

60F79

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
333	2001-125R	McHENRY	31	1

D-91-239-09

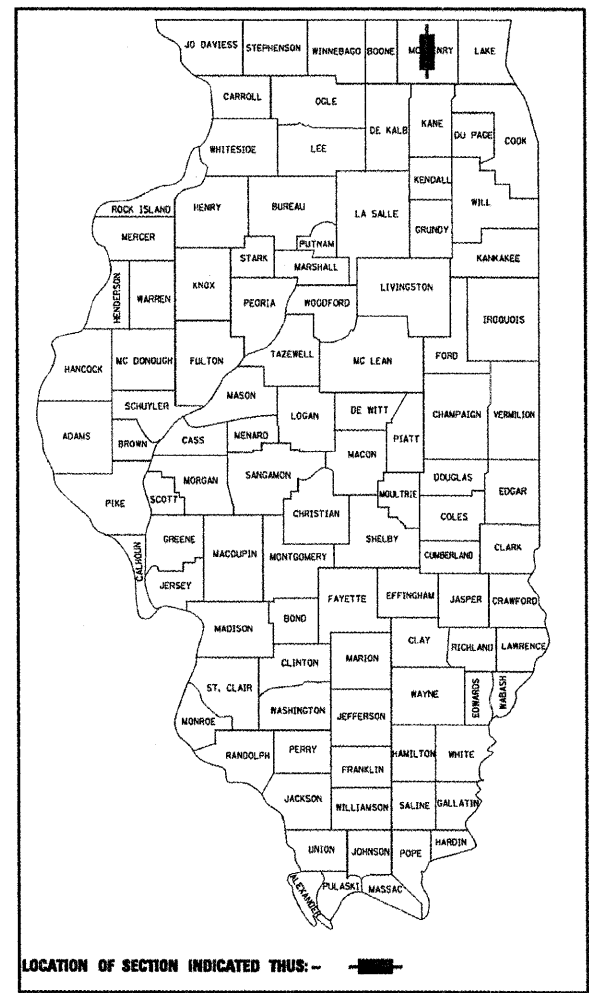
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
**PLANS FOR PROPOSED
 FEDERAL AID HIGHWAY**

DISTRICT 1
 CONGESTION MITIGATION AIR QUALITY
 FIBER OPTIC COMMUNICATION NETWORK
**IL. ROUTE 31 (RICHMOND ROAD)
 FROM JOHNSBURG ROAD
 TO BLAKE DRIVE**
 PROJECT: CMF-0336(04B)
 McHENRY COUNTY
 F.A.P. 336/ILL. 31 (RICHMOND RD.)
 SECTION 2008-078TS
 C-91-239-09

McHENRY TOWNSHIP



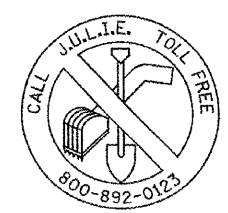
DISTRICT ONE-BUREAU OF TRAFFIC: STEPHEN TRAVIA/DARYLE DREW (847) 705-4420



