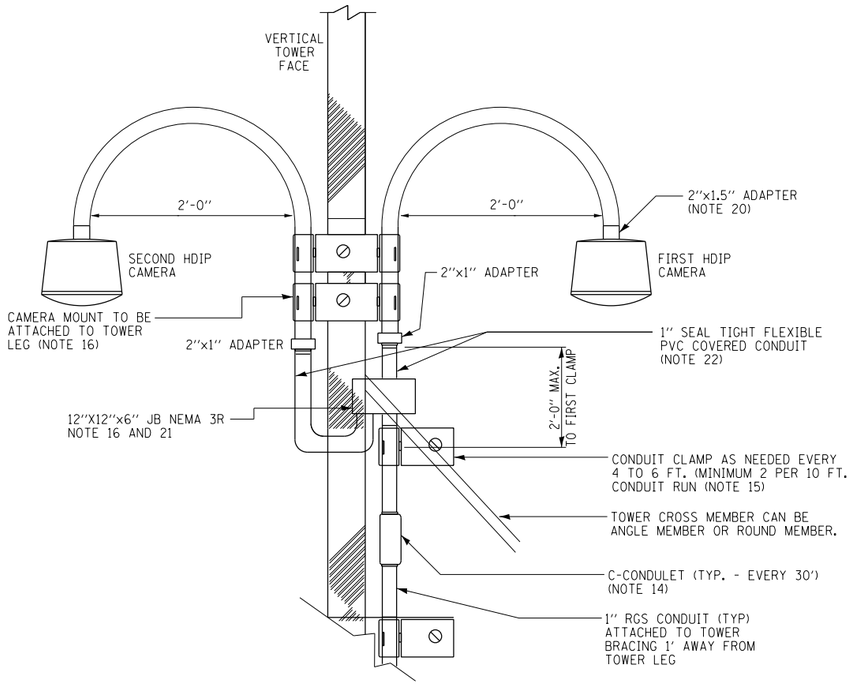
Illinois Tollway Base Sheet Revisions

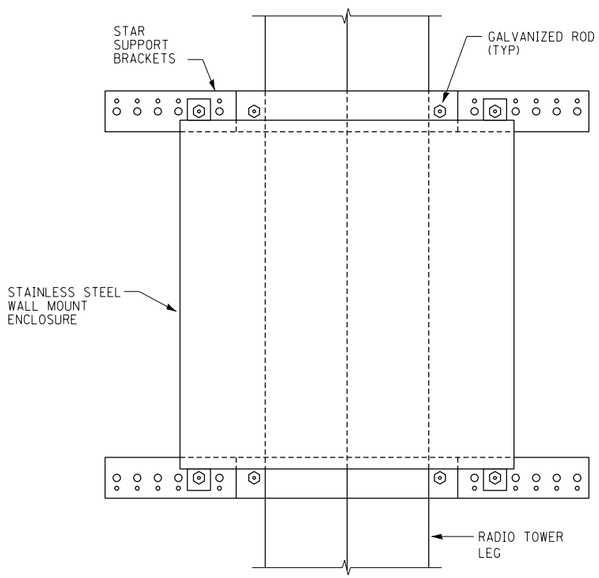
Section M	Base Sheet Drawings	
	Drawing	**Modification Summary** **Effective: 2018-03-01**
	Pole Assembly (ITS)-Series 1000	
	M-ITS-1000	**Elevation Views Pole Mounted ITS Element Assembly**
		Added disconnect switch detail sheet.
		Minor editorial changes.
	Dynamic Message Sign (ITS)-Series 1100	
	M-ITS-1100	**DMS Type 1 Electrical Plan**
		Minor editorial changes.
	M-ITS-1101	**DMS Type 1 Site Grounding Plan**
		Minor editorial changes.
	M-ITS-1102	**DMS Type 1 Typical Site Wiring Detail**
		Minor editorial changes
	M-ITS-1103	**DMS Type 2-Cantilever Electrical Plan**
		Minor editorial changes.
	M-ITS-1104	**DMS Type 2-Butterfly Electrical Plan**
		Minor editorial changes
	M-ITS-1105	**DMS Type 2 Site Grounding Plan**
		Clarified coarse wash gravel specifications.
		Minor editorial changes.
	M-ITS-1106	**DMS Type 2 Site Wiring Details**
		Minor editorial changes
	M-ITS-1107	**DMS Cabinet Layout Detail**
		Minor editorial changes.
	M-ITS-1108	**DMS Cabinet Wiring Diagram**
		Minor editorial changes.
	Cabinet Wiring (ITS)-Series 1200	
	M-ITS-1200 to M-ITS-1255	**Cabinet Wiring Diagrams**
		Revised DIN3 IP relay to DIN4.
	M-ITS-1200 to M-ITS-1207, M-ITS-1210, M-ITS-1255	**Cabinet Wiring Diagrams**
		Added single mode fiber patch panel.
	M-ITS-1200 to M-ITS-1202, M-ITS-1223 to M-ITS-1254	**Cabinet Wiring Diagrams**
		Added power over ethernet injector(s).
	M-ITS-1200	**ITS Pole Mounted Enclosure (CCTV and MVDS)**
		Added second sheet showing scale layout.
