## SPECIAL ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACIA</td>
<td>ASYNCHRONOUS COMMUNICATIONS INTERFACE ADAPTER</td>
</tr>
<tr>
<td>ADDR</td>
<td>ADDRESS</td>
</tr>
<tr>
<td>ADOT</td>
<td>ARIZONA DEPARTMENT OF TRANSPORTATION</td>
</tr>
<tr>
<td>APS</td>
<td>ARIZONA PUBLIC SERVICE</td>
</tr>
<tr>
<td>ASSY</td>
<td>ASSEMBLY</td>
</tr>
<tr>
<td>AWC</td>
<td>AMERICAN WIRE GAUGE</td>
</tr>
<tr>
<td>BKR</td>
<td>BREAKER</td>
</tr>
<tr>
<td>BNC</td>
<td>COAXIAL CONNECTOR TYPE</td>
</tr>
<tr>
<td>BOC</td>
<td>BACK OF CURB</td>
</tr>
<tr>
<td>BW</td>
<td>BARRIER WALL</td>
</tr>
<tr>
<td>CC</td>
<td>CONTROL CABLE</td>
</tr>
<tr>
<td>CCSDU</td>
<td>CCTV CONTROL SIGNAL DISTRIBUTION UNIT</td>
</tr>
<tr>
<td>CCTV</td>
<td>CLOSED CIRCUIT TELEVISION</td>
</tr>
<tr>
<td>C/L</td>
<td>CENTER LINE</td>
</tr>
<tr>
<td>COAX</td>
<td>COAXIAL CABLE</td>
</tr>
<tr>
<td>CONT.</td>
<td>CONTROL</td>
</tr>
<tr>
<td>CPU</td>
<td>CENTRAL PROCESSING UNIT</td>
</tr>
<tr>
<td>C</td>
<td>CABINET - SEVEN DIGIT IDENTIFICATION CODE</td>
</tr>
<tr>
<td>DB-25</td>
<td>25 PIN CONNECTOR</td>
</tr>
<tr>
<td>DET.</td>
<td>DETECTOR</td>
</tr>
<tr>
<td>DIA</td>
<td>DIAMETER</td>
</tr>
<tr>
<td>DLC</td>
<td>DETECTOR LOOP CABLE</td>
</tr>
<tr>
<td>DMS</td>
<td>DYNAMIC MESSAGE SIGN</td>
</tr>
<tr>
<td>EEPROM</td>
<td>ELECTRICALLY ERASABLE PROGRAMMABLE READ-ONLY MEMORY</td>
</tr>
<tr>
<td>EIA</td>
<td>ELECTRONICS INDUSTRY ASSOCIATION</td>
</tr>
<tr>
<td>EMT</td>
<td>ELECTRICAL METALLIC TUNING</td>
</tr>
<tr>
<td>EOP</td>
<td>EDGE OF PAVEMENT</td>
</tr>
<tr>
<td>EOTW</td>
<td>EDGE OF TRAVELED WAY</td>
</tr>
<tr>
<td>EPROM</td>
<td>ERASABLE PROGRAMMABLE READ ONLY MEMORY</td>
</tr>
<tr>
<td>EUSER</td>
<td>ELECTRIC UTILITY SERVICE</td>
</tr>
<tr>
<td>EXST.</td>
<td>EXISTING/EQUIPMENT REQUIREMENTS</td>
</tr>
<tr>
<td>FDM</td>
<td>FREQUENCY DIVISION MULTIPLEXOR</td>
</tr>
<tr>
<td>FMS</td>
<td>FREEWAY MANAGEMENT SYSTEM</td>
</tr>
<tr>
<td>FODC</td>
<td>FIBER OPTIC DISTRIBUTION CENTER</td>
</tr>
<tr>
<td>G,B</td>
<td>GREEN BOND</td>
</tr>
<tr>
<td>GND</td>
<td>GROUND</td>
</tr>
<tr>
<td>HDP</td>
<td>HIGH DENSITY POLY-ETHYLENE (CONDUIT)</td>
</tr>
<tr>
<td>HV</td>
<td>HIGH VOLTAGE</td>
</tr>
<tr>
<td>IDCT</td>
<td>INNERDUCT</td>
</tr>
<tr>
<td>JBX</td>
<td>JUNCTION BOX NO.</td>
</tr>
<tr>
<td>KVA</td>
<td>KILO-VOLT-AMPERES</td>
</tr>
<tr>
<td>L</td>
<td>LOAD CENTER - SEVEN DIGIT IDENTIFICATION CODE</td>
</tr>
<tr>
<td>LI</td>
<td>LOOP LEAD-IN CABLE</td>
</tr>
<tr>
<td>ML</td>
<td>MATCH LINE</td>
</tr>
<tr>
<td>MU</td>
<td>MAINTENANCE UNIT - FIVE DIGIT IDENTIFICATION CODE</td>
</tr>
<tr>
<td>N/C</td>
<td>NO CONNECTION</td>
</tr>
<tr>
<td>NC</td>
<td>NORMALLY CLOSED (RELAY CONTACT)</td>
</tr>
<tr>
<td>NEC</td>
<td>NATIONAL ELECTRICAL CODE</td>
</tr>
<tr>
<td>NEMA</td>
<td>NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION</td>
</tr>
<tr>
<td>NID</td>
<td>NETWORK INTERFACE DEVICE</td>
</tr>
<tr>
<td>NO</td>
<td>NORMALLY OPEN (RELAY CONTACT)</td>
</tr>
<tr>
<td>NTSC</td>
<td>NATIONAL TELEVISION STANDARDS COMMITTEE</td>
</tr>
<tr>
<td>N</td>
<td>PIPE NIPPLE</td>
</tr>
<tr>
<td>OD</td>
<td>OUTER DIAMETER</td>
</tr>
<tr>
<td>OTR</td>
<td>OPTICAL TRANSCEIVER</td>
</tr>
</tbody>
</table>

### SYMBOL LEGEND

- **EXISTING**
- **PROPOSED**
- **DESCRIPTION**

#### NO, 9 PULL BOX
- **NO, 9 PULL BOX**

#### NO, 7 FMS PULL BOX/24" DEEP
- **NO, 7 FMS PULL BOX/24" DEEP**

#### NO, 7 PULL BOX W/EXTENSION
- **NO, 7 PULL BOX W/EXTENSION**

#### NO, 7 PULL BOX
- **NO, 7 PULL BOX**

#### NO, 5 PULL BOX
- **NO, 5 PULL BOX**

#### CABLE OR DRAPE
- **CABLE OR DRAPE**

#### CONDUIT
- **CONDUIT**

#### CABINET CALLOUT
- **CABINET CALLOUT**

#### LOAD CENTER
- **LOAD CENTER**

#### SIGN SUPPORT STRUCTURE
- **SIGN SUPPORT STRUCTURE**

#### DYNAMIC MESSAGE SIGN (DMS)
- **DYNAMIC MESSAGE SIGN (DMS)**

#### LOOP DETECTOR (6" x 6")
- **LOOP DETECTOR (6" x 6")**

#### FLASHER ASSEMBLY
- **FLASHER ASSEMBLY**

#### RAMP METER ASSEMBLY
- **RAMP METER ASSEMBLY**

#### CCTV CAMERA
- **CCTV CAMERA**

#### NODE BUILDING
- **NODE BUILDING**

#### TRANSFORMER
- **TRANSFORMER**

---

**NOT TO SCALE**
FMS TRUNKLINE - HORIZONTAL CONFIGURATION

FMS TRUNKLINE - VERTICAL CONFIGURATION

3" HOPE (Top)
FMS Array 3-3"

Lighting - Conduit
When Noted On Plans

Drill Path

NOTES:

1. Excess Spoil Materials Shall be Removed Offsite or Placed in an Approved by Engineer Embankment by the Contractor.
2. Area Shall be Returned to Existing Grade.
3. Conduit Couplings Shall be staggered.
4. Minimum Cover to Top of Conduit is 30".
5. Trench Depth Varies Based on Potential Conflict with Utilities.
7. Roadway Lighting Conduit Shall Not Enter Any FMS Pull Boxes.
8. Reference Lighting Plans for Additional Information/Requirements for Any Pull Boxes Located Adjacent to Any FMS Pull Boxes. Lighting Conduit Shall be Installed as Required by Plans.
9. Detectable 2500* Pull Tape with #22 Gauge Conductor Shall be Installed in all Unused Conductors.
10. All Non-Powered Ductbanks Shall have a *22 AWG Tracer Wire Installed.
11. Fiber-optic cable shall not be installed in any conduit containing Inerduct, outside of an Inerduct.

