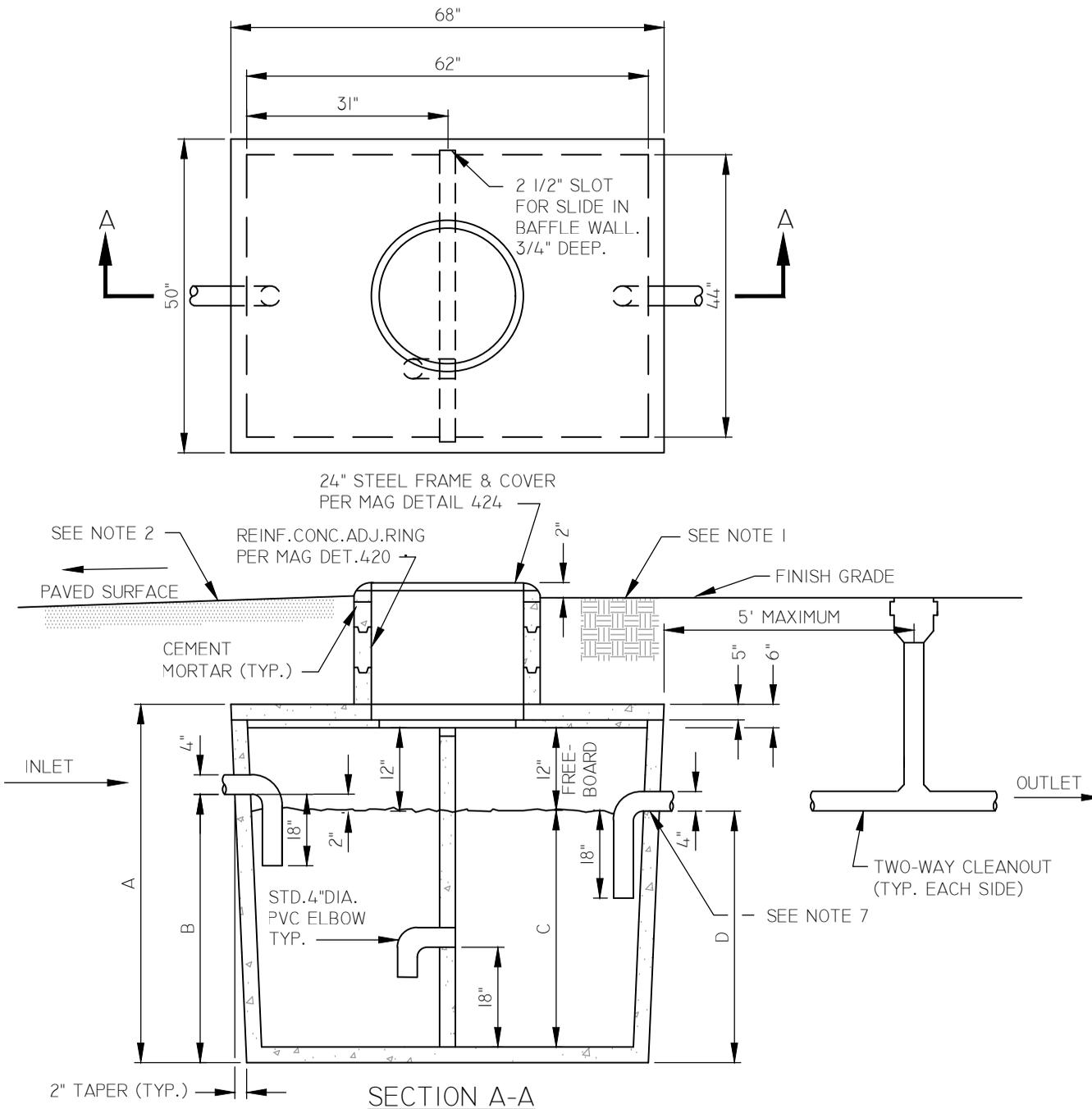


SECTION B-B



SECTION C-C

NOT TO SCALE

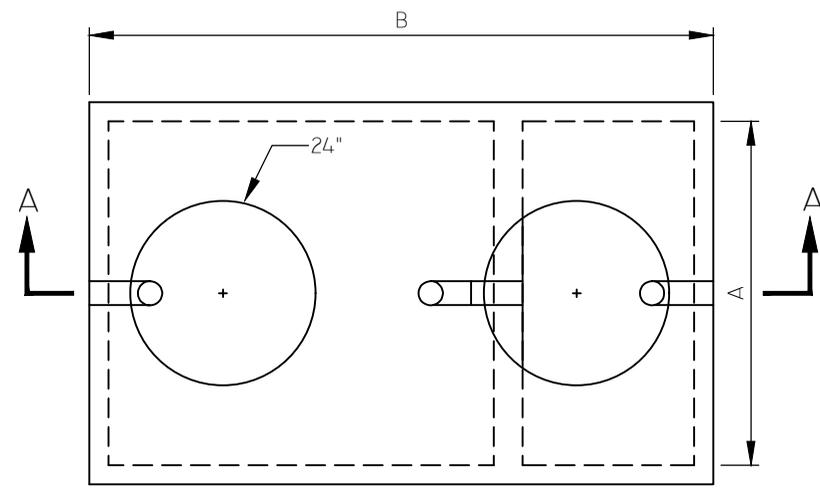


NOTES

1. WHEN INSTALLED IN UNPAVED AREAS, ELEVATE MANHOLE LID ABOVE SURROUNDING GRADE TO EXCLUDE SURFACE WATER. DO NOT INSTALL IN RETENTION OR WATER PONDING AREAS.
2. IF INSTALLED IN A PAVED OR CONCRETE AREA, SLOPE SURFACE AWAY FROM LID TO PROTECT AGAINST ENTRANCE OF SURFACE WATER.
3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE A MINIMUM OF 2-FEET OUTSIDE OF BUILDING FOUNDATION.
4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. AT A MINIMUM, DESIGN FOR H-20 LOADING.
5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.
7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.
8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

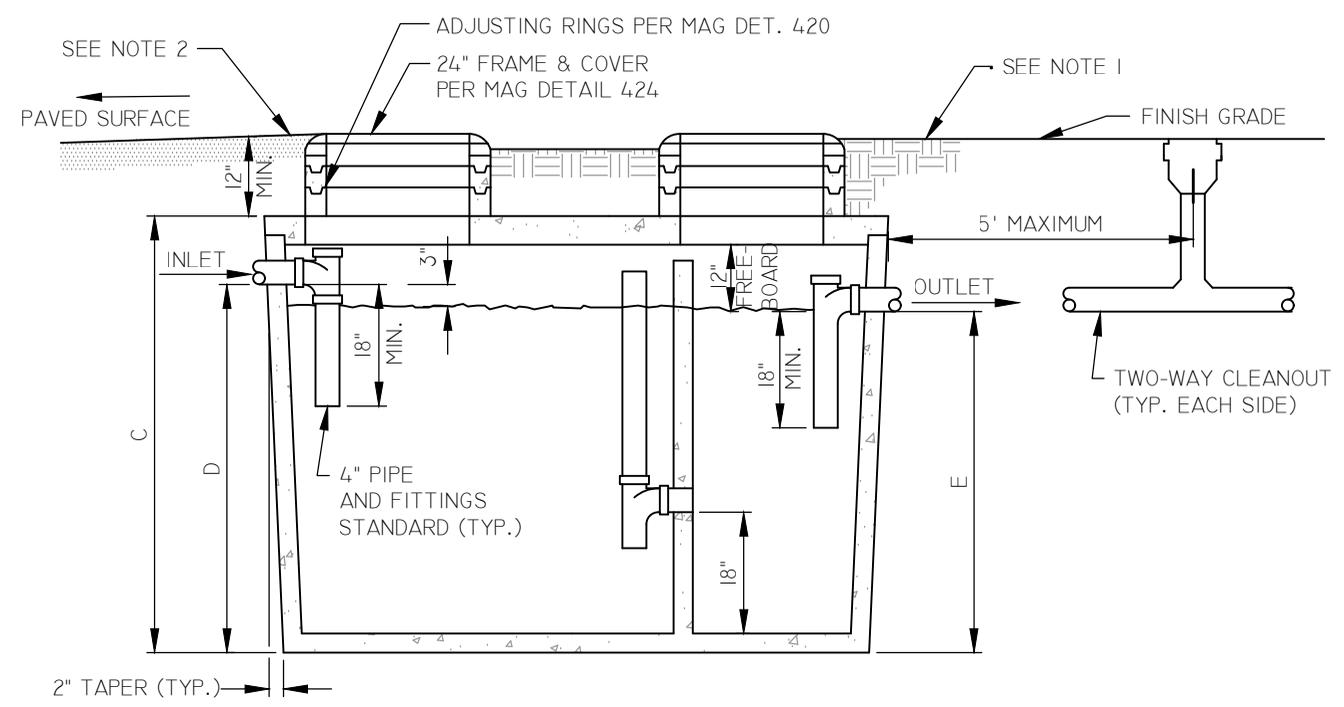
TANK SIZE	A	B	C	D
350 GAL.	58"	41"	35"	38"
500 GAL.	69"	54"	48"	51"

NOT TO SCALE



PLAN VIEW

(COVERS AND RINGS NOT SHOWN)



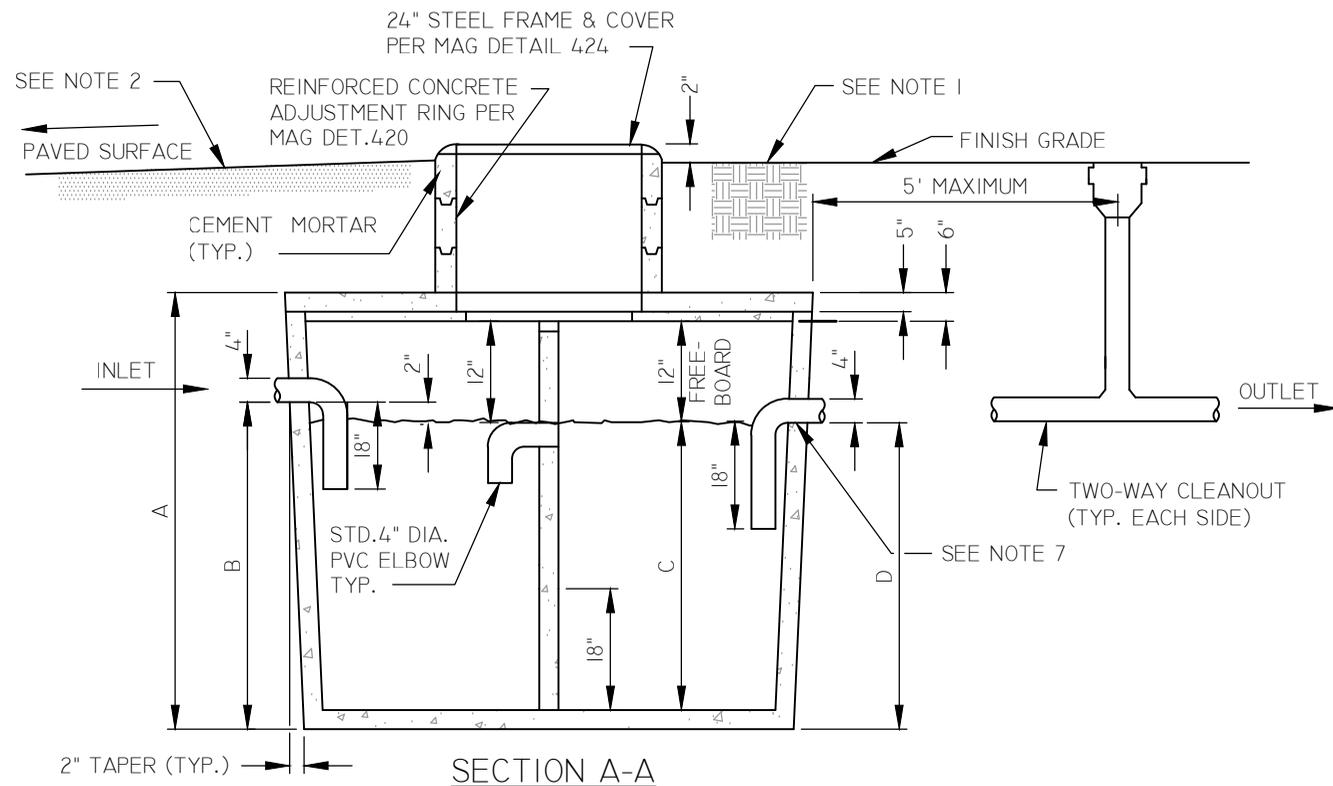
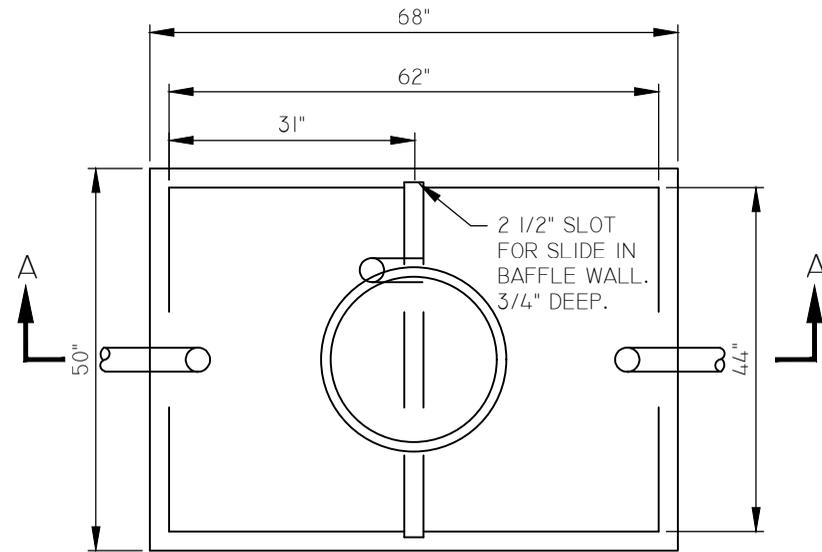
SECTION A-A

NOTES

1. WHEN INSTALLED IN UNPAVED AREAS, ELEVATE MANHOLE LIDS 2-INCHES MINIMUM ABOVE SURROUNDING GRADE TO EXCLUDE SURFACE WATER. DO NOT INSTALL IN RETENTION OR WATER-PONDING AREAS.
2. IF INSTALLED IN A PAVED OR CONCRETE AREA, SLOPE SURFACE AWAY FROM MANHOLE LIDS TO PROTECT AGAINST ENTRANCE OF SURFACE WATER.
3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE A MINIMUM OF 2-FEET OUTSIDE OF BUILDING FOUNDATION.
4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. AT A MINIMUM, DESIGN FOR H-20 LOADING.
5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.
7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.
8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

TANK SIZE	A	B	C	D	E
320 GAL.	3'-0"	7'-0"	4'-6"	3'-7"	3'-4"
500 GAL.	4'-0"	6'-0"	5'-10"	4'-10"	4'-7"

NOT TO SCALE



NOTES

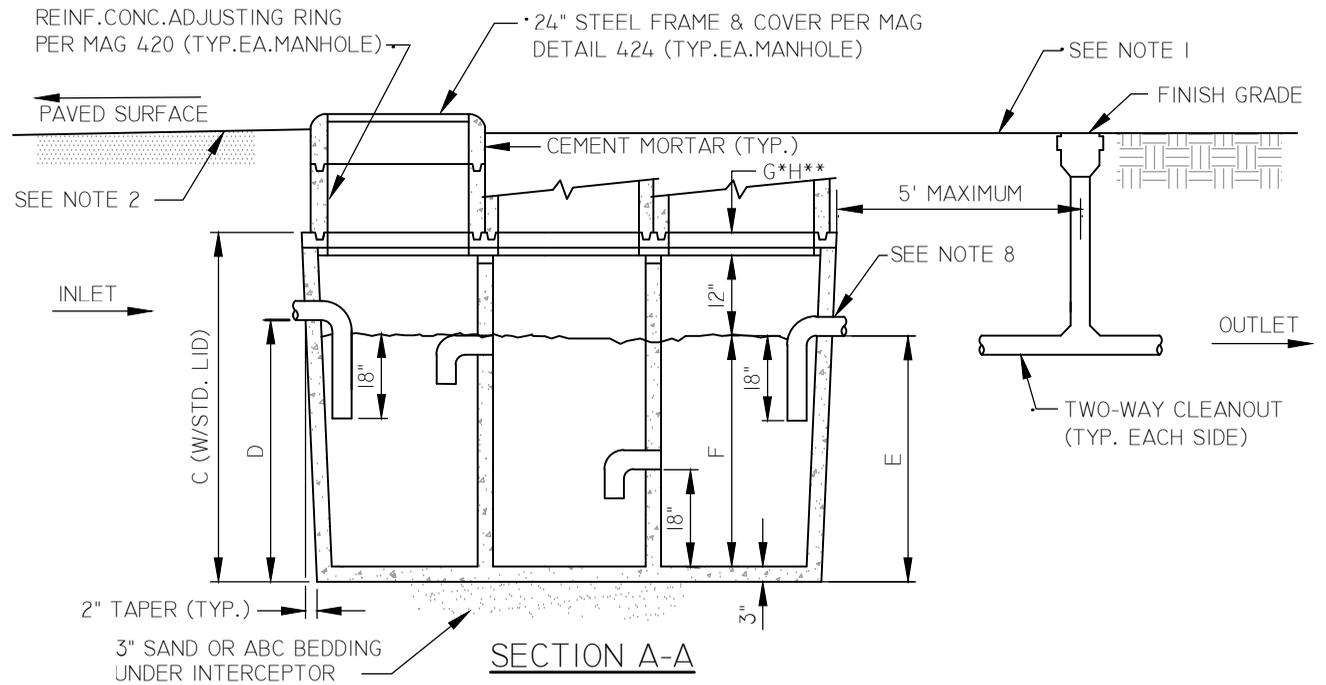
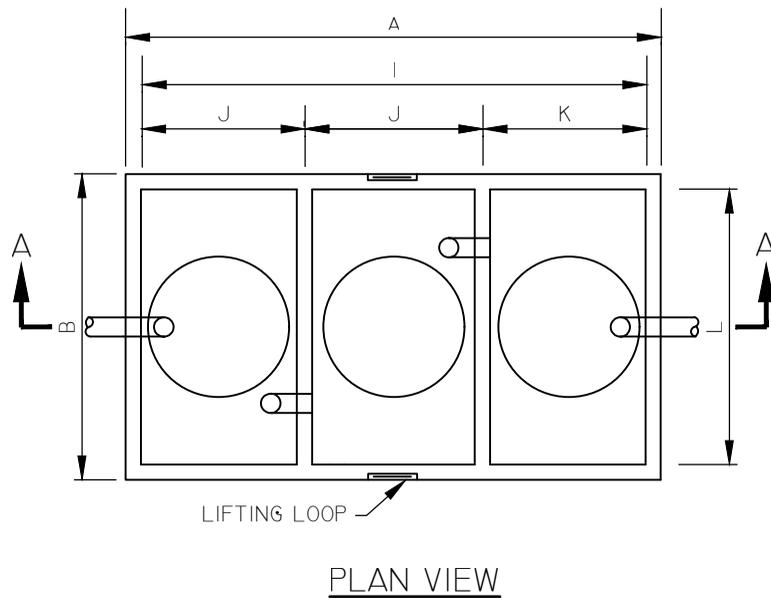
1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER.
3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2-FEET OUTSIDE OF BLDG. FOUNDATION.
4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.
7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.
8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

TANK SIZE	A	B	C	D
350 GAL.	58"	41"	35"	38"
500 GAL.	69"	54"	48"	51"

NOT TO SCALE

NOTES

1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.
2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER.
3. DIMENSIONS SHOWN ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR.
4. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2-FEET OUTSIDE OF BUILDING FOUNDATION.
5. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.
6. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.
7. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC. SEC. 206.
8. INLET AND OUTLET TO BE WATERTIGHT TO STRUCTURE.



TANK SIZE	A	B	C	D	E	F	G	H	I	J	K	L
750	102"	50"	69"	54"	51"	48"	6"	6"	96"	31"	31"	44"
1050	125"	61"	64"	48"	46"	43"	6"	8"	119"	40"	39"	55"
1250	125"	61"	72"	56"	54"	51"	6"	8"	119"	40"	39"	55"
1500	125"	61"	82"	66"	64"	61"	6"	8"	119"	40"	39"	55"
2000	156"	81"	71"	53"	51"	48"	8"	10"	150"	51"	48"	75"
2500	156"	81"	80"	62"	60"	57"	8"	10"	150"	51"	48"	75"

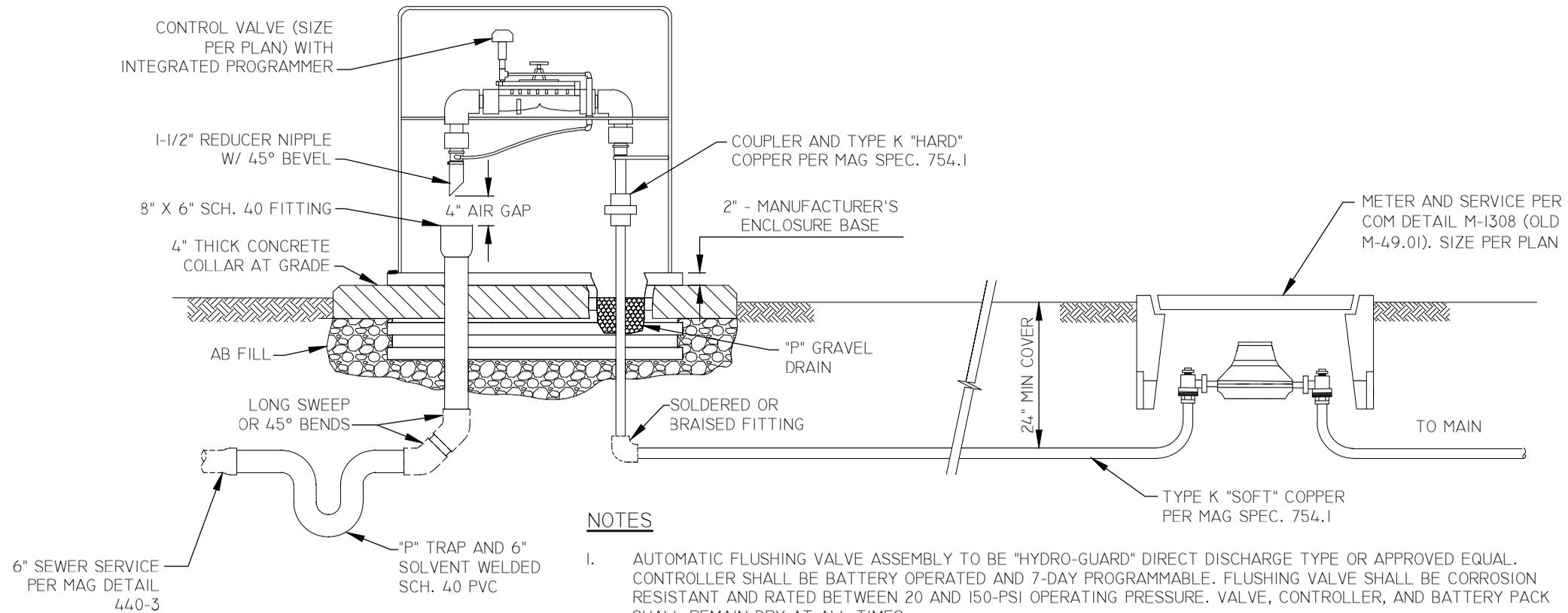
NOT TO SCALE



INDUSTRIAL WASTE INTERCEPTOR

OLD
M-36.03

DETAIL NO.
M-1403.3



THE INSTALLATION OF WATER LINE FLUSHING ASSEMBLIES SHALL BE APPROVED IN WRITING BY WATER RESOURCES ON A CASE BY CASE BASIS.

NOTES

1. AUTOMATIC FLUSHING VALVE ASSEMBLY TO BE "HYDRO-GUARD" DIRECT DISCHARGE TYPE OR APPROVED EQUAL. CONTROLLER SHALL BE BATTERY OPERATED AND 7-DAY PROGRAMMABLE. FLUSHING VALVE SHALL BE CORROSION RESISTANT AND RATED BETWEEN 20 AND 150-PSI OPERATING PRESSURE. VALVE, CONTROLLER, AND BATTERY PACK SHALL REMAIN DRY AT ALL TIMES.
2. ALL MOUNTING BRACKETS AND HARDWARE SHALL BE STAINLESS STEEL.
3. ENCLOSURE SHALL BE MANUFACTURED BY CHANNEL, HYDRO-GUARD, OR APPROVED EQUAL, AND SECURED BY LOCKING DEVICE. COLOR SHALL BE DESERT TAN OR PER PROJECT SPECIFICATIONS.
4. DRAINAGE SHALL BE DIRECTED AWAY FROM THE ASSEMBLY.
5. SERVICE LINE, METER AND CONTROL VALVE TO BE THE SAME SIZE.
6. APPROVED FLUSHING ASSEMBLY SIZES ARE 1", 1-1/2", AND 2".

NOT TO SCALE

PLANTING NOTES

<p>NATIVE PLANTING BACKFILL MIX:</p>	<p>MIX SHALL CONSIST OF 'NATIVE' SITE SOIL (NO CALICHE IN BACKFILL). REMOVE ALL INORGANIC MATERIAL GREATER THAN 1" IN SIZE. SOIL MIX SHALL BE WATER SETTLED WITHOUT POOLING. NO ADDITIONAL FERTILIZATION REQUIRED IN NATIVE PLANTING BACKFILL MIX.</p>
<p>AMENDED PLANTING BACKFILL MIX:</p>	<p>MIX SHALL CONSIST OF: 1/2 PART 'NATIVE' SITE SOIL (NO CALICHE IN BACKFILL) & 1/2 PART MULCH (*HUMUS) *NATURAL FERTILE, FRIABLE SOIL THOROUGHLY MIXED PRIOR TO BACKFILLING PIT. REMOVE ALL INORGANIC MATERIAL GREATER THAN 1" IN SIZE. SOIL BACKFILLING SHALL BE ACCOMPLISHED IN 6" LIFTS. EACH LIFT SHALL BE WATER SETTLED WITHOUT POOLING.</p>
<p>FERTILIZER TABLETS:</p>	<p>FERTILIZER TABLETS SHALL BE AGRIFORM OR EQUAL (21 GRAM 20-20-5) SLOW RELEASE. TABLETS SHALL BE PLACED AT 1/2 THE DEPTH OF THE ROOTBALL AT THE FOLLOWING RATES:</p> <ul style="list-style-type: none"> 1 TABLET PER 1 GALLON CONTAINER 2 TABLETS PER 5 GALLON CONTAINER 3 TABLETS PER 15 GALLON CONTAINER 4 TABLETS PER 24" BOX <p>AND AT A RATE OF 1 TABLET PER EACH ADDITIONAL 6" BOX SIZE. WHEN MULTIPLE QUANTITIES OF TABLETS ARE REQUIRED, THEY SHALL BE EQUALLY SPACED AT THE SPECIFIED DEPTH.</p>

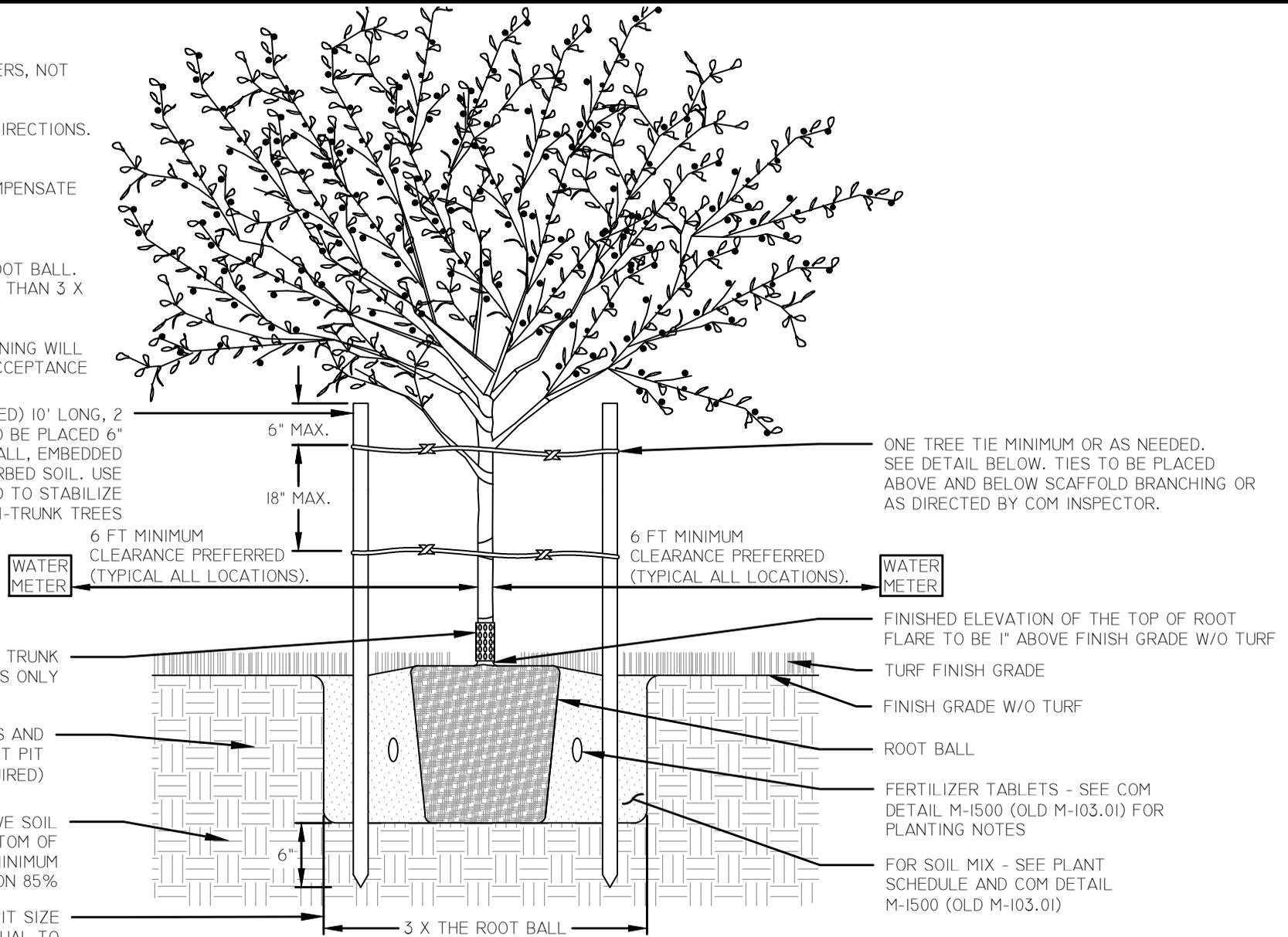
OLD
M-103.01

DETAIL NO.
M-1500

NOTES

1. PLANTS DELIVERED WITH CRACKED OR BROKEN CONTAINERS, NOT ROOTED IN CAN OR ROOT BOUND, WILL BE REJECTED.
2. TREE TRUNK SHALL BE CAPABLE OF MOVEMENT IN ALL DIRECTIONS. COORDINATE WITH COM INSPECTOR.
3. DEPTH OF PLANTING HOLE SHOULD BE ADJUSTED TO COMPENSATE FOR DECOMPOSITION OF ORGANIC MATTER IN ROOT BALL (SHALLOWER).
4. PLANTING HOLE SHALL BE 3 X THE DIAMETER OF THE ROOT BALL. CONTRACTOR SHALL NOT PLANT TREE IN HOLE SMALLER THAN 3 X THE DIAMETER OF THE ROOT BALL.
5. TREES SHALL NOT BE PRUNED PRIOR TO PLANTING. PRUNING WILL BE AT THE DISCRETION OF THE COM INSPECTOR UPON ACCEPTANCE OF THE TREE PLANTING.

LODGE POLE PINE STAKES (TREATED) 10' LONG, 2 REQUIRED PER TREE. STAKES TO BE PLACED 6" FROM OUTSIDE EDGE OF ROOT BALL, EMBEDDED A MINIMUM OF 6" INTO UNDISTURBED SOIL. USE ADDITIONAL STAKES WHEN NEEDED TO STABILIZE MULTI-TRUNK TREES



ONE TREE TIE MINIMUM OR AS NEEDED. SEE DETAIL BELOW. TIES TO BE PLACED ABOVE AND BELOW SCAFFOLD BRANCHING OR AS DIRECTED BY COM INSPECTOR.

"ARBOR GUARD" TREE TRUNK PROTECTOR TURF AREAS ONLY

SCARIFY SIDES AND BOTTOM OF PLANT PIT (INSPECTION REQUIRED)

UNDISTURBED NATIVE SOIL CONFORMING TO BOTTOM OF ROOT BALL. MINIMUM COMPACTION 85%

MINIMUM PLANT PIT SIZE DEPTH OF PIT EQUAL TO HEIGHT OF ROOT BALL

FINISHED ELEVATION OF THE TOP OF ROOT FLARE TO BE 1" ABOVE FINISH GRADE W/O TURF

TURF FINISH GRADE

FINISH GRADE W/O TURF

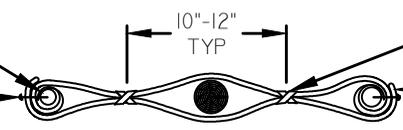
ROOT BALL

FERTILIZER TABLETS - SEE COM DETAIL M-1500 (OLD M-103.01) FOR PLANTING NOTES

FOR SOIL MIX - SEE PLANT SCHEDULE AND COM DETAIL M-1500 (OLD M-103.01)

ARBOR GREEN TIE TAPE (1") MULTI-TRUNK TREES - PLACE 3 STAKES IF NEEDED

TREE STAKE (TYPICAL 2 PLACES)
8 SCREW (GALVANIZED)



SQUARE KNOT (TYPICAL 2 PLACES)

WRAP TREE TIE AROUND TREE STAKE TWICE TO ENSURE EXTRA TREE STRAP FOR FUTURE ADJUSTMENT. USE 1" TIE TAPE

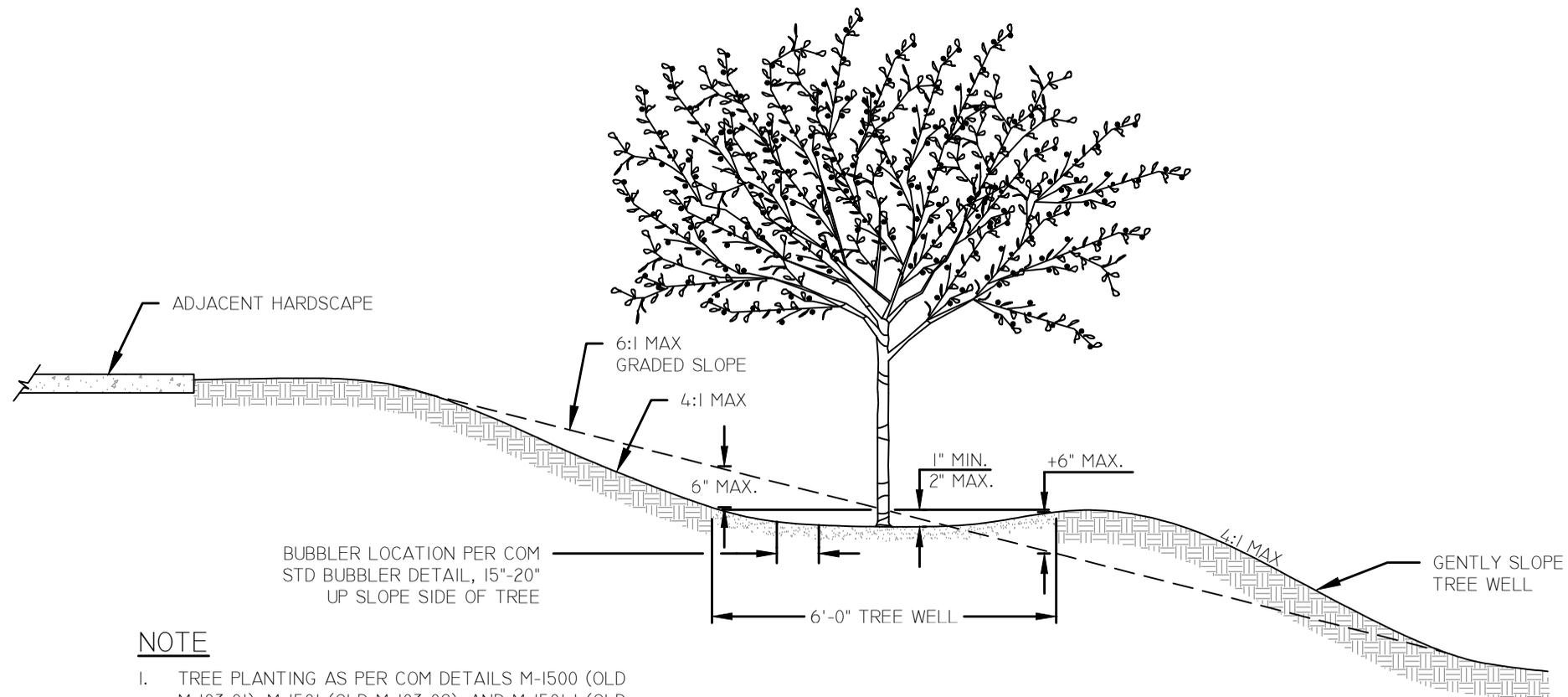
NOT TO SCALE



TREE PLANTING DETAIL IN TURF AREAS

OLD M-103.02

DETAIL NO. M-1501



NOTE

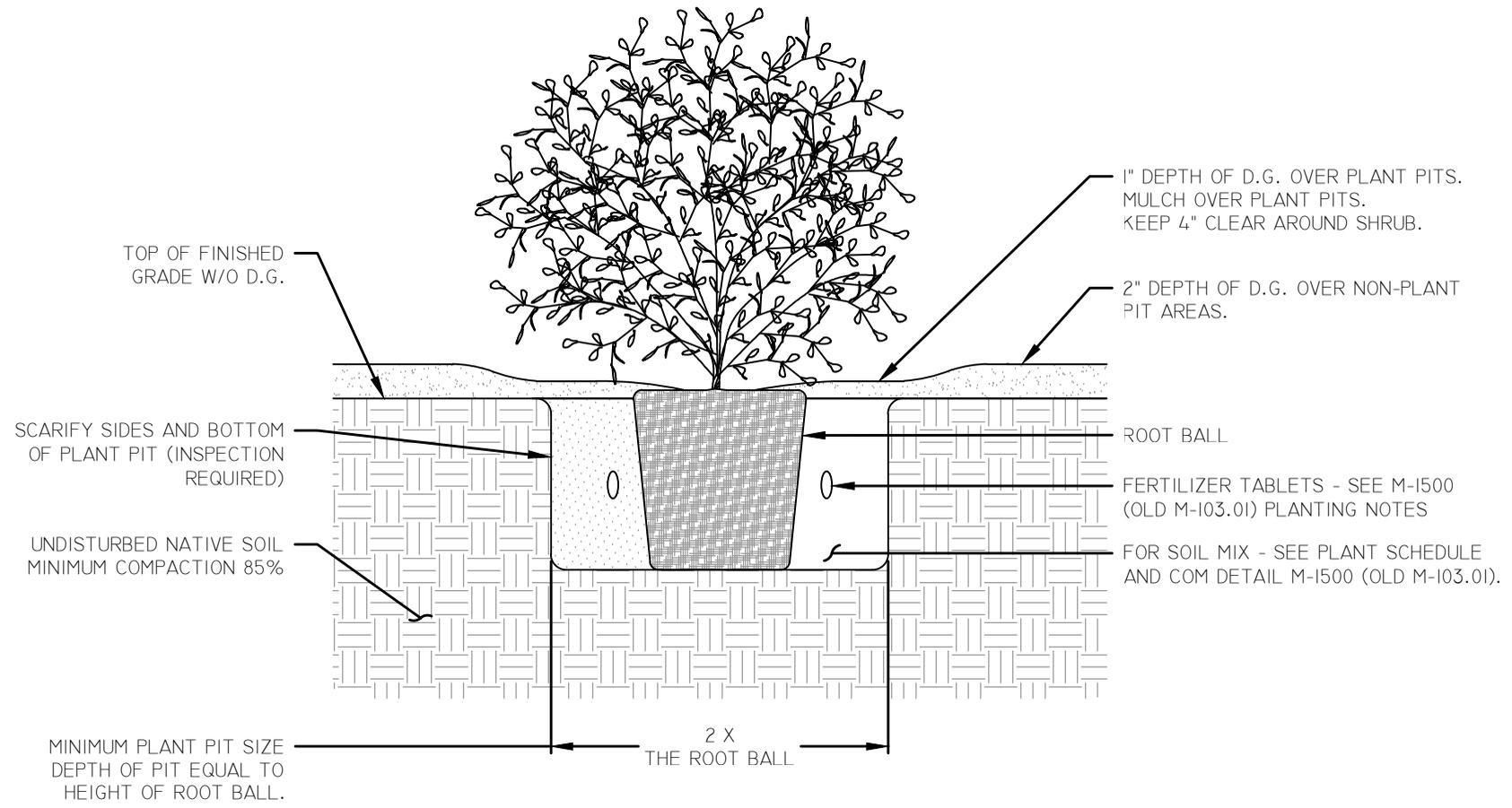
- I. TREE PLANTING AS PER COM DETAILS M-I500 (OLD M-I03.01), M-I501 (OLD M-I03.02), AND M-I501.1 (OLD M-I03.03).

RETENTION BASIN SLOPE TREE PLANTING

NOT TO SCALE

OLD
M-103.04

DETAIL NO.
M-1501.2



SHRUB PLANTING DETAIL

NOTES

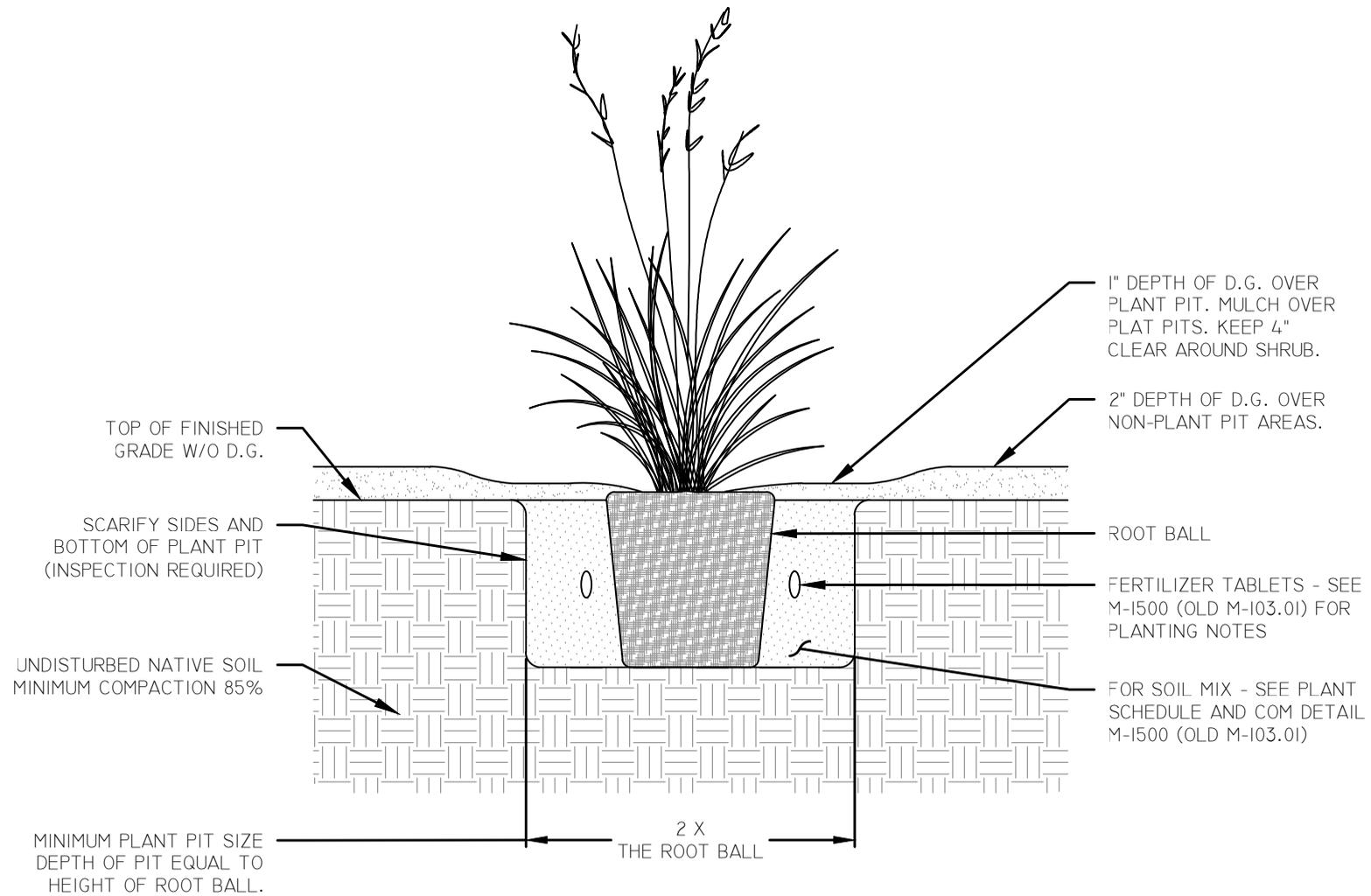
- I. PLANTS DELIVERED WITH CRACKED OR BROKEN CONTAINERS, NOT ROOTED IN CAN OR ROOT BOUND, WILL BE REJECTED.

OLD
M-103.06

DETAIL NO.
M-1502

NOT TO SCALE

ACCENT SHRUB PLANTING DETAIL



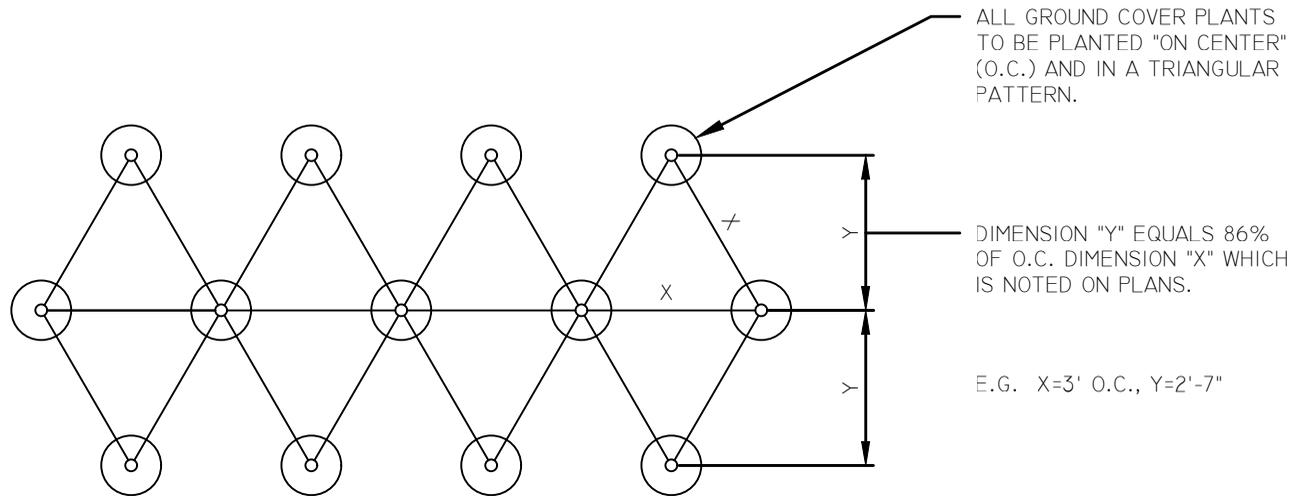
NOTES

- I. PLANTS DELIVERED WITH CRACKED OR BROKEN CONTAINERS, NOT ROOTED IN CAN OR ROOT BOUND, WILL BE REJECTED.

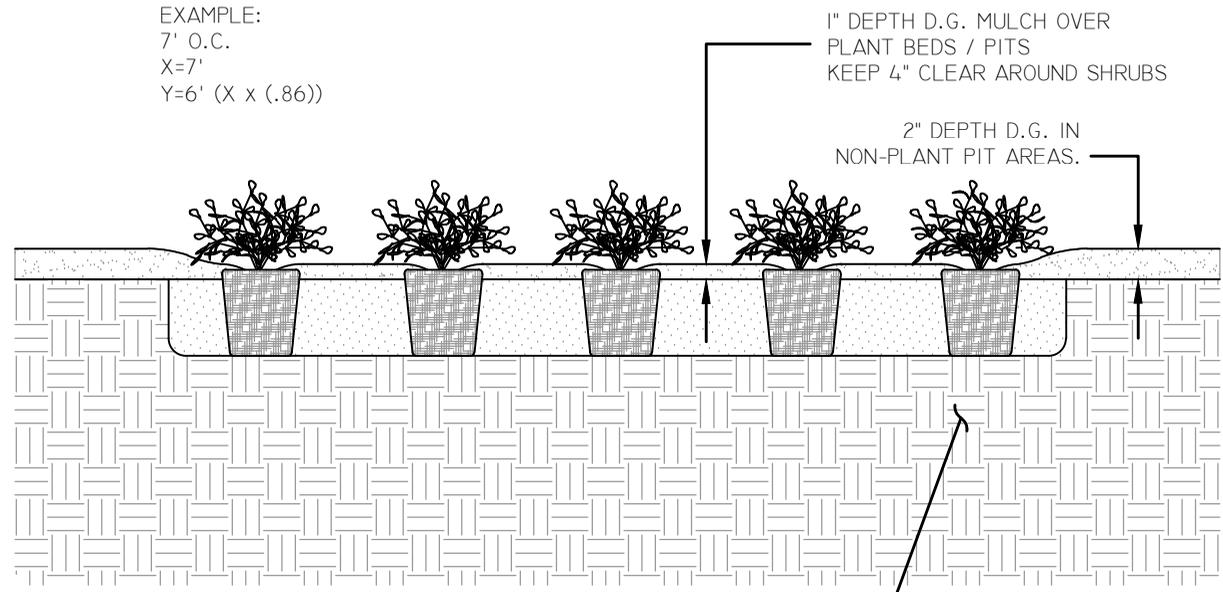
NOT TO SCALE

OLD
M-103.05

DETAIL NO.
M-1502.1



EXAMPLE:
 7' O.C.
 X=7'
 Y=6' (X x (.86))



TILL NATIVE SOIL TO A DEPTH OF 8" ADDING 3 CUBIC YARDS OF NITROLIZED HUMUS PER 1000 SQ. FT. ADD GYPSUM AT THE RATE OF 20 LBS. PER 1000 SQ. FT. AND INCORPORATE INTO TOP 2" OF SOIL. APPLY DACTHAL OR SURFLAN TO ALL GROUND COVER BEDS AT THE MANUFACTURER'S RECOMMENDED RATE.