Ernest R. Roberts III
 EXPIRES ON NOV. 30, 2009

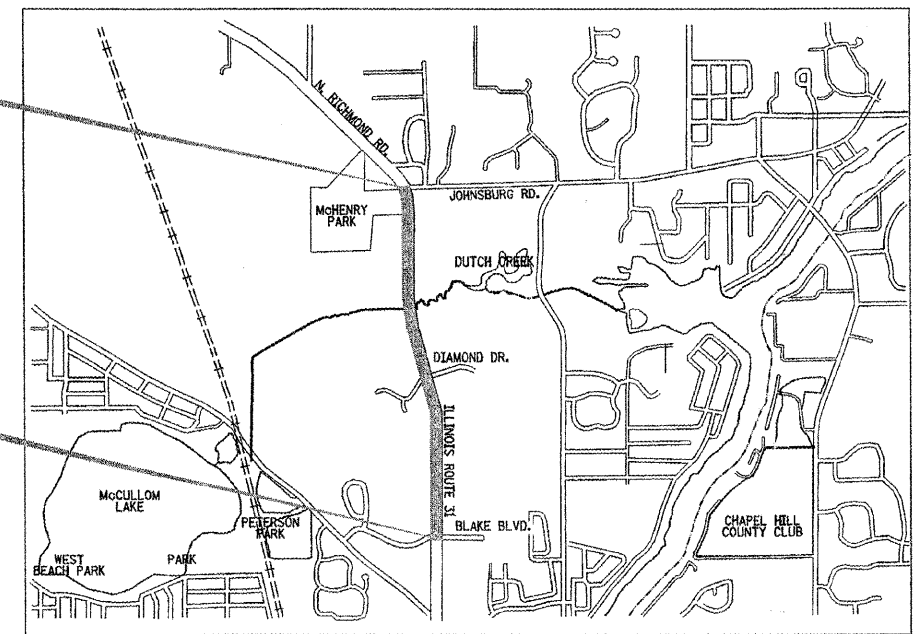
STANDARD DRAWINGS

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- 701011 857001
- 701101 862001
- 701406 878001
- 701701 880006
- 701901



PROJECT BEGINS STA. 85+33.67

PROJECT ENDS STA. 11+00.00



LOCATION MAP

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

SUBMITTED Jan 30 2009
Deane M. Keefe
 DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

March 27, 20 09
Charles J. Ingersoll
 ENGINEER OF DESIGN AND ENVIRONMENT

March 27, 20 09
Christine M. Keefe
 DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

20

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CONTRACT NO. 60F79

PREPARED BY Steve Travia
 TRAFFIC ENGINEER DATE Jan 27, 2009

SUMMARY OF QUANTITIES

80% FED.
20% STATE
URBAN

CODE NO.	ITEM	UNIT	GRAND TOTAL	JOHNSBURG ROAD	DIAMOND ROAD	BLAKE ROAD	INTER-CONNECT
		CONSTRUCTION CODE		Y031 1F	Y031 1F	Y031 1F	Y031 1F
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	4.0	1.0	1.0	1.0	1.0
67100100	MOBILIZATION	L SUM	1.0	0.25	0.25	0.25	0.25
70100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406	L SUM	1.0	0.25	0.25	0.25	0.25
70102635	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701	L SUM	1.0	0.25	0.25	0.25	0.25
81000600	CONDUIT IN TRENCH, 2" DIA., GALVANIZED STEEL	FOOT	5919	0.0	0.0	0.0	5919
81018500	CONDUIT PUSHED, 2" DIA., GALVANIZED STEEL	FOOT	386.0	0.0	0.0	0.0	386.0
81400100	HANDHOLE	EACH	6.0	0.0	0.0	0.0	6.0
81400200	HEAVY-DUTY HANDHOLE	EACH	3.0	0.0	0.0	0.0	3.0
81900200	TRENCH AND BACKFILL FOR ELECTRICAL WORK	FOOT	5919	0.0	0.0	0.0	5919
85000200	MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION	EACH	3.0	1.0	1.0	1.0	0.0
85700205	FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL	EACH	2.0	1.0	1.0	0.0	0.0
86400100	TRANSCEIVER - FIBER OPTIC	EACH	3.0	1.0	1.0	1.0	0.0
87301305	ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 14 1 PAIR	FOOT	640.0	640.0	0.0	0.0	0.0
88030020	SIGNAL HEAD, L.E.D, 1-FACE, 3-SECTION, MAST ARM MOUNTED	EACH	2.0	2.0	0.0	0.0	0.0
88030050	SIGNAL HEAD, L.E.D, 1-FACE, 3-SECTION, BRACKET MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
88030070	SIGNAL HEAD, L.E.D, 1-FACE, 4-SECTION, BRACKET MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
88030080	SIGNAL HEAD, L.E.D, 1-FACE, 4-SECTION, MAST ARM MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
88030110	SIGNAL HEAD, L.E.D, 1-FACE, 5-SECTION, MAST ARM MOUNTED	EACH	2.0	2.0	0.0	0.0	0.0
88030230	SIGNAL HEAD, L.E.D, 2-FACE, 1-3 SECTION, 1-4 SECTION, BRACKET MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
88030240	SIGNAL HEAD, L.E.D, 2-FACE, 1-3 SECTION, 1-5 SECTION, BRACKET MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
XX006958	SIGNAL HEAD, L.E.D, 3-FACE, 1-3 SECTION, 1-4 SECTION, 1-5 SECTION BRACKET MOUNTED	EACH	1.0	1.0	0.0	0.0	0.0
X0322925	ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1C	FOOT	6962.0	0.0	0.0	0.0	6962.0
X8710020	FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F SM12F	FOOT	6975.0	0.0	0.0	0.0	6975.0
87502500	TRAFFIC SIGNAL POST, GALVANIZED STEEL 16 FT.	EACH	2.0	2.0	0.0	0.0	0.0
42400200	SIDEWALK 5 INCH (PORTLAND CEMENT CONCRETE)	SQ FT	106.8	53.4	53.4	0.0	0.0
87900200	DRILL EXISTING HANDHOLE	EACH	4.0	1.0	2.0	1.0	0.0
88200210	TRAFFIC SIGNAL BACKPLATE, LOUVERED, ALUMINUM	EACH	5.0	5.0	0.0	0.0	0.0
88500100	INDUCTIVE LOOP DETECTOR	EACH	36.0	8.0	14.0	14.0	0.0
89502375	REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT	EACH	2.0	1.0	1.0	1.0	0.0
X0325705	RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM LEVEL 2	EACH	2.0	1.0	1.0	0.0	0.0
X8620020	UNINTERRUPTIBLE POWER SUPPLY	EACH	3.0	1.0	1.0	1.0	0.0
81100600	CONDUIT ATTACHED TO STRUCTURE, 2" DIA., GALVANIZED STEEL	FOOT	60.0	0.0	0.0	0.0	60.0
81300720	JUNCTION BOX, STAINLESS STEEL, ATTACHED TO STRUCTURE, 16"x12"x8"	EACH	2.0	0.0	0.0	0.0	2.0
X0322256	TEMPORARY INFORMATION SIGNING	SQ FT	206.0	103.0	0.0	103.0	0.0

