Mesa Standard Details & Specifications

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

EFFECTIVE DATE April 15, 2019

AVAILABLE ON-LINE WWW.MESA AZ.GOV/ENGINEERING
### 2019 City of Mesa Amendments to MAG Specifications and Standard Details Revisions

<table>
<thead>
<tr>
<th>Spec/Detail</th>
<th>Name</th>
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<tr>
<td>M-1.01</td>
<td>SHEET INDEX TO MESA STANDARD DETAILS</td>
<td>Updated</td>
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<tr>
<td>M-1.02</td>
<td>SHEET INDEX CONTINUED</td>
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<tr>
<td>M-1.03</td>
<td>SHEET INDEX CONTINUED</td>
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<tr>
<td>M-1.04</td>
<td>SHEET INDEX CONTINUED</td>
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<td>M-1.05</td>
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<td>M-1.06</td>
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<td>M-1.07</td>
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<tr>
<td>M-15.01</td>
<td>SPEED HUMP AND SPEED CUSHION PAVEMENT MARKINGS</td>
<td>Revised note 4- updated ADOT reference</td>
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<tr>
<td>M-19.01</td>
<td>TYPICAL STREET SECTION</td>
<td>Deleted note 7.</td>
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<tr>
<td>M-19.04.1</td>
<td>STANDARD TRENCH BACKFILL DETAIL ARTERIAL, COLLECTOR &amp; LOCAL</td>
<td>Clarified backfill, compaction and pay width requirements.</td>
</tr>
<tr>
<td>Standard</td>
<td>Description</td>
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<tr>
<td>M-19.04.2</td>
<td>STANDARD TRENCH BACKFILL DETAIL - NOTES</td>
<td>Revised notes 2, 3, 6, &amp; 10 to clarify pavement width requirements.</td>
</tr>
<tr>
<td>M-27.01.1</td>
<td>FIRE-RATED WATER METER ASSEMBLY, 4” AND LARGER</td>
<td>Revised key note 1 &amp; 11. Added key note 14. Modified DIP tee with 2” reducing blind flange and added locking curb stop to detail.</td>
</tr>
<tr>
<td>M-27.01.2</td>
<td>FIRE-RATED WATER METER ASSEMBLY, 4” AND LARGER - NOTES</td>
<td>Moved table from M-27.01.1 to this detail and modified. Revised note 3.</td>
</tr>
<tr>
<td>M-27.02.1</td>
<td>MANIFOLDED 6” WATER METER ASSEMBLY</td>
<td>Revised key note 1 &amp; 4. Added key note 14 and bubble note 14 to detail.</td>
</tr>
<tr>
<td>M-27.02.2</td>
<td>MANIFOLDED 6” WATER METER ASSEMBLY - NOTES</td>
<td>Revised note 4.</td>
</tr>
<tr>
<td>M-28.01.1</td>
<td>NON-FIRE-RATED WATER METER ASSEMBLY, 4” AND 6”</td>
<td>Revised note 1 and moved table to M-28.01.2. Revised note 6 &amp; 12. Replace double strap bronze saddle with DIP tee 2” reducing blind flange on detail. Replaced DIP spool with DIP tee in center of assembly.</td>
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<tr>
<td>M-28.01.2</td>
<td>NON-FIRE-RATED WATER METER ASSEMBLY, 4” AND 6” - NOTES</td>
<td>Moved table from M-28.01.1 to this detail and modified. Revised note 5.</td>
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<tr>
<td>M-32</td>
<td>GUARD POST FOR BACKFLOW PREVENTION DEVICES</td>
<td>Replaced safety post detail with note and reference to MAG.</td>
</tr>
<tr>
<td>M-34</td>
<td>GASKETED SEWER FITTINGS</td>
<td>Revised note 4 to remove reference to native material</td>
</tr>
<tr>
<td>M-38.01</td>
<td>2” AIR/VACUUM RELEASE VALVE</td>
<td>Revised note 4 to clarify orientation.</td>
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<tr>
<td>M-42</td>
<td>COMMERCIAL, INDUSTRIAL AND APARTMENT DRIVEWAY DETAIL</td>
<td>Revised note 3. Modified single driveway detail for attached sidewalk. Former detail 42.03 information added into this detail to show attached sidewalk thickness requirement.</td>
</tr>
<tr>
<td>M-44.02</td>
<td>SIDEWALK RAMPS – TYPE A</td>
<td>This detail combines detail M-44.02.1. and M-44.02.2.</td>
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<tr>
<td>M-44.03</td>
<td>SIDEWALK RAMPS – TYPE B</td>
<td>Deleted radius/ramp table from detail. Refer to Engineering Design Manual.</td>
</tr>
<tr>
<td>M-47.02</td>
<td>RIGHT TURN TRAP LANE TREATMENTS</td>
<td>Revised note 1 to clarify that this detail applies to trap lanes only.</td>
</tr>
<tr>
<td>M-49.03</td>
<td>SINGLE AND MANIFOLD WATER METER INSTALLATIONS</td>
<td>Revised note 2 to clarify that service lines are included in the detail.</td>
</tr>
<tr>
<td>M-53</td>
<td>WATER &amp; SEWER SERVICE STANDARDS FOR RESIDENTIAL SMALL LOT / MULTI - LOT PRIVATE</td>
<td>Revised note 7.</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
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<td>-------------------------------------------------------------------------------</td>
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<tr>
<td>M-62.01</td>
<td>STANDARDS FOR SOLID WASTE VEHICLE ACCESS</td>
<td>Revised note 4 regarding gate openings. Expanded detail to show closed loop of direction arrows.</td>
</tr>
<tr>
<td>M-62.05</td>
<td>STORAGE AREA SCREEN WALLS – BARREL SERVICE</td>
<td>Revised note 1 &amp; 5.</td>
</tr>
<tr>
<td>M-62.07</td>
<td>RESIDENTIAL SOLID WASTE GUIDELINES</td>
<td>Revised note 8.</td>
</tr>
<tr>
<td>M-62.08</td>
<td>BARREL COLLECTION PADS AT SMALL LOT/MULTILOT WITH PRIVATE DRIVES</td>
<td>Revised note of variable street width to correct detail number in reference.</td>
</tr>
<tr>
<td>M-66.07.5</td>
<td>STANDARD FIBER OPTIC DUCT BANK CONFIGURATIONS</td>
<td>Added note 2. Added section view directions to clarify detail.</td>
</tr>
<tr>
<td>M-90.01</td>
<td>TRAFFIC SIGNAL GENERAL NOTES I</td>
<td>Verified all web sites were noted correctly.</td>
</tr>
<tr>
<td>M-90.02</td>
<td>TRAFFIC SIGNAL GENERAL NOTES II</td>
<td>Vehicle Signal Indications- Corrected spelling error on note 3. Verified all web sites were noted correctly.</td>
</tr>
<tr>
<td>M-90.03</td>
<td>TRAFFIC SIGNAL GENERAL NOTES III</td>
<td>Corrected spelling of web site noted in the footnote.</td>
</tr>
<tr>
<td>M-91.01</td>
<td>TRAFFIC SIGNAL FULLY METERED SERVICE PEDESTAL</td>
<td>Front View Drawing- revised Ground Rod notation. Wiring Schematic- removed PEC and added a terminal block.</td>
</tr>
<tr>
<td>M-91.02</td>
<td>TRAFFIC SIGNAL SPLIT METERED SERVICE PEDESTAL</td>
<td>Front View Drawing- revised Ground Rod notation. Wiring Schematic- removed PEC and added a terminal block.</td>
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<tr>
<td>M-92.03</td>
<td>POLE, PULL BOX &amp; FOUNDATION GROUNDING</td>
<td>General Notes #1- changed #8 to #6 AWG.</td>
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<tr>
<td>M-93.02</td>
<td>TRAFFIC SIGNAL FIBER OPTIC INSTALLATION</td>
<td>Changed Reference number in text.</td>
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<tr>
<td>M-93.03</td>
<td>FIBER OPTIC TRUNK-LINE CONDUIT INSTALLATION DETAILS</td>
<td>Changed Reference number in text.</td>
</tr>
<tr>
<td>Document Code</td>
<td>Description</td>
<td>Changes and Notes</td>
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<tr>
<td>M-94.02</td>
<td>BIKE PUSH BUTTON INSTALLATION</td>
<td>General Notes #2- removed “C” pole reference and added Bicycle/Pedestrian Pole.</td>
</tr>
<tr>
<td>M-94.05</td>
<td>CITY OF MESA TRAFFIC SIGNAL POLE DETAILS</td>
<td>End of Signal Mast Arm Tenon View detail- removed “Black”.</td>
</tr>
<tr>
<td>M-94.06</td>
<td>CITY OF MESA TRAFFIC SIGNAL POLE GENERAL NOTES</td>
<td>Pole Type Chart- added JMod, KMod and LMod, plus there 15’ dimensions to chart. General Notes #6- revised note about anchor bolt information.</td>
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<tr>
<td>M-94.08</td>
<td>CITY OF MESA TYPE “ITS” POLE NOTES</td>
<td>General Notes #6- revised note about anchor bolt information.</td>
</tr>
<tr>
<td>M-94.10</td>
<td>TRAFFIC SIGNAL MAST ARM PELOCO MOUNT</td>
<td>Corrected drawing Product number to AB-3053.</td>
</tr>
<tr>
<td>M-95.01</td>
<td>SIGNAL POLE DRILLING DETAIL</td>
<td>Added “FY” to the mounting height chart.</td>
</tr>
<tr>
<td>M-95.03</td>
<td>TYPE “S” CLUSTER HEAD</td>
<td>2- Way Top Assembly Wiring Detail- removed. Back View Added Factory wiring terminal block notation.</td>
</tr>
<tr>
<td>M-95.05</td>
<td>TYPE “S” AND “T” CLUSTER HEAD GENERAL NOTES</td>
<td>General Note #5- revised note to include terminal block. General Note #6- deleted.</td>
</tr>
<tr>
<td>M-95.06</td>
<td>ADA PUSH BUTTON</td>
<td>Revised drawing notation- not #8-32, is #10-32. General Notes #4- revised note about #8-32 to #10-32.</td>
</tr>
<tr>
<td>M-95.08</td>
<td>LED ILLUMINATED STREET NAME SIGN DIMENSIONS</td>
<td>Drawing dimensions were not readable, corrected.</td>
</tr>
<tr>
<td>M-95.09</td>
<td>LED ILLUMINATED STREET NAME SIGN SUPPORT STRUCTURE NOTES</td>
<td>Materials Note #1- revised web site URL. Footnote- corrected web site spelling.</td>
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<tr>
<td>M-96.01</td>
<td>DETECTOR LOOP INSTALLATION DETAILS</td>
<td>Detail 1 was bold, removed the bold face type.</td>
</tr>
<tr>
<td>Reference</td>
<td>Description</td>
<td>Notes/detail</td>
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<tr>
<td>M-96.05</td>
<td>VIDEO DETECTION CAMERA INSTALLATION</td>
<td>Drawing- added Video Detection Camera Installation on Luminaire Mast Arm.</td>
</tr>
<tr>
<td>M-97.02</td>
<td>GENERAL CABLE AND WIRING NOTES</td>
<td>General Note #12- changed #10 to #8 AWG.</td>
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<tr>
<td>M-97.04</td>
<td>25 CONDUCTOR CABLE #2</td>
<td>Changed Signal Common to Spare.</td>
</tr>
<tr>
<td>M-97.05</td>
<td>25 CONDUCTOR CABLE #1 AND #2 GENERAL NOTES</td>
<td>Detail was not included last year, it needs to be included. Sheet left blank for future information.</td>
</tr>
<tr>
<td>M-99.01</td>
<td>PUSH BUTTON STATION SIGN</td>
<td>Both Drawing- revised Brass Grommets in holes for #12 bolts.</td>
</tr>
<tr>
<td>M-105.01</td>
<td>LANDSCAPE IRRIGATION REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY - 2” AND SMALLER</td>
<td>Revised notes 7 &amp; 8 regarding painting requirements.</td>
</tr>
<tr>
<td>M-106.02</td>
<td>TYPICAL LANDSCAPE IRRIGATION THRUST BLOCK DETAILS</td>
<td>Revise note 2 to clarify applicability of detail.</td>
</tr>
</tbody>
</table>
Mesa Standard Specifications

Amendments to MAG Uniform Standard Specifications for Public Works Construction

EFFECTIVE DATE April 15, 2019

MESAAZ.GOV/ENGINEERING

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

EFFECTIVE DATE April 15, 2019
The City of Mesa Standard Specifications for Public Works Construction shall be in accordance with the 2019 Revision to the 2015 edition of the Uniform Standard Specifications for Public Works Construction as sponsored by the Maricopa Association of Governments (www.marag.maricopa.gov), 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:

106.2.1 General:

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

“Quality Control (QC) Testing” is testing performed to assure the materials installed comply with the requirements set forth in City standards and the Contract Documents.

“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 and the Contract Documents.

For City of Mesa projects (where the City of Mesa is the Contracting Agency), 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 of Mesa is not the Contracting Agency ("non-City projects"), the person or entity holding the City of Mesa 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, that for “non-City projects” these responsibilities are ultimately incumbent on the permit holder.

Requirements related to minimum QC testing, including required minimum testing frequencies, are set forth herein. The City may also elect to perform independent QA testing for any project or permit. The City will typically perform QA testing at a frequency of approximately one QA sample for every four QC samples. However, the City may deviate from this frequency (either to increase or decrease it) at the City’s own discretion.

The Contractor (whether the City’s Contractor or the Permittee’s Contractor) shall provide all support necessary to 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 National Bureau of Standards in the National Voluntary Laboratory Accreditation Program (NVLAP) for construction services or the AASHTO Accreditation Plan (AAP) for Soils, Asphalt and Concrete.

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 NICET Level II, Arizona Technical Testing Institute, American Concrete Institute, or other nationally recognized program applicable to the project and approved by the City of Mesa. All personnel performing field testing or sampling shall carry copies of their 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 or sampling done by that entity.

Prior to the start of any construction, the Contractor shall give the City Inspector a schedule of the proposed testing and the name of the laboratory that will perform the work, along with evidence of the required 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:

1. Order the Contractor to replace ineffective or unqualified quality control personnel.
2. Order the Contractor to stop 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 of Mesa 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 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:

The Contractor shall establish a system acceptable to the City to record and report all material test results. The daily test reports shall include but not be limited to:

1. Test designation
2. Date of test
3. Name of tester
4. Location of test/sample (station and offset)
5. Product suppliers and project codes (as applicable)
6. Depth/elevation of test/sample
7. Test result
8. Control requirement(s)
8. Cause of rejection (if applicable)  
9. Results of retests (if applicable)  
10. Remedial action (if applicable)  

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. If the minimum number of tests has not been performed per the QCTP, this shall be stated in the weekly summary report with an explanation of the circumstances. 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 two bound, hard copies of the test results showing the results of all of the testing completed for the permit or project. 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. Hard copies of all of the 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>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
<th>Frequency</th>
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<tbody>
<tr>
<td><strong>STREET SUBGRADE</strong></td>
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</tr>
<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>Moisture Density Relationship</td>
<td>T99 &amp; T224</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 250 linear feet per traffic lane or portion thereof (notes 1 &amp; 4)</td>
</tr>
<tr>
<td><strong>CURB &amp; GUTTER SUBGRADE OR SIDEWALK SUBGRADE</strong></td>
<td></td>
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</tr>
<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
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<td>T99 &amp; T224</td>
<td>1 per soil type</td>
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<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 250 linear feet per traffic lane or portion thereof (notes 1 &amp; 4)</td>
</tr>
<tr>
<td><strong>STRUCTURE FOUNDATION – SUBGRADE (if required)</strong></td>
<td></td>
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<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>Moisture Density Relationship</td>
<td>T99 &amp; T224</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 250 square feet (if required) (notes 1 &amp; 4)</td>
</tr>
<tr>
<td><strong>STRUCTURAL BACKFILL</strong></td>
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</tr>
<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>Moisture Density Relationship</td>
<td>T99 &amp; T224</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 1,000 cubic feet or per 2-feet of lift thickness, whichever is greater (notes 1 &amp; 4)</td>
</tr>
<tr>
<td><strong>EMBANKMENT</strong></td>
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<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
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<tr>
<td>Moisture Density Relationship</td>
<td>T99 &amp; T224</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 250 linear feet per traffic lane per 12 inches of depth or portion thereof (notes 1 &amp; 4)</td>
</tr>
<tr>
<td><strong>TRENCH BACKFILL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sieve Analysis</td>
<td>T311</td>
<td>1 per soil type</td>
</tr>
<tr>
<td>Moisture Density Relationship</td>
<td>T99 &amp; T224</td>
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</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 250 linear feet per 2 feet of depth or portion thereof (notes 1, 3, &amp; 4)</td>
</tr>
<tr>
<td>Test Description</td>
<td>Test Method</td>
<td>Frequency</td>
</tr>
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<tr>
<td><strong>AGGREGATE BASE COURSE</strong></td>
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</tr>
<tr>
<td>Sieve Analysis</td>
<td>T27</td>
<td>1 per source per each day’s delivery</td>
</tr>
<tr>
<td>Plasticity Index</td>
<td>T146, T89 &amp; T90</td>
<td>1 per source per each day’s delivery</td>
</tr>
<tr>
<td>Moisture Density Relationship</td>
<td>T 99 &amp; T224</td>
<td>1 per source</td>
</tr>
<tr>
<td>In-Place Density</td>
<td>T191(sandcone) or T310 (nuke)</td>
<td>1 per 500 linear feet per traffic lane (note 8)</td>
</tr>
<tr>
<td><strong>RESIDENTIAL, ARTERIAL, &amp; RUBBERIZED ASPHALTIC CONCRETE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition Furnace Binder Calibration</td>
<td>T308</td>
<td>1 per mix design per project (note 6)</td>
</tr>
<tr>
<td><strong>ARTERIAL ASPHALTIC CONCRETE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Binder Content</td>
<td>T308</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Percent In-Lab Air Voids @ Ndes</td>
<td>T269</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Theoretical Max Specific Gravity (Rice)</td>
<td>T209</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Gyratory Density</td>
<td>T312</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Percent In-Place Air Voids</td>
<td>T269 or ASTM D 7227</td>
<td>1 per 1,000 linear feet per traffic lane or 1 per each day’s paving, whichever is greater (notes 5 &amp; 7)</td>
</tr>
<tr>
<td><strong>RESIDENTIAL &amp; RUBBERIZED ASPHALTIC CONCRETE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asphalt Binder Content</td>
<td>T308</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Percent In-Lab Air Voids</td>
<td>T269</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Theoretical Max Specific Gravity (Rice)</td>
<td>T209</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Compaction of Marshall Specimens</td>
<td>T245</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Sieve Analysis</td>
<td>T30</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Bulk Specific Gravity of Marshall Specimens</td>
<td>T166</td>
<td>1 per each day’s paving or 500 tons whichever is greater</td>
</tr>
<tr>
<td>Percent In-Place Air Voids</td>
<td>T269 or ASTM D 7227</td>
<td>1 per 1,000 linear feet per traffic lane or 1 per each day’s paving, whichever is greater (notes 5 &amp; 7)</td>
</tr>
</tbody>
</table>
## PORTLAND CEMENT CONCRETE

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling of Concrete</td>
<td>T141</td>
<td>1 per 50 cubic yards or per placement, whichever is greater</td>
</tr>
<tr>
<td>Temperature of Concrete</td>
<td>T309</td>
<td>1 per 50 cubic yards or per placement, whichever is greater</td>
</tr>
<tr>
<td>Slump</td>
<td>T119</td>
<td>1 per 50 cubic yards or per placement, whichever is greater</td>
</tr>
<tr>
<td>Making &amp; Curing Concrete Specimens</td>
<td>T23</td>
<td>1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater</td>
</tr>
<tr>
<td>Compressive Strength of Concrete Specimens</td>
<td>T22</td>
<td>1 set of 4 cylinders per 50 cubic yards or per placement, whichever is greater</td>
</tr>
<tr>
<td>Percent Entrained Air Content</td>
<td>T152, T196, or T199</td>
<td>Where applicable, 1 per 50 cubic yards or per placement, whichever is greater</td>
</tr>
</tbody>
</table>

## GROUT

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling &amp; Testing Grout</td>
<td>ASTM C1019</td>
<td>1 per day’s construction or 5,000 square feet, whichever is greater</td>
</tr>
</tbody>
</table>

## MORTAR

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strength of Molded Masonry Cylinders &amp; Cubes</td>
<td>ASTM C780 ANNEX A6</td>
<td>1 per day’s construction or 5,000 square feet, whichever is greater</td>
</tr>
</tbody>
</table>

## DECOMPOSED GRANITE

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Analysis</td>
<td>T27</td>
<td>1 per soil type or source(note 2)</td>
</tr>
</tbody>
</table>

## PLAYGROUND SAND

<table>
<thead>
<tr>
<th>Test</th>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Analysis</td>
<td>T27</td>
<td>1 per soil type or source(note 2)</td>
</tr>
</tbody>
</table>

---

**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:** The certifications for the laboratory and technicians as discussed above will be changed as follows: The testing laboratory for landscape soil must be certified by the Western States Proficiency Testing Program. The person responsible for the testing and providing recommendations must be certified as a Professional Soil Scientist by The American Society of Agronomy.

**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 will 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.

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

**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.
106.2.6 Failing Test Results and Referee Lab:

The lab performing QC or QA testing shall notify the City Inspector, the Contractor and the Permitee (if applicable) immediately if the lab determines that the material being tested is not in conformance with the required specifications. The Contractor or Permitee 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 consultant for referee tests. The third-party consultant shall meet the same requirements as the consultant 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 of Mesa test results will prevail.

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

Underground Damage Prevention: For all projects that include underground excavation or other work that could impact City utilities, Contractor/Permitee is required to complete a 90-minute Underground Damage Prevention & Safety training presentation by City’s Energy Resources Department, prior to commencing work and will take place at their offices or another suitable location. Contractor/Permitee personnel are responsible for their own transportation to and from the training site. Contractor/Permitee can contact the Damage Prevention Office at 480-644-5827 for assistance and to make reservations to attend a session. Information on City's Damage Prevention & Safety training is also available at www.mesaaz.gov/energy/, under "Energy Safety/Damage Prevention and Safety Training." This 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 prior to beginning work on the project.

At a minimum, the following Contractor/Permitee personnel shall attend this presentation and complete any required follow-up activities: Job Superintendent, Foreman, and Operator(s) from Contractor/Permitee, the same staff from the Natural Gas Subcontractor(s), and any other major Subcontractor as determined by City. This presentation is to be free of charge with no pre-set attendance limit. Contractor/Permitee is encouraged to have additional field personnel attend if possible.

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

Nothing in this Section or City's Underground Damage Prevention & Safety training presentation shall be construed as replacing or superseding OSHA Regulations, Arizona State Law, and City’s established policy for Contract Construction Safety, or other applicable regulations. Contractor/Permitee 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 May 19, 2006, 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: http://mesaaz.gov/home/showdocument?id=13974 (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.](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:

The minimum limits of corrective action shall include the affected area but no less than one city block or 660 feet. The Contractor shall remove any areas of bleeding, but in no case less than the specified roller width, as directed by the Engineer, and replace the affected material with new material meeting the specification requirements for the mix type involved. This shall be done, any time within the one (1) year warranty until the bleeding has been corrected, at no additional cost to the City. Should the stability of the mix be affected by the excess asphalt cement to such an extent that the pavement is displaced under normal traffic load, within the one (1) year warranty; the areas affected shall be removed and replaced with new material, at no additional cost to the City. The criteria for determining stability of the mix shall be 3/8-inch movement or more of the asphalt (rutting or shoving) 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 340.3.9 – Modify the subsection to add the following:

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

X. 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. Crazing, 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.

Y. 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.

Z. 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 Traffic Barricade Manual for work within the City limits.

AA. Section 402 – Add a new Section to read as follows:

SECTION 402

PAVEMENT MARKING

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.

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.
BB. **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.

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

Backfill 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. No slurry shall come into contact with any metal surface, services, air releases, etc. The metal shall be insulated with a layer of native material provided that native material is acceptable.

DD. **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.

EE. **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.

FF. **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.

GG. **Section 610** – Delete all references to PVC water pipe.

HH. **Section 610.3 (A)** – Replace the last sentence with the following:

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

II. **Section 610.3 (B)** – Replace the section with the following:

Pipes 20- inches diameter and larger shall be either:

- a) Ductile Iron Pipe, minimum pressure class 250 psi
- b) Welded Steel, AWWA C200
- c) Bar-wrapped Concrete Cylinder Pipe, AWWA C303

JJ. **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.

KK. **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.

LL. **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.

MM. **Section 610.5.5** – Replace the section with the following:

**Extra Protection:** New water lines that require extra protection from either new or existing sewer lines, shall have extra protection provided by using ductile iron pipe for the water line. The water line shall be constructed of a standard pipe length and shall be centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal. The sewer line shall be encased in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

New water lines that require extra protection from sewer lines, shall have identification wrap and/or tape installed on the water and sewer lines for the length that requires extra protection for each line.

Existing water lines that require extra protection from new sewer lines shall provide for extra protection by:

1. reconstructing the existing water line using ductile iron pipe with standard pipe lengths centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, and encasing the new sewer line in six (6) inches of concrete for the horizontal distance of the lines that require extra protection but for a distance no less than ten (10) feet horizontal, or

2. encasement of both the existing water line and the new sewer line in six (6) inches of concrete for the horizontal distance of the lines that require extra protection but for a distance no less than ten (10) feet horizontal.

3. Extra protection for existing ductile iron water lines can be met by the installation of restrained or mechanical joints on the existing water line within ten (10) feet horizontal of the crossing and encasement of the new sewer line in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

NN. **Subsection 610.6.1** – Add the following sentence:

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

OO. **Subsection 610.6.2** – Delete all references to naturally pigmented material.

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

Waterline 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.
QQ. **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 on-line at [http://www.mesaaz.gov/home/showdocument?id=3258](http://www.mesaaz.gov/home/showdocument?id=3258). No exceptions are allowed.

RR. **Subsection 610.10 (A)** – Revise as follows:

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

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

Remove cadmium plating per ASTM B766 as a coating option.

TT. **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.

UU. **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.

VV. **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 the short section of pipe to be removed and replaced with ductile iron pipe.

WW. **Subsection 610.13** – Add the following paragraph:

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

XX. **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.
YY. 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.

ZZ. 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.

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

and AWWA C651, latest edition.

BBB. 611.1 – Description- Modify paragraph 4 from “72 hours” to “3 business days”

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

DDD. 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.

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

FFF. 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 or chlorination shall be made through a city-provided construction meter and backflow assembly.

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

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

III. 611.3.2 (D) – modify the first sentence of paragraph 2 to remove “not to exceed 300 ppm”
JJJ. 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.

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

LLL. 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 8:00 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. Prior to pressure testing the system, bacteria tests should be passed if connected to the system. 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 available, test results from the private laboratory shall be sent via email to the City Inspector and shall also be emailed to WaterQualityVM@MesaAz.gov. 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.

MMM. 611.3.3 - Final Flushing, Sampling and Testing- Delete item (B) under the 5th paragraph

NNN. 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.

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

The Contractor shall provide to the Engineer sewer and video inspections from a city-approved pipeline company. The annotated video inspection records shall be provided in DVD format, or on a USB storage device, for new sewer pipeline and existing sewer pipeline connections at the discretion of the City and Engineer. The video shall clearly show all ponded water depths, joints, seals, connections, connecting pipes, junction structures and manholes. In the case of new sewer pipeline, the video shall show the entire length of the new sewer pipeline installation. In the case of existing sewer pipeline to which new sewer connections are made, the video shall clearly show each connection and shall show a distance along the existing sewer pipe of not less than ten (10) feet on either side of the connection. The video annotation shall include a bookmark and identifying note for each manhole, junction structure, and connection. The Contractor will not be allowed to place the final pavement over the sewer line until the Engineer has reviewed and accepted the video. No separate payment will be made for this inspection; the cost of the video inspection shall be included in the cost of the pipe by the Contractor.

PPP. Subsection 615.2 – Modify the subsection to add:

Ductile iron pipe shall be minimum pressure class 150 unless otherwise noted and shall be ceramic epoxy lined as approved by the City Engineer.
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 semicircular 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 cobbles 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 ½-inch for pipe having inside diameter not greater than 42-inches; ¾-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 property 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.
All manholes shall have a minimum of 6-inches and maximum of 16-inches of reinforced concrete adjusting rings.

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

When a manhole is called out in the plans or in the specification to be lined with a PVC T-lock lining, all exposed concrete surfaces, including the shelf and opening, shall be lined.

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

SSS. 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 on-line at https://www.mesaaz.gov/home/showdocument?id=28435. No exceptions are allowed.

Valves shall not be installed in the horizontal position.