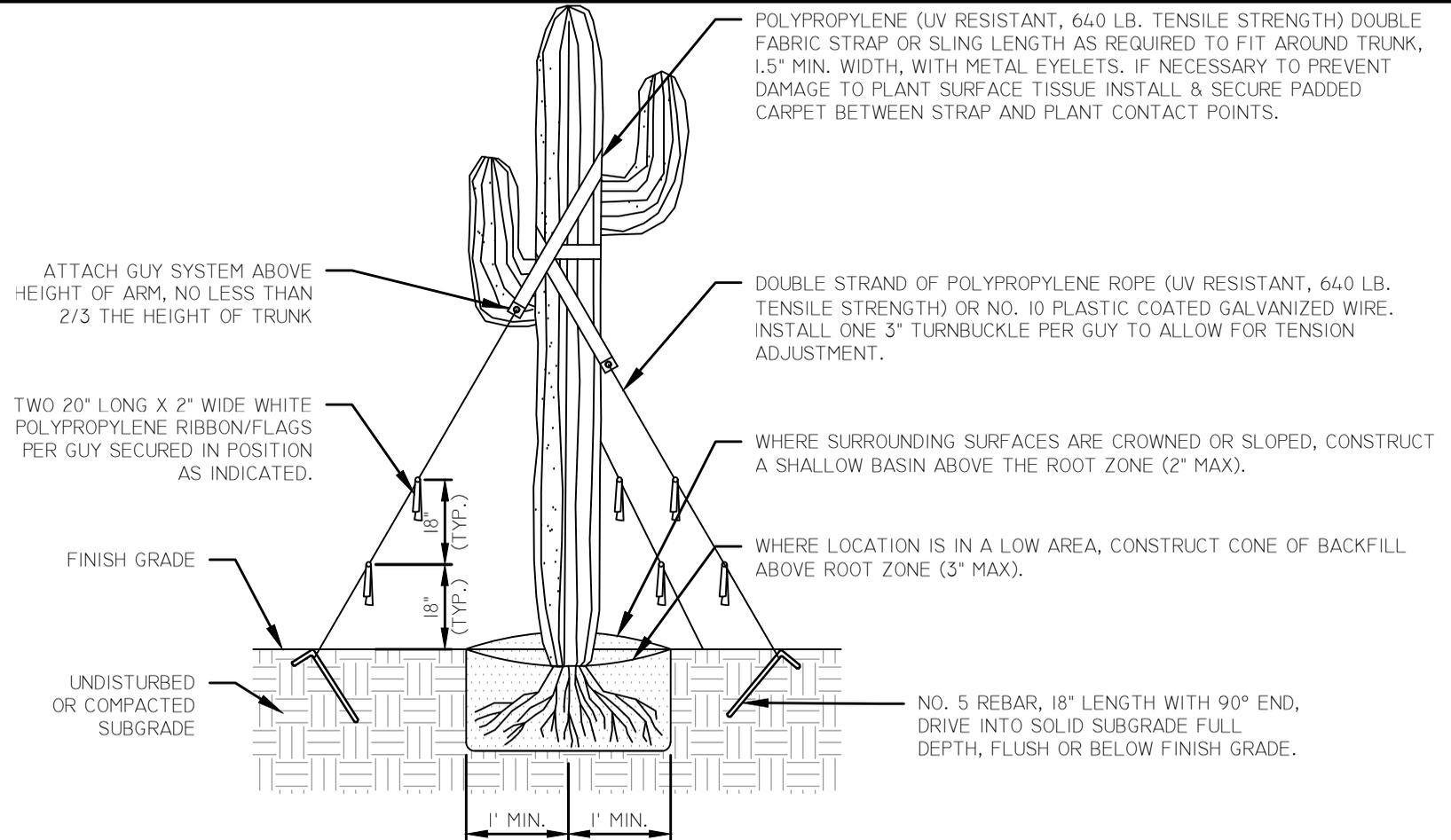
NOT TO SCALE

DETAIL NO.
 M-1502.2

OLD
 M-103.07

NOTES

1. SAGUARO TO HAVE MINIMUM 2' DIAMETER ROOT MASS.
2. PLANT AT/OR NO DEEPER THAN 6" FROM ORIGINAL GRADE AND AT SAME SOLAR ORIENTATION AS ORIGINALLY GROWN.
3. BACKFILL TO CONSIST OF DRY HOMOGENOUS MIXTURE OF 1/8" MINUS SCREENED NATIVE SITE SOIL (50%) AND 1/4" MINUS DECOMPOSED GRANITE (50%).
4. GUY SYSTEM TO INCLUDE ATTACHMENT STRAP, GUY, FLAGGING AND STAKES.
5. NO WATER EMISSION POINTS CLOSER THAN 8' FROM BASE OF SAGUARO.

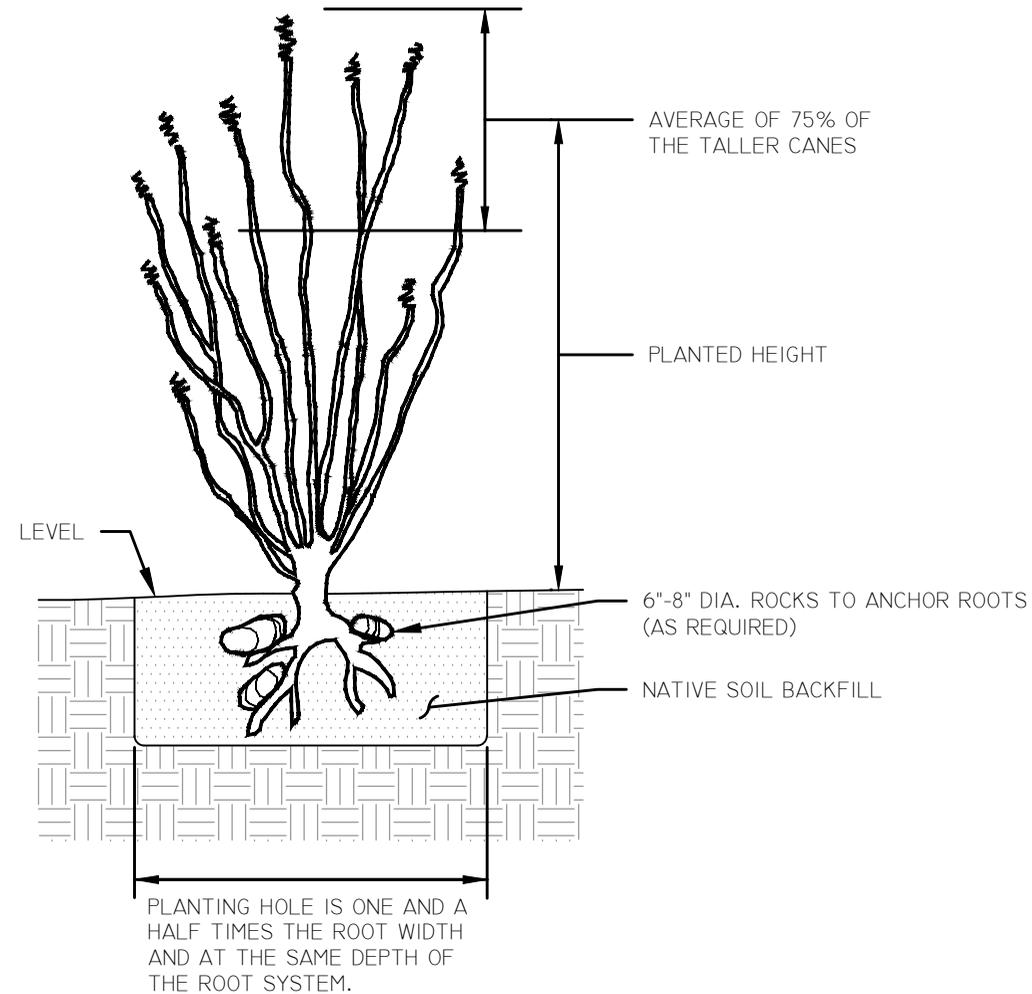


INSTALLATION PROCEDURE

1. CLEANLY CUT AND REMOVE ANY DAMAGED ROOTS. SPRAY ALL ROOT SURFACES WITH AN APPLICATION OF STREPTOMIACIN AND IMMEDIATELY APPLY TO WET SURFACES AN APPLICATION OF DUSTING SULFUR.
2. EXCAVATE OR AUGER PLANT PIT WITH SOLID VERTICAL SIDES. PROVIDE A MINIMUM 6" CLEARANCE FROM ENDS AND ROOTS.
3. SET AND BALANCE PLANT ON A FIRM BED OF BACKFILL. (8 INCH MIN. DEPTH)
4. PLACE AND COMPACT FIRST LIFT OF BACKFILL AROUND ROOTS ELIMINATING ALL VOIDS. PLANT SHOULD BALANCE WITHOUT SUPPORT.
5. INSTALL AND COMPACT REMAINING BACKFILL IN 6" MAX. DEPTH LIFT(S) TO FINISH GRADE AS SHOWN.
6. INSTALL GUY SYSTEMS TO SECURE POSITION AND PREVENT UPPER MOVEMENT OF PLANT (MINIMUM 3 PER PLANT) SPACED AT 120°.
7. MAINTAIN ALL GUYING SYSTEM COMPONENTS FOR A MIN. PERIOD OF ONE YEAR UNLESS OTHERWISE DIRECTED.
8. DO NOT WATER UNTIL 3 WEEKS AFTER PLANTING.
9. RETAIN THE NATIVE PLANT TRANSPORT TAG AS ISSUED FORM THE ARIZONA DEPARTMENT OF AGRICULTURE AND GIVE TO THE COM INSPECTOR.

NOTES

1. ROOT PRUNE ALL SHREDDED OR DAMAGED ROOTS. TEAR DRIED SHEATH OFF ROOTS. IF THERE ARE CRUSHED OR DAMAGED ROOTS, MAKE CLEAN CUTS. ENSURE ALL WOUNDS TO THE ROOT SYSTEM ARE SEALED BEFORE PLANTING BY ALLOWING TIME FOR SELF-SEALING OR APPLICATION OF WETTABLE DUSTING SULFUR, (1.5 LBS).
2. PLANT NO DEEPER THAN WHAT THE PLANT WAS PREVIOUSLY PLANTED.
3. BACKFILL TO CONSIST OF CLEAN NATIVE SOIL.
4. APPLY NAPHYL ACETIC ACID OR "B-I" OR APPROVED ROOTING HORMONE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
5. AFTER PLANTING, DO NOT WATER FOR A PERIOD OF SEVEN TO TEN DAYS TO ALLOW ANY ROOTS THAT MAY HAVE BEEN DAMAGED DURING PLANTING TO CALLUS OFF.
6. WATER WEEKLY THROUGH SUMMER, UNLESS INSTRUCTED OTHERWISE.
7. BARE ROOTS SHALL NOT BE OUT OF THE GROUND FOR MORE THAN FIVE DAYS BEFORE PLANTING.
8. RETAIN THE NATIVE PLANT TRANSPORT TAG AS ISSUED FROM THE ARIZONA DEPARTMENT OF AGRICULTURE AND GIVE TO THE COM INSPECTOR.

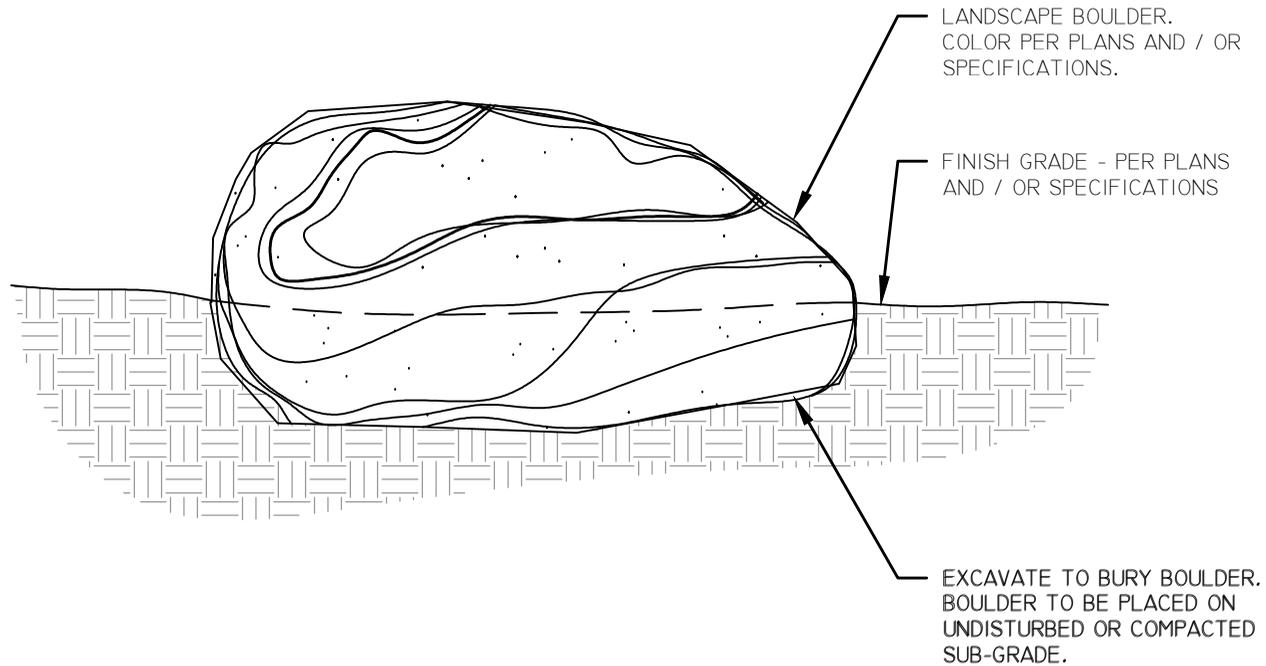


OCOTILLO PLANTING DETAIL

OLD
M-103.09

DETAIL NO.
M-1502.4

NOT TO SCALE



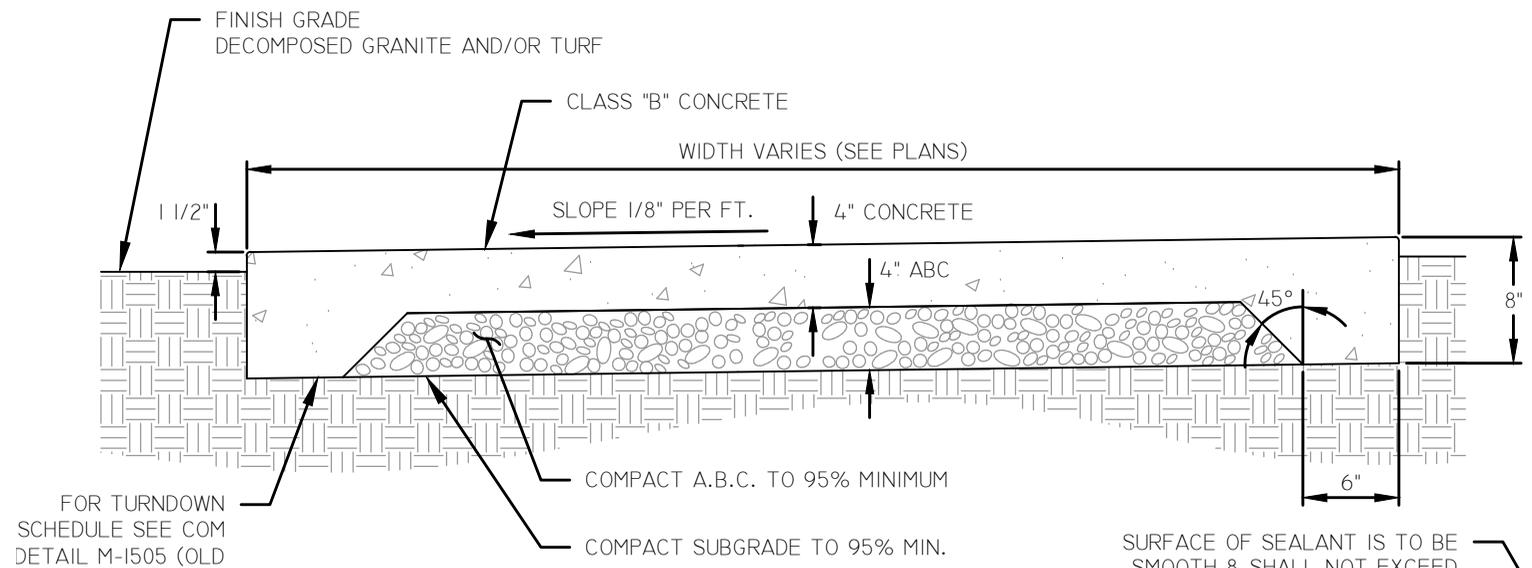
NOTES

1. BOULDERS TO BE PLACED IN A WAY SO SCARRING DOES NOT OCCUR. LANDSCAPE ARCHITECT OR ENGINEER TO APPROVE THE FINAL BOULDER PLACEMENT AND CONDITION.
2. BURY LOWER 1/3 OF BOULDER AS NEEDED TO ACHIEVE NATURAL APPEARANCE.
3. LANDSCAPE BOULDER SPECIFICATIONS:
4'X4'X4' 3.0 TONS (MIN.)
3'X3'X3' 1.5 TONS
2'X2'X2' 1.0 TON
4. SEE PLANS FOR BOULDER SIZE AND PLACEMENT.

NOT TO SCALE

OLD
M-102

DETAIL NO.
M-1503

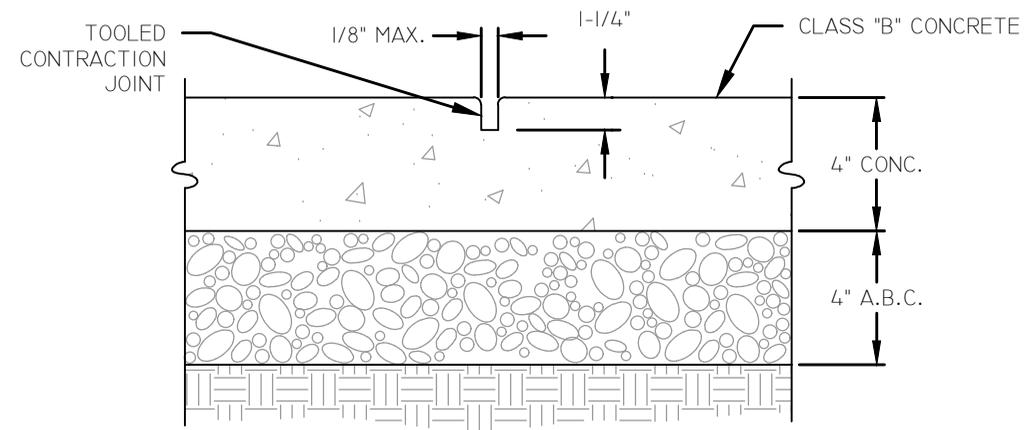


FOR TURNDOWN SCHEDULE SEE COM DETAIL M-1505 (OLD M-III.03).

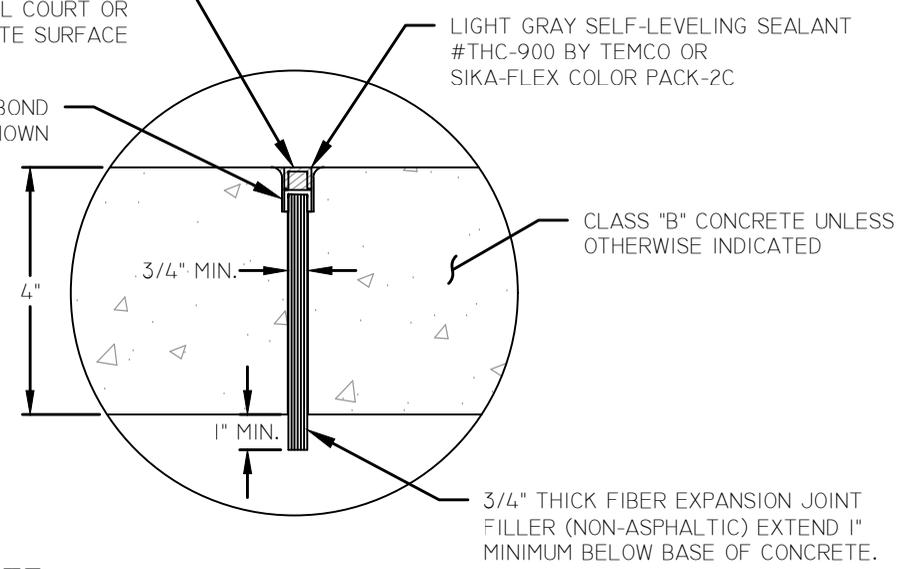
NOTE

- CONSTRUCT WALK PER MAG DETAIL 230, CITY OF MESA AMENDMENTS AND AS DETAILED ABOVE AND ON PLANS.

SURFACE OF SEALANT IS TO BE SMOOTH & SHALL NOT EXCEED LEVEL OF BASKETBALL COURT OR RAMADA CONCRETE SURFACE



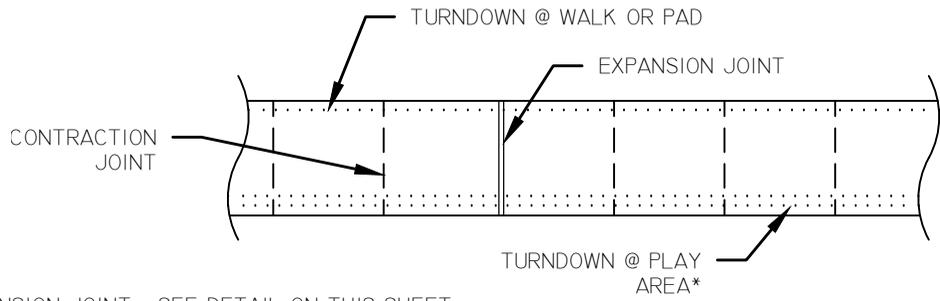
"CONTIE" BOND BREAKER SHOWN



NOTE

- CAULKING REQUIRED FOR BASKETBALL COURT & RAMADAS. INSTALL STANDARD 1/2" ASPHALTIC FIBER EXPANSION JOINT FOR ALL PARK WALKWAYS. (TOP OF EXPANSION JOINT MATERIAL 1/4" MAX. BELOW TOP OF FINISH CONCRETE).

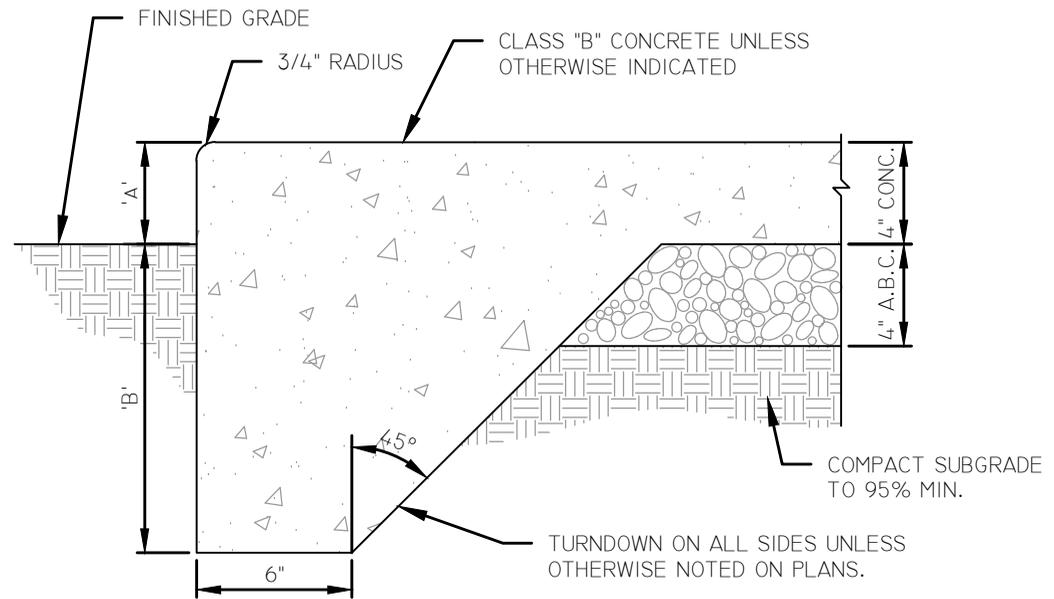
NOT TO SCALE



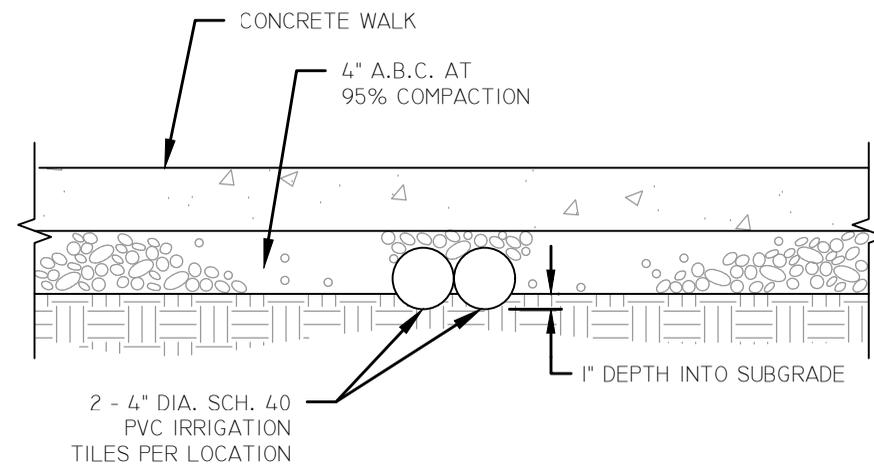
EXPANSION JOINT - SEE DETAIL ON THIS SHEET
 CONTRACTION JOINT - SEE DETAIL ON THIS SHEET
 TURNDOWNS VARY - SEE TURNDOWN SCHEDULE BELOW
 TURNDOWNS AT PLAY AREAS ARE INDICATED WITH A DOUBLE LINE

TURNDOWN SCHEDULE

TURNDOWN AREA	'A'	'B'	TOTAL
*PLAY AREA (TOP OF SAND)	4"	12"	16"
*PLAY AREA (ENGINEERED WOOD FIBER)	1/2"	17-1/2"	18"
BASKETBALL COURT	1/2"	7 1/2"	8"
RAMADA	1/2"	7 1/2"	8"
WALK	1/2"	7 1/2"	8"



NOT TO SCALE



NOTE

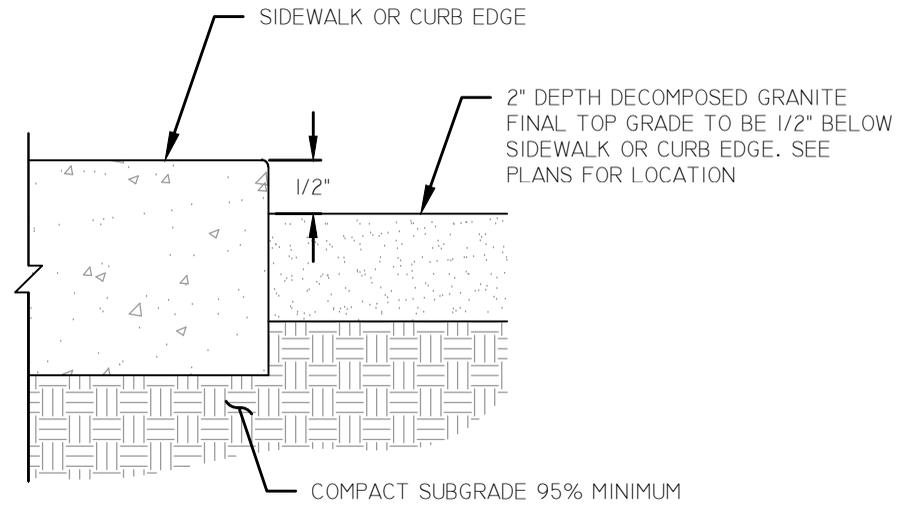
1. TILE CUT AT 45° WHERE IT DAYLIGHTS

NOT TO SCALE

DETAIL NO.
M-1506

OLD
M-111.06

DECOMPOSED GRANITE AT CONCRETE



NOTE

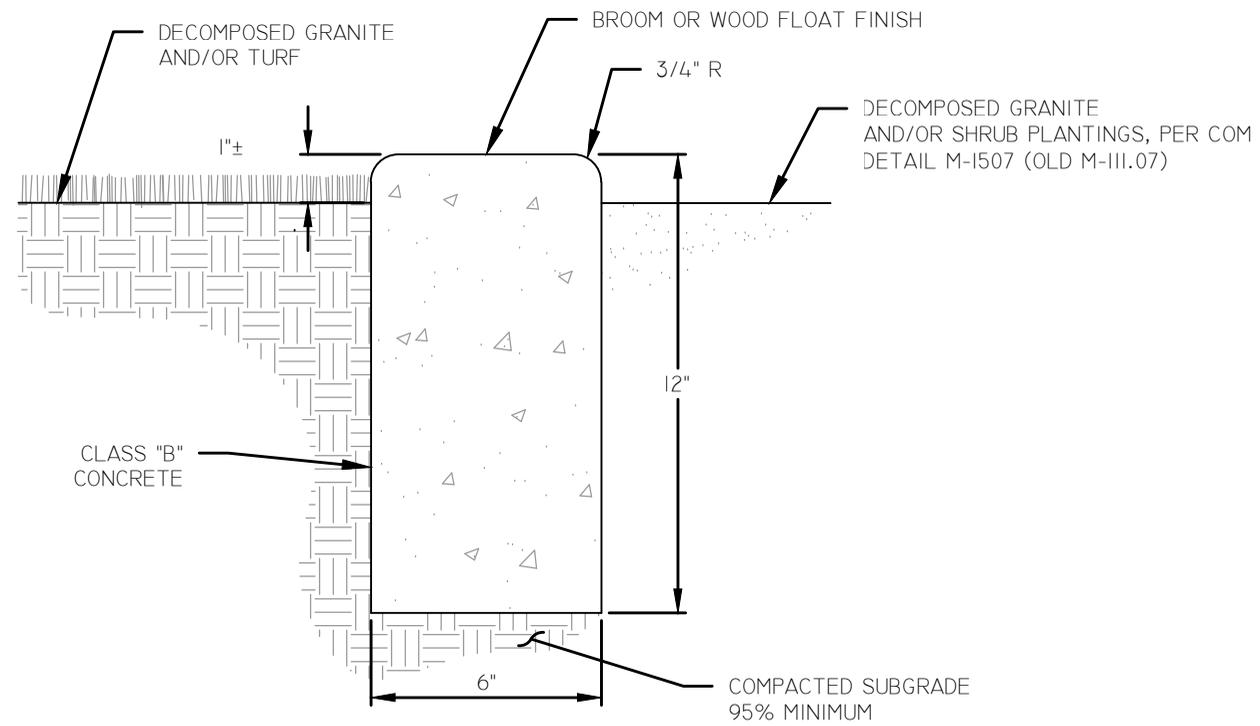
CONTRACTOR SHALL INSTALL D.G. AS FOLLOWS:
 PLACE AND ROLL DECOMPOSED GRANITE TO 2" TOTAL DEPTH OVER 95% COMPACTED SUBGRADE. PRE-EMERGENT HERBICIDE SURFLAN, DACTHAL OR APPROVED EQUAL SHALL BE APPLIED BEFORE AND AFTER GRANITE PLACEMENT. (CONTRACTOR SHALL SUBMIT DECOMPOSED GRANITE SAMPLES IN RIGID PLASTIC OR METAL CONTAINERS. PROJECT NUMBER AND SUPPLIER NAME SHALL BE LABELED ON CONTAINER.)

NOT TO SCALE

OLD
M-111.07

DETAIL NO.
M-1507

12" CONCRETE HEADER CURB DETAIL



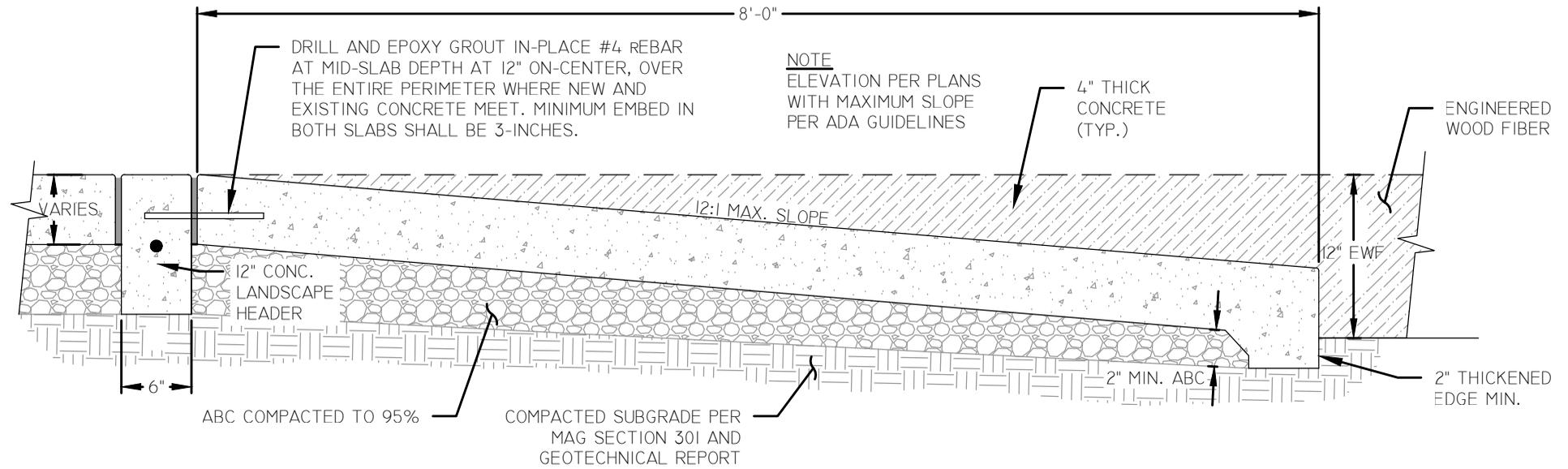
NOTE

- I. EXPANSION & CONTRACTION JOINTS AS PER MAG STD. SPECS.

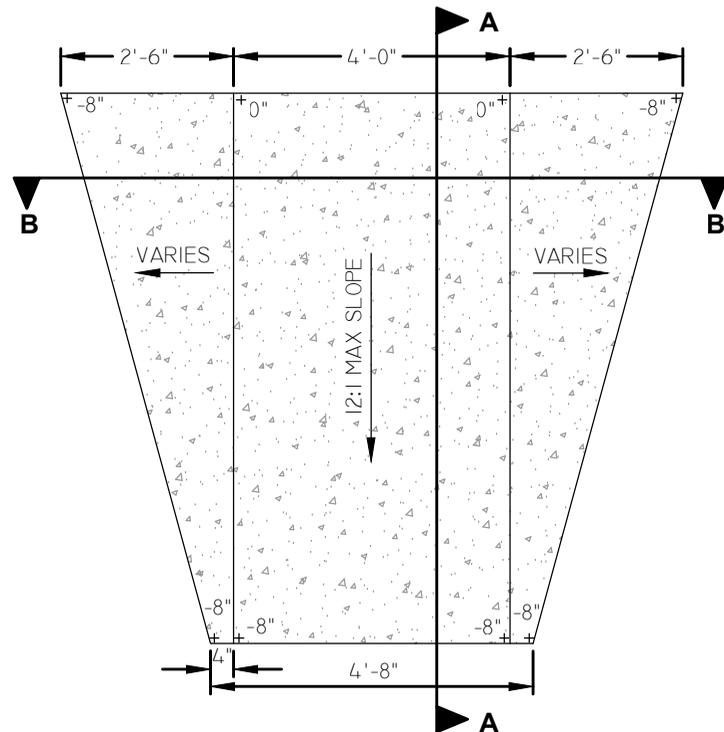
NOT TO SCALE

OLD
M-111.08

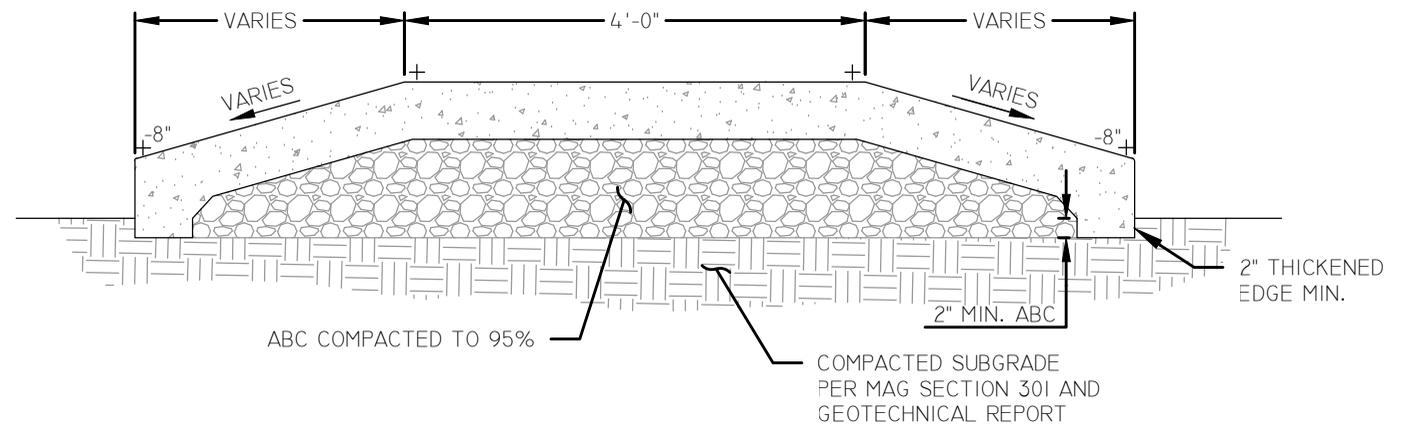
DETAIL NO.
M-1508



SECTION A

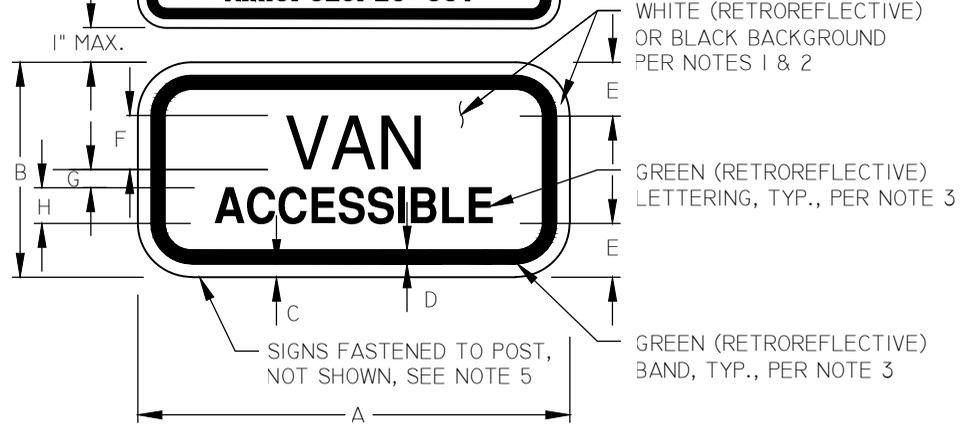
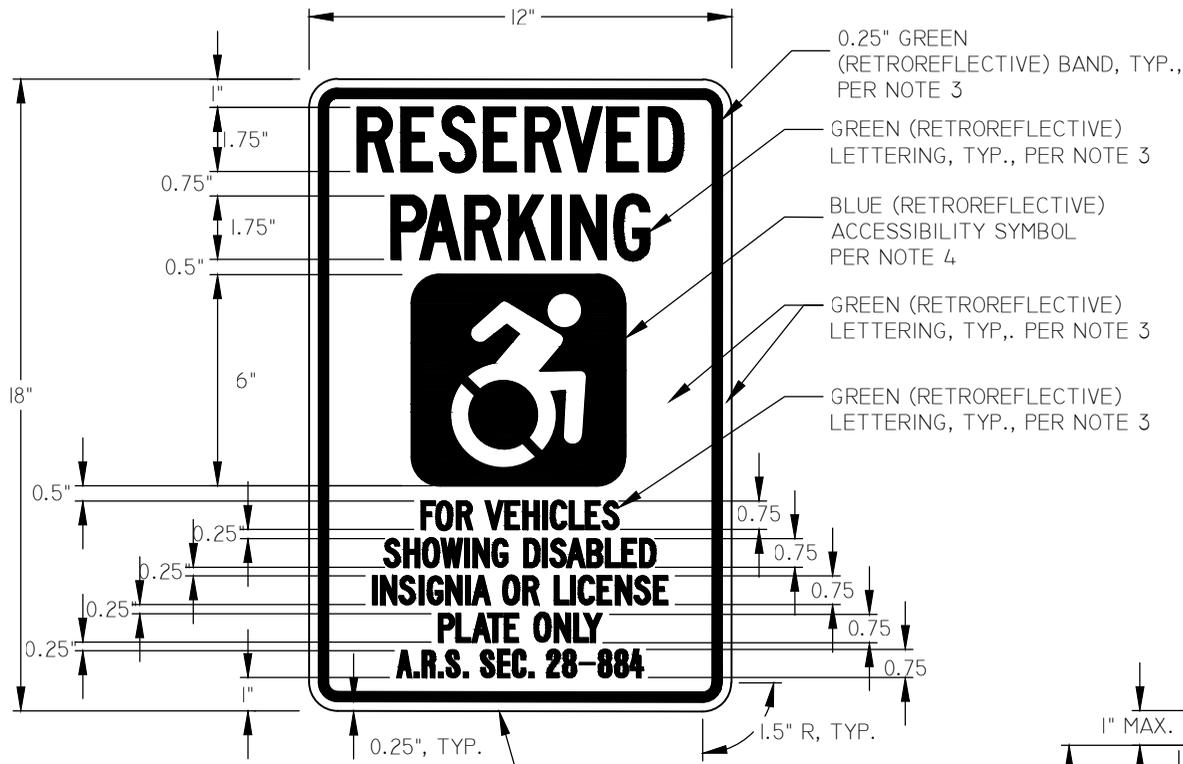


PLAN VIEW



SECTION B

NOT TO SCALE



NOTES

1. SIGN BLANK MATERIAL SHALL BE WHITE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE PRISMATIC REFLECTIVE SHEETING OR APPROVED EQUAL.
2. FILM SHALL BE RETROREFELCTIVE ELECTRO-CUT AND APPLIED OVER THE WHITE SHEETING TO CREATE THE COLORED BORDER, TEXT AND LEGEND. THE FILM SHALL BE TRANSPARENT ACRYLIC, PRESSURE SENSITIVE MATERIAL BY 3M OR APPROVED EQUAL AND BE IN COMPLIANCE WITH THE REFLECTIVE SHEETING MANUFACTURER'S MATCHED COMPONENT SYSTEM.
3. ALL LETTERING AND BORDER BANDS SHALL BE A SERIES 'C' GREEN RETROREFELCTIVE COLOR.
4. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE WHITE (RETROREFELCTIVE) ON A 5" X 5" BLUE (RETROREFELCTIVE) FIELD WITH 1/2" RADIUS CORNERS.
5. SIGN(S) SHALL BE LOCATED AND FASTENED ON A SQUARE TUBULAR POST, PER COM DETAIL M-1210 (OLD M-39), AS SHOWN AND DIMENSIONED ON COM DETAIL M-1207.4 (OLD M-23.06).
6. TO BE USED ON NON-FEDERALLY FUNDED PARKS PROJECTS.

VAN ACCESSIBLE SIGN VARIATIONS										
A	B	C	D	E	F	G	H	J	K	L
12	6	0.375	0.438	1.5	1.5 D	0.5	1 D	1.871	3.859	1.5
18	9	0.375	0.438	2.25	2 D	1	1.5 D	2.493	5.784	1.5

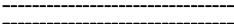
PARKING APPLICATION
 COLORS:
 LEGEND -GREEN (RETROREFLECTIVE) OR BLACK
 BACKGROUND -WHITE (RETROREFLECTIVE)

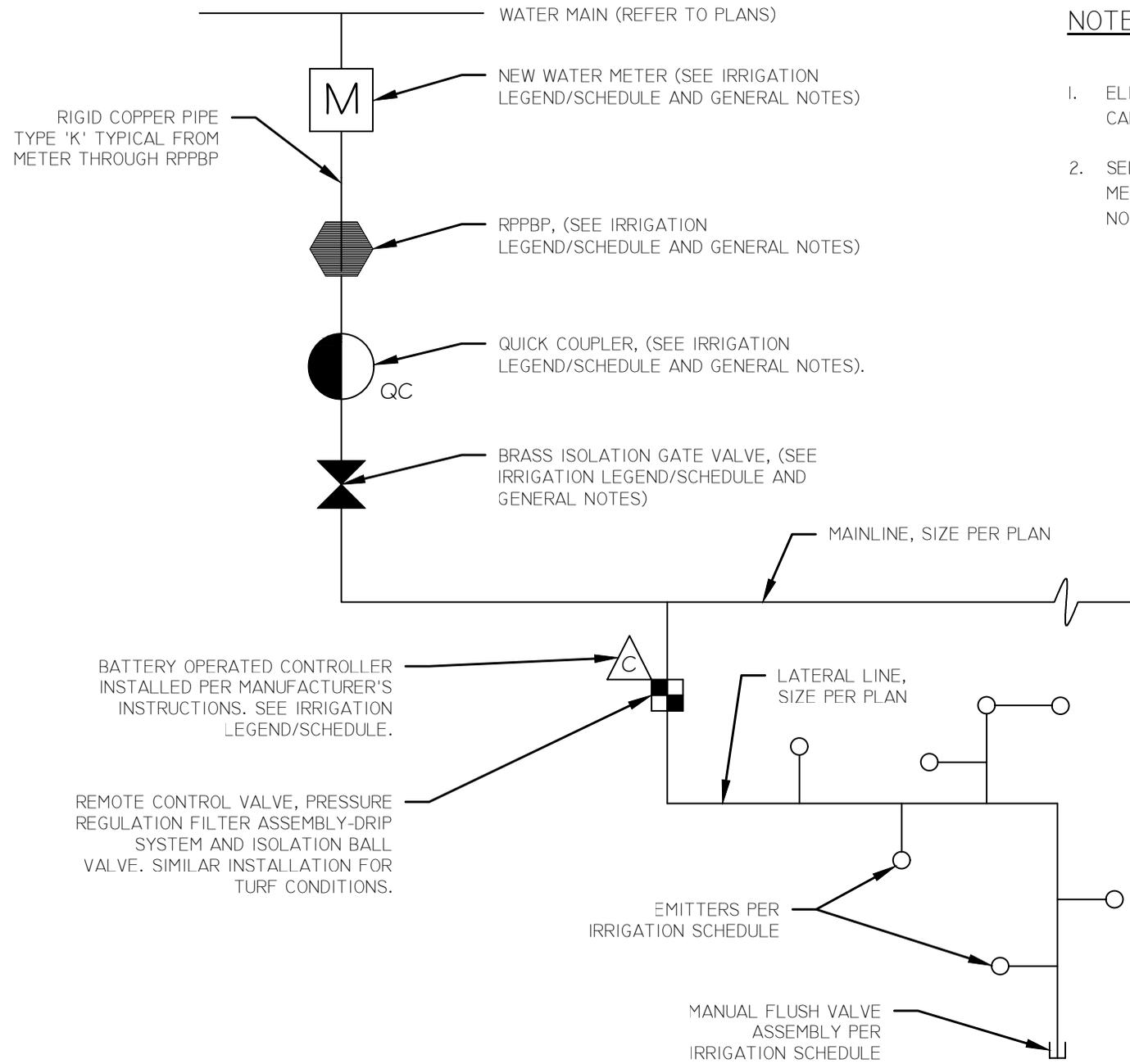
DIRECTIONAL APPLICATION
 COLORS:
 LEGEND -WHITE (RETROREFLECTIVE)
 BACKGROUND -BLUE (RETROREFLECTIVE)

SIGN FASTENED TO POST,
 NOT SHOWN, SEE NOTE 5

SIGNS FASTENED TO POST,
 NOT SHOWN, SEE NOTE 5

NOT TO SCALE

<u>SYMBOL</u>	<u>DESCRIPTION</u>	<u>REMARKS</u>
	WATER METER	
	REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION UNIT	
	QUICK COUPLER	
	MASTER VALVE / FLOW METER	F/M WITH MOTOROLA OR CALSENSE ONLY
	MASTER VALVE	
	CONTROLLER 'X'	
	ISOLATION GATE VALVE	FOR ALL RUBBER RING PIPE 3" OR GREATER
	BRASS ISOLATION GATE VALVE	FOR ALL SOLVENT WELD PIPE
	REMOTE CONTROL VALVE - SPRINKLERS / BUBBLERS	
	REMOTE CONTROL VALVE - DRIP ASSEMBLY	
	MAIN LINE - SCHEDULE 40	ALL FITTINGS SCHEDULE - 80
	SHRUB LATERAL - SCHEDULE 40	SHRUB LATERAL 3/4 " MIN.
	TREE LATERAL - SCHEDULE 40	TREE LATERAL 3/4" MIN. LAWN LATERAL AS NOTED ON PLANS
	SCHEDULE 40 PVC SLEEVE	SIZE AS NOTED ON PLANS
	EMITTER	
	BUBBLER	
	MANUAL FLUSH VALVE	
	EXISTING IRRIGATION VALVE BOX	



NOTES TO CONSULTANT:

1. ELIMINATE, MODIFY OR COMPLETE DETAILED CALLOUTS BASED ON 'ACTUAL' IRRIGATION DESIGN.
2. SELF ACTUATED VALVES AS APPROVED BY CITY OF MESA TRANSPORTATION DEPARTMENT. HUNTER NODE 200 OR APPROVED EQUIVALENT.

