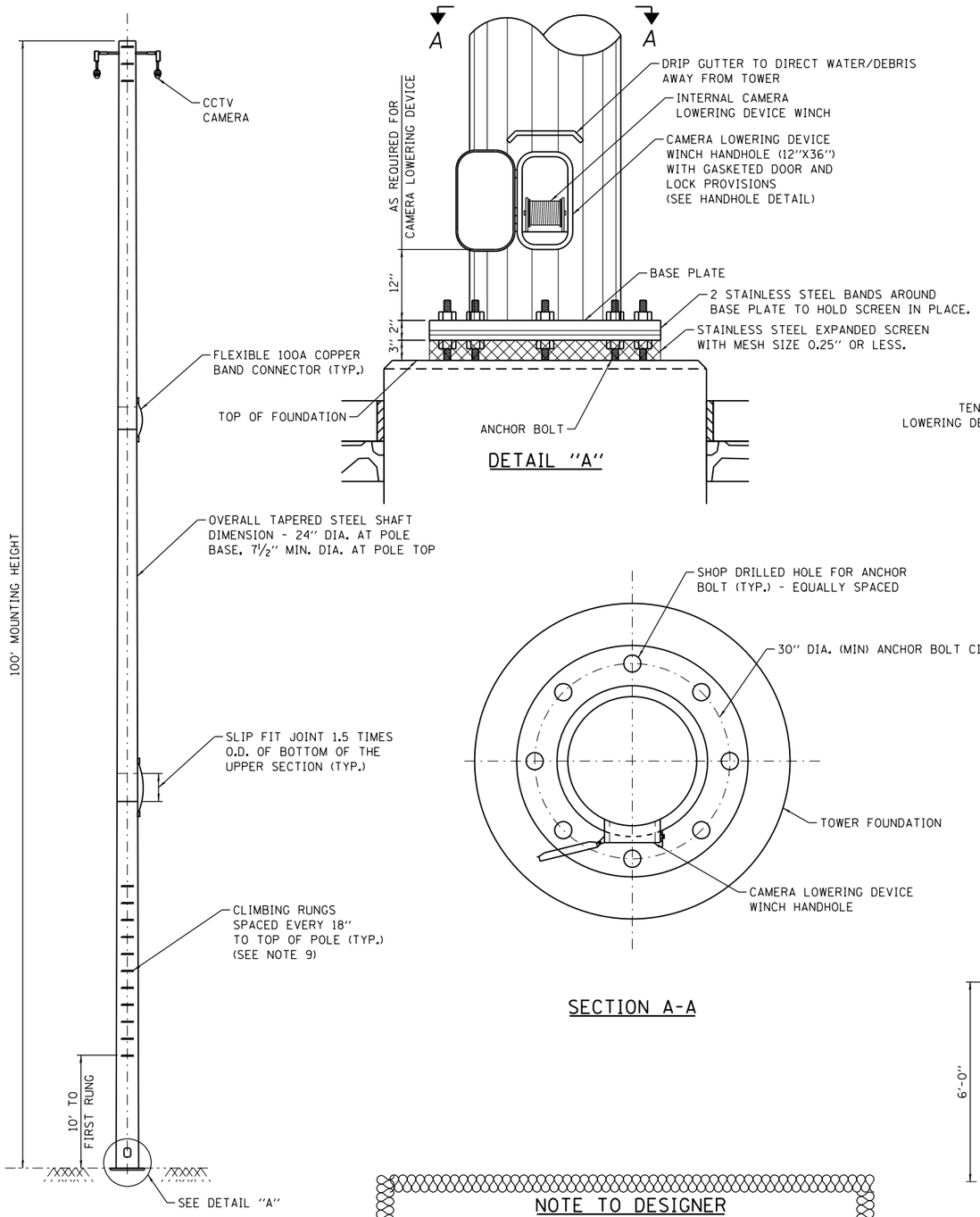
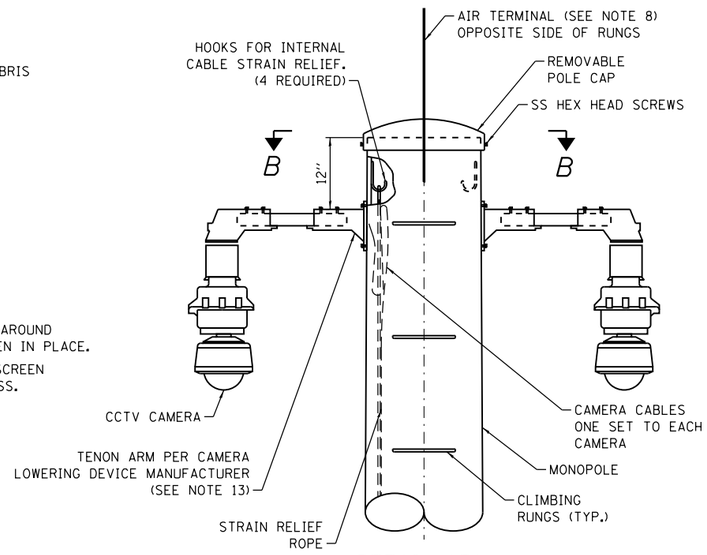
Illinois Tollway M-ITS Base Sheet Revisions