	M-ITS-1203 to M-ITS-1205, M-ITS-1211 to M-ITS-1222, M-ITS-1231 to M-ITS-1254	**Cabinet Wiring Diagrams**
		Clarified MVDS wiring.
	~~**M-ITS-1256**~~	**Tower Mounted CCTV ITS Assembly, 300' CAT6 or Less**
		Retired.
	Roadway Weather Information System (ITS)-Series 1300	
	M-ITS-1300	**RWIS Pole, Sensor Mounting Detail**
		Sheet redrawn with new pole-mounted RWIS design
	M-ITS-1301	**RWIS Cabinet Wiring Diagram**
		Sheet redrawn with new pole-mounted RWIS design.
		RWIS connected to fiber.
	M-ITS-1302	**Typical RWIS Site Installation Plan**
		Sheet redrawn with new pole-mounted RWIS design.
		Added non-intrusive pavement sensor.
	~~**M-ITS-1303**~~	**RWIS Road Surface Sensor Pole**
		Retired.
	Tower Mounted CCTV (ITS)-Series 1500	
	M-ITS-1502	**ITS Details Tower Mount Camera Assembly**
		Reference to M-ITS-1256 changed to M-ITS-1255 to reflect changes in 1200 series.
	Plaza Electrical (Business System)-Series 2500	
	M-BUS-2501	**Legend, Symbol List, Abbreviations and Equipment Schedules**
		Minor editorial changes.
	M-BUS-2525	**I-Pass Only (IPO) Lane Island Plan and Details 12 Foot Wide Lane**
		Minor editorial changes.
	M-BUS-2526	**Toll Equipment Wiring Diagram ACM and IPO Lanes**
		Minor editorial changes.
	M-BUS-2558	**VES Wash System Suggested Conduit Routing**
		Minor editorial changes.

New Sheet ~~Retired Sheet~~



CCTV EQUIPMENT MOUNTING SCHEME LATTICED TOWER

(NOT TO SCALE)



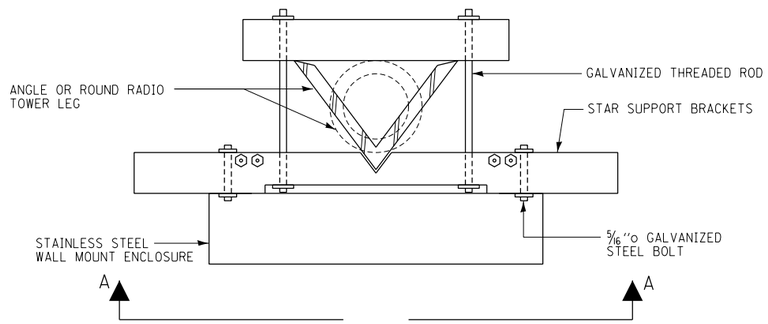
ENCLOSURE MOUNTED TO TOWER LEG

(NOT TO SCALE)

NOTE TO DESIGNER

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 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.

