Illinois Tollway Base Sheet Revisions

Section M	Base Sheet Drawings	
	Drawing	**Modification Summary** **Effective: 03-31-2016**
	All	**The electronic (pdf) version of the Standard Drawing are now made searchable (text).**
	Erosion Sediment Control (ESC)-Series 200	
	M-ESC-205	**Sediment Basin Dewatering Device**
		Revised Note 7, removed proprietary name from skimmer device.
	Roadway (RDY)-Series 400	
	M-RDY-408	**Approach Slab, Mainline**
	All	Changed Transverse Reinforcement size and spacing in the bottom mat of the bridge approach slab and transition approach shoulder slabs from #6@9" to #8@4" to be in conformance with IDOT ABD Memo 15.8.
	All	Changed Transverse Reinforcement size and spacing in the top mat of the bridge approach slab and transition approach shoulder slabs from #5@12" to #5@6" to be in conformance with IDOT ABD Memo 15.8.
	All	Changed Longitudinal Reinforcement size and spacing in the top mat of the bridge approach slab and transition approach shoulder slabs from #4@15" to #5@6" to be in conformance with IDOT ABD Memo 15.8.
	All	Added note *** to clarify that base sheet reinforcement is for approach slabs not located on retaining walls. If approach slab is placed on retaining wall, reinforcement shall be designed for TL-5 crash loading.
	All	Changed spacing and shape of both dxx vertical bars in the barrier on the bridge approach slab and transition approach shoulder slab to match the vertical bars in the bridge parapet and moment slab barrier.
	All	Changed top mat reinforcement cover to 2.25" to be consistent with deck and moment slab clearances.
	Sheets 1,2	Updated Note to Designer for Drainage Structures. Designer to determine size, type and location.
	Sheets 1,2	Changed approach slab shoulder width requirements to match Structures Design Manual.
	Sheet 3	Added option of using subgrade aggregate, special under the transition approach slab.
	Sheet 3	Added additional Approach Slab Barrier Elevation to distinguish between non-integral and integral/semi-integral abutments.
	Sheet 3	Eliminated Optional Longitudinal Joint Within a Traffic Lane detail.
	Sheet 4	Changed Neoprene Sheet to Elastomeric Sheet to keep call out generic and not specific.
	Sheet 5	Revised Bill of Material to clarify Pay Items and Pay Item Numbers to be included.
	Sheet 5	Added note to Typical Barrier Transition Detail to clarify where the 1'-9" dimension should be measured.
	M-RDY-409	**Approach Slab, Ramp**
	All	Changed Transverse Reinforcement size and spacing in the bottom mat of the bridge approach slab and transition approach shoulder slabs from #6@9" to #8@4" to be in conformance with IDOT ABD Memo 15.8.
	All	Changed Transverse Reinforcement size and spacing in the top mat of the bridge approach slab and transition approach shoulder slabs from #5@12" to #5@6" to be in conformance with IDOT ABD Memo 15.8.
	All	Changed Longitudinal Reinforcement size and spacing in the top mat of the bridge approach slab and transition approach shoulder slabs from #4@15" to #5@6" to be in conformance with IDOT ABD Memo 15.8.
	All	Added note *** to clarify that base sheet reinforcement is for approach slabs not located on retaining walls. If approach slab is placed on retaining wall, reinforcement shall be designed for TL-5 crash loading.
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	Sheet 4	Changed Neoprene Sheet to Elastomeric Sheet to keep call out generic and not specific.
	Sheet 5	Revised Bill of Material to clarify Pay Items and Pay Item Numbers to be included.
	Sheet 5	Added note to Typical Barrier Transition Detail to clarify where the 1'-9" dimension should be measured.
	M-RDY-410	**Reserved**
	M-RDY-411	**Emergency Turnaround Median Width ≥ 35 Ft**
	Bridge (BRG)-Series 500	
	M-BRG-506	**Expansion Joint Repair**
		Base Sheet was removed since details did not match Special Provision.
	M-BRG-507	**Crash Wall Modifications Median Piers**
		Note 4 - Changed Reinforcing bars to Reinforcement Bars.
	M-BRG-508	**Crash Wall Modifications Shoulder Piers**
		Note 4 - Changed Reinforcing bars to Reinforcement Bars.
	M-BRG-525	**Slopewall Details**
	Drainage (DRN)-Series 600	
	M-DRN-601	**Slope Drain**
		Revised storm sewer to "Class B, 12".
	M-DRN-602	**Bioswale**

Tollway Base Sheet Revisions

Section M	Base Sheet Drawings	
	Drawing	**Modification Summary** **Effective: 03-31-2016**
	Maintenance of Traffic (MOT)-Series 700	
	M-MOT-700	**Temporary Concrete Barrier "Y" Connector Segment**
		Revised Barrier Details Notes.
		Changed barrier edges chamfered from 1/2" to 1" on all edges (optional).
	Overhead Sign (OHS)-Series 720	
	M-OHS-720	**Overhead Sign Structure Span Type Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
	M-OHS-721	**Overhead Sign Structure Cantilever Type Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
	M-OHS-722	**Overhead Sign Structure Entrance Monotube Type (Steel) Mainline Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table and Total Bill of Material.
	M-OHS-723	**Overhead Sign Structure Exit Monotube Type (Steel) Mainline Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table and Total Bill of Material.
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table and Total Bill of Material.
	M-OHS-724	**Overhead Sign Structure Butterfly Type (Steel) Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Removed Truss Extension for Mounting Walkway detail and references
		Added "L" column and removed TGL and TGL1 from the Summary Table
	M-OHS-725	**Overhead Sign Structure Entrance Monotube Type (Steel) AET Ramp Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table.
	M-OHS-726	**Overhead Sign Structure Exit Monotube Type (Steel) AET Ramp Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table.
	M-OHS-727	**Overhead Sign Structure Exit Monotube Type (Steel) Cash-IPO Ramp Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
		Clarified Concrete Structures is for Single Face Barrier and included in Summary Table.
	M-OHS-728	**Overhead Sign Structure Span Type (Steel) Summary and Total Bill of Material**
		Added Protective Coat (SQ YD) to Summary Table
		Clarified Class SI and Class DS Concrete are included in Foundation For Overhead Sign Structure.
	M-OHS-729	**Overhead Sign Structure ITS Gantry Frame (Steel) Single Span Structure Details**
	Sheet 1	Revised Material Specification Table to specify ASTM A500 Gr C & B for Frame & Mounting Beam HSS, respectively.
	Sheet 4	Removed Note 6, referring to ASTM requirements of HSS members.
	Sheet 5	Revised Note 1 to clarify requirements for Contractor when soil conditions are not met in the field.
	Sheet 5	Removed Protective Coat quantity since not required to be applied to shoulder foundation.
	Sheet 5	Updated anchor bolt note to allow ASTM F1554 bolts.
	Sheet 6	Revised Note 1 to clarify requirements for Contractor when soil conditions are not met in the field.
	Sheet 6	Removed Protective Coat quantity since not required to be applied to shoulder foundation.
	Sheet 7	Added note 5 to clarify limits of protective coat and revised protective coat quantity in Median Foundation Schedule.
	M-OHS-730	**Overhead Sign Structure ITS Gantry Frame (Steel) Two-Span Structure Details**
	Sheet 1	Revised Material Specification Table to specify ASTM A500 Gr C & B for Frame & Mounting Beam HSS, respectively.
	Sheet 4	Removed Note 6, referring to ASTM requirements of HSS members.
	Sheet 6	Revised Note 1 to clarify requirements for Contractor when soil conditions are not met in the field.
	Sheet 6	Removed Protective Coat quantity since not required to be applied to shoulder foundation.
	Sheet 6	Updated anchor bolt note to allow ASTM F1554 bolts.
	Sheet 7	Revised Note 1 to clarify requirements for Contractor when soil conditions are not met in the field.
	Sheet 7	Removed Protective Coat quantity since not required to be applied to shoulder foundation.
	Sheet 8	Added note 5 to clarify limits of protective coat and revised protective coat quantity in Median Foundation Schedule.
	Pole Assembly-Series 1000	
	M-ITS-1000	**ELEVATION VIEWS POLE MOUNTED ITS ELEMENT ASSEMBLY**
		Added 30A-2P NEMA 4X DISC MTD ON SUPPORT DETAIL.
	M-ITS-1001	**GENERAL NOTES POLE MOUNTED ITS ELEMENT ASSEMBLY**
		Added Note 16 regarding disconnect switch usage.
	M-ITS-1002	**ITS STANDARD FOUNDATION: New Sheet**
	Dynamic Message Sign (ITS) - Series 1100	
	M-ITS-1100	Revised conduit call-outs
	M-ITS-1103	Revised 30A-2P NEMA 4X DISC MTD ON SUPPORT DETAIL. Removed pad mounted transformer.
	M-ITS-1104	Revised 30A-2P NEMA 4X DISC MTD ON SUPPORT DETAIL. Revised Note 2 to eliminate 120/208V and pad mount.
	Cabinet Wiring-Series 1200	
	M-ITS-1200	**Cabinet Wiring**
	All	Added HOT3, NB, and GB to Duplex Receptacle.
	M-ITS-1255	Added HOT5 to Duplex Receptacle.
	M-ITS-1256	Deleted HOT5 from Video Distributiom Panel.

	Base Sheet Drawings		
	Drawing	Modification Summary	Effective: 03-31-2016
Tollway Base Sheet Revisions			
		Weigh-In-Motion - Series 1600	
Section M	M-WIM-1600	WEIGH-IN-MOTION CABINET AND FOUNDATION DETAILS	
	M-WIM-1601	WEIGH-IN-MOTION IP CAMERA DETAILS	
	M-WIM-1602	WEIGH-IN-MOTION LOOP DETECTOR DETAILS	
	M-WIM-1603	WEIGH-IN-MOTION DETECTOR LOOP AND QUARTZ SENSOR DETAIL	
	M-WIM-1604	INSTALLATION DETAIL DETECTOR HOUSING & DETECTOR HOUSING ADAPTER	
	M-WIM-1605	WEIGH-IN-MOTION DETECTOR HOUSING DETAIL	
		Flashing Sign Beacon - Series 1700	
	M-ITS-1700	FLASHING SIGN BEACON INSTALLATION BREAKAWAY ELECTRICAL DETAIL	
	M-ITS-1701	FLASHING SIGN BEACON INSTALLATION WIRING DIAGRAM	
		Conduit Details at Integral Abutment-Series 1900	
	M-ITS-1900	CONDUIT DETAILS AT INTEGRAL ABUTMENT BRIDGE STANDARD SLOPE WALL	
		Business Systems (BUS)- Series 2500	
	M-BUS-2500	CABLE CONDUIT SCHEDULE AND GENERAL NOTES	
	M-BUS-2501	LEGEND SYMBOL LIST, ABBREVIATIONS AND EQUIPMENT SCHEDULES	
	M-BUS-2502	SINGLE LINE DIAGRAM AND UTILITY POWER CABLE/CONDUIT SCHEDULE	
	M-BUS-2503	CONTROL BUILDING LIGHTING PLAN AND MISCELLANEOUS DETAILS - MAIN PLAZA	
	M-BUS-2504	CONTROL BUILDING LIGHTING PLAN AND MISCELLANEOUS DETAILS - REMOTE PLAZA	
	M-BUS-2505	CONTROL BUILDING GROUNDING DETAILS - MAIN PLAZA	
	M-BUS-2506	CONTROL BUILDING GROUNDING DETAILS - REMOTE PLAZA	
	M-BUS-2507	GROUNDING SCHEMATIC	
	M-BUS-2508	CONTROL BUILDING MISCELLANEOUS DETAILS	
	M-BUS-2509	UPS SINGLE LINE AND WIRING DIAGRAM	
	M-BUS-2510	MISCELLANEOUS SCHEMATIC DIAGRAMS	
	M-BUS-2511	VIDEO POWER JUNCTION BOX DETAIL - MAIN PLAZA	
	M-BUS-2512	VIDEO POWER JUNCTION BOX DETAIL - REMOTE PLAZA	
	M-BUS-2513	VIDEO WATCHDOG CAMERA DETAILS	
	M-BUS-2514	RAMP PLAZA MONOTUBE DETAILS ACM AND IPO LANES	
	M-BUS-2515	LOOP JUNCTION BOX DETAIL	
	M-BUS-2516	CONTROL BUILDING LIGHTING AND RECEPTACLE PLAN - MAIN PLAZA	
	M-BUS-2517	CONTROL BUILDING LIGHTING AND RECEPTACLE PLAN -REMOTE PLAZA	
	M-BUS-2518	MISCELLANEOUS CROSS SECTION DETAILS	
	M-BUS-2519	COMED TRANSFORMER PAD DETAIL	
	M-BUS-2520	ELECTRICAL SITE PLAN - ACM AND IPO LANES	
	M-BUS-2521	UNDERGROUND ELECTRICAL PLAN - ACM AND IPO LANES - MAIN PLAZA	
	M-BUS-2522	PLAZA I-PASS PLANS - ACM AND IPO LANES	
	M-BUS-2523	UNDERGROUND ELECTRICAL PLAN - ACM AND IPO LANES - REMOTE PLAZA	
	M-BUS-2524	AUTOMATIC LANE ISLAND PLAN AND DETAILS 12 FOOT WIDE LANE	
	M-BUS-2525	IPASS ONLY (IPO) LANE ISLAND PLAN AND DETAILS 12 FOOT WIDE LANE	
	M-BUS-2526	TOLL EQUIPMENT WIRING DIAGRAM - ACM AND IPO LANES	
	M-BUS-2527	LOOP AND TREADLE INSTALLATION DETAILS - ACM AND IPO LANES	
	M-BUS-2528	CONTROL BUILDING TSIC - ACM AND IPO LANES - MAIN PLAZA	
	M-BUS-2529	CONTROL BUILDING TSIC - ACM AND IPO LANES - REMOTE PLAZA	
	M-BUS-2530	TSIC TERMINAL BLOCK LAYOUT - ACM AND IPO LANES	
	M-BUS-2531	CONTROL BUILDING EQUIPMENT LAYOUT - ACM AND IPO LANES - MAIN PLAZA	
	M-BUS-2532	CONTROL BUILDING EQUIPMENT LAYOUT - ACM AND IPO LANES - REMOTE PLAZA	
	M-BUS-2533	CONTROL BUILDING R3 RACK - MAIN PLAZA	
	M-BUS-2534	CONTROL BUILDING R3 RACK - REMOTE PLAZA	
	M-BUS-2535	MISCELLANEOUS DETAILS -ACM AND IPO LANES	
	M-BUS-2536	PANELBOARD SCHEDULES FOR TP1 AND TP2 - ACM AND IPO LANES	
	M-BUS-2537	PANELBOARD SCHEDULES FOR MDP AND UPS UNITS - ACM AND IPO LANES	
	M-BUS-2538	FIBER INTERCONNECTIONS BETWEEN MAIN AND REMOTE PLAZAS - ACM AND IPO LANES	
	M-BUS-2539	PLAZA LANE CONTROL SIGNAL - ACM AND IPO LANES	
	M-BUS-2540	TRAFFIC LIGHT DETAILS - ACM LANES	
	M-BUS-2541	TRAFFIC LIGHT DETAILS - IPO LANES	
	M-BUS-2542	ELECTRICAL SITE PLAN AET LANES	
	M-BUS-2543	UNDERGROUND CONDUIT PLAN - MAIN PLAZA	
	M-BUS-2544	UNDERGROUND CONDUIT PLAN - MAIN PLAZA PLAN - REMOTE PLAZA	
	M-BUS-2545	CONTROL BUILDING EQUIPMENT LAYOUT - REMOTE PLAZA	
	M-BUS-2546	CONTROL BUILDING EQUIPMENT LAYOUT - MAIN PLAZA	
	M-BUS-2547	CONTROL BUILDING TSIC - MAIN AND REMOTE PLAZAS - AET LANES	
	M-BUS-2548	TSIC TERMINAL BLOCK LAYOUT - ACM AND IPO LANES REMOTE PLAZAS - AET LANES	
	M-BUS-2549	PANELBOARD SCHEDULES - MAIN PLAZA AET LANES	
	M-BUS-2550	PANELBOARD SCHEDULES - REMOTE PLAZA AET LANES	
	M-BUS-2551	WIRING DIAGRAM - AET 1-LANE LAYOUT	
	M-BUS-2552	WIRING DIAGRAM - AET 3-LANE LAYOUT	
	M-BUS-2553	LOOP PLAN - AET 1-LANE LAYOUT	
	M-BUS-2554	LOOP PLAN - AET 3-LANE LAYOUT	
	M-BUS-2555	VES WASH SYSTEM ENCLOSURE DETAIL	
	M-BUS-2556	VES WASH SYSTEM PANEL DETAIL	
	M-BUS-2557	VES WASH SYSTEM FLOW DIAGRAM AND MECHANICAL DETAIL	
	M-BUS-2558	VES WASH SYSTEM SUGGESTED CONDUIT ROUTING	
	M-BUS-2559	VES WASH SYSTEM MISCELLANEOUS POWER WIRING DIAGRAM	
	M-BUS-2560	VES WASH SYSTEM CONTROL SWITCH SCHEMATIC	

New Sheet

TOLL EQUIPMENT WIRING CABLE/CONDUIT SCHEDULE

SYMBOL	CABLE DESCRIPTION	REMARKS
1	1-6PR #22 SHLD	NOTE 8
2	1-3/C #12 SHLD	NOTE 3
3	1-3PR #22 SHLD	NOTE 8
4	1-4/C #12 SHLD	NOTES 1 & 3
5	2-1/C #12, 1-1/C #12(GRD)	NOTE 1
6	1-1PR #14 SHLD (LOOP LEAD IN)	
7	1-1/C #14 (LOOP WIRE)	
8	1-1/C #6 BARE TINNED (GRD)	NOTE 5
9	1-7/C #12 SHLD	NOTE 3
10	1-3/C #12 SHLD	NOTE 3
11	2-1PR #22 SHLD	NOTE 1
12	1-3/C #16 SHLD (24 VAC) 1-3/C #12 SHLD 1-COAXIAL VIDEO CABLE	NOTES 3, 4, 9 & 10
13	1-2 PR #24 (RS 422)	NOTE 7
14	1-COAXIAL VIDEO CABLE	NOTES 9, 10
15	1-COAXIAL ANTENNA CABLE	
16	1- 9/C #22 IND SHLD	
17	1-1/C #4/0 (GRD BARE TINNED COPPER CONDUCTOR)	
18	1-1/C #8 (GRD BARE TINNED COPPER CONDUCTOR)	
19	1-1/C #2 (GRD BARE TINNED COPPER CONDUCTOR)	
20	1-4PR #24 (CATEGORY 5)	
21	1-6 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
22	1-24 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
23	1-36 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
24	1-48 STRAND, SINGLE MODE FIBER OPTIC CABLE	ARMORED CABLE
25	1-12PR #22 SHLD	
26	1-9/C #18 SHLD	NOTE 3
27	2-2/C #18 SHLD	NOTE 3
28	1-6PR #22 SHLD	
29	1-3PR #24 SHLD	NOTE 6
30	1-3/C #10 SHLD	
31	1-2PR #22 SHLD	
32	OEM CABLE (POWER AND VIDEO)	NOTE 11
33	1 - 1PR #22 SHLD (SENSE WIRE VES CAM)	
34 THRU 49	RESERVED FOR STANDARD DRAWINGS	
50	CAT6 CABLE	OUTDOOR RATED
51	SYNC CABLE, TWISTED PAIR # 24, BELDEN 89730	NOTE 12

TOLL EQUIPMENT WIRING CABLE/CONDUIT SCHEDULE

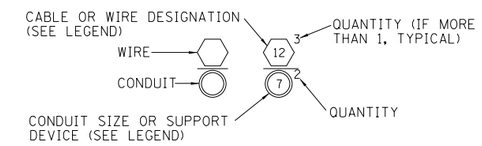
SYMBOL	CABLE DESCRIPTION	CONDUIT SIZE		REMARKS
		EXPOSED	EMBEDED OR UNDERGROUND	
101	(4) 1/C #3/0 (1) 1/C #4 (GRD)		4"	
102	(4) 1/C 250 MCM (1) 1/C #1/0 (GRD)		4"	
103	(4) 1/C #2 (1) 1/C #8 (GRD)		2"	
104	(3) 1/C #10 (1) 1/C #10 (GRD)	1"	1"	
105	(4) 1/C #10 (1) 1/C #10 (GRD)	1"	1"	
106	(2) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
107	(4) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
108	(4) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
109	(5) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
110	(5) 1/C #12 (1) 1/C #12 (GRD)	1"	2"	
111	(6) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
112	(8) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
113	1" CABLE DUCT WITH (2) 1/C #12 (1) 1/C #12 (GRD)	1"	1"	
114	1" CABLE DUCT WITH (3) 4/C #12 (SHLD)	1"	1"	
115	(3) 1/C #2/0 & 1 #8 (GND)		4"	
116	(2) 1/C #8 (1) 1/C #8 (GRD) 600V			
117	(3) 1/C #250MCM 600V (1) 1/C #1/0 (GRD) 600V		3"	
118	(2) 1/C #4 (1) 1/C #8 (GRD) 600V		2"	
119	(1) 16 AWG 6C FPLR (6) 1PR #22 SHLD	1"	1"	SECURITY-CARD ACCESSS
120	(2) 1/C #16 SHIELDED PAIR	1"	1"	FIRE ALARM
121	(2) 1/C #10 (1) 1/C #10 (GRD)	1"	1"	
122	(3) 1/C #3/0 (1) 1/C #1/0 (GRD)		3"	
123	(3) 1/C #1/0 (1) 1/C #4 (GRD)		3"	
124	(1) 1/C #6 SHLD			NOTE 11
125	36 STRANDS SM, FIBER OPTIC			ARMORED CABLE
126	12 STRANDS SM, FIBER OPTIC			ARMORED CABLE
127	2#2, 1#6		2"	
128	2#1, 1#6		2"	
129	3#8, 1#8		2"	
130	2#6, 1#8		1 1/4"	

CONDUIT SIZES

1	RIGID METALLIC CONDUIT 3/4"
2	RIGID METALLIC CONDUIT 1"
3	RIGID METALLIC CONDUIT 1 1/4"
4	RIGID METALLIC CONDUIT 1½"
5	RIGID METALLIC CONDUIT 2"
6	RIGID METALLIC CONDUIT 2½"
7	RIGID METALLIC CONDUIT 3"
9	RIGID METALLIC CONDUIT 4"
12	RIGID NON-METALLIC CONDUIT 1" SCHEDULE 40
15	RIGID NON-METALLIC CONDUIT 2" SCHEDULE 40
17	RIGID NON-METALLIC CONDUIT 3" SCHEDULE 40
18	NOT USED
19	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 40
22	RIGID NON-METALLIC CONDUIT 1" SCHEDULE 80
24	RIGID NON-METALLIC CONDUIT 1½" SCHEDULE 80
25	RIGID NON-METALLIC CONDUIT 2" SCHEDULE 80
27	RIGID NON-METALLIC CONDUIT 3" SCHEDULE 80
29	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 80
32	RIGID METALLIC CONDUIT PVC COATED 1"
33	RIGID METALLIC CONDUIT PVC COATED 1¼"
34	RIGID METALLIC CONDUIT PVC COATED 1½"
35	RIGID METALLIC CONDUIT PVC COATED 2"
37	RIGID METALLIC CONDUIT PVC COATED 3"
39	RIGID METALLIC CONDUIT PVC COATED 4"
40	1½" COILABLE PVC CABLE DUCT
41	RIGID NON-METALLIC CONDUIT 4" SCHEDULE 80 WITH 1" INNER DUCTS
42	1" COILABLE NON-METALLIC CONDUIT
43	2" COILABLE NON-METALLIC CONDUIT
44	4" COILABLE NON-METALLIC CONDUIT
45	3" COILABLE NON-METALLIC CONDUIT
46	1 1/2" COILABLE NON-METALLIC CONDUIT

NOTES:

1. MINIMUM SIZE OF EXPOSED CONDUIT IS ¾". MINIMUM SIZE OF EMBEDDED CONDUIT IS 1". EMBEDDED CONDUIT SHALL BE PVC COATED RIGID STEEL.
2. STANDARD AND IDRIS LOOPS SHALL BE FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOP LEAD-IN CABLING IS FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. MULTI-CONDUCTOR SHIELDED CABLE #12 AWG FOR NORMAL POWER, UPS POWER, TRAFFIC VIOLATION LIGHTS, AND LANE CONTROL SIGNALS, SHALL BE COLOR CODED AS SPECIFIED IN THE SPECIAL PROVISIONS OF THE CONTRACT.
4. MULTI-CONDUCTOR SHIELDED CABLE #14 AWG THROUGH #18 AWG FOR CONTROL USE SHALL BE COLOR CODED PER ICEA-NEC (K-2) STANDARD.
5. A GROUND ROD IS INSTALLED AT EACH AUTOMATIC MACHINE AS SHOWN ON DWG. M-BUS-2507. CADWELD A #6 AWG GROUND WIRE TO THE GROUND ROD AND COIL 6' OF GROUND WIRE IN THE LANE CONTROL CABINET TO BE TERMINATED AT THE ACM BY THE ILLINOIS TOLLWAY.
6. PROVIDE SPD PROTECTION ADAPTERS FOR ALL COAXIAL VIDEO AND ANTENNA CABLES ENTERING BUILDING. IN-LINE ADAPTERS MUST BE INSTALLED AT ALL CONNECTIONS TO THE R3 RACK, ELPAC AND IPASS EQUIPMENT. THE SPD PROTECTION ADAPTERS SHALL BE PHOENIX CONTACT (OR EQUIVALENT) "COAXTRAX SERIES" CATALOG NUMBER C-UFB-5DC/E.
7. PROVIDE SPD PROTECTION ADAPTERS FOR ALL RS-422 AND CATEGORY 5E CABLES ENTERING THE BUILDING. IN-LINE ADAPTERS MUST BE INSTALLED AT ALL CONNECTIONS TO THE CISCO SWITCH, ELPAC AND IPASS EQUIPMENT. THE SPD ADAPTER FOR RS-422 CABLES SHALL BE PHOENIX CONTACT (OR EQUIVALENT) DATATRAB D-UFB-V11/BS-B. THE SPD ADAPTER FOR CATEGORY 5E CABLES SHALL BE PHOENIX CONTACT (OR EQUIVALENT) DATATRAB D-LAN-CAT-5E.
8. PLENUM RATED CABLE INSTALLED IN EMBEDDED CONDUIT.
9. LANE VIOLATION CAMERA IS MOUNTED ON MONOTUBE.
10. PROVIDE SURGE PROTECTION DEVICE (SPD) FOR ALL COAXIAL VIDEO CABLES, AN IN-LINE ADAPTER MUST BE INSTALLED AT THE CONNECTION TO THE FIBER OPTIC DEVICE. THE SPD SHALL BE AS MANUFACTURED BY PHOENIX CONTACT COAXTRAX SERIES, CATALOG NUMBER C-UFB-5DC/E.
11. PROVIDE SURGE PROTECTIION DEVICE FOR ALL CABLES FROM EXTERNAL DEVICES ROUTED INTO THE PLAZA BUILDING INCLUDING ALL CAT6, COAX AND POWER CABLES.
12. ANTENNA READER SYNC CABLE IN CONDUIT MUST BE INSTALLED BETWEEN TWO PLAZAS WHEN THEIR ANTENNAS ARE WITHIN 500FT. OF EACH OTHER.



DESIGNATION KEY

NOTE TO DESIGNER

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NOTE TO DESIGNER

ANTENNA READER SYNC CABLE IN CONDUIT MUST BE INSTALLED BETWEEN TWO PLAZAS WHEN THEIR ANTENNAS ARE WITHIN 500FT. OF EACH OTHER.

M-BUS-2500

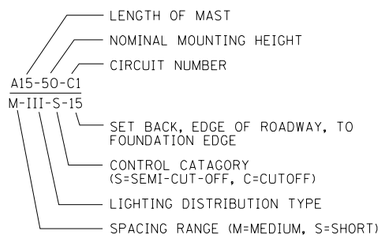
Illinois Tollway

CABLE CONDUIT SCHEDULE AND GENERAL NOTES

DATE
3-31-2016

LEGEND

- EXPOSED CONDUIT
- CONDUIT IN SLAB
- UNDERGROUND CONDUIT OR CABLE DUCT
- CONDUIT OR CABLE DUCT IN CASING
- HOME RUN TO PANEL AS NOTED
- INDICATES CIRCUIT TURNING DOWN
- INDICATES CIRCUIT TURNING UP
- GROUND ROD
- GROUNDING TRIAD
- G — EXPOSED GROUND CONDUCTOR
- G — UNDERGROUND GROUND CONDUCTOR



SYMBOL LIST

SYMBOL	DESCRIPTION
30 KVA 480-208Y/120V 3Ø, 4W	TRANSFORMER. 30 KVA DENOTES TRANSFORMER RATING. 480-208Y/120V DENOTES VOLTAGE. 3Ø DENOTES 3 PHASE. 4W DENOTES 4 WIRE.
(1)	LEGEND NUMBER FOR CABLE & CONDUIT. (SEE CABLE AND CONDUIT SCHEDULES).
(1)	MOTOR. NUMBER 1 DENOTES HORSEPOWER.
N E L ATS 260A 3P,4W	AUTOMATIC TRANSFER SWITCH (ATS). N DENOTES NORMAL SOURCE. E DENOTES EMERGENCY SOURCE. L DENOTES LOAD. 260A DENOTES 260 AMPERE ATS RATING. 3P DENOTES 3 POLE. 4W DENOTES 4 WIRE.
JB OR (J)	JUNCTION BOX.
60A	DISCONNECT SWITCH. 60A DENOTES 60 AMPERES.
50A	CIRCUIT BREAKER. 50A DENOTES 50 AMPERES.
200A 3PDT. SW.	MANUAL TRANSFER SWITCH. 200A DENOTES 200 AMPERES. 3PDT DENOTES 3 POLE DOUBLE-THROW.
(WH)	SELF CONTAINED UTILITY METERING.
(G)	STANDBY GENERATOR.
30A 2P	PANEL CIRCUIT BREAKER. 30A DENOTES 30 AMPERES. 2P DENOTES 2 POLES.
(C)	MECHANICALLY HELD LIGHTING COIL.
(CR)	CONTROL RELAY COIL.
SPD WITH LP	TRANSIENT VOLTAGE SURGE SUPPRESSION WITH LIGHTNING PROTECTION

ABBREVIATIONS

ACM	AUTOMATIC COIN MACHINE
AET	ALL ELECTRONIC TOLL
AFF	ABOVE FINISH FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
BF	BARRIER WARNING LIGHT
C/B	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
DHH	DOUBLE HANDHOLE
FACP	FIRE ALARM CONTROL PANEL
FLPC	FRONT LICENSE PLATE CAMERA
GCS	GENERATOR CONTROL SWITCH
GFI	GROUND FAULT INTERRUPTER
HH	HANDHOLE
IPO	I-PASS ONLY
JB	JUNCTION BOX
LA	LIGHTNING ARRESTER
LC	LINE CONDITIONER
LCC	LANE CONTROLLER CABINET
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MMF	MULTI-MODE FIBER
MSD	MAIN SERVICE DISCONNECT
MTS	MANUAL TRANSFER SWITCH
OCR	OPTICAL CHARACTER RECOGNITION
RLPC	REAR LICENSE PLATE CAMERA
SMF	SINGLE MODE FIBER
SPD	SURGE PROTECTION DEVICE
TOC	TRAFFIC OPERATION CENTER
TSIC	TERMINAL STRIP INTERCONNECT CENTER
UPS	UNINTERRUPTIBLE POWER SUPPLY
VES	VIOLATION ENFORCEMENT SYSTEM
WP	WEATHERPROOF

NOTE:

1. ALL TYPE 'B' FIXTURES SHALL BE MOUNTED AT THE SAME ELEVATION WITH A MINIMUM MOUNTING HEIGHT AS INDICATED.

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WIRING DEVICE SCHEDULE

SYMBOL	DESCRIPTION	RATING	MFR. AND CAT. NO.	MOUNTING HEIGHT
$ a OC	SINGLE-POLE SWITCH a-SWITCH LEG (LOWER CASE LETTER)	20A, 120V	HUBBELL #LHIR	4'-0"
X	DUPLEX RECEPTACLE X - CIRCUIT NUMBER	20A, 120V	HUBBELL #HBL5362	18" AS NOTED
X	QUAD RECEPTACLE X - CIRCUIT NUMBER	20A, 120V	-	18" AS NOTED
C	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR, BACK BOX, & ANGLE ADAPTER	200A, 600V	CROUSE-HINDS "ARKTITE" SERIES #AREA20417	3'-0" ABOVE GRADE
B	4P, 4W, WEATHERPROOF RECEPTACLE WITH SPRING DOOR & BACK BOX	30A, 600V	CROUSE-HINDS "ARKTITE" SERIES #ARE3413	3'-0" ABOVE GRADE
WP GFI	DUPLEX RECEPTACLE WITH GROUND FAULT PROTECTION WP - IDENTIFIES WEATHERPROOF	20A, 120V	HUBBELL #GF5362	3'-0" ABOVE GRADE

LIGHTING FIXTURE SCHEDULE

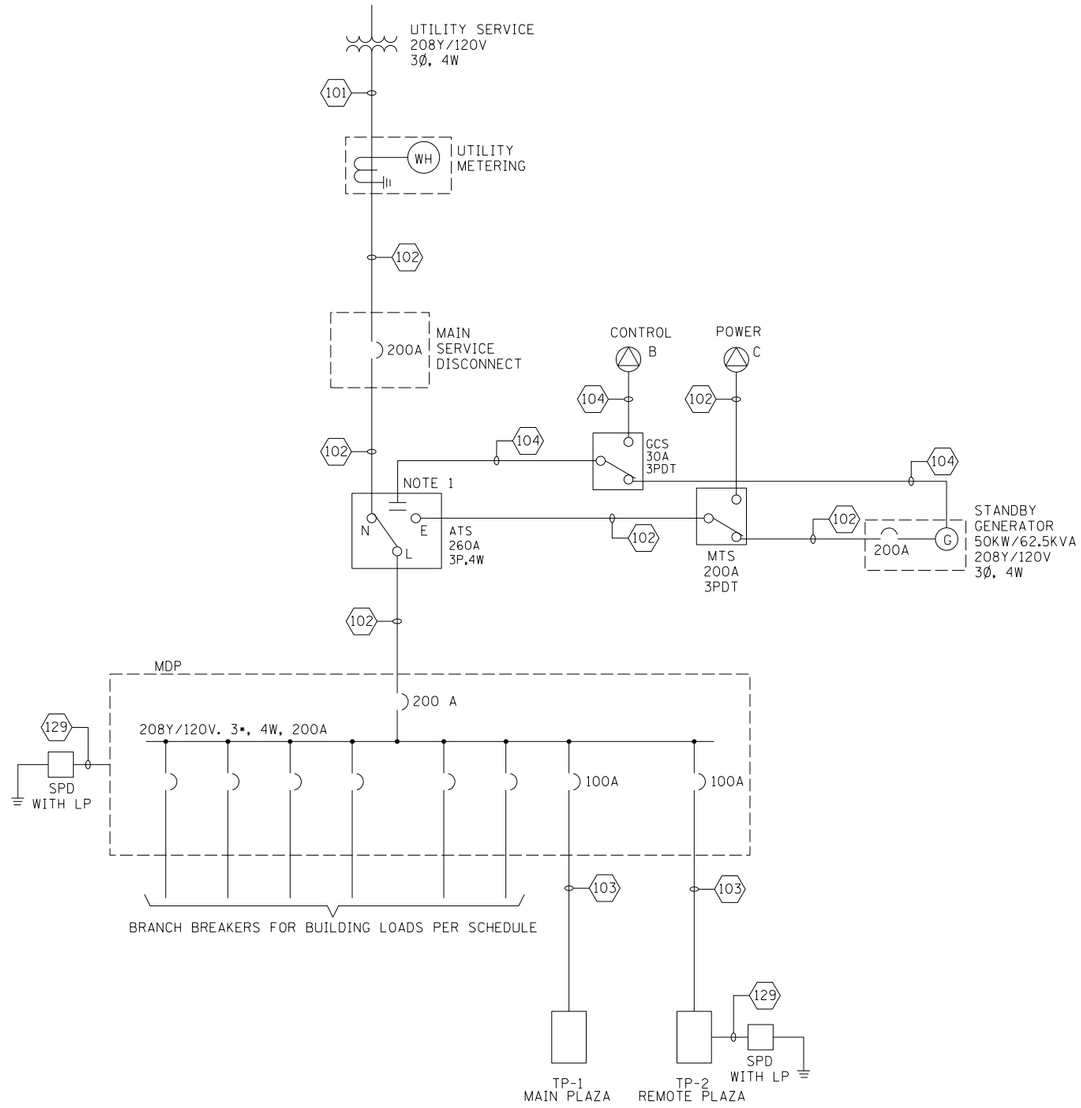
SYMBOL	DESCRIPTION	VOLTAGE	LAMPS	MFR. AND CAT. NO.	REMARKS
A	4' LED LOW PROFILE SUSPENDED DIRECT LUMINAIRE	120 V	LED	PHILIPS / LIGHTOLIER ST-74-W-A-35A-40-U-35A ATLAS ILW4 & LED 4D	MOUNT 8' ABOVE FINISHED FLOOR
B	LED LARGE GLASS LOW PROFILE WALL PACK	120 V	LED	PHILIPS / DAYBRITE WTN-24WLU-FWT	MOUNT 10'-0" ABOVE FINISHED GRADE NOTE 1
C	EMERGENCY LED LIGHT WITH NICKEL METAL HYBRIDE BATTERY	120 V	LED	DUAL LITE EV LED LITE GEAR	MOUNT 8' ABOVE FINISHED FLOOR

M-BUS-2501

Illinois Tollway

LEGEND, SYMBOL LIST, ABBREVIATIONS AND EQUIPMENT SCHEDULES

DATE
3-31-2016



SINGLE LINE DIAGRAM

NOTES:

1. CONTACT TO INITIATE ENGINE STARTING CONTROLS.
2. ALL CIRCUIT BREAKERS AND DISCONNECT SWITCHES ARE 3-POLE UNLESS NOTED OTHERWISE.
3. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.

NOTES TO DESIGNER

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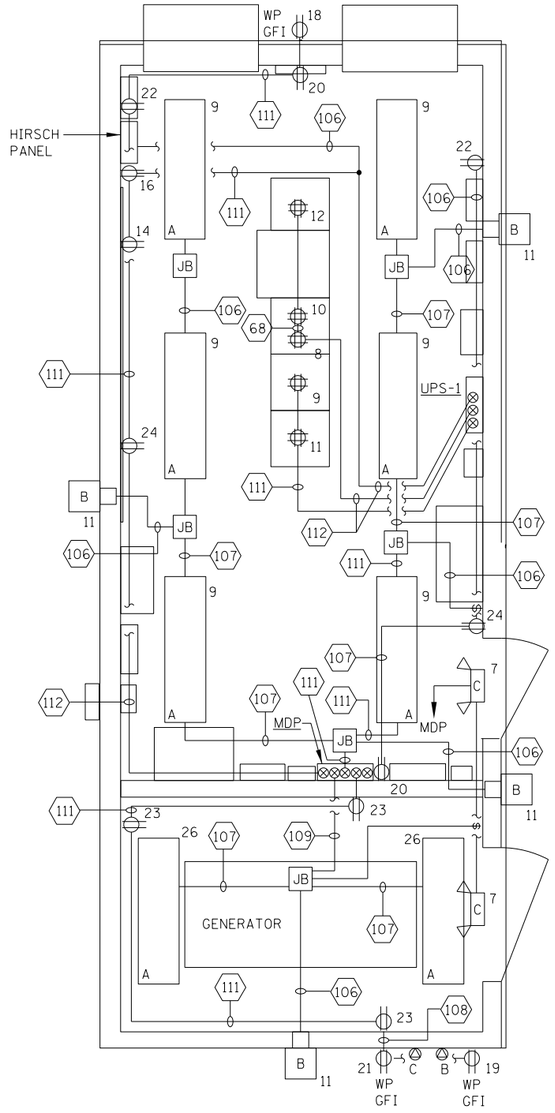
FEEDER TO REMOTE RAMP POWER PANEL. CABLING TO REMOTE PLAZA TO BE SIZED BY THE DESIGNER.

M-BUS-2502

Illinois Tollway

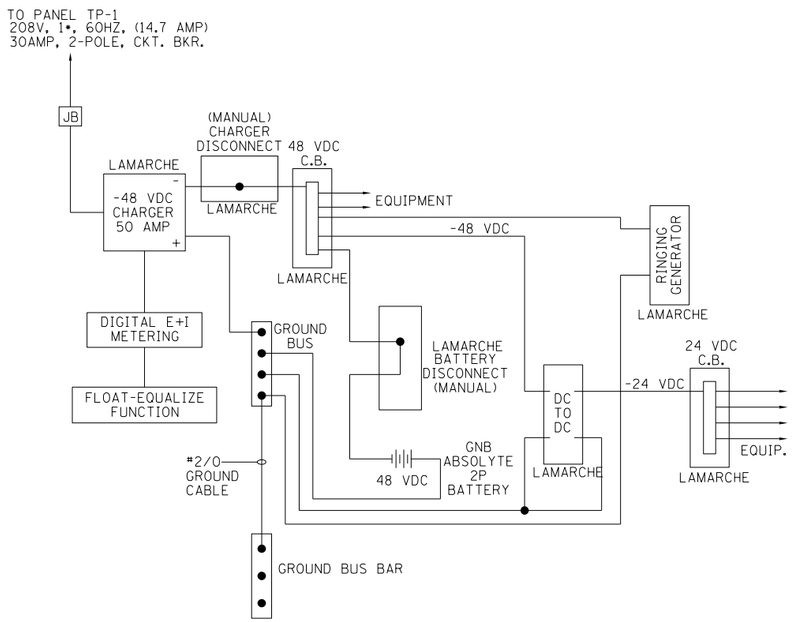
SINGLE LINE DIAGRAM AND UTILITY POWER CABLE/CONDUIT SCHEDULE

DATE
3-31-2016



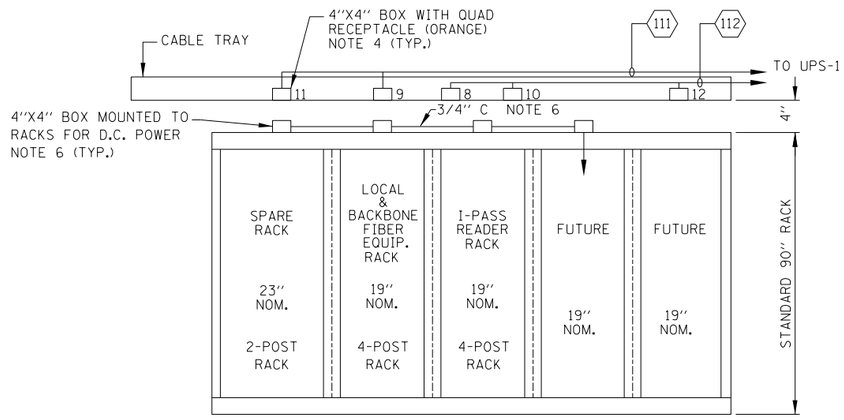
BUILDING LIGHTING AND RECEPTACLE PLAN

NOT TO SCALE



BATTERY CHARGER INTERCONNECTION DIAGRAM

NOT TO SCALE



COMMUNICATIONS AND EQUIPMENT RACK ELEVATION C

NOT TO SCALE

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 3#4" WITH 2-1/C #12 AND 1/C #12 GRD. UNLESS OTHERWISE NOTED.
3. FOR PANEL SCHEDULES SEE DWGS. M-BUS-2536 AND M-BUS-2537.
4. PROVIDE QUAD RECEPTACLES (5 TOTAL) FOR THE EQUIPMENT RACKS AS SHOWN. THE RECEPTACLES SHALL BE MOUNTED TO THE SIDE OF THE CABLE TRAY AS DIRECTED BY THE ILLINOIS TOLLWAY.
5. FOR LEGEND, WIRING DEVICE SCHEDULE, LIGHT FIXTURE SCHEDULE AND ABBREVIATIONS SEE DWG. M-BUS-2501.
6. IF REQUIRED, PROVIDE 3/4" CONDUIT FROM THE D.C. POWER EQUIPMENT TO PULLBOXES TO BE LOCATED AT THE TOP OF EACH EQUIPMENT RACK. THE CONDUIT SHALL BE INSTALLED EMPTY FOR FUTURE USE BY THE ILLINOIS TOLLWAY.

NOTE TO DESIGNER

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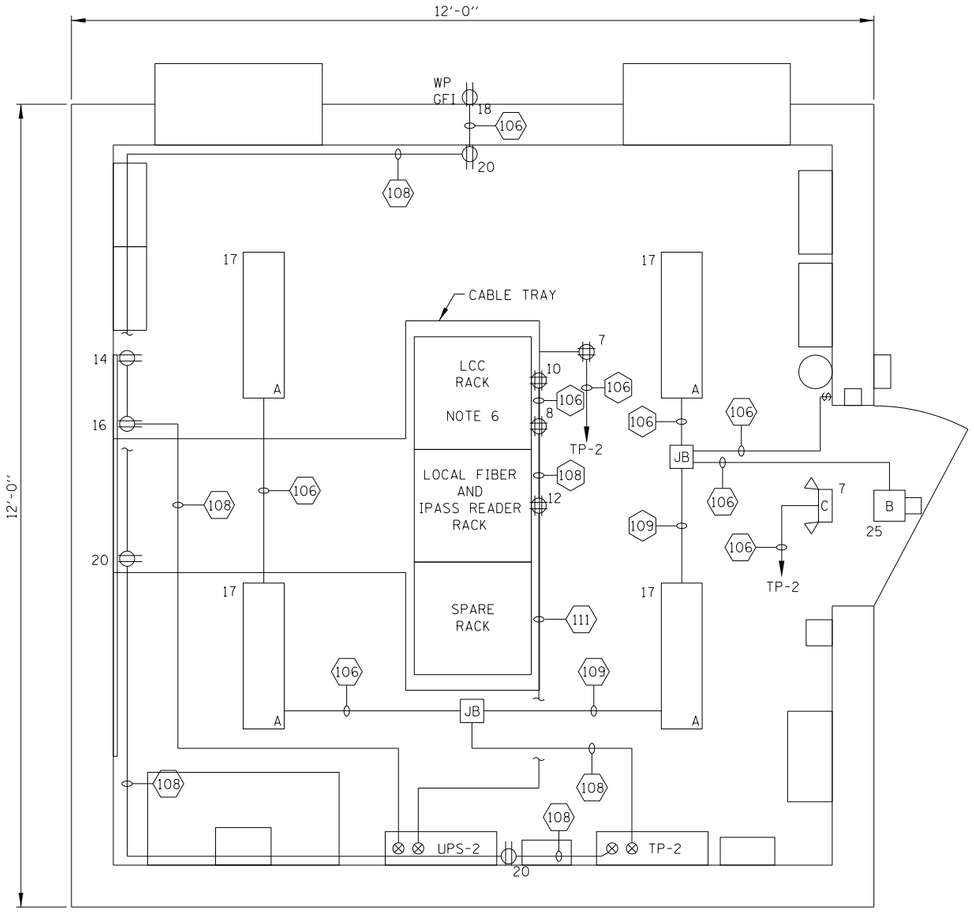
M-BUS-2503

Illinois Tollway

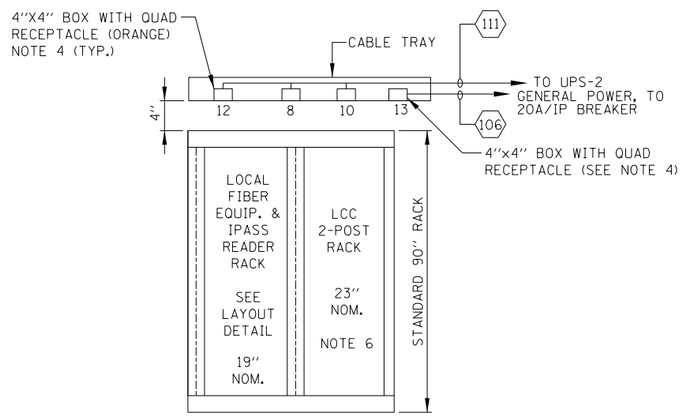
CONTROL BUILDING LIGHTING PLAN AND MISCELLANEOUS DETAILS - MAIN PLAZA

DATE
3-31-2016



BUILDING LIGHTING AND RECEPTACLE PLAN

NOT TO SCALE

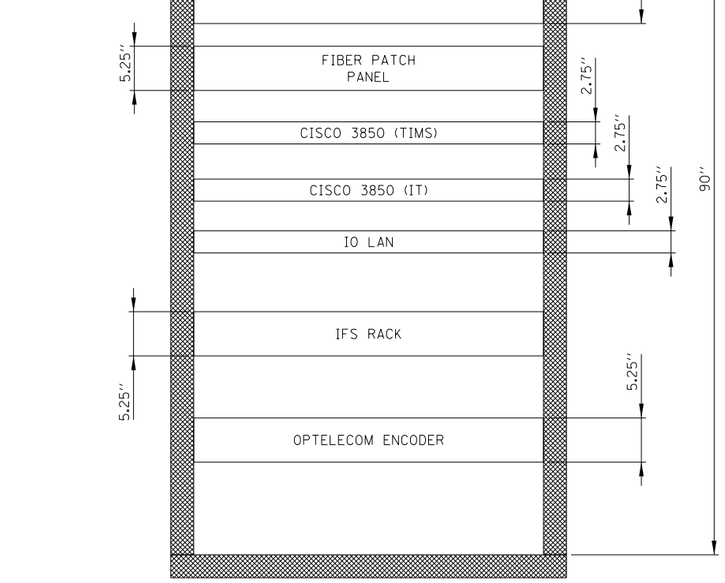


COMMUNICATIONS AND EQUIPMENT RACK ELEVATION

NOT TO SCALE

NOTES:

1. SEE DWG. M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 3/4" WITH 2-1/C #12 AND 1/C #12 GRD. UNLESS OTHERWISE NOTED.
3. FOR PANEL SCHEDULES, SEE DWGS. M-BUS-2536 AND M-BUS-2537.
4. PROVIDE QUAD RECEPTACLES (3 TOTAL) FOR THE EQUIPMENT RACKS AS SHOWN. THE RECEPTACLES SHALL BE MOUNTED TO THE SIDE OF THE CABLE TRAY AS DIRECTED BY THE ENGINEER.
5. FOR LEGEND, WIRING DEVICE SCHEDULE, LIGHT FIXTURE SCHEDULE AND ABBREVIATIONS SEE BASE SHEET M-BUS-2501.
6. THE LCC RACK IS A 23" NOM. 2-POST RACK. THE IPO AND ACM LANE CONTROLLER CABINETS ARE MOUNTED BACK-TO-BACK AS SHOWN ON BASE SHEET M-BUS-2531.



LOCAL FIBER EQUIP. AND IPASS READER RACK LAYOUT DETAIL

NOT TO SCALE

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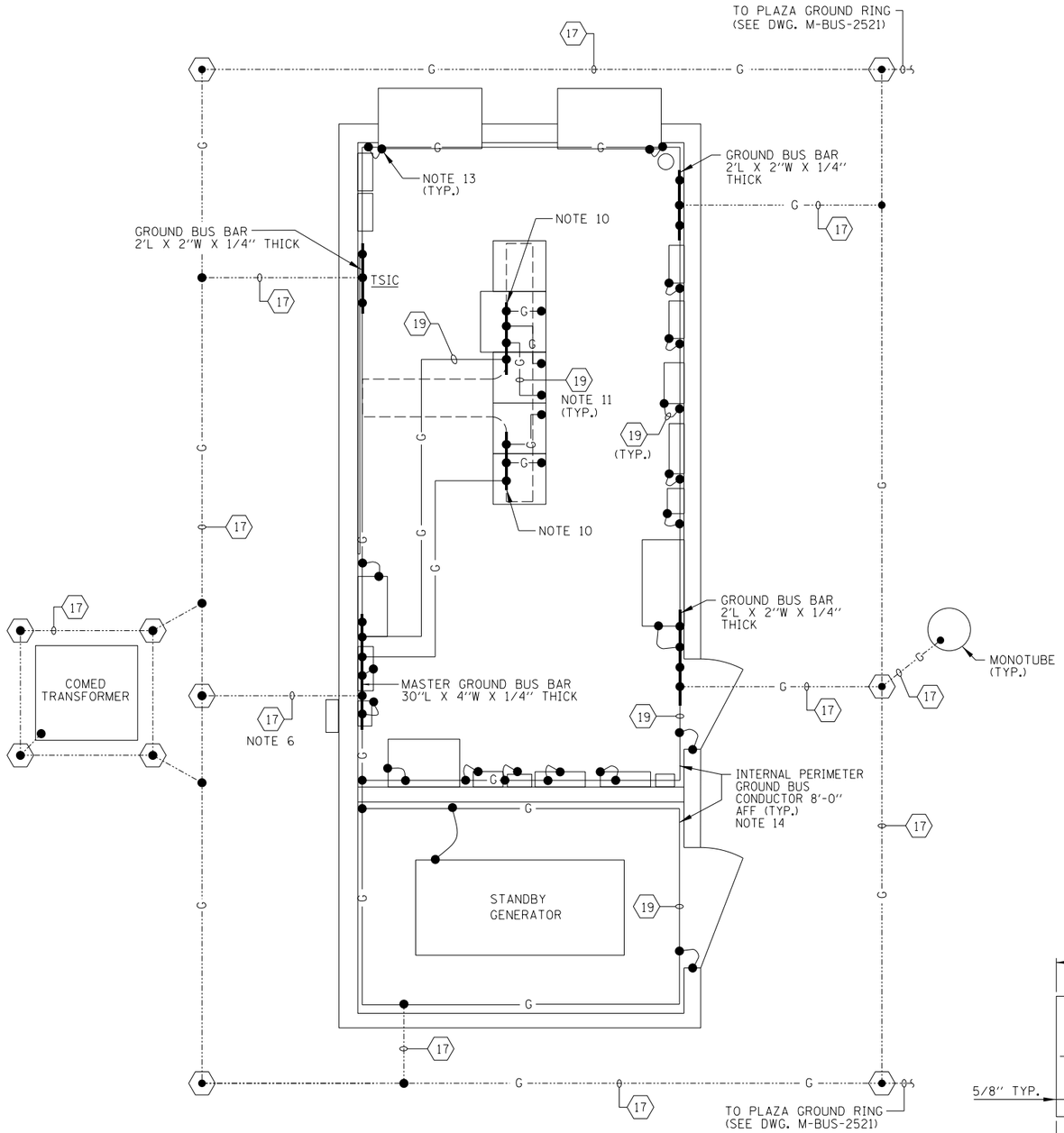
M-BUS-2504

Illinois Tollway

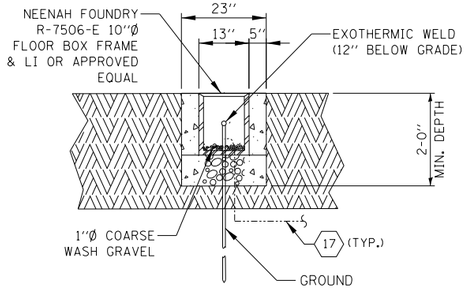
CONTROL BUILDING LIGHTING PLAN AND MISCELLANEOUS DETAILS - REMOTE PLAZA

DATE
3-31-2016



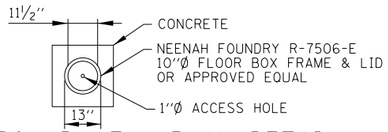
BUILDING ELECTRICAL GROUNDING LAYOUT

NOT TO SCALE



GROUND WELL ELEVATION DETAIL

NOT TO SCALE (NOTE 3)

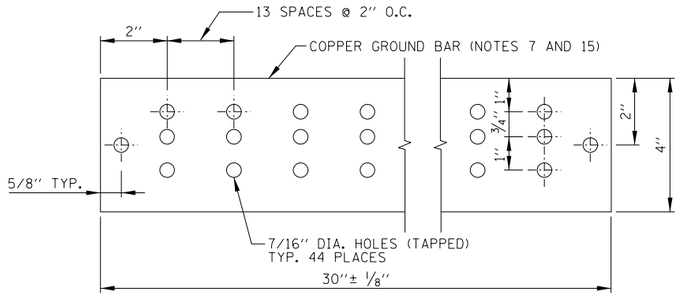


GROUND WELL PLAN DETAIL

NOT TO SCALE (NOTE 3)

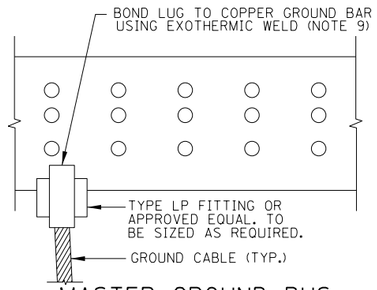
NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE.
2. SEE BASE SHEET M-BUS-2502 FOR POWER CABLE INFORMATION.
3. DETAIL SHOWS INSTALLATION IN UNPAVED AREA. WHEN INSTALLING IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.
4. GROUND WELLS ARE REQUIRED AT EVERY GROUND ROD.
5. SEE BASE SHEET M-BUS-2507 FOR GROUNDING SCHEMATIC.
6. PROVIDE 1" SCHEDULE 40 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 BAR 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 SEAMLESS HEAVY DUTY COMPRESSION TERMINAL.
12. A FOUR INCH GAP SHALL BE PROVIDED BETWEEN THE 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 8 FEET ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACE ON INSULATED STANDOFFS. THE STANDOFFS 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 8 FEET ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING BRACKET WITH INSULATOR.



