NOTES:

1. Mount ITS Device, Various, so that it is mounted on the correct side of pole at a height recommended by the manufacturer.

2. Support hooks should be appropriately sized for the number and size of conductors to be supported. Support electrical and communication cables with separate hooks.

3. Run all wiring inside the pole and provide strain relief and support for all control cables.

4. When installing the mounting brackets for ITS device, various, align and angle the device to cover the zones per manufacturer's specifications.

CCTV CAMERA ASSEMBLY (TYPICAL)  
(NOT TO SCALE)
NEC 250.60 Air Terminal Support
No. 6 Copper Wire
52" above CCTV Lowering Arm

Bonding Plate
CCTV Lowering
Device Arm

Tenon
Pole

Continuous No. 6 Copper Wire
Ground Lug Attached to Terminal Base

NEC 250.60 Air Terminal
Tenon Pole - CCTV Lowering
No. 6 Copper Wire

THIS DRAWING REPLACES ITS-10.11 DATED 07-20-2018.
NOTES:

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between concrete pole and adjacent paved areas.

2. A 6" thick work pad with dimensions shown on details shall be provided unless it is an otherwise paved area. In level areas, the top of the pad shall be 1" above the ground line. In steeply sloped areas (4:1 or steeper), the pad's design shall be adjusted to provide access, drainage, and safety, as approved by the Engineer.

3. For areas with less severe slopes (5:1 or less), grading, grading, drainage, and safety, as approved by the Engineer. (Refer to SCD ITS-50.12 for Sloped Work Pads.)

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between concrete pole and adjacent paved areas.

2. A 6" thick work pad with dimensions shown on details shall be provided unless it is an otherwise paved area. In level areas, the top of the pad shall be 1" above the ground line. In steeply sloped areas (4:1 or steeper), the pad's design shall be adjusted to provide access, drainage, and safety, as approved by the Engineer.

3. For areas with less severe slopes (5:1 or less), grading, grading, drainage, and safety, as approved by the Engineer. (Refer to SCD ITS-50.12 for Sloped Work Pads.)
NOTES:

1. Mount vehicle detector unit so that the detector is mounted on the roadway side of pole at a height recommended by the manufacturer.

2. Support hooks should be appropriately sized for the number and size of conductors to be supported. Support electrical and communication cables with separate hooks.

3. Run all wiring inside the pole and provide strain relief and support for all control cables.

4. See plan sheets for vehicle detector locations.

5. When installing the mounting brackets for vehicle detectors, align and angle the detectors to cover the detection zones as per manufacturer's specifications.

CCTV Camera Assembly (Typical)

(Typical)

(Typical)
ENGINEERING
ROADWAY OFFICE OF
2016 POLE-MOUNTED CABINET
CCTV ASSEMBLY DETAILS
STANDARD ROADWAY CONSTRUCTION DRAWING

SCD NUMBER
ITS-11.10

ENGINEER STDS.

REVISION DATE
TRANSPORTATION ADMINISTRATOR
STATE OF OHIO DEPARTMENT OF
07-19-2019
Davie L. Hollstein

POLE
24”
46”
24”
30”
52”

Bonding Plate
Device Arm
CCTV Lowering
Cabinet
ITS
NEC 250.60 Air Terminal Support
No. 6 Copper Wire
No. 6 Copper Wire
No. 6 Copper Wire

IF Required
Cabinet
Comm.
Concrete Pole

Communication Cable
Power Cable

52” Above | of CCTV Lowering Arm
Size Air Terminal Length to Extend
NEC 250.60 Air Terminal
Tenon

Rigid Metal Conduit
2” dia. Galvanized
Fitting

NEC 250.60 Air Terminal Support

Fitting

Concrete Pole

DETAIL “A”
ITS CABINET
(NOT TO SCALE)

DETAIL “B”
AIR TERMINAL
(NOT TO SCALE)

DETAIL “C”
CONDUITS
(NOT TO SCALE)

THIS DRAWING REPLACES ITS-11.10 DATED 07-17-2015.
NOTES:

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between pole and adjacent paved areas.

2. A 6" thick work pad with dimensions shown on plans shall be provided unless in an otherwise paved area. In level areas, the top of the pad shall be 1" above the ground line. In steeply sloped areas (10 or steeper), the pad's design shall be adjusted to provide access, drainage, and safety, as approved by the Engineer.

3. For areas with less severe slopes (5:1 or less), grading or earthwork is preferred.

4. For pole-mounted ITS cabinets, the mounting height shall result in the bottom of the cabinet to be 30" above the work pad.
NOTES:
1. If ITS cabinet is pole-mounted, it shall be oriented on side (C) of pole, above 2" couplings.

2. If communication cabinet is pole-mounted, it shall be oriented on side (B) of pole, above 2" couplings if required.

3. The tenon at the top of the pole shall be bolted so the lowering device camera arm shall be oriented on side (A) of the pole or offset angle allowable up to 90 degrees toward side (A) or (B), to avoid lowering the camera over the lowering device operator for safety reasons, or into any cabinets or devices mounted on the pole. Thus, the camera arm shall be oriented in the range of 90 degrees to 270 degrees from the large handhole, a minimum of 90 degrees from the handhole in either direction. The camera arm shall also be oriented so the camera is capable of viewing in all roadway directions, including major routes and side streets. Therefore, the pole shall not block any roadway views from the camera, or only block a roadway view as little as possible, possibly a small portion of a ramp, approved by the engineer.

4. The grounding system/lugs shall be integrated nearby the 4 1/2" x 30" handhole opening to allow for easy inspection and attachment of grounding wire to lug. The grounding lug shall in no way interfere with the placement/operation of the camera lowering device or winch.

5. Maximum horizontal deflection is 1" for a sustained 30 mph wind velocity with no gust.


7. All unused coupling holes shall be plugged with threaded PVC plugs to prevent any kind of weather/insect intrusion. Rubber caps shall be unacceptable.
SIGNAL POLE WITH MAST ARM

NOT TO SCALE

POLE MOUNTED CAMERA BRACKET ASSEMBLY:

A. POLE MOUNT ADAPTER WALL MOUNT (BLACK)
B. 1 1/4" FLOOR FLANGE
C. 1 1/4" X 12" GALVANIZED STEEL NIPPLE
D. 1 1/4 STRAIGHT ACCESS PORT (STYLE C, ZINC PLATED CAST IRON)
E. 1 1/4" 90° STREET ELBOW, GALVANIZED STEEL
F. POLE MOUNT ADAPTER BRACKET (BLACK)
G. ALUMINUM SLIP-ON RAIL FITTING WALL-MOUNT FLANGE, ADJUSTABLE ANGLE, FOR 1 1/4" PIPE
H. 1 1/4" ALUMINUM PIPE
I. ALUMINUM SLIP-ON RAIL FITTING, ADJUSTABLE ANGLE TEE
   FOR 1 1/4" PIPE
J. RG-59 CAT 5E CABLE
K. 10' Ethernet cable
L. Anchor Base
M. Stainless Steel Banding Straps

NOTES:

1. Shall be capable of supporting CCTV assembly unit up to 75 lbs.
2. All connection points shall be properly sealed to ensure weatherproof cable pathway from signal pole into CCTV assembly unit.
3. PTFE anti-seize thread sealant shall be used on all fittings.
5. Lock and flat washers shall be used.
6. All exposed cables - all cabling shall be hidden by bracket assembly unit.
7. All hardware shall be stainless steel.
8. All screws shall be hex head cap screws.
9. All unused coupling holes shall be plugged with threaded PVC plugs to prevent any kind of weather/rodent intrusion. Rubber caps shall be unacceptable.
10. Camera shall be a minimum of 10 ft above the mast arm on the support pole. If there is luminare bracket arm, the CCTV camera shall be just below the bracket arm attachment.
WORK BY UTILITY -

- Aerial service entrance cable furnished and installed by electric utility, if necessary, see power service pole mounted details.
- Communications cable furnished and installed by communication provider.

WORK BY CONTRACTOR -

1. Contractor furnished and installed Class IV wood pole (minimum 30' long). See table on this sheet for setting depths. It is the responsibility of the Contractor to furnish and install a wood pole that is sufficient in length to meet min. roadway clearance of 20 ft. Wood pole shall be furnished and installed as part of the power service for shared utility sites.
2. 2" conduit riser. See detail - Conduit Mounting Bracket for mounting details.
3. Schedule 80 PVC conduit in trench. Conduit shall be 2" minimum for communication. Terminate this conduit in pull box. Conduit installed a minimum of 30" below grade.
4. Pull box, 30" will be installed at the location shown in the plan.
5. Conduit per plan by Contractor.