ROUTING OF CONDUIT AND CABLES TO PLAZA/TOWER BUILDING SHALL BE SHOWN FOR EACH INSTALLATION OCCURRENCE DEPICTING ACTUAL CONDITIONS. INSTALLATION AND ROUTING OF EQUIPMENT AND CABLES SHALL BE SHOWN IN PLAN VIEW FORMAT AS WELL AS DESCRIBE THE LOCATION AND POSITION OF WALL MOUNT, RACK MOUNT AND CABLE TRAY POSITIONS WITHIN THE PLAZA/TOWER BUILDING. CISCO SWITCH PORTS TO BE USED SHALL BE IDENTIFIED.



ENCLOSURE MOUNTING TO TOWER LEG

(NOT TO SCALE)

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR FINAL ATTACHMENT DETAILS BASED ON THE DRAWINGS AND PRE-INSTALLATION MEETING WITH ILLINOIS TOLLWAY.
2. APPLICABLE DESIGN CRITERIA SHALL BE PER THE LATEST EDITION OF AISC MANUAL, ASCE 7-05, TIA-222-G, AND APPLICABLE NATIONAL, STATE, AND OR LOCAL BUILDING CODES.
3. EQUIPMENT MOUNTING SHALL ALSO MEET REQUIREMENTS LISTED IN SPECIAL PROVISIONS.
4. DESIGN LOADS SHALL BE AS FOLLOWS:
   A. DEAD LOADS SHALL INCLUDE ALL EQUIPMENT LOADS, INCLUDING CONDUIT AND MOUNTING LOADS SHALL BE CONSIDERED IN THE DESIGN. PTZ HDIP CAMERA WEIGHT SHALL BE ASSUMED TO WEIGH MINIMUM 10.14 LBS. ACTUAL LOAD SHALL BE VERIFIED FOR THE SPECIFIED MODEL FROM VENDOR.
   B. DESIGN SEISMIC ACCELERATION AND WIND SPEED SHOULD BE DETERMINED FROM APPLICABLE BUILDING CODES AND DESIGN STANDARDS.
   C. DESIGN LOAD COMBINATIONS SHOULD BE DETERMINED FROM APPLICABLE BUILDING CODES AND DESIGN STANDARDS. DESIGN SHALL BE BASED ON ALLOWABLE STRESS DESIGN (A.S.D.) METHOD.
5. MOUNTING HEIGHTS FOR CAMERA WILL BE AS CLOSE TO TOWER TOP AS PRACTICAL, UNLESS ILLINOIS TOLLWAY OR ENGINEER SPECIFIES OTHERWISE. THE PLAN LOCATION SHALL BE COORDINATED WITH THE ILLINOIS TOLLWAY AND ENGINEER.
6. NO HOLES CAN BE DRILLED AND NO WELDING IS ALLOWED INTO TOWER MEMBERS. DO NOT MOUNT RIGID CONDUIT TO TRANSMISSION LINE LADDER. CAMERA AND ANTENNA SHALL BE MOUNTED ON TOWER VERTICAL LEGS ONLY AT A MINIMUM OF 1'-0" AWAY FROM TOWER LEG.
7. CONDUIT HANGERS AND MANUFACTURER SHOWN IN DRAWINGS ARE REPRESENTATIVE ONLY. CONTRACTOR SHALL ONLY CHOOSE MANUFACTURED HARDWARE THAT HAS A RATED "DESIGN LOAD" FROM THE VENDOR AND IS CAPABLE OF RESISTING ALL APPLIED LOADS. A MINIMUM FACTOR OF SAFETY OF 5 SHALL BE ENSURED. VENDOR SPECIFIED "DESIGN LOAD" BASED ON F.S. < 5 SHALL BE PROPORTIONATELY DERATED (E.G. IF DESIGN LOAD IS BASED ON F.S. OF 3, IT SHALL BE DERATED TO 60%).
8. NOT USED.
9. CONTRACTOR IS RESPONSIBLE FOR THEIR QUALITY CONTROL AND PROVIDING DOCUMENTATION THAT ALL BOLTS ARE TORQUED AND HARDWARE TIGHTENED TO MANUFACTURER'S ESTABLISHED REQUIREMENTS.
10. CONTRACTOR, THROUGH THE ENGINEER, SHALL COORDINATE CAMERA AND ANTENNA MOUNTING WITH ILLINOIS TOLLWAY'S TOWER CREW, AT LEAST ONE WEEK BEFORE PROPOSED INSTALLATION. CONTRACTOR SHALL PROVIDE ALL MATERIALS, TOOLS AND EQUIPMENT FOR COMPLETE INSTALLATION OF CAMERA AND ANTENNAS AT EACH PLAZA.