MASTER GROUND BUS BAR SUPPORT SPACING DETAIL

NOT TO SCALE



MASTER GROUND BUS BAR CONNECTION DETAIL

NOT TO SCALE

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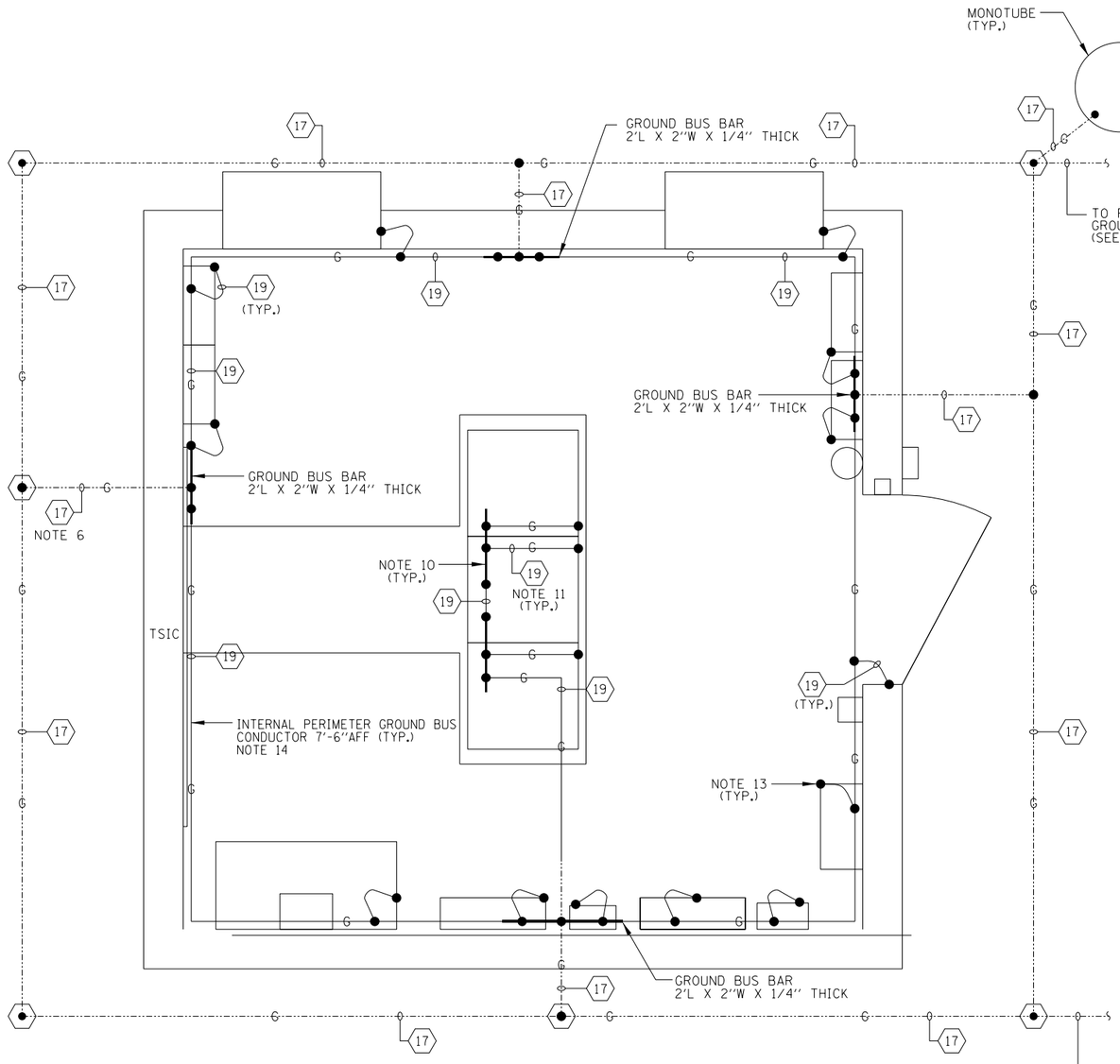
M-BUS-2505

Illinois Tollway

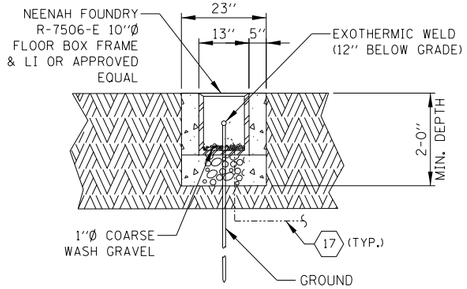
CONTROL BUILDING GROUNDING DETAILS - MAIN PLAZA

DATE
3-31-2016



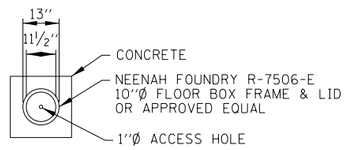
BUILDING ELECTRICAL GROUNDING LAYOUT

NOT TO SCALE



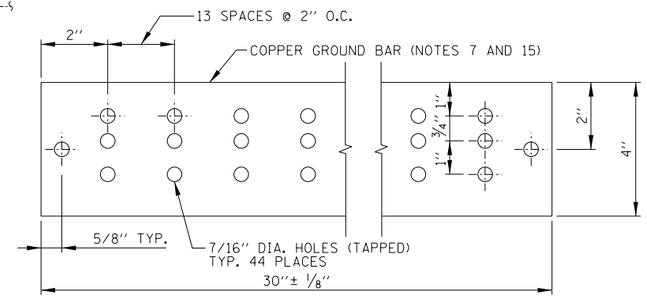
GROUND WELL ELEVATION DETAIL

NOT TO SCALE (NOTE 3)



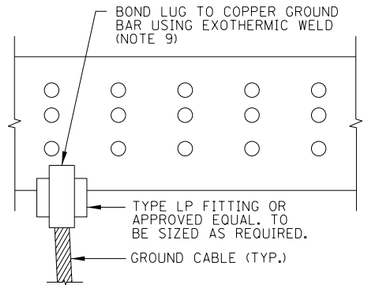
GROUND WELL PLAN DETAIL

NOT TO SCALE (NOTE 3)



MASTER GROUND BUS BAR SUPPORT SPACING DETAIL

NOT TO SCALE



MASTER GROUND BUS BAR CONNECTION DETAIL

NOT TO SCALE

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE.
2. SEE BASE SHEET M-BUS-2532 FOR CONTROL BUILDING EQUIPMENT LAYOUT.
3. DETAIL SHOWS INSTALLATION IN UNPAVED AREA. WHEN INSTALLING IN A PAVED AREA, INCORPORATE GROUND WELL IN THE POUR.
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 BAR 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 SEAMLESS HEAVY DUTY COMPRESSION TERMINAL.
12. A FOUR INCH GAP SHALL BE PROVIDED BETWEEN THE 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 7'-6" ABOVE FINISHED FLOOR. THE CONDUCTOR SHALL BE SUPPORTED 2 INCHES FROM THE WALL SURFACE ON INSULATED STANDOFFS. THE STANDOFFS 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 7'-6" ABOVE FINISHED FLOOR AND MOUNTED TO WALL USING A MOUNTING BRACKET WITH INSULATOR.

NOTE TO DESIGNER

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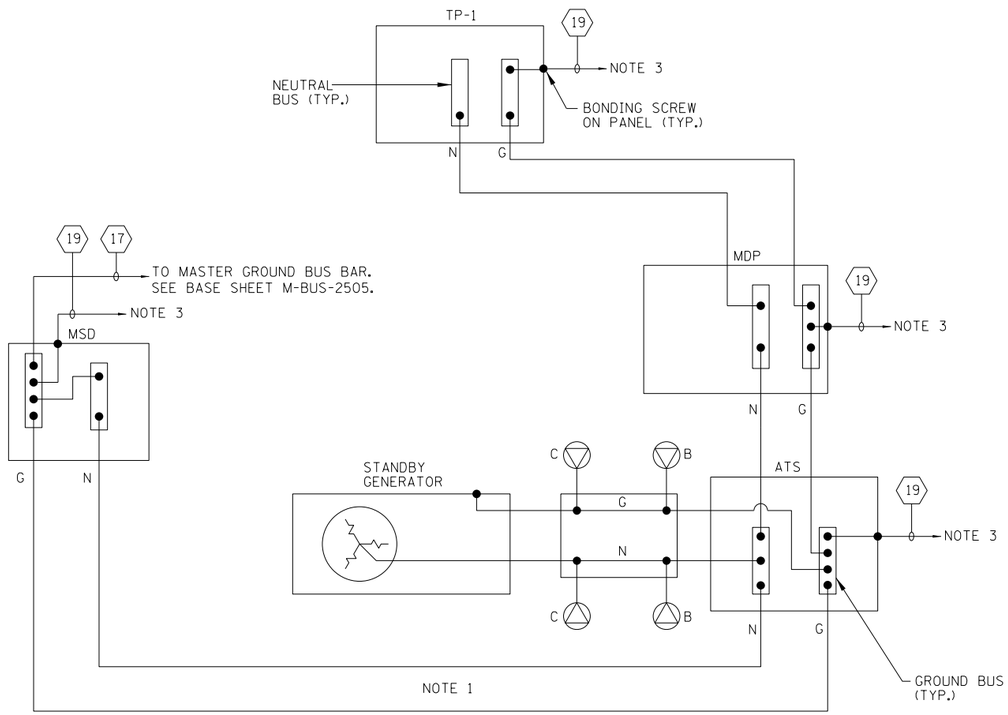
M-BUS-2506

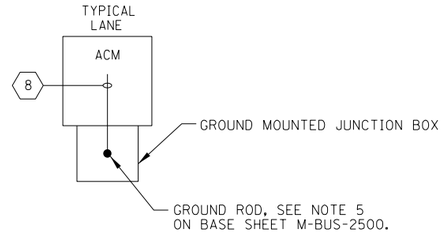
Illinois Tollway

CONTROL BUILDING GROUNDING DETAILS - REMOTE PLAZA

DATE
3-31-2016



CONTROL BUILDING EQUIPMENT



EQUIPMENT GROUNDING

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE.
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. SEE BASE SHEETS M-BUS-2505 AND M-BUS-2506.
4. GROUNDING SHALL BE PER MOTOROLA R56 STANDARD.
5. A GROUND ROD IS INSTALLED AT EACH AUTOMATIC MACHINE. CALDWELD A #6 AWG GROUND WIRE TO THE GROUND ROD AND COIL 6' OF GROUND WIRE IN THE LANE CONTROL CABINET TO BE TERMINATED AT THE ACM BY THE ILLINOIS TOLLWAY.

NOTE TO DESIGNER

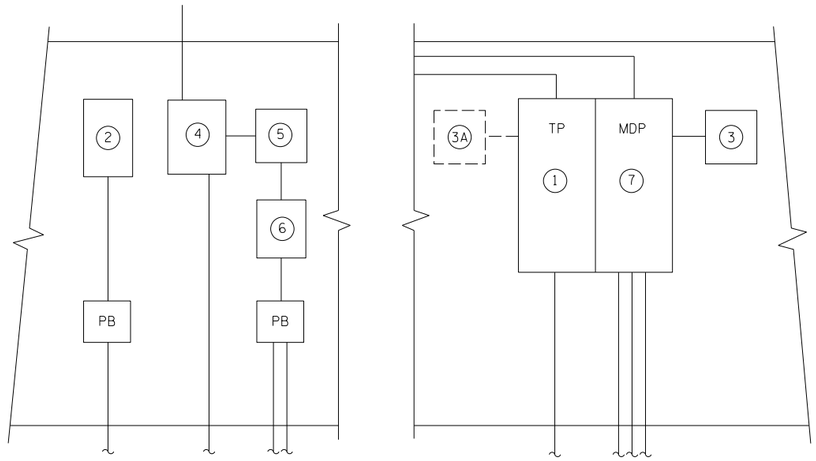
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF 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.

M-BUS-2507

Illinois Tollway

GROUNDING SCHEMATIC

DATE
3-31-2016



WALL ELEVATIONS

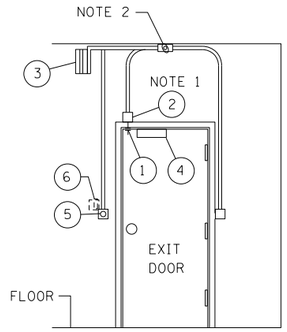
NOT TO SCALE NOTE 2

EQUIPMENT LEGEND

ITEM	DESCRIPTION
1	PANELBOARD NEMA 1 ENCLOSURE, PANEL TP-1 (OR TP-2), 100A. MAIN CIRCUIT BREAKER, 208/120 VOLT, 3-PHASE, 4W, 30 CIRCUITS.
2	FLASHING BEACON CONTROLLER ASSEMBLIES - PELCO WITH PART NO.'S SE-1003, SE-0139, SM-0179, SM-0196, SM-0215, SM-0164, FS-3906, FS-0216, SM-0217, SM-0218, AND FS-6402.
3	LIGHTNING ARRESTOR SYSTEM (MAIN PLAZA ONLY) - PHOENIX CONTACT "FLASHTRAB SERIES" CATALOG NUMBER 5602202.
3A	LIGHTNING ARRESTOR AND SPD SYSTEM (REMOTE PLAZA ONLY) - PHOENIX CONTACT "COMBOTRAB SERIES" CATALOG NUMBER 5602202.
4	LIGHTING CONTACTOR 120V, 30A, 1 PHASE, 4-POLE IN A NEMA 1 ENCLOSURE WITH A THREE POSITION SELECTOR SWITCH HAND-OFF-AUTO MOUNTED ON THE COVER.
5	TRANSFORMER DRY TYPE, 2KVA, 120V PRIMARY, 480V SECONDARY, 1-PHASE, 3-WIRE ROADWAY LIGHTING.
6	CIRCUIT BREAKER, 30A, 2-POLE, 480 VOLT IN A NEMA 1 ENCLOSURE.
7	MAIN DISTRIBUTION PANEL (MDP), 208Y/120V, 3 PHASE, 4W 200 AMP, MAIN CIRCUIT BREAKER (MAIN RAMP ONLY)

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.



DOOR ALARM JUNCTION BOX DETAIL- SINGLE DOOR

NOT TO SCALE

EQUIPMENT LEGEND - DOOR ALARM

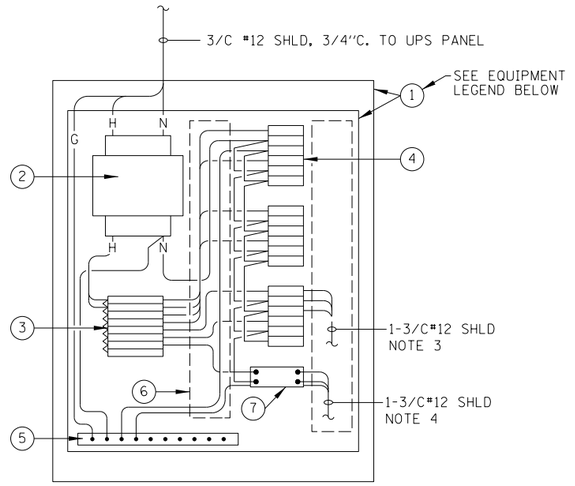
ITEM	DESCRIPTION
1	NORMALLY CLOSED (N.C. WHEN THE DOOR IS CLOSED) MAG REED CONTACT BUILT INTO DOOR FRAME. SENTROL 1078C OR 1078 SERIES. COIL CONTACT LEADS AND COMMUNICATION CABLE IN JUNCTION BOX.
2	JUNCTION BOX, 4" X 4" WITH BLANK COVER PLATE, AND ¾" CONDUIT TO CABLE TRAY.
3	MOTION DETECTOR
4	MAGNETIC DOOR LOCK
5	DOOR RELEASE BUTTON
6	CARD READER (EXTERIOR)

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 ¾" CONDUIT.

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.



VIDEO POWER JUNCTION BOX

(APPLICABLE TO EXISTING LOCATIONS)
NOT TO SCALE

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX

ITEM	QTY	DESCRIPTION
1	1	20"H X 16"W X 8"D NEMA 1 ENCLOSURE WITH 17"H X 14 1#2"W BACK PANEL, HOFFMAN CATALOG NO. A-20N16BLP, WITH A-20N16MP PANEL.
2	1	CONTROL POWER TRANSFORMER 120VAC-24VAC 500 VA SQUARE-D, CLASS 9070, PART 9070T500D13.
3	8	TERMINAL BLOCKS, FUSE SWITCH TYPE WITH BLOWN FUSE INDICATOR COMPLETE WITH 5 AMP FUSE, MOUNTING RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS, ALLEN BRADLEY CATALOG NO. 1492-WFB1024.
4	3	TERMINAL BLOCKS, 6 POLE PANEL MOUNT BLOCK SCREW TERMINAL WITH WIRE CLAMP, ALLEN BRADLEY CATALOG NO. 1492-HJ86.
5	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. X-GS2K.
6	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H, CATALOG NO. F1X1LG6 WITH COVER C1LG6.
7	1	AC-DC CONVERTER FOR IPO FLPC

NOTES:

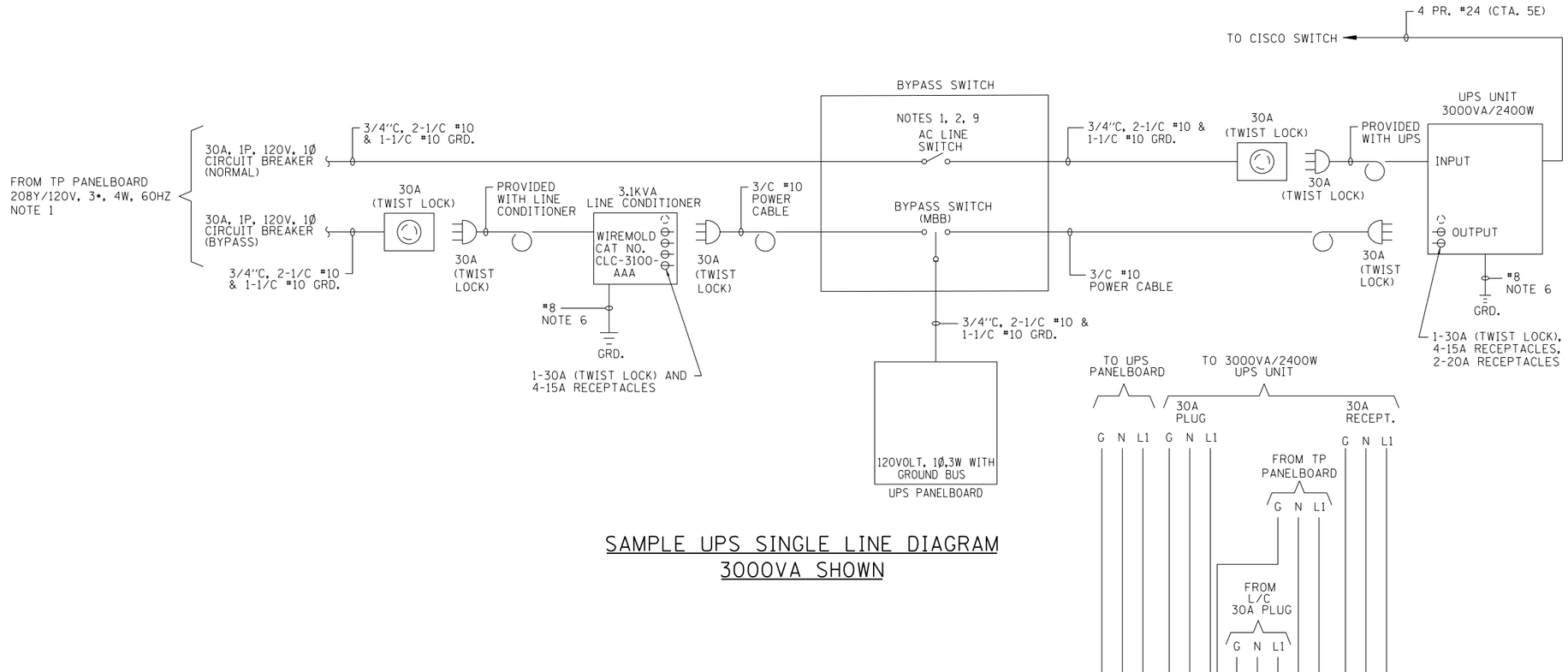
1. VIDEO JUNCTION BOX SHALL BE WIRED TO ACCOMODATE 1 WATCHDOG CAMERA.
2. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.
3. ROUTE 1-3/C #12 POWER CABLES FOR EACH VIDEO CAMERA FROM THE VIDEO JUNCTION BOX TO SURGE PROTECTION DEVICES ON TSIC. CABLES ARE THEN ROUTED TO THE HANDHOLE AS SHOWN ON BASE SHEETS M-BUS-2521 AND M-BUS-2523.
4. ROUTE 1-3/C #12 POWER CABLE FOR THE IPO FLPC FROM THE AC-DC CONVERTER IN THE VIDEO JUNCTION BOX TO SURGE PROTECTION DEVICE ON TSIC. CABLES ARE THEN ROUTED TO THE HANDHOLE AS SHOWN ON BASE SHEETS M-BUS-2521 AND M-BUS-2523.

M-BUS-2508

Illinois Tollway

CONTROL BUILDING MISCELLANEOUS DETAILS

DATE
3-31-2016



SAMPLE UPS SINGLE LINE DIAGRAM
3000VA SHOWN

BYPASS SWITCH WIRING DIAGRAM

NOTES:

1. PHASING MUST BE THE SAME ALL THROUGH SYSTEM.
2. REMOVE FLAT PLATE JUMPER BETWEEN DUAL PINS 8 - 8 AND 9 - 9 AS DIRECTED BY THE MANUFACTURER TO PROVIDE FOR TWO POWER SOURCES.
3. BOTH SWITCHES SHOWN IN "OFF" POSITION.
4. INPUT AND OUTPUT VOLTAGE IS 120 VOLT, 1 PHASE, 60 HERTZ, 3 WIRE.
5. CONDUIT SIZE SHOWN IS BASED ON TYPE THHN/THWN WIRE.
6. CONNECT GROUND ELECTRODE CONDUCTOR TO EQUIPMENT ENCLOSURE ROUTE CONDUCTOR FROM EQUIPMENT ENCLOSURE TO GROUND BUS BAR IN THE POWER SECTION OF THE REMOTE RAMP CABINET.
7. THE UPS SHALL BE AS MANUFACTURED BY GE. THE BYPASS SWITCH SHALL BE AS MANUFACTURED BY POWERWARE, INC. THE LINE CONDITIONER SHALL BE AS MANUFACTURED BY WIREMOLD ELECTRONICS.
8. DASHED LINES INDICATE INTERNAL WIRING. SOLID LINES INDICATE EXTERNAL WIRING.
9. ELECTRICAL CONTRACTOR MODIFIES BYPASS SWITCH IN FIELD BY ADDING 30A (TWIST LOCK) RECEPTACLE.

NOTE TO DESIGNER

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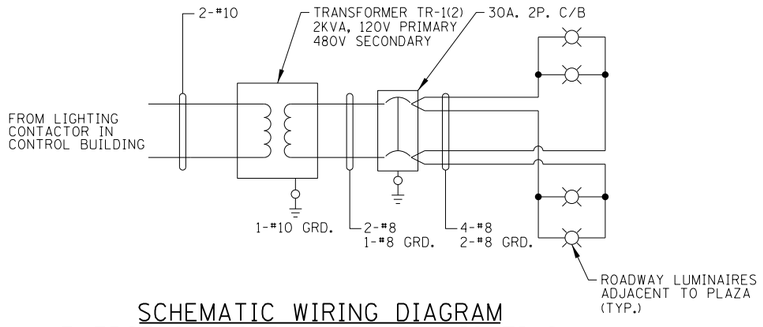
M-BUS-2509

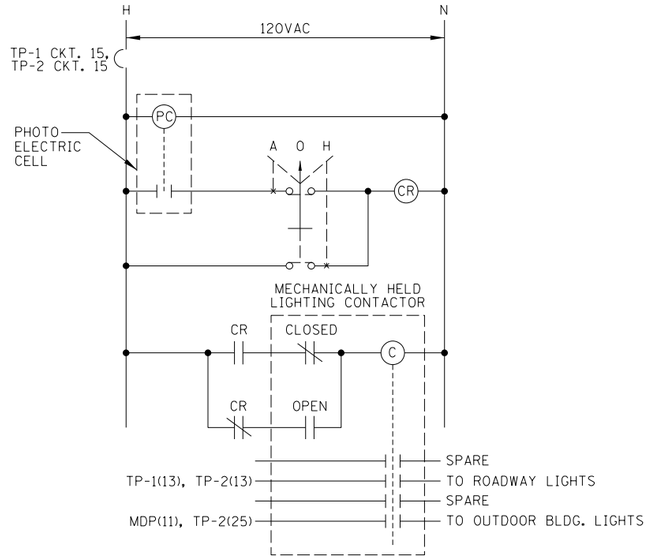
Illinois Tollway

UPS SINGLE LINE AND WIRING DIAGRAM

DATE
3-31-2016



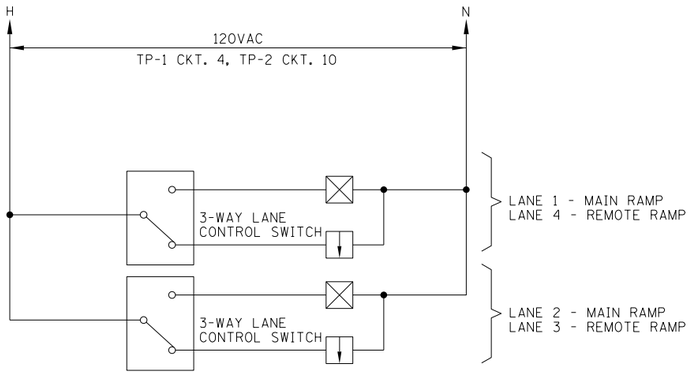
SCHEMATIC WIRING DIAGRAM
EMERGENCY ROADWAY PLAZA LIGHTING



LIGHTING CONTACTOR WIRING DIAGRAM

NOTES:

1. SEE BASE SHEETS M-BUS-2501 FOR SYMBOLS AND ABBREVIATIONS.
2. SEE BASE SHEETS M-BUS-2503, M-BUS-2504, M-BUS-2521, M-BUS-2523, AND M-BUS-2539 FOR CABLE AND CONDUIT ROUTING.



LANE CONTROL SIGNAL WIRING DIAGRAM

NOTE TO DESIGNER

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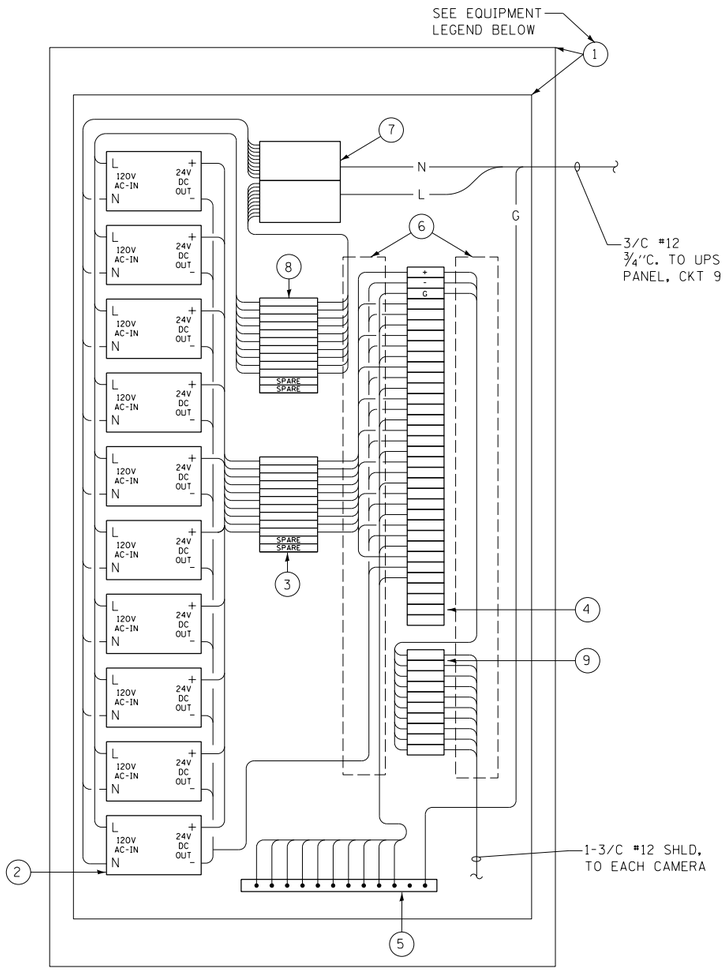
Illinois Tollway

MISCELLANEOUS
SCHEMATIC DIAGRAMS

DATE
3-31-2016



FRONT & REAR VES CAMERA
VIDEO POWER JUNCTION BOX

N.T.S.

VIDEO POWER JUNCTION BOX - MAIN PLAZA

NOTE TO DESIGNER

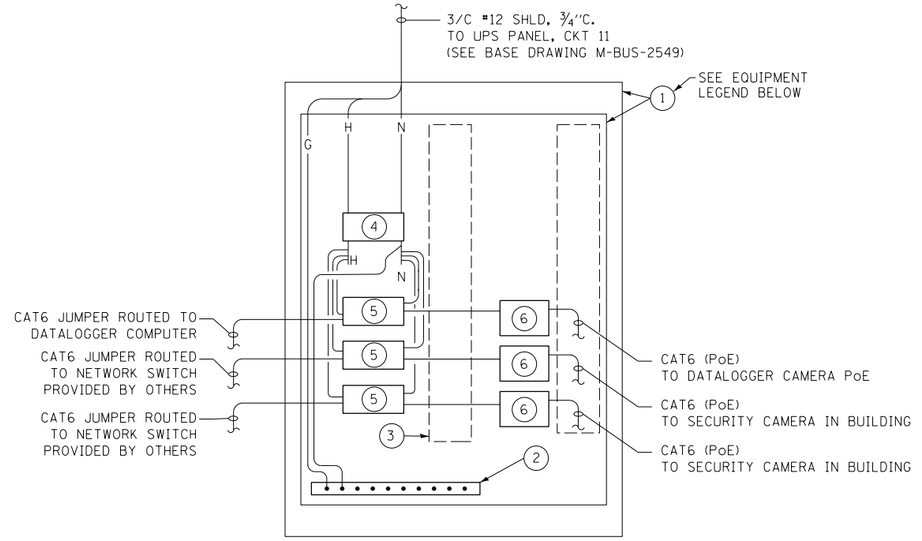
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF 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.

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX

ITEM	QUANTITY (SAMPLE)	DESCRIPTION
1	1	48"H X 24"W X 8"D NEMA 1 ENCLOSURE WITH 44"H X 22 ½"W BACK PANEL, HOFFMAN CATALOG NO. A-48N24BLP, WITH A-48N24MP PANEL.
2	10	CONTROL POWER SUPPLY 120VAC-24VDC 106W LAMBDA NO. HWS100-24/A.
3	12	TERMINAL BLOCKS, FUSE SWITCH TYPE WITH BLOWN FUSE INDICATOR COMPLETE WITH 5 AMP FUSE, MOUNTING RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS, ALLEN BRADLEY CATALOG NO. 1492-FB1M30-D1.
4	21	TERMINAL BLOCKS, ON POLE PANEL MOUNT BLOCK SCREW TERMINAL WITH WIRE CLAMP, ALLEN BRADLEY CATALOG NO. 1492-CD6.
5	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. PGS2K.
6	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H, CATALOG NO. F1X1LG6 WITH COVER C1LG6.
7	1	POWER DISTRIBUTION BLOCK MARATHON NO. 1322580.
8	12	SQUARE D, QOU 115 1P/15A BREAKER.
9	10	SURGE SUPPRESSOR MTL MODEL ZB24580.

NOTES:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.
2. ROUTE 1-3/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.



DATA LOGGER CAMERA
VIDEO POWER JUNCTION BOX

N.T.S.

VIDEO POWER JUNCTION BOX - MAIN PLAZA

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX

ITEM	QUANTITY (SAMPLE)	DESCRIPTION
1	1	30"H X 24"W X 8"D NEMA 1 ENCLOSURE WITH 26"H X 22 ½"W BACK PANEL, HOFFMAN CATALOG NO. A-20N16BLP, WITH A-20N16MP PANEL.
2	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. PGS2K.
3	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H, CATALOG NO. F1X1LG6 WITH COVER C1LG6.
4	1	QUAD BOX WITH 2 - DUAL AC OUTLETS. POWER SOURCE CKT-11 OF UPS PANEL.
5	3	PoE INJECTOR FOR DATALOGGER CAMERA. AXIS T8124. POWER PLUGS INTO QUAD BOX OUTLET. ONE PoE FOR SECURITY CAMERA.
6	3	CAT 6 HIGH PoE SURGE PROTECTOR, MTL 24590.

NOTES:

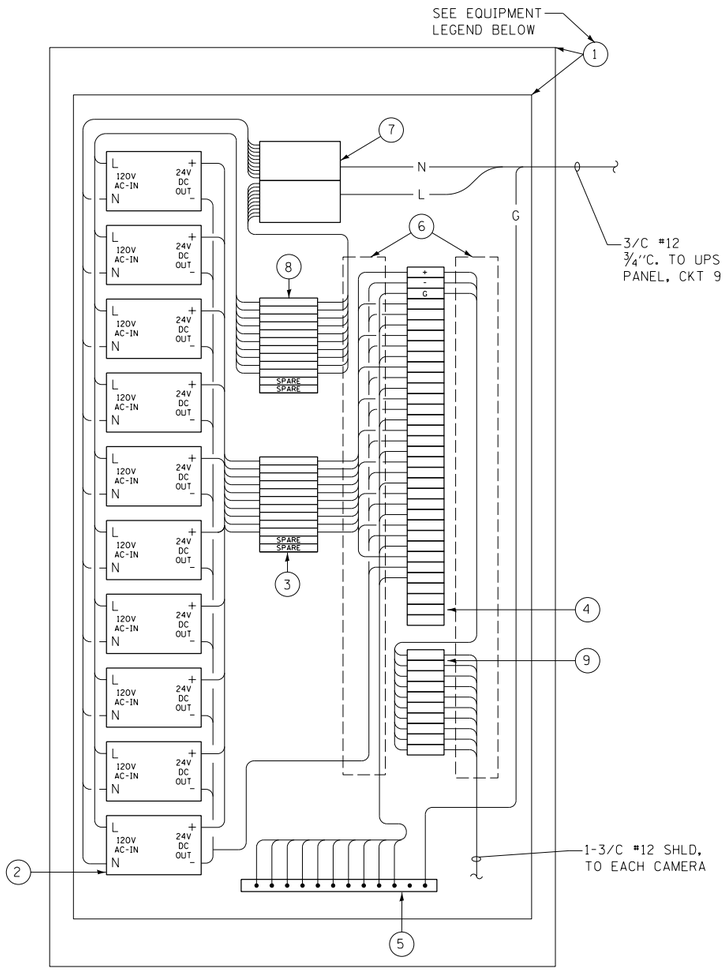
1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.
2. ALL ELECTRICAL CABLES TO CAMERAS SHALL HAVE SURGE PROTECTION.

M-BUS-2511

Illinois Tollway

VIDEO POWER JUNCTION BOX DETAIL - MAIN PLAZA

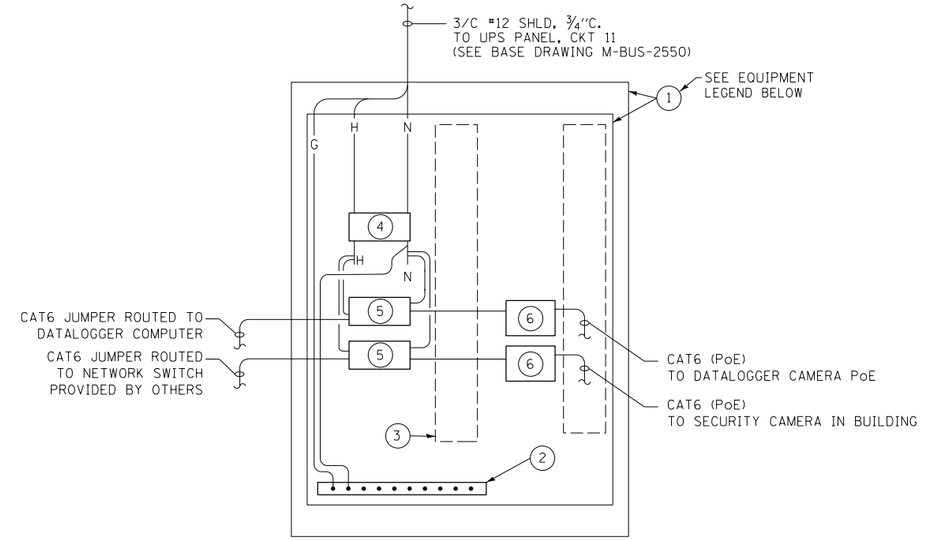
DATE
3-31-2016



FRONT & REAR VES CAMERA VIDEO POWER JUNCTION BOX

N.T.S.

VIDEO POWER JUNCTION BOX REMOTE PLAZA



DATA LOGGER CAMERA VIDEO POWER JUNCTION BOX

N.T.S.

VIDEO POWER JUNCTION BOX REMOTE PLAZA

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX

ITEM	QUANTITY (SAMPLE)	DESCRIPTION
1	1	48"H X 24"W X 8"D NEMA 1 ENCLOSURE WITH 44"H X 22 ½"W BACK PANEL, HOFFMAN CATALOG NO. A-48N24BLP, WITH A-48N24MP PANEL.
2	10	CONTROL POWER SUPPLY 120VAC-24VDC 106W LAMBDA NO. HWS100-24/A.
3	12	TERMINAL BLOCKS, FUSE SWITCH TYPE WITH BLOWN FUSE INDICATOR COMPLETE WITH 5 AMP FUSE, MOUNTING RAIL, ANCHORS, BARRIERS, MARKING STRIPS AND JUMPERS, ALLEN BRADLEY CATALOG NO. 1492-FB1M30-D1.
4	21	TERMINAL BLOCKS, ON POLE PANEL MOUNT BLOCK SCREW TERMINAL WITH WIRE CLAMP, ALLEN BRADLEY CATALOG NO. 1492-CD6.
5	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. PGS2K.
6	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H, CATALOG NO. F1X1LG6 WITH COVER C1LG6.
7	1	POWER DISTRIBUTION BLOCK MARATHON NO. 1322580.
8	12	SQUARE D, QOU 115 1P/15A BREAKER.
9	10	SURGE SUPPRESSOR MTL MODEL ZB24580.

NOTES:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.
2. ROUTE 1-3/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.

EQUIPMENT LEGEND - VIDEO POWER JUNCTION BOX

ITEM	QUANTITY (SAMPLE)	DESCRIPTION
1	1	30"H X 24"W X 8"D NEMA 1 ENCLOSURE WITH 26"H X 22 ½"W BACK PANEL, HOFFMAN CATALOG NO. A-20N16BLP, WITH A-20N16MP PANEL.
2	1	GROUND BAR SYSTEM WITH INSULATED MOUNTING BRACKET, HOFFMAN CATALOG NO. PGS2K.
3	LOT	PANDUIT PLASTIC WIRING DUCT SNAP-IN SLOT DESIGN AND NON-SLIP COVER, 1"W X 1"H, CATALOG NO. F1X1LG6 WITH COVER C1LG6.
4	1	QUAD BOX WITH 2 - DUAL AC OUTLETS. POWER SOURCE CKT-11 OF UPS PANEL.
5	2	PoE INJECTOR FOR DATALOGGER CAMERA. AXIS T8124. POWER PLUGS INTO QUAD BOX OUTLET. ONE PoE FOR SECURITY CAMERA
6	2	CAT 6 HIGH PoE SURGE PROTECTOR, MTL 24590

NOTES:

1. LABEL JUNCTION BOX, TERMINAL STRIPS, AND ALL WIRE AND CABLES.
2. ALL ELECTRICAL CABLES TO CAMERAS SHALL HAVE SURGE PROTECTION.

NOTE TO DESIGNER

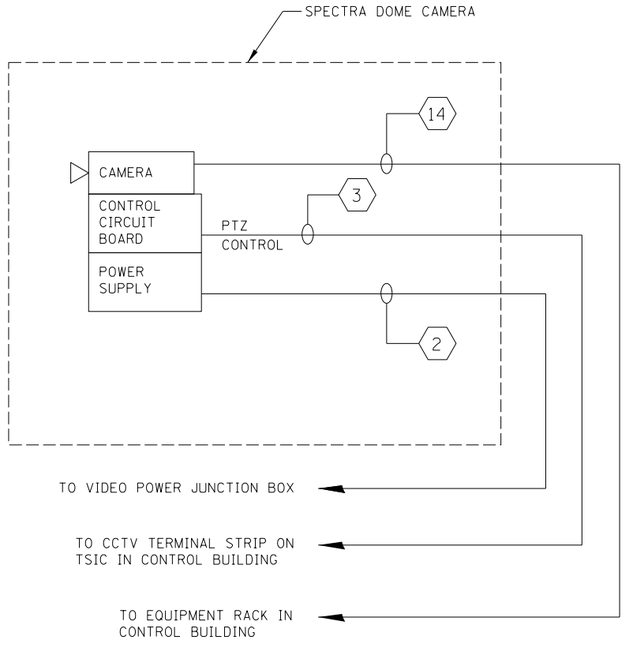
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF 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.

M-BUS-2512

Illinois Tollway

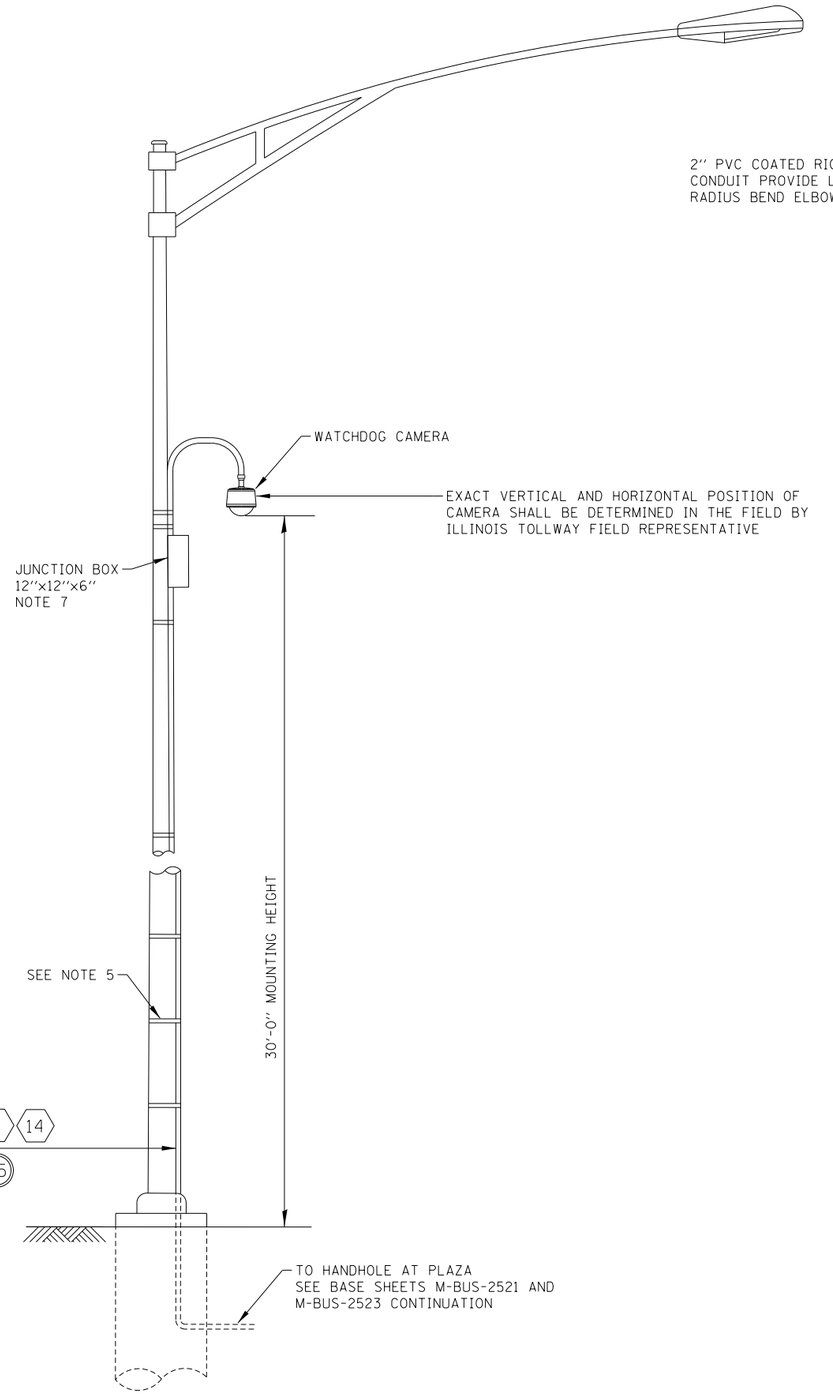
VIDEO POWER JUNCTION BOX DETAIL - REMOTE PLAZA

DATE
3-31-2016



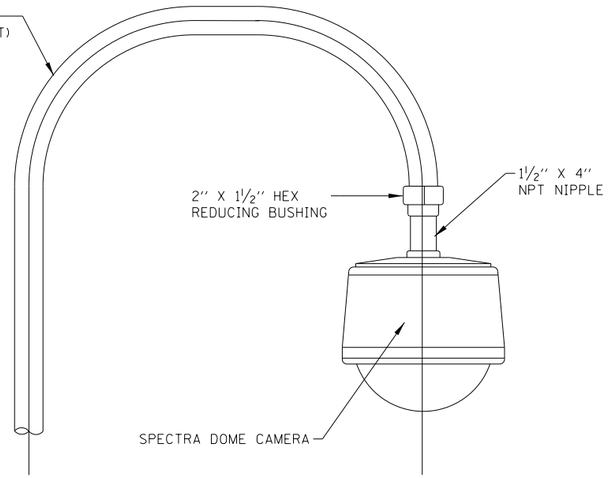
WIRING DIAGRAM

N.T.S.



EQUIPMENT MOUNTED TO LIGHT POLE DETAIL

N.T.S.



VIDEO WATCHDOG CAMERA

N.T.S.

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. INSTALL CABLES BETWEEN THE JUNCTION BOX AND CAMERA PER MANUFACTURER'S RECOMMENDATIONS.
3. THE CAMERA'S FINAL MOUNTING LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. CAMERA CONDUIT INSTALLATION SHALL BE COORDINATED WITH THE ROADWAY LIGHTING WORK.
5. PROVIDE STAINLESS STEEL STRAPS FOR ATTACHING CAMERA CONDUIT TO THE OUTSIDE OF LIGHT POLE. STRAPS SHALL BE SPACED A MAXIMUM OF 5 FEET APART.
6. THE COST FOR THE WORK TO FURNISH AND INSTALL THE CAMERA, CABLES, CONDUIT, AND ASSOCIATED MOUNTING HARDWARE ON THE LIGHT POLE SHALL BE INCLUDED IN THE LUMP SUM PAY ITEM FOR ELECTRICAL WORK FOR THE PLAZA.
7. PROVIDE STRAIN RELIEF FOR VERTICAL CABLES IN JUNCTION BOX TRANSITION POWER CABLE FROM 3#12 TO 3#18. LOOP 12" OF 3#18 WIRE FOR CABLE IN JUNCTION BOX TO FACILITATE CAMERA MAINTENANCE.

NOTE TO DESIGNER

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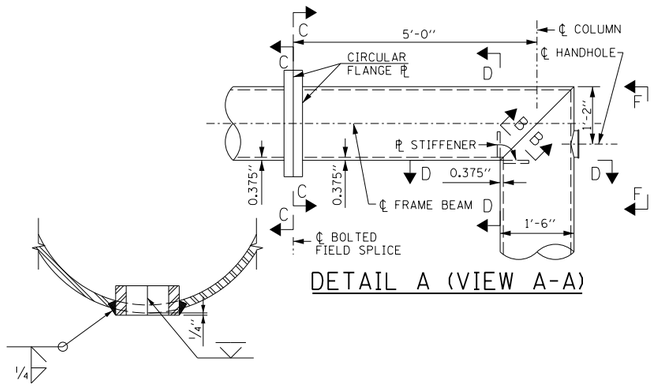
M-BUS-2513

Illinois Tollway

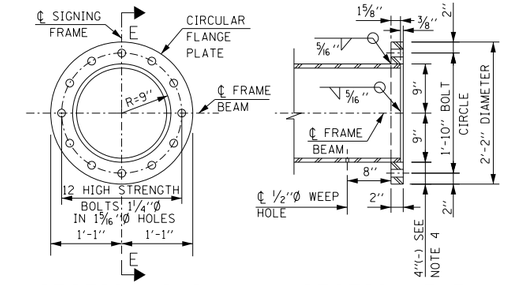
VIDEO WATCHDOG CAMERA DETAILS

DATE 3-31-2016



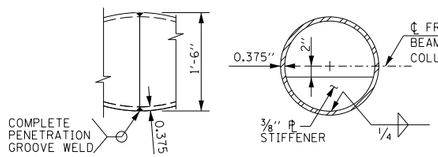
DETAIL A (VIEW A-A)

SECTION G-G



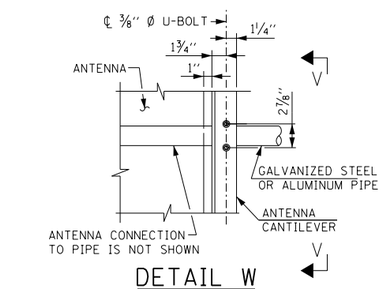
SECTION C-C

SECTION E-E

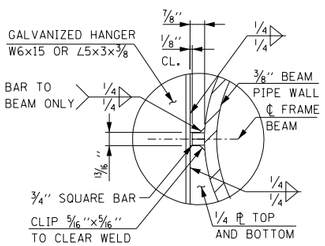


SECTION B-B

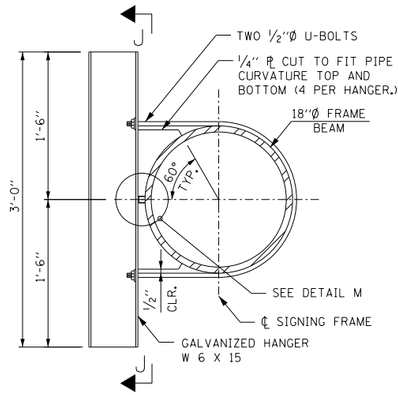
SECTION D-D



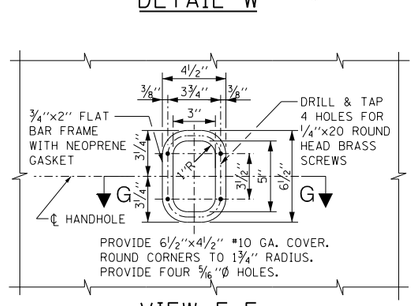
DETAIL W



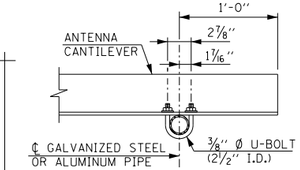
DETAIL M



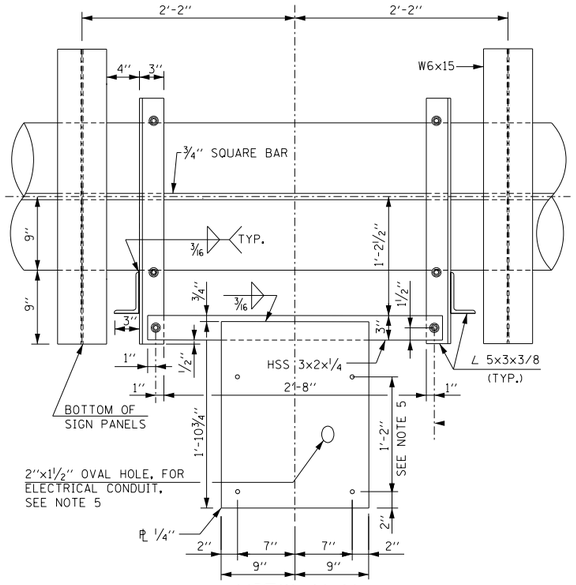
SECTION H-H (SIGN HANGER)



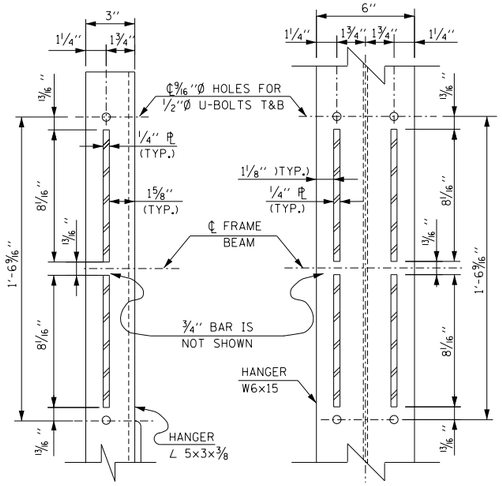
VIEW F-F



VIEW V-V

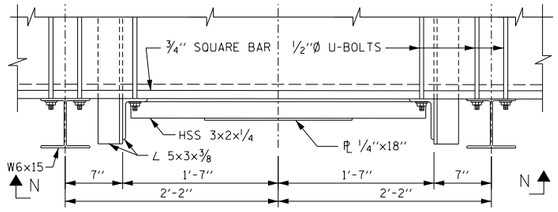


VIEW N-N

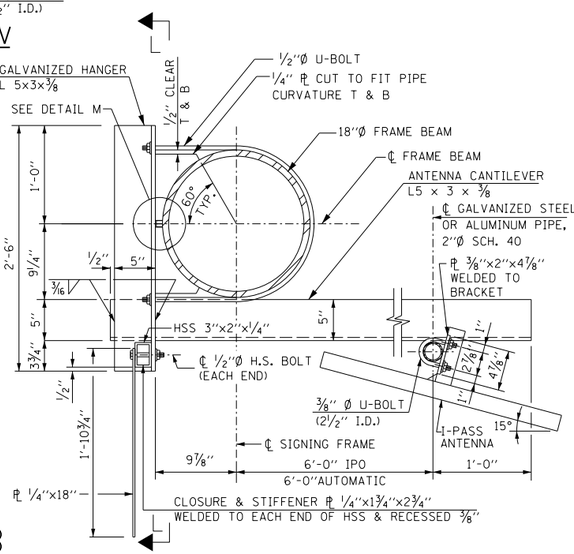


SECTION J-J

SECTION L-L



DETAIL P
(PLAN, LANE CONTROL SIGNAL CONNECTION)



SECTION K-K (ANTENNA HANGER)

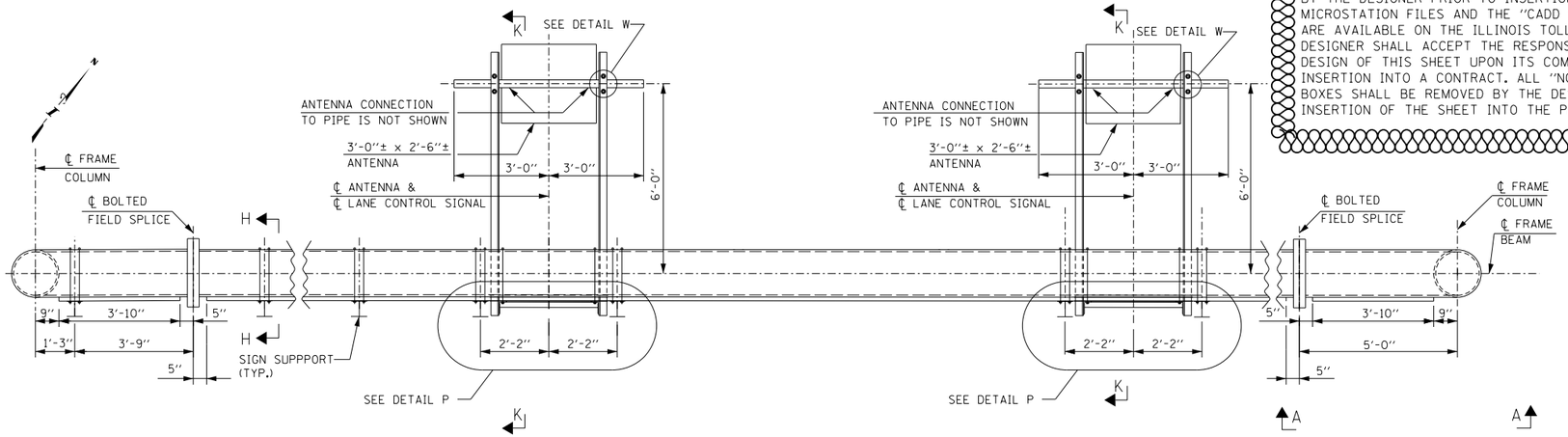
NOTE TO DESIGNER

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.