WOOD POLE SETTING
DEPTH CHART

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<th>LENGTH</th>
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<td>8'-0&quot;</td>
</tr>
<tr>
<td>65</td>
<td>8'-0&quot;</td>
</tr>
</tbody>
</table>

COMUNICATION SERVICE DETAIL

NOTES:

1. Contractor must coordinate with Utilities' Field Engineer. Contractor shall be responsible for scheduling and coordinating all utilities, related work, and inspections as necessitated by the project.
1. Remove and store topsoil from the evacuation. Dispose of all unsuitable material before backfilling.
2. Center the conduit in the trench and hold firmly in place while the trench is backfilled.
3. The backfill material shall conform to ODOT Item 625 - Trenching (Incidental).
4. Install a 4 mil plastic orange warning tape 6" - 8" below surface, incidental for the entire length of the trench.
5. After backfill material is placed in unpaved areas, seed and mulch over trenched area.
6. Provide high impact conduit spacers at intervals not greater than 10'. Spacers are considered incidental to the conduit item and ill not be paid for separately.
6. Each pull box shall have a drain, 1/4" conduit, independently draining to a ditch or to a roadway underdrain (shown in Standard Construction Drawing HL-30.11).
7. Slope the proposed 4" raceway (PVC conduit) to drain into 32" pull box on either side of the freeway shoulder, where applicable. The 4" conduit shall remain above the underdrain.
8. Minimum bend radius of 4" PVC is 24".
9. Contractor shall install a pull box pad as detailed on this page. The pull box pad shall be incidental to this pay item and will not be paid for separately.
10. Duct seal shall be placed on all conduits in pull box which enter a cabinet.

Contractor shall make necessary provisions to ensure that the lid and ring (frame assembly) are secure before pouring concrete. Expansion material shall be placed between lid and ring (frame assembly). Contractor shall inspect the frame assembly for any deficiencies and/or voids prior to pouring concrete. All voids shall be filled prior to pouring pad. All deficiencies shall be reported to ODOT personnel on scene so that prompt corrections can be made. Workpads shall be sloped so that all sides are even with the ground. Contractor shall ensure that all debris and excess concrete is removed from the inside of the ring so that the lid can be easily removed and replaced.
One coat of water repellent sealer shall be applied to the inside and outside of the pull box.

Concrete shall have air entrainment of 6% +/- 2% and shall have 4500 PSI strength at 28 days. Concrete materials shall meet ODOT specifications.

Lid ring load transfer is to be distributed by use of preformed elastic joint material.

Cut off conduits so they extend no more than 3" beyond the pull box wall and provide bushings.

Whenever possible, conduits should enter the pull box via a knockout. Conduit shall enter the pull box through its wall only if the opening is saw or core drilled. Conduits shall not enter via the bottom of the pull box without approval by the ODOT Engineer. Conduit shall enter knockout as close to 90 degrees as possible.

The wedge anchor assembly shall unseal whenever the entire area above the knockout 1/4 of the casting is encased in either concrete or asphalt. The excavation shall be centered around the knockout.

After the conduits have been installed, any opening in the pull box wall shall be totally filled with mortar or concrete and finished flush with the inside of the pull box wall no voids.

Pull box bearing capacity to exceed 40,000 pounds.

Enlarging the knockout area, if required, shall be done by saw cutting the concrete. As after method is allowed, the contractor shall replace the concrete housing, if damaged, at their expense.

Any conduit that exits a pull box, contains cable and directly enters any electronics cabinet, shall be duct-sealed in the pull box.

The Contractor shall install non organic fiberglass pull tape with a minimum 800 ft./lb tension strength in conduit to facilitate cable placement.

All unused conduits shall be capped and the caps secured to the conduits with tape.

Standard placement for wire mesh and rebar shall be used.

Each pull box shall have a drain, #4 conduit, independently draining to a ditch or to a roadway underdrain shown in Standard Construction Drawing HL-30.11).

Slope the proposed 4" raceway (PVC conduit) to drain into 32" pull box on either side of the freeway shoulder, where applicable. The 4" conduit shall remain above the underdrain.

Minimum bend radius of 4" PVC is 24".

Contractor shall install a pull box pad as detailed on this page. The pull box pad shall be incidental to this pay item and will not be paid for separately.

Each pull box pad shall be placed on an asphalt surface or a roadway underdrain on the inside of the pull box wall after the conduits have been installed. Any opening in the pull box wall shall be totally filled with mortar or concrete and finished flush with the inside of the pull box wall no voids.

Concrete materials shall meet ODOT specifications. Concrete shall have air entrainment of 6% +/- 2% and shall have 4500 PSI strength at 28 days. Concrete materials shall meet ODOT specifications.

Lid ring load transfer is to be distributed by use of preformed elastic joint material.

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Pull box bearing capacity to exceed 40,000 pounds.

Enlarging the knockout area, if required, shall be done by saw cutting the concrete. No other method is allowed. The contractor shall replace the concrete housing, if damaged, at their expense.

Any conduit that exits a pull box, contains cable and directly enters any electronics cabinet, shall be duct-sealed in the pull box.

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Any conduit that exits a pull box, contains cable and directly enters any electronics cabinet, shall be duct-sealed in the pull box.

The Contractor shall install non organic fiberglass pull tape with a minimum 800 ft./lb tension strength in conduit to facilitate cable placement.

All unused conduits shall be capped and the caps secured to the conduits with tape.

Standard placement for wire mesh and rebar shall be used.

Each pull box shall have a drain, #4 conduit, independently draining to a ditch or to a roadway underdrain shown in Standard Construction Drawing HL-30.11).

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Pull box bearing capacity to exceed 40,000 pounds.

Enlarging the knockout area, if required, shall be done by saw cutting the concrete. No other method is allowed. The contractor shall replace the concrete housing, if damaged, at their expense.

Any conduit that exits a pull box, contains cable and directly enters any electronics cabinet, shall be duct-sealed in the pull box.

The Contractor shall install non organic fiberglass pull tape with a minimum 800 ft./lb tension strength in conduit to facilitate cable placement.

All unused conduits shall be capped and the caps secured to the conduits with tape.

Standard placement for wire mesh and rebar shall be used.

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Concrete materials shall meet ODOT specifications. Concrete shall have air entrainment of 6% +/- 2% and shall have 4500 PSI strength at 28 days. Concrete materials shall meet ODOT specifications.

Lid ring load transfer is to be distributed by use of preformed elastic joint material.

Cut off conduits so they extend no more than 3" beyond the pull box wall and provide bushings.

Whenever possible, conduits should enter the pull box via a knockout. Conduit shall enter the pull box through its wall only if the opening is saw or core drilled. Conduits shall not enter via the bottom of the pull box without approval by the ODOT Engineer. Conduit shall enter knockout as close to 90 degrees as possible.

The wedge anchor assembly shall unseal whenever the entire area above the knockout 1/4 of the casting is encased in either concrete or asphalt. The excavation shall be centered around the knockout.

After the conduits have been installed, any opening in the pull box wall shall be totally filled with mortar or concrete and finished flush with the inside of the pull box wall no voids.
CONDUIT ON STRUCTURE
Expansion Fittings for Conduit on Structure
Shall be OZ (Type AX), Spring City (Type AF),
or Crouse-Hinds (Type XJ-4) or Approved Equal.
Each Expansion Fitting shall have a Copper
External Bonding Jumper.

External Bonding Jumper.
Each Expansion Fitting shall have a Copper
or Crouse-Hinds (Type XJ-4) or Approved Equal.