11. COMMUNICATIONS EQUIPMENT ENCLOSURE SHALL BE MOUNTED TO TOWER LEG.
12. UNLESS THESE ARE PART OF MANUFACTURED ASSEMBLY, THREADED RODS AND U-BOLTS SHALL BE HOT-DIPPED GALVANIZED STEEL). IN SOME CASES DUE TO MANUFACTURED PART AVAILABILITY, THREADED RODS AND U-BOLTS MAY BE STAINLESS STEEL. IN THIS CASE, THEY MUST CONFORM TO ASTM A193, CLASS I, GRADE B8 (AISI TYPE 304). WASHERS SHALL CONFORM TO ASTM A240, TYPE 302. NUTS SHALL CONFORM TO ASTM A194 (AASHTO M292), GRADE 8F (AISI TYPE 303). ALL THREADED RODS AND U-BOLTS TO BE DOUBLE NUTTED. MATERIAL FOR STRUCTURAL STEEL, ANGLES, ETC. SHALL BE A36 AND SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM 4123.
13. CONDUIT OUTLET BODY WITH COVER SHALL BE MALLEABLE IRON WITH TRIPLE COAT FINISH OR EPOXY POWDER COATED ALUMINUM. OUTLET BODY SHALL BE SEALED TIGHT WITH NEOPRENE GASKETS.
14. CABLE STRAIN RELIEF STARTS AT THE 12"x12"x6" JUNCTION BOX. FROM THAT POINT DOWN, C-CONDULETS SHALL BE UTILIZED EVERY 30'-0". THE CONTRACTOR IS RESPONSIBLE FOR UTILIZING STRAIN RELIEVE TECHNIQUES IN THE CONDULETS AND JUNCTION BOX. FOR EXAMPLE CHINESE FINGER TRAPS CAN BE UTILIZED OR WEDGES. THE CONTRACTOR WILL COORDINATE THIS EFFORT WITH THE ENGINEER AND THE ILLINOIS TOLLWAY TOWER CREW. JUNCTION BOX SHALL HAVE WEEP HOLES IN BOTTOM TO ALLOW MOISTURE TO BLEED OFF. JB SHALL HAVE A NON-CORROSIVE TERMINAL STRIP SO IT CAN BE USED AS A TRANSITION POINT FOR CABLING. THE CONTRACTOR SHALL SPOOL UP APPROXIMATELY 1'-0" OF CABLE AS TO ALLOW MAINTENANCE OF THE CAMERA.
15. ALL NECESSARY MOUNTING HARDWARE AND BRACKETS NECESSARY TO ATTACH THE EQUIPMENT, RACEWAYS AND PULL BOXES TO THE TOWER SHALL BE PRE-MANUFACTURED AND NOT BE BUILT IN THE FIELD WITH INDIVIDUAL COMPONENTS.
16. CAMERA ATTACHMENTS TO TOWER LEG SHALL BE AT MINIMUM OF 2 LOCATIONS UTILIZING UNIVERSAL SADDLE MOUNTS OR WELDED PIPE TO PIPE CLAMPS DEPENDING ON THE TOWER TYPE. CONTRACTOR TO DETERMINE PROPER SIZE. U-BOLTS WILL BE REQUIRED. THE GOOSE NECK MOUNT TO THE TOWER SHALL BE SET PLUMB SO AS TO PROVIDE A PLUMB CAMERA INSTALLATION.
17. ALL WORK WILL REQUIRE CLOSE COORDINATION WITH ILLINOIS TOLLWAY STAFF AND THE ENGINEER. THIS INCLUDES A PRE-INSTALLATION MEETING WITH ILLINOIS TOLLWAY STAFF AND ENGINEER.
18. NOT USED.
19. ALL CONNECTIONS SHALL BE SEALED WITH TAPE AS PER ILLINOIS TOLLWAY TOWER CREW INSTRUCTIONS.
20. ONCE CABLES ARE PULLED, CONTRACTOR TO FILL ADAPTER WITH ELECTRICAL PUTTY AS TO PREVENT ANY CONDENSATION TO SEEP INTO CAMERA HOUSING.
21. TRANSITION ETHERNET AND POWER CABLES.
22. ALL CONDUITS MUST CONNECT TO BOTTOM OF 12"x12"x6" NEMA 4X ENCLOSURE.

