Mesa Standard Details

Amendments to MAG Uniform Standard Details for Public Works Construction

EFFECTIVE DATE August 1, 2017

Available Online
WWW.MESA AZ.GOV/ENGINEERING
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* DENOTES DETAILS REVISED FOR 2017 PUBLICATION.
**DETAIL NO.** | **SUBJECT**
--- | ---
M-105.07 | LANDSCAPE IRRIGATION BRASS GATE VALVE ASSEMBLY
INSTALLED WITH SOLVENT WELD PVC PIPE - 2 1/2" OR SMALLER
M-105.08 | LANDSCAPE IRRIGATION GATE VALVE ASSEMBLY
INSTALLED WITH RUBBER RING PIPE
M-106.01 | LANDSCAPE TRENCHING DETAIL
M-106.02 | TYPICAL LANDSCAPE IRRIGATION THRUST BLOCK DETAILS
M-106.03 | TYPICAL WIRE CONNECTION DETAIL
M-106.04 | IRRIGATION LEGEND
M-106.05 | LANDSCAPE IRRIGATION FRICTION LOSS CALCULATIONS
M-107.01 | VALVE MANIFOLD DETAIL
M-108.01 | DRIPLINE VALVE WITH FILTER AND PRESSURE REGULATOR ASSEMBLY
M-108.02 | DRIPLINE SYSTEM - Emitter DETAIL
M-108.03 | DRIPLINE SYSTEM - MANUAL FLUSH END CAP ASSEMBLY
M-108.04 | LANDSCAPE IRRIGATION Emitter SCHEDULE
M-109.01 | REMOTE CONTROL VALVE ASSEMBLY
M-109.02 | SPRINKLER HEAD WITH SWING JOINT ASSEMBLY
M-109.03 | NOT USED
M-110.01 | TREE BUBBLER ASSEMBLY
M-111.01 | NOT USED
M-111.02 | WALKWAY DETAIL
M-111.03 | CONCRETE TURNDOWN - TYPICAL PARK APPLICATION
M-111.04 | NOT USED
M-111.05 | NOT USED
M-111.06 | TYPICAL WALKWAY WITH 4" IRRIGATION TILES - FLOOD IRRIGATION APPLICATION
M-111.07 | DECOMPOSED GRANITE AT CONCRETE
M-111.08 | 12" CONCRETE HEADER CURB DETAIL

**DETAIL NO.** | **SUBJECT**
--- | ---
M-111.09 | NOT USED
M-111.10 | PLAYGROUND ADA ACCESS RAMP

* DENOTES DETAILS REVISED FOR 2017 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.
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 PAVEMENT MARKINGS - TYPE I (PERMANENT), IN ACCORDANCE WITH THE LATEST ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION SECTION 705, PREFORMED PAVEMENT MARKINGS - TYPE I (PERMANENT).

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 480-644-2663 FOR STREET WIDTHS GREATER THAN 40 FEET.

6. CONTACT THE CITY OF MESA SIGN SHOP AT 480-644-3752 TWO WEEKS PRIOR TO INSTALLATION TO COORDINATE PLACEMENT OF ADVANCE WARNING SIGNS.

SECTION A-A

SECTION B-B

14' TRAVEL LENGTH - FOR 25 MPH STREETS

SECTION B-B

22' TRAVEL LENGTH - FOR 30 MPH STREETS

PLAN VIEW
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. Stripping 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-12 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.

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.

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-42 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. ENGINEER SHALL PROVIDE PROPER DRAINAGE OF THE PARTIAL MEDIAN ACCESS OPENING AS APPROVED BY THE CITY.

2. STREET LIGHTS MAY NOT BE PLACED ON THE PARTIAL MEDIAN ISLAND.

3. CL DW IS CENTERLINE OF DRIVEWAY, IN CASE OF DIVIDED DRIVEWAYS IT IS THE CENTERLINE OF THE ENTRANCE SIDE.

4. ALL DIMENSIONS ARE TO FACE OF CURB. DIMENSIONS SHOWN ARE FOR TYPICAL 16" MEDIAN.

5. USE MAG DETAIL 223 MEDIAN NOSE TRANSITION DETAIL.

6. REFER TO M-11-09, "MEDIAN CONCRETE PAVER DETAIL", FOR MEDIAN SECTION.

PARTIAL MEDIAN ACCESS ISLAND

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

6:1.5 RADIUS LENGTH VARIES PER MEDIAN WIDTH

TYPICAL APPLICATIONS

MEDIAN NOSE ALIGNMENT AT TEE INTERSECTION

NOT TO SCALE
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 65 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 CDD 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.

14. When a natural gas line is exposed, contact the affected gas utility for the inspection of gas line prior to backfilling. When backfilling, the city of Mesa requires shading material 6 inches (minimum) around the bottom, top, and sides of the pipe. Shading material adjacent to the pipe shall be select sandy type soil, free of rocks or debris and will pass through a 3/8” screen, City of Mesa (gas): 480-644-2754 or 480-644-2262. Southwest Gas: 602-861-1999 or 602-271-4277.

REV: 03/01/2017
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.

11. Repair or replace in-kind any utility damaged during construction per mag section 107.11 and landscape/sprinkler damage per mag section 107.16.

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 622-263-1100 before any potholing, excavating, or boring.

14. When a natural gas line is exposed, contact the affected gas utility for the inspection of gas line prior to backfilling. When backfilling, the city of Mesa requires shading material 6 inches (minimum) around the bottom, top, and sides of the pipe. Shading material adjacent to the pipe shall be select sandy type soil, free of rocks or debris and will pass through a 3/8" screen. City of Mesa (gas): 480-644-2784, or 480-644-2262. Southwest Gas: 602-861-999 or 602-271-277.
NOTES

1. TEMPORARY POTHOLE PROTECTION IS ONLY TO BE USED WITH PERMISSION OF ENGINEER.

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

3. POTHOLE COVER ANCHORING SYSTEM SHALL BE APPROVED BY ENGINEER PRIOR TO USE.

4. CONTRACTOR SHALL INSPECT COVERED POTHOLAS 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) 263-1100 BEFORE ANY POTHOLING, EXCAVATING, OR BORING.
NOTES

1. THE MAXIMUM PAVEMENT CUT FOR VACUUM POTHOLE SHALL NOT EXCEED 24" X 24".

2. CLUSTERED POTHOLES, TWO FEET OF SEPARATION OR LESS, MUST BE COMBINED TO FORM ONE UNIFORM PATCH AND MEET COM DETAIL M-5-04.

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 OR DAMAGED.

4. TEMPORARY PAVEMENT SHALL BE AUTHORIZED FOR TEN BUSINESS DAYS OR AT THE DISCRETION OF THE CITY INSPECTOR.

5. IN THE EVENT THAT PERMANENT OR TEMPORARY POTHOLES SETTLE 1/4" DIFFERENCE OR GREATER, THE CONTRACTOR SHALL PERMANENTLY REPAIR THE POTHOLES PER CITY OF MESA AND MAG STANDARDS WITHIN TWO DAYS.

6. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND RESTORE EXISTING LANDSCAPE AND LANDSCAPE IRRIGATION THAT IS DISTURBED BY CONSTRUCTION. SAID LANDSCAPE AND LANDSCAPE IRRIGATION SHALL BE REPLACED IN KIND AND REPAIRED TO THE SATISFACTION OF THE PROPERTY OWNER (IF APPLICABLE) AND THE CITY INSPECTOR. EXISTING CONDITIONS DEFINED HEREIN SHALL INCLUDE, BUT NOT BE LIMITED TO, PLANTS, PAVESTONES, ROCK, GRAVEL, DRIVEWAYS, CONCRETE BORDERS, RETENTION BERM, SPRINKLER SYSTEMS, AND OTHER LANDSCAPE MATERIALS.

SECTION A-A

LIMITS OF POTHOLE EXCAVATION

6" MIN. EACH SIDE (TYP)

SAWCUT EDGES TO NEAT, CLEAN, STRAIGHT VERTICAL FACES, TACK EDGES

M-58 IN CASE OF EXPOSED GAS LINE

FIRM EXCAVATION LINE

EXISTING UTILITY(S)

MATCH EXISTING ASPHALT PAVEMENT (PLACED AND COMPACTED IN MAXIMUM 3-INCH LIFTS FOR EITHER PAVEMENT OR CONCRETE THICKNESS BUT IN NO CASE LESS THAN 6".)

1/2 SACK CSLM PER MAG SPEC 728 (MINIMUM SET TIME OF 48 HRS PRIOR TO PAVEMENT PLACEMENT). EXISTING ASPHALT PAVEMENT OR CONCRETE, WHERE PRESENT, THICKNESS VARIES.

INSTALL FINISH SURFACE TO MATCH ADJACENT SURFACE. USE ASPHALT PAVEMENT OR AN APPROVED HIGH PERFORMANCE PATCH WHEN APPROVED BY THE CITY. FOR CONCRETE, USE CLASS AT AND MATCH COLOR, TEXTURE AND FINISH OF EXISTING. FOR DECOMPOSED GRANITE OR OTHER SURFACES, MATCH EXISTING MATERIAL.

POTHOLE PLAN VIEW

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

NOT TO SCALE
**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 PMTR1 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 MASTER SEAL OR EQUIVALENT MEETING COM REQUIREMENTS (AS DETERMINED BY THE CITY REPRESENTATIVE) AT A MINIMUM APPLICATION RATE OF 1.2 GALLONS PER 1,000 SQUARE YARDS FOR EACH OF TWO APPLICATIONS, NOT TO EXCEED 3.0 GALLONS PER 1,000 SQUARE YARDS 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. SURFACE TREATMENT OF THE FINAL SURFACE COURSE FOR "A" ASPHALT MIXES SHALL BE APPLIED AS FOLLOWS:
   - APPLY C0S-TR FOG SEAL WITH A DILUTION OF 1:1 WITH WATER AND APPLICATION RATE OF 12 GALLONS PER 1,000 SQUARE YARDS. APPLY NO SOONER THAN 30 DAYS AFTER ASPHALT PLACEMENT OR AS DIRECTED BY CITY REPRESENTATIVE WITHIN 1-YEAR OF ASPHALT PLACEMENT, NOT TO EXCEED ONE (1) TREATMENT. SEE MESA AMENDMENTS FOR SPECIFICATION. FOG SEAL WILL REQUIRE A SUBMITTAL FOR APPROVAL PRIOR TO PLACEMENT.
8. UTILITY ADJUSTMENTS SHALL BE COMPLETED PRIOR TO APPLICATION OF SURFACE TREATMENT.
10. MAX. 6:1 SLOPE ALLOWED EXCEPT WHERE AREA IMMEDIATELY ADJACENT TO R.O.W. OR SIDEWALK HAS 4' MIN. AREA AT SLOPE OF 6:1 OR LESS. THEN SLOPE BEYOND SAID 4' AREA CAN BE INCREASED TO A MAX OF 4:1. SIDEWALK WIDTHS SHOWN ON THIS DETAIL SHALL TAKE 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)
|-------------------|-----------------|-----------------------------|--------------------------|-------------------|----------------------
| FACE TO FACE      | CL TO FACE      |                             |                          |                   |                      |
| (A)               | (B)             | (C)                         | (D)                      | (E)               | (F)                  | (G)                  |
| **LOCAL STREET**  | **RESIDENTIAL** | **LAND USE**                | **OPTIONAL**             | **INDUSTRIAL**    | **COMMERCIAL**       |
| **RESIDENTIAL**   | **LAND USE**    | **OPTIONAL**                | **INDUSTRIAL**           | **COMMERCIAL**    |                      |
| 3'-6"/1'-10"/6"  | 1'-17"          | 5'                          | 5'-3" R-1/2"             | 5'-0" R-1/2"     | 6'-6" 50'-6" R-1/2" |
| 3'-6"/1'-10"/6"  | 1'-17"          | 6"                          | 6'-0" R-1/2"             | 6'-0" R-1/2"     | 50'-6" R-1/2"       |
| 4'-0"            | 2'-0"           | 5'                          | 2'-0" A-1'-6"            | 3'-0" A-5/4"     | 8'-6" 60'-6" R-1/2" |
| 4'-0"            | 2'-0"           | 5'                          | 2'-0" A-1'-6"            | 3'-0" A-5/4"     | 8'-6" 80'-6" R-1/2" |
| 3'-6"/1'-10"/6"  | 1'-10"/2'-0"/23"| 6"                          | 3'-5" R-3/4"             | 6'-0" R-3/4"     | 8'-0" 80'-6" R-1/2" |
| 6'-6"            | 3'-6"           | 6"                          | 2'-0" A-1'-6"            | 3'-0" A-5/4"     | 10'-0" 110'-6" R-1/2 |
| 6'-6"            | 3'-6"           | 6"                          | 2'-0" A-1'-6"            | 3'-0" A-5/4"     | 10'-0" 30'-6" R-1/2 |

**DETACHMENT:** **IMPORTANT:** USE 5 DETACHMENT **DETACHMENT:** **IMPORTANT:** MAY BE WIDER AT INTERSECTIONS AND TURN LANE - SEE M-46.01 THROUGH M-46.05.

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**TYPICAL STREET SECTION**

**DETAIL NO.**

M-19.01

**REV.**

06/30/2017
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 ROADSIDE 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 CM DETAIL M-19.01 FOR MIN. THICKNESS.)

8. WHEN THE ELEVATION OF THE NEW BASE ASPHALT DOES NOT MATCH THE EXISTING, ASPHALT AND/OR AGGREGATE BASE SHALL BE SAWCUT, REMOVED, AND REPLACED AS DIRECTED BY THE INSPECTOR TO CREATE A SMOOTH TRANSITION.
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 'R' ASPHALT MIXES SHALL BE APPLIED AS FOLLOWS:

APPLY A POLYMER MODIFIED MASTERSEAL OR EQUIVALENT MEETING COM REQUIREMENTS AT A RATE SPECIFIED BY THE PRODUCT'S MANUFACTURER BUT NO LESS THAN (2) TWO APPLICATIONS AT A RATE OF .12 GAL PER 50 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) LIP TO LIP</td>
<td>(B) CL TO LIP</td>
<td>(C)</td>
<td>(D)</td>
<td>(E)</td>
<td>(F)</td>
</tr>
<tr>
<td>5'</td>
<td>15.5'</td>
<td>2'</td>
<td>3' R-1/2&quot;</td>
<td>N/A</td>
<td>50'</td>
</tr>
</tbody>
</table>

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![Diagram](image)
LONGITUDINAL TRENCHES
(PARALLEL TO CL OF STREET)

EXISTING S/W (TYP.)

EXISTING PAVEMENT

TRENCH

A

SURFACE A.C.
(VARIES)

BASE A.C.
(VARIES)

A.B.C./SELECT
(VARIES)

MORE THAN 6".

PAY WIDTH
NOTES 6 & 7

CRACKSEAL AND SLURRY SEAL
(MAG 536 AND 537)
(TYP. SEE NOTE #7)

SAWCUT &
TACK (TYP.)

A.B.C. OR NATIVE MATERIAL AT 95%
PER AASHHTO T-99 (MAG 601 & 702)
(SEE NOTE #1)

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

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)

EXISTING S/W (TYP.)

TRENCH

A

SURFACE ASPHALT
(SEE NOTE #0)

BASE ASPHALT
(SEE NOTE #2)

A.B.C. (MAG 702) AT
100% PER AASHHTO T-99

SAWCUT &
TACK (TYP.)

A.B.C. (MAG 702) AT 100% AASHHTO T-99

CRACKSEAL AND SLURRY SEAL
(MAG 536 AND 537)
(TYP. SEE NOTE #7)

1/2" PIPE ZONE

REDIING (MAG 601.2.3
AND 601.4)

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

1/2" PIPE ZONE

REDIING (MAG 601.2.3
AND 601.4)

SEE M-19.04.2
FOR NOTES

NOT TO SCALE

REV. 5/27/2017
1. SEE LATEST POLICY STATEMENT FOR STREET TRENCH BACKFILLING AND REPLACEMENT.

2. BASE ASPHALT SHALL BE INSTALLED TO SURFACE OF EXISTING PAVEMENT. THE THICKNESS OF THE ASPHALT SHALL BE EQUAL TO THE ADJACENT EXISTING ASPHALT HOWEVER, NOT LESS THAN THE SUM OF BOTH BASE & SURFACE COURSE ASPHALTS AS NOTED IN COM DETAIL M-19.01 OR M-19.03 EXCEPT WHEN AN A-3/4" ASPHALT MIX IS REQUIRED FOR A SURFACE COURSE, A 1/4" ASPHALT MIX WILL BE INSTALLED. IF THE DEPTH OF THE ASPHALT IS MORE THAN 4-INCHES, PLACEMENT SHALL BE IN TWO LIFTS.

3. AFTER THE BASE ASPHALT PATCH HAS BEEN SUBJECTED TO TRAFFIC FOR AT LEAST TWO (2) WEEKS BUT NOT MORE THAN TWO (2) MONTHS, MILL 1/2 INCHES AND REPLACE WITH SURFACE ASPHALT CONCRETE MIX. MINIMUM MILL WIDTH SHALL BE EQUAL TO THE WIDTH OF THE BASE ASPHALT PATCH PLUS 1/2-INCH EACH SIDE (1/2" 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-PROPULSED MECHANICAL SPREADING AND FINISHING EQUIPMENT IN ACCORDANCE WITH MAG 3215.20.

4. WHEN THIS DIMENSION IS 4-8 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. FOR ALL STREET TYPES THICKER THAN 3" (OR MORE THAN ONE LIFT), THE MINIMUM PAY WIDTH FOR PAVEMENT REPLACEMENT SHALL BE 42" FOR TYPE A; FOR TYPE B, THE MINIMUM PAY WIDTH SHALL BE 48" TO ACHIEVE A MINIMUM REPLACEMENT WIDTH OF 42". 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 500 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 Z11 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 AASHO 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. 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, BORNE, TRENCH OR DISTURB STREET PAVEMENT FOR A PERIOD OF FIVE (5) YEARS AFTER THE CITY’S ACCEPTANCE OF STREET CONSTRUCTION I.E. (NEW PAVEMENT, PAVEMENT RENOVATION OR PAVEMENT RECONSTRUCTION) AT THE LOCATION OF THE PROPOSED RIGHT-OF-WAY PERMIT.

2. THE AMOUNT OF THE PAVEMENT RESTORATION FEE SHALL BE AS ESTABLISHED PER THE CITY’S FEE SCHEDULE.

3. FOR A PERIOD OF TWO (2) YEARS AFTER THE CITY’S ACCEPTANCE OF STREET CONSTRUCTION PAVEMENT CUT RESTRICTIONS ARE IN PLACE AND ARE AUTHORIZED ONLY UNDER THE FOLLOWING EXCEPTIONS: A VERIFIABLE EMERGENCY EXISTS THAT ENDANGERS LIFE OR PROPERTY; AN INTERRUPTION OF ESSENTIAL UTILITY SERVICE; UTILITY OR OTHER SERVICE FOR BUILDINGS IS REQUIRED WHERE NO OTHER FEASIBLE MEANS OF PROVIDING SUCH SERVICE EXISTS; OR A PAVEMENT CUT IS REQUIRED BY CITY, COUNTY, STATE OR FEDERAL REGULATION.

4. BETWEEN ONE (1) YEAR AND TWO (2) YEARS AFTER ACCEPTANCE, IF THE CITY ENGINEER DETERMINES THAT THE COST TO MILL AND OVERLAY IS SUBSTANTIALLY LESS THAN THE COST OF ALTERNATE ROUTING FOR PERMITTEE’S FACILITIES THE PERMITTEE MAY CHOOSE TO CUT THE PAVEMENT AND PERFORM A MILL AND OVERLAY.

5. STREET CUTS PERMITTED WITHIN ONE (1) YEAR OF CONSTRUCTION, RECONSTRUCTION OR RENOVATION SHALL REQUIRE THE MILL AND OVERLAY FOR A MINIMUM OF THE FULL WIDTH OF ALL LANES IMPACTED BY THE CUT(S) INCLUDING TO THE CURB ON OUTSIDE LANES AND A MINIMUM DISTANCE OF TWENTY-FIVE (25) FEET FOR COLLECTOR/RESIDENTIAL STREETS OR FIFTY (50) FEET FOR ARTERIAL STREETS EXTENDING FROM THE AREA OF THE CUT IN BOTH DIRECTIONS.

6. THE REQUIREMENT TO RENOVATE THE STREET BY MILL AND OVERLAY/INLAY SHALL NOT APPLY TO ONE 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.

NOTE:
FOR CONCRETE PIPE, NATIVE BACKFILL WITH NO MATERIAL GREATER THAN 1/2 INCHES MAY BE USED WITH CITY APPROVAL.
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, THEN 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 4.8" 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 2.4" TO 4.8")
   - BE 5052-H32 ALLOY TREATED ALUMINUM WITH ALCOR 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.US/MAP.SPG).

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 #1050 WHITE DG CLAD SHEETING OR APPROVED EQUAL. ALL TRANSPARENT ACRYLIC PRESSURE-SENSITIVE FILM SHALL BE 3M #177 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 HNY-C.

4. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2008 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 4' X 6'. 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 ALCORINE 200 CONVERSION COATING
   • BE 0.029" 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.
NOTES
1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE AND YELLOW PRismatic SHEETING OR APPROVED EQUAL.
2. ALL ACRYLIC PRESSURE SENSITIVE FILM SHALL BE 3M #177 GREEN ELECTRO CUT (EC) FILM AND 3M #7725-12 BLACK EC FILM OR APPROVED EQUAL.
5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ON 2005 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. 16/7/8" SIGN BLANKS SHALL:
   • HAVE DIMENSIONS AS DETAILED (LENGTH VARIES 24" TO 48")
   • BE 6063-635 ALLOY TREATED ALUMINUM WITH ALUMINUM 1203 CONVERSION COATING.
   • BE 0.25" 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. 10" OR 12" STREET NAME SIGN DETERMINED PER CITY REQUIREMENTS M-20.01 & M-20.02.
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. TThen 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. HWY-1.

5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2020 MUTCD AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 6X7 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-H32 ALLOY TREATED ALUMINUM WITH ALODINE 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 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 480-644-3775 FOR ASSISTANCE AND APPROVAL OF SIGN LAYOUT.

REV. 11/29/16
NOTES

1. ALL REFLECTIVE SHEETING MATERIAL(S) SHALL BE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE WHITE PRISMATIC SHEETING ON APPROVED EQUAL.

2. ALL TRANSPARENT ACRYLIC, PRESSURE-SENSITIVE FILM SHALL BE 3M #1175 BLUE ELECTRO CUT FILM OR APPROVED EQUAL.

3. THESE SIGNS ARE CONSTRUCTED BY APPLYING WHITE SHEETING TO THE ENTIRE BLANK. ON TOP OF THIS SHEETING A BLUE TRANSLUCENT PRESSURE-SENSITIVE FILM FROM WHICH THE LEGEND HAS BEEN CUT AND REMOVED IS APPLIED. 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 UPER- AND LOWER-CASE HIGHWAY gothic 'c'.

5. SIDE MARGINS AND SPACING BETWEEN STREET NAME AND SUFFIX ARE SHOWN PER 2009 MUTED AND ARE TO BE USED UP TO THE MAXIMUM SIGN BLANK SIZE OF 48" IN LENGTH. MINIMUM REQUIRED DIMENSIONS (SHOWN IN BRACKETS) MAY BE USED WHEN SIGNS WOULD OTHERWISE EXCEED THE MAXIMUM LENGTH.

6. 14" SIGN BLANKS SHALL:
   • HAVE DIMENSIONS Per DETAIL "A"
   • BE 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING
   • BE 0.125" THICK WITH ROUNDED CORNERS Per DETAIL "A"

7. STREET NAME SPELLINGS AND TYPES CAN BE OBTAINED FROM THE "STREET AREA DIRECTORY" AVAILABLE ON THE CITY OF MESA'S WEBSITE (WWW.MESA.AZ.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 20.0.

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.
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

ARTERIAL/COLLECTOR TO LOCAL
4-WAY 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

FRASER DRIVE (LOCAL)
(25 MPH)

LOCAL TO LOCAL "T" - INTERSECTION

NOT TO SCALE

REV: 12/30/2015

SPECIAL NOTE:
- "T" - INTERSECTION WITH CUL-DE-SAC/DEAD ENDS/NO OUTLET
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 7" 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.MESAAZ.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.
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).
6. GO TO HTTP://WWW.MEAAZ.GOV/RESIDENTS/TRANSPORTATION/BIKE-PEDESTRIAN FOR BIKE ROUTE INFORMATION.
7. GO TO HTTP://WWW.MEAAZ.GOV/HOME/SHOWDOCUMENT?ID=8154 FOR THE LATEST SPEED LIMIT MAP.
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 3/16" X 0.030" STAINLESS STEEL STRAP AND FLARED LEG BRACKET WITH A CENTER MOLD THREADED 5/16" 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.

NOT TO SCALE
NOTES

1. HORIZONTAL LOCATIONS OF PUBLIC STREET NAME SIGN(S) SHALL TYPICALLY BE WITHIN A COMMON RIGHT-OF-WAY OR P.O.D.E. AT:
   • 1'-6" TO 3'-0" FROM BACK OF SIDEWALK
   • OR 6'-0" TO 8'-6" FROM EDGE OF PAVEMENT WHERE SIDEWALK DOES NOT EXIST
   • AND WITH 3'-0" MIN. CLEARANCE FROM A HYDRANT
   Locations shall be verified based on CoM transportation requirements & required clearances from underground utilities.

2. STREET NAME SIGN(S) SHALL BE MOUNTED ON A TRAFFIC SIGNAL POST OR STREET LIGHT WHEREVER POSSIBLE. SIGN(S) SHALL OTHERWISE BE FASTENED TO A SQUARE TUBING POST INSTALLED PER CoM DETAIL M-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 1200 CONVERSION COATING. SIGNS BLANKS GREATER THAN 16 SQUARE FEET SHALL BE 0.125 THICK 5052-H38 ALLOY TREATED ALUMINUM WITH ALODINE 1200 CONVERSION COATING. DELINEATORS SHALL COMPLY WITH DETAIL M-61.
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.

ACCESSIBLE SIGN HEIGHT AND INSTALLATION

HANDICAPPED PARKING SIGN TO BE PER THE 2003 ICC/ANSI A117.1 SECTION 5.0.1.5. 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

TYPICAL ACCESSIBLE STALL MARKINGS

MIN 3' WIDE ACCESSIBLE AISLE
4' PREFERRED

WHITE MARKINGS (TYP.)
NOTES

1. EXCEPT FOR HANDICAP PARKING SIGNS, ALL SIGNS SHALL BE MOUNTED AT A HEIGHT OF 7 FEET AS MEASURED FROM THE BOTTOM OF THE SIGN.

2. IN CASES WHERE CURBS OR SIDEWALKS DO NOT EXIST, HEIGHT OF SIGNS SHALL BE MEASURED FROM ROAD SURFACE.

3. SEE COM DETAIL M-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 3" HIGH, SERIES "C", HIGHWAY GOTHIC.
   C. LETTERING, 1/2" 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 SORCADING 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, 2" ARROW, AND 1" BORDER SHALL BE WHITE WITH A BLUE BACKGROUND, REFLECTIVE ENGINEERING GRADE SHEETING.
   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.

2" SQUARE TUBING WITH ADJUSTABLE MOUNTING BRACKET ON A SERIES 60000 BIG BUSTER SIGN STAND OR EQUIVALENT WITH 5'X10' BASE.
NOTES

1. CONTRACTOR SHALL FLUSH 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 6 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.
NOTES

1. SIGN BLANK MATERIAL SHALL BE WHITE PRESSURE SENSITIVE ASTM TYPE IV WIDE ANGLE PRISOMATIC 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-59, AS SHOWN AND DIMENSIONED ON COM DETAIL M-23.06.
CUSTOMER PIPING MAKE-UP WATER LINE TO COOLING TOWER

COPPER SERVICE LINE

FLOW

DRIFT

EVAPORATION VARI

2' TO 4'

WATER SPRAYED DOWNWARD

COOLING TOWER

FLOW

CUSTOMER PIPING TO SANITARY SEWER

FLOOR OF ROOFTOP (LOCATION OF COOLING TOWER)

INSTALL REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY, SIZE MATCH TO METER (REFER TO STANDARD DETAIL M-31.08)

INFLUENT METER: COPPER SERVICE LINE, CURB STOP WITH LOCKING WINGS AND METER BOX WITH COVER PER COM DETAILS M-49.01 AND M-49.02; ELECTRICAL WIRING FOR GROUND LEVEL METER READOUT DEVICE INSTALLED IN SCHEDULE 40 PVC TO REMOTE READOUT LOCATION.

METER PLACEMENT AT COOLING TOWER

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

GROUND LEVEL METER READOUT DEVICE PLACEMENT

NOTES
1. PRIOR TO THE APPROVAL AND INSTALLATION OF SUBTRACTIVE METERS, CALCULATIONS SHALL BE PROVIDED TO THE WATER RESOURCES DEPARTMENT ESTABLISHING PROPOSED METER SIZES PER CITY OF MESA ENGINEERING AND DESIGN STANDARDS 317.25.

2. BUILDING SAFETY DIVISION PLUMBING AND ELECTRICAL PERMITS REQUIRED FOR INSTALLATION.
METER ASSEMBLY KEY NOTES

1. SINGLE METER OR COMPOUND (TWO METERS MANIFOLDED) ASSEMBLY PER TABLE BELOW. ALL FITTINGS ABOVE GROUND SHALL BE FLANGED FITTINGS. ALL FLANGE BOLTS, NUTS AND STUDS IN ALL ABOVE GROUND FLANGES SHALL BE 316 STAINLESS STEEL AND LUBRICATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.

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<th>SERVICE SIZE</th>
<th>METER SIZE</th>
<th>MAXIMUM FLOW</th>
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<tr>
<td>1/2&quot;</td>
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(2) 6" METERS IN MANIFOLDED ASSEMBLY PER COND DETAILS M-27.01.1 & M-27.02.2


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 OSBY 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) 646-6462 FOR BPA'S THAT ARE APPROVED AND APPROPRIATE FOR THE PROJECT. SEE NOTE NO. 16 REGARDING REQUIRED TESTING. ALL CONNECTIONS TO BE FLANGED.

6. DIP SPOOLS.
7. DIP 90° ELBOW (FLANGE BY FLANGE).
8. ZINC COATED THREAD-RECEIVED STEEL ROD, BOLT TO FLANGES AS SHOWN AT CENTER OF PIPE. TYPICAL OF BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.

9. FINISHED GRADE BELOW 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 FOR EACH METER AND VALVE IN ASSEMBLY.

11. DOUBLE STRAP BRONZE SADDLE, 2" X CLOSE BRASS NIPPLE AND 2" FORD B-11-777W LOCKING CURB STOP. DRILL 2" DIAMETER HOLE IN CURB SETTER SADDLE. 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 AZONIZED ALUMINUM TAG, ATTACHED TO OPERATOR WHEEL WITH #6 STAINLESS STEEL JACK CHAIN. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.

SEE M-27.01.2 FOR REFERENCED NOTES

NOT TO SCALE

REV. 12/05/2016
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. 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. 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?DID=48 PRIOR TO THE REQUEST FOR FINAL INSPECTION.

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

SEE M-27.01.1
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. SEE MESA STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT: HTTP://WWW.MESA AZ.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 480-644-2641.
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.
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.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462 PRIOR TO THE REQUEST FOR FINAL INSPECTION.

SEE M-27.02.1
NOTES

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-27.02.1 & M-27.02.2.
3. WHERE A 10" SERVICE IS REQUIRED, APPLY THIS DETAIL FOR A COMPUND 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 BROWN OR DARK BROWN.
   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. SEE MESA
   STANDARD SPECIFICATIONS FOR SPECIFIC REQUIREMENTS AT:
   HTTPS://WWW.MESAAZ. GOV/BUSINESS/ENGINEERING/RESA-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 480-644-2841.
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 METER WATER SHOP AT 480-644-2841 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: HTTPS://WWW.MESAAZ. GOV/HOME/SHWDOCUMENT?ID=5462 PRIOR TO THE REQUEST
    FOR FINAL INSPECTION.
LIST OF MATERIALS

1. 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. 3" DIA. TYPE K COPPER WATER SERVICE PIPE. (SEE COM DETAIL M-49.02)
4. WATER METER BOX AND COVER PER COM DETAIL M-29.
5. CITY-APPROVED BACKFLOW PREVENTION ASSEMBLY PER COM DETAILS M-31.03.
6. 2"X3"X2' COPPER TEE SOLDERED
7. 2" COPPER 90° BEND SOLDERED
8. ATTACH STAINLESS STEEL OR ANODIZED ALUMINUM TAG AT VALVE. TEXT "CUSTOMER SHUT OFF VALVE" SHALL BE ENGRAVED OR STAMPED ON TAG.