NOTES:

1. WORK THIS SHEET WITH PROJECT SPECIFIC STRUCTURAL DRAWINGS FOR MONOTUBE.
2. SIGNING AND SIGN HANGER ARE OMITTED FROM "DETAIL A" (VIEW A-A) FOR CLARITY.
3. FOR DETAILS OF ATTACHMENT BETWEEN HANGER AND SIGN PANELS, SEE STANDARD F10.
4. INSIDE DIAMETER OF CIRCULAR FLANGE PLATE SHALL BE 1/16" GREATER THAN OUTSIDE DIAMETER OF FRAME BEAM.
5. CONTRACTOR SHALL VERIFY LOCATION AND SIZE OF HOLES WITH LANE CONTROL SIGNAL PRIOR TO FABRICATION OF ¼" PLATE.
6. T&B DENOTE TOP AND BOTTOM.
7. FINAL LOCATION OF I-PASS ANTENNAS SHALL BE AS DIRECTED BY THE ILLINOIS TOLLWAY.
8. PROVIDE FOUR ¼ Ø WEEP HOLES IN BOTTOM OF HSS 3x2x¼ @ 10" SPACING AND 3" FROM EACH END.

M-BUS-2514

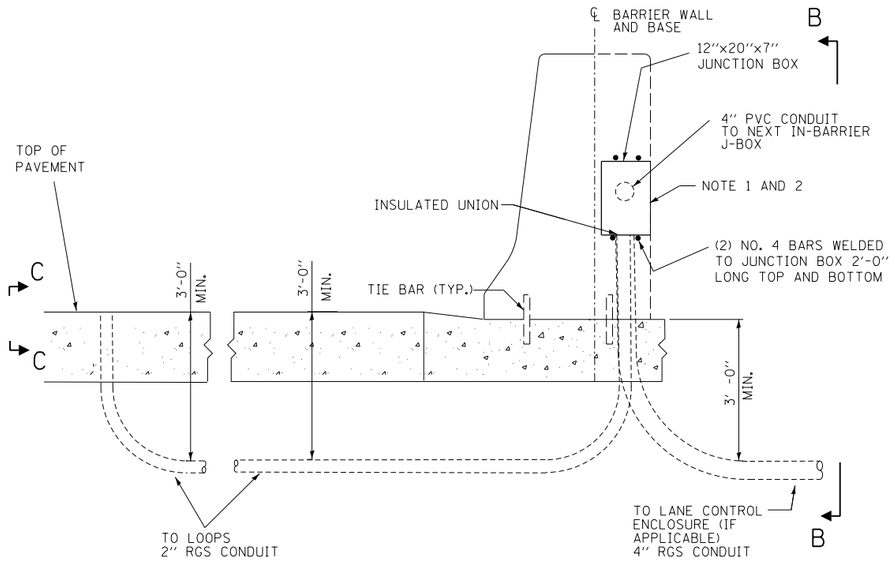


TYPICAL MONOTUBE PLAN

Illinois Tollway

RAMP PLAZA MONOTUBE DETAILS
ACM AND IPO LANES

DATE
3-31-2016

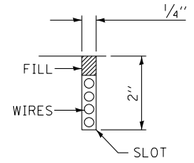


SECTION A-A
(LANE LOOP LAYOUT)

N.T.S.

NOTES:

1. SEE BASE SHEETS M-BUS-2527, M-BUS-2552, AND M-BUS-2553 FOR LOOP LAYOUT.
2. THE REINFORCEMENT IS NOT SHOWN FOR CLARITY.
3. CONDUITS THAT STUB UP IN THE PAVEMENT ARE 2'', UNLESS NOTED OTHERWISE. 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.

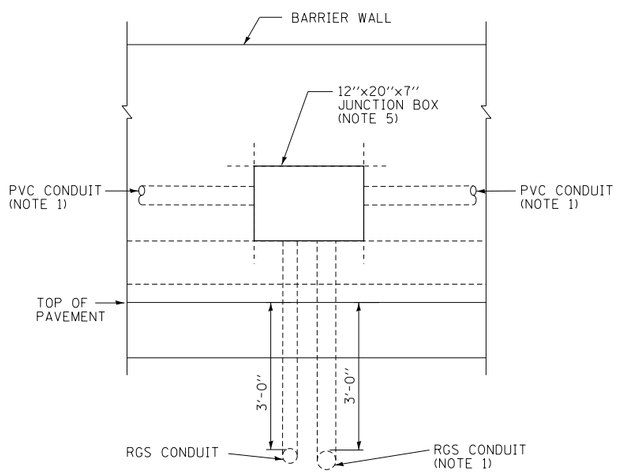


DETAIL OF
DETECTOR LOOP SLOT

N.T.S.

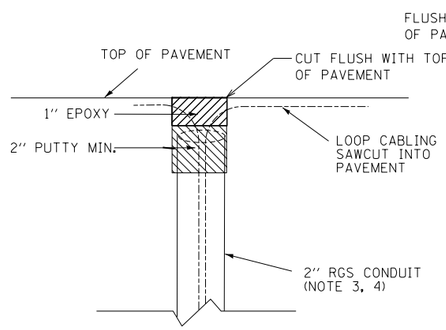
NOTE TO DESIGNER

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.



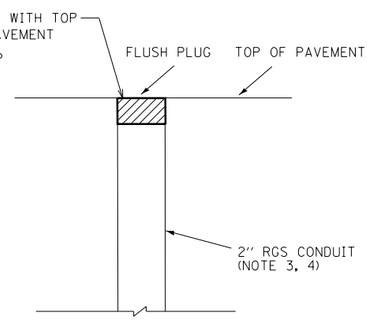
ELEVATION B-B
EMBEDDED JUNCTION BOX IN BARRIER WALL-ELEVATION

N.T.S.



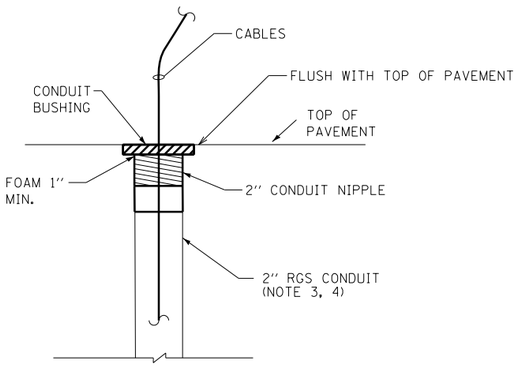
SECTION C-C
LOOP INSTALLATION DETAILS

N.T.S.



SECTION C-C
PRIOR TO ROAD OR ISLAND CONSTRUCTION

N.T.S.



SECTION C-C
EQUIPMENT ENDS AFTER CABLE INSTALLATION

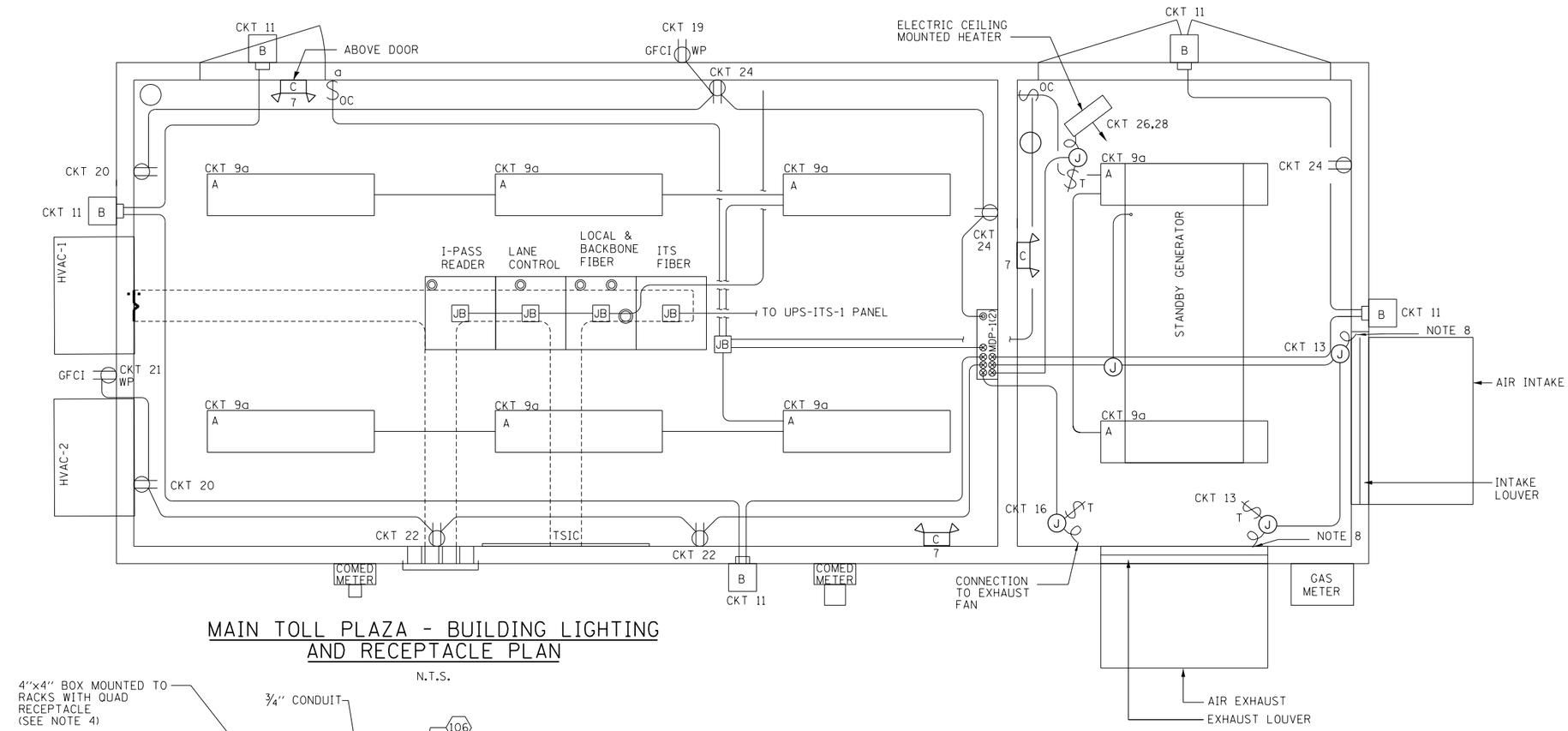
N.T.S.

M-BUS-2515

Illinois Tollway

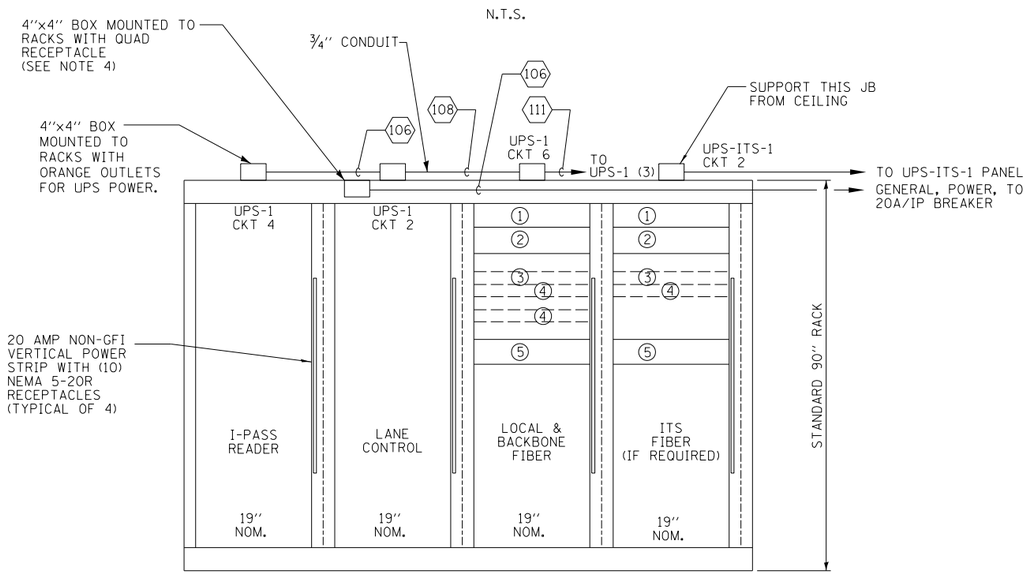
LOOP JUNCTION BOX DETAIL

DATE
3-31-2016



MAIN TOLL PLAZA - BUILDING LIGHTING AND RECEPTACLE PLAN

N.T.S.



COMMUNICATIONS AND EQUIPMENT RACK ELEVATION C

N.T.S.

LEGEND:

1. FIBER-OPTIC CORNING RACK INTERCONNECT CENTER CCH-04U (4 RU)
2. FIBER-OPTIC CORNING RACK INTERCONNECT CENTER CCH-04U (4 RU)
3. FUTURE NETWORK SWITCHES - (1 RU) NOTE 11
4. FUTURE NETWORK SWITCHES - (1 RU) NOTE 11
5. COMM. SCOPE MODULAR PATCH PANEL - (2 RU)

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE 3/4" WITH 2-1/C #12 AND 1/C #12 GRD, UNLESS OTHERWISE NOTED.
3. FOR PANEL SCHEDULES, SEE BASE SHEETS M-BUS-2536, M-BUS-2537, AND M-BUS-2549.
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, LEGEND, AND ABBREVIATIONS, SEE BASE SHEET M-BUS-2501.
6. LIGHTING AND RECEPTACLES SHALL BE FED FROM PANEL MDP-1.
7. PROVIDE CONNECTIONS TO THE MOTORIZED DAMPER AND GEN. CONTROL PANEL DAMPERS TO BE CONTROLLED FROM GEN. CONTROLLER.
8. CONNECT EMERGENCY BATTERY PACKS AHEAD OF LIGHTING CIRCUIT.
9. COMMUNICATION AND EQUIPMENT RACK SHALL BE AS FOLLOWS:
   I-PASS
   LANE CONTROL
   BACKBONE FIBER IT
   ITS FIBER
10. CONTRACTOR SHALL COORDINATE FINAL RACK LAYOUT WITH THE ENGINEER AND THE ILLINOIS TOLLWAY.
11. NETWORK SWITCHES PROCURED BY OTHERS.

NOTE TO DESIGNER

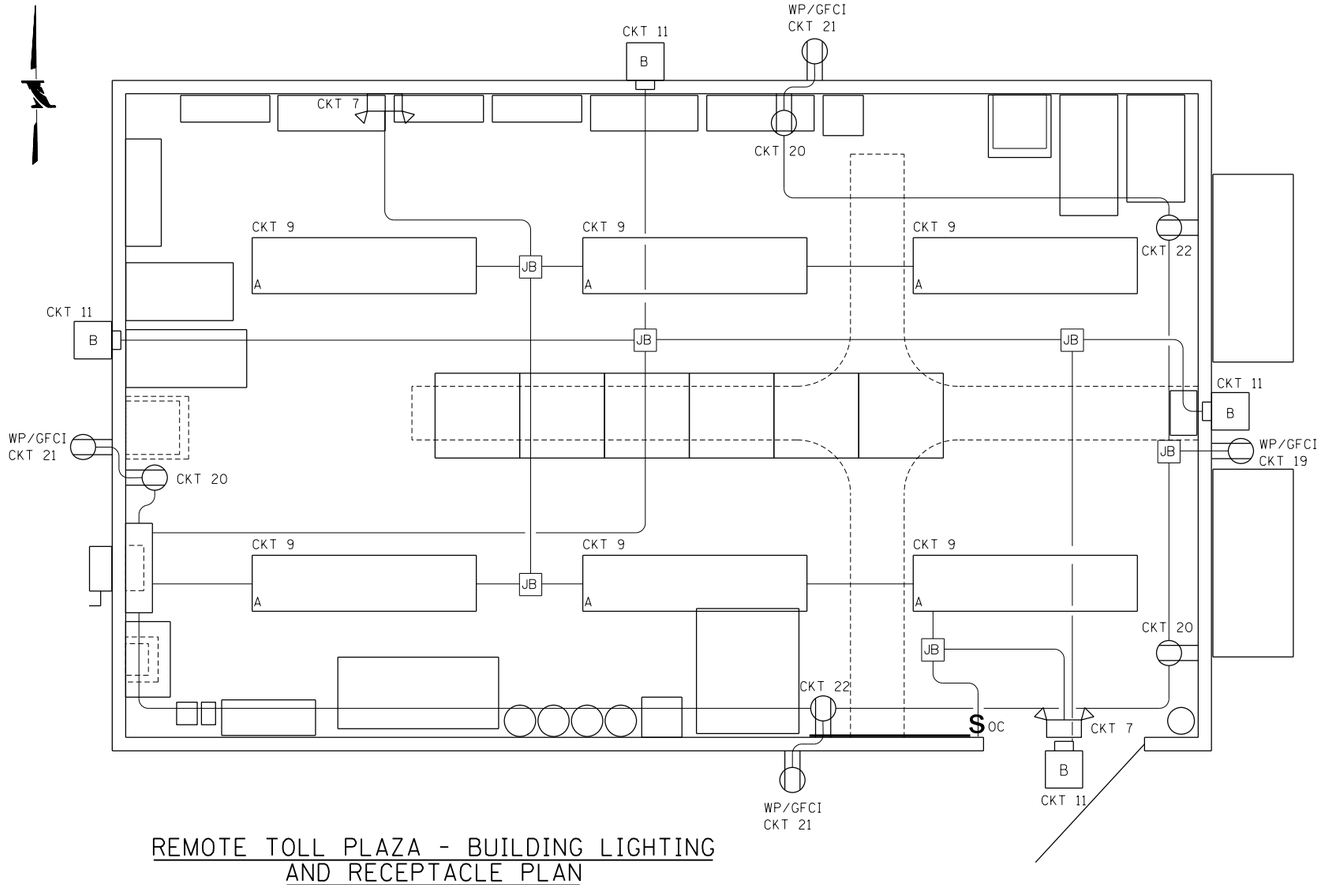
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF 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.

M-BUS-2516

Illinois Tollway

CONTROL BUILDING LIGHTING AND RECEPTACLE PLAN - MAIN PLAZA

DATE
3-31-2016



REMOTE TOLL PLAZA - BUILDING LIGHTING AND RECEPTACLE PLAN

N.T.S.

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. RECEPTACLE AND LIGHTING CONDUIT SHALL BE ¾'' WITH 2-1/C #12 AND 1/C #12 GRD, UNLESS OTHERWISE NOTED.
3. FOR PANEL SCHEDULES, SEE BASE SHEETS M-BUS-2536, M-BUS-2537, AND M-BUS-2550.
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, LEGEND, AND ABBREVIATIONS, SEE BASE SHEET M-BUS-2501.
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.
   SAMPLE:
   I-PASS READER
   LANE CONTROL
   I-PASS READER REMOTE PLAZA
   LANE CONTROL REMOTE PLAZA
   ITS FIBER
   LOCAL AND BACKBONE FIBER
9. CONTRACTOR SHALL COORDINATE FINAL RACK LAYOUT WITH THE ENGINEER AND THE ILLINOIS TOLLWAY.
10. NETWORK SWITCHES PROCURED BY OTHERS.

LEGEND:

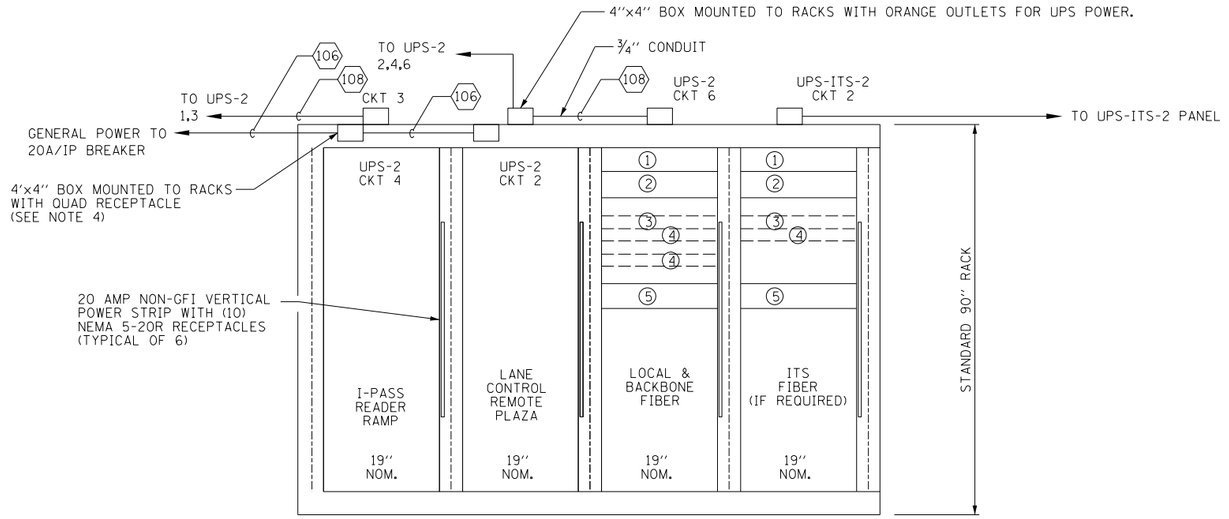
① FIBER-OPTIC CORNING RACK INTERCONNECT CENTER CCH-04U (4 RU)

② FIBER-OPTIC CORNING RACK INTERCONNECT CENTER CCH-04U (4 RU)

③ FUTURE NETWORK SWITCHES - (1 RU) NOTE 10

④ FUTURE NETWORK SWITCHES - (1 RU) NOTE 10

⑤ COMM. SCOPE MODULAR PATCH PANEL - (2 RU)



COMMUNICATIONS AND EQUIPMENT RACK ELEVATION

N.T.S.

NOTE TO DESIGNER

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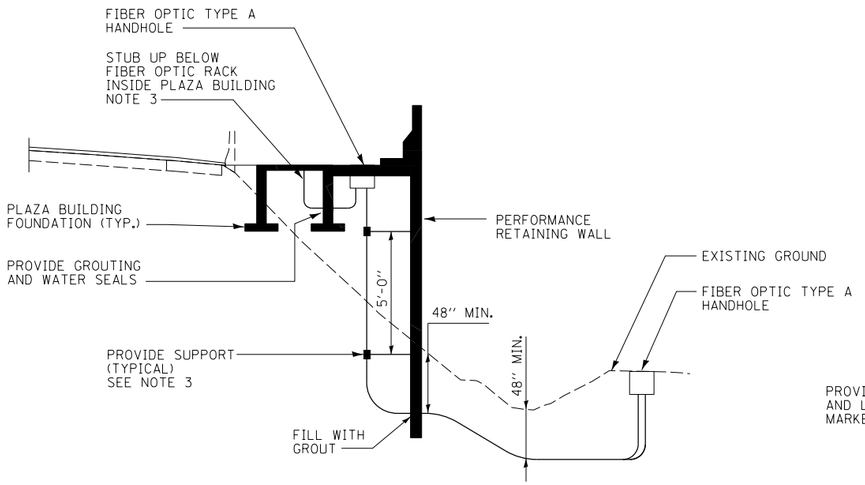
M-BUS-2517

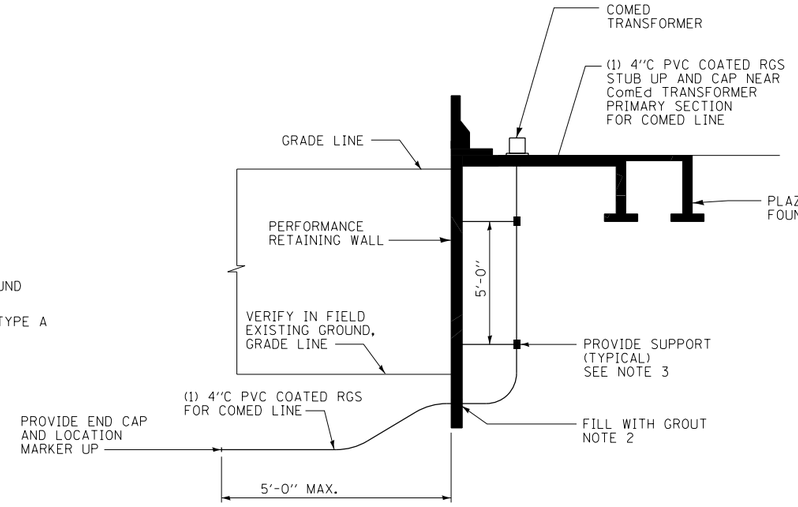
Illinois Tollway

CONTROL BUILDING LIGHTING AND RECEPTACLE PLAN - REMOTE PLAZA

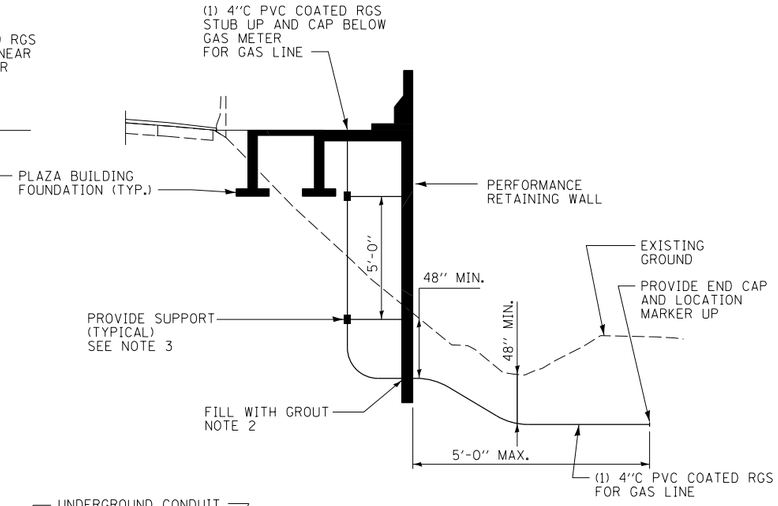
DATE
3-31-2016



DETAIL FOR FIBER STUB UP



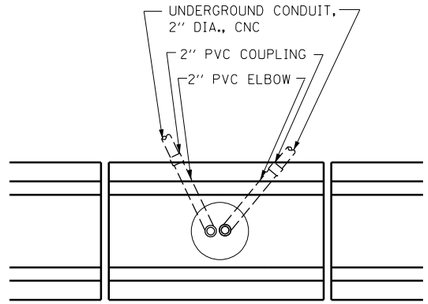
DETAIL FOR COMED LINE STUB UP



DETAIL FOR GAS LINE STUB UP

NOTES:

1. DETAILS ARE ONLY SCHEMATICS FOR GUIDANCE, AND CONTRACTOR HAS TO COORDINATE WITH COMED AND NICOR GAS SERVICE LINES.
2. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL FOR LOCATION OF OPENINGS THROUGH RETAINING WALL. THE HOLE DIA./SLOT 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 HAS TO BE COORDINATED WITH COMED AND NICOR UTILITIES. PROVIDE CONDUIT CLAMP/ANCHOR BOLT OF POWER STRUT, B-LINE OR UNISTRUT AND MOUNTING HARDWARE.



PLAN - DOUBLE FACE BARRIER

NOTE TO DESIGNER

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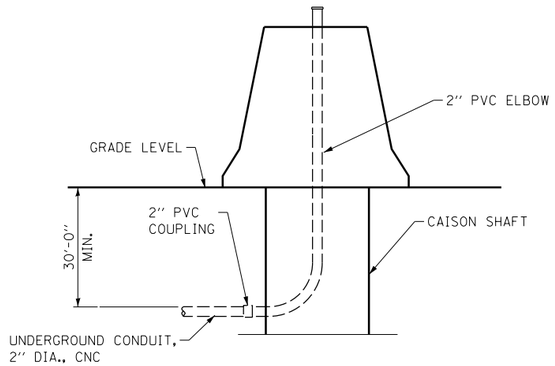
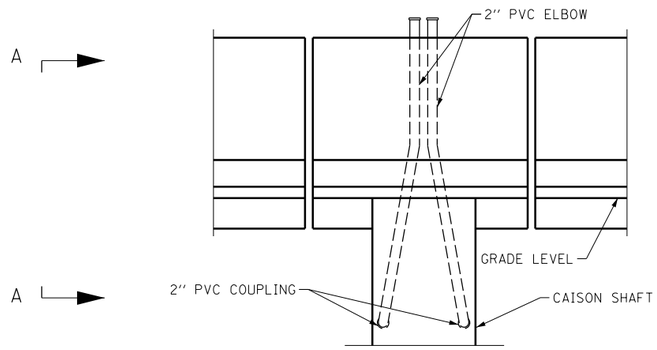


SECTION A-A



ELEVATION

CONDUIT DETAIL AT LIGHT POLE FOUNDATION INTEGRAL WITH BARRIER WALL

(NO SCALE)

NOTE:

ALL DIMENSIONS AND REINFORCEMENT SHALL BE PER ILLINOIS TOLLWAY STANDARD DRAWING H8-02 FOR TYPE 1 CENTERED CAISSON, 42" BARRIER.

M-BUS-2518

Illinois Tollway

MISCELLANEOUS CROSS SECTION DETAILS

DATE
3-31-2016

9-12-08
C5288
PAGE 1 OF 1

REVISES STANDARD DATED 4-1-98
COMPATIBLE UNITS AVAILABLE IN PASSPORT

9-12-08
C5288
PAGE 1 OF 1

1-PH COMPT TR PAD - ESS/RSS

SIZE OF TRANSFORMER (12) — 167kVA MAXIMUM CAPACITY

C5288.A TO 167kVA

ITEM	CAT ID DESCRIPTION TABLE-1		CAT ID	UNIT	QUANTITY A
A	GROUNDING INSTALLATION C8550. GD	(1)			1
C	WIRE,COPPER, OVERHEAD, BARE, 1/0, 19 STR, SOFT DRAWN TINNED, 3	(1)	0000355082	FT	35
D	CONNECTOR, COMPRESSION, 1/0 OR 2/0 STR CU. RUN & TAP, BURNDY C		0000368545	EA	1

NOTES:

APPLICATION

- THIS STANDARD SHALL BE USED FOR THE INSTALLATION OF AN ELECTRIC OR RESIDENTIAL SERVICE STATION FOUNDATION AS DESCRIBED IN "ComEd's GENERAL TERMS AND CONDITIONS".

SUPPLEMENTARY MATERIAL

(1) WHEN BARE LEAD COVERED CABLES ARE LOCATED OR PLANNED WITHIN 200 FEET, OMIT ITEM "C" AND REPLACE WITH 1/0 LEAD CLAD COPPER CONDUCTOR (CATID 0000360809). SPECIFY STAINLESS STEEL GROUNDS PER C8550.CGO.

(2) PRECAST ALTERNATIVES TO THIS POURED DESIGN MAY BE AVAILABLE. CONTACT CONSTRUCTION STANDARDS GROUP.

INFORMATION

(11) THE CUSTOMER TO INSTALL THE TRANSFORMER FOUNDATION, 1 INCH CONDUITS, AND TRENCH FOR ComEd GROUND WIRE.

(12) ComEd TO PROVIDE AND INSTALL THE GROUND WIRE AND GRID.

(13) AFTER PRIMARY AND SECONDARY CONDUITS ARE IN PLACE, BACKFILL WITH SCREENINGS, SAND, OR FINE EXCAVATED MATERIAL. COMPACT THOROUGHLY BEFORE POURING FOUNDATION.

(14) CONCRETE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE APPLICABLE ACI CODE AND AIR ENTRAINED. IT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. AIR ENTRAINMENT SHALL BE 4 TO 7 PERCENT OF THE VOLUME OF CONCRETE.

(19) TOP OF FOUNDATION TO BE SMOOTH AND LEVEL.

(16) GRADE AWAY FROM FOUNDATION. FINAL GRADE SHALL BE WELL DRAINED AT ALL TIMES.

(17) PRIMARY AND SECONDARY CONDUIT MUST COME THROUGH FOUNDATION IN DESIGNATED AREAS.

(18) SEE C7723 FOR BURNDY-HUSKY DIE SET CROSS REFERENCE.

(19) DO NOT PLACE CONDUITS UNDER THIS SECTION OF FOUNDATION IF AVOIDABLE.

20 DO NOT DISTURB EARTH IN FOUNDATION AREA MORE THAN NECESSARY WHEN INSTALLING CONDUIT.

(21) TERMINATE PRIMARY AND SECONDARY CONDUITS FLUSH WITH TOP OF FOUNDATION.

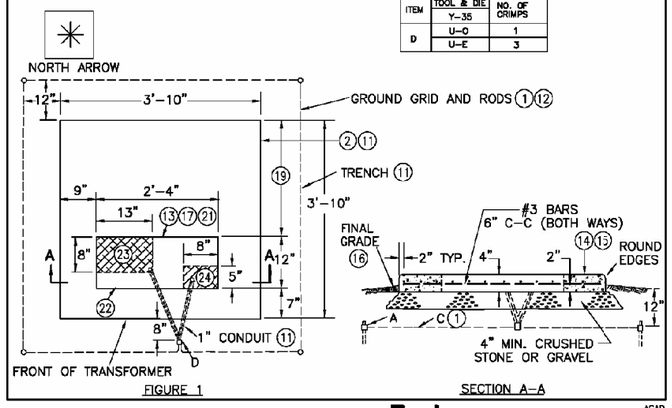
(22) BOX OUT CONDUIT OPENING.

(23) SECONDARY CONDUIT LOCATION.

(24) PRIMARY CONDUIT LOCATION.

25 CONSULT SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PROGRAM OR ENVIRONMENTAL SERVICES IF TOTAL OIL CAPACITY EQUAL TO OR EXCEEDING 1320 GALLONS EXISTS OR IS PLANNED AT ESS/RSS SITE.

PRESSING TABLE (18)		
ITEM	TOOL & DIE	NO. OF CRIMPS
D	Y-35	
	U-O	1
	U-E	3



ACAD

Exelon. Energy Delivery SYSTEM STANDARD

9-12-08
C5286
PAGE 1 OF 6

REVISES STANDARD DATED 10-31-02
COMPATIBLE UNITS AVAILABLE IN PASSPORT

9-12-08
C5286
PAGE 1 OF 6

3-PH RADIAL COMPT TR PAD - ESS (1)(23)(29)

SIZE OF TRANSFORMER

C5286.B 45 - 225kVA 120/208V
.C 112.5 - 300kVA 120/208V
.D 225 - 500kVA 120/208V
.E 750kVA 120/208V
.F 45 - 75kVA 277/480V
.G 112.5 - 300kVA 277/480V
.H 225 - 1000kVA 277/480V
.J 1500 - 2500kVA 277/480V
.K 500 - 750kVA 4kV
.L 1000 - 2500kVA 4kV

ITEM	CAT ID DESCRIPTION TABLE-1		CAT ID	UNIT	QUANTITY .B	.C	.D	.E	.F	.G	.H	.J	.K	.L
A	GROUNDING INSTALLATION C8550. GD	(1)			1	1	1	1	1	1	1	1	1	1
B	WIRE,COPPER, OVERHEAD, BARE, 1/0, 19 STR, SOFT DRAWN TINNED, 3	(1)(2)	0000355082	FT	55	55	60	60	50	55	60	70	60	65
C	CONNECTOR, COMPRESSION, 1/0 OR 2/0 STR CU. RUN & TAP, BURNDY C	(2)	0000368545	EA	1	1	1	1	1	1	1	1	1	1

NOTES:

APPLICATION

- THIS STANDARD SHALL BE USED TO INSTALL AN ELECTRIC SERVICE STATION FOUNDATION FOR A 3Ø RADIAL-FEED COMPARTMENTAL TRANSFORMER AS DESCRIBED IN "ComEd's GENERAL TERMS AND CONDITIONS".

SUPPLEMENTARY MATERIAL

(1) WHEN BARE LEAD COVERED CABLES ARE LOCATED OR PLANNED WITHIN 200 FEET, REPLACE ITEM "B" WITH 1/0 LEAD CLAD COPPER CONDUCTOR (CAT ID 0000350809) AND SPECIFY GROUND RODS IN ACCORDANCE WITH C8550. ENGINEER TO SPECIFY WHEN THIS CONDITION EXISTS.

(2) WHEN JUNCTION CABINET IS USED, ADD ONE OF ITEM "C" AND ADD 15 FEET OF ITEM "B".

(3) STEEL PLATE NOT FURNISHED WITH STANDARD. ORDER FROM SYSTEMS SHOPS AT TECH CENTER OR LOCAL VENDOR.

INFORMATION

(11) CUSTOMER SHALL SUPPLY AND INSTALL ALL ITEMS WITHIN THIS STANDARD EXCEPT FOR THE GROUNDING MATERIAL.

(2) PRECAST ALTERNATIVES TO THIS POURED DESIGN MAY BE AVAILABLE. CONTACT DISTRIBUTION ENGINEERING DEPARTMENT FOR DETAILS.

(3) DO NOT PLACE CONDUITS UNDER THIS SECTION OF FOUNDATION IF AVOIDABLE.

(4) DO NOT DISTURB GROUND IN FOUNDATION AREA MORE THAN NECESSARY WHEN INSTALLING CONDUIT.

(15) PRIMARY AND SECONDARY CONDUIT MUST COME THROUGH FOUNDATION IN DESIGNATED AREAS.

(16) CONDUIT SHALL TERMINATE FLUSH WITH THE TOP OF THE FOUNDATION UNLESS OTHERWISE DESIGNATED.

(7) IF METAL CONDUIT IS USED, THE GROUNDING BUSHING SHALL NOT PROTRUDE ABOVE THE TOP OF THE FOUNDATION.

(18) AFTER PRIMARY AND SECONDARY CONDUITS ARE IN PLACE, BACKFILL WITH SCREENINGS, SAND OR FINE EXCAVATED MATERIAL. COMPACT THOROUGHLY BEFORE PLACING AGGREGATE AND POURING FOUNDATION.

(9) CONCRETE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE APPLICABLE ACI CODE. IT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. AIR ENTRAINMENT SHALL BE 4 TO 7% OF THE VOLUME OF CONCRETE.

(19) TOP OF THE FOUNDATION SHALL BE SMOOTH AND LEVEL.

(21) GROUND GRID CONSISTS OF A CONTINUOUS COPPER GROUND LOOP. BRING ONE TAIL OF GROUND LOOP INTO EACH OPENING IN FOUNDATION. CONNECT GROUND CABLE (ITEM "B") TO GROUND RODS AS SHOWN IN C8550. CLOSE LOOP WITH COMPRESSION CONNECTOR (ITEM "C").

WHEN LEAD CLAD CABLE IS USED FOR THE GROUND CABLE, COVER THE ITEM "C" CONNECTION WITH MOISTURE SEALING COMPOUND AND PLASTIC TAPE AS SHOWN IN DETAIL-1.

(22) FINAL GRADE SHALL SLOPE AWAY FROM FOUNDATION. FINAL GRADE SHALL BE WELL DRAINED AT ALL TIMES.

(23) A JUNCTION CABINET IS REQUIRED IF SECONDARY CONDUIT SPACE REQUIREMENTS EXCEED LIMITS SPECIFIED IN TABLE-A. REFER TO PAGE 3 FOR DETAILS OF NECESSARY FOUNDATION.

(24) CONTACT DISTRIBUTION ENGINEERING DEPARTMENT FOR APPROVED SUPPLIERS OF JUNCTION CABINET. ALTERNATIVE DESIGNS MAY BE SUBMITTED FOR APPROVAL.

(25) CABINET SHALL BE ANCHORED TO THE FOUNDATION.

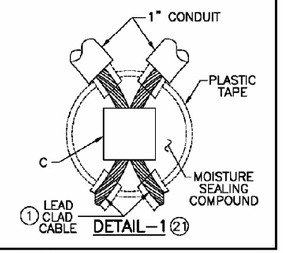
(26) ComEd WILL FURNISH AND INSTALL CABLE AND LUGS BETWEEN JUNCTION CABINET BUS AND TRANSFORMER SECONDARY TERMINALS.

(27) CUSTOMER SHALL NOT CONNECT THEIR CABLES TO BUS IN AREAS DESIGNATED AS ComEd POSITIONS.

(28) BUS BAR SHOWN CAN ACCOMMODATE A MAXIMUM OF 20 CABLES PER PHASE FROM CUSTOMER AND 10 CABLES PER PHASE FROM ComEd TRANSFORMER.

(29) CONSULT SPILL PREVENTION, CONTROL AND COUNTERMEASURES (SPCC) PROGRAM OR ENVIRONMENTAL SERVICES IF TOTAL OIL CAPACITY EQUAL TO OR EXCEEDING 1320 GALLONS EXISTS OR IS PLANNED AT ESS SITE.

30 FOR TRANSFORMER CLEARANCES REFER TO STANDARDS C5284, C5285, AND C7500.

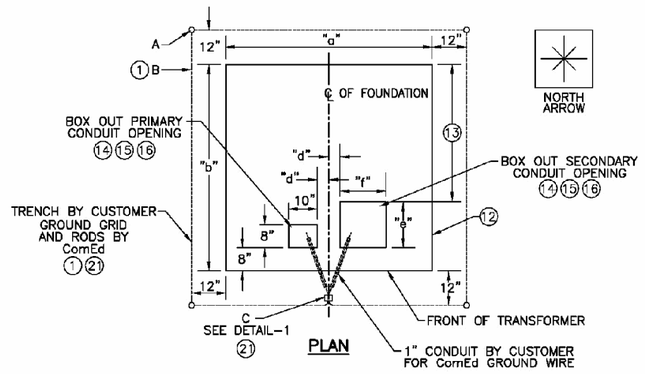


ACAD

Exelon. Energy Delivery SYSTEM STANDARD

9-12-08
C5286
PAGE 2 OF 6

9-12-08
C5286
PAGE 2 OF 6



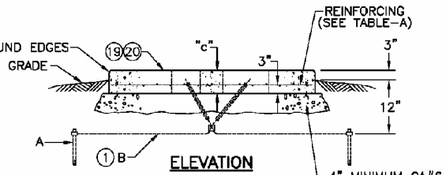


TABLE-B PRESSING TABLE		
TOOL	DIE	CRIMPS
Y35	U-E U26YGT	3

TABLE-A

C82866	TRANSFORMER MVA MIN	TRANSFORMER MVA MAX	MIN SEC VOLTAGE	DIMENSIONS a	b	c	d	e	f	SECONDARY CONDUIT FORMATIONS 3.5" MAX NO. (23)	4" MAX NO. (23)	REINFORCING (BARS BOTH WAYS)	ESTIMATING DATA REINFORCING BARS (FT)	CONCRETE (CU YD)
.B	45	225	208/120	6'-0"	5'-6"	6"	4"	14"	14"	4	4	#3 BARS 5" C.C.	159	.54
.C	112.5	300	208/120	6'-0"	5'-6"	6"	4"	14"	18"	6	6	#3 BARS 5" C.C.	159	.53
.D	225	500	208/120	7'-0"	6'-6"	6"	4"	18"	18"	9	9	#3 BARS 4" C.C.	259	.74
.E	750	750	208/120	7'-0"	6'-6"	6"	4"	18"	26.5"	16	12	#4 BARS 6" C.C.	174	.68
.F	45	75	480/277	5'-0"	5'-6"	6"	4"	14"	14"	4	4	#2 BARS 4" C.C.	142	.39
.G	112.5	300	480/277	6'-0"	5'-6"	6"	4"	14"	18"	6	6	#3 BARS 5" C.C.	159	.53
.H	225	1000	480/277	8'-0"	7'-0"	7"	4"	18"	18"	9	9	#4 BARS 5" C.C.	266	.94
.J	1500	2500	480/277	8'-6"	8'-6"	8"	4"	18"	26.5"	16	12	#4 BARS 5" C.C.	330	1.64
.K	500	750	4kV	7'-0"	6'-0"	6"	10"	8"	10"	2	2	#4 BARS 5" C.C.	198	.70
.L	1000	2500	4kV	8'-0"	8'-0"	8"	6"	14"	14"	4	4	#4 BARS 5" C.C.	292	1.51

ACAD

Exelon. Energy Delivery SYSTEM STANDARD

NOTE:

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

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.

M-BUS-2519

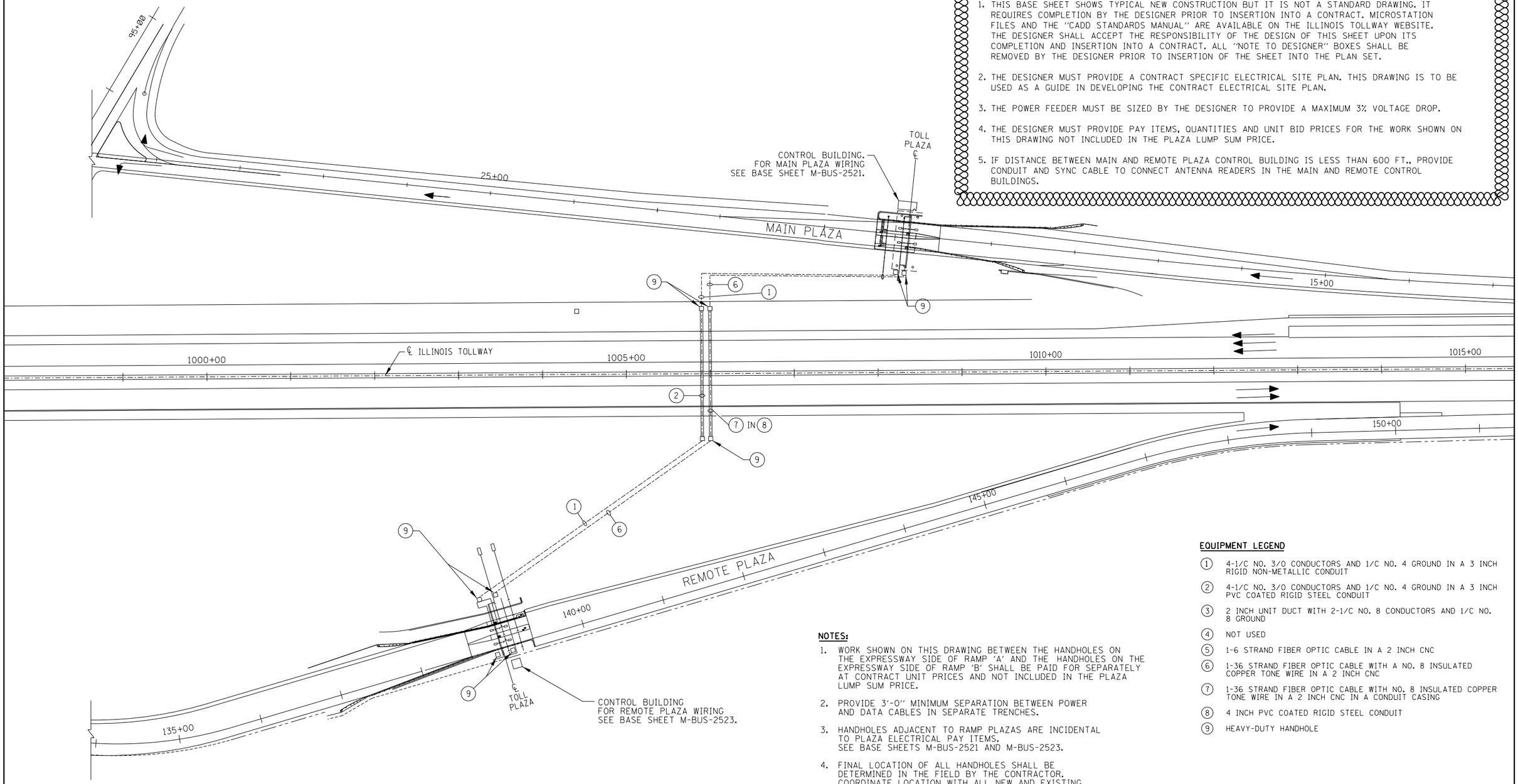
Illinois Tollway

COMED TRANSFORMER PAD DETAIL

DATE
3-31-2016

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. 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.
2. THE DESIGNER MUST PROVIDE A CONTRACT SPECIFIC ELECTRICAL SITE PLAN. THIS DRAWING IS TO BE USED AS A GUIDE IN DEVELOPING THE CONTRACT ELECTRICAL SITE PLAN.
3. THE POWER FEEDER MUST BE SIZED BY THE DESIGNER TO PROVIDE A MAXIMUM 3% VOLTAGE DROP.
4. THE DESIGNER MUST PROVIDE PAY ITEMS, QUANTITIES AND UNIT BID PRICES FOR THE WORK SHOWN ON THIS DRAWING NOT INCLUDED IN THE PLAZA LUMP SUM PRICE.
5. IF DISTANCE BETWEEN MAIN AND REMOTE PLAZA CONTROL BUILDING IS LESS THAN 600 FT., PROVIDE CONDUIT AND SYNC CABLE TO CONNECT ANTENNA READERS IN THE MAIN AND REMOTE CONTROL BUILDINGS.



SITE PLAN

NOTES:

1. WORK SHOWN ON THIS DRAWING BETWEEN THE HANDHOLES ON THE EXPRESSWAY SIDE OF RAMP 'A' AND THE HANDHOLES ON THE EXPRESSWAY SIDE OF RAMP 'B' SHALL BE PAID FOR SEPARATELY AT CONTRACT UNIT PRICES AND NOT INCLUDED IN THE PLAZA LUMP SUM PRICE.
2. PROVIDE 3'-0" MINIMUM SEPARATION BETWEEN POWER AND DATA CABLES IN SEPARATE TRENCHES.
3. HANDHOLES ADJACENT TO RAMP PLAZAS ARE INCIDENTAL TO PLAZA ELECTRICAL PAY ITEMS. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523.
4. FINAL LOCATION OF ALL HANDHOLES SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. COORDINATE LOCATION WITH ALL NEW AND EXISTING UTILITIES.

EQUIPMENT LEGEND

(1) 4-1/C NO. 3/0 CONDUCTORS AND 1/C NO. 4 GROUND IN A 3 INCH RIGID NON-METALLIC CONDUIT
(2) 4-1/C NO. 3/0 CONDUCTORS AND 1/C NO. 4 GROUND IN A 3 INCH PVC COATED RIGID STEEL CONDUIT
(3) 2 INCH UNIT DUCT WITH 2-1/C NO. 8 CONDUCTORS AND 1/C NO. 8 GROUND
(4) NOT USED
(5) 1-6 STRAND FIBER OPTIC CABLE IN A 2 INCH CNC
(6) 1-36 STRAND FIBER OPTIC CABLE WITH A NO. 8 INSULATED COPPER TONE WIRE IN A 2 INCH CNC
(7) 1-36 STRAND FIBER OPTIC CABLE WITH NO. 8 INSULATED COPPER TONE WIRE IN A 2 INCH CNC IN A CONDUIT CASING
(8) 4 INCH PVC COATED RIGID STEEL CONDUIT
(9) HEAVY-DUTY HANDHOLE

M-BUS-2520

Illinois Tollway

ELECTRICAL SITE PLAN - ACM AND IPO LANES

DATE
3-31-2016

NOTE TO DESIGNER

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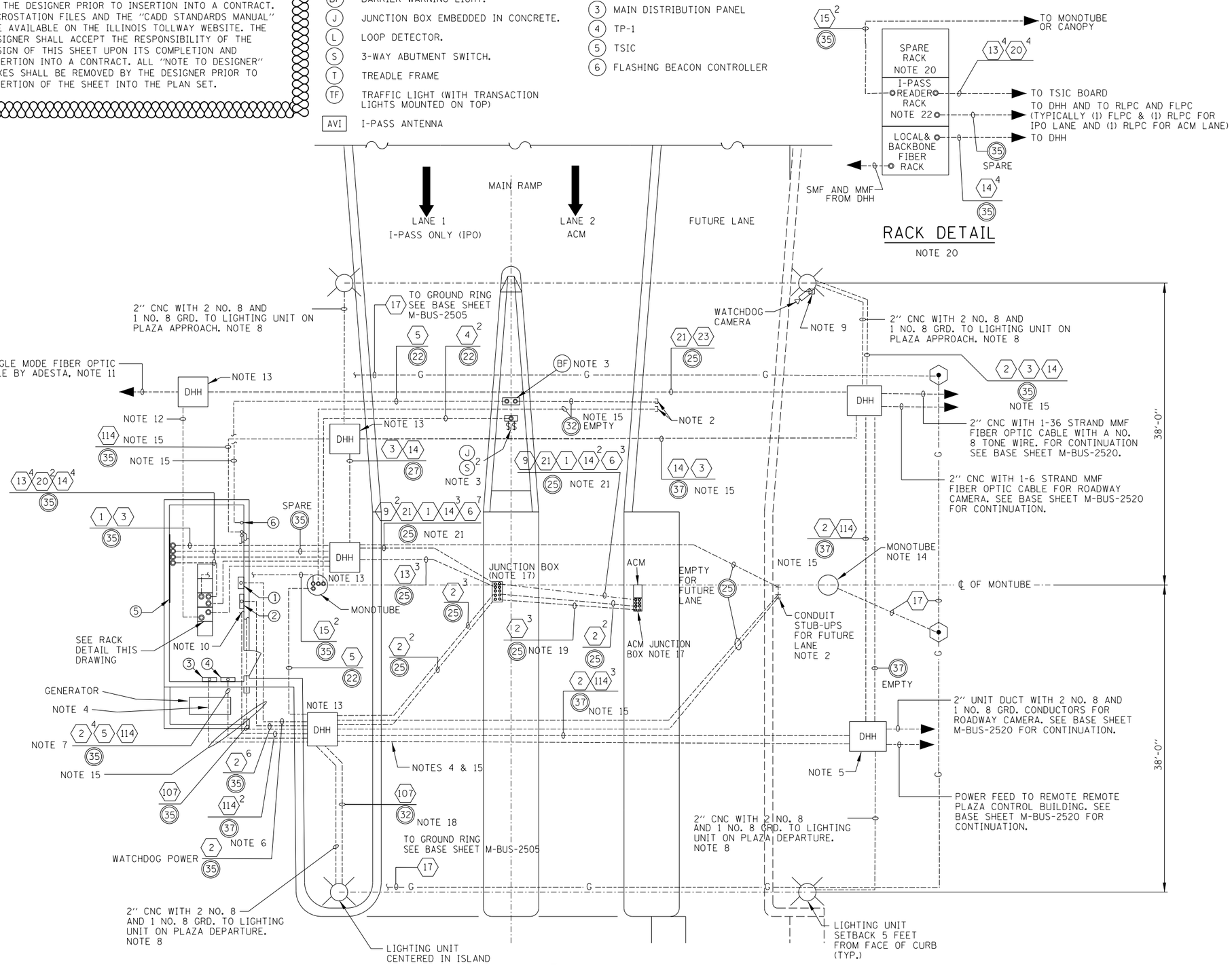
EQUIPMENT LEGEND

ITEM	DESCRIPTION
ACM	AUTOMATIC SOLID-STATE MACHINE.
BF	BARRIER WARNING LIGHT.
J	JUNCTION BOX EMBEDDED IN CONCRETE.
L	LOOP DETECTOR.
S	3-WAY ABUTMENT SWITCH.
T	TREADLE FRAME
TF	TRAFFIC LIGHT (WITH TRANSACTION LIGHTS MOUNTED ON TOP)
AVI	I-PASS ANTENNA

LEGEND:

1. VIDEO POWER JUNCTION BOX
2. UPS-1
3. MAIN DISTRIBUTION PANEL
4. TP-1
5. TSIC
6. FLASHING BEACON CONTROLLER



PLAN

NOT TO SCALE

RACK DETAIL

NOTE 20

NOTES:

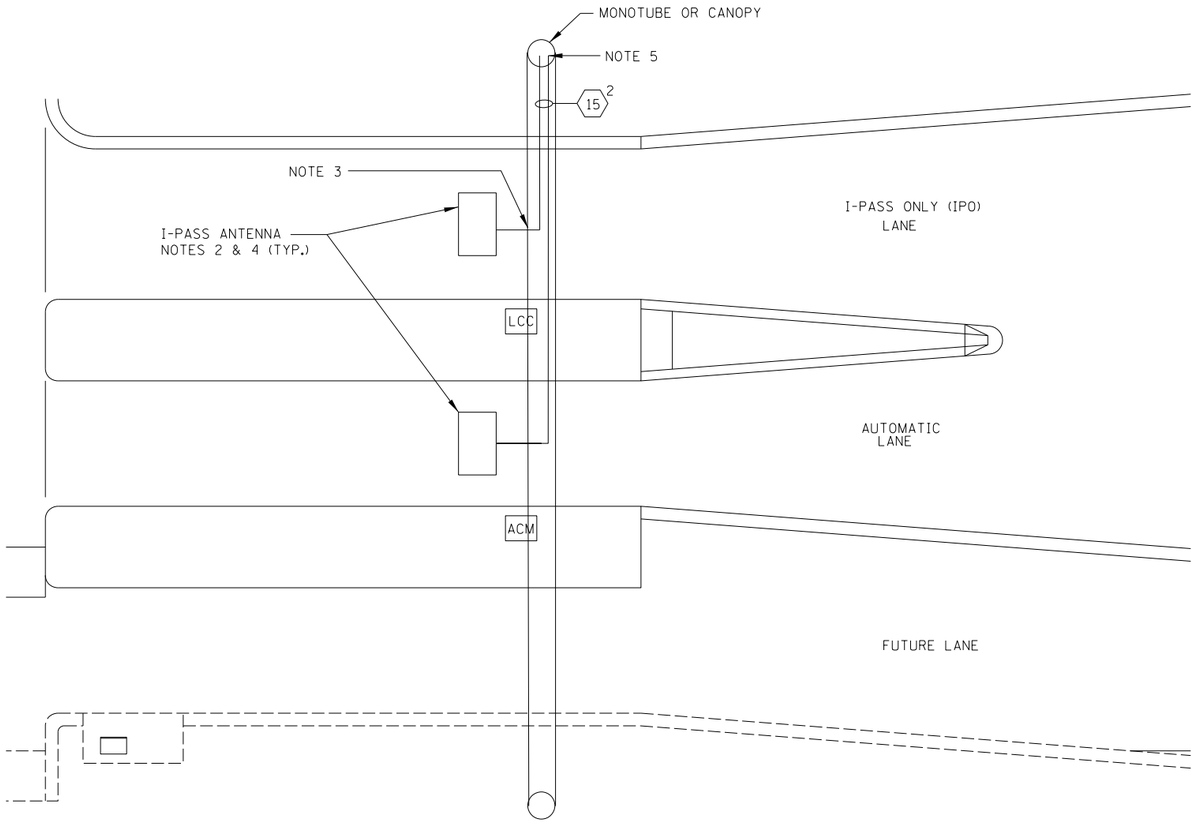
1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. CAP CONDUITS FOR EXTENSION TO FUTURE LANES.
3. SEE BASE SHEETS M-BUS-2524 AND M-BUS-2525 FOR ISLAND PLAN UNDERGROUND CONDUIT RUNS AND EQUIPMENT LEGEND.
4. 3" PVC COATED CONDUIT WITH FEEDER TO REMOTE RAMP CONTROL BUILDING. SEE BASE SHEET M-BUS-2520 FOR SITE PLAN.
5. FINAL LOCATION OF ALL HANDHOLES SHALL BE APPROVED BY THE ENGINEER (TYP.).
6. ROUTE 3" CONDUIT WITH ROADWAY LIGHTING TO 30 AMP CIRCUIT BREAKER.
7. THE ROADWAY CAMERA SHALL BE FED FROM TP-1.
8. CNC DUCT CASING SHALL EXTEND 5'-0" PAST PAVED AREA.
9. CONDUIT IS RUN UP THE LIGHT STANDARD TO THE VIDEO WATCHDOG CAMERA. SEE BASE SHEET M-BUS-2513 FOR DETAILS.
10. ROUTE TO LIGHTING CONTACTOR.
11. PROVIDE 4" CONDUIT SLEEVE IN HANDHOLE FOR SINGLE MODE FIBER OPTIC CABLE.
12. 4" CONDUIT WITH FOUR 1" INNER DUCTS. INSTALL 36 STRAND MMF CABLE IN ONE INNER DUCT, INSTALL 6 STRAND MMF CABLE IN A SECOND INNER DUCT AND ADESTA WILL INSTALL THE 48 STRAND SMF CABLE IN A THIRD INNER DUCT. THE REMAINING INNER DUCT IS SPARE. CABLES WILL BE ROUTED TO THEIR RESPECTIVE DISTRIBUTION PANELS.
13. ALL EXCESS (SLACK) POWER AND DATA CABLE(S) MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
14. EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BEARING PLATE AT EACH END.
15. PVC CONDUIT SHALL BE USED WHEN THE CONDUIT IS COVERED OR ENCASED IN CONCRETE. TRANSITIONS WILL BE ALLOWED. ALL EXPOSED CONDUITS SHALL BE PVC COATED RGS. CONTACT THE ENGINEER AND ILLINOIS TOLLWAY FOR MORE DETAILS. SLEEVES SHALL BE USED WHEN DEEMED NECESSARY.
16. ALL COAX CABLES FROM VES AND WATCHDOG CAMERAS MUST LAND ON SURGE PROTECTION DEVICES.
17. LOCATION OF LANE AND ISLAND STUB-UPS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO THE CONCRETE POUR. THE FINAL LOCATIONS OF EQUIPMENT SHALL BE APPROVED BY THE ILLINOIS TOLLWAY.
18. ROUTE 3 - 1/C NO. 12 CONDUCTORS FROM THE, LIGHTING CONTACTOR LOCATED IN THE BUILDING TO THE LIGHT POLE FOR PLAZA LIGHTING CONTROL CIRCUIT. PROVIDE A PHOTOCELL ON THE SAME POLE.
19. (3) UPS POWER FEEDS ARE REQUIRED WHEN LASER DELINEATOR IS PRESENT. LASER DELINEATORS ARE AT THE FOLLOWING PLAZAS: 4, 37, 93, 95, 97 AND 101.
20. THE SPARE RACK IS A 23" NOM. 2-POST RACK. THE ACM AND IPO LANE CONTROLLER CABINETS ARE MOUNTED BACK-TO-BACK ON THE RACK AS SHOWN ON BASE SHEET M-BUS-2531.
21. CONTRACTOR TO PROVIDE FAN OUT KITS OR PATCH PANEL AT BOTH ENDS FOR THE 6-STRAND MULTIMODE FIBER OPTIC CABLE FOR EACH ACM LANE.
22. EACH IMAGE CAPTURE COMPUTER AND LANE CONTROLLER HAS AN ETHERNET INTERFACE TO THE CISCO 3850 SWITCH.

