Illinois Tollway Base Sheet Revisions

Section M  Base Sheet Drawings

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<th>Drawing</th>
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<tbody>
<tr>
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<td>Effective: 2021-03-01</td>
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<tr>
<td>M-BUS-2500</td>
<td>Cable/Conduit Schedule and General Notes</td>
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<td>M-BUS-2501</td>
<td>Legend, Symbol List, Abbreviations, and Equipment Schedules</td>
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<td>M-BUS-2502A</td>
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<td>M-BUS-2509</td>
<td>Showing full drawings for remote plaza.</td>
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<td>Control Building Equipment Layout - Main Plaza</td>
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<td>M-BUS-2511</td>
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<td>Wiring Diagram - AET 3-Lane Layout</td>
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<td>M-BUS-2519B</td>
<td>Wiring Diagram - AET 1-Lane Layout</td>
</tr>
<tr>
<td>M-BUS-2520</td>
<td>Showing full drawings for remote plaza.</td>
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<tr>
<td>M-BUS-2521</td>
<td>Control Building Equipment Layout - Remote Plaza</td>
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<td>M-BUS-2522</td>
<td>Interior Elevations - Remote Plaza</td>
</tr>
<tr>
<td>M-BUS-2523</td>
<td>Mechanical Plan - Remote Plaza</td>
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<td>M-BUS-2524</td>
<td>Control Building Lighting and Receptacle Plan - Remote Plaza</td>
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<td>M-BUS-2525</td>
<td>Control Building Grounding Details - Remote Plaza</td>
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<td>M-BUS-2526</td>
<td>Panelboard Schedules - Remote Plaza AET Lanes</td>
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<td>Video Power Junction Box - Remote Plaza</td>
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<td>Drawing</td>
<td>Modification Summary</td>
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<td>Data Logger Camera. Previous sheet 2561.</td>
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<td>Overhead Conduit Tray. Detail for new conduit tray connection to plaza monotubes.</td>
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<td>Toll Plaza Identification Sign. Detail for sign to identify plaza building number.</td>
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<td>Plaza Control Building Concrete Foundation. Detail for foundation for pre-fabricated building.</td>
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<td>Control Building Lighting Plan and Miscellaneous Detail - Main Plaza. Merged with previous M-BUS-2516 to become current M-BUS-2513.</td>
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<td>Control Building Lighting Plan and Miscellaneous Detail - Remote Plaza. Merged with previous M-BUS-2517 to become current M-BUS-2524.</td>
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<td>M-BUS-2547</td>
<td>Video Watchdog Camera Details. Retired.</td>
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<td>M-BUS-2548</td>
<td>Ramp Plaza Monotube Details ACM and IPO Lanes. Retired.</td>
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<td>M-BUS-2549</td>
<td>Electric Site Plan - ACM and IPO Lanes. Retired.</td>
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<td>Automatic Lane (ACM/ATPM) Island Plan and Details 12 Foot Wide Lane. Retired.</td>
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<td>M-BUS-2554</td>
<td>I-Pass Only (IPO) Lane Island Plan and Details 12 Foot Wide Lane. Retired.</td>
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### Conduit Sizes

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>TOLL EQUIPMENT WIRING CABLE/CONDUIT SCHEDULE</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>RIGID METALLIC CONDUIT 1/2&quot;</td>
</tr>
<tr>
<td>2</td>
<td>RIGID METALLIC CONDUIT 1&quot;</td>
</tr>
<tr>
<td>3</td>
<td>RIGID METALLIC CONDUIT 3/4&quot;</td>
</tr>
<tr>
<td>4</td>
<td>RIGID METALLIC CONDUIT 1&quot;</td>
</tr>
<tr>
<td>5</td>
<td>RIGID METALLIC CONDUIT 2&quot;</td>
</tr>
<tr>
<td>6</td>
<td>RIGID METALLIC CONDUIT 3&quot;</td>
</tr>
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<td>7</td>
<td>RIGID METALLIC CONDUIT 4&quot;</td>
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<td>8</td>
<td>RIGID METALLIC CONDUIT 6&quot;</td>
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<td>9</td>
<td>RIGID METALLIC CONDUIT 8&quot;</td>
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<td>10</td>
<td>RIGID METALLIC CONDUIT 10&quot;</td>
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<tr>
<td>11</td>
<td>RIGID METALLIC CONDUIT 12&quot;</td>
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<td>12</td>
<td>RIGID METALLIC CONDUIT 14&quot;</td>
</tr>
<tr>
<td>13</td>
<td>RIGID METALLIC CONDUIT 16&quot;</td>
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### Cables/Conduits Schedule

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CABLE DESCRIPTION</th>
<th>CONDUIT SIZE</th>
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<tr>
<td>1-00</td>
<td>1/16&quot; CABLE DUCT</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>1-01</td>
<td>1/16&quot; CABLE DUCT</td>
<td>1&quot;</td>
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<td>1-02</td>
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<td>1/16&quot; CABLE DUCT</td>
<td>4&quot;</td>
</tr>
<tr>
<td>1-07</td>
<td>1/16&quot; CABLE DUCT</td>
<td>6&quot;</td>
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</tbody>
</table>

### Notes

1. Minimum size of exposed conduit is 3/4". Minimum size of embedded conduit is 1". Embedded conduit shall be PVC coated rigid steel.
2. Standard and quantum loops shall be furnished and installed by the Illinois Tollway Loop System. Cabinets are furnished and installed by the contractor.
3. Multi-conductor shielded cable #12 AWG for normal and UPS power shall be color coded as specified in the special provisions of the contract.
4. Multi-conductor shielded cable #4 AWG through #18 AWG for control shall be color coded for DCA-NEC 6.2 standards.
5. Not used.
6. Provide SPX protection adaptors for all antenna cables entering buildings. Line adaptors must be installed at all connections to the rack. Bias and cross wires shall be installed per NEC standard and quantum loops shall be furnished for control purposes. The use of adaptors for fiber optic cables shall be Phoenix contact or equivalent. Tinned copper conductors shall be color-coded for DCA-NEC 6.2 standards.
7. Provide SPX protection adaptors for all 5-422 and category 6 cables entering the building. The adaptors shall be provided for all connections to the loop system. Cat 6 cable shall be Phoenix contact or equivalent. Tinned copper conductors shall be color-coded for DCA-NEC 6.2 standards.
8. Provide nut adapter cable installed in embedded conduit.
9. Where isolation carpet is mounted on moisture walls.
10. Provide surge protection device for all cables from external devices routed into the plaza buildings including CAT-5, CAT-6, and fiber cables.
11. Antenna header sync cable in conduit must be installed between two plazas when their antennas are within 500ft of each other.
NOTES:

1. TO PROPOSED COMED SERVICE

2. CONDUIT ROUTING SHOWN DIAGRAMMATICALLY. THE CONTRACTOR IS RESPONSIBLE FOR FINAL ROUTING.

3. ALL EMPTY CONDUITS UNDERGROUND OR ABOVE GRADE SHALL HAVE A PULL STRING FOR COMED SERVICE TO TRANSFORMER PAD.

SEE NOTE 1.

(1) 4" CNC UNDERGROUND CASING D (JT810879) (SEE NOTE 2)

4" CNC UNDERGROUND (I) (JT810879)

(3) ECC, JC NO. 8 (I) (JS817212)

SEE NOTE 2.

(2) 4" CNC UNDERGROUND (I) (JT810879)

SEE NOTE 2.

SEE NOTE 3 (TYP.)

6" CNC UNDERGROUND CASING (I) (JS810881)

ECC, JC NO. 8 (I) (JS817212)

SEE NOTE 3 (TYP.)

SEE NOTE 4 (TYP.)

PROVIDE (2) 6" SDR 11 HDPE SLEEVES, EACH SLEEVE SHALL HAVE:

6. PROVIDE (2) 6" SDR 11 HDPE SLEEVES, EACH SLEEVE SHALL HAVE;

(1) 3' CNC DUCT (SODA GREEN)

(2) 3' CNC DUCT (GREEN/WHITE STRIPE)

(3) 3' CNC DUCT (SOLID GREEN)

4" CNC UNDERGROUND (I) (JT810879)

(3) ECC, JC NO. 4 (I) (JS817214)

SEE NOTE 4 (TYP.)

SEE NOTE 1.

SEE NOTE 1.

SEE NOTE 2.

SEE NOTE 2.

SEE NOTE 2.

SEE NOTE 2.

NOTE TO DESIGNER

THE SHEET SHOWN TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE CONTRACTOR PRIOR TO INSERTION INTO A CONTRACT.

CONTRACTOR FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" NOTICES SHALL BE REVISED BY THE DESIGNER PRIOR TO INSERTION INTO THE PLAN SET.
CONTROL BUILDING EQUIPMENT

NOTES:
1. See cable/conduit schedule sheet for cable tags.
2. Provide 3/4" Schedule 40 PVC conduits for ground cables connecting UPS-1 and LC-1 to master ground bus bar.
3. Provide exothermic connection to internal perimeter bus conductor.
4. Grounding shall be per special provisions.