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 PLOT DATE = 1/27/2009

DESIGNED - LC
 DRAWN - BID
 CHECKED - ER
 DATE -
 REVISED -
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 REVISED -
 REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

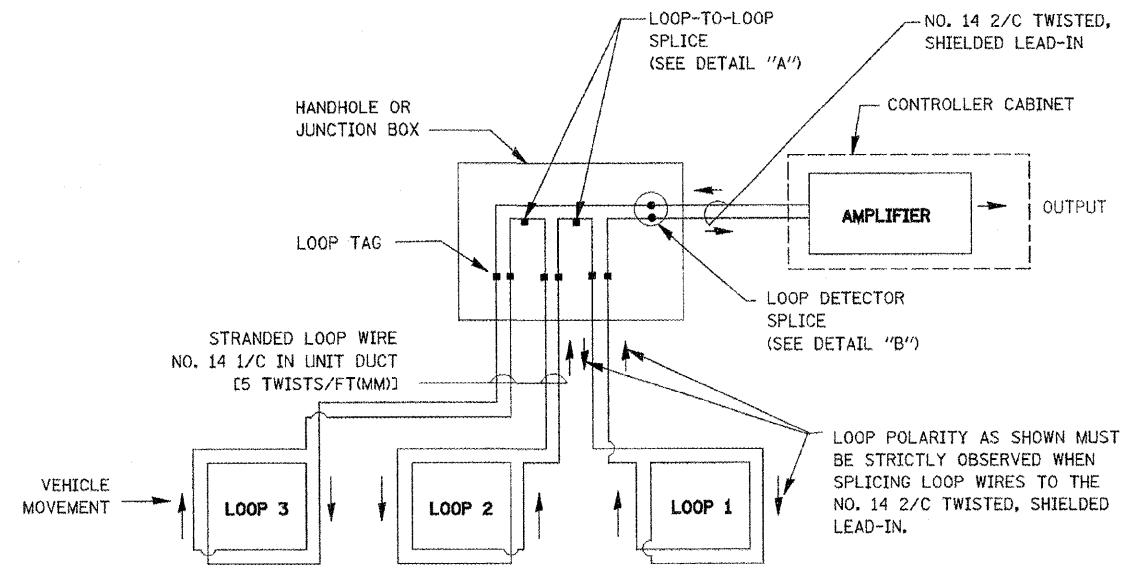
**SUMMARY OF QUANTITIES
 TRAFFIC SIGNAL MODIFICATION
 IL RTE 31(RICHMOND RD.) FROM JOHNSBURG RD TO BLAKE RD**