Valves shall not be installed in vaults.

TTT. 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).

UUU. 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 24” of any fitting, 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.

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

WWW. 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 and Water Resources Approved Products List.

XXX. 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.

YYY. 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.

ZZZ. 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.
AAAA. **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.

BBBB. **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.

CCCC. **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.

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

EEEE. **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).

FFFF. **Subsection 750.1** - Delete section in its entirety.

GGGG. **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 online at: [http://www.mesaaz.gov/home/showdocument?id=3258](http://www.mesaaz.gov/home/showdocument?id=3258). 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.

HHHH. **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.

III. **Section 752** – Delete this section in its entirety.

JJJJ. **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 [http://www.mesaaz.gov/home/showdocument?id=3258](http://www.mesaaz.gov/home/showdocument?id=3258). No exceptions are allowed.

**KKKK. Section 758 -** Modify the section as follows:

Delete all references to AWWA C301, prestressed concrete pressure pipe.

**LLLL. 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.

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

**NNNN. 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](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.

**OOOO. 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.

**PPPP. 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.
Mesa Standard Details

Amendments to MAG Uniform Standard Details for Public Works Construction

EFFECTIVE DATE April 15, 2019
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**REV. 01/31/2019**

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*DENOTES DETAILS REVISED FOR 2019 PUBLICATION.
NOTES:

1. Plaque shall be satin bronze raised areas with black pebble recessed areas.

2. Font shall be Helvetica

3. Mounting system shall be concealed stud system.
NOTES

1. EACH SPEED HUMP OR CUSHION SHALL HAVE TWO MARKINGS FOR EACH DIRECTION OF TRAVEL. ONE MARKING SHALL BE LOCATED ON THE APPROACH SIDE OF THE HUMP/CUSHION, AND ONE SHALL BE LOCATED ON THE DEPARTURE SIDE OF THE HUMP/CUSHION.

2. ALL CHEVRON STRIPES SHALL BE ONE FOOT IN WIDTH.

3. WHERE LANE STRIPING IS PRESENT, THE MARKINGS SHALL ALIGN WITH THE CENTER OF THE THROUGH TRAFFIC LANE.

4. ALL SPEED HUMPS AND CUSHIONS IN THE CITY OF MESA SHALL USE PREFORMED PERMANENT PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 705, PREFORMED PAVEMENT MARKINGS.

5. SEE COM DETAIL M-15.02 FOR SPEED HUMP LAYOUT AND SPECIFICATIONS. SEE COM DETAILS M-15.03 THROUGH M-15.06 FOR SPEED CUSHION LAYOUT AND SPECIFICATIONS.
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 LASTEST 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" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES.
5. STRIPING TO BE INSTALLED PER COM DETAIL M-15.01. BECAUSE THE WIDTHS OF STREETS VARY, SPEED HUMPS MAY REQUIRE ADDITIONAL MARKINGS. CONSULT TRAFFIC STUDIES STAFF AT 480-644-2163 FOR STREET WIDTHS GREATER THAN 40 FEET.
6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-7375 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.
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" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES.

5. STRIPING TO BE INSTALLED PER 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-15.03 THROUGH 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.
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" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES.

5. STRIPING TO BE INSTALLED PER COM DETAIL 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-15.03 THROUGH M-15.06.

6. CONTACT THE CITY OF MESAS SIGN SHOP AT 480-644-3175 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.

SECTION A-A

SECTION B-B
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" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES.

5. STRIPING TO BE INSTALLED PER COM DETAIL 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-15.03 THROUGH 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.
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" IN HEIGHT TO PROVIDE MAXIMUM EFFECTIVENESS, WHILE NOT BEING OVERLY RESTRICTIVE TO EMERGENCY POLICE AND FIRE VEHICLES.
5. STRIPING TO BE INSTALLED PER CDM DETAIL 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 CDM DETAILS M-15.03 THROUGH 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.
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. C.D. 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 M-11.09, "MEDIAN CONCRETE PAVER DETAIL", FOR MEDIAN SECTION.

PARTIAL MEDIAN ACCESS ISLAND

TYPICAL APPLICATIONS

ALIGN BULL NOSE W/ RADIUS RETURN OR 30° FROM EDGE OF DRIVEWAY LANE

ALIGN BULL NOSE W/ RADIUS RETURN OR 30° FROM EDGE OF DRIVEWAY LANE

MEDIAN WIDTH VARIES

6.5' RADIUS LENGTH VARIES PER MEDIAN WIDTH

MEDIAN NOSE ALIGNMENT AT TEE INTERSECTION

NOT TO SCALE

REV. 11/19/2015

DETAIL NO. M-16
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 1-FOOT MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN THE BORE AND EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY ENGINEERING INSPECTOR.

5. WHEN THE BORE PASSES WITHIN 2 FEET 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 VERIFY THE EXACT LOCATION OF THE UTILITY/FACILITY. WHEN THE UTILITY CANNOT BE FOUND AS MARKED (BLUE STAKED), THE POTHOLING 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-18.03.

9. THE UTILITY COMPANY OR THEIR CONTRACTOR SHALL PROVIDE COPIES OF ALL BORE PROFILES TO THE ENGINEERING INSPECTOR 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 (BLUE STAKE, INC.) BEFORE ANY POTHOLING, EXCAVATING, OR BORING.

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 1-FOOT MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN THE BORE AND EXISTING UTILITIES UNLESS OTHERWISE APPROVED BY ENGINEERING INSPECTOR.

5. WHEN THE BORE PASSES WITHIN 2 FEET 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 POTHOLING 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-18.03.

9. THE UTILITY COMPANY OR THEIR CONTRACTOR SHALL PROVIDE COPIES OF ALL BORE PROFILES TO THE ENGINEERING INSPECTOR PRIOR TO THE BORE.

10. BACKFILL REQUIREMENTS FOR EXCAVATIONS (PITS) OUTSIDE THE ROADWAY PRISM SHALL BE PER MAG SECTION 600.

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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 BLUE STAKE AT 623-263-1102 BEFORE ANY POTHOLING, EXCAVATING, OR BORING.

NOTES

1. TEMPORARY POT-HOLE PROTECTION IS ONLY TO BE USED WITH PERMISSION OF ENGINEER.

2. POT-HOLE EXCAVATION SHALL BE A MAXIMUM OF 12-INCHES IN DIAMETER.

3. POT-HOLE 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 BLUE STAKE AT (602) 263-1700 BEFORE ANY POTHOLING, EXCAVATING, OR BORING.

EXSISTING AC PAVEMENT

2" MINIMUM TEMPORARY PAVEMENT

COLD PATCH PER COM DETAIL M-18.03

2"X2" STEEL PLATE WITH EXPANSION TYPE ANCHORING SYSTEM (TO BE APPROVED BY ENGINEER)

12" MAX POT-HOLE

EXPOSED EXISTING UTILITY

POT-HOLE COVER ANCHOR SYSTEM
**NOTES**

1. THE MAXIMUM PAVEMENT CUT FOR VACUUM POTHOLE SHALL NOT EXCEED 20" X 20".

2. CLUSTERED POTHOLES, TWO FEET OF SEPARATION OR LESS, MUST BE COMBINED TO FORM ONE UNIFORM PATCH AND MEET COM DETAIL M-9.04.

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 POTHOLE 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, PAVINGSTONES, ROCK, GRAVEL, DRIVEWAYS, CONCRETE BORDERS, RETENTION BEMS, SPRINKLER SYSTEMS, AND OTHER LANDSCAPE MATERIALS.

**SECTION A-A**

**POTHOLE PLAN VIEW**

* COLD MIX ASPHALT - CRAFCO H.P. (HIGH PERFORMANCE) COLD PATCH OR APPROVED EQUIVALENT

**LIMITS OF POTHOLE EXCAVATION**

- 6" MIN. EACH SIDE (TYP)
- 18"-24"
NOTES
1. ALL STREETS TO BE CONSTRUCTED WITH A STRAIGHT CROWN AT A 2% CROSS SLOPE.
2. WHERE 10" A.B.C. IS REQUIRED, IT IS TO BE INSTALLED IN (2) TWO EQUAL LAYERS.
3. A.B.C. FILL TO CONFORM TO SECTION 702 (AGGREGATE BASE).
4. ASPHALT CONCRETE SHALL CONFORM TO THE CURRENT EAST VALLEY ASPHALT COMMITTEE HOT ASPHALT MIX CRITERIA, 2012 EDITION, AND BE APPROVED BY THE EAST VALLEY ASPHALT COMMITTEE (EVAC).
5. ALL NEW AND REHAB ARTERIAL STREET SURFACE COURSE ASPHALT SHALL BE POLYMER MODIFIED TERMINAL BLEND RUBBER (PMT+R) PER EVAC CRITERIA.
6. SURFACE TREATMENT OF THE FINAL SURFACE COURSE FOR "R" ASPHALT MIXES, INCLUDING PARKING LOT MIXES, SHALL BE APPLIED AS FOLLOWS:
   APPLY A POLYMER MODIFIED MASTERSEAL OR EQUIVALENT MEETING COM REQUIREMENTS (AS DETERMINED BY THE CITY REPRESENTATIVE) AT A MINIMUM APPLICATION RATE OF .18 GAL PER SQ YD FOR EACH OF TWO APPLICATIONS, NOT TO EXCEED .30 GAL PER SQ YD TOTAL (OR PER MANUFACTURER’S RECOMMENDED GUIDELINES). APPLY WITHIN 3 MONTHS OF ASPHALT PLACEMENT 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 PLACEMENT.
7. UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO APPLICATION OF SURFACE TREATMENT.
9. MAX. 6:1 SLOPE ALLOWED EXCEPT WHERE AREA IMMEDIATELY ADJACENT TO R.O.W. OR SIDEWALK HAS A MIN. AREA AT SLOPE OF 6:1 OR LESS. THEN SLOPE BEYOND SAID 1’ AREA CAN BE INCREASED TO A MAX OF 4:1. SIDEWALK WIDTHS SHOWN ON THIS DETAIL SHALL TAKE PRECEDENCE 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)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) DISTANCE FACE TO FACE</td>
<td>(B) SURFACE TREATMENT SEE NOTES 6 &amp; 7</td>
<td>(C) PLANT MIX SURFACE COURSE</td>
<td>(D) STRAIGHT CROWN SLOPE: 0.02 FT/FT (TYP.)</td>
<td>(E) VERTICAL CURB AND GUTTER SHALL BE TYPE &quot;A&quot; PER DETAIL 220. (ROLL CURB PER DETAIL 22) ALLOWED ON RESIDENTIAL STREETS.</td>
<td>(F) PLANT MIX BASE COURSE A.B.C.</td>
<td>(G) RIGHT OF WAY WIDTH</td>
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LOCAL STREET RESIDENTIAL LAND USE

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
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<th>(D)</th>
<th>(E)</th>
<th>(F)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>34'</td>
<td>17'</td>
<td>5'</td>
<td>3.0&quot; R-1/2&quot;</td>
<td>N/A</td>
<td>6&quot;</td>
<td>50' +8 PUFE</td>
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LOCAL STREET RESIDENTIAL LAND USE, OPTIONAL

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<tr>
<th>(A)</th>
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<th>(D)</th>
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<th>(F)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>34'</td>
<td>17'</td>
<td>5' **</td>
<td>3.0&quot; R-1/2&quot;</td>
<td>N/A</td>
<td>6&quot;</td>
<td>50' +10' PUFE</td>
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LOCAL STREET INDUSTRIAL

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<tr>
<td>60'</td>
<td>20'</td>
<td>5&quot;</td>
<td>2.0&quot; A-1/2&quot;</td>
<td>3.0&quot; A-3/4&quot;</td>
<td>8&quot;</td>
<td>60' +20' PUFE</td>
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LOCAL STREET COMMERCIAL

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<tr>
<th>(A)</th>
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<tr>
<td>46'</td>
<td>23'</td>
<td>5&quot;</td>
<td>2.0&quot; A-1/2&quot;</td>
<td>3.0&quot; A-3/4&quot;</td>
<td>8&quot;</td>
<td>80' +8 PUFE</td>
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COLLECTOR STREET *

<table>
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<tr>
<th>(A)</th>
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<th>(E)</th>
<th>(F)</th>
<th>(G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34'/140'/66'</td>
<td>17'/20'/23'</td>
<td>6&quot;</td>
<td>3.5&quot; R-3/4&quot;</td>
<td>N/A</td>
<td>6&quot;</td>
<td>80'/80'/80' +8 PUFE</td>
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MAJOR COLLECTOR STREET *

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<th>(D)</th>
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<th>(G)</th>
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</thead>
<tbody>
<tr>
<td>68'</td>
<td>34'</td>
<td>6&quot;</td>
<td>2.0&quot; A-1/2&quot;</td>
<td>3 1/2&quot; A-3/4&quot;</td>
<td>10&quot;</td>
<td>110' +8 PUFE</td>
</tr>
</tbody>
</table>

ARTERIAL STREET *

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
<th>(F)</th>
<th>(G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>68'/72'/88'/94'</td>
<td>54'/56'/64'/71'</td>
<td>6&quot;</td>
<td>2.0&quot; A-1/2&quot; PMTR+</td>
<td>3 1/2&quot; A-3/4&quot;</td>
<td>10&quot;</td>
<td>110' TO 150' +8 PUFE</td>
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</tbody>
</table>

* DETACHED, LINEAR SIDEWALKS ARE REQUIRED. SEE DETAIL M-43.
** USE 5' DETACHMENT
*** MAY BE WIDER AT INTERSECTIONS AND TURN LANES - SEE M-46.01 THROUGH M-46.05.

SEE NOTE 9 ABOVE

SEE NOTES 6 & 7

SEE NOTES 6 & 7

FOR SIDEWALK CONSTRUCTION SEE MAG DETAIL 230 (M-43) FOR DETACHED 5/W

REV. 06/19/2018

DETAIL NO. M-19.01

TYPICAL STREET SECTION

LOCAL STREET RESIDENTIAL LAND USE

LOCAL STREET RESIDENTIAL LAND USE, OPTIONAL

LOCAL STREET INDUSTRIAL

LOCAL STREET COMMERCIAL

COLLECTOR STREET *

MAJOR COLLECTOR STREET *

ARTERIAL STREET *

* DETACHED, LINEAR SIDEWALKS ARE REQUIRED. SEE DETAIL M-43.
** USE 5' DETACHMENT
*** MAY BE WIDER AT INTERSECTIONS AND TURN LANES - SEE M-46.01 THROUGH M-46.05.
NOTES

1. REDWOOD HEADER (MAG DETAIL 201 TYPE C) OR THICKENED EDGE (MAG 201 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 (R-1/2" AC MIX), MAJOR COLLECTOR, ARTERIAL, AND INDUSTRIAL/COMMERCIAL STREETS (A-1/2" AC MIX). ALL TRANSITIONS SHALL BE BUTT JOINT.

7. PLACE NEW SURFACE & BASE PAVEMENT OVER EXISTING PAVEMENT. (SEE COM DETAIL M-15.01 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.
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 22) TO RIBBON CURB.

5. SURFACE TREATMENT OF THE FINAL SURFACE COURSE FOR "B" 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.

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**PAVEMENT TABLE**

<table>
<thead>
<tr>
<th>ROADWAY (WIDTH)</th>
<th>RIBBON (WIDTH)</th>
<th>A.C. SURFACE COURSE (DEPTH) (TYPE)</th>
<th>A.C. BASE COURSE (DEPTH) (TYPE)</th>
<th>A.B.C. BASE (DEPTH) (TYPE)</th>
<th>RIGHT OF WAY (WIDTH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>(B)</td>
<td>(C)</td>
<td>(D)</td>
<td>(E)</td>
<td>(F)</td>
</tr>
<tr>
<td>3'</td>
<td>15.5'</td>
<td>2'</td>
<td>3' R-1/2' SEE NOTE 5</td>
<td>N/A</td>
<td>6'</td>
</tr>
</tbody>
</table>

---

(A) DISTANCE LIP TO LIP

(B) MIN. (Typ.)

SLOPE = 0.0% (Typ.)

IRRIGATED LOT ELEV. (Typ.)

NOT TO SCALE

REV. 11/9/2015
LONGITUDINAL TRENCHES
(PARALLEL TO CL OF STREET)

S/W (TYP.)

PROPOSED OR
EXISTING PAVEMENT

TRENCH

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

S/W (TYP.)

PROPOSED OR
EXISTING PAVEMENT

TRENCH

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

See M-19.04.2 for Notes

NOTE: FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL GREATER THAN 1 1/2" MAY BE USED WITH CITY APPROVAL.
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-19.01. STANDARD COMPACTION REQUIREMENTS APPLY. THE TYPE OF ASPHALT CONCRETE MIX SHALL BE PER COM DETAILS M-19.01 OR 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-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.


9. SEE MAG DETAIL 211 FOR REQUIREMENTS REGARDING THE USE OF PLATING OF TRANSVERSE TRENCHES.


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-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.
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 LINES 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 POTHOLE SMALLER THAN TWO (2) SQUARE FEET WITHIN THE LIMITS OF THE NEW PAVEMENT SECTION.

7. POTHOLE REPAIR SHALL BE PER CITY OF MESA DETAIL M-18.03.

8. TRENCH REPAIR SHALL BE PER CITY OF MESA DETAIL M-19.04.

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 “SIGNING & PAVEMENT MARKING DESIGN PROCEDURES MANUAL.”

12. DETECTOR LOOPS LOCATED WITHIN THE PAVEMENT RESTORATION LIMITS SHALL BE REPLACED PER CITY OF MESA DETAILS M-96.01 THROUGH M-96.04.
NOTES

1. WHEN STREET 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.

A.B.C., GRANULAR OR NONGRANULAR NATIVE MATERIAL (MAG SPEC 601 & 702) AT 99% AASHTO T-99

A.B.C. PER MAG STD. SPEC. 702 AND 601. RECLAIMED CONCRETE AND RECLAIMED PAVEMENT MATERIAL ARE NOT ALLOWED FOR PIPE ZONE BACKFILL.

BEDDING PER MAG SPEC 601.2.3

NOTE:
FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL GREATER THAN 1/2 INCHES MAY BE USED WITH CITY APPROVAL.
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. THEREFORE 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 UPPERCASE AND LOWERCASE HWA-Y-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 4.8” 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-H32 ALLOY TREATED ALUMINUM WITH ALCOAT 1200 CONVERSION COATING;
   - BE 0.025” 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 (WWW.MESA.AZ.GOV/ABOUT-US/MAPS).

8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. 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.
NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE SENSITIVE ASTM TYPE XI 3M #1090 WHITE DG CLAD SHEETING OR APPROVED EQUAL. ALL TRANSPARENT ACRYLIC PRESSURE-SENSITIVE FILM SHALL BE 3M #1177 GREEN ELECTRO CUT FILM OR APPROVED EQUAL.

2. 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. THIS THE GREEN BACKGROUND IS APPLIED ON TOP OF THE WHITE SHEETING RESULTING IN A SIGN WITH A WHITE LEGEND AND A GREEN BACKGROUND.

3. LETTER FONT SHALL BE INITIAL UPPERCASE AND LOWERCASE HHW-C.

4. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2004 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.

5. 12" SIGN BLANKS SHALL:
   - HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48");
   - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALUMINIDE 200 CONVERSION COATING;
   - BE 0.079" THICK WITH 1" MINIMUM ROUNDED CORNERS.


7. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-5175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.

8. USE THIS SIGN FOR PUBLIC STREETS WITH A SPEED LIMIT OF 30 MPH OR GREATER.
DEAD END WITH 10" PUBLIC STREET NAME COMBINATION SIGN

NOTES
1. ALL REFLECTIVE SHEETING MATERIALS SHALL BE PRESSURE SENSITIVE ASTM TYPE IV WHITE ANGLE WHITE AND YELLOW PRISMATIC SHEETING OR APPROVED EQUAL.
2. ALL ACRYLIC PRESSURE SENSITIVE FILM SHALL BE 3M #177 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 3/4 (H) PORTION OF THE SIGN BLANK AND YELLOW SHEETING TO THE TOP 1/4 PORTION OF THE SIGN BLANK. ON TOP OF THE WHITE SHEETING A GREEN TRANSPARENT PRESSURE SENSITIVE FILM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. THIS 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. THIS PORTION OF THE SIGN WILL HAVE A YELLOW BACKGROUND AND A BLACK LEGEND.
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2005 MUTCD AND ARE TO BE USED UNTIL THE MAXIMUM SIGN BLANK SIZE OF 48" X 60" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.
6. 10"/10" SIGN BLANKS SHALL:
   a. HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48");
   b. BE 50:52-558 ALLOY TREATED ALUMINUM WITH ALODINE 1203 CONVERSION COATING;
   c. BE 0.025" 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 (WWW.MESAZ.GOV/ABOUT-US/STREET-NAMES).
8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. 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-20.01 8 M-20.02.

DEAD END WITH 12" PUBLIC STREET NAME COMBINATION SIGN

REV. 11/6/16
SERIAL NO. M-20.03
NOTES
1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE FRISOMATIC 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 4" 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 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 WEBSITE (WWW.MESA.AZ.GOV/ABOUT-US/MAPS);
8. ALL PUBLIC STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.
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 #1175 BLUE ELECTRO-CUT FILM OR APPROVED EQUAL.

3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK, ON TOP OF THE SHEETING A BLUE TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. 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 UPPERCASE AND LOWERCASE 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. 1" SIGN BLANKS SHALL:
   - BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALUCINE 1200 CONVERSION COATING
   - BE 0.025" THICK WITH ROUNDED CORNERS PER DETAIL "A".

7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET AREA DIRECTORY" AVAILABLE ON THE CITY OF MESA'S WEBSITE (WWW.MESA.GOV).

8. WHERE A PRIVATE STREET INTERSECTS A PUBLIC STREET, THE SIGN FOR THE PUBLIC STREET SHALL BE WHITE ON BLUE, AND DIMENSIONS SHALL BE PER COM DETAIL 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 INSTALLATION. 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.

DETAIL "A" - BLANK DIMENSIONS

NOT TO SCALE

REV. 03/08/2016
NOTES

1. SEE COG DETAIL 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.

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

2ND STREET (LOCAL)
(25 MPH)

STAPLEY DRIVE (MAJOR)
(30 MPH OR GREATER)

BROWN ROAD (MAJOR)
(30 MPH OR GREATER)

JULY CIRCLE (LOCAL)
(25 MPH)

UNIVERSITY DRIVE (MAJOR)
(30 MPH OR GREATER)

FRASER DRIVE (LOCAL)
(25 MPH)

ARterial/Collector to local
4-way intersection

ARterial/Collector to local
"T" - intersection

NOT TO SCALE

REV. 10/12/2016
NOTES
1. SEE COM DETAIL 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.

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

6TH STREET (LOCAL) (25 MPH)

PARSELL AVENUE (LOCAL) (25 MPH)

LOCAL TO LOCAL 4-WAY INTERSECTION

HOPI AVENUE (LOCAL) (25 MPH)

QUAIL CIRCLE (LOCAL) (25 MPH)

6TH STREET (LOCAL) (25 MPH)

FRASER DRIVE (LOCAL) (25 MPH)

LOCAL TO LOCAL "T" - INTERSECTION

NOT TO SCALE
NOTE

1. SEE COM DETAILS M-21.07 & M-21.08 FOR SIGN LAYOUT INFORMATION.

NORTHEAST AREA EXAMPLE

SOUTHWEST AREA EXAMPLE
NOTES
1. SEE COM DETAILS M-21.07 AND M-21.08 FOR SIGN LAYOUT INFORMATION.
2. SEE COM DETAILS M-95.07 THROUGH M-95.09 FOR SUPPORT STRUCTURE, SIGN, AND INSTALLATION DETAILS.
NOTES

1. SEE COM DETAILS M-21.05 AND M-21.06 FOR ADDRESSING SCHEMES.

2. SEE COM DETAIL M-95.07 FOR INSTALLATION DETAILS FOR INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS).

3. LETTERS, NUMBERS, AND ARROWS 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 AREA DIRECTORY" AVAILABLE ON THE CITY OF MESA'S WEBSITE (WWW.MESA AZ.GOV).

7. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3175 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.

STANDARD SIGN LAYOUT

VARIANCE = 6" MIN/12" MAX
WHOLE FOOT INCREMENTS ONLY

BLANK DIMENSIONS (METRO)
VIEWABLE DIMENSIONS (IISNS)

WHITE ARROW (TYPICAL)
NOTES
1. SEE COM DETAILS M-21.05 AND M-21.06 FOR ADDRESSING SCHEMES.
2. SEE COM DETAIL M-95.07 FOR INSTALLATION DETAILS FOR INTERNALLY ILLUMINATED STREET NAME SIGNS (IISNS).
3. LETTERS, NUMBERS, AND ARROWS SHALL BE WHITE ON A GREEN BACKGROUND. FONT SHALL BE INITIAL UPPER- AND LOWER-CASE HIGHWAY GOTHIC "O".
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 AREA DIRECTORY" AVAILABLE ON THE CITY OF MESA'S WEBSITE (WWW.MESA AZ.GOV).
7. ALL STREET NAME SIGNS ARE SUBJECT TO APPROVAL BY THE CITY OF MESA PRIOR TO INSTALLATION. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3775 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.

DUAL NAME SIGN LAYOUT

CONVENTIONAL METRO AND INTERNALLY ILLUMINATED SIGNS
DUAL NAME LAYOUT

REV. 03/08/2016
NOTES
1. Use street light poles for sign mounting where possible.
2. 200’ minimum distance between signs preferred.
3. 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.
4. Distances are approximate.
5. Sign sizes to be per latest edition of the MUTCD including Arizona supplement (if applicable).

NOT TO SCALE

TYPICAL SIGNING FOR ARTERIAL AND COLLECTOR STREETS

REV. 10/24/2016
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 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 HOLE THREADED 5/8" X 18.

6. SIGNS ON OTHER POLE TYPES SHALL BE 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 NOT ACCEPTABLE.
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 city transportation requirements & required clearances from underground utilities.

2. STREET NAME SIGN(S) SHALL BE MOUNTED ON A TRAFFIC SIGNAL POST OR STREET LIGHT. MOUNTING WHEREVER POSSIBLE. SIGN(S) SHALL OTHERWISE BE FASTENED TO A SQUARE TUBING POST INSTALLED PER COM DETAIL M-39.

3. SEE APPLICABLE DETAILS FOR STREET NAME SIGN INSTALLATION:
   • M-21.03: ARTERIAL/COLLECTOR TO LOCAL
   • M-21.04: LOCAL TO LOCAL
   • M-21.05 AND M-21.06 FOR INSTALLATION ON TRAFFIC SIGNAL POST

4. PUBLIC STREET NAME SIGNS SHALL BE FURNISHED AND INSTALLED BY THE CITY UNLESS COM APPROVES OTHERWISE.

5. THE MINIMUM MOUNTING HEIGHT FOR STREET NAME SIGNS SHALL BE 9.5 FEET.
NOTES

1. WHERE CURBS OR SIDEWALKS DO NOT EXIST, HEIGHT OF SIGNS SHALL BE MEASURED FROM THE ROAD SURFACE.

2. POSTS SHALL BE INSTALLED PER COM DETAIL 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-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 I200 CONVERSION COATING. SIGNS BLANKS GREATER THAN 16 SQUARE FEET SHALL BE 0.125 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE I200 CONVERSION COATING. DELINEATORS SHALL COMPLY WITH DETAIL M-61.

**Rev. 03/01/2017**
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-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.
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-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-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.
NOTES

1. SEE COM DETAIL M-25 FOR ACCESSIBLE SIGN DETAILS.

2. AN ACCESSIBLE SIGN IS REQUIRED FOR EACH ACCESSIBLE PARKING SPACE.

HANDICAPPED PARKING SIGN TO BE PER THE 2003 ICC/ANSI A117.1 SECTION & FIGURE 307.3. POST MOUNTED OBJECTS SHALL OVERHANG A MAXIMUM OF 4" ON EACH SIDE OF THE POST. 2 POSTS MAY BE REQUIRED TO ACCOMPLISH THIS.

12" x 18"
ACCESSIBLE SIGN,
SEE NOTE 1

12" x 6"
VAN ACCESSIBLE PLAQUE
(WHERE APPLICABLE),
SEE NOTE 1

TOP OF FINISHED GRADE

POST, SLEEVE & ANCHOR ASSEMBLY PER COM DETAIL M-39

ACCESSIBLE SIGN HEIGHT AND INSTALLATION

MIN 3' WIDE ACCESSIBLE AISLE
4' PREFERRED

WHITE MARKINGS (TYP.)

MIN 3' WIDE ACCESSIBLE AISLE
4' PREFERRED

WHITE MARKINGS (TYP.)

MIN 3' WIDE ACCESSIBLE AISLE
4' PREFERRED

WHITE MARKINGS (TYP.)