Shall be OZ (Type AX), Spring City (Type AF),
Expansion Fittings for Conduit on Structure

BRIDGE PIER RISER

Section A-A

TYPICAL SURVEILLANCE CONDUIT
TREATMENT AT END OF BRIDGE PARAPET

TYPICAL SURVEILLANCE CONDUIT
TREATMENT AT END OF BARRIER WALL

6" Min. Agg. Base and Drain, per H-500.11

Optional Locations for the
Upper 18" Required. For the
High Barrier see Std. Drawings.
RM-4 for Notes and Details
No Show

Traffic Side →

08-20-2018

David L. Martin

TRANSPORTATION ADMINISTRATOR
STATE OF OHIO
DEPARTMENT OF

H-500.11
Concrete Pavement

Asphalt Pavement

Median Pullbox and Conduit

Raceway and Dowel Bar Placement (Not to Scale)

**Conduit Transition to Median Junction Box**
(Not to Scale)

**Aggregate Base (Concrete Pavement) or Asphalt Intermediate Course**

**Construction Joints:** Barrier runs with abutting vertical surfaces at either required or permissible condition. Joints are to be gelled to each other by use of 3/4" QF. By 1" long epoxy coated deformed dowel bars as per CDS 223.20, bars are to be placed as shown. Provide a 4" clearance to barrier surfaces and to any raceways.

Raceways locate as shown unless otherwise directed by the engineer. Ensure that the electrical raceway is clear of obstructions. Cost of the 4" polyvinyl chloride raceways is included where shown on the plans. The cost for additional raceways and No. 10 and copper clad or aluminum wire is also included where shown on the plans for future installation of circuits.

**Concrete Pavement**

**Asphalt Pavement**

**Concrete Pavement**

** Aggregate Base**

**Asphalt Base**

**Aggregate Base**

**Concrete Pavement**

**Asphalt Base**

**Concrete Pavement**

**Asphalt Base**

**Aggregate Base**

**Concrete Pavement**

**Asphalt Base**

**Aggregate Base**

**Concrete Pavement**

**Asphalt Base**

**Aggregate Base**
### Notes:

1. Contractor must coordinate with utilities’ field engineer. Contractor shall be responsible for scheduling and coordinating of all utilities, related work, and inspections as necessary for this project.
2. All work and materials shown on electrical service details from the electric utility pole to the disconnect is incidental to power service pay items.
3. Service provider conduit systems shall be installed per NEC and local requirements.
4. Do not extend conduit above the secondary or neutral position at any time.
5. Conduit shall maintain a minimum clearance of 6” below the secondary or neutral.
6. All proposed service types and locations are subject to approval from utility. Contractor is responsible for furnishing and installing all equipment according to Engineer’s approval.
7. If power service is needed to provide 480V, the service shall be a 480/240V single phase service. The contractor shall coordinate with the power company to determine if they have any special requirements for a metered 480 volt service drop, such as but not limited to, an additional enclosure or disconnect ahead of the meter, current transformers, or conduit boxes. If so, the contractor shall modify the power service as needed, as approved by the engineer.
8. All conduit used in Power Service construction shall be Rigid Metallic Conduit (RMC) per 725.04. Transition to other conduit materials (if called for in the plans) at no less than 2 feet below finished grade.
9. All energized parts shall be guarded against accidental contact using guards supplied or approved by the electrical device manufacturer.

### Legend:

- **Work by Contractor** -
  - Install rigid 2" conduit sweeps.
  - Warning ribbon 12" above service lateral.
  - Contractor-installed equipment stand per HL-40.20. Channel strut attached to pole per conduit mounting bracket details.
  - Utility meter. Contractor to supply manual bypass type socket.
  - Flexible service disconnect switch. Flow sizes & service rating per plan. Disconnect natatory switch enclosures shall be sized approximately to fit number and size of conduit connections required. Door seal shall be installed on each conduit connection. NEMI 42 disconnect enclosures with 2 pole, bolt on type circuit breaker.
  - Enclosure shall be service entrance rated. Provide two (2) padlocks for each enclosure. Padlocks furnished shall be brass, equal to Wiessl Buchanan 690, and shall be labeled in accordance with the CMS 631.06 or ODOT Type A. The disconnect shall be capable of being positioned in both the ON and OFF positions and shall also be capable of separately locking the door shut. One padlock shall be used to lock the disconnect switch in the appropriate position and one shall be used to lock the door shut.
  - Concrete pull box 18" will be installed within 5' of every electrical service. No electrical splices permitted.
  - 5" x 10" copper clad steel grounding rod electrode, app. top of ground rod installed 30" below grade and at least 1" off edge of pole or equipment foundation. See sketch “Site Grounding.”
  - 2" rigid conduit riser. See conduit mounting bracket for mounting details.
  - Service entrance cable in conduit by Contractor. All service entrance cable shall be 4X-MV90-2.4KV for 100A services and 1X/0 for 200A services, or as required by utility.
  - Threaded hub type conduit coupling between enclosures sized to accommodate conductors. See plan for wire requirements.
  - 1" PVC conduit for ground.
  - 1-5C #4 XHHW-2 grounding electrode conductor in conduit to disconnect switch neutral bus.

### Power Service

- 120/240V, 3 wire, 1 phase or 480/240V, 3 wire, 1 phase
- See Standard Construction Drawing H-40.20 for More Details.
- 105A disconnects will be fused at 85A
- 65A disconnects will be fused at 50A
**WORK BY UTILITY**
- Aerial service entrance cable furnished and installed by utility.
- Sizing of utility service entrance cable onto Contractor's service entrance cable by utility.
- Termination of Contractor-supplied service entrance cable onto Contractor-installed wood pole/anchor frame.
- Existing proposed electric utility pole installed by utility (No Wiring).
- Communication cable furnished and installed by communication provider if needed.

**WORK BY CONTRACTOR**
1. Install rigid 90° conduit sweeps.
2. Warning ribbon 12" above service lateral.
3. Conduit furnished and installed Class V wood pole. Minimum 30' long. See table on this sheet for concrete pull box sizes. Pull box shall be installed per plan. See detail 'Site Grounding.' Conduit installed per NEC and local requirements. Threaded hub type conduit coupling between enclosures sized to accommodate conductors. See plan for wire requirements. 
5. Service entrance cable in conduit by Contractor. All service entrance cable shall be #4-MV90-2.4KV for 100A services and #1/0 for 200A services, as required by utility. Contractor to supply manual bypass type socket. Utility meter. Contractor to supply manual bypass type socket.
6. Fusible service disconnect switch. Fuse sizes & service rating per plan. Fusible service disconnect switch with 2 poles. Enclosure shall be service entrance rated. Provide two (2) padlocks for each enclosure. Padlocks furnished shall be brass, equal to Wilson Bohannan 660A, and shall be keyed in accordance with the CMS 631.06 or ODOT Type A. The disconnect shall be capable of being padlocked in both the ON and OFF positions and shall also be capable of guarding ribbon 12" above service lateral. See plan for more details. Grounding conductor connected to grounding electrode conductor in conduit to disconnect switch neutral bus. Grounding conductor shall be #6 AWG stranded copper and shall be installed per NEC and local requirements. 
7. Do not extend conduit above the secondary or neutral position at any time.
8. Conduit shall maintain a minimum clearance of 5' below the secondary or neutral.
9. Provide proper conductor size for all service entrance cables. See plan for wire requirements. 
10. All proposed service types and locations are subject to approval from utility. Contractor is responsible for furnishing and installing all equipment according to Engineer's approval.
11. In case of power service is needed to provide 480V, the service shall be a 480/240V single phase service. The contractor shall coordinate with the power company to determine if they have any special requirements for a metered HSB or service drop, such as fuse not fused to an additional enclosure or disconnect ahead of the meter, current transformers, or conduit boxes. If so, the contractor shall modify the plan as necessary to accommodate the customer's unique requirements.
12. If power service is needed to provide 480V, the service shall be a 480/240V single phase service. The contractor shall coordinate with the power company to determine if they have any special requirements for a metered HSB or service drop, such as fuse not fused to an additional enclosure or disconnect ahead of the meter, current transformers, or conduit boxes. If so, the contractor shall modify the plan as necessary to accommodate the customer's unique requirements.
13. All conduit used in Power Service construction shall be Rigid Metallic Conduit (RMC) per 725.04. Transition to other conduit materials (if called for in the plans) at no less than 2 feet below finished grade.
14. All necessary equipment and conduit shall be installed per applicable codes and ordinances. See plan for additional details.

**POWER SERVICE**
240/120V, 3 Wires, 1 Phase or 480/240V, 3 Wires, 1 Phase
- See Standard Construction Drawing HL-40.10 for more details.
- 105A disconnects will be fused at 50A.
- 260A disconnects will be fused at 300A.
1. All conduit shall conform to C&MS 725.04.
1. This layout should be used for all Ground-Mounted ITS Cabinet locations. If any equipment shown/listed is not to be installed by the Contractor, the dedicated space provided shall be left empty.