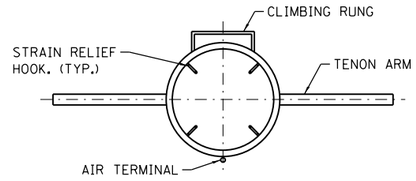
Section M	Base Sheet Drawings	
	Drawing	**Modification Summary** **Effective: 2021-03-01**
		New Sheet ☒ Retired Standard
	Pole Assembly (ITS)-Series 1000	
	M-ITS-1000	**Elevation Views Pole Mounted ITS Element Assembly**
		. Sheet 1of3: Added title for one section detail; Added note on wires from solar panels to battery box then to ITS enclosure then Cat6 cables to ITS devices installed on the ITS pole . Sheet 2of3: Added title for ITS Disconnect Switch Cast-in place . Sheet 3of3: Added new assembly detail for ITS Disconnect Switch Pre-cast (simplified installation)
	M-ITS-1001	**General Notes Pole Mounted ITS Element Assembly**
		. Added Note 22.: Cables shall enter poles through a gromet. Gromet size shall be chosen so that the center hole forms a water tight seal around the cables
	Dynamic Message Sign (ITS)-Series 1100	
	M-ITS-1103	**DMS Front Access-Cantilever Electrical Plan**
		. Revised assembly details for DMS Type 2 Cantilever pushed further away so the edge of the DMS clears Lane 1
	M-ITS-1104	**DMS Front Access-Butterfly Electrical Plan**
		. Revised asembly details for DMS Butterfly Type 2 Front Access pushed further away to the edge of the DMS clears Lane 1
	Cabinet Wiring (ITS)-Series 1200	
	M-ITS-1200 to M-ITS-1213	**M-ITS-1200: Cabinet Layout and Wirring ITS Pole Mounted Enclosure (1-MVDS)** **M-ITS-1201: Cabinet Layout and Wirring ITS Pole Mounted Enclosure (2-MVDS)** **M-ITS-1202: Cabinet Layout and Wirring ITS Pole Mounted Enclosure (3-MVDS)** **M-ITS-1203: Cabinet Layout and Wirring ITS Pole Mounted Enclosure (1-CCTV camera)** **M-ITS-1204: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (1-CCTV and 1-MVDS)** **M-ITS-1205: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (1-CCTV camera and 2-MVDS)** **M-ITS-1206: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (1-CCTV and 3-MVDS)** **M-ITS-1207: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (2-CCTV cameras)** **M-ITS-1208: Caninet Layout and Wiring ITS Pole Mounted Enclosure (2-CCTV Cameras and 1-MVDS)** **M-ITS-1209: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (2-CCTV cameras and 2-MVDS)** **M-ITS-1210: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (2-CCTV cameras and 3-MVDS)** **M-ITS-1211: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (1-MVDS) Solar Generator and FOC** **M-ITS-1212: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (2-MVDS) Solar Generator and FOC** **M-ITS-1213: Cabinet Layout and Wiring ITS Pole Mounted Enclosure (3-MVDS) Solar Generator and FOC**
		. Revised to show the fiber optic conduit and power conduit interface with the ITS Enclosure for location and size . Added Note 13: Fiber cable shall run straight down from the Gator patch through the left most conduit. Power cable shall be pulled through the conduit to the right of the fiber conduit. No slack shall be placed in the cabinet, slack shall be put in power and fiber optic handholes . Revised layout to remove Cohu Surge Suppressor Part AS . Revised details for Part V to remove dash line for DITEK surge suppressor . Revised description for Item V to remove Cohu camera . Revised Item AQ to remove reference to Cohu PoE power injector . Remove Item AS for Cohu PoE injector not required anymore . Revised Note 4: to say Not used
	M-ITS-1217	Cabinet Wiring Diagram In Pavement Detection System AP, PoE and Injector ITS Assembly
		. Revised to show the fiber optic conduit and power conduit interface with the ITS Enclosure for location and size . Added Note 13: Fiber cable shall run straight down from the Gator patch through the left most conduit. Power cable shall be pulled through the conduit to the right of the fiber conduit. No slack shall be placed in the cabinet, slack shall be put in power and fiber optic handholes . Added Note to Designer: The DSE shall specify the Gator Patch length per site
	Roadway Weather Information System (ITS)-Series 1300	
	M-ITS-1300	**RWIS Pole, Sensor Mounting Detail**
		. Added Note 8: Wind sensor can be installed on the secondary pole it primary pole is close to tree line . Added Note 9: All cables installed in a pole shall use a grommet to connect to ITS device installed on the pole
	M-ITS-1302	**Typical RWIS Site Installation Plan**
		. Added Note 5: Note to Designer: In the event the Primary and Secondary poles cannot be installed within the 40 foot maximum radius of the bridge deck, the DSE shall consult with the Tollway and GEC on an alternate placement solution . Added Note 6: Note to Designer: Installation of the Primary and Secondary pole for bridge installation: pole to be installed near immediate entrance of the bridge so non-invasive laser temperature sensor can monitor bridge deck temperature and bridge approach temperature