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	MC HENRY	31	2
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT				

IE INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

LOOP DETECTOR NOTES

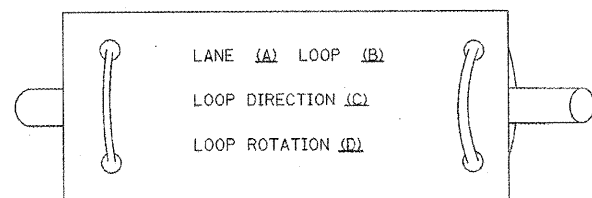
1. EACH PAIR OF LOOP WIRES SHALL BE PLACED IN A SEPARATE UNIT DUCT FROM THE EDGE OF PAVEMENT TO THE HANDHOLE. SPACING BETWEEN THE HOLES DRILLED IN THE PAVEMENT SHALL NOT BE LESS THAN 6" (150 mm). UNIT DUCT SHALL BE INCLUDED IN THE COST OF THE LOOP WIRE.
2. THE NUMBER OF LOOP TURNS SHALL BE AS RECOMMENDED BY THE AMPLIFIER MANUFACTURER. ALL ADJACENT SIDES OF THE LOOPS SHALL BE INSTALLED IN SUCH A WAY THAT THE CURRENT FLOW IS IN THE SAME DIRECTION TO REINFORCE ITS MAGNETIC FIELDS FOR SMALL VEHICLE DETECTION.
3. EACH LOOP LEAD-IN SHALL BE IDENTIFIED AND PERMANENTLY TAGGED IN THE HANDHOLE. EACH LEAD-IN CABLE TAG SHALL INDICATE THE LOCATION OF THE LOOP, LOOP ROTATION (CLOCKWISE/COUNTERCLOCKWISE), LOOP LEAD-IN DIRECTION (IN OR OUT), LOOP CABLE NUMBER AND LOCATION IN CABINET, AND NUMBER OF TURNS IN THE DETECTOR LOOPS IN WATER PROOF INK AS INDICATED ON THE DISTRICT 1 STANDARD TRAFFIC SIGNAL DESIGN DETAIL. THE CONTRACTOR SHALL MARK LOOP LOCATIONS ON RECORD DRAWINGS AND PRESENT TO THE ENGINEER AFTER FINAL INSPECTION. LOOPS SHALL BE MARKED BY LANE AND LOOP NUMBER. SEE DETAIL BELOW.
4. ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.
5. IN ASPHALT PAVEMENT, LOOPS SHOULD BE PLACED IN THE BINDER AND DIVEHOLES MARKED AT THE CURB WITH A SAW-CUT. THE SAW-CUT SHALL BE CUT IN ACCORDANCE WITH LOCAL AND E.P.A. DUST CONTROL REQUIREMENTS. DETECTOR LOOP(S) SHALL NOT BE INSTALLED IN WET CONDITIONS AND THE SAW-CUTS MUST BE FREE OF DEBRIS AND RESIDUE SUCH AS DUST AND WATER WHICH IS TO BE ACHIEVED BY THE USE OF COMPRESSED AIR, WIRE BRUSHING AND HEAT DRYING ACCORDING TO SEALANT MANUFACTURER REQUIREMENTS. THE DETECTOR WIRE SHALL BE HELD IN PLACE BY THE USE OF FORM WEDGES. WEDGES SHALL BE SPACED NO MORE THAN 18" (450 mm) APART.
6. LOOP SPLICES SHALL BE SOLDERED USING A SOLDERING IRON. BLOW TORCHES OR OTHER DEVICES WHICH OXIDIZE COPPER CABLE SHALL NOT BE ALLOWED FOR SOLDERING OPERATIONS. SEE DETAIL BELOW RIGHT.
7. PREFORMED DETECTOR LOOPS SHALL BE USED, AS SHOWN ON THE PLANS, WHERE NEW CONCRETE PAVEMENT IS PROPOSED. THE INSTALLATION OF PREFORMED LOOPS SHALL BE IN ACCORDANCE WITH THE DISTRICT 1 SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.