NOTES

1. TOP OF WATER METER SHALL BE A MINIMUM OF 2" BELOW UNDERSIDE OF COVER.
2. METERS SHALL NOT BE INSTALLED IN DRIVEWAYS OR IN A LOCATION INACCESSIBLE FOR MAINTENANCE.
3. ALL METERS SHALL BE 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 3.17.25

NOT TO SCALE

REV. 03/02/2017
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.

NOT TO SCALE

REV. 03/02/2017

DETAIL NO. M-29

1 1/2" & 2" APPROVED WATER METERS
THIS SHEET INTENTIONALLY LEFT BLANK
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://MESA.AZ.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.MESA.AZ.GOV/HOME/SHOWDOCUMENT?ID=5462, PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. BACKFLOW ASSEMBLIES SHALL BE PAINTED LIGHT TAN OR A COLOR TO MATCH THE BUILDING. DO NOT PAINT THE NAME PLATE, STAINLESS STEEL BODY, OR ANY BRASS PARTS OF THE ASSEMBLY.
5. INSTALL BRASS PIPE PLUG IN EACH 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 2½-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)

REVIEWED: 03/11/2007
REVISION DATE: 03/02/2017
NOT TO SCALE
DETAIL NO. M-31.01

REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY

LIST OF MATERIALS

1. APPROVED REDUCED PRESSURE PRINCIPLE 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" PIPE SPOOL. COPPER 2.5"- 3" OR FLANGE BY FLANGE D.I.P. 4"- 10".
4. ZINC COATED THREADED STEEL ROD, BOLT TO FLANGES AS SHOWN, TYPICAL BOTH SIDES. ROD DIAMETER TO MATCH NOMINAL BOLT DIAMETER FOR CONNECTING FLANGES.
DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY

LIST OF MATERIALS

1. APPROVED DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY.
2. RESILIENT SEATED GATE VALVE, G.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

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://MESAAZ.GOV/HOME/SOWDOCUMENT?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 CON 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 2" INCH MINIMUM CLEARANCE BETWEEN BACKFLOW ASSEMBLY AND PERMANENT STRUCTURES.
10. THIS DETAIL IS INTENDED FOR LOW HAZARD DOMESTIC SERVICE PROTECTION AND FIRE LINES WITH EXTERIOR ASSEMBLIES. A REDUCED PRESSURE PRINCIPLE BACKFLOW ASSEMBLY MUST BE INSTALLED IF CHEMICAL ADDITIVES ARE INJECTED ANYWHERE DOWNSTREAM OR AN AUXILIARY WATER SOURCE IS CONNECTED.
11. SCREENING SHALL BE AS REQUIRED BY CITY OF MESA, (NOT SHOWN)
NOTES

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.MESA AZ.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.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462, PRIOR TO THE REQUEST FOR FINAL INSPECTION.

4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDERED ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 96). THE FLUX SHALL BE TYPE 0A 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)
NOTES

1. CONTACT CITY OF MESA, WATER QUALITY SERVICES AT (480-644-5462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS AT:
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.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462, PRIOR TO THE REQUEST FOR FINAL INSPECTION.
4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 34% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 95). 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 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

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.MESA AZ.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.MESA AZ.GOV/HOME/SHOWDOCUMENT?ID=5462, PRIOR TO THE REQUEST FOR FINAL INSPECTION.

4. ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY W/ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, AND SN 96). THE FLUX SHALL BE TYPE OA FOR GENERAL SOLDERING ON COPPER.

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

6. PRESSURE VACUUM BREAKERS MUST BE INSTALLED AT LEAST 12-IINCHES ABOVE ALL DOWNSTREAM PIPING AND THE HIGHEST OUTLET ON THE SYSTEM. IF THIS DISTANCE EXCEEDS 24-IINCHES, 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 PERFORATES THE CONCRETE.

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

1. ASSEMBLY SHALL BE TESTED FOR PROPER OPERATION PER COM REQUIREMENTS BY A CERTIFIED TESTER RECOGNIZED BY THE CITY BEFORE A FINAL APPROVAL IS ISSUED.

2. CONTACT COM WATER QUALITY BACKFLOW AT (480) 644-6462 FOR LATEST LIST OF APPROVED BACKFLOW ASSEMBLIES OR CERTIFIED TESTERS LIST AT: HTTP://WWW.MESA22.GOV/HOME/SHOWDOCUMENT?ID=5460.

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 3/1/2.

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 USGBC/CR APPROVED AND EITHER U.L. LISTED OR FM APPROVED.

2. SUPPLY PIPE MATERIALS AND INSTALLATION SHALL COMPLY WITH NFPA 13, 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-I, TYPE C. SEE WATER RESOURCES APPROVED PRODUCTS LIST AT: HTTP://WWW.MESA AZ.GOVERN/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 630 AS AMENDED BY THE CITY OF MESA AND SHALL HAVE A MINIMUM WORKING PRESSURE RATING OF 200 PSIG. VALVE SHALL BE A GATE VALVE WITH A 2" SQUARE OPERATING NUT AND DESIGNED TO PREVENT CLOSURE IN LESS THAN FIVE (5) SECONDS FROM FULL OPEN POSITION.

4. VALVES SHALL BE SAME SIZE AS FIRE LINE. IN NO CASE SHALL THE VALVE BE SMALLER THAN 4". ON FIRE LINES SMALLER THAN 4", THE LINE SHALL NOT BE REDUCED TO SMALLER THAN 4" UNTIL BEYOND THE RIGHT-OF-WAY OR EASEMENT IF AN EASEMENT EXISTS.

5. THE PORTION OF FIRE LINE LOCATED IN AN EASEMENT OR ROW SHALL BE APPROVED DIP ONLY. OWNER MAY INSTALL OTHER SUITABLE FIRE LINE MATERIALS APPROVED BY THE BUILDING SAFETY DEPT. FOR LINE BEYOND EASEMENT OR ROW. IN THIS CASE, AN APPROVED TRANSITION FITTING OR FLANGE SHALL BE INSTALLED BEYOND THE ROW OR EASEMENT IF AN EASEMENT EXISTS. DIP PIPE AND FITTINGS SHALL BE PER WATER RESOURCES APPROVED PRODUCTS LIST, SEE HTTP://WWW.MESA AZ.GOV/SHOWDOCUMENT?ID=5462.2.

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.
SAFETY POST FOR BACKFLOW PREVENTION DEVICES

PLAN VIEW

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).

BUILDING WALL, FENCE, ETC.

SEE COMM. DETAIL M-31 FOR MIN. DISTANCES

CUSTOMER'S WATER SERVICE

SAFETY POST PER MAG DETAIL 140
EXCEPT AS NOTED ABOVE

12" DIA.
NOTES

1. VAULT SHALL BE INSTALLED ONLY IN NON-TRAFFIC AREAS.

2. THE SIZE OF THE VAULT SHALL BE DETERMINED BY THE SIZE OF THE PRIMARY MEASURING DEVICE.

3. THE SELECTION OF TYPE AND SIZE OF A PRIMARY MEASURING DEVICE SHALL BE APPROVED BY THE CITY OF MESA INDUSTRIAL PRETREATMENT SECTION.

4. VAULT SHALL BE A PRE-CAST CONCRETE FLUME VAULT BY UTILITY VAULT CO., SMITH PRECAST, OR EQUAL. LIFTING INSERTS AND ACCESS DOORS INSTALLED BY PRE-CAST MANUFACTURER.

5. ACCESS DOORS SHALL BE HINGED, FLUSH MOUNTED WITH RECESSED LIFTING HANDLES AND SHALL HAVE PENTAHED LOCKING BOLTS WITH A RECESSED AREA FOR SECURING THE VAULT WITH A PADLOCK AND SHALL BE TORSION ASSISTED. THE ACCESS DOORS SHALL HAVE A CLEAR OPENING OF NOT LESS THAN 36" X 60".

6. LADDER SHALL BE A MINIMUM OF 1.5 FEET WIDE. LADDER AND ALL LADDER HARDWARE SHALL BE FIBERGLASS OR STAINLESS STEEL.

7. WHEN REQUIRED FOR THE PURPOSE OF OBTAINING MONTHLY CITY OF MESA WASTEWATER SERVICE CHARGE INFORMATION, THE SECONDARY MEASURING DEVICE SHALL BE A PULSAR OPEN CHANNEL MONITOR, MODEL TYPE TO BE APPROVED BY THE CITY OF MESA'S INDUSTRIAL PRETREATMENT SECTION.
NOTES

1. PVC TYPE COUPLINGS SHALL BE USED FOR ALL REPAIRS ON PVC SEWER LINES.

2. SHIELDED RUBBER TYPE COUPLINGS MAY BE USED ONLY WHEN REPAIRING OTHER TYPES OF SEWER LINES, SUCH AS CLAY, DUCTILE IRON, OR TRANSITIONS FROM PVC TO OTHER TYPE PIPE.

3. APPROVED GASKETED SEWER FITTINGS INCLUDE FERNCO AND MULTI FITTINGS, INC.

4. BACKFILL MATERIAL FROM THE BOTTOM OF THE EXCAVATION TO THE SPRING LINE OF THE PIPE SHALL BE PLACED TO PROVIDE FULL SUPPORT FOR THE PIPE. BACKFILL, WHETHER IMPORTED OR NATIVE, THAT IS USED FOR THIS PURPOSE SHALL BE GRANULAR PER MFG SECTION 6.1.6, BE PLACED AT A MOISTURE CONTENT SUCH THAT IT IS SEMI-FLOWABLE; BE LOW-SHRINK AND REQUIRE MINIMAL COMPACTION EFFORT. MATERIALS SUCH AS CONTROLLED LOW STRENGTH MATERIAL (CLSM) PER MFG SECTION 7.2.8, PORTLAND CEMENT PER MFG SECTION 725, ABC SLURRY, PEA GRAVEL, ETC. MAY BE USED.

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

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>
</table>
| 350 GAL.   | 5'1"| 4'1"| 3'5"| 3'8"
| 500 GAL.   | 6'6"| 5'4"| 4'8"| 5'1"|

NOT TO SCALE

REV. 7/31/22
NOTES

1. WHEN INSTALLED IN UNPAVED AREAS, ELEVATE MANHOLE LID 2 INCHES MINIMUM ABOVE SURROUNDING GRADE TO EXCLUDE SURFACE WATER. DO NOT INSTALL IN RETENTION OR WATER-PONDING AREAS.

2. IF INSTALLED IN A PAVED OR CONCRETE AREA, SLOPE SURFACE AWAY FROM MANHOLE LIDS TO PROTECT AGAINST ENTRANCE OF SURFACE WATER.

3. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE A MINIMUM OF 2 FEET OUTSIDE OF BUILDING FOUNDATION.

4. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. AT A MINIMUM, DESIGN FOR H-20 LOADING.

5. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.

6. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC SECTION 206.

7. INLET AND OUTLET MUST BE WATERTIGHT TO STRUCTURE.

8. THE FOLLOWING DIMENSIONS ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR:

<table>
<thead>
<tr>
<th>TANK SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
</table>
| 500 GAL.  | 3' - 0" | 7' - 0" | 4' - 6" | 5' - 7" | 5' - 4"
| 500 GAL.  | 4' - 0" | 6' - 2" | 5' - 10" | 4' - 10" | 4' - 7"
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 ENCLODED 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 MFG 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>69&quot;</td>
<td>54&quot;</td>
<td>48&quot;</td>
<td>51&quot;</td>
</tr>
</tbody>
</table>

NOT TO SCALE

REV. 7/31/22

DETAIL NO.
M-36.02
NOTES

1. ELEVATE SIDEWALLS ABOVE SURROUNDING GROUND SURFACE, AS SHOWN IN DETAIL, TO EXCLUDE SURFACE WATERS.

2. IF INSTALLED IN A PAVED AREA, SLOPE SURFACE TO PROTECT AGAINST ENTRANCE OF SURFACE RUN-OFF WATER.

3. DIMENSIONS SHOWN ARE THE MINIMUM ALLOWABLE FOR THIS TYPE OF WASTE INTERCEPTOR.

4. NOT APPROVED FOR USE INSIDE AN ENCLOSED BUILDING. TANK MUST BE MINIMUM OF 2 FEET OUTSIDE OF BUILDING FOUNDATION.

5. PRE-CAST TANK TO BE REINFORCED AS REQUIRED TO MEET STRUCTURAL REQUIREMENTS OF EACH SEPARATE INSTALLATION. USE NOT RECOMMENDED WHERE VEHICLE WHEEL LOAD PASSES DIRECTLY ACROSS TOP OF INTERCEPTOR.

6. INTERIOR OF TANK SHALL BE COATED WITH ASPHALT EMULSION.

7. EXCAVATION MUST ALLOW FOR 12" CLEARANCE AROUND TANK. EXCAVATION AND BACKFILL SHALL BE PER MAG SPEC, SEC. 206.

8. INLET AND OUTLET TO BE WATERTIGHT TO STRUCTURE.

<table>
<thead>
<tr>
<th>TANK SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>12&quot;</td>
<td>50&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
<tr>
<td>1050</td>
<td>125'6&quot;</td>
<td>61'6&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
<tr>
<td>1250</td>
<td>125'6&quot;</td>
<td>61'6&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>125'6&quot;</td>
<td>61'6&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>125'6&quot;</td>
<td>61'6&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
<tr>
<td>2500</td>
<td>125'6&quot;</td>
<td>61'6&quot;</td>
<td>65'6&quot;</td>
<td>54'6&quot;</td>
<td>31'6&quot;</td>
<td>48'6&quot;</td>
<td>6'6&quot;</td>
<td>6'6&quot;</td>
<td>8'6&quot;</td>
<td>31'6&quot;</td>
<td>44'6&quot;</td>
<td></td>
</tr>
</tbody>
</table>

NOT TO SCALE

REV. 7/31/2024
THIS SHEET INTENTIONALLY LEFT BLANK
THIS SHEET INTENTIONALLY LEFT BLANK
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 MFG 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-49.01 (AT WATER MAIN CONNECTION).

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.
NOTES

1. PLACE MARKERS WHERE SHOWN ON THE PLANS.

2. MARKERS NOT TYPICALLY REQUIRED IN DEVELOPED OR PAVED AREAS.

APPLY DECAL TO FACE OF POST (BOTH SIDES)

4" WIDE X 66" LONG UTILITY MARKER POST, RHINO 3-RAIL, ORANGE FIBERGLASS OR APPROVED EQUAL, INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

FINISHED GRADE

2'- MAX

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

1" HIGH WITH 1/4" STROKE
WHITE 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

DECAL

CITY OF MESA

CITY OF MESA
1. When total area of signage exceeds 2,000 sq. in., an additional post is required.
2. Anchor, sleeve and post shall be 1/2 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 3" 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 fig. Section 726 and as shown. Tape over anchor
     bottom and holes prior to concrete placement.
4. Lateral clearances from post(s) per applicable sign detail and as determined by the city.

**ELEVATION A - ANCHOR, SLEEVE & POST**

**SECTION A - ANCHOR, SLEEVE & POST**

1. Post: 2" x 2"
   - See notes 1 & 2
   - Refer to detail 'B', this sheet, for length
   - Finish Grade

2. Sleeve:
   - See note 2
   - 2-1/2" x 2-1/2"
   - 1/8" length

3. Anchor:
   - See notes 2 & 3
   - 2-1/4" x 2-1/4"
   - Length, varies

**SECTION B - SIGN FASTENING**

- Fasten per section B, this detail and applicable C.O.M. sign detail

**SECTION B - POST & SIGN ASSEMBLY**

**ELEVATION B - SIGN ASSEMBLY**

1. Sign(s), per applicable C.O.M. details

2. Sign post length measured from top of sign(s) to depth below grade

3. Anchor, sleeve and post assembly

4. Not to scale

---

NOTES:

Sign(s), per applicable C.O.M. details

**POST INSTALLATION (SQUARE TUBING)**

DETAIL NO. M-39

REV. 02/06/10
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 PREFORMED EXPANSION JOINT FILLER A.S.T.M. D-775.

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

3. DRIVEWAYS GREATER THAN 50' 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 ROW OR RAKE SHALL EXTEND 2' MINIMUM BEYOND THE BACK OF SIDEWALK OR 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 CM 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'-16'</td>
<td>16'-20'</td>
<td>20'-30'</td>
</tr>
</tbody>
</table>

NOT TO SCALE

REV. 01/31/2014

DETAIL NO. M-40.02
NOTES

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 INTUMESCENT TYPE PREFORMED EXPANSION JOINT FILLER A.S.T.M D-175.

5. CONCRETE SHALL BE CLASS "B" SEC. 725.

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

NOT TO SCALE

REV. 11/19/22/5
1. DRIVEWAY PER COM DETAIL M-42. DOUBLE DRIVEWAY MAX. WIDTH = 60'.

2. D MIN. FROM ULTIMATE R/W LINE PER COM DETAIL M-19.01 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 200</td>
<td>60'</td>
</tr>
<tr>
<td>201 TO 300</td>
<td>80'</td>
</tr>
<tr>
<td>GREATER THAN 300</td>
<td>100'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NON-RESIDENTIAL UNITS</th>
<th>D MIN.</th>
</tr>
</thead>
<tbody>
<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.
THIS SHEET INTENTIONALLY LEFT BLANK
TYPICAL SECTION

MAY NOT APPLY WITHIN 600 FEET OF AN INTERSECTION. SEE COM DETAILS M-46.01 THROUGH M-46.05.

NOTES

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 PUFE 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

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.


PEDESTRIAN PUSHBUTTON LOCATION REQUIREMENTS

MIN LEVEL (2% MAX) SPACE REQUIRED ADJACENT TO PUSHBUTTON

CROSSWALK STRIPE

S'/W' WIDTH SHOWN ON PLANS

S'W' WIDTH

CO/ CROSSWALK WH/- WIDTH

10' MAX

SEE NOTE #7

10' MIN

48" X 30" RECTANGLE

(SEE NOTE #1)

SIDEWALK RAMP (TYP.)

30' MIN LEVEL SPACE ON ALL SIDES OF POLE

NEW PUSHBUTTON POLE ADDED ADJACENT TO LEVEL PORTION OF RAMP, USE SINGLE CURB TO PROTECT LANDING FROM DEBRIS.

MATCH S'/W' GRADE

REMOVE EXISTING CURB AS NEEDED.
THIS SHEET INTENTIONALLY LEFT BLANK
THIS SHEET INTENTIONALLY LEFT BLANK
### APPROVED DETECTABLE WARNING PRODUCTS (TRUNCATED DOMES)

1. **STANDARD COLOR SHALL BE RED** (FEDERAL COLOR NO. 20109 OR EQUIVALENT). **STANDARD COLOR SHALL BE USED UNLESS OTHERWISE DIRECTED.**

2. **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 website at [HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=3254.](HTTP://WWW.MESAAZ.GOV/HOME/SHOWDOCUMENT?ID=3254.)

### NOTES

1. **CONTROL ELEVATIONS SHOWN ARE IN RELATION TO THE GUTTER AND ARE LOCATED RADIALY, GUTTER EL.+0.**

2. **CLASS ‘B’ CONC. CONSTRUCTION PER SECTION 725.**

3. **FOR NEW CONSTRUCTION, USE OF TYPE B RAMPS SHALL BE IN ACCORDANCE WITH THE TABLE ON THIS SHEET.**

4. **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.**

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 & ACCESSIBLE APPROACH SHALL BE 10 INCHES.**

### Table: NEW CONSTRUCTION INTERSECTION TYPE

<table>
<thead>
<tr>
<th>NEW CONSTRUCTION INTERSECTION TYPE</th>
<th>CORNER RADIUS (TO FC)</th>
<th>RAMP TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOCAL STREET INTERSECTING A</td>
<td>20.5’</td>
<td>A-COM DETAIL M-44.02</td>
</tr>
<tr>
<td>COLLECTOR STREET INTERSECTING A</td>
<td>20.5’</td>
<td>L-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>MAJOR COLLECTOR STREET INTERSECTING A</td>
<td>25.5’</td>
<td>C-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>4-LANE ARTERIAL INTERSECTING A</td>
<td>25.5’</td>
<td>C-COM DETAIL M-44.04</td>
</tr>
<tr>
<td>5-LANE ARTERIAL</td>
<td>25.5’</td>
<td>B-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>6-LANE ARTERIAL INTERSECTING A</td>
<td>30.5’</td>
<td>B-COM DETAIL M-44.03</td>
</tr>
</tbody>
</table>
### 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. For new construction, use of Type B Ramps shall be in accordance with the Table on this sheet.
4. 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.
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 & accessible approach shall be 10 inches.
7. Standard color of detectable warning shall be red (Federal color No. 2019 or equivalent). Standard color shall be used unless otherwise directed.
8. 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.

<table>
<thead>
<tr>
<th>NEW CONSTRUCTION INTERSECTION TYPE</th>
<th>RADIUS TO FC</th>
<th>RAMP TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local street intersecting a local collector or arterial</td>
<td>20.5'</td>
<td>A-COM DETAIL M-44.02</td>
</tr>
<tr>
<td>Collector street intersecting a collector or arterial</td>
<td>20.5'</td>
<td>C-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>Major collector street intersecting a major collector or arterial</td>
<td>25.5'</td>
<td>C-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>4-lane arterial intersecting a 4-lane arterial (M-64.01 &amp; M-64.02)</td>
<td>25.5'</td>
<td>C-COM DETAIL M-44.06</td>
</tr>
<tr>
<td>4-lane arterial intersecting a 6-lane arterial</td>
<td>25.5'</td>
<td>B-COM DETAIL M-44.03</td>
</tr>
<tr>
<td>6-lane arterial intersecting a 6-lane arterial (M-64.03 &amp; M-64.04)</td>
<td>30.5'</td>
<td>B-COM DETAIL M-44.03</td>
</tr>
</tbody>
</table>
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. CROSSTREWS SHALL BE ALIGNED PERPENDICULAR TO THE STREET CENTERLINE AS MUCH AS POSSIBLE.
4. SEE PLANS FOR LOCATION OF SIDEWALK RAMP CENTERLINE.
5. NEW RESIDENTIAL IS REQUIRED TO USE TYPE A.
6. TYPE B REQUIRES A MINIMUM OF A 25° RADIUS.
Notes:
1. All concrete to be Class 9B, Mag Section 725.
2. All ramps and detectable warning shall be aligned perpendicular to the curbline at the ramp control point. Crosswalks shall be aligned perpendicular to the street centerline as much as possible.
3. Ramp landing depth shall match sidewalk width, 5", minimum as measured radially from back of curb to face of ramp curb.
4. When a concrete apron exists the sawcut may be made in the apron 2" from back of existing curb.
5. See plans for location of sidewalk ramp centerline.
6. Minimum 4" long level area required between ramps, 8" thick.
7. Curb height may be decreased to 4" for space limited areas provided the ramp slope is a maximum 1:12:1 and the minimum 4" long level area between ramps is maintained.
8. Each ramp retrofit requires a site specific assessment and field review by the design engineer to ensure functional design.
9. Ramp width shall match sidewalk or path width, 5" minimum as measured at back of ramp along ramp curb.
10. Ramp shall have heavy rough broom finish.
11. Payment limits include full ramp detail including portion beyond curb return.

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

Section A-A

1. DETECTABLE WARNING LIMITS PER M-44.03
2. 2" TYP.
3. SIDEWALK RAMP C
4. SEE NOTE 6
5. SEE NOTE 5
6. SEE NOTE 4
7. SEE NOTE 7
8. 6" SIDEWALK WITH SMOOTH FINISH
9. TC = 6" SEE NOTE 7
10. PAVEMENT REPLACEMENT PER M-16.01
11. DETECTABLE WARNING
12. 6" SEE NOTE 6
13. TWO CROSSING DIRECTIONS AT CORNER
14. SEE NOTE 2
15. SEE NOTE 9
16. SEE NOTE 8
17. SIDEWALK RAMP C
18. EXPANSION JOINT (TYP.)
19. EXPANSION JOINT (TYP.)
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.

SECTION A-A

NOTE ELEVATION PER PLANS WITH MAXIMUM SLOPE PER ADA GUIDELINES
NOTES

1. 1/2" BITUMINOUS PREFORMED EXPANSION JOINT FILLER, ASTM D-1751 PER MAG SECTION 729.

2. SUBGRADE PREPARATION PER MAG SECTION 301.

3. CONTRACTION JOINTS IN THE BUS PULLOUT PAVEMENT SHALL MATCH THOSE IN THE CURB.

4. CONCRETE SHALL BE CLASS "A" PER MAG SECTION 725.

5. BUS SHelter PAD AND SHelter PER COM DETAILS M-45.02.1 THROUGH M-45.07.4 IF REQUIRED BY PLANs. BUS Shelters SHALL NOT BE PlACED WITHIN SIGHT VISIBILITY TRiANGLES OF ADJACENT STREET INTERSECTIONS OR DrivewayS.

6. PAVEMENT TRANSITION. (SEE SECTION A-A)

7. CROSS SLOPE SHALL BE 2% UNLESS OTHERWISE NOTED ON PLANS.

8. BUS PULLOUT DIMENSIONS MAY BE REVISED UPON WRITTEN APPROVAL OF THE CITY.

9. WHEELCHAIR PAD, CONSTRUCT PER MAG DETAIL 230.

10. BUS STOP SIGN

11. ALTERNATE SHELTER PAD LOCATION. SEE M-45.01.2.

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

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

STANDING SEAM PANELS
24 GA. RIDGE/HIP TRIM
4"x4"x3/16" T.S. FRAME
24 GA. RIDGE/HIP TRIM
MITER & BUTT WELD CORNERS WITH 3/4" WELD.

STREET

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

ROOF PLAN
CITY OF MESA ENGINEERING DEPARTMENT

GENERAL NOTES

1. CONCRETE PAD IS "CLASS-B" (TYP.) A.B.C. IS COMPACTED TO MIN. 95% (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-45,03,1 & 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 INFLAT PANEL (OPPOSITE OF THE TELEPHONE LOCATION) ON THE INSIDE OF THE BUS SHELTER WITH 4 NON-REMOVABLE P Rico Rivets at Each Corner.

PAINTING NOTES

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

CARBOLINE PRODUCTS AVAILABLE FROM DUNN-EDWARDS PAINTS (OR APPROVED EQUAL)

FINISH: HIGH GLOSS

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

SOLIDS BY VOLUME: 63% ± 2%

DRY FILM THICKNESS: 3.0-5.0 MIL PER COAT

TWO COATS FINISH (MINIMUM):
CARBOLINE 13A HB TWO-COMPONENT, ACRYLIC, ALIPHATIC POLYURETHANE

SOLIDS BY VOLUME: 54% ± 2%

DRY FILM THICKNESS: 3.0-5.0 MIL PER COAT

BUILDING INFORMATION
GOVERNING CODE: I994, LBC
SEISMIC ZONE: 2
SOIL BEARING: 1500 PSI
CONCRETE (ALL): 2500 PSI
METALS: ROLLED SHAPES AND PLATES Fy36 KSI
PIPES: Fy36 KSI
STRUCTURAL TUBING: Fy46 KSI
1/4" BENT PLATE CLOSURE: Fy52 KSI

CONSTRUCTION TYPE: I-I-N SHELTER IS SHOP OCCUPANCY
B - FABRICATED

SHELTER DESIGN COMPLIES WITH A.D.A.G.
SECTIONS 6.41 THRU 6.47

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

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

SBS-2/97

MASTER PLAN REGISTRATION

REV. 03/30/2015
2 FOOTING @ T.S. FRAME CONNECTION DETAIL

1 TYPICAL CLOSURE CONNECTION DETAIL

3 RIDGE BEAM SPLICE
NOTES

1. DRILL HOLE:
   See detail 2. M-45.03.1 for anchor type and anchor diameter. Drill hole in existing concrete, 1/2" 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 SPLICING

---

STANDING SEAM ROOF PANEL

(BERRIDGE CEE-LOCK OR K-LOK STRUCT.)

NOTCH DRAIN FLASHING TO CLEAR BOLTS

PLATE TO BENT PLATE (TYP.)

1-3/4" WIDE X 1/2" LONG X 1/4" THK. T=.080 TOP & BOTT. OF BENT PLATE

3" WIDE X 1/2" LONG X 1/4" THK. PL. CENTERED ON BENT PLATE W/1/2" 2-1/2" DIAM. A-325 N 20LTS.

BENT PLATE

W/LOCK NUTS W/ 3" O.C. + HORIZ.

7/16" MAX. GAP

1/2" MIN.

1/2" M. Gap

FRONT

BENT PLATE

VERSATILE BUS SHELFIER - STRUCTURAL DETAILS

M-45.03.2

REV. 03/23/2015
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.
A - ROOF SECTION & FRAME SECTION (PARTIAL)
1. **SOLID PANEL TO FRAME CONNECTION (TYP.)**

   - 3/4" X 3/16" X 1/8" ANGLE WELDED TO FRAME, CONTINUOUS
   - 1/8" GA. PANEL
   - 3/16" HOLE @ 6" O.C. TYPICAL, USE BUTTON HEAD ALLEN DRIVE METAL SCREWS, TYPICAL ALL CONNECTIONS
   - 4" X 3/16" T.S.

   **NO PERFORATION (1) @ JAMBS & HEAD ONLY**
   - 1/8" GA. (42% SHADE) PERFORATED STEEL PANEL - 1/4" HOLE WITH 3/8" STAGGER, RIVETED TO FRAMEWORK, PAINT TO MATCH FRAME.
   - 4" X 3/16" T.S.
   - FRAME SHOWN
   - 1/8" GA. BENT STEEL CHANNEL, PAINT TO MATCH T.S. FRAME.
   - 4" X 3/16" T.S.
   - 5/16" STEEL POP-RIVETS @ 6" O.C. (TYP. FOR PERFOR PANEL ONLY) PAINT TO MATCH FRAME.
   - 3/4" X 3/16" X 1/8" L
   - (SEE DETAIL NO. 1 ABOVE)

2. **PERFORATED SCREEN FRAME (JAMB)**

   - SEE DRAWING NO. A-68000
   - FOR STRUCTURAL CALCULATIONS
   - SFR-12/97
   - MASTER PLAN REGISTRATION

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**8 BIKE LOOP DETAIL**

- **EXPANSION JOINT**
- **CONCRETE SLAB**
- **PLAN VIEW**
- **2-3/8" BIKE LOOP SCHEDULE 40 PIPE**
- **24" MIN. CLEAR**
- **8" X 6" TURNDOWN SEE FLOOR PLAN**
- **FLUSH MOUNT**
- **6" CONC. OVER 4" AWC**

**PATTERSON-WILLIAMS RAINBOW RACK, MODEL NO. 1629-01M3**
- POWDER COATED OR APPROVED EQUAL, COLOR: GREEN (RAL 6027), PAINTED TO MATCH BENCH BY MANUFACTURER.
- 2 LOOPS REQUIRED, SEE FLOOR PLAN, FASTEN TO CONCRETE WITH 5/8" DIAMETER 4" LONG PRIMA HIGH EXPANSION ANCHORS BY RED HEAD, 3/8" DIAMETER 3-3/4" LONG KWIK BOLT. 1/2" EXPANSION ANCHOR BY HILTI, OR ENGINEER'S APPROVED EQUAL.
3. PERFORATED SCREEN FRAME (SILL)

- 16 GA. (.02" THICK) PERFORATED STEEL PANEL 1/4" HOLE WITH 3/8" STAGGER, RIVETED TO FRAMEWORK
- CAULK BEAD - CLEAR ACRYLIC/SILICONE
- 12 GA. BENT STEEL ANGLED CHANNEL PAINT TO MATCH T.S. FRAME (TO SIT BETWEEN JAMBS FRAMES)
- 3/8"x3/8"x1/8" L (SEE DETAIL NO. 1 ABOVE)
- 3/8"x3/8"x1/8" T.S
- 4"x3/8"x1/8" T.S. FRAME SHOWN BEYOND

5. CONCRETE SCORE

- SAWCUT
- 1/2" NEW CONCRETE

6. EXPANSION JOINT

- TOOL CAULKING SMOOTH
- 3/4"-1/2" CLOSED CELL FOAM BAND BREAKER
- NEW OR EXISTING CONCRETE
- 1/2" NON-ASPH. FIBER MATERIAL EXTEND TO 1" BELOW CONCRETE

SEE SECTIONS B ON SHEET 3 FOR HAND-HOLE LOCATION.
THIS SHEET INTENTIONALLY LEFT BLANK
NOTE:
SEE SHEET M-45.06.3 FOR KEY NOTES.