NOTE TO DESIGNER:
This base sheet shows typical construction but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CADD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. All "Note to designer" boxes shall be removed by the designer prior to insertion of the sheet into the plan set.
NOTE TO DESIGNER

1. EQUIPMENT SHOWN ON THIS DRAWING MUST BE
   COORDINATED WITH THE ILLINOIS TOLLWAY IT
   DEPARTMENT.

2. ALL CABLES AND CONNECTORS REQUIRED SHALL
   BE
   FURNISHED AND INSTALLED BY THE CONTRACTOR.

3. ALL FIBER OPTIC PATCH CORDS SHALL BE
   FURNISHED AND INSTALLED BY THE CONTRACTOR.

4. ALL FIBER OPTIC SFP'S REQUIRED FOR TERMINATING
   FIBER OPTIC CABLES AT CISCO SWITCHES SHALL BE
   FURNISHED AND INSTALLED BY THE CONTRACTOR.

5. PROVIDE IN-LINE SPD PROTECTION ADAPTERS FOR ALL
   CATEGORY 6 CABLES ENTERING THE BUILDING INCLUDING
   ALL CONNECTIONS TO THE CISCO SWITCH, EPAC, I-PASS
   EQUIPMENT AND RACK.

NOTES:

- SMF and Network Connectivity between Main Plaza and Remote Plaza

- Equipment shown on this drawing must be
  coordinated with the Illinois Tollway IT Department.

- All cables and connectors required shall be
  furnished and installed by the contractor.

- All fiber optic patch cords shall be
  furnished and installed by the contractor.

- All fiber optic SFP's required for terminating
  fiber optic cables at Cisco switches shall be
  furnished and installed by the contractor.

- Provide in-line SPD protection adapters for all
  Category 6 cables entering the building including
  all connections to the Cisco switch, EPAC, I-PASS
  equipment and rack.

NOTE TO DESIGNER:

- This base sheet shows typical construction but it is
  NOT a standard template. It requires completion by
  the designer prior to insertion into a contract.

- The "CADD STANDARDS MANUAL" and "M-BUS-2505 STANDARD"
  are available on the Illinois Tollway website. The
  designer shall accept all responsibilities of the
  design of this sheet upon its completion and
  insertion into a contract. All notes to designer
  boxes shall be removed by the designer prior to
  insertion of the sheet into the plan set.

NOTE TO DESIGNER:

- Whether a ramp plaza building connects to the
  fiber backbone directly or through a main control
  building is situational based on the number of
  buildings, distance between them, and other factors.
  Coordinating fiber routing in coordination with Illinois
  Tollway IT and Business Systems.
NOTES:

1. MINIMUM CONDUIT SIZE IS 1-1/2".
2. LOOP WIRE SPLICES ARE MADE IN JUNCTION BOXES.
3. CONDUITS FOR LOOPS ARE TO BE 1-1/2" RIGID GALVANIZED STEEL PVC COATED.
4. LOOPS PROVIDED AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOP LEAD IN CABLES (DLCs) ROUTED TO BARRIER WALL. SEE LOOP INSTALLATION DETAILS.
5. CONTRACTOR SHALL COORDINATE WITH ILLINOIS TOLLWAY FOR PROVIDING SUIT OPENING, SAW CUTTING AND OTHER MISCELLANEOUS WORK REQUIRED FOR COMPLETE LOOP INSTALLATION.
6. CONDUITS FOR LOOPS ARE TO BE 1-1/2" RIGID GALVANIZED STEEL PVC COATED.
7. CONTRACTOR IS TO PROVIDE ALL CONDUIT AND LOOP LEAD IN CABLE FROM BUILDING TO JUNCTION BOX IN BARRIER WALL. 3 FEET OF CABLE COILED IN JUNCTION BOX IN BARRIER WALL.
8. CONTRACTOR TO CONFIRM THE CORRECT NUMBER OF DETECTOR LOOP IRIS AND LOOP LEAD (DLCs) ROUTED TO THE BARRIER WALL. JUNCTION BOXES BASED ON THE LAYOUT SHOWN HERE.
9. CONDUITS AND CONDUIT STUB UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL LANES AND SHOULDERS).
10. LEAD EDGE OF LOOP 2 SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.
11. MONOTUBE (TYP.) CONDUIT (TYP).
12. CONDUIT (TYP).
13. CONDUIT (TYP).
14. LOOP DETECTORS SHALL BE IN THE CENTER OF THE STRIPED LANES.
15. LOOP DETECTORS SHALL BE IN THE CENTER OF THE STRIPED LANES.
16. LOOP DETECTORS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO CONSTRUCTION STARTING.
17. LOCATION OF ALL LANE LOOP INSTALLATION DETAILS.
18. CONTRACTOR TO CONFIRM THE CORRECT NUMBER OF DETECTOR LOOP IRIS AND LOOP LEAD (DLCs) ROUTED TO THE BARRIER WALL. JUNCTION BOXES BASED ON THE LAYOUT SHOWN HERE.
19. CONDUITS AND CONDUIT STUB UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL LANES AND SHOULDERS).
20. LEAD EDGE OF LOOP 2 SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.
21. MONOTUBE (TYP.) CONDUIT (TYP).
22. MONOTUBE (TYP.) CONDUIT (TYP).
23. LOOP DETECTORS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO CONSTRUCTION STARTING.
24. LOCATION OF ALL LANE LOOP INSTALLATION DETAILS.
25. CONTRACTOR TO CONFIRM THE CORRECT NUMBER OF DETECTOR LOOP IRIS AND LOOP LEAD (DLCs) ROUTED TO THE BARRIER WALL. JUNCTION BOXES BASED ON THE LAYOUT SHOWN HERE.
26. CONDUITS AND CONDUIT STUB UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL LANES AND SHOULDERS).
27. LEAD EDGE OF LOOP 2 SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.
28. MONOTUBE (TYP.) CONDUIT (TYP).
29. LOOP DETECTORS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO CONSTRUCTION STARTING.
30. LOCATION OF ALL LANE LOOP INSTALLATION DETAILS.
31. CONTRACTOR TO CONFIRM THE CORRECT NUMBER OF DETECTOR LOOP IRIS AND LOOP LEAD (DLCs) ROUTED TO THE BARRIER WALL. JUNCTION BOXES BASED ON THE LAYOUT SHOWN HERE.
32. CONDUITS AND CONDUIT STUB UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL LANES AND SHOULDERS).
33. LEAD EDGE OF LOOP 2 SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.
34. MONOTUBE (TYP.) CONDUIT (TYP).
35. LOOP DETECTORS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO CONSTRUCTION STARTING.
36. LOCATION OF ALL LANE LOOP INSTALLATION DETAILS.
37. CONTRACTOR TO CONFIRM THE CORRECT NUMBER OF DETECTOR LOOP IRIS AND LOOP LEAD (DLCs) ROUTED TO THE BARRIER WALL. JUNCTION BOXES BASED ON THE LAYOUT SHOWN HERE.
38. CONDUITS AND CONDUIT STUB UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL LANES AND SHOULDERS).
39. LEAD EDGE OF LOOP 2 SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.
40. MONOTUBE (TYP.) CONDUIT (TYP).
NOTES:

1. MINIMUM CONDUIT SIZE IS 1-1/2".
2. LOOP WIRE SPLICES ARE MADE IN JUNCTION BOXES.
3. CONDUITS FOR LOOPs ARE TO BE 1-1/2" RIGID GALVANIZED STEEL PVC COATED.
4. LOOPS PROVIDED AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOPS PULLED BACK TO JUNCTION BOXES IN BARRIER WALL. SEE LOOP INSTALLATION DETAILS.
5. CONTRACTOR SHALL COLLABORATE WITH ILLINOIS TOLLWAY FOR PROPER SLOT OPENING, SAW CUTTING AND OTHER MISCELLANEOUS WORK REQUIRED FOR COMPLETE LOOP INSTALLATION.
6. Loops MUST BE VERIFIED BY THE ILLINOIS TOLLWAY PRIOR TO ANY CONSTRUCTION STARTING. LOCATION OF ALL LOOPs AND LANE STUB UPS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY BEFORE CONCRETE POUR. CONTRACTOR IS TO COORDINATE WITH THE ENGINEER.
7. SEE CONDUIT ROUTING DETAILS.
8. CONTRACTOR IS TO PROVIDE ALL CONDUIT AND LOOP LEAD IN CABLE FROM BUILDING TO JUNCTION BOX IN BARRIER WALL. 3 FEET OF CABLE COILED IN JUNCTION BOX AT BARRIER WALL.
9. ALL LOOP DETECTORS SHALL BE IN THE CENTER OF THE STRIPED LANES.
10. CONDUITS AND CONDUIT STRIPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL, LANES AND SHOULDERs).
11. LEAD EDGE OF LOOP 2 SHALL BE 4' DOWNSTREAM OF MONOTUBE CENTERLINE.
12. PIEZO AND QUANTUM SYSTEM LOOPS SHALL BE INSTALLED IN TRAVEL LANES ONLY.

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.

MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE FROM THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. NOTE TO DESIGNER BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

1-LANE AET EQUIPMENT AND LOOP LAYOUT
NOTE 14

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NOTE 15

NOTE TO DESIGNER

VES CAMERAS ON SHOULDER ARE NOT TYPICALLY INSTALLED. SHOWN HERE FOR COMPLETION BUT SHOULD BE REMOVED BY DESIGNER UNLESS THEY ARE SPECIFICALLY REQUESTED BY ILLINOIS TOLLWAY.