M-BUS-2521

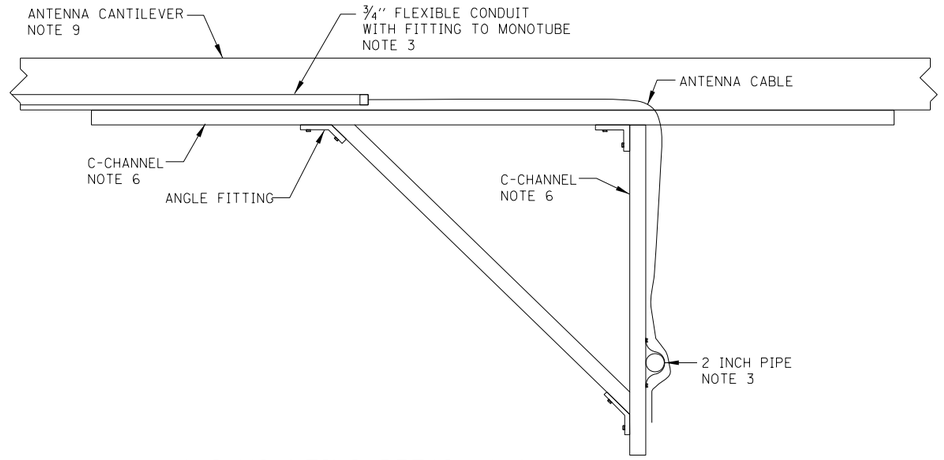
Illinois Tollway

UNDERGROUND ELECTRICAL PLAN - ACM AND IPO LANES - MAIN PLAZA

DATE
3-31-2016



CONDUIT AND WIRE DIAGRAM FOR I-PASS ANTENNA



AVI MOUNTING DETAIL A-A

NOT TO SCALE

NOTE TO DESIGNER

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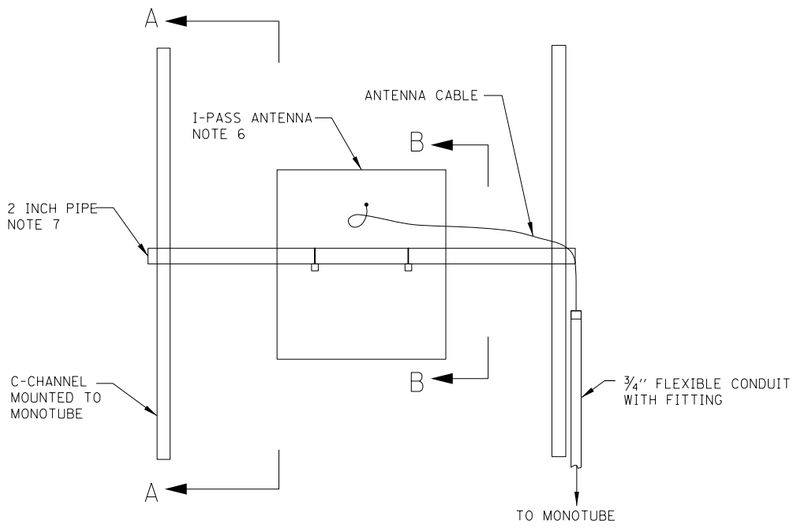
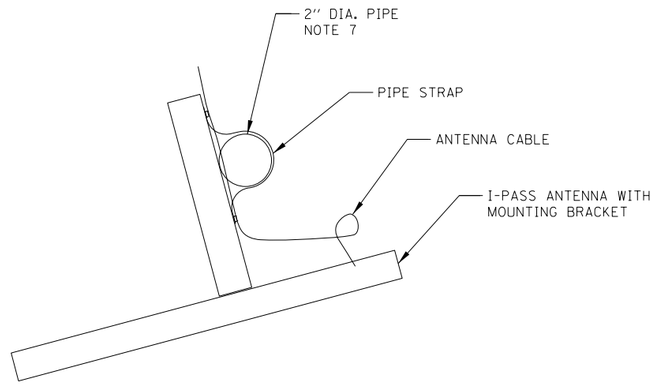
NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. SEE BASE SHEET M-BUS-2514 FOR I-PASS ANTENNA INSTALLATION DETAIL.
3. THE I-PASS ANTENNA COAXIAL CABLES SHALL BE INSTALLED INSIDE THE MONOTUBE FRAME TO THE ANTENNA LOCATIONS. DRILL AND TAP A HOLE IN THE MONOTUBE FRAME AND INSTALL A 1 INCH THREADED FITTING AT EACH ANTENNA LOCATION. SEE DETAIL THIS SHEET.
4. THE ILLINOIS TOLLWAY SHALL VERIFY THE I-PASS ANTENNA LOCATIONS PRIOR TO INSTALLATION.
5. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523 FOR ADDITIONAL DETAILS (TYP.).
6. MOUNTING BRACKETS SHALL ALLOW EASY ADJUSTMENT TO THE I-PASS ANTENNA. ANTENNA SHALL BE ABLE TO BE ADJUSTED UP TO 6 FEET (MINIMUM) FROM THE CENTERLINE OF THE MONOTUBE
7. GALVANIZED STEEL OR ALUMINUM PIPE, 2 INCH DIA., SCHEDULE 40.
8. MOUNTING HEIGHT FOR THE I-PASS ANTENNA SHALL BE MIN. 18'-0" ABOVE THE FINISHED PAVEMENT FROM THE BOTTOM MOST PART OF THE ANTENNA.
9. DETAIL PROVIDED FOR ANTENNA MOUNTING TO TO A MONOTUBE. CONTRACTOR TO MAKE NECESSARY ADJUSTMENTS.
10. THE I-PASS ANTENNA WILL BE FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.
11. ANTENNA CABLE SHALL BE SECURED TO MOUNTING BARCKET WITH STAINLESS STEEL STRAPS.



AVI MOUNTING DETAIL

NOT TO SCALE



AVI MOUNTING DETAIL B-B

M-BUS-2522

Illinois Tollway

PLAZA I-PASS PLANS - ACM AND IPO LANES

DATE
3-31-2016

NOTE TO DESIGNER

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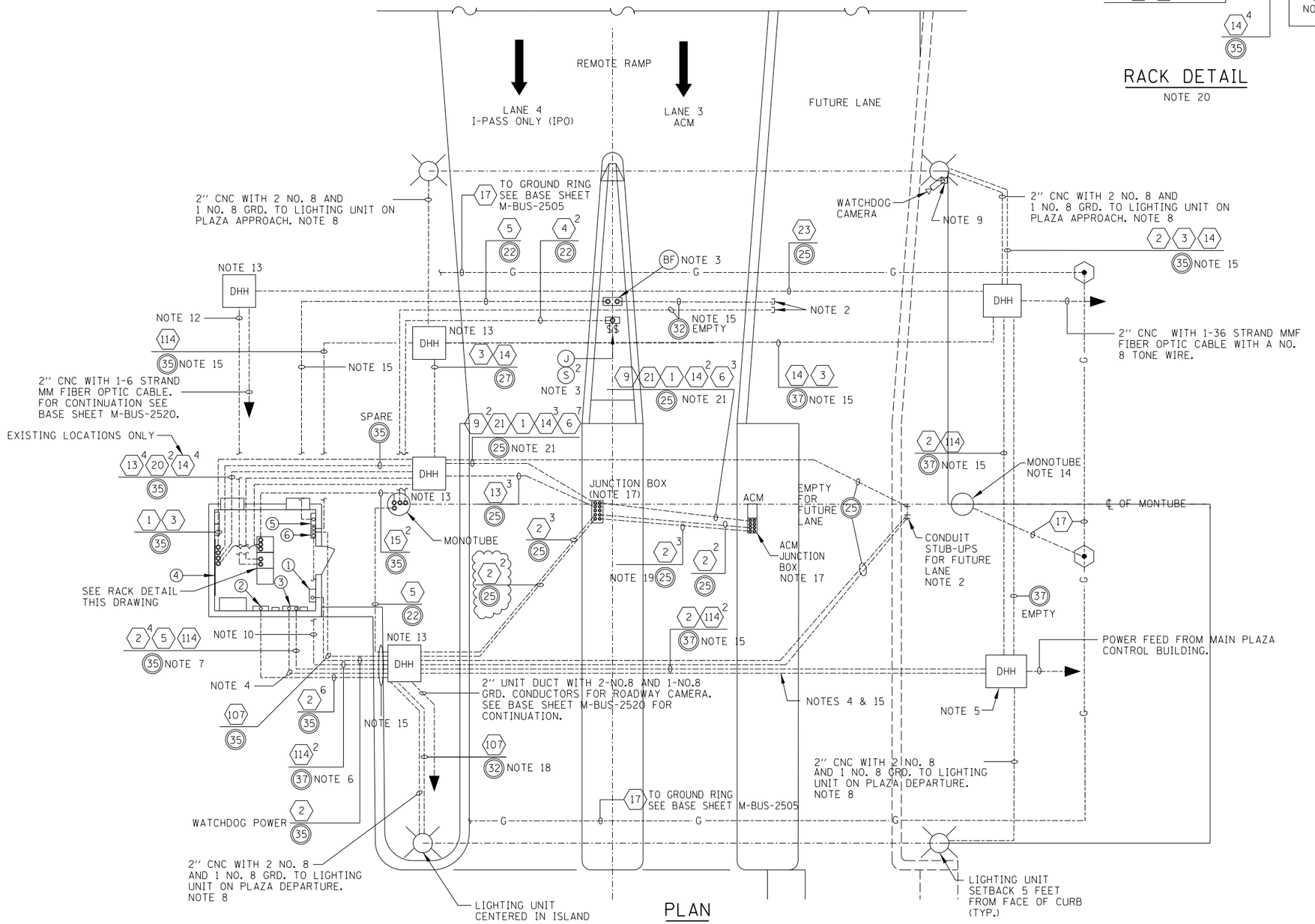
EQUIPMENT LEGEND

ITEM	DESCRIPTION
ACM	AUTOMATIC SOLID-STATE MACHINE.
BF	BARRIER WARNING LIGHT.
J	JUNCTION BOX EMBEDDED IN CONCRETE.
L	LOOP DETECTOR.
S	3-WAY ABUTMENT SWITCH.
T	TREADLE FRAME
TF	TRAFFIC LIGHT (WITH TRANSACTION LIGHTS MOUNTED ON TOP)
AVI	I-PASS ANTENNA

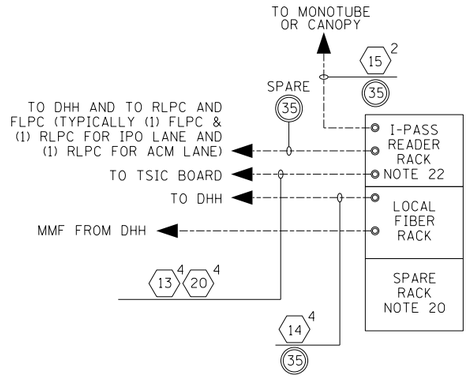
LEGEND:

1. VIDEO POWER JUNCTION BOX
2. UPS-1
3. MAIN DISTRIBUTION PANEL
4. TP-1
5. TSIC
6. FLASHING BEACON CONTROLLER



PLAN

NOT TO SCALE



RACK DETAIL

NOTE 20

NOTES:

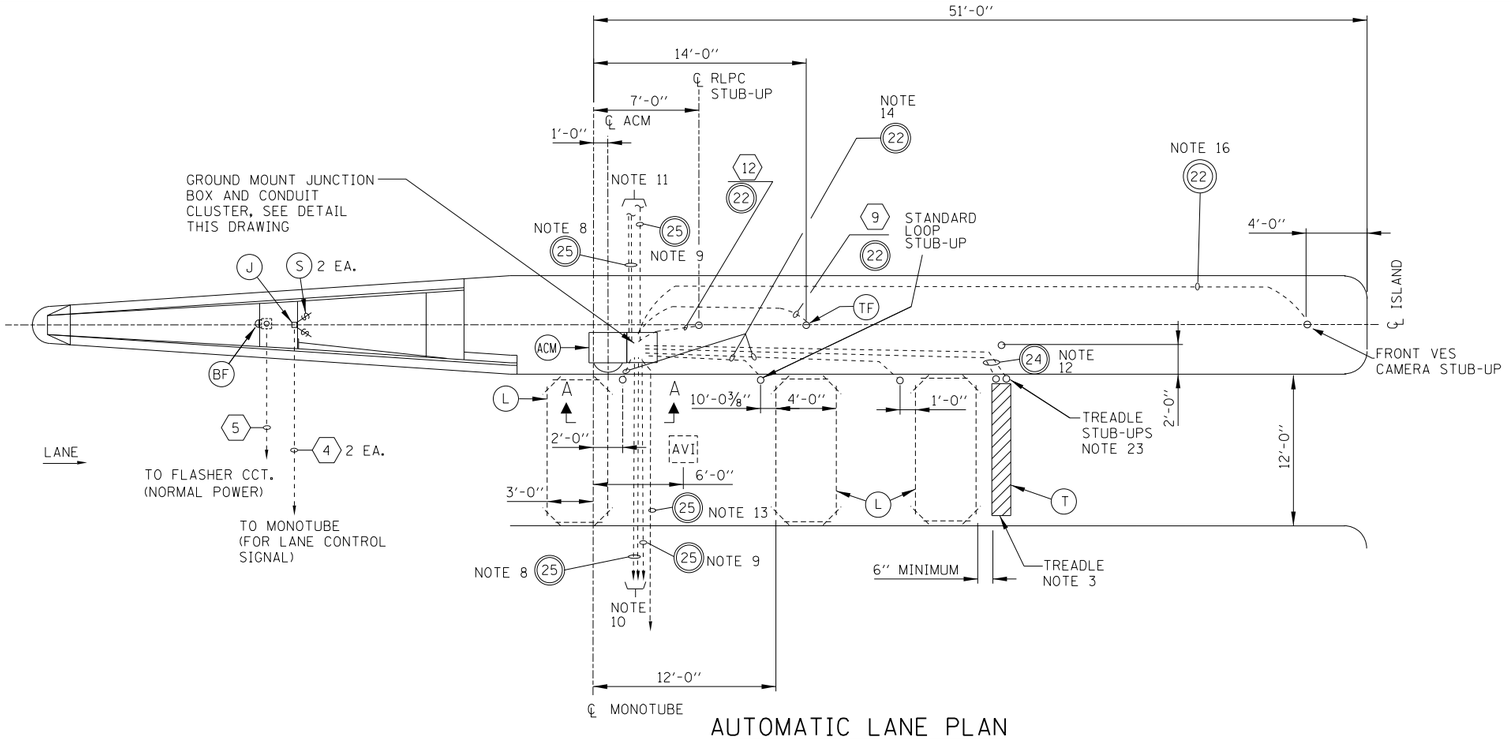
1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. CAP CONDUITS FOR EXTENSION TO FUTURE LANES.
3. SEE BASE SHEETS M-BUS-2524 AND M-BUS-2525 FOR ISLAND PLAN UNDERGROUND CONDUIT RUNS AND EQUIPMENT LEGEND.
4. 3" PVC COATED CONDUIT WITH FEEDER TO MAIN PLAZA CONTROL BUILDING. SEE BASE SHEET M-BUS-2520 FOR SITE PLAN.
5. FINAL LOCATION OF ALL HANDHOLES SHALL BE APPROVED BY THE ENGINEER.
6. ROUTE 3" CONDUIT WITH ROADWAY LIGHTING TO 30 AMP CIRCUIT BREAKER.
7. THE ROADWAY CAMERA SHALL BE FED FROM TP-2.
8. CNC DUCT CASING SHALL EXTEND 5'-0" PAST PAVED AREA.
9. CONDUIT IS RUN UP THE LIGHT STANDARD TO THE VIDEO WATCHDOG CAMERA. SEE BASE SHEET M-BUS-2513 FOR DETAILS.
10. ROUTE TO LIGHTING CONTACTOR.
11. NOT USED
12. ONE 36 STRAND MMF AND ONE 6 STRAND MMF FIBER OPTIC CABLE INSTALLED IN A 2" PVC COATED CONDUIT.
13. ALL EXCESS (SLACK) POWER AND DATA CABLE(S) MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
14. EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BEARING PLATE AT EACH END.
15. PVC CONDUIT SHALL BE USED WHEN THE CONDUIT IS COVERED OR ENCASED IN CONCRETE. TRANSITIONS WILL BE ALLOWED. ALL EXPOSED CONDUITS SHALL BE PVC COATED RGS. CONTACT THE ENGINEER AND ILLINOIS TOLLWAY FOR MORE DETAILS. SLEEVES SHALL BE USED WHEN DEEMED NECESSARY.
16. ALL COAX CABLES FROM VES AND WATCHDOG CAMERAS MUST LAND ON SURGE PROTECTION DEVICES.
17. LOCATION OF LANE AND ISLAND STUB-UPSSHALL BE APPROVED BY THE ILLINOIS TOLLWAY PRIOR TO THE CONCRETE POUR. THE FINAL LOCATIONS OF EQUIPMENT SHALL BE APPROVED BY THE ILLINOIS TOLLWAY.
18. ROUTE 3-1/C NO. 12 CONDUCTORS FROM THE LIGHTING CONTACTOR LOCATED IN THE BUILDING TO THE LIGHT POLE FOR PLAZA LIGHTING CONTROL CIRCUIT. PROVIDE A PHOTOCELL ON THE SAME POLE.
19. (3) UPS POWER FEEDS ARE REQUIRED WHEN LASER DELINEATOR IS PRESENT. LASER DELINEATORS ARE AT THE FOLLOWING PLAZAS: 4, 37, 93, 95, 97 AND 101.
20. THE SPARE RACK IS A 23" NOM. 2-POST RACK. THE ACM AND IPO LANE CONTROLLER CABINETS ARE MOUNTED BACK-TO-BACK ON THE RACK AS SHOWN ON BASE SHEET M-BUS-2531.
21. CONTRACTOR TO PROVIDE FAN OUT KITS OR PATCH PANELS AT BOTH ENDS FOR THE 6-STRAND MULTIMODE FIBER OPTIC CABLE FOR EACH ACM LANE.
22. EACH IMAGE CAPTURE COMPUTER AND LANE CONTROLLER HAS AN ETHERNET INTERFACE TO THE CISCO 3850 SWITCH.

M-BUS-2523

Illinois Tollway

UNDERGROUND ELECTRICAL PLAN - ACM AND IPO LANES - REMOTE PLAZA

DATE 3-31-2016



AUTOMATIC LANE PLAN

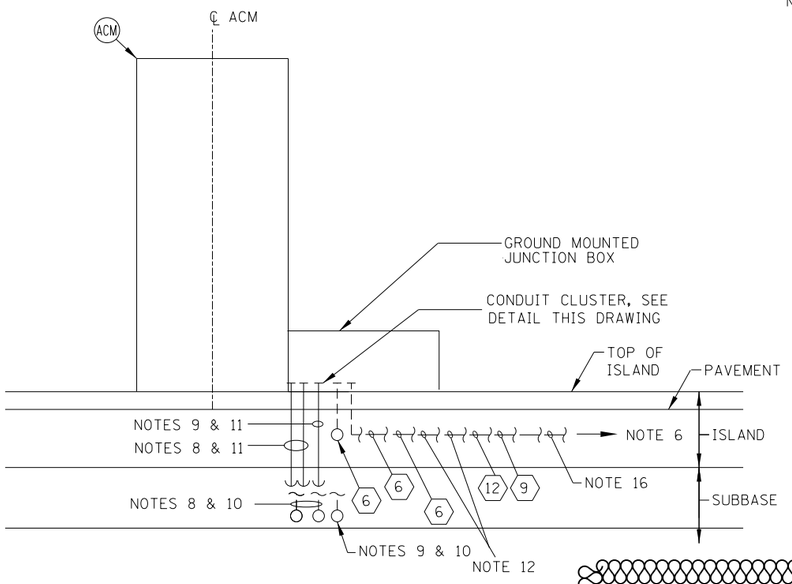
NOT TO SCALE

EQUIPMENT LEGEND

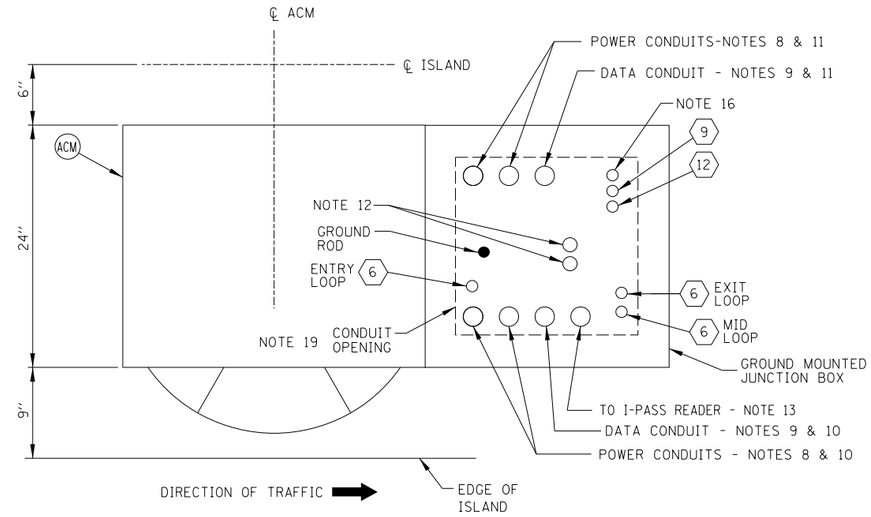
ITEM	DESCRIPTION
ACM	AUTOMATIC SOLID-STATE MACHINE.
BF	BARRIER WARNING LIGHT.
J	JUNCTION BOX EMBEDDED IN CONCRETE.
L	LOOP DETECTOR.
S	3-WAY ABUTMENT SWITCH.
T	TREADLE FRAME
TF	TRAFFIC LIGHT (WITH TRANSACTION LIGHTS MOUNTED ON TOP)
AVI	I-PASS ANTENNA

NOTES:

1. SEE BASE SHEET M-BUS-2526 FOR WIRING DIAGRAM.
2. NOT USED
3. TREADLES ARE CUT DIRECTLY INTO CONCRETE.
4. SEE BASE SHEET M-BUS-2507 FOR GROUNDING SCHEMATIC.
5. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND ADDITIONAL NOTES.
6. FOR CONTINUATION OF CONDUIT RUNS SEE LANE PLAN THIS DRAWING. CONDUITS SHALL BE RUN AT THE SAME HORIZONTAL ELEVATION, IN THE CENTER OF ISLAND BETWEEN REBARS, WITH A TOTAL OF 7" MINIMUM COVER OVER ALL CONDUITS.
7. NOT USED
8. TWO 2" CONDUITS ARE UTILIZED FOR POWER. ONE IS FOR UPS WHILE THE OTHER IS FOR NORMAL POWER.
9. DATA CONDUIT CONTAINING DATA, I-PASS INTERFACE AND VIDEO SIGNAL CABLES.
10. POWER AND DATA CONDUITS TO CONTROL BUILDING. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523.
11. POWER AND DATA CONDUITS TO ADJACENT LANE. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523.
12. CABLE SUPPLIED WITH TREADLES. TWO 1.5" CONDUITS. TREADLE FRAME AND CONDUIT ARE FURNISHED AND INSTALLED BY THE CONTRACTOR. ONLY TWO 90 DEGREE BENDS ARE ALLOWED FOR THE TREADLE CONDUIT.
13. PROVIDE A 2" CONDUIT FROM I-PASS READER LOCATED IN THE CONTROL BUILDING TO THE CLOSEST ACM OR IPASS LANE CONTROLLER.
14. ILLINOIS TOLLWAY INSTALLED LOOP WIRES SHALL ENTER INTO A 1" CONDUIT WITH AN EPOXY PLUG 6" FROM THE EDGE OF THE ISLAND, SEE BASE SHEET M-BUS-2527.
15. LOCATIONS OF VIOLATION CAMERAS, CABINETS, TRAFFIC LIGHT AND LOOP STUB-UPS SHALL BE VERIFIED WITH THE ILLINOIS TOLLWAY AFTER CONDUITS ARE INSTALLED BUT PRIOR TO BACKFILL.
16. FLPC CONDUIT SHALL BE INSTALLED. VERIFY WITH THE ILLINOIS TOLLWAY IF FLPC WILL BE INSTALLED.
17. FLPC AND RLPC FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY. CONDUIT AND CABLING FURNISHED AND INSTALLED BY THE CONTRACTOR.
18. NOT USED.
19. CONTRACTOR TO VERIFY CABINET HAS A MINIMUM 18"X18" CONDUIT OPENING PRIOR TO PLACING CONDUITS.
20. NOT USED
21. VERIFY LOCATIONS OF STUB-UPS IN THE FIELD AS DIRECTED BY THE ILLINOIS TOLLWAY PRIOR TO BACKFILL.
22. WHEN SCHEDULE 80 PVC CONDUIT IS CALLED OUT, VERIFY THAT THE CONDUIT WILL BE EITHER BURIED UNDER CONCRETE OR ENCASED IN CONCRETE. ELECTRICAL CONTRACTOR TO COORDINATE EFFORTS WITH OTHER CONTRACTORS TO VERIFY INSTALLATION RUNS SMOOTHLY.
23. CONDUIT STUBS FOR TREADLE FRAMES ARE INSTALLED 6" TO 10" FROM CURB, SEE BASE SHEET M-BUS-2527.



SECTION A-A



CONDUIT CLUSTER DETAIL AT AUTOMATIC SOLID-STATE MACHINE (ACM)

NOTE TO DESIGNER

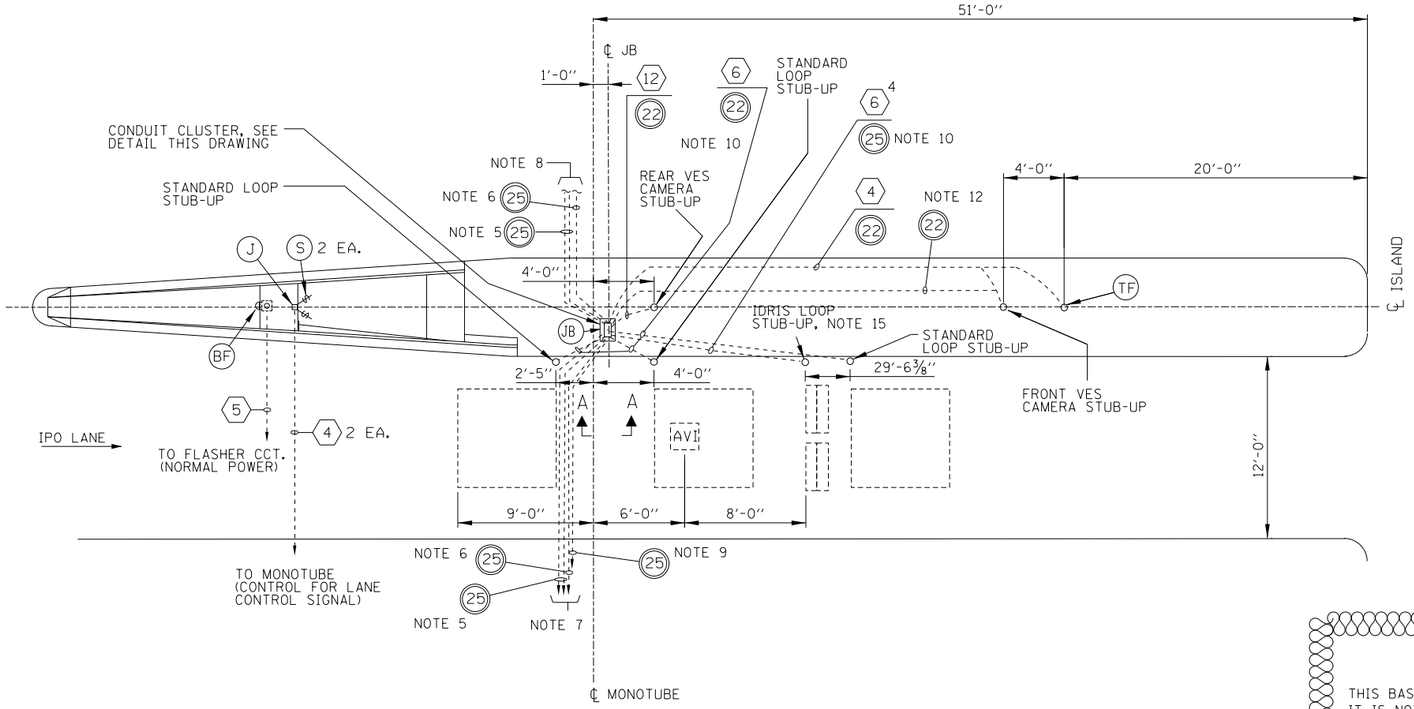
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF 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.

M-BUS-2524

Illinois Tollway

AUTOMATIC LANE ISLAND PLAN AND DETAILS 12 FOOT WIDE LANE

DATE 3-31-2016



I-PASS ONLY (IPO) LANE PLAN

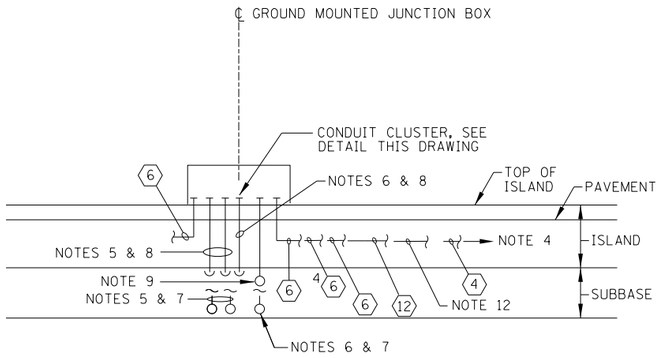
NOT TO SCALE

NOTES:

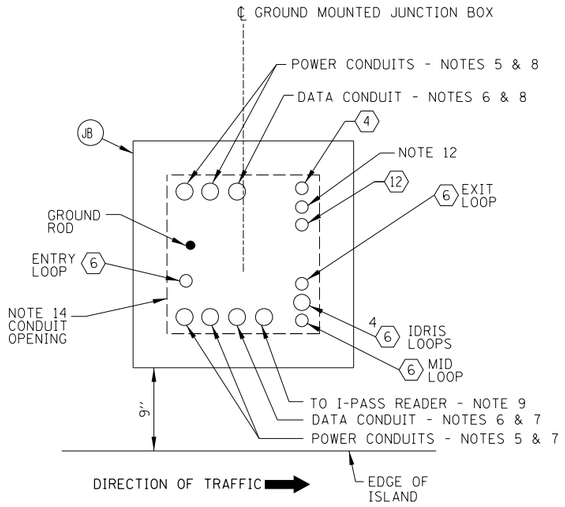
1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND ADDITIONAL NOTES.
2. SEE BASE SHEET M-BUS-2526 FOR WIRING DIAGRAM.
3. WHEN PVC CONDUIT IS CALLED OUT VERIFY THAT THE CONDUIT WILL BE EITHER BURIED UNDER CONCRETE OR ENCASED IN CONCRETE. ELECTRICAL CONTRACTOR TO COORDINATE EFFORTS WITH OTHER CONTRACTORS TO VERIFY INSTALLATION RUNS SMOOTHLY.
4. FOR CONTINUATION OF CONDUIT RUNS SEE LANE PLAN THIS DRAWING. CONDUITS SHALL BE RUN AT THE SAME HORIZONTAL ELEVATION, IN THE CENTER OF ISLAND BETWEEN REBARS, WITH A TOTAL OF 7" MINIMUM COVER OVER ALL CONDUITS.
5. TWO 2" CONDUITS ARE UTILIZED FOR POWER. ONE IS FOR UPS WHILE THE OTHERIS FOR NORMAL POWER.
6. DATA CONDUIT CONTAINING DATA, I-PASS INTERFACE AND VIDEO SIGNAL CABLES.
7. POWER AND DATA CONDUITS TO CONTROL BUILDING. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523.
8. POWER AND DATA CONDUITS TO ADJACENT LANE. SEE BASE SHEETS M-BUS-2521 AND M-BUS-2523.
9. PROVIDE A 2" CONDUIT FROM I-PASS READER LOCATED IN THE BUILDING TO CLOSEST ACM OR IPASS LANE CONTROLLER.
10. ILLINOIS TOLLWAY INSTALLED LOOP WIRES SHALL ENTER INTO A 1" CONDUIT WITH AN EPOXY ENTER INTO A 1" CONDUIT WITH AN EPOXY PLUG 6" FROM THE EDGE OF THE ISLAND. SEE BASE SHEET M-BUS-2527.
11. LOCATIONS OF VIOLATION CAMERAS, CABINETS, TRAFFIC LIGHT AND LOOP STUB-UPS SHALL BE VERIFIED WITH THE ILLINOIS TOLLWAY AFTER CONDUITS ARE INSTALLED BUT PRIOR TO BACKFILL.
12. FLPC CONDUIT SHALL BE INSTALLED. VERIFY WITH THE ILLINOIS TOLLWAY IF FLPC WILL BE INSTALLED.
13. FLPC AND RLPC FURNISHEDAND INSTALLED BY THE ILLINOIS TOLLWAY. CONDUIT AND CABLING FURNISHED AND INSTALLED BYTHE CONTRACTOR.
14. CONTRACTOR TO VERIFY CABINET HAS A MINIMUM 18"X18" CONDUIT OPENING PRIOR TO PLACING CONDUITS.
15. ILLINOIS TOLLWAY INSTALLED IDRIS LOOP WIRES SHALL ENTER INTO A SINGLE 2" CONDUIT WITH AN EPOXY PLUG 6" FROM THE EDGE OF THE ISLAND. INSTALLATION SHALL BE SIMILIAR TO THAT SHOWN FOR A 1" CONDUIT IN DETAILS 3 AND 4 ON BASE SHEET M-BUS-2527.
16. VERIFY LOCATIONS OF STUB-UPS IN THE FIELD AS DIRECTED BY THE ILLINOIS TOLLWAY PRIOR TO BACKFILL.

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.



SECTION A-A



CONDUIT CLUSTER DETAIL AT GROUND MOUNTED JUNCTION BOX

EQUIPMENT LEGEND

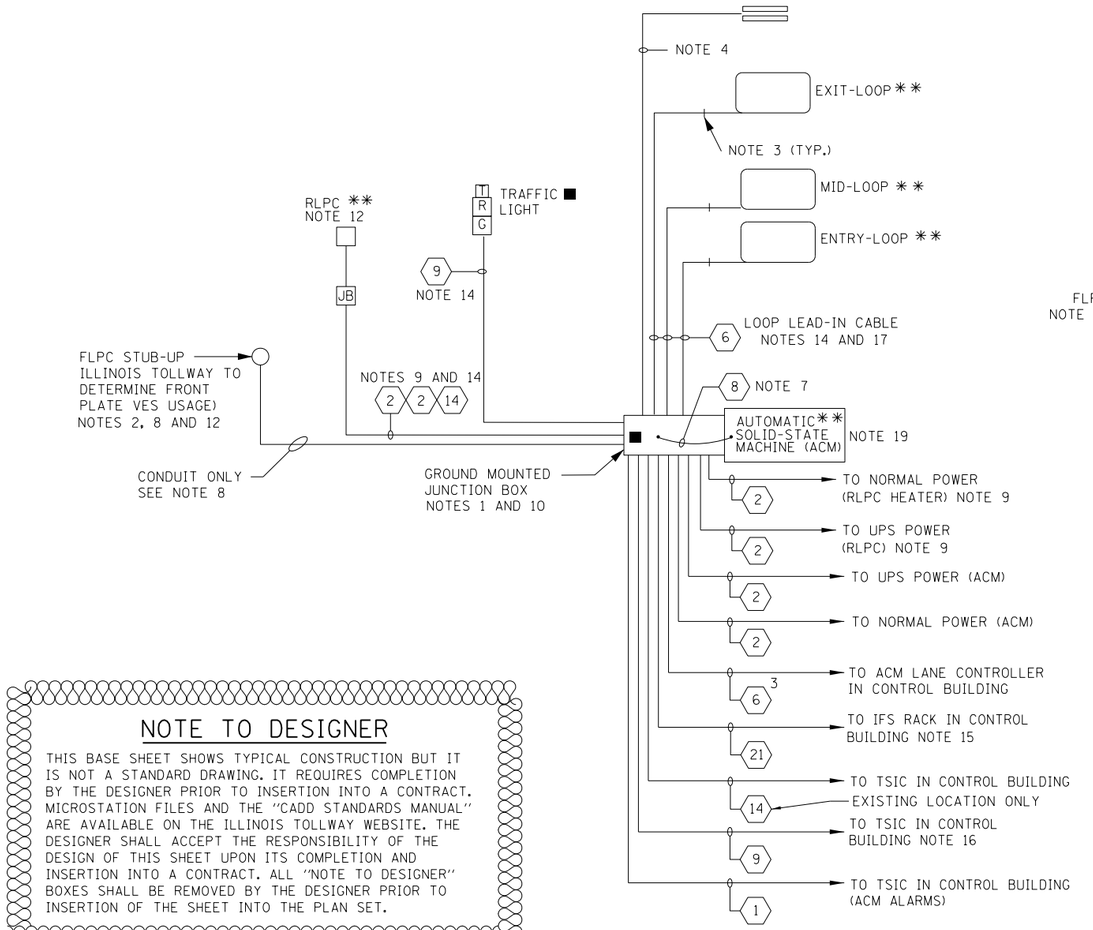
ITEM	DESCRIPTION
JB	GROUND MOUNTED JUNCTION BOX
BF	BARRIER WARNING LIGHT.
J	JUNCTION BOX EMBEDDED IN CONCRETE.
S	3-WAY ABUTMENT SWITCH.
TF	TRANSACTION LIGHT
AVI	I-PASS ANTENNA

M-BUS-2525

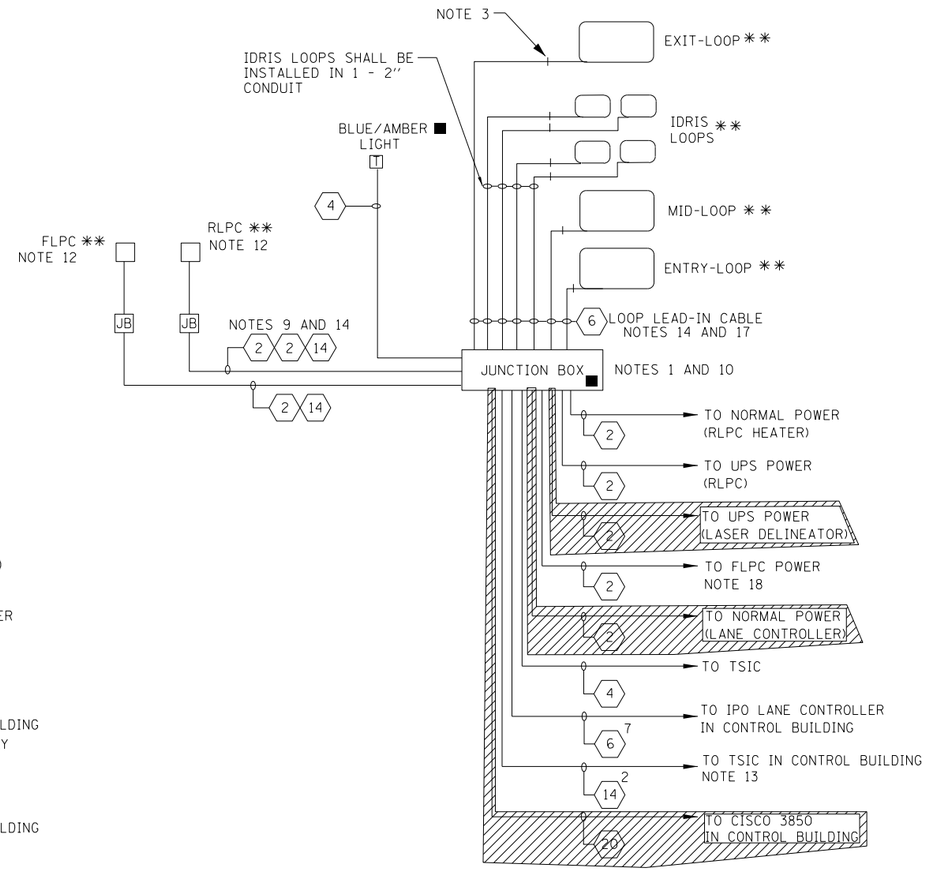
Illinois Tollway

IPASS ONLY (IPO) LANE ISLAND PLAN AND DETAILS 12 FOOT WIDE LANE

DATE 3-31-2016



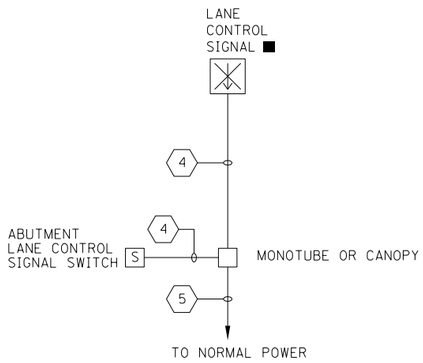
AUTOMATIC LANE AT RAMP PLAZA



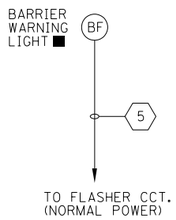
I-PASS ONLY (IPO) LANE AT RAMP PLAZA

NOTE TO DESIGNER

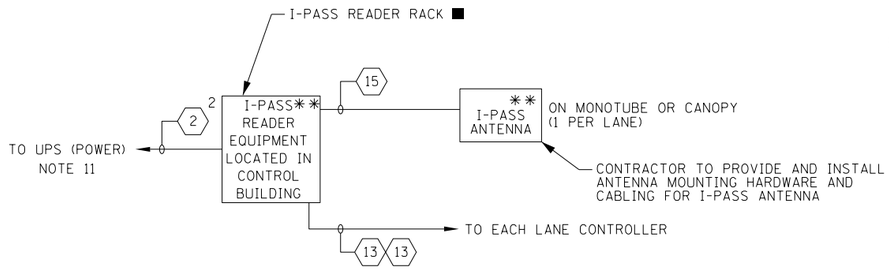
THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE 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.



LANE CONTROL SIGNAL



AUXILIARY EQUIPMENT



I-PASS BLOCK WIRING DIAGRAM

NOTES:

1. GROUND MOUNT JUNCTION BOXES ARE FURNISHED AND INSTALLED BY THE CONTRACTOR.
2. FLPC AND RLPC TO BE INSTALLED BY THE ILLINOIS TOLLWAY.
3. WATERPROOF SPLICE (SEE BASE SHEET M-BUS-2527). CONTRACTOR TO RUN LOOP LEAD-IN CABLE SPLICED IN JUNCTION BOX (TYP.).
4. FIBER OPTIC TREADLE LEADS WITH SMA CONNECTORS TO TRANSCEIVER IN ACM LANE CONTROLLER CABLES AND TREADLE FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.
5. NOT USED.
6. NOT USED.
7. FIBER OPTIC TREADLE FRAME IS FURNISHED BY THE ILLINOIS TOLLWAY AND INSTALLED BY THE CONTRACTOR.
8. A GROUND ROD IS INSTALLED AT EACH AUTOMATIC MACHINE AS SHOWN ON THE AUTOMATIC LANE ISLAND PLAN AND DETAILS DRAWING. CADWELD A #6 AWG GROUND WIRE TO THE GROUND ROD AND COIL 6' OF GROUND WIRE IN THE LANE CONTROL CABINET, TO BE TERMINATED AT THE ACM BY THE ILLINOIS TOLLWAY.
9. UPS/NORMAL POWER AND COAX CABLING FOR THE RLPC COMES DIRECTLY FROM THE CONTROL BUILDING. THESE CABLES ARE ROUTED THROUGH THE JUNCTION BOX.
10. POWER LOOPED THROUGH THE JUNCTION BOX.
11. DRAWING ILLUSTRATES TWO UPS CABLE TAG #2'S LANDING IN THE READER ENCLOSURE. THIS WOULD BE FOR TWO UNIQUE UPS CIRCUITS. THE SECOND CIRCUIT IS REQUIRED FOR PLAZAS THAT HAVE THREE OR MORE LANES.
12. FLPC AND RLPC STANCHIONS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR. RLPC STANCHION IS TO BE PROVIDED WITH A JUNCTION BOX FOR CABLE SPLICING.
13. REMOTE RAMP INTERFACE IS IFS. LOCAL RAMP INTERFACE IS RLPC IMAGE CAPTURE COMPUTER FOR RLPC AND FLPC IMAGE CAPTURE COMPUTER FOR FLPC. COAX ARE SURGE PROTECTED ON TSIC.
14. CABLE TO BE LOOPED THROUGH GROUND MOUNTED JUNCTION BOX TO CONTROL BUILDING.
15. FIBER TERMINATES ON IFS RACK. (2) RS-422 AND (1) RS-232 LINKS ARE CREATED FROM IFS TO ACM LANE CONTROLLER FOR MOST APPLICATIONS. USE FIBER PATCH OR FAN-OUT KIT.
16. ALL CONDUCTORS TERMINATE ON TSIC FOR SURGE PROTECTION AND THEN ROUTED TO THE ACM OR IPO LANE CONTROLLER.
17. LOOP LEAD-INS TO BE EXTENDED FROM JUNCTION BOX TO ACM OR IPO LANE CONTROLLER IN THE CONTROL BUILDING.
18. AC/DC IPO FLPC POWER SUPPLY IS LOCATED IN THE CONTROL BUILDING.
19. ACM HAS IFS 8020 WOM TO TRANSITION FROM ALARMS TO FIBER.

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

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

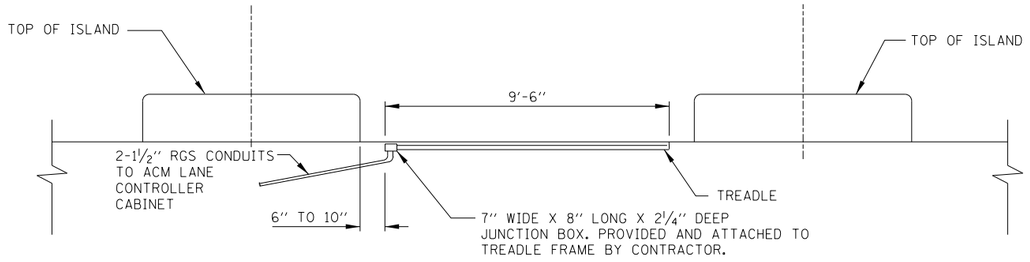
■ - INDICATES EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR

M-BUS-2526

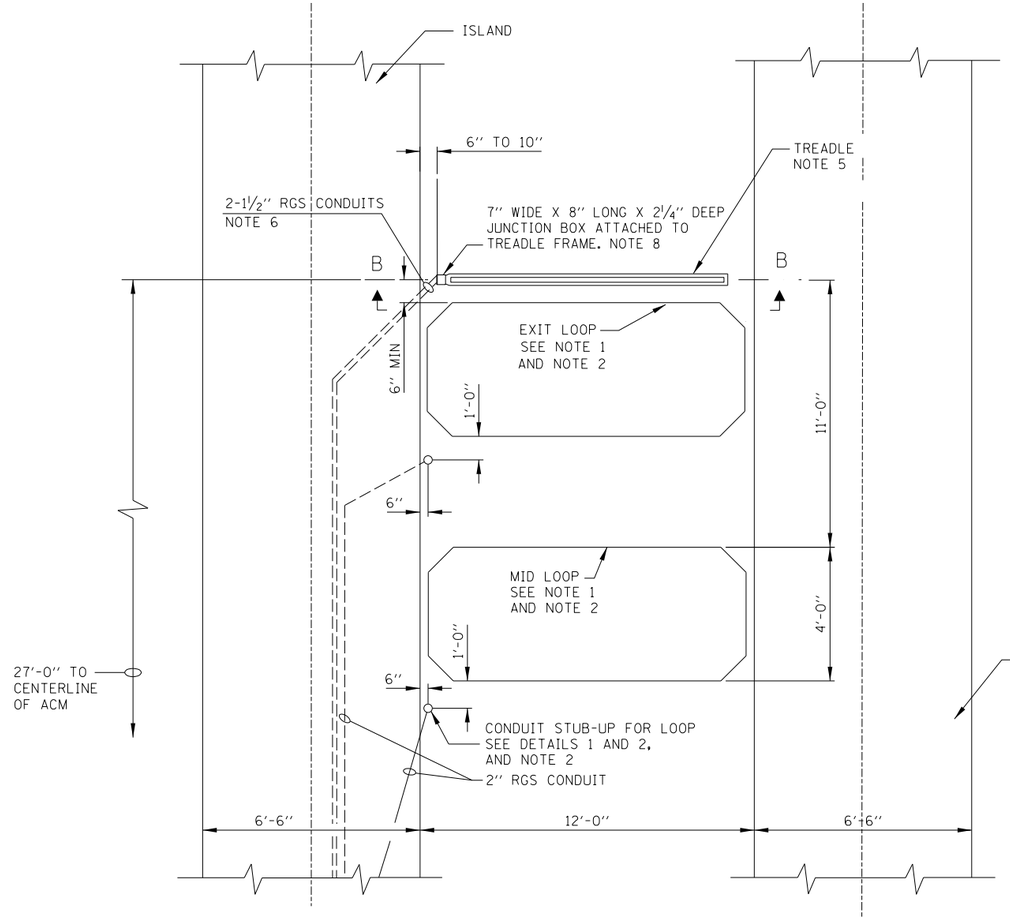
Illinois Tollway

TOLL EQUIPMENT
WIRING DIAGRAM -
ACM AND IPO LANES

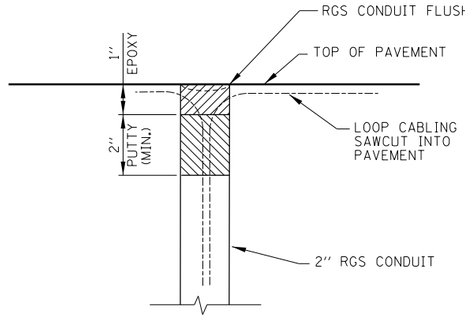
DATE
3-31-2016



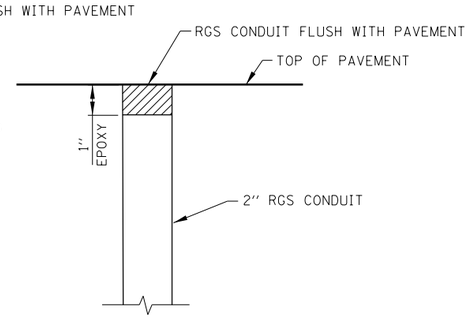
SECTION B-B



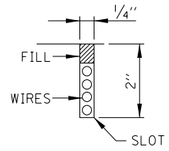
FIBER OPTIC TREADLE DETAIL



LOOP INSTALLATION DETAIL-1



LOOP RACEWAY STUB-UP DETAIL-2



DETECTOR LOOP SLOT DETAIL-3

N.T.S.