Illinois Tollway Base Sheet Revisions

Section M	Base Sheet Drawings	
	Drawing	**Modification Summary** **Effective: 2020-03-01**
	Solar Powered Generator (ITS)-Series 1400	
	M-ITS-1400	**Solar Power Generator Details**
		. Added Note to Designer: The simplified solar power arrangement shall only be used for a maximum of 3 MVDS. For all other arrangments use the 1400 Series
	Tower Mounted CCTV (ITS)-Series 1500	
	M-ITS-1500	**ITS Details Tower Mount Camera Details**
		. Added note to Designer: The 2 CCTV shall be placed on the leg facing the roadway with a clear field of view . Added Note 23: The CCTV cameras shall be mounted on the same tower leg with an Axis T92B62 mounting arm with T94A01D pendant kit, or equivalent as approved by the engineer. There will be 24in vertical spacing between the cameras
	M-ITS-1503	. Removed details for Part AS: removed PoE power injector . Remove Item AS: removed reference to Cohu PoE injector
	Flashing Sign Beacon (ITS)-Series 1700	
	M-ITS-1700	**Flashing Sign Beacon Installation Breakaway Electrical Detail**
		. Added details for power cable disconnect box Breakaway . Added details for the 4 flashing lights installed on the static sign with flashing sequence and light mounting details onto the sign . Added Note 1: see plans for required conductor sizes . Added Note 2: All three conductors shall be in one harness . Added Note 3: As an alternative to the conduit body on fondation, use thermoplastic junction boxes . Added Note 4: Slack in line side cable shall be provided in handhole . Added Note to Designer: Install new CCTV within 500 feet upstream of the static beacon sign . Added note to Designer: If an existing ITS enclosure lies within the immediate proximity of the flashing sign then power can be connected to that enclosure, otherwise install a new ITS enclosure near the flashing sign
	M-ITS-1701	**Cabinet Layout and Wiring ITS Pole Mounted Enclosure**
		. Added wires for second pair of flashing lights and connection to the circuit breakers . Added Item AT: ELTEC FS-4 DC Flasher . Added Item AU: 9 PIN Harness for FS-4 . Rved dashline for DITEK surge supressor for Cohu camera . Revised Item V: removed reference to DITEK for Cohu camera . Revised Item AS to say N/A
	IPDC Facility (ITS)-Series 1800	
	M-ITS-1815	**IPDC and Combination Plaza/IPDC Concrete Foundation**
		. Added new sheet for IPDC and Combination Plaza/IPDC Concrete Foundation details
	Conduit Details at Integral Abutment Bridge (ITS)-Series 1900	
	M-ITS-1900	**Conduit Details at Integral Abutment Bridge with MSE Wall (Sheet 3)**
		. Added material type for ITS conduit attached to bridge: PVC coated steel or FRE conduit per plan
	100 FT. Monopole (ITS)-Series 2000	
	M-ITS-2000	**100 FT. Monopole Closed Circuit Television (CCTV) Camera Tower**
		. Sheet 1of4: Added details for ITS and support for ITS Enclosure foundation: 16" Dia. X 4' @ 3000PSI Circular Concrete Foundation . Sheet 4of4: Added details to install the ITS Enclosure and ITS Disconnect Switch onto the concrete slab of 100 foot monotube
	Video Power Junction Box (ITS)-Series 2100	
	M-ITS-2100	**Video Power Junction Box Model A: 4 PoE CCTV arrangment without communication switch**
		. New drawing created to standardize Video Power Junction Box arrangment - Without Cisco switch when the box is installed and can use Cat 6 cables when distance is less than 300 feet from Plaza Communication room
	M-ITS-2101	**Video Power Junction Box Model B: 4 PoE CCTV arrangment Cosco 4000 switch**
		. New drawing created to standardize Video Power Junction Box arrangment - With Cisco 4000 switch when the box is installed at a distance greater than 300 feet from the Cisco switch in the Plaza Communication Room