NOT TO SCALE
KEY NOTES:

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.
ATTACHMENT PLATE

DETAIL

EXISTING OR NEW 4"X4"X3/16" T.S. FRAMEWORK
1-1/2" MIN LAP
1-1/2" MAX. GAP
T.S. 4"X3"X3/16"

SEE DET. NO. 2 ON M-45.05 FOR SIMILAR SCREEN FRAME, HEAD, CONSTRUCTION

PRE-DRILL FOR TEK SCREWS (TYP.)
5/8"X4" PAX LONG @ 11/2"
#12-14X1" LONG TEKS @ 3" O.C.

TOP RAIL OR POST FOR END SCREEN OR TOP RAIL FOR SUN SCREEN

NOT TO SCALE

DETAIL NO.
M-45.07.4

REV. 03/28/2016

STANDARD BUS SHelter - SUN SCREEN DETAILS
MINIMUM BOARDING AREA DETACHED SIDEWALK

BUS STOP SIGN
BUS TRAVEL
FACE OF CURB

SIDEWALK WIDTH VARIES

8'
22' Preferred
5' Minimum

MINIMUM BOARDING AREA MEANDERING SIDEWALK OR NO SIDEWALK

PARKWAY
BUS STOP SIGN
FACE OF CURB

PARKWAY

SIDEWALK WIDTH VARIES

8'
22' Preferred
5' Minimum
BUS TRAVEL

MINIMUM BOARDING AREA

BUS STOP SIGN
BUS TRAVEL
FACE OF CURB

SIDEWALK WIDTH VARIES

8'
22' Preferred
5' Minimum

STANDARD SIGN INSTALLATION
BEHIND CURB AND GUTTER

STANDARD SIGN INSTALLATION
BEHIND SIDEWALK

ADDITIONAL WIDENING
(AS NEEDED) PER MAG 230

NOT TO SCALE
NOTES
1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. CONTINUATION OF TAPERS SHOWN ON FIGURE COM DETAIL M-46.02.
5. REFER TO COM DETAILS M-44.01.1 & M-44.01.2 FOR PUSH-BUTTON 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. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIANS CROSSINGS, CROWN WALK SHALL BE PERPENDICULAR TO MEDIANS.
5. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-46.01.
6. REFER TO COM DETAILS M-44.01.1 & M-44.01.2 FOR PUSHTUBBON LOCATIONS.

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

12' CROSSWALK LINES
6' GAP, TYP.
2' DASH
20' TYP.

4' TYP.
MIN 24'
20', TYP.
CROSSWALK/MEDIAN PER COM DETAIL M-46.01.3, TYP.
SIDEWALK RAMP PER COM DETAIL M-44.03. TYP.
RAISED MEDIAN
DETACHED 6' WIDE SIDEWALK PER COM DETAIL M-42, TYP.

LEFT TURN DETAIL

START LEFT TURN LANE STRIPING
20', START REVERSE CURVE
20' TYP.

NOT TO SCALE
CROSSWALK/MEDIAN DETAIL

SECTION A-A

SECTION B-B

SECTION C-C

CONCRETE 6"X12" CURB

MATCH AC TO CURB

1/2" EXP. JOINT MATERIAL (TYP)

5" MEDIAN CURB

6' MIN.

DETECTABLE WARNING

1/2" EXP. JOINT MATERIAL (TYP)

12" MEDIAN CURB

1/2" EXP. JOINT MATERIAL (TYP)

MEDIAN CURBS

DETECTABLE WARNING PER APPROVED LIST

12" CROSSWALK LINE

12" CROSSWALK LINE

17" OPENING

17" CROSSWALK

7'

15'

8"
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 PAVERS IN A RAGGED WEAVE PATTERN
(SEE MAG SPECIFICATIONS, SECTION 342)

EXISTING CONCRETE CURB

SAND SWEPT JOINTS

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

95% COMPACTED SUBGRADE PER MAG SECTION 301

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.)

NOT TO SCALE
NOTES
1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS BAYS ARE REQUIRED AT EACH INTERSECTION.
4. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-46.02.
5. REFER TO COM DETAILS M-44.01.1 & M-44.01.2 FOR PUSHBUTTON LOCATIONS.

25.5' RADIUS, F/C, TYP.
15' X 72" WIDE P.U.F.E., TYP., ALL CORNERS
BUS PULLOUT, TYP., ALL CORNERS.
SEE COM DETAIL M-44.01

STRIPED MEDIAN

CROSSWALK WIDTH, TYP. 8'
12' CROSSWALK LINES
4', TYP.

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

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

STRIPED MEDIAN

NOT TO SCALE

REV. 06/26/2017
NOTES
1. ALL DIMENSIONS AT CURB LINE ARE TO FACE OF CURB (F/C) UNLESS OTHERWISE NOTED.
2. IF NO RIGHT TURN LANE, CONTINUE 6' BIKE LANE TO APPROACH.
3. DEVELOPER SHALL CONFIRM WITH THE CITY IF BUS PULLOUTS ARE REQUIRED AT EACH INTERSECTION.
4. FOR INTERSECTION LEGS WITH PEDESTRIAN REFUGE MEDIAN CROSSINGS, CROSSWALK SHALL BE PERPENDICULAR TO MEDIAN.
5. TAPER DIMENSIONS NOT SHOWN IN LOWER LEFT CORNER FOR CLARITY. REFER TO TYPICAL DIMENSIONS SHOWN IN UPPER RIGHT CORNER.
6. CONTINUATION OF TAPERS SHOWN ON COM DETAIL M-46.04.
7. REFER TO COM DETAILS M-44.01 & M-44.02 FOR PUSHBUTTON LOCATIONS.

30.5' RADIUS, F/C, TYP.
15' WIDE P.U.E.E., TYP., ALL CORNERS
BUS PULLOUT, TYP., ALL CORNERS, PER COM DETAIL M-45.0

CROSSWALK MEDIAN DETAIL

NOT TO SCALE
REV. 08/22/2016

DETECTABLE WARNING PER APPROVED LIST

REF TO COM DETAIL M-46.01.3

SECTION PER COM DETAIL M-16

RAISED MEDIAN

ARterial Street Intersection (6 Lanes) With 8' Raised Medians

Detail No. M-46.03.2
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 Details M-44.01 & M-44.02 for pushbutton locations.

NOTES
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 PUSHBUTTON 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. For intersection legs with pedestrian refuge median crossings, crosswalk shall be perpendicular to median.
5. Refer to COM details M-44.0.1 & M-44.0.2 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.

CENTER OF SIDEWALK RAMP, TYP.

12' WIDE WHITE CROSSWALK LINES, TYP.

CENTER OF SIDEWALK RAMP, TYP.

12' WIDE WHITE CROSSWALK LINES, TYP.

18' WIDE WHITE STOP BAR, TYP.

4', TYP.

7.5', TYP.

4', TYP.

RADIUS RAMPS

DUAL RAMPS
NOTES
1. R3-SR at all right turn lanes.
2. Install Carrot for extra wide right turn lanes (8' or more). For lanes wider than 20', install Carrot and "arrow" pavement marking.
3. See COM DETAIL M-47.03 for arrow marking details.

NO BIKE LANES

WITH BIKE LANES

NOT TO SCALE

REV. 09/22/2016
NOTES

1. INSTALL R3-5R AND R3-5FP PLAQUE AT ALL RIGHT TURN LAKES.
2. INSTALL ARROW AND "ONLY" PAVEMENT MARKINGS AT ALL RIGHT TURN TRAP LAKES.
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 LAKES 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

DETAIL "A" - 3'x9', SKIPS
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 CON 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 MIL)) PREFORMED THERMOPLASTIC PER ADOT STANDARD SPECIFICATIONS SECTION 705.
NOTE
DOTTED LINE SHALL BE TYPE I PREFORMED PLASTIC PAVEMENT
MARKING PER ADOIT STANDARD SPECIFICATION SECTION 705.

NOTES
1. FIND THE POINTS OF THE LANE LINES EXTENDED TO THE INSIDE OF THE CROSSTWALK 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 OPPOSITE 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.

TYPICAL BIKE LANE LAYOUT

TYPICAL LAYOUT FOR SHARED BIKE/PARKING LANES

BIKE RIDER DETAIL
1. ENGINEER TO SET "BLUE TOPS" FOR ALL WATER METER BOXES TO MATCH BACK OF SIDEWALK GRADE OR TOP OF CURB GRADE IF CURB ONLY. INSTALL TOP OF SERVICE CURB STOP 8" MIN. TO 10" MAX. BELOW "BLUE TOP" EXCEPT FOR SPECIAL CONDITIONS (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 FIXTURE 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 6' 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 6' 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.
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 DETAIL M-29 FOR 1-1/2" AND 2" WATER METERS.
5. BRANCHES BEFORE THE METER ARE NOT ALLOWED; I.E., ONLY ONE METER PER SERVICE TAP EXCEPT FOR LANDSCAPE METERS AS SHOWN IN DETAIL M-29.03.
6. FOR 3/4" AND 1" SERVICES, A MINIMUM OF 1/2 FEET COPPER "PIGTAIL" ON CUSTOMER'S SIDE OF METER BEFORE CHANGING TO OTHER MATERIAL FOR 1-1/2" & 2" SERVICES, A MINIMUM OF 4 FEET COPPER "PIGTAIL" ON CUSTOMER'S SIDE 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 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 LEAD, COMPLIANT WITH EPA SAFE DRINKING WATER ACT REQUIREMENTS.

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<tr>
<th>MATERIALS LIST</th>
<th>SERVICE LINE SIZES</th>
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<tr>
<td>3/4&quot;</td>
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<td>1/2&quot;</td>
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<tr>
<th>SERVICE SADDLE (WITH I.P. THREADS)</th>
<th>SEE APPROVED PRODUCTS LIST</th>
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<th>COMPRESSION STOP (BALL STYLE) (WITH I.P. THREADS)</th>
<th>SEE APPROVED PRODUCTS LIST</th>
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<th>CURB STOP WITH LOCKING WINGS (BALL STYLE)</th>
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<th>OUTLET METER COUPLING</th>
<th>SEE APPROVED PRODUCTS LIST</th>
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<tr>
<th>SERVICE LINE (TYPE K-SOFT)</th>
<th>COPPER (TYPE K-SOFT)</th>
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SINGLE-STRAP SERVICE SADDLES ARE PERMITTED ON WATER MAINS 8" AND SMALLER. DOUBLE-STRAP SERVICE SADDLES ARE REQUIRED ON WATER MAINS LARGER THAN 8". SERVICE SADDLES SHALL BE ALL-BRASS AND HAVE I.P. THREADS. SERVICE SADDLES PER APPROVED PRODUCTS LIST.

ALL COPPER PIPE JOINTS SHALL BE SOLDERED. THE SOLDER ALLOY SHALL COMPLY WITH ASTM B 32 HAVING A SILVER CONTENT OF NOT LESS THAN 3.4% INTENDED FOR JOINING COPPER PIPES FOR POTABLE WATER SYSTEMS (GRADES SN 94, SN 95, OR SN 96). THE FLUX SHALL BE TYPE QA FOR GENERAL SOLDERING ON COPPER.

BOLTS AND NUTS USED TO CONNECT 1-1/2" AND 2" WATER METER FLANGES SHALL BE 516 GRADE STAINLESS STEEL WITH THREADS COATED WITH FOOD GRADE ANTI-SEIZE COMPOUND.
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.

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**Plan View - Parallel Installation**

- Single Meter Installation
- Manifold Meter Installation

**Plan View - Perpendicular Installation**

- Water meter, box and cover installed parallel to street per COM DETAIL M-49.01 and M-49.02.
- Water service domestic.
- Water service for landscape irrigation.
- Backflow prevention assembly per COM DETAIL M-31.03 or M-31.04.
- 12" (Typ.) to center of box.
- Property line.
- Curb, gutter, and sidewalk.

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Copper Service Line per COM DETAIL M-49.01 and M-49.02.
WATER LINE CUT AND PLUG NOTES:

1. Cap and plugs must be adequately "dry blocked".
2. Dry blocks shall be standard size solid masonry concrete blocks (ASTM C-139).
3. The quantity and arrangement of the blocking must withstand line pressure by holding the cap or plug in position.
4. Dry blocking shall be properly shimmed tight and secure against the cap before line pressure is restored.
5. Concrete thrust blocks shall not be poured until line pressure is restored and the cap or plug is inspected for leakage.
6. Concrete shall not be poured over any portion of the abandoned pipe.
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.
VALVE ABANDONMENT

EXISTING GROUND

MATCH EXISTING GRADE, FINAL LAYER THICKNESS AND TYPE TO MATCH EXISTING NATIVE, A.C. OR CONCRETE

EXISTING VALVE HOUSING

BACKFILL WITH 1/2 BAG CLSM 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.
**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 INSULATING 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.

8. THE SEWER FACILITIES DEDICATED TO SERVING ONE GROUP OF LOTS (INCLUDING MAINS & SERVICES OR PORTION THEREOF LOCATED IN THE STREET FRONTING THE CLUSTER) SHALL BE PRIVATE.

9. THE PRIVATE SEWER MAIN AND PRIVATE SEWER SERVICES LOCATED OUTSIDE OF RIGHT-OFF-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, EXCEPT 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. Restraint joint carrier pipe per City of Mesa approved products list.
2. Stainless steel casing spacers per City of Mesa approved products list.
3. 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 37.12 or larger shall be installed with grout connections.
6. Grout connections and grouting shall be per Mag specification 602.
7. Annullar space between casing and carrier pipe shall be left empty per Mag Spec. 602, unless otherwise indicated in project plans and specifications.

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.

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.
- Restrained length in casings shall not be considered as part of the restraint length for thrust calculation purposes.
- Acceptable carrier pipe installation positions are standard and centered, as shown above.
- Care must be exercised to avoid metal-to-metal contact between the carrier and casing pipe.
- Installation shall conform to AWWA M54.
1. GAS PIPE SHALL HAVE A MINIMUM OF 36" COVER AS MEASURED FROM WHICHEVER IS LOWER, FINISHED GRADE OF PAVEMENT OR NATURAL GROUND, UNLESS OTHERWISE NOTED. "BLUE TOPS" MAY BE REQUESTED TO VERIFY COVER AS REQUIRED PER NOTE 1 OF COM DETAIL M-49.1.


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 NEEDED BARRIERS, 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" HORIZONTAL SEPARATION FROM THE OUTSIDE DIAMETER OF THE WATER LINE.

10. ALL WATER MAINS IN MAJOR STREETS SHALL HAVE A MINIMUM COVER OF 36"-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.

11. 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.
THIS SHEET INTENTIONALLY LEFT BLANK
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.

6. Post shall be installed per com detail M-39.
PLEASE NOTE
SOLID WASTE VEHICLES
WEIGH APPROX. 29 TONS
WHEN FULL; DRIVeways
MUST BE BUILT TO SUPPORT
THIS WEIGHT WITHOUT
DAMAGE TO DRIVE.

HAMMER HEAD DRIVE

PUBLIC ROADWAY

A TYPICAL SOLID WASTE COLLECTION ROUTE

SAFETY NOTE
BACKING UP MORE THAN 50' AFTER SERVICE
TO A SOLID WASTE BIN IS PROHIBITED. THE 50'
IS MEASURED FROM THE BACK OF THE SOLID
WASTE COLLECTION VEHICLE. MAKE SURE THE
AREA HAS THE PROPER TURNING RADIUS AND
ACCESS AREA TO LEAVE SITE. THE VEHICLE IS
APPROX. 5' LONG. SOLID WASTE COLLECTION
VEHICLES WILL NOT TURN WHILE BACKING.

MAX. BIN DEVIATION

CLEARANCE REQUIREMENTS

NOTES

1. ALL CURBS ARE TO BE ALIGNED ON THE OUTSIDE OF
ENCLOSURE WALLS, THE CURBS SHALL NOT
INTERFERENCE 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 RADIUS) 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 11' IS REQUIRED
IN DRIVE, 20' OVER BARREL SERVICE LOCATION AND
25' OVER BIN ENCLOSURE AREA FROM STEEL
SAFETY POSTS BACK 50'.

5. ROUTES SHALL BE CLEAR OF ALL OBSTRUCTIONS
(CURBS, WALLS, OVERHEAD WIRE, 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 ADDRESS IN COM DETAILS
M-62.02 AND M-62.03.

10. STANDARDS FOR BIN ENCLOSURE: SCREEN WALLS,
SAFETY POSTS, AND GATES ARE ADDRESS IN
COM DETAIL M-62.04.
DOUBLE-WIDE BIN ENCLOSURE CONFIGURATIONS

SINGLE-WIDE BIN ENCLOSURE CONFIGURATION

SEE M-62.02.2 FOR REFERENCED 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 of (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 of food waste 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 living unit per week. For example, a development with 200 units x .3 yards = 30 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 there is a min. 6 foot goffth created within each enclosure.

8. Gates, hinges and mounting hardware shall not intrude upon minimum net enclosure opening so there is a minimum 12” width within each enclosure. Double enclosure gates must be able to open simultaneously.

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 roadway shall have enclosure gates that screen the bins from public view.

11. Bin enclosures to be a minimum of 3 feet from any non-combustible planned or existing structure at its closest point; 3 feet from any combustible planned or existing structure at its closest point (per Uniform Fire Code 103.7.2).

12. Standards for solid waste vehicle access are addressed in Con Detail M-62.01.

13. Standards for triple wide enclosures are addressed in Con Detail M-62.03.

14. Standards for bin enclosure screen walls, safety posts, and gates are addressed in Con Detail M-62.04.

15. Standards for properties approved for barrel service are addressed in Con Detail M-62.05.

16. Restaurants must provide a separate enclosed area to accommodate their grease trap. 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 impede the enclosure opening (and gating if required). Additional items such as landscaping control boxes and lighting may be positioned on the outside of the enclosure walls.

18. Tree planting should not take place within ten (10) feet of the bin enclosure and should be spaced so as 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.
6-FOOT MASONRY SCREEN WALL

2'x8'x16' CMU

#4 BARS @ 8" ON CENTER
(GROUT CELLS SOLID FULL HEIGHT)

PROVIDE 4" OPENING AT LOW POINT WHERE FLOOR SLOPES BACK INTO BIN RECEPTACLE.
SPACES AT 10'-0" O.C.

6" THICK CONCRETE PAD

2-1/4" BARS CONTINUOUS

FINISH GRADE

SEE NOTE 11

SEE NOTE 9

ALTERNATE

SAFETY POST

FILL WITH GROUT AND CROWN TOP
6" REFLECTIVE ENGINEER'S TAPE
(3M HIGH DENSITY YELLOW
PRESSURE SENSITIVE TAPE OR
APPROVED EQUIVALENT)

6" DIA. X 8.5" STEEL POST,
SCHEDULE 40, GALVANIZED

EXIST. GRADE

CONCRETE (CLASS B)

EXIST. CONC. OR ASPHALT

SEE M-62.04.2 FOR REFERENCED NOTES

NOT TO SCALE

REV. 03/30/16
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-COMBUSTABLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT, AND 5 FEET FROM ANY COMBUSTABLE PLANNED OR EXISTING STRUCTURE AT ITS CLOSEST POINT (PER UNIFORM FIRE CODE NO.3, 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 RINGS INSTALLED AND HOLES DRILLED IN THE CONCRETE AT BOTH THE OPEN AND CLOSED POSITIONS TO PREVENT GATES FROM CLOSING INTO THE COLLECTION VEHICLE.


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 1A CONCRETE AS PER SECTION 725 EXCEPT AS NOTED IN SAFETY POST DETAIL ON COM DETAIL M-62.04.1.

10. STEEL REINFORCEMENT SHALL BE GRD 40.

11. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS 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, DUPLIEKES, TRIPLEXES, AND FOURPLEXES) MAY REQUEST TO USE AUTOMATED BARREL SERVICE. PRIOR APPROVAL MUST BE MADE FROM THE SOLID WASTE DEPARTMENT. 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 ORDINANCE.

STORAGE AREA SCREEN WALLS FOR BARREL SERVICE
TABLE #1

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<tr>
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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: $f_c = 3,000$ PSI
   REINFORCING: $f_y = 60,000$ PSI, $f_y = 24,000$ PSI
   MASONRY: $f_m = 1,500$ PSI
7. SAFETY POSTS, WHEEL STOPS, & GUIDE RAILS SECURED TO CONCRETE SLAB, ARE REQUIRED FOR ALL ENCLOSURES. SAFETY POSTS ARE ADDRESSED IN COM DETAIL M-62.04.

LARGE COMPACTOR REFUSE AREA

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) 602-3059 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 14'.
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.
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, 5, 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 (HAMMER-HEAD DRIVES AND DEAD-ENDS ARE UNACCEPTABLE).

6. PRIVATE STREETS WITH CUL-DE-SAC MUST BE DESIGNED TO MEET CITY OF MESA STANDARDS FOR CUL-DE-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. ALL GATES MUST OPEN FROM THE CODE OR REMOTE PROVIDED, WITH THE EXCEPTION OF EXIT ONLY GATES. EXIT ONLY GATES WILL BE WIRE 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 SPACE SO AS NOT TO CREATE AN AERIAL OBSTRUCTION FOR THE BARREL DUMPING AT THE FINAL FULL GROWTH DIMENSIONS.

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

11. "MINIMUM 4' 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 (ON 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-62.06. SHOW ALL BARREL LOCATIONS. WITH ADDRESSES, ON SITE PLAN. FOR VISIBILITY TRUANGLE, REFER TO LATEST VERSION OF ENGINEERING AND DESIGN STANDARDS. LOCATIONS FOR THE BARRELS SHALL BE IDENTIFIED WITH A DURABLE METAL MARKER. REFER TO M-62.06.

2. ON STREET PARKING REQUIREMENTS: UNDER 30’ WIDTH, NO PARKING EITHER SIDE; 34’ 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 PLACELOCATION.

4. PLACEMENT DESIGNATIONS WILL NOT BE LOCATED NEAR CLUSTER MAILBOX LOCATIONS. BARRELS SHOULD HAVE A MINIMUM 64’ 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 A HORIZONTAL OF BARREL COLLECTION LOCATION AREAS.

7. THE REQUIRED USE OF IDENTIFIED LOCATIONS FOR INDIVIDUAL 60-GALLON CONTAINERS MUST BE INCLUDED IN THE HOMEOWNER’S CONDITIONS, COVENANTS, AND RESTRICTIONS (CC&R). 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 60-GAL REFUSE CONTAINER, ONE 60-GAL RECYCLING CONTAINER, AND ONE 90-GAL 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 ENROACH ONTO SIDEWALKS.
NOTES:

1. 2 BARREL COLLECTION LOCATIONS PER RESIDENTIAL UNIT ARE REQUIRED, SPLIT BETWEEN THE ALLEY DRIVEWAY, i.e., 6 RESIDENTIAL HOMES WOULD REQUIRE 12 PADS, THESE CAN BE 6 PADS EACH SIDE OF THE DRIVEWAY. ADDITIONAL UNITS WILL REQUIRE ADDITIONAL PADS.

2. LOCATION OF NO PARKING SIGN MAY NEED TO BE ADJUSTED TO ACCOUNT FOR ADJACENT FIRE HYDRANTS (6' 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

ADDRESS OR UNIT #
LETTER AND NUMBER SIZE = 1/4"

LETTER SIZE = 3/16"

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.

RECICLING 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

STANCHION
LOCATION
(TYP.)

4-FOOT HEIGHT
SAFETY RAILING

PLAN VIEW
N.T.S.

ATTACHMENT DETAIL NO. 1
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

PROFILE VIEW
N.T.S.

INSTALL PER ATTACHMENT
DETAIL #1 OR #2
(CONTRACTOR'S OPTION
UNLESS OTHERWISE NOTED)

ATTACHMENT DETAIL NO. 2
N.T.S.

1 1/2" O.D. STEEL PIPE

GROUT SOLID

PRE-SET STEEL SLEEVE

W/2
W/2
WIDTH
8" MIN.

TOP OF HEADWALL

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

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

TOP OF HEADWALL

W/2

W/2

W/2

6" MIN.

1 1/2" SCHEDULE 40 GALVANIZED
PIPE TO 6" x 6" x 3/8" STEEL PLATE
MIN. WIDTH OF WALL SHALL BE 6"
WITH NELSON STUDS

NOT TO SCALE
NOTES

1. VAULT SHALL BE PRECAST CONCRETE. SHOP DRAWING SUBMITTAL IS REQUIRED.

2. ONE 10' LONG BY 5/8" DIAMETER COPPER GROUND ROD SHALL BE INSTALLED IN ONE OF THE GROUND ROD KNOCKOUTS. THE TOP 4 INCHES OF THE ROD SHALL BE EXPOSED ABOVE THE FLOOR OF THE VAULT FOR FUTURE INSTALLATION (BY OTHERS) OF GROUNDING CLAMPS.

3. INSTALL 1/2" DIAMETER THREADED SST EPOXY ANCHOR BOLT IN MANHOLE EMBED 2" MINIMUM INTO MANHOLE WALL WITH 2" MINIMUM EXPOSED. CITY WILL DIRECT CONTRACTOR RELATIVE TO IN WHICH CORNER OF MANHOLE TO INSTALL SAID BOLT. ALL TRACER WIRES ENTERING MANHOLE SHALL BE ROUTED AROUND THE EDGES OF THE MANHOLE TO THIS BOLT LOCATION. CONNECT ALL WIRES TOGETHER AND ATTACH TO THIS BOLT.

4. TEST POINTS SHALL BE INSTALLED UNLESS OTHERWISE DIRECTED BY CITY OF MES A ENGINEERING STAFF.


6. ALL CONDUITS SHALL PENETRATE VAULT MANHOLE ONLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT DETAIL M-66-04.
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 SPICE ENCLOSED CENTERED ON BLACK. BLACK ON BRANCH FIBER SHALL MATCH OR EXCEED BLACK 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 BE 2 INCHES OF DECOMPOSED GRAINITE 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/T MANHOLE ONLY AT EXISTING PULL BOX KNOCKOUT LOCATIONS AND FOLLOW KNOCKOUT DETAIL M-66.3L.

SECTION A-A
SECTION B-B

(2) GALVANIZED "C" CHANNEL EMBEDDED IN EACH WALL, # TOTAL

8 - 15 HOLE "C" CHANNEL RACK
16 - 1/2" SPRING NUTS AND BOLTS
8 - 7 1/2" HOOKS

RACKING PACKAGE

1'-6" X 1'-6" KNOCKOUTS CENTERED ON EACH SIDE
2'-10" X 1'-3" WIDE SLOTTED ENTRY CENTERED ON EACH END

REV. 12/06/16

NOT TO SCALE

DETAIL NO.
M-66.012

4 X 4 FIBER OPTIC BOTTOMLESS MANHOLE
NOTES

1. FURNISH WITH MACHINED HORIZONTAL BEARING SURFACE.
2. FURNISH WITH T-GASKET.
3. CASTINGS SHALL CONFORM TO MAG SPECIFICATION SECTION 7.12 AND MOBILE LOADING REQUIREMENTS.
4. FRAME IS 310 POUNDS. COVER IS 150 POUNDS.
5. GALVANIZED COVER SHALL INCLUDE IDENTIFICATION OF 1" LETTERS IN STANDARD "MARKINGS" "MESA ITS FIBER" OR "MESA ITD FIBER" AS NOTED ON APPROVED PLANS.
6. SEE APPROVED PRODUCTS LIST AVAILABLE AT WWW.MESA.GOV.
7. ROUND LIDS SHALL BE USED IN THE TRAVELWAY AND SQUARE BOX LIDS SHALL BE USED BEHIND THE SIDEWALK.

NOT TO SCALE
NOTES

1. FRAME AND LID SHALL BE CAST GRAY IRON PER ASTM A-48 CLASS 35B.
2. FRAME IS 25 POUNDS, LID IS 13 POUNDS.
3. NO PAINT.
4. H-20 TRAFFIC RATING REQUIRED.
5. ALL UNUSED AND FUTURE CONDUITS SHALL BE PLUGGED WITH AN EXPANDABLE PLUG. ALL CABLE FILLED CONDUITS SHALL BE PLUGGED WITH SIMPLEX PLUG. SEE APPROVED PRODUCTS LIST FOR SPECIFIC PRODUCTS.

5/8" RAISED LETTERING PER LID DETAILS, THIS SHEET

TWO CONCEALED PICKHOLES, TYP.

MANHOLE AND FRAME & COVER PER COM DETAILS M-66.01 & M-66.02

CONCRETE COLLAR

2" PVC SCHEDULE 40 GRAY CONDUIT WITH ONE COPPER TRACER WIRE

SEE PLAN AND SECTION, THIS SHEET

SEE TEST POINT LID DETAILS, BELOW

COIL 2' OF TRACER WIRE AND ATTACH TO UNDERSIDE OF DUCT PLUG

INSTALL FLUSH

CLASS "B" CONCRETE

CAST IRON FRAME AND COVER

PEA GRAVEL

COPPER TRACER WIRE

2" PVC SCHEDULE 40 CONDUIT WITH MINIMUM BEND RADIUS PER PROJECT SPECIFICATIONS

SEE NOTE 5

REZ. 12/14/2016

NOT TO SCALE
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.

Inside Face of Vault

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).

Route tracer wire past plug into vault.

Copper tracer wire in top 1' conduit per trenching and duct bank detail.

3/4" plywood attached to inside face of vault/Manhole. Remove after concrete is set.

Bedding and shading material per conduit trench detail.

Section

Not to Scale
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.

NOTES
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.

CABLE RACKS MOUNTING BRACKET ATTACHED TO STRUT CHANNEL OR ATTACHED DIRECTLY TO VAULT WALL AS APPROVED BY COM REPRESENTATIVE.

CABLE TIE, TYPICAL OF 3 FOR EACH COIL.

FIBER CABLE COILED VERTICALLY, SEE NOTE I.

SEE NOTE I.

EXISTING STRUT CHANNEL

SPICE CLOSURE J-HOOK RACKS

ONE (1) PAIR OF CABLE RACKS, TYPICAL OF FOUR (4) EACH WALL MOUNT ON EXISTING STRUT CHANNEL OR DIRECTLY ON VAULT WALL BY APPROVAL OF COM REPRESENTATIVE.

PERSPECTIVE.
NOTES
1. SEE CON DETAIL M-66.09 FOR CABLE SPOOL LENGTH.
2. PULL BOX COVER LETTERING SHALL BE "M" LETTERS CAST IN STANDARD MARKINGS "MESA FIBER".
3. FOR NEW FULL 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.

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

SUPPORT BLOCK LAYOUT

PULLBOX, CONDUIT AND CABLE MANAGEMENT

TRACER WIRE PER CON 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 SPLICER CLOSURE ON CENTER TOP OF COILED CABLE. COIL TRACER WIRE AND LAY ON CENTER TOP OF SPLICE CLOSURE. REFER TO PLANS.
PROVIDE 4 - 2"X2"X16" SUPPORT BLOCKS, 1 PER CORNER AND LEVEL PER CONDITIONS.

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

MARKER TAPE INSTALLED 12" ABOVE CONDUIT (TRENCH INSTALLATION ONLY)
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 24" X 24" x 36" DEEP NUMBER 9 PULL BOX, AS PER PLANS.

NOTE:

- 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.
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.
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.
**NOTE**

Conduit size shall be as shown on plans.
ALIGN BOTH MICRODUCT TO ONE SIDE OF PULL BOX

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

CONTRACTOR INSTALL FIBER OPTIC IDENTIFICATION TAGS.

SEAL MICRODUCT/FIBER WITH HEAT SHRINK (TYP)
SEAL ENDS OF EMPTY MICRODUCT WITH MANUFACTURER APPROVED WATER TIGHT PLUGS (TYP)

CONDUIT TO EXTEND 2 TO 4 INCHES ABOVE AGGREGATE FLOOR

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

CONDUIT ACCESS HOLE (TYP)

CONDUIT INSTALLATION IN PULL BOX

SECTION

MICRODUCT INSTALLATION IN 4' DEEP NO. 9 PULL BOX

SECTION

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

NOT TO SCALE

SEEN M-66.08.2 FOR REFERENCED NOTES

REV. 12/19/2016
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 "MESAFIBER".
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 HOT 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 LOOPED 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.GOV/ENGINEERING/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 DUCT BANK EXCEPT PER JACKEO, 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 SHAMED 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'

<table>
<thead>
<tr>
<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>
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<td>120'</td>
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<tr>
<td>Deep No. 9 Pull Box</td>
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</tr>
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<td>200'</td>
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<tr>
<td>6' x 6' Vault</td>
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<td>200'</td>
</tr>
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</tr>
<tr>
<td>Building Exterior NEMA Box</td>
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<td>25'</td>
</tr>
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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 CDM details M-66.06 or M-66.08.1 per structure type.

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**Splice Closure**

Splice closure if applicable on midpoint of cable spool.

**Finish Grade**

Finish grade.

**Fiber Optic Junction Structure**

See Table 'A' right.