LEGEND

* INDICATES EQUIPMENT FURNISHED BY THE ILLINOIS TOLLWAY AND INSTALLED BY THE CONTRACTOR.

** INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.

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NOTES:
1. See cable/ conduit schedule and notes sheets for cable takes.
2. Front and rear VES camera cables are pulled by the contractor into monotube and pole arm. The contractor will run 50' of cable, leaving the majority inside the MONOTUBE arm. The Illinois Tollway will pull from the pole arm to the cameras and then terminate.
3. VES camera numbering scheme begins at right shoulder and are ordered sequentially (1, 2, 3, ... etc) to left shoulder.
4. All cabinets and power panel located in control building.
5. COAX for Avi antennas route through 2" to 1" coupler (if available), then run in 1" Sealtite conduit to antenna.
6. Equipment locations must be verified by the Illinois Tollway prior to construction and installation.
7. If VES cameras are mounted 18' above the roadway, then the cameras shall be placed 33' horizontal from the trigger.
8. This cablen is used to power the VES cameras. These cable will run from a 24V DC power supply located in the VPJB.
9. Data logger camera shall be placed downstream of the exiting monotube on a non-breakaway dedicated pole. Data logger camera power and signal shall go through CAT 6 ethernet cable. Mount data logger camera at 20'.
10. 1½" Sealtite and fittings are furnished by the contractor and installed by the Illinois Tollway.
11. All wiring from cameras/Avi antennas shall be surge protected as it enters Plaza building. Surge protection shall be in its VPJB for cameras and in communication room for Avi cabinets.
12. Provide 14 ft perpendicular ouitrogen support for VES camera pole and the antenna pole, due to the needs of multiple readers, often only maintaining the position of the VES support poles so the longer outrigger will need to cantleaver more towards the exterior side of the monotonube.
13. Not used.
14. Contractor shall furnish and install junction box 12"X12"X6" type NEMA 4X, HOFFMAN
15. Surge protection shall be in VES VPJB for cameras and in communication room for antenna.

NOTE TO DESIGNER:
This base sheet shows typical construction but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract.

LEGEND:
* Indicates equipment furnished by the Illinois Tollway and installed by the contractor.
** Indicates equipment furnished and installed by the Illinois Tollway.
*** Indicates equipment furnished and installed by the contractor.

FRONT / REAR PLATE VES BLOCK WIRING DIAGRAM
NOTES:

1. CONTRACTOR SHALL ROUTE ALL CONDUIT AS REQUIRED TO ALL PANELS, EQUIPMENT AND CONTROL DEVICES.

2. THE WALL ELEVATIONS FOR THE MAIN RAMP CONTROL BUILDING ARE SHOWN ON THIS DRAWING. THE WALL ELEVATIONS (NOT SHOWN) FOR THE REMOTE RAMP CONTROL BUILDING ARE SIMILAR.

3. MINIMUM CLEARANCE BETWEEN CABINETS SHALL ALLOW THE DOORS TO OPEN 90 DEGREES MINIMUM.
**GREENHECK**

**NOTES**

1. UNIT SHALL HAVE AN CERTIFIED COILS, NACZA RATED FANS, AND UL LISTED & LABELED ELECTRICAL COMPONENTS.

2. PROVIDE HVAC UNITS WITH FACTORY SUPPLY AND RETURN AIRLES.

3. HVAC PROVIDE LEAD/LAG THERMOSHEM CONTROLLER BARD MODEL #MC4001-AC WITH BASE ALARMS AND ETHERNET ACCESS.

4. ALL MANUFACTURERS AND PART NUMBERS ARE FOR REFERENCE. THE CONTRACTOR SHALL PROVIDE CALCULATIONS FOR HVAC AND HEATING SYSTEM BASED ON BUILDING CONSTRUCTION AND INTERNAL BUILDING LOADS.

This base sheet shows typical new construction, but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CADD STANDARDS MANUAL" are for reference. All "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THIS SHEET INTO THE PLAN SET.

The estimated equipment building loads for equipment is 19,000 BTU/Hr. The designer shall size the HVAC systems accordingly.

**ABBREVIATION LEGEND**

- CFW - CUBIC FEET PER MINUTE

**ELECTRICAL ROOM**

<table>
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<tr>
<th>MARK</th>
<th>LOCATION</th>
<th>SERVICES</th>
<th>NUM. TON</th>
<th>ELECTRICAL</th>
<th>ELECTRICAL</th>
<th>MANUFACTURER/ MODEL NUMBER</th>
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**EXHAUST FAN AND DAMPERS**

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<tr>
<td>E-1</td>
<td>GENERATOR ROOM</td>
<td>GREENHECK</td>
<td>SE1</td>
<td>EXHAUST FAN</td>
<td>750</td>
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**EXHAUST FAN AND DAMPERS**

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<td>GENERATOR ROOM</td>
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<td>GREENHECK</td>
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<tr>
<td>EMPH-02</td>
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**ELECTRIC UNIT HEATER SCHEDULE**

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<th>MARK</th>
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<th>MODEL</th>
<th>TYPE</th>
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<th>CFM</th>
<th>VPH</th>
<th>NOTES</th>
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<tr>
<td>UH-1</td>
<td>GENERATOR ROOM</td>
<td>1UL</td>
<td>MOUNTED</td>
<td>1000</td>
<td>240</td>
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<td>60</td>
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COMMUNICATIONS AND EQUIPMENT RACK ELEVATION

NOTE 1. SEE CABLE/CONDUIT SCHEDULED SHEET FOR CABLE TAGS.

NOTE 2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 2/0 WTH 2/0X #2 AND 2/0X #12 GRD, UNLESS OTHERWISE NOTED.

NOTE 3. FOR PANEL SCHEDULES, SEE PANELBOARD SCHEDULES SHEET.

NOTE 4. PROVIDE CONNECTION TO RECEPTACLES FOR THE EQUIPMENT RACKS AS SPECIFIED. THE PLUS SEMP SHALL BE MOUNTED TO THE SIDE OF THE CABINET AS DIRECTED BY THE ENGINEER.

NOTE 5. FOR LIGHTING FIXTURE SCHEDULE, ELECTRICAL SYMBOLS, LEGEND, AND ABBREVIATIONS, SEE LEGEND SHEET.

NOTE 6. LIGHTING AND RECEPTACLE SHEALS SHALL BE FED FROM PANEL MDP-1.

NOTE 7. PROVIDE CONNECTIONS TO THE MOTORIZED DAMPER AND GEN. CONTROLLER PANEL DAMPERS TO BE CONTROLLED FROM GEN. CONTROLLER.

NOTE 8. CONNECT EMERGENCY BATTERY PACKS AHEAD OF LIGHTING CIRCUIT.

NOTE 9. COMMUNICATION AND EQUIPMENT RACK SHALL BE AS FOLLOWS: LANES, LANE CONTROL, BACKBONE FIBER, ITS FIBER.

NOTE 10. CONTRACTOR SHALL COORDINATE FINAL RACK LAYOUT WITH THE ENGINEER AND THE ILLINOIS TOLLWAY.

NOTE 11. NETWORK SWITCHES PROCURED BY OTHERS.

NOTE 12. RED INDICATOR LIGHT INSTALLED FACING THE ROADWAY AND ACTIVATED WHEN GENERATOR IS RUNNING.

NOTE 13. SEE MISCELLANEOUS SCHEMATIC DIAGRAMS SHEET FOR EXTERIOR LIGHTING CONTROLS.

NOTE TO DESIGNER

THIS SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS ANNUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" Notes Shall Be Removed By The Designer Prior To Insertion Of The Sheet Into The Plan.
ALL EQUIPMENT LOCATED INSIDE THE BUILDING SHALL BE BONDED.

ALL COPPER GROUND BARS SHALL BE OF HARD DRAWN, COMMERCELY PURE, ELECTROLYTIC COPPER, FOR USE AS AN ELECTRICAL CONDUCTOR AND SHALL COMPLY WITH ASTM SPEC. B-187 OF LATEST DATE.

BOLTS, NUTS, & WASHERS USED FOR CONNECTION TO GROUND.

GROUND WELLS ARE REQUIRED AT EVERY GROUND ROD.

PROVIDE A #2 AWG GROUND CABLE FROM THE FRAME OF EACH TRANSFORMER.

GROUND WELLS IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.

EXOTHERMIC WELD (TYP.)

GROUNDING DETAILS - SEE GROUNDING SCHEMATIC SHEET FOR MORE DETAILS.

GROUND BUS BARS MUST BE MOUNTED APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACES OR INSULATED STANDOFFS. THE STANDOFFS SHALL BE INSTALLED AT INTRICATE INTERVALS TO KEEP THE CONDUCTOR SECURELY IN PLACE.

GROUND BUS RACKS MUST BE MOUNTED APPROXIMATELY 6 FEET ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING HARDWARE WITH INSULATION.