2. Any equipment not listed which needs to be installed by the Contractor shall have location approved by the ITS Engineer.

3. All device and equipment types shown shall utilize the dedicated rack space shown.

4. Contractor is responsible for providing all necessary 10/32 x 1/2" pan head zinc plated or stainless steel machine screws to attach devices to the rack, minimum 4 screws per device.

   NOTES:

   1. 12-24 TERMINATION SPACE
   2. 48 TERMINATION SPACE
   3. 72-144 TERMINATION SPACE

   DMS CONTROLLER WILL BE PLACED DIRECTLY UNDER THE SHELF UNLESS THERE IS NOT A DMS CONTROLLER, THEN PLACE THE CAMERA CONTROLLER UNDER THE SHELF. IF BOTH A DMS CONTROLLER AND A CAMERA CONTROLLER ARE NEEDED, PLACE THE DMS CONTROLLER ON TOP OF THE CAMERA CONTROLLER (CLOSER TO THE SHELF). ALSO NOTE THAT NEITHER CONTROLLER MAY BE PRESENT. IF THIS IS THE CASE, THE SPACE WILL REMAIN EMPTY.
NEMA ENCLOSURE WITH SURGE PROTECTION (NOT TO SCALE)

**SECTION A-A**

**TYPICAL HAR FLASHING BEACON SIGN**

**TRIAD GROUND SYSTEM** (NOT TO SCALE)

2. DESIGN DATA: Loading: Walkway Live Load = 80 pounds per square foot.

3. MATERIALS: Structural Steel ASTM A36 minimum yield strength fy=36000 pounds per square inch. Welding Electrode Grade G10XX or E70XX Manual Shielded Metal Arc. ASTM A490 or 1F264 Submerged Arc. E70XX or E70PXX Gas Metal Arc. Main Connections: Bolted ASTM A527 Other Bolts: As Noted. ASTM A307 Threaded Bars (f15k) ASTM A325. Steel shall be galvanized to conform to ASTM A153 after cutting, bending, and welding. Bolts, nuts, washers and similar threaded fasteners shall be galvanized per ASTM A153. These items may be mechanically zinc coated in accordance to ASTM B695 Class 50.

4. WORK DESCRIPTION: The work shall consist of the fabrication and installation of a hung catwalk structure. The host structure will be the Steel Pedestal Overhead Sign Support TC-(Modified). The Contractor shall supply full catwalk structure construction drawings to fit the span requirements by the Project Plan of the site of interest. The Construction Drawings shall be based on the Plan, Details and Materials described. The Contractor shall determine the exact placement of the sign on the sign support pedestal to calculate the length of catwalk required. If the wearing surface of the proposed catwalk is not at the same level as the bearing deck of the sign, steps shall be provided. The Contractor shall determine the width of tread and height of riser steps to ensure that the sign enclosure door will open out. A landing area shall be provided to allow total opening of the door.

5. Shop drawings shall be submitted to the Engineer 10 days before fabrication.

6. Payment for materials and installation of catwalk and ladder is incidental to sign pedestal.

7. 18 ga. steel walkway shall be clipped to top flange of the sign housing.

8. The end beam is optional but preferred. The beam should go across the end of the catwalk and attach to the deck. Contact the DMS manufacturer for permission and attachment method and location. The total vertical load should not exceed 525 pounds. The additional wind load should not exceed 220 pounds. The total vertical load should not exceed 450 pounds. If the wearing surface of the proposed catwalk is not at the same level as the bearing deck of the sign, steps shall be provided. The Contractor shall determine the width of tread and height of riser steps to ensure that the sign enclosure door will open out. A landing area shall be provided to allow total opening of the door.

9. Grating support rail shall be bolted (2 places) to concrete. Coat with Polyvinyl Chloride with 1" Diamonds. 11 gage Supported Wire Mesh. Walkway 18 ga. Steel Max. Distance to Support 9". Fasteners shall be galvanized to conform to ASTM A153 after cutting, bending, and welding. Bolts, nuts, washers and similar threaded fasteners shall be galvanized per ASTM A153. These items may be mechanically zinc coated in accordance to ASTM B695 Class 50.

10. The width of the catwalk at the door of the DMS enclosure can vary with the DMS size. It should be wide enough to open the access door outward ninety degrees from the sign housing.

11. See Standard Construction Drawings for pull box, conduit, and cabinet details.
T H E  I S  A  N E W  D R A W IN G.

E N G I N E E R I N G

R O A D W A Y

O F F I C E

2

D Y N A M I C  M E S S A G E  S I G N  -  P E D E S T A L  C A T W A L K

S T A N D A R D  R O A D W A Y  C O N S T R U C T I O N  D R A W I N G

S C D  N U M B E R

I T S-30.11

E N G I N E E R

S T D S .

R E V I S I O N  D A T E

T R A N S P O R T A T I O N  A D M I N I S T R A T O R

S T A T E  O F  O H I O  D E P A R T M E N T  O F

01-15-2016

D a v i d  L .  H o l s t e i n

Y e r a y

L A D D E R  P L A N

(See View M-M)

S S  B o l t s / N u t s  a t  A l u m i n u m / S t e e l  C o n n e c t i o n

I s o l a t e  A l u m i n u m  f r o m  G a l v a n i z e d  S t e e l  a n d  u s e  S S

B o l t s / N u t s  a t  A l u m i n u m / S t e e l  C o n n e c t i o n s.

2. I s o l a t e  a l u m i n u m  f r o m  g a l v a n i z e d  s t e e l  a n d  u s e  S S

B o l t s / N u t s  a t  A l u m i n u m / S t e e l  C o n n e c t i o n s.

3. C o n t a c t  b e t w e e n  a l u m i n u m  a n d  g a l v a n i z e d  p a r t s

s h a l l  b e  p r e v e n t e d  w i t h  0.0625"  a l u m i n u m  c h l o r i n e-

P r e n e  g a s k e t  o r  a p p r o v e d  s u b s t i t u t e.

4. U - b o l t s  s h a l l  b e  g a l v a n i z e d  s t e e l.

1.  S a d d l e  b a r s  s h o w n  o n  d e t a i l s  s h a l l  b e  b e n t  h o t.

2.  I s o l a t e  a l u m i n u m  f r o m  g a l v a n i z e d  s t e e l  a n d  u s e  S S

B o l t s / N u t s  a t  A l u m i n u m / S t e e l  C o n n e c t i o n s.

3.  C o n t a c t  b e t w e e n  a l u m i n u m  a n d  g a l v a n i z e d  p a r t s

s h a l l  b e  p r e v e n t e d  w i t h  0.0625"  a l u m i n u m  c h l o r i n e-

P r e n e  g a s k e t  o r  a p p r o v e d  s u b s t i t u t e.

4.  U - b o l t s  s h a l l  b e  g a l v a n i z e d  s t e e l.

C A T W A L K  H A N G E R  D E T A I L

D i a m e t e r  V a r i e s  w i t h  P o s i t i o n

C A T W A L K  H A N G E R  W E L D  D E T A I L

C A T W A L K  C R O S S  S E C T I O N  A N D  H A N G E R S

E L E V A T I O N

T R A N S V E R S E  B E A M  D E T A I L

C A T W A L K  H A N G E R  D E T A I L

C A T W A L K  H A N G E R  W E L D  D E T A I L

D E T A I L  O F  C O N N E C T I O N

I s o l a t e  A l u m i n u m  f r o m  G a l v a n i z e d  S t e e l  a n d  u s e  S S

B o l t s / N u t s  a t  A l u m i n u m / S t e e l  C o n n e c t i o n
NOTES:
1. For soil density, see chart.
2. Rod reinforcement = ASTM A615, GR. 60 KSI. (Bar lengths do not include hooks or hooks.)
3. Concrete density = 150 P.C.F.
4. Concrete strength = 3000 P.S.I.
5. Anchor bolts 8 ea. 1.25 x 48 F1554, Gr55.

For anchor bolt details see Note 5 and SCD ITS-30.13, sheet 1.

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<th>STRUCTURE</th>
<th>SOIL DENSITY</th>
<th>BARS</th>
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<td>#8</td>
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</table>

1. For soil density, see chart.
2. Rod reinforcement = ASTM A615, GR. 60 KSI. (Bar lengths do not include hooks or bends.)
3. Concrete density = 150 P.C.F.
4. Concrete strength = 3000 P.S.I.
5. Anchor bolts 8 ea. 1.25 x 48 F1554, Gr55.
NOTES:

1. Arm plate hole diameter shall be bolt diameter plus 1/64. Threads may be retapped after galvanizing.

2. Truss tubes are 38,000 psi.

3. The arm attachment plate shall be welded using a full penetration weld. The pole attachment to the base plate shall be welded using a full penetration weld.