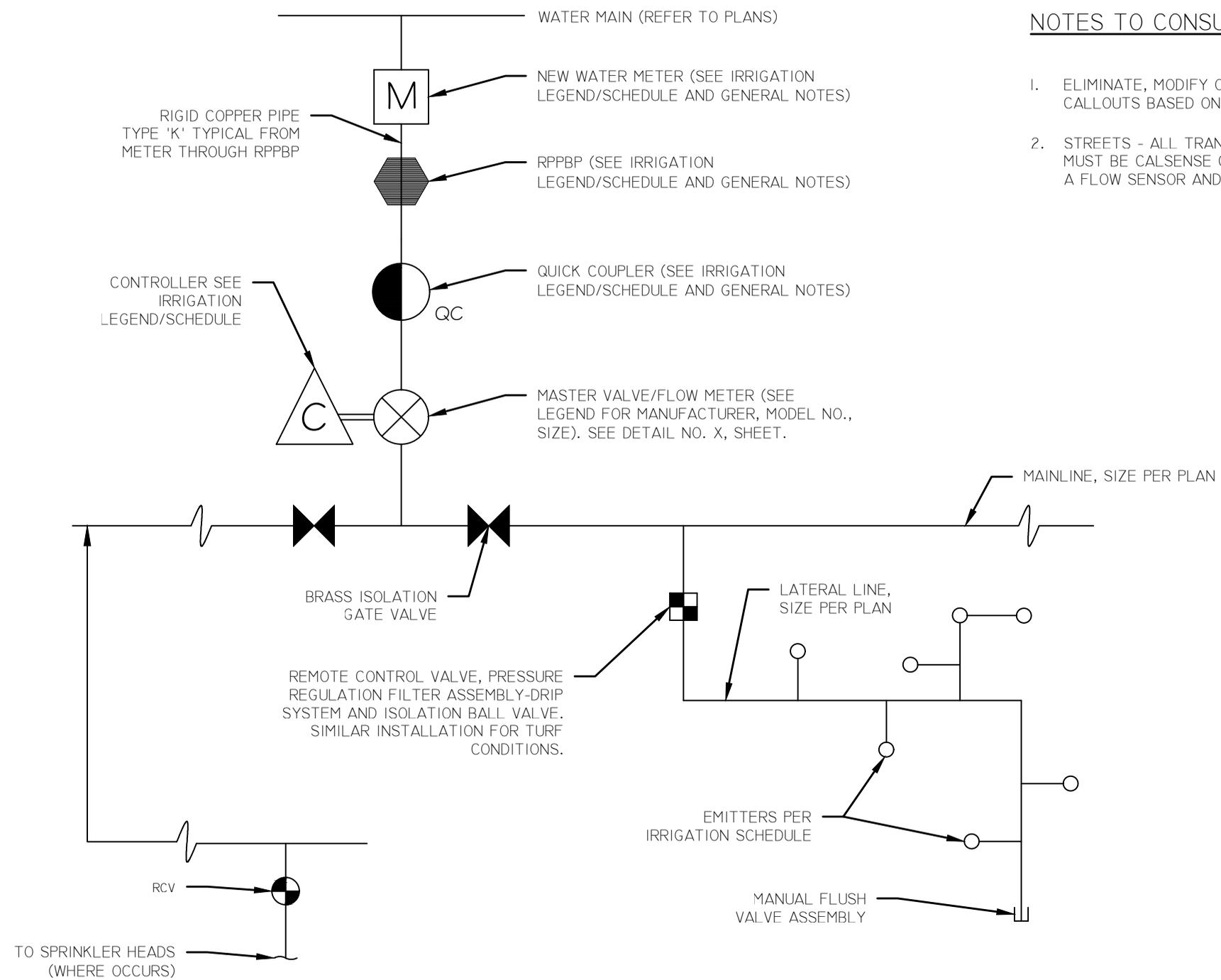


SCHEMATIC IRRIGATION LAYOUT -
BATTERY IRRIGATION CONTROLLER

OLD
M-104.02

DETAIL NO.
M-1601

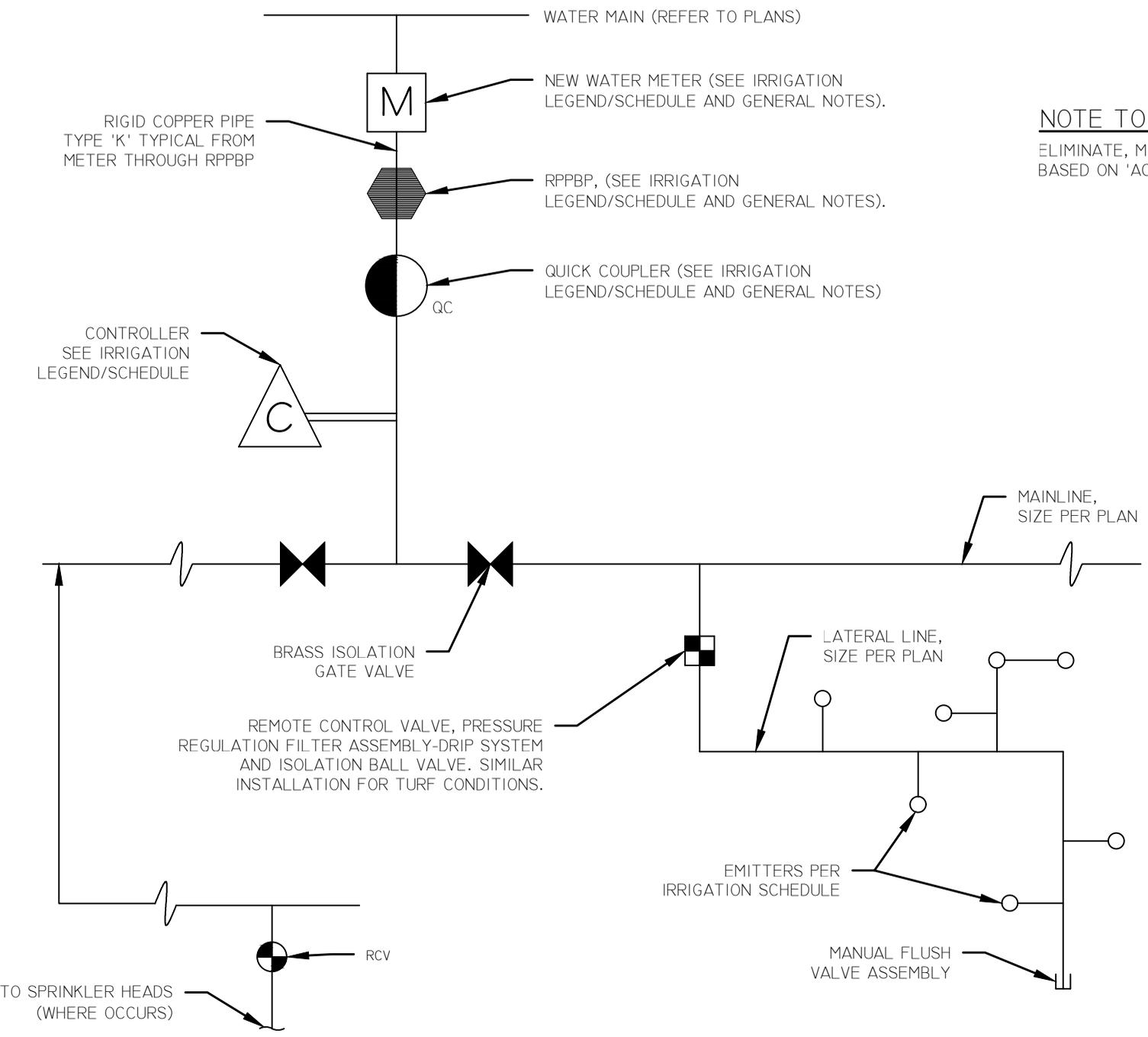
NOT TO SCALE



NOTES TO CONSULTANT:

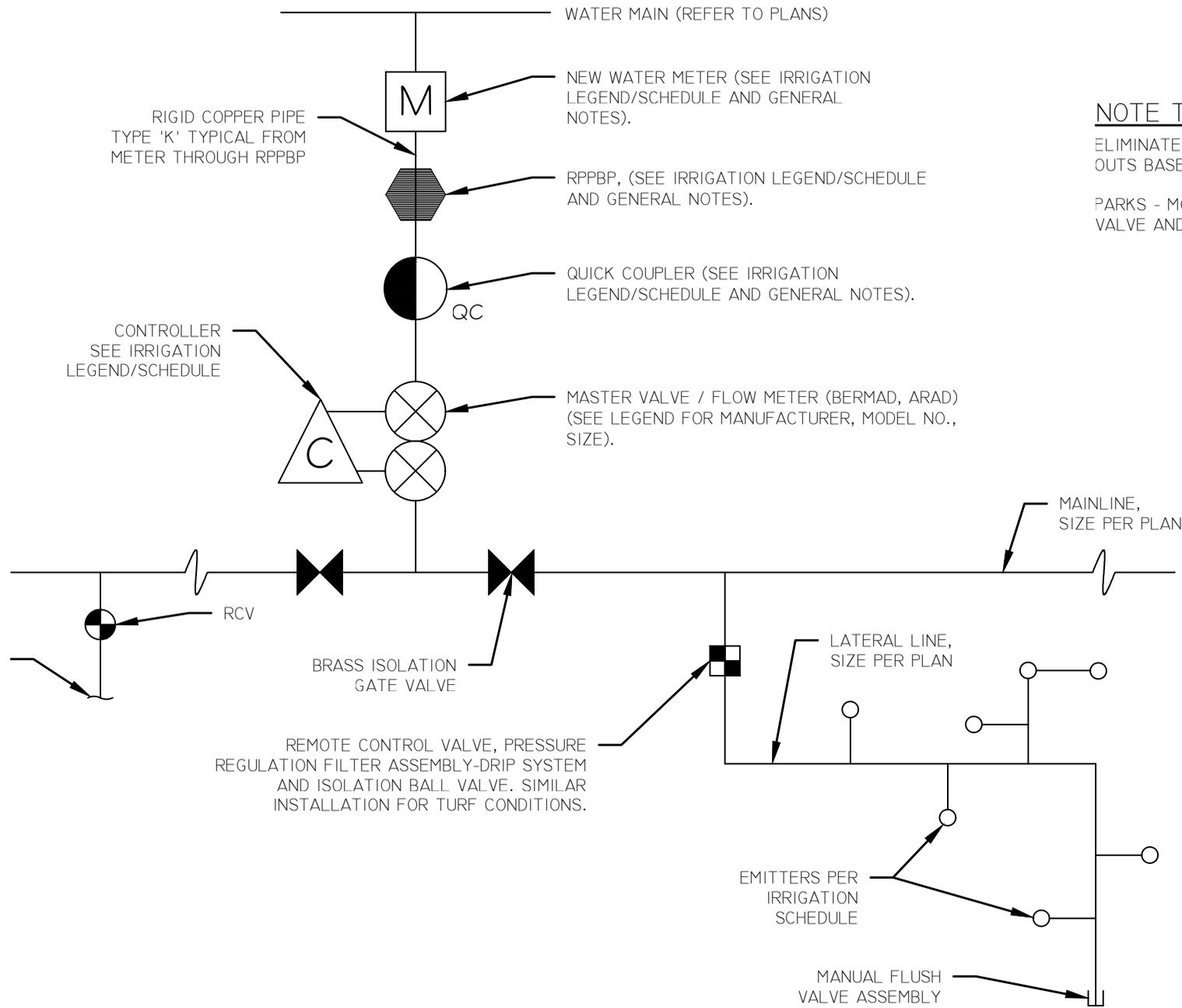
1. ELIMINATE, MODIFY OR COMPLETE DETAILED CALLOUTS BASED ON 'ACTUAL' IRRIGATION DESIGN.
2. STREETS - ALL TRANSPORTATION CONTROLLERS MUST BE CALSENSE CONTROLLERS AND MUST USE A FLOW SENSOR AND MASTER VALVE.

NOT TO SCALE



NOTE TO CONSULTANT
ELIMINATE, MODIFY OR COMPLETE DETAIL CALL OUTS
BASED ON 'ACTUAL' IRRIGATION DESIGN.

NOT TO SCALE

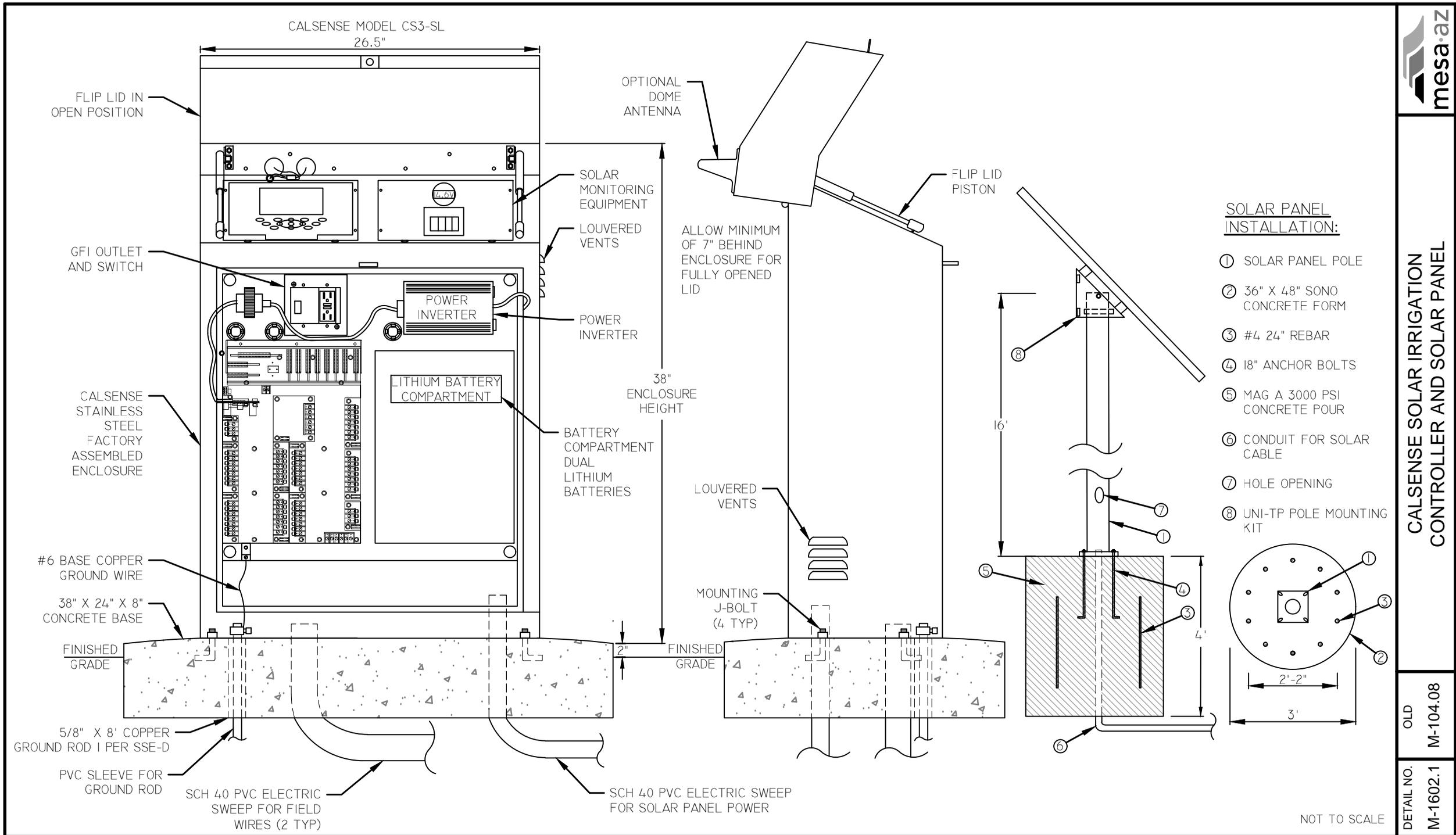


NOTE TO CONSULTANT

ELIMINATE, MODIFY OR COMPLETE DETAIL CALL OUTS BASED ON 'ACTUAL' IRRIGATION DESIGN.

PARKS - MOTOROLA APPLICATION WITH MASTER VALVE AND FLOW METER INSTALLATION

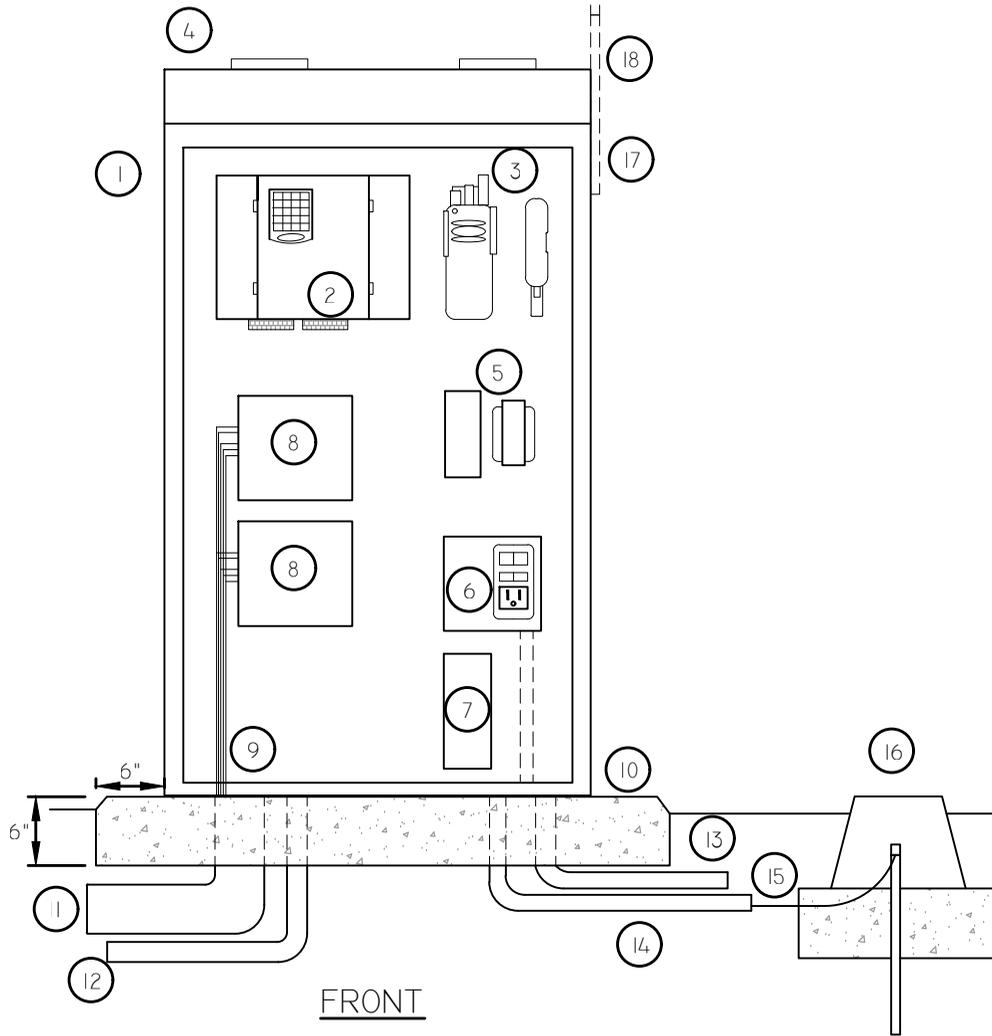
NOT TO SCALE



CALSENSE SOLAR IRRIGATION CONTROLLER AND SOLAR PANEL

OLD
M-104.08

DETAIL NO.
M-1602.1

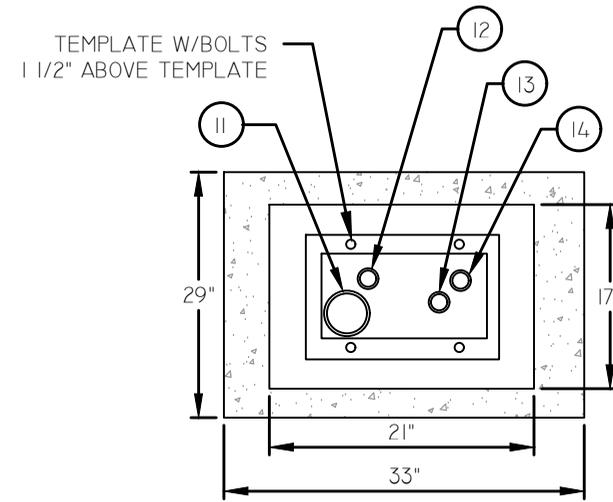


FRONT

LEGEND:

1. STAINLESS STEEL PEDESTAL ENCLOSURE
2. IRRINET ACE
3. MOTOROLA XPR RADIO
4. LOW PROFILE ANTENNA
5. 24 VAC TRANSFORMER/POWER SUPPLY
6. POWER BOX (INC. 120 VACS DISCONNECT, GFI & SURGE PROTECTION)
7. BACK-UP BATTERY
8. 24 VAC SURGE PROTECTION CARDS
9. 24 VAC VALVE WIRES
10. POURED IN PLACE 6" MIN. CONCRETE PAD W/TEMPLATE

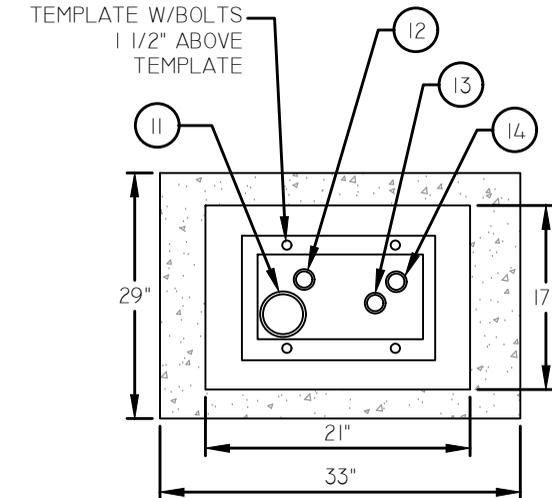
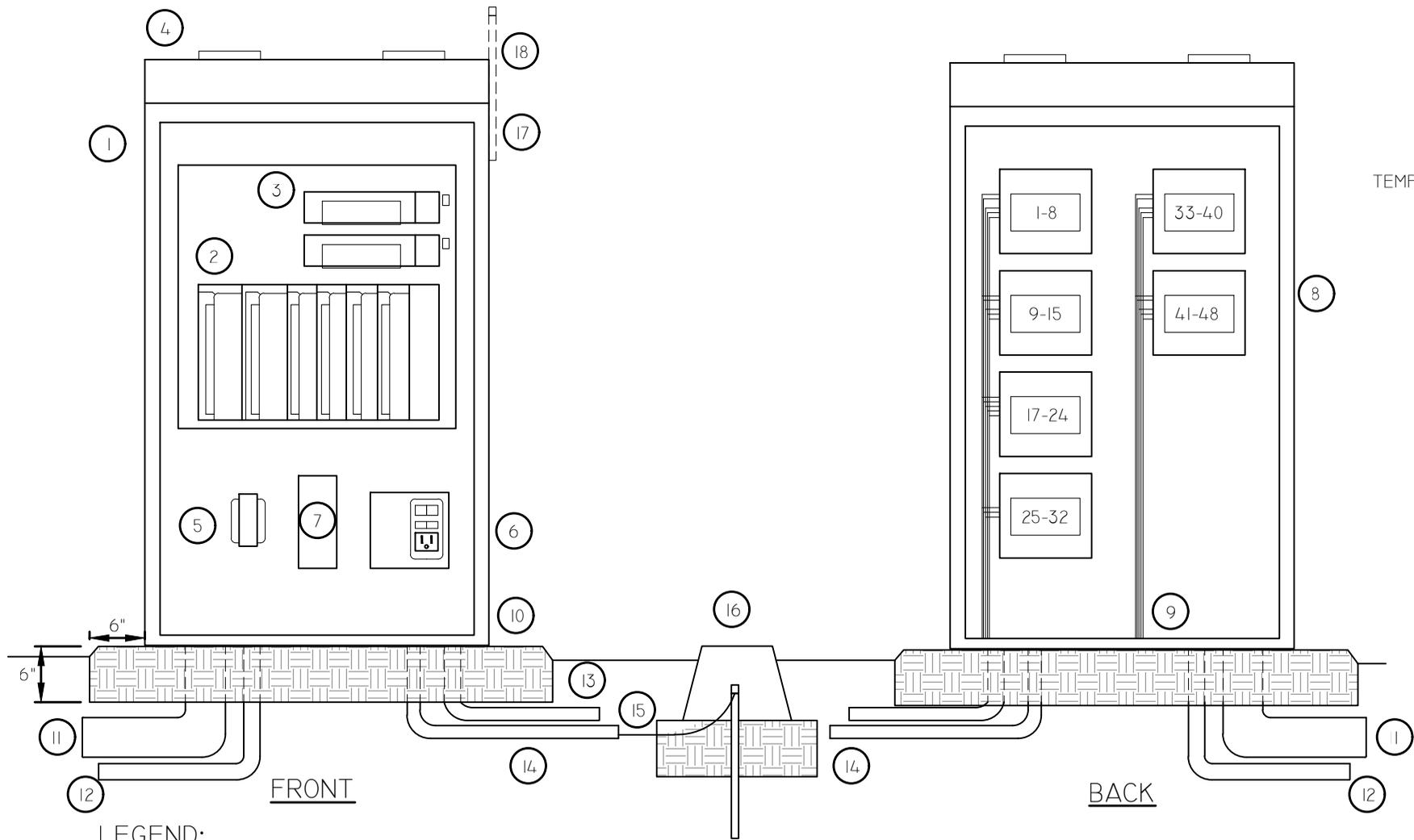
11. 3" PVC SCH. 80 LONG SWEEP FOR VALVE WIRES
12. 3/4" SCH. 80 LONG SWEEP ELL/SENSOR WIRES
13. 1" MIN./120 VAC ELECTRICAL MIN 36" COVER
14. 3/4" SCH. 80 LONG SWEEP/CONT. GROUNDING
15. #6 BARE COPPER GROUND WIRE CONNECTED TO GROUND ROD W/CADWELD CONNECTOR
16. 5/8" X 10' COPPER GROUND ROD IN 10" VALVE BOX FILLED WITH 3/8" PEA GRAVEL
17. OPTIONAL PIU (WHEN SPECIFIED)
18. OPTIONAL PIU ANTENNA (WHEN SPECIFIED)



PLAN VIEW

- 120 VAC POWER TO BE INSTALLED AS PER APPLICABLE ELECTRICAL CODES
- 120 VAC POWER TO BE ROUTED IN CONDUIT TO POWER BOX
- ALL CONDUITS TO EXTEND AT LEAST 12" BEYOND PAD
- 24 VAC FIELD WIRES TO BE CONNECTED TO SURGE CARDS
- SEAL BASE OF CABINET WITH CLEAR SILICONE @ SLAB
- COMPLETE CONTROLLER ASSEMBLY TO BE BUILT BY INTERSPEC, LLC AS PER CITY OF MESA SPECIFICATIONS
- STAINLESS STEEL BOLTS & TEMPLATE TO BE PROVIDED BY PARKS DEPARTMENT
- COMPLETE CONTROLLER ASSEMBLY (INC. CABINET) TO BE PROVIDED BY PARKS DEPARTMENT
- CONDUITS STUBBED OUT 3/4" ABOVE CONCRETE

NOT TO SCALE



PLAN VIEW

LEGEND:

- | | |
|--|--|
| <ul style="list-style-type: none"> 1. STAINLESS STEEL PEDESTAL ENCLOSURE 2. IRRINET ACE 3. MOTOROLA XPR 5380 RADIO 4. LOW PROFILE ANTENNA 5. 24 VAC TRANSFORMER/POWER SUPPLY 6. POWER BOX (INC. 120 VACS DISCONNECT, GFI & SURGE PROTECTION) 7. BACK-UP BATTERY 8. 24 VAC SURGE PROTECTION CARDS (BACK) 9. 24 VAC VALVE WIRES (BACK) 10. POURED IN PLACE 6" MIN. CONCRETE PAD W/TEMPLATE | <ul style="list-style-type: none"> 11. 2" - 3" PVC SCH. 80 LONG SWEEP FOR VALVE WIRES 12. 3/4" SCH. 80 LONG SWEEP ELL/SENSOR WIRES 13. 1" MIN./120 VAC ELECTRICAL MIN 36" COVER 14. 3/4" SCH. 80 LONG SWEEP/CONT. GROUNDING 15. #6 BARE COPPER GROUND WIRE CONNECTED TO GROUND ROD W/CADWELD CONNECTOR 16. 5/8" X 10' COPPER GROUND ROD IN 10" VALVE BOX FILLED WITH 3/8" PEA GRAVEL 17. OPTIONAL PIU (WHEN SPECIFIED) 18. OPTIONAL PIU ANTENNA (WHEN SPECIFIED) |
|--|--|

- 120 VAC POWER TO BE INSTALLED AS PER APPLICABLE ELECTRICAL CODES
- 120 VAC POWER TO BE ROUTED IN CONDUIT TO POWER BOX
- ALL CONDUITS TO EXTEND AT LEAST 12" BEYOND PAD
- 24 VAC FIELD WIRES TO BE CONNECTED TO SURGE CARDS
- SEAL BASE OF CABINET WITH CLEAR SILICONE @ SLAB
- COMPLETE CONTROLLER ASSEMBLY TO BE BUILT BY INTERSPEC, LLC AS PER CITY OF MESA SPECIFICATIONS
- STAINLESS STEEL BOLTS & TEMPLATE TO BE PROVIDED BY PARKS DEPARTMENT
- COMPLETE CONTROLLER ASSEMBLY (INC. CABINET) TO BE PROVIDED BY PARKS DEPARTMENT
- CONDUITS STUBBED OUT 3/4" ABOVE CONCRETE

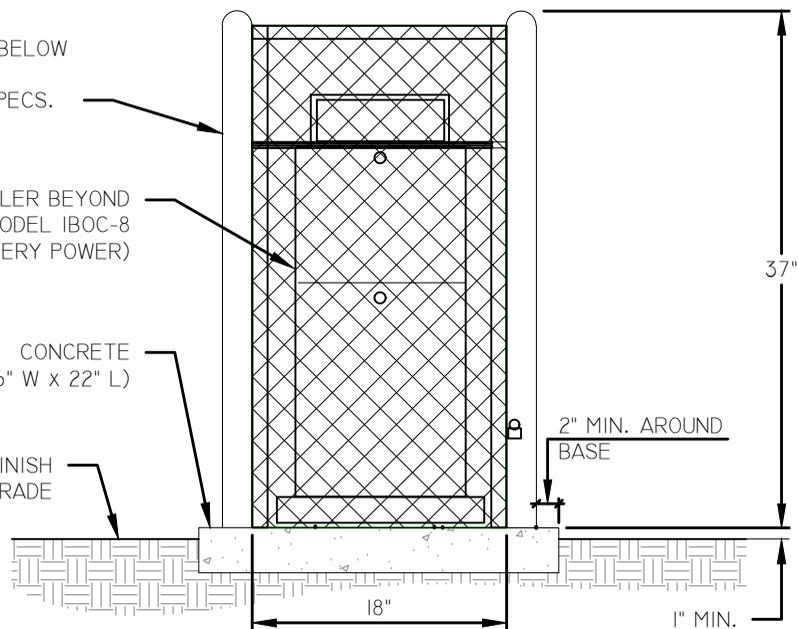
NOT TO SCALE

SECURITY CAGE
BPDJ-KADDYSHACK
MODEL #KS-I
COLOR: SEE NOTES BELOW
INSTALL PER
MANUFACTURER'S SPECS.

IRRIGATION CONTROLLER BEYOND
IRRITROL SYSTEMS MODEL IBOC-8
PLUS (BATTERY POWER)

4" CLASS 'B' CONCRETE
PAD (16" W x 22" L)

FINISH
GRADE



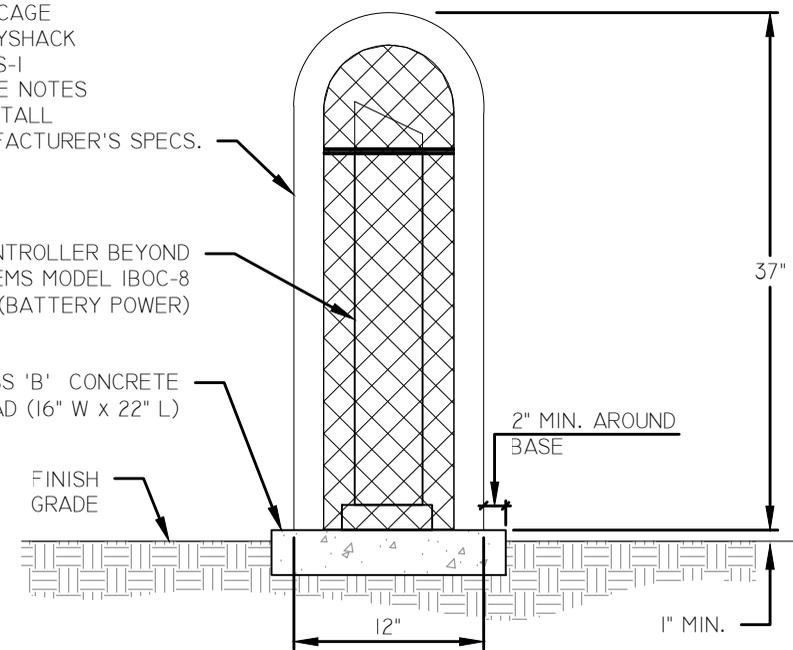
ELEVATION

SECURITY CAGE
BPDJ-KADDYSHACK
MODEL #KS-I
COLOR: SEE NOTES
BELOW INSTALL
PER MANUFACTURER'S SPECS.

IRRIGATION CONTROLLER BEYOND
IRRITROL SYSTEMS MODEL IBOC-8
PLUS (BATTERY POWER)

4" CLASS 'B' CONCRETE
PAD (16" W x 22" L)

FINISH
GRADE

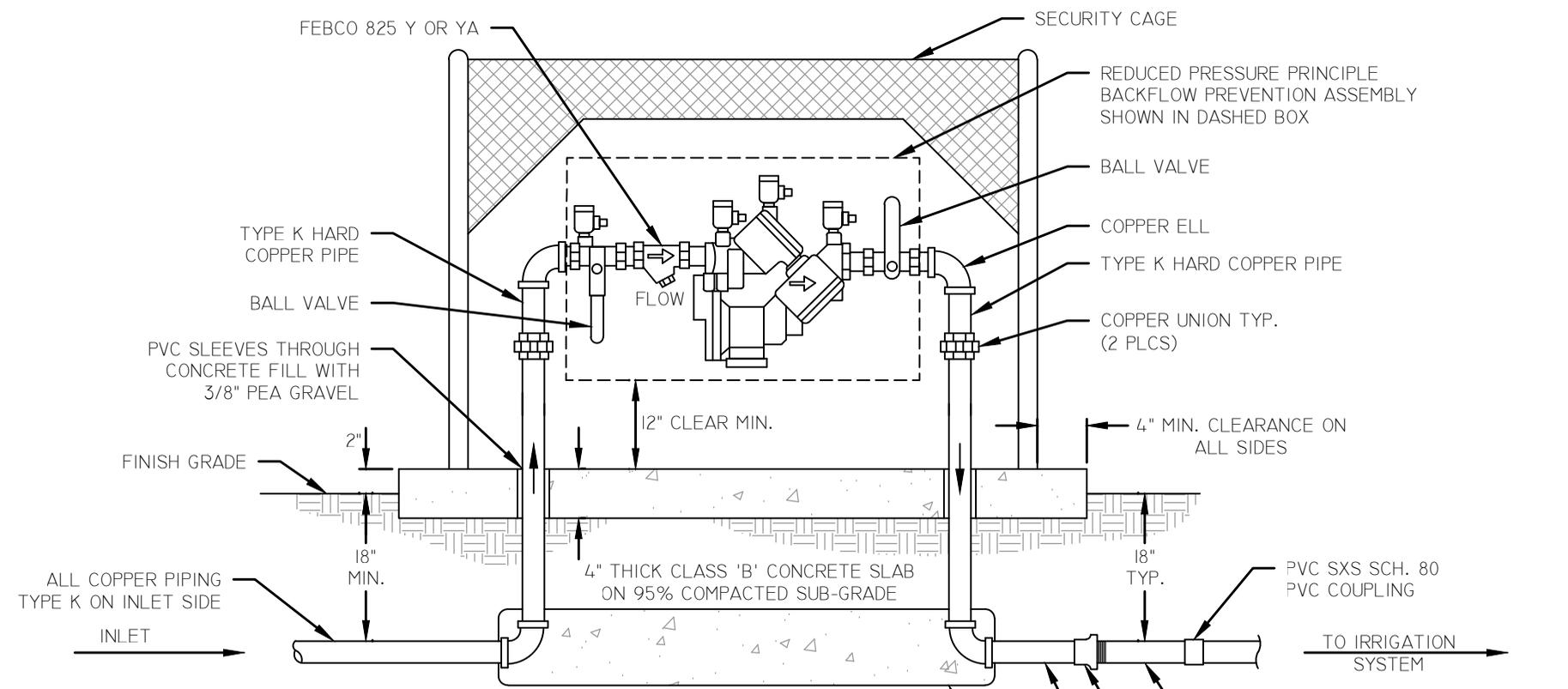


SECTION

NOTES

1. PEDESTAL MOUNT CONTROLLER IS TO BE PLACED ON CONCRETE SLAB WITH A SECURITY CAGE ENCLOSURE. (SEE DETAILS) B.P.D.I. 'KADDYSHACK' MODEL #KS-I - HINGED UNIT OR APPROVED EQUAL.
2. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR SHALL STAKE LOCATION AND CONTACT CITY OF MESA PRIOR TO INSTALLATION FOR APPROVAL.
4. CONTRACTOR SHALL INSTALL 4" CONCRETE SLAB TO SUPPORT CONTROLLER, PEDESTAL & SECURITY CAGE (SEE DETAILS). CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR CITY APPROVAL.
5. AFTER WELDING, ENTIRE UNIT SHALL BE SANDBLASTED, PROCESSED WITH IRON PHOSPHATE PRETREATMENT.
6. ELECTRO - STATIC APPLICATION OF POWDER SHALL BE FUSION BONDED EPOXY - COLOR: TAN.
7. HIGH GLOSS- SMOOTH FIELD 180 LB. IMPACT COATING.
8. ALL BOLTS FOR HINGES AND HASP SHALL BE ZINC PLATED TAMPER PROOF.

NOT TO SCALE

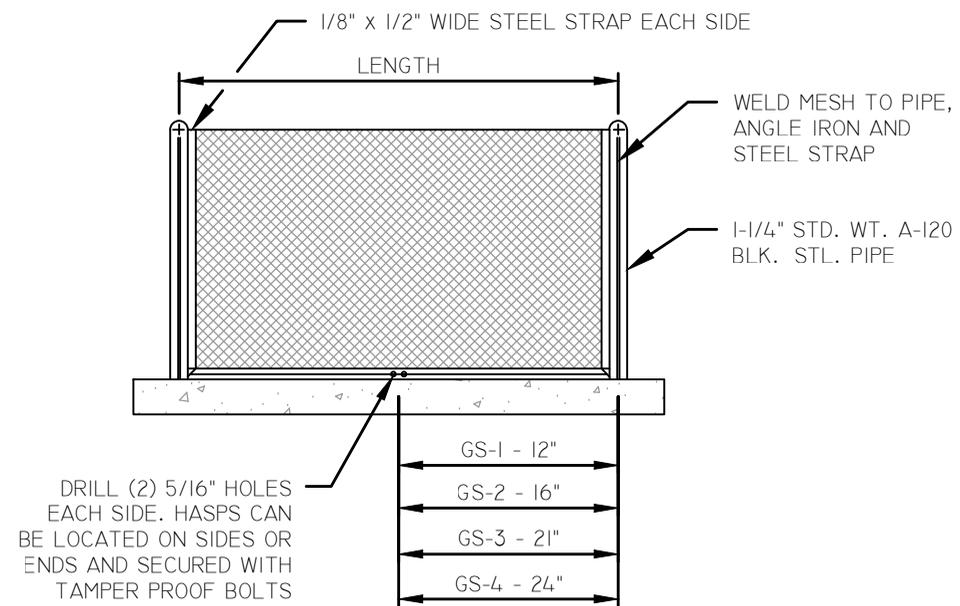
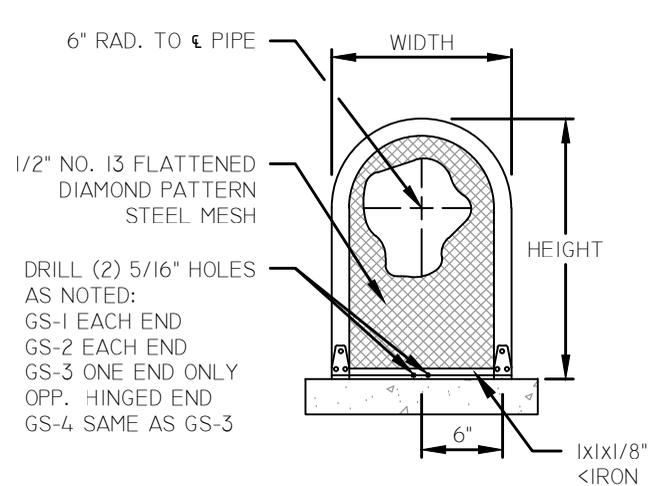


GENERAL BACKFLOW ASSEMBLY NOTES

1. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLY (FOR 2" DIAMETER PIPE OR SMALLER).
2. THE REQUIRED BACKFLOW PREVENTION ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW PREVENTION ASSEMBLIES. (CONTRACTOR TO VERIFY PRIOR TO ORDERING AND ASSEMBLY.)
3. THE BACKFLOW PREVENTION ASSEMBLY SHALL BE TESTED AND APPROVED BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED CERTIFIED INSPECTORS PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. INSTALL BACKFLOW PREVENTION UNIT WITHIN 24" OF WATER METER.
5. COPPER FITTINGS SHALL BE CONNECTED WITH LEAD FREE SOLDER JOINTS.
6. AFTER TESTING, INSTALL A BRASS PLUG IN EACH TESTCOCK ON THE ASSEMBLY.
7. BACKFLOW PREVENTION ASSEMBLY AND COPPER PIPES SHALL BE PAINTED DARK GREEN. THE DEVICE NAME IS NOT TO BE PAINTED.
8. FOR THE CAGE, ELECTRO - STATIC APPLICATION OF POWDER SHALL BE FUSION BONDED EPOXY - COLOR: TAN (RAL 1019).

ADAPT OUTLET FITTINGS TO PVC USING A SCH. 80 PVC TOE NIPPLE 8" LENGTH.
COPPER FEMALE ADAPTER
EXTEND COPPER PIPE 12" BEYOND CONCRETE THRUST BLOCK.
8"x8" X LENGTH AS REQUIRED CONTINUOUS THRUST BLOCKING. POLYWRAP ALL COPPER ENCASED WITHIN CONCRETE THRUST BLOCKING SECURED WITH TAPE PER MAG SECTION 610.6. CONCRETE SHALL BE CLASS 'C' PER MAG SECTION 725.

NOT TO SCALE

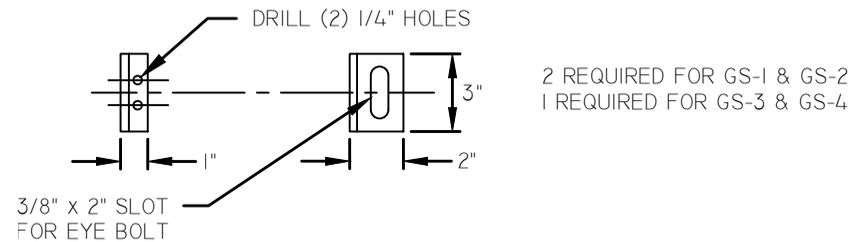


NOTES

1. AFTER WELDING, ENTIRE UNIT SHALL BE SANDBLASTED, AND PROCESSED WITH IRON PHOSPHATE PRETREATMENT.
2. ELECTROSTATIC APPLICATION OF POWDER SHALL BE FUSION BONDED EPOXY - MORTON PU94175 (DESERT TAN) OR APPROVED EQUAL.
3. HIGH GLOSS - SMOOTH FIELD 180 LB. IMPACT COATING.
4. ALL BOLTS FOR HINGES AND HASP SHALL BE ZINC PLATED TAMPER PROOF.
5. CONTRACTOR SHALL PROVIDE AND INSTALL PROTECTIVE CAGE, COLOR SHALL BE TAN. CLEARANCE SHALL BE A MINIMUM OF 4" (TOP & SIDES). SHOP DRAWINGS TO BE SUBMITTED TO CITY FOR APPROVAL. METAL CAGE SHALL BE LOCKABLE AND MOUNTED ON CONCRETE PAD.