**Conduit Bell Ends**

Installed prior to fiber cable installation may be removed by the contractor for the conduit plug installation with approval of the ITS or ITS project engineer.

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**Not to Scale**

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**REV. 01/26/2016**
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 MHS 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 ELECTRICAL CODE.**

2. **THE CITY OF MESA REQUIRES AT LEAST ONE MESA LEVEL 1 ROADWAY LIGHTING OR TRAFFIC SIGNAL TECHNICIAN ON SITE DURING ALL PHASES OF ANY STREETLIGHT WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE VERIFICATION OF CURRENT CERTIFICATION. IF A JOB SITE IS INSPECTED AND A CERTIFIED TECHNICIAN IS NOT ON SITE, THE JOB WILL BE SHUT DOWN. THIS SAME REQUIREMENT ALSO APPLIES TO LIGHTING WITHIN PARKING LOTS CONSTRUCTED, OWNED OR MAINTAINED BY THE CITY OF MESA.**

3. **CONTRACTOR SHALL SUBMIT A LIST CONTAINING NAMES AND QUALIFIED STATUS OF PERSONNEL THAT WILL BE ON THE IMMEDIATE JOB SITE TO THE INSPECTOR PRIOR TO STARTING ANY TYPE OF CONSTRUCTION. ANY CHANGES IN THIS LIST WILL REQUIRE IMMEDIATE NOTIFICATION TO THE INSPECTOR.**

4. **DURING THE WORKING HOURS PERIOD, IF THE CONTRACTOR FAILS TO OR IS UNABLE TO COMPLY WITH 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 RESPONSIBILITY OF THE CONTRACTOR, THE CITY WILL BE JUSTIFIED IN BILLING THE CONTRACTOR FOR THE COSTS INCURRED. IN SUCH CASES, A SEPARATE BILLING SHALL COVER EACH INCIDENT REQUIRING WORK BY CITY FORCES, THE AMOUNT OF EACH BILLING SHALL BE EITHER $500 OR THE ACTUAL ACCUMULATED CHARGES FOR EMPLOYEES, MACHINERY, MATERIALS AND EQUIPMENT, WHICH EVER IS GREATER, AND WHOSE BILLING WILL BE ISSUED 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 / SEE NOTE 16 THIS PAGE.**
   - **BEFORE INSTALLATION OF FIXTURES, AND PHOTOCELLS.**
   - **BEFORE MAKING SPlices.**
   - **WHEN PROJECT IS COMPLETED, IF NECESSARY, A LIST OF DISCREPANCIES WILL BE SUBMITTED TO THE CONTRACTOR FOR CORRECTIVE ACTION.**

FAILURE TO HAVE THESE ITEMS INSPECTED AND APPROVED BEFORE PROCEEDING WILL RESULT IN REJECTION OF THE WORK DONE, AND REMOVAL OF ANY 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 245 VOLT, WHERE A CABINET IS NOT USED, STREETLIGHT CIRCUITS SHALL BE 120/245 VOLT. ALL SERVICES SHALL BE 120/245 VOLT. ALL CONTROL CIRCUITS SHALL BE 120 VOLT.**

8. **BEFORE INSTALLATION OF ANY EXISTING STREETLIGHTS, THE NEW LIGHT SYSTEM SHALL BE WORKING OR TEMPORARY LIGHTING INSTALLED. EXISTING STREETLIGHTS TO BE REMOVED AND NEW STREETLIGHTS SHALL NOT OPERATE AT THE SAME TIME.**

9. **POLE LIGHTING AND 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. Where multiple circuits are used, each circuit shall not exceed 120 VOLT. ONE CONDUCTOR SHALL BE UNFUSED AND BE EITHER WHITE OR MARKED WHITE, AS REQUIRED.**

11. **ALL CIRCUIT CONDUCTORS IN UNDERGROUND CONDUIT SHALL BE XHHW/XHHW-2 INSULATION, MIN. #8-7 STRAND EXCEPT PHOTOCELL CIRCUIT SHALL BE STRAY CABLE (SEE NOTE 3 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 #46 C C WIRE, WHERE TWENTY-FOUR (24) INCHES COVER IS NOT POSSIBLE, GALVANIZED INSULATED STEEL CONDUIT (G.R.S.), SHALL BE USED. G.R.S. CONDUIT SHALL BE DOUBLE WRAPPED WITH 2X-MIL TAPE TO SIX (6) INCHES PAST THE THREADED METAL COUPLING, COMPRESSION COUPLINGS ARE NOT ALLOWED. PRIOR APPROVAL IS NEEDED FOR ANY DESIGN USING G.R.S. SPRING CLIPS.**

16. **ALL CONDUITS SHALL BE BLOWN OUT USING 50 PSI AIR PRESSURE AND TO BE MANOEUVERED BEFORE PULLING WIRE.**

17. **A TWO-INCH MINIMUMスペース BETWEEN PVC CONDUIT, AND EARTH COUPLING SHALL BE INSTALLED IN PVC CONDUIT RUNS AT INTERVALS NOT EXCEED (30 FEET).**

18. **ALL FORTY-FIVE (45) AND NINETY (90) DEGREE BENDS OF CONDUIT SHALL HAVE A RADIUS OF NOT LESS THAN EIGHTEEN (18) INCHES, FACTORY BENDS ONLY SHALL BE USED.**

19. **ALL JOINTS BETWEEN PVC CONDUIT, COUPLINGS & FITTING SHALL BE PREPARED WITH PURPLE PRIMER AND CEMENTED TOGETHER WITH GRAY PVC CEMENT.**

20. **THE CONNECTIONS SHOWN ON PLAN ARE DIAGRAMMATIC REPRESENTATIONS ONLY. CONTRACTOR IS TO INSTALL CONDUIT TO AVOID CONFLICTS. THE CONTRACTOR MAY AT HIS OPTION BORE FOR THE PLACEMENT OF CONDUIT PER CIV 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. STREETLIGHT CONDUIT IS INSTALLED AFTER RESIDENTIAL DRIVEWAY INSTALLATION. CONTRACTOR SHALL BORE CONDUIT UNDERGROUND, MEASURING THE CONDUIT BEHIND THE ENTRANCE WILL NOT BE PERMITTED.**

22. **BACKFILL REQUIREMENTS FOR ALL TRENCHES SHALL CONFORM TO ARTICLE 900 OF THE N.E.C. SECTION B.3 OF THE UNIFORM STANDARD SPECIFICATIONS, AND M-900. OF THE MESA STANDARD DETAILS FOR STREET TRENCH BACKFILL AND PAVEMENT REPLACEMENT.**

23. **WITH THE EXCEPTION OF DETACHED SIDEWALKS, PULL BOXES SHALL BE INSTALLED SECURELY ACCORDING TO TOLERANCE REQUIREMENTS. (2) PULL BOXES (3 FEET CENTER TO CENTER) BETWEEN STREETPOLES AND PULL BOXES.**

24. **PHOTOCELL RECEPTECLE SHALL BE POSITIONED ON LUMINAIRE SO THAT WHEN INSTALLED THE PHOTOCELL WILL FACE NORTH.**

25. **ALL STREETLIGHTS MUST BE LOW PROFILE TYPE, NO HIGHER THAN 1/2" ABOVE SOCKET.**

26. **ALL PHOTO CELL CIRCUIT MUST BE I-1/2" OR LARGER TO INCLUDE CONDUIT STUBING UP TO PHOTO CELL LIGHT POLE.**

27. **ALL RESIDENTIAL AND COLLECTOR CONDUIT SHALL BE I-1/2" CONDUIT.**

28. **ALL ARTERIAL CONDUIT SHALL BE 2", 1-1/2" CONDUIT FROM PULL BOX TO POLE.**

29. **FUSSING FOR LUMINAIRE SHALL BE SAMP FMN, LED LUMINAIRE TO BE FIXED ACCORDING TO TOLERANCE REQUIREMENTS.**

30. **ALL NON GALVANIZED CONDUITS SHALL HAVE INTERIOR POLE COATED WITH AMERICAN 7X8B OR APPROVED EQUIVALENT FROM BASE TO TOP OF HANDHOLE. (SMILES)
TYPE 1, LARGE COBRA HEAD LUMINAIRE

TYPE 2, SMALL COBRA HEAD LUMINAIRE

TYPE 3, SHOE BOX LUMINAIRE

**TYPE 1, AND TYPE 2 GENERAL DESCRIPTION**

To furnish a streetlight luminaire in accordance with the requirements of this specification and designed for roadway lighting. The ballast for Type 1 shall be a built-in multiple ballast for use with a 150 watt 55 volt, 200 watt 100 volt, 250 watt 100 volt, 310 watt 100 volt, 400 watt 100 volt high pressure sodium lamp with general shape as shown. The ballast for Type 2 shall be a built-in multiple ballast for use with a 100 watt 55 volt, 150 watt 55 volt high pressure sodium lamp with the general shape as shown.

The housing for Type 1 and Type 2 shall be precision aluminum die cast with an acrylic base electrocoat finish (see data table for color). The housing shall have an integral slipfitter for 1 1/4" to 2" pipe and shall contain a pipe stop. Clamping and leveling of the unit shall be accessible from within and without the unit. Each housing shall have the lamp wattage numbers adhered to the bottom of the luminaire so that it may be seen plainly from the roadway.

**TYPE 3 GENERAL DESCRIPTION**

To furnish a streetlight luminaire in accordance with the requirements of this specification and designed for roadway lighting. The ballast for Type 3 shall be a built-in multiple ballast for use with a 150 watt 55 volt, 150 watt 55 volt, 200 watt 100 volt, 250 watt 100 volt, 310 watt 100 volt, 400 watt 100 volt high pressure sodium lamp with general shape as shown.

The housing for Type 3 shall be precision aluminum die cast with a powder coat finish (see data table for color). Attachment and leveling of the unit shall be accomplished by four set screws which shall be accessible outside of the unit, on the external slipfitter. Each housing shall have the lamp wattage numbers adhered to the bottom of the luminaire so that it may be seen plainly from the roadway.
REQUIREMENTS

A. HOUSING
1. THE HOUSING SHALL BE DESIGNED FOR 90 DEGREE LIGHT CUTOFF.
2. TYPE O AND TYPE O HOUSING SHALL BE OF TWO DOOR WITH ONE DOOR ACCESSING THE OPTICAL ASSEMBLY AND ONE DOOR ACCESSING THE BALLAST ASSEMBLY.
3. TYPE O HOUSING SHALL BE OF ONE DOOR WITH ACCESS TO BOTH THE BALLAST AND OPTICAL COMPARTMENTS.
4. THE HOUSING SHALL BE ABLE TO WITHSTAND 1000 HOUR SALT SPRAY TEST ASTM I7.
5. NO REARRANGEMENT OF PARTS OR SEPARATE PARTS SHALL BE REQUIRED WHEN MOUNTING THE UNIT.

B. LAMP SOCKET
1. THE LAMP SOCKET SHALL BE MODUL MULTIPLE PORCELAIN ENCLOSED. THE RATING OF THE SOCKET SHALL EXCEED THE LAMP STARTING VOLTAGE.
2. THE SCREW SHELL OF THE SOCKET SHALL CONTAIN INTEGRAL LAMP GRIPS TO ASSURE ELECTRICAL CONTACT UNDER CONDITIONS OF NORMAL VIBRATION.
3. THE SOCKET SHALL BE ADJUSTABLE IN BOTH A HORIZONTAL AND VERTICAL DIRECTION.
4. THE SOCKET SHALL CONFORM TO T&D I-67 SPECIFICATION OF EEI STANDARDS.

C. DOOR GLASS
1. THE DOOR GLASS SHALL BE HEAT AND IMPACT RESISTANT FREE FROM IMPERFECTIONS AND STRATATIONS.

D. DOOR GLASS HOLDER-DOOR
1. THE DOOR GLASS HOLDER-DOOR SHALL BE SECURED AND HINGED TO THE UPPER HOUSING AT ONE END AND LATCHED TO THE UPPER HOUSING AT THE OPPOSITE END.

E. REFLECTOR
1. THE REFLECTOR SHALL BE OF DRAWN ALUMINUM AND HAVE A HIGHLY POLISHED ANODIC SURFACE.
2. THE REFLECTOR SHALL BE RIGIDLY MOUNTED WITHIN THE HOUSING TO ASSURE A TIGHT SURFACE FOR PROPER SEALING WHEN THE UNIT IS CLOSED.
3. GASKETS BETWEEN THE REFLECTOR AND GLASSWARE SHALL EFFECTIVELY SEAL THE OPTICAL ASSEMBLY FROM CONTAMINATES AND ALLOW FOR PROPER BREATHING OF THE ASSEMBLY THROUGH AN ACTIVATED CHARCOAL FILTER.
4. THE REFLECTOR DESIGN SHALL BE SUCH THAT BY PROPER POSITIONING OF THE LAMP SOCKET WILL PRODUCE AN IES TYPE II OR TYPE III LIGHTING DISTRIBUTION PATTERN.

F. TERMINAL BOARD
1. THE TERMINAL BOARD SHALL BE MOLDED OF FIBERGLASS REINFORCED POLYESTER WITH PROTECTIVE BARRIERS BETWEEN EACH TERMINAL.
2. THE TERMINAL SCREWS SHALL BE OF THE CAPTIVE TYPE AND EACH SCREW SHALL BE EQUIPPED WITH WIRE GRIPS WHICH WILL AUTOMATICALLY BE RAISED AND LOWERED AS THE SCREW IS OPERATED.
3. THE TERMINALS SHALL BE CAPABLE OF ACCEPTING UP TO #6 AWG CONDUCTOR.
4. THE TERMINAL BOARD SHALL HAVE THREE TERMINALS, ONE OF THESE TERMINALS SHALL BE FOR THE SYSTEM GROUND AND SHALL BE CONNECTED TO THE LUMINAIRE HOUSING.
5. WHEN A PHOTOCELL RECEPTACLE IS REQUIRED THREE ADDITIONAL TERMINALS SHALL BE PROVIDED FOR EXCLUSIVE PHOTOCELL OPERATION.
6. ALL UNITS ARE TO BE PREWIRED TO A SINGLE TERMINAL BOARD REQUIRING ONLY CUSTOMER CONNECTIONS TO CLEARLY IDENTIFIED TERMINALS.

G. HARDWARE
1. ALL HARDWARE SHALL BE OF NON-CORROSIVE OR SUITABLY PROTECTED METAL TO PREVENT ELECTROLYTIC ACTION BY CONTACT WITH ALUMINUM COMPONENTS SHALL BE SECURED TO THE LUMINAIRE FRAME WITH STAINLESS STEEL HARDWARE OF THE AISI 303 SERIES CHROME-NICKEL GRADE.

H. BALLAST
1. THE BALLAST SHALL BE OF THE BUILT IN DESIGN, MOUNTED WITHIN THE LUMINAIRE IN SUCH A MANNER THAT IT CAN BE EASILY DISCONNECTED BY SIMPLE DISCONNECTING PLUGS.
2. ON THE TYPE O AND TYPE O LUMINAIRES THE BALLAST AND OTHER AUXILIARY EQUIPMENT SHALL BE MOUNTED ON A SEPARATE DIE CAST Metal DOOR OF THE LUMINAIRE, TO FACILITATE REPLACEMENT WITHOUT THE USE OF TOOLS.
3. ON A TYPE O LUMINAIRE THE BALLAST AND OTHER AUXILIARY EQUIPMENT SHALL BE MOUNTED IN A REMOVABLE PANEL OR FRAME WITHIN THE LUMINAIRE, TO FACILITATE REPLACEMENT WITHOUT THE USE OF TOOLS.
4. THE HIGH PRESSURE SODIUM BALLAST SHALL BE OF THE THREE-COIL ISOLATED LAG TYPE REGULATOR DESIGN MULTIPLE VOLTAGE RATED (SEE DATA TABLE) FOR LINE VOLTAGE.
5. THE BALLAST CONTACT LAMINATION SHALL BE OF HIGH QUALITY ELECTRICAL GRADE STEEL WELDED TOGETHER TO MINIMIZE NOISE AND ASSURE TROUBLE FREE OPERATION OVER THE LIFE OF THE LUMINAIRE.
6. THE BALLAST COILS SHALL BE PRECISION WOUND ON FORMED INSULATING BOBBINS AND TERMINALS SHALL BE OF THE PUSH ON TYPE CONNECTIONS.
7. THE COMPONENT TO PROVIDE THE HIGH STARTING VOLTAGE REQUIRED BY THE HIGH PRESSURE SODIUM LAMP SHALL BE MOUNTED ON A NON ENCAPSULATED PLUG-IN MODULE WHICH SHALL BE EASILY ACCESSIBLE WITHOUT DISTURBING OTHER COMPONENTS OF THE BALLAST ASSEMBLY.
8. THE BALLAST SHALL BE CAPABLE OF STARTING AND OPERATING (SEE DATA TABLE) AT A HIGH PRESSURE SODIUM LAMP FROM A NOMINAL (SEE DATA TABLE) VOLTAGE 60% POWER SOURCE WITHIN THE LIMITS SPECIFIED BY THE LAMP MANUFACTURER. THE BALLAST INCLUDING STARTING ADD, MUST PROTECT ITSELF AGAINST NORMAL LAMP FAILURE MODES. THE BALLAST SHALL BE CAPABLE OF OPERATION WITH LAMP IN AN OPEN OR SHORT CIRCUIT CONDITION FOR SIX MONTHS WITHOUT SIGNIFICANT LOSS OF BALLAST LIFE.

I. INSPECTION
1. ALL INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY AN I.M.S.A. CERTIFIED INSPECTOR.

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<tr>
<th>LUMIN #</th>
<th>LAMP WATTAGE</th>
<th>LAMP TYPE</th>
<th>LAMP VOLTAGE</th>
<th>LINE VOLTAGE</th>
<th>I.E.S. DIST. TYPE</th>
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<td>L-115</td>
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</table>

**COLORS**

- GRAY - SHALL BE AN ACRYLIC BASE ELECTROCOAT ASA 70 GRAY.
- BRONZE - SHALL BE A POWDER COATED DE DARK BRONZE.
- GREEN - SHALL BE (SERIES 73 ENDURASHIELD III BY TNMEC) ECHO GREEN FOR MAIN STREET ONLY.
- CRECHEL - SHALL BE (SERIES 73 ENDURASHIELD III BY TNMEC) CRECHEL FOR MESA TOWN CENTER ONLY.

*OR APPROVED EQUAL.
DATA TABLE

<table>
<thead>
<tr>
<th>LUMIN. #</th>
<th>LAMP WATTAGE</th>
<th>LAMP TYPE</th>
<th>LAMP VOLTAGE</th>
<th>LINE VOLTAGE</th>
<th>I.E.S. DIST. TYPE</th>
<th>P.C. RECEPT.</th>
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NOTE

TO FURNISH A STREETLIGHT LUMINAIRE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION AND DESIGNED FOR ROADWAY LIGHTING WITH GENERAL SHAPE AS SHOWN.
REQUIREMENTS

A. HOUSING
1. THE HOUSING SHALL BE ONE PIECE EXTRUDED ALUMINUM WITH THE CANOPY BEING SPUN ALUMINUM.
2. THE HOUSING SHALL BE DESIGNED FOR 40 DEGREE LIGHT CUTOFF.
3. THE HOUSING SHALL BE OF ONE DOOR WITH ACCESS TO BOTH THE OPTICAL AND ELECTRIC SYSTEMS. THE SYSTEMS SHALL BE HINGED AND REMOVABLE FOR EASE OF SERVICING.
4. THE HOUSING SHALL BE ABLE TO WITHSTAND 1000 HOUR SALT SPRAY TEST ASTM I/7.
5. NO REARRANGEMENT OF PARTS OR SEPARATE PARTS SHALL BE REQUIRED WHEN MOUNTING THE UNIT.
6. ATTACHMENT AND LEVELING OF THE UNIT SHALL BE ACCOMPLISHED BY THE SLIDEPOTR.

B. ARM MOUNTED LUMINAIRE
1. THE HOUSING SHALL HAVE AN INTEGRAL SLIDEPOTR FOR 2 IN PIPE AND SHALL CONTAIN A PIPE STOP, CLAMPING AND LEVELING OF THE UNIT SHALL BE ACCESSIBLE FROM WITHIN THE UNIT.
2. SINGLE ARM AND TWIN ARMS ARE TO MOUNT TO A 3" O.D. X 6" POST TOPEX TENON.

C. POLE TOP MOUNTED LUMINAIRE
1. THE ALUMINUM SLIDEPOTR SHALL SUPPORT THE HOUSING AND CANOPY WITH AN EXTRUDED ALUMINUM YOKE WITH INTERNAL 5/8" STEEL TOE.
2. THE SLIDEPOTR SHALL FIT A POLE WITH A TOP TENON 2 1/8" O.D. X 5/8".
3. ATTACHMENT AND LEVELING OF THE UNIT SHALL BE ACCOMPLISHED BY FOUR 3/4" STAINLESS STEEL ALLEN SETSCREWS.

D. FINISH
1. A PRIMER COAT OF TNMEC SERIES 66 HI BUILD EPOXYLINE OR APPROVED EQUAL SHALL BE APPLIED TO A THICKNESS OF 3 DRY MILS.
2. THE FINISH COATING SHALL BE TNMEC SERIES 73 ENDURA SHIELD III OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS.
3. THE FINISH COLOR SHALL BE HUNTER GREEN; TNMEC COLOR NUMBER 024.
4. THE SHIELDING OF THE UNIT SHALL BE TNMEC SERIES 76 ENDURA CLEAR OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF 1.5 DRY MILS.

E. LAMP SOCKET
1. THE LAMP SOCKET SHALL BE MOGUL MULTIPLE PORCELAIN ENCLOSED. THE RATING OF THE SOCKET SHALL EXCEED THE LAMP STARTING VOLTAGE.
2. THE SCREW SHELL OF THE SOCKET SHALL CONTAIN INTEGRAL LAMP GRIPS TO ASSURE ELECTRICAL CONTACT UNDER CONDITIONS OF NORMAL VIBRATION.
3. THE SOCKET SHALL CONFORM TO TNMEC SPECIFICATION OF EEL STANDARDS.
4. THE SOCKET SHALL BE IN A HORIZONTAL POSITION.

F. DOOR GLASS
1. THE DOOR GLASS SHALL BE HEAT AND IMPACT RESISTANT AND FREE FROM IMPERFECTIONS AND STROBATIONS.

G. DOOR GLASS HOLDER/DOOR
1. THE DOOR GLASS HOLDER/DOOR SHALL BE SECURED TO THE HOUSING AT ONE END, AND HINGED TO THE HOUSING AT THE OPPOSITE END.

H. REFLECTOR
1. THE REFLECTOR SHALL BE HYDROFORMED ALUMINUM AND HAVE A HIGHLY POLISHED ANODIC SURFACE.
2. THE REFLECTOR SHALL BE RIGIDLY MOUNTED WITHIN THE HOUSING TO ASSURE A FLAT SURFACE FOR PROPER SEALING WHEN THE UNIT IS CLOSED.
3. GASKETS BETWEEN THE REFLECTOR AND GLASSWARE SHALL EFFECTIVELY SEAL THE OPTICAL ASSEMBLY FROM CONTAMINATES AND ALLOW FOR PROPER BREATHING OF THE ASSEMBLY THROUGH AN ACTIVATED CHARCOAL FILTER.
4. THE REFLECTOR DESIGN SHALL BE SUCH THAT PROPER POSITIONING OF THE LAMP SOCKET WILL PRODUCE AN IES TYPE III DISTRIBUTION PATTERN FOR THE POLE TOP LUMINAIRE, AND TYPE IV DISTRIBUTION PATTERN FOR THE ARM MOUNTED LUMINAIRE.

I. TERMINAL BOARD
1. THE TERMINAL BOARD SHALL BE MOLDED OF FIBERGLASS REINFORCED POLYESTER WITH PROTECTIVE BARRIERS BETWEEN EACH TERMINAL.
2. THE TERMINAL SCREWS SHALL BE OF THE CAPTIVE TYPE AND EACH SCREW SHALL BE EQUIPPED WITH WIRE GRIPS WHICH WILL AUTOMATICALLY BE RAISED AND LOWERED AS THE TERMINAL SCREW IS OPERATED.
3. THE TERMINALS SHALL BE CAPABLE OF ACCEPTING UP TO 14 AWG CONDUCTOR.
4. THE TERMINAL BOARD SHALL HAVE THREE TERMINALS, ONE OF THESE TERMINALS SHALL BE FOR THE SYSTEMS GROUND AND SHALL BE CONNECTED TO THE FIXTURE HOUSING.
5. WHEN A PHOTO CELL RECEPTACLE IS REQUIRED THREE ADDITIONAL TERMINALS SHALL BE PROVIDED FOR EXCLUSIVE PHOTO CELL OPERATION.
6. ALL UNITS ARE TO BE PREFEUR TO A SINGLE TERMINAL BOARD REQUIRING ONLY CUSTOMER CONNECTIONS TO CLEARLY IDENTIFIED TERMINALS.

J. HARDWARE
1. ALL HARDWARE SHALL BE NON-CORROSIVE OR SUITABLY PROTECTED METAL, WHEN NECESSARY TO PREVENT ELECTROLYTIC ACTION BY CONTACT WITH ALUMINUM COMPONENTS CAN BE SECURED TO THE LUMINAIRE FRAME WITH STAINLESS STEEL HARDWARE OF THE AISI 303 SERIES CHROME-NICKEL GR profession.

K. BALLAST
1. THE BALLAST SHALL BE OF THE BUILT IN DESIGN MOUNTED WITHIN THE LUMINAIRE IN SUCH A MANNER THAT IT CAN EASILY BE DISCONNECTED BY SIMPLE DISCONNECTING PLUGS.
2. THE BALLAST AND OTHER AUXILIARY EQUIPMENT SHALL BE SECURED IN A REMOVABLE PANEL.
3. THE HIGH PRESSURE SODIUM BALLAST SHALL BE UNDER COIL ISOLATED LAG TYPE REGULATOR DESIGN RATING FOR LINE VOLTAGE.
4. THE BALLAST CORE LAMINATION SHALL BE OF HIGH QUALITY ELECTRICAL GRADE STEEL WELDED TOGETHER TO MINIMIZE NOISE AND ASSURE TROUBLE FREE OPERATION OVER THE LIFE OF THE LUMINAIRE.
5. THE BALLAST COILS SHALL BE PRECISION WOUND ON FORMED INSULATING BOBBINS AND TERMINALS SHALL BE OF THE PUSH ON TYPE CONNECTION.
6. THE COMPONENT TO PROVIDE THE HIGH STARTING VOLTAGE REQUIRED BY THE HIGH PRESSURE SODIUM LAMP SHALL BE PLUG-IN MODULE.
7. THE BALLAST SHALL BE CAPABLE OF STARTING AND OPERATING A 100-400 WATT HIGH PRESSURE SODIUM LAMP FROM A NOMINAL 240 VOLT 60HZ POWER SOURCE WITHIN THE LIMITS SPECIFIED BY THE LAMP MANUFACTURER. THE BALLAST INCLUDING STARTING AID, MUST PROTECT ITSELF AGAINST NORMAL LAMP FAILURE MODE. THE BALLAST SHALL BE CAPABLE OF OPERATION WITH LAMP IN AN OPEN OR SHORT CIRCUIT CONDITION FOR SIX MONTHS WITHOUT SIGNIFICANT LOSS OF BALLAST LIFE.

L. INSPECTION
1. ALL INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY AN IMSA CERTIFIED INSPECTOR.
**NOTE**

TO FURNISH A STREETLIGHT LUMINAIRE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION AND DESIGNED FOR ROADWAY LIGHTING WITH GENERAL SHAPE AS SHOWN.

**DATA TABLE**

<table>
<thead>
<tr>
<th>LUMIN. #</th>
<th>LAMP WATTAGE</th>
<th>LAMP TYPE</th>
<th>LAMP VOLTAGE</th>
<th>LINE VOLTAGE</th>
<th>I.E.S. DIST. TYPE</th>
<th>P.C. RECEPT.</th>
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**NOTE**

TO FURNISH A PEDESTRIAN LUMINAIRE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION AND DESIGNED FOR WALKWAY LIGHTING WITH GENERAL SHAPE AS SHOWN.

**DATA TABLE**

<table>
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<th>LAMP WATTAGE</th>
<th>LAMP TYPE</th>
<th>LAMP VOLTAGE</th>
<th>LINE VOLTAGE</th>
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<td>240, 277</td>
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REQUIREMENTS

A. HOUSING
1. The housing shall be one piece extruded aluminum with the canopy being spun aluminum.
2. The housing shall be designed for 90 degree light cutoff.
3. The housing shall be of one piece with access to both the optical and electrical systems. The systems shall be hinged and removable for ease of servicing.
4. The housing shall be able to withstand 1000-hour salt spray test ASTM I/II.
5. No rearrangement of parts or separate parts shall be required when mounting the unit.
6. Attachment and leveling of the unit shall be accomplished by the slipfitter.

B. ARM MOUNTED LUMINAIRE
1. The housing shall have an integral slipfitter for 2” pipe and shall contain a pipe stop. Clamping and leveling of the unit shall be accessible from within the unit.

C. FINISH
1. A primer coat of Tnemec Series 66 Hi Build Epoxy Primer or Approved Equal shall be applied to a thickness of 3 dry mils.
2. The finish coating shall be Tnemec Series 73 Endura Shield III or Approved Equal, applied to a minimum thickness of 3 dry mils.
3. The finish color shall be Hunter Green, Tnemec Color Number P22.
4. The final coating shall be Tnemec Series 76 Enoura Clear or Approved Equal, applied to a minimum thickness of 1.5 dry mils.

D. LAMP SOCKET
1. The 400 W lamp socket shall be mogul multiple porcelain encased. The rating of the socket shall exceed the lamp starting voltage.
2. The 75 W lamp socket shall be medium multiple porcelain encased. The rating of the socket shall exceed the lamp starting voltage.
3. The screw shell of the socket shall contain integral lamp grips to assure electrical contact under conditions of normal vibration.
4. The socket shall conform to UL1741 Specification of E11 standards.
5. The socket shall be in a horizontal position.

E. DOOR GLASS
1. The door glass shall be heat and impact resistant and free from imperfections and stratations.

F. DOOR GLASS HOLDER DOOR
1. The door glass holder door shall be secured to the housing at one end, and hinged to the housing at the opposite end.

G. REFLECTOR
1. The reflector shall be hydroformed aluminum and have a highly polished anodic surface.
2. The reflector shall be rigidly mounted within the housing to assure a firm surface for proper sealing when the unit is closed.
3. Gaskets between the reflector and glassware shall effectively seal the optical assembly from contaminants and allow for proper breathing of the assembly through an activated charcoal filter.
4. The reflector design shall be such that proper positioning of the lamp socket will produce an IES Type III distribution for the arm mounted luminaire.

I. TERMINAL BOARD
1. The terminal board shall be molded of fiberglass reinforced polyester with protective barriers between each terminal.
2. The terminal screws shall be of the captive type and each screw shall be equipped with wire grips which will automatically be raised and lowered as the terminal screw is operated.
3. The terminals shall be capable of accepting up to #6 AWG conductor.
4. The terminal board shall have three terminals. One of these terminals shall be for the systems ground and shall be connected to the fixture housing.
5. When a photo cell receptacle is required three additional terminals shall be provided for exclusive photo cell operations.
6. All units are to be wired to a single terminal board requiring only customer connections to clearly identified terminals.

J. HARDWARE
1. All hardware shall be of non-corrosive or suitably protected metal. When necessary to prevent electrostatic action by contact with aluminum components shall be secured to the luminaire frame with stainless steel hardware of the AISI 304 Series Chrome-Nickel grade.

K. BALLAST
1. The ballast shall be of the built-in design mounted within the luminaire in such a manner that it can easily be disconnected by simple disconnecting plugs.
2. The ballast and other auxiliary equipment shall be mounted in a removable panel.
3. The metal halide ballast shall be of the two coil, high reactance, high power factor type design with an ignitor for a 72 watt pulse start metal halide lamp ANSI Code M-493. The ballast shall be equal to advance #7159200 rated 10/20/40/20/20/27 input voltage.
4. The metal halide ballast shall be of the constant wattage autotransformer type design for a 400 watt metal halide lamp ANSI Code M-56 or H-33. The ballast shall be equal to advance #7146051 rated 12/20/24/20/20/27 input voltage.
5. The ballast core lamination shall be of high quality electrical grade steel welded together to minimize noise and assure stable operation over the life of the luminaire.
6. The ballast coils shall be precision wound on formed insulating bobbins and terminals shall be of the push on type connections.
7. The ballast shall be capable of starting and operating a 400 watt metal halide lamp from a nominal 240 Volt 60Hz power source within the limits specified by the lamp manufacturer. The ballast must protect itself against normal lamp failure, modes. The ballast shall be capable of operation with lamp in an open or short circuit condition for six months without significant loss of ballast life.