NOTES:

1. ILLINOIS TOLLWAY TO INSTALL LOOPS. A SLOT ⅜" WIDE BY 2" DEEP SHALL BE SAW CUT INTO PAVEMENT AS SHOWN TO GET LOOP WIRE BACK TO STUB-UP AFTER IT IS INSTALLED.
2. ILLINOIS TOLLWAY TO INSTALL LOOPS. VEHICLE DETECTOR WIRE SHALL BE ONE CONTINUOUS NO. 14 THHN/THWN STRANDED WIRE IN PVC TUBE OF SUFFICIENT LENGTH FOR 4 CONTINUOUS LOOPS IN THE ⅜" SLOT. FILL SLOT WITH EPOXY RESIN SYSTEM IN ACCORDANCE WITH SPECIAL PROVISIONS. LOOP IS SPLICED AT THE EPOXY PLUG BY THE ILLINOIS TOLLWAY TO THE 1/PR SHIELDED LOOP LEAD-IN CABLE FURNISHED AND INSTALLED BY THE CONTRACTOR. ILLINOIS TOLLWAY SHALL FURNISH AND INSTALL LOOP WIRE, SEALER AND EPOXY PLUG.
3. FIBER OPTIC TREADLE TO BE FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.
4. THE TREADLE CABLES WILL BE TERMINATED AND CONNECTED TO THE TRANSCEIVERS BY THE ILLINOIS TOLLWAY.
5. TREADLES ARE CUT DIRECTLY INTO CONCRETE.
6. CONDUIT IS FURNISHED AND INSTALLED BY THE CONTRACTOR. ONLY TWO 90 DEGREE BENDS ARE ALLOWED FOR THE TREADLE CONDUIT.
7. NOT USED.
8. TWO 1½" CONDUIT OPENINGS ARE REQUIRED. CONDUIT OPENINGS MUST BE COORDINATED WITH THE PROPER POSITIONING OF THE FIBER TREADLE FRAME.
9. TREADLE CONDUITS MUST BE FASTENED TO THE TREADLE FRAME PRIOR TO CONCRETE POUR.

NOTE TO DESIGNER

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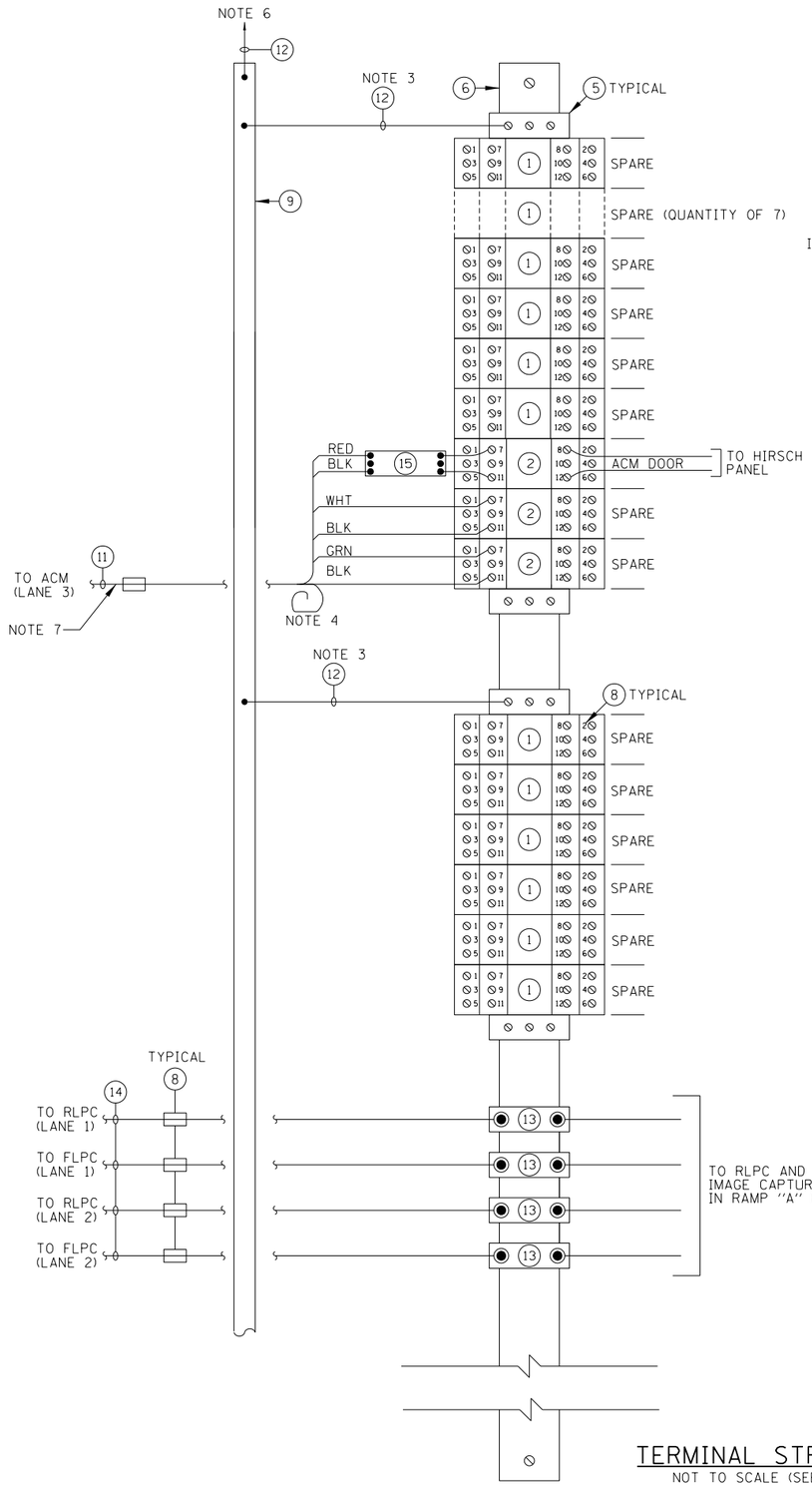
M-BUS-2527

Illinois Tollway

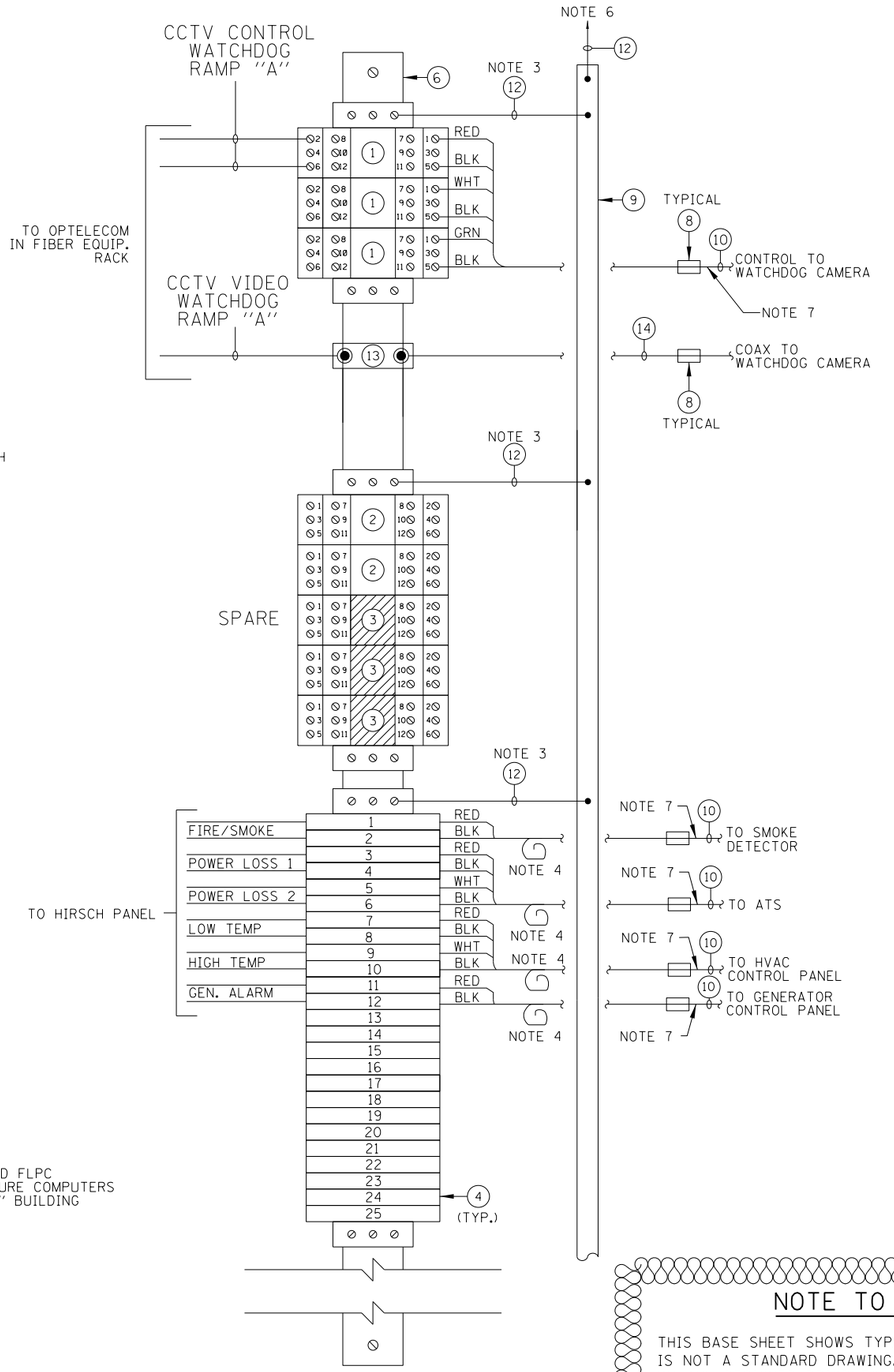
LOOP AND TREADLE INSTALLATION DETAILS - ACM AND IPO LANES

DATE
3-31-2016



TERMINAL STRIP LAYOUT

NOT TO SCALE (SEE NOTES 1 & 2)



NOTES:

1. TERMINAL BLOCKS ARE LOCATED ON THE TERMINAL STRIP INTERCONNECT CENTER (TSIC) LOCATED IN CONTROL BUILDING SEE BASE SHEET M-BUS-2530. FOR A COMPLETE LAYOUT OF THE TSIC.
2. TERMINAL BLOCKS, TERMINAL BLOCK MARKER STRIPS, AND GROUND BUS BARS ARE SHOWN DIAGRAMMATICALLY. WIRING DUCT IS NOT SHOWN ON THIS DRAWING.
3. ROUTE #6 COPPER GROUND CABLE FROM GROUND TERMINAL BLOCK TO GROUND BUS BAR.
4. COIL SPARE PAIRS FOR FUTURE USE.
5. THE CONTRACTOR SHALL IDENTIFY EACH LANE CABLE ON AS-BUILT DRAWINGS.
6. ROUTE #6 COPPER GROUND CABLE FROM GROUND BUS BAR TO THE BUILDING'S MASTER GROUND BAR. SEE BASE SHEET RPE8 FOR LOCATION OF MASTER GROUND BAR.
7. SHIELD GROUND WIRE TIED BACK IN 3" PIGTAIL AND TERMINATED TO TSIC GROUND BUS BAR WITH A BURNDY TYPE YAEV LUG. THE COMPONENT END OF THE SHIELD GROUND WIRE IS NOT TO BE TERMINATED.
8. EACH CABLE SHALL BE IDENTIFIED WITH A CABLE MARKER.
9. FOR DATA/COMMUNICATIONS CABLE COLOR CODE CHART, SEE BASE SHEET M-BUS-2530.
10. EACH TERMINAL BLOCK WIRING TERMINAL SHALL BE IDENTIFIED WITH A TERMINAL MARKER. THE MARKERS SHALL BE NUMBERED AS DIRECTED BY THE AUTHORITY.

EQUIPMENT LEGEND

ITEM	QUANTITY	DESCRIPTION
(1)	21 EA.	TERMINAL BLOCK WITH DATA SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT5-HF-12DC-ST WITH BASE ELEMENT PT2x2-BE.
(2)	5 EA.	TERMINAL BLOCK WITH DISCRETE SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT2x1-5DC-ST WITH BASE ELEMENT PT2x1-BE.
(3)	3 EA.	TERMINAL BLOCK BASE. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR BASE ELEMENT PT2x1-BE.
(4)	25 EA.	UNIVERSAL TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UK5N.
(5)	10 EA.	GROUND TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UDK-4-MTK-P/P.
(6)	2 EA.	MOUNTING RAIL; COPPER UNPERFORATED, 35mm x 7.5mm x 900mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
(7)	1 LOT	TERMINAL BLOCK MARKERS. PHOENIX CONTACT CATALOG NUMBER ZB 5.
(8)	1 LOT	CABLE MARKERS. BRADY TYPE PWC-PK-3.
(9)	2 EA.	EQUIPMENT GROUND BUS BAR. HOFFMAN CATALOG NUMBER X-GS6K.
(10)	1 LOT	3 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
(11)	1 LOT	6 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
(12)	1 LOT	1-1/C #6 GROUND CABLE. (NOTES 3 AND 6)
(13)	5 EA	COAX SURGE SUPPRESSOR. ATLANTIC SCIENTIFIC CATALOG NUMBER 24584.
(14)	1 LOT	#18 RG-6/U COAX CABLE.
(15)	1 EA	CONTACT CLOSURE SURGE SUPPRESSOR. ATLANTIC SCIENTIFIC CATALOG NUMBER 24528.

NOTE TO DESIGNER

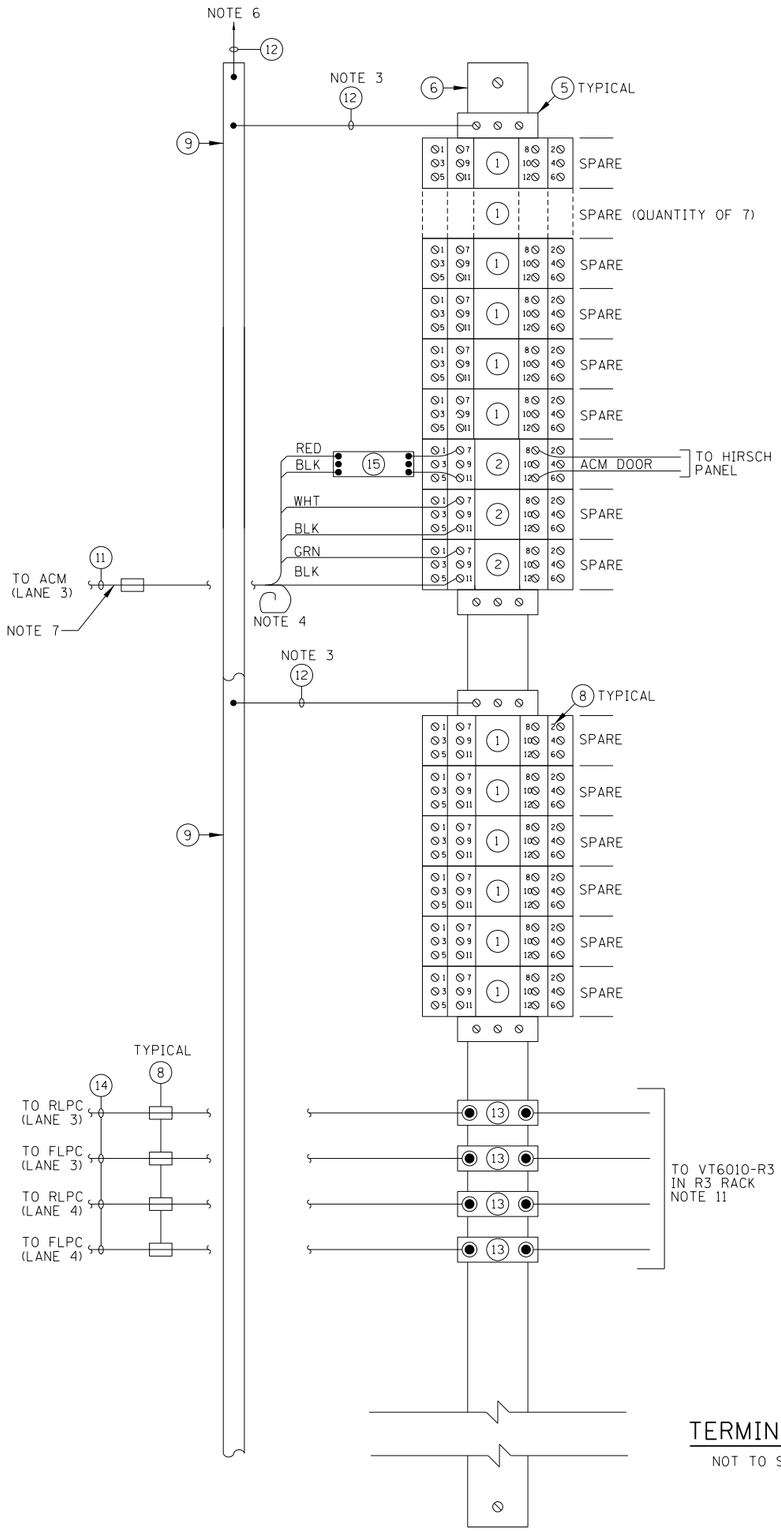
THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE 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.

M-BUS-2528

Illinois Tollway

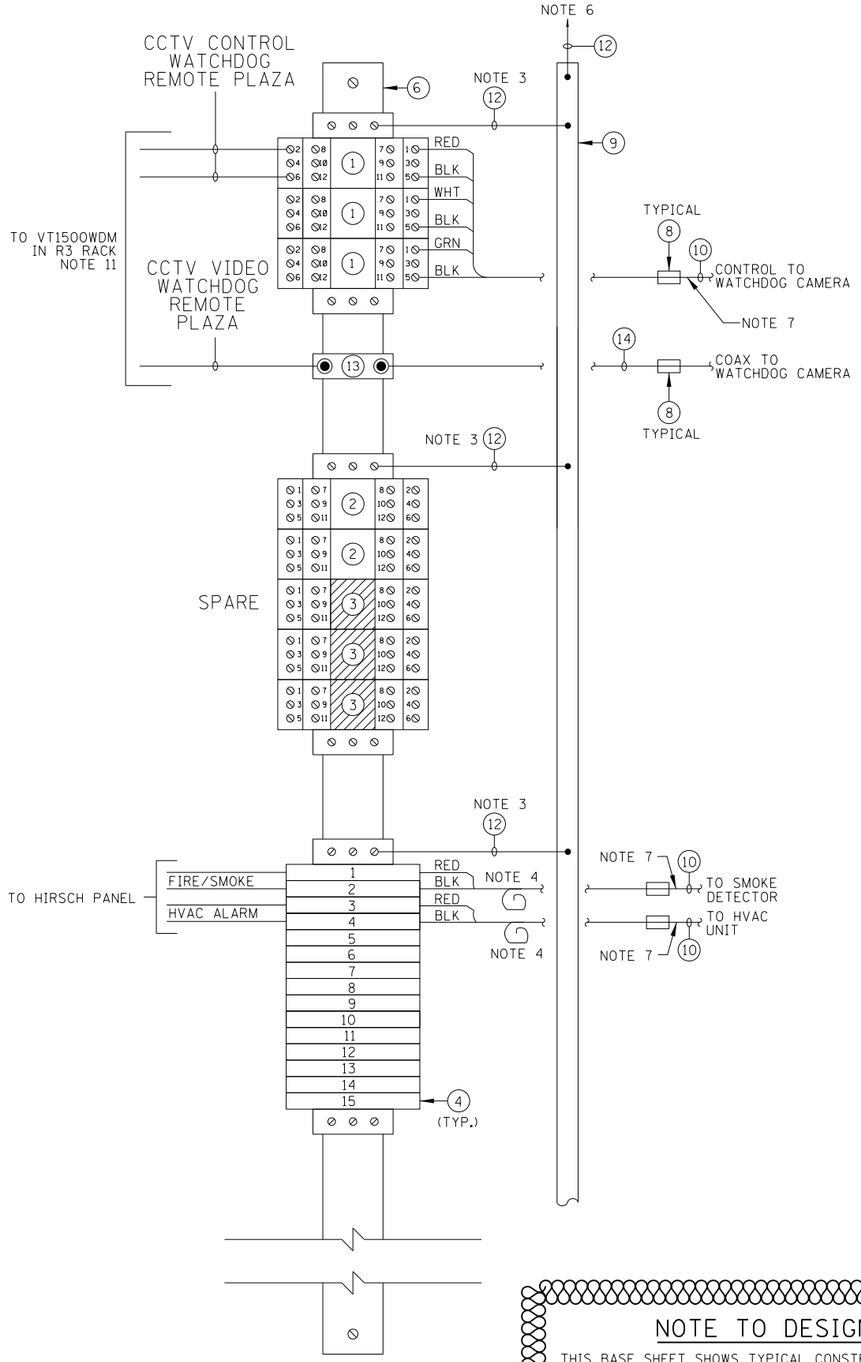
CONTROL BUILDING TSIC - ACM AND IPO LANES - MAIN PLAZA

DATE
3-31-2016



TERMINAL STRIP LAYOUT

NOT TO SCALE (SEE NOTES 1 & 2)



NOTES:

1. TERMINAL BLOCKS ARE LOCATED ON THE TERMINAL STRIP INTERCONNECT CENTER (TSIC) LOCATED IN CONTROL BUILDING SEE BASE SHEET M-BUS-2530. FOR A COMPLETE LAYOUT OF THE TSIC.
2. TERMINAL BLOCKS, TERMINAL BLOCK MARKER STRIPS, AND GROUND BUS BARS ARE SHOWN DIAGRAMMATICALLY. WIRING DUCT IS NOT SHOWN ON THIS DRAWING.
3. ROUTE #6 COPPER GROUND CABLE FROM GROUND TERMINAL BLOCK TO GROUND BUS BAR.
4. COIL SPARE PAIRS FOR FUTURE USE.
5. THE CONTRACTOR SHALL IDENTIFY EACH LANE CABLE ON AS-BUILT DRAWINGS.
6. ROUTE #6 COPPER GROUND CABLE FROM GROUND BUS BAR TO THE BUILDING'S MASTER GROUND BAR. SEE BASE SHEET M-BUS-2532 FOR LOCATION OF MASTER GROUND BAR.
7. SHIELD GROUND WIRE TIED BACK IN 3" PIGTAIL AND TERMINATED TO TSIC GROUND BUS BAR WITH A BURNDY TYPE YAEV LUG. THE COMPONENT END OF THE SHIELD GROUND WIRE IS NOT TO BE TERMINATED.
8. EACH CABLE SHALL BE IDENTIFIED WITH A CABLE MARKER.
9. FOR DATA/COMMUNICATIONS CABLE COLOR CODE CHART, SEE BASE SHEET M-BUS-2530.
10. EACH TERMINAL BLOCK WIRING TERMINAL SHALL BE IDENTIFIED WITH A TERMINAL MARKER. THE MARKERS SHALL BE NUMBERED AS DIRECTED BY THE AUTHORITY.
11. SEE BASE SHEET M-BUS-2534 FOR INFORMATION ON R3 RACK DEVICE CONNECTIONS.

EQUIPMENT LEGEND

ITEM	QUANTITY	DESCRIPTION
1	21 EA.	TERMINAL BLOCK WITH DATA SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT5-HF-12DC-ST WITH BASE ELEMENT PT2x2-BE.
2	5 EA.	TERMINAL BLOCK WITH DISCRETE SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT2x1-5DC-ST WITH BASE ELEMENT PT2x1-BE.
3	3 EA.	TERMINAL BLOCK BASE. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR BASE ELEMENT PT2x1-BE.
4	15 EA.	UNIVERSAL TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UK5N.
5	10 EA.	GROUND TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UDK-4-MTK-P/P.
6	2 EA.	MOUNTING RAIL; COPPER UNPERFORATED, 35mm x 7.5mm x 900mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
7	1 LOT	TERMINAL BLOCK MARKERS. PHOENIX CONTACT CATALOG NUMBER ZB 5.
8	1 LOT	CABLE MARKERS. BRADY TYPE PWC-PK-3.
9	2 EA.	EQUIPMENT GROUND BUS BAR. HOFFMAN CATALOG NUMBER X-GS6K.
10	1 LOT	3 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
11	1 LOT	6 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
12	1 LOT	1-1/C #6 GROUND CABLE. (NOTES 3 AND 6)
13	5 EA	COAX SURGE SUPPRESSOR. ATLANTIC SCIENTIFIC CATALOG NUMBER 24584.
14	1 LOT	#18 RG-6/U COAX CABLE.
15	1 EA	CONTACT CLOSURE SURGE SUPPRESSOR. ATLANTIC SCIENTIFIC CATALOG NUMBER 24528.

NOTE TO DESIGNER

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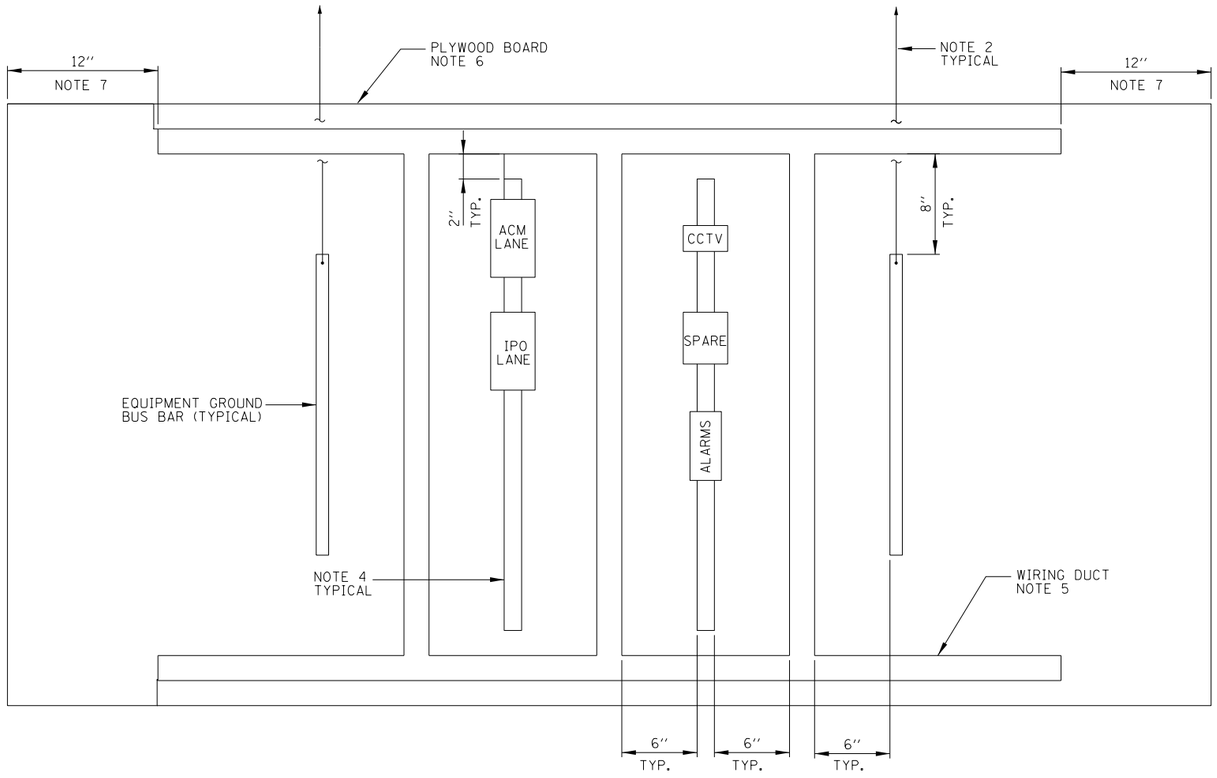
M-BUS-2529

Illinois Tollway

CONTROL BUILDING TSIC - ACM AND IPO LANES - REMOTE PLAZA

DATE
3-31-2016



TERMINAL STRIP INTERCONNECT CENTER (TSIC)

NOT TO SCALE (SEE NOTES 1 AND 3)

NOTES:

1. TERMINAL STRIP INTERCONNECT CENTERS (TSIC) ARE LOCATED IN THE CONTROL BUILDING. SEE BUILDING EQUIPMENT LAYOUT BASE SHEETS M-BUS-2531 AND M-BUS-2532 FOR THE TSIC INSTALLATION LOCATIONS.
2. ROUTE #6 COPPER GROUND CABLE FROM THE GROUND BUS BAR TO INTERNAL PERIMETER GROUND BUS CONDUCTOR.
3. ALL EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.
4. DIN RAIL MOUNTED TERMINAL BLOCKS. SEE BASE SHEET M-BUS-2528 FOR TERMINAL BLOCK DETAILS.
5. PROVIDE WIRE DUCT AS SHOWN ON THE DRAWING. WIRE DUCT SHALL BE PANDUIT PART NUMBER E2X3LG6 WITH COVER PART NUMBER C2LG6 AND CORNER STRIP PART NUMBER CSP3LG-O.
6. PROVIDE A 4'X8'X3#4'' THICK PLYWOOD BOARD FOR THE TSIC IN THE MAIN PLAZA CONTROL BUILDING AS SHOWN ON BASE SHEET M-BUS-2531 AND A 4'X6'X¾'' THICK PLYWOOD BOARD FOR THE TSIC IN THE REMOTE PLAZA CONTROL BUILDING AS SHOWN ON BASE SHEET M-BUS-2532.
7. THERE WILL BE A 12 INCH GAP BETWEEN THE EDGE OF THE WIRING DUCT AND THE EDGE OF THE PLYWOOD BOARD FOR THE MAIN PLAZA TSIC ONLY. THERE WILL BE NO SUCH GAP FOR THE REMOTE PLAZA TSIC BOARD.

3 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-1	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
3 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88777 OR MANHATTAN #M43103.	

6 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-2	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
4	BLACK PAIRED WITH BLUE
5	BLACK PAIRED WITH YELLOW
6	BLACK PAIRED WITH BROWN
6 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88778 OR MANHATTAN #M43106	

NOTE TO DESIGNER

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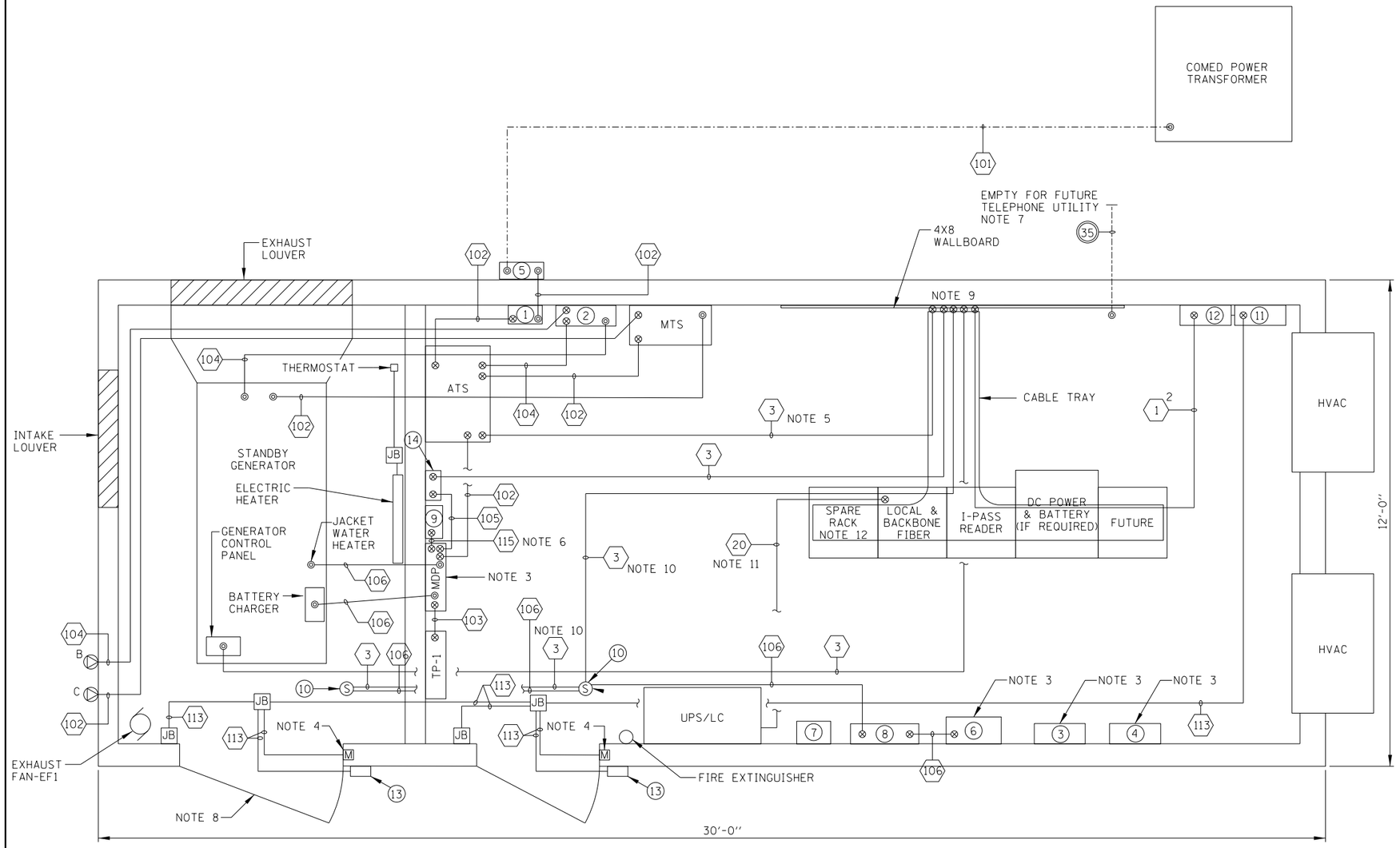
M-BUS-2530

Illinois Tollway

TSIC TERMINAL BLOCK
LAYOUT - ACM AND IPO LANES

DATE
3-31-2016



MAIN PLAZA CONTROL BUILDING POWER PLAN

NOT TO SCALE

NOTE TO DESIGNER

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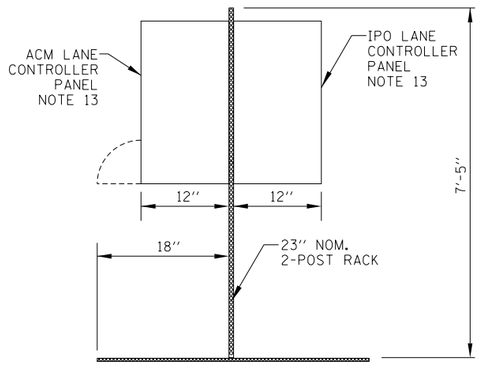


ACM AND IPO LANE CONTROLLER PANEL RACK MOUNTING DETAIL (SIDE VIEW)

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. SEE BASE SHEET M-BUS-2502 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
3. SEE BASE SHEET M-BUS-2508 FOR WALL ELEVATION.
4. DOOR ALARM SWITCH, SEE DETAIL 2 ON BASE SHEET M-BUS-2508.
5. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR ATS ALARMS AND ROUTE TO WALLBOARD.
6. THE SPD AND LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED TO A CIRCUIT BREAKER LOCATED IN THE MDP.
7. THE CONDUIT SHALL BE STUBBED OUT 5 FEET FROM THE BUILDING FOUNDATION.
8. THE DOORWAY FOR THE GENERATOR ROOM SHALL BE WIDE ENOUGH TO ALLOW FOR THE INSTALLATION AND REMOVAL OF THE GENSET.
9. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD. SEE BASE SHEET M-BUS-2530 FOR DETAILS.
10. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO WALL BOARD.
11. PROVIDE AN ETHERNET CONNECTION FROM UPS TO CISCO SWITCH.
12. THE SPARE RACK IS A 2-POST 23" NOM. RACK. SEE ACM AND IPO LANE CONTROLLER CABINET RACK MOUNTING DETAIL (SIDE VIEW) FOR MOUNTING DETAILS. BOTH CABINETS ARE MOUNTED ON THE 2-POST RACK BACK-TO-BACK.
13. BOTH ACM AND IPO LANE CONTROLLER PANELS SHALL BE DIRECTLY MOUNTED ON THE RACK. CONTRACTOR SHALL COORDINATE EXACT LOCATION WITH THE ENGINEER.

LEGEND:

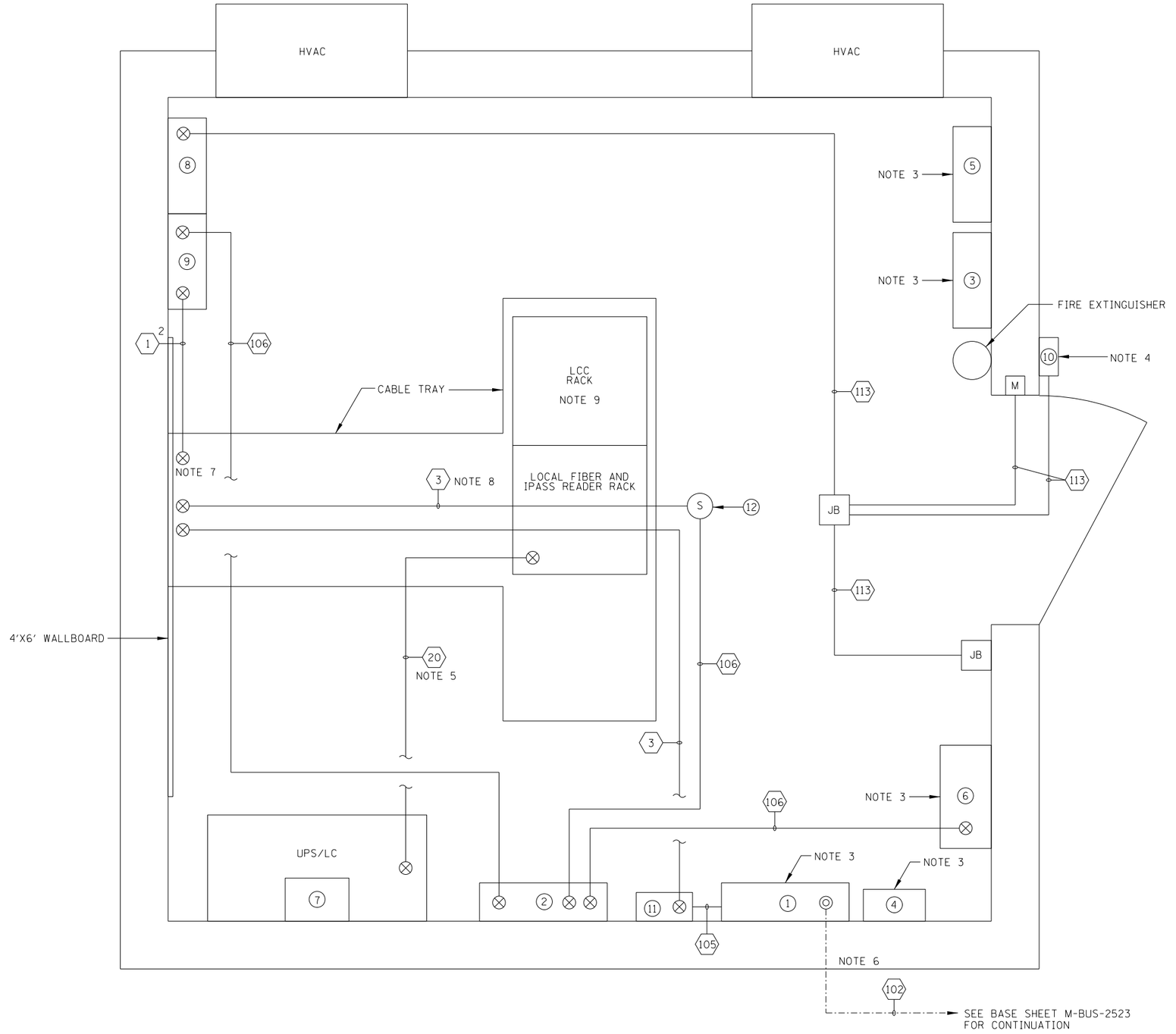
(1) MAIN SERVICE DISCONNECT
(2) GENERATOR CONTROL SWITCH
(3) LIGHTING CONTRACTOR & TRANSFORMER
(4) FLASHING BEACON CONTROLLER
(5) UTILITY METER
(6) VIDEO POWER JUNCTION BOX
(7) BYPASS SWITCH
(8) UPS-1
(9) SPD AND LIGHTNING PROTECTION SYSTEM
(10) SMOKE DETECTOR PANEL
(11) CARD READER PANEL
(12) HIRSCH PANEL
(13) CARD READER
(14) HVAC CONTROL PANEL

M-BUS-2531

Illinois Tollway

CONTROL BUILDING EQUIPMENT LAYOUT - ACM AND IPO LANES - MAIN PLAZA

DATE
3-31-2016



REMOTE PLAZA CONTROL BUILDING POWER PLAN

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. SEE BASE SHEET M-BUS-2502 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
3. SEE BASE SHEET M-BUS-2508 FOR WALL ELEVATION.
4. DOOR ALARM SWITCH, SEE DETAIL 2 ON BASE SHEET M-BUS-2508.
5. PROVIDE AN ETHERNET CONNECTION FROM UPS TO CISCO SWITCH.
6. THE LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED AS RECOMMENDED BY THE MANUFACTURER.
7. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD. SEE BASE SHEET M-BUS-2530 FOR DETAILS.
8. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO WALL BOARD.
9. THE LCC RACK IS A 23'' NOM. 2-POST RACK. THE IPO AND ACM LANE CONTROLLER CABINETS ARE MOUNTED BACK-TO-BACK AS SHOWN ON BASE SHEET M-BUS-2531.

LEGEND:

(1) TP-2
(2) UPS-2
(3) LIGHTING CONTACTOR & TRANSFORMER
(4) SPD AND LIGHTNING PROTECTION SYSTEM
(5) FLASHING BEACON CONTROLLER
(6) VIDEO POWER JUNCTION BOX
(7) BYPASS SWITCH
(8) CARD READER PANEL
(9) HIRSCH PANEL
(10) CARD READER
(11) HVAC CONTROL PANEL
(12) SMOKE DETECTOR

NOTE TO DESIGNER

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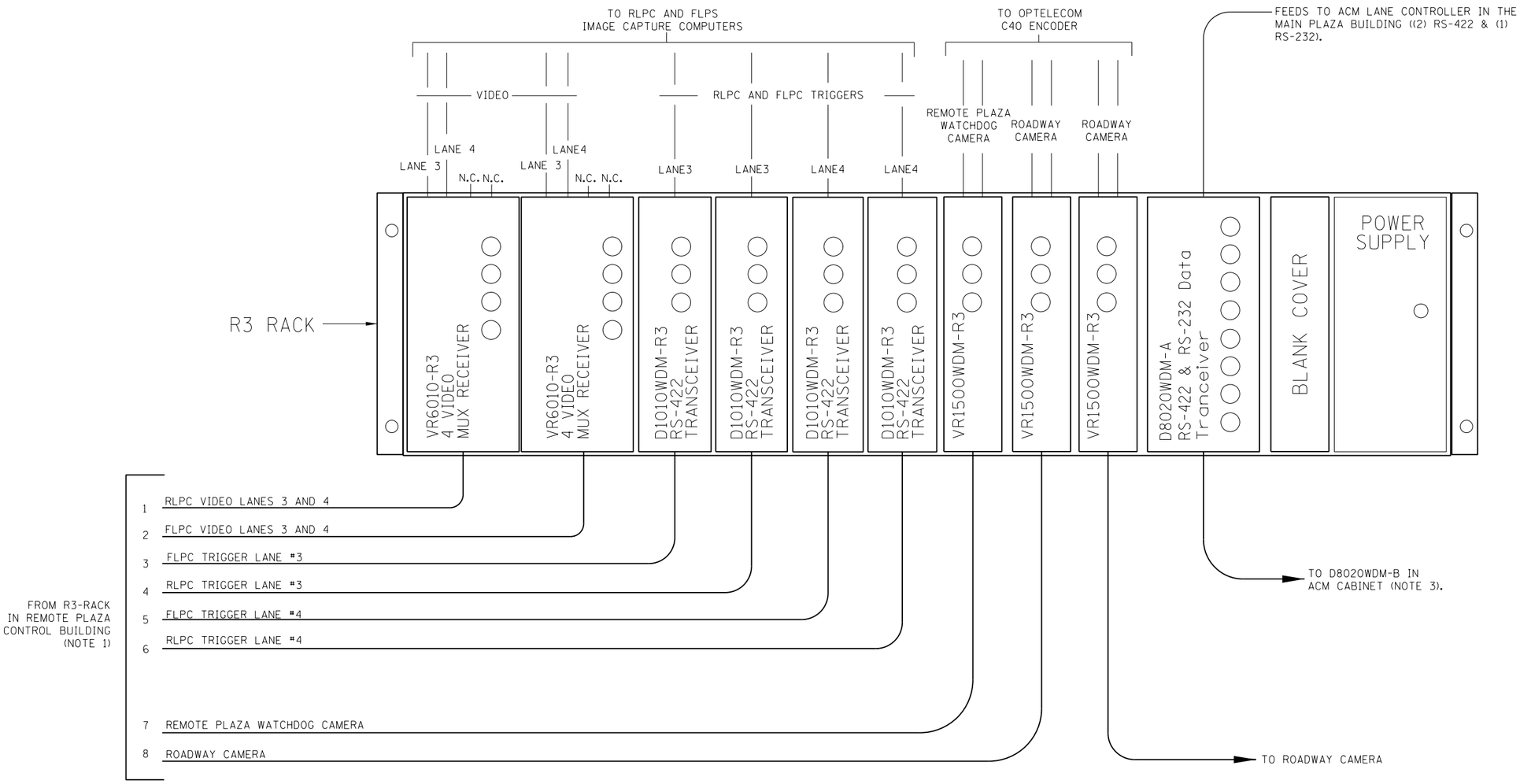
M-BUS-2532

Illinois Tollway

CONTROL BUILDING EQUIPMENT LAYOUT - ACM AND IPO LANES - REMOTE PLAZA

DATE
3-31-2016



NOTES:

1. PARTIAL 36 STRAND MULTI-MODE FIBER OPTIC CABLE BETWEEN MAIN PLAZA AND REMOTE PLAZA.
2. ALL CABLES FROM THE LANES ARE LANDED ON SURGE PROTECTION TERMINAL BLOCKS LOCATED ON THE TSIC BOARD AND THEN ROUTED FROM THE TSIC BOARD TO THE APPROPRIATE FIBER OPTIC DEVICE.
3. IF REQUIRED, A 6 STRAND MULTI-MODE CABLE IS ROUTED BETWEEN THE ACM LANE CONTROLLER IN THE MAIN PLAZA BUILDING AND THE ACM.
4. (1) 8020 DATA MODULE REQUIRED TO ACCEPT (2) RS-422 AND (1) RS-232 FEEDS FROM ACM LANE CONTROLLER EQUIPMENT. MAY INCLUDE (1) RS-422 FEED IF LASER DELINEATOR IS USED AT THE SITE (NOTE 4).

NOTE TO DESIGNER

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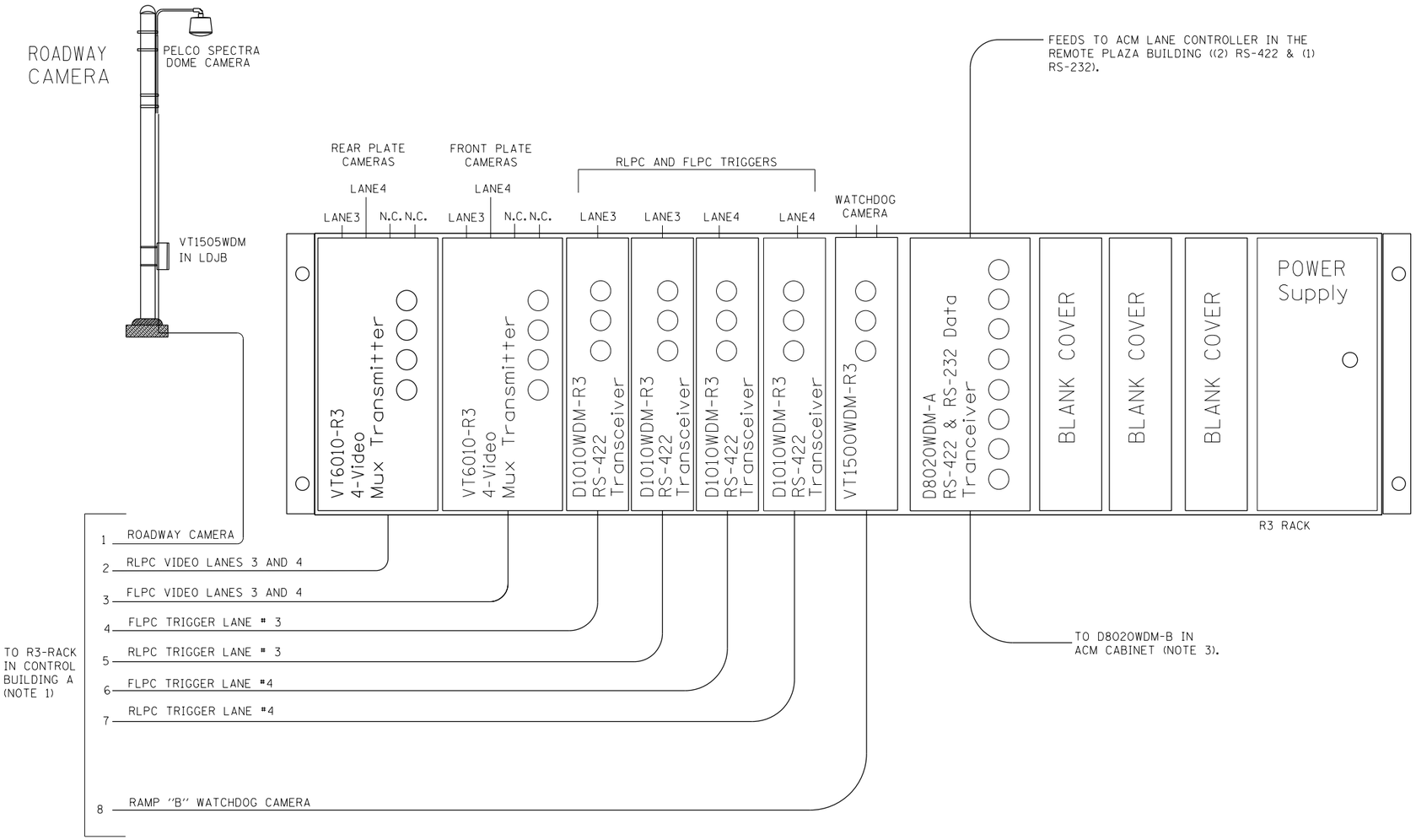
DESIGNER TO VERIFY IF THE EXISTING R3 RACK HAS SUFFICIENT SPACE TO ACCOMODATE THE D8020WDM MODULE.

M-BUS-2533

Illinois Tollway

CONTROL BUILDING R3 RACK - MAIN PLAZA

DATE
3-31-2016



NOTES:

1. PARTIAL 36 STRAND MULTI-MODE FIBEROPTIC CABLE BETWEEN MAIN PLAZA AND REMOTE PLAZA.
2. ALL CABLES FROM THE LANES ARE LANDED ON SURGE PROTECTION TERMINAL BLOCKS LOCATED ON THE TSIC BOARD AND THEN ROUTED FROM THE TSIC BOARD TO THE APPROPRIATE FIBER OPTIC DEVICE.
3. IF REQUIRED, A 6 STRAND MULTI-MODE CABLE IS ROUTED BETWEEN THE ACM LANE CONTROLLER IN THE REMOTE PLAZA BUILDING AND THE ACM.
4. (1) 8020 DATA MODULE REQUIRED TO ACCEPT (2) RS-422 AND (1) RS-232 FEEDS FROM ACM LANE CONTROLLER EQUIPMENT. MAY INCLUDE (1) RS-422 FEED IF LASER DELINEATOR IS USED AT THE SITE (NOTE 4).

NOTE TO DESIGNER

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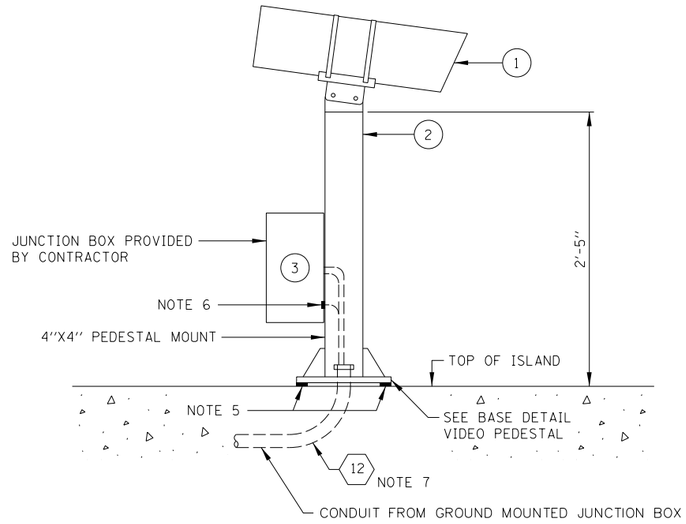
DESIGNER TO VERIFY IF THE EXISTING R3 RACK HAS SUFFICIENT SPACE TO ACCOMODATE THE D8020WDM MODULE.

M-BUS-2534

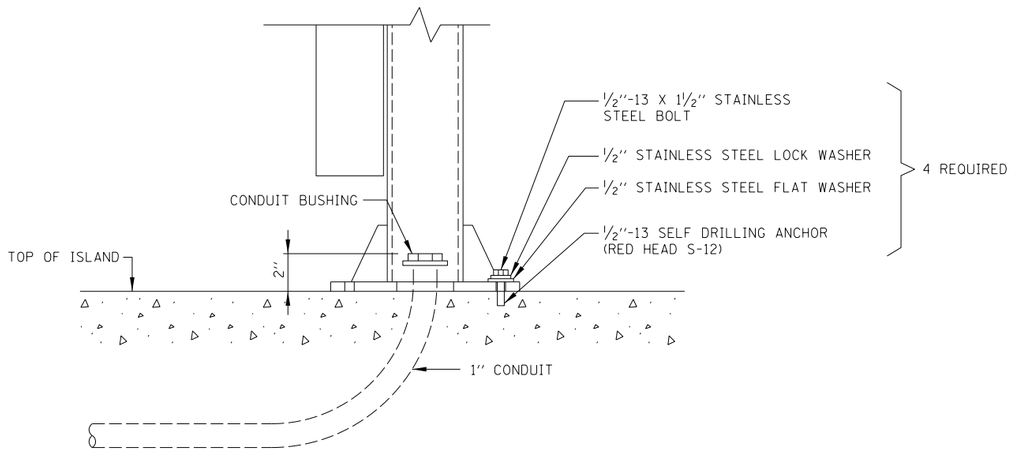
Illinois Tollway

CONTROL BUILDING R3 RACK - REMOTE PLAZA

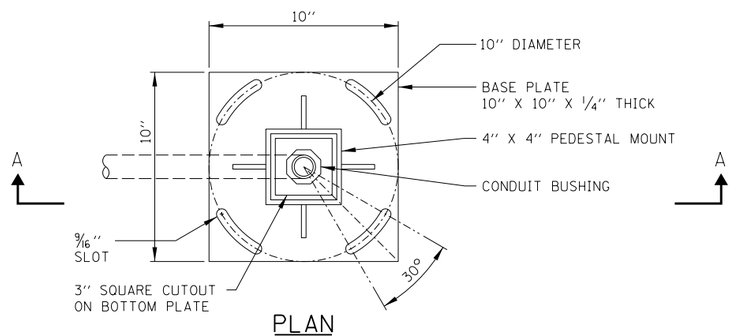
DATE 3-31-2016



REAR VIOLATION CAMERA PEDESTAL DETAIL



SECTION A-A



PLAN

VIDEO PEDESTAL BASE DETAIL

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND ADDITIONAL NOTES.
2. SEE BASE SHEET M-BUS-2526 FOR TOLL EQUIPMENT WIRING DIAGRAM.
3. VIOLATION PEDESTAL, AND JUNCTION BOX SHALL BE FURNISHED BY THE CONTRACTOR.
4. VIOLATION CAMERAS SHALL BE FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.
5. USE GALVANIZED STEEL SHIMS UNDER THE BASE PLATE TO PLUMB THE CAMERA PEDESTAL.
6. THE GROUND WIRE MUST BE EXOTHERMICALLY WELDED TO THE CAMERA PEDESTAL AS DIRECTED BY THE ILLINOIS TOLLWAY.
7. COIL 3' OF EACH CABLE IN JUNCTION BOX FOR TERMINATION BY THE ILLINOIS TOLLWAY.