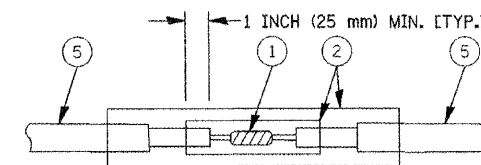
DETECTOR LOOP WIRING SCHEMATIC

- LOOPS SHALL BE SPLICED IN SERIES.
- SAW-CUTS SHALL BE A MINIMUM WIDTH OF 5/16" (8 mm).
- SAW-CUT DEPTHS SHALL BE 3" (75 mm). IF IN CONCRETE, THE SAW-CUT DEPTH SHALL BE TO THE TOP OF THE REINFORCEMENT.
- LOOP CORNERS SHALL BE DRILLED WITH A 2" (50 mm) DIAMETER CORE.

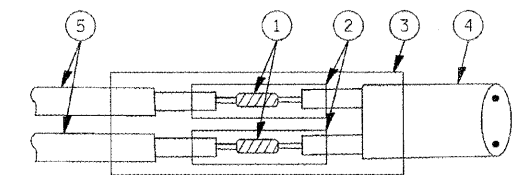
LOOP LEAD-IN CABLE TAG



- A. LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY
- B. LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.
- C. LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".
- D. LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.



**DETAIL "A"
LOOP-TO-LOOP SPLICE**



**DETAIL "B"
LOOP-TO-CONTROLLER SPLICE**

LOOP DETECTOR SPLICE

- 1 WESTERN UNION SPLICE SOLDERED WITH ROSIN CORE FLUX. ALL EXPOSED SURFACES OF THE SOLDER SHALL BE SMOOTH.
- 2 WCSMW 30/100 HEAT SHRINK TUBE, MINIMUM LENGTH 3" (75 mm), UNDERWATER GRADE.
- 3 WCS 200/750 HEAT SHRINK TUBE, MINIMUM LENGTH 6" (150 mm), UNDERWATER GRADE.
- 4 NO. 14 2/C TWISTED, SHIELDED CABLE.
- 5 LOOP CONDUCTOR WITH FLEXIBLE PLASTIC TUBE.

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION				
DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS				
SCALE: N.T.S.		DRAWN BY: RWP		
DATE: 01-31-2006		CHECKED BY: DAZ		
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	3
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

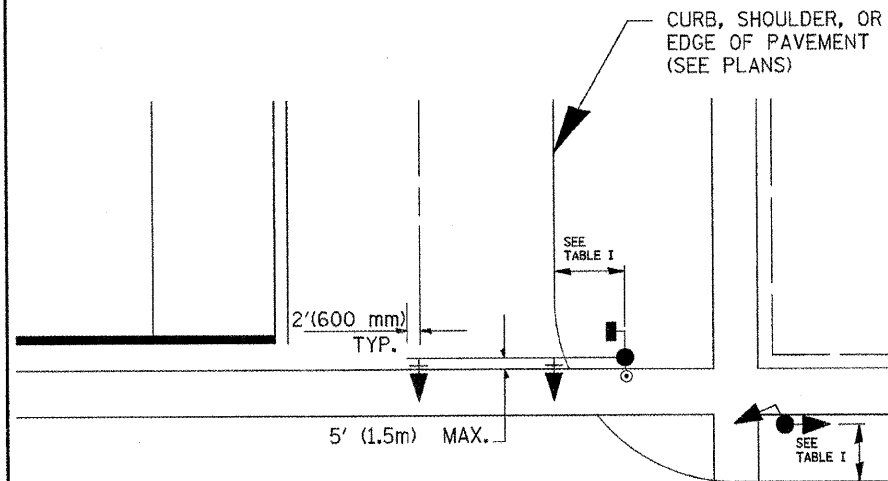
**DISTRICT ONE STANDARD
TRAFFIC SIGNAL DESIGN DETAILS**