L. LAMP
1. The 400 WATT METAL HALIDE LAMP SHALL BE EQUAL TO VENTURE #57520, M440310, 400 WATT, CLEAR, MOGUL BASE, ED-37, 3000K, RATED FOR UNIVERSAL OPERATION, 36.000 INITIAL LUMENS, 28.000 MINIMUM LUMENS.
2. The pulse start metal halide lamp shall be equal to venture #21281 M4700C, 70 WATT, COATED, MED BASE, ED-17, 3700K, RATED FOR HORIZONTAL OPERATION.

M. INSPECTION
1. All installations shall be inspected and approved by an IMSA CERTIFIED INSPECTOR.
LAMP SPECIFICATION

GENERAL

THE LAMP SHALL BE A HIGH PRESSURE SODIUM TYPE FOR OPERATION ON AN HPS BALLAST AND ANY SPECIFICATIONS. THE POLYCRYSTALLINE CERAMIC ARC TUBE SHALL HAVE POLYCRYSTALLINE CERAMIC END PLUGS AT BOTH ENDS SUCH THAT END SEAL INTEGRITY CAN RECEIVE 100% INSPECTION UNDER MAGNIFICATION. THE ELECTRICAL CONNECTION AT EACH END OF THE ARC TUBE SHALL BE VIA A SINGLE WIRE THROUGH THE CERAMIC END PLUG.

LAMP SEASONING


LAMP LIFE

AT 100 HOURS PER START THE LAMP LIFE SHALL BE SUCH THAT 85% OF INSTALLED LAMPS WILL CONTINUE TO OPERATE AFTER 16,000 HOURS OF USE AND 67% WILL CONTINUE TO OPERATE AFTER 24,000 HOURS OF USE.

WARRANTY

THE SUPPLIER AND MANUFACTURER OF THESE LAMPS SHALL PROVIDE SPECIFICATION SHEETS GIVING "PERFORMANCE DATA" AND "ELECTRICAL CHARACTERISTICS" AND SHALL WARRANT THAT THE LAMPS ARE FREE FROM DEFECTS IN MATERIAL, WORKMANSHIP AND TITLE AND COMPLY WITH THEIR WRITTEN SPECIFICATIONS AND THE PROVISIONS OF THIS SPECIFICATION.

THE SUPPLIER AND MANUFACTURER AGREE THAT IF ANY LAMP FAILS DURING THE FIRST 4,000 HOURS OF OPERATION IT WILL BE REPLACED AT NO CHARGE AND THAT ANY LAMPS THAT FAIL IN EXCESS OF THE CUMULATIVE PERCENTAGE FAILURE RATE SHOWN BELOW WILL BE REPLACED AT NO COST.

DATA TABLE

<table>
<thead>
<tr>
<th>LAMP #</th>
<th>LAMP WATT</th>
<th>BALLAST SPEC.</th>
<th>BASE DESIGNATION</th>
<th>BULB SHAPE</th>
<th>BULB MATERIAL</th>
<th>BULB FINISH</th>
<th>MAX OVERALL LENGTH</th>
<th>LIGHT CENTER LENGTH</th>
<th>VOLTAGE AFTER TESTING &amp; 100 HOURS SEASONING</th>
<th>AVG. INITIAL LUMENS AFTER 100 HOURS SEASONING</th>
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<tbody>
<tr>
<td>LP-100</td>
<td>70</td>
<td>S-62</td>
<td>MEDIUM BRASS</td>
<td>E-17 OR B-17</td>
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<td>5 7/16”</td>
<td>3 7/16”</td>
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<td>5,685</td>
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<td>S-56</td>
<td>MODUL BRASS</td>
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<td>5”</td>
<td>65 - 62</td>
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<td>S-55</td>
<td>MODUL BRASS</td>
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<td>5”</td>
<td>65 - 62</td>
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<tr>
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<td>B-37</td>
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<td>7”</td>
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<td>1000</td>
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<td>LP-109</td>
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<td>MEDIUM BRASS</td>
<td>E-17 OR B-17</td>
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<td>CLEAR</td>
<td>5 11/16”</td>
<td>3 11/16”</td>
<td>45 - 62</td>
<td>16,000</td>
</tr>
</tbody>
</table>
TIME DELAY PHOTO ELECTRIC CONTROL REQUIREMENTS

PC-101:
- PC-101 IS 105 - 135 VOLS.
- 50/60HZ AC (20V NOMINAL)

PC-102:
- PC-102 IS 200 - 300 VOLS.
- 50/60HZ AC

PHYSICAL:

SIZE: SEE DRAWING

WEIGHT: APPROXIMATELY 7 OZ. CROSS

CHASSIS: MOLDED PHENOLIC WITH 3 POLE TWISTLOCK
PLUG WITH CROSS LINKED POLYETHYLENE GASKET.

HOUSING: U.V. STABILIZED POLYPROPYLENE WITH
ACRYLIC WINDOW WITH UV INHIBITOR.

COLOR CODE:
- PC-101 IS GRAY
- PC-102 IS MAROON

ELECTRICAL:

SUPPLY VOLTAGE:
- PC-101 IS 105 - 135 VOLS.
- 50/60HZ AC (20V NOMINAL)
- PC-102 IS 200 - 300 VOLS.

RATINGS LOAD:
- 1000 WATTS / 1800VA MAX. SFST, N.C.
- 1000 WATTS TUNGSTEN
- 1800VA MERCURY VAPOR, HIGH PRESSURE SODIUM

INRUSH CURRENT:
- 150 AMPERES AT 120 VOLTS
- 65 AMPERES AT 240 VOLTS

OPERATING LEVELS:
- TURN ON AVERAGE 1 FC @ 0.25 FC
- TURN OFF BY 2.25 FC
- OFF TO ON RATIO: 1.5:1

CONTROL POWER:
- 5.2 WATTS, MAXIMUM (2.75 AVERAGE) AT 240 VAC.

DIELECTRICAL STRENGTH:
- 5 KV MINIMUM BETWEEN ANY CURRENT CARRYING
PART AND METAL MOUNTING SURFACE.

SURGE SUPPRESSOR:
- 382 JOULE MDV / 15000 AMPS

PHOTOCELL:
- SILICON PHOTOTRANSISTOR

TIME DELAY:
- OFF CYCLE ONLY, 3 TO 30 SECONDS

ENVIRONMENTAL:

AMBIENT TEMPERATURE RANGE:
- 65° FAHRENHEIT TO +125° FAHRENHEIT

MOISTURE RESISTANCE:
- 100% RELATIVE HUMIDITY

WARRANTY:
- 5 YEARS FROM DATE OF MANUFACTURING
SEE M-73.01.3 FOR REFERENCED NOTES

NOTE:
ALL ARMS SHALL HAVE A 5/8" HOLE (WITH RUBBER GROMMET) DRILLED IN THE BOTTOM SIDE OF THE ARM 3" FROM THE EDGE OF SIMPLEX FITTING.

1/4" CASMIUM PLATED BUTTON HEAD ALLEN BOLT

1 3/4" DIA.

1 1/2" HEX HEAD BOLT

DRILL AND TAP FOR 1 1/2" HEX HEAD BOLT

NOT TO SCALE
NOTES:
1. Hand hole cover shall be secured by two cadmium plated 1/4"-20 button head Allen bolts.
2. Pole ground shall be 1/2"-13 UNC nut welded to inside of pole as shown.
3. Hand hole shall be oriented so that it is aligned with the mast arm.
4. Hand hole dimensions shall be 2 1/4" by 4 1/2".
5. Hand hole cover dimensions shall be 4" by 6 1/2".
6. Slot length of base plate equals anchor bolt dia. plus 1/2" on both sides of anchor bolt.

HAND HOLE COVER SHALL BE SECURED BY TWO CADMIUM PLATED 1/4"-20 BUTTON HEAD ALLEN BOLTS.

POLE GROUND SHALL BE 1/2"-13 UNC NUT WELDED TO INSIDE OF POLE AS SHOWN

SEE BASE DETAIL FOR HAND HOLE SPECIFICATIONS
NOTES

1. THE POLE DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, BASED ON A WIND SPEED OF 60 MILES PER HOUR.
2. THE POLE AND ALL PARTS SHALL BE STEEL.
4. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION, AS DETERMINED BY THE ENGINEER.
5. THE #1 ANCHOR BOLT SHALL HAVE A LENGTH DETERMINED BY THE DEPTH OF THE FOUNDATION, AND SHALL EXTEND TO 6" OR 3/4" ABOVE THE BOTTOM OF THE FOUNDATION. (M-73-06)
6. ANCHOR BOLTS WITH (4) HEX NUTS, (2) FLAT WASHERS, AND (1) ANCHOR PLATE PER BOLT SHALL BE HOT DIPPED GALVANIZED PER M-73-26.
7. ANCHOR BOLTS SHALL HAVE 1/4" TO 3/4" FULL THREAD ABOVE NUT. (M-73-06)
8. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 6".
9. 2-4" SQUARE, 1/2" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE POURED SEPARATELY FROM FOUNDATION.
10. CLASS A CONCRETE PER M.A.G. STANDARD 725.
11. #6 X 1/2" INSULATED COPPER STRANDED BOND WIRE.
12. 1/4" COPPER GROUNDING PLATE. (M-73-06)

DATA TABLE

<table>
<thead>
<tr>
<th>POLE #</th>
<th>LUMINAIRE MTG. HGT.</th>
<th>POLE HGT.</th>
<th>5 9/16&quot; O.D. PIPE</th>
<th>4 1/2&quot; O.D. PIPE</th>
<th>3 1/2&quot; O.D. PIPE</th>
<th>ARM TYPE</th>
<th>ARM LENGTH</th>
<th>ARM RISE</th>
<th>FNO. TYP.</th>
<th>BOLT CIRCLE</th>
<th>ANCHOR BOLTS</th>
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<tbody>
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<td>-</td>
<td>&quot;A&quot; &quot;B&quot; &quot;C&quot; &quot;D&quot; &quot;E&quot;</td>
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<tr>
<td>P-01</td>
<td>35-0'</td>
<td>25-6'</td>
<td>10-0'</td>
<td>7-9'</td>
<td>7-9''</td>
<td>A &quot;B&quot; &quot;C&quot; &quot;D&quot; &quot;E&quot;</td>
<td>10-0'</td>
<td>10-0'</td>
<td>F-104</td>
<td>10/12&quot;</td>
<td>1&quot; X 69&quot;</td>
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<tr>
<td>P-02</td>
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<td>27-6'</td>
<td>10-0'</td>
<td>8-9'</td>
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<td>A &quot;B&quot; &quot;C&quot; &quot;D&quot; &quot;E&quot;</td>
<td>10-0'</td>
<td>10-0'</td>
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<td>10-0'</td>
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<td>B &quot;C&quot; &quot;D&quot; &quot;E&quot; &quot;F&quot;</td>
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<td>A &quot;B&quot; &quot;C&quot; &quot;D&quot; &quot;E&quot;</td>
<td>10-0'</td>
<td>10-0'</td>
<td>F-104</td>
<td>10/12&quot;</td>
<td>1&quot; X 69&quot;</td>
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POLE 

<table>
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<tr>
<th>POLE #</th>
<th>LUMINAIRE MTG. HGT.</th>
<th>POLE HGT.</th>
<th>5 9/16&quot; O.D. PIPE</th>
<th>4 1/2&quot; O.D. PIPE</th>
<th>3 1/2&quot; O.D. PIPE</th>
<th>TENNEN</th>
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<tr>
<td>P-10</td>
<td>35-0'</td>
<td>35-0'</td>
<td>13-4&quot;</td>
<td>12-8&quot;</td>
<td>9-9'</td>
<td>7 3/8&quot; X 4 1/2&quot;</td>
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</table>

*NOTE: P-11 IS A TENNEN POLE WHICH USES A POLE TOP LUMINAIRE. P-103 THRU P-106 SHALL BE USED FOR NEW DEVELOPMENT REQUIRING STEPPED POLES. FOUNDATION M-76.01, F-104.
POLE CAP AND MAST ARM ATTACHMENT

THICKNESS OF FILLER RING
(IF NEEDED) TO MATCH
DIFFERENCE IN TAPERED TUBE
THICKNESS X 1 1/2" WIDE

.135" THK. (10 GAUGE) X 3" WIDE BACK-UP RING

NOTES
1. ALL BUTT WELDS TO BE GROUND FLUSH
2. LONGITUDINAL: BUTT WELD BY THE SUBMERGED ARC PROCESS
3. CIRCUMFERENTIAL: BUTT WELD WITH PERMANENT BACK-UP RING

SEE M-73.02.3 FOR REFERENCED NOTES
NOTES

1. HAND HOLE COVER SHALL BE SECURED BY A CADMIUM PLATED 1/4" x 20 BUTTON HEAD ALLEN BOLT AND HOLDING CLEAT.
2. POLE GROUND SHALL BE 1/2" DIA. N.C. TAPPED HOLE LOCATED AS SHOWN.
3. HAND HOLE SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE MAST ARM.
4. HAND HOLE DIMENSIONS SHALL BE 4" X 6 1/2".
5. HAND HOLE COVER DIMENSIONS SHALL BE 4 1/2" X 7".
6. SLOT LENGTH OF BASE PLATE EQUALS ANCHOR BOLT DIA. PLUS 1 1/2" ON BOTH SIDES OF ANCHOR BOLT.

BASE DETAIL

SECTION A-A

SECTION B-B

STANDARD HAND HOLE ASSEMBLY
### NOTES

1. The pole design, materials, and construction shall conform to AASHO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS, based on a wind speed of 83 miles per hour.
2. The pole and all parts shall be steel.
3. The pole and all pole parts shall be hot dipped galvanized per M.A.G. STANDARD 771.
4. Unstable soil may require deeper foundation, as determined by the engineer.
5. The 1 1/4" anchor bolt shall have a length determined by the depth of the foundation, and shall extend to 6" for 1' from the bottom of the foundation. P-207, P-208, P-209, and P-210 require 4" anchor bolts. (M-73.06.1)
6. Anchor bolts with (6) hex nuts, (2) flat washers, and (1) anchor plate per bolt shall be hot dipped galvanized per M.A.G. STANDARD 771. (M-73.06.1)
7. Anchor bolts shall have 1/4" to 3/4" full thread above nut. (M-73.06.1)
8. Conduit shall project a minimum of 2" above the foundation. Maximum projection shall be 4".
9. 5'-0" square, 4'-0" thick troweled finish smooth concrete cap with 1/2" round edge. Poured separately from foundation.
11. #6 XHHW green insulated copper stranded grounding wire.
12. 1/4" copper grounding plate. (M-73.06.1)
13. P-207, P-208, P-209, and P-210 foundations shall require 8 ea. (#7 x 9" - 4") vertical bars with 3/8" round cold drawn steel wire spiral cage with a 3" pitch.
14. The pipe on each side of a circumferential weld shall have the same outside diameter at the weld.
15. A stainless steel tag shall be permanently attached to the pole above the hand hole stating the manufacturer's name, C.O.M. pole #, and date manufactured.

### DATA TABLE

<table>
<thead>
<tr>
<th>POLE #</th>
<th>LUMINAIRE MTG. HT.</th>
<th>SHAFT LENGTH</th>
<th>ARM LENGTH</th>
<th>POLE O.D. AT BASE</th>
<th>ARM O.D. AT FLANGE</th>
<th>FNDN. DEPTH</th>
<th>FNDN. WIDTH</th>
<th>FNDN. TYP.</th>
<th>BOLT CIRCLE</th>
<th>SQUARE</th>
<th>PLATE</th>
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<tbody>
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<td>P-201</td>
<td>35'-0&quot;</td>
<td>50'-0&quot;</td>
<td>18'-0&quot;</td>
<td>8&quot;</td>
<td>5 3/16&quot;</td>
<td>5'-0&quot;</td>
<td>3'2&quot;</td>
<td>F-105</td>
<td>11 1/2&quot;</td>
<td>1 1&quot;</td>
<td></td>
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<tr>
<td>P-202</td>
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<td>20'-0&quot;</td>
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<td>F-105</td>
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<td>P-203</td>
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<td>3'-0&quot;</td>
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<tr>
<td>P-206*</td>
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<td>F-101</td>
<td>14 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>1 1/2&quot;</td>
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<tr>
<td>P-208*</td>
<td>55'-0&quot;</td>
<td>60'-0&quot;</td>
<td>20'-0&quot;</td>
<td>10 3/16&quot;</td>
<td>5 1/4&quot;</td>
<td>8'-0&quot;</td>
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<td>F-101</td>
<td>14 1/2&quot;</td>
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<td>P-209*</td>
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<td>F-101</td>
<td>14 1/2&quot;</td>
<td>1 1/2&quot;</td>
<td>1 1/2&quot;</td>
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</tbody>
</table>

*NOTE: P-207 thru P-210 requires steel case for general note 13. P-204 thru P-210 shall be used for new projects, and developments requiring tapered poles. P-205, and P-206 shall be used for alignment of fixtures, when pole location, or set back varies, as determined by the engineer. Foundations see M-76.01.
NOTES

1. ALL BUTT WELDS TO BE GROUND FLUSH.

2. LONGITUDINAL BUTT WELD BY THE SUBMERGED ARC PROCESS

3. CIRCUMFERENTIAL BUTT WELD WITH PERMANENT BACK-UP RING

NOTE

SLOT AND GUIDE PIN SHALL BE POSITIONED ON THE TOP SIDE OF THE POLE AND ARM.
NOTES
1. HAND HOLE COVER SHALL BE SECURED BY A CADMIUM PLATED 1/4"-20 BUTTON HEAD ALLEN BOLT AND HOLDING CLEAT.
2. POLE GROUND HOLE SHALL BE 1/2" DIA. N.C. TAPPED HOLE LOCATED AS SHOWN.
3. HAND HOLE COVER SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE MAST ARM.
4. HAND HOLE DIMENSIONS SHALL BE 4" X 6 1/2".
5. HAND HOLE COVER DIMENSIONS SHALL BE 4 1/2" X 7".
6. HAND HOLE DIMENSIONS FOR P-321, P-322, AND P-327 SHALL BE 5 5/8" X 5 1/2".
7. SLOT LENGTH OF BASE PLATE EQUALS ANCHOR BOLT DIA. PLUS 1/2" ON BOTH SIDES OF ANCHOR BOLT.
NOTES

1. THE POLE DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO AASHO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, BASED ON A WIND SPEED OF 25 MILES PER HOUR.
2. THE POLE AND ALL POLE PARTS SHALL BE STEEL.
3. THE POLE AND ALL POLE PARTS SHALL BE HOT DIPPED GALVANIZED PER M.A.G. STANDARD 77/1.
4. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION, AS DETERMINED BY THE ENGINEER.
5. THE 1 1/4" ANCHOR BOLT SHALL HAVE A LENGTH DETERMINED BY THE DEPTH OF THE FOUNDATION, AND SHALL EXTEND TO 6" OR 1" FROM THE BOTTOM OF THE FOUNDATION.
6. ANCHOR BOLTS WITH (6) HEX NUTS, (2) FLAT WASHERS, AND (1) ANCHOR PLATE PER BOLT SHALL BE HOT DIPPED GALVANIZED PER M.A.G. STANDARD 77/1.
7. ANCHOR BOLTS SHALL HAVE 1/2" TO 3/4" FULL THREAD ABOVE NUT.
8. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE FOUNDATION, MAXIMUM PROJECTION SHALL BE 4".
9. 3/4" SQUARE, 4" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE.
10. CLASS A CONCRETE PER M.A.G. STANDARD 725.
11. #6 X 4"_W GREEN INSULATED COPPER STRANDED GROUNDING WIRE.
12. 1/4" COPPER GROUNDING PLATE (M-73/06).
13. P-505, P-506, P-510, AND P-511 FOUNDATIONS SHALL REQUIRE 8 EA., (#7 X 7" - 4") VERTICAL BARS, WITH 3/8" ROUND COLD DRAWN STEEL WIRE SPIRAL CASE WITH A 3" PITCH.
14. THE PIPE ON EACH SIDE OF A CIRCUMFERENTIAL WELD SHALL HAVE THE SAME OUTSIDE DIAMETER AT THE WELD.
15. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURER'S NAME, C.O.M. POLE #, AND DATE MANUFACTURED.

DATA TABLE

<table>
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<tr>
<th>POLE #</th>
<th>VERT. DIM.</th>
<th>HOR. DIM.</th>
<th>DEGREE OF BEND</th>
<th>START OF BEND</th>
<th>RADIUS</th>
<th>HGT. AFTER BEND</th>
<th>O.D. AT BASE</th>
<th>FNDN. DEPTH</th>
<th>FNDN. WIDTH</th>
<th>FNDN. TYP.</th>
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<th>SQUARE</th>
<th>PLATE</th>
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2. P-531 SHALL BE USED FOR REPLACEMENT AND ONLY TO MATCH EXISTING STREETLIGHT POLES. FOUNDATIONS SEE M-76/01.
POLE CAP
2 3/8" O.D.
SCH. 40 PIPE

1/4" CADMIUM
PLATED BUTTON
HEAD ALLEN BOLT

1" WIRE
ACCESS HOLE

NOTE: WIRE ACCESS HOLE AND TENON SHALL BE SMOOTH, FREE FROM BURRS OR SHARP EDGES.

TENON Fixture ATTACHMENT AND POLE CAP

STEEL HOLDING CLEAT SHALL BE 1/4"
THICK MINIMUM

SEE NOTES ON M-73.04.1B FOR HAND HOLE AND COVER SPECIFICATIONS

HAND HOLE COVER SHALL BE SECURED BY A CADMIUM PLATED 1/4"-20 BUTTON HEAD ALLEN BOLT

BASE COVER SHALL BE MADE OF STEEL, SECURED TO POLE, AND SLID TIGHTLY AGAINST BASE PLATE

STANDARD HAND HOLE ASSEMBLY AND BASE COVER

SEE M-73.04.1C FOR REFERENCED NOTES AND DATA TABLE

NOT TO SCALE
NOTES

1. HAND HOLE COVER SHALL BE SECURED BY A CEDARUM PLATED 1/4-20 BUTTON HEADED ALLEN BOLT AND HOLDING CLEAT.
2. THE POLE'S GROUND SHALL BE 1/2" X 15 UNC NUT WELDED TO INSIDE OF THE POLE AS SHOWN.
3. HAND HOLE SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE MAST ARM.
4. HAND HOLE DIMENSIONS SHALL BE 3" X 3".
5. HAND HOLE COVER DIMENSIONS SHALL BE 3" X 3".
6. SLOT LENGTH OF BASE PLATE EQUALS ANCHOR BOLT DIA. PLUS 1/2" ON BOTH SIDES OF ANCHOR BOLT.

SEE M-73.04.1C FOR DATA TABLE.
### DATA TABLE

<table>
<thead>
<tr>
<th>POLE #</th>
<th>POLE HGT.</th>
<th>FNDN. DEPTH</th>
<th>FNDN. WIDTH</th>
<th>FNDN. TYP.</th>
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<th>PLATE</th>
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</table>

**NOTE:** P-401 THRU P-412 SHALL BE USED ONLY FOR REPLACEMENT AND ONLY TO MATCH EXISTING STREETLIGHT POLES.

| P-413   | 30'-0" DBL. ARMS | 6'-0"     | 2'-0"       | F-106      | 10"        | 10"    | 1"      | 1"                   |
| P-414   | 30'-0" DBL. ARMS | 6'-0"     | 2'-0"       | F-106      | 10"        | 10"    | 1"      | 1"                   |
| P-415   | 35'-0" DBL. ARMS | 6'-0"     | 2'-0"       | F-106      | 10"        | 10"    | 1"      | 1"                   |
| P-416   | 35'-0" DBL. ARMS | 6'-0"     | 2'-0"       | F-106      | 10"        | 10"    | 1"      | 1"                   |
| 6.0 SQ. |           |             |             |            |             |        |        |                      |
| P-417   | 40'-0" DBL. ARMS | 6'-0"     | 3'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |
| P-418   | 40'-0" DBL. ARMS | 6'-0"     | 3'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |
| P-419   | 45'-0" DBL. ARMS | 8'-0"     | 5'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |
| P-420   | 45'-0" DBL. ARMS | 8'-0"     | 5'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |
| P-421   | 45'-0" DBL. ARMS | 8'-0"     | 5'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |
| P-422   | 45'-0" DBL. ARMS | 8'-0"     | 5'-0"       | F-106      | 12"        | 12"    | 1 1/2"  | 1 1/2"               |

**NOTES:**
1. P-419, P-420 SHALL REQUIRE A STEEL CAGE PER NOTE 13.
2. P-413 THRU P-420 SHALL BE USED FOR NEW DEVELOPMENT REQUIRING SQUARE POLES.
3. FOUNDATIONS SEE M-76.0

### NOTES

1. THE POLE DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO AASHO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, BASED ON A WIND SPEED OF 80 MILES PER HOUR.
2. THE POLE AND ALL PARTS SHALL BE STEEL. (P-419 & P-420 POLES TO HAVE .250 WALL THICKNESS).
3. THE POLE AND ALL POLE PARTS SHALL BE SAND BLOSTED TO SSFC SPECIFICATION SP-6-65. A PRIMER COAT OF TNEMC SERIES 66-11 BUILD EPOXY ON OR APPROVED EQUAL SHALL BE APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS. THE COLOR COATING SHALL BE TNEMC SERIES 73 ENDURA SHIELD III OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS. THE FINAL COATING SHALL BE TNEMC SERIES 76 ENDURA CLEAR OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF .5 DRY MILLS. THE FINISH COLOR SHALL MATCH FIXTURE SPECIFIED. INTERIOR OF POLE SHALL HAVE AMERICAST 79HB OR APPROVED EQUIVALENT FROM INSIDE BASE TO TOP OF HAND HOLE. (SMI-6)
4. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION, AS DETERMINED BY THE ENGINEER.
5. THE ANCHOR BOLTS SHALL HAVE A LENGTH DETERMINED BY THE DEPTH OF THE FOUNDATION, AND SHALL EXTEND TO 6" OR 1" ABOVE THE BOTTOM OF THE FOUNDATION. SEE COLUMN "D" IN DATA TABLE FOR DIAMETER OF ANCHOR BOLT. (P-419, AND P-420 REQUIRES 4/4" ANCHOR BOLTS)
6. ANCHOR BOLTS WITH (1) HEX NUTS, (2) FLAT WASHERS, AND (1) ANCHOR PLATE PER BOLT SHALL BE HOT DIPPED GALVANIZED PER COM DETAIL M-73.06.1.
7. ANCHOR BOLTS SHALL HAVE 1/4" TO 3/4" FULL THREAD ABOVE NUT PER COM DETAIL M-73.06.1
8. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 4".
9. 2'-0" SQUARE, 4" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE. 13'-0" SQUARE FOR P-417, P-418, P-419, P-420.
10. CLASS A CONCRETE PER MAG STANDARD 725.
11. #6 XXHW GREEN INSULATED COPPER STRANDED GROUNDING WIRE.
12. 1/4" COPPER GROUNDING PLATE PER COM DETAIL M-73.06.2
13. P-419 AND P-420 FOUNDATIONS SHALL REQUIRE A EA. (97 X 7'-4") VERTICAL BARS WITH 3/8" ROUND COLD DRAWN STEEL WIRE SPIRAL CAGE WITH A 3" PITCH.
14. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURER’S NAME, COM POLE #, AND DATE MANUFACTURED.

**REV. 03/25/2015**

**DETAIL NO:** M-73.04.1C

**P-400 SERIES SQUARE STREETLIGHT POLE SPECIFICATION**
NOTES

1. THE POLE DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS, IT HAS A MINIMUM YIELD STRENGTH OF 50,000 PSI.

2. THE POLE AND ALL PARTS SHALL BE STEEL, 8" X 8" X .312 WALL THICKNESS.

3. THE POLE AND ALL POLE PARTS SHALL BE SAND BLASTED TO SSPC SPECIFICATION SP-6-65. A PRIMER COAT OF TNEVEC SERIES 66-1 BUILD EPOXIDE OR APPROVED EQUAL SHALL BE APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS. THE COLOR COATING SHALL BE TNEVEC SERIES 73 ENDURA SHIELD III OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS. THE FINAL COATING SHALL BE TNEVEC SERIES 76 ENDURA CLEAR OR APPROVED EQUAL, APPLIED TO A MINIMUM THICKNESS OF 1.5 DRY MILS. THE FINISH COLOR SHALL MATCH FIXTURE SPECIFIED.

4. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATION, AS DETERMINED BY THE ENGINEER.

5. FOR ANCHOR BOLTS SEE CM DETAIL M-73.06.3, NOTE 5.

6. ANCHOR BOLTS WITH (4) HEX NUTS, (2) FLAT WASHERS, AND (1) ANCHOR PLATE PER BOLT SHALL BE HOT DIPPED GALVANIZED PER CM DETAIL M-73.06.1.

7. ANCHOR BOLTS SHALL HAVE 1/4" TO 3/4" FULL THREAD ABOVE NUT. (CM DETAIL M-73.06)

8. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE FOUNDATION, MAXIMUM PROJECTION SHALL BE 4".

9. 3/8" SQUARE, 4" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE.

10. CLASS A CONCRETE PER MAG STANDARD 725.

11. #6 XHHW GREEN INSULATED COPPER STRANDED GROUNDING WIRE.

12. 1/4" COPPER GROUNDING PLATE PER CM DETAIL M-73.06.2.

13. FOR FOUNDATION SEE CM DETAIL M-73.24.3.

14. FOR MANHOLE & BASE SEE CM DETAIL M-73.04.2A

15. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURER'S NAME, CM POLE #, AND DATE MANUFACTURED.

SEE BASE CM DETAIL M-73.04.2B

M-73.04.2A

REV. 01/03/16
NOTES

1. HAND HOLE COVER SHALL BE SECURED BY A CADMIUM PLATED 1/4"-20 BUTTON HEAD ALLEN BOLT AND HOLDING CLIP.
2. THE POLE’S GROUND SHALL BE 1/2”-13 UNC NUT WELDED TO INSIDE OF THE POLE AS SHOWN.
3. HAND HOLE SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE MAST ARM.
4. HAND HOLE DIMENSIONS SHALL BE 3” BY 5”.
5. HAND HOLE COVER DIMENSIONS SHALL BE 3” BY 5”.
6. SQUARE PLATE 1 3/4” X 15” WITH 2” DIA. X 2 3/4” LONG SLOTTED HOLES ON IS 1/2” BOLT CIRCLE.

BASE DETAIL
NOTES

1. ALL POLE FOUNDATIONS SHALL HAVE A 10" DIA. COPPER GROUNDING PLATE PER COM DETAIL M-73.06.2 AND PLACED 6' BELOW BOTTOM OF POLE FOUNDATION.

2. FINISHED GRADE FOR ALL POLE FOUNDATIONS SHALL MATCH SIDEWALK GRADE, UNLESS OTHERWISE NOTED.

3. ALL CONDUIT BENDS SHALL BE FACTORY 65 AND 90 DEGREE BENDS WITH A MINIMUM RADIUS OF 18".

4. UNDERGROUND WIRING CIRCUITS SHALL BE INSTALLED IN SCHEDULE 40 RIGID P.V.C. CONDUIT. IT SHALL BE U.L. APPROVED FOR ABOVE GROUND AND UNDERGROUND USE WITH 90 DEGREE BENDS. MINIMUM DEPTH FROM TOP OF CURB TO TOPOF CONDUIT SHALL NOT BE LESS THAN 24" UNLESS OTHERWISE SPECIFIED.

5. INSPECTION BY ENGINEERING INSPECTOR SHALL BE REQUESTED BY THE ELECTRICAL CONTRACTOR WHEN THE POLE FOUNDATIONS ARE DUG, ANCHOR BOLTS, GROUND WIRE, AND GROUNDING PLATE ARE READY AND IN PLACE AND PRIOR TO POURING CONCRETE.

6. WHEN CONCRETE FOUNDATIONS ARE Poured THEY SHALL BE VIBRATED WITH A MECHANICAL VIBRATOR.

7. POLE FOUNDATIONS SHALL CURE FOR 72 HOURS BEFORE INSTALLING LIGHT POLES.

8. IN IRRIGATED AREAS, FOUNDATIONS & POLES AND PULL BOXES SHALL BE INSTALLED IN SUCH A MANNER THAT THEY ARE KEPT FREE OF CONTACT WITH IRRIGATION WATER. REFER TO M-76.02.2 FOR REQUIREMENTS PER APPLICABLE CONDITIONS.