TYPICAL ACCESSIBLE STALL MARKINGS

VAN ACCESSIBLE STALL MARKINGS

NOT TO SCALE

REV. 03/01/2017

STANDARD HANDICAP PARKING SIGN AND MARKINGS

DETAIL NO.
M-23.06
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 CON DETAIL M-23.06 FOR MOUNTING HEIGHT DETAILS FOR HANDICAP PARKING SIGNS.
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, 7" 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.
   E. LOCATION OF THE SIGN SHALL BE COORDINATED BY CONTRACTOR AND CITY PUBLIC RELATIONS REPRESENTATIVE.
   F. A SIGN MUST BE VISIBLE BY TRAFFIC FROM EACH DIRECTION. IF SIGN IS PLACED WITHIN TEMPORARY TRAFFIC CONTROL, CONTRACTOR SHALL OBTAIN APPROVAL BY TRAFFIC BARRICADE COORDINATOR FOR THE PROPOSED LOCATION(S) PRIOR TO INSTALLATION.
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, 2¼" ARROW, AND 1" BORDER SHALL BE WHITE WITH A BLUE BACKGROUND, REFLECTIVE ENGINEERING GRADE SHEETING.

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.
NOTES

1. 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 BARRICADE 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 BARRICADE COORDINATOR.

9. CONTRACTOR SHALL OBTAIN CITY INSPECTOR OR TRAFFIC BARRICADE 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.

11. SIGN MUST BE REMOVED THREE DAYS AFTER FINAL INSPECTION.
1. SIGN BLANK MATERIAL SHALL BE WHITE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE PRISMATIC REFLECTIVE SHEETING OR APPROVED EQUAL.

2. FILM SHALL BE 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 MANUFACTURERS MATCHED COMPONENT SYSTEM.

3. ALL LETTERING AND BORDER BANDS SHALL BE A SERIES ‘C’ GREEN COLOR.

4. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE WHITE ON A 5" X 5" BLUE FIELD WITH 1/2" RADIUS CORNERS.

5. SIGN(S) SHALL BE LOCATED AND FASTENED ON A SQUARE TUBULAR POST, PER COM DETAIL M-39, AS SHOWN AND DIMENSIONED ON COM DETAIL M-23.06.
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.

NOTES
1. PRIOR TO THE APPROVAL AND INSTALLATION OF SUBTRACTION 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.
METER ASSEMBLY KEY NOTES

1. SINGLE METER OR COMBINED (TWO METERS MANIFOLDED) PER TABLE ON M-27.01.2. THE METER (COMES WITH STRAINER) 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 391-1 & 391-2 TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST FOR APPROVED BURIED VALVES (WWW.MESA.az.gov/HOME/SHOWDOCUMENT?ID=3258)

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.


5. 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.

6. DIP SPOOL.

7. DIP 90° ELBOW (FLANGE BY FLANGE).

8. ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN AT CENTER OF PIPE, TYPICAL BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.

9. FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.

10. ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. ONE REQUIRED PER EACH METER AND VALVE IN ASSEMBLY.

11. DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" CLOSE BRASS NIPPLE AND 2" FORD B-11-777W LOCKING CURB STOP. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.

12. CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" x 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN.

13. 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.

14. STRAINER.
1. **THIS DETAIL SHALL BE USED WHERE VERY HIGH OR VERY LOW FLOWS ARE REQUIRED FOR EITHER A COMBINATION FIRE/DOMESTIC SERVICE OR VERY LARGE DOMESTIC SERVICE.**

2. **ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 316 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.**

3. **ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN. 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: HTTP://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS.**

4. **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.**

5. **INSTALL BRASS PIPE PLUG IN EACH TESTCOCK ON THE ASSEMBLY.**

6. **ALL METER ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS PER COM DETAIL M-32 OR A CAGE.**

7. **THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2641.**

8. **WHERE A 10" SERVICE IS REQUIRED, APPLY THIS DETAIL, USING TWO (2) 6" METERS MANIFOLDED IN AN ASSEMBLY PER COM DETAILS M-27.02.1 & M-27.02.2.**

9. **SCREENING SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).**

10. **A 24-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.**

11. **THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.**

12. **THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT AND SUSTAINABILITY DIVISION AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES.**

13. **THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5480 PRIOR TO THE REQUEST FOR FINAL INSPECTION.**

14. **WHEN A 4" BADGER MODEL FSAA-01 METER ASSEMBLY IS INSTALLED THE CONTRACTOR SHALL FURNISH AND INSTALL A 1-INCH FLANGE SPACER BETWEEN THE GATE VALVE AND STRAINER.**

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**NOTES**

<table>
<thead>
<tr>
<th>SERVICE SIZE</th>
<th>METER SIZE</th>
<th>METER AND STRAINER LENGTH</th>
<th>MAXIMUM FLOW</th>
</tr>
</thead>
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<tr>
<td>4&quot;</td>
<td>4&quot;</td>
<td>33&quot; (+1&quot; FLANGE SPACER PER NOTE 14)</td>
<td>SHALL NOT EXCEED MANUFACTURER’S RECOMMENDATIONS</td>
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<tr>
<td>6&quot;</td>
<td>6&quot;</td>
<td>45&quot;</td>
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<tr>
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<td></td>
<td>63&quot;</td>
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(2) 6" METERS IN MANIFOLDED ASSEMBLY PER COM DETAILS M-27.02.1 & M-27.02.2
NOTES

1. THIS DETAIL SHALL BE USED WHERE VERY HIGH OR VERY LOW FLOWS ARE REQUIRED FOR EITHER A COMBINATION FIRE/DOMESTIC SERVICE OR VERY LARGE DOMESTIC SERVICE.

2. A MANIFOLDED ASSEMBLY WITH TWO (2) 6" METERS SHALL BE USED FOR REPLACEMENT OF A 10" METER SO THAT FLOWS WILL EXCEED THE CAPACITY OF A 10" SERVICE AND ASSOCIATED COSTS ARE REDUCED.

3. ALL FITTINGS ABOVE-GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS AND STUDS IN ALL ABOVE-GROUND FLANGES TO BE 316 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.

4. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN. 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: HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=12678.

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 TESTCOCK ON THE ASSEMBLY.

7. ALL METER ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS PER COM DETAIL M-32 OR A CAGE.

8. THE CITY OF MESA WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT THE WATER METER SHOP AT 480-644-2661.

9. SCREENING SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS.

10. A 24-INCH MINIMUM CLEARANCE BETWEEN A BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.

11. THE METER(S) ARE CITY OF MESA OWNED. THE BPA IS PRIVATELY OWNED.

12. THE METER(S) SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT AND SUSTAINABILITY DIVISION AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2661 TO INQUIRE ABOUT LEAD TIMES.

13. THE BACKFLOW PREVENTION ASSEMBLY SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS AT: HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462 PRIOR TO THE REQUEST FOR FINAL INSPECTION.
METER ASSEMBLY KEY NOTES

1. SINGLE METER OR COMPOUND (TWO METERS MANIFOLDED) PER TABLE ON M-28.01.2. THE METER SHALL BE PURCHASED FROM 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 391-1 & 391-2 TYPE C. BURIED VALVES SHALL BE PER WATER RESOURCES APPROVED PRODUCTS LIST (WWW.MESAAZ.GOV/BUSINESS/ENGINEERING)

3. OUTSIDE STEM & YOKE (OS & Y) RISING STEM FLANGED GATE VALVE WITH HAND WHEEL OPENING LEFT. APPROVED VALVE MANUFACTURERS PER APPROVED PRODUCTS LIST-WATER, AS MODIFIED WITH OS&Y RISING STEMS.

4. CONTRACTOR SHALL FURNISH & INSTALL A STRAINER DIRECTLY UPSTREAM OF THE WATER METER USING 316 STAINLESS STEEL HARDWARE. THE STRAINER SHALL BE AN AWWA APPROVED, NSF REGULATION COMPLIANT, LEAD FREE AND BRONZE OR STAINLESS STEEL BODIED Z-TYPE PLATE. THE STRAINER SHALL BE EQUIPPED WITH 316 STAINLESS STEEL FASTENERS, A STAINLESS STEEL OR BRASS DRAIN PLUG AND A STAINLESS STEEL SCREEN.


6. 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.

7. DIP SPOOL, SINGLE LENGTH.

8. DIP 90° ELBOW (FLANGE BY FLANGE).

9. ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN AT CENTER LINE OF PIPE, TYPICAL BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.

10. FINISHED GRADE BENEATH METER ASSEMBLY. GRADE LEVEL AND FREE OF TRIP HAZARDS. COMPACT TO 95% OF MAXIMUM DENSITY.

11. ADJUSTABLE METAL PIPE SUPPORTS, POWDER COATED (UNLESS OTHERWISE NOTED ON PLANS) ON CONCRETE BASE. ONE REQUIRED PER EACH METER AND VALVE IN ASSEMBLY.

12. DIP TEE WITH 2" REDUCING BLIND FLANGE, 2" x CLOSE BRASS NIPPLE AND 2" FORD B-11-777W LOCKING CURB STOP. DRILL FULL 2" HOLE BENEATH. INSTALL 2" MIP BRASS PLUG IN EACH CURB STOP.

13. CONCRETE BASE FOR ADJUSTABLE METAL PIPE SUPPORTS, 6" X 12" CONTINUOUS BENEATH ASSEMBLY AS SHOWN.

14. 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.

15. MINIMUM 16" THICK CONTINUOUS CONCRETE THRUST BLOCK. POUR FULL WIDTH OF TRENCH, EMBEDDING THREADED RODS, AS SHOWN.

SEE M-28.01.2 FOR REFERENCED NOTES

NOT TO SCALE

REV. 06/06/2018

DETAIL NO.
M-28.01.1

NON-FIRE-RATED WATER METER ASSEMBLY, 4" AND 6"
1. DETAILS M-28.01.1 & M-28.01.2 ARE GENERALLY 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.

2. WHERE HIGHER NON-FIRE FLOWS ARE REQUIRED USE COM DETAILS M-27.01.1 & M-27.01.2 OR M-27.02.1 & M-27.02.2.

3. WHERE A 10" SERVICE IS REQUIRED, APPLY THIS DETAIL FOR A COMPOUND METER ASSEMBLY CONSISTING OF TWO (2) MANIFOLDED 6" METERS PER COM DETAILS M-27.02.1 & M-27.02.2.

4. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS AND STUDS IN ALL ABOVE GROUND FLANGES TO BE 316 STAINLESS STEEL, LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.

5. ALL ABOVE-GROUND COMPONENTS SHALL BE PAINTED LIGHT TAN. DO NOT PAINT NAME PLATES, VALVE STEMS, METER DIALS, ELECTRONIC COMPONENTS, OR 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: HTTP://WWW.MESAAZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS.

6. 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.

7. INSTALL BRASS PIPE PLUG IN EACH TESTCOCK ON THE ASSEMBLY.

8. ALL METER ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS PER COM DETAIL M-32 OR A CAGE.

9. WATER METER SHOP STAFF SHALL ASSIST IN ALL INSPECTIONS. CONTACT WATER METER SHOP AT 480-644-2641.

10. SCREENING SHALL BE REQUIRED PER CITY OF MESA PLANNING DIVISION REQUIREMENTS. (NOT SHOWN).

11. A 24-INCH MINIMUM CLEARANCE BETWEEN BACKFLOW PREVENTION ASSEMBLY (BPA) AND PERMANENT STRUCTURES SHALL BE PROVIDED.

12. THE METER(S) ARE CITY OF MESA OWNED AND SHALL BE PURCHASED FROM THE CITY. ALLOW UP TO 8-WEEKS FOR DELIVERY. CONTACT THE DEVELOPMENT AND SUSTAINABILITY DIVISION AT 480-644-4273 TO PURCHASE AND THE WATER METER SHOP AT 480-644-2641 TO INQUIRE ABOUT LEAD TIMES.

13. BPA IS PRIVATELY OWNED. THE BPA SHALL BE TESTED AND "PASSED" BY A CERTIFIED TECHNICIAN DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED INSPECTORS LIST AT: HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462 PRIOR TO THE REQUEST FOR FINAL INSPECTION.
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 PURCHASED FROM THE CITY OF MESA.

4. SEE COM DETAILS M-29 AND 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.
LIST OF MATERIALS

1. 1 1/2" OR 2" ANGLE METER VALVE (LOCKING TYPE) - CITY SIDE OF INLET SERVICE LINE. (SEE COM DETAIL 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-49.02).
4. WATER METER BOX AND LID ASSEMBLY PER APPROVED PRODUCTS LIST.
5. CITY APPROVED BACKFLOW PREVENTION ASSEMBLY PER COM DETAILS M-31.03, OR 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 PURCHASED FROM THE CITY OF MESA.
4. SEE COM DETAILS M-49.01 THROUGH M-49.03 FOR INSTALLATION.
6. WATER METER BOX SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 6 FEET FROM TREES.

SECTION A-A

FLOW

NOT TO SCALE

REV. 05/02/2017
1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT: HTTP://MESAAZ.GOV/HOME/SOWDOCUENT?ID=5462.

2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.

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: HTTP://WWW.MESAAZ.GOV/HOME/SOWDOCUENT?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 TESTCOCK ON THE ASSEMBLY.

6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL 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 FIRELINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.

11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOTES

L1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT: HTTP://MESAAZ.GOV/HOME/SOWDOCUENT?ID=5462.

2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.

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: HTTP://WWW.MESAAZ.GOV/HOME/SOWDOCUENT?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 TESTCOCK ON THE ASSEMBLY.

6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL 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 FIRELINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.

11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT: HTTP://MESAAZ.GOV/HOME/SOWDOCUENT?ID=5462.

2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.

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: HTTP://WWW.MESAAZ.GOV/HOME/SOWDOCUENT?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 TESTCOCK ON THE ASSEMBLY.

6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL 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 FIRELINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.

11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT: HTTP://MESAAZ.GOV/HOME/SOWDOCUENT?ID=5462.

2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.

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: HTTP://WWW.MESAAZ.GOV/HOME/SOWDOCUENT?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 TESTCOCK ON THE ASSEMBLY.

6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL 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 FIRELINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.

11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT: HTTP://MESAAZ.GOV/HOME/SOWDOCUENT?ID=5462.

2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.

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: HTTP://WWW.MESAAZ.GOV/HOME/SOWDOCUENT?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 TESTCOCK ON THE ASSEMBLY.

6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COM DETAIL 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 FIRELINES WITH CHEMICAL ADDITIVES, AUXILIARY WATER OR STORAGE TANK CONNECTIONS, OR A SYSTEM EQUIPPED WITH BOOSTER PUMPS THAT OPERATE AGAINST THE BACKFLOW ASSEMBLY.

11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)
DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

LIST OF MATERIALS

1. APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.
2. RESILIENT SEATED GATE VALVE, O.S. & Y. (FIRE LINE CONNECTION) N.R.S. (NON FIRE LINE)
3. 90° ELL, FLANGED D.I.P. 2 1/2" THROUGH 10"
4. PIPE SPOOL, COPPER 2 1/2" - 3" OR FLANGE BY FLANGE D.I.P. 4" - 10"
5. ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN, TYPICAL, BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.

NOTES

1. CONTACT CITY OF MESA, WATER QUALITY BACKFLOW AT (520) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS LIST AT: HTTP://MESA.AZ.GOV/HOME/SHOWDOCUMENT?ID=54-62.
2. THE REQUIRED BACKFLOW ASSEMBLY SHALL BE A MANUFACTURER AND MODEL NUMBER DESIGNATED IN THE CURRENT CITY OF MESA LIST OF APPROVED BACKFLOW ASSEMBLIES.
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: HTTP://MESA.AZ.GOV/HOME/SHOWDOCUMENT?ID=54-62, 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 TESTCOCK ON THE ASSEMBLY.
6. ALL BACKFLOW ASSEMBLIES SHALL BE PROTECTED BY GUARD POSTS. SEE COR DETAIL 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 REQUIRED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY MUST BE INSTALLED IF CHEMICAL ADDITIVES ARE INJECTED ANYWHERE DOWNSTREAM OR AN AUXILIARY WATER SOURCE IS CONNECTED.
11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA. (NOT SHOWN)

NOT TO SCALE

REV. 09/09/2016
1. Contact City of Mesa, Water Quality Services at (480) 644-6462 for latest list of approved backflow assemblies or certified testers at http://www.mesaaz.gov/home/showdocument?id=5462.

2. The required backflow assembly shall be a manufacturer and model number designated in the current City of Mesa list of approved backflow assemblies.

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: http://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 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.

5. Install a brass pipe plug in each testcock 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 shall be as required by City of Mesa. (Not shown)
1. Contact City of Mesa, Water Quality Services at (480-644-6462) for latest list of approved backflow assemblies or certified testers at: http://www.mesaaz.gov/home/showdocument?id=5462.

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5. Install a brass pipe plug in each testcock 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 shall be as required by City of Mesa Planning Division. (Not shown)

### Notes

- **Approved 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"

---

**Details**: M-3104

**Rev.**: 03/02/2017

**Not to Scale**

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**Diagram**

- Double Check Valve Backflow Prevention Assembly
- Security Cage
- Name Plate
- Flow
- Inlet
- Outlet
- 4" Min. Clearance on all sides
- 1/2" Min.
- 24" Max.
- Security Cage
- 4" Min. Clearance on all sides
- Finished Grade
- Screenings (not shown)
- Install as close to water meter as possible
- Adapt outlet fittings to main line as required
- Adapt outlet fittings to main line as required
- Install as close to water meter as possible
1. Contact City of Mesa, Water Quality Services at (480) 644-5462 for latest list of approved backflow assemblies or certified testers at: http://www.mesaaz.gov/Home/ShowDocument?id=5462.

2. The required backflow assembly shall be a manufacturer and model number designated in the current City of Mesa list of approved backflow assemblies.

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: http://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 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, and SN 96). The flux shall be type OA for general soldering on copper.

5. Install a brass pipe plug in each testcock 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-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 shall be as required by City of Mesa Planning Division. (Not shown)

NOTES

- Pressure vacuum breaker assembly, ball valves included.
- Type "L" copper pipe, 3/4" through 2" from meter to assembly.
- 90° ell, copper, 3/4" through 2".
- Pipe union, brass or copper.
- Backflow assembly cage for 1.5" and 2".

LIST OF MATERIALS
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.


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 3/02.

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.

LIST OF MATERIALS

1. DOUBLE CHECK VALVE ASSEMBLY SHALL BE UL/CSF/CRH OR FM APPROVED AND EITHER U.L. LISTED OR FM APPROVED.

2. SUPPLY PIPE, MATERIALS AND INSTALLATION SHALL COMPLY WITH NFPA 15. PIPE IN R.O.W. SHALL BE DUCTILE IRON.
NOTES

1. AN APPROVED VALVE BOX ASSEMBLY WITH "DEBRIS CAP" SHALL BE INSTALLED ON ALL FIRE LINES PER MAG DETAIL 391-1, TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST AT: HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=12678, 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 650 AS AMENDED BY THE CITY OF MESA AND SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 200 PSI. 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 HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=5462.

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.
NOTES:

1. CONTACT CITY OF MESA WATER QUALITY BACKFLOW FOR APPROVED BACKFLOW ASSEMBLIES AT 480-644-6462.

2. GO TO HTTP://WWW.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462 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 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.
NOTE
SAFETY POSTS SHALL BE 4" DIAMETER, 48" HEIGHT PER MAG DETAIL M-40, TYPE 1.

NOTE
SAFETY POSTS ARE REQUIRED AT THESE LOCATIONS IF BACKFLOW PREVENTION DEVICE IS IN AN OPEN AREA (NOT NEXT TO A BUILDING WALL OR FENCE.)

SAFETY POST FOR BACKFLOW PREVENTION DEVICES
PLAN VIEW
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 EQUIVALENT 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 PENTACON 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.
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 725, 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.

NOTES
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.

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:

<table>
<thead>
<tr>
<th>TANK SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>350 GAL.</td>
<td>58&quot;</td>
<td>41&quot;</td>
<td>35&quot;</td>
<td>38&quot;</td>
</tr>
<tr>
<td>500 GAL.</td>
<td>66&quot;</td>
<td>54&quot;</td>
<td>48&quot;</td>
<td>51&quot;</td>
</tr>
</tbody>
</table>

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:

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<td>35°</td>
<td>38°</td>
</tr>
<tr>
<td>520 GAL.</td>
<td>69°</td>
<td>54°</td>
<td>48°</td>
<td>51°</td>
</tr>
</tbody>
</table>

SECTION A-A

NOT TO SCALE

REV. 7/31/2014

DETAIL NO.
M-36.02

mesa az
NOTES

1. ELEVATE SIDESWALLS 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.
NOTES

1. PROVIDE MARKER IN NON-PAVED AREAS ONLY. SEE COM DETAIL M-38.03.

2. COMBINATION AIR RELEASE AND AIR VACUUM VALVES SHALL COMPLY WITH SECTION 630.6 OF THE MAG UNIFORM STANDARD SPECIFICATIONS, MESA AMENDMENTS, AND SHALL INCLUDE BALL VALVES, ALL PIPING, AND AIR RELEASE VALVE COVER AND CONCRETE BASE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE DRAWINGS FOR APPROVED AIR RELEASE/VACUUM VALVE ASSEMBLIES. SEE APPROVED PRODUCT LIST.

3. RESTRAIN ALL PIPING FROM ARV TO MAIN.

4. SERVICE SADDLE 2" CURB STOP AND ASSOCIATED ITEMS PER COM DETAIL M-X.0.01 (AT WATER MAIN CONNECTION). INSTALL SERVICE SADDLE AT WATER MAIN AT 90° FROM HORIZONTAL.

5. THIS DETAIL IS INTENDED FOR USE ON WATER DISTRIBUTION MAINS 16" AND UNDER, WITHIN PUBLIC RIGHT OF WAY. THE DESIGN ENGINEER SHALL CALCULATE THE REQUIRED AIR RELIEF SIZING AND INSTALLATION REQUIREMENTS FOR EACH APPLICATION.
4" WIDE BY 66" LONG UTILITY MARKER POST, RHINO 3-RAIL ORANGE FIBERGLASS OR APPROVED EQUAL INSTALLED PER MANUFACTURER'S RECOMMENDATIONS

APPLY DECAL TO FACE OF POST (BOTH SIDES)

NOTES
1. PLACE MARKERS WHERE SHOWN ON THE PLANS.
2. MARKERS NOT TYPICALLY REQUIRED IN DEVELOPED OR PAVED AREAS.

1" HIGH WITH 1/4" STROKE
WHITE LETTERING ON BLUE BACKGROUND

1" HIGH WITH 1/4" STROKE
BLUE LETTERING ON WHITE BACKGROUND

WHITE BACKGROUND

ALL BLACK LETTERING (1/4" TO 1/3" HIGH LETTERS) ON WHITE BACKGROUND

ALL BLACK LETTERING (1/4" TO 1/3" HIGH LETTERS) ON WHITE BACKGROUND

FINISHED GRADE

POST

DECAL
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 36" 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 720 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.

SIGN POST LENGTH MEASURED FROM TOP OF SIGN(S) TO DEPTH BELOW GRADE

SIGN HEIGHT PER APPLICABLE C.O.M. SIGN DETAIL UNLESS OTHERWISE DIRECTED BY C.O.M. TRANSPORTATION DEPT.

SECTION A - ANCHOR, SLEEVE & POST

POST
SLEEVE
ANCHOR

SECTION B - SIGN FASTENING

SIGN(S), PER APPLICABLE C.O.M. DETAILS

SECTION B - POST & SIGN ASSEMBLY

DETAIL - POST & SIGN ASSEMBLY

NOT TO SCALE

REV. 02/04/13

M-P-39
1. 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. 0-75).

2. Refer to Mag Detail 230 for contraction and expansion joint details.

3. Driveways greater than 30' in width require city approval, utility and property line conflicts shall be considered for all driveway installations.

4. When installing a driveway in existing sidewalk and/or curb, the following notes apply:
   A. 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.
   B. Sidewalk must be sawcut to full depth or removed to next expansion joint.

5. The back of R/W or curb shall extend 2' minimum beyond the back of sidewalk behind the driveway approach unless otherwise approved by the city.

6. 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.

7. For residential small lot/multi-lot private developments, minimum driveway width shall be 20' on a local street. Use Curb Detail M-62 for driveways on collector or arterial streets.

Detached s/w between d/w/s per Mag 230 (width per com detail M-19.01 or per plans).

LANDSCAPED PARKWAY

DETACHED S/W PER MAG 230 MODIFIED TO 6" THICK CONCRETE (WIDTH AS PER PLANS, 5" MIN.)

ATTACHED S/W PER MAG 230 (WIDTH PER COM DETAIL M-19.01 OR PER PLANS).

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

NOT TO SCALE
RESIDENTIAL DRIVEWAY ENTRANCE - TYPE 2
(DETACHED SIDEWALK)

DETAIL NO. M-40.02

NOTES

1. 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 PREFORRED EXPANSION JOINT FILLER A.S.T.M. D-75).  

2. REFER TO MAG DETAIL 230 FOR CONTRACTION AND EXPANSION JOINT DETAILS.

3. DRIVEWAYS GREATER THAN 30' IN WIDTH REQUIRE CITY APPROVAL. UTILITY AND PROPERTY LINE CONFLICTS SHALL BE CONSIDERED FOR ALL DRIVEWAY INSTALLATIONS.

4. WHEN INSTALLING A DRIVEWAY IN EXISTING SIDEWALK AND/OR CURB, THE FOLLOWING NOTES APPLY:
   A. 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.
   B. SIDEWALK MUST BE SAWCUT TO FULL DEPTH OR REMOVED TO NEXT EXPANSION JOINT.

5. THE BACK OF RAW OR PIPE SHALL EXTEND 2' MINIMUM BEHIND THE BACK OF SIDEWALK BEHIND THE DRIVEWAY APPROACH, UNLESS OTHERWISE APPROVED BY THE CITY.

6. FOR RESIDENTIAL SMALL LOT/MULTI-LOT PRIVATE DRIVE DEVELOPMENTS, MINIMUM DRIVEWAY WIDTH SHALL BE 24' ON A LOCAL STREET. USE COM DETAIL M-42 FOR DRIVEWAYS ON COLLECTOR OR ARTERIAL STREETS.

<table>
<thead>
<tr>
<th>CARPORT/GARAGE</th>
<th>1 CAR</th>
<th>2 CAR</th>
<th>3 CAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRIVeway WIDTh</td>
<td>12'-6&quot;</td>
<td>16'-5&quot;</td>
<td>19'-6&quot;</td>
</tr>
<tr>
<td>ON LOCAL STREET</td>
<td>16'-20&quot;</td>
<td>26'-50&quot;</td>
<td></td>
</tr>
</tbody>
</table>
1. COM DETAIL M-40.03, "RESIDENTIAL DRIVEWAY ENTRANCE - RETROFIT ONLY" SHALL BE USED ONLY ON EXISTING DRIVEWAYS. REFER TO COM DETAILS M-40.01 AND M-40.02 FOR NEW RESIDENTIAL DRIVEWAY INSTALLATIONS.

2. CONTRACTION AND EXPANSION JOINTS SHALL ALIGN WITH EXISTING JOINTS IN DRIVEWAY.

3. REFER TO MAG DETAIL 230 FOR CONTRACTION AND EXPANSION JOINT DETAILS.

4. 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 I/P BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M D-1751.

5. CONCRETE SHALL BE CLASS "B" SEC. 225.

6. THE BACK OF RVU OR PUFE SHALL EXTEND 2' MINIMUM BEYOND THE BACK OF SIDEWALK BEHIND THE DRIVEWAY APPROACH, UNLESS OTHERWISE APPROVED BY THE CITY.

NOT TO SCALE
**NOTES**

1. Expansion joints shall be constructed at each side of driveway depression at points of curvature and at all rigid structures.
2. All concrete shall be Class "A" as per Section 725.
3. All commercial driveways, alley entrances, and sidewalks behind driveways shall be 6" thick on 4" A.B.C. or 8" thick on compacted native soil. Sidewalk width at back of driveway shall be 4 feet. Sidewalk thickness and section shall match driveway section for 10' each side of driveway.
4. All commercial driveways have contraction joints at the driveway centerline, at break between sidewalk and driveway wings, and from back corner of apron to lip of gutter. The contraction joints may be either scored or sawcut 1-inch deep.
5. Finish grade elevation at the apron corner/sidewalk shall equal the top of curb elevation unless otherwise approved by the city engineer.
6. Finish curb elevation shall transition uniformly from full height curb elevation to depressed curb elevation.