NOTE TO DESIGNER

NOTES:

1. SEE CABLE/CONDUIT SCHEDULE SHEET FOR CABLE TAGS.

2. NOT TO SCALE

3. DETAIL SHOWS INSTALLATION IN UNPAVED AREA. WHEN INSTALLING IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.

4. GROUND WELLS AND REQUIRED AT EVERY GROUND ROD.

5. SEE GROUNDING SCHEMATIC SHEET FOR MORE DETAILS.

6. PROVIDE #2 CABLE OR PVC CONDUIT FOR GROUND CABLES UNDER BUILDING (TYP.).

7. ALL COPPER GROUND BARS SHALL BE OF HARD DRAWN, COMMERCELY PURE, ELECTROLYTIC COPPER, FOR USE AS AN ELECTRICAL CONDUCTOR AND SHALL COMPLY WITH ASTM SPEC. B-187 OF LATEST DATE.

8. BOLTS, NUTS, & WASHERS USED FOR CONNECTION TO GROUND BUS BARS SHALL BE SOLID COPPER.

9. WELD PER MANUFACTURER SPECIFICATION (ERICO PRODUCTS OR BURNEY CORP.).

10. THE COPPER GROUND BUS BAR SHALL BE MOUNTED TO THE CABLE "BAD ABOVE EQUIPMENT RACKS.

11. PROVIDE A #2 AWG GROUND CABLE FROM THE FRAME OF EACH EQUIPMENT RACK TO THE GROUND BUS AS SHOWN. THE CABLE SHALL BE BOLTED TO THE RACK USING A SEAMLESS, HEAVY DUTY COMPRESSION TERMINAL.

12. A FOUR INCH GAP SHALL BE PROVIDED BETWEEN THE TWO CONDUCTORS THAT MAKE UP THE INTERNAL, PERIMETER GROUND BUS CONDUCTOR.

13. ALL EQUIPMENT LOCATED OUTSIDE THE BUILDING SHALL BE BONDED TO THE MAIN GROUND BUS OR THE INTERNAL PERIMETER GROUND BUS CONDUCTOR WITH #2 AWG GROUND CABLE. ALL CONNECTIONS MUST BE EXOTHERMICALLY WELDED.

14. THE INTERNAL, PERIMETER GROUND BUS CONDUCTOR MUST BE INSTALLED HORIZONTALLY ALONG THE WALL, AT APPROXIMATELY 8 FEET ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACES OR INSULATED STANDOFFS. THE STANDOFFS SHALL BE INSTALLED AT INTERMITTENT INTERVALS TO KEEP THE CONDUCTOR SECURELY IN PLACE.

15. THE GROUND BUS BARS MUST BE MOUNTED APPROXIMATELY 6 FEET ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING HARDWARE WITH INSULATION.
<table>
<thead>
<tr>
<th>PANELBOARD</th>
<th>LOAD (WATTS)</th>
<th>PHASE/WIRE</th>
<th>VOLTAGE</th>
<th>MAINS</th>
<th>PHASE/WIRE</th>
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<td>UPS-1</td>
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<tr>
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<td>TOTAL WATTS &quot;A,C&quot;</td>
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THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY
WEB SITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE
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CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY
THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

2. THE DESIGNER SHALL ADJUST DETAIL AND QUANTITIES AS REQUIRED
FOR NUMBER OF VES CAMERAS.

3. THE DESIGNER SHALL INCLUDE VIDEO POWER JUNCTION BOX DETAILS
(M-ITS-2100 SERIES BASE SHEETS) FOR SECURITY CAMERAS AND DATA
LOGGER CAMERA.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

LICENSED PROFESSIONAL ENGINEER

NOTE TO DESIGNER:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.

2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

3. ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

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LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

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4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.

2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

3. ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

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LOGGER CAMERA.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

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2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

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4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

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LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

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LOGGER CAMERA.

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LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

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2. THE DESIGNER SHALL ADJUST DETAIL AND QUANTITIES AS REQUIRED
FOR NUMBER OF VES CAMERAS.

3. THE DESIGNER SHALL INCLUDE VIDEO POWER JUNCTION BOX DETAILS
(M-ITS-2100 SERIES BASE SHEETS) FOR SECURITY CAMERAS AND DATA
LOGGER CAMERA.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.

2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

3. ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

NOTES TO DESIGNER:

1. THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A
STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER
PRIOR TO INSERTION INTO A CONTRACT INCORPORATION FILE AND THE
"CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY
WEB SITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE
DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A
CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY
THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

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3. THE DESIGNER SHALL INCLUDE VIDEO POWER JUNCTION BOX DETAILS
(M-ITS-2100 SERIES BASE SHEETS) FOR SECURITY CAMERAS AND DATA
LOGGER CAMERA.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.

LICENSED PROFESSIONAL ENGINEER

SUBJECT TO CHANGE DURING CONSTRUCTION

NOTE TO DESIGNER:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.

2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

3. ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.

4. CAT5 CABLES SHALL BE SURGE PROTECTED ON THE TSIC.
NOTES

1. SEE CABLE AND CONDUIT SCHEDULE SHEET FOR CABLE TAGS.
2. SEE ELECTRICAL WIRING DIAGRAMS SHEET FOR MONOTUBE WIRING.
3. NOT USED.
4. CAP ALL CONDUIT ENDS FOR FUTURE USE.
5. FINAL LOCATION OF ALL HANDHOLES AND JUNCTION BOXES SHALL BE APPROVED
   BY THE ENGINEER.
6. NOT USED.
7. ROUTE PLAZA ROADWAY LIGHTING CIRCUITS TO LIGHTING CONTRACTOR. THESE
   STAY ON PLAZA CIRCUITS. THE VES CAMERA HIGH PRESSURE WASH SYSTEM CABLE
   AND 1/C #8 AND 1/C #9 GROUND WIRE FROM LIGHTING CONTRACTOR LOCATED IN THE
   POWER CABLES TO THE LIGHT POLE FOR PLAZA LIGHTING CONTROL CIRCUIT. PROVIDE
   PROTOCOL ON SAME POLE.
8. ALL EXCESS ISOLATOR POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO
   EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
9. EXISTING EMBANKMENT GROUND WIRE TO THE MONOTUBE'S BASE.
10. REFER TO THE TERMINAL BLOCK LAYOUT SHEET. LOW VOLTAGE WIRE FROM VES AND
     SECURITY CAMERAS LAND ON SURGE PROTECTION DEVICES.
11. PVC CONDUIT SHALL BE USED WHEN THE CONDUIT IS EITHER COVERED OR ENCASED IN
     CONCRETE. ANY EXPOSED CONDUIT SHALL BE PVC COATED RGS. SLEEVES SHALL BE USED
     WHEN CROSSING WALLS, FOUNDATIONS.
12. LOCATION OF LANE STUB UPS TO BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO
     CONCRETE POUR. FINAL LOCATION OF EQUIPMENT TO BE APPROVED BY THE ENGINEER.
13. PROVIDE (2) 4" PVC COATED RGS 5FT PAST RETAINING WALL TO CHANGE TRANSFORMER
     TO LIGHT POLE FOR PLAZA ROADWAY LIGHTING CIRCUIT. INSTALL SLEEVE IN COORDINATION
     WITH STRUCTURAL AND ORI. ONE ON NEAR COMED TRANSFORMER LOCATION. PROVIDE WATER
     PROOF SEALING AT RETAINING WALL.
14. RIGID METALLIC CONDUIT PVC COATED FOR MOISTURE PROOF/ANTENNA CABLE
     SHALL RUN IN OVERHEAD CONDUIT TRAY. SEE OVERHEAD CONDUIT TRAY DETAILS.
15. SEE VES CAMERA HIGH PRESSURE WASH SYSTEM SHEETS FOR DETAILS. THIS WORK WILL BE
     PAID UNDER PAY ITEM 1202/03 "VES CAMERA, HIGH PRESSURE WASH SYSTEM, LOCATION 2".
16. FOR LIGHT POLE AND FOUNDATION DETAILS, SEE ILLINOIS TOLLWAY STANDARD SHEET H1
     AND H2.  NOT USED.
17. NOT USED.
18. PROVIDE (2) 4" SIM 13 HOPE SLEEVES, EACH SLEEVE SHALL HAVE:
   (1) 18" CNC DUCT (SOLID GREEN)
   (1) 18" CNC DUCT (SOLID WHITE STRIPE)
   (1) 18" CNC DUCT (SOLID BLACK STRIPE)
19. NOTE TO DESIGNER
   THIS SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD SHEET. IT REQUIRES
   COMPILATION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.
   NOTIFICATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS
   TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE
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   INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" SHEETS SHALL BE REMOVED BY THE
   DESIGNER PRIOR TO INSERTION INTO A CONTRACT.
Due to confirm the correct number of detector load-in cables (loop routed to the barrier junction boxes) based on the layout shown here, the contractor shall install (4) each shoulder for main loops.

1. Travel lanes - (4) loop each travel lane.
2. Main loops - (1) piezo angle loop + (1) spare.

NOTE TO DESIGNER

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NOTES:

1. Minimum conduit size is 1-1/2".
2. Loop wire splices are made in junction boxes.
3. Conduits for loops are to be 1-1/2" rigid galvanized steel PVC coated.
4. Loops provided and installed by the Illinois Tollway. Loops pulled back to junction boxes in barrier wall. See loop installation details. Contractor shall coordinate with Illinois Tollway for providing slot openings, saw cutting and other miscellaneous work required for complete loop installation.
5. Verify the conduit, monotubes and ves camera pole locations with the Illinois Tollway prior to barrier construction.
6. Equipment locations must be verified by the Illinois Tollway prior to construction starting. Location of all lane loops and lane stub ups shall be approved by the Illinois Tollway before concrete pour. Contractor to coordinate with the engineer.
7. See conduit routing details.
8. Contractor is to provide all conduit and loop lead in cable from barrier to junction box in barrier wall. 3 feet of cable coiled in junction box at barrier wall.
9. All loop detectors shall be in the center of the striped lanes.
10. Conduits and conduit stub ups shown shall be installed in all lanes (travel lanes and shoulders).
11. Lead edge of loop 2 shall be 6" downstream of monotube centerline.
12. Piezo and quantum system loops shall be installed in travel lanes only.