EQUIPMENT LEGEND

ITEM	DESCRIPTION
1	CAMERA FURNISHED AND INSTALLED BY THE ILLINOIS TOLLWAY.
2	PEDESTAL SHALL BE BY EMI. MODEL BRHM-29CP+.
3	JUNCTION BOX WITH MOUNTING PANEL, 12"X10"X6".

NOTE TO DESIGNER

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M-BUS-2535

Illinois Tollway

MISCELLANEOUS DETAILS - ACM AND IPO LANES

DATE
3-31-2016

PANELBOARD TP-1
VOLTAGE 208Y/120V.
PHASE/WIRE 3/4

MAINS 100A. MCB
BUS RATING 100A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS) A	B	C	AMPS/ POLES	CKT BKR		CKT BKR	AMPS/ POLES	LOAD (WATTS) A	B	C	CKT NO.	DESCRIPTION
SPARE	1				20/1				20/1				2	SPARE
SPARE	3				20/1				20/1	270			4	LANE CONTROL SIGNALS
SPARE	5				20/1				20/1			1140	6	LANE 2 TOLL EQUIPMENT (ACM)
LANE 1 RLPC/HEATER	7			580	20/1				20/1				8	SPARE
UPS-1 (3000VA)	9		2100		30/1				30/1		2480		10	LINE CONDITIONER (3.1 KVA) LC-1
ROADWAY CAMERA	11			100	20/1				20/1			580	12	LANE 2 RLPC HEATER
ROADWAY LIGHTING TRANSFORMER	13	2000			20/1				20/1	1140			14	FUTURE LANE TOLL EQUIPMENT
LIGHTING CONTACTOR (CONTROL)	15			200	20/1				20/1	580			16	FUTURE LANE RLPC HEATER
SPARE	17				20/1				30/1				18	SPARE
RACK MOUNTED DC POWER SYSTEM (IF REQUIRED)	19		1530		30/2				20/1				20	SPARE
	21			1530					20/1				22	SPARE
SPARE	23				20/1				20/1				24	SPARE
BARRIER WARNING LIGHTS	25	232			20/1				20/1				26	SPARE
SPACE	27												28	SPACE
SPACE	29												30	SPACE
SUBTOTAL "A"		2232								1990				
SUBTOTAL "B"			3630								2480			
SUBTOTAL "C"				2410								1720		
TOTAL WATTS "A,B,C"		= 14462W		= 14.5KW		= 18.2KVA								

PANELBOARD TP-2
VOLTAGE 208Y/120V.
PHASE/WIRE 3/4

MAINS 100A. MCB
BUS RATING 100A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS) A	B	C	AMPS/ POLES	CKT BKR		CKT BKR	AMPS/ POLES	LOAD (WATTS) A	B	C	CKT NO.	DESCRIPTION
SPD PANEL	1	—			30/3				30/2	1885			2	HVAC UNIT 1
	3		—								1885		4	
	5			—					20/1	1140			6	LANE 3 TOLL EQUIPMENT (ACM)
BATTERY LIGHT ✳	7		150		20/1				20/1			580	8	LANE 3 RLPC HEATER
ROADWAY CAMERA	9		100		20/1				20/1	270			10	LANE CONTROL SIGNALS
UPS-2 (3000VA)	11			2100	30/1				30/1			2480	12	LINE CONDITIONER (3.1 KVA) LC-1
ROADWAY LIGHTING TRANSFORMER	13	2000			20/1				20/1	580			14	FUTURE LANE RLPC HEATER
LIGHTING CONTACTOR (CONTROL)	15		200		20/1				20/1		1140		16	FUTURE LANE TOLL EQUIPMENT
SWITCHED INTERIOR LIGHTS	17		320		20/1				20/1	200			18	OUTDOOR RECEPTACLE
LANE 4 RLPC/HEATER	19		580		20/1				20/1	600			20	INTERIOR RECEPTACLES
SPARE	21				20/1				30/2		1885		22	HVAC UNIT 2
BARRIER WARNING LIGHTS	23		232		20/1							1885	24	
OUTDOOR LIGHT	25		100		20/1				20/1				26	SPARE
SPARE	27				20/1				20/1				28	SPARE
SPARE	29				20/1				20/1				30	SPARE
SUBTOTAL "A"		2000								4675				
SUBTOTAL "B"			1682								4910			
SUBTOTAL "C"				2100								4945		
TOTAL WATTS "A,B,C"		= 20312W		= 20.4KW		= 25.6KVA								

✳ PROVIDE WITH HANDLE LOCKING DEVICE

NOTE:

1. PANELBOARD CIRCUITING SHOWN IS FOR A TWO LANE RAMP PLAZA.

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.

M-BUS-2536

Illinois Tollway

PANELBOARD SCHEDULES FOR TP1 AND TP2 - ACM AND IPO LANES

DATE
3-31-2016

PANELBOARD MDP
VOLTAGE 208Y/120V.
PHASE/WIRE 3/4

MAINS 200A. MCB
BUS RATING 200A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS) A	B	C	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS) A	B	C	CKT NO.	DESCRIPTION
PANEL TP-1	1	5482			100/3			100/3	6475			2	PANEL TP-2
	3		7160							6620		4	
	5			2960							8357	6	
BATTERY LIGHT **	7	300			20/1			30/2	2000			8	HVAC UNIT 1
SWITCHED INTERIOR LIGHTS	9		480		20/1					2000		10	
OUTDOOR LIGHTS	11			300	20/1			30/2			2000	12	HVAC UNIT 2
SPARE	13				20/1				2000			14	
GEN. BATTERY CHARGER	15		160		20/1			20/1				16	SPARE
GEN. JACKET WATER HTR.	17			1500	20/1			20/1			200	18	OUTDOOR RECEPTACLES
OUTDOOR RECEPTACLE	19	200			20/1			20/1	400			20	INTERIOR RECEPTACLES
OUTDOOR RECEPTACLE	21		200		20/1			20/1		400		22	INTERIOR RECEPTACLES
GEN. RM. RECEPTACLES	23			600	20/1			20/1			400	24	INTERIOR RECEPTACLES
SPD PANEL	25	—			30/3			20/1	160			26	INTERIOR LIGHTS GEN. RM.
	27		—					20/1				28	SPARE
	29			—				20/1				30	SPARE
SUBTOTAL "A"		5982							11035				
SUBTOTAL "B"			8000							9020			
SUBTOTAL "C"				5360							10957		
TOTAL WATTS "A,B,C"		= 50354W			= 50.4KW			= 63.0KVA					

** PROVIDE WITH HANDLE LOCKING DEVICE.

NOTES:

1. PANELBOARD CIRCUITING SHOWN IS FOR A TWO LANE RAMP PLAZA.
2. IPO LANES HAVE (1) FLPC AND (1) RLPC. THE FLPC IS CONNECTED TO (1) UPS POWER FEED. RLPC IS CONNECTED TO (1) UPS POWER FEED AND (1) NORMAL POWER FEED.
3. ACM LANES HAVE (1) RLPC ONLY. DESIGNER TO VERIFY IF FLPC IS REQUIRED.

PANELBOARD UPS-1
VOLTAGE 120V.
PHASE/WIRE 1/2

MAINS 30A. 1P. MCB
BUS RATING 30A.
MOUNTING SURFACE

NOTE 1

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
LANE 2 TOLL EQUIPMENT (ACM)	1	200	15/1			15/1	100	2	LANE 1 RLPC
LANE 2 TOLL EQUIPMENT (LCC)	3	200	15/1			15/1	100	4	LANE 2 RLPC
LANE TOLL EQUIPMENT/LCC	5	200	15/1			15/1	100	6	FUTURE LANE RLPC
LANE 1 FLPC	7	100	15/1			15/1	200	8	I-PASS RACK RECEPTACLE
RACK RECEPTACLE	9	200	15/1			15/1	200	10	I-PASS RACK RECEPTACLE
RACK RECEPTACLE	11	200	15/1			15/1	200	12	RACK RECEPTACLE
VIDEO POWER JUNCTION BOX	13	200	15/1			15/1	200	14	TSIC EQPT. BOARD
SMOKE DETECTORS	15	50	15/1			15/1	200	16	TSIC EQPT. BOARD
SPARE	17	200	15/1			15/1	100	18	HIRSCH PANEL
SUBTOTAL		1550					1400		
TOTAL WATTS		= 2950W	= 3KW	= 3.8KVA					

PANELBOARD UPS-2
VOLTAGE 120V.
PHASE/WIRE 1/2

MAINS 30A. 1P. MCB
BUS RATING 30A.
MOUNTING SURFACE

NOTE 1

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
LANE 4 TOLL EQUIPMENT (LCC)	1	200	15/1			15/1	100	2	LANE 4 RLPC
LANE 3 TOLL EQUIPMENT (ACM)	3	200	15/1			15/1	100	4	LANE 3 RLPC
LANE 3 TOLL EQUIPMENT (LCC)	5	200	15/1			15/1	100	6	FUTURE LANE RLPC
LANE 4 (IPO) FLPC	7	100	15/1			15/1	200	8	I-PASS RACK RECEPTACLE
FUTURE LANE TOLL EQUIPMENT/LCC	9	200	15/1			15/1	200	10	I-PASS RACK RECEPTACLE
VIDEO POWER JUNCTION BOX	11	200	15/1			15/1	200	12	RACK RECEPTACLE
SMOKE DETECTOR	13	50	15/1			15/1	200	14	TSIC EQPT. BOARD
SPARE	15	200	15/1			15/1	200	16	TSIC EQPT. BOARD
SPARE	17	-	15/1			15/1	100	18	HIRSCH PANEL
SUBTOTAL		1350					1400		
TOTAL WATTS		= 2750W	= 2.8KW	= 3.5KVA					

NOTE TO DESIGNER

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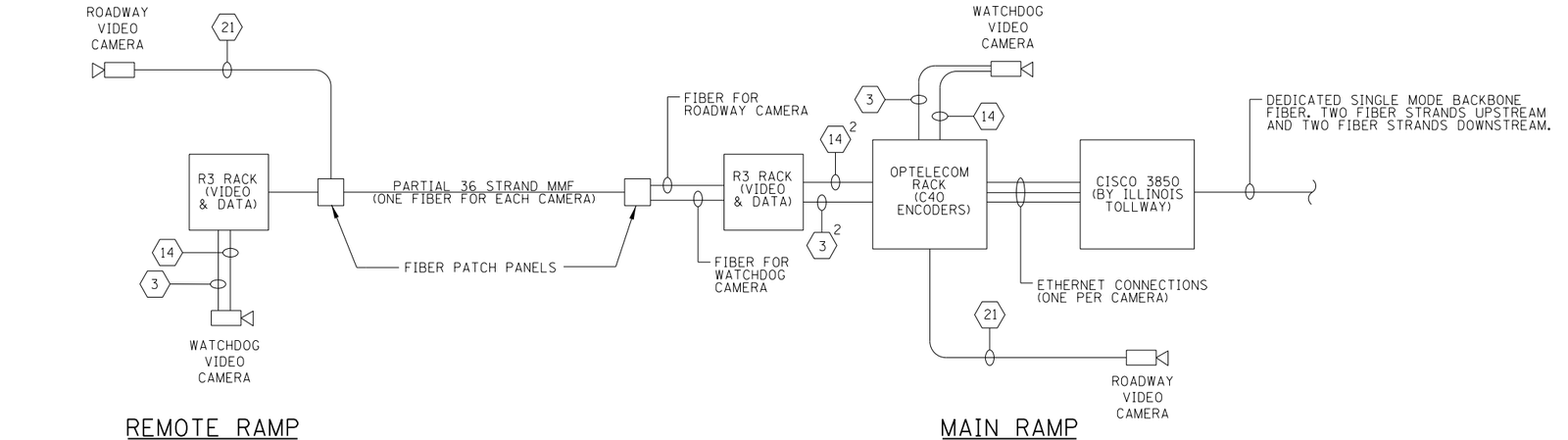
M-BUS-2537

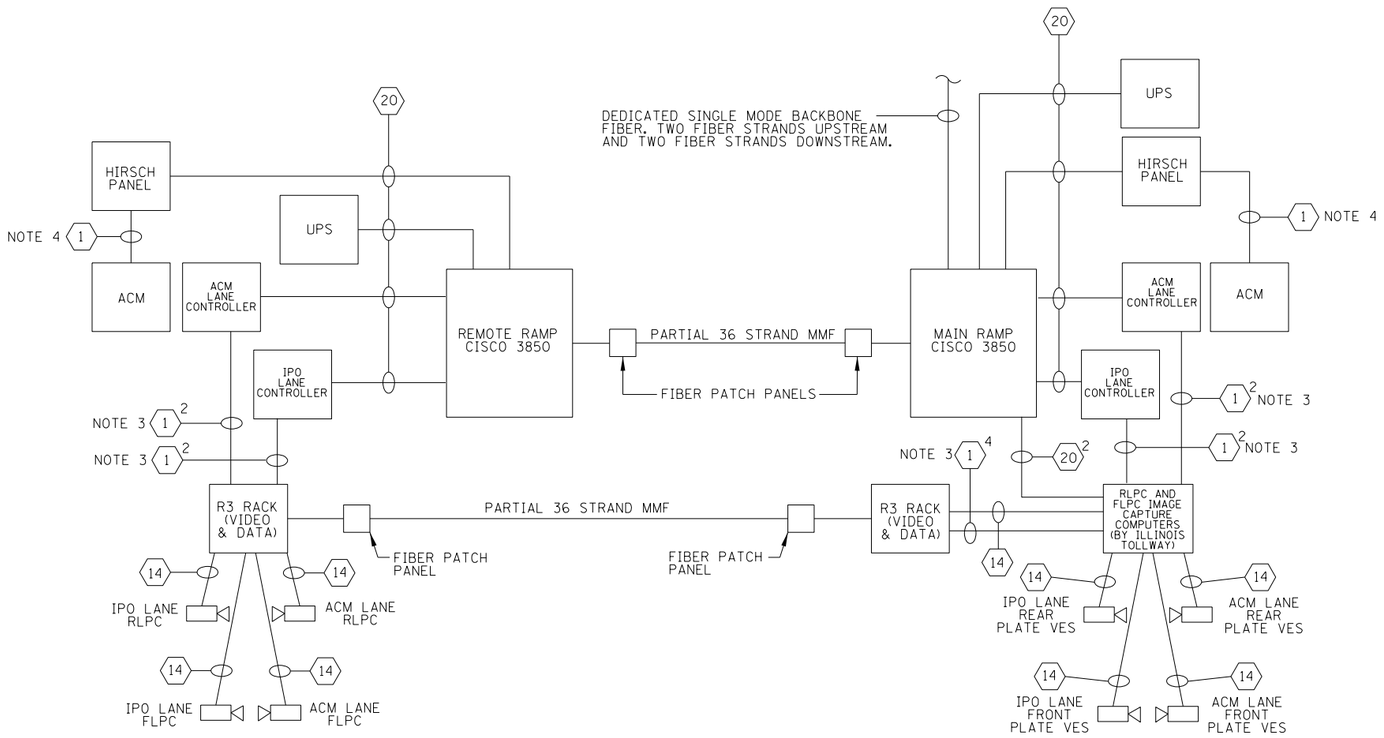
Illinois Tollway

PANELBOARD SCHEDULES
FOR MDP AND UPS
UNITS - ACM AND IPO LANES

DATE
3-31-2016



RAMP PLAZA CCTV



MMF CONNECTIVITY BETWEEN MAIN PLAZA AND B

NOTES:

1. EQUIPMENT SHOWN ON THIS DRAWING MUST BE COORDINATED WITH THE ILLINOIS TOLLWAY IT DEPARTMENT.
2. ALL CABLING AND CONNECTORS REQUIRED SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
3. EACH VES CAMERA HAS AN ASSOCIATED TRIGGER INTERFACE THAT (INITIATES FROM THE LANE CONTROLLER) TO THE ELPAC.
4. EACH ACM LANE CONTROLLER HAS ALARM CONTACTS THAT ARE WIRED TO THE HIRSCH PANEL.
5. ALL FIBER OPTIC PATCH CORDS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
6. ALL FIBER OPTIC SFP'S REQUIRED FOR TERMINATING FIBER OPTIC CABLES AT CISCO SWITCHES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
7. DATA CABLES ROUTED FROM THE LANES TO THE TSIC SHALL BE LANDED ON SPD PROTECTION TERMINAL BLOCKS.
8. PROVIDE IN-LINE SPD PROTECTION ADAPTERS FOR ALL RS-422, COAXIAL AND CATEGORY 5E CABLES ENTERING THE BUILDING INCLUDING ALL CONNECTIONS TO THE CISCO SWITCH, EPAC, IPASS EQUIPMENT AND R3 RACK.

NOTE TO DESIGNER

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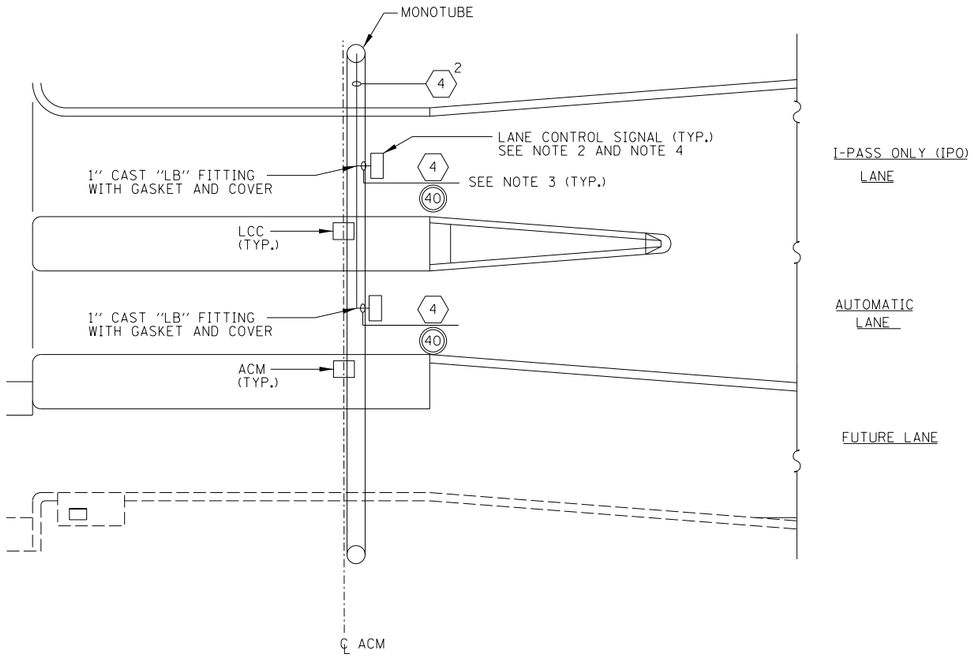
M-BUS-2538

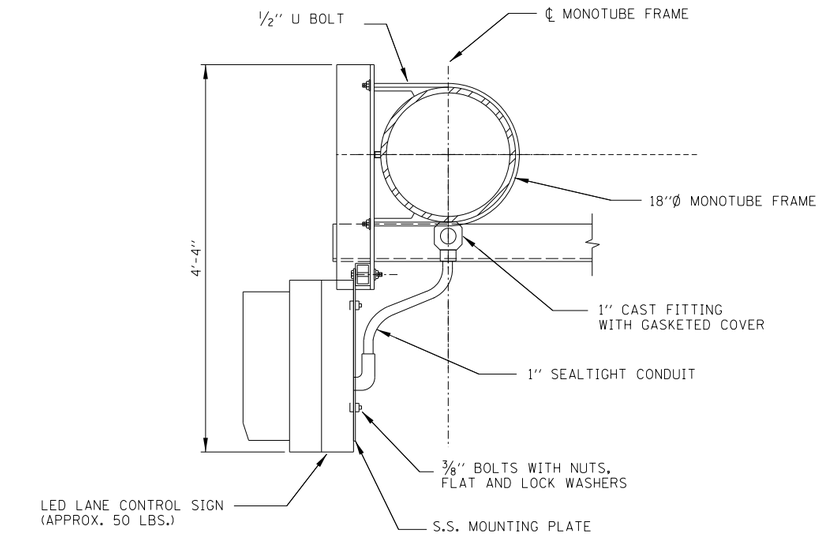
Illinois Tollway

FIBER INTERCONNECTIONS BETWEEN MAIN AND REMOTE PLAZAS - ACM AND IPO LANES

DATE
3-31-2016



CONDUIT AND WIRE DIAGRAM FOR LANE CONTROL SIGNALS



LANE CONTROL SIGNAL MOUNTING DETAIL

(LED LANE CONTROL)

NOTE TO DESIGNER

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NOTES:

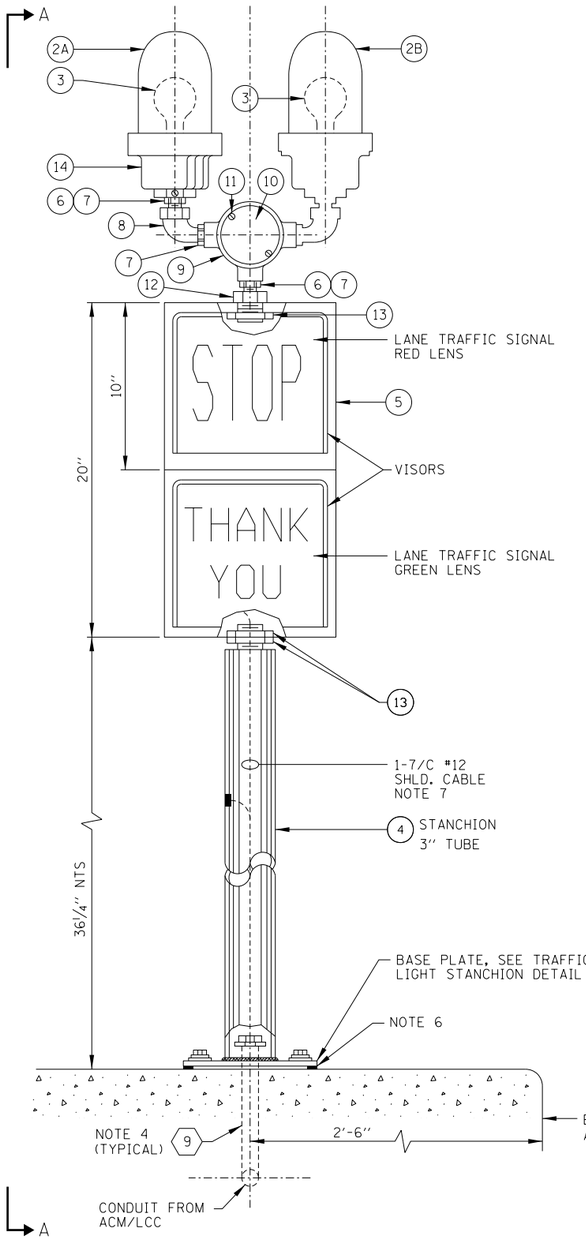
1. SEE BASE SHEET M-BUS-2500 FOR CABLE CONDUIT SCHEDULES.
2. SEE ''LANE CONTROL SIGNAL MOUNTING DETAIL'' FOR LANE CONTROL SIGNAL INSTALLATION.
3. THE LANE CONTROL SIGNAL WIRES SHALL BE ROUTED VERTICALLY INSIDE THE SIGNING FRAME TO THE HORIZONTAL MEMBER. DRILL AND TAP A HOLE IN THE SIGNING FRAME AND INSTALL A 1'' THREADED WATERTIGHT FITTING. CONDUIT AND FITTINGS SHALL BE INSTALLED AS SHOWN ON PLANS.
4. LED CONTROL SIGNAL WITH RED ''X'' AND GREEN DOWN ARROW BY NATIONAL SIGN AND SIGNAL COMPANY, MODEL #18LEDLC21-8.
5. ALL CONDUITS AND FITTINGS MUST BE PAINTED TO MATCH THE SIGNING FRAME AS DIRECTED BY THE ILLINOIS TOLLWAY.

M-BUS-2539

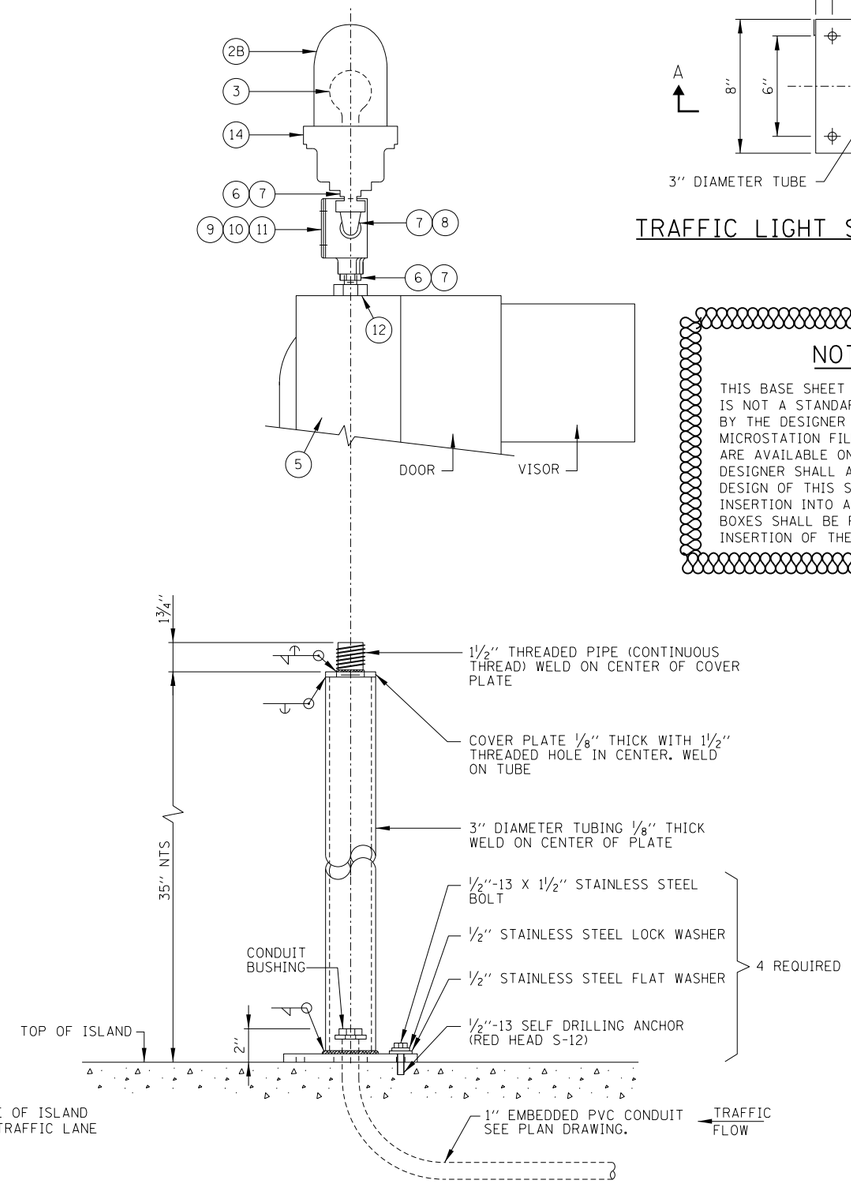
Illinois Tollway

PLAZA LANE
CONTROL SIGNAL -
ACM AND IPO LANES

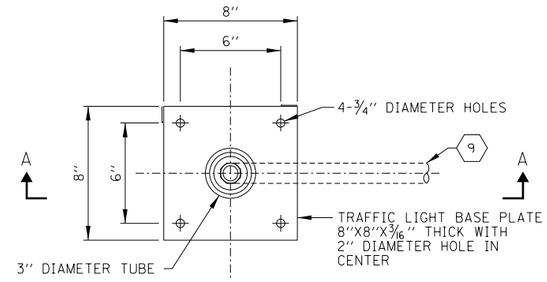
DATE
3-31-2016



TRAFFIC LIGHT



SECTION A-A



TRAFFIC LIGHT STANCHION DETAIL

NOTE TO DESIGNER

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NOTES:

1. TRAFFIC LIGHT ASSEMBLY PROVIDED AND INSTALLED BY THE CONTRACTOR.
2. GLOBE TO BE AMBER FOR LOW I-PASS ACCOUNT AND BLUE FOR VALID I-PASS TRANSACTION.
3. MATERIAL FOR STANCHION AND BASE PLATE TO BE STEEL. FINISH SHALL BE HIGH GLOSS BLACK ENAMEL OVER RUST INHIBITIVE PRIMER.
4. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND ADDITIONAL NOTES.
5. SEE BASE SHEET M-BUS-2526 FOR TOLL EQUIPMENT WIRING DIAGRAMS.
6. USE GALVANIZED STEEL SHIMS UNDER THE BASE PLATE TO PLUMB THE TRAFFIC LIGHT.
7. THE GROUND WIRE MUST BE EXOTHERMICALLY WELDED TO THE STANCHION TUBE AS DIRECTED BY THE ILLINOIS TOLLWAY.

EQUIPMENT LEGEND

ITEM	DESCRIPTION
1	NOT USED
2A	AMBER GLOBE, BY THE ILLINOIS TOLLWAY (NOTE 2).
2B	BLUE GLOBE, BY THE ILLINOIS TOLLWAY (NOTE 2).
3	69 WATT CLEAR LAMP OR LED EQUIVALENT, BY THE ILLINOIS TOLLWAY.
4	STANCHION, 3" TUBE.
5	LANE TRAFFIC LIGHT, EAGLE SIGNAL CATALOG NO. SA320X2211YBB, NO SUBSTITUTE. AVAILABLE FROM BROWN TRAFFIC PRODUCTS, INC.
6	CLOSE UP NIPPLE, ¾"X1½".
7	LOCKNUT ¾". CATALOG NO. BL75.
8	90° MALE TO FEMALE SHORT BUSHED ELBOW (MALLEABLE IRON) ¾". CATALOG NO. LMF90-75.
9	'T' OUTLET BOX, ¾" HUBS. CATALOG NO. SEHT-75.
10	COVER (CAST MALLEABLE IRON) FURNISHED WITH SCREWS. CATALOG NO. SEHK-BC.
11	GASKET (FIBER COMPOSITION). CATALOG NO. SEH-GK.
12	HEX REDUCING BUSHING, 1½"-¾". O-Z/GEDNEY CATALOG NO. 329R.
13	LOCKNUT 1½". CATALOG NO. BL150.
14	PENDANT HOOD FIXTURE WITH PORCELAIN SOCKET, BRASS SCREW SHELL. CATALOG NO. REA-1075.

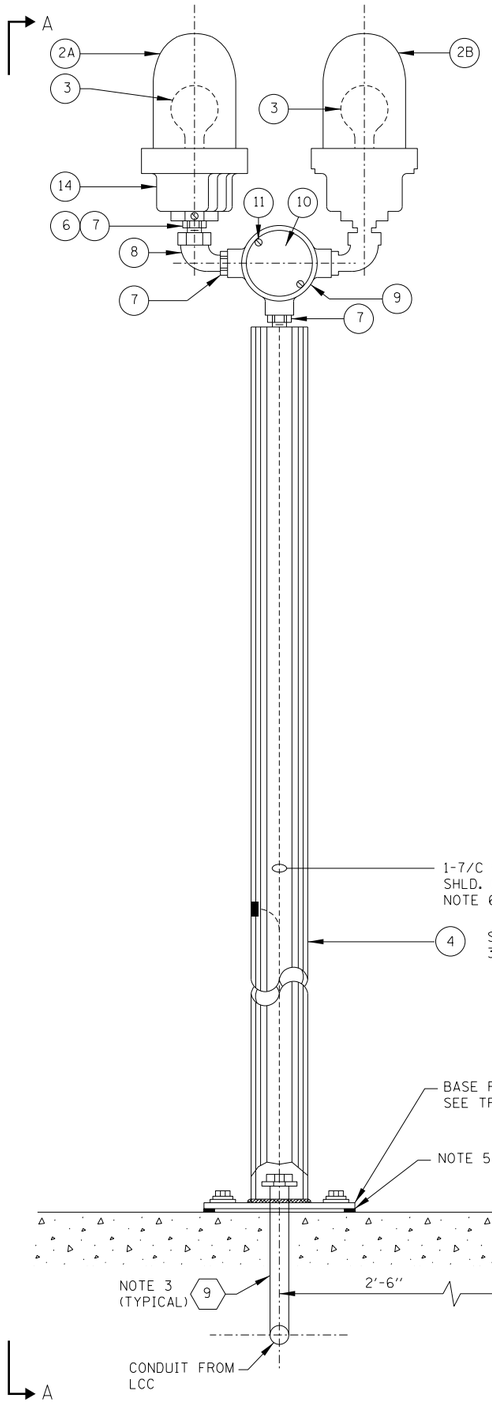
NOTE - ALL THE ABOVE CATALOG NUMBERS ARE APPLETON ELECTRIC COMPANY UNLESS OTHERWISE NOTED.

M-BUS-2540

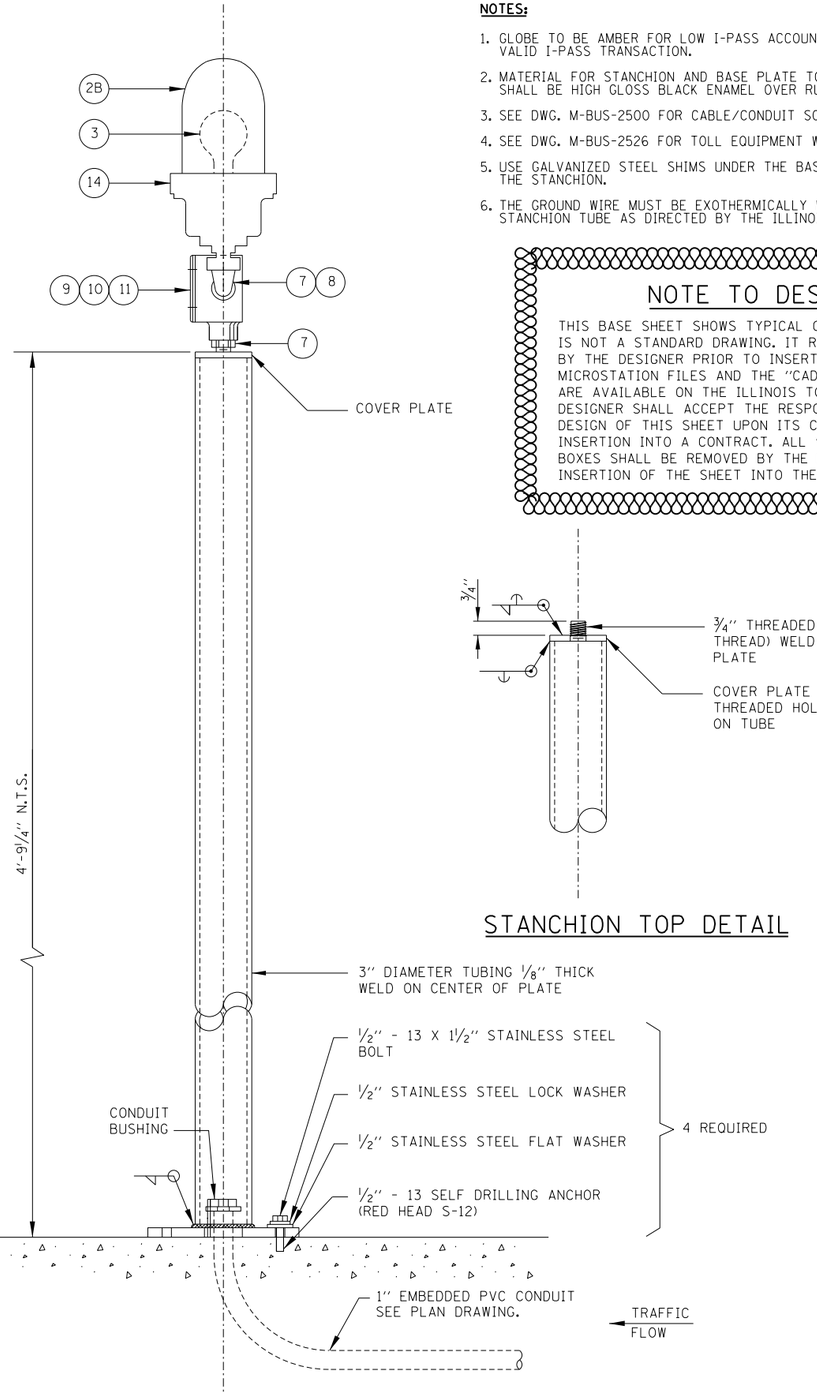
Illinois Tollway

TRAFFIC LIGHT DETAILS - ACM LANES

DATE
3-31-2016



TRAFFIC LIGHT



SECTION A-A

NOTES:

1. GLOBE TO BE AMBER FOR LOW I-PASS ACCOUNT AND BLUE FOR VALID I-PASS TRANSACTION.
2. MATERIAL FOR STANCHION AND BASE PLATE TO BE STEEL. FINISH SHALL BE HIGH GLOSS BLACK ENAMEL OVER RUST INHIBITIVE PRIMER.
3. SEE DWG. M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND ADDITIONAL NOTES.
4. SEE DWG. M-BUS-2526 FOR TOLL EQUIPMENT WIRING DIAGRAMS.
5. USE GALVANIZED STEEL SHIMS UNDER THE BASE PLATE TO PLUMB THE STANCHION.
6. THE GROUND WIRE MUST BE EXOTHERMICALLY WELDED TO THE STANCHION TUBE AS DIRECTED BY THE ILLINOIS TOLLWAY.

NOTE TO DESIGNER

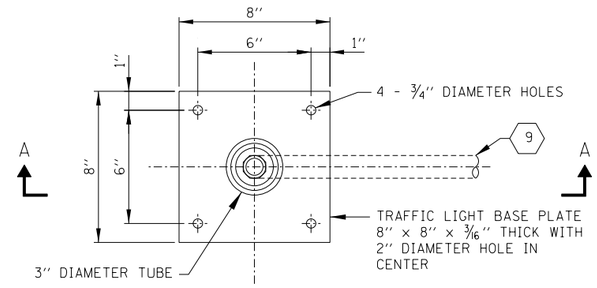
THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE 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.

STANCHION TOP DETAIL

EQUIPMENT LEGEND

ITEM	DESCRIPTION
1	NOT USED
2A	AMBER GLOBE, BY THE ILLINOIS TOLLWAY (NOTE 1).
2B	BLUE GLOBE, BY THE ILLINOIS TOLLWAY (NOTE 1).
3	69 WATT CLEAR LAMP OR LED EQUIVALENT, BY THE ILLINOIS TOLLWAY.
4	STANCHION, 3" TUBE.
5	NOT USED
6	CLOSE UP NIPPLE, ¾" x 1½"
7	LOCKNUT, ¾", CATALOG NO. BL75
8	90 DEGREE MALE TO FEMALE SHORT BUSHED ELBOW (MALLEABLE IRON) ¾". CATALOG NO. LMF90-75.
9	'T' OUTLET BOX, ¾" HUBS. CATALOG NO. SEHT-75.
10	COVER (CAST MALLEABLE IRON) FURNISHED WITH SCREWS. CATALOG NO. SEHK-BC.
11	GASKET (FIBER COMPOSITION). CATALOG NO. SEH-GK.
12	NOT USED
13	NOT USED
14	PENDANT HOOD FIXTURE WITH PORCELAIN SOCKET, BRASS SCREW SHELL. CATALOG NO. REA-1075.

NOTE - UNLESS OTHERWISE NOTED, ALL ABOVE CATALOG NUMBERS ARE APPLETON ELECTRIC COMPANY.



PLAN

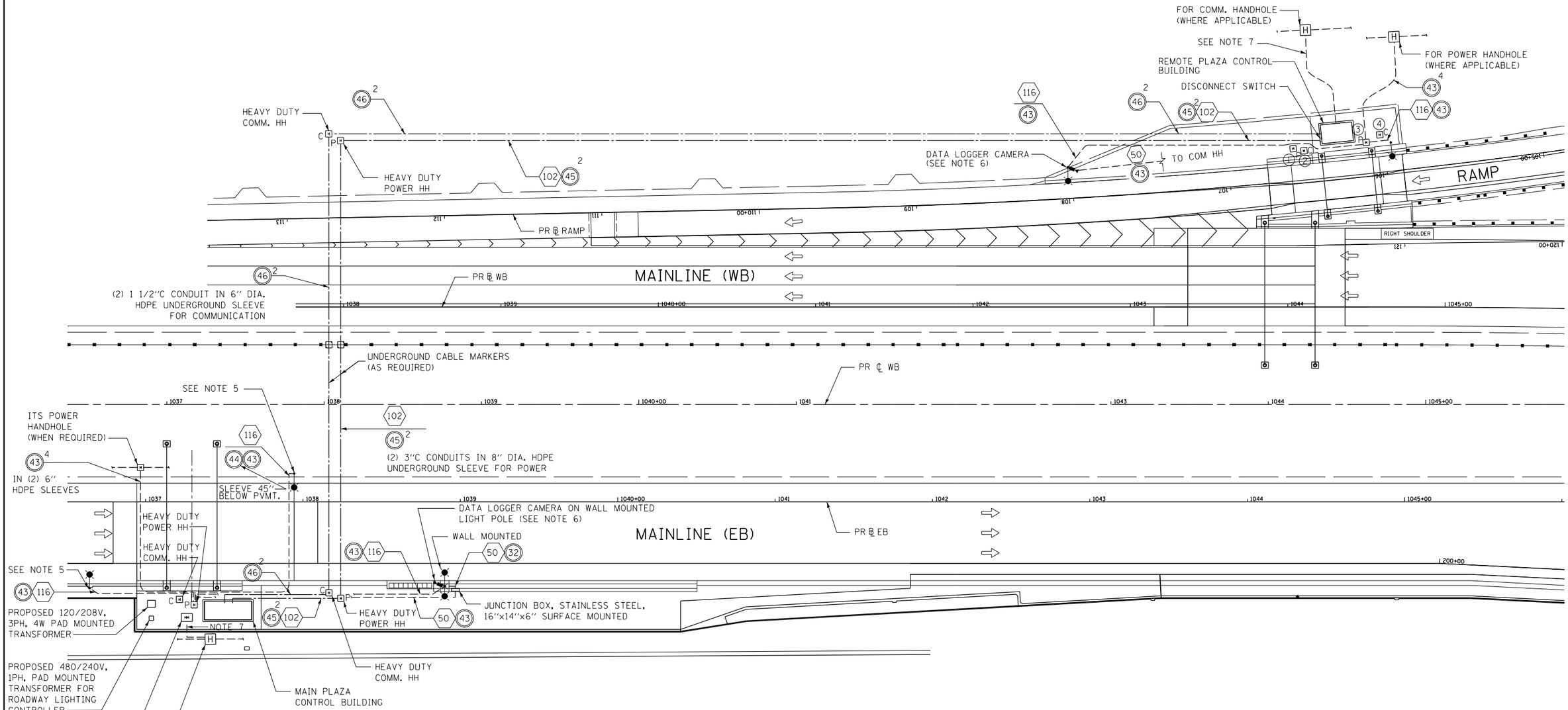
TRAFFIC LIGHT STANCHION DETAIL

M-BUS-2541

Illinois Tollway

TRAFFIC LIGHT DETAILS - IPO LANES

DATE
3-31-2016



LEGEND

1. HEAVY DUTY POWER HH
2. HEAVY DUTY COMM. HH
3. HEAVY DUTY POWER HH)
4. HEAVY DUTY COMM. HH

NOTES:

1. SEE BASE SHEET M-BUS-2501 FOR SYMBOL LEGEND.
2. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE.
3. ALL EMPTY CONDUITS UNDERGROUND OR ABOVE GRADE SHALL HAVE A PULL CORD.
4. UNDERGROUND CABLE/CONDUIT MARKING TAPE IS TO BE INSTALLED OVER UNDERGROUND CONDUITS.
5. GROUND MOUNTED LIGHT POLE, ALUMINUM, 50 FT., 15 FT. MAST ARM, LED LUMINAIRE (AS PER ROADWAY LIGHTING PLAN) AND LIGHT POLE FOUNDATION (ROADWAY) STEEL HELIX (7 FT) OR CONCRETE.
6. CONTRACTOR SHALL RUN 1" DIA. RGS PVC COATED CONDUIT OUTSIDE LIGHT POLE FOR DATA LOGGER CAMERA.
7. PROVIDE (2) 6" SDR 13 HDPE SLEEVES, EACH SLEEVE SHALL HAVE;
   (1) 1 ½" CNC DUCT (SOLID GREEN)
   (1) 1 ½" CNC DUCT (GREEN/WHITE STRIPE)
   (1) 1 ½" CNC DUCT (BLACK/RED STRIPE)

NOTES TO DESIGNER

1. 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.
2. THE DESIGNER MUST PROVIDE A CONTRACT SPECIFIC ELECTRICAL SITE PLAN. THIS DRAWING IS TO BE USED AS A GUIDE IN DEVELOPING THE CONTRACT ELECTRICAL SITE PLAN.
3. THE POWER FEEDER MUST BE SIZED BY THE DESIGNER TO PROVIDE A MAXIMUM 3% VOLTAGE DROP.
4. THE DESIGNER MUST PROVIDE PAY ITEMS, QUANTITIES AND UNIT BID PRICES FOR THE WORK SHOWN ON THIS DRAWING NOT INCLUDED IN THE PLAZA LUMP SUM PRICE.
5. IF DISTANCE BETWEEN MAIN AND REMOTE PLAZA CONTROL BUILDING IS LESS THAN 600 FT., PROVIDE CONDUIT AND SYNC CABLE TO CONNECT ANTENNA READERS IN THE MAIN AND REMOTE CONTROL BUILDINGS.

SCALE IN FEET
0 20 40

M-BUS-2542

Illinois Tollway

ELECTRICAL SITE PLAN
AET LANES

DATE
3-31-2016

1037

MONOTUBE (TYP.)

VES CAMERA WASH SYSTEM JUNCTION BOX (NEMA 4X) 16"X14"X6". SEE BASE SHEET M-BUS-2558 FOR MORE DETAILS

TO ITS POWER HANDHOLE SEE BASE SHEET M-BUS-2542

TO LIGHT POLE, SEE BASE SHEET M-BUS-2542

PROPOSED 120/208V, 3PH, 4W PAD MOUNTED TRANSFORMER, NOTE 14

CAP FOR ComEd INCOMING, NOTE 12

PROPOSED 480/240V, 1PH, PAD MOUNTED TRANSFORMER FOR ROADWAY LIGHTING CONTROLLER (WHEN REQUIRED)

SEE BASE SHEET M-BUS-2554

MAIN PLAZA

VES WASH SYSTEM CABINET (LOCATION 1)

PROPOSED ROADWAY LIGHTING CONTROLLER (BY ROADWAY LIGHTING DESIGNER) WHEN REQUIRED

TYPE A HH

NOTE 19

ComEd METER FOR PLAZA POWER

ComEd METER FOR OUTDOOR LIGHTING

SPARE SPARE

SEE BASE SHEET M-BUS-2542

SPARE SPARE SPARE

PoE

TO LIGHT POLE SEE BASE SHEET M-BUS-2542

TO LIGHT POLE SEE BASE SHEET M-BUS-2542

DATA LOGGER CAMERA SEE BASE SHEET M-BUS-2542

USE FLEXIBLE CONNECTION MINIMUM OF 6" BETWEEN STATIONARY PIPING AND ENGINE FUEL INLET

(1)4" PVC COATED SLEEVE IN WALL

FUEL LINE IN 4" FLEXIBLE PVC PIPE

(1) 4" PVC COATED RGS SLEEVE WITH FUEL LINE (BLACK IPS 1" OR 1 1/4" THREADED PIPE) COMPATIBLE WITH GAS METER

CONCRETE PAD FOR GAS METER 2'x3'x6" THICK 5 FT FROM THE BACK OF THE CURB

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE AND CONDUIT SCHEDULE.
2. SEE BASE SHEET M-BUS-2552 FOR AET WIRING DIAGRAM.
3. CAP ALL CONDUIT STUBS FOR FUTURE USE.
4. FINAL LOCATION OF ALL HANDHOLES AND JUNCTION BOXES SHALL BE APPROVED BY THE ENGINEER.
5. NOT USED.
6. ROUTE PLAZA ROADWAY LIGHTING CIRCUITS TO LIGHTING CONTACTOR. THESE STAY ON PLAZA CIRCUITS, THAT ARE POWERED FROM PLAZA EMERGENCY GENERATOR. ROUTE 2-1/C #8 AND 1/C #8 GROUND WIRE FROM LIGHTING CONTACTOR LOCATED IN THE POWER CABINET TO THE LIGHT POLE FOR PLAZA LIGHTING CONTROL CIRCUIT. PROVIDE PHOTOCELL ON SAME POLE.
7. ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
8. EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BASE.
9. REFER TO TSIC TERMINAL BLOCK LAYOUT BASE SHEET M-BUS-2548. LOW VOLTAGE WIRE FROM VES AND SECURITY CAMERAS LAND ON SURGE PROTECTION DEVICES.
10. 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 WALL FOUNDATIONS.
11. 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.
12. PROVIDE (2) 4" PVC COATED RGS 5FT PAST RETAINING WALL UP TO ComEd TRANSFORMER FOR ComEd INCOMING PRIMARY CABLES. INSTALL SLEEVE IN COORDINATION WITH STRUCTURAL AND STUB UP NEAR ComEd TRANSFORMER LOCATION. PROVIDE WATER PROOF SEALING AT RETAINING WALL.
13. PROVIDE PVC TO RGS COUPLING AND RGS PVC COATED CONDUIT FROM PVC CONDUIT UP TO CAMERA ON THE POLE.
14. CONTRACTOR SHALL FURNISH AND INSTALL PROPOSED TRANSFORMER PAD AND CONDUIT/TRENCH FOR ComEd. ComEd WILL FURNISH AND INSTALL TRANSFORMER AND GROUND ROD/WIRING. ALL WORK SHALL CONFORM TO ComEd STANDARD. THIS WILL BE PAID UNDER PAY ITEM: JS804100 - ELECTRIC SERVICE INSTALLATION.
15. SEE BASE SHEET M-BUS-2555 THRU M-BUS-2560 FOR VES CAMERA WASH SYSTEM.
16. FOR LIGHT POLE AND FOUNDATION DETAILS, SEE ILLINOIS TOLLWAY STANDARD DRAWINGS H1 AND H2.
17. CONTRACTOR SHALL PROVIDE (1) 4" PVC COATED RGS SLEEVE FROM BUILDING SOUTHEAST CORNER SOUTH UP TO NICOR METER PAD TO INSTALL GAS PIPING TO BUILDING. STUB UP SLEEVE NEAR GAS METER LOCATION. PROVIDE WATERPROOF SEALING AT RETAINING WALL.
18. NOT USED.
19. PROVIDE (2) 6" SDR 13 HDPE SLEEVES, EACH SLEEVE SHALL HAVE;
    (1) 1 1/2" CNC DUCT (SOLID GREEN)
    (1) 1 1/2" CNC DUCT (GREEN/WHITE STRIPE)
    (1) 1 1/2" CNC DUCT (BLACK/RED STRIPE)
20. PROVIDE LIGHTING CONTROLLER SERVICE CONDUIT 3"C PVC-SCH 40 AND STUP UP INTO METER 3"C RGS PVC COATED FOR SERVICE TO THE CONTROLLER.
21. FOR HANDHOLE LOCATIONS, SEE BASE SHEET M-BUS-2542.

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.

M-BUS-2543

Illinois Tollway

UNDERGROUND CONDUIT PLAN - MAIN PLAZA

DATE
3-31-2016

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE AND CONDUIT SCHEDULE.
2. SEE BASE SHEETS M-BUS-2551 AND M-BUS-2552 FOR AET WIRING DIAGRAMS.
3. SEE BASE SHEET M-BUS-2542 FOR HANDHOLES LOCATIONS.
4. CAP ALL CONDUIT STUBS 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 CONTACTOR. THESE STAY ON PLAZA CIRCUITS, THAT ARE POWERED FROM PLAZA EMERGENCY GENERATOR. ROUTE 2-1/C #8 AND 1/C #8 GROUND WIRE FROM LIGHTING CONTACTOR LOCATED IN THE POWER CABINET TO THE LIGHT POLE FOR PLAZA LIGHTING CONTROL CIRCUIT. PROVIDE PHOTOCELL ON SAME POLE.
8. ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLE WILL BE COILED INSIDE THE BUILDING.
9. EXOTHERMICALLY WELD THE GROUND WIRE TO THE MONOTUBE'S BASE.
10. REFER TO TSIC TERMINAL BLOCK LAYOUT BASE SHEET M-BUS-2548. 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 WALL 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 UP TO ComEd TRANSFORMER FOR ComEd INCOMING PRIMARY CABLES. INSTALL SLEEVE IN COORDINATION WITH STRUCTURAL AND STUB UP NEAR ComEd TRANSFORMER LOCATION. PROVIDE WATER PROOF SEALING AT RETAINING WALL.
14. PROVIDE PVC TO RGS COUPLING AND RGS PVC COATED CONDUIT FROM PVC CONDUIT UP TO CAMERA ON THE POLE.
15. CONTRACTOR SHALL FURNISH AND INSTALL PROPOSED TRANSFORMER PAD AND CONDUIT/TRENCH FOR ComEd. ComEd WILL FURNISH AND INSTALL TRANSFORMER AND GROUND ROD/WIRING. ALL WORK SHALL CONFORM TO ComEd STANDARD. THIS WILL BE PAID UNDER PAY ITEM: JS804100 - ELECTRIC SERVICE INSTALLATION.
16. SEE BASE SHEETS M-BUS-2555 THRU M-BUS-2560 FOR VES CAMERA WASH SYSTEM. THIS WORK WILL BE PAID UNDER PAY ITEM JT132701 "VES CAMERA HIGH PRESSURE WASH SYSTEM, LOCATION 1".
17. FOR LIGHT POLE AND FOUNDATION DETAILS, SEE ILLINOIS TOLLWAY STANDARD DRAWINGS H1 AND H2.
18. CONTRACTOR SHALL PROVIDE (1) 4" PVC COATED RGS SLEEVE FROM BUILDING SOUTHEAST CORNER SOUTH UP TO 5 FT PAST RETAINING WALL FOR NICOR TO INSTALL GAS PIPING TO BUILDING. STUB UP SLEEVE NEAR GAS METER LOCATION. PROVIDE WATERPROOF SEALING AT RETAINING WALL.
19. NOT USED.
20. PROVIDE (2) 6" SDR 13 HDPE SLEEVES, EACH SLEEVE SHALL HAVE;
    (1) 1 1/2" CNC DUCT (SOLID GREEN)
    (1) 1 1/2" CNC DUCT (GREEN/WHITE STRIPE)
    (1) 1 1/2" CNC DUCT (BLACK/RED STRIPE)
21. PROVIDE LIGHTING CONTROLLER SERVICE CONDUIT 3"C PVC-SCH 40 AND STUP UP INTO METER 3"C RGS PVC COATED FOR SERVICE TO THE CONTROLLER.
22. FOR HANDHOLE LOCATIONS, SEE BASE SHEET M-BUS-2542.