STANDARD SIZES - CENTERLINE DIMENSIONS

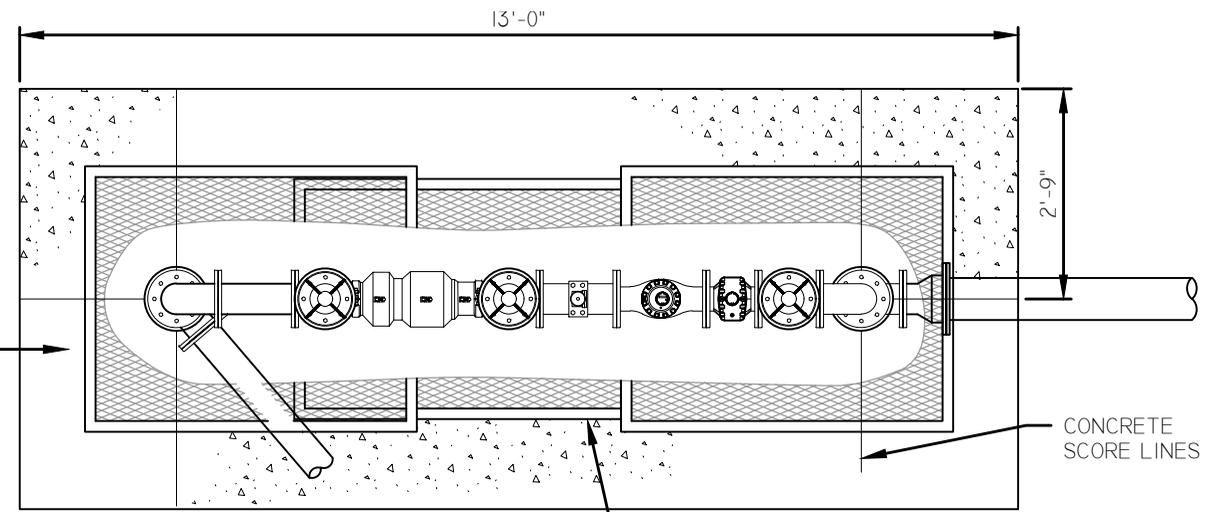
GS-1	12" W x 24" H x 24"L	LIFT OFF UNIT
GS-2	12" W x 24" H x 32"L	LIFT OFF UNIT
GS-3	12" W x 24" H x 42"L	HINGED UNIT
GS-4	12" W x 30" H x 48"L	HINGED UNIT



HASP DETAIL

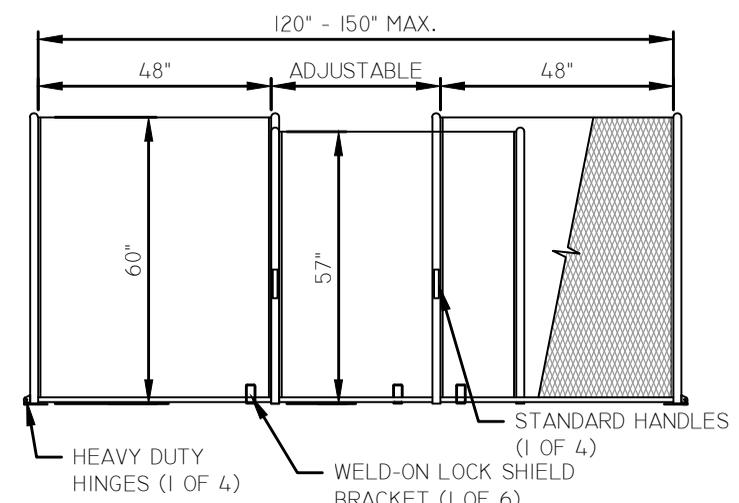
NOT TO SCALE

NOT TO SCALE

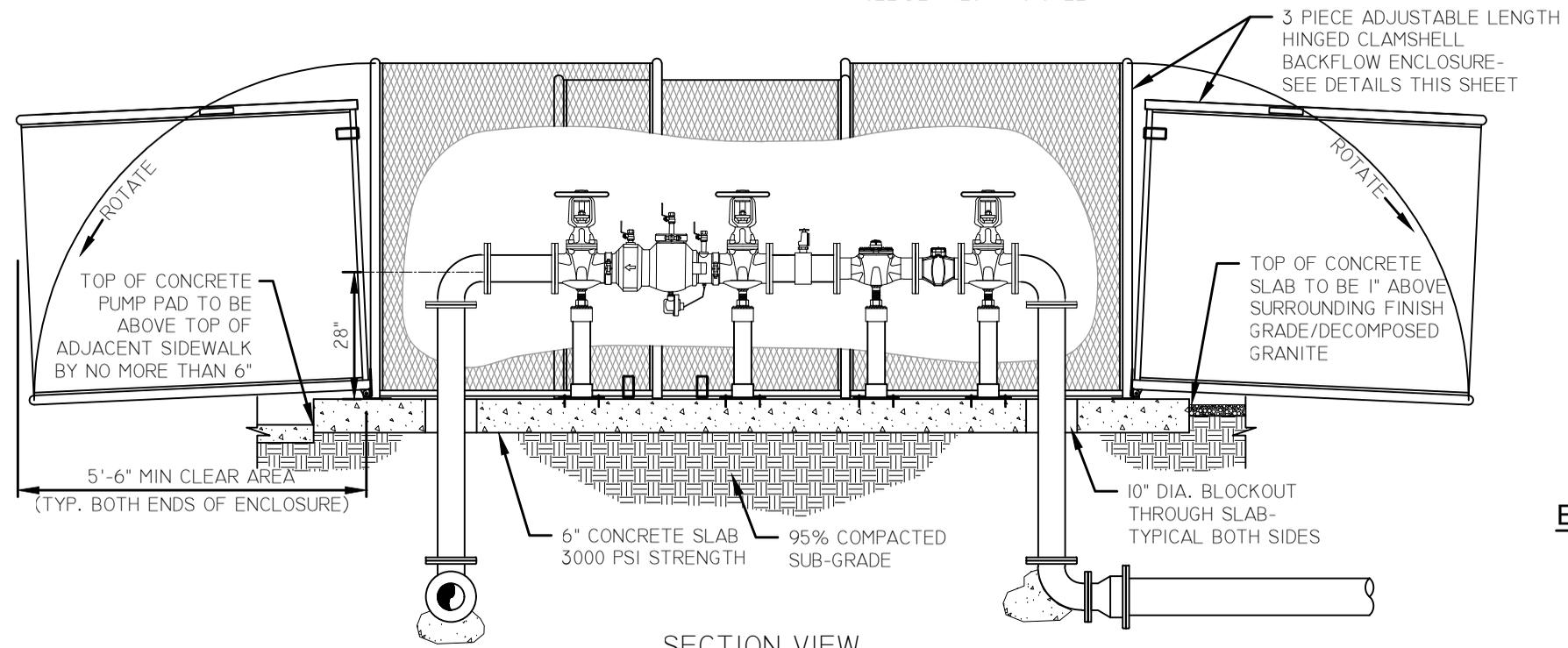


PLAN VIEW

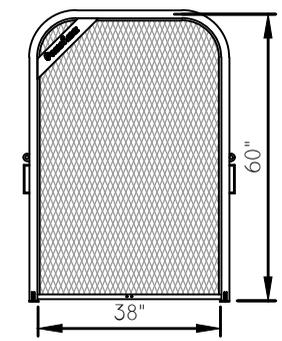
3 PIECE ADJUSTABLE LENGTH HINGED CLAMHELL BACKFLOW ENCLOSURE- SEE DETAILS THIS SHEET



ENCLOSURE FRONT ELEVATION



SECTION VIEW



ENCLOSURE END ELEVATION

6" CONCRETE SLAB
3000 PSI STRENGTH

CONCRETE
SCORE LINES

HEAVY DUTY
HINGES (1 OF 4)

WELD-ON LOCK SHIELD
BRACKET (1 OF 6)

STANDARD HANDLES
(1 OF 4)

TOP OF CONCRETE
PUMP PAD TO BE
ABOVE TOP OF
ADJACENT SIDEWALK
BY NO MORE THAN 6"

5'-6" MIN CLEAR AREA
(TYP. BOTH ENDS OF ENCLOSURE)

6" CONCRETE SLAB
3000 PSI STRENGTH

95% COMPACTED
SUB-GRADE

10" DIA. BLOCKOUT
THROUGH SLAB-
TYPICAL BOTH SIDES

3 PIECE ADJUSTABLE LENGTH
HINGED CLAMHELL
BACKFLOW ENCLOSURE-
SEE DETAILS THIS SHEET

TOP OF CONCRETE
SLAB TO BE 1" ABOVE
SURROUNDING FINISH
GRADE/DECOMPOSED
GRANITE

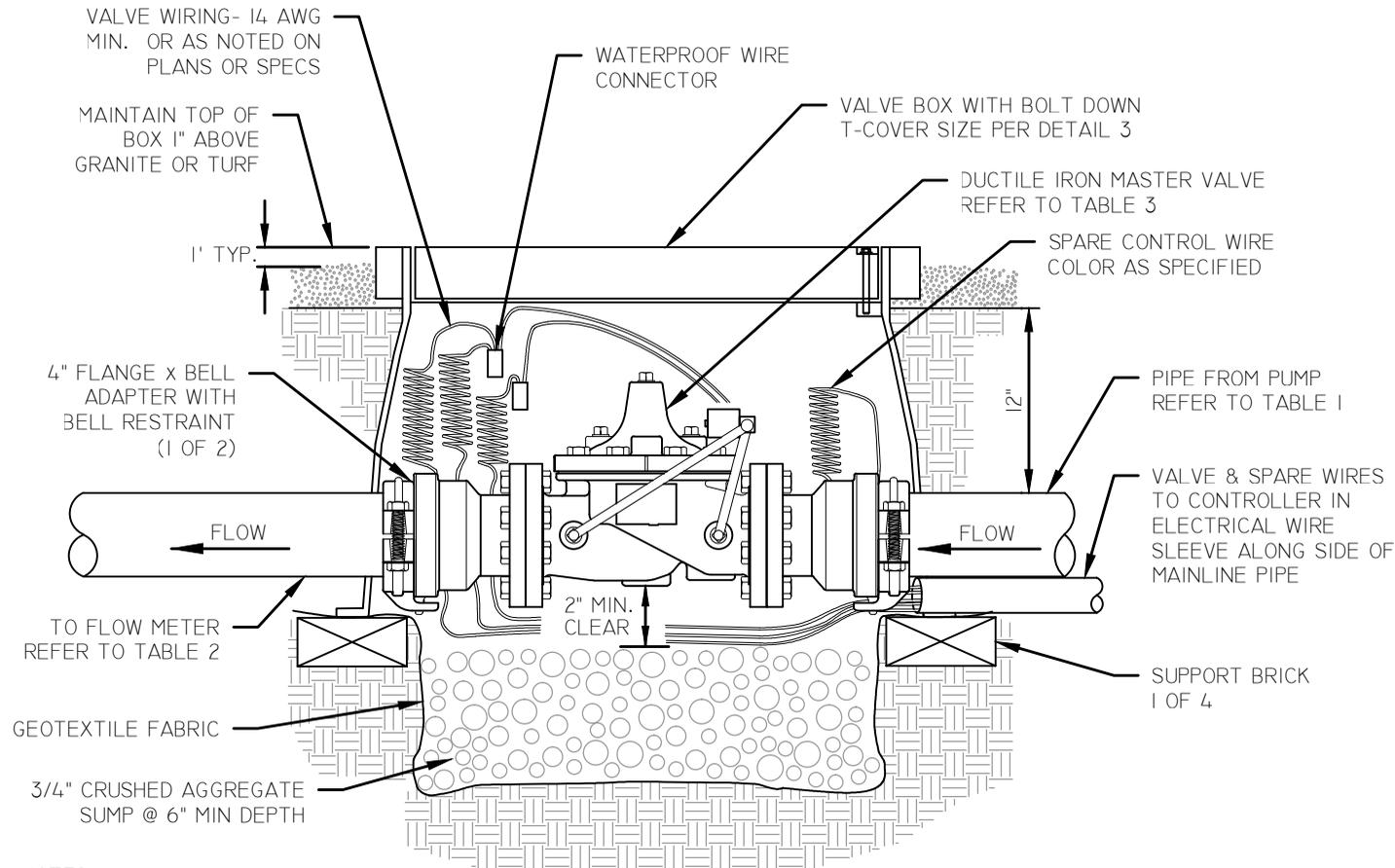


TABLE 1 - PIPE MATERIAL
NOTE: FROM PUMP TO MASTER VALVE

PIPE SIZE	LOCATION	
	R/W OR ROADWAY	PARK
≤2"	SCHEDULE 40 PVC	SCHEDULE 40 PVC SOLVENT/WELD
≥3"	SCHEDULE 40 PVC	CLASS 200 RING TITE

TABLE 2 - PIPE MATERIAL
NOTE: FROM MASTER VALVE TO FLOWMETER

PIPE SIZE	LOCATION	
	R/W OR ROADWAY	PARK
≤2"	SCHEDULE 40 OR 80 PVC	SCHEDULE 40 PVC SOLVENT/WELD
≥3"	SCHEDULE 40 OR 80 PVC	CLASS 200 RING TITE

TABLE 3 - MASTER VALVE
NOTE: INCLUDE OPTIONAL CHECK VALVE & SPEED CONTROL ON SOLENOID

PIPE SIZE	LOCATION	
	R/W OR ROADWAY	PARK
≤2"	DUCTILE IRON MASTER VALVE WITH 24 VAC SOLENOID OR PVC	DUCTILE IRON MASTER VALVE WITH 24 VAC SOLENOID RAINBIRD EFB CP SERIES
≥3"	DUCTILE IRON MASTER VALVE WITH 24 VAC SOLENOID	DUCTILE IRON MASTER VALVE WITH 24VAC SOLENOID RAINBIRD EFB CP SERIES

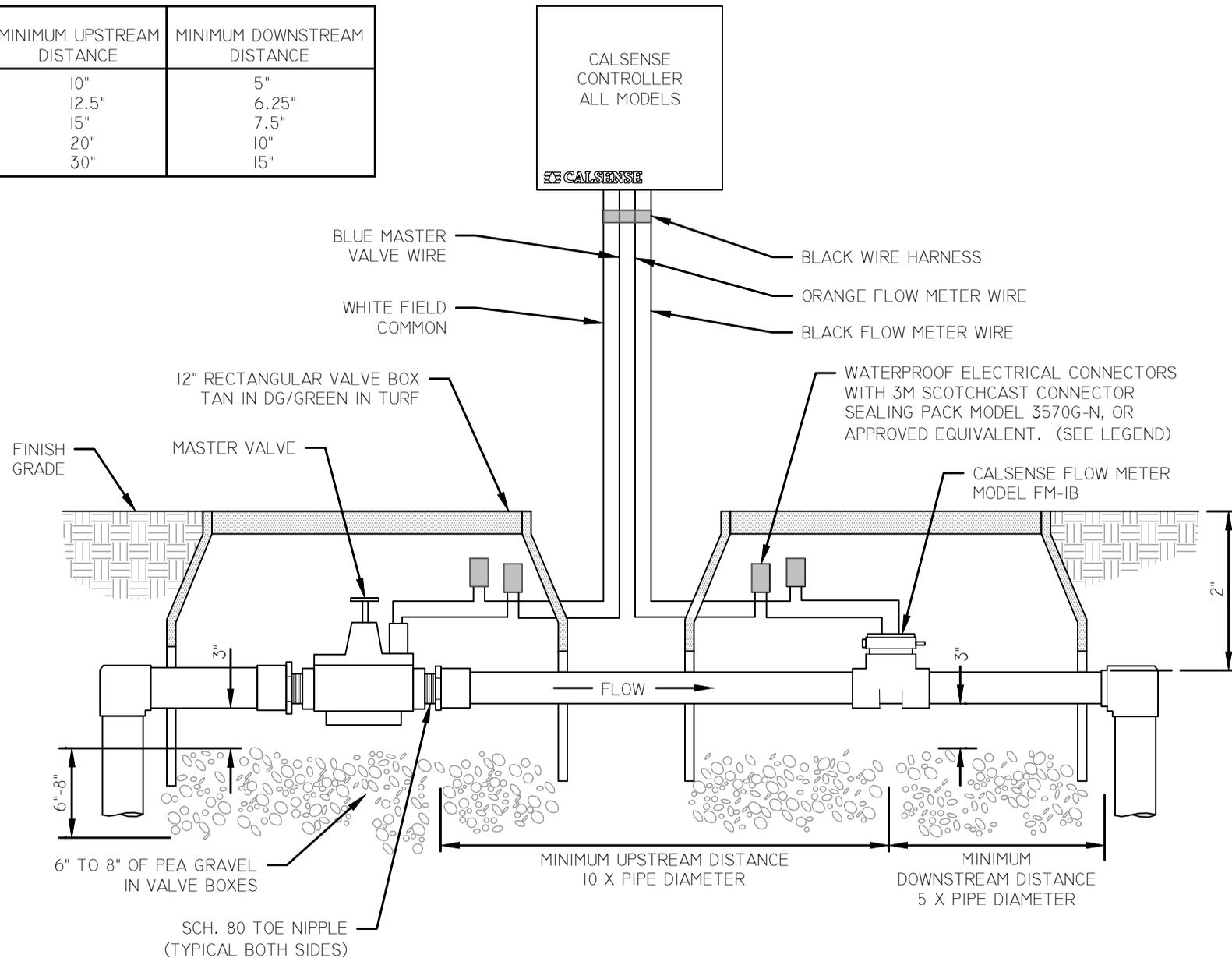
NOTES:

- 4" MASTER VALVE SHOWN THIS DETAIL- 1.25" & 2" MASTER VALVES INSTALLED ON BYPASS LINES SHALL BE SIMILAR EXCEPT ELIMINATING BELL ADAPTERS WITH RESTRAINTS & SUBSTITUTING FLANGED CONNECTIONS WITH FEMALE PIPE THREAD (FPT) CONNECTIONS USING SCH 80 PVC NIPPLES & FITTINGS AS REQUIRED.
- ALL MASTER VALVES SHALL BE NORMALLY CLOSED.
- PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX (WRAP AROUND 1/2" PIPE 15 TIMES).
- ONE GREEN SPARE WIRE (SIZE TO MATCH COMMON WIRE AWG) SHALL HAVE CONTINUOUS LOOP IN & OUT OF EACH MASTER VALVE (IN CONDUIT FROM CONTROLLER TO MASTER VALVE USING SPEARS DRI-SPLICE WIRE CONNECTORS) & FLOW METER BOX. SEE IRRIGATION DETAILS 1 & 2 FOR WIRE COLORS.
- INSTALL MAINLINE PIPES AT 12" COVER FROM PUMP DISCHARGE UNTIL BEYOND MV & FM ASSEMBLIES WHERE 4" PIPE TRANSITIONS TO 6" WHERE IT SHALL GO TO 24" DEPTH FOR REMAINDER OF MAINLINE SYSTEM.
- EMBOSS COVER OF VALVE BOX WITH 2" STENCIL LETTERS SHOWING SIZE & "MV" USING STENCIL & STYLUS TIP TORCH (EX.- 4"MV).
- VALVE BOX TO BE TAN COLOR WITH BOLT DOWN T-COVER.
- OPTIONAL SPEED CONTROL ONLY REQUIRED ON 2" & 4" MASTER VALVE SOLENOIDS.

MASTER VALVE ASSEMBLY

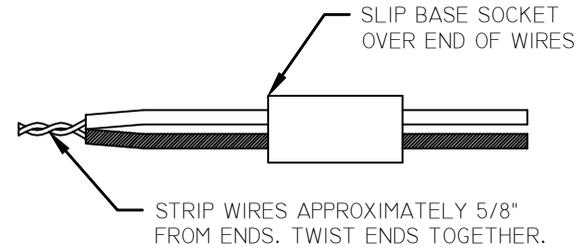
NOT TO SCALE

PIPE DIAMETER	MINIMUM UPSTREAM DISTANCE	MINIMUM DOWNSTREAM DISTANCE
1"	10"	5"
1.25"	12.5"	6.25"
1.5"	15"	7.5"
2"	20"	10"
3"	30"	15"

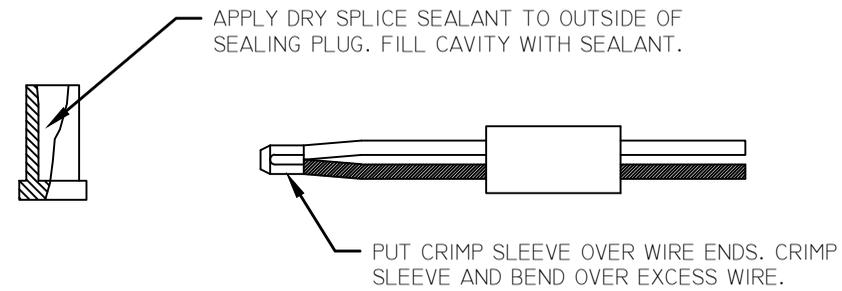


NOT TO SCALE

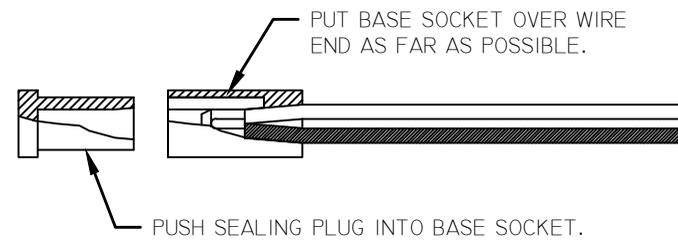
STEP 1



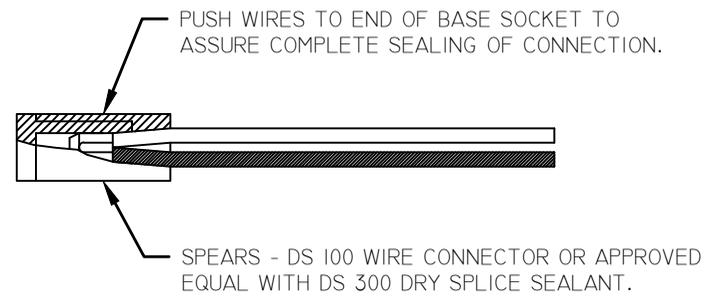
STEP 2



STEP 3



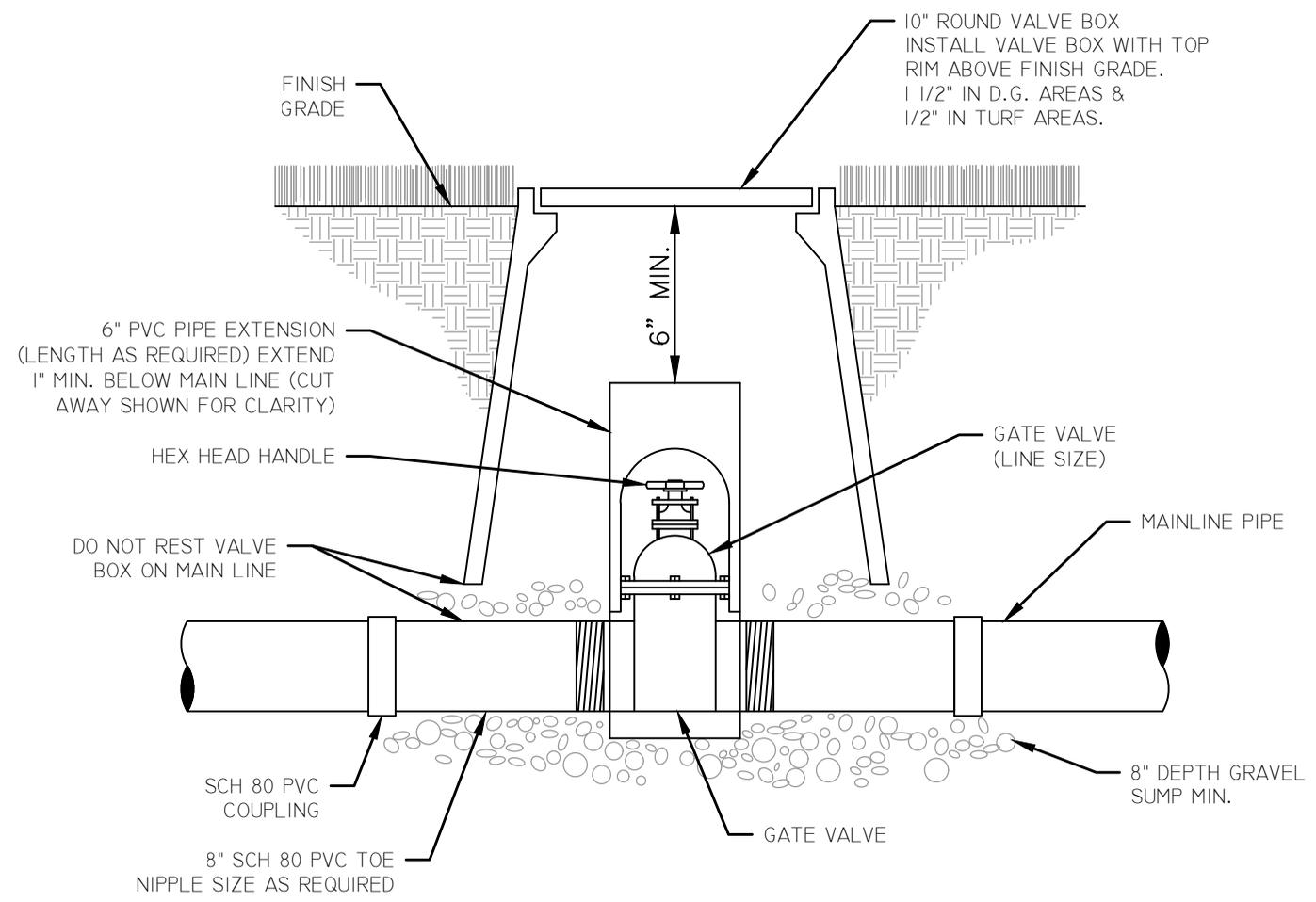
STEP 4



NOTE

- I. FOR WIRE SIZES NO.14, NO.12, AND NO.10

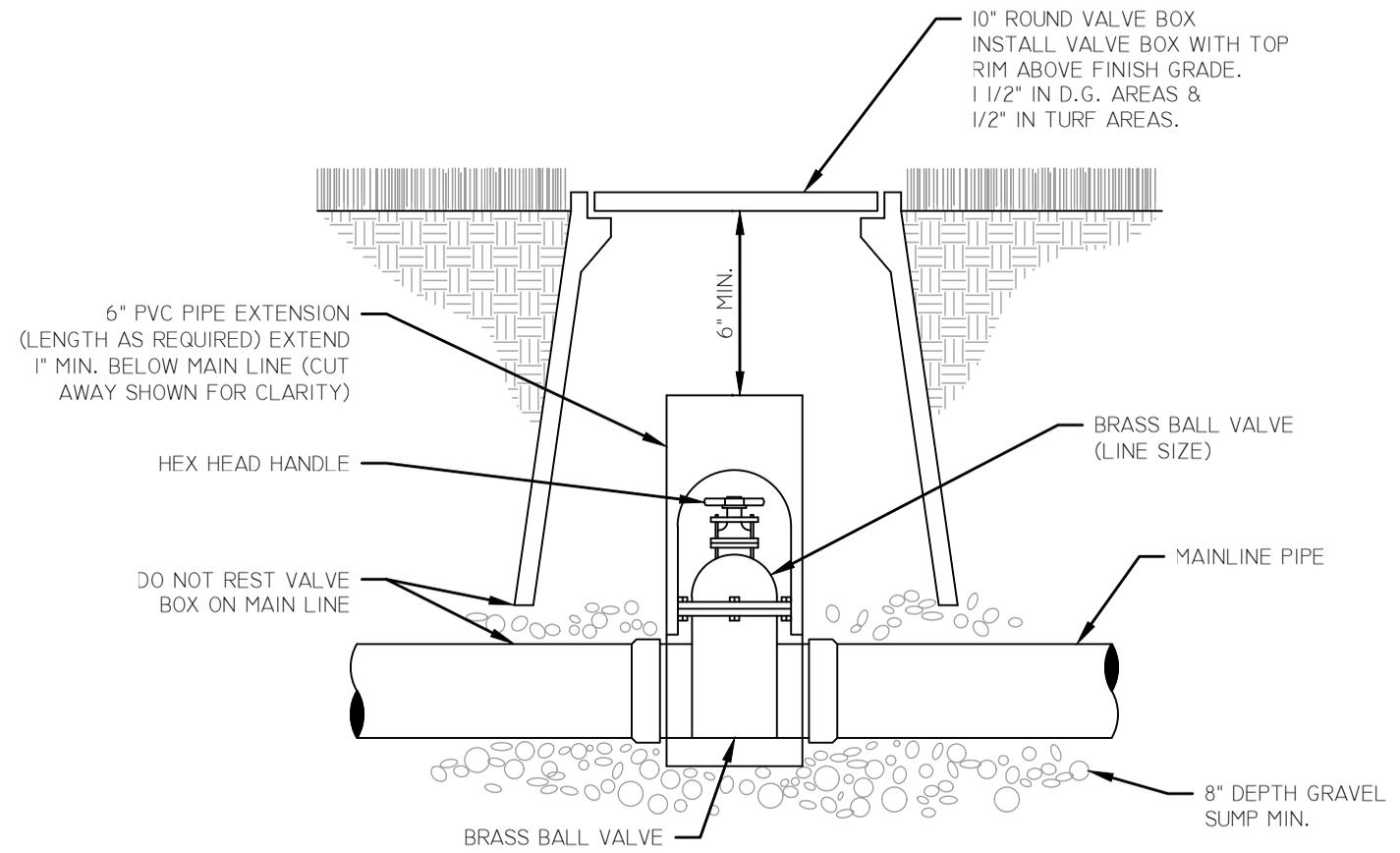
NOT TO SCALE



NOTES

1. COMPACT SOIL AROUND CONTROL VALVE PIT ASSEMBLY TO SAME DENSITY AS UNDISTURBED ADJACENT SOIL.
2. IF GATE VALVE IS OVER 5.0 FEET DEEP, USE MAG 391-2 FOR EXTENSION.
3. PROVIDE CITY OF MESA WITH GATE VALVE KEY - LENGTH AS REQUIRED.
4. FOR ALL PIPE 2-1/2" OR SMALLER.

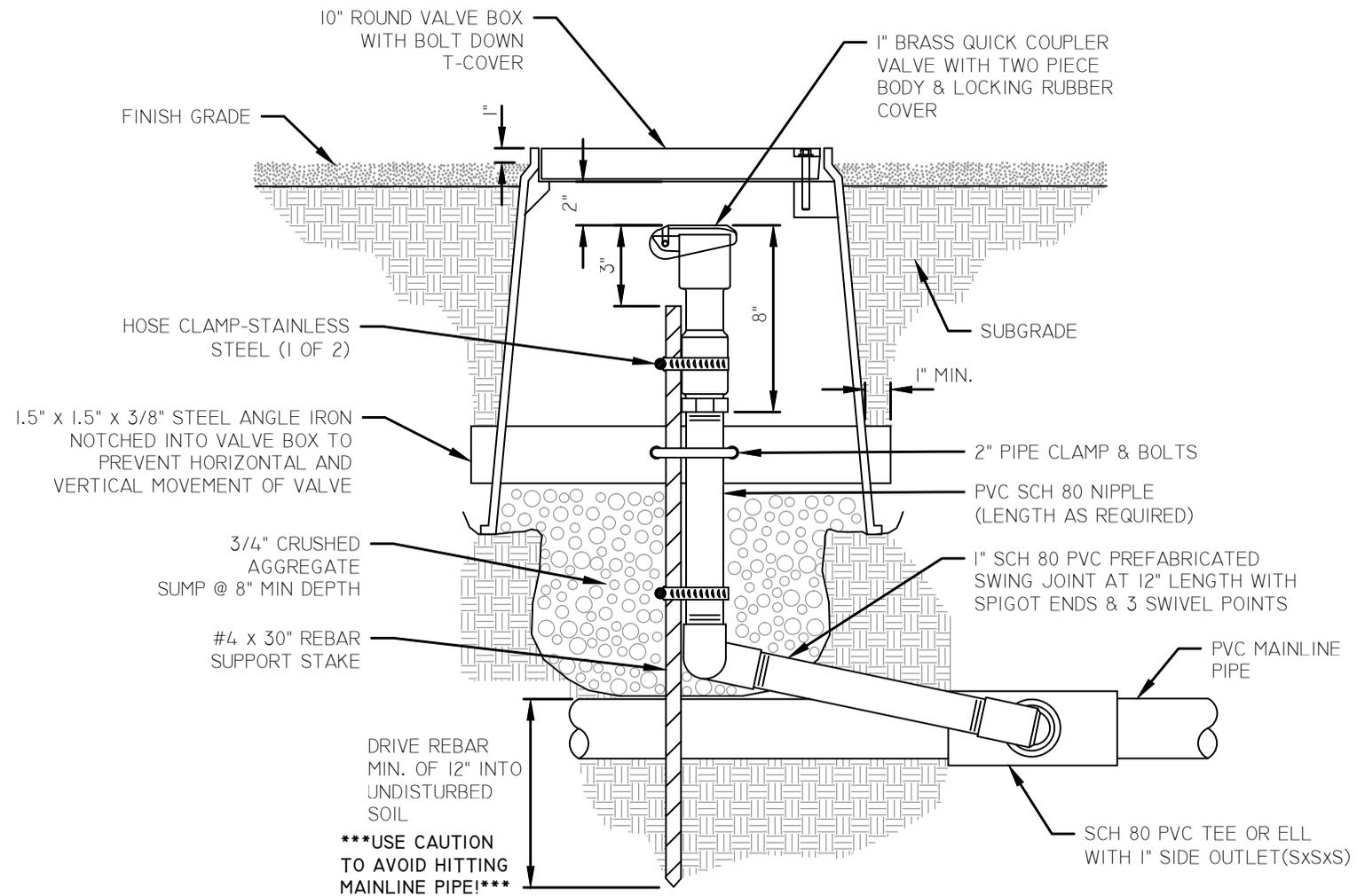
NOT TO SCALE



NOTES

1. COMPACT SOIL AROUND CONTROL VALVE PIT ASSEMBLY TO SAME DENSITY AS UNDISTURBED ADJACENT SOIL.
2. IF BRASS BALL VALVE IS OVER 5.0 FEET DEEP, USE MAG 391-2 FOR EXTENSION.
3. PROVIDE CITY OF MESA WITH BRASS BALL VALVE KEY - LENGTH AS REQUIRED.
4. FOR ALL PIPE 3" OR GREATER.

NOT TO SCALE



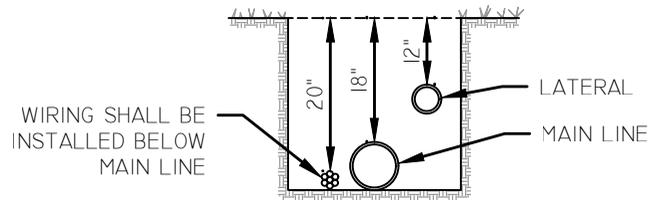
NOTES:

1. SIZE SWING JOINT INLET TO MATCH MAINLINE PIPE SIZE.
2. EMBOSS VALVE BOX COVER WITH "QC" IN 2" STENCIL LETTERS USING STYLUS TIP TORCH.
3. AGGREGATE ROCK SUMP SHALL REMAIN A MINIMUM OF 4" BELOW TOP OF QUICK COUPLER.
4. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED WITH RECLAIMED WATER.

QUICK COUPLER VALVE ASSEMBLY

NOT TO SCALE

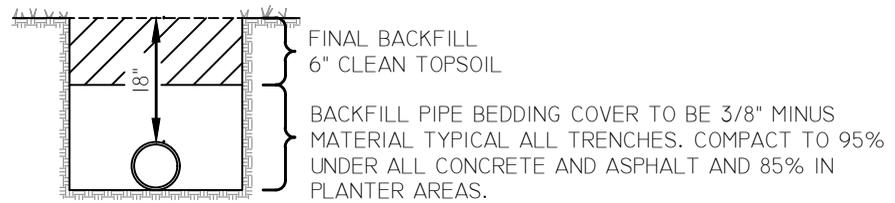
MAIN SUPPLY, LATERAL AND WIRING



NOTE

TAPE AND BUNDLE WIRING AT 10' INTERVALS. SPLICED WIRES TO BE IN 10" SPLICE PIT BOXES.

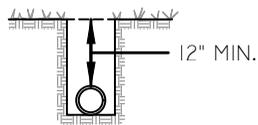
MAIN SUPPLY



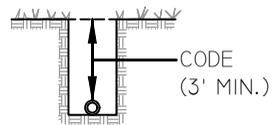
NOTE

ALL MAIN SUPPLY LINES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION SPECIFICATIONS.

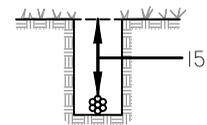
LATERAL



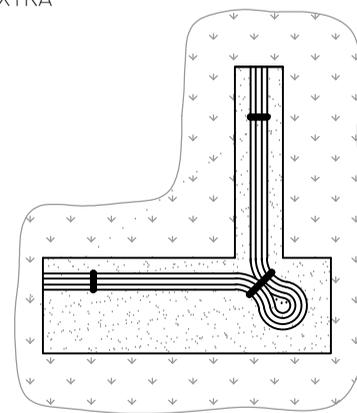
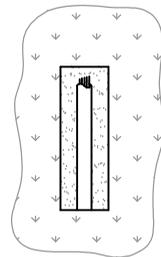
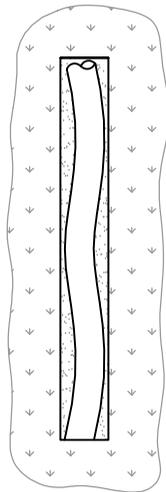
120 VOLT



CONTROL WIRING



WIRE LEGEND
 RED=CONTROLLER
 BLUE=MASTER VALVE
 BLACK/ORANGE=FLOW METER
 WHITE=COMMON
 GREEN=EXTRA



NOTE

NO TRENCH TO BE CLOSER THAN 18" TO CONCRETE SIDEWALK, CURBS, ELECTRIC POLES, J-BOXES, ELECTRIC CABINETS, STREET SIGNALS, SIGNS, ETC.

NOTES

ALL 120 VOLT WIRING IN CONDUIT TO BE INSTALLED IN ACCORDANCE WITH LOCAL CODE.

APPROVED "ELECTRICAL POWER WIRES BELOW" WARNING TAPE SHALL BE INSTALLED 12" ABOVE ALL POWER WIRING IN TRENCHES.

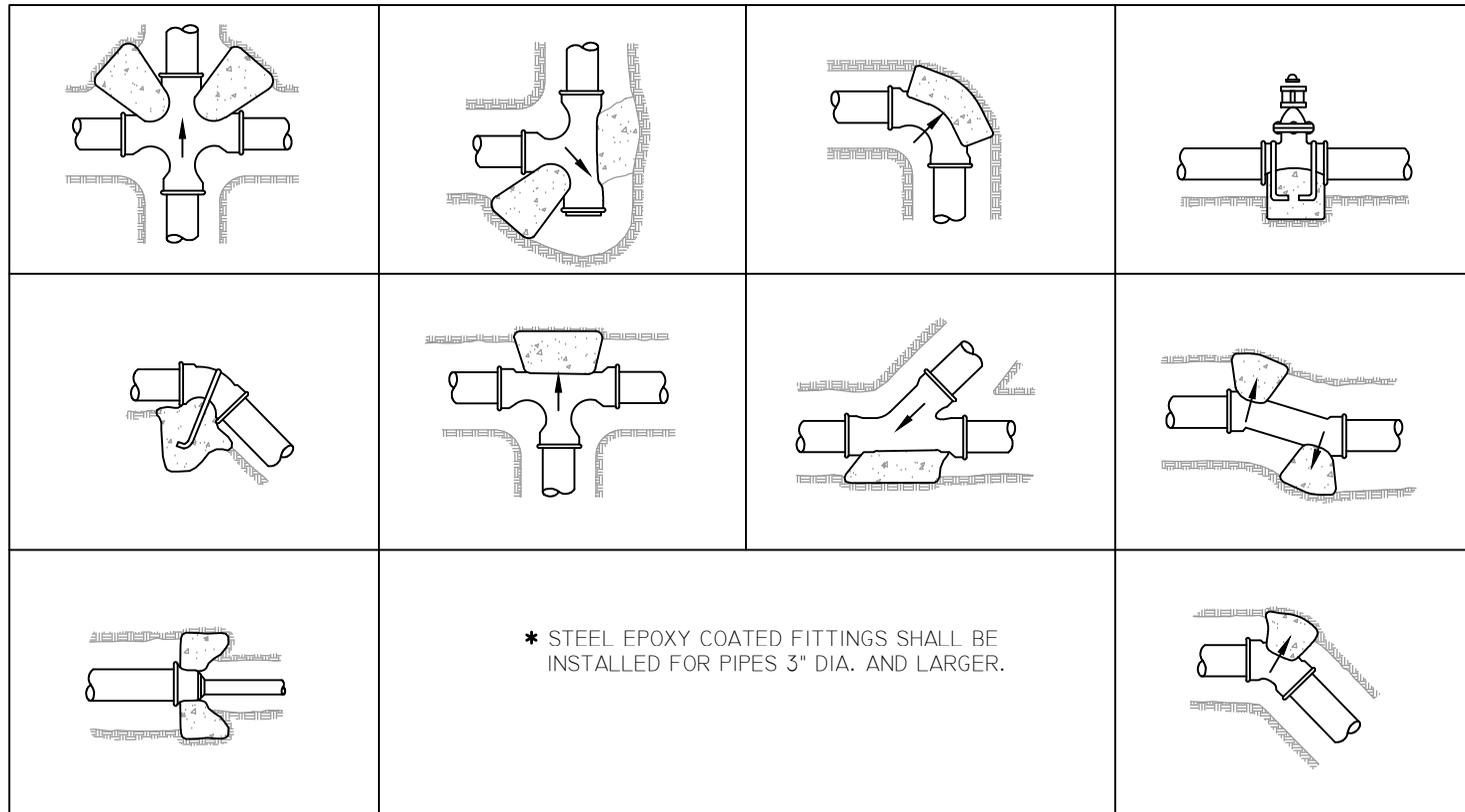
NOTE

TIE A LOOSE 20" LOOP IN ALL WIRING AT CHANGES OF DIRECTION GREATER THAN 30° AND AT EACH END OF WIRE SLEEVES. UNTIE ALL LOOPS AFTER ALL CONNECTIONS HAVE BEEN MADE.

NOTE

ALL PLASTIC PIPING TO BE SNAKED IN TRENCHES AS SHOWN.

NOT TO SCALE



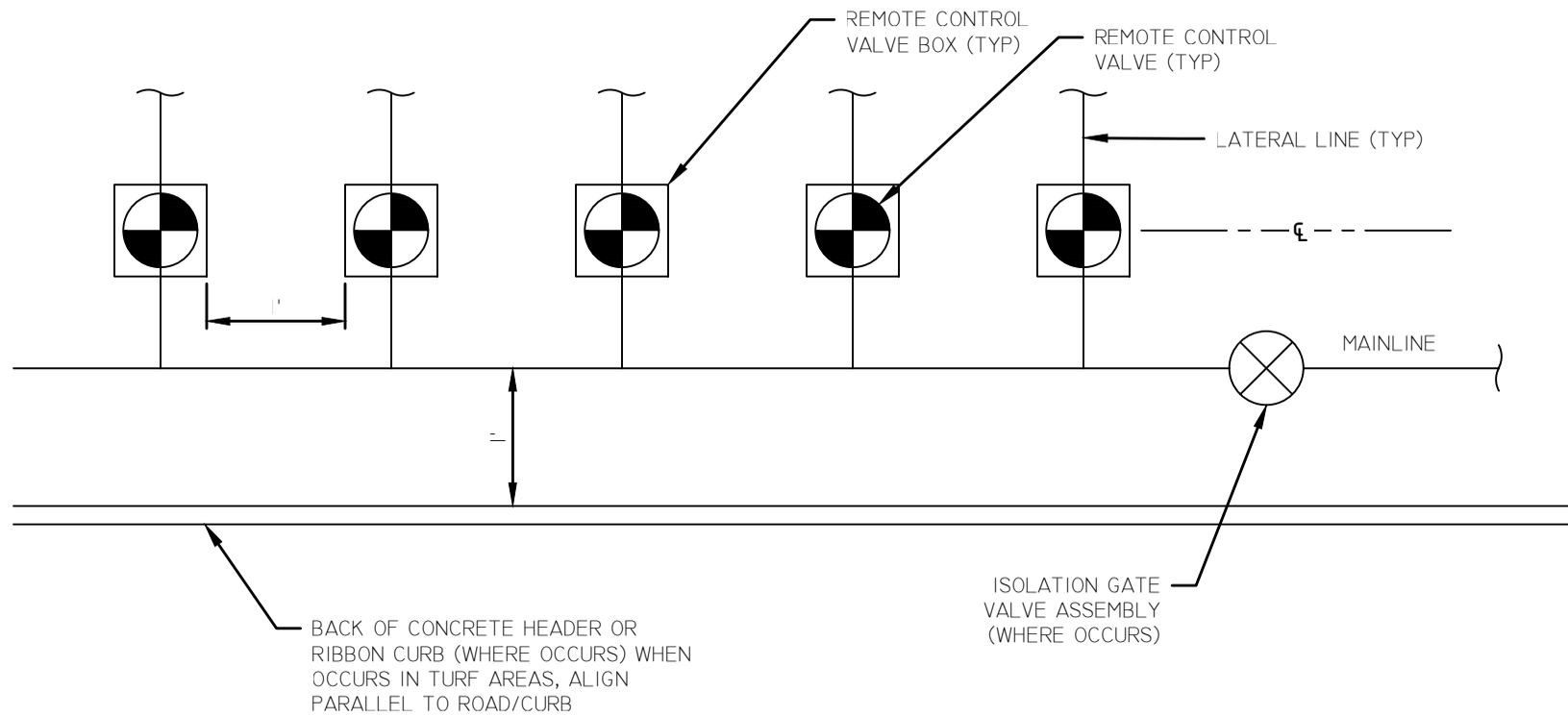
INSTALLATION NOTES

1. ALL MAIN LINE TO BE INSTALLED AND TESTED ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS. SEE ALSO MAG STD. DETAIL 380.
2. ALL TRENCH DEPTH AND WIDTH SHALL BE AS SHOWN ON THE TYPICAL TRENCHING DETAIL.
3. CONTRACTOR TO PROVIDE AND INSTALL 'POLY PLASTIC' (6 MIL. MINIMUM THICKNESS) BETWEEN "ALL" CONCRETE THRUST BLOCKS AND FITTINGS.

NOTES

1. SEE MAG DETAIL 380 FOR SIZING INFORMATION.
2. THIS DETAIL APPLIES TO IRRIGATION MAIN LINES. DOES NOT APPLY TO PUBLIC WATER MAINS.

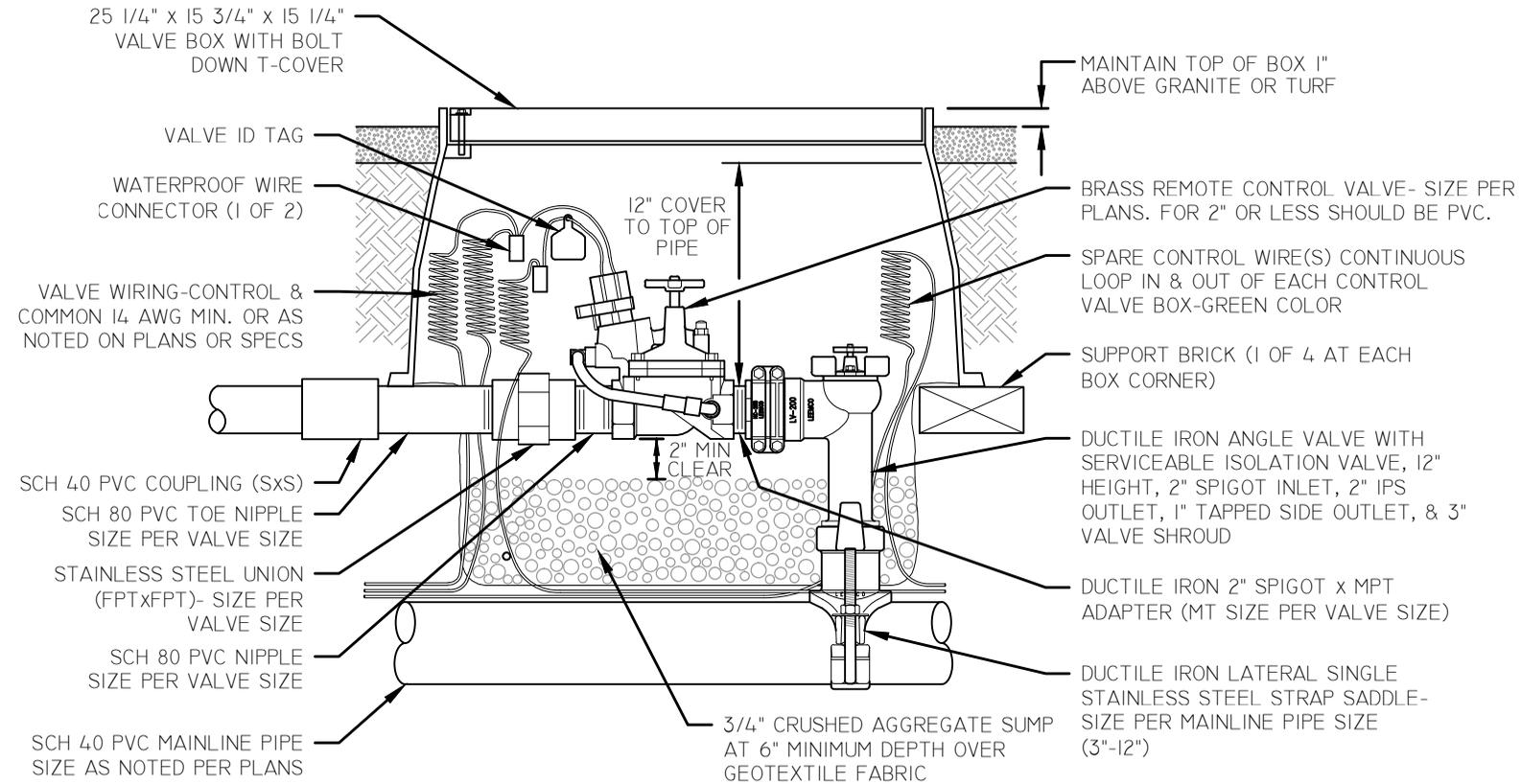
NOT TO SCALE



NOTE

I. VALVE AND VALVE BOX TO BE LAID OUT UNIFORMLY AND GROUPED TOGETHER WHENEVER POSSIBLE.

NOT TO SCALE

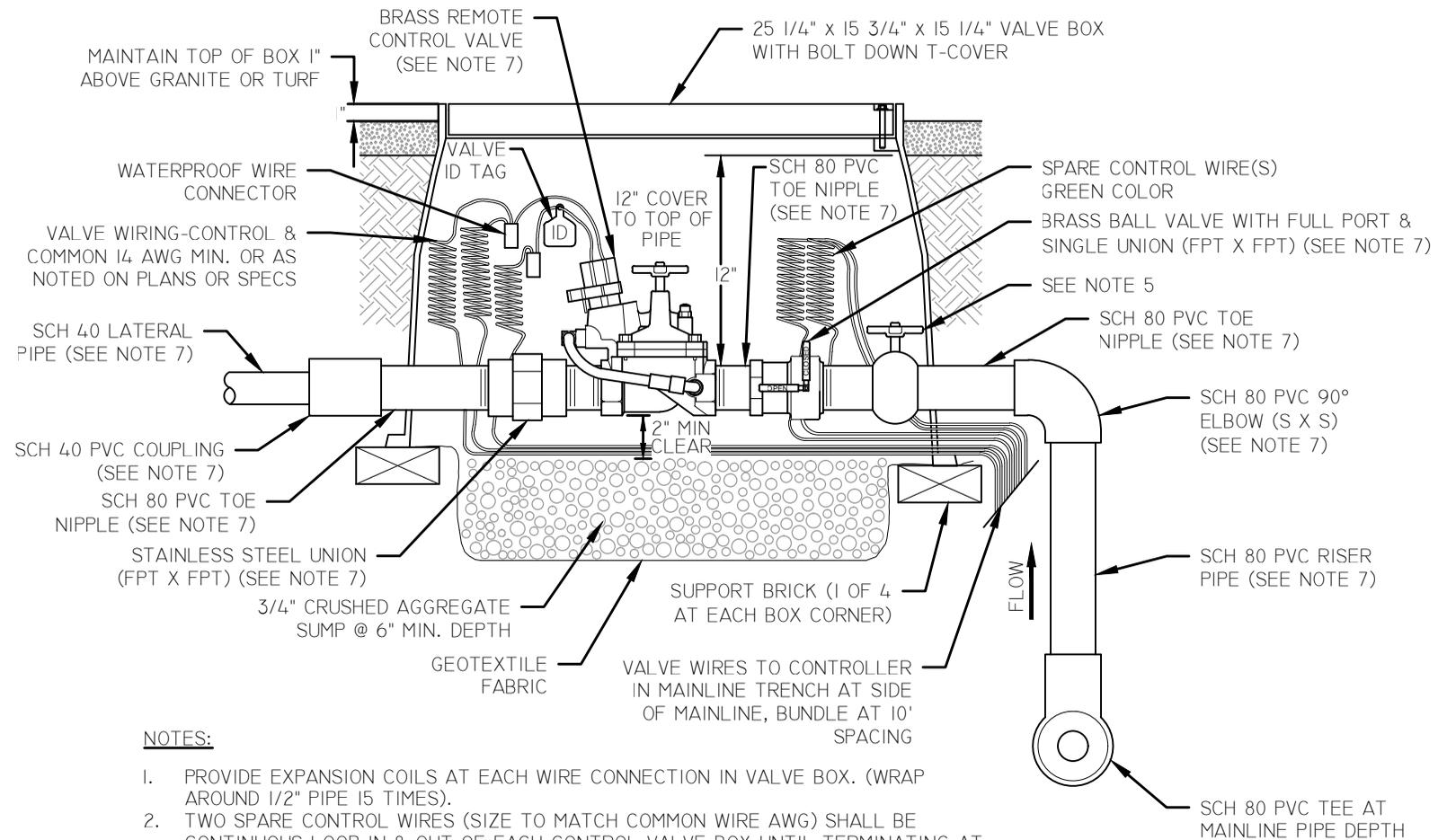


NOTES:

1. REMOTE CONTROL VALVE TO BE SIZED PER VALVE KEYS AS SHOWN ON IRRIGATION PLAN SHEETS.
2. PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX. (WRAP AROUND 1/2" PIPE 15 TIMES).
3. TWO SPARE CONTROL WIRES (SIZE TO MATCH COMMON WIRE AWG) SHALL BE CONTINUOUS LOOP IN & OUT OF EACH CONTROL VALVE BOX UNTIL TERMINATING AT FURTHEST VALVE FROM CONTROLLER. SPARE WIRES SHALL BE GREEN COLOR.
4. EMBOSS COVER OF VALVE BOX WITH 2" STENCIL LETTERS/NUMBERS NOTING STATION NUMBER - VALVE TYPE (IE: '2-LR' = STATION #2 - LARGE ROTOR VALVE).
5. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED FOR RECLAIMED WATER.
6. INSTALL VALVE ASSEMBLY WITHIN VALVE BOX TO ALLOW FOR REMOVAL OF CONTROL VALVE BY REMOVING UNION AND ROTATING CONTROL VALVE WITH ANGLE VALVE AWAY FROM LATERAL PIPE SO CONTROL VALVE AND THREADED ADAPTER WILL SLIDE OUT OF ANGLE VALVE ALL WITHOUT DISPLACING VALVE BOX.
7. REMOTE CONTROL VALVES $\leq 2"$ SHALL BE PVC REMOTE CONTROL VALVES.