9. IN AREAS THAT SLOPE AWAY FROM THE SIDEWALK, CURB, OR ROADWAY, THE GRADE AROUND THE POLES SHALL BE SUCH THAT SIDEWALK, CURB, OR ROADWAY CAN BE USED AS THE GRADE CONTROL POINT FOR THE POLE FOUNDATION ELEVATION. REFER TO M-76.02.2 FOR REQUIREMENTS PER APPLICABLE CONDITIONS.

10. UNSTABLE SOIL MAY REQUIRE DEEPER FOUNDATIONS AS DETERMINED BY THE ENGINEER.

FOUNDATION NOTES

1. FOUNDATION SHALL BE CLASS A CONCRETE PER MAG STANDARD 725.

2. 4" DIA. COPPER GROUNDING PLATE PER COM DETAIL M-73.06.2.

3. THE BOND CONDUCTOR IN THE CONCRETE FOUNDATION SHALL BE A #6 STRANDED AND GREEN WIRE WITH XHHW INSULATION.

4. 1-1/2" SCHEDULE 40 P.V.C. 90 DEGREE BEND CONDUITS WITH A RADIUS OF NOT LESS THAN 18" (FACTORY BENDS ONLY SHALL BE USED). CONDUITS SHALL PROJECT A MINIMUM OF 3" ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 4". WHERE POLE IS USED A 1-1/2" CONDUIT SHALL BE USED.

5. 4-1/4" DIA. X 64" ANCHOR BOLTS (56KIS) W LEVELING NUTS & WASHERS. OPTIONAL: TACK-WELD NUTS TO WASHERS & WASHERS TO BASE PLATE AFTER TIGHTENING OF BOLTS. TORQUE = 650 FT- LBS.

6. 3'-0" SQUARE, 4" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE. CONCRETE SHALL BE CLASS B PER MAG STANDARD SPECIFICATION 725.

7. POLE PER COM DETAIL M-73.06.1.

NOT TO SCALE
NOTE
BREAK-AWAY BANNER DESIGNED FOR 50 MPH WIND WITH 1.3 GUST FACTOR WITH BANNER INSTALLED.

SEE LUMINAIRE SPECIFICATION

STAINLESS STEEL 1/4" DIA. QUICK RELEASE PIN

STEEL POLE STEEL PIPE COUPLING WELDED TO POLE

SAFETY CABLE ALUMINUM BREAK-AWAY BRACKET

3/4" STEEL PIPE (1.05" O.D.) BANNER ARM WITH ALUMINUM BREAK AWAY COUPLINGS

3.25" O.D. POLE SHAFT BELOW PIPE STOP

AUXILIARY LIGHTING BRACKET FOR BANNERS EACH SIDE TYPICAL

POLES SUPPLIED WITH PIPE PLUGS WHEN BANNER ARMS ARE NOT USED

DUPLEX RECEPTACLE WITH WEATHERPROOF COVER 90 DEGREE TO MAST ARM NOTE POLES SUPPLIED WITH BLANK COVERS WHEN RECEPTACLES ARE NOT USED

DECORATIVE CAST ALUMINUM COLLAR TO SLIDE OVER THE SUFFITTER TO BE PART OF THE LUMINAIRE

7.54" O.D. AT 48" FROM BASE PLATE

8.01" O.D. POLE SHAFT AT BASE PLATE

SEE M-73.05.3 FOR REFERENCED NOTES

SEE NOTE 7
SEE NOTE 8
SEE NOTE 9
SEE NOTE 10
SEE NOTE 11
SEE NOTE 12

P-902 DOUBLE ARM

P-903 SINGLE ARM

NOT TO SCALE

REV. 8/31/2021

TOWN CENTER DECORATIVE STREETLIGHT POLE SPECIFICATION

DETAIL NO. M-73.05.1
NOTES

1. HAND HOLE COVER SHALL BE SECURED BY A STAINLESS STEEL 1/4"-20 BUTTON HEAD ALLEN BOLT AND HOLDING CLEAT.
2. POLE GROUND SHALL BE 1/2" x 1/8 L.A.C. NUT WELDED TO INSIDE OF POLE AS SHOWN.
3. HAND HOLE SHALL BE ORIENTED SO THAT IT IS ALIGNED WITH THE PAST ARM.
4. HAND HOLE DIMENSIONS SHALL BE 5" x 5" (P-90), 4" x 6" (P-502, P-905). 
5. SLOT LENGTH OF BASE PLATE EQUALS ANCHOR BOLT DIAMETER PLUS 1/2" ON BOTH SIDES OF ANCHOR BOLT.

NOTES

1. THE POLE DESIGN, MATERIALS, AND CONSTRUCTION SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, BASED ON A WIND SPEED OF 80 MILES PER HOUR.
2. THE POLE SHALL BE STEEL WITH THE DECORATIVE ARM, BASE COVER, AND RECEPCTACLE COVER TO BE ALUMINUM.
3. THE STEEL POLE SHALL BE SAND-BLASTED TO SSPC SPECIFICATIONS SP-6-63. THE CAST ALUMINUM DECORATIVE ARM, BASE COVER, RECEPCTACLE COVER, AND OTHER MISCELLANEOUS ALUMINUM PARTS SHALL BE SOLVENT CLEANED TO SSPC SP-6 SPECIFICATION TO REMOVE ALL SOLUBLE CONTAMINANTS. AFTER SURFACE PREPARATION A PRIMER COAT OF THEMEC SERIES 66 HI BUILD EPOXOLINE OR APPROVED EQUIVALENT SHALL BE APPLIED TO A THICKNESS OF 3 DRY MILS. THE COLOR COATING SHALL BE THEMEC SERIES 73 ENDURA SHIELD III OR APPROVED EQUIVALENT. APPLIED TO A MINIMUM THICKNESS OF 3 DRY MILS, THE FINAL COATING SHALL BE THEMEC SERIES 76 ENDURA CLEAR OR APPROVED EQUIVALENT. APPLIED TO A MINIMUM THICKNESS OF 1.5 DRY MILS. THE FINISH COLOR SHALL BE HUNTER GREEN, THEMEC COLOR NUMBER P L20.
4. UNSTABLE SOIL MAY REQUIRE DEEDER FOUNDATION, AS DETERMINED BY THE ENGINEER.
5. THE 1" ANCHOR BOLT SHALL HAVE A LENGTH DETERMINED BY THE DEPTH OF THE FOUNDATION, AND SHALL EXTEND TO 6" FOR 11" ABOVE THE BOTTOM OF THE FOUNDATION. (M-73.06)
6. ANCHOR BOLTS WITH 4 HEX NUTS, 2 FLAT WASHERS, AND 1 ANCHOR PLATE PER BOLT SHALL BE HOT DIPPED GALLANIZED PER M-73.06.
7. ANCHOR BOLTS SHALL HAVE 1/4" TO 3/4" FULL THREAD ABOVE NUT. (M-73.06)
8. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE FOUNDATION. MAXIMUM PROJECTION SHALL BE 4".
9. 2'-0" SQUARE, 4" THICK TROWELED FINISH SMOOTH CONCRETE CAP WITH 1/2" ROUND EDGE. FOUNDED SEPARATELY FROM FOUNDATION.
10. CLASS A CONCRETE PER M.A.G. STANDARD 725.
11. #6 B.H.W. GREEN INSULATED COPPER STRANDED GROUNDING WIRE.
12. 1/2" COPPER GROUNDING PLATE. (M-73.06)
13. THE PIPE ON EACH SIDE OF A CIRCUMFERENTIAL WELD SHALL HAVE THE SAME OUTSIDE DIAMETER AT THE WELD.

NOT TO SCALE
REV. 1/04/2016

M73.05.3
TOWN CENTER DECORATIVE STREETLIGHT POLE SPECIFICATION
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NOTES

1. THE ANCHOR BOLT AND PARTS SHALL BE IN ACCORDANCE WITH ASTM A-36, OR A-537.
2. ANCHOR BOLT SHALL HAVE A MINIMUM THREAD LENGTH OF 6" AT EACH END.
3. THE ANCHOR BOLT AND PARTS SHALL BE HOT DIPPED GALVANIZED PER MFG STD. 771 AFTER FABRICATION AND THREADING.
4. THE ANCHOR BOLT SHALL BE FURNISHED WITH (2) HEX NUTS, (2) FLAT WASHERS, AND (1) ANCHOR PLATE PER BOLT.

ANCHOR BOLT PLAN

ANCHOR BOLT SHALL BE CENTERED IN PLATE

HEX NUT

7/8" X 3 1/2" X 3 1/2" ANCHOR PLATE

SIDE VIEW

AB-101 - AB-108 ANCHOR BOLTS

NOT TO SCALE

REV. 03/22/2016
G-101 COPPER GROUNDING PLATE

NOTES:
1. ALL POLE FOUNDATIONS SHALL HAVE A 1/4" COPPER GROUNDING PLATE (M-73.6) 6" BELOW BOTTOM OF POLE FOUNDATION.
2. THE GROUNDING WIRE IN THE CONCRETE FOUNDATION, SHALL BE A 6" STRANDED AND GREEN INSULATED WITH XHHW INSULATION.
NOTES

1. THE BOX SHALL BE AN APPROVED BOX FOR #3 1/2 & FOR #5 1/2 AND NON-SETTLING SHOULDERS TO MAINTAIN GRADE. THE BOX SHALL BE MANUFACTURED WITH APPROXIMATE DIMENSIONS AS SHOWN.

2. COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS: STREET LIGHTING

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OPTIONAL PULL BOX LIDS

LID "A" NON-METALLIC LID
LID "B" CAST IRON WITH HOLD DOWN BOLTS

HOLD DOWN BOLT DETAIL
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 P.V.C. 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 M440 STANDARD SPECIFICATION 60; CLEARANCE FROM RETAINING WALL, WHERE APPLICABLE AS SHOWN ON COM DETAIL M-74.02.2

NOT TO SCALE
**Installation at Detached Sidewalk**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate
- Installation at detached sidewalk

**Installation at Sidewalk to Downward Slope**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate
- Installation at sidewalk to downward slope

**Installation in Unpaved Median**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate
- Installation in unpaved median

**Installation in Paved Median**

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

**Retaining Wall**

- Where applicable

**Installation at Sidewalk to Upward Slope**

- Conduit bends per COM detail M-74.02.1
- 1" aggregate
- Installation at sidewalk to upward slope

**NOTE**

- 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 50" MIN. CLEARANCE FROM LCC CABINET
  - SHALL HAVE A DEPTH OF 10" MIN. BELOW SIDewALK GRADE
  - HAVE A SMOOTH TROWELED FINISH AND 1/2" RADIUS CHAMBERS ALONG TOP EDGES
  - BE BACKFILLED WITH EXCAVATED MATERIALS AND COMPACTED PER MAG STANDARD SPECIFICATION 601.
  - SHALL EXTEND A MINIMUM OF 6-FTS EITHER SIDE OF THE PULL BOX.
CIRCUIT BREAKER PANEL GE TLM 8-2 FULD
GE BREAKER 2P60 THGL 260
GE BREAKER 2P30 THGL 2130 HID
GE BREAKER 1/2 INCH IP 15 THGP 115
GE BREAKER IP 15 THGL 115
NEUTRAL BAR (FROM ABOVE)
CONTACTOR 30A MECHANICAL EATON A202KBA. 2
SPLICES/REDUCERS-AL/CU BURNDY BDB-II-210-2
TERMINAL BOARD 20A-154V GE CRIBI84
GFCI-15AMP-NEMA CONFIGURATION S-18R
LEVITON IVJX3 (OR EQUAL)
NEON MINIATURE INDICATOR LIGHT RED
CHICAGO MINIATURE #2818AI
ISA (Q1/277 SINGLE POLE SWITCH PASS
SEYMOUR CS1641-W
HANDY BOX W/COVER
BOX: STEEL CITY 2-1/2" D #5871-1/2
COVER: STEEL CITY 58630
KNOCK OUT BUSHING # TOPAZ 988751
SPlice/Reducer COVER BURNDY 588COVER2

SEE M-75.01.1C FOR REFERENCED NOTES
CABINET REQUIREMENTS

GENERAL
THE MANUFACTURER MUST BE ABLE UPON REQUEST TO PRODUCE PART NUMBERS ON ALL COMPONENTS FOR REPAIR PURPOSES. CERTIFICATES OF COMPLIANCE MAY BE REQUESTED ON EACH CABINET OR ON ANY COMPONENT OR PART THEREOF.

PERFORMANCE
THE ENCLOSURE WILL MEET OR EXCEED THE REQUIREMENTS OF A NEMA 5R RATING AND SHALL BE UL LISTED.

CABINET CONSTRUCTION

GENERAL
THE CABINET AND DOOR SHALL BE CONSTRUCTED FROM 5052 H32 SHEET ALUMINUM ALLOY WHICH HAS A THICKNESS OF .025". EXTERNAL AND INTERNAL WELDS SHALL BE MADE USING THE HELIARC WELDING METHOD. ALL WELDS SHALL BE NEATLY FORMED AND FREE OF CRACKS, BLOW HOLES AND OTHER IRREGULARITIES.
ALL INSIDE AND OUTSIDE EDGES OF THE CABINET SHALL BE FREE OF BURRS.
THE DOOR OPENING SHALL BE DOUBLE FLANGED ON ALL 4 SIDES WHICH INCREASES STRENGTH AROUND OPENINGS AND KEEPS DIRT AND LIQUIDS FROM ENTERING THE ENCLOSURE WHEN DOOR IS OPENED.
A DOOR RESTRAINT SHALL BE PROVIDED TO PREVENT DOOR MOVEMENT WHEN OPENED IN WINDY CONDITIONS.

DOOR/HARDWARE
THE DOOR SHALL BE FURNISHED WITH A GASKET THAT SATISFIES THE PHYSICAL PROPERTIES AS FOUND IN UL508 TABLE 2.1 AND SHALL FORM A WEATHER-TIGHT SEAL BETWEEN THE CABINET AND DOOR.
THE HINGE SHALL BE CONTINUOUS AND BOLTED TO THE CABINET AND DOOR UTILIZING 1/4"-20 300 SERIES STAINLESS STEEL CARRIAGE BOLTS AND 300 SERIES STAINLESS STEEL NY-LOCK NUTS.
THE HINGE WILL BE MADE OF 0.075/14 GAUGE 500 SERIES STAINLESS STEEL AND SHALL HAVE A 3" OPEN WIDTH WITH A .750" DIAMETER 500 SERIES STAINLESS STEEL HINGE PIN.
THE HINGE PIN SHALL BE CAPPED TOP AND BOTTOM BY WELD TO RENDER IT TAMPER PROOF.
ALL BOLT HOLES SHALL BE GASKETED TO MEET OR EXCEED THE REQUIREMENTS OF A NEMA 4X RATING.
A POCKET, 6.00" HIGH X 15.00" LONG X .750" DEEP, WITH BOTH ENDS OPEN, SHALL BE WELDED TO THE INSIDE OF THE DOOR.
THE LATCHING MECHANISM SHALL BE A 3-POINT DRAW ROLLER TYPE.
THE CENTER CATCH SHALL BE 300 SERIES STAINLESS STEEL PLATE.
PUSH-ROSES WILL BE TURNED EDGWISE AT THE OUTWARD SUPPORTS AND SHALL BE .250" X .750" ALUMINUM.
ROLLERS SHALL HAVE A MINIMUM DIAMETER OF .875" AND WILL BE MADE OF DELRIN. THE CENTER CATCH SHALL BE FABRICATED FROM 300 SERIES STAINLESS STEEL, MINIMUM.
AN OPERATING HANDLE SHALL BE FURNISHED.
THE HANDLE WILL BE 300 SERIES STAINLESS STEEL WITH A .375" DIAMETER SHAFT.
THE LATCHING HANDLE SHALL HAVE A PROVISION FOR PADELocking IN THE CLOSED POSITION. ALL PADELock HARDWARE SHALL BE MADE OF MINIMUM 11 GAUGE STAINLESS STEEL.

EQUIPMENT MOUNTING

MOUNTING CHANNELS
THE ENCLOSURE SHALL BE EQUIPPED WITH TWO REVERSED "U" MOUNTING CHANNELS WELDED TO THE BACK WALL OF THE ENCLOSURE, WITH (4) 1/4"-20 STAINLESS STEEL PRESS-IN CAPTIVE STUDS.

THE REVERSED MOUNTING CHANNELS WILL BE EQUIPPED WITH ALL MOUNTING HARDWARE NEEDED TO MOUNT ALUMINUM BACK PANEL TO THE (4) 1/4"-20 STAINLESS STEEL PRESS-IN CAPTIVE STUDS (SEE MOUNTING CHANNEL DETAIL).

ALUMINUM BACK PANEL
THE ENCLOSURE SHALL BE EQUIPPED WITH A PREDRILLED AND TAPPED 5052 H32 ALUMINUM BACK PANEL HAVING A THICKNESS OF .025" (CITY WILL BE PROVIDE A DRILLING AND TAPPING DETAIL). THE PANEL SHALL BE NATURAL FINISHED. ALL MOUNTING HARDWARE WILL BE FURNISHED.

CABINET FINISH
THE OUTSIDE SURFACE OF THE CABINET SHALL HAVE A SMOOTH, UNIFORMED, NATURAL ALUMINUM FINISH.

CABINET MOUNTING
PAID MOUNT ENCLOSURE
ENCLOSURE SHALL BE CONSTRUCTED TO BE MOUNTED ON CONCRETE PAD (SEE MOUNTING PATTERN FOR DETAILS).
NOTE: FOR NEMA TYPE 4X RATINGS THE CABINET WILL BE BOLTED AND GASKETED WITH A CLOSED CELL NEOPRENE GASKET MATERIAL WITH THE PHYSICAL PROPERTIES AS FOUND IN UL508 TABLE 2.1 AND SHALL FORM A WEATHER-TIGHT SEAL BETWEEN THE CABINET AND CONCRETE PAD. THE AREA OF THE CABINET WITH THE MOUNTING HOLES SHALL BE REINFORCED TO .375" THICKNESS ON THE INSIDE.

APPROVED MANUFACTURER
CABINET IS TO BE MANUFACTURED BY AN APPROVED UL LISTED MANUFACTURER.

REFERENCE ONLY
C-113 LIGHTING CONTROL CABINET

CABINET BASE AND MOUNTING DIMENSIONS
SEE COM DETAIL M-75.02.1 FOR PAD DIMENSIONS

SIDE VIEW

FRONT VIEW

VIEW WITH FRONT DOOR OPENED AND DEAD DOOR REMOVED

INSTALLATION
LOCATION
LOCATE WITH OTHER STREETLIGHT EQUIPPING APPURTENANCES PER SEPARATION DISTANCES NOTED IN COM DETAILS M-75.03 AND M-75.04.

BASE PAD & CONDUIT
INSTALL WITH PAD & CONDUIT IN PLACE PER COM DETAILS M-75.02.1 AND M-75.02.2.

CONDITIONS
INSTALL IN MEDIAN OR ALONG STREET PER APPLICABLE CONDITION SHOWN ON COM DETAIL M-75.02.3

SEE M-75.01.2D FOR REFERENCED NOTES
CIRCUITRY FOR COMPONENT PANEL
MOUNTED ON CABINET REAR WALL
(W/ RAISED LOAD CENTER FOR CONNECTION TO FLUSH MOUNT BREAKERS ON DEAD FRONT)

NOTE
REFER TO COM DETAIL M-75.03 FOR 240 VOLT SERVICE TO LCC SCHEMATIC AND COM DETAIL M-75.02.2 FOR GROUND ROD AND CONDUIT PENETRATIONS THROUGH LCC PAD

SEE M-75.01.2D FOR REFERENCED NOTES

NOT TO SCALE
GENERAL REQUIREMENTS

EACH CABINET AND ALL COMPONENTS SHALL BE PER CITY OF MESA APPROVED PRODUCTS LIST. THE CABINET SHALL BE PROVIDED COMPLETE WITH ALL COMPONENTS NOTED ON COM DETAIL M-75.01.2A AND M-75.01.2B AND SHALL INCLUDE ALL WIRING PER DIAGRAM SHOWN ON COM DETAIL M-75.01.2C. MANUFACTURERS SHALL BE REQUIRED TO PRODUCE PART NUMBERS FOR ALL COMPONENTS SO THAT PARTS CAN BE REQUESTED WHENEVER REPAIRS ARE NECESSARY. CERTIFICATES OF COMPLIANCE MAY BE REQUESTED ON EACH CABINET OR ON ANY COMPONENT OR PART THEREOF.

CABINET CONSTRUCTION

THE ENCLOSURE SHALL MEET OR EXCEED THE REQUIREMENTS OF A NEMA 3R RATING AND SHALL BE UL LISTED.

THE CABINET AND FRONT DOOR, AS SHOWN ON COM DETAIL M-75.01.2A, SHALL BE CONSTRUCTED FROM 5052-H32 SHEET ALUMINUM ALLOY WHICH HAS A THICKNESS OF .125". EXTERNAL AND INTERNAL WELDS SHALL BE MADE USING THE TIG ARC WELDING METHOD. ALL WELDS SHALL BE NEATLY FORMED AND FREE OF CRACKS, SLOPE HOLES AND OTHER IRREGULARITIES.

ALL INSIDE AND OUTSIDE EDGES OF THE CABINET SHALL BE FREE OF BURRS.

THE FRONT DOOR OPENING SHALL BE DOUBLE FLANGED ON ALL 4 SIDES WHICH INCREASES STRENGTH AROUND OPENINGS AND KEEPS DIRT AND LIQUIDS FROM ENTERING THE ENCLOSURE WHEN DOOR IS OPENED.

A FRONT DOOR RESTRAINT SHALL BE PROVIDED TO PREVENT DOOR MOVEMENT WHEN OPENED IN WINDY CONDITIONS.

THE OUTSIDE SURFACE OF THE CABINET AND FRONT DOOR SHALL HAVE A SMOOTH AND UNIFORM NATURAL ALUMINUM FINISH.

MOUNTING CHANNELS ON REAR WALL FOR COMPONENT PANEL

THE ENCLOSURE SHALL BE EQUIPPED WITH TWO REVERSED "C" MOUNTING CHANNELS WELDED TO THE INSIDE REAR WALL OF THE ENCLOSURE WITH (6) #14-20 STAINLESS STEEL PRESS-IN CAPTIVE STUDS, FH00420-16.

THE REVERSED MOUNTING CHANNELS SHALL BE EQUIPPED WITH ALL MOUNTING HARDWARE AS NEEDED TO MOUNT REAR COMPONENT PANEL TO (6) #14-20 STAINLESS STEEL PRESS-IN CAPTIVE STUDS PER MOUNTING CHANNEL DETAIL ON COM DETAIL M-75.01.2A.

COMPONENT PANEL MOUNTED ON REAR WALL

THE ENCLOSURE SHALL BE EQUIPPED WITH A REMOVABLE COMPONENT PANEL MOUNTED ON THE CABINET REAR WALL AND FABRICATED FROM 5052-H32 ALUMINUM AND HAVING A THICKNESS OF .125". THE PANEL SHALL BE PREDRILLED AND TAPPED PER DETAIL PROVIDED BY THE CITY OF MESA.

FRONT DOOR/HARDWARE

THE DOOR SHALL BE FURNISHED WITH A GASKET THAT SATISFIES THE PHYSICAL PROPERTIES AS FOUND IN UL508 TABLE 21.1 AND SHALL FORM A WEATHER-TIGHT SEAL BETWEEN THE CABINET AND DOOR.

THE HINGE SHALL BE CONTINUOUS AND BOLTED TO THE CABINET AND DOOR UTILIZING 1/4"-20 300 SERIES STAINLESS STEEL CAMAROE BOLTS AND 300 SERIES STAINLESS STEEL NY-LOCK NUTS.

THE HINGE SHALL BE MADE OF .750 UL GAUGE 300 SERIES STAINLESS STEEL AND SHALL HAVE A 3" OPEN WIDTH WITH A .250" DIAMETER 300 SERIES STAINLESS STEEL HINGE PIN.

THE HINGE PIN SHALL BE CAPPED TOP AND BOTTOM BY WELD TO RENDER IT TAMPER PROOF.

ALL BOLT HOLES SHALL BE GASKETED TO MEET OR EXCEED THE REQUIREMENTS OF A NEMA 4X RATING.

A POCKET, 6.00" HIGH X 15.00" LONG X .750" DEEP, WITH BOTH ENDS OPEN, SHALL BE WELDED TO THE INSIDE OF THE DOOR.

THE LATCHING MECHANISM SHALL BE A 3-POINT DRAW ROLLER TYPE. ROLLERS SHALL HAVE A MINIMUM DIAMETER OF .750" AND WILL BE MADE OF DELRIN.

THE CENTER CATCH SHALL BE 300 SERIES STAINLESS STEEL PLATE AND SHALL BE FABRICATED FROM .115" STAINLESS STEEL, MINIMUM.

PUSHRODS WILL BE TURNED EDGEWISE AT THE OUTWARD SUPPORTS AND SHALL BE .250" X .750" ALUMINUM.

AN OPERATING HANDLE SHALL BE FURNISHED AND SHALL BE FABRICATED FROM 300 SERIES STAINLESS STEEL AND HAVE A 3/4" DIAMETER SHAFT.

THE HANDLE LATCH SHALL HAVE A PROVISION FOR PADDLOCKING IN THE CLOSED POSITION. ALL PADLOCK HARDWARE SHALL BE MADE OF MINIMUM 11 GAUGE STAINLESS STEEL.

CABINET BASE MOUNTING

ENCLOSURE BASE SHALL BE MANUFACTURED PER BASE & MOUNTING DIMENSIONS ON COM DETAIL M-75.01.2A FOR MOUNTING ON A CONCRETE PAD PER COM DETAILS M-75.02.1, M-75.02.2 AND M-75.02.3.

THE AREA OF THE CABINET WITH THE MOUNTING HOLES SHALL BE REINFORCED TO .375" THICKNESS ON THE INSIDE.

NOTE: FOR NEMA TYPE 4X RATINGS THE CABINET WILL BE BOLTED AND GASKETED WITH A CLOSED CELL NEOPRENE GASKET MATERIAL WITH THE PHYSICAL PROPERTIES AS FOUND IN UL508 TABLE 21.1 AND SHALL FORM A WEATHER-TIGHT SEAL BETWEEN THE CABINET AND CONCRETE PAD.
PAD MANUFACTURING REQUIREMENTS

THE CONCRETE PAD IS MANUFACTURED TO SUPPORT AND ACCOMMODATE CONNECTIONS TO A LIGHTING CONTROL CABINET (LCC). THE PAD SHALL INCLUDE ANCHOR BOLTS TO MOUNT THE LCC, PER COM DETAIL M-75.01.2A. AN 8" X 11" OPENING ALLOWS FOR CONDUITS AND A GROUNDING ROD PER COM DETAIL M-75.02.2. PADS SHALL BE PRECAST BY AN APPROVED MANUFACTURER PER THE FOLLOWING CRITERIA:

CONCRETE

THE CONCRETE SHALL BE CLASS A, PER MAG STANDARD SPECIFICATION 120.

REINFORCEMENT

EACH PAD SHALL HAVE #4 STEEL REINFORCING, PER MAG STANDARD SPECIFICATION 775 AND AS SHOWN FOR APPLICABLE PAD TYPE.

ANCHOR BOLTS

EACH PAD SHALL BE EQUIPPED WITH (6) 1/2" X 8" STAINLESS STEEL ANCHOR BOLTS WITH HEX NUT AND WASHER, PER MAG STANDARD SPECIFICATION 771.

FINISH

THE CONCRETE SURFACE SHALL HAVE A UNIFORM SMOOTH TROWELED FINISH FREE OF ANY PITS AND BLEMISHES, PER MAG STANDARD SPECIFICATION 505. ALL INSIDE AND OUTSIDE EDGES SHALL HAVE A 3/4" ROUND CHAMFER.

INSTALLATION

LOCATION

THE PAD SHALL BE INSTALLED ALONG WITH THE ELECTRIC UTILITY POINT OF DELIVERY (P.O.D.) AND POINT OF SERVICE (P.O.S.) AND LOCATED PER SEPARATION DISTANCES NOTED ON COM DETAIL M-75.03.

PAD TYPE & CONDITIONS

INSTALL IN MEDIAN OR ALONG STREET WITH PAD TYPE AND FRONT ORIENTED PER APPLICABLE CONDITION SHOWN ON COM DETAILS M-75.02.3 AND M-75.05.

FINISH GRADE, CONDUIT & GROUNDING

INSTALL PER COM DETAIL M-75.02.2

NOT TO SCALE
**SECTION A**

**FINISHED PAD SURFACE TO MATCH SIDEWALK OR PAVING GRADE WHERE APPLICABLE**

**LCC PAD OPENING TO BE FILLED WITH 3/4" AGGREGATE TO WITHIN 1/2" TO 3/4" BELOW TOP OF PAD. SEAL WITH MASONRY MORTAR MIX AROUND CONDUITS.**

**1/4" COPPER CLAD GROUNDING ROD, LOCATED IN FRONT LEFT CORNER OF OPENING**

**FRONT**

**LCC PAD, GROUNDING ROD & CONDUIT INSTALLATION**

**INSTALLATION NOTES**

1. LOCATE LIGHTING CONTROL CABINET (LCC) PAD PER REQUIREMENTS OF 240 VOLT SERVICE SCHEMATIC ON COM DETAIL M-75.35 AND PER APPLICABLE CONDITION ON COM DETAIL M-75.03.2.

2. 5/8" COPPER CLAD GROUNDING ROD SHALL BE INSTALLED AS SHOWN AND CONNECTED FROM GROUNDING ROD IN POINT OF SERVICE (P.O.S.) PULLBOX AS PER NOTES ON ON COM DETAIL M-75.33.

3. ALL CONDUIT SHALL BE 2" SCHEDULE 40 P.V.C. AND INCLUDE A 90° BEND WITH RADIUS OF NOT LESS THAN 18" (ONLY FACTORY BENDS SHALL BE USED).

4. CONDUIT END BELLS SHALL BE INSTALLED BEFORE PULLING WIRE.

5. BACKFILL SHALL BE WITH EXCAVATED MATERIALS AND THOROUGHLY COMPACTED PER MAG STANDARD SPECIFICATION 601.

6. AGGREGATE/GROUT SHALL BE INSTALLED AS SHOWN.
**INSTALLATION AT DETACHED SIDEWALK**

Finish grade 2" beneath top of pad and per com detail M-75.02.2, typ. Opening for grounding rod and conduit through pad per com detail M-75.02.2, typ.

**INSTALLATION AT SIDEWALK TO UPWARD SLOPE**

A retaining wall:
- Is required in areas of flood irrigation.
- Is required where a new 6" upward slope will not meet the existing grade.
- Shall be located for 36" min. clearance from LCC cabinet.
- Shall have a depth of 12" min. below sidewalk grade.
- Have a smooth troweled finish and 1/2" radius chamfers along top edges.
- Be backfilled with excavated materials and compacted per MAC standard specification 601.
- Shall extend a minimum of 6-feet either side of the cabinet.

**INSTALLATION AT SIDEWALK TO DOWNWARD SLOPE**

C-105 LCC pad per com detail M-75.02.1, attached sidewalk per com detail M-75.02.2, typ.

**INSTALLATION IN UNPAVED MEDIAN**

Finish grade 2" above surrounding grade, per com detail M-75.02.2, typ.

**INSTALLATION IN PAVED MEDIAN**

C-105 LCC pad per com detail M-75.02.1, concrete or brick pavers.
INSTALLATION NOTES

1. **The Point of Delivery (P.O.D.) Pull Box** point of service (P.O.S.) pull box and lighting control cabinet (LCC) 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.

2. The LCC pad shall be located between 7' and 12' from the P.O.S. pull box. Wherever possible the P.O.S. pull box shall be located in an area between the utility's P.O.D. pull box and the LCC pad. Otherwise the P.O.S. pull box may be located within the alternate area shown. In either instance, the P.O.S. pull box shall be located no further than 100' from the utility's P.O.D.

3. A 10' long, 5/8" copper clad grounding rod shall be installed in the P.O.S. pull box. The grounding rod in the P.O.S. pull box shall extend 2' to 4' above base of full box.

4. See comm detail M-75.02.2 for grounding rod and extension through LCC pad.

5. The P.O.S. and LCC pad shall be connected by one (1) 2" PVC conduit with three (3) #2 x/hw conductors and one (1) #4 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 conduit from point of connection.

7. 2' to 3' additional feet of each conductor shall be looped within P.O.S. pull boxes and the LCC. LCC circuits shall be tagged and labeled.

8. The #4 awg bare stranded copper wire conductor (N) is used to interconnect the P.O.S. and LCC grounding rods and shall be installed without splices. 2¼ inch long ground (G) tails shall be provided at the P.O.S. and LCC for interconnecting grounds. Neutral conductors and the LCC pad. Approved grounding rod clamps shall be dedicated and accessible at all P.O.S. and LCC locations.