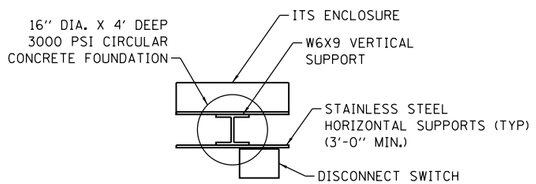




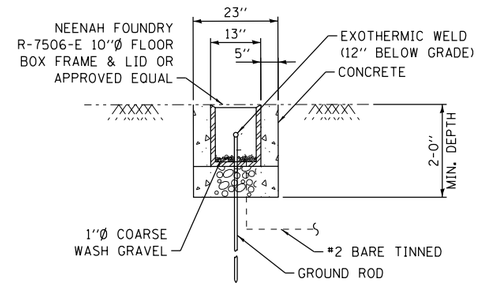


NOTES

1. THE MONOPOLE TOWER SHALL MEET CURRENT AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS".
2. CAMERA WIRES SHALL EXTEND 24 INCHES LONGER THAN THEIR RESPECTIVE TENON ARM AND SHALL BE TRAINED BACK INTO THE ARM/POLE WHICH SHALL THEN BE CLOSED WITH A CAP AS SPECIFIED. ALL WIRES SHALL BE CAPPED WITH HEAT SHRINK INSULATING BOOTS. CRIMP CAPS ARE UNACCEPTABLE. ALL WIRES SHALL BE TAGGED WITH WIRE MARKERS AT BOTH ENDS. THE TENON ARMS SHALL BE TAGGED CORRESPONDING TO THE WIRING CONTAINED WITHIN.
3. ALL MULTI-CONDUCTOR CABLES SHALL BE FITTED WITH A HEAT-SHRINK MULTI-LEG BOOT. THE BOOT SHALL MEET MILITARY SPECIFICATION MIL-I-81765/1.
4. TENON ARM SHALL BE AS REQUIRED BY CAMERA LOWERING DEVICE MANUFACTURER.
5. CAMERA MOUNTING HARDWARE SHALL BE WATERTIGHT.
6. USE METAL BUSHING WHEN CONNECTING PVC TO CABINET. USE GROMMETS AT BOTH ENDS OF CONDUIT TO SEAL CONDUIT BUT ALLOW GROUND CABLE TO RUN THROUGH BOTH ENDS.
7. GROUND ROD SHALL BE PLACED A MINIMUM OF 10' FROM THE FOUNDATION. A GROUND WELL SHALL BE INCLUDED TO PERMIT ACCESS TO THE GROUND ROD CONNECTION. CONNECTION TO THE GROUND BUS BAR AND THE GROUND ROD SHALL BE EXOTHERMIC WELD.
8. AIR TERMINAL SHALL EXTEND A MINIMUM OF 3 FEET ABOVE TOP OF TOWER. AIR TERMINAL SHALL CONNECT TO TOWER USING STRAPS OR CLAMPS APPROVED BY THE ENGINEER. AIR TERMINAL SHALL BE EXOTHERMIC WELDED TO A #2/0 GROUNDING CONDUCTOR. GROUNDING CONDUCTOR SHALL BE STRAPPED TO MONOPOLE TOWER EVERY 10 FEET. GROUNDING CONDUCTOR SHALL EXTEND TO AND BE EXOTHERMIC WELDED TO THE NEAREST TOWER GROUND ROD.
9. CLIMBING RUNGS SHALL BE ORIENTED 90° FROM TENON ARMS AND ON THE SIDE OF POLE FACING AWAY FROM TRAFFIC.
10. FOUNDATION SHALL BE IN ACCORDANCE WITH SECTION 837 OF THE STANDARD SPECIFICATIONS AND PAID FOR AS LIGHT TOWER FOUNDATION, 48" DIAMETER (83700300).
11. MONOPOLE, LOWERING DEVICE, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION "MONOPOLE CCTV CAMERA TOWER ASSEMBLY".
12. THE MONOPOLE TOWER, ITS ENCLOSURE, AND FENCE GROUNDING SHALL BE IN ACCORDANCE WITH ILLINOIS TOLLWAY SPECIAL PROVISION "ITS ELEMENT SITE GROUNDING".
13. TENON ARMS MAY OPTIONALLY BE "TOP-MOUNTED".



NOT TO SCALE



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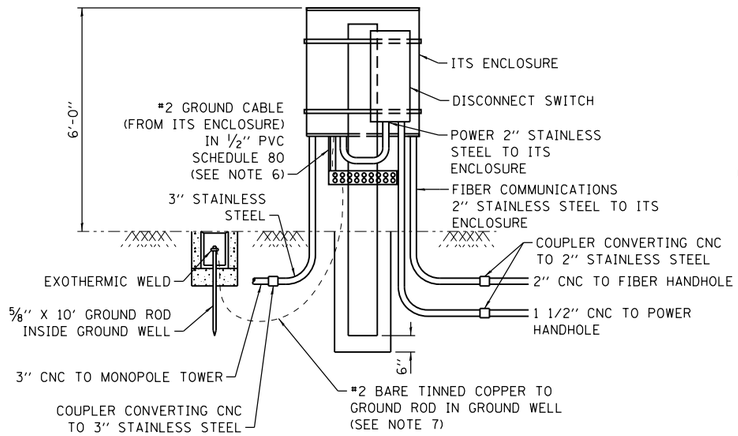

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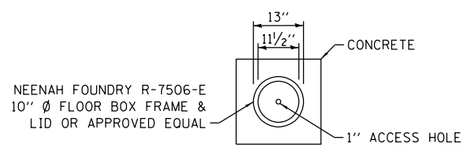

NOT TO SCALE

NOTE TO DESIGNER

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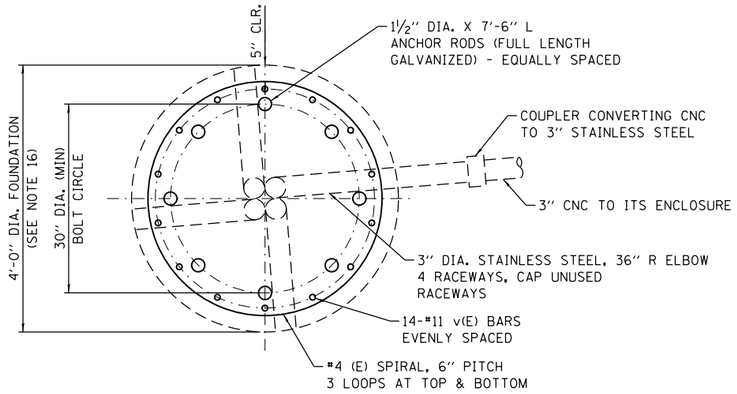
Illinois Tollway