TURF REMOTE CONTROL VALVE ASSEMBLY

NOT TO SCALE



NOTES:

1. PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX. (WRAP AROUND 1/2" PIPE 15 TIMES).
2. TWO SPARE CONTROL WIRES (SIZE TO MATCH COMMON WIRE AWG) SHALL BE CONTINUOUS LOOP IN & OUT OF EACH CONTROL VALVE BOX UNTIL TERMINATING AT FURTHEST VALVE FROM CONTROLLER. SPARE WIRES SHALL BE GREEN COLOR.
3. EMBOSS COVER OF VALVE BOX WITH 2" STENCIL NUMBERS NOTING CONTROLLER STATION NUMBER - VALVE TYPE (IE: '8-S' = STATION #8 - SHRUB VALVE).
4. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED FOR RECLAIMED WATER.
5. INSTALL BALL VALVE ON MAINLINE SIDE OF CONTROL VALVE TO FACILITATE REMOVAL OF CONTROL VALVE WITHOUT DISPLACING VALVE BOX AND SO BALL VALVE HANDLE MOVES FREELY WITHOUT OBSTRUCTION.
6. INSTALL UNION ON LATERAL SIDE OF CONTROL VALVE WHERE EASILY ACCESSIBLE WITHIN VALVE BOX TO FACILITATE REMOVAL OF CONTROL VALVE WITHOUT DISPLACING VALVE BOX.
7. SIZE EQUIPMENT PER PLANS

TURF REMOTE CONTROL VALVE ASSEMBLY

NOT TO SCALE

NOTES:

1. PRESSURE REGULATING FILTER SHALL INCLUDE DEBRIS INDICATOR & 200 MESH STAINLESS STEEL SCREEN WITH INTEGRATED PRESSURE REGULATOR.
2. PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX. (WRAP AROUND 1/2" PIPE 15 TIMES).
3. TWO SPARE CONTROL WIRES (SIZE TO MATCH COMMON WIRE AWG) SHALL BE CONTINUOUS LOOP IN & OUT OF EACH CONTROL VALVE BOX UNTIL TERMINATING AT FURTHEST VALVE FROM CONTROLLER. SPARE WIRES SHALL BE GREEN COLOR.
4. EMBOSS COVER OF VALVE BOX WITH 2" STENCIL NUMBERS NOTING CONTROLLER STATION NUMBER - VALVE TYPE (IE: '8-S' = STATION #8 - SHRUB VALVE).
5. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED FOR RECLAIMED WATER.
6. INSTALL BALL VALVE ON MAINLINE SIDE OF CONTROL VALVE TO FACILITATE REMOVAL OF CONTROL VALVE WITHOUT DISPLACING VALVE BOX AND SO BALL VALVE HANDLE MOVES FREELY WITHOUT OBSTRUCTION.
7. INSTALL UNION ON LATERAL SIDE OF CONTROL VALVE WHERE EASILY ACCESSIBLE WITHIN VALVE BOX TO FACILITATE REMOVAL OF CONTROL VALVE WITHOUT DISPLACING VALVE BOX.
8. WHERE DRIP LATERAL SUB-MAIN PIPE IS USED WITH SEPARATE COMBINATION DRIP FILTERS/PRESSURE REGULATORS (PER DETAIL 12) AS SHOWN PER PLANS, THEN OMIT DRIP FILTER/PRESSURE REGULATOR FROM DRIP CONTROL VALVE ASSEMBLY.

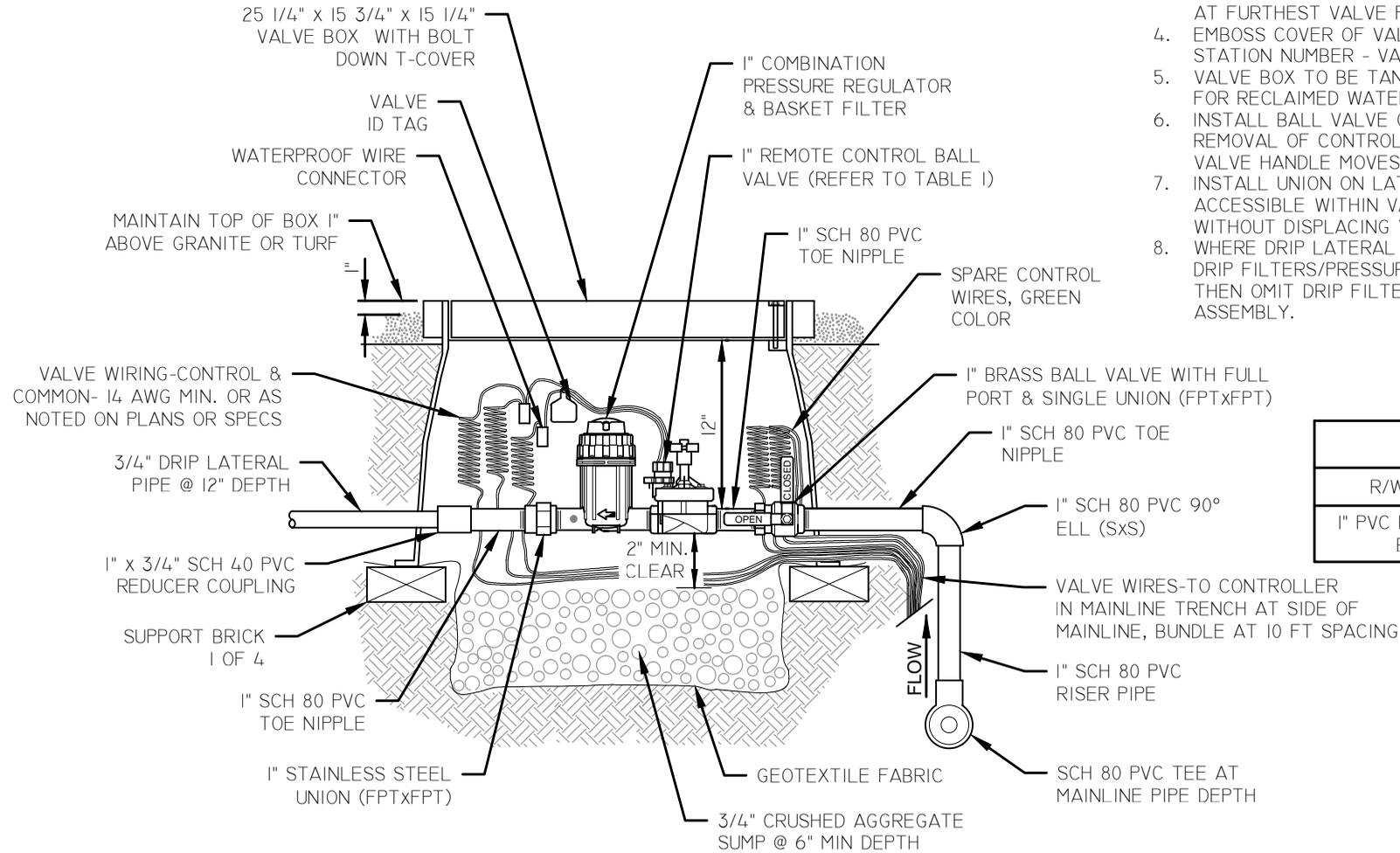


TABLE 1 - REMOTE CONTROL VALVE

LOCATION	
R/W OR ROADWAY	PARK
1" PVC REMOTE CONTROL BALL VALVE	1" BRASS REMOTE CONTROL BALL VALVE

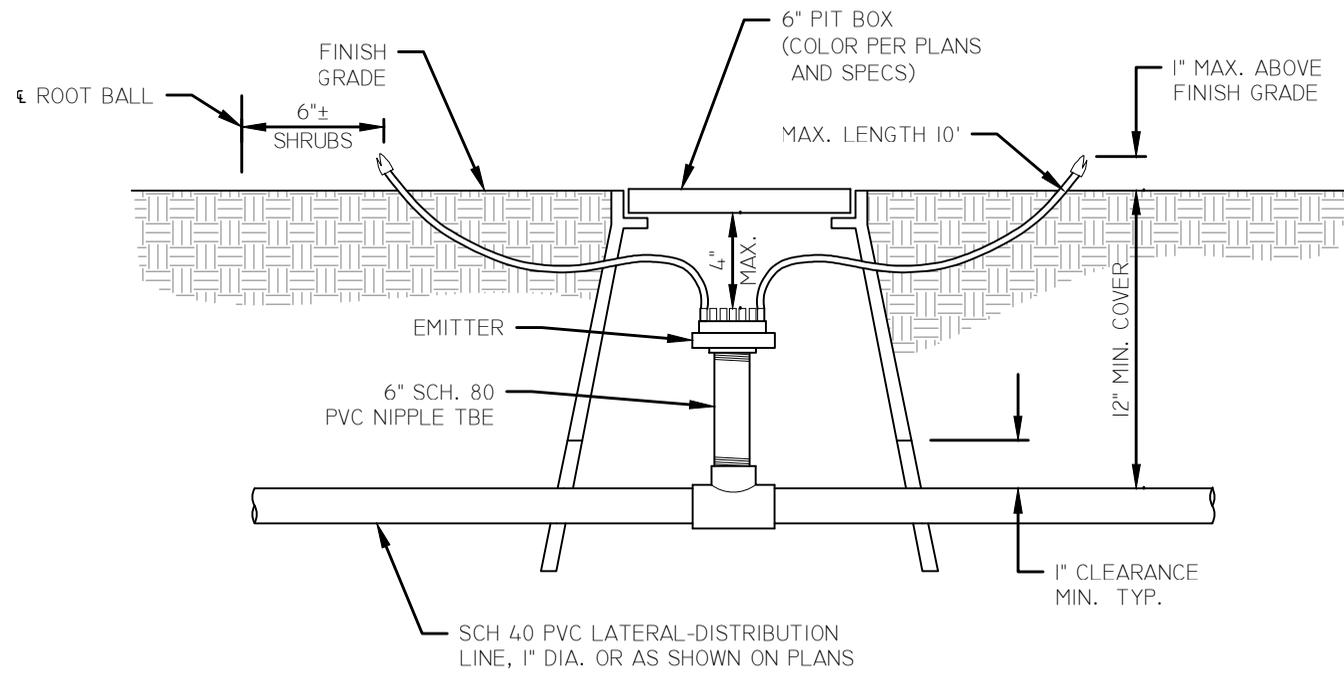
DRIP REMOTE CONTROL VALVE ASSEMBLY

NOT TO SCALE

EMITTER SCHEDULE: OPERATION AT 20-25 PSI					
(I) BOWSMITH (MULTI) ML210 OR EQUAL (PER 5 TO 6 SHRUBS)					
(I) BOWSMITH (SINGLE) SL 1 GPH OR EQUAL (PER EACH SHRUB)					
(I) BOWSMITH (MULTI) ML220 OR EQUAL (PER EACH TREE)					
FOR 15 GALLON TREES					
3 OUTLETS SPACED PER COM DETAIL M-1613.2					
FOR 24" BOX TREES					
4 OUTLETS SPACED PER COM DETAIL M-1613.2					
FOR EACH 12" INCREASE IN BOX - PROVIDE "1" ADDITIONAL OUTLET (MAINTAIN EQUAL SPACING OF OUTLETS)					
EMITTER SCHEDULE					
TYPE	TOTAL FLOW	SIZE	QUANTITY	FLOW PER OUTLET	OUTLETS OPEN
TREES	6 GPH	15 GALLON	1 EM.	2 GPH	3
	8 GPH	24" BOX	1 EM.	2 GPH	4
	10 GPH	36" BOX	1 EM.	2 GPH	5
	12 GPH	48" BOX	1 EM.	2 GPH	6
	16-24 GPH	56" BOX AND LARGER	2 EM.	2 GPH	8-12
SHRUBS	1 GPH	1 GALLON	1 EM.	1 GPH	1
	1 GPH	5 GALLON	1 EM.	1 GPH	1
	3 GPH	15 GALLON	1 EM.	1 GPH	3
LOW WATER USE SHRUBS	.6 GPH	1 GALLON	1 EM.	.6 GPH	1
	.6 GPH	5 GALLON	1 EM.	.6 GPH	1

NOTE:
IRRIGATION DESIGN CONSULTANT TO ADD/INCLUDE LANDSCAPE IRRIGATION EMITTER SCHEDULE AS A DETAIL IN THE CONSTRUCTION DOCUMENTS.

DRIP SYSTEM - EMITTER DETAIL



NOT TO SCALE

OLD
 M-108.02
 M-1613.1

LEGEND

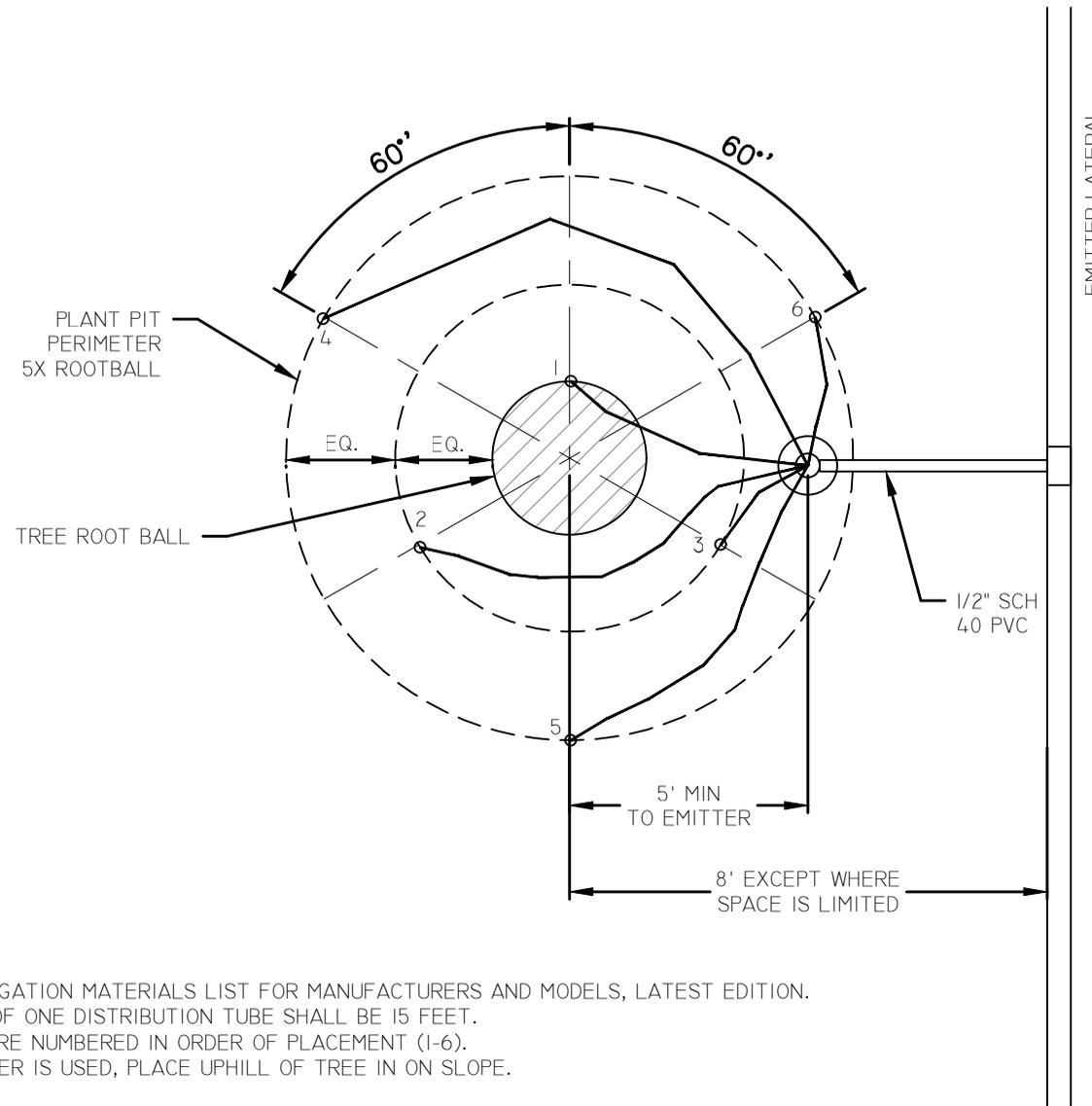


MULTI-OUTLET EMITTER
(AND EMISSION POINT) IN
HEAVY DUTY 6" ROUND
PLASTIC BOX WITH
LOCKABLE LID



EMISSION POINT

— 1/4" DISTRIBUTION TUBING

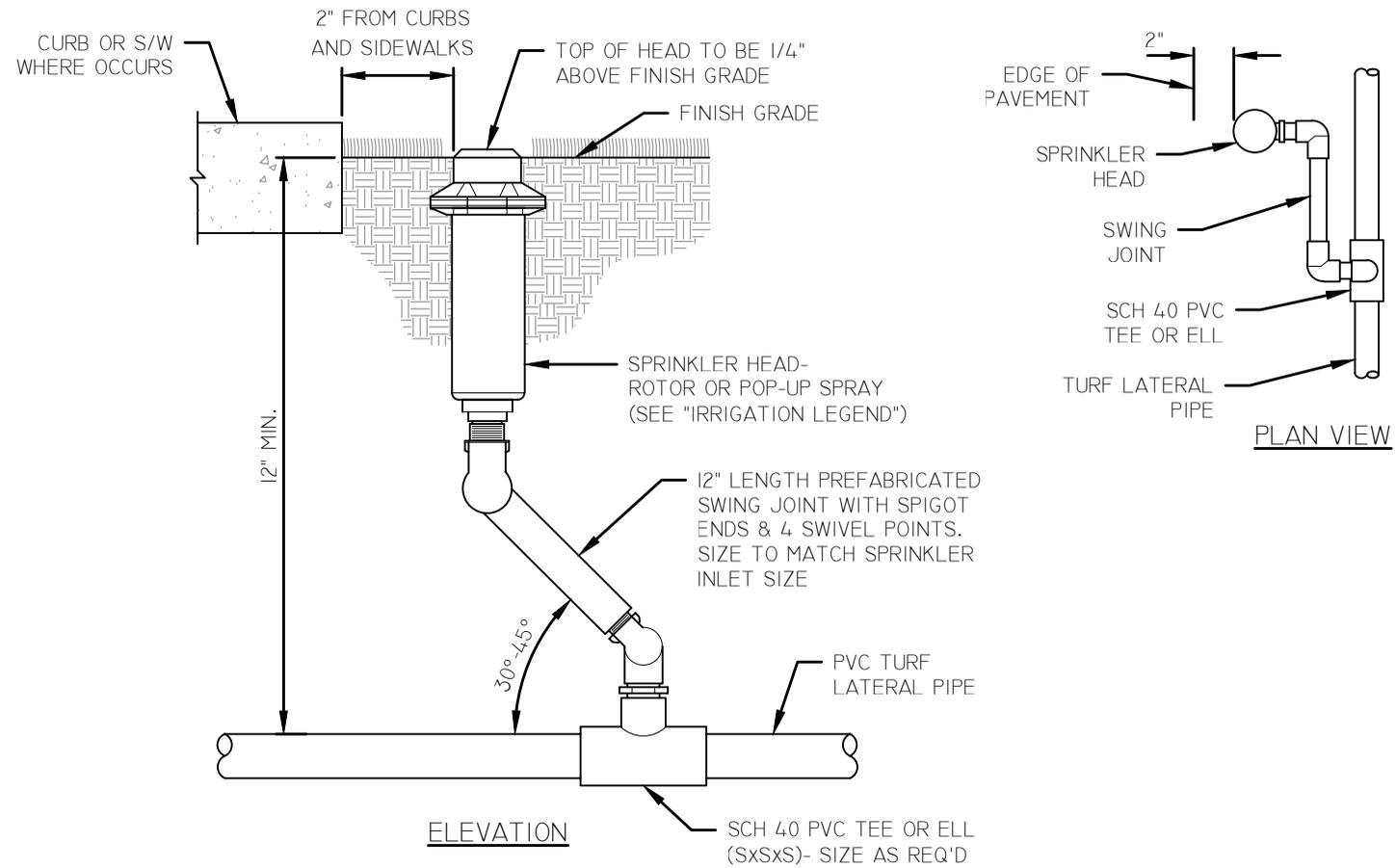


NOTES

1. SEE APPROVED IRRIGATION MATERIALS LIST FOR MANUFACTURERS AND MODELS, LATEST EDITION.
2. MAXIMUM LENGTH OF ONE DISTRIBUTION TUBE SHALL BE 15 FEET.
3. EMISSION POINTS ARE NUMBERED IN ORDER OF PLACEMENT (1-6).
4. IF ONLY ONE EMITTER IS USED, PLACE UPHILL OF TREE IN ON SLOPE.

NOT TO SCALE

SPRINKLER HEAD WITH SWING JOINT ASSEMBLY



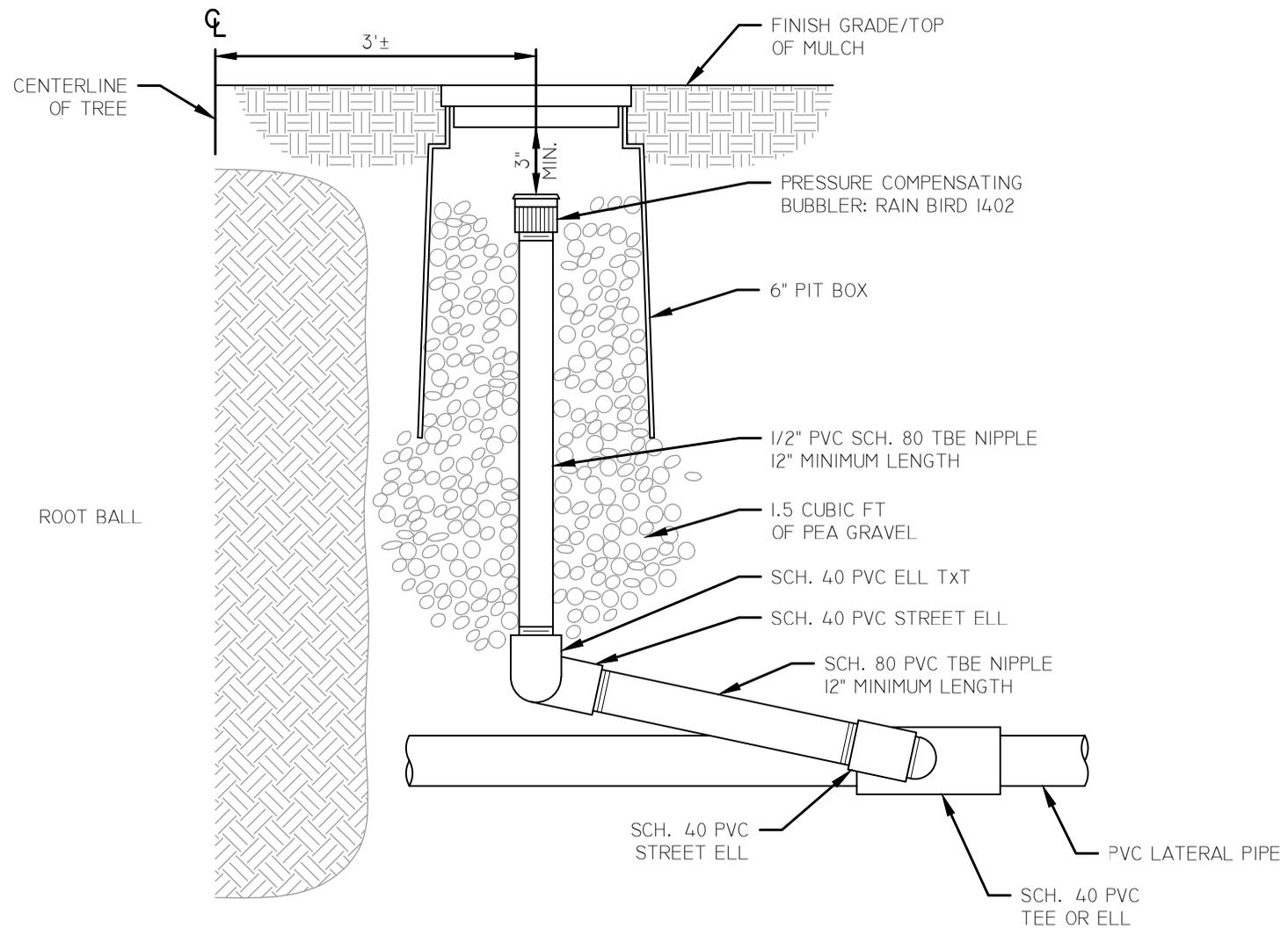
NOTES:

1. COMPACT AREA AROUND SPRINKLER HEAD AND TRENCH TO 85%.
2. SWING JOINT SIZE TO MATCH INLET SIZE OF SPRINKLER, 3/4" MINIMUM.
3. LOCATE HEADS 2" MIN. FROM ALL CURBS AND SIDEWALK EDGES.

NOT TO SCALE

DETAIL NO.
M-1614

OLD
M-109.02



TREE BUBBLER ASSEMBLY

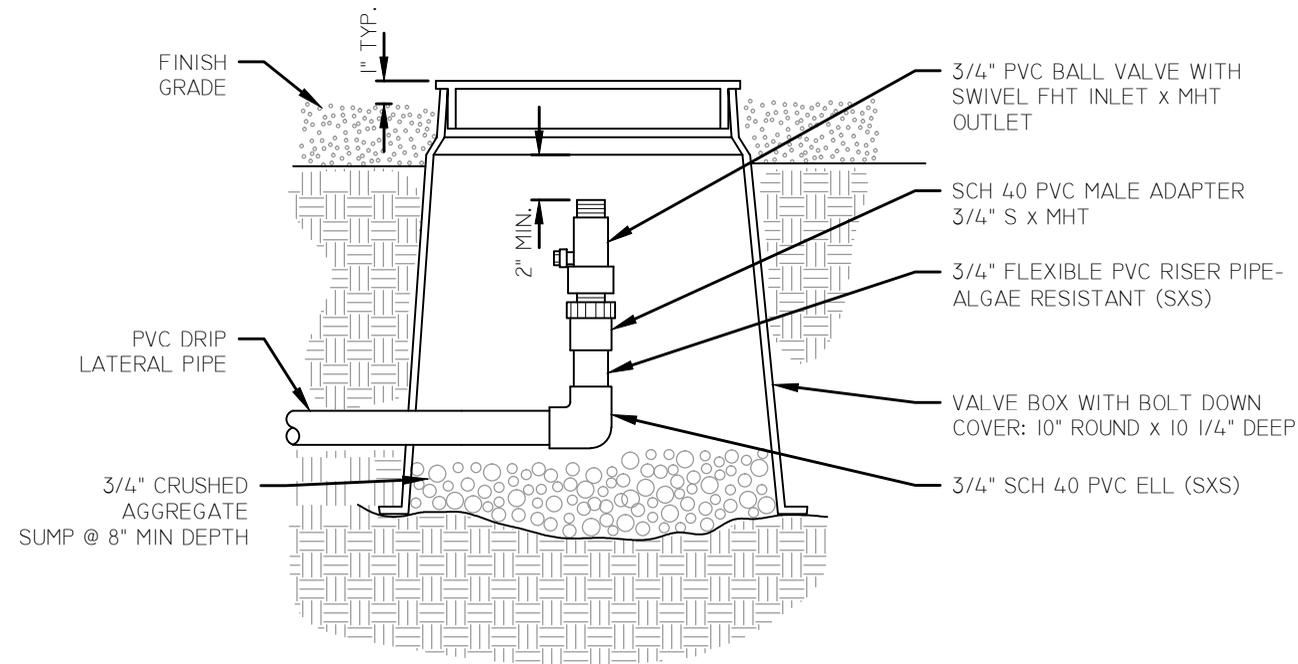
NOTES

1. ALL FITTINGS AND COMPONENTS OF SWING JOINT ASSEMBLY SHALL BE THE SAME NOMINAL SIZE AS BUBBLER INLET.
2. BUBBLER ASSEMBLIES SHALL BE INSTALLED APPROXIMATELY 3- FEET FROM CENTERLINE OF TREE.
3. TEFLON TAPE ALL THREADED CONNECTIONS.

OLD
M-110.01

DETAIL NO.
M-1615

NOT TO SCALE



NOTES:

1. EMBOSS COVER WITH 2" HIGH "FV" USING STENCIL AND PERMANENT PAINT.
2. BOX TO BE TAN IN GRANITE, GREEN IN TURF AND PURPLE WHEN USED FOR RECLAIMED WATER.

DRIP FLUSH END CAP ASSEMBLY

NOT TO SCALE

DETAIL NO.
M-1616

OLD
M-108.03

FRICION LOSS

PRESSURE AT SITE SOURCE VERIFIED WITH CITY PSI _____

FRICION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER PSI _____

REDUCED PRESSURE VACUUM BREAKER PSI _____

MAIN LINE PIPE PSI _____

VALVE PSI _____

LATERAL LINE PIPE PSI _____

* TOTAL FRICTION LOSS PSI _____

* REQUIRED PRESSURE AT HEAD PSI _____

(TOTAL FRICTION LOSS)+(REQUIRED PSI AT HEAD)

* PRESSURE REQUIRED AT SOURCE PSI _____

CALCULATIONS DONE BY _____

SIGNED

DATE

NOTES

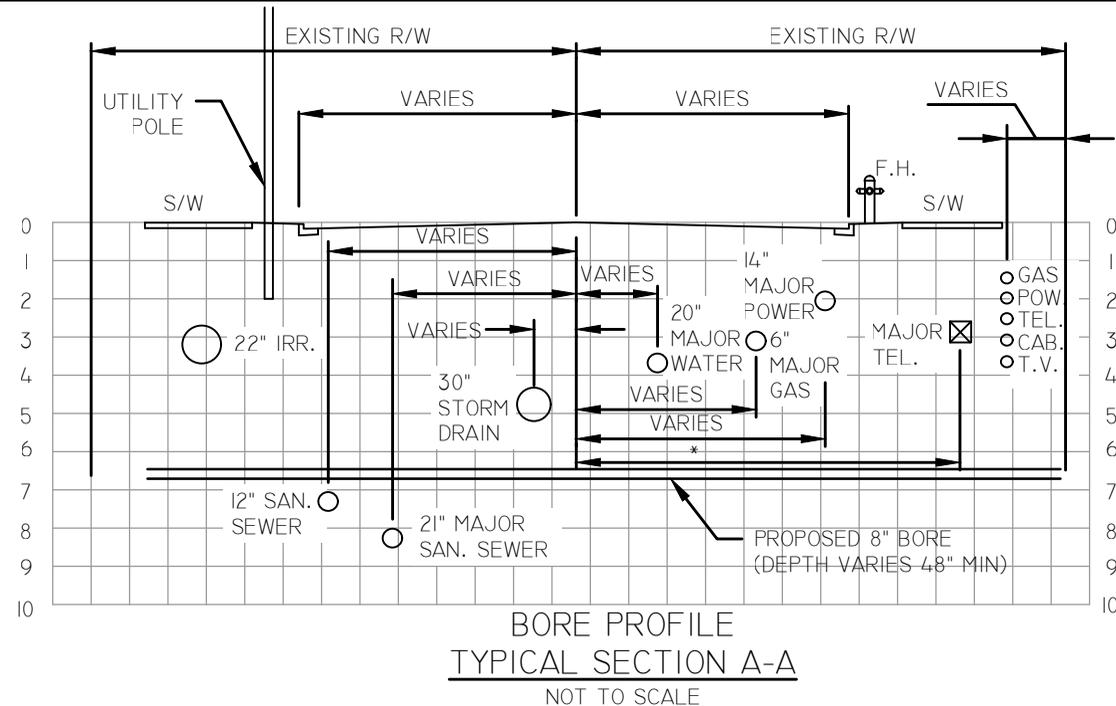
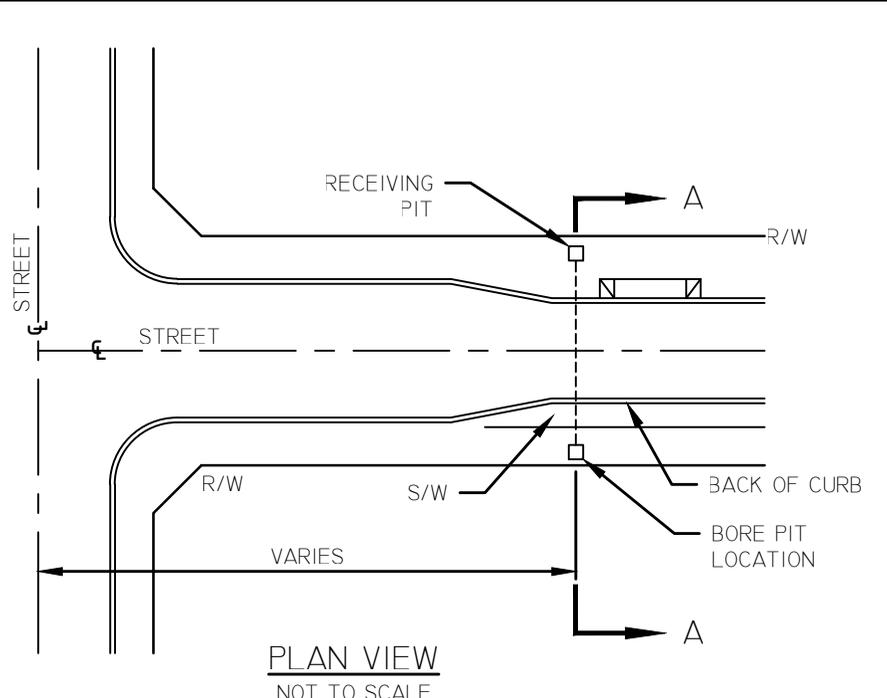
- I. IRRIGATION DESIGN CONSULTANT TO PROVIDE FRICTION LOSS CALCULATIONS FOR THE WORST CASE SCENARIO VALVE AS A DETAIL IN THE IRRIGATION DETAIL SECTION.



LANDSCAPE IRRIGATION FRICTION
LOSS CALCULATIONS

OLD
M-106.05

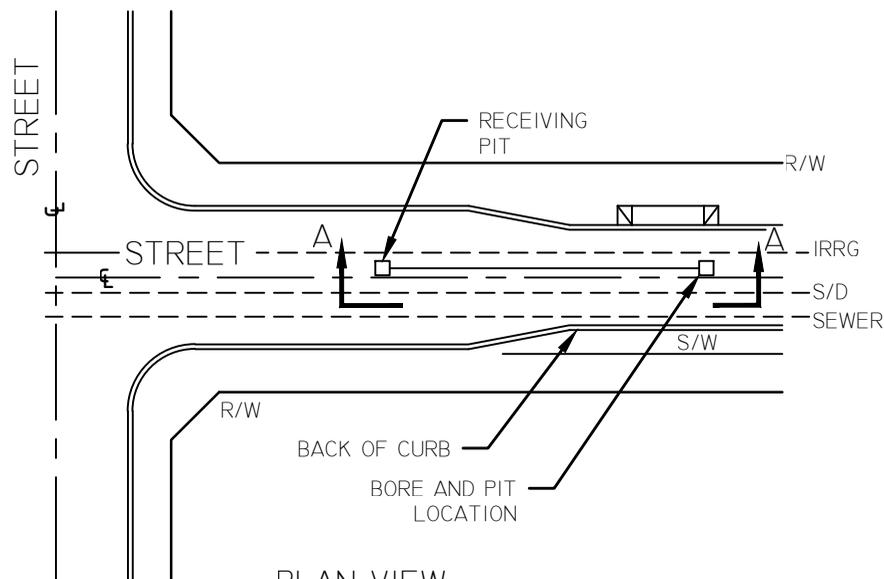
DETAIL NO.
M-1617



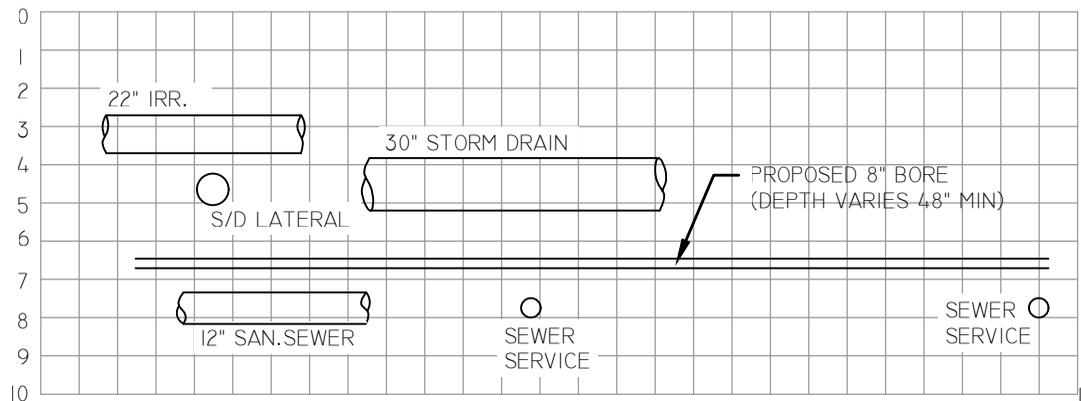
NOTES

1. UTILITY BORES SHALL BE PERFORMED IN ACCORDANCE WITH THE POLICY STATEMENT FOR STREET UTILITY CROSSINGS USING BORING METHODS WITHIN PUBLIC RIGHT-OF-WAY. PRIOR TO ANY WORK, THE UTILITY COMPANY SHALL SUBMIT PLANS FOR REVIEW AND APPROVAL BY THE CITY.
2. GUIDED BORES ARE REQUIRED WHEN THE BORE EXCEEDS 45 FEET IN LENGTH, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND ENGINEERING INSPECTOR.
3. A PVC CONDUIT, SCHEDULE 40 OR BETTER, SHALL BE INSERTED IN THE BORE TO CARRY THE UTILITY COMPANY'S CABLES OR PRODUCT.
4. A 2' MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN THE BORE AND EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY ENGINEERING INSPECTOR, OR IF THE UTILITY IS CITY GAS, THEN APPROVAL REQUIRED BY A CITY OF MESA GAS SYSTEM INSPECTOR.
5. WHEN THE BORE PASSES WITHIN 3' OF ANY EXISTING UTILITY, A POT HOLE AT THE TIME OF THE BORE WILL BE REQUIRED TO MONITOR THE BORE.
6. THE CITY INSPECTOR SHALL BE NOTIFIED IF OBSTRUCTIONS ARE ENCOUNTERED.
7. POT HOLES ARE REQUIRED TO VERIFY ALL UTILITY LOCATIONS PRIOR TO THE BORE. EVERY REASONABLE EFFORT SHALL BE EMPLOYED TO EXPOSE AND VERIFY THE EXACT LOCATION OF THE UTILITY/FACILITY. WHEN THE UTILITY CANNOT BE FOUND AS MARKED (BLUE STAKED), THE POT HOLE CONTRACTOR/EXCAVATOR SHALL NOTIFY THE FACILITY OWNER (AS NOTED ON THE BLUE STAKE TICKET) FOR ADDITIONAL INFORMATION. IF NO FURTHER INFORMATION IS AVAILABLE, THE EXCAVATOR SHALL EXTEND THE SEARCH FOR A MINIMUM OF 2 FEET BELOW, AND 2 FEET TO EITHER SIDE OF THE PROPOSED BORE LOCATION/ELEVATION.

8. WHEN VACUUM POT HOLES ARE REQUIRED, PAVEMENT CUT SHALL CONFORM TO COM DETAIL M-1700.3 (OLD M-18.03).
9. THE UTILITY COMPANY OR THEIR CONTRACTOR SHALL PROVIDE COPIES OF ALL BORE PROFILES TO THE ENGINEERING INSPECTOR AND ENERGY RESOURCES BORE MONITOR PRIOR TO THE BORE.
10. BACKFILL REQUIREMENTS FOR EXCAVATIONS (PITS) OUTSIDE THE ROADWAY PRISM SHALL BE PER MAG SECTION 600.
11. REPAIR OR REPLACE IN-KIND ANY UTILITY DAMAGED DURING CONSTRUCTION PER MAG SECTION 107.II AND LANDSCAPE/SPRINKLER DAMAGE PER MAG SECTION 107.9.
12. THE UTILITY COMPANY/CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM THE OWNER TO TRIM OR REMOVE ANY LANDSCAPING. WHEN REQUESTED, A COPY OF THE PERMISSION SHALL BE PROVIDED TO THE ENGINEERING INSPECTOR.
13. CONTACT ARIZONA 811 BEFORE ANY POT HOLE, EXCAVATING, OR BORING.
14. WHEN A NATURAL GAS LINE IS EXPOSED, CONTACT THE AFFECTED GAS UTILITY FOR THE INSPECTION OF GAS LINE PRIOR TO BACKFILLING. WHEN BACKFILLING, THE CITY OF MESA REQUIRES SHADING MATERIAL 6 INCHES (MINIMUM) AROUND THE BOTTOM, TOP, AND SIDES OF THE PIPE. SHADING MATERIAL ADJACENT TO THE PIPE SHALL BE SELECT SANDY TYPE SOIL, FREE OF ROCKS OR DEBRIS AND WILL PASS THROUGH A 3/8" SCREEN AS APPROVED BY CITY OF MESA GAS SYSTEM INSPECTOR. CITY OF MESA (GAS): 480-644-2754 OR 480-644-2262. SOUTHWEST GAS: 602-861-1999 OR 602-271-4277.



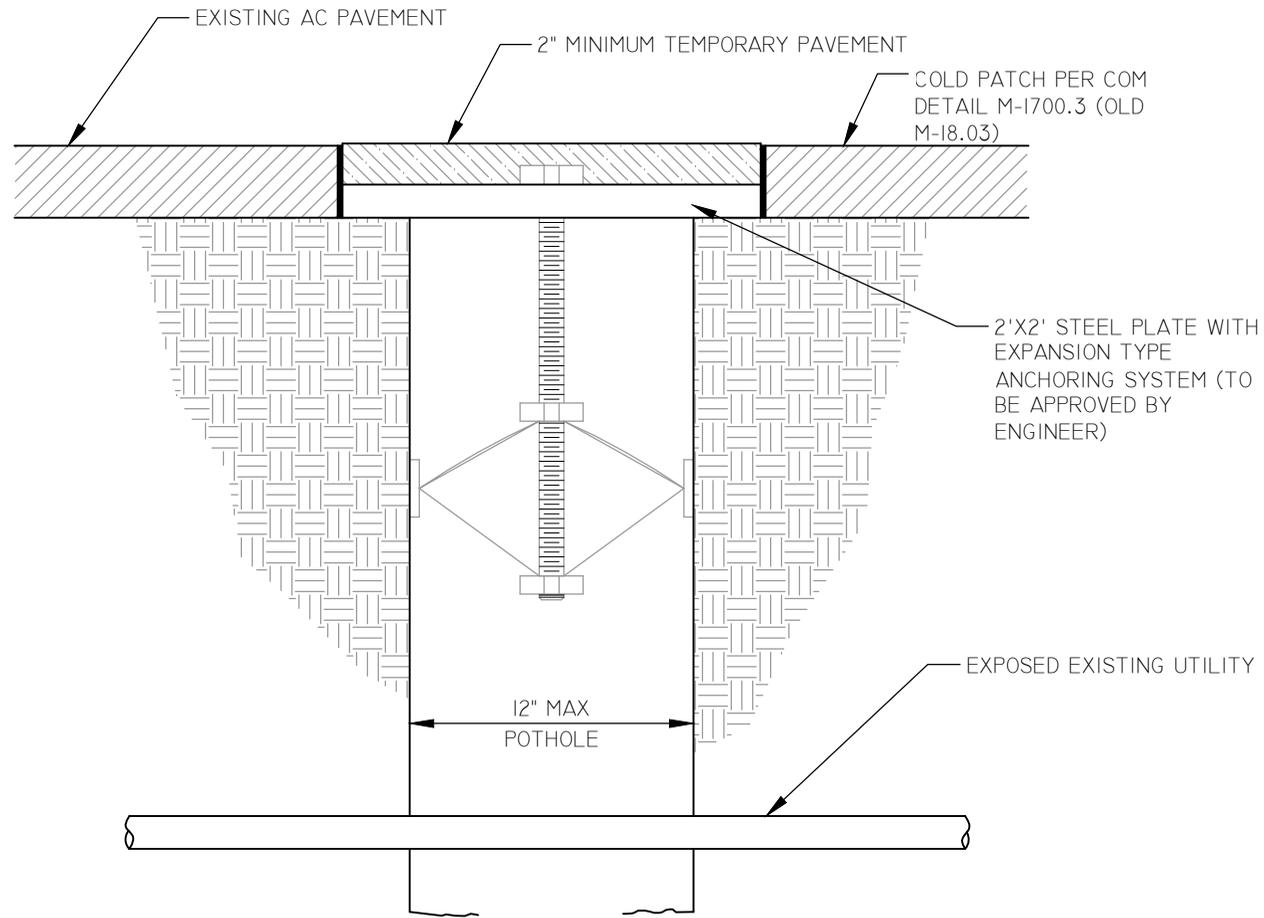
PLAN VIEW
NOT TO SCALE



BORE PROFILE
TYPICAL SECTION A-A
NOT TO SCALE

NOTES

1. UTILITY BORES SHALL BE PERFORMED IN ACCORDANCE WITH THE POLICY STATEMENT FOR UTILITY INSTALLATION USING BORING METHODS WITHIN PUBLIC RIGHT-OF-WAY. PRIOR TO ANY WORK, THE UTILITY COMPANY SHALL SUBMIT PLANS FOR REVIEW AND APPROVAL BY THE CITY.
2. GUIDED BORES ARE REQUIRED WHEN THE BORE EXCEEDS 45 FEET IN LENGTH, UNLESS OTHERWISE APPROVED BY THE ENGINEER AND ENGINEERING INSPECTOR.
3. A PVC CONDUIT, SCHEDULE 40 OR BETTER, SHALL BE INSERTED IN THE BORE TO CARRY THE UTILITY COMPANY'S CABLES OR PRODUCT.
4. A 2' MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN THE BORE AND EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY ENGINEERING INSPECTOR, OR IF THE UTILITY IS CITY GAS, THEN APPROVAL REQUIRED BY A CITY OF MESA GAS SYSTEM INSPECTOR.
5. WHEN THE BORE PASSES WITHIN 3' OF ANY EXISTING UTILITY, A POTHOLE AT THE TIME OF THE BORE WILL BE REQUIRED TO MONITOR THE BORE.
6. THE CITY INSPECTOR SHALL BE NOTIFIED IF OBSTRUCTIONS ARE ENCOUNTERED.
7. POTHOLES ARE REQUIRED TO VERIFY ALL UTILITY LOCATIONS PRIOR TO THE BORE. EVERY REASONABLE EFFORT SHALL BE EMPLOYED TO EXPOSE AND VERIFY THE EXACT LOCATION OF THE UTILITY/FACILITY. WHEN THE UTILITY CANNOT BE FOUND AS MARKED (BLUE STAKED), THE POTHOLES CONTRACTOR/EXCAVATOR SHALL NOTIFY THE FACILITY OWNER (AS NOTED ON THE BLUE STAKE TICKET) FOR ADDITIONAL INFORMATION. IF NO FURTHER INFORMATION IS AVAILABLE, THE EXCAVATOR SHALL EXTEND THE SEARCH FOR A MINIMUM OF 2 FEET BELOW, AND 2 FEET TO EITHER SIDE OF THE PROPOSED BORE LOCATION/ELEVATION.
8. WHEN VACUUM POTHOLES ARE REQUIRED, PAVEMENT CUT SHALL CONFORM TO COM DETAIL M-1700.3 (OLD M-18.03).
9. THE UTILITY COMPANY OR THEIR CONTRACTOR SHALL PROVIDE COPIES OF ALL BORE PROFILES TO THE ENGINEERING INSPECTOR AND ENERGY RESOURCES BORE MONITOR PRIOR TO THE BORE.
10. BACKFILL REQUIREMENTS FOR EXCAVATIONS (PITS) OUTSIDE THE ROADWAY PRISM SHALL BE PER MAG SECTION 600.
11. REPAIR OR REPLACE IN-KIND ANY UTILITY DAMAGED DURING CONSTRUCTION PER MAG SECTION 107.11 AND LANDSCAPE/SPRINKLER DAMAGE PER MAG SECTION 107.9.
12. THE UTILITY COMPANY/CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM THE OWNER TO TRIM OR REMOVE ANY LANDSCAPING. WHEN REQUESTED, A COPY OF THE PERMISSION SHALL BE PROVIDED TO THE ENGINEERING INSPECTOR.
13. CONTACT ARIZONA 811 BEFORE ANY POTHOLES, EXCAVATING, OR BORING.
14. WHEN A NATURAL GAS LINE IS EXPOSED, CONTACT THE AFFECTED GAS UTILITY FOR THE INSPECTION OF GAS LINE PRIOR TO BACKFILLING. WHEN BACKFILLING, THE CITY OF MESA REQUIRES SHADING MATERIAL 6 INCHES (MINIMUM) AROUND THE BOTTOM, TOP, AND SIDES OF THE PIPE. SHADING MATERIAL ADJACENT TO THE PIPE SHALL BE SELECT SANDY TYPE SOIL, FREE OF ROCKS OR DEBRIS AND WILL PASS THROUGH A 3/8" SCREEN AS APPROVED BY A CITY OF MESA GAS SYSTEM INSPECTOR. CITY OF MESA (GAS): 480-644-2754 OR 480-644-2262. SOUTHWEST GAS: 602-861-1999 OR 602-271-4277.