* Denotes a minimum required feature.
CONDUIT TRENCH UNDER ASPHALTIC CONCRETE PAVEMENT

NOTES:

1. Excess Spill Materials Shall Be Removed Entirely or Placed in an Approved by Engineer Embankment by the Contractor.
2. Conduit Couplings Shall Be Staggered.
3. Minimum Cover to Top of Conduit is 30".
4. Trench Depth Varies Based on Potential Conflict with Utilities.
5. Conduit Shall Not Exceed 360-Degrees of Cumulative Bending Between Adjacent Pull Boxes.
7. Reference Lighting Plans for Additional Information/Requirements for Any Pull Boxes Located Adjacent to Any FWS Pull Boxes, Lighting Conduit Shall Be Installed as Required by Plans.
8. Detectable 2500# Pull Tape with #22 Gauge Conductor Shall Be Installed in all Unused Conduits.
9. All Non-Powered Outboards Shall have a #2 AWG Tracer Wire Installed.
10. Repair with Class P PCPP.

CONDUIT TRENCH UNDER PCPP

Fiber-optic cable shall not be installed in any conduit containing innerduct, outside of an innerduct.

NOT TO SCALE
NOTES:
1. Conduit Deflection for Conduit Containing Fiber Optic Cable Shall Not Exceed 1" Per Foot in any Direction.
2. Conduit Shall be Routed No Closer Than 2" to Any Obstruction.
3. Core Drilling Through an Obstruction May be Used as an Alternative Method. When Approved by Engineer.
4. Backfill Under Footer Shall be Cement Slurry (6500 psi)

TYPICAL HORIZONTAL ROUTING OF CONDUIT AROUND AN OBSTRUCTION

TYPICAL VERTICAL ROUTING OF CONDUIT UNDER AN OBSTRUCTION

NOTES:
1. When Drilling Under Roadways, Backfill Shall be Bentonite Slurry or other Approved Materials.
2. HOPE Conduit Installation Shall Meet All of the Dimensional Requirements Shown in this Detail.
3. Lateral Offset to Unprotected Drill PH Shall Comply With Std. Dwg. FM-327 "CLEAR ZONE, UNPROTECTED EQUIPMENT".

TYPICAL CONDUIT DIRECTIONAL DRILL PATH

DETAIL A
NOTES:

1. See Plans for Size and Number of Conduits, and Contents at Each DMS Sign Location.

2. Contractor Shall Modify Base Plate to Have an 8" Minimum Diameter Hole Centered in the Base Plate for Electrical Conduits.


---

FOUNDATIONS FOR TUBULAR SIGN STRUCTURE

---

CONDUIT INSTALLATION
RMC TO PVC CONDUIT CONNECTION

---

THROUGH-WALL CONDUIT INSTALLATION

---

NOTES:

1. Core or Sleeve Hole Shall be Waterproofed With Mortar & Rubber Sealant or Other Approved Sealant, as Shown Above.
ONE-HOLE STRAP (SINGLE CONDUIT) 
ALONG CONCRETE BOX SEGMENT

ONE-HOLE STRAP (MULTIPLE CONDUITS) 
ALONG CONCRETE BOX SEGMENT

TWO-HOLE STRAP ALONG CONCRETE BOX SEGMENT

ONE-HOLE STRAP ALONG RUSTICATED WALL

WEDGE ANCHORS 
ON VERTICAL WALL MOUNT

NOTE:
1. Maximum Strap Spacing of 10". Place Strap 36" min. from any conduit fitting, coupling or box.
2. See Plans for Conduit Sizes.
EXPANSION COUPLING DETAIL

ANCHOR
1/2" x 3/4" BOLT

Conduits Per Plan

45° BEND FITTING

1. Expansion Couplings Shall be Installed at all Bridge Expansion Joints.
2. Expansion Couplings Shall be Installed on Conduit Runs Greater Than 100' at a Maximum Spacing of 100', with a Minimum of one Per Run Per Conduit.
3. Expansion Couplings Shall not be Installed Underground in Dirt.

NOT TO SCALE
NOTES:

1. Only one end of structure shown; details apply to both ends.

2. Minor deviations from design detail may be required for placement of conduit in order to provide proper clearance of conduit from anchor slab and diaphragm or abutment reinforcing steel.

3. Expansion joint shall allow for 6' (min) movement per 100' length of structure.

4. Conduit placement at support assembly shall allow for flex and free movement.
NOTES:
1. Conduit Type is as Noted.
2. Only One End of Structure Shown. Details Apply to Both Ends.
3. Minor Deviations From Design Detail May be Required for Placement of Conduit In Order to Provide Proper Clearance of Conduit From Anchor Slab and Diaphragm or Abutment Reinforcing Steel.
4. AASHTO Girders is Illustrated. Details Apply to Steel Girder Structure Also.
5. Structures In Excess of 1,000' Will Require In-Line Pull Boxes as Noted on the Plans.
6. Expansion Joint Shall Allow for 6" (150mm) Movement per 100' Length of Structure.
7. Conduit Placement at Hanger Assembly Shall Allow for Flex and Free Movement.
FMS No. 9 Pull Box

Conduit for Fiber

Spare

FMS Power

Trunkline

Roadway Lighting (When Co-located with Trunkline)

New Conduit Per Plan

Lighting Pull Box, "ADOT LIGHTING - HIGH VOLTAGE"

Adjacent to FMS No. 9 Pull Box

FMS Pull Box

Conduit for Fiber

Spare

FMS Power

Trunkline

Roadway Lighting (When Co-located with Trunkline)

New Conduit Per Plan

Lighting Pull Box, "ADOT LIGHTING - HIGH VOLTAGE"

Adjacent to FMS Pull Box

ADOT To City Connection

NOTE

1. Lighting Pull Box is intended to be shown on the same side of the Trunkline as the Roadway Lighting.

NOT TO SCALE
NOTES:

1. When a Transformer is not Used in Conjunction with a Control Cabinet, the Power Conduit Shall be Stubbed Up into the Control Cabinet Foundation.

2. See Plans for Conduit Layout.

3. The 1" Ground Rod Stubout Shall be Field Located.
NOTES:
1. Backfill with designated size No. 57 aggregate, conforming to the requirements of AASHTO M 85. Below pull box, backfill around sides of pull box with select excavated materials shall be compacted at least 95% of the maximum density as determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

2. Conduit from the typical trench section shall not deflect by more than 1 inch per foot from the alignment preceding or following the pull box.

3. Top of conduits shall be located at 30" (Min) below existing ground. Conduits at pull boxes shall deflect no more than 1 inch per foot to enter pull box. Conduits shall be flush with inside of pull box.

4. The No. 9 pull box shall measure 45" x 23" for all interior dimensions of the pull box, measured at top of pull box. This measurement shall also apply to interior depth.

5. Numbers in circles refer to items in material list.

6. Pulling horns near bottom of pull box.

7. All new pull boxes shall be furnished with racks and hooks installed.

8. Provide total slack per plan for each fiber optic cable installed in all No. 9 pull boxes, with splice enclosure centered on slack. Slack on branch fiber shall match or exceed slack on trunkline fiber.

9. Plug each conduit end with approved, waterproof duct plug.

10. Pull box and lid shall be rated for H50-44 loading.

11. All power and communication cables shall be tagged with cable identification.

12. ADOT FMS shall be the title embossed on the lid.

13. Pull box height above finished grade shall permit 2 inches of decomposed granite to be used to match existing grade/finish.

14. Locking lip W/Seal between cover and cover assembly.

PULL BOX NO. 9
WIRING DETAILS

1 1/8" x 1/2" Wide "C" channel embedded in each side wall, 4 total. Maintain 6" from finished floor.

1 1/2" x 3/8" Wide "C" channel embedded in each side wall. 4 total. Maintain 6" from finished floor.

3" Term-A-duct (or approved equal) 12 per side, 48 total

3" Dia. (Typ) 12 per side, 48 total

3/16" Min. (Typ)

ISOMETRIC VIEW

45" x 23" Depth

Galvanized "C" Channel Embedded in each wall, 4 total.

Limit of Excavation No. 4 Sides See Note 1

CONDUIT PLACEMENT AND COILING DETAIL
SIDE VIEW

MATERIAL LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Warning Tape</td>
</tr>
<tr>
<td>02</td>
<td>No. 1 Pull Box</td>
</tr>
<tr>
<td>03</td>
<td>Designated Size No. 57 Aggregate</td>
</tr>
<tr>
<td>04</td>
<td>Ground Rod</td>
</tr>
<tr>
<td>05</td>
<td>Flexible pull tape 1500</td>
</tr>
<tr>
<td>06</td>
<td>#8 AWG Ground wire to lid</td>
</tr>
<tr>
<td>07</td>
<td>Conduit per fiber</td>
</tr>
</tbody>
</table>

RACKING PACKAGE

4 - 18 Hole C-Channel Rack

8 - 3/4" Spring Nuts and Bolts

8 - 7/8" Hooks

INSTALLATION IN SLOPED AREAS

POWER SPARE SWCD
STEP 1
Tag Cables and Place Cable Straps to Secure Cables.