100 FT. MONOPOLE CLOSED CIRCUIT TELEVISION (CCTV) CAMERA TOWER

DATE
3-01-2021

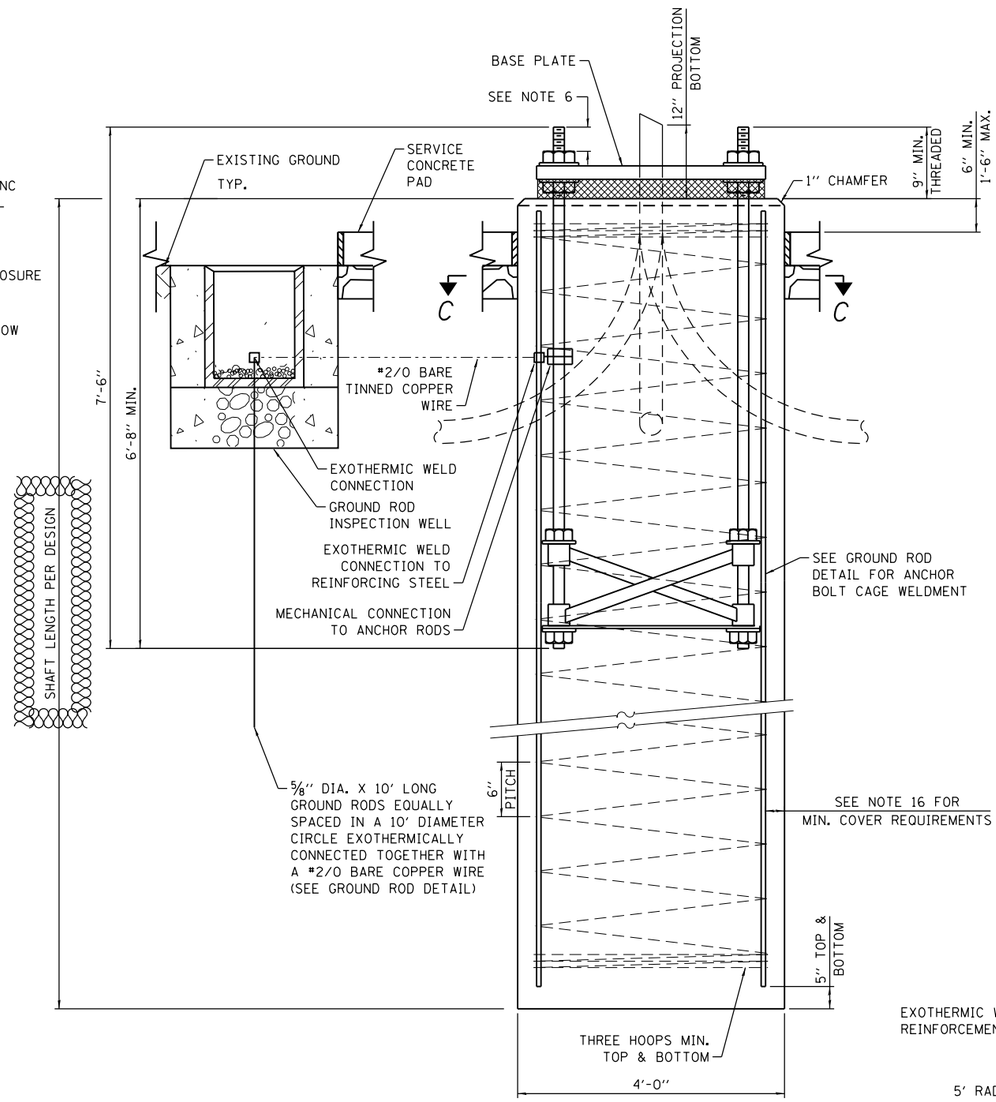


SECTION C-C

MONOPOLE FOUNDATION SCHEDULE

STATION	SHAFT LENGTH	BAR	NUMBER	SIZE	LENGTH	SHAPE
		v(E)	14	11	SHAFT LENGTH-10"	——
		#4 SPIRAL (E) - SEE FOUNDATION ELEVATION				
		v(E)	14	11	SHAFT LENGTH-10"	——
		#4 SPIRAL (E) - SEE FOUNDATION ELEVATION				
		v(E)	14	11	SHAFT LENGTH-10"	——
		#4 SPIRAL (E) - SEE FOUNDATION ELEVATION				

SHAFT LENGTH TABLE			
SOIL CONSISTENCY		AVERAGE STRENGTH Qu in tsf	SHAFT LENGTH
Cohesive	SOFT	< 0.5	22'-6"
	MEDIUM	0.5 to 1	18'-6"
	STIFF	1 to 2	15'-6"
	VERY STIFF	2 to 4	13'-6"
	HARD	> 4	12'-0"
		N in BLOWS/FT.	
Granular	VERY LOOSE	< 5	18'-0"
	LOOSE	5 to 10	16'-6"
	MEDIUM	10 to 25	15'-6"
	DENSE	25 to 50	15'-0"
	VERY DENSE	> 50	14'-0"



FOUNDATION ELEVATION

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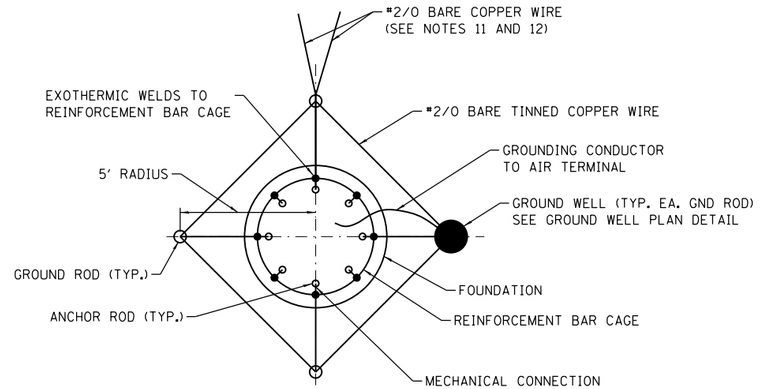
NOTES