**PLAN - DETAIL**

1. When installing a driveway in existing sidewalk and/or curb, the following notes apply:
   - A. Remove curb portion only when constructing new depression in existing curb & gutter. Existing curb shall be removed by sawcutting curb horizontally as shown in detail A. Damaged gutter shall be removed and replaced where directed by engineer.
   - B. Sidewalk shall be sawcut to full depth or removed to next expansion joint.
   - C. Install (2) 3" Schedule 40 P.V.C. conduits at 7' back of curb, minimum 24" below final grade, and extend 2' minimum beyond edge of driveway for possible future landscaping or street light installation. Install plugs in both ends of conduits. Stamp 3" letter "C" in concrete for conduit marker.
   - D. The back of R/W or P.U.F.E. shall extend 2' minimum beyond the back of sidewalk along the back of the driveway, unless otherwise approved by the city.
   - E. For acceptable driveway grade breaks use ADOT drawing C-06.10.

**DETAIL "A"**

- See detail B.
- See note 6.
- See note 3.

**SECTION "A"-"A"**

See M-42.01 through M-42.03.

**COMMERCIAL, INDUSTRIAL AND APARTMENT DRIVEWAY DETAIL**

REV. 06/04/2018

DETAIL NO. M-42
NOTES

1. DRIVEWAY PER COM DETAIL M-42. DOUBLE DRIVEWAY MAX. WIDTH = 60’.

2. D MIN. FROM ULTIMATE R/W LINE PER COM DETAIL M-9.01 TO CENTERLINE OF GATE CONTROL MECHANISM. 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:

<table>
<thead>
<tr>
<th>Residential Units</th>
<th>D Min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25</td>
<td>20’</td>
</tr>
<tr>
<td>25 to 100</td>
<td>40’</td>
</tr>
<tr>
<td>101 to 150</td>
<td>60’</td>
</tr>
<tr>
<td>151 to 200</td>
<td>80’</td>
</tr>
<tr>
<td>Greater than 200</td>
<td>100’</td>
</tr>
<tr>
<td>Non-Residential Units</td>
<td>D Min.</td>
</tr>
<tr>
<td>ANY NUMBER OF UNITS</td>
<td>60’</td>
</tr>
</tbody>
</table>

3. GATE INSTALLED AT BEGINNING OF 15’ RADIUS.

4. 30’ MIN. DIMENSION FROM CENTERLINE OF GATE CONTROL MECHANISM TO FACE OF GATE.

5. WHERE EXISTING CONDITIONS DEMAND IT NECESSARY TO REQUEST A DESIGN EXCEPTION OF THE GATED ACCESS, THIS STANDARD MAY BE MODIFIED BY THE TRAFFIC ENGINEER AND/OR CITY ENGINEER.
NOTES

1. DRIVEWAY PER COM DETAIL M-42. DOUBLE DRIVEWAY MAX. WIDTH = 60'.

2. D MIN. FROM ULTIMATE ROW LINE PER COM DETAIL M-49.01 TO CENTERLINE OF GATE CONTROL MECHANISM. 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:

<table>
<thead>
<tr>
<th>Non-Residential Units</th>
<th>D Min.</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>25 TO 100</td>
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<tr>
<td>151 TO 200</td>
<td>80'</td>
</tr>
<tr>
<td>GREATER THAN 200</td>
<td>100'</td>
</tr>
</tbody>
</table>

3. GATE INSTALLED AT BEGINNING OF 15' RADIUS.

4. 30' MIN. DIMENSION FROM CENTERLINE OF GATE CONTROL MECHANISM 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 TRAFFIC ENGINEER AND/OR CITY ENGINEER.
1. Sidewalks shall be per Mag Detail 230 with a minimum 6-foot width unless otherwise approved by the City. Sidewalks at bridge structures shall have a minimum width of 8-feet unless otherwise approved by the City.

2. Attached sidewalk or reduced sidewalk setback may be allowed in cases where right of way or easements are limited.

3. In locations where this detail cannot be applied because of existing conditions, refer to Mag Detail 230 for minimum sidewalk setback.

4. This detail is a guide for installation of detached sidewalks. Each project site shall be reviewed for final approval by the City of Mesa.

5. The back of R/W or PUF shall extend 2' minimum beyond the back of sidewalk along the back of the driveway, unless otherwise approved by the City.

6. Max. 6:1 slope allowed except where area adjacent to R/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.

**Notes**

- Sidewalks shall be per Mag Detail 230 with a minimum 6-foot width unless otherwise approved by the City. Sidewalks at bridge structures shall have a minimum width of 8-feet unless otherwise approved by the City.
- Attached sidewalk or reduced sidewalk setback may be allowed in cases where right of way or easements are limited.
- In locations where this detail cannot be applied because of existing conditions, refer to Mag Detail 230 for minimum sidewalk setback.
- This detail is a guide for installation of detached sidewalks. Each project site shall be reviewed for final approval by the City of Mesa.
- The back of R/W or PUF shall extend 2' minimum beyond the back of sidewalk along the back of the driveway, unless otherwise approved by the City.
- Max. 6:1 slope allowed except where area adjacent to R/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.
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-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 pushbutton height is reduced to 46". However, the obstruction distance shall be 25" max with a 46" pushbutton height.

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.

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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 pushbutton height is reduced to 46". However, the obstruction distance shall be 25" max with a 46" pushbutton height.
NOTES

1. CONTROL ELEVATIONS SHOWN ARE IN RELATION TO THE GUTTER AND ARE LOCATED RADIAL. GUTTER EL.=0.

2. CLASS 'B' CONC. CONSTRUCTION PER 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 HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=3254.
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 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.

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NOTES:
1. ALL CONCRETE TO BE CLASS "B", MAG SECTION 725.
2. FOR SLOPING TRANSITION FROM RAMP TO CURB, SEE DETAIL M-44.03.
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.

LEGEND
RAMP CONTROL POINT (TYP.) SEE PLANS

TYPE B – RETROFIT

SECTION A-A

REV. 03/02/2017

DUAL CURB DIRECTIONAL SIDEWALK RAMPS

M-44.04.1

DETAIL NO.
NOTES:
1. ALL CONCRETE TO BE CLASS "A", MAG SECTION 725.
2. ALL RAMP 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 LANDING DEPTH SHALL MATCH SIDEWALK WIDTH, 5" MINIMUM, AS MEASURED RADIAL 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 RAMPS SLOPE IS A MAXIMUM 1:21 TO THE 4" LONG LEVEL AREA BETWEEN RAMPS IS MAINTAINED.
8. EACH RAMP RETROFIT ALWAYS 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 RAMPS ALONG 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
  12:1 MAXIMUM SLOPE, 15:1 DESIRED SLOPE
- 2% MAXIMUM SLOPE, 1.5% MINIMUM SLOPE

SECTION A-A

- DETECTABLE WARNING LIMITS PER M-44.03
- PAVEMENT REPLACEMENT PER M-16.01

EXPANSION JOINT (TYP.)

SIDEWALK RAMP A

SEE NOTE 9

SIDEWALK

SEE NOTE 6

SEE NOTE 7

2" TYP.

TC = 6"

SEE NOTE 4

2" SIDEWALK WITH SMOOTH FINISH

SEE NOTE 7

PAVEMENT REPLACEMENT PER M-16.01

EXPANSION JOINT (TYP.)

SIDEWALK RAMP A

SEE NOTE 9

SIDEWALK

SEE NOTE 6

SEE NOTE 7

2" TYP.

TC = 6"

SEE NOTE 4

2" SIDEWALK WITH SMOOTH FINISH

SEE NOTE 7

PAVEMENT REPLACEMENT PER M-16.01

TWO CROSSING DIRECTIONS AT CORNER

ONE CROSSING DIRECTION AT CORNER

EXIST.
TRAFFIC
SIGN

RAMP CURB
(TYP.)

CONSTRUCTION JOINT
1" DEEP OR FORMED SEPARATELY

SEE DETAIL
M-44.03

SEE NOTE 5 FOR DEPTH

PROJECTED
TOP OF CURB

DETECTABLE
WARNING

Sawcut
SEE NOTE 4

PAVEMENT
REPLACEMENT
PER M-16.01

CURB & GUTTER PER
MAG DET 220, TYPE "A"

MATCH GUTTER FLOW LINE

SEE NOTE 3

SEE DETAIL
M-44.03

DATE NO.
M-44.04.2

REV. 06/20/2017

DETAIL No.
M-44.04.2

DIIRECTIONAL SIDEWALK RAMP RETROFIT

Mesa Az
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: HTTP://MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=3254.**
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 about said plane.

3. Refer to the City of Mesa’s approved product list available at www.mesaaz.gov/engineering/approvedproductlist.aspx for a list of the truncated dome products that are acceptable for use with this detail.

4. Color of tiles shall be red (Federal color no. 20109 or equivalent) unless otherwise directed by the City.

5. Center truncated dome tiles within landing area left-to-right.

**NOTES**

- Drill and epoxy grout in-place #4 rebar at mid-slab depth at 12" on-center, over the entire perimeter where new and existing concrete meet. Minimum embed in both slabs shall be 3-inches.

- Existing ramp to be retrofitted detectable warning tiles installed per manufacturer's instructions

- Class "B" concrete per Mag 725 with rough broom finish

- Exposed end poured in new concrete.

**SECTION A-A**

NOT TO SCALE
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-45.02.1 THROUGH M-45.07.4 IF REQUIRED BY PLANS.

6. BUS SHELTERS SHALL NOT BE PLACED WITHIN SIGHT VISIBILITY TRIANGLES OF ADJACENT STREET INTERSECTIONS OR DRIVEWAYS.

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 SHIELER PAD LOCATION, SEE M-45.01.2.

12. ALTERNATIVE WHEELCHAIR PAD, CONSTRUCT PER MAG DETAIL 230, SEE M-45.01.2.
22 GA. METAL COVER PLATE, UNDER HIP MEMBER. GREASE MIDDLE & ATTACH WITH SELF TAPPING PHILIPS PAN HEAD SCREWS @ 12" O.C. FIT END CONDITIONS. PAINT TO MATCH FRAME.

24 GA. DRIP FLASHING OVER 1/8" BENT PLATE CLOSURE TYP. ALL 4 SIDES.

INSTALL SOLAR LIGHTING PER COM SPECIFICATION AS FOUND AT WWW.MESA AZ.GOV.

MITER & BUTT WELD CORNERS WITH 3/4" WELD.

STANDING SEAM PANELS

24 GA. RIDGE/ HIP TRIM

4"X4"X3/16" T.S. FRAME

24 GA. RIDGE/HIP TRIM

MITER RIDGE/HIP TRIM FOR FIT OVER DRIP FLASHING (TYP.)

(2) 1" DIA. DRILLED HOLES IN BEAM WITH COVER PLATES FOR FUTURE ELECT. SEE DETAIL B ON SHEET 3.

STREET

ROOF PLAN
CITY OF MESA ENGINEERING DEPARTMENT

GENERAL NOTES

1. CONCRETE PAD IS "CLASS-B" (TYP.) A.B.C. IS COMPACTED TO MIN. 65% (TYP.)

2. NATIVE SOIL UNDER A.B.C. IS COMPACTED TO MIN. 95% (TYP.)

3. CONCRETE FOOTER IS "CLASS-B" (TYP.)

4. NATIVE SOIL UNDER FOOTER IS COMPACTED TO MIN. 95% (TYP.)

5. FINISH CONCRETE PAD WITH A MEDIUM BROOM TEXTURE

6. SEE PLANS FOR PAD GRADES

7. INSPECTION REQUIRED FOR ADHESIVE ANCHOR SYSTEM - SEE DETAILS 2 & 6 ON M-45.03.3 & M-45.03.2, RESPECTIVELY.

8. THE INTERNATIONAL "NO SMOKING" SIGN SHALL FEATURE THE 3-INCH DIAMETER SYMBOL IN TWO COLORS, RED & BLACK, WITH A WHITE BACKGROUND. SILK SCREENED ONTO A 1/16-INCH THICK SHEET METAL BASE CUT TO A 4-INCH SQUARE. THE SIGN SHALL BE ATTACHED AT 57-INCHES ABOVE FINISH FLOOR CENTERED ON THE LOWER INFILL PANEL (OPPOSITE OF THE TELEPHONE LOCATION) ON THE INSIDE OF THE BUS SHELTER WITH 4 NON-REMOVABLE PDP RIVETS AT EACH CORNER.

PAINTING NOTES

ALL PAINTING IS RESTRICTED TO A CONTROLLED SHOP SETTING WITHIN MARRICO COUNTY.

CARBOLINE PRODUCTS AVAILABLE FROM DUNN-EDWARDS PAINTS (TYP.).

FINISH: HIGH GLOSS

FINISH SYSTEM:
TWO COATS PRIMER (MINIMUM): CARBOGUARD 888 EPOXY POLYAMIDE

SOLIDS BY VOLUME: 63% ± 2%

DRY FILM THICKNESS: 3.0-5.0 MIL PER COAT

TWO COATS FINISH (MINIMUM):
CARBOHANE 134 HP TWO-COMPONENT, ACRYLIC, ALIPHATIC POLYURETHANE

SOLIDS BY VOLUME: 54% ± 2%

DRY FILM THICKNESS: 3.0-5.0 MIL PER COAT

BUILDING INFORMATION

GOVERNING CODE: IRC 1994 LBC
SEISMIC ZONE: 2
SOIL BEARING: 1500 PSF
CONCRETE (ALL): 2500 PSI
METALS:
ROLLED SHAPES AND PLATES: FY50 KS
PIPING: FY35 KS
STRUCTURAL TUBING: FY40 KS
1/4" BENT PLATE CLOSURE: FY50 KS

CONSTRUCTION TYPE: 1-H SHELTER IS SHOP OCCUPIED & FABRICATED

SHELTER DESIGN COMPLIES WITH A.D.A.S. SECTIONS (A) THROUGH (G).

SEE DRAWING NO. A-68002 & A-68000A FOR STRUCTURAL CALCULATIONS.

ELECTRICAL FACILITIES N.I.C. UNLESS SPECIFICALLY STATED ON PLANS

SRR-2/97

MASTER PLAN REGISTRATION

REV. 03/30/2015
NOTES

1. DRILL HOLE:
   SEE DETAIL 2, M-45, 03-1 FOR ANCHOR TYPE AND ANCHOR DIAMETER. DRILL HOLE IN EXISTING CONCRETE, 1/8" LARGER DIAMETER THAN THREADED RODS.

2. CLEAN HOLE:
   FOR DRY-DRILLED HOLE, VACUUM OR BLOW OUT HOLE USING OIL-FREE AND MOISTURE-FREE COMPRESSED AIR. FOR WET DRILLED HOLES, WASH OUT HOLE TO REMOVE DRILLING SLURRY RESIDUE. REMOVE FREE STANDING WATER AND ALLOW HOLE TO THOROUGHLY DRY.

3. EPOXY:

4. PREPARE ANCHOR:
   CLEAN, DRY AND WIPE ANCHOR FREE OF ALL WATER, DIRT, OIL AND GREASE, ETC.

5. SET ANCHOR:
   FILL HOLE WITH EPOXY, INSERT ANCHOR AND WORK UP AND DOWN AND TAP LIGHTLY TO INSURE COMPLETE EMBEDMENT.

6. SET OR CURE TIME:
   DO NOT DISPLACE OR MOVE ANCHOR IN ANY WAY AFTER ANCHOR IS SET. ALLOW EPOXY TO CURE FOR 24 HOURS MINIMUM BEFORE TIGHTENING NUTS ON ANCHOR.

6 TYP. EPOXY GROUTING PROCEDURE

7 BENT PLATE SPLICE
5 STANDARD HAND HOLE ASSEMBLY AND BASE COVER

NOTES:

1. Hand hole cover shall be secured by a cadmium plated 1/2"-20 button head allen bolt and holding cleat.
2. The post's ground shall be 1/2"-13 UNC nut welded to inside of post.
3. Hand hole shall be oriented so that it faces 90 degrees away from the street.
4. Hand hole dimensions shall be 3" by 6".
5. Hand hole cover dimensions shall be 3" by 6".
6. Slot length of base plate equals anchor bolt dia. plus 1/2" on both sides of anchor bolt.

CAULK: THICKNESS VARIES. SEE DETAIL NO. 2.
NOTE:
SEE DETAIL 2 (FOOTING @ T.S. FRAME CONNECTION) ON M-45.03.1 FOR ADDITIONAL INFORMATION.

A - ROOF SECTION & FRAME SECTION (PARTIAL)
PATTERSON-WILLIAMS RAINBOW RACK, MODEL NO. 1629-01M3
POWDER COATED OR APPROVED EQUAL. COLOR: GREEN (RAL 6007). PAINTED TO MATCH BENCH BY MANUFACTURER. 2
LOOPS REQUIRED. SEE FLOOR PLAN. FASTEN TO CONCRETE
WITH 5/16" DIAMETER 4" LONG FRIMA HIGH EXPANSION
ANCHORS BY RED HEAD, 3/8" DIAMETER 3-3/4" LONG AHK
BOLT. 1/2" EXPANSION ANCHOR BY HITI, OR ENGINEER'S
APPROVED EQUAL.

8 BIKE LOOP DETAIL

SEE DRAWING NO. A-68000
FOR STRUCTURAL CALCULATIONS

SRS-12/67
MASTER PLAN REGISTRATION

REV. 03/30/2015
3. PERFORATED SCREEN FRAME (SILL)

- 16 GA. (.021in. THICK) PERFORATED STEEL PANEL 1/4" HOLE WITH 5/8" STAGGER, RIVETED TO FRAMEWORK, PAINT TO MATCH FRAME.
- 1/2" GA. BENT STEEL ANGLED CHANNEL PAINT TO MATCH T.S. FRAME (TO SIT BETWEEN JAMB FRAMES)
- 5/16" STEEL POP-RIVETS @ 9" O.C. (TYP. FOR PERF. PANEL ONLY)
- CAULK BEAD - CLEAR ACRYLIC SILICONE
- 3/4" X 3/16" T.S. FRAME SHOWN BEYOND

4. CONNECTION @ ROOF STRUCTURE

- 3/4" X 3/16" T.S. FRAME
- 3/4" X 3/16" T.S. BEYOND
- CAULK A 2 COMPONENT POLYURETHANE ELASTOMERIC SEALANT IN A SELF-LEVELING CONSISTENCY (SILASTIK)

5. CONCRETE SCORE

- TOOL CAULKING SMOOTH
- 3/4" - 1/2" CLOSED CELL RUBBER OR FOAM CASING
- 1/4" MIN. CAULKING THICKNESS FROM CONCRETE
- NEW CONCRETE
- 1/2" NON-ASPH. FIBER MATERIAL EXTEND TO 1" BELOW CONCRETE

6. EXPANSION JOINT

- SEE SECTION "B3" ON SHEET 3 FOR HAND-HOLE LOCATION

SEE DRAWING NO. A-64000 FOR STRUCTURAL CALCULATIONS
SBS-1/2/97
MASTER PLAN REGISTRATION
NOT TO SCALE

REV. 07/23/2016
1. SUN SCREEN (SEE DETAIL NO. 5 THIS SHEET).
2. END SCREEN (SEE DETAIL NO. 6 THIS SHEET - LEFT HAND).
3. END SCREEN (SEE DETAIL NO. 6 THIS SHEET - RIGHT HAND).
4. 1'-4" x 1'-4" x 1'-8" DEEP FOUNDATION (SEE DETAIL NO. 6 ON SHEET NO. 6).
5. 6' BENCH IN RELOCATED POSITION FROM STANDARD.
6. 1'-4" x 1'-4" x 1'-8" DEEP FOUNDATION W/MODIFIED "T" TOP (SEE DETAIL NO. 11 ON SHEET NO. 6).
7. PROVIDE AND ATTACH SCHEDULE HOLDER, RCH-22 BY TRANSIT INFORMATION PRODUCTS OR APPROVED EQUAL. FINAL MOUNTING LOCATION AS SPECIFIED BY CITY INSPECTOR.
NOTE:
*POSITION OF POST IN FOOTER IS DETERMINED BY FRAME ORIENTATION (SIDE TO SIDE, REQUIRES 6" MIN. CLEARANCE) (FRONT TO BACK, REQUIRES 4" MIN. CLEARANCE) THIS IS TYPICAL TO DET. NO. 6 & DET. NO. 11 RIGHT.

*POSTS, NO CLOSER THAN 4' FROM FOOTING EDGE

3" x 4" POST OR 2" x 2" POST, PLACEMENT WILL VARY. SEE PLANS & NOTE RIGHT

(3) #3 TIES @ 1/2" O.C. IN TOP 5" OF CONC. FTG.

FINISH TO MATCH SHELTER PAD

TOOL TO DEFINE FTG. OUTLINE

2" CLEAR

3" CLEAR (TYP.)

CLASS "B" CONC. FOOTING

1-4" SQUARE

(4) #5 VERTICAL REINF. @ EA. COR. & (2) #3 TIES @ 60" O.C.

NOT TO SCALE
**Minimum Boarding Area Detached Sidewalk**

- 8' Minimum
- 22' Preferred
- Sidewalk width varies

**Minimum Boarding Area Meandering Sidewalk or No Sidewalk**

- 8' Minimum
- 22' Preferred
- Sidewalk width varies

**Standard Sign Installation**

- Behind curb and gutter
- Behind sidewalk

**Additional Widening (as needed) per MAG 230**
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-46.04.
6. REFER TO COM DETAILS M-44.04.1 & M-44.04.2 FOR PUSHLIGHT LOCATION.

25.5' RADIUS, F/C, TYP.
15' WIDE P.L.F.E., TYP., ALL CORNERS
BUS PULLOUT, TYP., ALL CORNERS.
PER COM DETAIL M-45.01

RAISED MEDIAN

STRAIGHT MEDIAN ACROSS FROM RAISED MEDIAN

LEFT TURN DETAIL

START LEFT TURN LANE STRIPING
20', START REVERSE CURVE

LEFT TURN MEDIAN

CROSSWALK WIDTH, TYP. 6'
12' CROSSWALK LINES

2' DASH 6' GAP, TYP.
6' GAP, TYP.

19' STOP BARRIER, TYP.

RIGHT TURN LANE OPENING, TYP.
300' TAPER
250'

RAISED MEDIAN

DETACHED 6' WIDE SIDEWALK PER COM DETAIL M-42.
SIDEWALK RAMP PER COM DETAIL M-44.03, TYP.

CROSSWALK/RAISED MEDIAN PER COM DETAIL M-46.04.3, TYP.

NOT TO SCALE

REV. 06/29/2017

DETAIL NO. M-46.04.2

MESAA Z

ARTERIAL STREET INTERSECTION (4 LANES)
WITH 8' RAISED MEDIANS
CROSSWALK/MEDIAN DETAIL

SECTION A-A

CONCRETE 6"X12" CURB
MATCH AC TO CURB
CONCRETE 6"X12" CURB
1/2" EXP. JOINT MATERIAL (TYP)

SECTION B-B

DETECTABLE WARNING
MATCH AC TO CURB
CONCRETE 6"X12" CURB
1/2" EXP. JOINT MATERIAL (TYP)

SECTION C-C

DETECTABLE WARNING PER APPROVED LIST
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. (NP. 1.)

NEW CONCRETE HEADER CURB
SEE DETAIL X THIS SHEET

NEW OR EXISTING
CONCRETE CURB

D.G. B TREE AND
SHRUB PLANTINGS
5’ B/C TO B/C

HOLLAND STONE I, MANUFACTURED BY "PAVESTONE"
4-1/8" X 8-1/4" X 3-1/8" THICK, OAKS BLEND COLOR
CONCRETE PAVING IN A BASKET WEAVE PATTERN
(SEE MAG SPECIFICATIONS, SECTION 342)

EXISTING
CONCRETE CURB

SAND SWEEP JOINTS

2" CLEAN WASHED COMPACTED SAND
BASE PER MAG STD. 342.2.1

0.95% COMPACTED SUBGRADE PER MAG SECTION 301

REV. 10/18/2016
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. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-44.02.
5. REFER TO COM DETAILS M-44.01.1 & M-44.01.2 FOR PUSHDOWN LOCATIONS.
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-46.04.
6. REFER TO COM DETAIL M-44.01.1 & M-44.01.2 FOR PUSHTURN LOCATIONS.

30' RADIUS, F/C, TYP.
15' WIDE P.U.F.E., TYP., ALL CORNERS
BUS PULLOUT, TYP., ALL CORNERS,
PER COM DETAIL M-45.01

CROSSWALK WIDTH, TYP. 0.6
1/2 CROSSWALK LINES

2' DASH 6' GAP, TYP.
2' DASH 4' GAP
18" STOP BAR

4" MIN., TYP.
120° REVERSE CURVE

11" RIGHT TURN LANE OPENING, TYP.

16' P.U.F.E.
CORNER WITHOUT
RIGHT TURN LANE

SIDEWALK RAMP PER
COM DETAIL M-44.03
DETACHED 6' WIDE
SIDEWALK PER COM
DETAIL M-43, TYP.

LEFT TURN DETAIL

STRIPE MEDIAN ACROSS FROM RAISED MEDIAN

NOT TO SCALE

REV. 03/16/2016

M-46.03.1
NOTE
1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. REFER TO COM DETAILS M-44.01.1 & M-44.01.2 FOR PUSH BUTTON LOCATIONS.

STRIPED MEDIAN ACROSS FROM RAISED MEDIAN
75' R/W

RAISED MEDIAN, TYP.

DETACHED 6' WIDE SIDEWALK PER COM DETAIL M-43, TYP.

15' WIDE P.U.F.E., TYP.
BUS PULLOUT, TYP.
PER COM DETAIL M-45.01

SIDEWALK RAMP
TYP., PER COM DETAIL M-44.03

MEDIAN TAPER TRANSITION STRIPING
100' R, F/C

2' DASH
6' GAP, TYP.

65' R/W

250'

300', LT & RT CURB TAPERS & TRANSITION W/MEDIAN STRIPING TAPERS

120' MEDIAN REVERSE CURVE & RT TURN LANE OPENING

15' WIDE P.U.F.E., TYP.

65' R/W

RAISED MEDIAN

NOT TO SCALE

REV. 03/16/2016

DETAIL NO.
M-46.05.1
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. Refer to COM details M-44.01.1 & M-44.01.2 for pushbutton locations.
NOTE:
LEFT TURN LANE LENGTH MAY VARY TO SUIT SPECIFIC CONDITIONS.
USE 200' TYPICAL ON ARTERIAL STREETS AND 100' TYPICAL ON NON-ARTERIAL STREETS.
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.

NOTE:
ALL DIMENSIONS ARE TO THE INSIDE EDGE OF STRIPING.

RADIUS RAMPS

DUAL RAMPS

CENTRE OF SIDEWALK RAMP, TYP.
12" WIDE WHITE CROSSWALK LINES, TYP.
4", TYP.
18" WIDE WHITE STOP BAR, TYP.
5", TYP.
10", TYP.
7.5", TYP.
4", TYP.
18" WIDE WHITE STOP BAR, TYP.
NOTES
1. RS-9R AT ALL RIGHT TURN LANES.
2. INSTALL CARROT FOR EXTRA WIDE RIGHT TURN LANES (8' OR MORE). FOR LANE WIDER THAN 20', INSTALL CARROT AND "ARROW" PAVEMENT MARKING.
3. SEE CDM DETAIL M-47.03 FOR ARROW MARKING DETAILS.
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-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.

EXCERPT FROM MUTCD 2009 (AZ SUPPLEMENT), TABLE 2C-4 CONDITION A

<table>
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<th>SPEED (MPH)</th>
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<tr>
<td>20</td>
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<tr>
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<td>55</td>
<td>700</td>
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<tr>
<td>60</td>
<td>775</td>
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</table>

NOTES

"D" SEE NOTE 3

SEE DETAIL "A"

IF GREATER THAN 18', INSTALL A CARROT (SHOWN ABOVE)

DETAIL "A" - 3'x9' SKIPS

AT YY ST

AT SIGNAL

R3-SFP
30"X12"

R3-5R
30"X36"

W9-10IL 36"X36"

ADOT ARIZONA
MANUAL OF
APPROVED SIGNS

REV. 06/04/2018

DETAIL NO. M-47.02

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-47.01, 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 MUTED LATEST EDITION.

7. ALL LEGENDS AND SYMBOLS SHALL BE APPLIED IN TYPE IV 0.90 INCH (0.90 MILL) PREFORMED THERMOPLASTIC PER ADOT STANDARD SPECIFICATIONS SECTION 705.
NOTE
DOTTED LINE SHALL BE TYPE I PREFORMED PLASTIC PAVEMENT MARKING PER ADOT STANDARD SPECIFICATION SECTION 705.

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 STEP THREE IF NECESSARY.
5. EXTEND SOLID 4" WHITE FROM CROSSWALK THROUGH FIRST TWO SKIPS.
NOTES

1. INSTALL BIKE LANE MARKINGS AFTER EACH INTERSECTION.

2. SYMBOL SPACING NOT TO EXCEED 1000 FT.

3. BIKE RIDER FACES TOWARDS TRAFFIC.

4. BIKE RIDER WEARS HELMET.

5. ALL LEGENDS AND SYMBOLS SHALL BE APPLIED IN TYPE IV 0.90 INCH (0.90 MILL) PREFORMED THERMOPLASTIC PER AASHTO STANDARD SPECIFICATIONS SECTION 705.
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 6" MIN. TO 10" MAX. BELOW "BLUE TOP" EXCEPT FOR SPECIAL CONDITIONS (R.R., LARGE METER, ETC.).