STEP 2
Fiber Branch to Enter Splice Closure, Cables are to be Cut to the Same Length and Spliced. Closure Shall be Watertight and Encapsulated Using Re-enterable Seals.

STEP 3
Fiber Optic Pigtails to Cabinet

PLAN VIEW
CABINET DOWNSTREAM OR PERPENDICULAR TO PULLBOX

LEGEND:
- Branch Cable
- Exiting Trunkline Cable
- Entering Trunkline Cable

SECTION A-A
- POWER SPARE SMFO

SECTION B-B
- POWER SPARE SMFO
NOTES:
1. Cover Opens to 180 Degree Position.
2. Exclude All Provisions for 90-Degree Open Position.
3. Easily Opened and Closed By One Person, Maximum Force Required To Open/Close = 30 Lbs.
4. Torsion Assist with Spring Mechanism, No Hydraulic System.
5. Locking Hardware Required.
6. 4" Welded Lettering on Lid to Read "ADOT FMS".
7. Load Rated for HS 20-44.
9. Grounding Lug to be Attached on Frame for Cover Grounding Per NEC.

PLAN VIEW WITH COVER

END VIEW OF FRAME

COVER AND FRAME ASSEMBLY

END VIEW OF FRAME

PLAN VIEW OF FRAME

Frame Anchors Embedded Into Pull Box Lid

Torsion Bar Assisted Hinged Cover

4" Lettering

Recessed Lifting Handle

Padlock Cover Plate 4" x 6"

ADOT FMS

Lock Down Bolt

ARIZONA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS
#S STANDARD DRAWINGS

ON FILE

No. 9 PULL BOX
TORSION ASSIST COVER

SIGNATURE

FM-2.05

NOT TO SCALE
NOTES:
1. Backfill with designated size No. 57 Aggregate to bottom of the Pull Box. Backfill around Sides of the Pull Box with select excavated material and thoroughly compact. Set Pull Box 2 inches above finished grade to allow for 2 inches of decomposed granite to be used to match slope.

2. Pull Box lids shall be rated HS-20.

3. Conduit from the typical trench section shall not deflect by more than 1 inch per foot from the alignment preceding or following the Pull Box.

4. Lateral conduit as required.

5. Conduit C/L shall be allowed to minimize bending during cable pulling.

6. All Power and Communications Cable shall be tagged with cable identification.

7. Numbers in circles refer to items in Material List.

8. "ADOT FMS" shall be the title embossed on the lid in Urban Projects and "ADOT ELECTRICAL HIGH VOLTAGE" on Rural Projects.

9. Use PVC to extend into Pull Box.

10. Use felt paper to block opening between conduits and around base to prevent backfill material from entering Box.

11. Single Mode Fiber Optic Cable conduit shall sweep into No. 7 Pull Boxes with exceptions to provide a conduit path for Loop Loop-Laid-In Cable from Loop Detector Locations to Controller Cabinet Locations that are not immediately adjacent to the Loop Detector Location.

MATERIAL LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Warning Tape</td>
</tr>
<tr>
<td>2</td>
<td>Concrete Building Block 2&quot; x 4&quot; x 8&quot;</td>
</tr>
<tr>
<td>3</td>
<td>No. 7 Pull Box 24' Deep</td>
</tr>
<tr>
<td>4</td>
<td>Aggregate Size No. 57</td>
</tr>
<tr>
<td>5</td>
<td>SMFO Trenching Cable</td>
</tr>
<tr>
<td>6</td>
<td>Electrical Power Cables - See Note 6</td>
</tr>
<tr>
<td>7</td>
<td>3&quot; DIA Schedule 40 PVC Conduit</td>
</tr>
<tr>
<td>8</td>
<td>90 Degree Elbow, 18&quot; Radius</td>
</tr>
<tr>
<td>9</td>
<td>PVC Coupling</td>
</tr>
<tr>
<td>10</td>
<td>45 Degree PVC Elbow, 18&quot; Radius</td>
</tr>
<tr>
<td>11</td>
<td>Bell End for PVC - See Note 9</td>
</tr>
<tr>
<td>12</td>
<td>30 Lb. Felt Paper</td>
</tr>
</tbody>
</table>
NOTES:
1. Backfill with designated size No. 57 aggregate to bottom of the Pull Box. Backfill around sides of the Pull Box with Select Excavated Material and Thoroughly Compacted. Allow for 2 inches of decomposed granite to be used to match slope.
2. Pull box lid shall be rated HS 20.
3. Conduit from the typical trench section shall not deflect by more than 1 inch per foot from the alignment preceding or following the Pull Box.
4. Lateral Conduits as Required.
5. Conduit C/L shall be aligned to minimize bending during cable pulling.
6. All power and communications Cable shall be tagged with cable identification.
7. Numbers in circles refer to items in material list.
8. "AOKS" shall be the title embossed on the lid in urban projects and "AOK ELECTRICAL HIGH VOLTAGE" on rural projects.
9. Use PVC to extend into Pull Box.
10. Use felt Paper to block opening between Conducts and prevent backfill materials from entering Pull Box.
11. Pull box height 6" - 12" below finished grade. Decomposed granite to be used to match existing.
12. Existing Pull Box configurations may vary, locations where No. 7 pull boxes are being replaced shall be installed as shown on this sheet unless directed otherwise by the project plans.
13. Place felt paper covering entire pull box before covering with fill.
14. Contractor shall note pull box location by GPS coordinates unless instructed otherwise in the plans.

MATERIAL LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Warning Tape</td>
</tr>
<tr>
<td>2</td>
<td>Concrete Building Block 2&quot; x 4&quot; x 8&quot;</td>
</tr>
<tr>
<td>3</td>
<td>No. 7 Pull Box 24&quot; Deep</td>
</tr>
<tr>
<td>4</td>
<td>Aggregate designated size # 57</td>
</tr>
<tr>
<td>5</td>
<td>SMFD trunkline cable</td>
</tr>
<tr>
<td>6</td>
<td>3&quot; dia. Schedule 40 PVC or HDPE conduits</td>
</tr>
<tr>
<td>7</td>
<td>30 Degree Elbow, 18&quot; Radius</td>
</tr>
<tr>
<td>8</td>
<td>PVC Coupling</td>
</tr>
<tr>
<td>9</td>
<td>Select excavated backfill</td>
</tr>
<tr>
<td>10</td>
<td>45 Degree Elbow, 18&quot; Radius</td>
</tr>
<tr>
<td>11</td>
<td>Bell End for PVC - See Note 9</td>
</tr>
<tr>
<td>12</td>
<td>30 lb. felt Paper</td>
</tr>
</tbody>
</table>

INSTALLATION FOR NO. 7 PULL BOX WITH THREE CONDUITS SWEEPING INTO PULL BOX

INSTALLATION FOR NO. 7 PULL BOX WITH ONE CONDUIT SWEEPING INTO PULL BOX

NOT TO SCALE
NOTES:

1. Backfill with Designated Size No. 57 Aggregate, Conforming to the Requirement of AASHTO M 43, Below Pull Box. Backfill Around Sides of Pull Box With Select Excavated Materials shall be Compacted at Least 95% of the Maximum Density as Determined In Accordance with the Requirements of the Applicable Test Methods of the ADOT Materials Testing Manual, as Directed and Approved by the Engineer.

2. Conduit From the Typical Trench Section Shall Not Deflect by More Than 1 Inch Per Foot From the Alignment Preceding or Following the Pull Box.

3. The Contractor Shall Pour the Floor with Drain, After the 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 Slack Per Plan for Each Fiber Optic Cable Colled in All No. 1 Pull Boxes, With Solid Enclosure Centered on Slack, Slack on Branch Fiber Shall Match or Exceed Slack on Trunkline Fiber.

7. Plug Each Conduit End With Approved, Waterproof Duct Plug.

8. Pull Box and Lids Shall Be Rated for H520-44 Loading.

9. All Power and Communication Cables Shall Be Tagged With Cable Identification.

10. Pull Box Height Above Finished Grade Shall Permit 2 Inches of Decomposed Granite to Be Used to Match Existing Grade/Slope.