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This base sheet shows typical construction but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CADD standards manual" are available on the Illinois Tollway site. The designer shall accept responsibility of the design of this sheet upon its completion and insertion into a contract. All "note to designer" notes shall be removed by the designer prior to insertion of the sheet into the plan set.

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5. Verify the conduit, monotubes and ves camera pole locations with the Illinois Tollway prior to barrier construction.
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11. Lead edge of loop 2 shall be 6" downstream of monotube centerline.
12. Piezo and quantum system loops shall be installed in travel lanes only.
NOTES:

1. MINIMUM CONDUIT SIZE IS 1-1/2".

2. LOOP WIRE SPACES ARE MADE IN Junction BOXES.

3. CONDUITS FOR LOOPS ARE TO BE 1-1/2" RIGID GALVANIZED STEEL PVC COATED.

4. LOOP PROGRESS AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOPS FULLED BACK TO Junction BOXES IN BARREN WALL. SEE LOOP INSTALLATION DETAILS.

5. VERIFY THE CONDUIT, MONOTUBE AND VES CAMERA POLE LOCATIONS WITH THE ILLINOIS TOLLWAY PRIOR TO BARRIER CONSTRUCTION.

6. EQUIPMENT LOCATIONS MUST BE VERIFIED BY THE ILLINOIS TOLLWAY PRIOR TO ANY CONSTRUCTION STARTING. LOCATION OF ALL LANE LOOPS AND LANE STUB UPS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY BEFORE CONCRETE POUR. CONTRACTOR TO COORDINATE WITH THE ENGINEER.

7. SEE CONDUIT ROUTING DETAILS.

8. CONTRACTOR IS TO PROVIDE ALL CONDUIT AND LOOP LEAD IN CABLE FROM BUILDING TO Junction BOX IN BARRIER WALL. 3 FEET OF CABLE COiled IN Junction BOX AT BARRIER WALL.

9. ALL LOOP DETECTORS SHALL BE IN THE CENTER OF THE STRIPED LANES.

10. CONDUITS AND CONDUIT STUD UPS SHOWN SHALL BE INSTALLED IN ALL LANES (TRAVEL, LANES AND SHOULDERS).

11. LEAD EDGE OF LOOP 2 SHALL BE 6' DOWNSTREAM OF MONOTUBE CENTERLINE.

12. PEZO AND QUANTUM SYSTEM LOOPS SHALL BE INSTALLED IN TRAVEL LANE ONLY.

NOTE TO DESIGNER:

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NOTE 14
1. See cable conduit schedule and notes sheet for cable tags.

2. Front and rear VES camera cables are pulled by the contractor into monotube and pole arm. This contractor will pull the cables into the monotube arm to the cameras and then terminate.

3. VES camera numbering scheme begins at right shoulder and are ordered sequentially (1, 2, 3, ... etc.) to left shoulder.

4. All cabinets and power panel located in control building.

5. Camera for AVI antennas routed through 2" to 3" conduit (if required), then run in 1" “Staellite conduit to antenna.

Equipment locations must be verified by the Illinois Tollway prior to construction and installation.

If VES cameras are mounted above the roadway, then the cameras must be placed 33' horizontal from the trigger.

This cabling is used to power the VES cameras. These cables will run from the 24V DC power supply located in the VES.

Data logger camera shall be placed downstream of the exiting monotube or a non-breakaway dedicated pole. Data logger camera power and signal will go through CAT 5 Ethernet cable. Mount data logger camera at 20'. 1.5" "Staellite" and fittings are furnished by the contractor and installed by the Illinois Tollway.

6. All wiring from cameras/AVI antennas shall be surge protected as it enters plaza building. Surge protection shall be in VES VIP for cameras and in communication room for antenna cable.

7. Provides 14 ft perpendicular outrigger support for VES camera pole and the antenna pole due to the needs of multi-protocol readers only maintain the position of the VES support poles so the longer outrigger will need to cantilever more towards the exterior side of the monotube.

8. All cabinets and power panel located in control building.

9. VES camera numbering scheme begins at right shoulder and are ordered sequentially (1, 2, 3, ... etc.) to left shoulder.

10. Camera for AVI antennas routed through 2" to 3" conduit (if required), then run in 1" “Staellite conduit to antenna.

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This cabling is used to power the VES cameras. These cables will run from the 24V DC power supply located in the VES.

Data logger camera shall be placed downstream of the exiting monotube or a non-breakaway dedicated pole. Data logger camera power and signal will go through CAT 5 Ethernet cable. Mount data logger camera at 20'. 1.5" "Staellite" and fittings are furnished by the contractor and installed by the Illinois Tollway.

11. All wiring from cameras/AVI antennas shall be surge protected as it enters plaza building. Surge protection shall be in VES VIP for cameras and in communication room for antenna cable.

12. Provides 14 ft perpendicular outrigger support for VES camera pole and the antenna pole due to the needs of multi-protocol readers only maintain the position of the VES support poles so the longer outrigger will need to cantilever more towards the exterior side of the monotube.

13. All cabinets and power panel located in control building.

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15. All wiring from cameras/AVI antennas shall be surge protected as it enters plaza building. Surge protection shall be in VES VIP for cameras and in communication room for antenna cable.
NOTES TO DESIGNER

1. See cable/conduit schedules sheet for cable tags.
2. See system power single line diagram sheet for details.
3. Door alarm switch, see detail on door alarm details sheet.
4. Provide a 3 pair #22 shielded cable for ATS alarms and route to TSIC board. All contact closures shall be routed to TSIC.
5. The lightning protection system device shall be connected to the load side of the main breaker.
6. For roadway lighting, route to 30A circuit breaker.
7. All excess (slack) power and data cables must be coiled in the warehouse. No excess cables will be stored inside the cabinet.
8. Not used.
9. PVC SCH-40 conduit inside building shall be used when the conduit is either covered or encased in concrete. Transition shall be allowed. Any exposed conduit shall be PVC coated HDPE sleeves shall be used when deemed necessary.
10. The cable length from the antenna to the I-PASS reader shall not exceed 150 feet.
11. Provide a 3 pair #22 shielded cable for smoke detector alarm contact and route to card reader equipment.
12. Provide an Ethernet cable from UPS and from card reader panel to local backBone rack. Network switches to be procured by others.
13. Terminate alarm cables on terminal block on TSIC board.
14. Not used.
15. Power front and rear VES cameras from 24V DC video junction box #3 and data logger camera from security video junction box #4. All power to be surge protected.
16. All copper communications and control cables shall enter building along glass wall and be connected to a surge protection that connects to ground bus in building.
17. Location of 26 racks be in the middle of the room.
18. For security camera, contractor to verify clear unobstructed line of sight to the entrance doors.
19. Install transformer on 6" concrete pad 1 ft away from exterior wall. All feed to this transformer shall be underground.
20. Provide (2) 6" SDR 11 HDPE sleeves each. See base sheet MBUS-2547 for details.
21. THE LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED TO THE LOAD SIDE OF THE MAIN BREAKER.
22. THE CABLE LENGTH FROM THE ANTENNA TO THE I-PASS READER SHALL NOT EXCEED 150 FEET.
23. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKED DETECTOR ALARM CONTACT AND ROUTE TO CARD READER EQUIPMENT.
24. PROVIDE AN ETHERNET CABLE FROM UPS AND FROM CARD READER PANEL TO LOCAL BACKBONE RACK. NETWORK SWITCHES TO BE PROCURED BY OTHERS.
25. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
26. NOT USED.
27. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM SECURITY VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
28. NOT USED.
29. PROVIDE (2) 6" SDR 11 HDPE SLEEVES EACH, SEE BASE SHEET MBUS-2547 FOR DETAILS.
30. INSTALL TRANSFORMER ON 6" CONCRETE PAD 1 FT AWAY FROM EXTERIOR WALL. ALL FEED TO THIS TRANSFORMER SHALL BE UNDERGROUND.
31. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO CARD READER EQUIPMENT.
32. PROVIDE AN ETHERNET CABLE FROM UPS AND FROM CARD READER PANEL TO LOCAL BACKBONE RACK. NETWORK SWITCHES TO BE PROCURED BY OTHERS.
33. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
34. NOT USED.
35. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM SECURITY VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
36. NOT USED.
37. PROVIDE (2) 6" SDR 11 HDPE SLEEVES EACH, SEE BASE SHEET MBUS-2547 FOR DETAILS.
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41. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
42. NOT USED.
43. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM SECURITY VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
44. NOT USED.
45. PROVIDE (2) 6" SDR 11 HDPE SLEEVES EACH, SEE BASE SHEET MBUS-2547 FOR DETAILS.
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49. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
50. NOT USED.
51. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM SECURITY VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
52. NOT USED.
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57. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
58. NOT USED.
59. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM SECURITY VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
60. NOT USED.
NOTES:

1. CONTRACTOR SHALL ROUTE ALL CABLES AS REQUIRED TO ALL PANELS, EQUIPMENT AND CONTROL DEVICES.

2. THE WALL ELEVATIONS FOR THE MAIN RAMP CONTROL BUILDING ARE SHOWN ON THIS DRAWING. THE WALL ELEVATIONS FOR THE REMOTE RAMP CONTROL BUILDING ARE SIMILAR.