9. All splices for conductors, grounds and bonds shall be done with a gel cap stub splice kit aged cap sl-270-03 hole or approved equal.

10. A maximum of two streetlight circuits per LCC is allowable.

11. Whenever a new LCC is fed from the P.O.S. of an existing LCC a new P.O.S. pullbox shall additionally be installed between the existing and new LCCs. (Not shown).
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. Wherever possible, the P.O.S. pull box shall be located in an area between the utility’s P.O.D. pull box and the streetlight area. Otherwise, the P.O.S. pull box may be located within the alternate area shown. In either instance, the P.O.S. pull box shall not 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" schedule 40 conduit with two (2) #8 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-73.06.1, M-73.06.2 & M-73.07. All splices, grounds and bonds shall be done with a gel cap stud splice kit. All cables shall be equal. Approved grounding rod clamps shall be dedicated and accessible at the P.O.S.

8. A water proof fuse holder with a 30 amp fuse shall be installed on the hot conductor (H) from the utility service.

9. A maximum of 3 streetlights connected from the P.O.S. are allowable. Applicable streetlight foundation per COm details M-76.01 and M-76.02.2.

ATTACHED SIDEWALK SHOWN. REFER TO COm DETAILS M-74.02.2 & M-76.02.2 FOR P.O.S. & STREETLIGHT FOUNDATION INSTALLATIONS PER APPLICABLE CONDITIONS.

P.O.S. & STREETLIGHT LOCATION

NOT TO SCALE
NOTES:

1. All pole foundations shall have a 1/4" copper grounding plate (M-73,6) 6" below bottom of pole foundation.
2. All finished pole foundations shall be at sidewalk grade, unless otherwise noted.
3. All 45 degree and 90 degree bends for conduit shall have a radius of not less than 18" (factory bends only shall be used).
4. Underground wiring circuits shall be installed in Schedule 40 Rigid PVC conduit. It shall be U.L. approved for above ground and underground use with 90 degree C wire. Minimum depth from top of curb to top of conduit shall not be less than 24" unless otherwise specified.
5. Inspection by engineering inspector shall be requested by the electrical contractor when the pole foundations are dug, anchor bolts, ground wire, and grounding plate are ready and in place prior to pouring concrete.

* Concrete cap poured separate from foundation.

While concrete foundations are poured they shall be vibrated with a mechanical vibrator. Pole foundations shall cure for 72-hours before installing light poles.

In irrigated areas, poles and pull boxes shall be installed in such a manner that they are kept out of direct contact with irrigation water.

In areas that slope away from the sidewalk, curb, or roadway, the grade around the poles shall be such that sidewalk, curb, or roadway can be used as the grade control point for the pole foundation elevation.

Unstable soil may require deeper foundations as determined by the engineer.

Concrete foundation shall be a continuous pour.

Foundation notes:

- 3'-0" square, 4" thick troweled finish smooth concrete cap with 1/2" round edge.
- 2'-0" square, 4" thick troweled finish smooth concrete cap with 1/2" round edge.
- 1-1/2" Schedule 40 PVC. 90 degree bend conduit with a radius of not less than 18" (factory bends only shall be used). Conduit shall project a minimum of 2" above the foundation. Maximum projection shall be 6", (for pole see note 4).
- Anchor bolts with 4 hex nuts, and 2 flat washers and 1 anchor plate bolt shall be hot-dipped galvanized per M.A.G. Standard 727, see data table on pole specification for size, projection above foundation, and bolt circle.
- Class A concrete per M.A.G. Standard 725.
- Foundation shall require 8 ea. (#7 x 7'-4") vertical bars, with 3/8" round cold drawn steel wire spiral cage with a 3" per foot pitch.
- The grounding wire in the concrete foundation shall be a #6 stranded and green insulated with XHHW insulation.
- 1/4" copper grounding plate (M-73,6).
- 4" cap to be minimum class 3 concrete per M.A.G. Standard 725.
- 1-1/2" conduit min. shall be used for PC circuit.

NOT TO SCALE
INSTALLATION NOTES:
1. SPECIAL FOUNDATION INSTALLATIONS SHALL BE CONSTRUCTED FOLLOWING THE CITY OF MESA STREETLIGHT FOUNDATION SPECIFICATION UNLESS NOTED OTHERWISE.
2. THE DEPTH OF FOUNDATION SHALL BE MEASURED FROM THE LOWEST PART OF THE EXISTING GRADE.
3. EXPOSED FOUNDATION SHALL BE SQUARE WITH 1/2" ROUND EDGES.
4. STEEL CASE IS REQUIRED WHEN FOUNDATION IS EXPOSED 1'-0" OR ABOVE EXISTING GRADE.
5. WHEN STREETLIGHT (POLES, FOUNDATIONS, PULL BOXES, AND CONTROLLER CABINETS) IS INSTALLED IN AN UPWARD SLOPE SECTION A RETAINING WALL SHALL BE INSTALLED OR THE GRADE SHALL BE CUT BACK TO OBTAIN A LEVEL AREA FOR AT LEAST 2'-0" FROM STREETLIGHT EQUIPMENT.
6. FINISHED GRADE SHALL BE AT SIDEMARK GRADE UNLESS OTHERWISE NOTED.
7. WHEN STREETLIGHT EQUIPMENT (POLES, FOUNDATIONS, PULL BOXES, AND CONTROLLER CABINETS) IS INSTALLED IN A DOWNWARD SLOPE SECTION, NEEDED DIRT SHALL BE HAULED IN TO OBTAIN A LEVEL AREA FOR AT LEAST 2'-0" FROM STREETLIGHT EQUIPMENT. THE SLOPE OF THE FINISHED GRADE SHALL NOT EXCEED A 6:1 SLOPE AND SHALL MATCH AND CONFORM TO THE EXISTING TERRAIN.
8. RETAINING WALL SHALL BE INSTALLED IN ALL AREAS THAT CANNOT BE CUT BACK TO OBTAIN A LEVEL AREA FOR AT LEAST 2'-0" FROM STREETLIGHT EQUIPMENT. IN AREAS THAT THE FINISHED GRADE WILL EXCEED A 6:1 SLOPE AND IN AREAS THAT USE FLOOD IRRIGATION.
9. RETAINING WALL SHALL HAVE A FOUNDATION 12" BELOW SIDEWALK GRADE.
10. RETAINING WALL SHALL HAVE A TRIMMED, SMOOTH FINISH WITH 1/2" ROUND EDGES.
11. BACKFILL WITH EXCAVATED MATERIALS AND THOROUGHLY TAMPER MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD 601.
**GENERAL NOTES:**

1. THE MAST ARM DETAIL, ADAPTOR PLATE, AND MATERIALS SHALL CONFORM TO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR MAXIMUM 85% U.L., UWH, AND THAT SHALL BASED ON A WIND SPEED OF 40 MPH PER HOUR.

2. THE MAST ARM, ADAPTOR PLATE, AND ALL PARTS SHALL BE STATED.

3. THE MAST ARM, ADAPTOR PLATE, AND ALL PARTS SHALL BE NOTched THROUGH 3/4"-11 NC HIGH STRENGTH BOLTS.

4. ADAPTOR PLATE AP-101 SMALL BOLT PATTERN REQUIRED MADE 3/4"-11 NC HIGH STRENGTH BOLTS.

5. ADAPTOR PLATE AP-102 LARGE BOLT PATTERN REQUIRED MADE 3/4"-12-10 NC HIGH STRENGTH BOLTS.

6. THE MAST ARM REQUIRES FOUR 3/4"-12 1/2" 10 NC HIGH STRENGTH BOLTS.

7. LOCTITE OR EQUA SHALL BE APPLIED TO ALL BOLTS.


**DATA TABLE**

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**NOTES:**

1. ARM NO TS-101 & TS-102 ARE TO BE USED WITH ADAPTOR PLATE TO MOUNT LUMINARIES ON TRAFFIC SIGNAL POLE 25°-0" TO 45°-0".

2. ARM NO TS-101 & TS-102 ARE TO BE USED WITH ADAPTOR PLATE TO MOUNT LUMINARIES ON TRAFFIC SIGNAL POLE 25°-0" TO 45°-0".

3. ARM NO TS-103 & TS-104 ARE TO BE USED WITH ADAPTOR PLATE TO MOUNT LUMINARIES ON TRAFFIC SIGNAL POLE 30°-0" TO 45°-0".

4. ARM NO TS-103 & TS-104 ARE TO BE USED WITH ADAPTOR PLATE TO MOUNT LUMINARIES ON TRAFFIC SIGNAL POLE 30°-0" TO 45°-0".
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

1. MESA STANDARD DETAILS AMENDMENT TO THE UNIFORM STANDARD DETAILS: CURRENT. SEE 'CITY OF MESA' WEB SITE (WWW.MESA.AZ.GOV/BUSINESS/ENGINEERING/MESA-STANDARD-DETAILS-SPECIFICATIONS)
2. FOR ITS/Traffic Signals APPROVED PRODUCT SPECIFICATIONS, SEE 'CITY OF MESA' WEB SITE * FOR CURRENT SPECIFICATION.
3. ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION: CURRENT.
4. ADOT TRAFFIC SIGNALS & LIGHTING CURRENT HIGHWAYS STANDARD DRAWINGS.
5. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, TRAFFIC CONTROL SYSTEMS: STANDARDS PUBLICATION: TSZ-2003 VER 2.06.
6. INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC., WIRE AND CABLE SPECIFICATIONS: CURRENT.
7. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS: US001/FHWA: CURRENT.
8. AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS (AASHTO) STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS: IH46.

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 LPS (PEDESTAL) FOUNDATION BEFORE CONCRETE IS POURED.
2. ANY SIGNAL APPURTENANCE THAT IS SUBJECT TO BEING INSTALLED ON A SLICE 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-66.01.1.
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-II SHALL BE GRAY UNLESS OTHERWISE SPECIFIED ON PLANS.
3. ALL CONDUITS SHALL HAVE AS A MINIMUM ONE GREEN #8 THIN/THICK COPPER STRANDED BOND WIRE AND 2500 LB MILLE 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 (JACKMOON 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 PULL BOXES. 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.
VIDEO DETECTION SYSTEMS

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

POLES

1. REFER TO COM DETAIL M-94.01, M-94.03, M-94.06, M-94.08, M-94.09 FOR CITY OF MESA POLES AND MAST ARMS (OTHER POLES AND MAST ARMS ARE PER ADO T-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, BUTTONS, BUTTON STATIONS AND FRAMEWORK SHALL BE PRE-TRIEATED AND ELECTROSTATIC POWDER COATED SEMI-GLOSS BLACK.

MOUNTING ASSEMBLIES FOR VEHICLE 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 ADO T TS (0-1) NO LOCK RINGS SHALL BE PERMITTED ON ANY PART OF THE MOUNT. LOWER ELBOWS SHALL HAVE 1/2 TEETH SERRATIONS 1/8" 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. ALL PIPE THREADS WHETHER INTERNAL OR EXTERNAL SHALL BE OF THE TAPERED TYPE.
5. ALL PIPE SHALL BE SCHEDULE 40 (0.45" WALL THICKNESS).
6. 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/SENSOR DOORS SHALL BE EASILY REMOVED, WITHOUT HAVING TO DRIVE OUT RETAINING HINGE PINS.
4. TUNNEL VISORS SHALL BE 12" LONG FOR 12" HEADS. THEY SHALL BE MADE OF ALUMINUM, THEY SHALL BE ATTACHED TO THE SIGNAL HEAD BY SCREWS THROUGH 90 DEGREE RIGHT ANGLE MOUNTING TABS. (SEE ADO T TS 8-2 FOR DESIGN SPECIFICATIONS).
5. BACKPLATES WITH 5" BORDERS SHALL BE USED ON ALL 12 INCH HEADS. ALL BACKPLATES SHALL BE LOUVED 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 ADO T 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.

* - http://mesaaz.gov/residents/transportation/signal-maintenance-operation/traffic-signal-specifications
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" website 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 pushbuttons 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" website for approved suppliers.

* - HTTP://MESAAZ.GOV/RESIDENTS/TRANSPORTATION/SIGNAL-MAINTENANCE-OPERATION/TRAFFICE-SIGNAL-SPECIFICATIONS
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 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 CONTROLLED CABINET AND EQUIPMENT, DETECTION LOOPS, PULL BOXES, CONDUIT, POLES, MAST ARMS, HEADS OR RELATED EQUIPMENT AS A RESULT OF THE CONTRACTOR’S WORK IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT THEIR EXPENSE AS REQUIRED BY THE CITY. A CITY OF MESA TRAFFIC SIGNAL TECHNICIAN SHALL INSPECT THESE REPAIRS.

A. A TRAFFIC SIGNAL CANNOT BE DARK OR IN FLASH FOR MORE THAN TWO HOURS.

B. A LOSS OF COMMUNICATION SHALL BE REPAIRED WITHIN 24 HOURS.

C. DETECTION LOOPS SHALL BE REPLACED IN TWO WEEKS UNLESS OTHERWISE APPROVED BY THE ITS GROUP AND ENGINEER INSPECTOR. AGREE IN WRITING THAT THE WORK SCHEDULE REQUIRES ADJUSTMENT OF THIS TIME FRAME.

5. DURING TRAFFIC SIGNAL INSTALLATION, MAINTENANCE, OR REPAIR, ANY UNUSED OR INACTIVE SIGNAL HEADS SHALL BE PROPERLY COVERED WITH A PROPPED 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 ACCRUAL CHARGE FOR EMPLOYEES TIME, MATERIALS AND EQUIPMENT, WHICHER EVER IS GREATER. EMPLOYEES TIME WILL BE BILLED AT EACH INDIVIDUAL'S HOURLY RATE PLUS THE APPLICABLE CITY OVERHEAD RATIO. ANY MATERIALS USED WILL BE BILLED AT COST. EQUIPMENT RATES WILL BE BASED ON THE MOST RECENT SCHEDULE OF EQUIPMENT RENTAL RATES FOR FORCE ACCOUNT WORK, AS APPROVED BY THE ARIZONA DEPARTMENT OF TRANSPORTATION.

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

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

IF THE TRAFFIC SIGNAL FIBER OPTIC CABLE IS DAMAGED AS A RESULT OF A PROJECT, THE TRAFFIC SIGNAL FIBER OPTIC CABLE SHALL BE REPLACED IN THE INCREDMENT 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 WORKMANLIKE MANNER. THE CITY OF MESA INSPECTION TEAM WILL MAKE THE DETERMINATION IF THE WORK PERFORMED MEETS THAT CRITERIA AND MAY REQUEST THAT THE WORK BE REDONE IF IT HAS NOT.

WARRANTY

1. CONTRACTOR SHALL 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 HIPS AND BEFORE COVERING CONDUIT.

C. BEFORE FILLING FILTER BOX HOLES WITH AGGREGATE.

D. BEFORE FILLING TRAFFIC SIGNAL AND OR FIBER OPTIC CABLE.

E. WHEN POLE FOUNDATIONS ARE READY TO BE POURED WITH CONCRETE.

F. WHILE POURING FOUNDATIONS.

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

4. ALL TRAFFIC SIGNAL HEAD ASSEMBLIES SHALL BE INSPECTED BY THE COM INSPECTOR PRIOR TO THE INSTALLATION BY THE CONTRACTOR.
WORKSITE SAFETY

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLY WITH THE CITY OF MESA TRAFFIC BARRICADE MANUAL FOR ANY WORK INSIDE THE CITY LIMITS AND ACQUIRE ANY TEMPORARY TRAFFIC CONTROL PERMITS REQUIRED FOR THE PROJECT.

2. CONTRACTOR SHALL PROVIDE APPROVED WORKSITE BARRICADES 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 IMPED 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, GOOGLE, REFLECTIVE VESTS, AND A SAFETY HARNESS WHEN WORKING IN A BUCKET TRUCK.
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).
GENERAL NOTES

1. A #8 XHHW INSULATED COPPER STRANDED BOND WIRE WITH A 14" COPPER GROUNDING PLATE (SEE M-73.6 FOR PLATE DETAIL) OR A 25' 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, O, 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.

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

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, 02.

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. ANTEENNAE SHALL BE LOCATED 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 SIGNAGE AND WINDOW VIEWS. CABINETS SHALL BE A MINIMUM OF 50' FROM EXISTING SIGNAGE 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.
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 1:6 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 1:6 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 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.

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CONCRETE MEDIAN DETAIL:

- 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)
- 3/4" aggregate
- 30 lb. felt paper wrapped around pull box when in concrete
- 4" thick concrete with 4" of aggregate / brick pavers laid in 4" of washed sand.

TOP VIEW:

- 2" inch Schedule 40 PVC 90 degree bend conduit
- 3 inch Schedule 40 PVC 90 degree bend conduit
- Concrete building block (8" x 1-1/2" x 16")
- Cover omitted for clarity

TYPICAL PULL BOX INSTALLATION:

- Marked traffic signals
- Backfill & thoroughly tamp excavated area
- Pull box cover
- 30 lb. felt paper
- Finished grade
- Undisturbed soil

EQUAL TO DEPTH OF BOX:

- 6" page dimensions: 600x1000
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
GENERAL NOTES

1. INSTALL GREEN #8 THHN/THWN STRANDED COPPER WIRE FULL LENGTH INSIDE OF CONDUIT WITH THREE FEET (3') EXTENDING ABOVE CONDUIT.

2. ALL 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 HDPE 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 TOP 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 AND TWO FLAT WASHERS.

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.
FIGURE A
INSTALLATION NEAR ANOTHER POLE

EXISTING SIDEWALK

POINT OF RETURN

EXISTING/OTHER POLE TYPICAL LOCATION

SIDEWALK INSTALLATION PER M.A.G. 340
ADD SIDEWALK TO MAINTAIN CLEAR SIDEWALK BETWEEN BASE PLATE AND BACK OF WALK.

FIGURE B
SOLO INSTALLATION

EXISTING SIDEWALK

POINT OF RETURN

BIKE PUSH BUTTON POLE

W=EXISTING SIDEWALK WIDTH

GENERAL NOTES
1. BOTTOM OF BASE PLATE TO BE FLUSH WITH TOP OF SIDEWALK.
2. INSTALL BIKE PUSH BUTTON FOR BICYCLISTS WITH C 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 .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 "A" FOR ANCHOR BOLT DETAILS. ANCHOR BOLTS SHALL BE 1” X 35”. EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS AND TWO FLAT WASHERS.

5. ANCHOR BOLTS SHALL PROJECT 3 1/2” ABOVE THE FINISHED SIDEWALK.

**TAPERED POLE DIAMETER TABLE**

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<thead>
<tr>
<th>HEIGHT</th>
<th>BASE</th>
<th>TOP</th>
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<tbody>
<tr>
<td>8' - 0&quot;</td>
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<td>10' - 0&quot;</td>
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NOTE: 15’ & 18’ "A" POLES – STRAIGHT ONLY

[Details of the table and specifications]
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

DESIGN CRITERIA

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

MAX. LOADING INFORMATION
## 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 6'-0" dia. and cast with a 1" concrete (3,000 psi) for M.A.G. standard 75% poured against undisturbed compacted earth.
3. Unstable soil may require deeper foundation. See ADOT specifications, road and bridge construction section 731-1.01.
4. Install 1 3/4" 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 14" for anchor bolt details. Anchor bolt information can be found in chart by pole type. Each anchor bolt shall have four hex nuts and two flat washers.
7. Anchor bolts shall project 6 inches above the foundation.
8. The leveling nuts shall be installed on top of concrete pole base. Space between concrete pole base and pole base around leveling nuts shall be grouted with a deep hole. The deep hole shall be constructed of 1/2" cotton rope and be oriented on the opposite side of the pole from the street. See ADOT specifications, road and bridge construction section 731-3.01.
9. Grounding as shown on detail M-92-03 Note 1 shall be installed before the concrete is poured and connected to pole grounding screw in the hand hole.
10. Finish to be galvanized unless otherwise specified on plans.
11. City of Mesa signal poles shall have a hand hole manufacture installed opposite the signal mast arm plate (ADOT TS 4-20) and a J-hook.
12. Four 1.25"-7UNC high strength connecting bolts (A325 Gr. 80) are required for 20-65 signal mast arms. Four 1.5"-6UNC high strength connecting bolts (A325 Gr. 80) are required for 60-65 signal mast arms.
13. All signal mast arms shall be of one piece construction.
14. A stainless steel tag shall be permanently attached to the pole above the hand hole stating the manufacturer's name, C.O.M. pole type and date manufactured.
15. Manufacturer to supply structural shop drawings and calculations sealed by registered Arizona structural engineer.

### Pole Specifications

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<th>Pole Base</th>
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### Signal Arm Data

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<th>Rise (FT)</th>
<th>Arm Mounting Height &quot;H&quot; (FT)</th>
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### Not to Scale

Rev. 12/6/2016
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 731-3.00).

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 "A" FOR ANCHOR BOLT DETAILS. ANCHOR BOLTS SHALL BE 2" X 70". EACH ANCHOR BOLT SHALL HAVE FOUR HEX NUTS AND TWO FLAT WASHERS.

7. ANCHOR BOLTS SHALL PROJECT 8 INCHES ABOVE THE FOUNDATION.

8. THE LEVELING NUTS SHALL BE INSTALLED ON TOP OF CONCRETE POLE BASE. SPACE BETWEEN CONCRETE POLE BASE AND POLE BASE AROUND LEVELING NUTS SHALL BE GROUTED WITH A WEER HOLE. THE WEER HOLE SHALL BE CONSTRUCTED A COTTON ROPE AND BE ORIENTED ON THE OPPOSITE SIDE OF THE POLE FROM THE STREET; SEE ADOT SPECIFICATIONS, ROAD AND BRIDGE CONSTRUCTION SECTION 731-3.00).

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 THAN 1.5" AT 50 MPH WIND.

14. FINISH TO BE GALVANIZED PER ASTM A 123 UNLESS OTHERWISE SPECIFIED ON PLANS.

15. A STAINLESS STEEL TAG SHALL BE PERMANENTLY ATTACHED TO THE POLE ABOVE THE HAND HOLE STATING THE MANUFACTURER'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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<td>5/8&quot; DIA. X 2 1/2&quot; HHMB W/NUTS AND WASHERS (GALVANIZED)</td>
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<td>3</td>
<td>2 3/8&quot; O.D. X 3&quot;-0&quot; SCH 40 STD PIPE (GALVANIZED)</td>
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<tr>
<td>6</td>
<td>1/2&quot; NUTS (GALVANIZED)</td>
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<tr>
<td>24</td>
<td>1/2&quot; WASHERS (GALVANIZED)</td>
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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-SEIZE 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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<th>SWH &quot;A&quot;</th>
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REV. 07/31/2014
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 LED.

FLASHING YELLOW ARROW "FY"
SIGNAL HEAD CONFIGURATION

BODY WASHER

INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS.

NOT TO SCALE
HEAD ASSEMBLY

- Indicates location of elevator plumbizer for mast arm mounts.

2-WAY BOTTOM ASSEMBLY WIRING DETAIL

2-WAY TOP ASSEMBLY

Plumbizer - will not be used for pole (side) mount locations, a type V mount shall be used.
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 CAPS 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 SPLICING COMPARTMENT. WIRE SHALL BE 16 AWG THW PER ADOT 733-2.04. WIRE SHALL EXTEND PAST THE SPLICING COMPARTMENT OPENING BY 6 INCHES.

6. SPLICING COMPARTMENT COVER SHALL BE DESIGNED SO THAT IT MAY BE FLIPPED OUT OF THE WAY AS SHOWN ON THE SPLICING COMPARTMENT COVER DETAIL.

7. 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.

8. ALL SIGNAL INDICATIONS SHALL BE L.E.D.

9. 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 8-32 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 42CH (HOUSING) 
   AND CAMPBELL 40CP (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-60.02

7. SEE COM DETAIL 99.01 AND 99.02 FOR PUSH BUTTON STATION SIGNS.
| SIGN SIZE | SIGN LENGTH (SL) | VIEWABLE LENGTH (VL) | SIGN HEIGHT (SH) | VIEWABLE HEIGHT (VH) | A   | B   | C   | D   | E   | F   | G   | H   | I   | J   | SIGN WEIGHT (LBS) |
|-----------|-----------------|----------------------|-----------------|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|
| 6'        | 75.375"         | 68.10"               | 28.4375"        | 24.50"              | 18.00" | -   | 18.00" | 7.00" | 7.00" | 18.00" | -   | 18.00" | 7.00" | 7.00" | 83               |
| 8'        | 99.375"         | 92.10"               | 28.4375"        | 24.50"              | 18.00" | 49.687" | 18.00" | 7.00" | 7.00" | 18.00" | 49.687" | 18.00" | 7.00" | 7.00" | 106              |
| 10'       | 123.375"        | 116.10"              | 28.4375"        | 24.50"              | 18.00" | 61.687" | 18.00" | 7.00" | 7.00" | 18.00" | 61.687" | 18.00" | 7.00" | 7.00" | 129              |

* VENDOR TO SUBMIT TOTAL WEIGHT OF SIGN ASSEMBLY (NOT TO EXCEED 350 LBS)
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 POWER COATED SILVER/ALUMINUM WITH UV INHIBITORS AND WITH 10 YEAR LONGEVIY 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 16'6" 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 850 Fuse Holder with a 3 AMP Fuse shall be installed in the pull box.
3. THE ILLUMINATED SIGN LED POWER SUPPLY SHALL BE PHILIPS/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 MANUFACTURE, SERIAL NUMBER, VOLTAGE AND AMPERAGE REQUIREMENTS. IT SHALL BE PERMANENTLY ATTACHED.
2. THE ILLUMINATED STREET NAME SIGN ASSEMBLY SHALL CARRY A 10 YEAR WARRANTY. SIGN FACES WILL BE WARRANTED AGAINST FADING, CRACKING, BUBBLING, DECALIMATION, 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 100' 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 TRANSPORTATION/TRAFFIC_SIGNALS_SPECIFICATIONS.ASPX

* - HTTP://MESAAZ.GOV/RESIDENTS TRANSPORTATION/SIGNAL-MAINTENANCE-OPERATION/TRAFFIC-SIGNAL-SPECIFICATIONS
**GENERAL NOTES:**

1. THE CCTV CABLE (SHIELDED CAT 5E) SHALL RUN UNSLICED 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 ENTRES HOLES SHALL BE FIELD-DRILLED WITH STRAIN RELIEF CORD CONNECTOR NON-METALLIC, TAPPED TO 1/2 INCH N.P.T.
LAGGING

TRAFFIC FLOW DIRECTION

LEADING

2 - WIRES

4 - WIRES

2 - WIRES

WIRING DIAGRAM FOR QUADRUPOLE LOOP

TRAFFIC FLOW DIRECTION

LEADING

3 - WIRES

WIRING DIAGRAM FOR 6' X 6' LOOP

SEALER

1/8" MAX.

1/4" SAWCUT

PCCP OR AC

1.5" MIN.

FINISH COURSE OR OVERLAY

PAVEMENT SURFACE

SEALER

1.5" MIN.

PCCP OR AC

1/4" SAWCUT

DNA 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

1.25"

1.25"

PVC CONDUIT SEE PLANS FOR SIZE

4" OF SAND

SEE M-96.04 FOR LOOP SPOUT DETAIL

CURB & GUTTER

CUT 3' Y TO LOCATE CONDUIT

SAW CUT PATTERN FOR QUADRUPOLc POWER

GUARDRIPPOLE POWER PLAN SYMBOL

DETAIL "A"

DETAIL 1

DETAIL 2
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 2.

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 #515-1986. 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 POLY, 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 FULL BOX. CONDUIT IS TO BE 2" SCHEDULE 40 PVC.

14. ALL LOOP WIRE SHALL BE TWISTED AT THE RATE OF TWO TURNS PER FOOT FROM THE LOOP STUB-OUT INTO THE FULL 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 FULL BOX AS FOLLOWS: CURB TO MEDIAN:
   FRONT TO BACK
   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. UPON PASSING FINAL FIELD TEST, DETECTOR LOOPS SHALL BE CONNECTED AND MADE TO OPERATE BY THE CONTRACTOR.

21. DETECTOR LOOP INSTALLATION FIELD TEST: BEFORE AND AFTER THE SAW CUT SEALANT HAS BEEN INSTALLED, THE CONTRACTOR SHALL PERFORM AN INSULATION RESISTANCE-TO-GROUND TEST. THE INSULATION RESISTANCE-TO-GROUND SHALL BE AT LEAST 100 MEGOHMS WHEN MEASURED AT A VOLTAGE BETWEEN 400 AND 600 VOLTS DC.

22. ALL NEW TRAFFIC SIGNAL INSTALLATIONS WILL HAVE THE DETECTOR LOOP INSTALLATION FIELD TEST CONDUCTED AND PASSED AT THE CABINET. THE FIELD TEST WILL BE CONDUCTED OVER THE ENTIRE LOOP CIRCUITRY: LOOP LEAD-IN WIRE AND LOOP WIRE INSTALLATION.

23. ANY EXISTING LOOP REPLACEMENT, THE CONTRACTOR SHALL CONFIRM THE LOOP STUB-OUT LOCATION PRIOR TO CUTTING/INSTALLING LOOPS, AND WILL ALSO CONFIRM THE CONDUIT BETWEEN THE LOOP STUB-OUT AND THE FULL 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 SAWS 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:
   \[ A = \text{WIDTH OF THE DESIRED DETECTION ZONE}, \]
   \[ B = \sqrt{A^2 - \frac{C^2}{4}} + \sqrt{B^2} \]
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 LPM COLD PATCH.

4. LPM COLD PATCH SHALL BE COMPACTED IN TWO LiftS WITH A MACHINE PLATE TAMPER, LEAVE LPM 1/2" ABOVE OF ROADWAY SURFACE.

5. EXCAVATION SHALL BE FILLED WITH "SPEED CRETE," NO OTHER BACKFILL MATERIAL SHALL BE USED.

SIDE VIEW
NOT TO SCALE

FILL HOLE WITH "SPEED CRETE" CONCRETE... DO NOT BACKFILL EXCAVATION (SEE NOTES).

CUT LOOP WIRE SLOT (DETECT A DUCT) TO MATCH TOP OF CONCRETE
2" BELL END
2" 90 DEGREE 9-1/2" RADIUS

SEAL WITH DUCT SEAL
6" - 9"
6" - 6"
FROM GUTTER LIP

CUT 3" Y TO LOCATE CONDUIT

TOP VIEW
NOT TO SCALE

WIRE SLOT, MATCH DEPTH AT END OF SLOT TO DEPTH OF STUBOUT HOLE.
2" BELL END
GUTTER

STREET
GENERAL NOTES

1. VIDEO DETECTION SYSTEM CABLE SHALL BE ATTACHED TO THE STRAIN RELIEF SUPPORT HOOK LOCATED AT THE TOP OF THE POLE (INSIDE). CABLE SHALL BE SUPPORTED WITH FACTORY CABLE STRAIN RELIEF DEVICE.

2. VDS-CABLE SHALL BE OF 1-PIECE AND EXTEND FROM THE CAMERA TO THE HAND HOLE, AND A DRIp LOOP SHALL BE FORMED AT THE BASE OF THE CAMERA.

3. VDC INSTALL NEEDS TO BE APPROVED BY THE ITS/TRAFFIC SIGNAL GROUP PRIOR TO INSTALLING.

4. MOUNTING BRACKET SUPPLIED BY VIDEO DETECTION CAMERA MANUFACTURER.

5. CAMERA MOUNTING LOCATION TO BE DETERMINED BY INSPECTOR.

6. SPLICES SHALL BE MADE WITH 3M SCOTCH LOCK 3/4" INSULATION DISPLACEMENT CONNECTORS.

TYPICAL VIDEO DETECTION CAMERA INSTALLATION

MAXIMUM 12" Drip Loop

TUBE LENGTH 12"

3/4" CHASE NIPPLE

FIELD-DRILL AND TAP HOLE IN TOP OF ARM WITH 3/4" NPT.

NOTE #2

NOTE #6

NOT TO SCALE

REV. 12/13/2015

DETAIL NO. M-96.05
GENERAL NOTES

1. IN CIRCUITS WHERE THE VOLTAGE DOES NOT EXCEED 600 VOLTS AC, SPLICES SHALL BE MADE UTILIZING APPROVED WING NUT WIRE CONNECTORS. SOLDERED CONNECTIONS SHALL NOT BE PERMITTED. THE INSULATION FOR THE SPLICE SHALL CONSIST OF BLACK 3M SCOTCH 533 ELECTRICAL TAPE AND COMPLETE SUBMERSION IN "SCOTCH KOTE".