2. MECHANICAL COUPLINGS FOR SERVICE EXTENSIONS MAY BE ALLOWED ON A PER INSTALLATION BASIS WITH PRIOR WRITTEN APPROVAL FROM THE WATER RESOURCES DEPARTMENT.


4. WATER METER SIZES 1", 1 1/2" AND 2" MAY BE REDUCED FROM AN EXISTING WATER SERVICE AND VALVE TO A SIZE WHICH IS ADEQUATE TO SUPPLY THE FIXED COUNT DEMAND UPON APPROVAL OF DEVELOPMENT SERVICE'S 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 4" OF METER SIZE APPROVED PIPING DOWNSTREAM OF THE WATER METER. WHERE BACKFLOW PREVENTION IS REQUIRED THE BACKFLOW DEVICE SIZE MUST BE EQUAL TO OR GREATER THAN THE REQUESTED WATER METER SIZE. THE LENGTH OF THE BACKFLOW PREVENTER AND ITS METER SIZE PIPING SHALL BE COUNTED AS PART OF THE REQUIRED 4" 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
### Service Line Sizes

<table>
<thead>
<tr>
<th>Material</th>
<th>3/4&quot;</th>
<th>&quot;</th>
<th>1/2&quot;</th>
<th>2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Saddle (with I.P. Threads)</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compression Stop (Ball Style) (with I.P. Threads)</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curb Stop With Locking Wings (Ball Style)</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outlet Meter Coupling</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
<td>SEE APPROVED PRODUCTS LIST</td>
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<tr>
<td>Service Line</td>
<td>COPPER (TYPE K-SOF1)</td>
<td>COPPER (TYPE K-SOF1)</td>
<td>COPPER (TYPE K-HARD)</td>
<td>COPPER (TYPE K-HARD)</td>
</tr>
</tbody>
</table>

### Notes:

1. **City of Mesa** does not allow flared-type connections on the city side of the meter.
2. **No** tapped couplings will be allowed.
3. See approved products list for water meter box and lid.
4. See com detail M-29 for 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-49.03.
6. For 3/4" and 1" services, a minimum of 1/2 foot copper pigtail on customer's side before changing to other material. For 1/2" & 2" services, a minimum of 4 feet copper pigtail on customer's side 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 line on the customer's side of the 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. Fittings and valves in contact with potable water shall be no/low lead, compliant with EPA safe drinking water act requirements.
NOTES:

1. SERVICE LINE BETWEEN WATER METERS AND WATER MAIN SHALL BE COPPER PER COM DETAIL M-49.01 AND M-49.02.


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.
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-559)
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 M.A.G. DETAIL 330.
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.
MATCH EXISTING GRADE, FINAL LAYER THICKNESS AND TYPE TO MATCH EXISTING NATIVE, A.C. OR CONCRETE

EXISTING GROUND

12" MIN.

EXISTING VALVE HOUSING

BACKFILL WITH 1/2 SACK CLAY PER MAC SPEC 728

REMOVE MINIMUM OF TOP 12" OF EXISTING VALVE HOUSING, BOX AND COVER

EXISTING VALVE TO BE ABANDONED IN PLACE. THE FINAL POSITION OF THE VALVE, OPEN OR CLOSED, SHALL BE PER PROJECT SPECIFICATIONS AND PLANS.

VALVE ABANDONMENT
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 MFG STANDARD DETAIL 380.

NOTES:
1. INSTALLATION AND CORROSION PROTECTION PER MFG SPECIFICATION SECTION 600.
2. ALL JOINTS TO BE RESTRAINED PER MFG 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.
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.


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-49.01 & 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.


12. ALL OTHER REQUIREMENTS FOR PRIVATE WATER AND SEWER SERVICE SHALL ADHERE TO THE LATEST ADOPTED UNIFORM PLUMBING CODE AS AMENDED BY THE CITY.
Casing Installation Profile View

Installation Notes:
1. Restained joint carrier pipe per City of Mesa approved products list.
2. Stainless steel casing spacers per City of Mesa approved products list.
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'-1/2" 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.

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, manufacturers recommendation, and project plans and specifications.
- Restained 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.

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.
NOTES

1. GAS PIPE SHALL HAVE A MINIMUM OF 36" COVER AS MEASURED FROM WHICHEREVER 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-491.1.


4. SEE CONSTRUCTION PLANS FOR WATER MAIN AND GAS PIPE SIZES.

5. WHERE WATER AND GAS ARE INSTALLED IN A JOINT TRENCH, THE WATER LINE CONTRACTOR SHALL ADJUST BOTH WATER AND GAS VALVE HOUSING BOXES TO FINISHED GRADE ACCORDING TO THE APPLICABLE STANDARD DETAIL. ALSO, THE WATER LINE CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN ALL NECESSARY BARRICADING, STEEL PLATING AND TRENCH SHORING REQUIRED DURING GAS INSTALLATION.

6. THE WATER LINE CONTRACTOR SHALL COMPLETE ALL BACKFILL TO FINISHED GRADE AFTER THE GAS PIPE INSTALLATION IS COMPLETED.

7. A MINIMUM OF 12" OF SEPARATION SHALL BE MAINTAINED BETWEEN GAS PIPE, WATER MAIN AND OTHER UNDERGROUND FACILITIES WHEN OVERCROSSING OR UNDERCROSSING.

8. 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.

9. AT A MINIMUM GAS LINE INSTALLATION SHALL MAINTAIN 18-INCH HORIZONTAL SEPARATION FROM THE OUTSIDE DIAMETER OF THE WATER LINE.

10. 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:

   (A) 36-INCHES FOR MAINS SMALLER THAN 12-INCHES

   (B) 48-INCHES FOR MAINS 12-INCH AND LARGER.

II. 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.
NOTES

1. PANEL SHALL BE FABRICATED FROM 0.063" THICK 3004-H14, 5052-H38, OR 6061-T6 ALUMINUM ALLOY ETCHED ON BOTH SIDES.
2. CORNERS OF PANEL SHALL BE ROUNDED WITH A 1-INCH 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-23.01.
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) in a manner that allows solid waste collection vehicles access to bin enclosures. Sites shall be designed so collection vehicles can safely access and lift a bin without obstructions (ground level and aerial obstructions).

3. For the safety of others, solid waste collection vehicles will not back up more than 50 feet after servicing a bin and will not make any turns while backing.

4. No awnings or building projections allowed in solid waste collection vehicle routes. Min. 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 automated gates.

5. Routes shall be clear of all obstructions (curbs, walls, overhead wires, and awnings) to prevent damage from the collection vehicle.

6. Take note of the solid waste collection route. 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.

8. Bin enclosures shall be located away from entrances and exits or business drive-thru’s. So solid waste collection vehicle does not create a safety hazard by blocking in-coming or out-going traffic.

9. Standards for single, double, and triple-wide bin enclosures are addressed in COM details M-62.02 and M-62.03.

10. Standards for bin enclosure screen walls, safety posts, and gates are addressed in COM detail M-62.04.
NOTES

1. ALL COMMERCIAL PROPERTIES SHALL BE DESIGNED WITH ENCLOSURES TO ACCOMMODATE (1) REFUSE AND (1) RECYCLING ENCLOSURE FOR EVERY 20,000 SQUARE FEET OF BUILDING SPACE. RESTAURANTS WHICH ARE DESIGNED ON A SINGLE PAD SHALL HAVE A MINIMUM (1) REFUSE AND (1) RECYCLING ENCLOSURE. THE ENCLOSURES CAN BE SET UP AS DOUBLES OR SINGLES TO MAXIMIZE THE USE OF THE PROPERTY.

2. MULTI-UNIT RESIDENTIAL DEVELOPMENTS SHALL BE DESIGNED WITH EITHER SINGLE OR DOUBLE-WIDE ENCLOSURES FOR TRASH AND AT LEAST ONE TRIPLE-WIDE ENCLOSURE FOR RECYCLING.

3. COMPACTORS CAN BE USED 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. 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.

4. THE NUMBER OF BIN ENCLOSURES NEEDED DEPENDS ON THE SIZE OF THE DEVELOPMENT. TYPICALLY, TOTAL VOLUME NEEDS CAN BE CALCULATED BASED ON ONE HALF CUBIC YARD PER LINING UNIT PER WEEK. FOR EXAMPLE, A DEVELOPMENT WITH 200 UNITS X .5 YARDS = 100 YARDS PER WEEK OR 10 TRASH BINS (6 YARDS SERVICED TWO TIMES PER WEEK (10 X 6 X 2 = 120 YARDS).

5. SINGLE-WIDE BIN ENCLOSURES SHALL HAVE A NET ENCLOSURE OPENING OF 12 FEET.

6. 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.

7. GATES, HINGES, SAFETY POSTS, AND MOUNTING HARDWARE SHALL BE INSTALLED SO THAT THERE IS A MIN. 9 FOOT DEPTH CREATED WITHIN EACH ENCLOSURE.

8. GATES, HINGES AND MOUNTING HARDWARE SHALL NOT INTRUDER UPON MINIMUM NET ENCLOSURE OPENING SO THERE IS A MINIMUM 12" WIDTH WITHIN EACH ENCLOSURE. DOUBLE ENCLOSURE GATE MUST BE ABLE TO OPEN SIMULTANEOUSLY.

9. BIN ENCLOSURES ARE TO BE ANGLED NO MORE THAN 30 DEGREES FROM THE CENTER LINE OF THE SOLID WASTE COLLECTION VEHICLE ROUTE.

10. BINS THAT ARE VISIBLE FROM A PUBLIC ROADSIDE 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; 3 FEET FROM ANY COMBUSTIBLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT PER UNIFORM FIRE CODE (203.2.2).

12. STANDARDS FOR SOLID WASTE VEHICLE ACCESS ARE ADDRESSED IN COM DETAIL M-62.01.

13. STANDARDS FOR TRIPLE WIDE ENCLOSURES ARE ADDRESSED IN COM DETAIL M-62.03.

14. STANDARDS FOR BIN ENCLOSURE SCREEN WALLS, SAFETY POSTS, AND GATES ARE ADDRESSED IN COM DETAIL M-62.04.

15. STANDARDS FOR PROPERTIES APPROVED FOR BARREL SERVICE ARE ADDRESSED IN COM DETAIL M-62.05.

16. RESTAURANTS MUST PROVIDE A SEPARATE ENCLOSED AREA TO ACCOMMODATE THEIR GARBAGE TRASH. THIS DESIGNATED AREA MUST NOT INTERFERE WITH THE TRASH/RECYCLING COLLECTION.

17. SOLID WASTE ENCLOSURES MAY INCLUDE WATER CONNECTIONS & DRAINS TO FACILITATE CLEANING OF DUMPSTERS. THESE SHOULD BE LOCATED TO NOT IMPED 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.

18. TREE PLANTING SHOULD NOT TAKE PLACE WITHIN TEN (10) FEET OF THE BIN ENCLOSURE AND SHOULD BE SPACED AS SO NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BIN DUMPING AT THE FINAL FULL GROWTH DIMENSIONS.
NOTES

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-62.02.

2. TRIPLE-WIDE ENCLOSURES SHALL HAVE A NET ENCLOSURE OPENING OF 36 FEET AND SHALL BE DESIGNED WITHOUT MIDWALLS. GATES, HINGES, AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING. GATES MUST BE ABLE TO OPEN SIMULTANEOUSLY.

3. GATES, HINGES, SAFETY POSTS, AND MOUNTING HARDWARE SHALL BE INSTALLED SO THERE IS A MINIMUM 9 FOOT DEPTH CREATED WITHIN EACH ENCLOSURE.

4. BIN ENCLOSURES ARE TO BE ANGLED NO MORE THAN 30 DEGREES FROM THE CENTER LINE OF THE SOLID WASTE COLLECTION VEHICLE ROUTE.

5. CONTRACTION JOINTS MAY BE EITHER SCORED OR SAWCUT 1-INCH DEEP.

6. GATES, HINGES AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING SO THERE IS A MINIMUM 12" WIDTH CLEAR WITHIN EACH ENCLOSURE.
SEE M-62.04.2 FOR REFERENCED NOTES
NOTES

1. TRASH AND RECYCLING BIN AREA SHALL BE SCREENED WITH A SIX FOOT (6') MASONRY WALL PER COM DETAIL M-62.04.1.

2. BIN ENCLOSURE TO BE A MINIMUM OF 5 FEET FROM ANY NON-COMBUSTIBLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT, AND 5 FEET FROM ANY COMBUSTIBLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT PER UNIFORM FIRE CODE (103.2.2).

3. BINS THAT ARE VISIBLE FROM A PUBLIC ROADWAY SHALL HAVE ENCLOSURE GATES THAT SCREEN THE BINS FROM PUBLIC VIEW.

4. GATES SHALL BE INSTALLED SO THERE IS A NET BIN ENCLOSURE OPENING OF 12 FEET PER BIN. GATES, HINGES, AND MOUNTING HARDWARE SHALL NOT INFRINGE UPON MINIMUM NET ENCLOSURE OPENING.

5. GATES, HINGES, SAFETY POSTS, AND MOUNTING HARDWARE SHALL BE INSTALLED SO THERE IS A MINIMUM 9 FOOT DEPTH CREATED WITHIN EACH ENCLOSURE.

6. EACH ENCLOSURE GATE SHALL HAVE DROP FINS INSTALLED AND HOLES DRILLED IN THE CONCRETE AT BOTH THE OPEN AND CLOSED POSITIONS TO PREVENT GATES FROM CLOSING INTO THE COLLECTION VEHICLE.

7. BIN ENCLOSURES SHALL HAVE (3) 6" DIAMETER STEEL SAFETY POSTS INSTALLED IN THE BACK OF THE ENCLOSURE ONLY PER COM DETAIL M-62.04.1.

8. 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.

9. USE CLASS 'A' CONCRETE AS PER SECTION 7.2 EXCEPT AS NOTED IN SAFETY POST DETAIL ON COM DETAIL M-62.04.1.

10. STEEL REINFORCEMENT SHALL BE GRADE 40.

11. EXPANSION JOINT FILLER SHALL BE 1/2'' (12.7MM) MINUSUS TYPE PREFORMED EXPANSION JOINT FILLER ASTM D-1751.

12. EXTERIOR FINISH OF 6 FOOT MASONRY SCREEN WALLS SHALL BE COORDINATED ARCHITECTURALLY WITH PRIMARY BUILDING FINISHES.

13. 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.

14. STANDARDS FOR SOLID WASTE VEHICLE ACCESS ARE ADDRESSED IN COM DETAIL M-62.01.

15. STANDARDS FOR SINGLE, DOUBLE, AND TRIPLE-WIDE BIN ENCLOSURES ARE ADDRESSED IN COM DETAILS M-62.02 AND M-62.03.

SEE M-62.04.1 FOR REFERENCED NOTES
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 THE BUSINESS OR APARTMENT AND CAPABILITY OF ROUTING THE STOP.

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.


5. COLLECTION OF BARRELS WILL FOLLOW THE CURRENT RESIDENTIAL COLLECTION STANDARDS.
LARGE COMPACTOR REFUSE AREA

SECTION A-A

NOTES:

1. CONSTRUCT ENCLOSURE PER COM DETAIL 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 \( f_c = 3,000 \text{ PSI} \)
   REINFORCING \( f_y = 60,000 \text{ PSI} \)
   \( f_y = 20,000 \text{ PSI} \)
   MASONRY \( f_m = 1,500 \text{ PSI} \)
7. SAFETY POSTS, WHEEL STOPS, & GUIDE RAILS SECURED TO CONCRETE SLAB ARE REQUIRED FOR ALL ENCLOSURES. SAFETY POSTS ARE ADDRESSED IN COM DETAIL M-62.04.
8. PROPER CLEANING METHODS ARE TO BE USED TO PREVENT THE DISCHARGE OF WASH WATER INTO PUBLIC STORM DRAIN SYSTEM. PLEASE CONTACT THE CITY OF MESA AT (480) 615-3594 FOR A LIST OF BEST MANAGEMENT PRACTICES THAT WILL HELP YOUR FACILITY COMPLY WITH ENVIRONMENTAL REGULATIONS.
9. ANY DOORS PROVIDED (NOT SHOWN ON THIS DETAIL) SHALL BE SELF-CLOSING AND SELF-LATCHING.
10. 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-62.04.
11. GATES, HINGES, AND MOUNTING HARDWARE SHALL NOT INTRUDE UPON MINIMUM NET ENCLOSURE OPENING.
12. ENCLOSURES SHALL HAVE A MINIMUM OPENING OF 1/4".
13. REFER TO COM DETAIL M-62.01 FOR CLEARANCE REQUIREMENTS.
14. SOME COMPACTORS MAY HAVE COMPACTOR AREA IN FRONT (PREFERRED METHOD). SELF LOADING FRONT LOAD COMPACTOR PREFERRED.

TABLE 1

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REV.: 12/26/2016

DETAIL NO. M-62.06

LARGE COMPACTOR REFUSE AREA

8'-0" MIN. 15'-0" MIN.
5'-0" MIN. 10'-0" MIN.
40'-0" MIN. 40'-0" MIN. 10'-0" MIN.
27 DEG. MAX. 27 DEG. MAX.
MAX. BREAK OVER OF 3% 90 DEG. APPROACH
MATCH A.C. 15 DEG. MIN.
REFUSE AREA PAD 1% SLOPE MIN.
WELDED WIRE FABRIC 5% SLOPE MAX.
6'-0" CONC. SLAB REINFORCED WITH 6'-X-1/4" W
VERTICAL REINF. (R) GROUT CELLS WITH REINF. BARS SOLID
SOLID GROUT BELOW GRADE
8'-0"X8'-0" C.P.L.M. MAG. SEC. 775
STANDARD JOINT DUR-0-WALL WIRE @ 16" O.C.
COLOR, TEXTURE, MATERIAL OF ENCLOSURE TO MATCH BLDG'S.
DEEP CUT BOND BEAM 8'-0"X8'-0" SOLID WITH REINF. BAR #4 BEND INTO CORNERS
8'-0"X8'-0" SOLID CAP

NOT TO SCALE
THE CITY OF MESA RESIDENTIAL SOLID WASTE GUIDELINES

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, 6, AND 7 NOTED FOR SMALL LOT/MULTI-LOT WITH PRIVATE DRIVE BARREL COLLECTION.

2. GATES OR DOOR OPENING MUST ALLOW FOR CONTAINER PASSAGE OF APPROXIMATELY 33 INCHES IN WIDTH.

3. PRIVATE STREETS MUST HAVE AN AREA FOR COLLECTION WITHOUT OBSTRUCTION.

4. PRIVATE STREETS MUST BE DESIGNED TO WITHSTAND THE WEIGHT OF 37 CUBIC YARD COLLECTION VEHICLES (APPROX. 29 TONS).

5. ALL STREETS MUST BE DESIGNED SO THAT COLLECTION VEHICLES ARE NOT FORCED TO BACK UP AT ANY TIME (HAMMERHEAD DRIVES AND DEAD-ENDS ARE UNACCEPTABLE).

6. PRIVATE STREETS WITH CUL-OE-SACs MUST BE DESIGNED TO MEET CITY OF MESA STANDARDS FOR CUL-OE-SAC TURNING RADIUS.

7. BARRELS WILL NEED TO BE SET OUT FOR COLLECTION BY 6:00 A.M. AND REMOVED NO LATER THAN 6:00 P.M. ON THE DAY OF COLLECTION.

8. DEVELOPERS OF GATED SUBDIVISIONs MUST SUPPLY SOLID WASTE COLLECTION SERVICES WITH A GATE CODE OR REMOTE ACCESS AT THE 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 OR REMOTE PROVIDED, WITH THE EXCEPTION OF EXIT ONLY GATES. EXIT ONLY GATES WILL BE WIREd FOR AUTOMATIC OPENING. ALL GATES MUST REMAIN OPEN FOR A MINIMUM 30 SECONDS ONCE FULLY OPEN, OR UNTIL COLLECTION VEHICLE SAFELY PASSES THROUGH GATE PATH.

9. FOR STREETS DESIGNATED FOR CURBSIDE BARREL COLLECTION, TREE PLANTING SHOULD NOT TAKE PLACE WITHIN TEN (10) FEET OF THE CURB AND SHOULD BE SPACED SO AS NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BARREL DUMPING AT THE FINAL FULL GROWTH DIMENSIONS.

10. STREETLIGHTS WILL NEED TO BE DESIGNATED TO ACCOMMODATE THE HEIGHT OF THE SOLID WASTE COLLECTION VEHICLE.

11. MINIMUM 14' OVERHEAD CLEARANCE IS NEEDED FOR COLLECTION VEHICLE TO SAFELY NEGOTIATE.

12. BARREL PAD LOCATIONS SHALL BE NO MORE THAN 100' FROM UNIT UTILIZING THE PAD.

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. EACH UNIT MUST HAVE A PREDETERMINED LOCATION FOR A MINIMUM OF 2 BARRELS PER UNIT WHERE STREET PARKING IS PROHIBITED AT ALL TIMES, BARRELS SHALL HAVE A DESIGNATED LOCATION ON THE STREET WITH A PERMANENT MARKING ON THE CURBING IDENTIFYING ADDRESS OR UNIT NUMBER REFER TO 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-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 WILL 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 14' 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). BARRELS WILL NEED TO BE SET OUT FOR COLLECTION BY 6:00 A.M. AND REMOVED NO LATER THAN 6:00 P.M. ON THE DAY OF COLLECTION.

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. GATES OR DOOR OPENING MUST ALLOW FOR CONTAINER PASSAGE OF APPROXIMATELY 33 INCHES IN WIDTH.

10. BARREL COLLECTION LOCATION AREA SHALL NOT ENCROACH ONTO SIDEWALKS.
NOTES:

1. Two 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.

2. Location of no parking sign may need to be adjusted to account for adjacent fire hydrants (15' parking restriction each side), mailboxes, or other obstructions.

3. Barrel location area to comply with COM Detail M-62.07.

4. For parking restrictions, refer to COM Detail M-62.07.
TRASH BARREL MARKER

A = 3.5" (89 MM)
B = 0.72" (18 MM)
C = 3.3/25" (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.

RECYCLING BARREL MARKER

NOTE: BARREL MARKERS SHALL BE PLACED AT TIME OF CONCRETE PLACEMENT.
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 VANED GRATE OF 534-5.
8. ALL CONCRETE SHALL BE CLASS "A" PER MAG SECTION 7

FOR SECTION B-B, SEE MAG STD DETAIL 534-1
NOTE
ALL PIPE SHALL BE 1 1/2 SCHEDULE 40
GALVANIZED PIPE (1.9" O.D., 2.72#/L.F.).

HEADWALL
AS SPECIFIED
ON PLANS

4-FOOT HEIGHT
SAFETY RAILING

STANCHION
LOCATION
(TYP.)

PLAN VIEW
N.T.S.

CONSTRUCT 4-FOOT HEIGHT SAFETY
RAILING (1 1/2" SCHEDULE 40
GALVANIZED STEEL PIPE)

CONSTRUCT STANCHION
(1 1/2" SCHEDULE 40
GALVANIZED STEEL PIPE)

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
M.A.G. SPEC. SEC. 530

INSTALL PER ATTACHMENT
DETAIL #1 OR #2
(CONTRACTORS OPTION
UNLESS OTHERWISE NOTED)

PROFILE VIEW
N.T.S.

ATTACHMENT DETAIL NO. 1
N.T.S.

WIDTH
8" MIN.

1 1/2" SCHEDULE 40 GALVANIZED
PIPE WELDED TO STEEL PLATE

3/8" x 6" STEEL PLATE INSTALLED
FLUSH WITH TOP OF HEADWALL (GALVANIZED)

TOP OF HEADWALL

ATTACHMENT DETAIL NO. 2
N.T.S.

WIDTH
6" MIN.

1 1/2" SCHEDULE 40 GALVANIZED
PIPE WELDED TO 6" X 3/8" STEEL PLATE

W/2

TO 6" X 3/8" STEEL PLATE

MIN. WIDTH OF WALL SHALL BE 6"
WITH NELSON STUDS

W/2

TOP OF HEADWALL

W/2

W/2

WELD #3 REBAR OR NELSON STUDS
NOTES
1. VAULT SHALL BE PRECAST CONCRETE. SHOP DRAWING SUBMITTAL IS REQUIRED.
2. ONE 12’ 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) OR GROUNDING CLAMPS.
3. INSTALL 1/2” DIAMETER THREADED SST EPOXY ANCHOR BOLT IN MANHOLE EMERGED 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.
6. ALL CONDUITS SHALL PENETRATE VAULT MANHOLE ONLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT DETAIL M-66-04.

REV. 9/21/2016
DETAIL NO. M-66-01.1
NOT TO SCALE
NOTES:

1. BACKFILL WITH DESIGNATED SIZE NO. 57 AGGREGATE BELOW PULL BOX. 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 DEFLUCT 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 PULL BOX INSTALLATION.

4. THE CONTRACTOR SHALL GROUT THE KNOCKOUT AREAS, AROUND THE CONDUITS, WITH A SMOOTH CONCRETE FINISH AFTER THE PULL BOX INSTALLATION.

5. ALL NEW PULL BOXES SHALL BE FURNISHED WITH RACKS AND HOOKS INSTALLED.

6. PROVIDE TOTAL BLACK PER PLAN FOR EACH FIBER OPTIC CABLE COILED IN ALL NO. 9 PULL BOXES, WITH SPlice ENCLOSURE CENTERED ON BLACK. SLACK ON BRANCH FIBER SHALL MATCH OR EXCEED SLACK ON TRUNKLINE FIBER.

7. PLUG EACH CONDUIT END WITH APPROVED, WATERPROOF DUCT PLUG.

8. PULL BOX AND LIDS SHALL BE RATED FOR HS20-44 LOADING.

9. ALL POWER AND COMMUNICATION CABLES SHALL BE TAGGED WITH CABLE IDENTIFICATION.

10. PULL BOX HEIGHT ABOVE FINISHED GRADE SHALL MATCH INCHES OF DECOMPOSED GRANITE TO BE USED TO MATCH EXISTING GRADE/SLOPE.

11. LOCKING LIP/SEAL BETWEEN WALL AND COVER ASSEMBLY.

12. NO. 9 SPLIT PULL BOX 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.

14. ALL CONDUITS SHALL PENETRATE WALL/МАНХОЛ ЕНLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT DETAIL M-68.3L.
NOTES

1. FURNISH WITH MACHINED HORIZONTAL BEARING SURFACE.
2. FURNISH WITH T-GASKET.
3. CASTINGS SHALL CONFORM TO MUG SPECIFICATION
   SECTION 7/A AND HOH LOADING REQUIREMENTS.
4. FRAME IS 310 POUNDS, COVER IS 350 POUNDS.
5. GALVANIZED COVER SHALL INCLUDE IDENTIFICATION OF 1" LETTERS IN STANDARD "MARKINGS "MESA ITS FIBER" OR
   "MESA ITO FIBER" AS NOTED ON APPROVED PLANS.
6. SEE APPROVED PRODUCTS LIST AVAILABLE AT
   WWW.MESA2AZ.GOV.
7. ROUND LIDS SHALL BE USED IN THE TRAVELWAY AND
   SQUARE BOX LIDS SHALL BE USED BEHIND THE SIDEWALK.
NOTES

1. ALL KNOCKOUTS SHALL BE SEALED TIGHT UPON USAGE.
2. 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.

CONDUITS SHALL PENETRATE VAULT/MANHOLE ONLY AT EXISTING KNOCKOUT LOCATIONS

ENCASE ENTIRE CONDUIT DUCTBANK IN CLASS B CONCRETE AS SHOWN (ONLY WITHIN CONDUIT TRENCH)

3" MINIMUM COVER ON ALL SIDES OF CONDUIT DUCTBANK (TYPICAL)

INSIDE FACE OF VAULT

ROUTE TRACER WIRE PAST PLUG INTO VAULT

3/4" PLYWOOD ATTACHED TO INSIDE FACE OF VAULT/MANHOLE: REMOVE AFTER CONCRETE IS SET.

SECTION

COPPER TRACER WIRE IN TOP 1' CONDUIT PER TRENCHING AND DUCT BANK DETAIL

BEDDING AND SHADING MATERIAL PER CONDUIT TRENCH DETAIL

SEE NOTE 2

6"
NOTES

1. HORIZONTAL COILING SHALL BE UTILIZED WHEN MANHOLES AND VAULTS ARE SHALLOW AND VERTICAL WALL SPACE IS LIMITED.

2. SEE COM DETAIL M-66.09 FOR CABLE SPOOL LENGTH.

3. 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.