3. MINIMUM CLEARANCE BETWEEN CABINETS SHALL ALLOW THE DOORS TO OPEN IN DEGREES MINIMUM.

EQUIPMENT LEGEND

ITEM DESCRIPTION

1. LIGHTING DISTRIBUTOR, 3000VA, 3 PHASE, 3 WIRE IN A,NEMA 1 ENCLOSURE WITH A THREE POSITION SELECTOR SWITCH HAND-OFF-AUTO MOUNTED ON THE COVER. TRANSFORMER DRY TYPE, 120V/240V PRIMARY, 60U SECONDARY.

2. VARIOUS RR POWER #3

3. CIRCUIT BREAKER

4. PRIMARY CIRCUIT BREAKER

5. LIGHTNING ARRESTOR SYSTEM

6. MAIN DISTRIBUTION PANEL (MDP-2), 208Y/120V, 3 PHASE, 400 100 AMP, MAIN CIRCUIT BREAKER

7. LIGHTNING ARRESTOR SYSTEM

8. UPS-2 PANEL.

9. VARIOUS RR POWER #4

10. ITS 2-1 PANEL.
1. UNIT SHALL HAVE AER COILS, MERCY-102 LISTED AND LABELLED ELECTRICAL COMPONENTS.

2. PROVIDE HVAC UNITS WITH FACTORY SUPPLY AND RETURN AIR GRILLES.

3. HVAC PROVIDE LEAD/LAG THERMOSTAT CONTROLLER BARD MODEL #HC401013C WITH BASE ALARMS AND ETHERNET ACCESS.

4. ALL MANUFACTURERS AND PART NUMBERS ARE FOR REFERENCE - THE CONTRACTOR SHALL PROVIDE CALCULATIONS FOR HVAC AND HEATING SYSTEM BASED ON BUILDING CONSTRUCTION AND INTERNAL BUILDING LOADS.

### Notes to Designer

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The estimated equipment building loads for equipment is 19,000 BTU/hr. The designer shall size the HVAC systems accordingly.

### Abbreviation Legend

CFM - CUBIC FEET PER MINUTE
NOTES:
1. See Cable/Conduit Schedules sheet for cable tags.
2. Receptacle and lighting conduit shall be 3/8" with 2-LC #12 and 1-LC #12 GND, unless otherwise noted.
3. For panel schedules, see panelboard schedules sheet.
4. Provide connection to receptacles for the equipment racks as specified. The plug strip shall be mounted to the side of the cabinet as directed by the engineer.
5. For lighting fixture schedule, electrical symbols, legends, and abbreviations, see legend sheet.
6. Lighting and receptacles shall be fed from panel MDP-2.
7. Connect emergency battery pack ahead of light circuit.
8. Communication and equipment racks shall be approved by the engineer. A sample is shown below.
9. For electrical symbols, see legend sheet.
10. Contractor shall coordinate final rack layout with the engineer and the Illinois Tollway.

COMMUNICATIONS AND EQUIPMENT RACK ELEVATION

COMMUNICATIONS AND EQUIPMENT RACK LAYOUT

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LEGEND
1. Fiber-optic Corning Rack Interconnect Center (CH-OIU (8 RU))
2. Fiber-optic Corning Rack Interconnect Center (CH-OIU (4 RU))
3. Future network switches - (1 RU) see note 10
4. Future network switches - (1 RU) see note 10
5. CommScope modular patch panel - (2 RU)

COMMUNICATION AND EQUIPMENT RACK ELEVATION

NOT TO SCALE
NOTE TO DESIGNER

This sheet shows typical construction but it is NOT TO SCALE. It requires completion by the designer prior to insertion into a contract. Interpretation rules and the CADD standards manual are available on the Illinois Tollway website. The designer shall accept the responsibility of the construction for the information on the sheet. The designer shall accept the responsibility of making the insertion into a contract. *NOTE TO DESIGNER* boxes shall be removed by the designer prior to insertion into a contract. All "NOTE TO DESIGNER" notes must be completed by the designer prior to insertion of the sheet into the plan set.

1. See cable/conduit schedule for cable tags.
2. See control building equipment layout sheet for more detail.
3. Details show installation in unpaved area. When installing in a paved area, separate ground well in the form.
4. Ground wells are required at every ground rod.
5. Not used.
6. Provide 1/" PVC conduit for ground cables under building (TYP).
7. All copper ground bars shall be of hard drawn, commercially pure, electrolytic copper, for use as an electrical conductor and shall comply with ASTM spec. B-187 of latest date.
8. Bolts, nuts, & washers used for connection to ground bus bars shall be solid copper.
9. Weld per manufacturer specification (ERICO products or BURNDY CORP.)
10. The copper ground bus bars shall be mounted to the cable tray above equipment racks.
11. Provide a #2 AWG ground cable from the frame of each equipment rack to the ground bus as shown. The cable shall be bolted to the rack using a stainless steel compression terminal.
12. A four inch gap shall be provided between the ends of the two conductors that make up the internal perimeter ground bus conductor.
13. All equipment located inside the building shall be bonded to the main ground bus or the internal perimeter ground conductor with a #2 AWG ground cable. All connections must be exothermically welded.
14. The internal perimeter ground bus conductor must be installed horizontally along the wall approximately 1' above finished floor. The conductor shall be supported 2 inches from the wall surface on insulated stands. The stands shall be installed at intervals as necessary to keep the conductor securely in place without noticeable sags and bends.
15. The ground bus bars must be mounted approximately 1' above finished floor and mounted to wall using a mounting bracket with insulator.

GROUNDING DETAILS - CONTROL BUILDING

GROUND BUS LAYOUT

Building electrical grounding layout

Ground bus bar 2'L x 2"W x 1/4" thick

NOTE 1

Master ground bus bar 30'L x 4"W x 3/4" thick

NOTE 2

Ground bus bar 2'L x 2"W x 1/4" thick

NOTE 3

COPPER GROUND BAR (NOTES 7 AND 15)

30"±1/8" (5/8" TYP.)

NOTE 4

2" Coarse Wash Gravel

NOTE 5

13"

NOTE 6

Concrete

NOTE 7

Nieman Foundry R-7506-E 10"DIA. Floor box frame & lid or approved equal

NOTE 8

Remote Plaza

M-BUS-2525

NOTE 9

EXOTHERMIC WELD

NOTE 10

Ford Motor Company

NOTE 11

GROUND WELL PLAN DETAIL

GROUND WELL ELEVATION DETAIL

NOT TO SCALE

NOT TO SCALE

Master ground bus bar support spacing detail

NOT TO SCALE

Master ground bus bar connection detail

NOT TO SCALE

12 spaces @ 5" O.C.

Copper ground bar (NOTES 7 AND 15)

TYP. 44 Places

716" Dia. Holes (Tapped)

TYP. 4" Holes

(Note 15)

716" Dia. Holes (Tapped)

TYP. 44 Places

(Note 15)
### PANELBOARD SCHEDULES

#### PANELBOARD NO: 02-1.

<table>
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<th>PHASE/WIRE</th>
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#### PANELBOARD NO: 02-3.

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<tr>
<td>A, B</td>
<td>200</td>
<td>TOTAL WATTS A, B</td>
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</tbody>
</table>

#### PANELBOARD NO: 10-1.

<table>
<thead>
<tr>
<th>PHASE/WIRE</th>
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<tbody>
<tr>
<td>A</td>
<td>200</td>
<td>TOTAL WATTS A</td>
</tr>
</tbody>
</table>

**NOTE TO DESIGNER:**

This base sheet shows typical construction but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract. Microstation files and the "CADD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. A note to designer boxes shall be removed by the designer prior to insertion of the sheet into the plan set.
NOTES TO DESIGNER

1. THIS SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. ILLUSTRATION FILES AND THE "CODE STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

2. THE DESIGNER SHALL ADJUST DETAIL AND QUANTITIES AS REQUIRED FOR NUMBER OF VES CAMERAS.

3. THE DESIGNER SHALL INCLUDE VIDEO POWER JUNCTION BOX DETAILS IN ITS 2100 SERIES BASE SHEETS FOR SECURITY CAMERAS AND DATA LOGGER CAMERAS.

NOTES:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.

2. ROUTE 1-2/C #12 POWER CABLE TO EACH CAMERA.

3. ALL ELECTRICAL CABLES TO CAMERA SHALL HAVE SURGE PROTECTION.

4. CAT6 CABLE SHALL BE SURGE PROTECTED ON THE TSIC.
PLT References:

1. See Loop Layout sheets for more details.
2. The reinforcement is not shown for clarity.
3. Conducts that stub up in the pavement are 1.5" for Quantum and Piezo strips, 1.25" for all others unless noted otherwise. See Loop layout detail. Conduit between junction boxes shall be 4" dia.
4. Electrical contractor must coordinate with Illinois Tollway and pavement contractor. No concrete pour shall be done before conduit is laid out and approved by the Engineer.
5. Junction boxes must be installed a minimum of 12" apart.