1. THE ANCHOR RODS SHALL BE VERTICAL. NO ADJUSTMENT SHALL BE ALLOWED AFTER THE FOUNDATION IS PLACED.
2. THE TOP OF THE FOUNDATION TO 18" BELOW GRADE SHALL BE FORMED.
3. SURFACE WATER WILL NOT BE PERMITTED TO ENTER THE HOLE AND ALL WATER WHICH MAY HAVE INFILTRATED INTO THE HOLE SHALL BE REMOVED BEFORE PLACING CONCRETE.
4. TWO ANCHOR RODS OPPOSITE EACH OTHER SHALL HAVE ROD THREADS PEENED AFTER NUTS ARE INSTALLED.
5. A MINIMUM OF THREE FULL THREADS SHALL REMAIN EXPOSED AFTER MONOPOLE TOWER IS INSTALLED.
6. STEEL ANCHOR ROD FORMS SHALL NOT BE REMOVED FOR A MINIMUM OF 3 DAYS AFTER CONCRETE IS POURED. THE TOWER SHALL NOT BE SET UNTIL THE CONCRETE HAS BEEN CURED ACCORDING TO ART. 1020.13 OF THE STANDARD SPECIFICATIONS, OR AS APPROVED BY THE ENGINEER.
7. ANCHOR ROD QUANTITY, DIAMETER, AND LENGTH SHALL BE DETERMINED BY THE TOWER MANUFACTURER AND APPROVED BY THE ENGINEER. EACH FOUNDATION SHALL HAVE A MINIMUM OF 8 ANCHOR RODS.
8. COORDINATE THE ROD CIRCLE DIAMETER OF THE TOWER WITH THE DIAMETER OF THE ANCHOR ROD CAGE.
9. THE FOUNDATION SHALL BE POURED MONOLITHICALLY AND SHALL HAVE NO CONSTRUCTION JOINTS.
10. ALL GROUNDING INDICATED ON THE PLANS SHALL BE INCLUDED IN THE COST OF ITS ELEMENT SITE GROUNDING.
11. FOUNDATION GROUNDING RING IS TO BE CONNECTED TO PLAZA BUILDING GROUNDING HALO, IF WITHIN 100 FEET OF ONE ANOTHER.
12. FOUNDATION GROUNDING RING IS TO BE CONNECTED TO ITS ENCLOSURE GROUNDING.
13. REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED.
14. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF DIFFERENT SOILS ARE FOUND DURING CONSTRUCTION THAN AS SHOWN IN THE SOIL BORINGS.
15. THE DRILLED SHAFT FOUNDATION CONCRETE SHALL BE CLASS DS WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI. THE REINFORCEMENT BARS SHALL HAVE A MINIMUM FIELD STRENGTH OF 60,000 PSI.
16. FOUNDATION DIAMETER BASED ON 5" CONCERETE COVER. THE MINIMUM COVER SHALL BE 3" IN DRY SHAFT EXCAVATION AND 4" IN A WET HOLE. WHEN ROCK IS ENCOUNTERED A 5" COVER AGAINST SOIL AND A 2" COVER AGAINST ROCK SHALL BE REQUIRED.



GROUND ROD DETAIL

Illinois Tollway

100 FT. MONOPOLE CLOSED CIRCUIT TELEVISION (CCTV) CAMERA TOWER

DATE
3-01-2021

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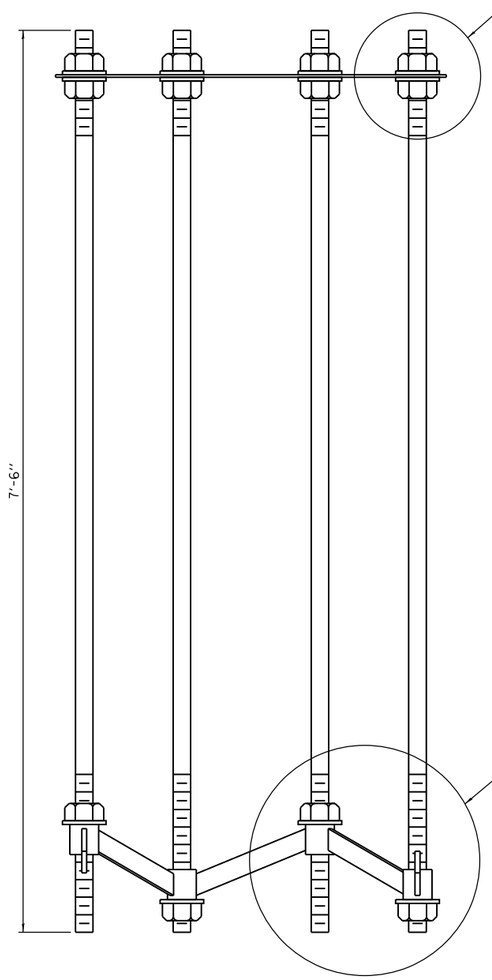
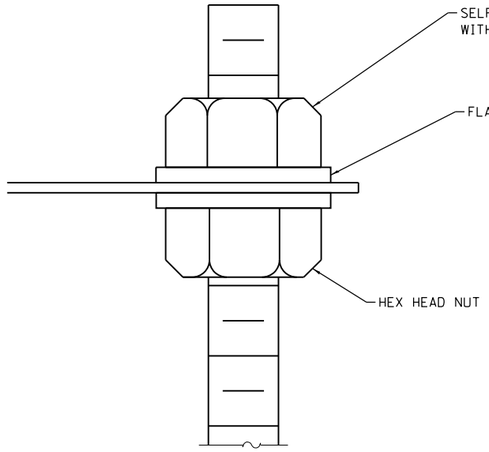
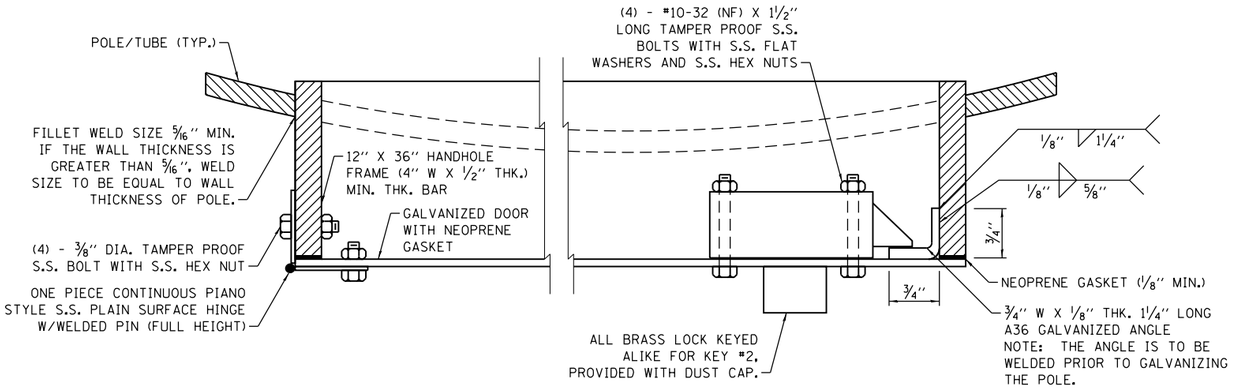