4. Arm and pole tube are 62,000 psi.

5. A minimum of one bolt thread shall run above the anchor nut. A bolt diameter of 1/2" or greater shall be used per manufacturer's engineering requirements.

6. All unused couplings shall be provided with a removable galvanized cast iron plug.

7. The design loads were developed without applying galloping fatigue loads. Also, the stress requirements of Note b, Table 11-2 in the AASHTO code were not applied. This is a joint decision of the ODOT Engineers and the Consultants.

8. When placed on a concrete median barrier foundation, the length of the vertical support member shall be reduced by the height of the barrier wall (approx. 50%).

9. Weld 4 threaded steel 2 1/2" pipe couplings or short nipples to the arm tubes approximately 12" outboard of the first sign bracket for each sign. Remove all sharp edges inside the chord and pipe couplings.

10. Attach varmint screen with stainless steel band and minimum 2" overlap. Use overlapping screen with stainless steel wire ties. Screen shall be welded wire mesh or expanded metal sheet, stainless steel or galvanized, with openings no larger than 1/8".

11. Attach varmint screen with stainless steel band and minimum 2" overlap. Use overlapping screen with stainless steel wire ties. Screen shall be welded wire mesh or expanded metal sheet, stainless steel or galvanized, with openings no larger than 1/8".
1. Steel shapes other than arm and pole tubes are A.S.T.M. A572.
2. Galvanize steel after fabrication per A.S.T.M. A572.
4. Steel nuts and washers A.S.T.M. A357.
5. H.S. bolts, nuts and washers A.S.T.M. A325.

When placed on a concrete median barrier foundation, the length of the vertical support member shall be reduced by the height of the barrier wall lip price. 20°.

NOTES:

1. Steel shapes other than arm and pole tubes are A.S.T.M. A572.
2. Galvanize steel after fabrication per A.S.T.M. A572.
4. Steel nuts and washers A.S.T.M. A357.
5. H.S. bolts, nuts and washers A.S.T.M. A325.

When placed on a concrete median barrier foundation, the length of the vertical support member shall be reduced by the height of the barrier wall lip price. 20°.
NOTES:

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between concrete foundation and adjacent concrete.

2. A 6" thick work pad with dimensions shown on details shall be provided. A 6" thick work pad shall be provided between the cabinet and adjacent concrete.

3. Where pull boxes are placed in pre-poured concrete, the location of pull boxes shall be adjusted to provide access, drainage, and safety, as approved by the Engineer.

4. PVC conduit and fittings shall be used. The conduit and fittings shall be sized as per ODOT standards.

5. Conduit connections shall be made as shown on the plan.

6. Cable trays shall be used as shown on the plan.

7. Conduit fittings shall be compatible with the selected conduit material.

8. Conduit shall be run as shown on the plan.

9. Conduit shall be run as per C&MS 633.11 per ODOT requirements.

10. Work pad shall be provided unless in an otherwise paved area.

11. Foundation as per Plan shall be provided.
NOTES:

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between concrete foundation and adjacent paved areas.

2. A 6" thick work pad with dimensions shown on details shall be provided unless in an otherwise paved area. In level areas, the top of the pad shall be 3" above the ground line. In steeply sloped areas, the pad's design shall be adjusted to provide access, drainage, and safety, as approved by the Engineer.

3. For pole-mounted ITS cabinets, the mounting height shall result in the bottom of the cabinet to be 30" above the work pad.
**NOTES:**

1. **DESIGN SPECIFICATIONS:** This catwalk structure conforms to the Specifications For The Design, Fabrication and Erection Of Structural Steel as adopted by the American Institute Of Steel Construction. Metal fabrication, and to the Structural Welding Code of the American Welding Society, latest edition.

2. **DESIGN DATA:**
   - Loading: Walkway Live Load = 85 pounds per square foot.
   - Material: Structural Steel ASTM A36 minimum yield strength Fy=36000 pounds per square inch.
   - Welding Process: E60XX or E70XX Manual Shielded Metal-Arc; E70XX or E70XX Submerged Arc; E700X-G or E700X-GAS Metal Arc.
   - Main Connections bolts: ASTM A325
   - Other Bolts (As Noted): ASTM A307
   - Threaded Bars (stock) ASTM A36

3. **MATERIAL:**
   - Steel shall be guaranteed to conform to ASTM A123 after cutting bending and welding. Bolts, nuts, washers and similar threaded fasteners shall be guaranteed as per ASTM A153. These items may be mechanically arc coated in accordance to ASTM B699 Class 50.

4. **WORK DESCRIPTION:**
   - The work shall consist of the fabrication and installation of a truss catwalk structure. The host structure will be the Steel Truss Overhead Sign Support TC-15.116 (Modified).
   - The Contractor shall prepare full catwalk structure construction drawings to fit the span requirements by the Project Plan at the site of interest. The Construction Drawings shall be based on the Plan, Details and Materials described.

5. **SHOP DRAWINGS:**
   - The Contractor shall determine the exact placement of the sign on the sign support truss to calculate the length of catwalk required.
   - The catwalk shall be widened to 3'-0" from the door of the DMS enclosure a minimum distance of 3'-0" and a maximum distance of 4'-6". The door must be able to fully open to 90-degrees from the enclosure.
   - If the wearing surface of the proposed catwalk is not at the same level as the bearing deck of the sign, steps shall be provided. The Contractor shall determine the width of the tread and height of the steps to assure that the sign enclosure door will open out. A landing area shall be provided to allow total opening of the door.
   - The Contractor shall determine the width of tread and height of the door.

6. **STEPS:**
   - Steps may be required to access the sign working area floor (See Note 6).

7. **PANELS:**
   - Supported Wire Mesh with 1" Diamonds; 1/16 Gage Wire with Polyester Coating. Lag, Button and Side Rails to be clamped to the Katwalk. Ends to be lapped to close gap between hanger and catwalk.

8. **ELEVATION:**
   - The Contractor shall determine the width of tread and height of the panel.

9. **REVISIONS:**
   - The Shop drawings shall be submitted to the Engineer 10 days before fabrication.
   - Payment for materials and installation of catwalk and ladder is included to sign tower.
   - If the wearing surface of the proposed catwalk is not at the same level as the bearing deck of the sign, steps shall be provided. The Contractor shall determine the width of the tread and height of the steps to assure that the sign enclosure door will open out. A landing area shall be provided to allow total opening of the door.

10. **TEMPORARY ELEVATION:**
    - The Contractor shall determine the width of tread and height of the panel.

11. **NOTES:**
    - See Standard Construction Drawings for pull box, conduit, and exterior details.
HANDRAIL AND POST

FRAME RAIL DETAIL

TRANSVERSE BEAM DETAIL

LADDER PLAN
(See Page 3 for View M-A)

CATWALK CROSS SECTION AND HANGERS

DYNAMIC MESSAGE SIGN - TRUSS CATWALK

(See CATWALK PLAN On Sheet 1)
**BEARING PLATE**

(Sneck Section A-A)

Holes

1 ⅛"

1"

R

ASTM A307

1" Bolt

⅜"

T = ⅜"

**SADDLE DETAIL**

Front Hanger Detail

Leveling Nut

Bolts

ASTM A325

⅞" HS

Tightening Nut

**TIGHTENING PLATE**

Hanger Elevation

A

Front Hanger Detail

**BEARING PLATE**

Tightening Plate

Levering Nut

Ⅲ" H/S ASTM A325

Bolts

**HANGER DETAIL**

3" Holes

1 ⅛"

1"

R

ASTM A307

1" Bolt

⅜"

T = ⅜"

**SADDLE DETAIL**

Rear Hanger Detail

Saddle Bar

⅞" x 1 ¼" Rod

ASTM A307

**PLAN**

1 ½"

1 ½"

1 ½"

2 ½"

**3" Holes**

1 ½" Holes

**TIGHTENING PLATE**

Hanger Elevation

**SECTION A-A**

Cage Hoops 3 x 1¾" Bar

**CAGED LADDER VIEW M-M**

May be Needed to Close Gap.