PLAN

- CABLE TIE, TYPICAL OF 3 FOR EACH COIL
- INCOMING FIBER OPTIC CABLE
- FIBER CABLE COILED HORIZONTALLY
- 4' X 4' VAULT
- OUTGOING FIBER OPTIC CABLE
- ALL CONDUIT TO BE SEALED
- ONE (1) PAIR OF CABLE RACKS, TYPICAL OF FOUR (4) EACH WALL) MOUNT ON EXISTING STUFT CHANNEL OR DIRECTLY ON VAULT WALL BY APPROVAL OF CM REPRESENTATIVE.

SEE NOTE 2

COILED (CLOCKWISE) CABLES AND SPICE ENCLOSURES ARE TO BE SECURED WITH CABLE STRAPS TO HORIZONTAL J-HOOKS.
NOTE

1. SEE COM DETAIL 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.
NOTES
1. SEE CON DETAIL M-66.09 FOR CABLE SPOOL LENGTH.
2._PULL BOX COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS "MESA FIBER".
3. FOR NEW PULL BOX INSTALLATIONS, BOX SIZE WILL BE PER PLANS.
4. THE CONDUIT ASSEMBLY SHALL ALWAYS BE INSTALLED IN THE TRENCH OR IN THE BORE SO THAT THE BLUE AND ORANGE CONDUITS ARE ON THE TOP. 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. CONDUIT COLORING SHALL BE VISIBLE WHEN LOOKING INTO THE PULL BOXES. ALL ELBOWS, COUPLERS AND BELL ENDS SHALL BE FACTORY COLORED TO MATCH THE CONDUIT.

CONDUIT TO BE INSTALLED PER GENERAL NOTE 4 AND NOTE 5
CONDUIT AS SPECIFIED ON THE PLANS WITH 36" RADIUS X 65 DEGREE ELBOW
CONDUIT TO EXTEND 2 TO 4 INCHES ABOVE THE AGGREGATE FLOOR

PULLBOX, CONDUIT AND CABLE MANAGEMENT
WHERE A PULL BOX IS AT A SIGNALIZED INTERSECTION ON FUTURE SIGNALIZED INTERSECTIONS, ADD ONE 2" CONDUIT TO SIGNAL TRAFFIC SIGNAL PULL BOX

MARKER TAPE INSTALLED 12" ABOVE CONDUIT (TRENCH INSTALLATION ONLY)

FINISHED GRADE

TRACER WIRE PER COM DETAIL M-66.07.3
COIL FIBER OPTIC CABLE IN PULL BOX, SEE NOTE 1 LAY COILED CABLE ALONG SIDE WALL (PREFERRED) OR ON AGGREGATE FLOOR, LAY SPLICE CLOSURE ON CENTER TOP OF COILED CABLE, COIL TRACER WIRE AND LAY ON CENTER TOP OF SPLICE CLOSURE, REFER TO PLANS.

CONTRACTOR WILL SUPPLY THE FIBER OPTIC IDENTIFICATION TAGS AND INSTALL WHERE SHOWN. IN NON-PAVED AREAS, BACKFILL AND COMPACT NATIVE TO 85% MAX DENSITY MINIMUM.

#9 PULL BOX PER PLAN

1" IN NON-PAVED AREAS, FLUSH IN PAVED AREAS

CITY DEPARTMENT IDENTIFICATION ON COVER, SEE NOTE 3

SPLICE CLOSURE

SUPPORT BLOCK LAYOUT

NOT TO SCALE

REV: 12/14/20/6

DETAIL NO.
M-66.07.1

SWEET CONDUIT ENTRY

STANDARD FIBER OPTIC CABLE INSTALLATION PULL BOX FOR
NOTES

1. SEE COM DETAIL M-66.09 FOR CABLE SPOOL LENGTH.
2. PULL BOX COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS "MESA ITS FIBER" OR "MESA ITD FIBER" AS NOTED ON APPROVED PLANS.
3. FOR NEW PULL BOX INSTALLATIONS, BOX SIZE WILL BE 24X48 INCH DEEP NUMBER 9 PULL BOX, AS PER PLANS.

CONTRACTOR WILL SUPPLY THE FIBER OPTIC IDENTIFICATION TAGS AND INSTALL WHERE SHOWN.

IN NON-PAVED AREAS, BACKFILL AND COMPACT NATIVE TO 85% MAX DENSITY MINIMUM.

TRACER WIRE PER COM DETAIL M-66.07.3

COIL FIBER OPTIC CABLE IN PULL BOX, SEE NOTE 1. LAY COILED CABLE ALONG SIDE WALL (PREFERRED) OR ON AGGREGATE FLOOR. LAY SPlice Closure ON CENTER TOP OF COILED CABLE. COIL TRACER WIRE AND LAY ON CENTER TOP OF SPlice Closure. REFER TO PLANS.

WHERE A PULL BOX IS AT A SIGNALIZED INTERSECTION OR FUTURE SIGNALIZED INTERSECTIONS, ADD ONE 2" CONDUIT TO TRAFFIC SIGNAL PULL BOX

PROVIDE 4 - 2"X8"X6" SUPPORT BLOCKS, 1 PER CORNER AND LEVEL PER CONDITIONS.

PULLBOX, CONDUIT AND CABLE MANAGEMENT

SUPPORT BLOCK LAYOUT

MARKER TAPE INSTALLED 12' ABOVE CONDUIT (TRENCH INSTALLATION ONLY)

#9 PULL BOX PER PLAN

1" IN NON-PAVED AREAS, FLUSH IN PAVED AREAS

CITY DEPARTMENT IDENTIFICATION ON COVER, SEE NOTE 3

ABOVE GROUND UTILITY MARKER POST WHERE NOTED ON THE PLANS. SEE COM DETAIL M-66.10.
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.

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 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.

TRACER WIRE DETAIL

TYPICAL PULL BOX LOCATION
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 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.
### Standard Fiber Optic Duct Bank Configurations

**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.

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<tr>
<th>Configuration</th>
<th>Description</th>
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<td>Quad-Duct</td>
<td>Quadruple duct configuration and allocation.</td>
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<tr>
<td>Dual-Duct</td>
<td>Double duct configuration.</td>
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<tr>
<td>Single-Duct</td>
<td>Single duct configuration.</td>
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**NOT TO SCALE**

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**FIBER OPTIC DUCT BANK CONFIGURATIONS**

- **Quad-Duct**
  - Dashed - for ITD Fiber Optic Use
  - Solid - for Traffic Signal Fiber Optic Use

- **Dual-Duct**
- **Single-Duct**
- **E-Street - 12**

---

**CONDUIT CONFIGURATION AND ALLOCATION**

- **Looking East/North**
  - Primary ITD Fiber Conduit (Blue)
  - Secondary ITD Fiber Conduit (Orange)
  - ITD Feeder Conduit (White)
  - ITD Backbone Conduit (Gray)
  - Tracer Wire in 1" Gray PVC Conduit, see Note 1
  - Pull Tape, Typ., see Note 3

**NOTES**

- **NOTE 1.** Conduit size shall be as shown on plans.
- **NOTE 2.** At manholes and vaults, primary and secondary conduits shall enter and exit manhole without crossing.
- **NOTE 3.** Dashed - for ITD Fiber Optic Use
- **NOTE 4.** Solid - for Traffic Signal Fiber Optic Use

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**REV. 06/04/2018**

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**DETAIL NO. M-66.07.5**

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**STANDARD FIBER OPTIC DUCT BANK CONFIGURATIONS**

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**CONDUIT CONFIGURATION AND ALLOCATION**

- **Looking East/North**
  - Primary ITD Fiber Conduit (Blue)
  - Secondary ITD Fiber Conduit (Orange)
  - ITD Feeder Conduit (White)
  - ITD Backbone Conduit (Gray)
  - Tracer Wire in 1" Gray PVC Conduit, see Note 1
  - Pull Tape, Typ., see Note 3

---

**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.
PLAN

ALIGN BOTH MICRODUCT TO ONE SIDE OF PULL BOX

CITY DEPARTMENT IDENTIFICATION COVER, SEE NOTE 4

TRACER WIRE #12 XLPE OR XHHW

COIL 12' OF TRACER WIRE IN EACH PULL BOX

48" DEEP NO. 9 PULL BOX

SEAL JACKET/MICRODUCT OPENING WITH SILICONE

MICRODUCT SHALL EXTEND FAR ENOUGH INTO PULL BOX, SO THAT THE MICRODUCTS CAN BE COUPLED TOGETHER ONE TIME.

CONDUIT TO EXTEND 2 TO 4 INCHES ABOVE AGGREGATE FLOOR

COIL FIBER OPTIC CABLE PER COM M-66.09

CONTRACTOR INSTALL FIBER OPTIC IDENTIFICATION TAGS.

SECURE VERTICAL COILED FIBER OPTIC CABLE TO EYESOLTS INSIDE PULL BOX ON THE SAME SIDE AS MICRODUCT ENTRY INTO PULL BOX.

FINISHED GRADE

CONDUIT ACCESS HOLE (TYP)

BUNDLED MICRODUCT (TYP)

SECTION

MICRODUCT INSTALLATION IN 4' DEEP NO. 9 PULL BOX

SECTION

MICRODUCT INSTALLATION IN EXISTING NO. 7 OR NO. 9 PULL BOX

EXISTING NO. 7 OR NO. 9 PULL BOX

SEE DETAIL LEFT FOR FIBER INSTALLATION REQUIREMENTS NOTES

SEE M-66.08.2 FOR REFERENCED NOTES

NOT TO SCALE

REV. 12/9/2016
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-93.01 FOR PULL BOX INSTALLATION.

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 SPICED WITHIN THE PULL BOX ONLY. 12" OF TRACER WIRE SHALL BE LOOLED FROM THE TOP OF THE PULL BOX FOR LOCATING PURPOSES.

11. FOR CITY OF MESA, ITS FIBER OPTIC & ITS TRAFFIC SIGNAL APPROVED PRODUCTS, SEE APPROVED PRODUCT LIST AT HTTP://WWW.MESA.AZ.GOVERNMENT/APPROVEDPRODUCTLIST.ASPX

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.
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 MICRODUCT BANK EXCEPT PER JACKED, DRILLED OR BORED DETAIL.

2. MICRODUCTS FOR FIBER SYSTEM SHALL BE BLOWN OUT WITH COMPRESSED AIR AND HAVE AN HOPE BALL BLOWN THROUGH BEFORE FIBER CABLE IS INSTALLED. A TRAFFIC SIGNAL TECHNICIAN SHALL BE ON SITE DURING THIS PROCEDURE.

3. TRENCH SHALL BE SHOVED 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.

END SECTION
MICRODUCT PATHWAY CONFIGURATION AND ALLOCATION
**TABLE 'A'**

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<th>JUNCTION STRUCTURE</th>
<th>PULL OUT LENGTH</th>
<th>SPOOL LENGTH</th>
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<tr>
<td>No. 7 Pull Box</td>
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<tr>
<td>No. 9 Pull Box</td>
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<td>Equipment Room Termination</td>
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<tr>
<td>Building Exterior Nema Box</td>
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**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-66.06 OR M-66.08.1 PER STRUCTURE TYPE.
NOTES

1. PLACE MARKERS IN CONDUIT RUNS BACK OF SIDEWALK (OUT OF ROADWAY).
2. MARKERS NOT TYPICALLY REQUIRED IN DEVELOPED AREAS.
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 (1) Mega V in the field lighting system 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. Duration of work during the winter season, if the contractor 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 for the time, materials, labor and equipment, whichever is greater, which 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 filling pull box—see note 16 (this page)
   - Before installation of fixtures and photocell
   - 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 rework 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 40V AC. Where a cabinet is not used, streetlight circuits shall be 120/208V AC. All control circuits shall be 120V AC.

8. Before any work commences, the existing electrical system shall be energized and operating. Existing streetlights shall be removed and new streetlights shall not operate at the same time.

9. Power feeding 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. All streetlight wires or circuits are 120/240V AC. One conductor shall be un-insulated and be either white or marked white, as required.

12. All circuit conductors in underground conduit shall be 14/3XHV1XHV-2 INSULATION, MIN. #18/7 STRAND EXCEPT PHOTOCELL CIRCUIT SHALL BE TRAY CABLE (SEE NOTE 16 THIS PAGE)


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 a 10 degree C wire. Furthermore, 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 2X6 MIL TAPE TO SIX (6) INCHES PAST THE THREADED METAL COUPLING. COMPRESSION COUPLINGS ARE NOT ALLOWED. PRIOR APPROVAL IS NEEDED FOR ANY DESIGN USING 2X6 MIL OR LESS.

16. All conduits shall be blown out using 50-PSI air pressure to be mandrel bled before pulling wire.

17. All manufacturing, materials, and labor couples 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 & fittings shall be prepared with purple primer and cemented together with gray PVC cement.

20. The locations shown on plan are diagrammatic representations only. Contractor is to install conduit to avoid conflicts. The contractor may be at the option boro for the placement of conduit per con detail 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. Residential streetlight conduit is installed after residential driveway installation. It is the responsibility of the contractor to notify the owner of the conduit behind the entrance will not be permitted.

22. Backfill requirements for all trenches shall conform to Article 300 of the NEC, as section 3.4 of the uniform standard specifications, and M-9.4.0 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 coring allowance) at PVC (3) feet center to center between streetlight poles and pull boxes.

24. Photocell receptacle shall be positioned on luminaire so that when installed the photocell will face north.

25. All lighting caps to be low profile type. No higher than 1/2" above socket.

26. All photo cell circuit must be 1/2" or larger (to include conduit stubbing up at photo cell light pole).

27. All residential and collector conduit shall be 1/2" conduit.

28. All conduit shall be 2", 1/2" conduit from pull box to photo cell.

29. Fusing for this luminaire shall be SAMP FNM. LED luminaire to be fused according to wattage usage.

30. All non galvanized poles shall be interior pole coated with Americoat 7X8 or equivalent from base to top of hand hole. (SMILS)
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<th>CROSS REFERENCE</th>
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<td>STREETLIGHT WORK PROCEDURES</td>
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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 on median conditions shown on com detail M-74.02.2

4. All conduit shall be schedule 40 pvc manufactured with a factory 90 degree bend and a radius of not less than 8".

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 slump as shown.

11. Backfill shall consist of excavated materials and shall be compacted per mag standard specification 60.

12. Clearance from retaining wall, where applicable as shown on com detail M-74.02.2

13. Pull Box Location

Applicable Streetlight Foundation per com details M-76.01 & 76.02

Attached sidewalk shown, refer to com details M-74.02.2 & M-76.02.2 for junction/pullbox and streetlight foundation installations per applicable conditions

Not to scale

Rev. 1/30/15
**Installation at Detached Sidewalk**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate

**Installation at Sidewalk to Downward Slope**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate

**Installation in Unpaved Median**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate

**Installation in Paved Median**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate

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**Installation at Sidewalk to Upward Slope**

- Retaining wall, where applicable
- Conduit bends per COM detail M-74.02.1
- 1" aggregate

**Installation Conditions**

- Pull/junction box and installation conditions

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**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 35" MINIMUM CLEARANCE FROM LCC CABINET
- SHALL HAVE A DEPTH OF 10" MIN. BELOW SIDEWALK GRADE
- HAVE A SMOOTH TRIMMED 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 NOTES

1. LOCATE LIGHTING CONTROL CABINET (LCC) PAD PER REQUIREMENTS OF 240 VOLT SERVICE SCHEMATIC ON CONS Detail M-75.03 AND PER APPLICABLE CONDITION ON CONS Detail 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 CONS Detail 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 USA STANDARD SPECIFICATION 690.

6. AGGREGATE/GROUT SHALL BE INSTALLED AS SHOWN.

LIGHTING CONTROL CABINET PAD SPECIFICATION AND INSTALLATION

DETAIL NO. M-75.02.2

REV. 0/3/16
INSTALLATION NOTES

1. THE POINT OF DELIVERY (P.O.D.) PULL BOX, POINT OF SERVICE (P.O.S.) PULL BOX AND LIGHTING CONTROL CABINET (L.C.C.) PAD 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 PULLBOX DETAIL SHOWN IN LOWER LEFT.


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. SEE COM DETAIL M-75.02.2 FOR GROUNDING ROD AND EXTENSION THROUGH L.C.C. PAD.

5. THE P.O.S. AND THE L.C.C. PAD SHALL BE CONNECTED BY ONE (1) 2" PVC CONDUIT WITH THREE (3) #6 x-hw CONDUCTORS AND ONE (1) #6 AWG BARE STRANDED COPPER WIRE CONDUCTOR.

6. THE NEUTRAL CONDUCTOR (N) SHALL BE WHITE OR MARKED WITH WHITE TAPE FOR A MINIMUM OF 6" ALONG THE CONDUCTOR FROM POINT OF CONNECTION.

7. 2' TO 3' ADDITIONAL FEET OF EACH CONDUCTOR SHALL BE LOOPED WITHIN P.O.S. & P.O.S. PULL BOXES AND THE L.C.C. L.C.C. CIRCUITS SHALL BE TAGGED AND LABELED.


9. ALL SPIICES FOR CONDUCTORS, GROUNDS AND BONDS SHALL BE DONE WITH A GEL CAP STUB SPICE KIT (E.G., CAP SL-720-05 HOLE OR APPROVED EQUAL).

10. A MAXIMUM OF TWO STREETLIGHT CIRCUITS PER L.C.C. IS ALLOWABLE.


12. ATTACHED SIDEWALK SHOWN REFER TO COM DETAILS M-74.02.2 & M-75.02.2 FOR P.O.S. & L.C.C. INSTALLATIONS PER APPLICABLE CONDITIONS.

P.O.S. & L.C.C. PAD LOCATION

NOT TO SCALE

CLEARANCE FROM RETAINING WALL, WHERE APPLICABLE

REV. 12/01/2014

DETAIL NO. M-75.03

240V SINGLE PHASE SERVICE P.O.D. / P.O.S. / L.C.C. & GROUNDING

240 VOLT SERVICE SCHEMATIC

SECTION A

POINT OF SERVICE PULL BOX DETAIL
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 pullbox detail shown in lower left.

2. The streetlight pole shall be located between 7’ and 12’ from the P.O.S. pull box. Moreover, 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 instances, 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) 1/2” PVC schedule 40 conduit with two (2) #6 xhww minimum conductors and (2) #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-73-06.01, M-73-06.02 & M-73-06.07. All splices, grounds, and bond shall be done with a gel cap stub splice kit #6. cap sl-200-02 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 (U) from the utility service.

9. A maximum of three streetlights connected from the P.O.S. are allowable.

P.O.S. & STREETLIGHT LOCATION

ATTACHED SIDEWALK SHOWN

REFER TO COM DETAILS M-76.02.2 & M-76.02.2
FOR P.O.S. & STREETLIGHT FOUNDATION
INSTALLATIONS PER APPLICABLE CONDITIONS

P.O.S. & STREETLIGHT LOCATION

CLEAR LEVEL FROM RETAINING WALL
WHERE APPLICABLE

CLEARANCE FROM RETAINING WALL
WHERE APPLICABLE

1. **POINT OF DELIVERY**, service & location by electric utility, pullbox per utility specifications.
2. **POINT OF SERVICE PULLBOX** per com detail M-76.02.2.
3. **APPLICABLE STREETLIGHT FOUNDATION** per com detail M-76.01.
4. **F.O.S. ALTERNATE LOCATION**
5. **P.O.S. ALTERNATE LOCATION**
6. **P.O.S. PREFERRED LOCATION AREA**
7. **100' MAX**
8. **7' MIN, 12' MAX**
9. **110 VOLT SERVICE SCHEMATIC**
10. **POINT OF SERVICE PULLBOX DETAIL**
11. **CONDUIT & CONDUCTOR FROM ELECTRIC UTILITY SOURCE INSTALLATION PER UTILITY SPECIFICATIONS.**
EXISTING GRADE TO BE CUT BACK TO OBTAIN A LEVEL AREA FOR AT LEAST 3'-6" FROM STREETLIGHT EQUIPMENT.

ALL STREETLIGHT FOUNDATIONS SHALL BE AT SIDEWALK GRADE, UNLESS OTHERWISE NOTED.

SEE CITY OF MESA STREETLIGHT FOUNDATION SPECIFICATION FOR DETAILS. M-76-0.

FINISHED GRADE SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.

FINISHED GRADE SHALL BE FLUSH WITH STREETLIGHT FOUNDATION.

FINISHED GRADE SHALL BE AT SIDEWALK GRADE, UNLESS OTHERWISE NOTED.

FINISHED GRADE SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.

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DESCRIPTION

1. 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

2. For ITS/traffic signals approved product specifications, see "City of Mesa" web site * for current specifications.
3. Arizona Department of Transportation Standard Specifications for road and bridge construction: Current.
4. ADOT traffic signals & lighting current highways standard drawings.

ENGINEERING

1. 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

1. 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.
2. Any signal appurtenance that is subject to being installed on a slope may require a retaining wall at the engineer's discretion.
3. 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-44.01.1.
4. All pole foundations shall match back of sidewalk, as shown in detail M-92.03.

CONDUIT

1. Schedule 40 PVC conduits placed in cabinets, pull boxes, and foundations shall have end bells installed before pulling in wire or cable.
2. All schedule 40 PVC or HDPE SDR-11 shall be gray unless otherwise specified on plans.
3. All conduits shall have as a minimum one green #8 thin/thin 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.
4. Cap all unused and future conduits with a Tyco (Jackmson expandable) PVC plug. Cap all fiber filled conduits with a Tyco fiber optic simplex plug.

PULL BOXES & VAULTS

1. If called for on the plans the contractor shall supply the pullbox(s). See "City of Mesa" web site * for current specification.
2. Refer to COM detail M-66.01.1 & M-66.01.2 for 4 x 4 x 4 vault details.
3. Refer to COM detail M-66.02, for round lid, it shall read "City of Mesa fiber optic".

CONTROLLER CABINET ASSEMBLY

1. Unless otherwise noted on the plans the contractor shall supply the controller cabinet. See "City of Mesa" web site * for current specification.
2. Controller cabinet orientation shall be verified by the city inspector.

ELECTRICAL SERVICE PEDESTALS

1. 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)

1. 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.

* - http://mesaaz.gov/residents/transportation/signal-maintenance-operation/traffic-signal-specifications

REV. 12/14/2017
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-94.01, M-94.03, M-94.04, M-94.05, 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 11 GAUGE STEEL AS SHOWN ON COM DETAIL M-94.01.

LUMINAIRES

1. ALL LUMINAIRES SHALL BE PER CITY OF MESA STANDARD DETAILS.
2. ALL LUMINAIRES ON SIGNAL POLES SHALL BE 120 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-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 IS 15" TO THE TOP AND 14.5" TO THE BOTTOM.

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 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. (SEE ADOT TS 8-2 FOR DESIGN SPECIFICATIONS).
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-95.02.
8. FOR CLUSTER HEADS REFER TO COM DETAIL 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.

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-95.06.

2. For signs refer to COM detail M-99.01.

3. For mounting refer to COM detail M-95.01.

4. For bike push button installation refer to COM detail 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 (36" 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.


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.
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 CONTRACTORS 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. AGREED IN WRITING THAT THE WORK SCHEDULE REQUIRES ADJUSTMENT OF THIS TIME FRAME.

5. DURING TRAFFIC SIGNAL INSTALLATION, MAINTENANCE, OR REPAIR, ANY UNGUED 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.

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, WHICHER 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 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 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 SPICE POINTS WILL BE INTRODUCED INTO THE SYSTEM.

QUALITY

CONTRACTOR IS RESPONSIBLE FOR QUALITY AND SHALL PERFORM WORK IN A PROFESSIONAL, NEAT AND WORKMAN LIKE MANNER. THE CITY OF MESA TRAFFIC SIGNAL 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 WARRANT 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 ALL TRAFFIC SIGNAL HEAD ASSEMBLIES SHALL BE INSPECTED BY THE CM INSPECTOR PRIOR TO THE INSTALLATION BY THE CONTRACTOR.)

H.) WHEN PROJECT IS COMPLETED (PROJECT IS COMPLETE WHEN FINAL INSPECTION IS APPROVED AND BILL HAS BEEN SUBMITTED).

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. AGREED IN WRITING THAT THE WORK SCHEDULE REQUIRES ADJUSTMENT OF THIS TIME FRAME.

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).

H. ALL TRAFFIC SIGNAL HEAD ASSEMBLIES SHALL BE INSPECTED BY THE CM 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 BARRICAADING 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.
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 RAINTIGHT.
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 WIDED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. RAW ALUM

BASE PLAN

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 PVC PAD 18" 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. DEAD FRONT SHALL BE SPLIT TO ALLOW ACCESS TO LINE AND LOAD SIDE OF BREAKERS INDIVIDUALLY.
11. LIGHTING CONTACTOR SHALL BE INSTALLED IN ALL PEDESTALS PER WIRING SCHEMATIC.
12. ALL PEDESTAL ASSEMBLIES SHALL BE RATED FOR 22KAIC.

WIRING SCHEMATIC

REV. 12/18/2017

- NOT TO SCALE

- M-91.01

- TRAFFIC SIGNAL FULLY METERED SERVICE PEDESTAL

- M-91.01

- BASE PLAN

- DEMAND RESET DOOR W/ 6"x6" LEXAN VIEWING WINDOW

- LIGHTING CONTINUOUS LOCATION

- UNDERGROUND TERMINATION SECTION REMOVABLE RAINTIGHT SEALABLE COVER

- SPLIT DEADFRONT

- MANUAL/OFF/PHOTO SWITCH

- PADLOCKABLE DRAW LATCH

- METER SOCKET (100 AMP MIN.) FACTORY WIRED FROM LINE LANDING LUGS TO METER SOCKET IN A SEPERATE WIREFWAY

- 2 LOAD CONDUITS AT 36" DEPTH

- GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

- LANDING LUGS #6-250MCM AL/CU

- 20A 120V SIGNALS 20A SPARE 20A

- SQUARE D 8903SM02V02 OR APPROVED EQUIVALENT RATED FOR 22KAIC.

- UNDERWRIETERS LABORATORIES INC. File No.

- INDUSTRIAL CONTROL PANEL

- VOLUME "x" FRAME "w"

- SURFACE MOUNT ON A CIRCUIT BREAKER OF DISCHARGING NOT MORE THAN 10 Amps

- 22,000 KVAR 120V 240V

- METER SOCKET RATING: 100A, CONFORM TO CONTENTS ENCLOSURE.

- 120V/240V 3WIRE SERVICE
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 RAINTIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES WILL BE STAINLESS STEEL.
4. PHENOLIC NAMEPLATES WILL BE PROVIDED AS REQUIRED.
5. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
6. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
7. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
8. RAW ALUM

ENLARGED DRAWING NO. 1

METER SOCKET (100 AMP MIN.) FACTORY WIRED FROM LINE LANDING LUGS TO METER SOCKET IN A SEPARATE WIREWAY

MANUAL/OFF/PHOTO SWITCH

PADLOCKABLE DRAW LATCH

LANDING LUGS #6-250 MCM AL/CU

GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

2 LOAD CONDUITS AT 36" DEPTH

CONDUIT SERVICE SIZE AND DEPTH SHALL BE DETERMINED BY UTILITY PROVIDER

4 ANCHOR BOLTS 5/8" - 18" X 4"

CONCRETE FOUNDATION

FINISHED GRADE

2" CONCRETE FOUNDATION

GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

2 LOAD CONDUITS AT 36" DEPTH

CONDUIT SERVICE SIZE AND DEPTH SHALL BE DETERMINED BY UTILITY PROVIDER

4 ANCHOR BOLTS 5/8" - 18" X 4"

CONCRETE FOUNDATION

FINISHED GRADE

UNDERGROUND TERMINATION SECTION REMOVABLE RAINTIGHT SEALABLE COVER

LIGHTING CONTACOR LOCATION

SEE NOTE (8)

METER SOCKET (100 AMP MIN.) FACTORY WIRED FROM LINE LANDING LUGS TO METER SOCKET IN A SEPARATE WIREWAY

MANUAL/OFF/PHOTO SWITCH

PADLOCKABLE DRAW LATCH

LANDING LUGS #6-250 MCM AL/CU

GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

2 LOAD CONDUITS AT 36" DEPTH

CONDUIT SERVICE SIZE AND DEPTH SHALL BE DETERMINED BY UTILITY PROVIDER

4 ANCHOR BOLTS 5/8" - 18" X 4"

CONCRETE FOUNDATION

FINISHED GRADE

UNDERGROUND TERMINATION SECTION REMOVABLE RAINTIGHT SEALABLE COVER

LIGHTING CONTACOR LOCATION

SEE NOTE (8)

METER SOCKET (100 AMP MIN.) FACTORY WIRED FROM LINE LANDING LUGS TO METER SOCKET IN A SEPARATE WIREWAY

MANUAL/OFF/PHOTO SWITCH

PADLOCKABLE DRAW LATCH

LANDING LUGS #6-250 MCM AL/CU

GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

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CONDUIT SERVICE SIZE AND DEPTH SHALL BE DETERMINED BY UTILITY PROVIDER

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CONCRETE FOUNDATION

FINISHED GRADE

UNDERGROUND TERMINATION SECTION REMOVABLE RAINTIGHT SEALABLE COVER

LIGHTING CONTACOR LOCATION

SEE NOTE (8)

METER SOCKET (100 AMP MIN.) FACTORY WIRED FROM LINE LANDING LUGS TO METER SOCKET IN A SEPARATE WIREWAY

MANUAL/OFF/PHOTO SWITCH

PADLOCKABLE DRAW LATCH

LANDING LUGS #6-250 MCM AL/CU

GROUND ROD IN 1" PVC SLEEVE W/GROUND CLAMP

2 LOAD CONDUITS AT 36" DEPTH

CONDUIT SERVICE SIZE AND DEPTH SHALL BE DETERMINED BY UTILITY PROVIDER

4 ANCHOR BOLTS 5/8" - 18" X 4"

CONCRETE FOUNDATION

FINISHED GRADE

UNDERGROUND TERMINATION SECTION REMOVABLE RAINTIGHT SEALABLE COVER

LIGHTING CONTACOR LOCATION

SEE NOTE (8)
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 6" 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 56" 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.
RAISED P.C.C. PAD TYPICAL - UNPAVED AREAS, SIDEWALKS, PAVED AREAS.