11. Locking Lid W/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.

MATERIAL LIST

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Warning Tape</td>
</tr>
<tr>
<td>02</td>
<td>No. 9 Pull Box</td>
</tr>
<tr>
<td>03</td>
<td>Designated Size No. 57 Aggregate</td>
</tr>
<tr>
<td>04</td>
<td>Ground Rod</td>
</tr>
<tr>
<td>05</td>
<td>Detectable Pull Tape *2500</td>
</tr>
<tr>
<td>06</td>
<td>5 AWG Grounding Wire to Lid</td>
</tr>
<tr>
<td>07</td>
<td>Conduit Per Plans</td>
</tr>
<tr>
<td>08</td>
<td>Rack and Hooks Each Wall Ty</td>
</tr>
</tbody>
</table>
NOTES:

1. Except where otherwise noted, all dimensions shall have a ±0.0625" tolerance.
2. Ventilation Louvers with Filter/Shell Assembly shall be provided on rear door of cabinet.
3. Hinges for the rear cabinet door shall be located on the left side when facing the rear of the cabinet.
4. See Plan Sheets for Seven Digit Cabinet Numbers. Numbers shall be placed in such a manner that entire seven digit cabinet number is centered horizontally on the cabinets front door. See FM-3.13.
5. For future use.
6. Cabinets shall be to Earth ground per the NEC.
7. Caulking is required along interior bottom edges of cabinet.
Lifting Eye Plates (2 Required)
6.5" x 2.5" x 3/4" 1075-T6 Aluminum
1/4" O.D. Hole 3/8" x 1.5" SAE
Stainless Steel Bolts and Nuts
14 Required, Invert Eye Plates
After Installation.

Exhaust Area
(Typ. Both Sides)

CABINET TOP DETAIL

CAGE ASSEMBLY DETAIL

Cage Support Slot (Typ.)

Support Shelf Brackets
Shall be Located Directly
Below Drawer Unit.

NOTES:
1. The Bottom Cabinet Cage Supports Shall be
Continuously Welded Along the Sides Of The
Cabinet and Extended to the Inside Corner of
Door Openings. The Top Cabinet Cage
Supports Shall be Continuously Welded Along
The Sides of the Cabinet.

2. Cage Support Hole Slot Dimensions Shall be
Common for Top and Bottom.
NOTES:

1. The Panels Shall be Fabricated From Single Sheets of 0.125" Thick Aluminum. The Aluminum Shall be Bent to Form the Flaps as Shown on the Drawing.

2. Terminal Numbers and Labels Shall be Silk Screened on Panels.

3. The Panels Shall Not Be Painted.

4. The Panels Shall be Free of Burrs and Sharp Edges.

5. Spacers Shall be Used Between Cage and Side Panels.

LEFT SIDE PANEL

TYPICAL
HOLE SLOT DETAIL

SIDE VIEW SECTION

PLAN VIEW

FRONT VIEW

CUT OUT AREAS

SHLF

0.25" (Typ.)

0.25" R

0.020" E

0.020" E

0.050" (Typ.)

0.050" (Typ.)

NOT TO SCALE

FM-3.03

RAMP METER

CABINET SPECIAL DETAILS

ON FILE

SIGNATURE

ARIZONA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS
JTS STANDARD DRAWINGS

8/13
### Switch Pack 1

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC+</td>
<td>T2-4</td>
<td>T2-4</td>
</tr>
<tr>
<td>2</td>
<td>EQUIP. GROUND</td>
<td>T2-1</td>
<td>T2-1</td>
</tr>
<tr>
<td>3</td>
<td>LEFT LANE RED OUTPUT</td>
<td>T4-1</td>
<td>T4-1</td>
</tr>
<tr>
<td>4</td>
<td>NA</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>BEACON OUTPUT</td>
<td>FL-11, T4-12</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>LEFT LANE INPUT</td>
<td>C7-1</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>LEFT LANE GREEN OUTPUT</td>
<td>T4-2</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>BEACON INPUT</td>
<td>C7-5</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>+24 VDC</td>
<td>PSS-7, T3-12, 9</td>
<td>+24 VDC</td>
</tr>
<tr>
<td>10</td>
<td>LEFT LANE INPUT</td>
<td>C7-2</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>NA</td>
<td>11</td>
<td>NA</td>
</tr>
<tr>
<td>12</td>
<td>NA</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Switch Pack 2

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC+</td>
<td>T2-4</td>
<td>T2-4</td>
</tr>
<tr>
<td>2</td>
<td>EQUIP. GROUND</td>
<td>T2-1</td>
<td>T2-1</td>
</tr>
<tr>
<td>3</td>
<td>LEFT LANE RED OUTPUT</td>
<td>T4-1</td>
<td>T4-1</td>
</tr>
<tr>
<td>4</td>
<td>NA</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>BEACON OUTPUT</td>
<td>FL-11, T4-12</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>LEFT LANE INPUT</td>
<td>C7-1</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>LEFT LANE GREEN OUTPUT</td>
<td>T4-2</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>BEACON INPUT</td>
<td>C7-5</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>+24 VDC</td>
<td>PSS-7, T3-12, 9</td>
<td>+24 VDC</td>
</tr>
<tr>
<td>10</td>
<td>LEFT LANE INPUT</td>
<td>C7-2</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>AC+</td>
<td>T2-2</td>
<td>T2-2</td>
</tr>
<tr>
<td>12</td>
<td>NA</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Switch Pack 3

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC+</td>
<td>T2-4</td>
<td>T2-4</td>
</tr>
<tr>
<td>2</td>
<td>EQUIP. GROUND</td>
<td>T2-1</td>
<td>T2-1</td>
</tr>
<tr>
<td>3</td>
<td>GATE DOWN INPUT</td>
<td>T4-8</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>NA</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>SIGNAL OUTPUT</td>
<td>T4-6</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>GATE DOWN INPUT</td>
<td>C7-8</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>GATE UP INPUT</td>
<td>T4-7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>SIGNAL INPUT</td>
<td>C7-6</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>+24 VDC</td>
<td>PSS-7, T3-12, 9</td>
<td>+24 VDC</td>
</tr>
<tr>
<td>10</td>
<td>GATE UP INPUT</td>
<td>C7-7</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>AC-</td>
<td>T2-2</td>
<td>T2-2</td>
</tr>
<tr>
<td>12</td>
<td>NA</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Switch Pack 4

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC+</td>
<td>T2-4</td>
<td>T2-4</td>
</tr>
<tr>
<td>2</td>
<td>EQUIP. GROUND</td>
<td>T2-1</td>
<td>T2-1</td>
</tr>
<tr>
<td>3</td>
<td>GATE DOWN INPUT</td>
<td>T4-8</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>NA</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>SIGNAL OUTPUT</td>
<td>T4-6</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>GATE DOWN INPUT</td>
<td>C7-8</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>GATE UP INPUT</td>
<td>T4-7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>SIGNAL INPUT</td>
<td>C7-6</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>+24 VDC</td>
<td>PSS-7, T3-12, 9</td>
<td>+24 VDC</td>
</tr>
<tr>
<td>10</td>
<td>GATE UP INPUT</td>
<td>C7-7</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>AC+</td>
<td>T2-2</td>
<td>T2-2</td>
</tr>
<tr>
<td>12</td>
<td>NA</td>
<td>12</td>
<td>NA</td>
</tr>
</tbody>
</table>

---

**PDA4 Terminal Block T2**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EQUIPMENT GROUND</td>
<td>MODEL 204</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>SWPK-1</td>
<td>CIRCUIT 1 OUT</td>
<td>SWPK-1 3</td>
</tr>
<tr>
<td>3</td>
<td>SWPK-1</td>
<td>2</td>
<td>SWPK-1 3</td>
</tr>
<tr>
<td>4</td>
<td>SWPK-2</td>
<td>4</td>
<td>SWPK-2 7</td>
</tr>
<tr>
<td>5</td>
<td>SWPK-3</td>
<td>2</td>
<td>SWPK-3 5</td>
</tr>
<tr>
<td>6</td>
<td>SWPK-4</td>
<td>2</td>
<td>SWPK-4 5</td>
</tr>
<tr>
<td>7</td>
<td>REC 1</td>
<td>3</td>
<td>REC 1 7</td>
</tr>
<tr>
<td>8</td>
<td>REC 2</td>
<td>3</td>
<td>REC 2 7</td>
</tr>
<tr>
<td>9</td>
<td>REC 3A</td>
<td>3</td>
<td>REC 3A 7</td>
</tr>
<tr>
<td>10</td>
<td>REC 3B</td>
<td>3</td>
<td>REC 3B 7</td>
</tr>
</tbody>
</table>

**PDA4 Terminal Block T4**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC-</td>
<td>MODEL 204</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>BEACON POWER</td>
<td>MODEL 204</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>AC+ SOURCE</td>
<td>CB-1</td>
<td>CB-1 13</td>
</tr>
<tr>
<td>4</td>
<td>AC+ CONTROLLED</td>
<td>SWPK-1</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>(NOT USED)</td>
<td>SWPK-2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>SIGNAL POWER</td>
<td>MODEL 208</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>(NOT USED)</td>
<td>SWPK-3</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>AC-</td>
<td>MODEL 208</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>AC+ FILTERED</td>
<td>CB-1</td>
<td>CB-1 1</td>
</tr>
<tr>
<td>10</td>
<td>AC- FILTERED</td>
<td>REC 3A</td>
<td>REC 3A 2</td>
</tr>
</tbody>
</table>