MC 13 x 31.8, Rubber Spacer

Ladder Bolted (4) to 3"

3"

3"

1"

R

2'-7"

(See detail)

Frame Poles

End Frame

Welded to Both Flanges Shall be Top and Bottom

Can Be Used as Vertical Swatch

1" Dia. Rungs

Plug Welded

1 Dia. Rungs

Plugs Welded to Rails

**WELD DETAIL**

 chloroprene gasket or approved substitute.

" (minimum)

shall be prevented with a

Contact between aluminum and galvanized parts

1.

Saddle bars shown on details shall be bent hot.

2.

Isolate aluminum from galvanized steel and use SS bolts/nuts at aluminum/steel connections.

3.

Contact between aluminum and galvanized parts shall be prevented with a "minimum" chromoprene gasket or approved substitute.

NOTES:
1. Tie anchor bolts to rebar cage near the top and bottom of the anchor bolts.

2. Screws may be deeper as required in the plans.

3. When required by local conditions and approved by the Engineer, alternate foundation designs are acceptable.

4. Provide all anchor bolts with standard steel hex nuts, leveling nuts, and plain washers. The nuts shall be capable of developing the full strength of the anchor bolts.

5. At locations where the existing slope is 6:1 or greater, the buried depth of foundation shall apply to the low side of the slope. Set the top of the foundation 2" above the existing surface on the high side of the slope. The additional depth of foundation necessary to meet these requirements shall be added to the formed top.

---

**NOTES:**

- Tie anchor bolts to rebar cage near the top and bottom of the anchor bolts.
- Screws may be deeper as required in the plans.
- When required by local conditions and approved by the Engineer, alternate foundation designs are acceptable.
- Provide all anchor bolts with standard steel hex nuts, leveling nuts, and plain washers. The nuts shall be capable of developing the full strength of the anchor bolts.
- At locations where the existing slope is 6:1 or greater, the buried depth of foundation shall apply to the low side of the slope. Set the top of the foundation 2" above the existing surface on the high side of the slope. The additional depth of foundation necessary to meet these requirements shall be added to the formed top.

---

**CAP REINFORCEMENT FOR ALL CAPS**

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<th>Size of Bars</th>
<th>Spacing Top Bars</th>
<th>Length Top Bars</th>
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**FOUNDATION REINFORCEMENT SCHEDULE**

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<tr>
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---

**ANCHOR BOLTS**

- 36" Cap
- 3 1/2" + 1/2" (Right Hand Shown - Left Hand Opposite)

---

**ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED**
NOTES

1. For sign attachment assemblies to be furnished with this support, construction details and location of handle hole are shown in Standard Construction Drawings. For Standard Construction Drawings, see Standard Construction Drawings (SCD'S) TC-22.10 and TC-22.20.

2. One internal diagonal is required at each end of each pole. Remove all sharp edges inside the pole and pipe coupling.

3. Weld one threaded steel 2" pipe coupling to the outside of each end frame pole as shown in detail A. Remove all sharp edges inside the pole and pipe coupling.

4. Weld one threaded steel 3" pipe coupling to the front top chord of the truss approximately 48" outside of the first sign bracket for each sign. Remove all sharp edges inside the chord and pipe coupling.

5. Weld one threaded steel 3" pipe coupling to the front top chord of the truss approximately 48" outside of the first sign bracket for each sign. Remove all sharp edges inside the chord and pipe coupling.

6. Camber the truss a minimum of 1" for a span of 50' or less. Increase the camber 1/4" for each 5' of span over 50'.

7. Internal diagonals only may be relocated from the top indicated position to avoid weld joint overlap.

8. Provide a removable galvanized cast iron plug for all unused couplings and wire outlets.

9. Steel shall be 35 ksi minimum.

ENGINEERING
ROADWAY
OFFICE OF
22 TRUSS SUPPORT - 80' MAX.

DYNAMIC MESSAGE SIGN
STANDARD ROADWAY CONSTRUCTION DRAWING

SCD NUMBER
ITS-35.13

ENGINEER STDS.

REVISION DATE

TRANSPORTATION ADMINISTRATOR
STATE OF OHIO DEPARTMENT OF

01-18 - 2019

Dav id L. H ols tein

Y Ever

SECTION C-C
End Frame Pole

1/4" Plate

2" Horizontal Diagonal

See Flange Detail

1/4" Plate

2" Vertical Diagonal

Section Joint

Alternate at Every

Internal Diagonals

1/4" Bolt

12 "

5.633" Sch. 40 Pipe

Gotted Lines of Horizontal Members Omitted for Clarity

See Note 5

TRUSS END JOINT DETAILS
DETAIL "C"

POLE BASE DETAIL

ON CONCRETE FOUNDATION

FULL PENETRATION BASE PLATE WELD

Bolt Circle - 22" Din.

Chord Radius + 1/4"

As Required 1" x 40" Min. Anchor Bolt

Varmint Screen (See Note 13)

3/16" Galvanized Steel

Chord, Hex Nuts, Plain and Lockwashers

1 1/2" x 60" Anchor Bolts with STL

Steel Hex Nuts, and Plain Washers

Steel Hex Leveling Nuts

Concrete Base

5/8" min.

5/8" x 5/8" Angle

Wt 6" x 20 lb/ft

Nipple or Hole for U-Bolts

ANGLE SPAN SUPPORT (ALTERNATE)

BASE PLATE WELD

FULL PENETRATION

SECTION A-A

UPPER SPAN SUPPORT

(ALT E R N A T E)

LOWER SPAN SUPPORT

DETAIL "C"

DETAIL "D"

SECTION E-E

Gotted Lines of Horizontal Members Omitted for Clarity

See Note 7

TRUSS END JOINT DETAILS

DETAIL "C"

POLE BASE DETAIL

ON CONCRETE FOUNDATION

FULL PENETRATION BASE PLATE WELD

Bolt Circle - 22" Din.

Chord Radius + 1/4"

As Required 1" x 40" Min. Anchor Bolt

Varmint Screen (See Note 13)

3/16" Galvanized Steel

Chord, Hex Nuts, Plain and Lockwashers

1 1/2" x 60" Anchor Bolts with STL

Steel Hex Nuts, and Plain Washers

Steel Hex Leveling Nuts

Concrete Base

5/8" min.

5/8" x 5/8" Angle

Wt 6" x 20 lb/ft

Nipple or Hole for U-Bolts

ANGLE SPAN SUPPORT (ALTERNATE)

BASE PLATE WELD

FULL PENETRATION
NOTES:

1. For sign attachment assemblies to be furnished.
2. For foundation details, see applicable foundation drawings.
3. One internal diagonal is required at each end of section.
4. Weld one threaded steel 2" pipe coupling to the outside of each end frame pole as shown in Detail B. Remove all sharp edges inside the pole and pipe coupling.

5. Weld one threaded steel 2" pipe coupling to the front top chord of the truss approximately 18" outboard of the first sign bracket for each sign. Remove all sharp edges inside the chord and pipe coupling.
6. Camber the truss a minimum of 1" for a span of 50' or less. Increase the camber 1/4" for each 5' of span over 50'.
7. Internal diagonals only may be relocated from the top indicated position to avoid weld joint overlap.
8. Provide a removable galvanized cast iron plug for all unused couplings and wire outlets.
9. Steel shall be 35 ksi minimum.
11. Weld one threaded steel 2" pipe coupling to the outside of each end frame pole. Remove all sharp edges inside the pole and pipe coupling.
12. Use variable panel spacing on truss.
NOTES:

1. This foundation is intended for use with concrete barrier as detailed in Standard Construction Drawing (SCD) RM-4.3M.

2. If a 50" wall is required the reinforcing steel and anchor bolts shall remain in the same position relative to the top of the wall, as in the 32" wall.

3. Refer to SCD TC-21.10 and PIS 203210 for typical dimensions with the following modifications to the reinforcement schedules:

50" WALL
MARK 401 LENGTH = D - 13" + 5"
MARK 604 NUMBER = 6
MARK 605 NUMBER = 4
MARK 603 NUMBER = 4
MARK 602 VERTICAL DIMENSION ≥ 34"

72" WALL
MARK 401 LENGTH = D - 13" + 5"
MARK 604 NUMBER = 6
MARK 605 NUMBER = 4
MARK 603 NUMBER = 4
MARK 602 VERTICAL DIMENSION ≥ 32"

4. For information regarding the transition sections of the barrier, see SCD RM-4.3M.

5. Anchor bolts - 8 ea. - 1.25" x 48", F1553, Gr55

Dimensions with the following modifications to the reinforcement schedules:

3. Refer to SCD TC-21.10 and PIS 203210 for typical dimensions with the following modifications to the reinforcement schedules:

1. This foundation is intended for use with concrete barrier as detailed in Standard Construction Drawing (SCD) RM-4.3M.

2. If a 50" wall is required the reinforcing steel and anchor bolts shall remain in the same position relative to the top of the wall, as in the 32" wall.