2" PVC CONDUIT (TO SERVICE PEDESTAL) AT 36"

1" GROUND ROD SLEEVE

5/8"x10' GROUND ROD

2" PVC CONDUIT (TO SERVICE PEDESTAL) AT 36"

2 - 2" PVC CONDUIT (TO CONTROLLER) AT 36"

ANCHOR BOLTS (40A, 3/4"x15"x2")
(SEE NOTE 1)
CONDUIT AREA 12"x12"

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).
1. A #6 AWG XHHW insulated copper stranded bond wire with a 1/4" copper grounding plate (see M-73.06 for plate detail) or a 22' coil of #4 copper bare bond (solid or stranded) covered with 6" fill dirt.

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 thread above nuts on all poles.

POLE FOUNDATION LOCATION DETAIL

GROUND CONDUCTOR SHALL TERMINATE WITH A CRIMPED LUG OF APPROPRIATE SIZE.

GREEN #12 THHN/THWN COPPER BOND WIRE (STRANDED) UP POLE TO LUMINAIRE AND OR I15NS.

BLACKBURN WR-9 OR WR-189 M TYPE CRIMP OR EQUIVALENT CONNECTOR (GROUNDS, NEUTRAL, AND TRACERS)

#6 AWG BARE STRANDED CONDUCTOR POLE GROUND PIGTAIL

GREEN #8 THHN/THWN COPPER BOND WIRE (STRANDED).

PVC CONDUIT SWEEP

POLE GROUNDING DETAIL

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE NOTE 1

SEE FOUNDATION SCHEDULE FOR ELEVATION, MATCH BACK OF SIDEWALK - 0 + 2" TOLERANCE, REFER TO 90.01 FOUNDATIONS

POLE, PULLBOX & FOUNDATION GROUNDING

NOT TO SCALE

REV. 12/13/2017
1. EACH WIRELESS COMMUNICATION FACILITY (WCF) SHALL BE IDENTIFIED BY A PERMANENTLY INSTALLED PLAQUE OR MARKER, 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.

2. 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.

3. STREET LIGHT CONSTRUCTION AND POLE REPLACEMENT SHALL MATCH BUILD TYPE OF EXISTING STREET LIGHT POLES PER MESA STANDARD DETAILS AND SPECIFICATIONS M-70 THROUGH M-78.0.

4. THE REPLACEMENT POLE AND WCF SHALL NOT INCREASE THE DIAMETER OF THE EXISTING POLE BY MORE THAN SIXTY (60) PERCENT.

5. THE WCF OR REPLACEMENT POLE SHALL NOT EXTEND ABOVE THE HEIGHT OF THE EXISTING POLE BY MORE THAN SIX (6) FEET.

6. THE HEIGHT AND DIAMETER SHALL BE AT THE DISCRETION OF THE CITY.

7. THE POLE, FOUNDATION, WCF AND CONNECTIONS SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF ARIZONA.

8. ANTENNAE SHALL BE LOCATED IN NO MORE THAN 8' FROM THE FACE OF THE POLE. ONLY CANISTER-MOUNT AND CONCEALED ANTENNAE SHALL BE ALLOWED IN RESIDENTIAL AREAS.

9. ALL CONDUITS SHALL BE LOCATED INSIDE THE POLE.

10. EQUIPMENT CABINET SHALL BE SCREENED, LOW PROFILE, PAD MOUNTED, INCONSPICUOUSLY PLACED AWAY FROM SIGNAL AND WINDOW VIEWS. CABINETS SHALL BE A MINIMUM OF 50' FROM EXISTING SIGNAL AND DWELLING UNITS.

11. EQUIPMENT CABINET SHALL BE A MINIMUM OF TWO FEET FROM EXISTING OR PROPOSED SIDEWALK.

12. EQUIPMENT IS REQUIRED TO BE SCREENED BY A SCREEN WALL, PAINTED AND/OR LANDSCAPED. SCREENING SHALL BLEND WITH OR ENHANCE THE SURROUNDING CONTEXT IN TERMS OF SCALE, FORM, TEXTURE, MATERIALS AND COLOR. ALL SCREENING SHALL BE AT THE DISCRETION OF THE CITY.

13. THE POWER FOR THE WCF SHALL BE METERED SEPARATELY.
TRAFFIC SIGNAL PULL BOX INSTALLATION

GEO. 6-30.01

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 1:8 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 1:8 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 TAMPER PER M.A.G. 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 M-92.03.

CONCRETE MEDIAN DETAIL

3 INCH SCHEDULE 40 PVC 90 DEGREE BEND CONDUIT

2 INCH SCHEDULE 40 PVC 90 DEGREE BEND CONDUIT

COVER OMITTED FOR CLARITY

TOP VIEW

CONCRETE BUILDING BLOCK (6" x 1-1/2" x 16")

3" SCHEDULE 40 PVC 90 DEGREE BEND CONDUIT WITH A RADIUS OF NOT LESS THAN 24" (FACTORY BENDS ONLY SHALL BE USED)

2" SCHEDULE 40 PVC 90 DEGREE BEND CONDUIT WITH A RADIUS OF NOT LESS THAN 18" (FACTORY BENDS ONLY SHALL BE USED)

TYPICAL PULL BOX INSTALLATION

30 LB. FELT PAPER WRAPPED AROUND PULL BOX WHEN IN CONCRETE

FINISHED GRADE

UNDISTURBED SOIL

MARKED TRAFFIC SIGNALS

PULL BOX COVER

BACKFILL & THOROUGHLY TAMPER EXCAVATED AREA

8" MIN

24" MIN
FOR ALL ITS/ TRAFFIC SIGNAL FIBER OPTIC INSTALLATIONS DETAILS REFER TO M-66.01 TO M-66.10
FOR ALL ITS/ TRAFFIC SIGNAL FIBER OPTIC INSTALLATIONS DETAILS REFER TO M–66.01 TO M–66.10
1. INSTALL GREEN #8 THHN/THWN STRANDED COPPER WIRE FULL LENGTH INSIDE OF CONDUIT WITH THREE FEET (3') EXTENDING ABOVE CONDUIT.

2. ALL BARE BONDS SHALL BE SPLICED TOGETHER FOR FUTURE LOCATING PURPOSES.

3. GRAY PVC SCHEDULE 40 ELECTRICAL CONDUIT SHALL BE USED FOR OPEN TRENCH ONLY. GRAY HPFE SDR-11 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 PULLBOX EXISTS NEAR BY A NUMBER 7 PULLBOX FOR A FUTURE SIGNALS, CONNECT THE TWO PULLBOXES WITH A 2" CONDUIT.
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 4.00".
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, C.O.M. POLE TYPE AND DATE MANUFACTURED.
BIKE PUSH BUTTON INSTALLATION

**FIGURE A**
INSTALLATION NEAR ANOTHER POLE

- Existing sidewalk
- Point of return
- Existing/other pole typical location

**FIGURE B**
SOLO INSTALLATION

- Bike push button pole
- Point of return
- W = existing sidewalk width

**SIDEWALK INSTALLATION**
PER M.A.G. 340

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 M-90.03.
5. Push button station placard shall be as shown on M-99.02.
6. For push button station installation refer to M-95.06.
7. Refer to M-94.01 for foundation details.
8. For sidewalk construction refer to M.A.G. standard detail 230.
"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 0.125". 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 TS 4-23 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

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NOTE 15' & 18' "A" POLES—STRAIGHT ONLY
ARIZONA POLE SERIES

*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 M-94.05 AND M-94.06 SPECIFIC TRAFFIC SIGNAL POLE DETAILS AND TRAFFIC SIGNAL POLE TABLES AND GENERAL NOTES

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.

MAX. LOADING INFORMATION
TRAFFIC SIGNAL POLE DETAILS

**TOP OF TRAFFIC SIGNAL POLE**

- **HOLE DEPTH:** 3"
- **HOLE DIA.:** 3"
- **THK:** 1"
- **BOLT CIRCLE:** SQUARE
- **GUSSETS**
- **MOUNTING PLATES SHALL BE DRILLED AND TAPPED.**
- **LUMINAIRE MAST ARM**
- **HAND HOLE BACKSIDE SIGNAL MAST ARM ONLY SEE ADOT TS 4-20**
- **SIGNAL MAST ARM**
- **POLE BASE**
- **TEAR DROP OR SLOTTED PATTERN ONLY**
- **BOLT CIRCLE:** SQUARE
- **2.5" RADIUS TYP. FOR J, K, Q, AND R POLES OR 3.5" RADIUS TYP. FOR L AND S POLES.**

**END OF SIGNAL MAST ARM TENON VIEW**

- **BOLT CIRCLE:** SQUARE
- **GUSSETS**
- **3/8" DIA. GOLDA DRAWN STEEL WIRE SPIRAL CAGES WITH 3° PITCH**
- **VERTICAL REBARS**
- **SEE DETAIL M-94.06 NOTE 8**
- **SEE DETAIL M-94.06 NOTE 4**
- **SEE DETAIL M-94.06 NOTE 6**
- **SEE DETAIL M-94.06 NOTE 2**
- **SEE DETAIL M-94.06 NOTE 9**
- **HOLE DIA.:**
- **HOLE DEPTH:** 3"

**NOT TO SCALE**

**TRAFFIC SIGNAL POLE DETAILS**

**DETAIL NO. M-94.05**

**REV. 12/13/2017**
TRAFFIC SIGNAL POLE GENERAL NOTES

1. All materials and construction shall conform to the requirements of the City of Mesa specifications.
2. The foundation hole shall be augered and Class "A" concrete (3,000 PSI per M.A.G. 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" 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 TS 4-23 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".
7. Anchor bolts shall project 8 inches above the foundation.

TRAFFIC SIGNAL POLE NOTES

M-94.06

DETAIL NO.

REV. 12/18/2017
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 M.A.G. 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 TS 4-23 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.


9. GROUNDING AS SHOWN ON DETAIL 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, C.O.M. POLE TYPE AND DATE MANUFACTURED.

16. SEE DETAIL M-94.09 FOR ANTENNA CLAMP ASSEMBLY.

17. ALL SUPPORTS SHALL BE DESIGNED TO WITHSTAND 80 MPH WINDS PER AASHTO SPECIFICATIONS.
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 DETAIL M--94.07 FOR ITS POLE, 65°.

FURNISH WITH EACH CLAMP ASSEMBLY

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PELCO MOUNT GENERAL NOTES


2. A PELCO AB-3035 ASTRO-BRAC CLAMP KIT WITH CABLES OF THE APPROPRIATE LENGTH WILL BE INSTALLED OVER THE 1" CHASE NIPPLE. SUPERLUBE ANTI-SIZE COMPOUND MUST BE USED ON ALL STAINLESS STEEL THREADS.


4. EXCESS CABLE SHALL BE NEATLY LOOPED AROUND THE TENON.
GENERAL NOTES

1. ALL DIMENSIONS ARE IN INCHES.

2. DRILLING OF POLE TO BE ORIENTED ACCORDING TO TRAFFIC SIGNAL PLAN, OR 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, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

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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.

INDEMTIES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.
TYPE "S" CLUSTER HEAD

HEAD ASSEMBLY

INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.

FACTORY WIRING SHALL TERMINATE IN THE RED SECTION. A TERMINAL BLOCK SHALL BE PROVIDED.

LEFT SECTIONS HINGE LEFT
RIGHT SECTIONS HINGE RIGHT

FRONT VIEW (SEE NOTE #9 ON DETAIL M-95.05)

SEE NOTE #7 ON DETAIL M-95.05

SIDE VIEW

BOTTOM VIEW

TOP VIEW

2-WAY TOP ASSEMBLY

2-WAY BOTTOM ASSEMBLY

PLUMBIZER

R
Y
G

REV. 12/18/2017

NOT TO SCALE
HEAD ASSEMBLY

* INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.

2-WAY BOTTOM ASSEMBLY

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

FACTORY WIRING SHALL TERMINATE IN THE YELLOW SECTION. A TERMINAL BLOCK SHALL BE PROVIDED.

RIGHT SECTIONS HINGE RIGHT

LEFT SECTIONS HINGE LEFT

FRONT VIEW (SEE NOTE #9)

SEE NOTE 7

SIDE VIEW

BOTTOM VIEW

TOP VIEW

2-WAY TOP ASSEMBLY
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".
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 IN THE CENTER FOR THE TERMINAL BLOCK/WIRING TO PASS THROUGH. CAMPBELL MPS 600H (HOUSING) AND CAMPBELL 600P (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-90.02

7. SEE COM DETAIL 99.01 AND 99.02 FOR PUSH BUTTON STATION SIGNS.
**LED ILLUMINATED STREET NAME SIGN SUPPORT STRUCTURE**

**SIDE VIEW**
- **Frame**
- **1/4" Shim**
- **3/8" Hole**
- **Clamp Bolts**
- **Pole Connection Assembly**

**TOP VIEW**
- **Pole Connection Assembly Part #1**
- **Clamp Bolts**
- **Tab for Set Screw**
- **Pole Connection Assembly Part #2**
- **Tab for Set Screw**
- **3/8" Through Hole** (Typ of 10)

**ELEVATION**
- **Frame**
- **1/4" Shim Shall Be Used to Maintain Air Gap Around Sign at All Times**
- **3/8" Hole Inside** (Typ of 3 at Top and Bottom)
- **Tab for Set Screw** (Typ Top and Bottom)

**Detail No.** M-95.07

**Rev.** 01/31/2016

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<td>7.00&quot;</td>
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<tr>
<td>8'</td>
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<td>24.50&quot;</td>
<td>18.00&quot;</td>
<td>49.687&quot;</td>
<td>18.00&quot;</td>
<td>7.00&quot;</td>
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<tr>
<td>10'</td>
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<td>18.00&quot;</td>
<td>7.00&quot;</td>
<td>7.00&quot;</td>
<td>129</td>
</tr>
</tbody>
</table>

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

**NOT TO SCALE**

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

1. SIGN LEGEND LAYOUT SHALL BE PER M-21.05, M-21.06, M-21.07 AND 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" TO THE BOTTOM OF THE SIGN, MINIMUM.

WIRING NOTES

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 BUCHANAN MODEL 85U 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.

WARRANTY

1. A MANUFACTURERS 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 MANUFACTURER, 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, BUBLING, 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: HTTP://WWW.MESAAZ.GOV/RESIDENTS/TRANSPORTATION/SIGNALMAINTENANCE-OPERATION

* - HTTP://MESAAZ.GOV/RESIDENTS/TRANSPORTATION/SIGNAL-MAINTENANCE-OPERATION/TRAFFIC-SIGNAL-SPECIFICATIONS
CCTV AND 360 DEGREE PANORAMIC INSTALLATION DETAIL

DETAIL NO. M-95.10

REV. 12/6/2016

NOT TO SCALE

EXISTING LUMINAIRE MAST ARM

TRAFFIC SIGNAL POLE

POLE MOUNT– AXIS T91A67

FIELD-DRILLED HOLE WITH STRAIN RELIEF CORD CONNECTOR NON–METALLIC, TAPPED TO ½ INCH N.P.T.

1 SHIELDED CAT 5E CABLE, BELDEN 7929A AND A MINIMUM #14 AWG GROUND WIRE.

DOME CCTV PAN/ TILT/ ZOOM CAMERA

DRIP LOOP FORMED IN CAMERA CABLE PRIOR TO ENTERING MOUNTING ARM

CCTV CAMERA POLE MOUNTING DETAIL

N.T.S.

PLAN VIEW

N.T.S.

CENTERLINE OF CCTV MOUNTING ASSEMBLY

X = THE ROTATION OF THE CCTV CAMERA SHALL BE ALIGNED TO POINT AT THE TRAFFIC SIGNAL POLE ON THE DIAGONALLY OPPOSITE CORNER.

360 DEGREE PANORAMIC CAMERA POLE MOUNTING DETAIL

N.T.S.

FIELD-DRILLED HOLE WITH STRAIN RELIEF CORD CONNECTOR NON–METALLIC, TAPPED TO ½ INCH N.P.T.

1 SHIELDED CAT 5E CABLE, BELDEN 7929A.

GENERAL NOTES:

1. THE CCTV CABLE (SHIELDED CAT 5E) SHALL RUN UNSPLICED FROM THE CCTV TO THE POWER SUPPLY INSTALLED IN 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.
GENERAL NOTES:

1. THE SHIELDED CAT 5E CABLE SHALL RUN UNSPLICED FROM THE RADIO/ANTENNA TO THE POWER SUPPLY INSTALLED IN 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 ENTRIES HOLES SHALL BE FIELD-DRILLED WITH STRAIN RELIEF CORD CONNECTOR NON-METALLIC, TAPPED TO 1/2 INCH N.P.T.
DETECTOR LOOP INSTALLATION DETAILS

**WIRING DIAGRAM FOR QUADRUPOLE LOOP**

- 2 - Wires
- 4 - Wires
- 2 - Wires

**LEADING**

**LAGGING**

**TRAFFIC FLOW DIRECTION**

**WIRING DIAGRAM FOR 6' X 6' LOOP**

- 3 - Wires

**LEADING**

**LAGGING**

**TRAFFIC FLOW DIRECTION**

- 1/4" SAWCUT

**SEALER**

- 1/8" MAX.

**PCCP OR AC**

- 1/4" SAWCUT

**DETAIL 1**

**SEALER**

**PAVEMENT SURFACE**

- FINISH COURSE
- OR OVERLAY

**PCCP OR AC**

**DETAIL 2**

**CURB & GUTTER**

- CUT 3" Y TO LOCATE CONDUIT

**SEE M-96.04 FOR LOOP STUBOUT DETAIL**

**DETAIL "A"**

**PVC CONDUIT SEE PLANS FOR SIZE**

- 2" OF SAND

**DRILL DETECTOR LOOP CORNERS 2" DEEP THEN SAW PAVEMENT SLOTS TO FORM LOOP**

**LOOP WIRE - SEE THE SPECIFICATIONS**

**OVERLAP THE SAWED SLOTS TO ASSURE FULL DEPTH.**

**SEE M-96.02 FOR REFERENCED NOTES**

**REV. 12/13/2017**

**DETAIL NO. M-96.01**
GENERAL NOTES FOR M-96.01 DETAIL

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 TUENS 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-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 MIDDLE;

   1 BLACK TAPE = CURB LANE
   2 BLACK TAPE = MIDDLE LANE(S)
   3 BLACK TAPE = LEFT THRU LANE
   4 BLACK TAPE = FRONT 6' X 20' LOOP
   5 BLACK TAPE = MIDDLE 6' X 20' LOOP
   6 BLACK TAPE = 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. AFTER 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 STUBOUT LOCATION PRIOR TO CUTTING/INSTALLING LOOPS, AND WILL ALSO CONFIRM THE CONDUIT BETWEEN THE LOOP STUBOUT 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 M-96.01 FOR DETECTOR LOOP INSTALLATION DETAILS.

7. PERFORMED BIKE LOOP LOCATION TO BE INSTALLED WILL BE DETERMINED BY THE PLANS AND OR THE INSPECTOR. PERFORMED BIKE LOOP SIZE IS AS FOLLOWS;
   A = WIDTH OF THE DESIRED DETECTION ZONE;
   B = A
   C^2 = A^2 + B^2

REV. 12/16/2016
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.
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 I—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 SUPPLIED BY VIDEO DETECTION CAMERA MANUFACTURER.

5. CAMERA MOUNTING LOCATION TO BE DETERMINED BY INSPECTOR.

6. SPLICES SHALL BE MADE WITH 3M SCOTCH LOCK 314 INSULATION DISPLACEMENT CONNECTORS.
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 immersion 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 (Drawings M-97.01, M-97.03, M-97.04 and 97.06). Each tape shall be wrapped around the appropriate conductors four (4) times [for vehicle indication, pedestrian indication, and pedestrian 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 spares 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.

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 end tenons on mast arms shall be wired for protected/permit operation. All unused tenons shall be wired for future use and capped after the wires are secured in the tenon by the safety bolt.

10. 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

11. Streetlight luminaires on signal poles shall be wired per city of Mesa standard details.

12. 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 be used from the meter pedestal to the closest P.E.C. (photocell). Streetlight circuits shall be taped together with black tape to keep them separate from the traffic signal circuits.

13. Signs circuit wiring shall be taped together with orange tape to keep separate from the traffic signal circuits.

14. In all traffic signal conduits a green #8 THHN/THW stranded copper bond wire shall be used.

15. All electrical black and colored tape shall be Scotch 33+.

16. 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.
### VEHICULAR INDICATIONS

<table>
<thead>
<tr>
<th>PHASE</th>
<th>TAPE ID COLORS</th>
<th>INTERVAL</th>
<th>WIRE COLORS</th>
<th>INDICATIONS</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>RED</td>
<td>EBLT</td>
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<td>RED, YELLOW, GREEN</td>
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<tr>
<td>2</td>
<td>WHITE</td>
<td>WB</td>
<td>RED W/BLACK, ORANGE W/BLACK, GREEN W/BLACK</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>3</td>
<td>BLUE</td>
<td>NBLT</td>
<td>RED W/WHITE, BLUE W/WHITE, GREEN W/WHITE</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>4</td>
<td>GREEN</td>
<td>SB</td>
<td>RED W/GREEN, ORANGE W/RED, BLUE W/RED</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>1 FYA</td>
<td>RED, 1 YELLOW</td>
<td>EBLT</td>
<td>YELLOW W/RED</td>
<td>FYA PHASE 1</td>
</tr>
<tr>
<td>3 FYA</td>
<td>BLUE, 1 YELLOW</td>
<td>NBLT</td>
<td>YELLOW W/BLUE</td>
<td>FYA PHASE 3</td>
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### LRT INDICATIONS

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<th>TAPE ID COLORS</th>
<th>INTERVAL</th>
<th>WIRE COLORS</th>
<th>INDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 TRAIN</td>
<td>WHITE</td>
<td>WB</td>
<td>BROWN, BROWN W/WHITE</td>
<td>HORIZ BAR, VERT BAR</td>
</tr>
<tr>
<td>2 B.O. SIGN</td>
<td>WHITE</td>
<td>WB</td>
<td>ORANGE W/ GREEN</td>
<td>BLANKOUT SIGN</td>
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### PEDESTRIAN INDICATIONS

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<th>PHASE</th>
<th>TAPE ID COLORS</th>
<th>WIRE COLORS</th>
<th>INDICATIONS</th>
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<tbody>
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<td>2 PED</td>
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</tr>
<tr>
<td>4 PED</td>
<td>GREEN</td>
<td>BLACK W/WHITE, BLUE W/BLACK</td>
<td>DON'T WALK, WALK</td>
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### PEDESTRIAN PUSH BUTTONS

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<thead>
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<th>PHASE</th>
<th>TAPE ID COLORS</th>
<th>WIRE COLOR1</th>
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<td>2 PUSH BUTTON</td>
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<td>4 PUSH BUTTON</td>
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<td>SIGNAL COMMON</td>
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**MARKING TAPE PER PHASES**
- #1 = RED TAPE
- #2 = WHITE TAPE
- #3 = BLUE TAPE
- #4 = GREEN TAPE
# Cable #2, Two Tape Wraps

## Conductors Within Cable Phase Coding

### Vehicular Indications

<table>
<thead>
<tr>
<th>Phase</th>
<th>Tape ID Colors</th>
<th>Interval</th>
<th>Wire Colors</th>
<th>Indications</th>
</tr>
</thead>
<tbody>
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<td>5</td>
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<td>RED, ORANGE, GREEN</td>
<td>RED, YELLOW, GREEN</td>
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<tr>
<td>6</td>
<td>2 WHITE</td>
<td>EB</td>
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</tr>
<tr>
<td>7</td>
<td>2 BLUE</td>
<td>SBLT</td>
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<td>RED, YELLOW, GREEN</td>
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<tr>
<td>8</td>
<td>2 GREEN</td>
<td>NB</td>
<td>RED W/BLACK, ORANGE W/RED, BLUE W/RED</td>
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<tr>
<td>5 FYA</td>
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<td>WBLT</td>
<td>YELLOW W/RED</td>
<td>FYA Phase 5</td>
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<tr>
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<td>SBLT</td>
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<td>FYA Phase 7</td>
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### LRT Indications

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<th>Interval</th>
<th>Wire Colors</th>
<th>Indications</th>
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<tbody>
<tr>
<td>6 TRAIN</td>
<td>2 WHITE</td>
<td>EB</td>
<td>BROWN, BROWN W/WHITE</td>
<td>HORIZ BAR, VERT BAR</td>
</tr>
<tr>
<td>6 B.O. SIGN</td>
<td>2 WHITE</td>
<td>EB</td>
<td>ORANGE W/ GREEN</td>
<td>BLANKOUT SIGN</td>
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### Pedestrian Indications

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<thead>
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<th>Tape ID Colors</th>
<th>Wire Colors</th>
<th>Indications</th>
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<tbody>
<tr>
<td>6 PED</td>
<td>2 WHITE</td>
<td>BLACK, BLUE</td>
<td>DON'T WALK, WALK</td>
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<tr>
<td>8 PED</td>
<td>2 GREEN</td>
<td>BLACK W/WHITE, BLUE W/BLACK</td>
<td>DON'T WALK, WALK</td>
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### Pedestrian Push Buttons

<table>
<thead>
<tr>
<th>Phase</th>
<th>Tape ID Colors</th>
<th>Wire Colors</th>
<th>Marking Tape Per Phases</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 PUSH BUTTON</td>
<td>2 WHITE</td>
<td>WHITE W/ RED</td>
<td>#5 = 2 RED TAPE</td>
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<tr>
<td>8 PUSH BUTTON</td>
<td>2 GREEN</td>
<td>BLACK W/ RED</td>
<td>#6 = 2 WHITE TAPE</td>
</tr>
<tr>
<td>SPARE</td>
<td>WHITE</td>
<td></td>
<td>#7 = 2 BLUE TAPE</td>
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<tr>
<td>SPARE</td>
<td>WHITE W/ BLACK</td>
<td></td>
<td>#8 = 2 GREEN TAPE</td>
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### CONDUCTORS IN TRAFFIC SIGNAL POLES

#### OUTSIDE MAST ARM & TYPE “Q” HEADS

**7 CONDUCTOR CABLE**

<table>
<thead>
<tr>
<th>BASIC COLOR</th>
<th>SIGNAL INTERVAL</th>
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<tbody>
<tr>
<td>RED</td>
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<tr>
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</tr>
<tr>
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**5 CONDUCTOR CABLE**

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**2 CONDUCTOR CABLE**

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#### PUSH BUTTON

**7 CONDUCTOR CABLE**

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<td>PUSH BUTTON COMMON</td>
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**5 CONDUCTOR CABLE**

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<td>PEDESTRIAN COMMON</td>
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<td>SPARE</td>
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<tr>
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#### DOUBLE PEDESTRIAN HEADS

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<tr>
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<tr>
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<td>SPARE</td>
<td>4 &amp; 8</td>
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**LRT BLANKOUT**

**5 CONDUCTOR CABLE**

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#### MAST ARM VEHICLE INDICATIONS

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<tr>
<th>HEAD</th>
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<td>2</td>
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<tr>
<td>NEXT INSIDE</td>
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<td>5</td>
<td>4</td>
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#### POLE MOUNT VEHICLE INDICATIONS

<table>
<thead>
<tr>
<th>HEAD</th>
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<tbody>
<tr>
<td>SAME PHASE AS MAST ARM HEADS</td>
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<tr>
<td>DIFFERENT PHASE FROM MAST ARM</td>
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**DOUBLE LRT TRAIN**

**7 CONDUCTOR CABLE**

<table>
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</tr>
<tr>
<td>GREEN</td>
<td>VERTICAL BAR</td>
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<tr>
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<td>HORIZONTAL BAR</td>
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<tr>
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**LRT TRAIN**

**5 CONDUCTOR CABLE**

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<td>NEUTRAL</td>
</tr>
<tr>
<td>BLACK</td>
<td>SPARE</td>
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</table>

### GENERAL NOTES

1. 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.