Notes:

- PVC conduit and bushing should be used unless otherwise noted.
- Junction boxes must be placed as specified.
-REFERENCES:
  - Section A-A: Lane Loop Layout
  - Section C-C: Loop Installation Details
  - Detailed Elevation B-B: Embedded Junction Box in Barrier Wall - Elevation

Design Details:

- RGS conduit to loops 1.5" RGS conduit
- RGS conduit to lane control 4" RGS conduit
- Junction box 12"x20"x7"
- Insulated union top and bottom
- RGS conduit to loop (NOTE 1)
- 1 1/2" Insulated Union long top and bottom to junction box 2'-0" (2) No. 4 bars welded to junction box 2'-0"
- (2) No. 4 bars welded to junction box 2'-0".
- Wire filler cabling
- 1 1/2" Conduit nipple bushing
- 1 1/2" RGS conduit
- 1 1/2" RGS conduit (NOTE 3, 4)
- Foam 1" (NOTE 3, 4)
- 1 1/2" conduit nipple
- 1" epoxy
- 2" putty min.
- 4" PVC conduit
- 4" PVC conduit between junction boxes shall be 4" dia.
- Foam 1" (NOTE 3, 4)
- 1 1/2" Conduit nipple
- 1 1/2" RGS conduit
- Pin holes
- RGS conduit (NOTE 3, 4)
- 1 1/2" Conduit nipple
- 1" conduit nipple
- 1" foam
- 1" Epoxy

Insertion of the sheet into the plan set.

The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. All "Note to Designer" boxes shall be removed by the designer prior to insertion into the plan set.

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EQUIPMENT LEGEND - DOOR ALARM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. NORMALLY CLOSED (N.C. WHEN THE DOOR IS CLOSED) MAGNETIC CONTACT BUILT INTO Door Frame. SENTINEL 418 OR 419 SERIES. COIL CONTACT LEAD AND COMMUNICATION CABLE IN JUNCTION BOX.</td>
</tr>
<tr>
<td>2</td>
<td>2. JUNCTION BOX, 4&quot; X 4&quot; WITH BLANK COVER PLATE AND 1/2&quot; CONDUIT TO CABLE TRAY.</td>
</tr>
<tr>
<td>3</td>
<td>3. MOTION DETECTOR</td>
</tr>
<tr>
<td>4</td>
<td>4. MAGNETIC DOOR LOCK</td>
</tr>
<tr>
<td>5</td>
<td>5. DOOR RELEASE BUTTON</td>
</tr>
<tr>
<td>6</td>
<td>6. CARD READER (EXTERIOR)</td>
</tr>
</tbody>
</table>

NOTES:

1. COIL 2 FEET CABLE IN BOX FOR TERMINATION BY THE ILLINOIS TOLLWAY UNLESS OTHERWISE NOTED.

2. ROUTE TO CARD READER PANEL TERMINATION BY THE ILLINOIS TOLLWAY. 4-1PR #22 SHLD. CABLE IN 1/2" CONDUIT.

3. MECHANICAL LOCKS SHALL BE SCHLAGE BRAND (OR APPROVED EQUAL) AND SECURED WITH A CONSTRUCTION KEY WITH THREE COPIES PROVIDED TO ILLINOIS TOLLWAY BUSINESS SYSTEM.

NOTE 1

NOTE 2

NOTE 3

NOTE 4
Schematic Wiring Diagram

Emergency Roadway Plaza Lighting

Lighting Contactor Wiring Diagram

Transformer 30A, 2P, 08

Roadway Luminaires Adjacent to Plaza

From Lighting Contactor in Control Building

1#10 GND

1#8 GND

2#8 GND

PHOTO CELL

Electrical Contactor

Lighting Contactors

Electrically Held

Electrical panel

1#10 GRD

2#8 GRD

Lighting Contactors

Emergency Roadway Plaza Lighting

Lighting Contactors

Electrically Held

Lighting Contactors

NOTE TO DESIGNER

This base sheet shows typical construction but it is

NOT A STANDARD DRAWING. It requires completion by

the designer prior to insertion into a contract.

NOTES:

1. SEE SYMBOLS AND ABBREVIATIONS SHEET FOR LEGEND.

2. SEE PLANS FOR CABLE AND CONDUIT ROUTING.

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS

NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY

THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.

THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE

DESIGN OF THIS SHEET UPON ITS COMPLETION AND

INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER"

NOTES SHALL BE REMOVED BY THE DESIGNER PRIOR TO

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NOTE 1: THIS SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLIANCE BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.

NOTE 2: ALL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

NOTE 3: BUILDING EQUIPMENT LAYOUT DRAWINGS, FOR LOCATION.

NOTE 4: TERMINAL STRIP INTERCONNECT CENTER (TSIC) IS LOCATED IN THE CONTROL BUILDING.

3 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART

<table>
<thead>
<tr>
<th>PAIR NO.</th>
<th>MFG'S COLOR CODE CHART</th>
<th>COLOR COMBINATION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>BLACK PAIRED WITH RED</td>
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<tr>
<td>2</td>
<td></td>
<td>BLACK PAIRED WITH WHITE</td>
</tr>
<tr>
<td>3</td>
<td>MANHATTAN #M43106.</td>
<td>BLACK PAIRED WITH GREEN</td>
</tr>
<tr>
<td>4</td>
<td>BELDEN #83559.</td>
<td>ORANGE/BLACK</td>
</tr>
<tr>
<td>5</td>
<td>BELDEN #83559.</td>
<td>WHITE/BLACK</td>
</tr>
<tr>
<td>6</td>
<td>BELDEN #83559.</td>
<td>RED/BLACK</td>
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6 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART

<table>
<thead>
<tr>
<th>PAIR NO.</th>
<th>MFG'S COLOR CODE CHART</th>
<th>COLOR COMBINATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>BLACK PAIRED WITH RED</td>
</tr>
<tr>
<td>2</td>
<td>MANHATTAN #M43103.</td>
<td>BLACK PAIRED WITH WHITE</td>
</tr>
<tr>
<td>3</td>
<td>BELDEN #88777 OR 3 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>BELDEN #88778 OR 6 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED</td>
<td></td>
</tr>
</tbody>
</table>

9 CONDUCTOR ALARM CABLE COLOR CODE CHART

<table>
<thead>
<tr>
<th>CONDUCTOR</th>
<th>MFG'S COLOR CODE CHART</th>
<th>COLOR COMBINATION</th>
</tr>
</thead>
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<tr>
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</tr>
<tr>
<td>2</td>
<td>RED</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>ORANGE</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>GREEN</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>BLUE</td>
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</tr>
<tr>
<td>6</td>
<td>IVORY</td>
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<tr>
<td>7</td>
<td>NAVY</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>RED/BLACK</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>GREEN/BLACK</td>
<td></td>
</tr>
</tbody>
</table>

NOTE:

1. TERMINAL STRIP INTERCONNECT CENTER (TSIC) IS LOCATED IN THE CONTROL BUILDING. SEE BUILDING EQUIPMENT LAYOUT DRAWINGS, FOR LOCATION.

2. ROUTE #4 COPPER GROUND CABLE FROM GROUND BUS BAR TO INTERNAL PERIMETER GROUND BUS CONDUCTOR.

3. ALL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.

4. PROVIDE WIRE DUCT AS SHOWN ON THE DRAWING. WIRE DUCT SHALL BE PANDUIT PART NUMBER C2LG6 WITH COVER PART NUMBER C3P83 G.
NOTES:

1. See cable/conduit schedules sheet for cable tags.
2. Install cables between the plaza and camera per manufacturer’s recommendations.
3. The camera’s final mounting location shall be approved by the engineer prior to installation.
4. The cost for the work to furnish and install the camera, cables, conduit, and associated mounting hardware on the pole shall be included in the lump sum pay item for electrical work for the plaza.
5. Loop 3’ of cable for camera in pole to facilitate camera maintenance.

NOTE TO DESIGNER:
This blank sheet shows typical construction but it is not a standard drawing. It requires completion by the designer prior to insertion into a contract.

Microstation files and the "CADD Standards Manual" are available on the Illinois Tollway website. The designer shall accept the responsibility of the design of this sheet upon its completion and insertion into a contract. All "NOTE TO DESIGNER" notes shall be removed by the designer prior to insertion of the sheet into the plan set.
NOTES

1. DETAILS ARE ONLY SCHEMATICS FOR GUIDANCE AND CONTRACTOR MUST COORDINATE WITH COMED AND NICOR GAS SERVICE LINES.

2. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL FOR LOCATION OF OPENINGS THROUGH RETAINING WALL. THE HOLE DIAMETER SHALL BE LARGE ENOUGH SO THAT IT DOES NOT CAUSE ANY STRAIN ON UTILITY DUE TO SETTLEMENT OF THE WALL.

3. SUPPORTS ARE REQUIRED TO HOLD THE SLEEVES VERTICALLY BEFORE FILL-UP ONLY. THIS ALSO MUST BE COORDINATED WITH COMED AND NICOR UTILITIES. PROVIDE CONDUIT SUPPORTS ARE REQUIRED TO HOLD THE SLEEVES VERTICALLY BEFORE FILL-UP ONLY.