ABBREVIATIONS:

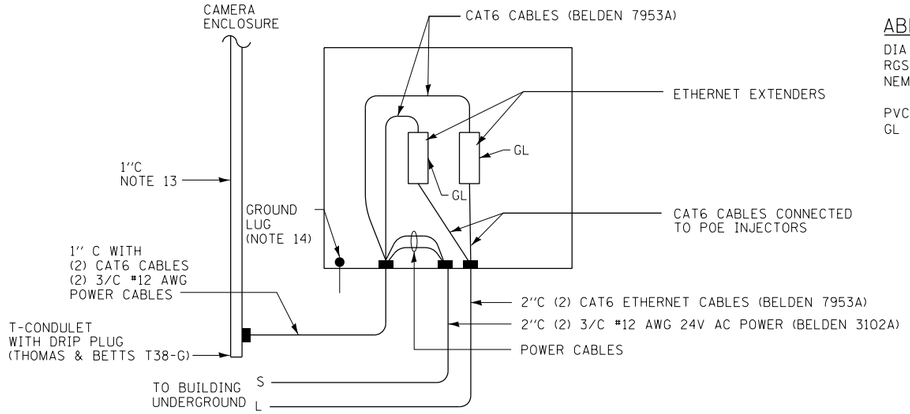
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
TIA	TELECOMMUNICATION INDUSTRY ASSOCIATION
RGS	RIGID GALVANIZED STEEL
JB	JUNCTION BOX