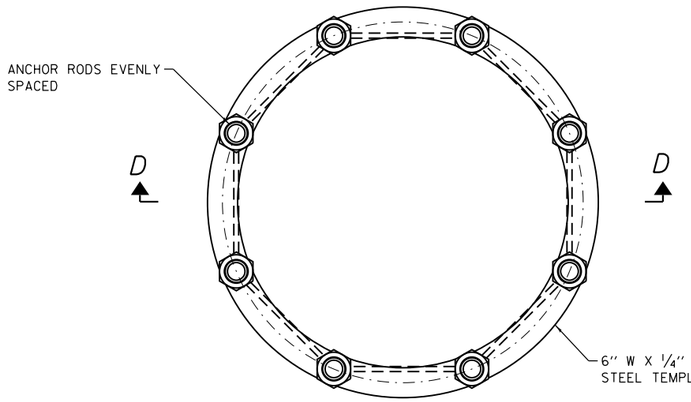
SECTION D-D



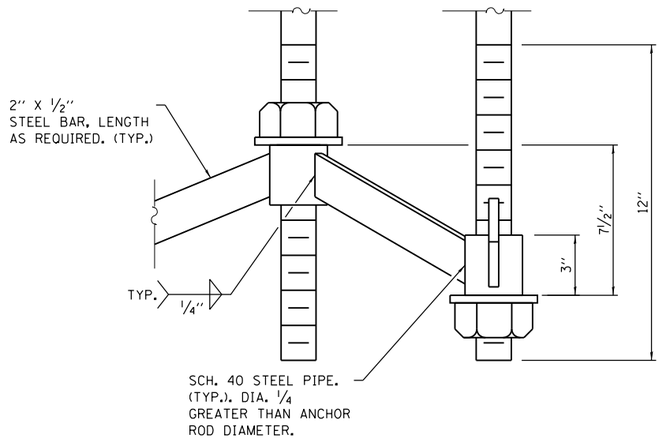
DETAIL "C"



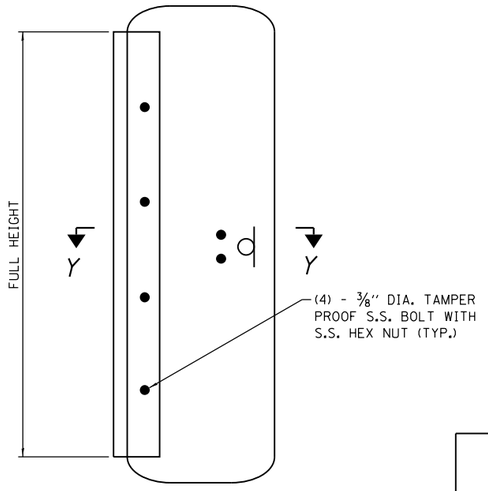
SECTION Y-Y



ANCHOR ROD CAGE (PLAN)



DETAIL "D"