4. ALL DIMENSIONS AND REINFORCEMENT SHALL BE PER ILLINOIS TOLLWAY STANDARD DRAWING H8 FOR TYPE 1 CENTERED CAISSON, 42" BARRIER.
NOTE:

CONCRETE PAD DETAIL FOR PROPOSED 480/240 V, SINGLE PHASE COMED TRANSFORMER FOR ROADWAY LIGHTING CONTROLLER.

NOTE TO DESIGNER

INSERTION OF THE SHEET INTO THE PLAN SET.

BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" DESIGN OF THIS SHEET UPON ITS COMPLETION AND DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE "CADD STANDARDS MANUAL" MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" REQUIRED COMPLETION BY THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" NOTES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.
NOTES:
1. COST OF OVERHEAD CONDUIT TRAYS AND FOOTINGS ARE INCIDENTAL TO PLAZA ELECTRICAL WORK.
2. INSTALL CONDUIT TRAY AND FOOTINGS PER MANUFACTURER RECOMMENDATIONS.
3. SECURE CONDUIT TO TRAY AND STRUCTURES AS REQUIRED BY CODE.

VOLTAGE DIVIDER JUNCTION BOX WITH NEMA 4X 36"X36"X12" SIZE PER PLAN (QUANTITY AND CONDUIT PVC COATED GRS (FLMC CONDUITS SIZE PER PLAN) (QUANTITY AND CONDUIT PVC COATED GRS)
1. Identification sign material shall meet the requirements of Article 720.02 of the Standard Specifications.

2. Identification signs shall be mounted onto the building using bolts and washers according to Article 720.04 of the Standard Specifications.
NOTES:

1. MAXIMUM SYSTEM PRESSURE IS 80 PSI.
2. EXACT OPERATING PRESSURE TO BE DETERMINED.
3. FOR PRODUCT SUBSTITUTIONS SEE THE SPECIFICATIONS.
4. ALL CONDUIT, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.
5. THIS DETAIL IS APPLICABLE TO VES WASH SYSTEM MAIN ENCLOSURE INSIDE THE BUILDINGS. FOR OUTSIDE INSTALLATION OF MAIN VES WASH SYSTEM ENCLOSURE, USE NEMA 4X ENCLOSURE - 12'H X 12'W X 6'D. HOFFMANN CAT. NO. A1212CHNFSS. FOR OUTSIDE INSTALLATION OF SIDE MOUNTED CONTROL PANEL JUNCTION BOX, USE NEMA 4X ENCLOSURE - 12'H X 12'W X 6'D. HOFFMANN CAT. NO. A12P12.

THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.

EXACT OPERATING PRESSURE TO BE DETERMINED.

MAXIMUM SYSTEM PRESSURE IS 80 PSI.

NOTES:

1. MAXIMUM SYSTEM PRESSURE IS 80 PSI.
2. EXACT OPERATING PRESSURE TO BE DETERMINED.
3. FOR PRODUCT SUBSTITUTIONS SEE THE SPECIFICATIONS.
4. ALL CONDUIT, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.
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THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT.

EXACT OPERATING PRESSURE TO BE DETERMINED.

MAXIMUM SYSTEM PRESSURE IS 80 PSI.
ILLINOIS TOLLWAY \(9976\) RR \(z\_\) STANDARDS\(\) BRAF\(\) HOLDER\(\) 2019 \(IL\) TOLLWAY CAD\(\) TABLES\(\) P\(\)en \(\)Black \(\)White -IL TOLLWAY \(\)TB\(\)L

NOTE 5

INSTALLATION DRAWINGS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY BEFORE INSTALLATION IN THE FIELD.

INSTALLATION DRAWINGS SHALL ALSO INDICATE THE POSITION OF THE MOUNTING HARDWARE ON THE CAMERA NOZZLE BRACKET. THE ALLOWS EASY ADJUSTMENT. CONTRACTOR SHALL SUBMIT INSTALLATION DRAWINGS CLEARLY IDENTIFYING PART NUMBERS USED FOR MOUNTING THE CAMERA NOZZLE BRACKET SHALL BE ADJUSTABLE. STAINLESS STEEL NUT-BOLT COMBINATION SHALL BE USED FOR MOUNTING THE CAMERA NOZZLE ON THE BACKPLATE OF THE HOFFMAN SWITCH ENCLOSURE.

THIS SWITCH IS NOT SHOWN ON THIS DRAWING. THIS SINGLE SWITCH WILL CONTROL THE LIQUID AND AIR INLET VALVES. THIS SWITCH IS MOUNTED ON THE BACKPLATE OF THE HOFFMAN SWITCH ENCLOSURE.

THE SWITCHES ARE NOT SHOWN ON THIS DRAWING. THE QUANTITIES ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA. THESE SWITCHES ARE MOUNTED WILL HAVE TEN (10) PORTS, ONE EACH FOR THE TEN (10) VES CAMERAS INSTALLED AND NO SPARE PORTS PLUGGED FOR FUTURE USE.

A 3-LANE MAINLINE PLAZA WILL HAVE TEN (10) CAMERAS (5 REAR AND 5 FRONT VES). THE MANIFOLD-VALVE SYSTEM FOR A 3-LANE RAMP PLAZA SIX (6) VES CAMERAS INSTALLED (3 REAR VES AND 3 FRONT VES) AND FOUR (4) SPARE PORTS PLUGGED FOR FUTURE USE.

A 1-LANE RAMP PLAZA CONFIGURATION IS ILLUSTRATED. THE MANIFOLD-VALVE SYSTEM SHOWN ILLUSTRATES TEN (10) PORTS, ONE EACH FOR THE Ten (10) VES CAMERAS INSTALLED AND NO SPARE PORTS PLUGGED FOR FUTURE USE.

QUANTITIES ILLUSTRATED ARE FOR A 1-LANE RAMP PLAZA THAT HAS SIX (6) VES CAMERAS (3 REAR AND 3 FRONT VES).

NOTE TO DESIGNER

THIS SHEET SHOULDS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.
**NOTES**

1. ALL CABLES ON THIS DRAWING IS #12 AWG
2. MAIN BREAKER IS 25A, ILLUSTRATED ON VES WASH PANEL DETAIL ITEM U, LOCATED ON TOP ON RAIL.
3. THREE 1-C #12 CABLES WILL BE ROUTED FROM THE MDP TO THE VES POWER WASH ENCLOSURE. THE POWER FEED WILL BE INITIATED FROM THE NORMAL BREAKER PANEL. THE CONTRACTOR TO SUPPLY AND INSTALL A 30A BREAKER IN THE MDP PANEL. POWER IS 120VAC WITH A HOT, NEUTRAL, AND GROUND. THIS POWER FEED WILL THEN TERMINATE ON THE MAIN 25A BREAKER IN THE VES POWER WASH ENCLOSURE.
4. ELECTRIC HEATER IS INSTALLED IN OUTSIDE CABINETS ONLY.

**MISCELLANEOUS POWER WIRING DIAGRAM**

**VES WASH SYSTEM**

**NOTE TO DESIGNER**

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NOTES:
1. SCHEMATIC ILLUSTRATES ONE (1) LANE PLAZA WITH SIX (6) VES CAMERAS INSTALLED (3 REAR AND 3 FRONT VES).
GENERAL NOTES:
1. All exposed concrete edges shall have a 3" x 45° chamfer, except where shown otherwise. Chamfer on vertical edges shall be continued a minimum of one foot below finished ground level.

REINFORCEMENT BARS:
1. Reinforcement bars, including reinforcement bars, epoxy-coated shall conform to the requirements of DOT Standard Specifications Section 508 and Article 1006.1.
2. Reinforcement bars designated "EP" shall be epoxy-coated.
4. Reinforcement bar bending dimensions are out-to-out.
5. Cover from the face of concrete to face of reinforcement bars shall be 3" for surfaces formed against earth and 2" for all other surfaces unless otherwise shown.

CONSTRUCTION SPECIFICATIONS:
1. Illinois Tollway Supplemental Specifications issued March 2021 to the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

DESIGN LOADING:
1. Loading, controlling case of the following:
   - 100 P.S.F.
   - 2,000 Lb. Concentrated Force or Known Loading Provided by its
   - Wind Speed 120 M.P.H. Applied to Building Walls, Per ACSE 7-16
   - Dead Load 30,000 Pounds (12'x30' Building) or 20,000 Pounds (12'x20' Building) Self Weight of Slab

DESIGN STRESSES FOR REINFORCED CONCRETE:
3. ACI 318-19 Building Code Requirements for Structural Concrete, 2019
5. ACI 318-19 Building Code Requirements for Structural Concrete, 2019
6. Illinois Tollway Geotechnical Engineer Manual dated March 2021

NOTES TO DESIGNER:
All "NOTE TO DESIGNER" Boxes shall be removed by the designer prior to insertion of the sheet into the plan set.

Drawings are concept foundation from a building manufacturer. The foundation must have a flat top slab as shown in the design in support the building frame.

The designer shall design the top slab, piers, walls and reinforcing details as necessary to support the building and meet local codes.

Loads shown are nominal. If actual loads are larger, replacement nominal loads shown.

The design is based on an allowable soil bearing pressure of 2,000 P.S.F.