M-ITS-1500

Illinois Tollway

ITS DETAILS
TOWER MOUNT CAMERA DETAILS

DATE
1-31-2015

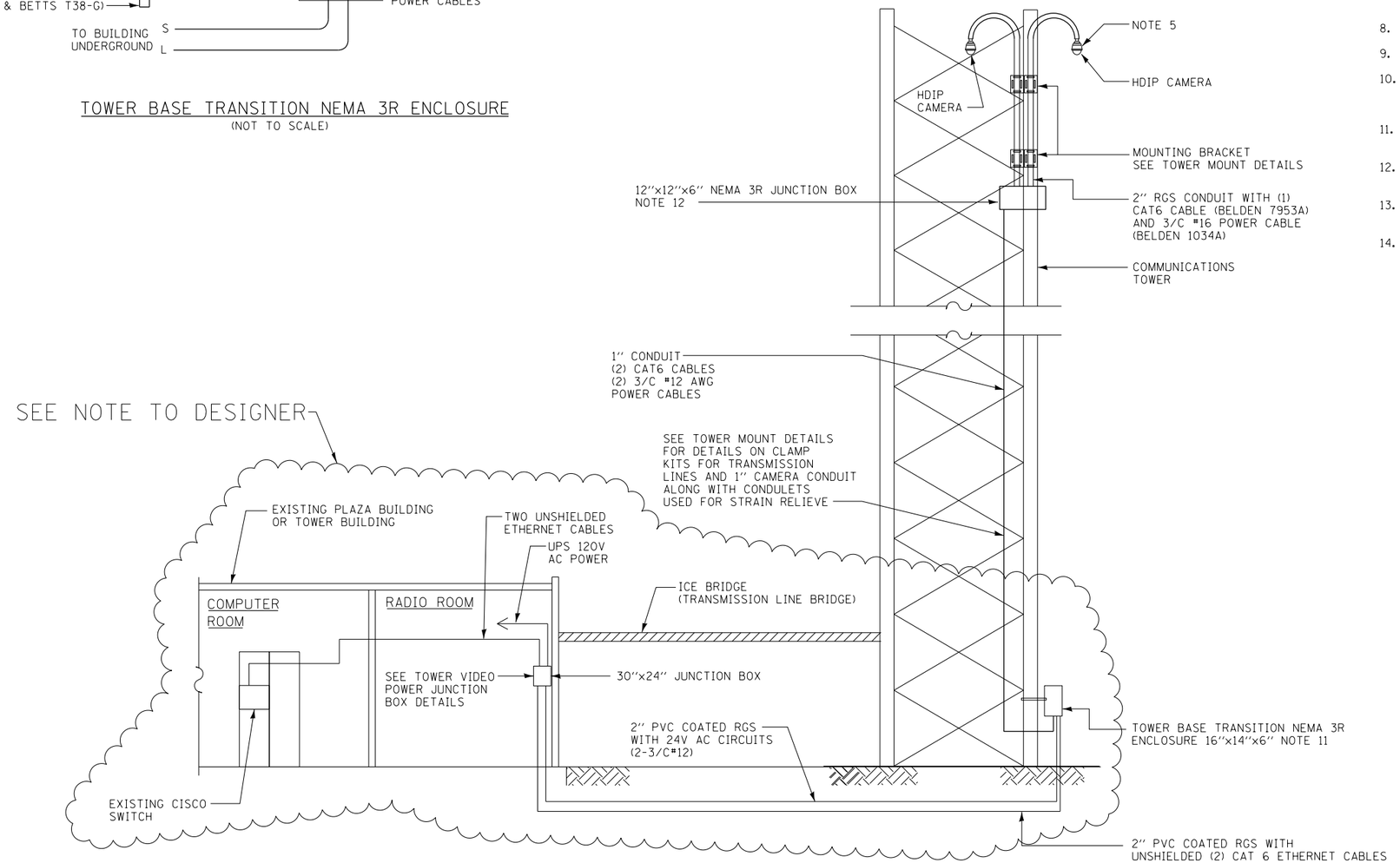


TOWER BASE TRANSITION NEMA 3R ENCLOSURE

(NOT TO SCALE)

ABBREVIATIONS:

DIA	DIAMETER
RGS	RIGID GALVANIZED STEEL
NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION
PVC	POLYVINYL CHLORIDE
GL	GROUND LUG



TOWER MOUNT CAMERA ASSEMBLY

(NOT TO SCALE)

NOTES:

1. NOT USED.
2. CAMERA MUST BE GROUNDED IN HOUSING.
3. ALL EQUIPMENT MUST BE CONNECTED TO A COMMON GROUND. CONNECT A #2 AWG GROUND CABLE FROM THE TOWER TO THE GROUND BAR IN THE COMMUNICATIONS ENCLOSURE. USE A #8 AWG FOR THIS GROUND. GROUND CABLES SHALL BE GREEN INSULATED TYPE RHW CONDUCTORS. ANY GROUND CONDUCTORS THAT ARE BURIED SHALL BE SOLID COPPER TINNED.
4. CONTRACTOR TO PROVIDE ALL POWER AND GROUND WIRING REQUIRED FOR SYSTEM OPERATION INCLUDING ETHERNET CONNECTIONS FROM THE CAMERAS TO THE CISCO SWITCH.
5. CONTRACTOR TO SEAL CONDUIT WITH ELECTRICAL PUTTY AS IT ENTERS THE CAMERA HOUSING. THIS WILL PREVENT ANY MOISTURE ENTERING THE CAMERA.
6. ALL CONNECTIONS SHALL BE SEALED WITH TAPE PER ILLINOIS TOLLWAY TOWER CREW INSTRUCTIONS.
7. CONDUIT TO BE RUN UNDERGROUND FOR CAT 6 ETHERNET CABLE AND POWER CABLES CORE HOLE INTO BUILDING TO RUN CONDUIT (DO NOT USE TRANSMISSION LINE PORT HOLES).
8. ALL BOM PARTS ARE TO BE CONSIDERED "OR EQUIVALENT".
9. SEE VIDEO POWER JUNCTION BOX DETAIL ON SHEET M-ITS-1255.
10. HD IP CAMERA WILL USE A SINGLE CAT6 CABLE TO EACH CAMERA. EACH CAMERA WILL REQUIRE 24V AC POWER. THE 24V AC POWER WILL BE ROUTED THRU 3/C #12 AWG CABLES AND WILL TRANSITION NEAR THE CAMERA TO 3/C #16 AWG CABLE.
11. TOWER BASE TRANSITION NEMA 3R ENCLOSURE SHALL BE USED TO HOUSE ETHERNET EXTENDERS AND TRANSITION FROM (2) CONDUITS TO (1) CONDUIT UP TO THE CAMERAS.
12. CAMERA TRANSITION NEMA 3R ENCLOSURE IS USED TO TRANSITION TO THE 2 CAMERAS. ENCLOSURE MUST MOUNT TO TOWER AT TWO POINTS.
13. LOOP A MINIMUM OF 3FT OF POWER CABLE AND CAT 6 INSIDE TOWER BASE TRANSITION ENCLOSURE.
14. CONNECT TOWER BASE ENCLOSURE TO THE TOWER VIA #6 GROUND CABLE CADWELD TO THE TOWER.

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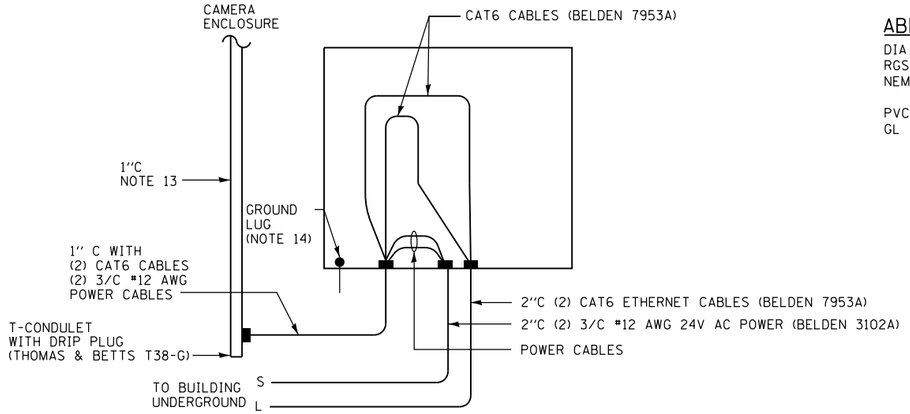
M-ITS-1501

Illinois Tollway

ITS DETAILS
TOWER MOUNT CAMERA ASSEMBLY
300' CAT6 OR MORE

DATE
3-1-2016



TOWER BASE TRANSITION NEMA 3R ENCLOSURE

(NOT TO SCALE)