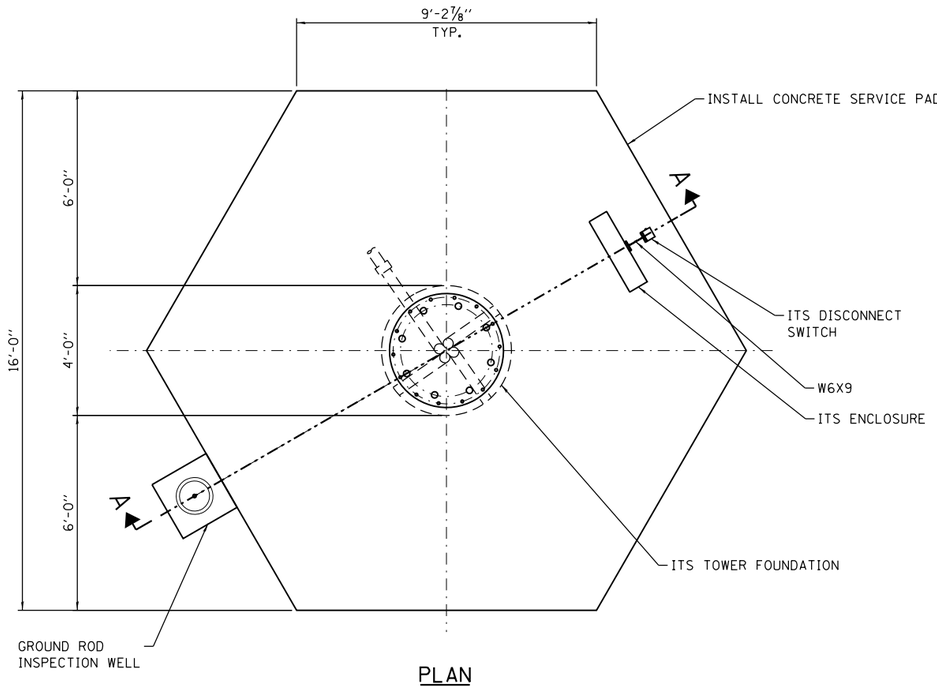


HANDHOLE DETAIL
(FACTORY ASSEMBLED)

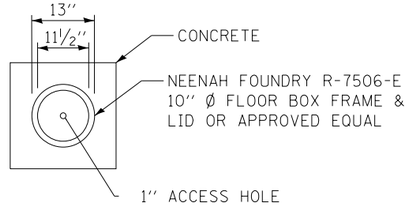
Illinois Tollway

100 FT. MONOPOLE CLOSED CIRCUIT TELEVISION (CCTV) CAMERA TOWER

DATE
3-01-2021

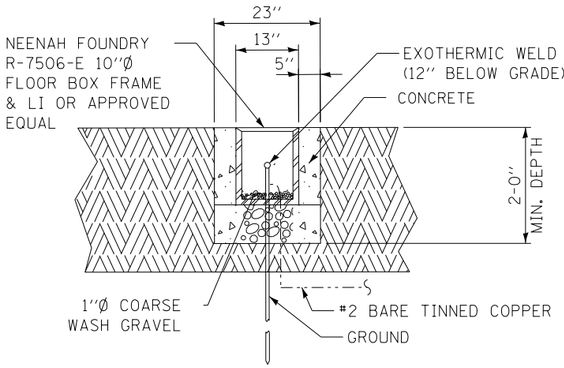


PLAN



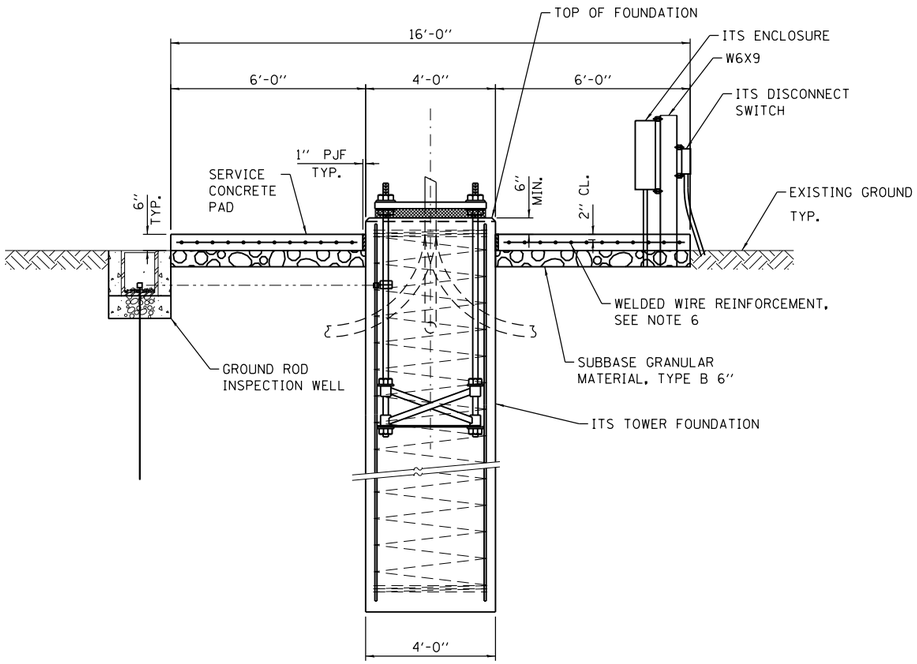
GROUND WELL PLAN DETAIL

NOT TO SCALE



GROUND WELL ELEVATION DETAIL

NOT TO SCALE



SECTION A-A

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NOTES

1. THE CONCRETE COMPRESSIVE STRENGTH SHALL BE F'C = 3,500 PSI. THE WELDED WIRE FABRIC GRADE SHALL BE FY = 65,000 PSI.
2. WELDED WIRE REINFORCEMENT SHALL HAVE A MINIMUM AREA OF 0.31 INCH IN EACH DIRECTION.
3. MIN. 3,000 PSF SOIL BEARING CAPACITY IS REQUIRED BELOW THE SERVICE PAD.
4. THE CABINET ASSEMBLY MUST BE ERECTED IN SUCH A WAY THAT THE CENTERLINE AXIS OF THE W-BEAM WEB IS LOCATED 90 DEGREES FROM THE CENTERLINE OF THE TENON ARM FOR THE CAMERAS.

Illinois Tollway

100 FT. MONOPOLE CLOSED CIRCUIT TELEVISION (CCTV) CAMERA TOWER

DATE
3-01-2021