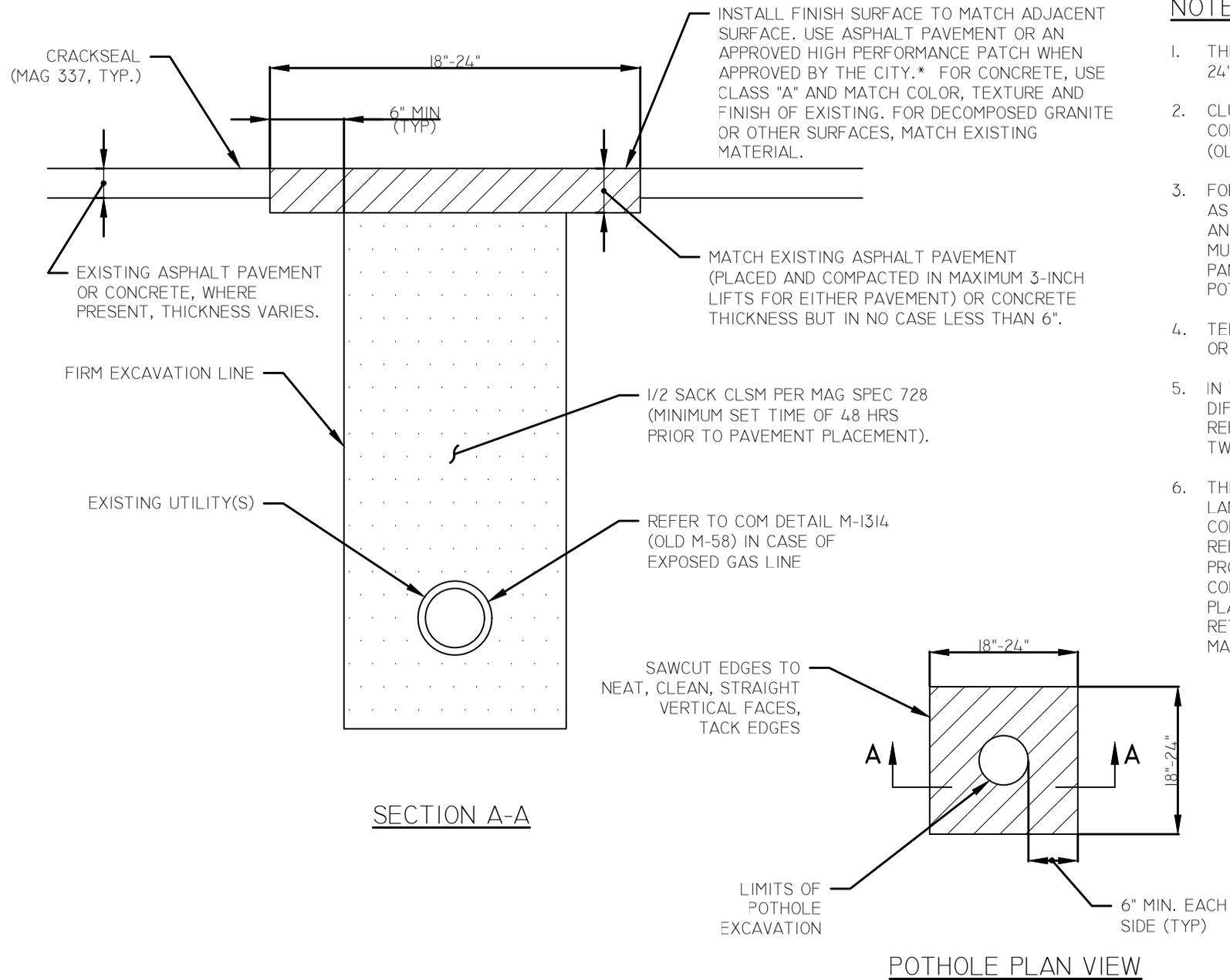


POTHOLE COVER ANCHOR SYSTEM

NOTES

1. TEMPORARY POTHOLE PROTECTION IS ONLY TO BE USED WITH PERMISSION OF ENGINEER.
2. POTHOLE EXCAVATION SHALL BE A MAXIMUM OF 12-INCHES IN DIAMETER.
3. POTHOLE COVER ANCHORING SYSTEM SHALL BE APPROVED BY ENGINEER PRIOR TO USE.
4. CONTRACTOR SHALL INSPECT COVERED POTHoles DAILY AND SHALL IMMEDIATELY CORRECT ANY THAT SHOW MOVEMENT OR DISPLACEMENT. A LOG OF THE DAILY INSPECTIONS SHALL BE SUPPLIED TO THE INSPECTOR, SIGNED DAILY BY THE CONTRACTOR.
5. CONTACT ARIZONA 811 AT (602) 263-1100 BEFORE ANY POTHOLING, EXCAVATING, OR BORING.

NOT TO SCALE



NOTES

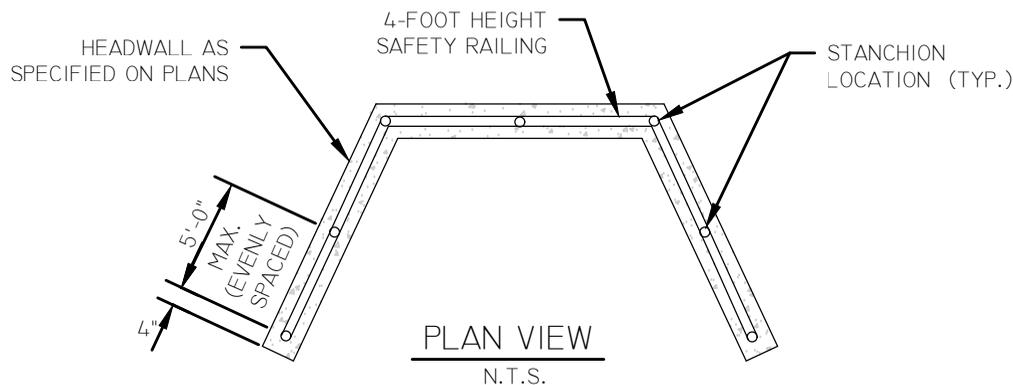
1. THE MAXIMUM PAVEMENT CUT FOR VACUUM POTHOLE SHALL NOT EXCEED 24" X 24".
2. CLUSTERED POTHOLES, TWO FEET OF SEPARATION OR LESS, MUST BE COMBINED TO FORM ONE UNIFORM PATCH AND MEET COM DETAIL M-1203.3 (OLD M-19.04.1).
3. FOR POTHOLE EXCAVATION REQUIRED WITHIN CONCRETE FACILITIES, SUCH AS PEDESTRIAN RAMPS OR DRIVEWAYS, THE CONCRETE MUST BE SAWCUT AND REMOVED TO THE NEAREST JOINT OR ENTIRE SECTION. CONCRETE MUST BE RESTORED PER MAG AND CITY OF MESA DETAILS. SIDEWALK PANELS MUST BE ENTIRELY REMOVED AND REPLACED IN-KIND, IF POTHOLED OR DAMAGED.
4. TEMPORARY PAVEMENT SHALL BE AUTHORIZED FOR TEN BUSINESS DAYS OR AT THE DISCRETION OF THE CITY INSPECTOR.
5. IN THE EVENT THAT PERMANENT OR TEMPORARY POTHOLES SETTLE 1/4" DIFFERENCE OR GREATER, THE CONTRACTOR SHALL PERMANENTLY REPAIR THE POTHOLES PER CITY OF MESA AND MAG STANDARDS WITHIN TWO DAYS.
6. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND RESTORE EXISTING LANDSCAPE AND LANDSCAPE IRRIGATION THAT IS DISTURBED BY CONSTRUCTION. SAID LANDSCAPE AND LANDSCAPE IRRIGATION SHALL BE REPLACED IN-KIND AND REPAIRED TO THE SATISFACTION OF THE PRIVATE PROPERTY OWNER (IF APPLICABLE) AND THE CITY INSPECTOR. EXISTING CONDITIONS DEFINED HEREIN SHALL INCLUDE, BUT NOT BE LIMITED TO PLANTS, PAVESTONES, ROCK, GRAVEL, DRIVEWAYS, CONCRETE BORDERS, RETENTION BERMS, SPRINKLER SYSTEMS, AND OTHER LANDSCAPE MATERIALS.

* COLD MIX ASPHALT - CRAFCO H.P. (HIGH PERFORMANCE) COLD PATCH OR APPROVED EQUIVALENT

NOT TO SCALE

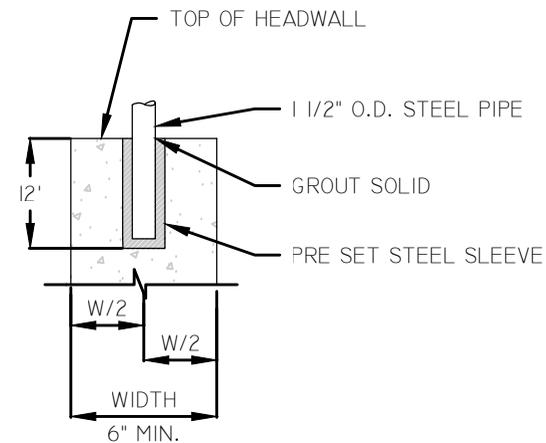
NOTE

ALL PIPE SHALL BE 1 1/2 SCHEDULE 40 GALVANIZED PIPE (1.9" O.D., 2.72#/L.F.).



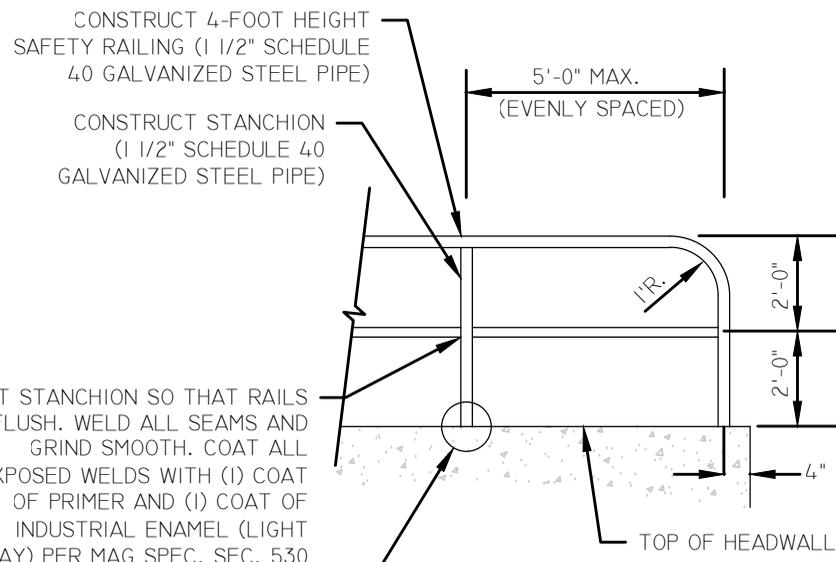
PLAN VIEW

N.T.S.



ATTACHMENT DETAIL NO. 1

N.T.S.

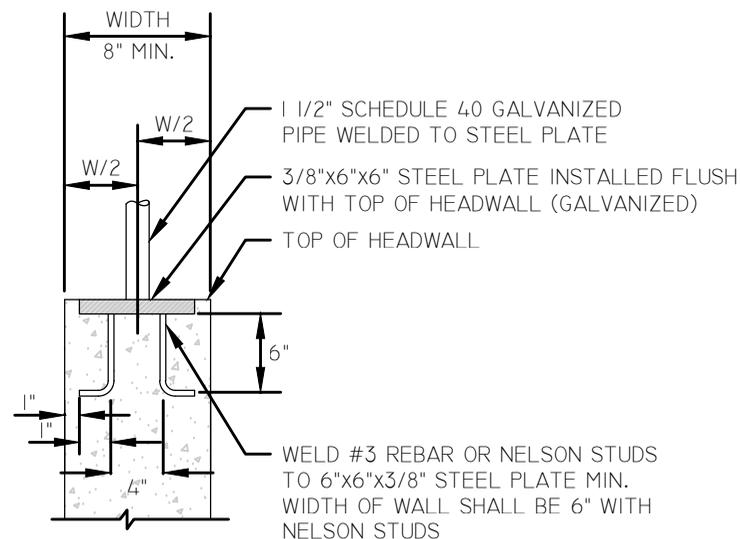


PROFILE VIEW

N.T.S.

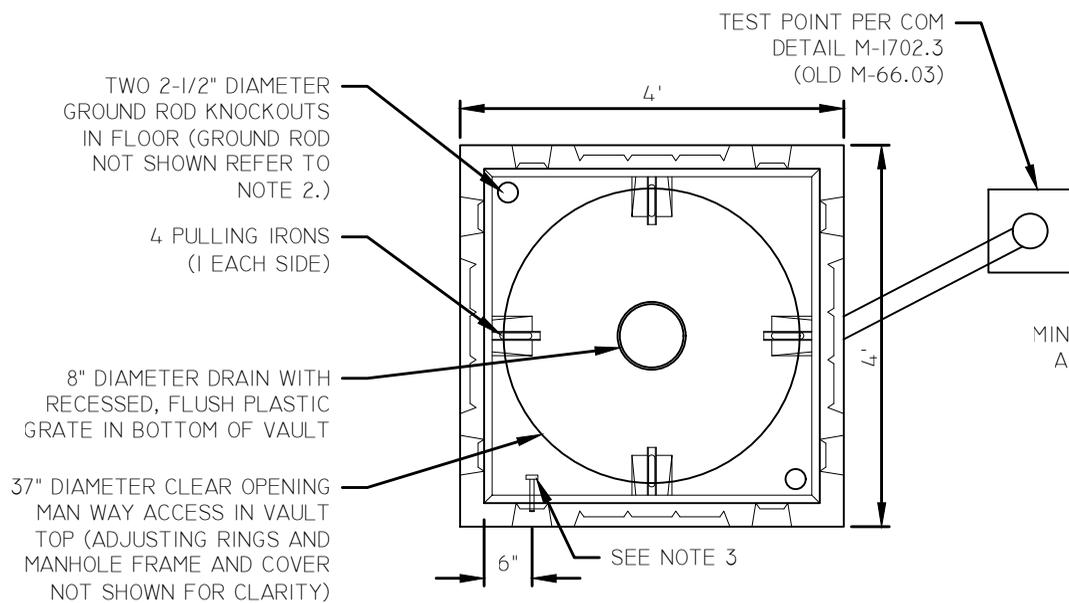
CUT STANCHION SO THAT RAILS FIT FLUSH. WELD ALL SEAMS AND GRIND SMOOTH. COAT ALL EXPOSED WELDS WITH (1) COAT OF PRIMER AND (1) COAT OF INDUSTRIAL ENAMEL (LIGHT GRAY) PER MAG SPEC. SEC. 530

INSTALL PER ATTACHMENT DETAIL #1 OR #2 (CONTRACTOR'S OPTION UNLESS OTHERWISE NOTED)

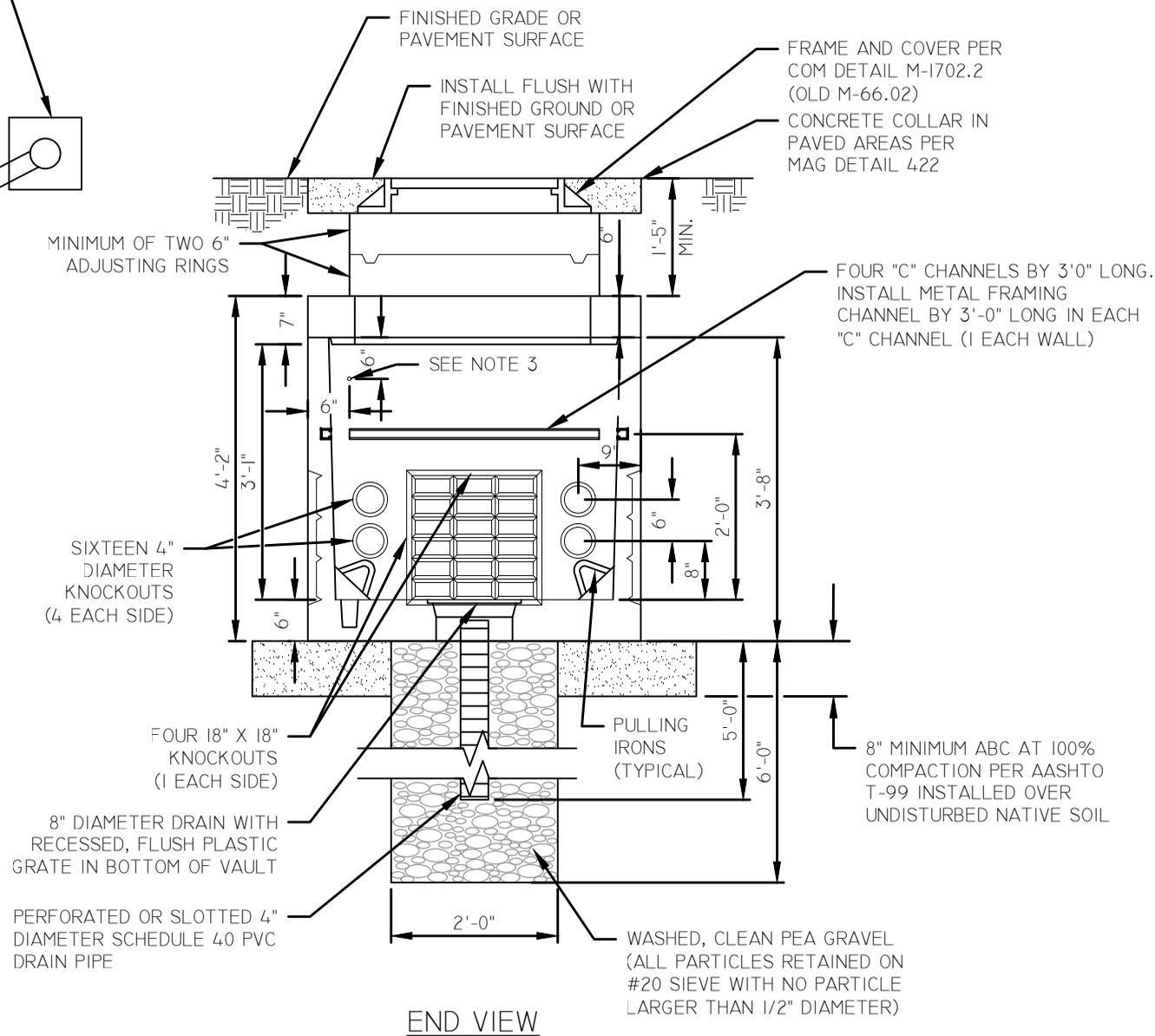


ATTACHMENT DETAIL NO. 2

N.T.S.



PLAN VIEW

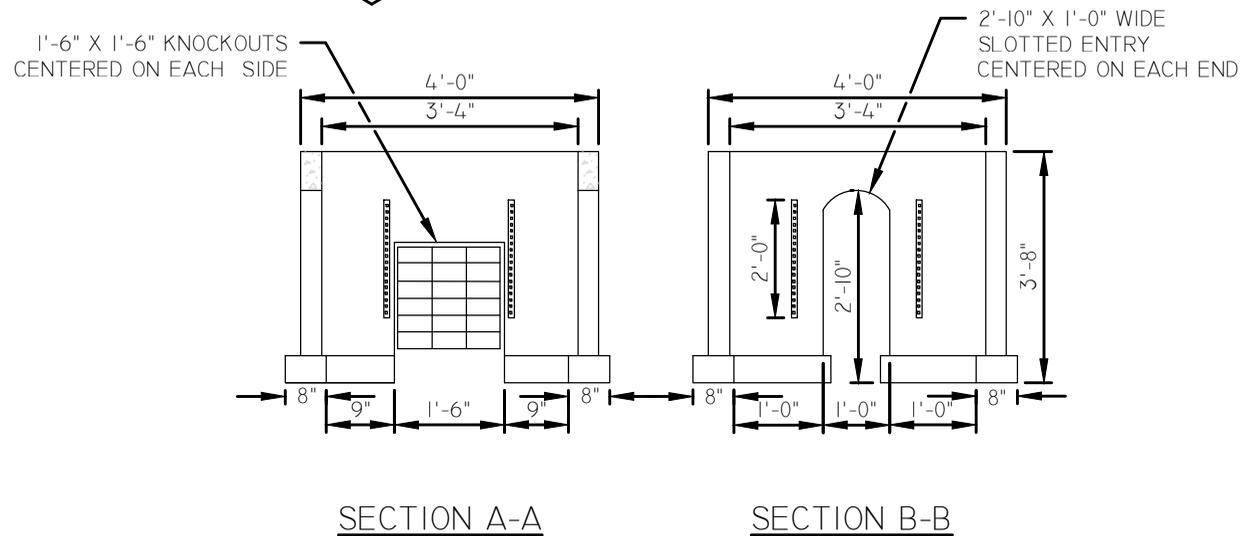
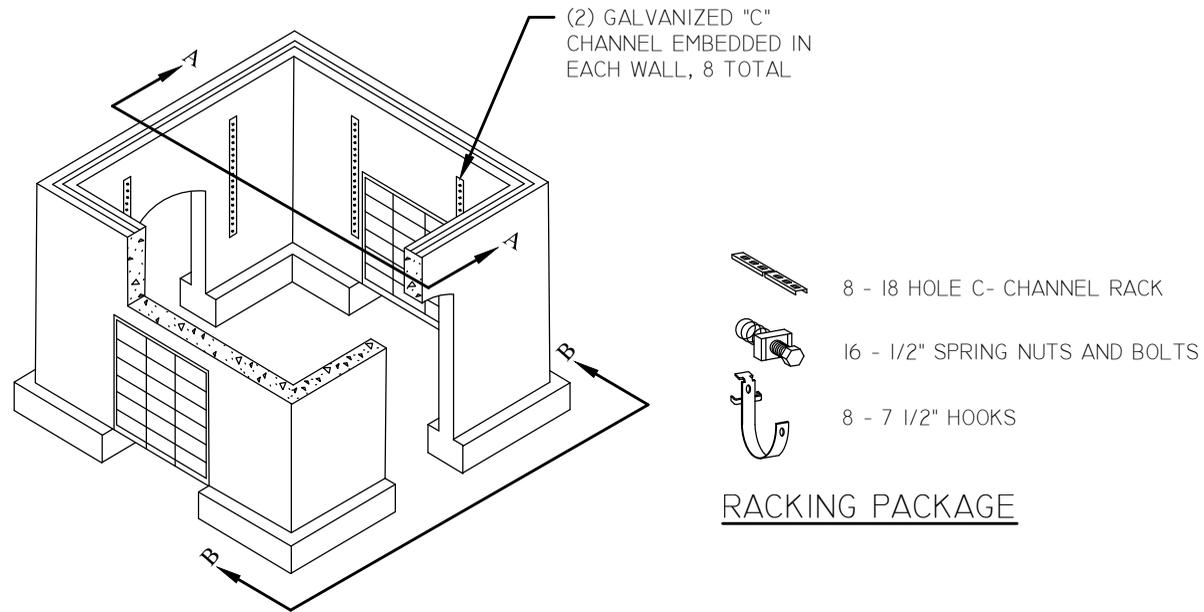


END VIEW

NOTES

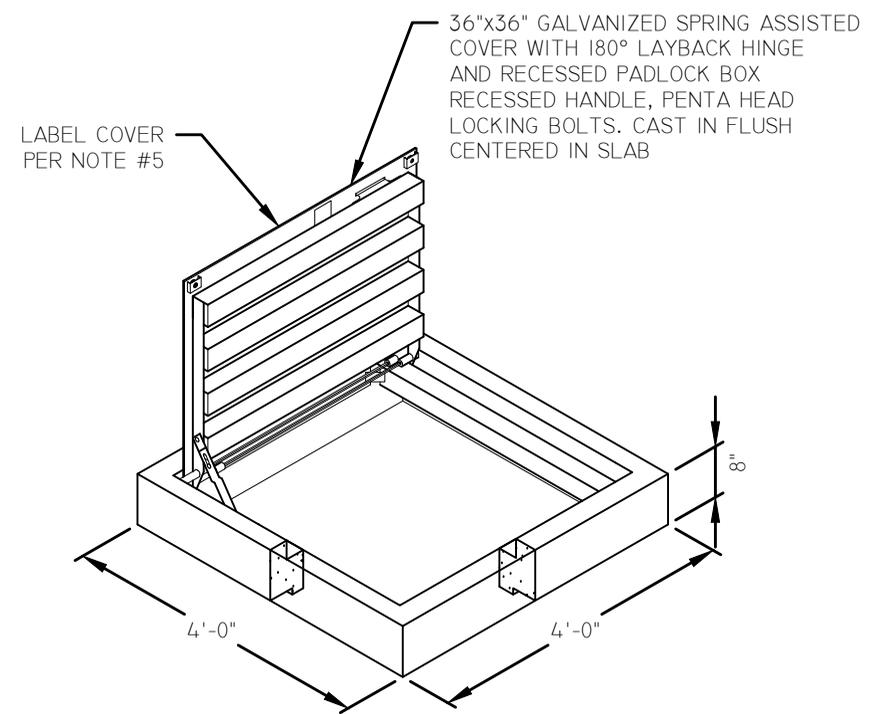
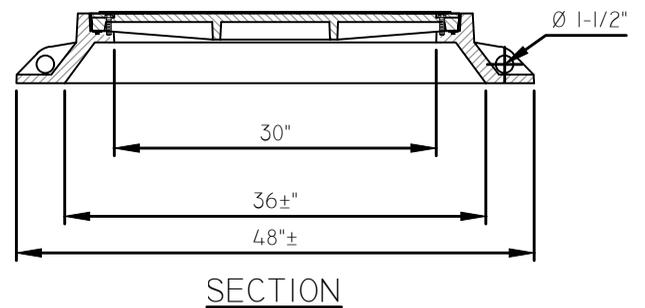
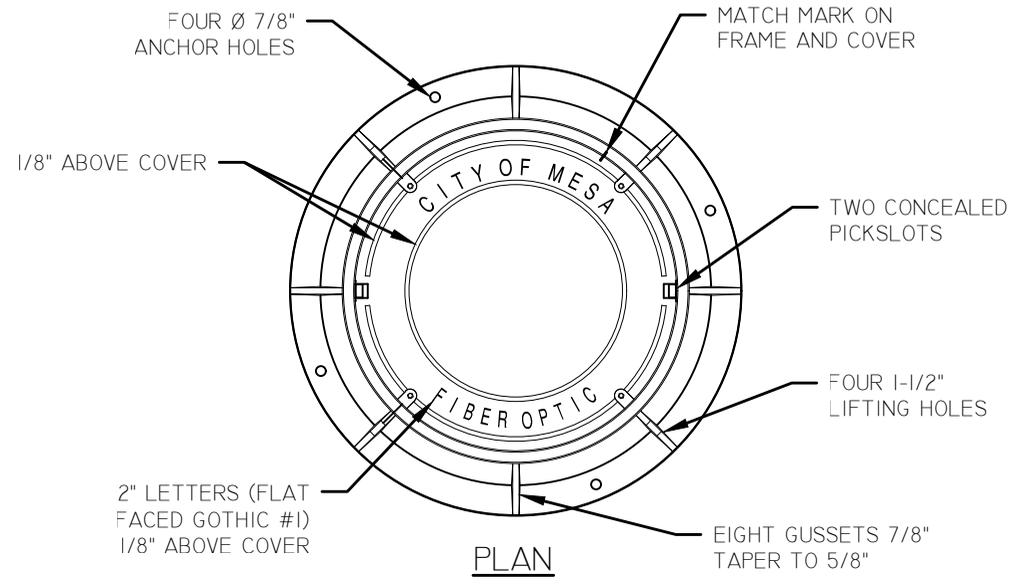
1. VAULT SHALL BE PRECAST CONCRETE. SHOP DRAWING SUBMITTAL IS REQUIRED.
2. ONE 10' LONG BY 5/8" DIAMETER COPPER GROUND ROD SHALL BE INSTALLED IN ONE OF THE GROUND ROD KNOCKOUTS. THE TOP 4 INCHES OF THE ROD SHALL BE EXPOSED ABOVE THE FLOOR OF THE VAULT FOR FUTURE INSTALLATION (BY OTHERS) OF GROUNDING CLAMPS.
3. INSTALL 1/2" DIAMETER THREADED SST EPOXY ANCHOR BOLT IN MANHOLE EMBED 2" MINIMUM INTO MANHOLE WALL WITH 2" MINIMUM EXPOSED. CITY WILL DIRECT CONTRACTOR RELATIVE TO IN WHICH CORNER OF MANHOLE TO INSTALL SAID BOLT. ALL TRACER WIRES ENTERING MANHOLE SHALL BE ROUTED AROUND THE EDGES OF THE MANHOLE TO THIS BOLT LOCATION. CONNECT ALL WIRES TOGETHER AND ATTACH TO THIS BOLT.
4. TEST POINTS SHALL BE INSTALLED UNLESS OTHERWISE DIRECTED BY CITY OF MESA ENGINEERING STAFF.
5. ALL CONDUITS ENTERING PULL BOXES SHALL REFLECT THE APPROPRIATE COLOR OF THEIR RESPECTIVE CONDUIT THAT WAS TRENCHED IN BETWEEN PULL BOXES AND THE COLOR SHALL BE VISIBLE WITHIN THE PULL BOX. THE CONDUIT SWEEPS AND/OR THE SECTIONS OF CONDUIT AND THE BELL ENDS SHALL BE COLOR COORDINATED TO REFLECT THE APPROPRIATE CONDUIT COLOR ENTERING THE PULL BOX FOR THE PURPOSE OF PROPER IDENTIFICATION. CONDUIT SHALL BE PROVIDED AND CONSTRUCTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS. ALL SWEEPS SHALL BE FACTORY COLORED TO MATCH THE CONDUIT.
6. ALL CONDUITS SHALL PENETRATE VAULT/ MANHOLE ONLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT COM DETAIL M-1702.4 (OLD M-66.04).

NOT TO SCALE



NOTES:

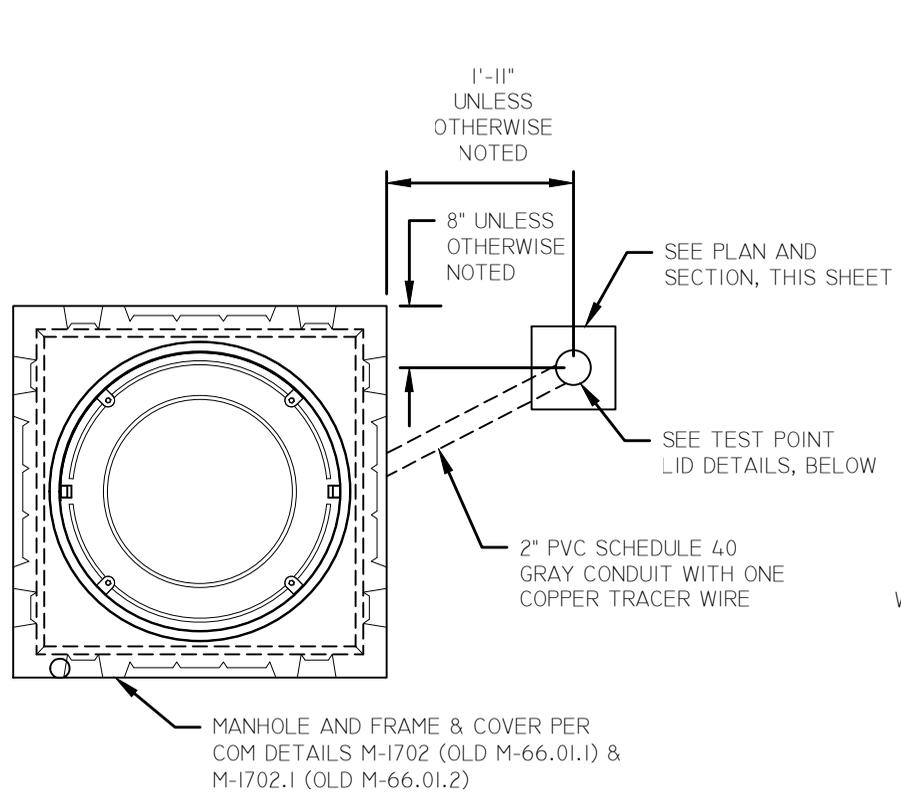
1. BACKFILL WITH ABC BELOW BOTTOMLESS MANHOLE. BACKFILL AROUND SIDES OF PULL BOX WITH SELECT EXCAVATED MATERIAL AND COMPACT AT 95% MAX. DENSITY.
2. CONDUIT FROM THE TYPICAL TRENCH SECTION SHALL NOT DEFLECT BY MORE THAN 1 INCH PER FOOT FROM THE ALIGNMENT PRECEDING OR FOLLOWING THE PULL BOX.
3. THE CONTRACTOR SHALL POUR THE FLOOR WITH DRAIN, AFTER THE BOTTOMLESS MANHOLE INSTALLATION.
4. THE CONTRACTOR SHALL GROUT THE KNOCKOUT AREAS AROUND THE CONDUITS WITH A SMOOTH CONCRETE FINISH AFTER THE BOTTOMLESS MANHOLE INSTALLATION.
5. ALL NEW BOTTOMLESS MANHOLES SHALL BE FURNISHED WITH RACKS AND HOOKS INSTALLED.
6. SEE COM DETAILS M-1702.5 (OLD M-66.05), M-1702.6 (OLD M-66.06), AND M-1702.15 (OLD M-66.09) FOR FIBER CABLE INSTALLATION AND FIBER CABLE SPLICE ENCLOSURE INSTALLATION.
7. PLUG EACH CONDUIT END WITH APPROVED, WATERPROOF DUCT PLUG.
8. BOTTOMLESS MANHOLES AND LIDS SHALL BE RATED FOR HS20-44 LOADING.
9. ALL POWER AND COMMUNICATION CABLES SHALL BE TAGGED WITH CABLE IDENTIFICATION.
10. BOTTOMLESS MANHOLE'S HEIGHT ABOVE FINISHED GRADE SHALL PERMIT 2 INCHES OF DECOMPOSED GRANITE TO BE USED TO MATCH EXISTING GRADE/SLOPE.
11. LOCKING LIP W/SEAL BETWEEN WALL AND COVER ASSEMBLY.
12. BOTTOMLESS MANHOLES MAY BE ALTERED BASED ON THE AVAILABILITY OF MODEL FROM VARIOUS MANUFACTURERS. SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE ORDERING OF MATERIALS.
13. TEST POINTS SHALL BE INSTALLED UNLESS OTHERWISE DIRECTED BY CITY OF MESA ENGINEERING STAFF PER COM DETAIL M-1702.3 (OLD M-66.03).
14. ALL CONDUITS SHALL PENETRATE VAULT/ MANHOLE ONLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT COM DETAIL M-1702.4 (OLD M-66.04).



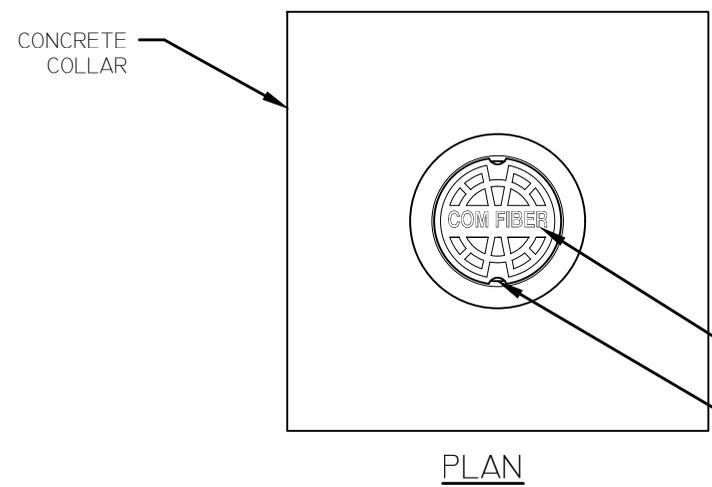
NOTES

1. FURNISH WITH MACHINED HORIZONTAL BEARING SURFACE.
2. FURNISH WITH T-GASKET.
3. CASTINGS SHALL CONFORM TO MAG SPECIFICATION SECTION 787 AND H20 LOADING REQUIREMENTS.
4. FRAME IS 310 POUNDS. COVER IS 150 POUNDS.
5. GALVANIZED COVER SHALL INCLUDE IDENTIFICATION OF 1" LETTERS IN STANDARD MARKINGS "CITY OF MESA FIBER" OPTIC" AS NOTED ON APPROVED PLANS.
6. SEE APPROVED PRODUCTS LIST AVAILABLE AT [HTTPS://WWW.MESA AZ.GOV/BUSINESS/ENGINEERING/APPROVE -PRODUCTS-EQUIPMENT-NATURAL -GAS-LINE-CONTRACTORS.](https://www.mesaaz.gov/business/engineering/approved-products-equipment-natural-gas-line-contractors)
7. ROUND LIDS SHALL BE USED IN THE TRAVELWAY AND SQUARE BOX LIDS SHALL BE USED BEHIND THE SIDEWALK.

NOT TO SCALE



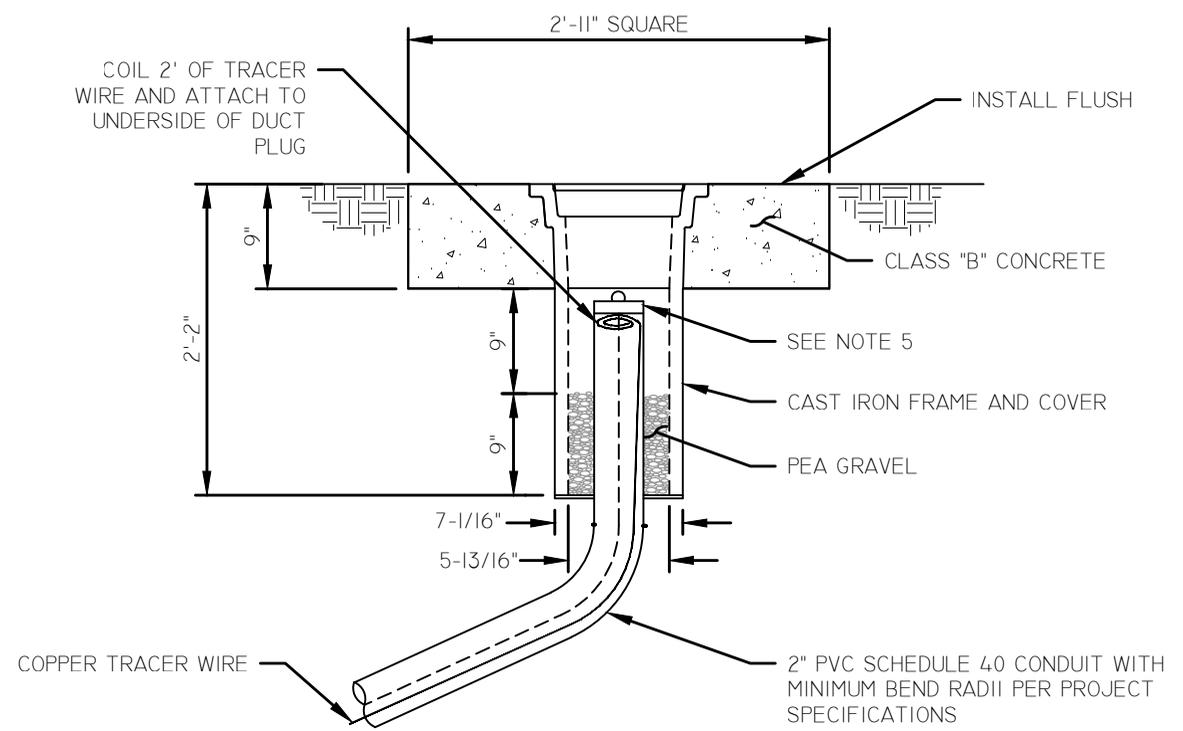
PLAN



PLAN

NOTES

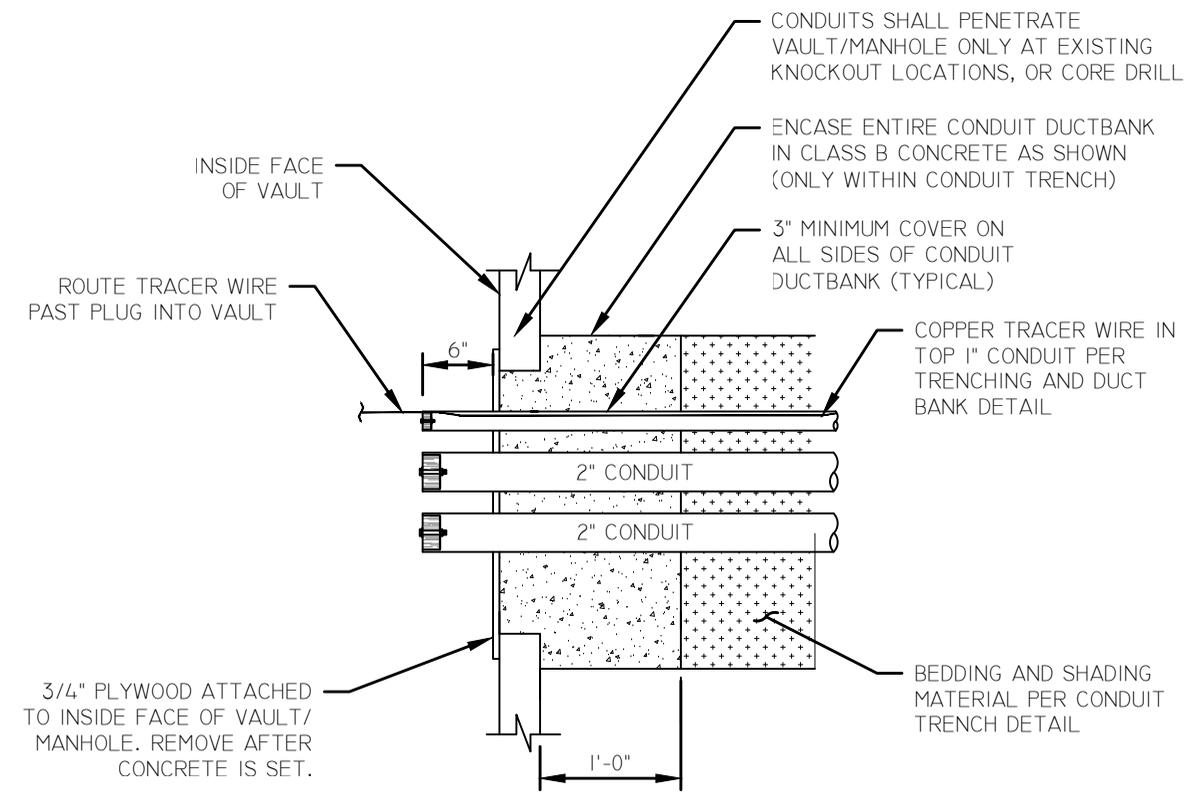
1. FRAME AND LID SHALL BE CAST GRAY IRON PER ASTM A-48 CLASS 35B.
2. FRAME IS 25 POUNDS. LID IS 13 POUNDS.
3. NO PAINT.
4. H-20 TRAFFIC RATING REQUIRED.
5. ALL UNUSED AND FUTURE CONDUITS SHALL BE PLUGGED WITH AN EXPANDABLE PLUG. ALL CABLE FILLED CONDUITS SHALL BE PLUGGED WITH SIMPLEX PLUG. SEE APPROVED PRODUCTS LIST FOR SPECIFIC PRODUCTS.



SECTION

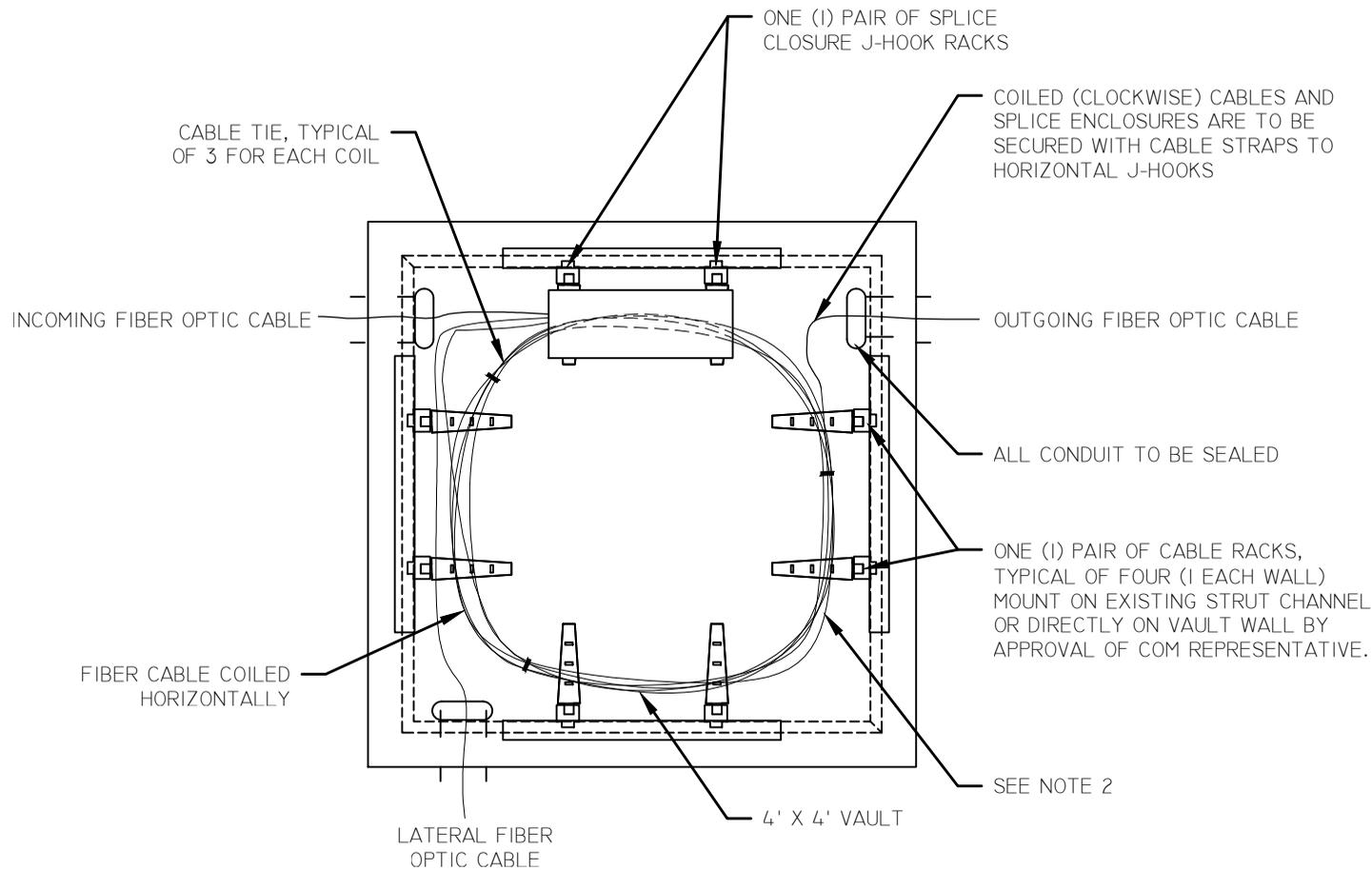
NOTES

1. ALL KNOCKOUTS SHALL BE SEALED TIGHT UPON USAGE.
2. ALL UNUSED AND FUTURE CONDUITS SHALL BE PLUGGED WITH AN EXPANDABLE PLUG.
3. ALL CABLE FILLED CONDUITS SHALL BE PLUGGED WITH A PLUG DESIGNED FOR NUMBER OF CABLES WITHIN ITS CONDUITS.
4. ALL USED AND FUTURE CONDUITS SHALL CONTAIN A PULL TAPE OF 2500LB TENSILE STRENGTH. THE PULL TAPE ENDS SHALL BE TIED TOGETHER TO PREVENT THE ENDS FROM INADVERTENTLY BEING PULLED BACK INTO CONDUIT. PULL TAPE SHALL BE LOW ELONGATION, AND SUITABLY LUBRICATED.



SECTION

NOT TO SCALE

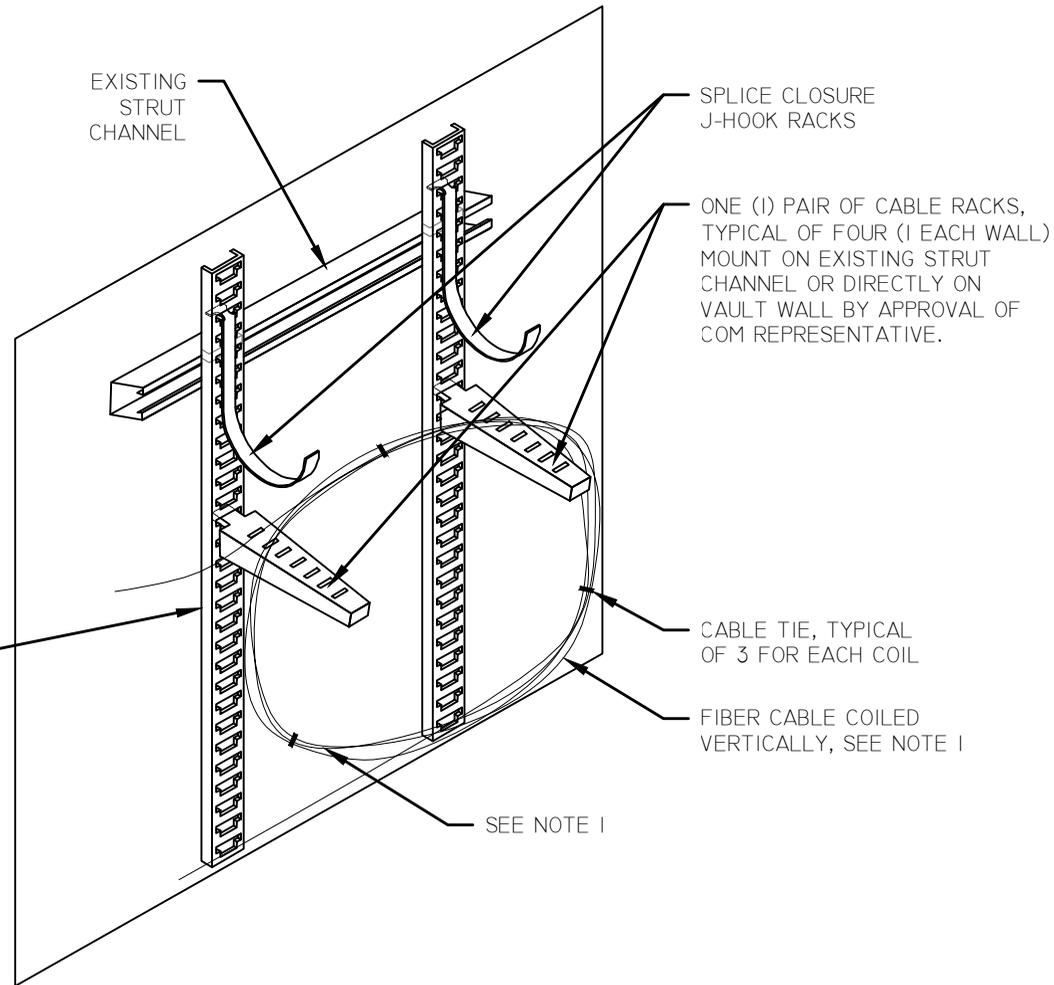


PLAN

NOTES

1. HORIZONTAL COILING SHALL BE UTILIZED WHEN MANHOLES AND VAULTS ARE SHALLOW AND VERTICAL WALL SPACE IS LIMITED.
2. SEE COM DETAIL M-1702.15 (OLD M-66.09) FOR CABLE SPOOL LENGTH.
3. WHEN CONGESTED CONDITIONS EXIST IN THE STRUCTURES THE FIBER CABLE SPOOL AND ENCLOSURE SHALL BE PLACED IN A LOCATION THAT WILL ALLOW FOR REMOVAL OF SAID ITEMS WITH MINIMAL DISTURBANCE OF THE OTHER ITEMS WITHIN THE STRUCTURE.
4. CABLE RACK MOUNTING BRACKET ATTACHED TO STRUT CHANNEL OR ATTACHED DIRECTLY TO VAULT WALL AS APPROVED BY COM REPRESENTATIVE.