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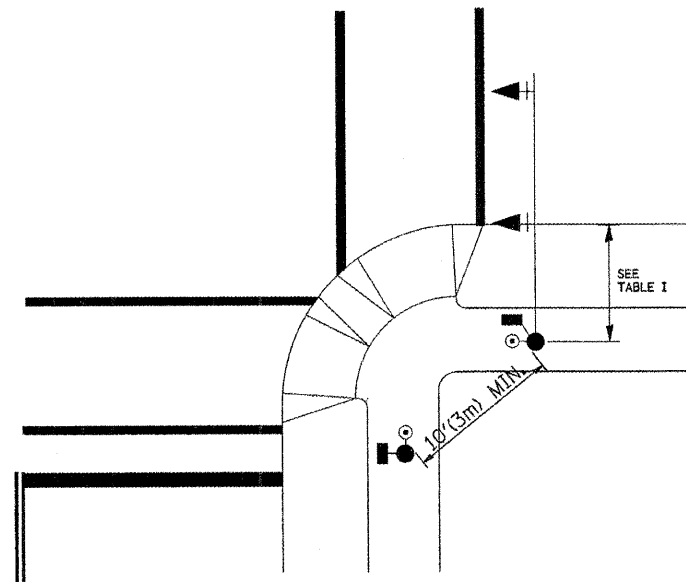
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PLOT DATE = 1/23/2009		DATE -	REVISED -

TRAFFIC SIGNAL MAST ARM AND POST

MAST ARM MOUNTED SIGNAL IN PROPOSED & FUTURE SIDEWALK AREA. INTERSECTION SHOWN WITH PEDESTRIAN SIGNAL AND PUSHBUTTON DETECTOR



PEDESTRIAN SIGNAL PUSHBUTTON



RECOMMENDED PUSHBUTTON LOCATIONS FOR ACCESSIBLE PEDESTRIAN SIGNALS SHALL BE IN ACCORDANCE WITH THE CURRENT MUTCD (SEE NOTE 1). TO MEET MUTCD REQUIREMENTS, PEDESTRIAN SIGNAL PUSHBUTTONS MAY HAVE TO BE MOUNTED ON A SEPARATE POST.

NOTES:

- AT ACCESSIBLE PEDESTRIAN SIGNAL LOCATIONS WITH PEDESTRIAN ACTUATION, EACH PUSHBUTTON SHALL ACTIVATE BOTH THE WALK INTERVAL AND THE ACCESSIBLE PEDESTRIAN SIGNALS.
 AT ACCESSIBLE PEDESTRIAN SIGNAL LOCATIONS, PUSHBUTTONS SHOULD CLEARLY INDICATE WHICH CROSSWALK SIGNAL IS ACTUATED BY EACH PUSHBUTTON. PUSHBUTTONS AND TACTILE ARROWS SHOULD HAVE HIGH VISUAL CONTRAST (SEE THE DEPARTMENT OF JUSTICE'S AMERICANS WITH DISABILITIES ACT STANDARDS FOR ACCESSIBLE DESIGN, 1991). TACTILE ARROWS SHOULD POINT IN THE SAME DIRECTION AS THE ASSOCIATED CROSSWALK. AT CORNERS OF SIGNALIZED LOCATIONS WITH ACCESSIBLE PEDESTRIAN SIGNALS WHERE PEDESTRIAN PUSHBUTTONS ARE PROVIDED, THE PUSHBUTTONS SHOULD BE SEPARATED BY THE DISTANCE OF AT LEAST 10 FT (3m). THIS ENABLES PEDESTRIANS WHO HAVE VISUAL DISABILITIES TO DISTINGUISH AND LOCATE THE APPROPRIATE PUSHBUTTON.
 PUSHBUTTONS FOR ACCESSIBLE PEDESTRIAN SIGNALS SHOULD BE LOCATED AS FOLLOWS:
 A: ADJACENT TO A LEVEL ALL-WEATHER SURFACE TO PROVIDE ACCESS FROM A WHEELCHAIR, AND WHERE THERE IS AN ALL WEATHER SURFACE, WHEELCHAIR ACCESSIBLE ROUTE TO THE RAMP.
 B: WITHIN 5 FT (1.5m) OF THE CROSSWALK EXTENDED.
 C: WITHIN 10 FT (3m) OF THE EDGE OF CURB, SHOULDER, OR PAVEMENT.
 D: PARALLEL TO THE CROSSWALK TO BE USED (SEE MUTCD FIGURE 4E-2).
 E: NORMAL PEDESTRIAN PUSHBUTTON MOUNTING HEIGHT SHOULD BE 3.5 FT (1.05m) ABOVE ADJACENT SIDEWALK
- PEDESTRIAN SIGNAL FACES SHALL BE MOUNTED WITH THE BOTTOM OF THE HOUSING NOT LESS THAN 8 FT (2.4m) NOR MORE THAN 10 FT (3.0m) ABOVE THE SIDEWALK LEVEL AND SO THERE IS A PEDESTRIAN INDICATION IN THE LINE OF PEDESTRIANS' VISION WHICH PERTAINS TO THE CROSSWALK BEING USED.
- THE BOTTOM OF THE HOUSING OF A VEHICLE SIGNAL FACE, NOT MOUNTED OVER A ROADWAY, SHALL BE AT LEAST 10 FT (3.0m) BUT NOT MORE THAN 15 FT (4.5m) ABOVE THE SIDEWALK OR, ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE HIGHWAY IF NO SIDEWALKS EXIST.
- THE BOTTOM OF THE HOUSING OF A VEHICLE SIGNAL FACE, MOUNTED OVER A ROADWAY, SHALL BE ACCORDING TO CURRENT STATE STANDARDS 877001 AND 877006. (16 FT (5m) MIN., 18 FT (5.5m) MAX., FROM HIGHEST POINT OF PAVEMENT)