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50" WALL
MARK 401 LENGTH = D - 13" + 5"
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MARK 605 NUMBER = 4
MARK 603 NUMBER = 4
MARK 602 VERTICAL DIMENSION ≥ 34"

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MARK 401 LENGTH = D - 13" + 5"
MARK 604 NUMBER = 6
MARK 605 NUMBER = 4
MARK 603 NUMBER = 4
MARK 602 VERTICAL DIMENSION ≥ 32"

4. For information regarding the transition sections of the barrier, see SCD RM-4.3M.

5. Anchor bolts - 8 ea. - 1.25" x 48", F1553, Gr55

Dimensions with the following modifications to the reinforcement schedules:
DESTINATION DYNAMIC MESSAGE SIGN (DDMS)
TWO-PANEL DETAILS

GROUND-MOUNTED BEAM, TYPE W--X--

<table>
<thead>
<tr>
<th>ITEM EXT.</th>
<th>ITEM TOTAL</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
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CHOOSE APPROPRIATE SIGN FROM TABLE A

TABLE A

<table>
<thead>
<tr>
<th>ITEM EXT.</th>
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<tr>
<td>625</td>
<td>22000</td>
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<td>TRENCH, 25' DEEP</td>
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<td>30700</td>
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<td>FULL BOX, 725.08, 18&quot;</td>
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<tr>
<td>625</td>
<td>36001</td>
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<td>POWER SERVICE, AS PER PLAN</td>
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<tr>
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<td>PLASTIC CAUTION TAPE</td>
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<td>GROUND MOUNTED STRUCTURAL BEAM SUPPORT, W--X--</td>
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<tr>
<td>630</td>
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<td>BREAKAWAY STRUCTURAL BEAM CONNECTOR</td>
</tr>
<tr>
<td>630</td>
<td>80200</td>
<td>-</td>
<td>SIG FT</td>
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<tr>
<td>630</td>
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<td>SIG FT</td>
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<tr>
<td>630</td>
<td>84000</td>
<td>EACH</td>
<td>GROUND MOUNTED STRUCTURAL BEAM SUPPORT FOUNDATION</td>
</tr>
</tbody>
</table>

NOTES:

1. Actual extrusheet sign size may vary depending on destinations desired. Sign design template obtainable from ODOT Office of Traffic Operations. Email Ryan.comer@ohio.gov.

2. The Contractor shall provide and install signs as specified in the plans in accordance with ODOT Supplemental Specification 009. Contractor shall also provide and install all conduits, wiring, and other items necessary to make the sign fully functional. All conduits shall enter the bottom of the cabinet and be attached to the steel beam. All connections shall be weatherproof. The Contractor shall run all wires for power into the cabinet and wire in the breaker panel as required. The distribution cable shall have pull-apart connections located in the nearest pull box from the cabinet. The cabinet shall be mounted to one of the beam supports as shown.

3. The Contractor shall submit one controller unit to ODOT ITS Lab for testing to verify control from the Traffic Management Center, and shall be shipped/delivered to the below address.

4. The Contractor shall purchase and provide a 4G LTE modem, antenna cables, and extrusheet cable for remote wireless cellular communication. For network consistency and through proprietary approval, LTE modems shall be AT&T or Verizon.

5. Size beams appropriately for sign area according to ODOT design standards and Standard Construction Drawing (SCD) TC-42.10. Install with beam spacing according to SCD TC-41.10.

6. Coordinate power service utility to supply necessary input for cabinet and sign, install power service as shown on drawing provided. Size distribution cable based on National Electric Code standards with voltage drop under 5%.

7. The table of items shown shall be carried to the general summary.
### Notes:

1. Actual extrusheet size may vary depending on destinations desired. Sign design template obtainable from ODOT ITS Lab at the below address for programming and installation.

2. The Contractor shall provide a modem serial number for ODOT ITS Lab at the above address for programming and installation.

3. The Contractor shall purchase and provide a 4G LTE modem, antenna cables, and Ethernet cable for remote wireless services. ODOT Office of Traffic Operations. Email Bryan Comer at Bryan.Comer@dot.ohio.gov.

4. The Contractor shall submit one controller unit to the ODOT Office of Traffic Operations for testing to verify control from the Traffic Management Center.

5. Size beams appropriately for sign area according to ODOT design standards and Standard Construction Drawing. Install with beam spacing according to SCD TC-47.90.

6. Coordinate power service utility to supply necessary input for cabinet and sign. The Contractor shall also provide all conduits, plastic caution tape, as per plan and shall include all labor, materials, and equipment necessary to construct the item.

7. The table of items shown shall be carried to the price for item 630, sign erected, extrusheet, as per plan and shall include all labor, materials, and equipment necessary for ODOT to establish wireless service. The Contractor shall also provide all conduits, plastic caution tape, as per plan and shall include all labor, materials, and equipment necessary to construct the item.

8. The 4G LTE modem equipment shall be delivered to the ODOT ITS Lab at the above address for programming and installation.

9. Actual extrusheet size may vary depending on destinations desired. Sign design template obtainable from ODOT ITS Lab at the above address for programming and installation.

### TABLE: THREE-PANEL DETAILS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM EXT.</th>
<th>ITEM TOTAL</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
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</thead>
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<tr>
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<td>30700</td>
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<td>POWER SERVICE, AS PER PLAN</td>
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<td>625</td>
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<td>FT</td>
<td>PLASTIC CAUTION TAPE</td>
</tr>
<tr>
<td>630</td>
<td>-----</td>
<td>-</td>
<td>FT</td>
<td>GROUND MOUNTED STRUCTURAL BEAM SUPPORT, X--X--</td>
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<tr>
<td>630</td>
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<td>SIGNALIZATION, MISC: LTE MODEM, Furnish Only</td>
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</tbody>
</table>
ITEM 625 - LIGHTING, MISC.: STEP-DOWN TRANSFORMER AND SUPPORT

Furnish and install a transformer and support as per the details on this sheet.

This item of work includes the transformer, support and foundations, ground rods, conduit, and all hubs as shown in the details on this sheet. The transformer and support shall be designed, fabricated, and supplied by the Contractor, with all services to be undertaken to prepare the site for installation. The transformer and support complete and in service.

Payment for the above work shall be made at the contract bid for Item 625 - Lighting, Misc. Step-Down Transformer and support, cabs, insulated, in place, fully functional, tested and accepted.

1. The transformer shall be a 3KVA, 480V 3-conductor to 240V 3-conductor step down unit. The transformer shall be sealed, epoxy-nomex-paperless, dry type, general purpose outdoor, 185°C insulation, with 304 stainless steel enclosure (NEMA 3R minimum).

2. The transformer and related wiring shall be UL listed for indoor-outdoor applications and shall meet applicable NEMA and IEEE standards.

3. The Contractor shall submit to the Engineer, for approval, two sets of transformer's drawings and specifications for the transformer.

4. The transformer shall be watertight and shall use the General purpose outdoor, 185°C insulation, shall be sealed, epoxy-encapsulated, dry type, stainless steel enclosure (NEMA 3R minimum).

5. Conduit connections to the disconnect switches and transformer shall be watertight and shall use the hubs listed on the enclosure U.L. labels.

6. Disconnect switches shall be lockable in on/off positions and door shut location and shall have 2 padlocks.

7. A separate disconnect may be needed in cases where disconnected transformer support is not easily accessible from cabinet/device location.

8. The transformer shall be a 3KVA, 480V 3-conductor step down unit. The transformer shall be sealed, epoxy-nomex-paperless, dry type, general purpose outdoor, 185°C insulation, with 304 stainless steel enclosure (NEMA 3R minimum).

9. Conduit connections to the disconnect switches and transformer shall be watertight and shall use the hubs listed on the enclosure U.L. labels.

10. Disconnect switches shall be lockable in on/off positions and door shut location and shall have 2 padlocks.

11. A separate disconnect may be needed in cases where disconnected and transformer support is not easily accessible from cabinet/device location.