NOT TO SCALE

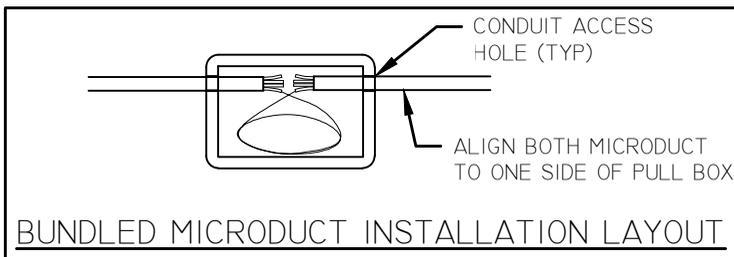


PERSPECTIVE

NOTE

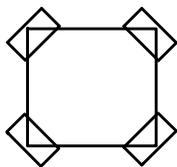
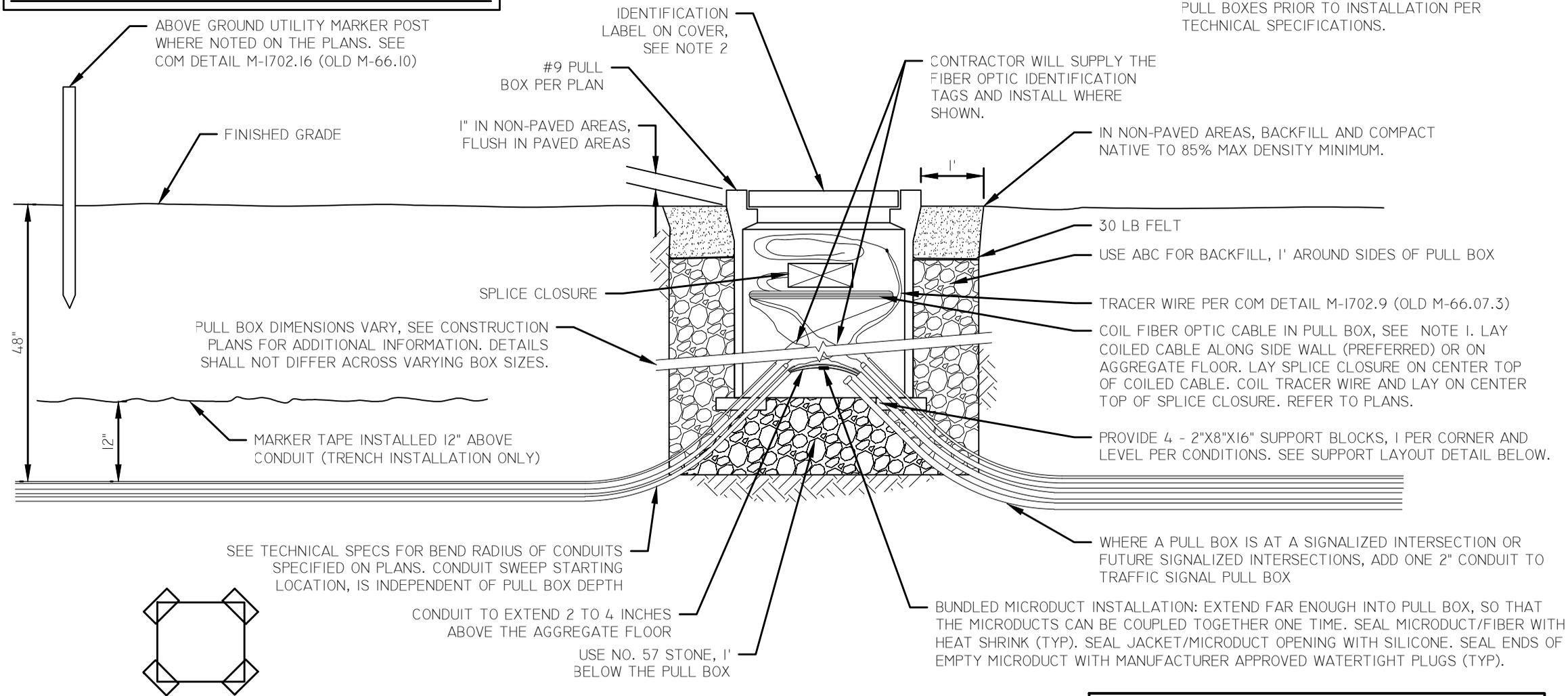
1. SEE COM DETAIL M-1702.15 (OLD M-66.09) FOR CABLE SPOOL LENGTH.
2. WHEN CONGESTED CONDITIONS EXIST IN THE STRUCTURE THE FIBER CABLE SPOOL AND ENCLOSURE SHALL BE PLACED IN A LOCATION THAT WILL ALLOW FOR REMOVAL OF SAID ITEMS WITH MINIMAL DISTURBANCE OF THE OTHER ITEMS WITHIN THE STRUCTURE.

NOT TO SCALE



NOTES

1. SEE COM DETAIL M-1702.15 (OLD M-66.09) FOR CABLE SPOOL LENGTH.
2. PULL BOX COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS "CITY OF MESA FIBER".
3. FOR NEW PULL BOX INSTALLATIONS, BOX SIZE WILL BE PER PLANS.
4. THE COUPLING ENDS OF THE PIPE SHALL ALWAYS FACE EAST OR NORTH. THE CONTRACTOR SHALL FOLLOW THE ASSEMBLY INSTRUCTIONS AS RECOMMENDED BY THE MANUFACTURER OF THE CONDUIT ASSEMBLY AND USE ONLY MANUFACTURER'S APPROVED SOLVENT.
5. TEMPORARY WOOD BRACES SHALL BE ADDED TO PULL BOXES PRIOR TO INSTALLATION PER TECHNICAL SPECIFICATIONS.



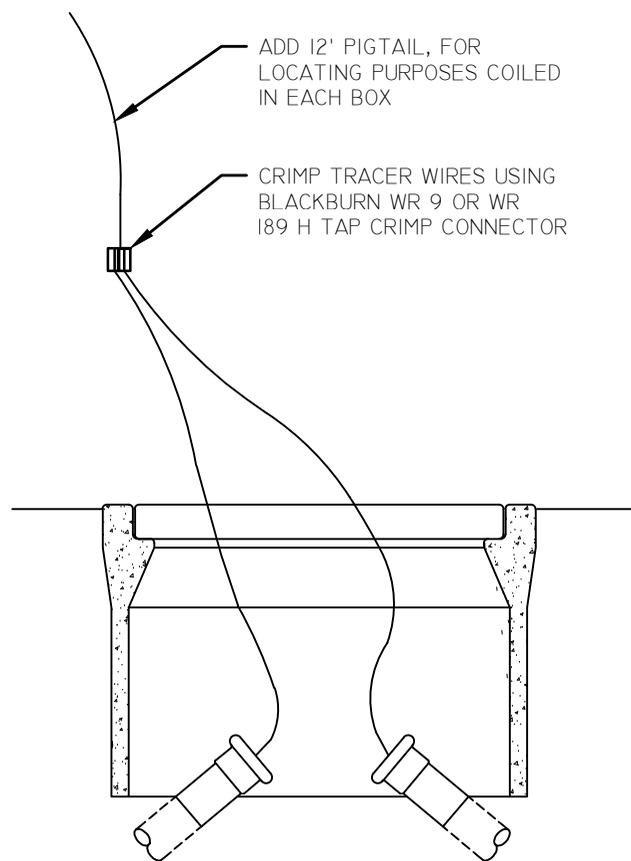
PULL BOX, CONDUIT AND CABLE MANAGEMENT
CONDUIT SWEEP LOCATION IS DEPENDENT ON PULL BOX DEPTH.

SEE COM DTL M-1702.8 (OLD M-66.07.2) FOR REFERENCED NOTES

NOT TO SCALE

NOTES

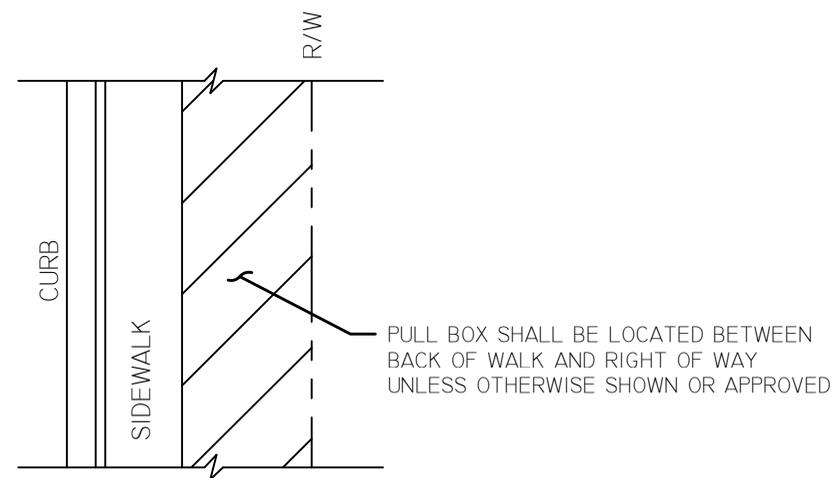
1. ALIGN MICRODUCT ENTRY INTO PULL BOX TO ONE SIDE TO AID IN COILING OF BLACK FIBER AND TRACER WIRE.
2. REFER TO COM DETAIL M-1228 (OLD M-93.01) FOR PULL BOX INSTALLATION, FOR PULL BOX PLACEMENT UNDER DIFFERENT SITE CONDITIONS.
3. PULL BOX COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS "MESA FIBER".
4. PULL BOXES SHALL BE SPACED APPROXIMATELY 650' APART.
5. CABLE SHALL BE INSTALLED AS ONE CONTINUOUS PIECE WITH NO SPLICES.
6. MICRODUCTS FOR FIBER SYSTEM SHALL BE BLOWN OUT WITH COMPRESSED AIR AND HAVE A HDPE BALL BLOWN THROUGH BEFORE FIBER CABLE MANDREL PROCEDURE. A TRAFFIC SIGNAL TECHNICIAN SHALL BE ON SITE DURING MANDREL PROCEDURE ON 2" QUAD DUCT INSTALLATIONS.
7. ALL UNUSED MICRODUCTS SHALL BE CAPPED AND SEALED WITH MICRODUCT MANUFACTURER APPROVED WATER TIGHT CAP.
8. SEAL MICRODUCT JACKET OPENINGS WITH SILICONE. SEAL ENDS OF THOSE MICRODUCTS CONTAINING FIBER OPTIC CABLE WITH HEAT SHRINK.
9. SEE SPECIFICATIONS FOR TESTING REQUIRED BEFORE ACCEPTANCE.
10. TRACER WIRE SHALL BE SPLICED WITHIN THE PULL BOX ONLY. 12" OF TRACER WIRE SHALL BE LOOPED FROM THE TOP OF THE PULL BOX FOR LOCATING PURPOSES.
11. FOR CITY OF MESA ITD FIBER OPTIC & ITS TRAFFIC SIGNAL APPROVED PRODUCTS. SEE APPROVED PRODUCT LIST AT [HTTPS://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/APPROVE-PRODUCTS-EQUIPMENT-NATURAL-GAS-LINE-CONTRACTORS](https://www.mesaaz.gov/business/engineering/approve-products-equipment-natural-gas-line-contractors)
12. FOR NEW PULL BOX INSTALLATIONS MINIMUM BOX SIZE WILL BE 48 INCH DEEP NO. 9 PULL BOX.
13. SECURE FIBER OPTIC CABLE TO THE EYEBOLTS INSIDE THE PULL BOX.



TRACER WIRE DETAIL

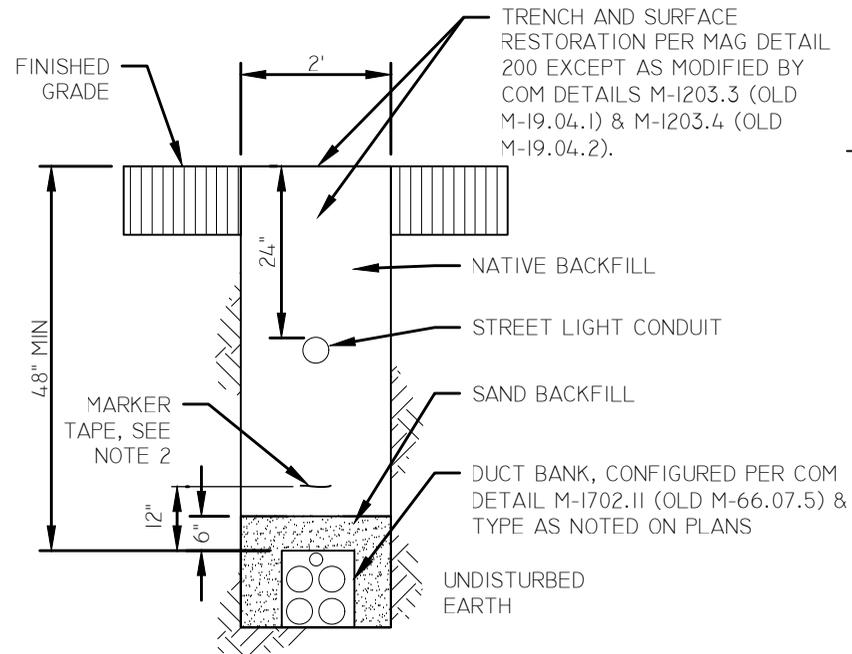
NOTES

1. WHEN LOW VOLTAGE CONDUIT IS BEING INSTALLED, THE CONDUITS FOR THE FIBER OPTIC CABLE SHALL SHARE A COMMON TRENCH WITH THE LOW VOLTAGE CONDUIT, AND CONNECT TO SEPARATE PULL BOXES.
2. PULL BOXES SHALL BE SPACED AS SHOWN ON THE PLANS.
3. ALL CONDUITS OF THE QUAD DUCT BANK SHALL CONTAIN A PULL TAPE 2500LB TENSILE STRENGTH. THE PULL TAPE ENDS SHALL BE TIED TO PLUG EYE BOLT, TO PREVENT THE ENDS FROM INADVERTENTLY BEING PULLED BACK INTO THE CONDUITS. CAP ALL UNUSED AND FUTURE CONDUITS WITH CONDUIT PLUG, SEE APPROVED PRODUCT LIST. CAP ALL FIBER FILLED CONDUITS WITH FIBER OPTIC SIMPLEX PLUG, SEE APPROVED PRODUCT LIST.

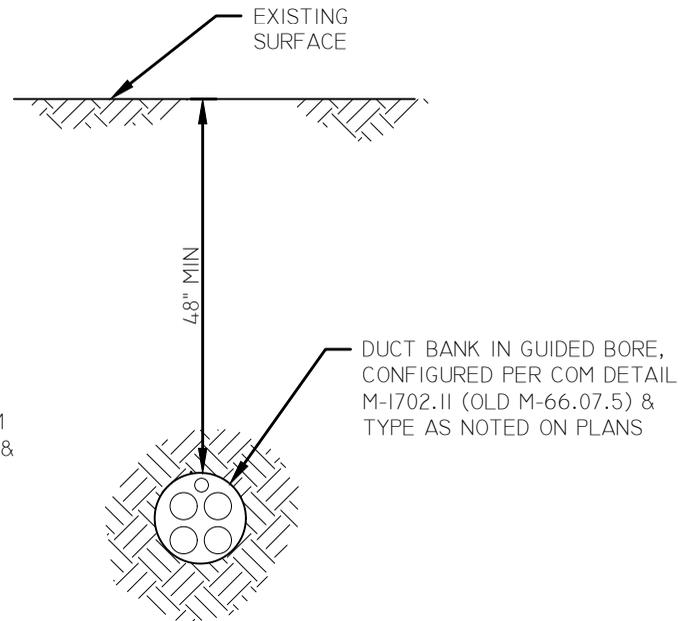


TYPICAL PULL BOX LOCATION

NOT TO SCALE



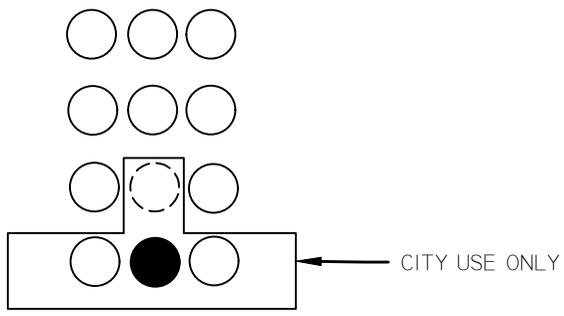
FIBER OPTIC TRUNKLINE
TRENCHED



FIBER OPTIC TRUNKLINE
JACKED, DRILLED OR BORED

NOTES

1. TRACER WIRE SHALL BE #12 AWG XLP OR XHHW IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.
2. MARKER TAPE SHALL BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS AND SHALL BE CENTERED OVER CONDUIT AND INSTALLED AT 12" ABOVE DUCT BANK.
3. ALL UNUSED CONDUITS OF THE DUCT BANK SHALL CONTAIN A PULL TAPE OF 2500 LB TENSILE STRENGTH. THE PULL TAPE ENDS SHALL BE TIED OFF TO PLUG EYE BOLT, TO PREVENT THE ENDS FROM INADVERTENTLY BEING PULLED BACK INTO THE CONDUITS. PULL TAPE SHALL BE LOW ELONGATION, AND SUITABLY LUBRICATED.
4. CONDUIT INSTALLED BY OPEN TRENCHING SHALL BE HELD IN PLACE BY SPACERS IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS.

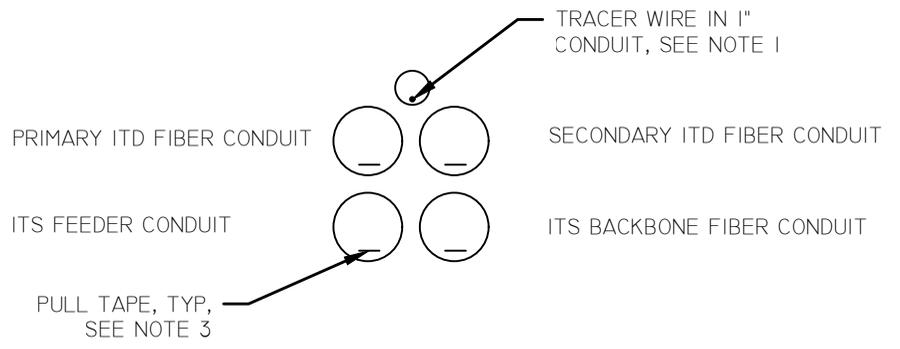


SOLID - FOR TRAFFIC SIGNAL FIBER OPTIC USE
DASHED - FOR ITD FIBER OPTIC USE

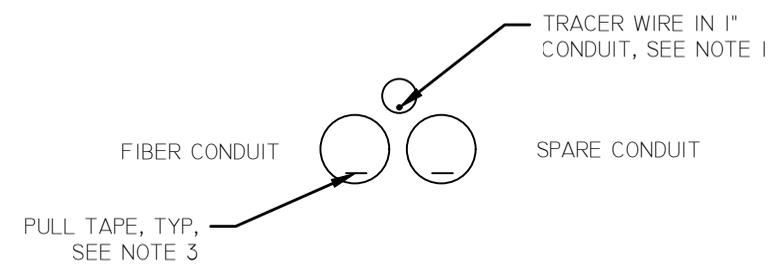
E-STREETS - 12
CONDUIT CONFIGURATION AND ALLOCATION

NOTE

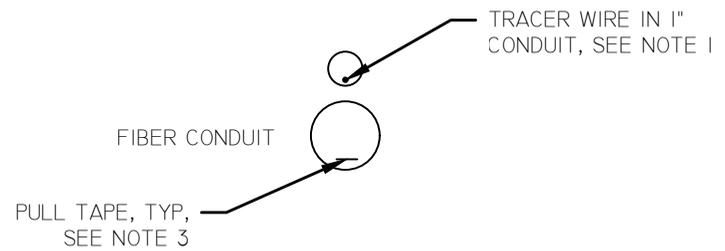
1. CONDUIT SIZE SHALL BE AS SHOWN ON PLANS.
2. AT MANHOLES AND VAULTS, PRIMARY AND SECONDARY CONDUITS SHALL ENTER AND EXIT MANHOLE WITHOUT CROSSING.



QUAD-DUCT
CONDUIT CONFIGURATION AND ALLOCATION
LOOKING EAST/NORTH

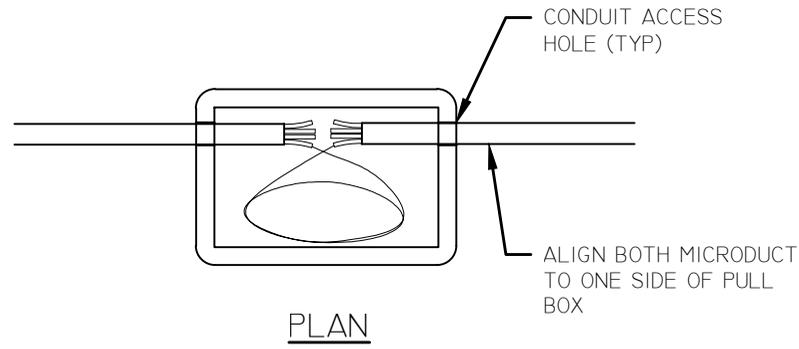


DUAL-DUCT
CONDUIT CONFIGURATION
LOOKING EAST/NORTH

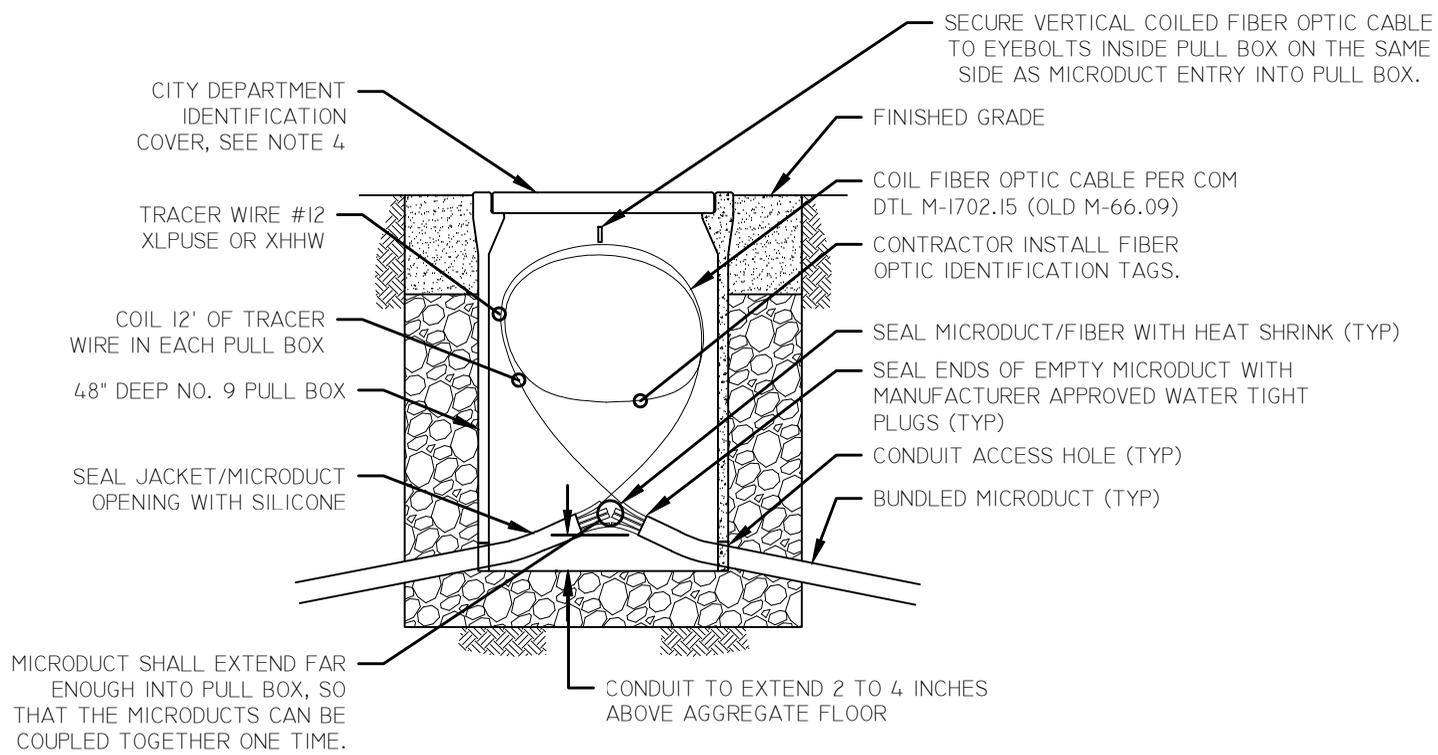


SINGLE-DUCT
CONDUIT CONFIGURATION
LOOKING EAST/NORTH

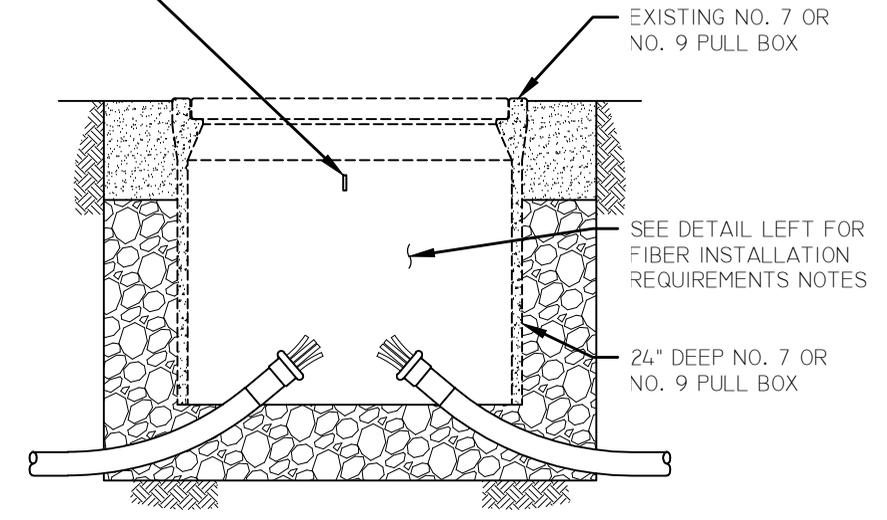
NOT TO SCALE



SEE COM DTL M-1702.8
(OLD M-66.07.2) FOR
REFERENCED NOTES



SECTION
MICRODUCT INSTALLATION IN
4' DEEP NO. 9 PULL BOX

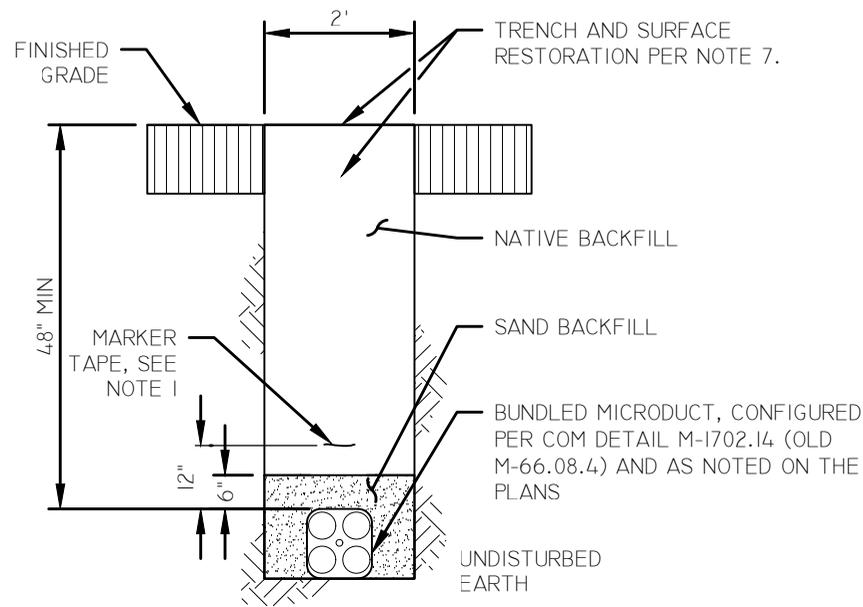


SECTION
MICRODUCT INSTALLATION IN
EXISTING NO. 7 OR NO. 9 PULL BOX

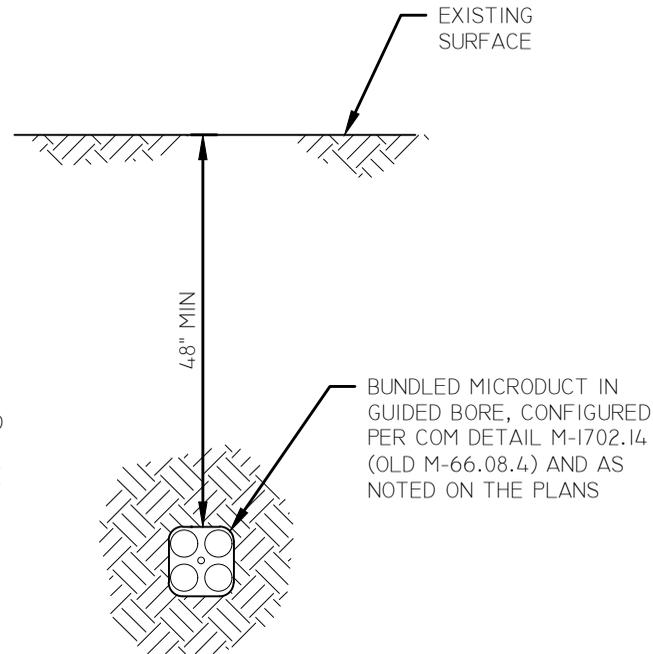
BUNDLED MICRODUCT INSTALLATION IN PULL BOXES

OLD
M-66.08.1

DETAIL NO.
M-1702.12



BUNDLED MICRODUCT TRUNKLINE
TRENCHED

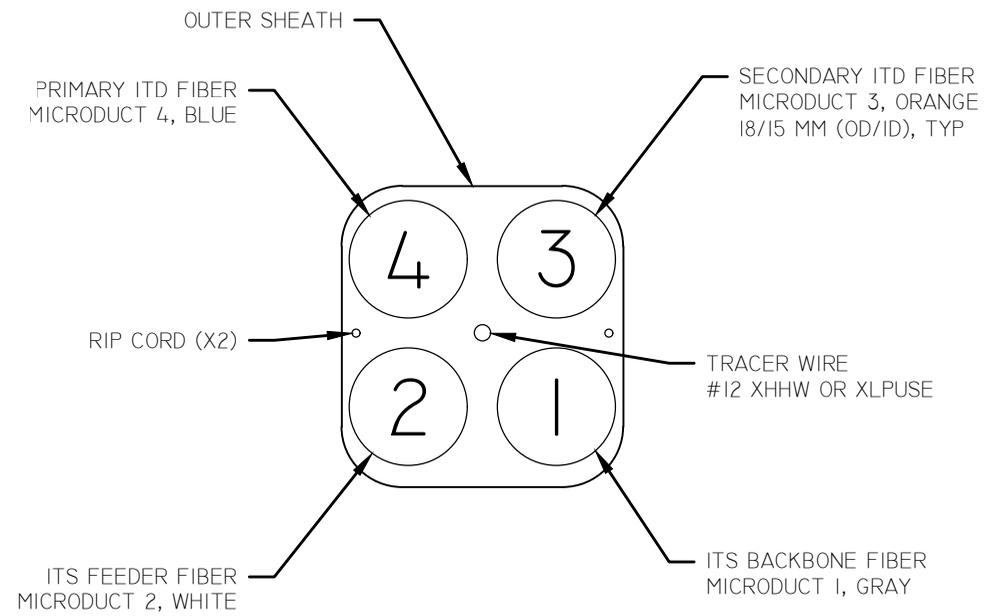


BUNDLED MICRODUCT TRUNKLINE
JACKED, DRILLED OR BORED

NOTES

1. MARKER TAPE SHALL BE IN ACCORDANCE WITH TECHNICAL SPECIFICATIONS AND CENTERED OVER BUNDLED MICRODUCT PER TRENCHED DETAIL. MARKER TAPE SHALL BE INSTALLED AT 12" ABOVE DUCT BANK EXCEPT PER JACKED, DRILLED OR BORED DETAIL.
2. MICRODUCTS FOR FIBER SYSTEM SHALL BE BLOWN OUT WITH COMPRESSED AIR AND HAVE AN HDPE BALL BLOWN THROUGH BEFORE FIBER CABLE IS INSTALLED. A TRAFFIC SIGNAL TECHNICIAN SHALL BE ON SITE DURING THIS PROCEDURE.
3. TRENCH SHALL BE SHADED WITH FILTERED MATERIAL TO A DEPTH OF 6" ABOVE THE BUNDLED MICRODUCT. SAND MAY BE USED. THE REMAINDER OF THE TRENCH MAY BE BACKFILLED WITH ORIGINAL EXCAVATED MATERIAL.
4. MAXIMUM BUNDLED MICRODUCT DEFLECTION ALLOWED SHALL BE 1" PER FOOT.
5. A 12" MINIMUM CLEARANCE FROM OTHER UTILITIES SHALL BE MAINTAINED UNLESS OTHERWISE SPECIFIED BY UTILITY OWNER.
6. THE CONTRACTOR SHALL FOLLOW THE ASSEMBLY INSTRUCTIONS AS RECOMMENDED BY THE MANUFACTURER OF THE BUNDLED MICRODUCT ASSEMBLY, INCLUDING ALL MANUFACTURER'S APPROVED MATERIALS.
7. RESTORE TRENCH SURFACE PER MAG DETAIL 200 WHEN OUTSIDE OF ROADWAY PAVEMENT. FOR ROADWAY PAVEMENT RESTORATION, SEE COM DETAILS M-1203.3 (OLD M-19.04.1) AND M-1203.4 (OLD M-19.04.2).

NOT TO SCALE



END SECTION
MICRODUCT PATHWAY CONFIGURATION AND ALLOCATION

NOT TO SCALE

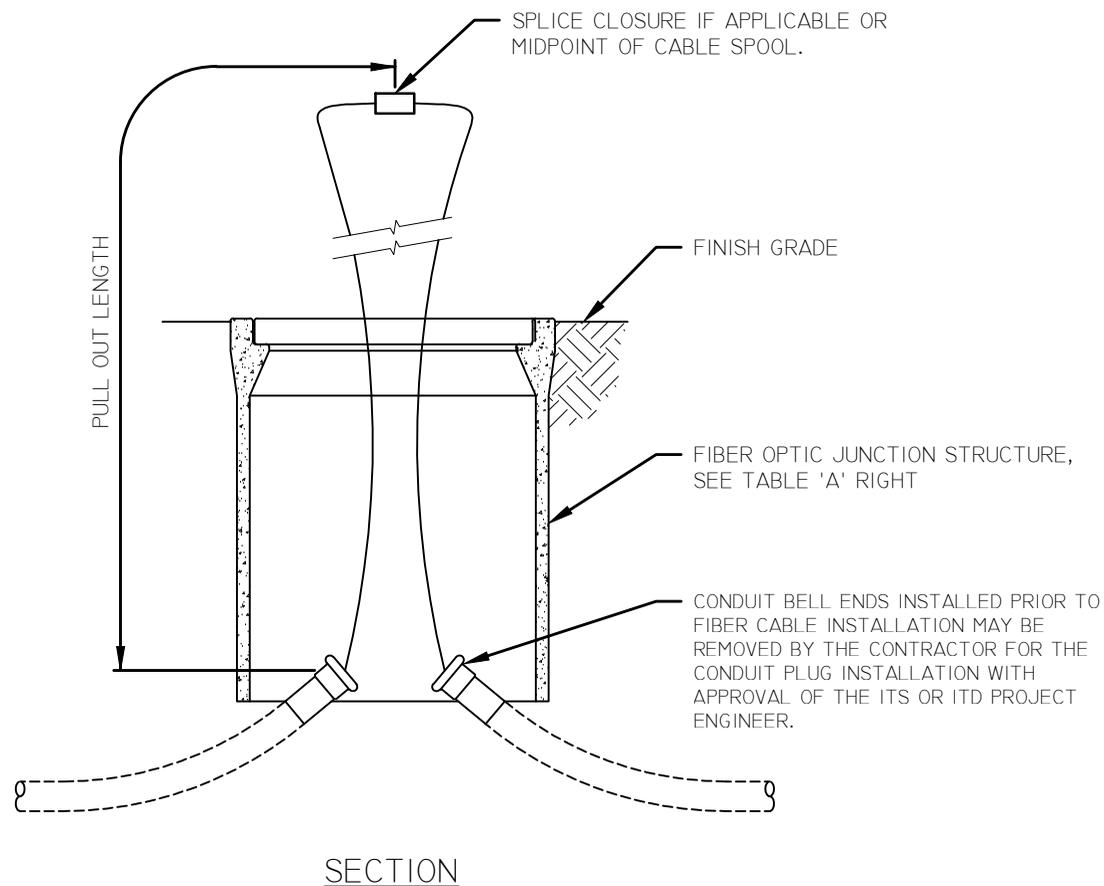
DETAIL NO. M-1702.14	OLD M-66.08.4
-------------------------	------------------

TABLE 'A'

JUNCTION STRUCTURE	PULL OUT LENGTH	SPOOL LENGTH
NO. 7 PULL BOX	25'	50'
NO. 9 PULL BOX	60'	120'
DEEP NO. 9 PULL BOX	60'	120'
4' x 4' VAULT	00'	200'
6' x 12' VAULT	00'	200'
EQUIPMENT ROOM TERMINATION	N/A	25'
BUILDING EXTERIOR NEMA BOX	2.5'	25'

NOTES

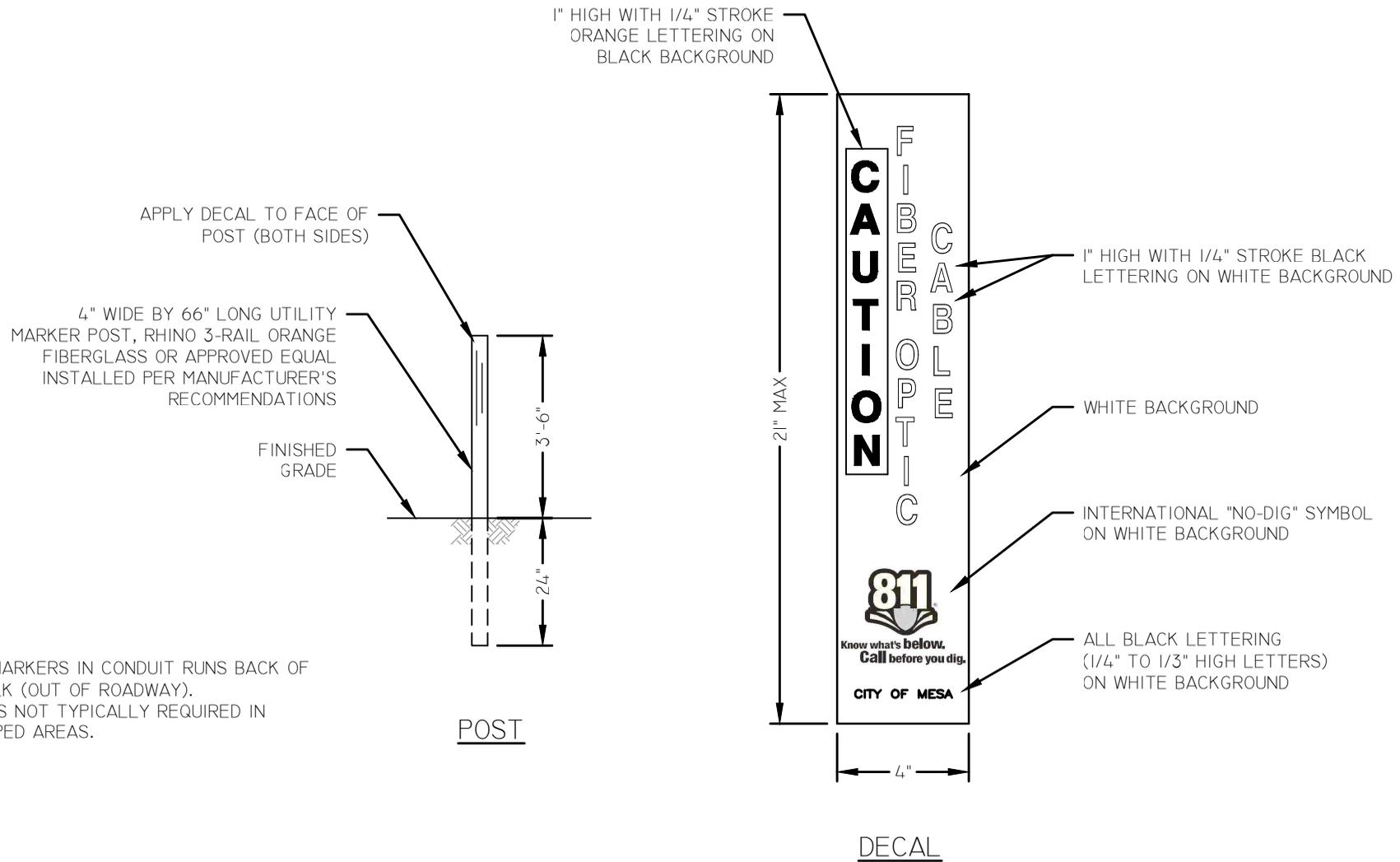
1. CONTRACTOR SHALL ALLOW ENOUGH SLACK IN FIBER CABLE BEFORE SPOOL TO ALLOW SPOOL TO BE PLACED ON GROUND WHEN REMOVED FROM THE STRUCTURE.
2. CONTRACTOR SHALL BIND FIBER CABLE SPOOL WITH TIE WRAPS IN THREE (3) LOCATIONS AROUND THE SPOOL.
3. CONTRACTOR SHALL PLACE SPOOL IN STRUCTURE PER COM DETAILS M-1702.6 (OLD M-66.06) OR M-1702.12 (OLD M-66.08.1) PER STRUCTURE TYPE.

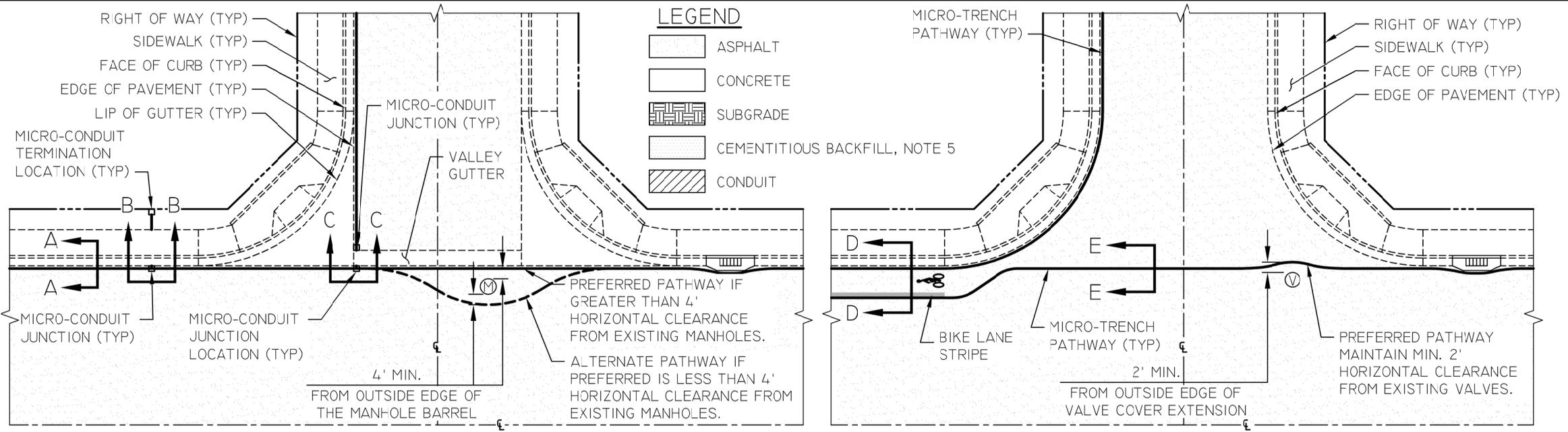


NOT TO SCALE

NOTES

1. PLACE MARKERS IN CONDUIT RUNS BACK OF SIDEWALK (OUT OF ROADWAY).
2. MARKERS NOT TYPICALLY REQUIRED IN DEVELOPED AREAS.



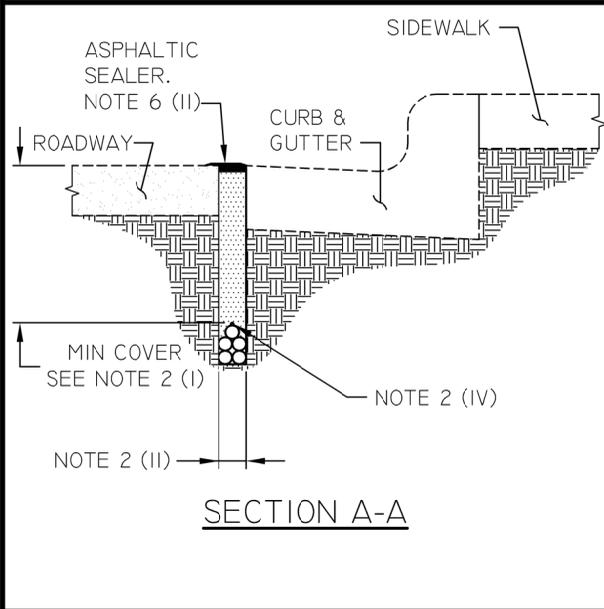


ROADWAY WITH VALLEY GUTTER & APRON @ CURB RETURN

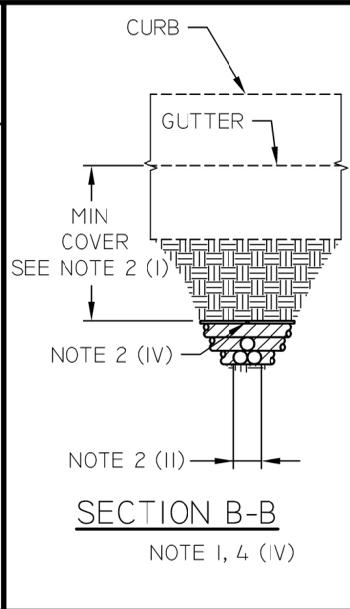
NOTE: REFER TO MICRO-TRENCH DETAILS NOTES M-1702.18 (OLD M-66.II.02), M-1702.19 (OLD M-66.II.03), AND M-1702.20 (OLD M-66.II.04)

ROADWAY WITH CURB AND GUTTER @ CURB RETURN

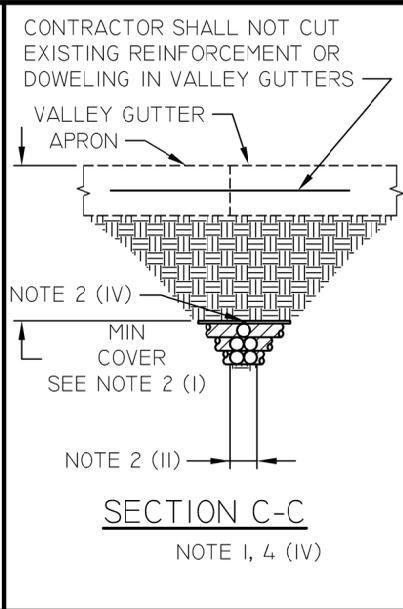
NOTE: REFER TO MICRO-TRENCH DETAILS NOTES M-1702.18 (OLD M-66.II.02), M-1702.19 (OLD M-66.II.03), AND M-1702.20 (OLD M-66.II.04)



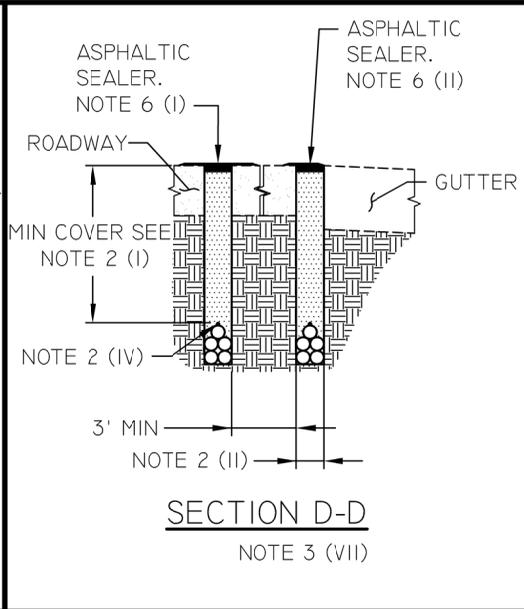
SECTION A-A



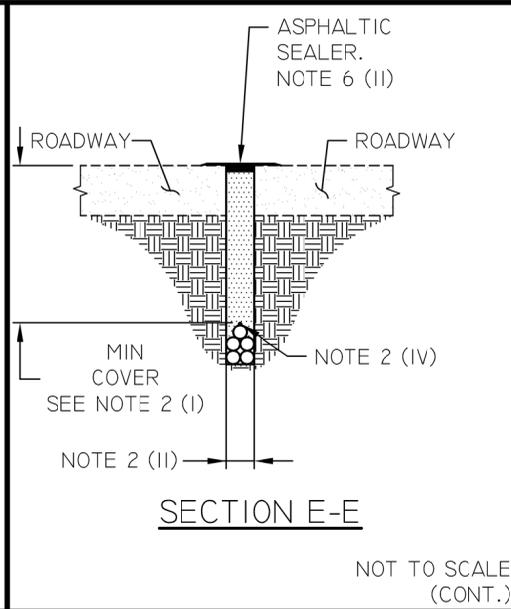
SECTION B-B
NOTE 1, 4 (IV)



SECTION C-C
NOTE 1, 4 (IV)



SECTION D-D
NOTE 3 (VII)



SECTION E-E

NOT TO SCALE (CONT.)

DETAIL NO. M-1702.17
OLD M-66.11.01

NOTES

MICRO-TRENCHING

THE FOLLOWING STANDARDS APPLY TO MICRO-TRENCHING:

I) MICRO-TRENCHING IS NOT PERMITTED IN THE FOLLOWING AREAS:

- I) CONCRETE STREETS, DRIVEWAYS, SIDEWALKS, CURB AND GUTTER, APRONS, OR OTHER CONCRETE STRUCTURES.
- II) SPECIAL PAVEMENTS SUCH AS, DECORATIVE PAVING, BRICKS, CONCRETE PAVERS, EXPOSED AGGREGATE CONCRETE, STAMPED ASPHALT, OR OTHER UNIQUE NON-CONCRETE OR NON-ASPHALT MATERIALS.
- III) CROWN OF THE STREET.