---

**Flasher Unit (FU) Socket Wiring Detail for Type Ramp Meter Cabinets Only**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Connect To Pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>LOAD CIRCUIT #1- BEACON OUTPUT</td>
<td>T4-5</td>
</tr>
<tr>
<td>8</td>
<td>LOAD CIRCUIT #2</td>
<td>NOT USED</td>
</tr>
<tr>
<td>9</td>
<td>EQUIPMENT GROUND</td>
<td>T2-1</td>
</tr>
<tr>
<td>10</td>
<td>AC-</td>
<td>T2-2</td>
</tr>
<tr>
<td>11</td>
<td>AC+</td>
<td>SWPK-1 PIN 5</td>
</tr>
</tbody>
</table>

---

**NOT TO SCALE**
NOTES:
1. The Panel shall be fabricated from a single sheet of 0.125" thick aluminum.
   The aluminum shall be bent to form the panels as shown on the drawing.
2. Terminal block and neutral bus mountings shall be via screws threaded into holes in the aluminum panel. Screws shall not protrude beyond back face of panel. The AC neutral bus shall be electrically isolated from the field panel.
3. All terminal blocks shall have 1/2" terminal spacing as shown.
4. Terminal numbers and labels shall be sketched on panels.
5. The panel shall not be painted. Furnish and install crimped stainless steel lugs on all conductors. Each conductor end shall have its own spade lug.
6. The panel shall be free of burrs and sharp edges.
7. The panel shall be attached by bolting the side panels (as shown on drawing) to the side panels on cage.
8. An approved surge protector shall be furnished and installed as part of each detector loop connected in the cabinet.
9. When adjacent terminals must be connected together, prefabricated shorting strips may be used in lieu of wire jumpers. Surge protectors may use individual leads with spade lugs attached in the same manner for attaching lugs to loop lead-in wires.
10. All AC neutral circuits in cabinet shall be connected to the cabinet AC neutral bus. The same neutral bus shall be connected to PDA4 T2-2.
11. The surge protector ground and the main circuit breaker box equipment ground stud shall be connected to the cabinet ground via a single bare #6 AWG soft drawn solid copper wire from the equipment ground bus. Cabinet shall be connected to earth ground per NEC.
12. Appropriately sized locking star washers shall be used on all terminals.
NOTES:
1. Signal Power Interrupt Relay to be D5 Relay with 120 VAC Coil and Contacts for 120 Vac, 10 Amperes, Socket to be D5PAI.
2. Relay Contacts Shown with Coil De-Energized.
<table>
<thead>
<tr>
<th>RELATION TO CONTROLLER</th>
<th>FUNCTION</th>
<th>CI CONNECTOR PIN</th>
<th>CI HARNESS BRANCH</th>
<th>OTHER END CONNECTOR</th>
<th>OTHER END CONNECTOR PIN</th>
<th>OTHER END DEVICE</th>
<th>OTHER END DEVICE TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRND</td>
<td>DC GROUND BUS</td>
<td>I</td>
<td>D</td>
<td>---</td>
<td>---</td>
<td>CABINET</td>
<td>DC GROUND BUS</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>LEFT LANE RED CONTROL</td>
<td>2</td>
<td>A</td>
<td>C7</td>
<td>1</td>
<td>PDA SW MK</td>
<td>6</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>LEFT LANE GREEN CONTROL</td>
<td>3</td>
<td>A</td>
<td>C4</td>
<td>3</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>RIGHT LANE RED CONTROL</td>
<td>9</td>
<td>A</td>
<td>C7</td>
<td>2</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>RIGHT LANE GREEN CONTROL</td>
<td>6</td>
<td>A</td>
<td>C7</td>
<td>2</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>SIGNAL CONTROL</td>
<td>7</td>
<td>A</td>
<td>C7</td>
<td>7</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>GATE UP CONTROL</td>
<td>8</td>
<td>A</td>
<td>C7</td>
<td>8</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>GATE DOWN CONTROL</td>
<td>9</td>
<td>A</td>
<td>C7</td>
<td>9</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>SPECIAL FUNCTION 1 CONTROL</td>
<td>10</td>
<td>A</td>
<td>C7</td>
<td>10</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>SPECIAL FUNCTION 2 CONTROL</td>
<td>12</td>
<td>A</td>
<td>C7</td>
<td>11</td>
<td>PDA SW MK</td>
<td>10</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>OUT TO WATCH DOG TIMER</td>
<td>12</td>
<td>A</td>
<td>C7</td>
<td>11</td>
<td>PDA, MODEL 208</td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATION TO CONTROLLER</th>
<th>FUNCTION</th>
<th>CI CONNECTOR PIN</th>
<th>CI HARNESS BRANCH</th>
<th>OTHER END CONNECTOR</th>
<th>OTHER END CONNECTOR PIN</th>
<th>OTHER END DEVICE</th>
<th>OTHER END DEVICE TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRND</td>
<td>DC GROUND BUS, INPUT FILE I</td>
<td>14</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-4</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>COUNT DETECTOR RESET (INPUT FILE I)</td>
<td>20</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-3</td>
</tr>
<tr>
<td>OUTPUT</td>
<td>METER DETECTOR RESET (INPUT FILE J)</td>
<td>21</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATION TO CONTROLLER</th>
<th>FUNCTION</th>
<th>CI CONNECTOR PIN</th>
<th>CI HARNESS BRANCH</th>
<th>OTHER END CONNECTOR</th>
<th>OTHER END CONNECTOR PIN</th>
<th>OTHER END DEVICE</th>
<th>OTHER END DEVICE TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT</td>
<td>LANE UPSTREAM DETECTOR</td>
<td>40</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>LANE DOWNSTREAM DETECTOR</td>
<td>31</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 1 UPSTREAM DETECTOR</td>
<td>31</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 2 UPSTREAM DETECTOR</td>
<td>32</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 3 UPSTREAM DETECTOR</td>
<td>33</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 4 UPSTREAM DETECTOR</td>
<td>34</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 5 UPSTREAM DETECTOR</td>
<td>35</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 6 UPSTREAM DETECTOR</td>
<td>36</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 7 UPSTREAM DETECTOR</td>
<td>37</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 8 UPSTREAM DETECTOR</td>
<td>38</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 9 UPSTREAM DETECTOR</td>
<td>39</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>CAN 10 UPSTREAM DETECTOR</td>
<td>40</td>
<td>B</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE I</td>
<td>TB15-2</td>
</tr>
<tr>
<td>INPUT</td>
<td>LANE INPUT DETECTOR</td>
<td>56</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>LANE OUTPUT DETECTOR</td>
<td>57</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>LANE IN INPUT DETECTOR</td>
<td>58</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>LANE IN OUTPUT DETECTOR</td>
<td>59</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>B Right Lane IN</td>
<td>61</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>B Right Lane OUT</td>
<td>62</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>B Special Function 1 IN</td>
<td>63</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
<tr>
<td>INPUT</td>
<td>B Special Function 2 IN</td>
<td>64</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RELATION TO CONTROLLER</th>
<th>FUNCTION</th>
<th>CI CONNECTOR PIN</th>
<th>CI HARNESS BRANCH</th>
<th>OTHER END CONNECTOR</th>
<th>OTHER END CONNECTOR PIN</th>
<th>OTHER END DEVICE</th>
<th>OTHER END DEVICE TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRND</td>
<td>DC GROUND BUS</td>
<td>92</td>
<td>D</td>
<td>---</td>
<td>---</td>
<td>CABINET</td>
<td>DC GROUND BUS</td>
</tr>
<tr>
<td>GRND</td>
<td>DC GROUND, INPUT FILE J</td>
<td>104</td>
<td>C</td>
<td>---</td>
<td>---</td>
<td>INPUT FILE J</td>
<td>TB15-4</td>
</tr>
</tbody>
</table>
NOTES:
1. The Bottom Cabinet Cage Supports Shall be Continuously Welded Along the Sides of the Cabinet and Extended to the Inside Corner of Door Openings. The Top Cabinet Cage Supports Shall be Continuously Welded Along the Sides of the Cabinet. The Top Cabinet Cage Supports Shall be a Minimum of 21.75" Apart.

2. The 16" Dimension Side of the Mounting Cage Shall be Bolted to the Cabinet Cage Supports.

3. Except Where Otherwise Specifically Noted, all Dimensions Shall Have a 0.0625" Tolerance.


5. See Plan Sheets for Seven-Digit Cabinet Identification Code. Numbers shall be Placed in such a manner that the entire Seven-Digit Cabinet Identification Code is Centered Horizontally on the Side of the Cabinet Facing Traffic.