NOTE TO DESIGNER

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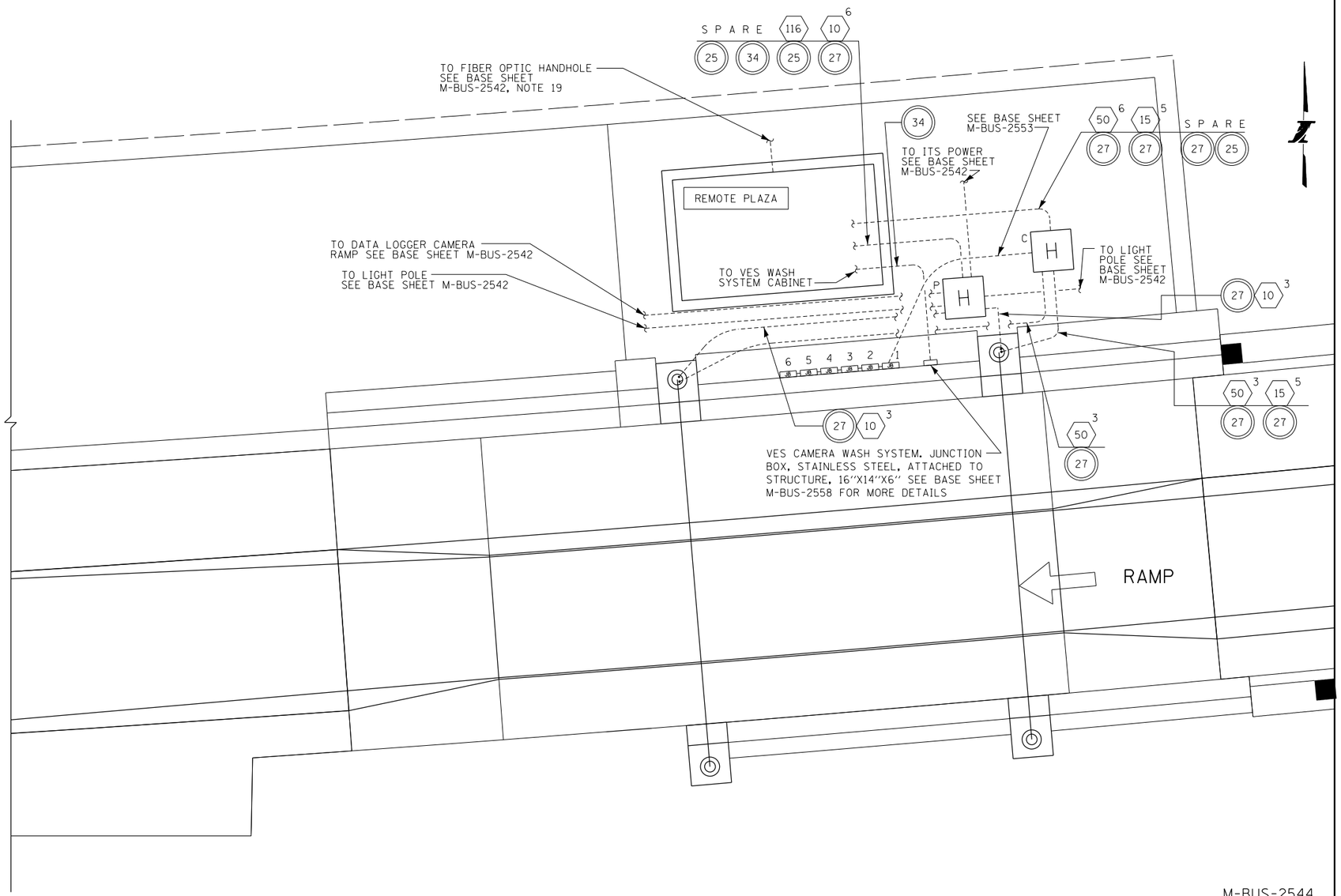
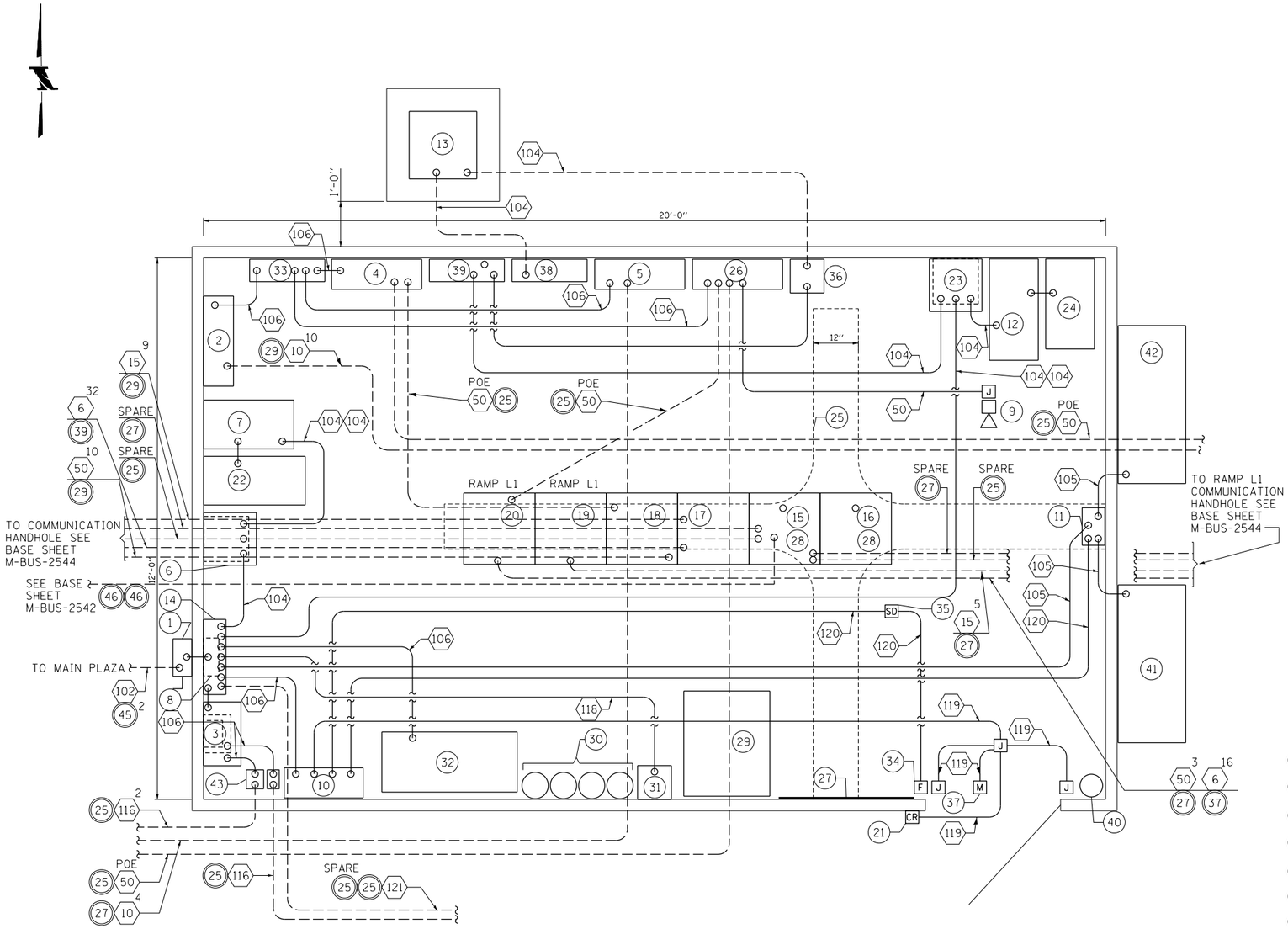


M-BUS-2544

Illinois Tollway

UNDERGROUND CONDUIT PLAN - REMOTE PLAZA

DATE
3-31-2016



CONTROL BUILDING REMOTE TOLL PLAZA EQUIPMENT LAYOUT

N.T.S.

NOTES 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.

IF DISTANCE BETWEEN MAIN AND REMOTE PLAZA CONTROL BUILDING IS LESS THAN 600 FT., PROVIDE CONDUIT AND SYNC CABLE TO CONNECT ANTENNA READERS IN THE MAIN AND REMOTE CONTROL BUILDINGS.

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. SEE BASE SHEET M-BUS-2503 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
3. DOOR ALARM SWITCH, SEE DETAIL ON BASE SHEET M-BUS-2548.
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 UTILITY METER.
6. FOR ROADWAY LIGHTING. ROUTE TO 30A. CIRCUIT BREAKER
7. ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLES WILL BE COILED INSIDE THE CABINET.
8. REFER TO TSIC TERMINAL BLOCK LAYOUT BASE SHEET M-BUS-2548. CONTRACTOR TO PROVIDE ASSEMBLY DRAWING OF TSIC DURING SUBMITTAL PHASE.
9. PVC SCH-80 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 RGS. 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. CONTRACTOR SHALL COORDINATE ALL WORK FOR UTILITY SERVICES WITH COMED AND NICOR.
15. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #3 AND DATA LOGGER CAMERA FROM 24V AC VIDEO JUNCTION BOX #4 ALL POWER TO BE SURGE PROTECTED.
16. ALL COPPER COMMUNICATIONS AND CONTROL CABLES SHALL ENTER BUILDING ALONG OUTSIDE WALL AND BE CONNECTED TO A SURGE PROTECTION THAT IS GROUNDED TO GROUND BUS IN BUILDING.
17. LOCATION OF (6) 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 13 HDPE SLEEVES EACH, SEE BASE SHEET M-BUS-2547 FOR DETAILS
    SLEEVE SHALL HAVE;
    (1) 1 1/2" CNC DUCT (SOLID GREEN)
    (1) 1 1/2" CNC DUCT (GREEN / WHITE STRIPE)
    (1) 1 1/2" CNC DUCT (BLACK / RED STRIPE)

LEGEND

1. BUILDING DISCONNECT WP-NEMA 4X
2. VIDEO JB POWER #3
3. LIGHTING TRANSFORMER, CONTACTOR, AND CIRCUIT BREAKER
4. VIDEO JB POWER #4
5. VIDEO JB POWER #5
6. BYPASS SWITCH/LINE CONDITIONER
7. UPS-2 (5 KVA)
8. SPD LIGHTNING PROTECTION SYSTEM PHOENIX CONTACT "FLASHTRAB + CNTL SERIES" CATALOG NUMBER 5603414
9. SECURITY CAMERA
10. CARD READER PANEL
11. HVAC CONTROL PANEL
12. UPS-ITS-2 (5 KVA)
13. 5 KVA, 208V/480V OUTDOOR TYPE SINGLE PHASE TRANSFORMER, NEMA 4X
14. ELECTRICAL PANEL MDP-2
15. 19" RACK LOCAL AND BACKBONE FIBER
16. 19" RACK ITS FIBER
17. 19" RACK I-PASS READER MAIN LINE REMOTE PLAZA
18. 19" RACK LANE CONTROL MAIN LINE REMOTE PLAZA
19. 19" RACK I-PASS READER RAMP L1
20. 19" RACK LANE CONTROL RAMP L1
21. CARD READER
22. BATTERY CABINET UPS-2 5 KVA
23. BYPASS SWITCH LINE CONDITIONER ITS POWER
24. BYPASS SWITCH CABINET ITS POWER
25. CABLE TRAY
26. VIDEO JB POWER #6
27. TSIC BOARD
28. SMF DISTRIBUTION PANEL
29. ROLAIR AIR COMPRESSOR
30. HP-80 NITROGEN TANKS - 4 NOS
31. DISCONNECT SWITCH 60A/1P, 250V FOR AIR COMPRESSOR
32. VES WASH CABINET LOCATION 3
33. PANEL UPS-2
34. PULL STATION
35. SMOKE DETECTOR
36. 30A DISCONNECT
37. MAGNETIC LOCK
38. ITS 2-1 PANEL
39. ITS 2-2 PANEL
40. FIRE EXTINGUISHER
41. HVAC UNIT - 1
42. HVAC UNIT - 2
43. 30A/2P C/B

M-BUS-2545

Illinois Tollway

CONTROL BUILDING EQUIPMENT LAYOUT - REMOTE PLAZA

DATE
3-31-2016

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULES.
2. SEE BASE SHEET M-BUS-2502 FOR SYSTEM POWER SINGLE LINE DIAGRAM.
3. SEE BASE SHEET M-BUS-2508 FOR WALL ELEVATION.
4. DOOR ALARM SWITCH, SEE DETAIL ON BASE SHEET M-BUS-2548.
5. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR ATS ALARMS AND ROUTE TO TSIC BOARD. ALL CONTACT CLOSURES SHALL BE ROUTED TO TSIC.
6. THE LIGHTNING PROTECTION SYSTEM DEVICE SHALL BE CONNECTED TO THE LOAD SIDE OF THE UTILITY METER.
7. FOR ROADWAY LIGHTING. ROUTE TO 30A. CIRCUIT BREAKER.
8. ALL EXCESS (SLACK) POWER AND DATA CABLES MUST BE COILED IN THE HANDHOLE. NO EXCESS CABLES WILL BE COILED INSIDE THE CABINET.
9. REFER TO TSIC TERMINAL BLOCK LAYOUT BASE SHEET M-BUS-2548. SEE BASE SHEET M-BUS-2547 NOTE 12 FOR NUMBERING. ALL VES CAT 6 IS SURGE PROTECTED. CONTRACTOR TO PROVIDE ASSEMBLY DRAWING OF TSIC DURING SUBMITTAL PHASE.
10. PVC SCH-80 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 RGS. SLEEVES SHALL BE USED WHEN DEEMED NECESSARY.
11. THE CABLE LENGTH FROM THE ANTENNA TO THE I-PASS READER SHALL NOT EXCEED 150 FEET FOR MAIN PLAZA.
12. PROVIDE A 3 PAIR #22 SHIELDED CABLE FOR SMOKE DETECTOR ALARM CONTACT AND ROUTE TO CARD READER EQUIPMENT.
13. PROVIDE AN ETHERNET CABLE FROM UPS AND FROM CARD READER PANEL TO LOCAL BACKBONE RACK. NETWORK SWITCHES TO BE PROCURED BY OTHERS.
14. TERMINATE ALARM CABLES ON TERMINAL BLOCK ON TSIC BOARD.
15. CONTRACTOR SHALL COORDINATE ALL WORK FOR UTILITY SERVICES WITH COMED AND NICOR.
16. POWER FRONT AND REAR VES CAMERAS FROM 24V DC VIDEO JUNCTION BOX #1 AND DATA LOGGER CAMERA FROM 24V AC VIDEO JUNCTION BOX #2 (SEE BASE SHEET M-BUS-2511). ALL POWER TO BE SURGE PROTECTED.

NOTES (CONT'D):

17. MOUNT PHOTOCELL 6" ABOVE TOP OF BUILDING POINTING TOWARDS NORTHEAST.
18. PROVIDE (2) 6" SDR 13 HDPE SLEEVES EACH. SLEEVE SHALL HAVE;
    (1) 1 1#2" CNC DUCT (SOLID GREEN)
    (1) 1 1#2" CNC DUCT (GREEN / WHITE STRIPE)
    (1) 1 1#2" CNC DUCT (BLACK / RED STRIPE)
19. LOCATION OF (4) RACKS BE IN THE MIDDLE OF THE ROOM.
20. FOR SECURITY CAMERA, CONTRACTOR TO VERIFY CLEAR UNOBSTRUCTED LINE OF SIGHT TO THE ENTRANCE DOORS.
21. INSTALL TRANSFORMER ON 6" CONCRETE PAD 1 FT AWAY FROM EXTERIOR WALL. ALL FEED TO THIS TRANSFORMER SHALL BE UNDERGROUND.

NOTES TO DESIGNER

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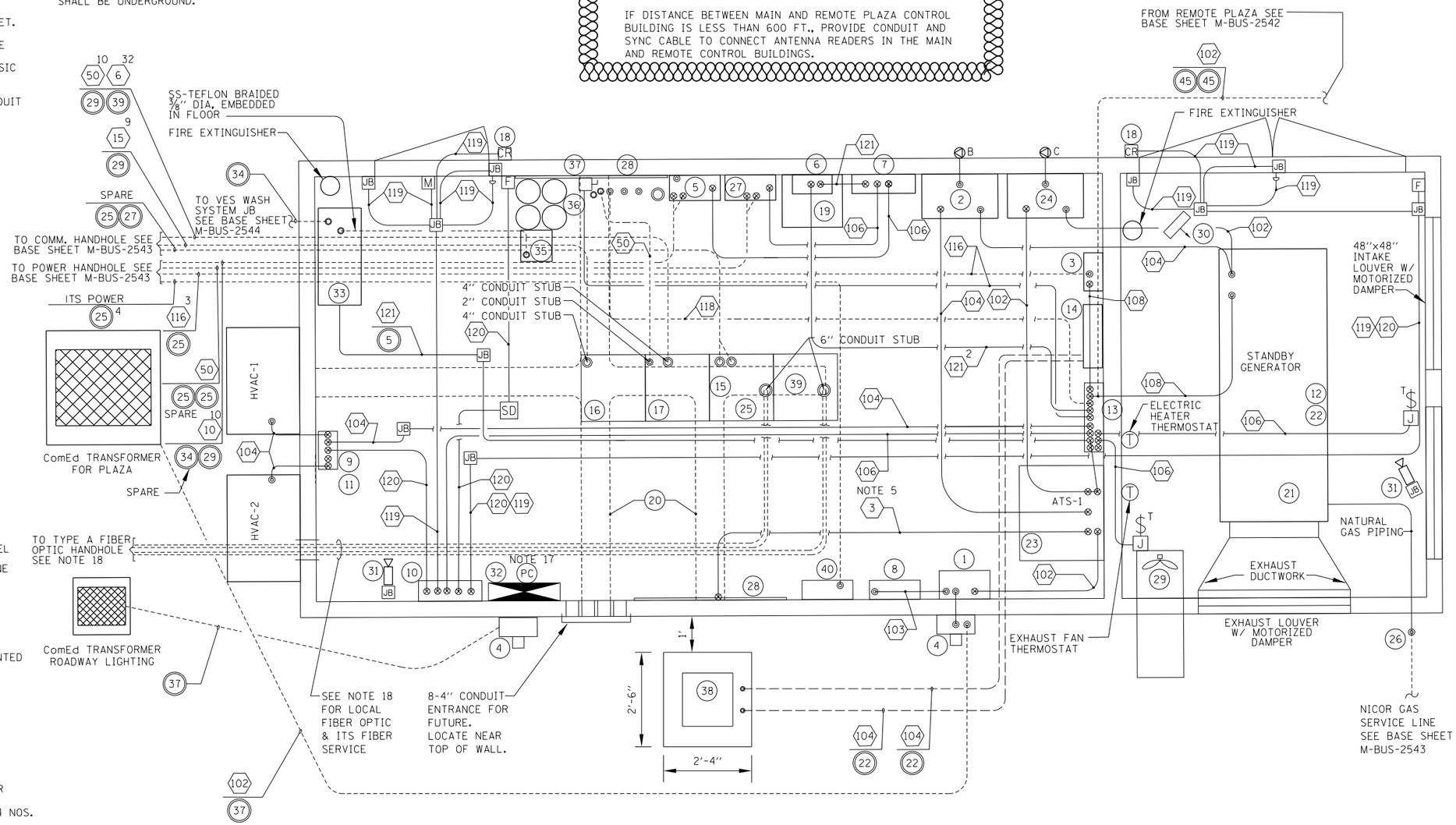
IF DISTANCE BETWEEN MAIN AND REMOTE PLAZA CONTROL BUILDING IS LESS THAN 600 FT., PROVIDE CONDUIT AND SYNC CABLE TO CONNECT ANTENNA READERS IN THE MAIN AND REMOTE CONTROL BUILDINGS.



LEGEND

1. MAIN SERVICE DISCONNECT 200A/3P
2. MTS-2 FOR GENERATOR CONTROL
3. LIGHTING CONTACTOR, TRANSFORMER, AND CIRCUIT BREAKER
4. ELECTRIC UTILITY METER
5. VIDEO JB POWER #1
6. BYPASS SWITCH
7. UPS-1 (3 KVA). CONTRACTOR SHALL INSTALL THE 3KVA UPS ABOVE GROUND, ON A SHELVING SYSTEM AS DIRECTED BY THE ENGINEER
8. LIGHTNING ARRESTER PHOENIX CONTACT "FLASHTRAB + CNTL SERIES" CATALOG NUMBER 5603414
9. TEMPERATURE ALARM
10. CARD READER PANEL
11. HVAC CONTROL PANEL
12. GENERATOR CONTROL PANEL
13. MAIN DISTRIBUTION PANEL MDP-1
14. ITS 1-1 (5 KVA)
15. 19" RACK LOCAL BACKBONE FIBER
16. 19" RACK I-PASS READER
17. 19" RACK LANE CONTROLLER RACK
18. CARD READER
19. UPS / LINE CONDITIONER
20. CABLE TRAY
21. JACKET WATER HEATER
22. BATTERY CHARGER
23. ATS
24. MTS-1 FOR GENERATOR POWER
25. SMF DISTRIBUTION PANEL
26. NICOR GAS SERVICE LINE
27. VIDEO JB POWER #2
28. TSIC BOARD
29. SIDEWALL EXHAUST FAN W/ MOTORIZED DAMPER
30. ELECTRIC CEILING MOUNTED HEATER
31. SECURITY CAMERA
32. ROADWAY LIGHTING CONTROLLER (BY ROADWAY LIGHTING DESIGNER)
33. VES WASH SYSTEM CABINET LOCATION 1
35. ROLAIR AIR COMPRESSOR
36. HP-80 NITROGEN TANK-4 NOS.
37. DISCONNECT SWITCH 60A/1P, 250V FOR AIR COMPRESSOR
38. 5 KVA, 208V/480V OUTDOOR TYPE SINGLE PHASE TRANSFORMER, NEMA 4X
39. 19" RACK ITS FIBER
40. ITS 1-2 PANEL

CONTROL BUILDING MAIN TOLL PLAZA EQUIPMENT LAYOUT

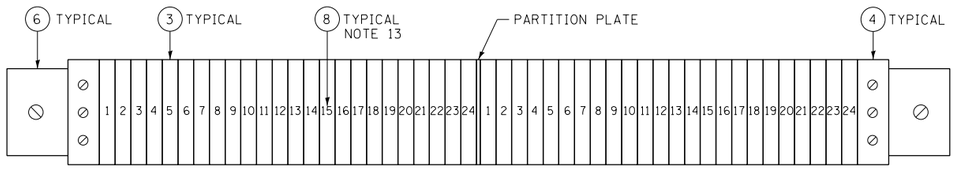
N.T.S.

M-BUS-2546

Illinois Tollway

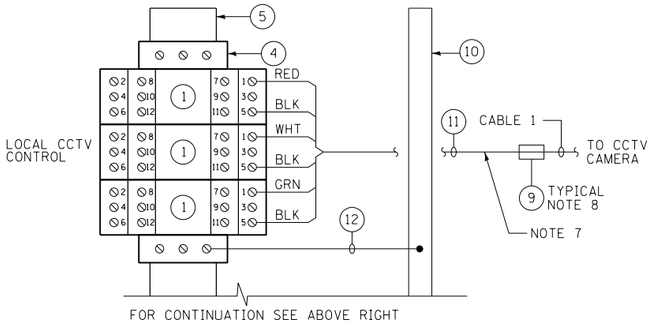
CONTROL BUILDING EQUIPMENT LAYOUT - MAIN PLAZA

DATE
3-31-2016

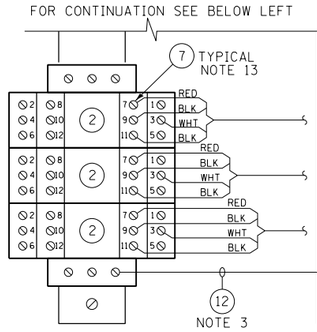


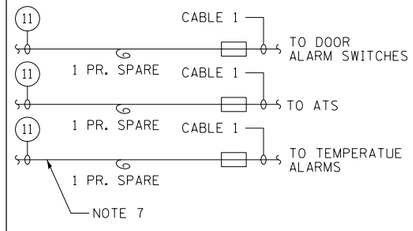
TERMINAL STRIP LAYOUT

SEE NOTE 1



BUILDING ALARMS





TERMINAL STRIP LAYOUT

SEE NOTE 1

EQUIPMENT LEGEND

ITEM	DESCRIPTION
1	TERMINAL BLOCK WITH DATA SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT5-HF-12DC-ST WITH BASE ELEMENT PT2x2-BE.
2	TERMINAL BLOCK WITH DISCRETE SIGNAL PROTECTION. PHOENIX CONTACT "PLUGTRAB PT" SERIES CATALOG NUMBER FOR PLUG PT2x1-5DC-ST WITH BASE ELEMENT PT2x1-BE.
3	UNIVERSAL TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER UK5N.
4	GROUND TERMINAL BLOCK. PHOENIX CONTACT CATALOG NUMBER USLKG1ON.
5	MOUNTING RAIL; COPPER UNPERFORATED, 35mm X 7.5m X 900mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
6	MOUNTING RAIL; COPPER UNPERFORATED, 35mm X 7.5m X 375mm, PHOENIX CONTACT CATALOG NUMBER 0801762.
7	TERMINAL BLOCK MARKERS. PHOENIX CONTACT CATALOG NUMBER ZB 5.
8	TERMINAL BLOCK MARKERS. PHOENIX CONTACT CATALOG NUMBER ZB 6.
9	CABLE MARKERS. BRADY TYPE PWC-PK-3.
10	EQUIPMENT GROUND BUS BAR. HOFFMAN CATALOG NUMBER PGS6K
11	3 PAIR #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS.
12	1-1/C #6 GROUND CABLE. (NOTES 3, 6, AND 9)

NOTES:

1. TERMINAL BLOCKS ARE LOCATED ON THE TERMINAL STRIP INTERCONNECT CENTER (TSIC) LOCATED IN PLAZA BUILDING. FOR A COMPLETE LAYOUT OF THE TERMINAL BLOCKS MOUNTED ON THE TSIC, SEE BASE SHEET M-BUS-2548.
2. TERMINAL BLOCKS, TERMINAL BLOCK MARKER STRIPS, AND GROUND BUS BARS ARE SHOWN DIAGRAMMATICALLY. WIRING DUCT IS NOT SHOWN ON THIS DRAWING.
3. ROUTE #6 COPPER GROUND CABLE FROM GROUND TERMINAL BLOCK TO GROUND BUS BAR.
4. DETAILED LANE CABLE WIRING DIAGRAM WILL BE PROVIDED BY THE ILLINOIS TOLLWAY.
5. THE CONTRACTOR SHALL IDENTIFY EACH LANE CABLE ON AS-BUILT DRAWINGS.
6. ROUTE #6 COPPER GROUND CABLE FROM GROUND BUS BAR TO THE BUILDING'S MASTER GROUND BAR.
7. SHIELD GROUND WIRE TIED BACK IN 3" PIGTAIL AND TERMINATED TO TSIC GROUND BUS BAR WITH A BURNDY TYPE YAEV LUG. THE COMPONENT END OF THE SHIELD GROUND WIRE IS NOT TO BE TERMINATED.
8. EACH CABLE SHALL BE IDENTIFIED WITH A CABLE MARKER.
9. ROUTE #6 COPPER GROUND CABLE FROM GROUND BUS BAR TO ADJACENT GROUND BAR ON BOARD AS SHOWN.
10. FOR DATA/COMMUNICATIONS CABLE COLOR CODE CHART, SEE BASE SHEET M-BUS-2548.
11. SEE BASE SHEET M-BUS-2548, FOR THE LOCAL CONTROL TERMINAL STRIP CONNECTION DESIGNATIONS.
12. EACH TERMINAL BLOCK WIRING TERMINAL SHALL BE IDENTIFIED WITH A TERMINAL MARKER. THE MARKERS SHALL BE NUMBERED AS DIRECTED BY THE ILLINOIS TOLLWAY.
13. SEE BASE SHEET M-BUS-2548, FOR THE BUILDING ALARMS TERMINAL STRIP CONNECTION DESIGNATIONS.
14. ALL ELECTRICAL CABLES FROM CAMERAS (POWER WIRING, CONTROL WIRING, COAX, CAT6, ETC.) SHALL BE SURGE PROTECTED AS THEY ENTER BUILDING. EACH WILL BE OUTDOOR TEMPERATURE RATED CABLE.
15. ALL ETHERNET CABLES SHALL BE FURNISHED BY CONTRACTOR AND SHALL BE CAT 6.
16. NETWORK SWITCHES SHALL BE PROCURED BY OTHERS.

NOTE TO DESIGNER

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M-BUS-2547

Illinois Tollway

CONTROL BUILDING
TSIC - MAIN AND REMOTE
PLAZAS - AET LANES

DATE
3-31-2016

NOTE TO DESIGNER

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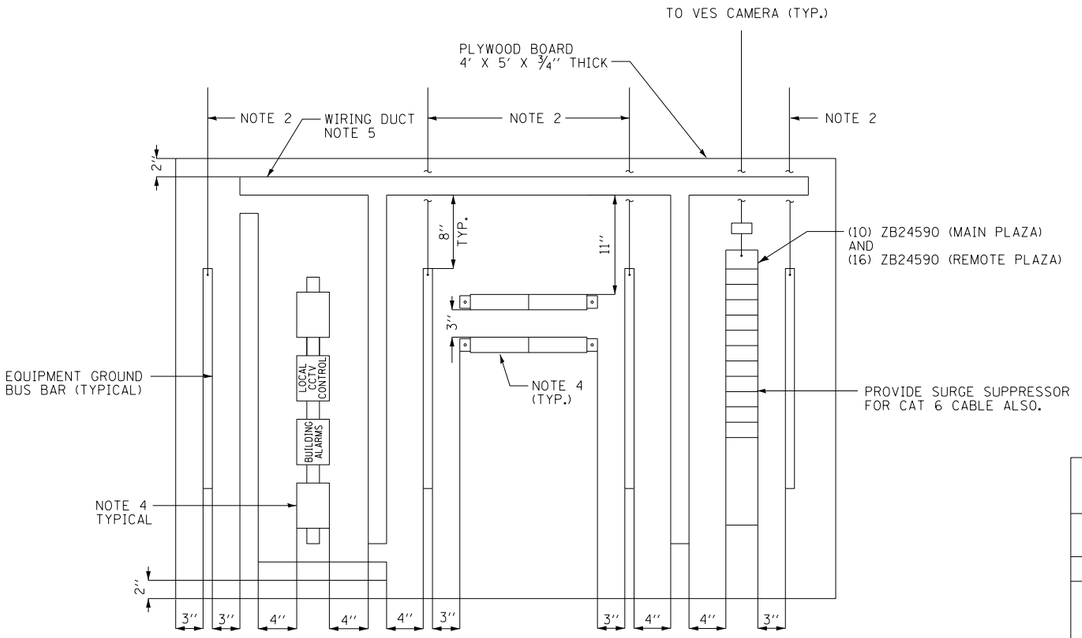


TERMINAL STRIP INTERCONNECT CENTER (TSIC)

N.T.S. (SEE NOTE 1)

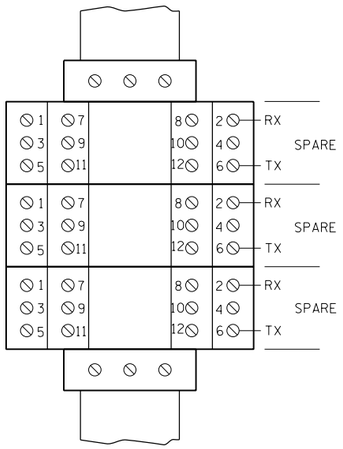
NOTES:

1. TERMINAL STRIP INTERCONNECT CENTER (TSIC) IS LOCATED IN THE CONTROL BUILDING. SEE BUILDING EQUIPMENT LAYOUT DRAWINGS, BASE SHEETS M-BUS-2545 AND M-BUS-2546 FOR LOCATION.
2. ROUTE #6 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. DIN RAIL MOUNTED TERMINAL BLOCKS. SEE BASE SHEET M-BUS-2547 FOR TERMINAL BLOCK DETAILS.
5. PROVIDE WIRE DUCT AS SHOWN ON THE DRAWING. WIRE DUCT SHALL BE PANDUIT PART NUMBER E2X3LG6 WITH COVER PART NUMBER C2LG6 AND CORNER STRIP PART NUMBER CSP3LG-O.
6. LOCAL VES CAMERAS LIGHTNING PROTECTION (10) (MAIN PLAZA) AND (16) (REMOTE PLAZA). SURGE PROTECTION FOR POWER SHALL BE PROVIDED INSIDE THE VPJB VES CAMERA CAT 6 SURGE SUPPRESSION SHALL BE PLACED ON THE TSIC. CAT 6 SURGE PROTECTION SHALL BE ATLANTIC SCIENTIFIC MODEL NO. ZB24590.
7. CONTRACTOR TO SUPPLY BACK TO BACK RJ45 CONNECTORS TO ALLOW VES CAMERA SURGE SUPPRESSORS (ZB24590) TO BE BY PASSED.

3 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-1	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
3 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88777 OR MANHATTAN #M43103.	

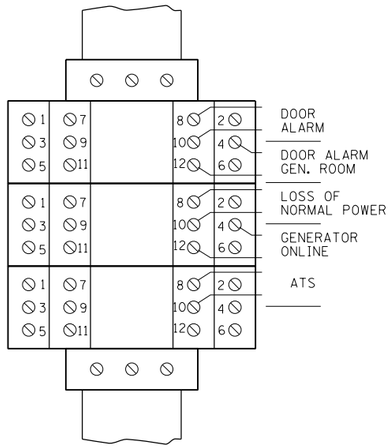
6 PAIR DATA/COMMUNICATIONS CABLE COLOR CODE CHART	
PAIR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-2	
1	BLACK PAIRED WITH RED
2	BLACK PAIRED WITH WHITE
3	BLACK PAIRED WITH GREEN
4	BLACK PAIRED WITH BLUE
5	BLACK PAIRED WITH YELLOW
6	BLACK PAIRED WITH BROWN
6 PR. #22 CABLE WITH INDIVIDUALLY SHIELDED PAIRS SHALL BE BELDEN #88778 OR MANHATTAN #M43106	

9 CONDUCTOR ALARM CABLE COLOR CODE CHART	
CONDUCTOR NO.	MFGR'S COLOR CODE CHART COLOR COMBINATION
CABLE-3	
1	BLACK
2	WHITE
3	RED
4	GREEN
5	ORANGE
6	BLUE
7	WHITE/BLACK
8	RED/BLACK
9	GREEN/BLACK
9 CONDUCTOR #22 SHIELDED CABLE SHALL BE BELDEN #83559.	



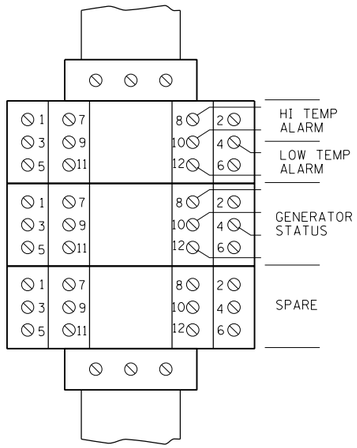
LOCAL CCTV CONTROL TERMINAL STRIP

N.T.S.



BUILDING ALARMS TERMINAL STRIP

N.T.S.



BUILDING ALARMS TERMINAL STRIP

N.T.S.

M-BUS-2548

Illinois Tollway

TSIC TERMINAL BLOCK LAYOUT MAIN AND REMOTE PLAZAS - AET LANES

DATE
3-31-2016

PANELBOARD MDP-1
VOLTAGE 120/208V
PHASE/WIRE 3/4

MAINS 250A. MCB
BUS RATING 300A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS) A	B	C	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS) A	B	C	CKT NO.	DESCRIPTION
PANEL MDP-2	1	7575			100/3			30/1	2400			2	UPS-1 (3 KVA)
	3		6960					20/1		200		4	LIGHTING CONTACTOR (CONTROL)
	5			11475				30/3			2000	6	HVAC UNITS
EMERGENCY LIGHT	7	200			20/1				2000			8	
INTERIOR LIGHTS	9		400		20/1					2000		10	
EXTERIOR BUILDING LIGHTS	11			400	20/1			60/2			---	12	SPARE
MOTORIZED DAMPERS	13	180			20/1				----			14	
GEN. BATTERY CHARGER	15		160		20/1			20/1		400		16	EXHAUST FAN
GEN. JACKET WATER HTR.	17			1500	20/1			20/1			200	18	ROADWAY LIGHTING CONTROLLER
EXTERIOR RECEPTACLE	19	400			20/1			20/1	400			20	INTERIOR RECEPTACLES
EXTERIOR RECEPTACLE	21		400		20/1			20/1		400		22	INTERIOR RECEPTACLES
SPARE	23			--	20/1			20/1			400	24	INTERIOR RECEPTACLES
SPARE	25	--			20/2			20/2	375			26	ELECTRIC CEILING MOUNTED HEATER
	27		--							375		28	
VES WASH SYSTEM (LOC 1)	29			2500	30/1			30/2			--	30	LINE CONDITIONER
AIR COMPRESSOR	31	3600			40/1				--			32	
ROADWAY LTG TRANSFORMER	33		960		20/2			20/1		--		34	SPARE
ROADWAY LTG TRANSFORMER	35			960				30/2			1252	36	UPS-ITS-1 (5 KVA)
LINE CONDITIONER (LC-1)	37		--		30/1				1252			38	
SPARE	39				20/1			20/1		--		40	SPARE
SPARE	41				20/1			20/1			--	42	SPARE
"A"		11955			SUBTOTAL "A" = 18382				6427				"A"
"B"			8880		SUBTOTAL "B" = 12255					3375			"B"
"C"				16835	SUBTOTAL "C" = 20687						3852		"C"
TOTAL WATTS "A,B,C"		= 51.32 KW											

PANELBOARD UPS-1
VOLTAGE 120V.
PHASE/WIRE 1/2

MAINS 30A. 1P. MCB
BUS RATING 30A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
SPARE	1	--	20/1			20/1	400	2	RACK RECEPTACLE (LCC)
SPARE	3	--	20/1			20/1	400	4	RACK RECEPTACLE (I-PASS)
SPARE	5	--	20/1			20/1	400	6	RACK RECEPTACLE (FIBER)
SPARE	7	--	20/1			20/1	200	8	CARD READER PANEL
VIDEO POWER JUNCTION BOX 1	9	500	20/1			20/1	--	10	SPARE
VIDEO POWER JUNCTION BOX 2	11	500	20/1			20/1	--	12	SPARE
SUBTOTAL "A"		1000					1400		
TOTAL WATTS "A,B"		= 2.4 KW							

PANELBOARD ITS 1
VOLTAGE 120V / 208V
PHASE/WIRE 1/3

MAINS 30A. 2P. MCB
BUS RATING 60A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
5 KVA TRANSFORMER	1	--	30/2P			10/1P	200	2	ITS RACK RECEPTACLES
	3					10/1P	--	4	SPARE
SPARE	5	--	10/1P			10/1P		6	SPARE
SPARE	7	--	10/1P			10/1P		8	SPARE
SUBTOTAL = ----		---					200		
TOTAL WATTS "A,B"		= 0.2 KW							

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M-BUS-2549

Illinois Tollway

PANELBOARD SCHEDULES - MAIN PLAZA AET LANES

DATE 3-31-2016

PANELBOARD MDP-2
VOLTAGE 120/208V
PHASE/WIRE 3/4

MAINS 100A. MCB
BUS RATING 100A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS) A	LOAD (WATTS) B	LOAD (WATTS) C	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS) A	LOAD (WATTS) B	LOAD (WATTS) C	CKT NO.	DESCRIPTION
SPARE	1	--			20/1			20/1	--			2	SPARE
SPARE	3		--		20/1			20/1		200		4	LIGHTING CONTACTOR (CONTROL)
SPARE	5			--	20/1			30/3			2000	6	HVAC UNITS
EMERGENCY LIGHT	7	100			20/1				2000			8	
INTERIOR LIGHTS	9		200		20/1					2000		10	
EXTERIOR BUILDING LIGHTS	11			240	20/1			30/1			--	12	SPARE
VES WASH SYSTEM (LOC 2)	13	2500			30/1			30/2	2500			14	UPS-2 (5 KVA)
SPARE	15		--		20/1					2500		16	
SPARE	17			--	20/1			20/1			--	18	SPARE
EXTERIOR RECEPTACLE	19	200			20/1			20/1	400			20	INTERIOR RECEPTACLES
EXTERIOR RECEPTACLE	21		200		20/1			20/1		400		22	INTERIOR RECEPTACLES
SPARE	23			--	20/1			30/2			--	24	LINE CONDITIONER
LINE CONDITIONER (LC-1)	25	2500			30/2				--			26	
	27		2500					20/1		--		28	SPARE
VES WASH SYSTEM (LOC 3)	29			2500	30/1			30/2			1250	30	UPS-ITS-2 (5 KVA)
SPARE	31	--			20/1				1250			32	
ROADWAY LTG TRANSFORMER	33		960		20/2			20/1		--		34	SPARE
ROADWAY LTG TRANSFORMER	35			960				40/1			3600	36	AIR COMPRESSOR
"A"		5300			SUBTOTAL "A" = 11450				6150				"A"
"B"			3860		SUBTOTAL "B" - 11960					8100			"B"
"C"				3700	SUBTOTAL "C" = 7470						3770		"C"
TOTAL WATTS "A,B,C"		= 28.38 KW											

PANELBOARD UPS-2
VOLTAGE 120V.
PHASE/WIRE 1/2

MAINS 30A. 1P. MCB
BUS RATING 30A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
RACK RECEPTACLE (REMOTE PLAZA)	1	400	20/1			20/1	300	2	RACK RECEPTACLE (LCC) RAMP L1
RACK RECEPTACLE (REMOTE PLAZA)	3	400	20/1			20/1	300	4	RACK RECEPTACLE (I-PASS) RAMP L1
VIDEO POWER JUNCTION BOX 5	5	400	20/1			20/1	400	6	RACK RECEPTACLE (FIBER)
VIDEO POWER JUNCTION BOX 6	7	400	20/1			20/1	200	8	CARD READER PANEL
VIDEO POWER JUNCTION BOX 3	9	400	20/1			20/1	--	10	SPARE
VIDEO POWER JUNCTION BOX 4	11	400	20/1			20/1	--	12	SPARE
SUBTOTAL "A"		2400					1200		
TOTAL WATTS "A,B,C"		= 3.6 KW							

PANELBOARD ITS 2
VOLTAGE 120V / 208V
PHASE/WIRE 1/3

MAINS 30A. 2P. MCB
BUS RATING 60A.
MOUNTING SURFACE

DESCRIPTION	CKT NO.	LOAD (WATTS)	AMPS/ POLES	CKT BKR	CKT BKR	AMPS/ POLES	LOAD (WATTS)	CKT NO.	DESCRIPTION
5 KVA TRANSFORMER	1	--	30/2P			10/1P	200	2	ITS RACK RECEPTACLES
	3					10/1P	--	4	SPARE
SPARE	5	--	10/1P			10/1P		6	SPARE
SPARE	7	--	10/1P			10/1P		8	SPARE
SUBTOTAL = ---		----					200		
TOTAL WATTS "A,B"		= 0.2 KW							

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M-BUS-2550

Illinois Tollway

PANELBOARD
SCHEDULES - REMOTE PLAZA
AET LANES

DATE
3-31-2016

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND NOTES.
2. FRONT AND REAR VES CAMERA CABLES ARE PULLED BY THE CONTRACTOR INTO MONOTUBE AND POLE ARM. THE CONTRACTOR WHIPS UP ABOUT 10 FEET OF CABLE, LEAVING THE MAJORITY INSIDE THE MONOTUBE/POLE ARM. THE ILLINOIS TOLLWAY WILL PULL FROM THE JB/POLE ARM TO THE CAMERAS AND THEN TERMINATE.
3. VES CAMERA NUMBERING SCHEME BEGIN 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, THEN RUN IN 1" 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 CABLING IS USED TO POWER THE VES CAMERAS. THESE CABLES WILL RUN FROM A 24V DC POWER SUPPLY LOCATED IN THE VPSB.
9. DATA LOGGER CAMERA SHALL BE PLACED DOWNSTREAM OF THE EXITING MONOTUBE ON A LIGHT STANDARD OR POLE. DATA LOGGER CAMERA POWER AND SIGNAL WILL GO THROUGH CAT 6 ETHERNET CABLE.
10. 1.5" SEALTITE AND FITTINGS ARE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE ILLINOIS TOLLWAY.
11. ALL WIRING FROM CAMERAS/I-PASS ANTENNAS SHALL BE SURGE PROTECTED AS IT ENTERS PLAZA BUILDING.
12. PROVIDE 14 FT PERPENDICULAR OUTRIGGER SUPPORT FOR VES CAMERA POLE AND THE ANTENNA POLE DUE TO THE NEEDS OF MULTIPROTOCOL READERS ONLY. MAINTAIN THE POSITION OF THE VES SUPPORT POLE SO THE LONGER OUTRIGGER WILL NEED TO CANTILEVER MORE TOWARDS THE DEPARTURE SIDE OF THE MONOTUBE.
13. NOT USED.
14. CONTRACTOR SHALL FURNISH AND INSTALL JUNCTION BOX 12"X12"X6" TYPE NEMA 4X, HOFFMAN A1212CHNFSS ON DOWN STREAM SIDE OF THE ENTRANCE AND EXIT MONOTUBES FOR TERMINATION OF POWER AND COMMUNICATION CABLES (EXCEPT AVI CABLES). SEE STRUCTURAL DRAWINGS FOR LOCATION.
15. REAR PLATE CAMERAS ARE MOUNTED 2'-6" UPSTREAM FROM C/L OF MONOTUBE AND AVI ANTENNAS ARE MOUNTED 2'-6" DOWNSTREAM FROM C/L OF MONOTUBE.

NOTE TO DESIGNER

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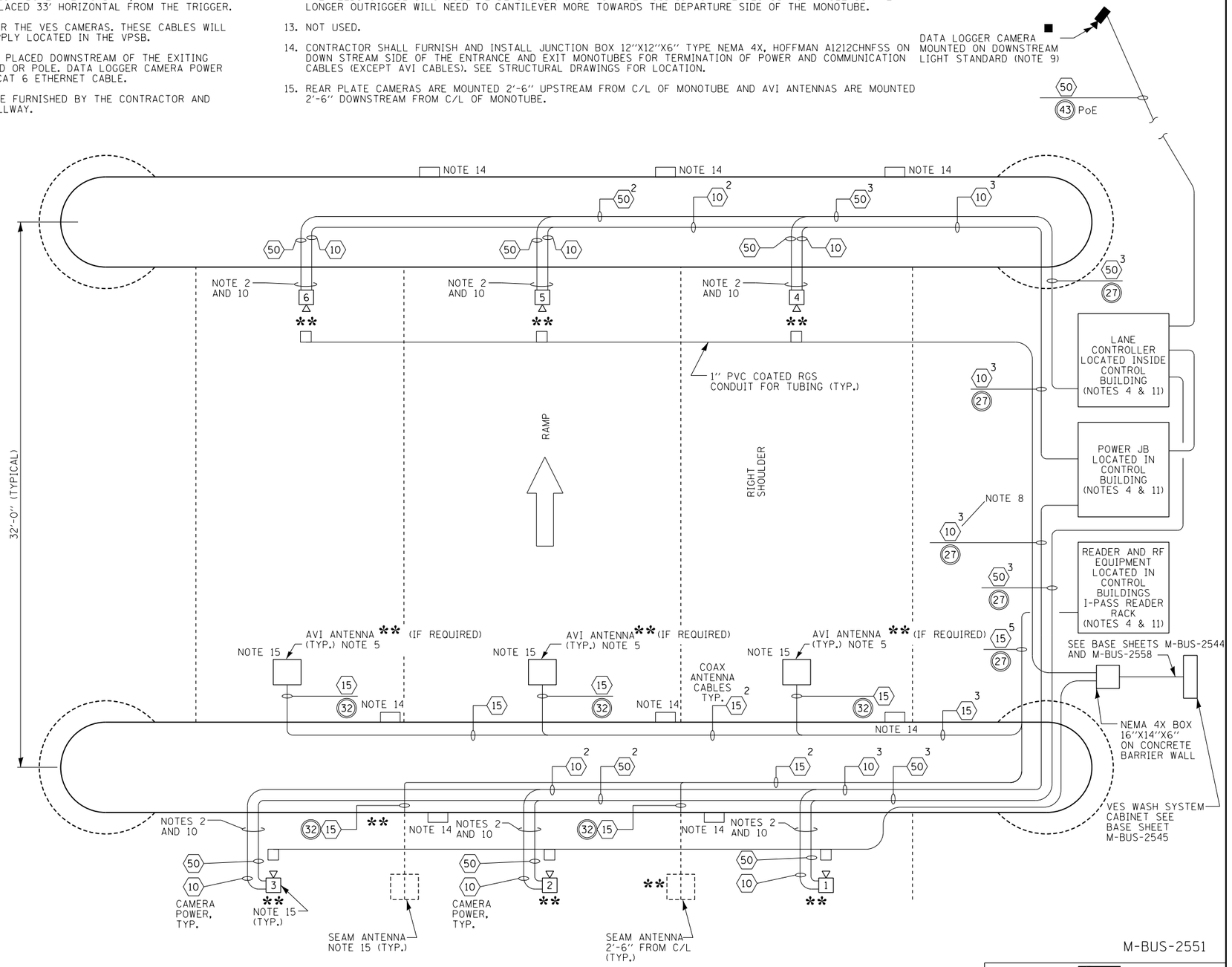
LEGEND:

- * 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

M-BUS-2551

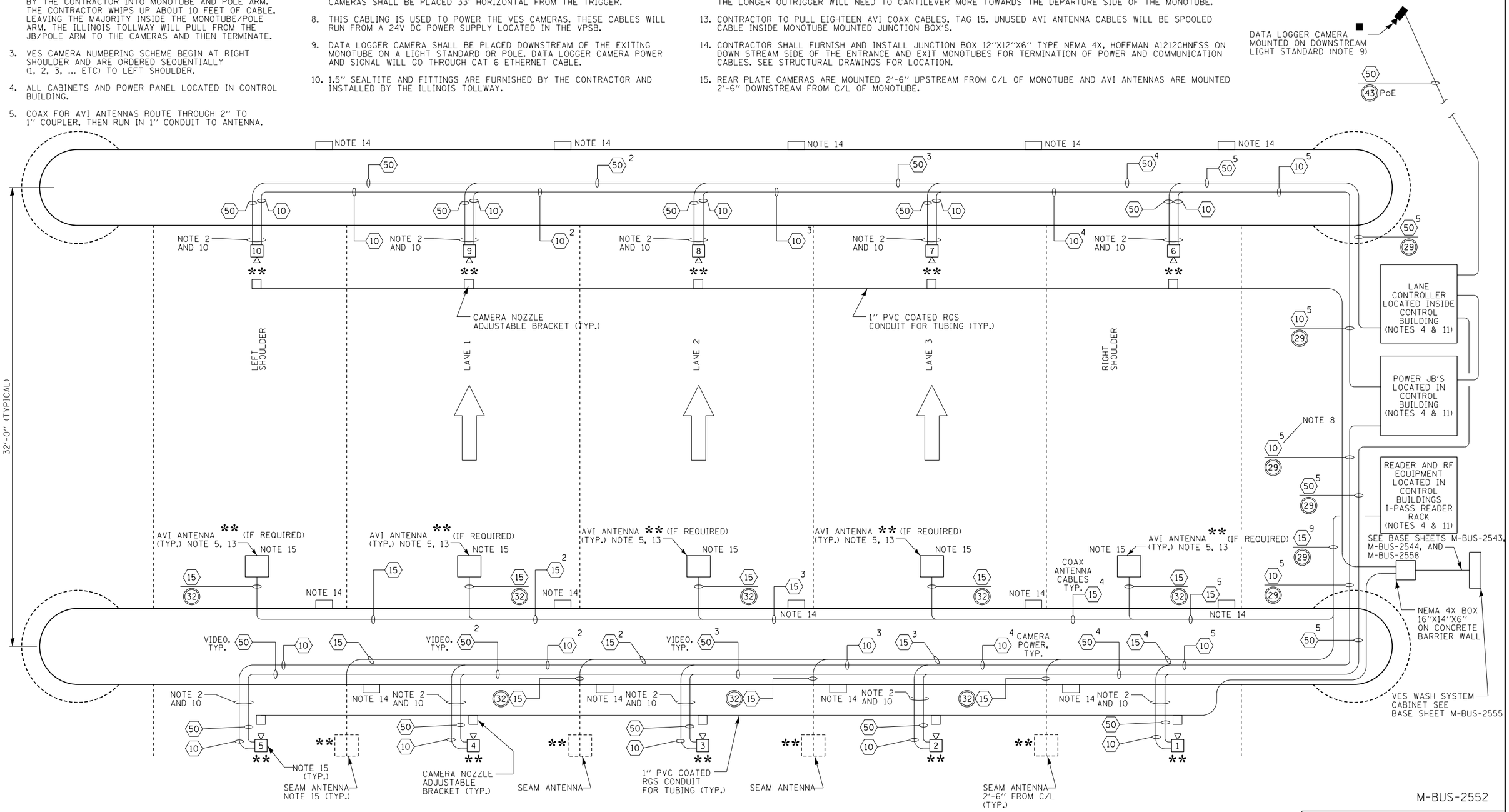
Illinois Tollway

WIRING DIAGRAM - AET 1-LANE LAYOUT

DATE 3-31-2016

NOTES:

1. SEE BASE SHEET M-BUS-2500 FOR CABLE/CONDUIT SCHEDULE AND NOTES.
2. FRONT AND REAR VES CAMERA CABLES ARE PULLED BY THE CONTRACTOR INTO MONOTUBE AND POLE ARM. THE CONTRACTOR WHIPS UP ABOUT 10 FEET OF CABLE. LEAVING THE MAJORITY INSIDE THE MONOTUBE/POLE ARM. THE ILLINOIS TOLLWAY WILL PULL FROM THE JB/POLE ARM TO THE CAMERAS AND THEN TERMINATE.
3. VES CAMERA NUMBERING SCHEME BEGIN 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, THEN RUN IN 1" 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 CABLING IS USED TO POWER THE VES CAMERAS. THESE CABLES WILL RUN FROM A 24V DC POWER SUPPLY LOCATED IN THE VPSB.
9. DATA LOGGER CAMERA SHALL BE PLACED DOWNSTREAM OF THE EXITING MONOTUBE ON A LIGHT STANDARD OR POLE. DATA LOGGER CAMERA POWER AND SIGNAL WILL GO THROUGH CAT 6 ETHERNET CABLE.
10. 1.5" SEALTITE AND FITTINGS ARE FURNISHED BY THE CONTRACTOR AND INSTALLED BY THE ILLINOIS TOLLWAY.
11. ALL WIRING FROM CAMERAS/I-PASS ANTENNAS SHALL BE SURGE PROTECTED AS IT ENTERS PLAZA BUILDING.
12. PROVIDE 14 FT PERPENDICULAR OUTRIGGER SUPPORT FOR VES CAMERA POLE AND THE ANTENNA POLE DUE TO THE NEEDS OF MULTIPROTOCOL READERS ONLY. MAINTAIN THE POSITION OF THE VES SUPPORT POLE SO THE LONGER OUTRIGGER WILL NEED TO CANTILEVER MORE TOWARDS THE DEPARTURE SIDE OF THE MONOTUBE.
13. CONTRACTOR TO PULL EIGHTEEN AVI COAX CABLES, TAG 15. UNUSED AVI ANTENNA CABLES WILL BE SPOOLED CABLE INSIDE MONOTUBE MOUNTED JUNCTION BOX'S.
14. CONTRACTOR SHALL FURNISH AND INSTALL JUNCTION BOX 12"X12"X6" TYPE NEMA 4X, HOFFMAN A1212CHNFSS ON DOWN STREAM SIDE OF THE ENTRANCE AND EXIT MONOTUBES FOR TERMINATION OF POWER AND COMMUNICATION CABLES. SEE STRUCTURAL DRAWINGS FOR LOCATION.
15. REAR PLATE CAMERAS ARE MOUNTED 2'-6" UPSTREAM FROM C/L OF MONOTUBE AND AVI ANTENNAS ARE MOUNTED 2'-6" DOWNSTREAM FROM C/L OF MONOTUBE.



M-BUS-2552

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FRONT / REAR PLATE VES BLOCK WIRING DIAGRAM

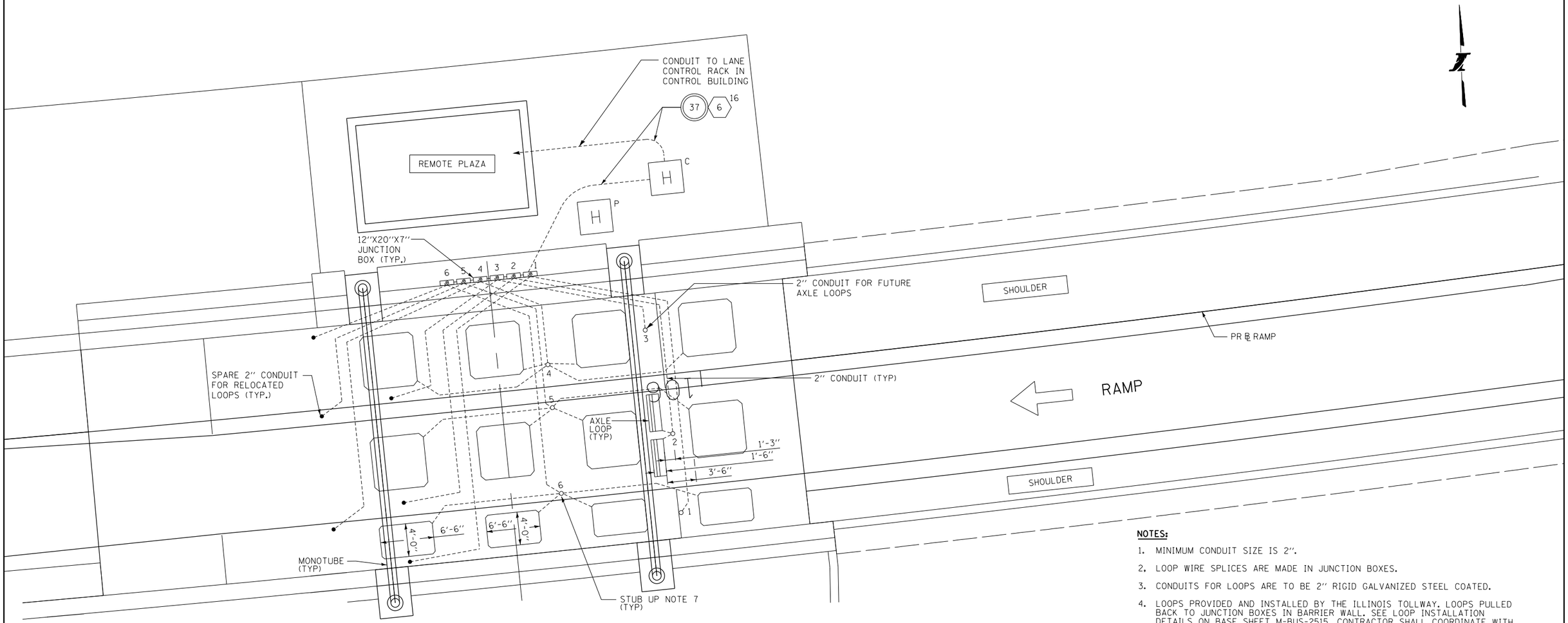
LEGEND:

- * 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.