2) MICRO-TRENCHING MUST:

- I) HAVE SUFFICIENT DEPTH FOR THE CONDUITS TO BE INSTALLED WITH A MINIMUM COVER OF 10-INCHES FOR ALL STREET CLASSIFICATIONS, EXCEPT RESIDENTIAL STREETS WHERE THE MINIMUM COVER IS 6-INCHES, UNLESS AT RAMP LOCATIONS, WHERE COVER MUST BE 10-INCHES.
- II) HAVE MAXIMUM 2.5-INCHES WIDE TRENCH.
- III) BE RESTORED WITH PREAPPROVED CEMENTITIOUS BACKFILL.
- IV) CONDUITS MUST BE TRACEABLE WITH 14 GAUGE TRACER WIRE MINIMUM.
- V) CONFORM TO SEPARATION REQUIREMENTS (HORIZONTAL AND VERTICAL) FROM EXISTING UTILITIES PER SECTIONS 706.2.1 AND 706.2.2 OF THE MESA ENGINEERING & DESIGN STANDARDS OR AS OTHERWISE SHOWN ON DETAIL M-1702.17 (OLD M-66.11.01), WHICHEVER IS GREATER.
- VI) BORE OVER OR UNDER TRAFFIC LOOPS WITH A MINIMUM OF 6-INCH CLEARANCE.

3) LOCATION OF TRENCHES:

- I) MICRO-TRENCHING IS APPROVED ON ALL STREET CLASSIFICATIONS.
- II) MICRO-TRENCHING MAY BE UTILIZED ON EACH SIDE OF A STREET.
- III) MUST BE LOCATED AT THE EDGE OF LIP OF THE GUTTER OR IN AN ALTERNATE LOCATION APPROVED BY THE CITY.
- IV) MICRO-TRENCHING SHALL BE CONSTRUCTED AND PHASED TO MINIMIZE INTERFERENCE WITH VEHICULAR TRAFFIC.
- V) MICRO-TRENCHING MAY EXTEND THROUGH AN INTERSECTION AND CONTINUE ADJACENT TO THE CURB ON THE OTHER SIDE OF THE INTERSECTION.
- VI) PRIOR TO MICRO-TRENCHING OPERATION, THE CITY INSPECTOR AND CONTRACTOR SHALL "WALK" THE MICRO-TRENCH PATH AFTER AZ811 LOCATE MARKS HAVE BEEN COMPLETED. THE PURPOSE OF THE "WALK" IS TO IDENTIFY ANY AREAS OF POTENTIAL CONFLICT AND/OR INTERFERENCE AND RECORD THE RESULTS OF THE "WALK". ADDITIONALLY, THE CONTRACTOR SHOULD VERIFY THAT ALL UTILITIES HAVE BEEN LOCATED. THE CONTRACTOR SHALL CROSS CHECK THE RECORD DRAWINGS AND PLANS WITH FIELD LOCATE MARKS TO DETERMINE DISCREPANCIES.

VII) A SECOND MICRO-TRENCH MAY BE PLACED 3 FEET AWAY FROM THE FIRST MICRO-TRENCH. IF A BIKE LANE EXISTS, MICRO-TRENCH SHALL BE COMPLETELY OUTSIDE OF THE BIKE LANE AND BE ADJACENT TO THE BIKE LANE STRIPE.

4) PAVEMENT CUTS

- I) SAW CUTS SHALL BE STRAIGHT AND CLEAN.
- II) THE VERTICAL FACES OF THE TRENCH MUST BE CLEAN, OIL FREE, WITH NO LOOSE MATERIAL.
- III) CONTRACTOR SHALL JACK OR PUSH CONDUITS DIRECTLY UNDER THE CURB AND GUTTER AND/OR VALLEY GUTTER.

5) BACKFILL PROCEDURES

THE BACKFILL MATERIAL MUST BE 1200-2000 PSI CONTROLLED LOW STRENGTH MATERIAL (CLSM) WITH SAND OR AN EQUIVALENT FLOWABLE TYPE BACKFILL AS SPECIFIED IN MAG SPECIFICATION SECTION 604, 701.3, AND 728. MICRO-TRENCHING AND CORES SHALL BE BACKFILLED BY THE END OF THE DAY FOLLOWING THE INSTALLATION OF THE NEW FACILITY. THIS BACKFILLING PROCESS MUST ADHERE TO THE FOLLOWING REQUIREMENTS:

- I) THE BACKFILL MUST BE PLACED IN A TRENCH FREE OF STANDING WATER.
- II) BEFORE PLACING ANY BACKFILL, REMOVE ALL LOOSE CONCRETE, ROCKS, TRASH, AND OTHER DEBRIS FROM THE EXCAVATION.
- III) SAND BEDDING IS NOT ALLOWED.
- IV) THE BACKFILL MUST BE PLACED USING AN ON-BOARD VIBRATOR THAT MATCHES THE MICRO-TRENCH WIDTH.
- V) THE BACKFILL MATERIAL MUST ADHERE TO MAG SPECIFICATION 604.1, MODIFIED TO REPLACE COARSE AGGREGATE WITH FINE AGGREGATE (SAND), AS SPECIFIED IN MAG SPECIFICATION SECTION 701.3

THE MATERIAL MUST ALSO:

- (A) FLOW FREELY TO THE TRENCH'S BOTTOM.
- (B) REMAIN STABLE UNDER TRAFFIC LOADS.
- (C) BE SUITABLE FOR THE ROAD ENVIRONMENT.
- (D) MEET PERFORMANCE TESTING PER MAG SPECIFICATION SECTION 604.4
- (E) MEET ACCEPTANCE PER MAG SPECIFICATION SECTION 604.5

VI) THE BACKFILL MATERIAL MUST BE 100% CURED BEFORE APPLYING THE ASPHALTIC SEALANT.

VII) IF TESTS OR INSPECTIONS REVEAL THAT THE BACKFILL FAILS TO MEET THE REQUIREMENTS MENTIONED ABOVE, THE BACKFILL WILL BE CONSIDERED UNACCEPTABLE AND MUST BE REMOVED AND REPLACED. ALL COSTS RELATED TO CORRECTIONS AND SUBSEQUENT TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR IF THE BACKFILL IS DEEMED UNACCEPTABLE AND/OR IF THE TRENCH IS BACKFILLED WITHOUT BEING INSPECTED BY THE CITY INSPECTOR.

VIII) THE ASPHALTIC SEALANT SHALL BE COMPLETED IN NO MORE THAN 7 CALENDAR DAYS AFTER THE PLACEMENT OF THE CLSM.



MICRO-TRENCH DETAILS - NOTES

OLD
M-66.11.02

DETAIL NO.
M-1702.18

6) ASPHALTIC SEALER/OVERBAND

THE ASPHALTIC SEALING MATERIAL, ALSO KNOWN AS AN OVERBAND, PLACED OVER THE TOP OF A MICRO-TRENCH SHALL CONFORM TO MAG STANDARD 337 AND BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS OR THE REQUIREMENTS OF THIS STANDARD, WHICHEVER IS MORE STRINGENT.

- I) THE SEALANT SHALL OVERLAY THE GROOVE LEAVING A MAXIMUM OVERBAND APPEARANCE OF 3-INCH WIDE (6-INCH WIDTH TOTAL) ON EACH SIDE OF THE EXCAVATION CENTERLINE.
- II) WHERE THE TRENCH IS ADJACENT TO CURB AND GUTTER OR OTHER CONCRETE SURFACE, THE SEALANT SHALL OVERLAY THE GROOVE LEAVING A MAXIMUM 3-INCH WIDE OVERBAND ON THE ASPHALT SURFACE.
- III) THE HEIGHT OF THE SEALANT ABOVE THE PAVEMENT SURFACE SHALL NOT EXCEED 1/8-INCH.
- IV) PAVEMENT PATCHES SHALL BE "SQUARED UP" AND NOT IRREGULAR IN SHAPE PER MESA STANDARD DETAIL M-1203.5 (OLD M-19.04.3).
- V) THE UTILITY POTHOLE-KEYHOLE METHOD, ALSO KNOWN AS CORE RESTORATION, SHALL CONFORM TO MAG DETAIL 212, TYPE B PAVEMENT REPAIR, MODIFIED FOR A MAXIMUM DIAMETER CORE OF 10-INCHES.
 - (A) IF THE PAVEMENT CORE IS FOUND FRACTURED OR DEFECTIVE UPON REMOVAL, OR IF IT BECOMES DAMAGED AFTER REMOVAL AND BEFORE REINSTATEMENT, THE DEFECTIVE OR DAMAGED CORE SHALL NOT BE USED TO RESTORE THE PAVEMENT.
 - (B) CLSM SHALL CONFORM TO M-1702.18 [OLD M-66.11.02(5)] AND BE PLACED TO TOP OF TRENCH, ALLOWING SPACE FOR ASPHALTIC SEALER.
 - (C) CONVENTIONAL POTHOLE RESTORATION SHALL CONFORM TO MESA STANDARD DETAIL M-1700.3 (OLD M-18.03) AND MAG DETAIL 212, TYPE A PAVEMENT REPAIR.
- VI) THE RESTORED SURFACE SHALL BE THOROUGHLY COMPACTED, SMOOTH AND TRUE TO GRADE AND CROSS-SECTION, AND FREE FROM RUTS, HUMPS, DEPRESSIONS, OR IRREGULARITIES. (MAG 336.2.4.1).
- VII) RESTORATION OF ANY DAMAGED TRAFFIC CONTROL DEVICES MUST BE COMPLETED, INCLUDING BUT NOT LIMITED TO, EMBEDDED LOOP DETECTORS AND PAVEMENT MARKINGS. DAMAGED LOOP DETECTORS SHALL BE REPLACED PER MESA STANDARD DETAILS M-1231 (OLD M-96.01) THROUGH M-1231.2 (OLD M-96.03).

7) SITE RESTORATION

- I) A CONTRACTOR PERFORMING CONSTRUCTION IN PUBLIC RIGHTS-OF-WAY (ROW) MUST RESTORE THE ROW TO A CONDITION EQUAL TO OR BETTER THAN THAT SPECIFIED IN THIS DETAIL OR OTHER APPLICABLE CITY DESIGN AND CONSTRUCTION STANDARDS.
- II) CONCRETE DAMAGE, POTHOLE EXCAVATIONS OR OTHER DAMAGE IN CONCRETE FACILITIES, SHALL BE SAW CUT AND REMOVED TO THE NEAREST JOINT. IF SIDEWALK PANELS ARE DAMAGED OR POTHOLED ACCORDING TO MESA STANDARD DETAIL M-1700.3 (OLD M-18.03), THEY MUST BE ENTIRELY REPLACED.

- III) TURF REPLACEMENT AND SOD MATCHING EXISTING TURF SHOULD BE USED AND CONFORM TO MAG STANDARD SPECIFICATION 430. RUTS SHOULD BE ELIMINATED, AND TOPSOIL MUST BE PREPARED TO CREATE A SMOOTH SURFACE DEVOID OF ROCKS AND GRAVEL.
- IV) ANY IRRIGATION SYSTEMS SHALL BE RESTORED PER MAG SPECIFICATION SECTION 440. ALL IRRIGATION SYSTEMS (I.E., SPRINKLER HEADS, BUBBLERS, EMITTERS, CONTROLS, ETC.) SERVING AN AREA AFFECTED BY THIS PROJECT SHALL BE RESTORED AS REQUIRED TO FACILITATE THE CONTINUED OPERATION FOR THEIR INTENDED USE. NEW SPRINKLER HEADS SHALL HAVE THE SAME PRECIPITATION OUTPUT AS THE EXISTING LAWN HEADS. ALL PIPING, PIPE FITTINGS, COUPLINGS, SPRINKLERS, EMITTERS, CONDUIT, SLEEVING, LOW VOLTAGE CONDUCTORS, SERVICE LINE CONDUCTORS, DRIP LINE, FIXTURES, ETC. USED IN THE REPAIR AND RESTORATION OF EXISTING SPRINKLER AND EMITTER SYSTEMS SHALL BE NEW, IN PERFECT CONDITION, AND SHALL COMPLY WITH MAG SPECIFICATION SECTION 757.
- V) FOR SYNTHETIC TURF, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR RESTORATION, ADHERING TO THESE ABBREVIATED STEPS:
 - (A) CLEAN THE SURFACE: BEGIN BY THOROUGHLY CLEANING THE SYNTHETIC TURF SURFACE. REMOVE DEBRIS, LEAVES, DIRT, AND DUST USING A LEAF BLOWER, BROOM, OR A GENTLE SPRAY OF WATER.
 - (B) APPLY INFILL: IF YOUR SYNTHETIC TURF HAS INFILL MATERIAL (LIKE SAND), CHECK IF IT NEEDS REPLENISHING. ADD THE APPROPRIATE AMOUNT OF INFILL TO MAINTAIN WEIGHT AND SUPPORT FOR THE TURF.
 - (C) REPAIR DAMAGES: INSPECT FOR DAMAGE SUCH AS TEARS, RIPS, OR LOOSE SEAMS. REPAIR DAMAGED AREAS AS PER THE MANUFACTURER'S GUIDELINES. SECURE SEAMS PROPERLY.
 - (D) DIRECTION OF GAUGES OR TUFTED FIBER: DETERMINE THE DIRECTION OF THE GAUGES OR TUFTED FIBER IN THE LAWN. ADD NEW SECTIONS IN THE CORRECT DIRECTION FOR A SEAMLESS APPEARANCE. ENSURE THAT BLADES AND STITCH PATTERNS FACE THE SAME DIRECTION.
 - (E) REMOVE STAINS: USE A MILD DETERGENT MIXED WITH WATER TO GENTLY SCRUB STAINED AREAS. RINSE THOROUGHLY WITH WATER TO REMOVE SOAP RESIDUE.
 - (F) RINSE AND DRAIN: RINSE THE ENTIRE TURF WITH WATER TO REMOVE CLEANING AGENTS OR DIRT. ENSURE PROPER DRAINAGE FROM THE SURFACE.
 - (G) GROOM THE TURF: USE THE BRUSH OR POWER BROOM TO GROOM THE TURF IN THE NATURAL DIRECTION OF THE BLADES. THIS HELPS FIBERS STAND UPRIGHT AND GIVES A REALISTIC APPEARANCE.

FOR GEOTEXTILE FABRIC, FOLLOW THE MANUFACTURER'S RECOMMENDATIONS FOR RESTORATION. HERE ARE THE ABBREVIATED STEPS:

- (A) GEOTEXTILE OR WEED BARRIER FABRIC, IS A SPECIALIZED MATERIAL DESIGNED FOR WEED CONTROL, EROSION PREVENTION, AND ENHANCED LANDSCAPING STABILITY. ENSURE THAT THE NEW GEOTEXTILE FABRIC MATCHES OR EXCEEDS THE QUALITY OF THE EXISTING FABRIC BEING REPLACED. THE WEIGHT PER SQUARE YARD SHOULD EXCEED THAT OF THE EXISTING GEOTEXTILE FABRIC.
- (B) BACKFILL AND COMPACT TRENCHES TO A MINIMUM OF 90% OF MAXIMUM DENSITY.





MICRO-TRENCH DETAILS - NOTES

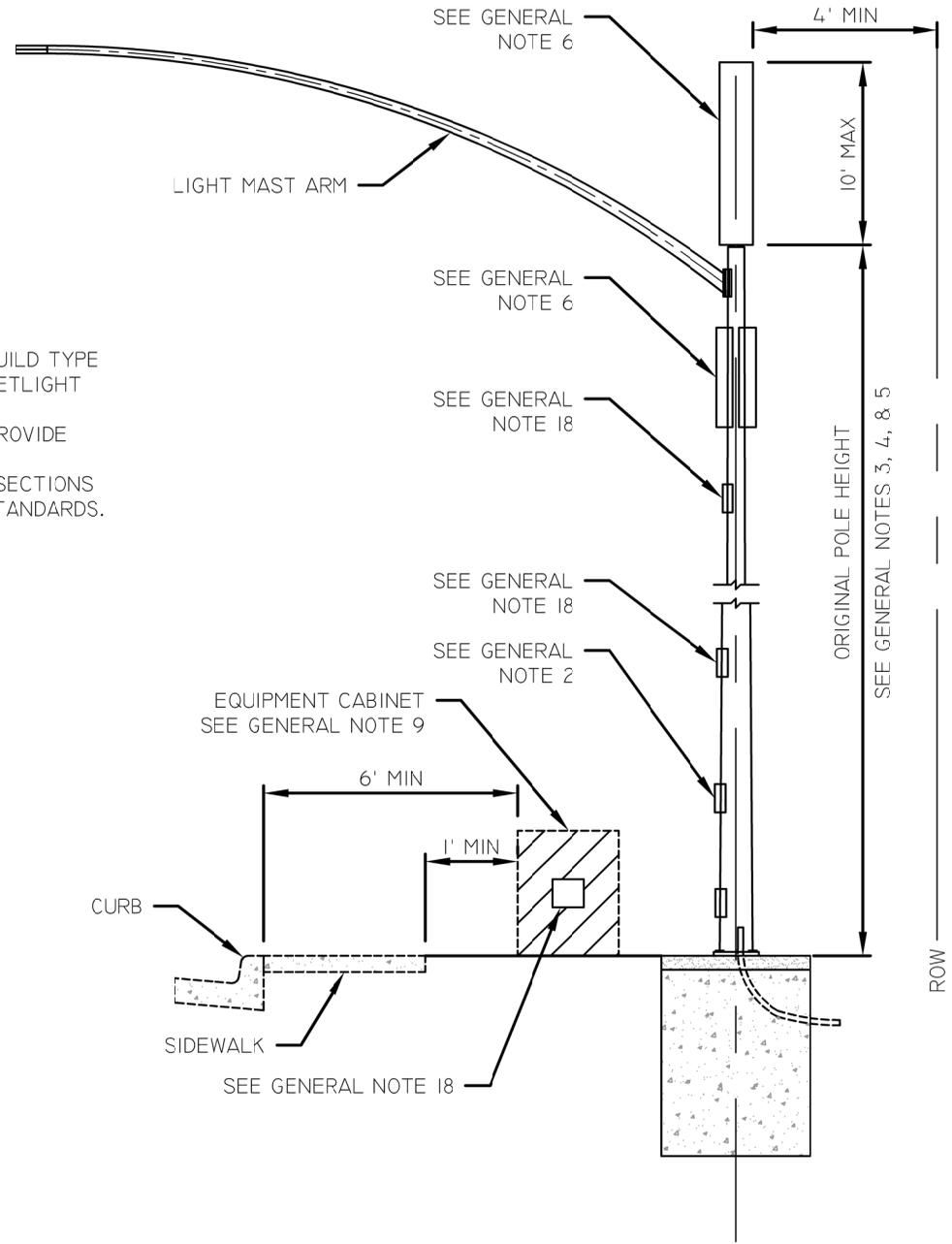
DETAIL NO.
M-1702.20

OLD
M-66.11.04

- (C) MAINTAIN A 6- TO 12-INCH OVERLAP BETWEEN EACH PIECE OF GEOTEXTILE FABRIC. FAILING TO OVERLAP THE MATERIAL COULD ALLOW WEEDS TO GROW BETWEEN THE GAPS.
- (D) SECURE THE LANDSCAPE FABRIC IN PLACE.
- (E) REMOVE WEEDS AND DEBRIS.
- (F) LEVEL THE SOIL SURFACE.
- (G) THE CONTRACTOR SHOULD MATCH THE EXISTING LANDSCAPE ROCK AND ROCK PATTERN, COVERING THE ENTIRE AREA WITH ROCK AND ENSURING NO GAPS WHERE THE GEOTEXTILE FABRIC IS EXPOSED.
- (H) UNLESS DIRECTED OTHERWISE BY THE CITY INSPECTOR, THE CONTRACTOR MUST COMPLETE ALL REPAIRS AND RESTORATION WORK ON DAMAGED OR DISTURBED LANDSCAPE IRRIGATION SYSTEMS, ELECTRICAL LINES, AND LIGHTING WITHIN 24 HOURS OF SUCH DAMAGE OR DISRUPTION.
- VI) RESTORATION WORK SHOULD BE CARRIED OUT PROMPTLY. UNSATISFACTORY RESTORATION OR DELAYED COMPLETION WILL LEAD TO A HALT IN ALL CONTRACTOR WORK ON THE OVERALL PROJECT. NO ADDITIONAL PERMITS WILL BE ISSUED UNTIL SATISFACTORY RESTORATION IS COMPLETED, INCLUDING PREVIOUSLY PERMITTED BUT UNFINISHED WORK.

NOTES

1. SEE GENERAL NOTES ON COM DETAIL M-1703.4 (OLD M-112.01.5).
2. STREETLIGHT CONSTRUCTION AND POLE REPLACEMENT SHALL MATCH BUILD TYPE OF EXISTING STREETLIGHT POLES PER APPLICABLE CITY OF MESA STREETLIGHT TECHNICAL MANUAL SPECIFICATIONS SL-73.01.1 THROUGH SL-73.09.4.
3. DECORATIVE POLE DESIGNS REQUIRE APPROVAL PRIOR TO SUBMITTAL. PROVIDE PROPOSED DESIGN TO SWFMESA@MESAAZ.GOV.
4. STREETLIGHT INSTALLATION LOCATION SHALL DEPEND ON APPLICABLE SECTIONS 914.10 THROUGH 914.13 OF THE CITY OF MESA ENGINEERING & DESIGN STANDARDS.

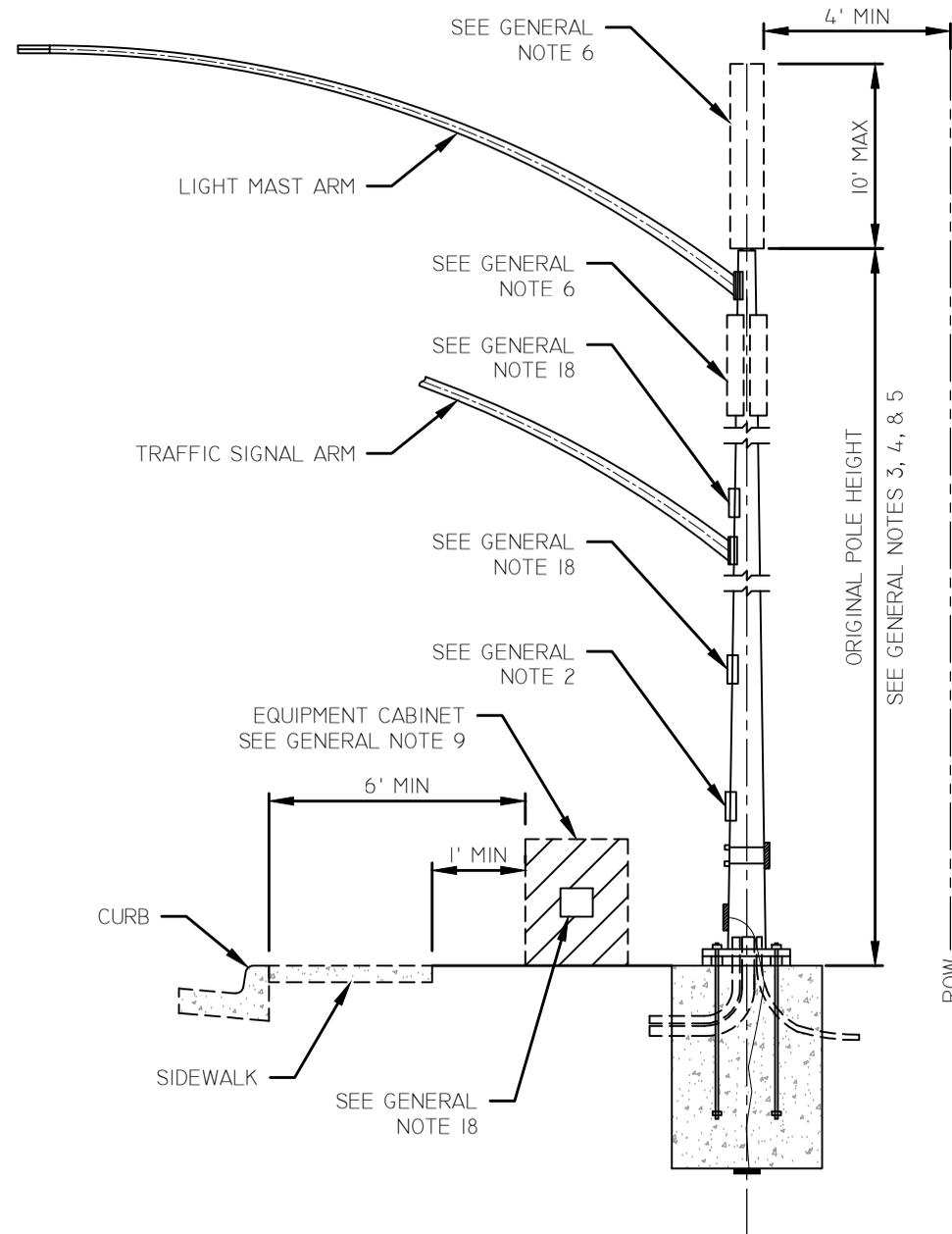


SMALL WIRELESS FACILITIES
STREETLIGHT POLE ATTACHMENT

NOT TO SCALE

NOTES

1. SEE GENERAL NOTES ON COM STANDARD DETAIL M-1703.4 (OLD M-112.01.5).
2. TRAFFIC SIGNAL CONSTRUCTION AND POLE REPLACEMENT SHALL MATCH BUILD TYPE OF EXISTING TRAFFIC SIGNAL POLES PER APPLICABLE COM DETAILS AND M-1229.2 (OLD M-94.03) THROUGH M-1229.6 (OLD M-94.06) AND M-1227.2 (OLD M-92.03).

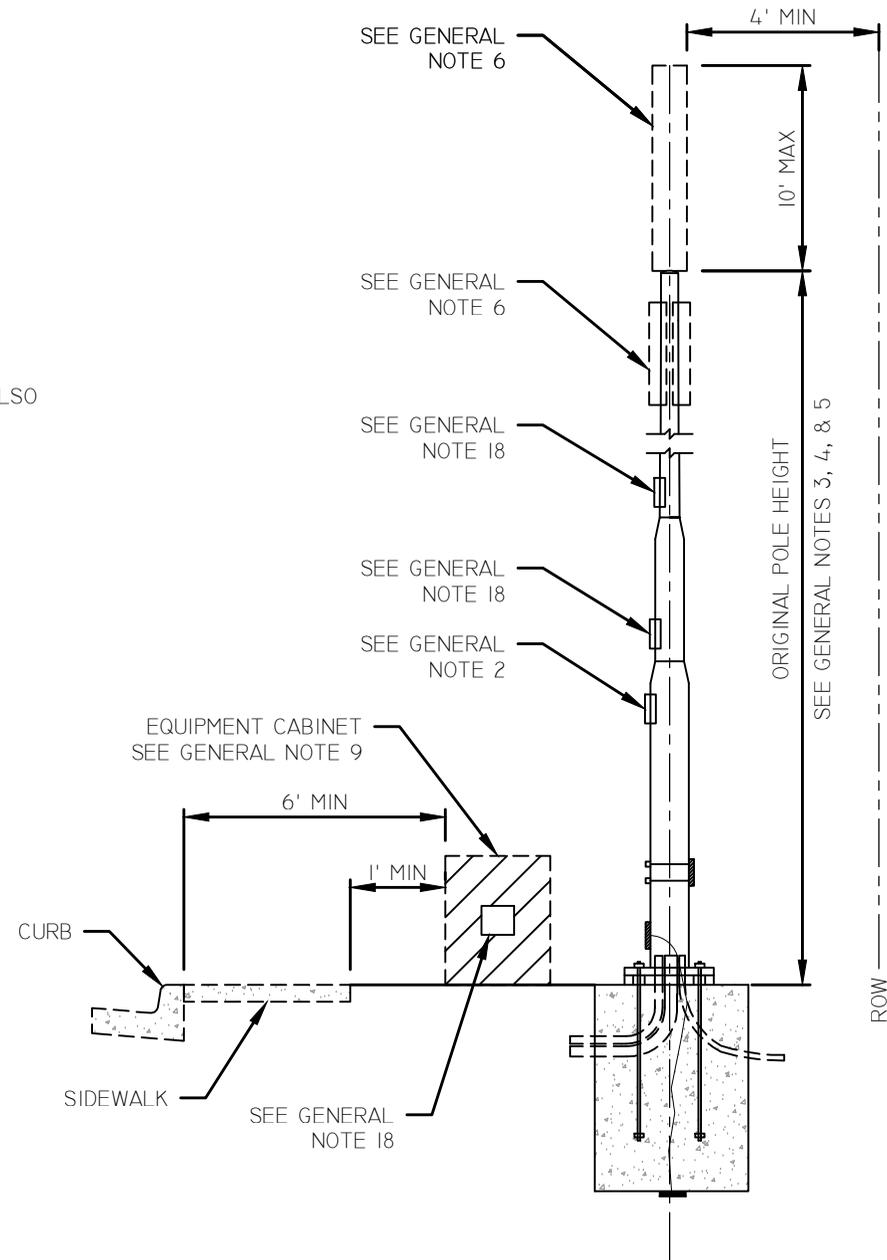


SMALL WIRELESS FACILITIES
TRAFFIC SIGNAL POLE ATTACHMENT

NOT TO SCALE

NOTES

1. SEE GENERAL NOTES ON COM DETAIL M-1703.4 (OLD M-112.01.5).
2. ALL REPLACEMENT INFORMATION TECHNOLOGY SERVICES MONO-POLES SHALL ALSO INCLUDE ANY CAMERAS, PHOTO-CELL OR SENSORS AS REQUIRED.



SMALL WIRELESS FACILITIES CITY
MONO-POLE ATTACHMENT

NOT TO SCALE

NOTES

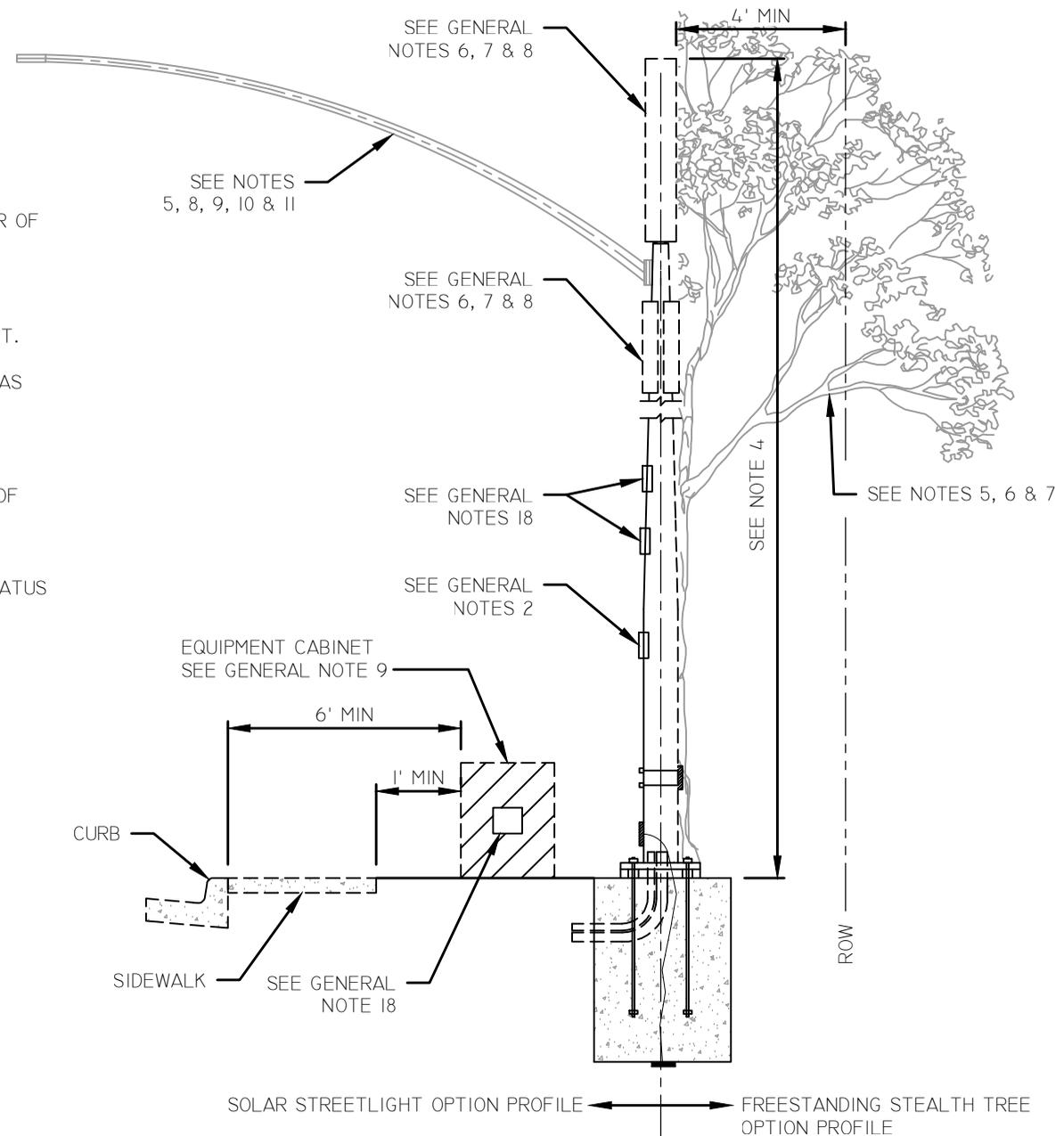
1. SEE GENERAL NOTES ON COM DETAIL M-1703.4 (OLD M-112.01.5).
2. THE MONOPOLE SHALL BE A SELF-SUPPORTING FREE STANDING STRUCTURE. THE DIAMETER OF THE MONOPOLE AND SWF SHALL BE A MAXIMUM OF 40 INCHES.
3. THE MONOPOLE SHALL NOT EXTEND ABOVE THE HEIGHT OF THE TALLEST EXISTING POLE WITHIN 500 FEET BY MORE THAN TEN (10) FEET AT A MAXIMUM OF 50 FEET.
4. MONOPOLE SHALL BE LOCATED PER THE CITY OF MESA ZONING ORDINANCE, CITY OF MESA ENGINEERING DESIGN STANDARDS AND FCC REQUIREMENTS, WHICHEVER IS MOST STRINGENT.
5. ALL MONOPOLES TO BE CONCEALED AS PLANT OF SIMILAR HEIGHT SELECTED FROM THE ACCEPTABLE PLANT LIST IN THE CITY OF MESA LANDSCAPE & IRRIGATION STANDARDS OR AS LIGHT POLE OF SIMILAR HEIGHT.

FREESTANDING STEALTH TREE

6. FAUX TREES MUST BE DESIGNED WITH A MINIMUM OF 3.5 BRANCHES PER FOOT FOR FULL DENSITY COVERAGE WITH LIMITED SPACING BETWEEN THE BRANCHES. SEVENTY PERCENT OF THE BRANCHES SHALL BE 8-FOOT OR LONGER.
7. BRANCHES SHALL EXTEND BEYOND THE LENGTH OF THE ANTENNA BY A MINIMUM OF 24-INCHES. TREES SHALL BE DESIGNED TO MIMIC THE NATURAL APPEARANCE OF THEIR SPECIES. THERE SHALL BE NO GAPS IN BRANCH COVERAGE. NO EXPOSED MOUNTING APPARATUS MAY REMAIN WITHOUT THE ASSOCIATED ANTENNAE.

SOLAR STREETLIGHT

8. MONOPOLE STREETLIGHT FIXTURE TO BE SOLAR POWERED AND MAINTAINED BY LICENSEE.
9. MONOPOLE STREETLIGHT TO MEET THE REQUIREMENTS OF COM DETAIL M-1229.8 (OLD M-94.08).
10. STREETLIGHT FOUNDATION TO MEET THE REQUIREMENTS OF CITY OF MESA STREETLIGHT TECHNICAL MANUAL SL-74.08.
11. STREETLIGHT MAST ARM TO MEET THE APPLICABLE REQUIREMENTS OF CITY OF MESA STREETLIGHT TECHNICAL MANUAL SL-73.01.1 THROUGH SL-73.09.4.

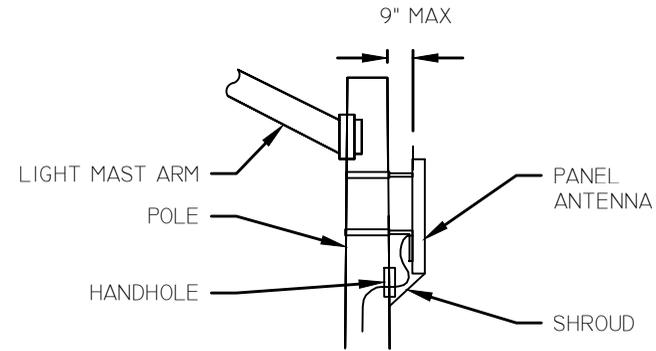


SMALL WIRELESS FACILITIES PRIVATE
MONO-POLE

NOT TO SCALE

GENERAL NOTES

1. A SMALL WIRELESS FACILITY (SWF) CONSISTS OF AN ANTENNA OR ANTENNAS THAT ARE NOT MORE THAN SIX CUBIC FEET IN VOLUME AND ALL OTHER WIRELESS EQUIPMENT ASSOCIATED WITH THE FACILITY LESS THAN TWENTY-EIGHT CUBIC FEET IN CUMULATIVE VOLUME PER A.R.S. 9-591.
2. EACH SWF SHALL BE IDENTIFIED BY A PERMANENTLY INSTALLED STAINLESS STEEL TAG, NO LARGER THAN FOUR (4) BY SIX (6) INCHES MOUNTED FIVE (5) FEET ABOVE GRADE, CLEARLY IDENTIFYING THE WIRELESS COMMUNICATIONS SERVICE PROVIDER'S NAME, ADDRESS, EMAIL CONTACT AND EMERGENCY PHONE NUMBER.
3. EACH SITE LICENSE LOCATION SHALL RECEIVE A NEW REPLACEMENT POLE PROVIDED BY THE WIRELESS COMMUNICATIONS SERVICE PROVIDER LOCATED NO MORE THAN FIVE (5) FEET FROM EXISTING LOCATION OR AS DIRECTED BY THE CITY OF MESA TRAFFIC ENGINEER.
4. THE REPLACEMENT POLE AND SWF SHALL NOT INCREASE THE DIAMETER OF THE EXISTING POLE BY MORE THAN SIXTY (60) PERCENT.
5. THE SWF OR REPLACEMENT POLE SHALL NOT EXTEND ABOVE THE HEIGHT OF THE EXISTING POLE BY MORE THAN TEN (10) FEET NOT TO EXCEED 50 FEET ABOVE GROUND LEVEL.
6. ANTENNAS SHALL BE LIMITED TO SNUG-MOUNT, CANISTER-MOUNT OR CONCEALED ANTENNA. PANEL ANTENNAS SHALL BE LOCATED NO MORE THAN 9" FROM THE FACE OF THE POLE. ONLY CANISTER-MOUNT OR CONCEALED ANTENNAS SHALL BE ALLOWED IN RESIDENTIAL AREAS. ALL PENETRATIONS SHALL BE SEALED TO PREVENT THE INFILTRATION OF WATER OR PESTS.
7. ANTENNAS SHALL BE MOUNTED WITH NO DOWN TILT.
8. ALL ANTENNAS WITH EXPOSED CABLES SHALL HAVE A SHROUD INSTALLED ON THE ANTENNA OR ANTENNA MOUNTING POSTS TO CONCEAL THE CABLES. SHROUD SHALL BE A FORTY-FIVE (45) DEGREE ANGLE AWAY FROM THE BOTTOM OF THE ANTENNA TOWARD THE POLE.
9. ALL REPLACEMENT POLES AND EQUIPMENT SHALL BE INSTALLED IN A LOCATION THAT DOES NOT IMPAIR OR INTERFERE WITH SIGHT VISIBILITY TRIANGLES (SVT) PER SECTION 211 OF THE CITY OF MESA ENGINEERING & DESIGN STANDARDS.
10. EQUIPMENT OTHER THAN ANTENNA SHALL BE LOW-PROFILE AND PAD-MOUNTED UNLESS OTHERWISE APPROVED BY THE CITY OF MESA.
11. THE POWER FOR THE SWF SHALL BE INDEPENDENT OF THE CITY OF MESA ASSET AND METERED SEPARATELY.
12. ALL WIRING SHALL BE LOCATED INSIDE A CONDUIT, INSIDE THE POLE, AND SEPARATE FROM THE CITY OF MESA CABLING.
13. ALL ELECTRICAL WORK MUST FOLLOW THE MOST CURRENT ADOPTED NATIONAL ELECTRIC CODE.
14. ALL DISTURBED LANDSCAPE AND IRRIGATION SYSTEMS SHALL BE REPLACED OR REPAIRED IN-KIND.
15. EXISTING POLE, MAST ARM AND ALL ASSOCIATED EQUIPMENT TO BE SALVAGED AND RETURNED TO THE CITY OF MESA. THE CONTRACTOR SHALL REMOVE THE FOUNDATION ENTIRELY AND BACKFILL PER MAG STANDARD DETAIL 200-1. THE REMOVAL AND SALVAGE LOCATION SHALL BE COORDINATED WITH THE CITY OF MESA CONSTRUCTION INSPECTOR.
16. PROVIDE ILLUMINATED ENERGY ISOLATING DEVICE (KILL SWITCH) AT EACH SWF PER CITY OF MESA ENGINEERING & DESIGN STANDARDS SECTION 713.
17. SCREENING MATERIAL SHALL BE MINIMUM 1/8" THICK STEEL PANELS WITH ROUTED PATTERN. PATTERN TO BE AS SHOWN OR APPROVED EQUAL. FINAL PAINT COLOR TO BE SPECIFIED AS PER EACH LOCATION BY THE CITY OF MESA.
18. EACH SWF SHALL HAVE PERMANENTLY INSTALLED STAINLESS STEEL TAGS FOR SAFETY AND KILL SWITCH IDENTIFICATION PURPOSES PER FCC REGULATION 47 CFR 1.1307(B), OSHA REGULATION 1910.145, AND CITY OF MESA ENGINEERING & DESIGN STANDARDS SECTION 713. THESE REGULATIONS ARE SUBJECT TO CHANGE, AND THE SIGNS SHOWN HERE ARE FOR REFERENCE ONLY. WHENEVER A SAFETY SIGN IS NECESSARY, TWO SIGNS SHALL BE PLACED 180 DEGREES APART.
19. THE TOP OF THE FOUNDATION SHALL MATCH ELEVATION OF BACK OF SIDEWALK OR BACK OF CURB IF NO SIDEWALK IS PRESENT.
20. LICENSEE SHALL PROVIDE A PHILIPS CITY TOUCH CONNECTOR NODE PER THE CITY OF MESA ENGINEERING & DESIGN STANDARDS SECTION 908.5.



EQUIPMENT MOUNTING DETAIL



SAFETY AND KILL SWITCH SIGN DETAILS



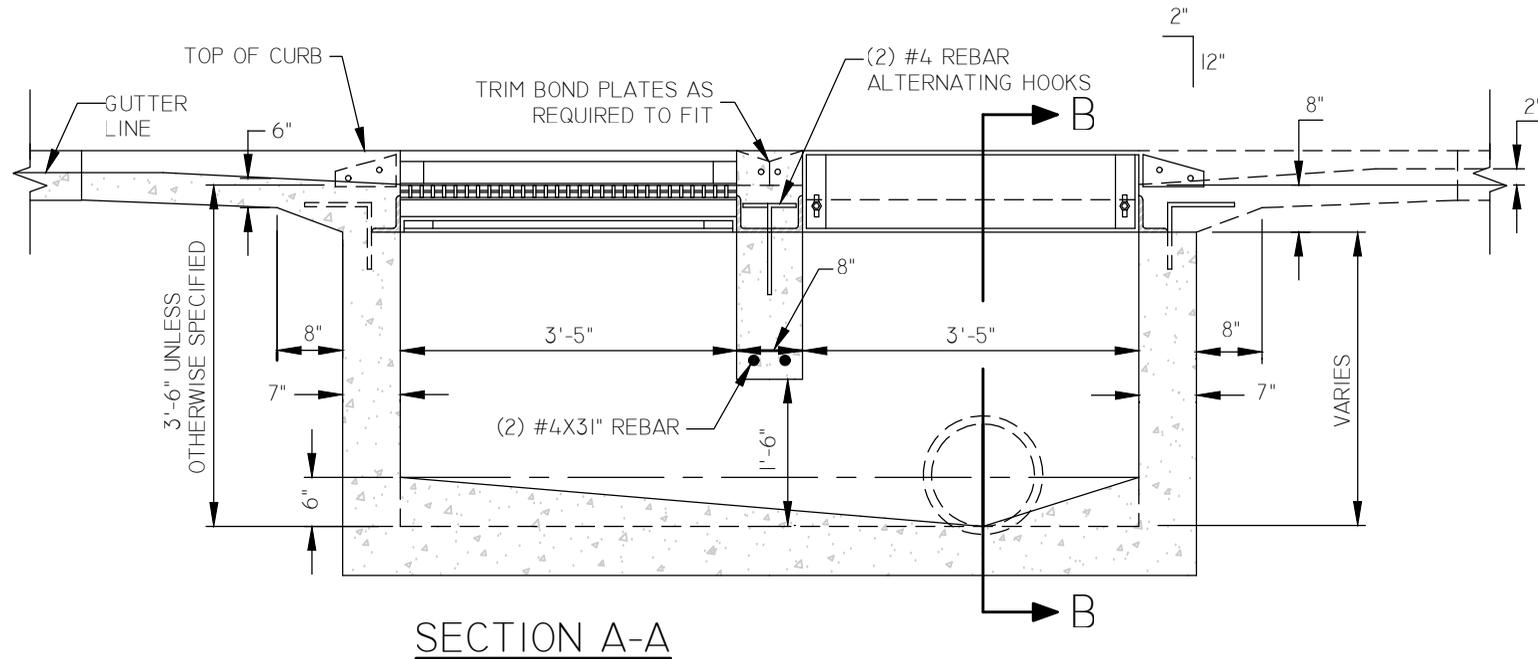
EQUIPMENT SCREENING DETAIL

NOT TO SCALE

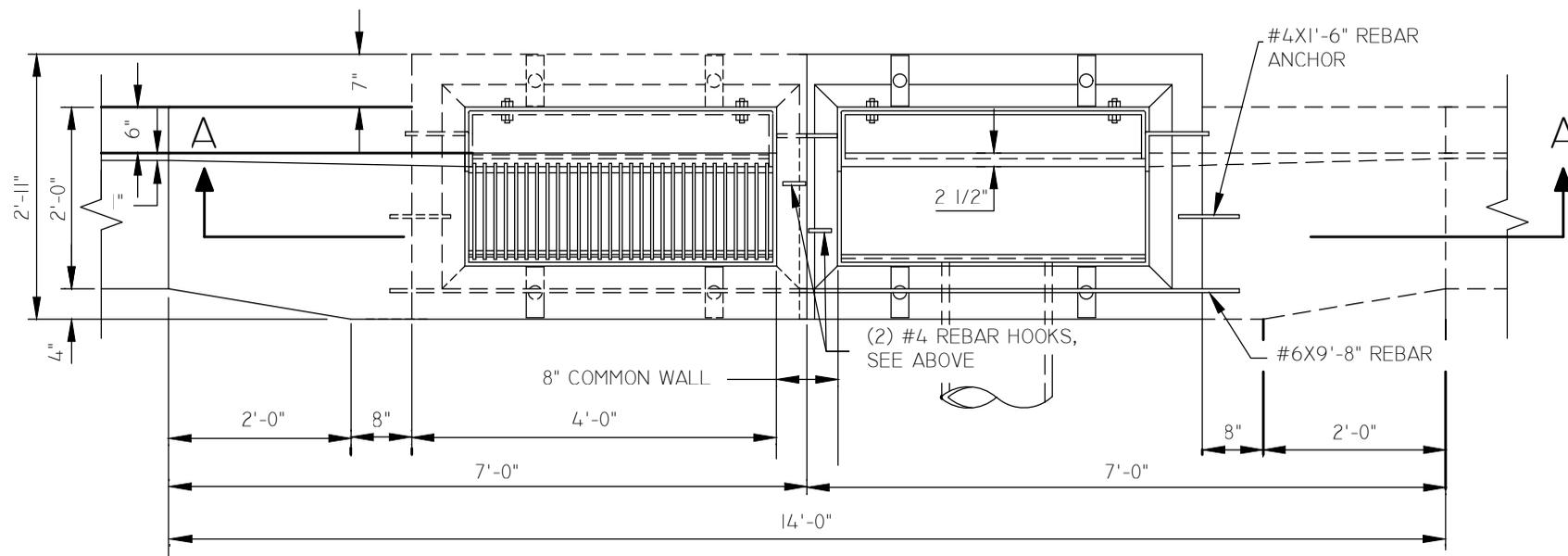
NOTES

1. ADJUSTABLE CURB, FRAME, AND GRATING UNITS SHALL COMPLY WITH MAG STD DETAIL 534
2. PIPE MAY ENTER OR LEAVE ANY WALL. BOTTOM OF BOX TO BE SLOPED TO OUTLET PIPE FROM ALL DIRECTIONS AND TROWELLED TO A HARD SMOOTH SURFACE.
3. CONNECTION PIPES MAY BE PLACED IN ANY POSITION AROUND THE WALLS PROVIDED THE POSITION IS CONSISTENT WITH THE PLAN
4. OUTLET PIPE SHALL BE TRIMMED TO FINAL SHAPE AND LENGTH BEFORE CONCRETE IS POURED.
5. ALL STRUCTURAL STEEL TO BE PAINTED ONE SHOP COAT OF NO. 1 D PAINT AND TWO FIELD COATS OF NO. 10 PAINT PER MAG SECTION 790.
6. ALL REINFORCING TO HAVE A MINIMUM OF 2" COVER.
7. FOR DETAIL OF CURB FRAME, GRATING AND ANCHORS REFER TO MAG STD DETAIL 534-2, 534-3, OR THE VANE DETAIL OF 534-5.25.
8. ALL CONCRETE SHALL BE CLASS 'A' PER MAG SECTION 7

FOR SECTION B-B, SEE
MAG STD DETAIL 534-1



SECTION A-A



HALF PLAN GUTTER & GRATE

HALF PLAN FRAME & ANCHORS