6. See Sheet FM-7.01 for Mounting Details.

7. Fiber Branch Cable Shall be Secured to Rack.
**CABINET NUMBER NOTES:**

1. See Plan Sheets for Seven-Digit Cabinet Identification Code. Numbers shall be placed in such a manner that entire seven-digit identification code is centered horizontally on the side of the cabinet facing traffic.

2. Cabinet Identification Code:

   A B C

   A. The first digit represents the assigned route number. Routes are numbered, as follows:
   1 - Interstate 10
   2 - Interstate 17
   3 - US Route 60
   4 - SR 143
   5 - SR 51
   6 - Loop 202
   7 - Loop 101
   8 - Interstate 19
   9 - Loop 303
   0 - Other

   B. The second digit represents the direction of the mile post with respect to the direction of travel, as follows:
   0 - Mile post numbering decreases with the direction of travel
   1 - Mile post numbering increases with the direction of travel

   C. The last five digits represent the mile post recorded to the nearest hundredth. (The last two digits represent tenths & hundredths).

3. Submit numbering detail to the engineer with supporting documentation for approval 10 working days prior to numbering.

**MAINTENANCE UNIT (MU) NUMBER NOTES:**

1. MU will be assigned by ADOT.

2. MU shall be visible facing the roadway.
NOTES:
1. 20 Amp 2-Pole Circuit Breaker (480V) in NEMA 3 Enclosure with External Operating Handle (Lockable). Enclosure to be Mounted to Side of Cabinet.
2. Use Grout or Mastic to Seal Gap Between Cabinet and Foundation.
3. For Number and Size of Conductors Between Transformer Cabinet and Control Cabinet, See Plan Sheets.
4. See Sheet FM-3.23 for Transformer Cabinet Foundation Details.
5. The Danger High Voltage Sign Shall be Made of Reflective Vinyl with Pressure-Sensitive Adhesive Backing.
9. Conduit Enter(s) and Exit(s) Circuit Breaker Enclosure from Back of Transformer Cabinet.

NOT TO SCALE
TRANSFORMER CABINET
EXTERNAL POWER DISCONNECT

08/15
TRANSFORMER CABINET
FM-3.14

ARMED FORCES
Arizona Department of Transportation
Transportation Systems Management and Operations
JTS STANDARD DRAWINGS

SIGNATURE
ON FILE
NOTES:
1. Install Rubber Grommets in Knockouts.
3. Transformer Shall be Single-Phase.
4. The Transformer Case Shall be Grounded to Equipment Through Mounting Screws.
5. Dimensions are Typical

LEGEND:
H = Hot Lead
B = Bond Wire
E = Equipment Ground
N = AC Neutral

NOT TO SCALE
DETAIL A
TYPICAL 10 KVA DRY TYPE TRANSFORMER

3/8" Sm. DIA. X 3/4" LG. DIA.
For 3/8" Min. Hardware

FRONT
SIDE
BACK

NOTES:
1. Install Rubber Grommets in Knockouts.
3. Transformer Shall be Single-Phase.
4. The Transformer Case Shall be Grounded to Equipment Through Mounting Screws.
5. Dimensions are Typical

LEGEND:
H - Hot Lead
B - Green Bond Wire
E - Equipment Ground
N - AC Neutral

DETAIL B
TYPICAL 25 KVA DRY TYPE TRANSFORMER

3/8" Sm. DIA. X 3/4" LG. DIA.
For 3/8" Min. Hardware

FRONT
SIDE
BACK

NOT TO SCALE

ON FILE
TRANSFORMER, 10KVA & 25KVA,
DRY TYPE DETAILS
AND WIRING DIAGRAMS
CABINET FOUNDATION INSTALLATION ON CUT SLOPES

CABINET FOUNDATION INSTALLATION ON FILL SLOPES

CLEARANCE FOR EQUIPMENT PROTECTED BY GUARDRAIL OR TRAFFIC BARRIER

NOTES:
1. All Field Equipment Locations Shall be Staked by The Contractor and Approved by The Engineer Prior to Installation.
2. Refer to AASHTO Roadside Design Guide For Clear Zone Requirements.
3. If 2a Can not be Met, Other Means Shall be as Approved by Engineer.
NOTES:

1. All Service Conductors and Service Switches shall have a 100 Amp Capacity.

2. All Components on 120/240 Volt Circuits shall be Rated for 600 Volt Operation. All other Components shall be Rated for 250 Volt Operation.

3. Typical Component Installations are Shown, Leave Space for Future Component Installation.

4. All Components shall be Interior Mounted.

5. All Live Electrical Components shall be Protected by a Dead-Front Panel which conforms to the NEC.

TYPE II LOAD CENTER WIRING DIAGRAM

NOT TO SCALE
NOTES:

1. Foundations shall be Class S (f=3,000 PSI) concrete.

2. All conduits shown shall be furnished and installed in foundation, see individual plans for stub out direction.

3. Foundations shall include 2-5/8" dia. by 10' ground rods, and they shall project 2" to 3" above the foundation.

4. The contractors shall furnish and install 2 #6 AWG conductors from transformer to control cabinet main circuit breaker. Indicated conduit, 1 #8 AWG ground wire shall be connected between the ground rods in the transformer cabinet and the control cabinet and shall be included in control cabinet installation.

5. The contractor shall note that the conduit layout dimensions are extremely critical and shall be adhered to.

6. Anchor bolts shall be galvanized steel, 3/4" x 11" x 5", complete with nuts & washers.

7. Anchor bolts shall project a minimum of 2" and a maximum of 2 1/2" above foundation.

8. Transformer cabinet may need to be located on opposite side of controller cabinet if required.

9. Contractor shall furnish and install anchor bolts for foundation.
NOTES:

1. This foundation shall be used only for the Skyline 336S series cabinet, when shown on plans.

2. Foundations shall be Class S (Fg<3,000 PSI) Concrete.

3. Foundation shall include a 5/8" X 10' Ground Rod, leaving a Projection Above the Foundation of 2' to 3'.

4. Anchor Bolts shall be Galvanized Steel, 3/4" X 11" X 5', Complete with Nuts and Washers.

5. Anchor Bolts shall project a Minimum of 2", and a Maximum of 2 1/2' Above Foundation.
NOTES:

1. This foundation shall be used only for the Skyline 332 series cabinet, unless otherwise noted on the plans.

2. Foundations shall be class 5 $\frac{f}{c}=3000$ psi concrete.

3. All conduits shown shall be furnished and installed in foundation. See individual site plans for conduit orientations and stub-out directions, and as directed by the Engineer. Stub-out conduits shall extend 12" past edge of foundation, and be securely capped. All conduits, except 1" ground rod sleeve, shall have end bell fittings. Cut 1" sleeve flush with foundation top.

4. Foundation shall include a 5/8 Inch x 10 foot ground rod, driven vertically into the earth to leaving a projection above the foundation of 2" to 3".

5. Contractor-furnished anchor bolts shall be galvanized steel, 3/4 Inch x 11 Inch x 5 Inch, complete with nuts and washers.

6. Anchor bolts shall project a minimum of 2 inches, and a maximum of 2 1/2 Inches above foundation. Cabinet leveling capability shall be provided, as shown in detail.
**NOTE:**

1. This foundation shall be used only for the Skyline 336S series cabinet, when shown on plans.
2. Foundations shall be Class S (F-C=5,000 PSI) Concrete.
3. Foundation shall include a 5/8" X 10' ground rod, leaving a projection above the foundation of 2" to 3".
4. Contractor shall furnish & install 2 #8 AWG conductors from transformer to control cabinet main circuit breaker. 1 #8 AWG green bond conductor shall be furnished & installed and connected between the transformer cabinet and control cabinet, all included in the foundation item.
5. Anchor bolts shall be Galvanized steel, 3/4" X 11" X 5", complete with nuts and washers.
6. Anchor bolts shall project a minimum of 2", and a maximum of 2 1/2" above foundation.
NOTES:

1. This foundation shall be used only for the Skyline 332 series cabinet, unless otherwise noted on the plans. Contractor shall confirm with Engineer on which side of the DMS cabinet the transformer cabinet will be located.

2. Foundations shall be class S (f'c=3000 psi) concrete.

3. All conduits shown shall be furnished and installed in foundation. See individual site plans for conduit orientations and stub-out direction, and as directed by the Engineer. Stub-out conduits shall extend 12" past edge of foundation, and be securely capped. All conduits, except 1" ground rod sleeves, shall have and bell fittings. Cut 1" sleeve flush with foundation top.

4. Foundation shall include a 5/8 inch x 10 foot ground rod, driven vertically into the earth to leaving a projection above the foundation of 2" to 3".

5. Contractor-furnished anchor bolts shall be galvanized steel, 3/4 inch x 11 inch x 5 inch, complete with nuts and washers.