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6. ALL CONNECTIONS SHALL BE SEALED WITH TAPE PER ILLINOIS TOLLWAY TOWER CREW INSTRUCTIONS
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8. ALL BOM PARTS ARE TO BE CONSIDERED "OR EQUIVALENT".
9. SEE VIDEO POWER JUNCTION BOX DETAIL ON SHEET M-ITS-1255.
10. HD IP CAMERA WILL USE A SINGLE CAT6 CABLE TO EACH CAMERA. EACH CAMERA WILL REQUIRE 24V AC POWER. THE 24V AC POWER WILL BE ROUTED THRU 3/C #12 AWG CABLES AND WILL TRANSITION NEAR THE CAMERA TO 3/C #16 AWG CABLE.
11. TOWER BASE TRANSITION NEMA 3R ENCLOSURE SHALL BE USED TO HOUSE ETHERNET EXTENDERS AND TRANSITION FROM (2) CONDUITS TO (1) CONDUIT UP TO THE CAMERAS.
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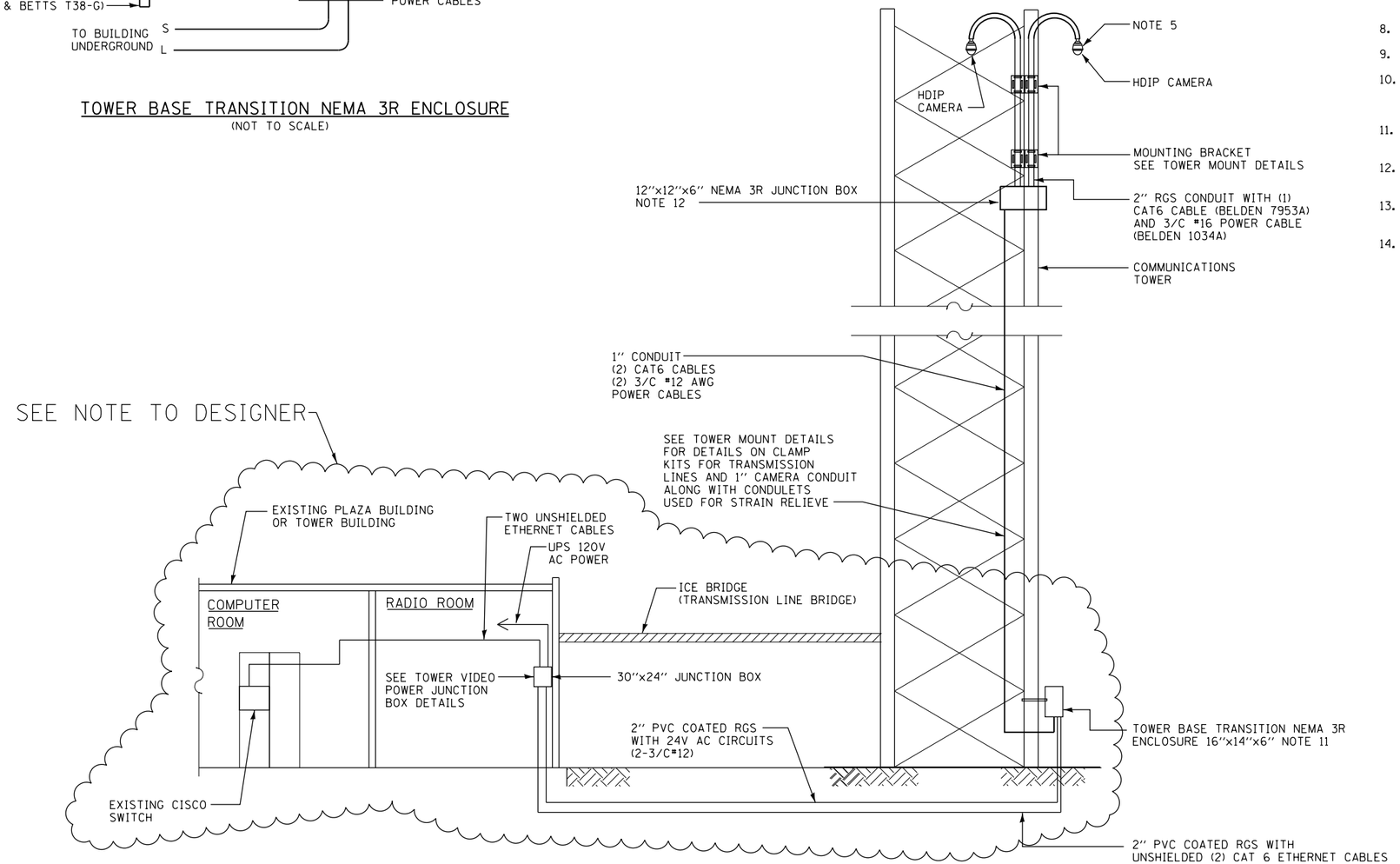

TOWER MOUNT CAMERA ASSEMBLY

(NOT TO SCALE)

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M-ITS-1502

Illinois Tollway

ITS DETAILS
TOWER MOUNT CAMERA ASSEMBLY
300' CAT6 OR LESS

DATE
3-1-2018