2. ALL ELECTRIC SERVICE SPLICES IN PULL BOXES SHALL BE MADE USING HOMAC 'FLOOD SEAL' RUBBERIZED ALUMINUM BAR SPLICE KIT PART #4ABG 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 67.06). EACH TAPE SHALL BE WRAPPED AROUND THE APPROPRIATE CONDUCTORS FOUR (4) TIMES [FOR VEHICLE INDICATION, PED INDICATION, AND PED PUSH BUTTON STATION WIRING TYPES AND COLOR CODES (FROM PULL BOX TO POLE) REFER TO ADOPT STANDARD SPECIFICATION "CONDUCTOR TABLE" ADOPT 732-2011(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 TAPPED INDIVIDUALLY WITH BLACK PVC 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 PLUMBER 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 WIRE FOR PROTECTED/PERMITTED OPERATION. ALL UNUSED TENONS SHALL BE WIRE 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 TAPE
   - INSIDE HEAD = 3 YELLOW TAPE

11. STREETLIGHT LUMINARIES ON SIGNAL POLES SHALL BE WIRED PER CITY OF MESA STANDARD DETAILS.

12. STREETLIGHT CIRCUIT WIRING SHALL BE #10 AWG, XHHW STRANDED BLACK IN MAIN CONDUCT 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). STREETLIGHTS CIRCUITS SHALL BE TAPPED TOGETHER WITH BLACK TAPE TO KEEP THEM SEPARATE FROM THE TRAFFIC SIGNAL CIRCUITS.

13. IONS CIRCUIT WIRING SHALL BE TAPPED TOGETHER WITH ORANGE TAPE TO KEEP SEPARATE FROM THE TRAFFIC SIGNAL CIRCUITS.

14. IN ALL TRAFFIC SIGNAL CONDUITS A GREEN #8 THHN/THWN STRANDED COPPER BOND WIRE SHALL BE USED.

15. ALL ELECTRICAL BLACK AND Colored TAPE SHALL BE SCOTCH 533.

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. GOLDERING THE CONDUCTOR END IS ALSO ACCEPTABLE.

STANDARD 8 PHASE LAYOUT
SEE PLANS FOR CORRECT PHASING SEQUENCE

NOT TO SCALE

REV. 10/24/2016
### 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>
<tr>
<td>1</td>
<td>1 RED</td>
<td>EBLT</td>
<td>RED, ORANGE, GREEN</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>2</td>
<td>1 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>1 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>1 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>1 RED, 1 YELLOW</td>
<td>EBLT</td>
<td>YELLOW W/RED</td>
<td>FYA PHASE 1</td>
</tr>
<tr>
<td>3 FYA</td>
<td>1 BLUE, 1 YELLOW</td>
<td>NBLT</td>
<td>YELLOW W/BLUE</td>
<td>FYA PHASE 3</td>
</tr>
</tbody>
</table>

### LRT 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>
<tr>
<td>2 TRAIN</td>
<td>1 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>1 WHITE</td>
<td>WB</td>
<td>ORANGE W/ GREEN</td>
<td>BLANKOUT SIGN</td>
</tr>
</tbody>
</table>

### PEDESTRIAN INDICATIONS

<table>
<thead>
<tr>
<th>PHASE</th>
<th>TAPE ID COLORS</th>
<th>WIRE COLORS</th>
<th>INDICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 PED</td>
<td>1 WHITE</td>
<td>BLACK, BLUE</td>
<td>DON'T WALK, WALK</td>
</tr>
<tr>
<td>4 PED</td>
<td>1 GREEN</td>
<td>BLACK W/WHITE, BLUE W/BLACK</td>
<td>DON'T WALK, WALK</td>
</tr>
</tbody>
</table>

### PEDESTRIAN PUSH BUTTONS

<table>
<thead>
<tr>
<th>PHASE</th>
<th>TAPE ID COLORS</th>
<th>WIRE COLOR</th>
<th>MARKING TAPE PER PHASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 PUSH BUTTON</td>
<td>1 WHITE</td>
<td>WHITE W/ RED</td>
<td>#1 = 1 RED TAPE</td>
</tr>
<tr>
<td>4 PUSH BUTTON</td>
<td>1 GREEN</td>
<td>BLACK W/ RED</td>
<td>#2 = 1 WHITE TAPE</td>
</tr>
<tr>
<td>PUSH BUTTON COMMON</td>
<td>1 BLACK</td>
<td>WHITE W/ BLACK</td>
<td>#3 = 1 BLUE TAPE</td>
</tr>
<tr>
<td>SIGNAL COMMON</td>
<td></td>
<td>WHITE</td>
<td>#4 = 1 GREEN TAPE</td>
</tr>
</tbody>
</table>
## 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>
<tr>
<td>5</td>
<td>2 RED</td>
<td>WBLT</td>
<td>RED, ORANGE, GREEN</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>6</td>
<td>2 WHITE</td>
<td>EB</td>
<td>RED W/BLACK, ORANGE W/BLACK, GREEN W/BLACK</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>7</td>
<td>2 BLUE</td>
<td>SBLT</td>
<td>RED W/WHITE, BLUE W/WHITE, GREEN W/WHITE</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>8</td>
<td>2 GREEN</td>
<td>NB</td>
<td>RED W/GREEN, ORANGE W/RED, BLUE W/RED</td>
<td>RED, YELLOW, GREEN</td>
</tr>
<tr>
<td>5 FYA</td>
<td>2 RED, 1 YELLOW</td>
<td>WBLT</td>
<td>YELLOW W/RED</td>
<td>FYA Phase 5</td>
</tr>
<tr>
<td>7 FYA</td>
<td>2 BLUE, 1 YELLOW</td>
<td>SBLT</td>
<td>YELLOW W/BLUE</td>
<td>FYA Phase 7</td>
</tr>
</tbody>
</table>

#### LRT 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>
<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>
</tr>
</tbody>
</table>

#### Pedestrian Indications

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

#### Pedestrian Push Buttons

<table>
<thead>
<tr>
<th>Phase</th>
<th>Tape ID Colors</th>
<th>Wire Colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Push Button</td>
<td>2 WHITE</td>
<td>WHITE W/ RED</td>
</tr>
<tr>
<td>8 Push Button</td>
<td>2 GREEN</td>
<td>BLACK W/ RED</td>
</tr>
<tr>
<td>Signal Common</td>
<td></td>
<td>WHITE</td>
</tr>
<tr>
<td>Spare</td>
<td></td>
<td>WHITE W/ BLACK</td>
</tr>
</tbody>
</table>
THIS SHEET INTENTIONALLY LEFT BLANK
### General Notes

1. All IMSA cable is pulled continuous (no splicing) from the terminal compartment in each signal head, push button, 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 3-section signal heads and push 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 bells on IMSA cable jacket.

5. All cable shall be tagged in the pull box with yellow tape as follows:
   - Mast arm vehicle indications
     - Head: Conductor(s) Tape(s)
     - Outside: 7 1
     - Next inside: 5 2
     - Next inside: 5 3
     - Next inside: 5 4
     - Next inside: 5 5
     - Etc.: 5 ETC
   - Pole mounted vehicle indications
     - Head: Tape(s)
     - Same phase as mast arm heads: Next #
     - Different phase from mast arm: None

6. IMSA cables for pedestrian heads shall be identified in pull boxes using brown tape in addition to standard phase ID taping.

### Pedestrian Heads

<table>
<thead>
<tr>
<th>5 Conductor Cable</th>
<th>2 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Red</td>
<td>Basic Color: Red</td>
</tr>
<tr>
<td>Signal Interval:</td>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Don't Walk</td>
<td>Push Button</td>
</tr>
<tr>
<td>Spare</td>
<td>Station</td>
</tr>
<tr>
<td>White Pedestrian</td>
<td>White</td>
</tr>
<tr>
<td>Common</td>
<td>Common</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
<tr>
<td>Spare</td>
<td>Spare</td>
</tr>
</tbody>
</table>

### Push Button

<table>
<thead>
<tr>
<th>2 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Black</td>
</tr>
<tr>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Push Button</td>
</tr>
<tr>
<td>Station</td>
</tr>
<tr>
<td>White</td>
</tr>
</tbody>
</table>

### Double Pedestrian Heads

<table>
<thead>
<tr>
<th>7 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Red</td>
</tr>
<tr>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Don't Walk</td>
</tr>
<tr>
<td>4 &amp; 8</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>2 &amp; 6</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>4 &amp; 8</td>
</tr>
<tr>
<td>White</td>
</tr>
<tr>
<td>2 &amp; 6</td>
</tr>
<tr>
<td>White/Black</td>
</tr>
<tr>
<td>Spare</td>
</tr>
</tbody>
</table>

### Mast Arm Vehicle Indications

<table>
<thead>
<tr>
<th>Head</th>
<th>Conductor(s)</th>
<th>Tape(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Next inside</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Next inside</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Next inside</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Next inside</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Etc.</td>
<td>5</td>
<td>ETC</td>
</tr>
</tbody>
</table>

### Pole Mounted Vehicle Indications

<table>
<thead>
<tr>
<th>Head</th>
<th>Tape(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same phase as mast arm heads</td>
<td>Next #</td>
</tr>
<tr>
<td>Different phase from mast arm</td>
<td>None</td>
</tr>
</tbody>
</table>

### LRT Blankout

<table>
<thead>
<tr>
<th>5 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Red</td>
</tr>
<tr>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Spare</td>
</tr>
<tr>
<td>Orange</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>White Neutral</td>
</tr>
<tr>
<td>Black Load</td>
</tr>
</tbody>
</table>

### LRT Train

<table>
<thead>
<tr>
<th>5 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Red</td>
</tr>
<tr>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Horizontal Bar</td>
</tr>
<tr>
<td>Orange</td>
</tr>
<tr>
<td>Green</td>
</tr>
<tr>
<td>White Vertical</td>
</tr>
<tr>
<td>Black</td>
</tr>
</tbody>
</table>

### Double LRT Train

<table>
<thead>
<tr>
<th>7 Conductor Cable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Color: Red</td>
</tr>
<tr>
<td>Signal Interval:</td>
</tr>
<tr>
<td>Horizontal Bar</td>
</tr>
<tr>
<td>Orange</td>
</tr>
<tr>
<td>Green Vertical</td>
</tr>
<tr>
<td>Black Horizontal</td>
</tr>
<tr>
<td>Blue Vertical</td>
</tr>
<tr>
<td>White Neutral</td>
</tr>
<tr>
<td>White/Black</td>
</tr>
</tbody>
</table>

---

REV: 12/31/2014
NOTES

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

1. 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' 5.0 TONS (MIN.)
   - 3'x3'x3' 1.5 TONS
   - 2'x2'x2' 1.0 TON

4. SEE PLANS FOR BOULDER SIZE AND PLACEMENT.
<table>
<thead>
<tr>
<th><strong>NATIVE PLANTING BACKFILL MIX:</strong></th>
<th><strong>AMENDED PLANTING BACKFILL MIX:</strong></th>
<th><strong>FERTILIZER TABLETS:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MIX SHALL CONSIST OF &quot;NATIVE&quot; SITE SOIL (NO CALICHE IN BACKFILL). REMOVE ALL INORGANIC MATERIAL GREATER THAN 1&quot; IN SIZE. SOIL MIX SHALL BE WATER SETTLED WITHOUT POOLING. NO ADDITIONAL FERTILIZATION REQUIRED IN NATIVE PLANTING BACKFILL MIX.</td>
<td>MIX SHALL CONSIST OF: 1/2 PART &quot;NATIVE&quot; SITE SOIL (NO CALICHE IN BACKFILL) &amp; 1/2 PART MULCH (*HUMUS). *NATURAL FERTILE, FRIABLE SOIL THOROUGHLY MIXED PRIOR TO BACKFILLING PIT. REMOVE ALL INORGANIC MATERIAL GREATER THAN 1&quot; IN SIZE. SOIL BACKFILLING SHALL BE ACCOMPLISHED IN 6&quot; LIFTS; EACH LIFT SHALL BE WATER SETTLED WITHOUT POOLING.</td>
<td>FERTILIZER TABLETS SHALL BE AGRIFORM OR EQUAL (21 GRAM 20-20-5 SLOW RELEASE). TABLETS SHALL BE PLACED AT 1/2 THE DEPTH OF THE ROOTBALL AT THE FOLLOWING RATES: 1 TABLET PER 1 GALLON CONTAINER 2 TABLETS PER 5 GALLON CONTAINER 3 TABLETS PER 10 GALLON CONTAINER 4 TABLETS PER 24&quot; BOX AND AT A RATE OF 1 TABLET PER EACH ADDITIONAL 6&quot; BOX SIZE. WHEN MULTIPLE QUANTITIES OF TABLETS ARE REQUIRED, THEY SHALL BE EQUALLY SPACED AT THE SPECIFIED DEPTH.</td>
</tr>
</tbody>
</table>
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) 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.

6 FT MINIMUM CLEARANCE PREFERRED (TYPICAL ALL LOCATIONS).

6' MAX.

18" MAX.

"ARBOR GUARD" TREE TRUNK PROTECTION TURF AREAS ONLY.

SCARIFY SIZES 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.

2 x THE ROOT BALL.

TREES TO BE PRUNED BY CONTRACTOR PER ANSI STANDARDS.

ONE TREE TIE MINIMUM OR AS NEEDED, SEE DETAIL BELOW, TIES TO BE PLACED ABOVE AND BELOW SCAFFOLD BRANCHING OR AS DIRECTED BY COM INSPECTOR.

WATER METER

FINISHED ELEVATION OF THE TOP OF ROOT FLARE TO BE 1" ABOVE FINISH GRADE W/ TURF

TURF FINISH GRADE

FINISH GRADE W/ TURF

ROOT BALL

FERTILIZER TABLETS - SEE COM DETAIL M-103.01 FOR PLANTING NOTES

FOR SOIL MIX - SEE PLANT SCHEDULE AND COM DETAIL M-103.01.

SQUARE KNOT (TYPICAL 2 PLACES)

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

# 8 SCREW (GALVANIZED)

10'-12" TYP

REV. 12/1/2016

DETAIL NO. M-103.02

NOT TO SCALE
ADJACENT HARDSCAPE

BUBBLER LOCATION PER CM
STD BUBBLER DETAIL, 15"-20" UP SLOPE SIDE OF TREE

NOTE
1. STAKING AND PLANTING AS PER CM DETAILS M-103.01,
   M-103.02, AND M-103.03.

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 NITROIZED 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 SURFAN TO ALL GROUND COVER BEDS AT THE MANUFACTURER'S RECOMMENDED RATE.

NOT TO SCALE
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 1/2" 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 STREPTOMYcin 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 HOLES. PLANT SHOULD BALANCE WITHOUT SUPPORT.
5. INSTALL AND COMPACT REMAINING BACKFILL IN 6" MAX. DEPTH LIFTS TO FINISH GRADE AS SHOWN.
6. INSTALL GUY SYSTEMS TO SECURE POSITION AND PREVENT UPRIGHT 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 COM INSPECTOR.
NOTES

1. ROOT PRUNE ALL SHREDDED OR DAMAGED ROOTS. TEAR DRIED SHEATH OFF ROOTS. IF THERE ARE CRUSHED OR DAMAGED ROOTS, MAKE CLEAN CUTS. ENSURE ALL WOUNDS TO THE ROOT SYSTEM ARE SEALED BEFORE PLANTING BY ALLOWING TIME FOR SELF-SEALING OR APPLICATION OF WETTABLE DUSTING SULFUR (1.5 LBS).

2. PLANT NO DEEPER THAN WHAT THE PLANT WAS PREVIOUSLY PLANTED.

3. BACKFILL TO CONSIST OF CLEAN NATIVE SOIL.

4. APPLY NAPHTHYL ACETIC ACID OR "K-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.

LEVEL

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

AVERAGE OF 75% OF THE TALLER CANES

PLANTED HEIGHT

6" D.I.A. ROCKS TO ANCHOR ROOTS *(AS REQUIRED)*

NATIVE SOIL BACKFILL
THIS SHEET INTENTIONALLY LEFT BLANK
NOTE TO CONSULTANT
ELIMINATE, MODIFY OR COMPLETE DETAIL CALL OUTS BASED ON 'ACTUAL' IRRIGATION DESIGN.

STREETS - TBOS (IN VALVE BOX)

WATER MAIN (REFER TO PLANS)

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

RPCBP, (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES)

QC

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

BRASS ISOLATION GATE VALVE, (SEE IRRIGATION LEGEND/SCHEDULE AND GENERAL NOTES).

MAINLINE, SIZE PER PLAN

BATTERY OPERATED CONTROLLER INSTALLED PER MANUFACTURER'S INSTRUCTIONS. SEE IRRIGATION LEGEND/SCHEDULE.

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

LATERAL LINE, SIZE PER PLAN

EMITTERS PER IRRIGATION SCHEDULE

MANUAL FLUSH VALVE ASSEMBLY PER IRRIGATION SCHEDULE

REV. 02/12/2015

NOT TO SCALE
THIS SHEET INTENTIONALLY LEFT BLANK
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. 100 VAC 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" SCH. 40 PVC SLEEVE FOR 6" COPPER GROUNDING ROD (SEE CON DETAIL M-104.10).

7. STAINLESS STEEL SECURITY CABINET SHALL HAVE A DOOR WITH DOCUMENT TRAY SUITABLE FOR STORING MANUALS AND REDUCED DRAWINGS.

8. HARDWIRE 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. "X" FOR LOCATION.

10. TEMPLATE FOR J-ROT Installation will be provided by PARKS DEPARTMENT.

11. CABINET AND CONTROLLER PROVIDED BY PARKS DEPARTMENT.

CONTRACTOR TO PROVIDE AND INSTALL TO POWER CO. POINT OF SERVICE
THIS SHEET INTENTIONALLY LEFT BLANK
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 160 LB. IMPACT COATING.

8. ALL BOLTS FOR HINGES AND HASP SHALL BE ZINC PLATED TAMPER PROOF.

SECTION

IRRIGATION CONTROLLER BEYOND IRRITROL SYSTEMS MODEL IBGC-8 PLUS (BATTERY POWER)
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 MS&A 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 MS&A 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 TEST COCK ON THE ASSEMBLY.

7. ELECTRO-STATIC APPLICATION OF POWDER SHALL BE FUSION BONDED EPOXY - COLOR: TAN (RAL 1014).

EXTRACTION

- **Backflow Prevention Assembly**
  - **Reduced Pressure Principle**
  - **Type K Hard Copper Pipe**
  - **Ball Valve**
  - **Copper Union Type**
  - **Copper Ell**
  - **Copper 4" Min. Clearance on All Sides**
  - **Concrete Slab on 95% Compacted Sub-Grade**

**Details**

- PVC sleeves through concrete fill with 3/8" pea gravel
- 4" thick class 'B' concrete slab

**Notes**

- PVC 5x5 SCH. 40
- Copper Female Adapter
- Extend copper pipe 12" beyond concrete thrust block
- 8/16" length as required continuous thrust blocking, Polywrapping all copper encased within concrete thrust blocking. 4" see MS&A Section 643. Concrete shall be class 'C' per MS&A Section 725.

**Dimensions**

- **Height:** 24" Min.
- **Width:** 12" Clear Min.
NOTES

1. AFTER WELDING, ENTIRE UNIT SHALL BE SANDBLASTED, AND PROCESSED WITH IRON PHOSPHATE PRETREATMENT.

2. ELECTROSTATIC APPLICATION OF POWDER SHALL BE FUSION BONDED EPOXY - MORTON PU94175 (DESERT TAN) OR APPROVED EQUAL.

3. HIGH GLOSS - SMOOTH FIELD 180 LB. IMPACT COATING.

4. ALL BOLTS FOR HINGES AND HASP SHALL BE ZINC PLATED TAMPER PROOF.

5. CONTRACTOR SHALL PROVIDE AND INSTALL PROTECTIVE CAGE, COLOR SHALL BE TAN. CLEARANCE SHALL BE A MINIMUM OF 4" (TOP & SIDES). SHOP DRAWINGS TO BE SUBMITTED TO CITY FOR APPROVAL. METAL CAGE SHALL BE LOCKABLE AND MOUNTED ON CONCRETE PAD.

STANDARD SIZES - CENTERLINE DIMENSIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS-1</td>
<td>12&quot; W x 24&quot; H x 24&quot; L</td>
<td>LIFT-OFF UNIT</td>
</tr>
<tr>
<td>GS-2</td>
<td>12&quot; W x 24&quot; H x 32&quot; L</td>
<td>LIFT-OFF UNIT</td>
</tr>
<tr>
<td>GS-3</td>
<td>12&quot; W x 24&quot; H x 42&quot; L</td>
<td>HINGED UNIT</td>
</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

REVISIONS TO SCALE
MASTER VALVE ASSEMBLY

NOTES:
1. 4" MASTER VALVE SHOWN THIS DETAIL - 1 1/2" & 2" MASTER VALVES INSTALLED ON BYPASS LINES SHALL
BE SIMILAR EXCEPT ELIMINATING BELL ADAPTOR OR RESTRAINING & 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 PV & FM ASSEMBLIES
WHERE 6" PIPE TRANSITIONS TO 6" WHERE IT SHALL GO TO 2" DEPTH FOR REMAINDER OF MAINLINE SYSTEM.
6. EMBOSSED COVER OF VALVE BOX WITH 2" STENCIL LETTERS SHOWING SIZE & "MV" USING STENCIL & STYLUS
TIP TOOL (EX: 4" MV). 7. VALVE BOX TO BE TAN COLOR WITH BOLT DOWN COVER.
8. OPTIONAL SPEED CONTROL ONLY REQUIRED ON 2" & 4" MASTER VALVE SOLENOIDS.
<table>
<thead>
<tr>
<th>Flowmeter Size</th>
<th>Minimum Upstream Distance</th>
<th>Minimum Downstream Distance</th>
</tr>
</thead>
<tbody>
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<td>10&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>1.25&quot;</td>
<td>12.5&quot;</td>
<td>6.25&quot;</td>
</tr>
<tr>
<td>1.5&quot;</td>
<td>15&quot;</td>
<td>7.5&quot;</td>
</tr>
<tr>
<td>2&quot;</td>
<td>20&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
<td>30&quot;</td>
<td>15&quot;</td>
</tr>
</tbody>
</table>

The diagram includes:
- Blue Master Valve Wire
- Black Wire Harness
- White Field Common
- Orange Flowmeter Wire
- Black Flowmeter Wire
- Waterproof Electrical Connectors (See Legend)
- CalSense Flowmeter Model FM-1B
- Minimum Upstream Distance (in proportion to flowmeter size)
- Minimum Downstream Distance (in proportion to flowmeter size)

Notes:
- 2" Rectangular Valve Box
- Tan in DS/Green in Turf
- 6" to 8" of Pea Gravel in Valve Boxes
- Sch. 80 Tee Nipple (Typical on both sides)

Legend:
- NOT TO SCALE
NOTES:
1. SIZE SWING JOINT INLET TO MATCH MAINLINE PIPE SIZE.
2. EMBOSSED VALVE BOX COVER WITH "QC" IN 2" STENCIL LETTERS USING STYLUS 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.

QUICK COUPLER VALVE ASSEMBLY
NOTES:
1. Compact soil around control valve pit assembly to same density as undisturbed adjacent soil.
2. If gate valve is over 3.0 feet deep, use MFG 39-2 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.
**MAIN SUPPLY, LATERAL AND WIRING**

WIRING SHALL BE INSTALLED BELOW MAIN LINE.

LATERAL

**NOTE**
TAPE AND BUNDLE WIRING AT 10' INTERVALS. SPICED WIRES TO BE IN 10' SPICE PIT BOXES.

I20 VOLT

**NOTES**
ALL I20 VOLT WIRING IN CONDUIT TO BE INSTALLED IN ACCORDANCE WITH LOCAL CODE.

APPROVED "ELECTRICAL POWER WIRES BELOW" WARNING TAPE SHALL BE INSTALLED 12" ABOVE ALL POWER WIRING IN TRENCHES.

CONTROL WIRING

**NOTE**
NO TRENCH TO BE CLOSER THAN 18" TO CONCRETE SIDEWALK, CURBS, ELECTRIC POLES, J-BOXES, ELECTRIC CABINETS, STREET SIGNALS, SIGNS, ETC.

**MAIN SUPPLY**

FINAL BACKFILL
6" CLEAN TOPSOIL

BACKFILL PIPE BEDDING COVER TO BE 3/8" MINUS MATERIAL TYPICAL. ALL TRENCHES, COMPACT TO 95% UNDER ALL CONCRETE AND ASPHALT AND 85% IN PLANTER AREAS.

**NOTE**
ALL MAIN SUPPLY LINES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION SPECIFICATIONS.

**NOTTO SCALE**

REV. 06/27/2016
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. Does not apply to public water mains.
**STEP 1**

- Strip wires approximately 5/8" from ends. Twist ends together.
- Slip base socket over end of wires.

**STEP 2**

- Apply dry splice sealant to outside of sealing plug. Fill cavity with sealant.
- Put crimp sleeve over wire ends. Crimp sleeve and bend over excess wire.

**STEP 3**

- Put base socket over wire end as far as possible.
- Push sealing plug into base socket.

**STEP 4**

- Push wires to end of base socket to assure complete sealing of connection.

**NOTE**

1. For wire sizes No.14, No.12, and No.10

*Spears - DS 100 wire connector or approved equal with DS 300 dry splice sealant.*
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>WATER METER</td>
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<td></td>
<td>REDUCED PRESSURE PRINCIPLE</td>
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<td>QC</td>
<td>QUICK COUPLER</td>
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<tr>
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<td>MASTER VALVE / FLOW METER</td>
<td>F/M WITH MOTOROLA OR CALSENSE ONLY</td>
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<tr>
<td></td>
<td>MASTER VALVE</td>
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<tr>
<td></td>
<td>CONTROLLER 'X'</td>
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<tr>
<td></td>
<td>ISOLATION GATE VALVE</td>
<td>FOR ALL RUBBER RING PIPE 3&quot; OR GREATER</td>
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<tr>
<td></td>
<td>BRASS ISOLATION GATE VALVE</td>
<td>FOR ALL SOLVENT WELD PIPE</td>
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<tr>
<td></td>
<td>REMOTE CONTROL VALVE - SPRINKLERS / BUBBLERS</td>
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<tr>
<td></td>
<td>REMOTE CONTROL VALVE - DRIP ASSEMBLY</td>
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<td></td>
<td>MAIN LINE - SCHEDULE 40</td>
<td>ALL FITTINGS SCHEDULE - 80</td>
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<tr>
<td>S</td>
<td>SHRUB LATERAL - CLASS 200</td>
<td>SHRUB LATERAL 3/4&quot; MIN.</td>
</tr>
<tr>
<td>T</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>
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<tr>
<td></td>
<td>Emitter</td>
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<tr>
<td></td>
<td>BUBBLER</td>
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<td>MANUAL FLUSH VALVE</td>
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<tr>
<td></td>
<td>EXISTING IRRIGATION VALVE BOX</td>
<td></td>
</tr>
</tbody>
</table>
FRICTION LOSS

PRESSURE AT SITE SOURCE VERIFIED WITH CITY

FRICTION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER

REDUCED PRESSURE VACUUM BREAKER

MAIN LINE PIPE

VALVE

LATERAL LINE PIPE

* TOTAL FRICTION LOSS

* REQUIRED PRESSURE AT HEAD

(TOTAL FRICTION LOSS) - (REQUIRED PSI AT HEAD)

* PRESSURE REQUIRED AT SOURCE

CALCULATIONS DONE BY

SIGNED

DATE

NOTES
1. IRRIGATION DESIGN CONSULTANT TO PROVIDE FRICTION LOSS CALCULATIONS FOR THE WORST CASE SCENARIO VALVE AS A DETAIL IN THE IRRIGATION DETAIL SECTION.
NOTE
1. Valve and valve box to be laid out uniformly and grouped together whenever possible.
Valve ID Tag

Waterproof Wire Connector

1" SCH 80 PVC Toe Nipple

Valve Wiring: Control & Common: 24 AWG Min. or As Noted on Plans or Specs

1" x 3/4" SCH 40 PVC Reducer Coupling

Maintain Top of Box 1" Above Granite or Turf

3/4" Drip Lateral Pipe @ 12"深度

2 1/4" x is 3/4" x is 1/4" Valve Box with Bolt Down T-Cover

Combination Pressure Regulation & Basket Filter

1" Brass Remote Control Valve

1" SCH 80 PVC Toe Nipple

1" Brass Ball Valve with Full Port & Single Union (FPTxFPT)

Spare Control Wires: Green Color

1" SCH 80 PVC Toe Nipple

1" SCH 80 PVC 90° Ell (5x5)

Valve Wires to Controller in Mainline Trench at Side of Mainline, Bundle at 10 FT Spacing

Support Brick: 1 of 4

1" SCH 80 PVC Risers Pipe

Geotextile Fabric

SCH 80 PVC Tee at Mainline Pipe Depth

Drift Remote Control Valve Assembly

Notes:
1. Pressure regulating filter shall include debris indicator & 200 mesh stainless steel screen with integrated pressure regulator.
2. Provide expansion coils at each wire connection in valve box. (Wrap around 1/2" pipe 5 times).
3. Two spare control wires (size to match common wire AWG) shall be continuous loop in & out of each control valve box until terminating at furthest valve from controller. Spare wires shall be green color.
4. Emboss cover of valve box with 2" stencil numbers noting controller station number - valve type (e.g.: 850 = station #8 - shrub valve).
5. Valve box to be tan in granite, green in turf, or purple when used for reclaimed water.
6. Install ball valve on mainline side of control valve to facilitate removal of control valve without displacing valve box and so ball valve handle moves freely without obstruction.
7. Install union on lateral side of control valve where easily accessible within valve box to facilitate removal of control valve without displacing valve box.
8. Where drip lateral sub-main pipe is used with separate combination drip filters/pressure regulators (per detail 2) as shown per plans, then omit drip filter/pressure regulator from drip control valve assembly.
DRIP FLUSH END CAP ASSEMBLY

NOTES:
1. EMBOSS 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.
<table>
<thead>
<tr>
<th>TYPE</th>
<th>TOTAL FLOW</th>
<th>SIZE</th>
<th>QUANTITY</th>
<th>FLOW PER OUTLET</th>
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<td>15 GALLON</td>
<td>1 EM</td>
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<td>8 GPH</td>
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<td>2 GPH</td>
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<td>16-24 GPH</td>
<td>56&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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<td>5 GALLON</td>
<td>1 EM</td>
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<td>LOW WATER USE SHRUBS</td>
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<td>.6 GPH</td>
<td>5 GALLON</td>
<td>1 EM</td>
<td>.6 GPH</td>
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</tr>
</tbody>
</table>

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 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 LETTERS / NUMBERS NOTING STATION NUMBER – VALVE TYPE (IE: 2" LIN = 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
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.
THIS SHEET INTENTIONALLY LEFT BLANK
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.
THIS SHEET INTENTIONALLY LEFT BLANK
NOTE
1. CONSTRUCT WALK PER MAG DETAIL 230, CITY OF MESA AMENDMENTS AND AS DETAILED ABOVE AND ON PLANS.

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).
**Turndown Schedule**

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<thead>
<tr>
<th>Turndown Area</th>
<th>'A'</th>
<th>'B'</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Play area (Top of Sand)</td>
<td>4&quot;</td>
<td>12&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td>*Play area (Engineered Wood Fiber)</td>
<td>1/2&quot;</td>
<td>7 1/2&quot;</td>
<td>8&quot;</td>
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<tr>
<td>Basketball Court</td>
<td>1/2&quot;</td>
<td>7 1/2&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>Ramada</td>
<td>1/2&quot;</td>
<td>7 1/2&quot;</td>
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</tr>
<tr>
<td>Walk</td>
<td>1/2&quot;</td>
<td>7 1/2&quot;</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

- **Expansion Joint**: See detail on this sheet.
- **Contraction Joint**: See detail on this sheet.
- **Turndowns Vary**: See Turndown Schedule below.
- **Turndowns at Play Areas**: Indicated with a double line.
- **Turndowns at Other Areas**: Indicated with a single line.
- **Finished Grade**: 5/4" radius.
- **Class B Concrete**: Unless otherwise indicated.
- **Compact Subgrade**: To 95% Min.
- **Turndown on all Sides**: Unless otherwise noted on plans.

**NOT TO SCALE**
THIS SHEET INTENTIONALLY LEFT BLANK
NOTE

1. TILE CUT AT 45° WHERE IT DAYLIGHTS
NOTE
CONTRACTOR SHALL INSTALL D.G. AS FOLLOWS:
PLACE AND ROLL DECOMPOSED GRANITE TO 2" TOTAL DEPTH OVER 95% COMPACTED SUBGRADE.
PRE-EMERGENT HERBICIDE SURFPLAN, 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 @ 6' O.C. AND EXPANSION JOINTS @ 50' MAX.
THIS SHEET INTENTIONALLY LEFT BLANK