6. Contractor shall furnish and install 2 #8 AWG conductors from transformer to control cabinet main breaker. 1 #8 AWG stranded green bond wire shall be connected between the ground rods in the transformer cabinet and DMS control cabinet.

7. Anchor bolts shall project a minimum of 2 inches, and a maximum of 2 1/2 inches above foundation. Cabinet leveling capability shall be provided, as shown in detail.
NOTES:

1. Foundations Shall be Class S (f'c=3,000 PSI) Concrete.

2. Foundations Shall Include a ¾" Ground Rod Which Shall be Driven Vertically into the Earth to a Minimum of 9’ Below the Ground Surface.

3. All Reinforcing Bars and Hoops Shall be ¾" Diameter Reinforcing Steel. Hoops Shall be Secured to Vertical Bars.

4. 1/0 AWG Green Bond Shall be Connected Between the Ground Rod in the Transformer Cabinet and the Ground Rod for the Associated Cabinet or Pole. Payment for this Conductor Shall be Included in Control Cabinet Installation.

5. The Contractor Shall Furnish and Install 2/0 AWG Conductors from Transformer to Control Cabinet Main Circuit Breaker in Indicated Conduit. 1/0 AWG Green Bond Shall be Connected Between Rods in the Transformer Cabinet and the Control Cabinet. Payment for these Conductors Shall be Included in Control Cabinet Installation.

6. Anchor Bolts Shall be Galvanized Steel, ¾" x 11" x 5". Complete with Nuts & Washers.

7. Anchor Bolts Shall Project a Minimum of 2" and a Maximum of 2½" Above Foundation.
NOTES:

1. Foundations Shall be Class S (F'c=3,000 PSI) Concrete.
2. Foundation Shall Include a 5/8" X 10' Ground Rod, Leaving a Projection Above the Foundation of 2" to 3".
3. Anchor Bolts Shall be Galvanized Steel, 3/4" X 11" X 5", Complete with Nuts and Washers.
4. Anchor Bolts Shall Project a Minimum of 2", and a Maximum of 2 1/2" Above Foundation.
NOTES:

1. Foundations Shall be Class S (F'c=3,000 PSI) Concrete.

2. Foundation Shall Include a 5/8" X 10' Ground Rod, Leaving a Projection Above the Foundation of 2" to 3".

3. Contractor Shall Furnish & Install 2 #8 AWG Conductors from Transformer to Control Cabinet Main Circuit Breaker. 1 #8 AWG Green Bond Conductor Shall Be Furnished & Installed and Connected Between the Transformer Cabinet and Control Cabinet, All Included in the Foundation Item.


5. Anchor Bolts Shall Project a Minimum of 2", and a Maximum of 2 1/2" Above Foundation.
SKYLINE DMS CABINET
ELEVATOR BASE

TOP AND BOTTOM VIEW

SIDE VIEW

BOLT SLOT
DETAIL

NOTES:
1. Cabinet Mounting Bolts Shall be Stainless Steel, 3/4" x 2", Complete with Nuts & Washers.
2. The Elevator Base Shall be Constructed of Sheet Aluminum (0.125" Min).
3. The Elevator Base Shall be Continuously Welded Along All the Mated Seams Of The Base.
4. Base Mounting Hole Slot Dimensions Shall be Common for Top and Bottom.

SKYLINE CABINET TO DAKTRONICS
FOUNDATION ELEVATOR BASE

NOT TO SCALE
NOTES:
1. Refer to Plans for Cable Routing To/From Cabinets.
2. All Ethernet Switch, are Single Mode, Operating at 1310 nm, Unless Otherwise Specified.
3. Ethernet Switch and Terminal Servers Shall Include Power Adapters Converting 120 VAC to Appropriate Operating Voltages, Interconnect to Power Not Shown.
TYPICAL CABINET DEPARTMENT FURNISHED

Dynamic Message Sign (DMS)

DMS CABINET ETHERNET BLOCK DIAGRAM

NOTE:
DMS and Cabinet with All Equipment Department Furnished and Contractor Installed. Except Ethernet Switch. Ethernet Switch is Contractor Supplied, Installed and Tested.
LOOP DETECTOR DEFINITION
(UP TO 6 LANE CONFIGURATION)

NOTES:
1. Not all cabinet locations will have all detection for mainline lanes as shown.
2. Input detection for each entrance lane shall be connected in series in the nearest roadside pull box.
3. All new & existing detection shall be tagged with pre-printed labels as shown in the table on this sheet. On existing detection, the contractor shall identify and label the upstream and downstream detection in each lane.

MAINLINE OR RAMPS MERGE/DIVERGE

<table>
<thead>
<tr>
<th>LANE</th>
<th>UPSTREAM</th>
<th>DOWNSTREAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>U</td>
<td>D</td>
</tr>
<tr>
<td>2</td>
<td>2U</td>
<td>2D</td>
</tr>
<tr>
<td>3</td>
<td>3U</td>
<td>3D</td>
</tr>
<tr>
<td>4</td>
<td>4U</td>
<td>4D</td>
</tr>
<tr>
<td>5</td>
<td>5U</td>
<td>5D</td>
</tr>
<tr>
<td>6</td>
<td>6U</td>
<td>6D</td>
</tr>
<tr>
<td>7</td>
<td>7U</td>
<td>7D</td>
</tr>
<tr>
<td>8</td>
<td>8U</td>
<td>8D</td>
</tr>
</tbody>
</table>

ENTRANCE RAMPS (E)

<table>
<thead>
<tr>
<th>LANE</th>
<th>LEFT</th>
<th>ELM</th>
<th>ELO</th>
<th>ELE</th>
<th>ELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOT TO SCALE
NOTES:
1. All Slurry Required to Fill Void Under Curb and Gutter.

HOME RUN CONDUIT

CROSS SECTIONS IN PCCP WITH FRICTION COURSE OR ASPHALT

NOTES:
1. High Temperature Backer Rod Shall Be Continuous and Completely Shield Loop Wire From Slot Sealant.
2. Coll backer rod in hole of cored corners to provide complete barrier between slot sealant and loop wires.
3. Adjust Saw Cut Depth For Friction Course Thicknesses Other Than Shown.
4. Sawcut Depth Shall Be Reduced 1/2" in PCCP Less Than 9" Thick.

CROSS SECTIONS IN PCCP WITHOUT FRICTION COURSE

NOTES:
1. Use Short Sections of Backer Rod As Needed to Hold Loop Wire In Place.
2. Sawcut Depth Shall Be Reduced 1/2" in PCCP Less Than 9" Thick.

SAWCUT ACROSS JOINTS

NOT TO SCALE

TYPICAL LOOP DETECTOR INSTALLATION DETAILS
NOTES:

1. Factory formed Preformed Loops Shall be 1/8" to 1/2" PVC Schedule 40 PVC or Polypropylene 150 psi Minimum.
2. The 90 Degree Corner Shall be 4" to 6" Radius. The Bends Shall be Integral to the Conduit. Separate 90's Shall Not be Used.
3. All Preformed Loops and Sleeved Lead-In Wire Shall be Filled With Loop Sealant. Lead-In shall be unsheathed to pull box.
4. Loop and Lead-In Wire shall be Stranded No. 16 AWG Copper and Rated at 600 volts with TFFN Insulation.
5. The Tee Fitting Shall be Constructed of PVC and Shall Have "Slip-Fit" Glue on' Covers. Tees Shall Not be Glued to PVC.
6. Loop Shall be Strapped Down to AB or Intermediate AC Surface at Corners and at a 2' Spacing on Each B Leg to Secure Loop to Prevent Movement During Paving. The Loop Shall be Placed Parallel to Finished Surface.
7. Loops Shall Have Five (5) Turns. Pairs of Loops In Same Lane Shall be wound in Opposite Directions. Polarity Shall be Tagged. There Shall be 18" Front Edge to Front Edge of the Loops in the Same Lane.
NOTES:
1. Pre-Formed Loops Shall Have 5 Turns Unless Otherwise Noted. Saw-Cut Loops Shall Have 4 Turns Unless Otherwise Noted.
2. Loops Shall Be Centered In Lane Unless Otherwise Noted.
3. See FM-5.05 for Detector Loops In PCCP Pavement.
4. See FM-5.02 for Saw Cut Details
5. See Project Plans For Pull Box Size and Number.
6. Lane Numbering as per Detection Definition Std Dwg FM-5.01.
NOTES:
1. Pre-Formed Loops Shall Have 5 Turns Unless Otherwise Noted. Saw-Cut Loops Shall Have 4 Turns Unless Otherwise Noted.
2. Loops Shall Be Centered in Lane Unless Otherwise Noted.
3. See FM-5.04 for Detector Loops in AC Pavement.
4. See FM-5.02 for Saw Cut Details.
5. See Project Plans for Pull Box Number and Size.
6. Lane Numbering as per Detection Definition Std Dwg FM-5.01.
**LOOP DETECTOR ACCURACY VERIFICATION FORM**