2. CABLE SHALL BE UTILIZED AS FOLLOWS:
   - 2 CONDUCTOR = ALL PUSH BUTTON STATIONS
   - 5 CONDUCTOR = ALL SECTION 1 SIGNAL HEADS AND PED HEADS (1 EACH)
   - 7 CONDUCTOR = ALL OUTBOARD MAST ARM AND TYPE "Q" SIGNAL HEADS
   - 7 CONDUCTOR = ALL DOUBLE PEDESTRIAN HEADS

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. YELLOW ID TAPE SHALL BE APPLIED 6" ABOVE PVC END BILLS ON IMSA CABLE JACKET.

5. ALL CABLE SHALL BE TAGGED IN THE PULL BOX WITH YELLOW TAPE AS FOLLOWS:

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

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

1. All dimensions are in inches.

2. Material shall be 20 gauge steel with porcelain enamel.
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.

EXCAVATE TO BURY BOULDER.
BOULDER TO BE PLACED ON UNDISTURBED OR COMPACTED SUB-GRADE.

FINISH GRADE - PER PLANS AND / OR SPECIFICATIONS.

LANDSCAPE BOULDER COLOR PER PLANS AND / OR SPECIFICATIONS.
<table>
<thead>
<tr>
<th><strong>PLANTING NOTES</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>NATIVE PLANTING BACKFILL MIX:</strong></td>
</tr>
</tbody>
</table>
| **AMENDED PLANTING BACKFILL MIX:** | **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.** |
| **FERTILIZER TABLETS:** | **FERTILIZER TABLETS SHALL BE AGRIFORM OR EQUAL**
|  | (21-20-20-5 SLOW RELEASE). TABLETS SHALL BE PLACED AT 1/2 THE DEPTH OF THE ROOTBALL AT THE FOLLOWING RATES:
|  | 1 TABLET PER 1 GALLON CONTAINER  
|  | 2 TABLETS PER 5 GALLON CONTAINER  
|  | 3 TABLETS PER 10 GALLON CONTAINER  
|  | 4 TABLETS PER 24" BOX  
|  | 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. |
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 CODE INSPECTOR.

Lodge Pole Pine Stakes (Treated) 6' Long, 2 Required Per Tree. Stakes to be Placed 6' from Outside Edge of Root Ball, Embedded a Minimum of 6' into Undisturbed Soil.

"Arbor Guard" Tree Trunk Protection Turf Areas Only

Scuff 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.

Tree Stake (Typical 2 Places)

#8 Screw (Galvanized)

6' MAX.

18" MAX.

6 FT MINIMUM CLEARANCE PREFERRED (TYPICAL ALL LOCATIONS).

One Tree Tie Minimum or as Needed, See Detail Below, Ties to be Placed Above and Below Scaffold Branching or as Directed by Code Inspector.

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 Plan Detail M-103.01 for planting notes

For Soil Mix - See Plant Schedule and Code Detail M-103.01

Square Knot (Typical 2 Places)

Wrap Tree Tie Around Tree Stake Twice to Ensure Extra Tree Strap For Future Adjustment.

NOT TO SCALE

REV. 01/11/2006
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.

LODGE POLE PINE STAKES (TREATED) 10 FT LONG, 2 REQUIRED PER TREE. STAKES TO BE PLACED 6" FROM OUTSIDE EDGE OF ROOT BALL, EMBEDDED A MINIMUM OF 6" INTO UNDISTURBED SOIL.

6 FT MINIMUM CLEARANCE PREFERRED (TYPICAL ALL LOCATIONS).

WATER FEATURE

WATER FEATURE

FINISHED ELEVATION OF THE TOP OF ROOT PLANE TO BE 1" ABOVE FINISH GRADE W/O D.G.

2" DEPTH OF D.G. OVER NON-PLANT PIT AREAS.

1" DEPTH OF D.G. OVER PLANT PITS; KEEP 6" CLEAR AROUND TREE TRUNK.

ROOT BALL

FERTILIZER TABLETS - SEE M-103.01 FOR PLANTING NOTES

FOR SOIL MIX - SEE PLANT SCHEDULE AND COM DETAIL M-103.02.

TREE STAKE (TYPICAL 2 PLACES)

# 8 SCREW (GALVANIZED)

1/4" 1/2" TYPE

WRAP TREE TIE AROUND TREE STAKE TWICE TO ENSURE EXTRA TREE STRAP FOR FUTURE ADJUSTMENT.

SQUARE KNOT (TYPICAL 2 PLACES)

NOT TO SCALE
1. STAKING AND PLANTING AS PER COM DETAILS M-103.01, M-103.02, AND M-103.03.

NOTE

RETENTION BASIN SLOPE TREE PLANTING
NOTES

1. PLANTS DELIVERED WITH CRACKED OR BROKEN CONTAINERS, NOT ROOTED IN CAN OR ROOT BOUND, WILL BE REJECTED.
NOTES

1. PLANTS DELIVERED WITH CRACKED OR BROKEN CONTAINERS, NOT ROOTED IN CAN OR ROOT BOUND, WILL BE REJECTED.
ALL GROUND COVER PLANTS TO BE PLANTED "ON CENTER" (O.C.) AND IN A TRIANGULAR PATTERN.

DIMENSION "Y" EQUALS 86% OF O.C. DIMENSION "X" WHICH IS NOTED ON PLANS.

E.G. X=3' O.C., Y=2'-7"

EXAMPLE:
7'/O.C.
X=7'
Y=6' (X x .86)

1' DEPTH D.G. MULCH OVER PLANT BEDS / PITS
2' DEPTH D.G. IN NON-PLANT PIT AREAS.

TILL NATIVE SOIL TO A DEPTH OF 6" 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 SURPLUS TO ALL GROUND COVER BEDS AT THE MANUFACTURER'S RECOMMENDED RATE.

NOT TO SCALE

REV. 09/27/2006
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 HOMOGENEOUS 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
   SULFOTHRION 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, 18 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 20".

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 CONSTRUCTOR.
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 "H" 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.

PLANTING HOLE IS ONE AND A HALF TIMES THE ROOT WIDTH AND AT THE SAME DEPTH OF THE ROOT SYSTEM.

LEVEL

PLANTED HEIGHT

AVERAGE OF 75% OF THE TALLER CANES

6"-8" DIA. ROCKS TO ANCHOR ROOTS (AS REQUIRED)

NATIVE SOIL BACKFILL

NOT TO SCALE
NOTE TO CONSULTANT
ELIMINATE, MODIFY OR COMPLETE DETAIL CALL OUTS BASED ON "ACTUAL" IRRIGATION DESIGN.

WATER MAIN (REFER TO PLANS)

NEW WATER METER (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES)

RPPF (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES)

CONTROLLER SEE IRRIGATION LEGEND/SCHEDULE.

QC

QUICK COUPLER (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES)

MASTER VALVE/FLOW METER (SEE LEGEND FOR MANUFACTURER, MODEL NO., SIZE). SEE DETAIL NO. X, SHEET.

MAINLINE, SIZE PER PLAN

BRASS ISOLATION GATE VALVE

REMOTE CONTROL VALVE, PRESSURE REGULATION FILTER ASSEMBLY-DROP SYSTEM AND ISOLATION BALL VALVE. SIMILAR INSTALLATION FOR TURF CONDITIONS.

RCV

EMITTERS PER IRRIGATION SCHEDULE

MANUAL FLUSH VALVE ASSEMBLY

TO SPRINKLER HEADS (WHERE OCCURS)
NOTE TO CONSULTANT

ELIMINATE, MODIFY OR COMPLETE DETAIL CALL OUTS BASED ON "ACTUAL" IRRIGATION DESIGN.

STREETS - IRRITROL, HYDROPOINT, RAINMASTER, M+C

M

NEW WATER METER (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES).

RCP08 (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES).

WATER MAIN (REFER TO PLANS)

RIGID COPPER PIPE

TYPE "K" - TYPICAL FROM METER THROUGH RCP08

CONTROLLER

SEE IRRIGATION LEGEND/SCHEDULE

QUICK COUPLER (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES).

C

MAINLINE

SIZE PER PLAN

BRASS ISOLATION GATE VALVE

REMOTE CONTROL VALVE, PRESSURE REGULATION FILTER ASSEMBLY-DRIPLINE SYSTEM AND ISOLATION BALL VALVE. SIMILAR INSTALLATION FOR TURF CONDITIONS.

TO SPRINKLER HEADS (WHERE OCCURS)

EMITTERS PER IRRIGATION SCHEDULE

LATERAL LINE

SIZE PER PLAN

MANUAL FLUSH VALVE ASSEMBLY

REV. 02/27/2016
NOTES

1. 110 VAC POWER SHALL BE ROUTED FROM POWER SUPPLY TO CIRCUIT BREAKER BOX, AND THEN CONNECTED TO OUTLET WITH DISCONNECT AND CONTROLLERS.
2. WHERE POSSIBLE, ALL WIRE SHALL BE ROUTED WITHIN CONDUIT. ALL WIRING NOT IN CONDUIT SHALL BE BUNDLED.
3. ALL ELECTRIC COMPONENTS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH "ALL" APPLICABLE CODES.
4. CONTRACTOR SHALL ASSEMBLE ENCLOSURE WITH MOUNTED COMPONENTS IN A SHOP PROVIDE DETAILED SHOP DRAWINGS OF INSTALLATION FOR REVIEW AND COMMENT PRIOR TO CONSTRUCTION.
5. INSTALL 1-INCH SCH. 40 PVC SLEEVE FOR 8" COPPER GROUND ROD.
6. SECURITY CABINET SHALL HAVE STEEL DOOR WITH DOCUMENT TRAY SUITABLE FOR STORING MANUALS AND REDUCED DRAWINGS.
NOTES

1. IOVAC POWER SHALL BE ROUTED FROM POWER SUPPLY TO CIRCUIT BREAKER BOX, AND THEN CONNECTED TO OUTLET WITH DISCONNECT, SATELLITE CONTROLLER(S), AND RADIO.

2. CONTROL WIRES ENTERING ENCLOSURE SHALL BE ROUTED DIRECTLY TO, AND CONNECTED TO, TERMINAL STRIPS(S), 18 GAUGE WIRE SHALL BE ROUTED BETWEEN TERMINAL STRIPS(S) AND SATELLITE CONTROLLER(S).

3. WHERE POSSIBLE, ALL WIRE SHALL BE ROUTED WITHIN CONDUIT. ALL WIRING NOT IN CONDUIT SHALL BE BUNDLED AND TAPE EVERY SIX INCHES.

4. ALL ELECTRIC COMPONENTS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES.

5. CONTRACTOR SHALL ASSEMBLE ENCLOSURE WITH MOUNTED COMPONENTS IN A SHOP, SUBMIT DETAILED SHOP DRAWINGS OF INSTALLATION PRIOR TO CONSTRUCTION.

6. 1-1/2 INCH SCH. 40 PVC SLEEVE FOR 6" COPPER GROUNDING ROD, (SEE COM DETAIL M-104.10).

7. STAINLESS STEEL SECURITY CABINET SHALL HAVE A DOOR WITH DOCUMENT TRAY SUITABLE FOR StORING MANUALS AND REDUCED DRAWINGS.

8. HARDWARE FROM BREAKER TO CONTROLLER WITH FLEX CONDUIT. CONTROLLER AND GFI OUTLET SHALL BE ON SEPARATE BREAKERS.

9. CONTROLLER TO BE PLACED IN NON-TURF AREA, AWAY FROM SPRINKLER COVERAGE, SEE SHEET NO. "A" FOR LOCATION.

10. TEMPLATE FOR P-ROL T INSTALLATION WILL BE PROVIDED BY PARKS DEPARTMENT.

11. CABINET AND CONTROLLER PROVIDED BY PARKS DEPARTMENT.
ELEVATION

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-1 - 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 150 LB. IMPACT COATING.

8. ALL BOLTS FOR HINGES AND HASP SHALL BE ZINC PLATED TAMPER PROOF.
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).
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 PU9475 (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

<table>
<thead>
<tr>
<th></th>
<th>12&quot; W x 24&quot; H x 24&quot; L</th>
<th>LIFT OFF UNIT</th>
</tr>
</thead>
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<tr>
<td>GS-1</td>
<td>12&quot; W x 24&quot; H x 32&quot; L</td>
<td>LIFT OFF UNIT</td>
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<tr>
<td>GS-2</td>
<td>12&quot; W x 24&quot; H x 32&quot; L</td>
<td>HINGED UNIT</td>
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<tr>
<td>GS-3</td>
<td>12&quot; W x 24&quot; H x 42&quot; L</td>
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</tr>
<tr>
<td>GS-4</td>
<td>12&quot; W x 30&quot; H x 48&quot; L</td>
<td>HINGED UNIT</td>
</tr>
</tbody>
</table>

HASP DETAIL

3/8" X 2" SLOT FOR EYE BOLT

2 REQUIRED FOR GS-1 & GS-2
1 REQUIRED FOR GS-3 & GS-4
NOTES:
1. 4" MASTER VALVE SHOWN THIS DETAIL, 1.25" & 2" MASTER VALVES INSTALLED ON BYPASS LINES SHALL BE SIMILAR EXCEPT ELIMINATING BELL ADAPTORS WITH RESTRAINTS & SUBSTITUTING FLANGED CONNECTIONS WITH FEMALE PIPE THREAD (FPT) CONNECTIONS USING SCH 80 PVC NIPPLES & FITTINGS AS REQUIRED.
2. ALL MASTER VALVES SHALL BE NORMALLY CLOSED.
3. PROVIDE EXPANSION COILS AT EACH WIRE CONNECTION IN VALVE BOX (WRAP AROUND 1/2" PIPE IS TIMES).
4. ONE SPARE WIRE (SIZE TO MATCH COMMON WIRE AWG) SHALL HAVE CONTINUOUS LOOP IN & OUT OF EACH MASTER VALVE & FLOW METER BOX. SEE IRRIGATION DETAILS 1 & 2 FOR WIRE COLORS.
5. INSTALL MAINLINE PIPES AT 2" COVER FROM PUMP DISCHARGE UNTIL BEYOND MV & FM ASSEMBLIES WHERE 4" PIPE TRANSITIONS TO 6" WHERE IT SHALL GO TO 2" DEPTH FOR REMAINDER OF MAINLINE SYSTEM.
6. EMBOSSED COVER OF VALVE BOX WITH "MV" STENCIL LETTERS SHOWING SIZE & "MV" USING STENCIL & STYLUS TIP DESIGN (EX: 4"MV).
7. VALVE BOX TO BE TAN COLOR WITH BOLT DOWN COVERS.
8. OPTIONAL SPEED CONTROL ONLY REQUIRED ON 2" & 4" MASTER VALVE SOLENOIDS.
QUICK COUPLER VALVE ASSEMBLY

NOTES:
1. SIZE SWING JOINT INLET TO MATCH MAINLINE PIPE SIZE.
2. EMBOSSED VALVE BOX COVER WITH "QC" IN 2" STENCIL LETTERS USING STYLIST TIP TORCH.
3. AGGREGATE ROCK SUMP SHALL REMAIN A MINIMUM OF 6" BELOW TOP OF QUICK COUPLER.
4. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED WITH RECLAIMED WATER.
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 MAGIC 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.
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 3" OR GREATER.
NOTE
ALL PLASTIC PIPING TO BE SNAKED IN TRENCHES AS SHOWN.

NOTE
TAPE AND BUNDLE WIRING AT 10' INTERVALS. SPliced WIRES TO BE IN 10' SPLICE PIT BOXES.

NOTE
ALL 120 VOLT WIRING IN CONDUIT TO BE INSTALLED IN ACCORDANCE WITH LOCAL CODE.

NOTE
Approved "ELECTRICAL POWER WIRES BELOW" WARNING TAPE SHALL BE INSTALLED 12" ABOVE ALL POWER WIRING IN TRENCHES.

NOTE
NO TRENCH TO BE CLOSER THAN 18" TO CONCRETE SIDEWALK, CURBS, ELECTRIC POLES, J-BOXES, ELECTRIC CABINETS, STREET SIGNALS, SIGNS, ETC.

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.
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 STD. DETAIL 380 FOR SIZING INFORMATION.
2. THIS DETAIL APPLIES TO IRRIGATION MAIN LINES. DOES NOT APPLY TO PUBLIC WATER MAINS.
STEP 1

SLIP BASE SOCKET OVER END OF WIRES

STRIP WIRES APPROXIMATELY 5/8" FROM ENDS. TWIST ENDS TOGETHER.

APPLY DRY SPLICE SEALANT TO OUTSIDE OF SEALING PLUG. FILL CAVITY WITH SEALANT.

STEP 2

PUT CRIMP SLEEVE OVER WIRE ENDS. CRIMP SLEEVE AND BEND OVER EXCESS WIRE.

PUT BASE SOCKET OVER WIRE END AS FAR AS POSSIBLE.

STEP 3

PUSH SEALING PLUG INTO BASE SOCKET.

STEP 4

PUSH WIRES TO END OF BASE SOCKET TO ASSURE COMPLETE SEALING OF CONNECTION.

SPEARS - DS 160 WIRE CONNECTOR OR APPROVED EQUAL. WITH DS 300 DRY SPLICE SEALANT.

NOTE

1. FOR WIRE SIZES NO.14, NO.12, AND NO.10
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>w</td>
<td>WATER METER</td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION UNIT</td>
<td></td>
</tr>
<tr>
<td>□ QC</td>
<td>QUICK COUPLER</td>
<td></td>
</tr>
<tr>
<td>⌛ ⌛</td>
<td>MASTER VALVE / FLOW METER</td>
<td>F/M WITH MOTOROLA OR CALSENSE ONLY</td>
</tr>
<tr>
<td>⌛ ⌛</td>
<td>MASTER VALVE</td>
<td></td>
</tr>
<tr>
<td>△</td>
<td>CONTROLLER 'X'</td>
<td></td>
</tr>
<tr>
<td>⌂</td>
<td>ISOLATION GATE VALVE</td>
<td>FOR ALL RUBBER RING PIPE 3&quot; OR GREATER</td>
</tr>
<tr>
<td>⌂</td>
<td>BRASS ISOLATION GATE VALVE</td>
<td>FOR ALL SOLVENT WELD PIPE</td>
</tr>
<tr>
<td>⌃</td>
<td>REMOTE CONTROL VALVE - SPRINKLERS / BUBBLERS</td>
<td></td>
</tr>
<tr>
<td>⌃</td>
<td>REMOTE CONTROL VALVE - DRIP ASSEMBLY</td>
<td></td>
</tr>
<tr>
<td>------ S ------</td>
<td>MAIN LINE - SCHEDULE 40</td>
<td>ALL FITTINGS SCHEDULE - 80</td>
</tr>
<tr>
<td>------ T ------</td>
<td>SHRUB LATERAL - CLASS 200</td>
<td>SHRUB LATERAL 3/4&quot; MIN.</td>
</tr>
<tr>
<td></td>
<td>TREE LATERAL - CLASS 200</td>
<td>TREE LATERAL 3/4&quot; MIN. LAWN LATERAL AS NOTED ON PLANS</td>
</tr>
<tr>
<td></td>
<td>SCHEDULE 40 PVC SLEEVE</td>
<td>SIZE AS NOTED ON PLANS</td>
</tr>
<tr>
<td>o</td>
<td>Emitter</td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>Bubbler</td>
<td></td>
</tr>
<tr>
<td>✇</td>
<td>Manual Flush Valve</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Existing Irrigation Valve Box</td>
<td></td>
</tr>
</tbody>
</table>
FRICION LOSS

PRESSURE AT SITE SOURCE VERIFIED WITH CITY

FRICION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER

REDUCED PRESSURE VACUUM BREAKER

MAIN LINE PIPE

VALVE

LATERAL LINE PIPE

* TOTAL FRICION LOSS

* REQUIRED PRESSURE AT HEAD

(TOTAL FRICION LOSS)-(REQUIRED PSI AT HEAD)

* PRESSURE REQUIRED AT SOURCE

CALCULATIONS DONE BY

SIGNED

DATE

NOTES

1. IRRIGATION DESIGN CONSULTANT TO PROVIDE FRICION LOSS CALCULATIONS FOR THE WORST CASE SCENARIO VALUE AS A DETAIL IN THE IRRIGATION DETAIL SECTION.
NOTE
1. VALVE AND VALVE BOX TO BE LAIRED OUT UNIFORMLY AND GROUPIED TOGETHER WHNEXT POSSIBLE.
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 3/4" 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. EMBOSSED COVER OF VALVE BOX WITH 2" STENCIL NUMBERS NOTING CONTROLLER STATION NUMBER + VALVE TYPE (E.G. "8-0" = STATION #8 - SHRUB VALVE).
5. VALVE BOX TO BE TAN IN GRANITE, GREEN IN TURF, OR PURPLE WHEN USED FOR RECLAIMED WATER.
6. INSTALL 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 DRIPLATERAL SUB-MAIN PIPE IS USED WITH SEPARATE COMBINATION DRIp FILTERS/PRESSURE REGULATORS (PER DETAIL #2) AS SHOWN PER PLANS, THEN OMIT DRIp FILTER/PRESSURE REGULATOR FROM DRIp CONTROL VALVE ASSEMBLY.
NOT TO SCALE

Detail No.
M-108.02

Rev. 09/27/2016
DRIP FLUSH END CAP ASSEMBLY

NOTES:

1. EMBOS Gi COVER WITH 2" HIGH "FW" USING STENCIL AND PERMANENT PAINT.
2. BOX TO BE TAN IN GRANITE, GREEN IN TURF AND PURPLE WHEN USED FOR RECLAIMED WATER.
EMITTER SCHEDULE: OPERATION AT 20-25 PSI

<table>
<thead>
<tr>
<th>TYPE</th>
<th>TOTAL FLOW</th>
<th>SIZE</th>
<th>QUANTITY</th>
<th>FLOW PER OUTLET</th>
<th>OUTLETS OPEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>TREES</td>
<td>6 GPH</td>
<td>15 GALLON</td>
<td>1 EM.</td>
<td>2 GPH</td>
<td>3</td>
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<tr>
<td></td>
<td>8 GPH</td>
<td>24&quot; BOX</td>
<td>1 EM.</td>
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<tr>
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<td>10 GPH</td>
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<td>2 GPH</td>
<td>6</td>
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<tr>
<td></td>
<td>16-24 GPH</td>
<td>58&quot; BOX AND LARGER</td>
<td>2 EM.</td>
<td>2 GPH</td>
<td>8-12</td>
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<tr>
<td>SHRUBS</td>
<td>1 GPH</td>
<td>1 GALLON</td>
<td>1 EM.</td>
<td>1 GPH</td>
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<tr>
<td></td>
<td>1 GPH</td>
<td>5 GALLON</td>
<td>1 EM.</td>
<td>1 GPH</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3 GPH</td>
<td>15 GALLON</td>
<td>1 EM.</td>
<td>1 GPH</td>
<td>3</td>
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<tr>
<td>LOW WATER USE SHRUBS</td>
<td>.6 GPH</td>
<td>1 GALLON</td>
<td>1 EM.</td>
<td>.6 GPH</td>
<td>1</td>
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<tr>
<td></td>
<td>.6 GPH</td>
<td>5 GALLON</td>
<td>1 EM.</td>
<td>.6 GPH</td>
<td>1</td>
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</tbody>
</table>

FOR 15 GALLON TREES
3 OUTLETS EQUALLY SPACED AROUND TREE / 6'-10"± FROM TREE TRUNK

FOR 24" BOX TREES
4 OUTLETS EQUALLY SPACED AROUND TREE / 10"-12"± FROM TREE TRUNK

FOR EACH 12" INCREASE IN BOX - PROVIDE "1" ADDITIONAL OUTLET
(MAINTAIN EQUAL SPACING OF OUTLETS)

OUTLETS OPEN

NOTE:
IRRIGATION DESIGN CONSULTANT TO ADD/INCLUDE LANDSCAPE IRRIGATION EMITTER SCHEDULE AS A DETAIL IN THE CONSTRUCTION DOCUMENTS.
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 10 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 FURTHERST VALVE FROM CONTROLLER. SPARE WIRES SHALL BE GREEN COLOR.
4. EMBOSSED COVER OF VALVE BOX WITH 2" STENCIL LETTERS / NUMBERS NOTING STATION NUMBER - VALVE TYPE (IE: 2"Wa = 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.

TURF REMOTE CONTROL VALVE ASSEMBLY

REV.: 02/24/2016
NOT TO SCALE
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.
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. TEFLOM TAPE ALL THREADED CONNECTIONS.
NOTE
1. CONSTRUCT WALK PER MAG DETAIL 230, CITY OF MESA AMMENDMENTS AND AS DETAILED ABOVE AND ON PLANS.

TOOLED CONTRACTION JOINT
1/8" MAX.

CLASS "B" CONCRETE

CLASS "B" CONCRETE UNLESS OTHERWISE INDICATED

3/4" MIN.

3/4" THICK FIBER EXPANSION JOINT FILLER (NON-ASPHALTIC) EXTEND 1" MINIMUM BELOW BASE OF CONCRETE.

NOTE
1. 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).

REV. 09/27/2006

CLASS "B" CONCRETE WITH ARTIFICIAL SLOPE.

SLOPE 1/8" PER FT.

SLOPE 1/8" PER FT.

SURFACE OF SEALANT IS TO BE SMOOTH & SHALL NOT EXCEED LEVEL OF BASKETBALL COURT OR RAMADA CONCRETE SURFACE

" CONTIE" BOND BREAKER SHOWN

COMPACT A B C TO 95% MINIMUM

COMPACT SUBGRADE TO 95% MIN.

LITE GREY SELF-LEVELING SEALANT #1HC-900 BY TEMCO OR SINA-FLEX COLOR PACK-2C

FOR TURNDOWN SCHEDULE SEE DETAIL M-111.03.
### Turndown Schedule

<table>
<thead>
<tr>
<th>Turndown Area</th>
<th>'A'</th>
<th>'B'</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Play Area (Top of Sand)</em></td>
<td>4&quot;</td>
<td>-</td>
<td>4&quot;</td>
</tr>
<tr>
<td><em>Play Area (Engineered Wood Fiber)</em></td>
<td>-</td>
<td>12&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>Basketball Court</td>
<td>1½&quot;</td>
<td>7 ½&quot;</td>
<td>9&quot;</td>
</tr>
<tr>
<td>Ramada</td>
<td>1½&quot;</td>
<td>7 ½&quot;</td>
<td>9&quot;</td>
</tr>
<tr>
<td>Walk</td>
<td>1½&quot;</td>
<td>7 ½&quot;</td>
<td>9&quot;</td>
</tr>
</tbody>
</table>

Turndown on all sides unless otherwise noted on plans.

Class "B" concrete unless otherwise indicated.

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.

Finished Grade

5/16" Radius

Compact Subgrade to 95% Min.
CONCRETE WALK

4" A.B.C. AT 95% COMPACTION

2 - 4" DIA. SCH. 40 PVC IRRIGATION TILES PER LOCATION

1" DEPTH INTO SUBGRADE

NOTE

1. TILE CUT AT 45° WHERE IT DAYLIGHTS

NOT TO SCALE
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.)
NOTE

1. EXPANSION & CONTRACTION JOINTS AS PER MAG STD. SPECS., CONTRACTION JOINTS @ 10' O.C. AND EXPANSION JOINTS @ 50' MAX.
DRILL AND EPOXY GROUT IN-PLACE #4 REBAR AT MID-SLAB DEPTH AT 12" ON-CENTER, OVER THE ENTIRE PERIMETER WHERE NEW AND EXISTING CONCRETE MEET, MINIMUM EMBED IN BOTH SLABS SHALL BE 3-INCHES.

NOTE
ELEVATION PER PLANS
WITH MAXIMUM SLOPE
PER ADA GUIDELINES

4" THICK CONCRETE (TYP.)
ENGINEERED WOOD FIBER

SECTION A

ABC COMPACTED TO 95%
COMPACTED SUBGRADE
PER M&G SECTION 301 AND
GEO TECHNICAL REPORT

SECTION B

ABC COMPACTED TO 95%
COMPACTED SUBGRADE
PER M&G SECTION 301 AND
GEO TECHNICAL REPORT

NOT TO SCALE