NOTES:

1. 

2. 

3. 

4. 

5. 

6. 

7. 

8. 

9. 

10. 

11. 

Notes:

Camera arm orientation may vary for views in all roadway directions, but shall be at least 90° from handhole location to accommodate viewing unit.

PLAN VIEW

Note:

Camera arm orientation may vary for views in all roadway directions, but shall be at least 90° from handhole location to accommodate viewing unit.
NOTES:

1. 1/2" preformed joint filler as per C&MS 705.03 shall be used between concrete poles and adjacent paved areas.

2. Work pad per C&MS 633.11.

3. Preference for work pad is to do earthwork grading around the area to avoid needing a sloped work pad, however, sloped work pad to be used in situations where slope is 4:1 or steeper.

1. 1/2" preformed joint filler as per C&MS 705.03:

- Isolation Joint

2. Power Conduit shall be One (1) 2" Conduit

3. Communication Conduit

4. CCTV Pole: Cabinet & Related Equipment Orientation will Vary. Consult ITS Engineer for Guidance.

5. Galvanized Steel Railing (Typ.)

6. Galvanized Steel Post (Typ.) 2" Dia. x .1875" Thickness

- Panel Lengths are Not to Exceed 36".

- L = Equal Interior Panel Lengths.

- Panel Lengths are Not to Exceed 36".

CROSS-SECTION A-A

TYPICAL DEVICE WORK PAD
SLOPED AREA

PLAN VIEW

ELEVATION VIEW
Vehicle Detection Assembly to Include the Following:

1. Vehicle Detector and Attachments
2. All Associated Cables Necessary for the Connections to Vehicle Detector and Attachments
3. Cabinet

Vehicle Detection Assembly to Include the Following:

- 45° Pole
- Nipple Continuous Weld
- Insulated Chase 10" Long Channel Bracket
- Aluminum Transformer Base, per HL-10.13 (Including Ground Rod)
- Foundation, per SCD HL-20.11
- Work Pad per C&MS 633.11 and No. 6 AWG Ground Wire
- Vehicle Detector Cable(s), Cabinet Enclosure (See Note 6)
- 2" Blind Coupling (NOT TO SCALE)

NOTES:

1. Mount Vehicle Detector on the roadway side of pole.
2. Support hooks should be appropriately sized for the number and size of conductors to be supported.
3. Run all wiring inside the pole and provide strain relief support for all control cables.
4. When installing the Vehicle Detector, maintain minimum clearances on roadways.
5. When installing the mounting brackets for Vehicle Detector, align and angle the detectors to cover the detection zone(s) as indicated and specified, per manufacturer recommendations.
6. Height of the cabinet shall be at a level to allow easy maintenance access while standing or 30" to the bottom of the cabinet. All conduit entrances into the cabinet shall be from the bottom side of the cabinet only.

Cabinet shall include:
- Aluminum enclosure
- Minimum dimensions: 24" x 24" x 12" (H x W x D)
- Corbin #2 keyed latch-type lock
- Needed power supplies and Vehicle Detector surge suppressor for serial, ethernet, and contact closure pairs.

Vehicle Detector Assembly (NOT TO SCALE)
NOTES:

1. RAMP METER SIGNAL DISPLAYS SHALL BE LOCATED AS SHOWN IN THE PLANS. THE FOUNDATION AND MAST ARM SIGNAL SUPPORT SHALL CONFORM TO STANDARD CONSTRUCTION DRAWING (SCD) TC-21.21 AND TC-81.22. SIGNAL HEADS SHALL BE 12" LED, TWO SECTION, RED OVER GREEN, BLACK POLYCARBONATE HOUSING WITH BLACK ALUMINUM VISOR, REFLECTIVE BACKPLATES, AND SHALL CONFORM TO NC-101. THE SIDE MOUNTED SIGNAL HEAD SHALL BE MOUNTED FOLLOWING SCD TC-85.10.

2. RAMP METER SIGNS AND WARNING BEACONS SHALL BE LOCATED AS SHOWN IN THE PLANS.

3. RAMP METER CONTROL EQUIPMENT SHALL BE LOCATED AS SHOWN IN THE PLANS. CONTROL EQUIPMENT, CABINET AND CABLE ITEMS SHALL CONFORM TO THE SPECIFICATIONS ESTABLISHED BY THE OFFICE OF TRAFFIC OPERATIONS HANDBOOK AND THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. EACH RAMP METER CABINET WITH CONTROLLER SHALL BE LOCATED AS SHOWN IN THE PLANS. METER SPECIFICATION IN THE PLAN SET.

4. PREFERRED RADAR DETECTOR LOCATION IS ON MAST ARM. IN THE CASE THAT THE RAMP METERING IS NOT MOUNTED ON THE RAMP, THEN, A SEPARATE POLE AND FOUNDATION ARE TO BE USED TO ACCURATELY DETECT THE LANES.
NOTES:

1. RAMP METER SIGNAL DISPLAYS SHALL BE LOCATED AS SHOWN IN THE PLANS. THE FOUNDATION AND MAST ARM SIGNAL SUPPORT SHALL CONFORM TO STANDARD CONSTRUCTION DRAWINGS (SCD) TC-21.31 AND TC-81.32. SIGNAL HEADS SHALL BE 12\" LED, TWO SECTION, RED OVER GREEN, BLACK POLYCARBONATE HOUSING WITH BLACK ALUMINUM VISOR, REFLECTIVE BACKPLATES, AND SHALL CONFORM TO 172.01. THE SIDE-MOUNTED SIGNAL HEAD SHALL BE MOUNTED FOLLOWING SCD TC-43.10.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH ITEM BID SEPARATELY.

2. RAMP METER SIGNS AND WARNING BEACONS SHALL BE LOCATED AS SHOWN IN THE PLANS. TWO 12\" YELLOW LED WARNING BEACONS SHALL BE LOCATED ON THE RAMP METERED STOP LINE AND FLASHING WHEN FLASHING (W3-8) SIGN AS SHOWN IN THIS DRAWING. THE BEACONS SHALL FLASH SIMULTANEOUSLY. SEE SHEET 3 FOR TYPICAL RAMP METER SIGN PLACEMENT.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE FOR EACH ITEM 632 SIGNALIZATION. MISC. - RAMP METER SIGN AND SHALL INCLUDE THE FOUNDATION EXCAVATION, FOUNDATION CONCRETE, ANCHOR BOLTS, GROUND ROOD, BREAKAWAY BASE, POLICE, SIGN, SIGN BRACKETS, FLASHERS, MOUNTING HARDWARE AND ALL OTHER ITEMS NECESSARY FOR A COMPLETE INSTALLATION.

ELECTRICAL CABLE WILL BE PAID AS A SEPARATE ITEM.

3. RAMP METER CONTROL EQUIPMENT SHALL BE LOCATED AS SHOWN IN THE PLANS. CONTROL EQUIPMENT, CABINET AND CABINET ITEMS SHALL CONFORM TO THE SPECIFICATIONS ESTABLISHED BY THE OFFICE OF TRAFFIC OPERATIONS HANDBOOK AND THE CONSTRUCTION AND MATERIAL SPECIFICATIONS. EACH RAMP METER CABINET WITH CONTROLLER SHALL CONSIST OF ALL HARDWARE NEEDED TO BE FULLY FUNCTIONAL. FOR FULL SPECIFICATION, SEE RAMP METER SPECIFICATION IN THE PLAN SET.

PAYMENT WILL BE MADE AT THE CONTRACT UNIT PRICE FOR SEPARATE BIDS INCLUDING USE OF 809 ATC CONTROLLER, APP AND 809 ITS CABINET - RAMP METER.

4. PREFERRED RADAR DETECTOR LOCATION IS ON MAST ARM. IN THE CASE THAT THE RAMP CONFIGURATION PREVENTS THIS LOCATION, A SEPARATE POLE AND FOUNDATION ARE TO BE USED TO ACCURATELY DETECT THE LANES.

RAMP METER SIGNAL INSTALLATION - MAST ARM

LOCATION OF ENFORCEMENT AREA SHALL BE APPROVED BY THE ENGINEER.

LEGEND

- TRAFFIC SIGNAL, 2 UNIT
- RADAR DETECTION UNIT
- METER BASE
- POWER SOURCE
- DISCONNECT SWITCH
1. Mast arm should extend 1' past the edge line.