**CABINET #**

**DATE**

**LOCATION**

**TESTERS**

**Test Procedure:**
1. Each loop in each lane must be tested individually.
2. From the base display press "1" to enter the "STATUS" menu.
3. Press "B" to enter the "Volume and Occupancy" menu.
4. Press "4" to view the count data for "Mainline 1-12".
5. With both people in position watch for the countdown timer on the controller to reset to "0" and ask the person performing the manual counting of vehicles to begin counting.
6. An additional worksheet is included to record the "20 second" count data that the 2070 controller provides. These figures are then automatically transferred to this sheet.
7. At the end of each 1 minute period ask the manual counter to provide the total count and record it in the additional worksheet. These figures will then automatically be transferred to this sheet.
8. After 15 minutes or 100 vehicles, cease counting.
9. Detector accuracy is computed using the following formula:

\[
\text{Percentage} = \left( \frac{\text{Manual Count} - \text{2070 Count}}{\text{Manual Count}} \right) \times 100 = \% \text{ Accuracy}
\]

**Passing is greater than or equal to 95% accuracy or less than or equal to 105% accuracy.**

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zone</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
<th>2070</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left Out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Que</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right In</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right Out</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage</th>
<th>(Pass/Fail)</th>
<th>Percentage</th>
<th>(Pass/Fail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane 1 U</td>
<td></td>
<td>Lane 1 D</td>
<td></td>
</tr>
<tr>
<td>Lane 2 U</td>
<td></td>
<td>Lane 2 D</td>
<td></td>
</tr>
<tr>
<td>Lane 3 U</td>
<td></td>
<td>Lane 3 D</td>
<td></td>
</tr>
<tr>
<td>Lane 4 U</td>
<td></td>
<td>Lane 4 D</td>
<td></td>
</tr>
<tr>
<td>Lane 5 U</td>
<td></td>
<td>Lane 5 D</td>
<td></td>
</tr>
<tr>
<td>Lane 6 U</td>
<td></td>
<td>Lane 6 D</td>
<td></td>
</tr>
<tr>
<td>Left Lane In</td>
<td></td>
<td>L Que</td>
<td></td>
</tr>
<tr>
<td>Left Lane Out</td>
<td></td>
<td>R Que</td>
<td></td>
</tr>
<tr>
<td>Right Lane In</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right Lane Out</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Contractor:**

**Inspector:**

---

**NOT TO SCALE**
<table>
<thead>
<tr>
<th>Location</th>
<th>Time Period</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>Total</th>
<th>% Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 2U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 3U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 4U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 5U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 6U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 7U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 8U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 9U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 10U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 11U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 12U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 13U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 14U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zone 15U</td>
<td>2070 Man</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

NOT TO SCALE
SIGNATURE
ARIZONA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS
ITS STANDARD DRAWINGS
FM-5.07
ON FILE
DETECTOR LOOP TEST FORM 2 PART A
| Location | Time Period | Zone | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | Total | % Accuracy |
|----------|-------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|-----------|
|          |             | 1 SD | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0.00  | 0.00      |
|          |             | 2 SD | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0.00  | 0.00      |

**Additional Pages**

The document continues with similar data tables for different locations and time periods. Each table provides a breakdown of counts across various zones and time slots, followed by an accuracy percentage.
NOTES:
1. For Conduit and Pull Box Layout, see Plan Sheets.
2. Poles cannot be located outside the clear zone for the Freeway. Broadway Bases shall be used.
3. Minimum clear zones shall be determined from the AASHTO Roadside Design Guide.
4. Permanently mark into Shoulder: curb the downstream edge of downstream input loop for proper stop bar location.
NOTES:
1. For Conduit and Pull Box Layout, See Plan Sheets.
2. If Poles Can Not Be Located Outside the Clear Zone for the Freeway, Breakaway Bases Shall Be Used.
3. Maximum Clear Zones shall be determined from the AASHTO Roadside Design Guide.
4. Permanently Mark Into Shoulder/ Curb the Downstream Edge at Downstream Input Loop for Proper Stop Bar Location.
NOTES:
1. For Curb and Pull Box Layout, See Plan Sheets.
2. If Poles Can Not be Located Outside the Clear Zone for the Freeway, Breakaway Bases Shall be Used.
4. Permanently Mark Into Shoulder/Curb the Downstream Edge of Downstream Input Loop for Proper Stop Bar Location.
NOTES:
1. For conduit and pull box layout, see plan sheets.
2. If poles can not be located outside the clear zone for the freeway, breakaway bases shall be used.
3. Minimum clear zones shall be determined from the AASHTO Roadside Design Guide.
4. Permanently mark into shoulder/curb the downstream edge of downstream input loop for proper stop bar location.
**NOTES:**

1. This detail applies to a typical 2-lane ramp meter where side-mounting the ramp meter is not possible. Conditions may vary, see plans for details of each location.

2. See Fig. 6.33 for other ramp meter details not shown.

3. Cabinet not protected by guardrail or barrier shall be located outside of the clear zone line. Excess cable shall be maintained within 3 ft of the cabinet. Each cabinet location to be determined by the contractor, with the approval of the engineer. The contractor shall work proposed cabinet location at least 48 hours prior to foundation excavation.

4. The contractor shall work proposed stop bar location at least 48 hours prior to loop detector installation or pose foundation excavation. The engineer will field review the proposed location prior to starting construction.
NOTES:
1. Anchor bolts shall project 3" above the foundation.
2. A 25-foot Coil of No. 4 AWG bare Copper conductor shall be installed before concrete is poured, and connected to pole grounding screw in hand hole.
3. Unstable soil may require deeper foundation.
4. Conduit holes in cabinet may be field drilled or factory drilled.
5. Top of drilled shaft foundation shall be within 6 inches of the finished grade.
6. The Contractor shall furnish and install all mounting hardware.
7. Pipe nipples shall be installed on poles requiring Type 343 pole mounted cabinets. Threaded pipe nipples shall not extend more than 0.25 of an inch inside pole wall.

POLE DESIGN NOTES:
Pole and associated mounting hardware shall be designed to support a 100 lbs. camera unit assembly with a 4 square feet projected wind area 2 feet above the top of the pole. Pole shall be designed such that the deflection of the CCTV camera does not exceed 1 inch, in 20 mph winds or less.
Pole and associated hardware shall be designed for Ultimate Wind Loading of 80 MPH plus 30% Gust Factor.
Pole is similar to an ADOF T Pole (5%1, 15-L, 4.03), with top of pole modified per detail FW 1.03

DRILLED SHAFT EMBEDMENT TABLE
<table>
<thead>
<tr>
<th>Level to top</th>
<th>15'-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>15'-0</td>
<td>10'-0</td>
</tr>
<tr>
<td>12'-0</td>
<td>15'-0</td>
</tr>
</tbody>
</table>

* See Note 5
NOTES:
1. All materials and construction shall conform to the requirements of the Standard Specifications, and all appearances to the Engineer's review.
2. Anchor bolts shall project 3" above the foundation.
3. Conduit shall project a minimum of 6" above the foundation. Maximum projection shall be 9".
4. Check out for existing lines. See Standard Specifications for grant requirements.
5. Pole shall be installed with hand hole on roadway side.
6. A 25' segment of No. 4 ACM Bare Copper Conductor shall be installed before the concrete is poured and connected to the grounding system in the hand hole.
7. The foundation hole shall be augered and filled with 5" (3,500 psi) concrete poured against undisturbed native soil. Reinforcing shall be ASTM A416, Grade 60, and the spiral reinforcing shall conform to AASHTO M256, Minimum Tensile Strength = 60 ksi.
9. All dimensions are nominal.
CCTV Environmental Enclosure

Adaptor Plate
Quick Connect/Disconnect type connector with male. Provide sufficient slack in cable between the pan/tilt mounting plate and wire mesh grip.

3" x 5" Hanger hole
Control/Power

CCTV CAMERA AND TILT/PAN UNIT MOUNTING

To Lightning Protection Equipment in Cabinet

Adapter Plate
1.50"

ADAPTER PLATE DETAIL

SECTION B-B

Pole-Top Mounting Plate
Install J Hook to produce support and strain relief.

CCTV Camera and Tilt/Pan Unit Mounting

Pole-Top Mounting Plate
2" Dia. Cable Hole
3/8" Steel Plate

POLE-TOP MOUNTING PLATE

NOTE:
Adaptor Plate is contractor furnished to match CCTV bolt pattern.

SECTION C-C

POLE-TOP MOUNTING PLATE DETAIL

5/16", 16 Count Thread Pattern, 3/8" Long Bolt (4 total)

2" Dia. Hanger Hole

5/16", 16 Count Thread Pattern, 3/8" Long Bolt (4 total)