Illinois Tollway

WIRING DIAGRAM - AET 3-LANE LAYOUT

DATE 3-31-2016



1-LANE AET EQUIPMENT AND LOOP LAYOUT

NOTE TO DESIGNER

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NOTES:

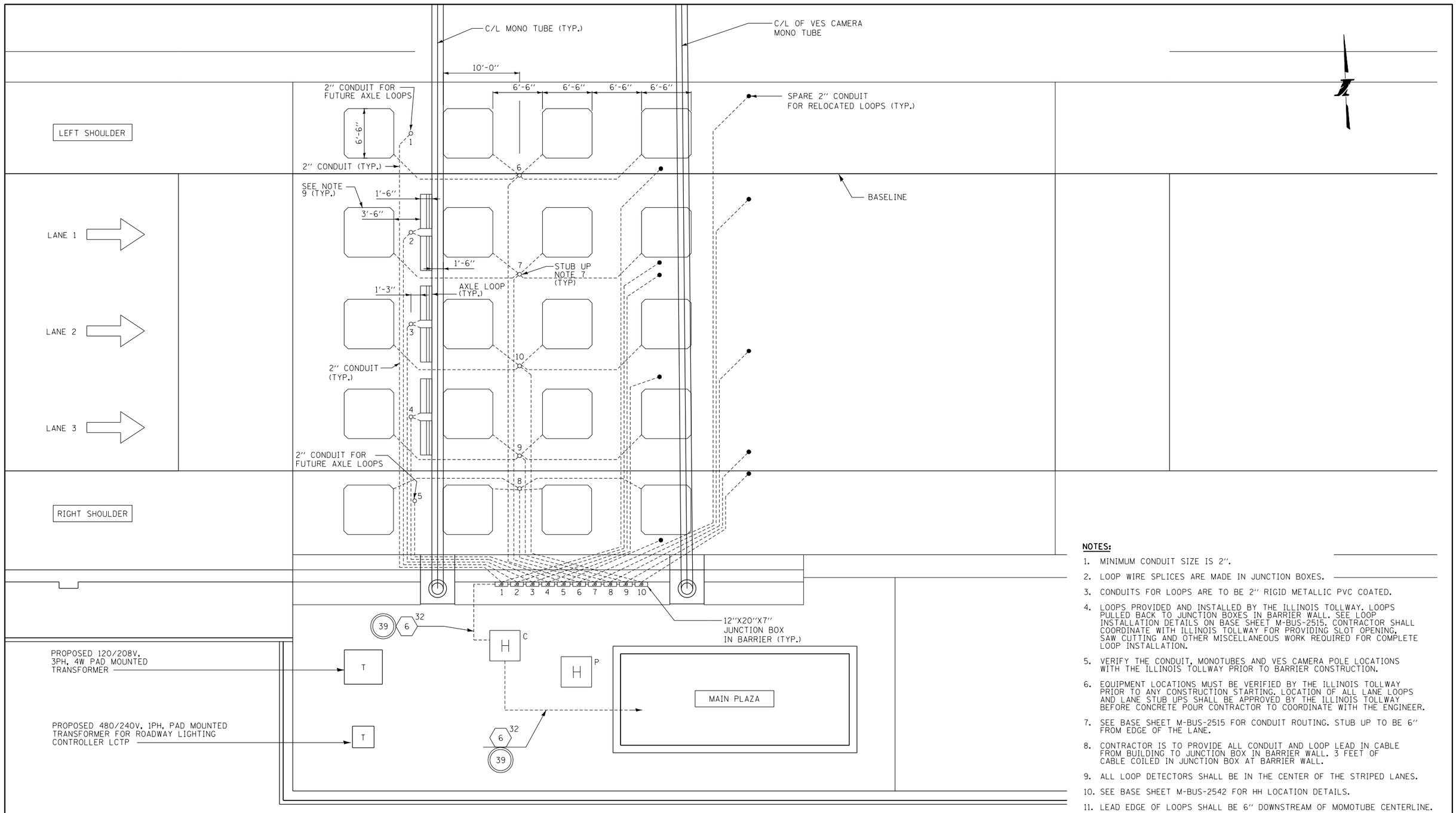
1. MINIMUM CONDUIT SIZE IS 2".
2. LOOP WIRE SPLICES ARE MADE IN JUNCTION BOXES.
3. CONDUITS FOR LOOPS ARE TO BE 2" RIGID GALVANIZED STEEL COATED.
4. LOOPS PROVIDED AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOPS PULLED BACK TO JUNCTION BOXES IN BARRIER WALL. SEE LOOP INSTALLATION DETAILS ON BASE SHEET M-BUS-2515. CONTRACTOR SHALL COORDINATE WITH ILLINOIS TOLLWAY FOR PROVIDING SLOT OPENING, 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 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 BASE SHEET M-BUS-2515 FOR CONDUIT ROUTING. STUB UP TO BE 6" FROM EDGE OF THE LANE.
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 LANES.
10. SEE BASE SHEET M-BUS-2542 FOR HH LOCATION DETAILS.
11. LEAD EDGE OF LOOPS SHALL BE 6" DOWNSTREAM OF MONOTUBE CENTERLINE.

M-BUS-2553

Illinois Tollway

LOOP PLAN - AET 1-LANE LAYOUT

DATE
3-31-2016



NOTES:

1. MINIMUM CONDUIT SIZE IS 2".
2. LOOP WIRE SPLICES ARE MADE IN JUNCTION BOXES.
3. CONDUITS FOR LOOPS ARE TO BE 2" RIGID METALLIC PVC COATED.
4. LOOPS PROVIDED AND INSTALLED BY THE ILLINOIS TOLLWAY. LOOPS PULLED BACK TO JUNCTION BOXES IN BARRIER WALL. SEE LOOP INSTALLATION DETAILS ON BASE SHEET M-BUS-2515. CONTRACTOR SHALL COORDINATE WITH ILLINOIS TOLLWAY FOR PROVIDING SLOT OPENING, 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 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 BASE SHEET M-BUS-2515 FOR CONDUIT ROUTING. STUB UP TO BE 6" FROM EDGE OF THE LANE.
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. SEE BASE SHEET M-BUS-2542 FOR HH LOCATION DETAILS.
11. LEAD EDGE OF LOOPS SHALL BE 6" DOWNSTREAM OF MOMOTUBE CENTERLINE.

M-BUS-2554

3-LANE AET EQUIPMENT AND LOOP LAYOUT

(AET LANES-THREE LANE CONFIGURATION)

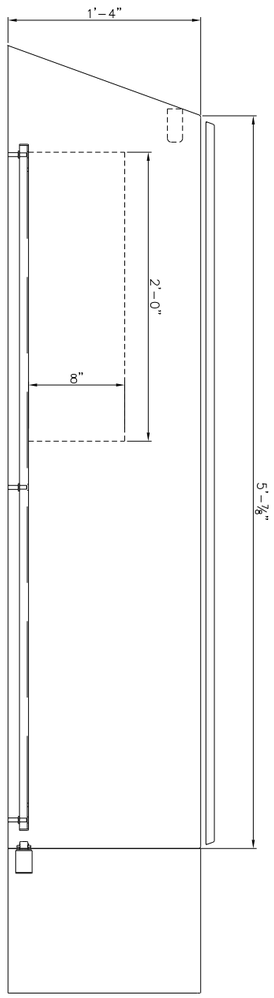
NOTE TO DESIGNER

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.

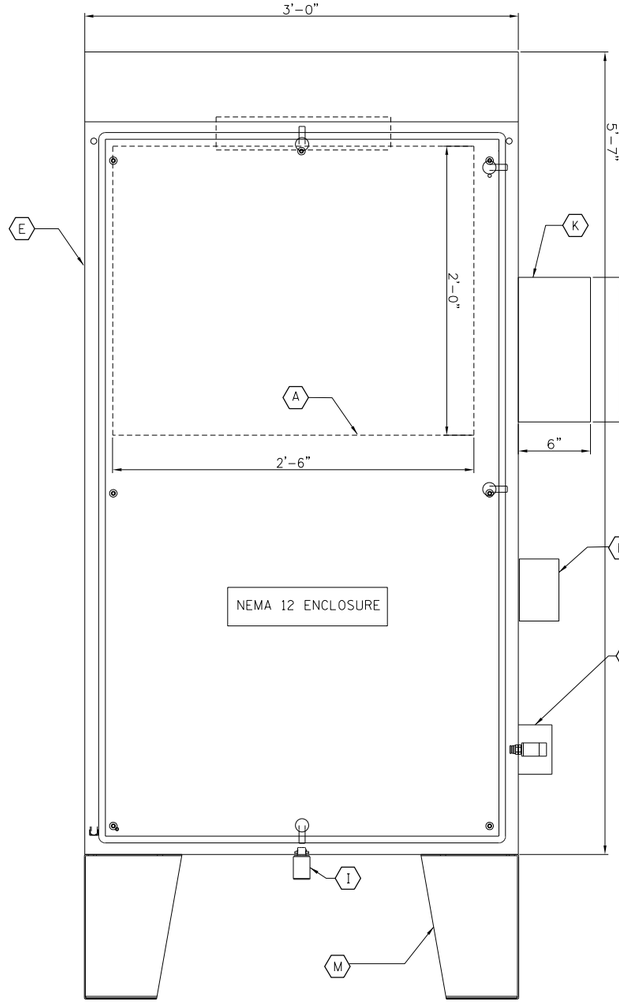
Illinois Tollway

LOOP PLAN - AET 3-LANE LAYOUT

DATE
3-31-2016

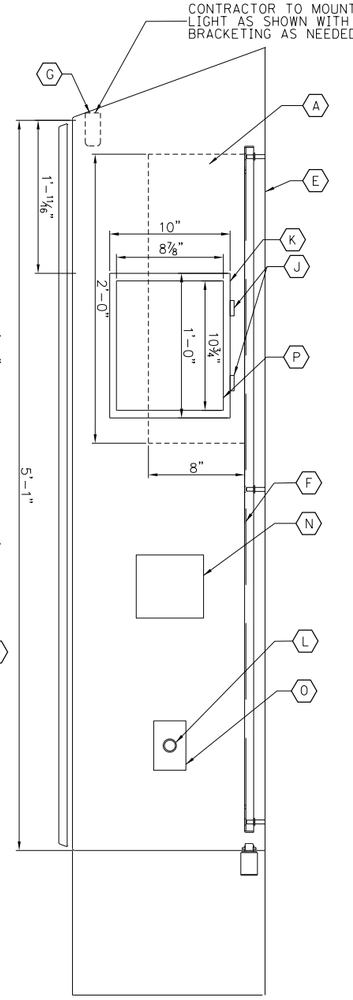


MAIN ENCLOSURE
LEFT SIDE VIEW



MAIN ENCLOSURE
FRONT VIEW

NOT TO SCALE



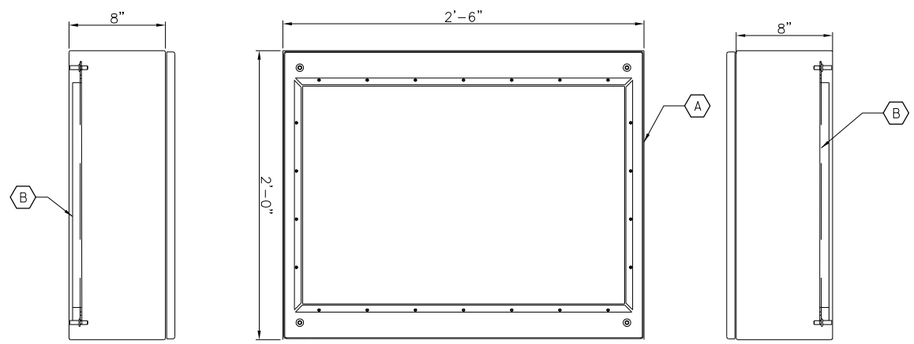
MAIN ENCLOSURE
RIGHT SIDE VIEW

NOTES:

1. MAXIMUM SYSTEM PRESSURE IS 80 PSI.
2. EXACT OPERATING PRESSURE TO BE DETERMINED.
3. FOR PRODUCT SUBSTITUTIONS SEE THE SPECIFICATIONS.
4. ALL CONDUITS, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.
5. THIS DETAIL IS APPLIED FOR LOCATION 1 (MAIN LINE MAIN PLAZA) AND LOCATION 3 (RAMP L1). THIS IS APPLICABLE TO VES WASH SYSTEM INSIDE THE BUILDINGS.
6. NEMA 4X ENCLOSURE IS ONLY REQUIRED WHEN THE VES ENCLOSURE EQUIPMENT ARE INSTALLED OUTDOOR.

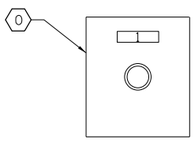
BILL OF MATERIALS COMPONENTS (OR APPROVED EQUAL)

	MARK NO.	QTY.	SPARE	DESCRIPTION
	A	1		NEMA 4X S.S. ENCLOSURE - 30"H X 24"W X 8"D HOFFMAN CATALOG No. CSD30248WSS
	B	1		SUBPANEL FOR ENCLOSURE HOFFMAN CATALOG No. CP3024
	D	1		GROUNDING BAR HOFFMAN CATALOG No. PGS2K (NOT ILLUSTRATED ON DRAWING)
SEE NOTE 6	E	1		NEMA 12 ENCLOSURE - 60"H X 36"W X 16"D HOFFMAN CATALOG No. A60N3618FSLP WITH MOUNTING BRACKETS (HOFFMAN CAT. No. CMFKSS) & PAD LOCKING HANDLE KIT (HOFFMAN CAT. No. WSHPL)
	F	1		SUBPANEL FOR NEMA 1X ENCLOSURE HOFFMAN CATALOG No. A49P32N
	G	1		INCANDESCENT LIGHT FIXTURE FOR ENCLOSURE WITH 120VAC OUTLET HOFFMAN CATALOG No. LF120V15 WITH DOOR SWITCH HOFFMAN CATALOG No. ALFSWD
	H			NOT USED
	I	1		SS VENT DRAIN HOFFMAN CATALOG No. AVDR4SS4
	J	2		FAST OPERATING STAINLESS STEEL CLAMP HOFFMAN CATALOG No. AL23SS
	K	1		NEMA 4X S.S. ENCLOSURE - 12"H X 10"W X 6"D HOFFMAN CATALOG No. A12106CHNFSS
	L	1	2	3/8" S.S. QUICK DISCONNECT ALPHA TECHNOLOGIES CATALOG No. 8013106
SEE NOTE 6	M	1		FLOOR STAND KIT FOR S.S ENCLOSURE HOFFMAN CATALOG NO. AFK1216SS (FOR OUTDOOR APPLICATION ONLY)
	N	1		ELECTRICAL DUAL OUTLET GFCI 20A WITH COVER THOMAS & BETTS CATALOG No. CKMUV
	O	1		IN DOOR COVER
	P	1		SUBPANEL FOR NEMA 1 SS JUNCTION BOX A12106CHNFSS HOFFMAN CATALOG No. A12P10
	Q	1		JUNCTION BOX SWING OUT PANEL KIT HOFFMAN CATALOG No. AJCDFK



ELECTRICAL ENCLOSURE

NOT TO SCALE



NAMEPLATE LEGEND

NUMBER	QTY.	TEXT HEIGHT	INSCRIPTION
1	1	1/8"	AIR CONNECTION

CONNECTION DETAIL

NOT TO SCALE

NOTE TO DESIGNER

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M-BUS-2555

Illinois Tollway

VES WASH SYSTEM
ENCLOSURE DETAIL

DATE
3-31-2016

BILL OF MATERIAL COMPONENTS (OR APPROVED EQUAL)

MARK NO.	QTY.	SPARE	DESCRIPTION
E	25		FUSED TERMINAL BLOCK (USES COOPER BUSSMAN AGC-2 2A FUSES) ALLEN BRADLEY CATALOG No. 1492-H4
F	AS REQ'D		FUSED TERMINAL BLOCK END BARRIER ALLEN BRADLEY CATALOG No. 1492-N37
G	35		STANDARD FEED-THRU TERMINAL BLOCK ALLEN BRADLEY CATALOG No. 1492-J4
H	AS REQ'D		STANDARD FEED-THRU TERMINAL BLOCK END BARRIER ALLEN BRADLEY CATALOG No. 1492-EBJ3
I	35		STANDARD FEED-THRU TERMINAL BLOCK - GREEN (GND) ALLEN BRADLEY CATALOG No. 1492-J4-G
J	12		DIN RAIL END ANCHORS ALLEN BRADLEY CATALOG No. 1492-EAJ35
N	AS REQ'D		2" X 3" WIREWAY WITH COVER PANDUIT CATALOG No. F2X3LG6 & C2LG6
O	AS REQ'D		1.5" X 3" WIREWAY WITH COVER PANDUIT CATALOG No. F1.5X3LG6 & C1.5LG6
P	AS REQ'D		2" X 4" WIREWAY WITH COVER PANDUIT CATALOG No. F2X4LG6 & C2LG6
R	1		3 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B030
S	1		5 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B050
T	2		10 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B100
U	1		25 AMP MAIN CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-MCAA125
V	AS REQ'D		AB DIN RAIL CATALOG NO. 199-DR1 OR APPROVED EQUAL
W	1		10 STATION MANIFOLD INCLUDING VALVES VERSA CATALOG No. EZM-2140-10-0-HC-A120
Y	2		SUBPLATE - SINGLE STATION VERSA CATALOG No. EM-21-120-1
Z	2		2-WAY N.C. VALVE ASSEMBLY VERSA CATALOG No. E7SM-2011-140-A120
AA	1		1/4" BLACK NYLON TUBING (NOTE 4) ALPHA N11-041-100
AB	1		100ft 3/8" NATURAL NYLON TUBING ALPHA N11-062-100
AG	1		20 AMP CIRCUIT BREAKER ALLEN BRADLEY CATALOG No. 1492-SP1B200
AH	1		GROUNDING BAR HOFFMAN CATALOG No. PGS2K
AI	1		10 GAL WASHER FLUID CANISTER SIMGO CATALOG No. 22-29764
AK	5		WALL MOUNT CYLINDER BRACKET GLOBAL INDUSTRIAL CATALOG No. G100
AL	3		1/4" BALL VALVE WESTERN ENTERPRISES CATALOG No. WMV-5-11
AM	1		NITROGEN TANK REGULATOR WESTERN ENTERPRISES CATALOG No. REB-7-5AC
AN	1		T-JUNCTION FITTING (10 PACK) SMC FITTINGS CATALOG No. KQ2T11-00
AO	1		45 DEG MALE ELBOW FITTING (10 PACK) SMC FITTINGS CATALOG No. KQ2K07-34S
AP	1	2	EXTERNAL QUICK DISCONNECT BULKHEAD FITTING (10 PACK) SMC FITTINGS CATALOG No. KQ2E11-36
AQ	1	4	MALE CONNECTOR FITTING (10 PACK) SMC FITTINGS CATALOG No. KQ2H11-35S
AR	1	4	FEMALE CONNECTOR FITTING (10 PACK) SMC FITTINGS CATALOG No. KQ2F11-35
AS	1		REGULATOR FOR FLUID CANISTER INLET CA TECHNOLOGIES CATALOG No. 52-7
AT	0	4	PNEUMATIC PIPE PLUGS VERSA CATALOG No. P-1022-02A
AU	AS REQ'D		U-BOLT ASSEMBLY GRAINGER CATALOG No. 5YY10
AV	AS REQ'D		T-CLIP CONNECTORS (NOT SHOWN) GRAINGER CATALOG No. 6ZF06

NOTE TO DESIGNER

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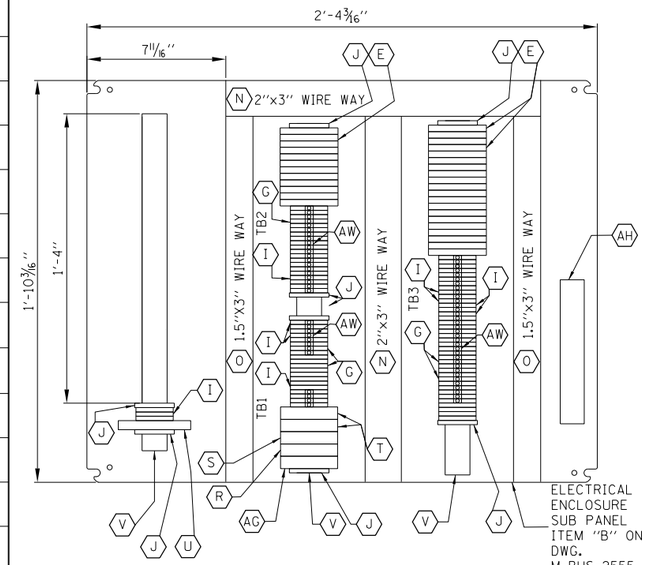
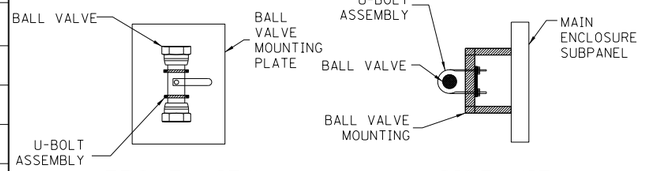


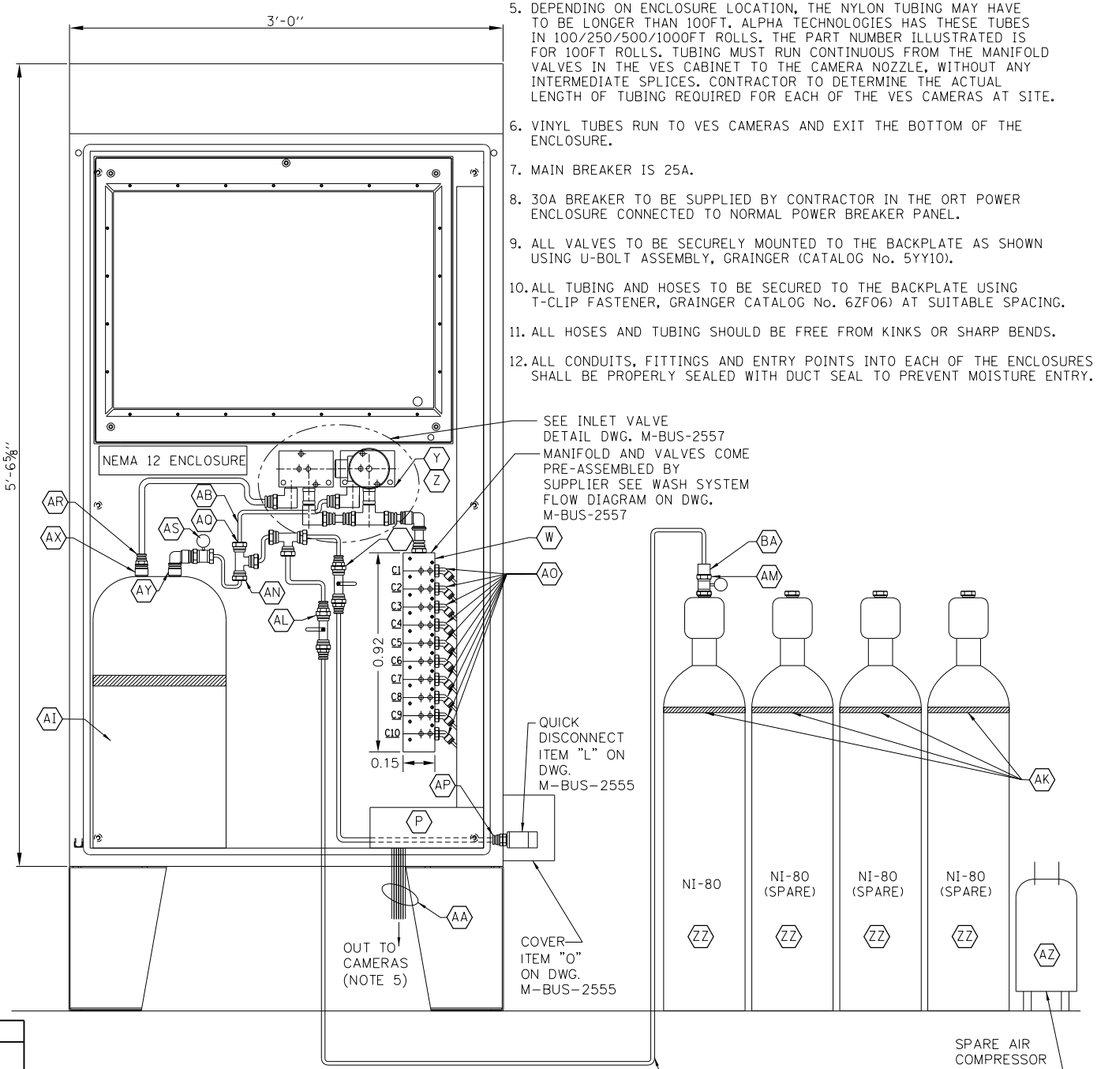
ELECTRICAL ENCLOSURE SUBPANEL



T-JUNCTION AND VALVE MOUNTING DETAIL

NOT TO SCALE

MARK NO.	QTY.	SPARE	DESCRIPTION
AW	10		CENTER JUMPERS ALLEN BRADLEY CATALOG No. 1492-CJJ6-10 & 1492-CJJ6-4
AX	1	4	1/4" FNPT SS LIQUID CONNECTOR FITTING HANSEN BEVERAGE CATALOG No. 2-HL16
AY	1	4	1/4" MNPT SS AIR CONNECTOR FITTING HANSEN BEVERAGE CATALOG No. 2-HL15
AZ	1		ROLAIR FC25009OL, 2 HP, 120V SINGLE PHASE AIR COMPRESSOR (DIRECT DRIVE)
BA	1	4	SMC FITTINGS, CATALOG NO. KSH11-365
ZZ	4		NI-80 AIRGAS NITROGEN TANK



MAIN ENCLOSURE AND SUBPANEL LAYOUT

NOT TO SCALE

M-BUS-2556

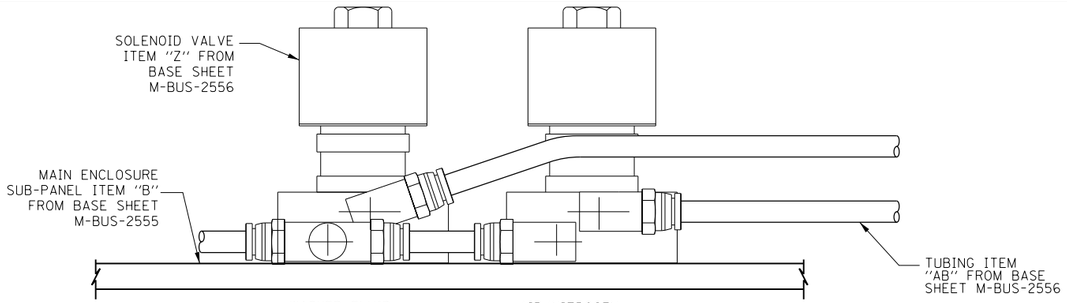
NOTES:

1. PNEUMATIC FITTINGS TO BE BRASS IN CONSTRUCTION AND MEET SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) SPECIFICATIONS.
2. QUANTITIES ILLUSTRATED ARE FOR A 3-LANE EB AND WB MAIN LINES THAT HAS TEN (10) VES CAMERAS EACH INSTALLED (5 REAR AND 5 FRONT VES).
3. PROVIDE BALL VALVE BETWEEN T-CONNECTOR AND NITROGEN TANK FOR REMOVAL OF TANK FROM THE ENCLOSURE.
4. CONTRACTOR SHALL PROVIDE SPLASH WIND SHIELD WASHER FLUID WITH ALCOHOL. GLYCOL SHALL NOT BE USED.
5. DEPENDING ON ENCLOSURE LOCATION, THE NYLON TUBING MAY HAVE TO BE LONGER THAN 100FT. ALPHA TECHNOLOGIES HAS THESE TUBES IN 100/250/500/1000FT ROLLS. THE PART NUMBER ILLUSTRATED IS FOR 100FT ROLLS. TUBING MUST RUN CONTINUOUS FROM THE MANIFOLD VALVES IN THE VES CABINET TO THE CAMERA NOZZLE, WITHOUT ANY INTERMEDIATE SPLICES. CONTRACTOR TO DETERMINE THE ACTUAL LENGTH OF TUBING REQUIRED FOR EACH OF THE VES CAMERAS AT SITE.
6. VINYL TUBES RUN TO VES CAMERAS AND EXIT THE BOTTOM OF THE ENCLOSURE.
7. MAIN BREAKER IS 25A.
8. 30A BREAKER TO BE SUPPLIED BY CONTRACTOR IN THE ORT POWER ENCLOSURE CONNECTED TO NORMAL POWER BREAKER PANEL.
9. ALL VALVES TO BE SECURELY MOUNTED TO THE BACKPLATE AS SHOWN USING U-BOLT ASSEMBLY, GRAINGER (CATALOG No. 5YY10).
10. ALL TUBING AND HOSES TO BE SECURED TO THE BACKPLATE USING T-CLIP FASTENER, GRAINGER CATALOG No. 6ZF06) AT SUITABLE SPACING.
11. ALL HOSES AND TUBING SHOULD BE FREE FROM KINKS OR SHARP BENDS.
12. ALL CONDUITS, FITTINGS AND ENTRY POINTS INTO EACH OF THE ENCLOSURES SHALL BE PROPERLY SEALED WITH DUCT SEAL TO PREVENT MOISTURE ENTRY.

Illinois Tollway

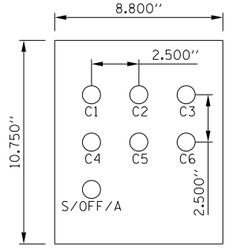
VES WASH SYSTEM PANEL DETAIL

DATE 3-31-2016



INLET VALVE DETAIL

NOT TO SCALE



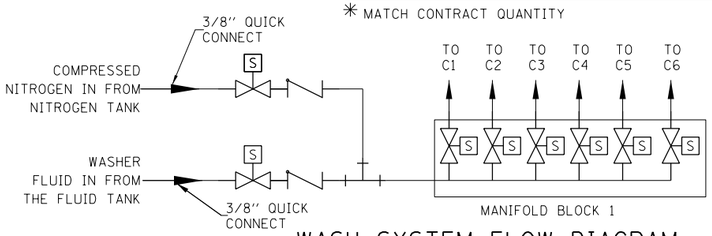
EXTERNAL SWITCHES

SWITCH NAMEPLATE LEGEND			
NUMBER	QTY.	TEXT HEIGHT	INSCRIPTION
1	1	1/8"	S / OFF / A
2-6	6	1/8"	C1, C2, ..., C6 (NOTE 5)

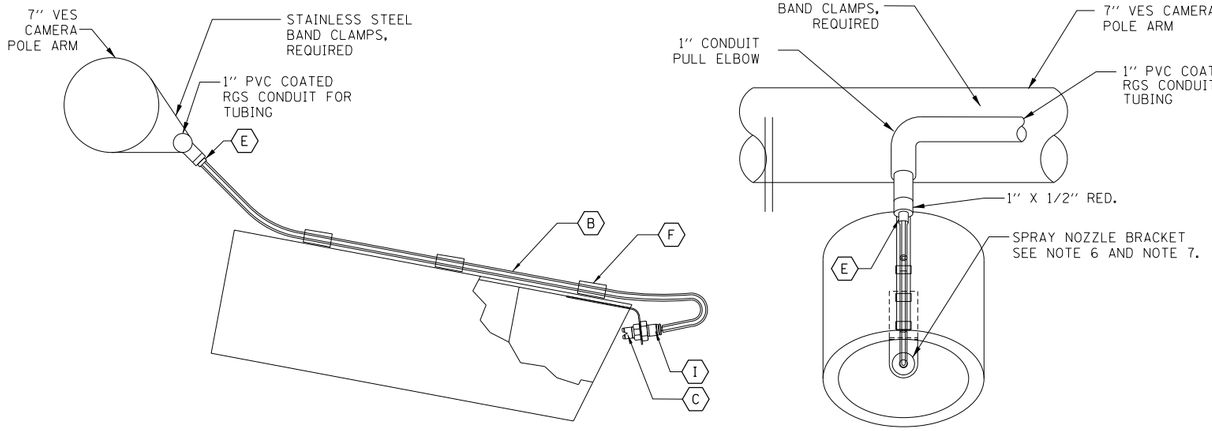
BILL OF MATERIAL COMPOTENTS (OR APPROVED EQUAL)

MARK NO.	QTY.	SPARE	DESCRIPTION
(A)	2	1	1/4" NPT CHECK VALVE McMASTER-CARR CATALOG No. 7775K62
(B)	AS REQ'D		SILICONE HOSE SLEEVE (50' SPOOL) McMASTER-CARR CATALOG No. 7453K49
(C)	6	*	SPRAY NOZZLE GRAINGER CATALOG No. 1MDH2
(E)	6		MINIATURE CORROSION RESISTANT STRAIN RELIEF HUBBELL CATALOG No. SHC1021CR
(F)	2		ADJUSTABLE MOUNTING STRAP McMASTER-CARR CATALOG No. 7572K12 (50 PER PACK)
(G)	5	2	30.5 MM, ON / OFF SWITCH (NOTE 4) SQUARE D PART NUMBER SKS11BH13
(H)	1	1	30.5 MM, ON / OFF / ON SWITCH (NOTE 5) SQUARE D PART NUMBER SKS43BH13
(I)	1	*	NOZZLE BULKHEAD FITTING (10 PACK) SMC FITTING CATALOG No. KQ2E07-35

* MATCH CONTRACT QUANTITY



WASH SYSTEM FLOW DIAGRAM

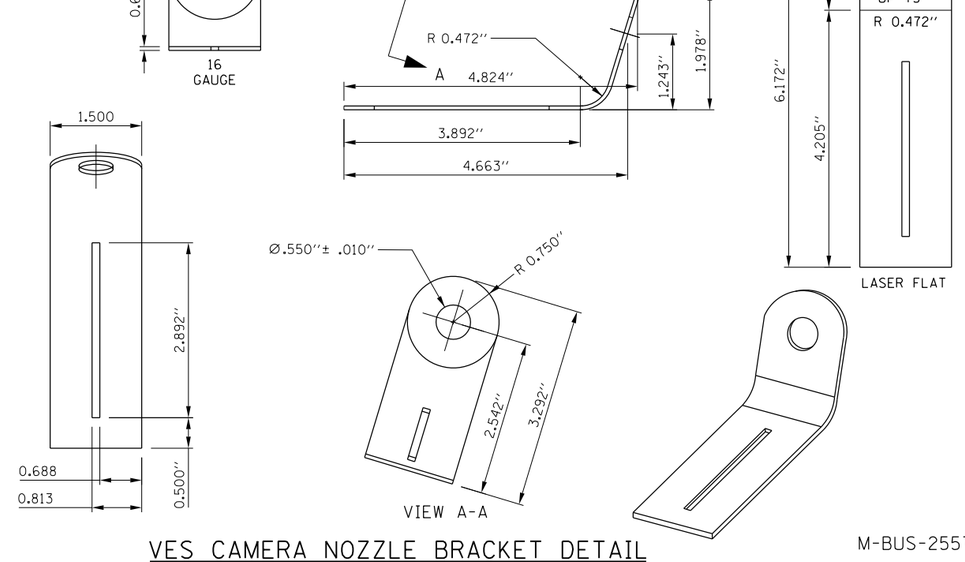


NOZZLE DETAIL - VES CAMERA MONOTUBE

NOT TO SCALE

NOTE:

1. QUANTITIES ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA THAT HAS SIX (6) VES CAMERAS (3 REAR AND 3 FRONT VES).
2. A 2-LANE RAMP PLAZA CONFIGURATION IS ILLUSTRATED. THE MANIFOLD-VALVE SYSTEM SHOWN ILLUSTRATES EIGHT (8) PORTS, ONE EACH FOR THE SIX (6) VES CAMERAS INSTALLED (3 REAR VES AND 3 FRONT VES) AND TWO (2) SPARE PORTS PLUGGED FOR FUTURE USE.
3. A 1-LANE RAMP PLAZA WILL HAVE FOUR (4) CAMERAS (2 REAR AND 2 FRONT VES). THE MANIFOLD-VALVE SYSTEM FOR A 1-LANE RAMP PLAZA WILL HAVE SIX (6) PORTS, ONE EACH FOR THE THREE (3) VES CAMERAS INSTALLED AND TWO (2) SPARE PORTS PLUGGED FOR FUTURE USE.
4. THE SWITCHES ARE NOT SHOWN ON THIS DRAWING. THE QUANTITY ILLUSTRATED ARE FOR A 2-LANE RAMP PLAZA. THESE SWITCHES ARE MOUNTED ON THE BACKPLATE OF THE HOFFMAN SWITCH ENCLOSURE ILLUSTRATED ON GUIDE-1.
5. 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 ILLUSTRATED ON GUIDE-1.
6. CAMERA NOZZLE BRACKET SHALL BE FABRICATED USING 12 GA. STAINLESS STEEL. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL.
7. CAMERA NOZZLE BRACKET SHALL BE ADJUSTABLE. STAINLESS STEEL NUT-BOLT COMBINATION SHALL BE USED FOR MOUNTING THE CAMERA NOZZLE BRACKET TO THE CAMERA LENS HOUSING. CONTRACTOR TO VERIFY THAT THE MOUNTING HARDWARE SECURELY HOLDS THE BRACKET BUT ALSO ALLOWS EASY ADJUSTMENT. CONTRACTOR SHALL SUBMIT INSTALLATION DRAWINGS CLEARLY IDENTIFYING PART NUMBERS USED FOR MOUNTING HARDWARE. INSTALLATION DRAWINGS SHALL ALSO INDICATE THE POSITON OF THE MOUNTING HARDWARE ON THE CAMERA NOZZLE BRACKET. THE INSTALLATION DRAWINGS SHALL BE APPROVED BY THE ILLINOIS TOLLWAY BEFORE INSTALLATION IN THE FIELD.



VES CAMERA NOZZLE BRACKET DETAIL

NOT TO SCALE

NOTE TO DESIGNER

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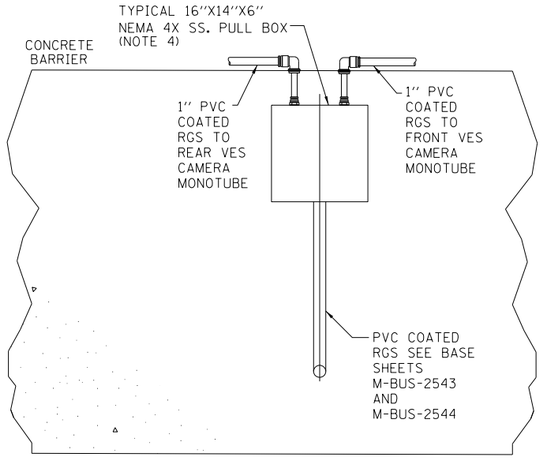
M-BUS-2557

Illinois Tollway

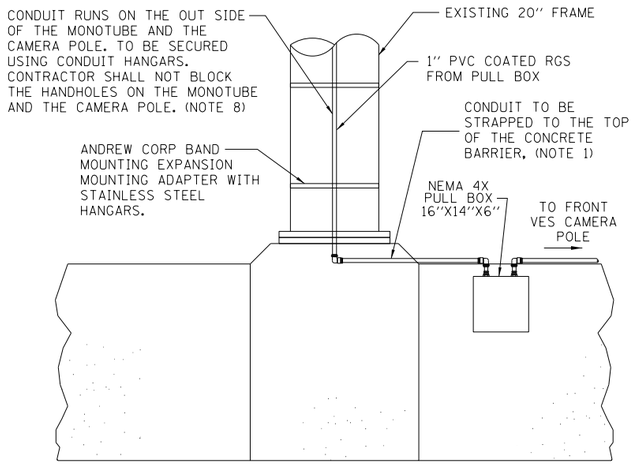
VES WASH SYSTEM FLOW DIAGRAM AND MECHANICAL DETAIL

DATE
3-31-2016



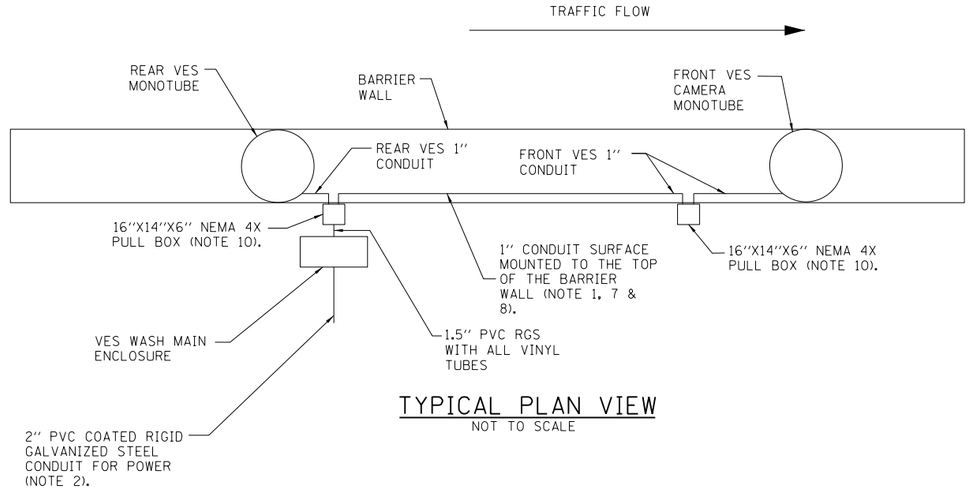
PARTIAL SECTION A-A

NOT TO SCALE



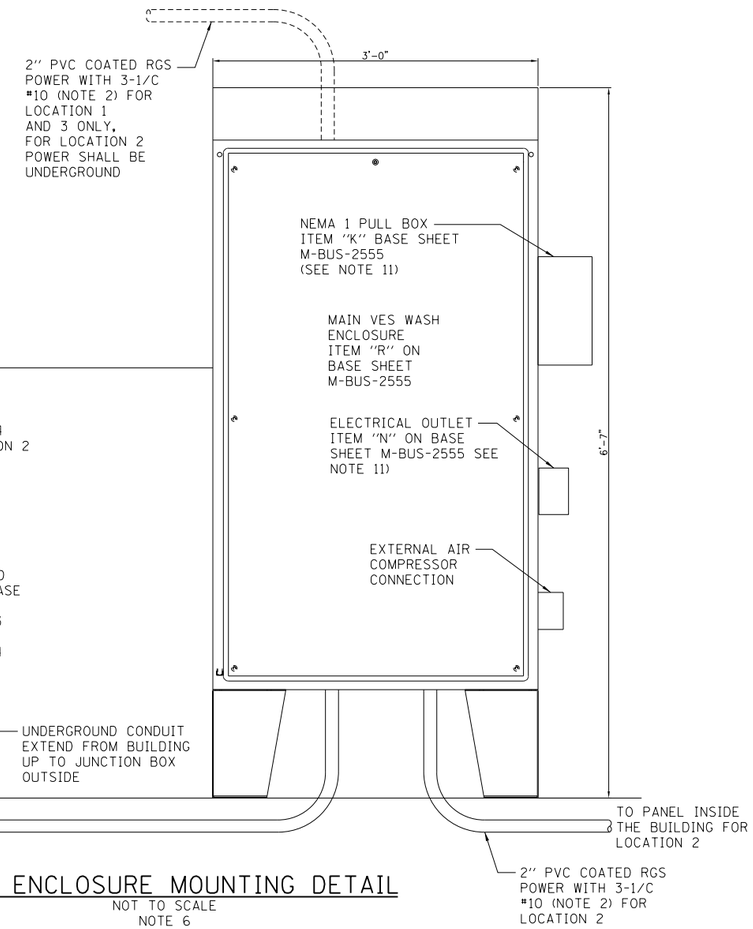
COLLECTION STRUCTURE CONDUIT DETAIL

NOT TO SCALE



TYPICAL PLAN VIEW

NOT TO SCALE



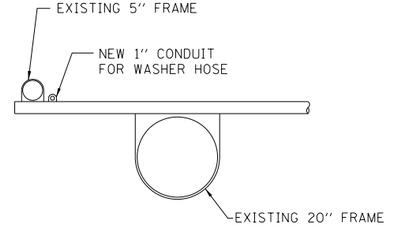
MAIN ENCLOSURE MOUNTING DETAIL

NOT TO SCALE

NOTE 6

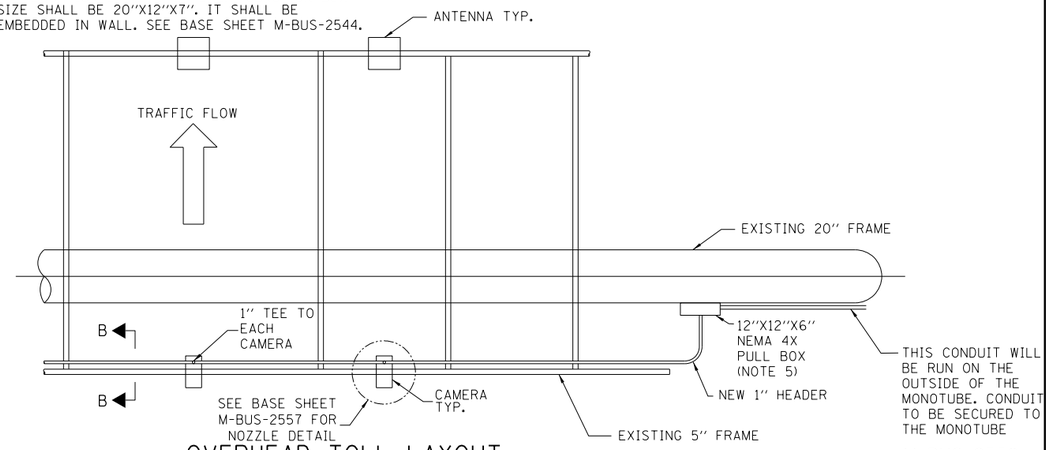
NOTES:

1. ALL CONDUIT ROUTING AND EQUIPMENT PLACEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR. THE ROUTING AND PLACEMENT DEPICTED IS SUGGESTED ONLY. ACTUAL ENCLOSURE LOCATION WILL VARY BASED ON SITE CONDITIONS. THE CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATION AND CONDUIT ROUTING WITH CONSTRUCTION ENGINEER AND ILLINOIS TOLLWAY ENGINEER.
2. THE POWER CONDUIT WILL RUN TO THE POWER PANEL INSIDE THE MAIN LINE PLAZA BUILDING. THE NORMAL BREAKER PANEL WILL BE UTILIZED FOR THE VES WASH POWER SOURCE.
3. UNLESS OTHERWISE NOTED ALL CONDUIT IS PVC COATED RGS.
4. ONE (1) NEMA 4X 12''X12''X6'' ENCLOSURE WILL BE PLACED ON THE REAR AND FRONT VES CAMERA MONOTUBE AND ONE (1) NEMA 4X 16''X14''X8'' WILL BE PLACED ON THE BARRIER WALL AT EACH AET ZONE.
5. MONOTUBE MOUNTED NEMA 4X PULL BOXES LOCATION TO BE DETERMINED IN FIELD. PULL BOX TO BE SECURELY FASTENED TO THE CONCRETE BARRIER. AT LEAST 1' OF SPOOLED UP VINYL TUBING FOR EACH CAMERA WILL BE PLACED IN THE MONOTUBE PULL BOXES.
6. FINAL POSITION OF VES ENCLOSURE WILL BE DETERMINED IN FIELD.
7. CONDUITS FOR SPRAY TUBING SHALL BE SEALED ON BOTH ENDS TO PREVENT WATER FROM PENETRATING.
8. CONTRACTOR SHALL PROVIDE STRAIN RELIEF FOR WASHER TUBING IN POLES/MONOTUBES.
9. FINAL POSITION AND NUMBER OF VES CAMERAS INSTALLED TO BE DETERMINED IN THE FIELD. NUMBER OF REAR VES CAMERAS SHOWN IS FOR ILLUSTRATION PURPOSES ONLY.
10. 16''x14''x6'' NEMA 4X PULL BOXES FOR THE REAR AND FRONT VES CAMERA MONOTUBE SHALL BE SURFACE MOUNTED ON THE RIGHT SHOULDER BARRIER WALL, AWAY FROM TRAFFIC.
11. NEMA 12 ENCLOSURE (ITEM ''K'' ON BASE SHEET M-BUS-2555), EXTERNAL AIR COMPRESSOR CONNECTION AND ELECTRICAL DUAL OUTLET (ITEM ''N'' ON BASE SHEET M-BUS-2555) SHALL BE MOUNTED ON THE SIDE OF THE MAIN ENCLOSURE, AWAY FROM ANY OBSTRUCTION.
12. ALL CONDUITS, FITTINGS AND PENETRATIONS INTO EACH OF THE ENCLOSURES IN THE SYSTEM SHALL BE PROPERLY SEALED WITH ELECTRICAL PUTTY OR OTHER APPROVED SEALING METHODS TO PREVENT MOISTURE AND RODENT ENTRY.
13. CONTRACTOR MUST VERIFY THAT THERE SHALL BE SUFFICIENT ROOM FOR CABINET DOOR TO OPEN.
14. FOR LOCATION 2 (REMOTE PLAZA) JUNCTION BOX SIZE SHALL BE 20''X12''X7''. IT SHALL BE EMBEDDED IN WALL. SEE BASE SHEET M-BUS-2544.



SELECTION B-B

NOT TO SCALE



OVERHEAD TOLL LAYOUT

NOT TO SCALE

TYP REAR VES ILLUSTRATED

M-BUS-2558

NOTE TO DESIGNER

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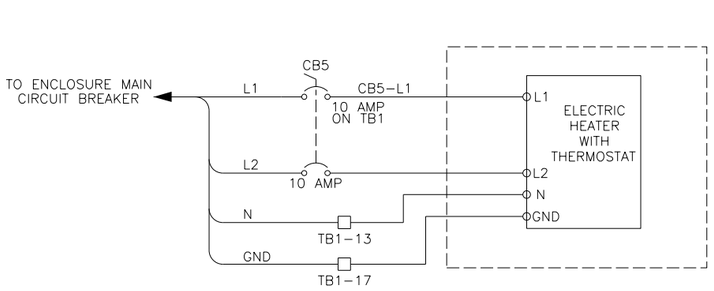
Illinois Tollway

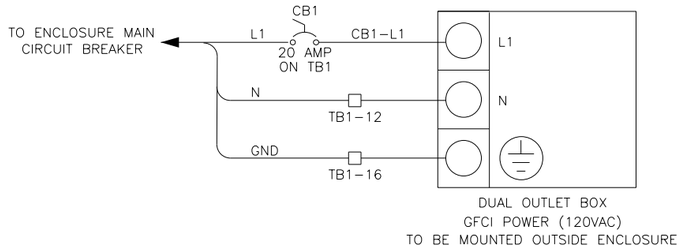
VES WASH SYSTEM
SUGGESTED CONDUIT ROUTING

DATE
3-31-2016

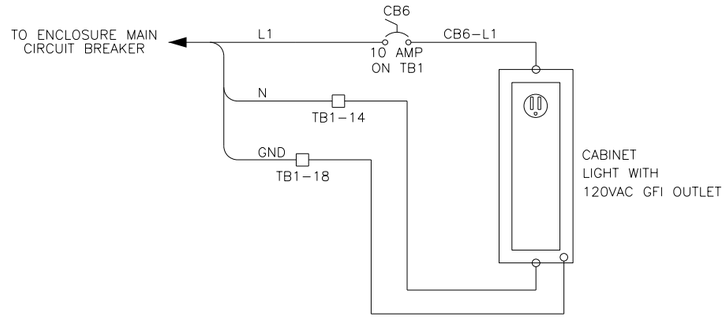


ELECTRIC HEATER WITH THERMOSTAT (IF REQUIRED)

NOTE 4



ELECTRICAL DUAL OUTLET GFCI 20A



CABINET LIGHTING AND GFI OUTLET

NOTE TO DESIGNER

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NOTES:

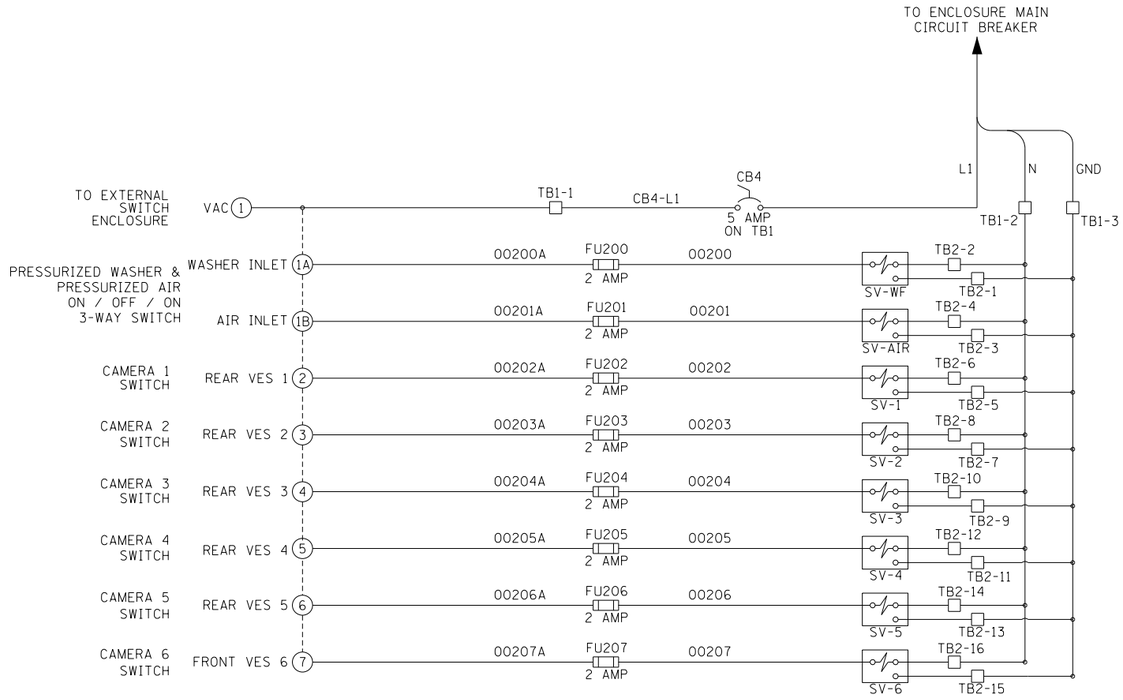
1. ALL CABLING ON THIS DRAWING IS #12 AWG
2. MAIN BREAKER IS 25A. ILLUSTRATED ON DWG. M-BUS-2556 ITEM (U). LOCATED ON TOP DIN RAIL.
3. THREE 1-C #10 CABLES WILL BE ROUTED FROM THE AET POWER ENCLOSURE TO THE VES POWER WASH ENCLOSURE. THE POWER FEED WILL BE INITIATED FROM THE NORMAL BREAKER PANEL. THE CONTRACTOR TO SUPPLY AND INSTALL A 30A BREAKER IN THE AET BREAKER 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.

M-BUS-2559

Illinois Tollway

VES WASH SYSTEM
MISCELLANEOUS POWER
WIRING DIAGRAM

DATE
3-31-2016



SWITCH CONFIGURATION

NOTE TO DESIGNER

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NOTES:

1. SCHEMATIC ILLUSTRATES THREE (3) LANE PLAZA WITH TEN (10) VES CAMERAS INSTALLED (5 REAR AND 5 FRONT VES).
2. WIDE ANGLE VES CAMERAS ARE INSTALLED.
3. FOR RAMP L1 VES CAMERAS SHALL BE SIX (6) 3 REAR, AND 3 FRONT VES.
4. FOR EB/WB MAIN LINE, VES CAMERAS SHALL BE TEN (10), (5 FRONT VES AND 5 REAR VES).

M-BUS-2560

Illinois Tollway

VES WASH SYSTEM CONTROL SWITCH SCHEMATIC

DATE
3-31-2016