PEDESTRIAN SIGNAL POST

PEDESTRIAN SIGNAL HEAD AND PEDESTRIAN PUSHBUTTON DETECTOR LOCATION

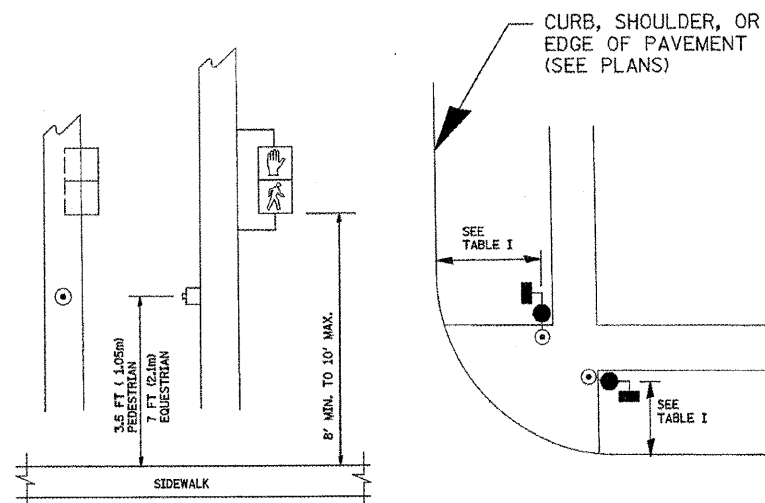


TABLE I

TRAFFIC SIGNAL EQUIPMENT	COMBINATION CONCRETE CURB AND GUTTER (MIN. DIST. FROM BACK OF CURB)	SHOULDER/NON-CURBED AREA (MIN. DIST. FROM EDGE OF PAVEMENT)
TRAFFIC SIGNAL MAST ARM POLE	6 FT (1.8m)	SHOULDER WIDTH + 2FT(0.6m), MINIMUM 10FT(3.0m)
TRAFFIC SIGNAL POST	4 FT (1.2m)	SHOULDER WIDTH + 2FT(0.6m), MINIMUM 10FT(3.0m)
PEDESTRIAN SIGNAL POST	4 FT (1.2m)	SHOULDER WIDTH + 2FT(0.6m), MINIMUM 10FT(3.0m)
PEDESTRIAN PUSHBUTTON	SEE NOTE 1	SEE NOTE 1

INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

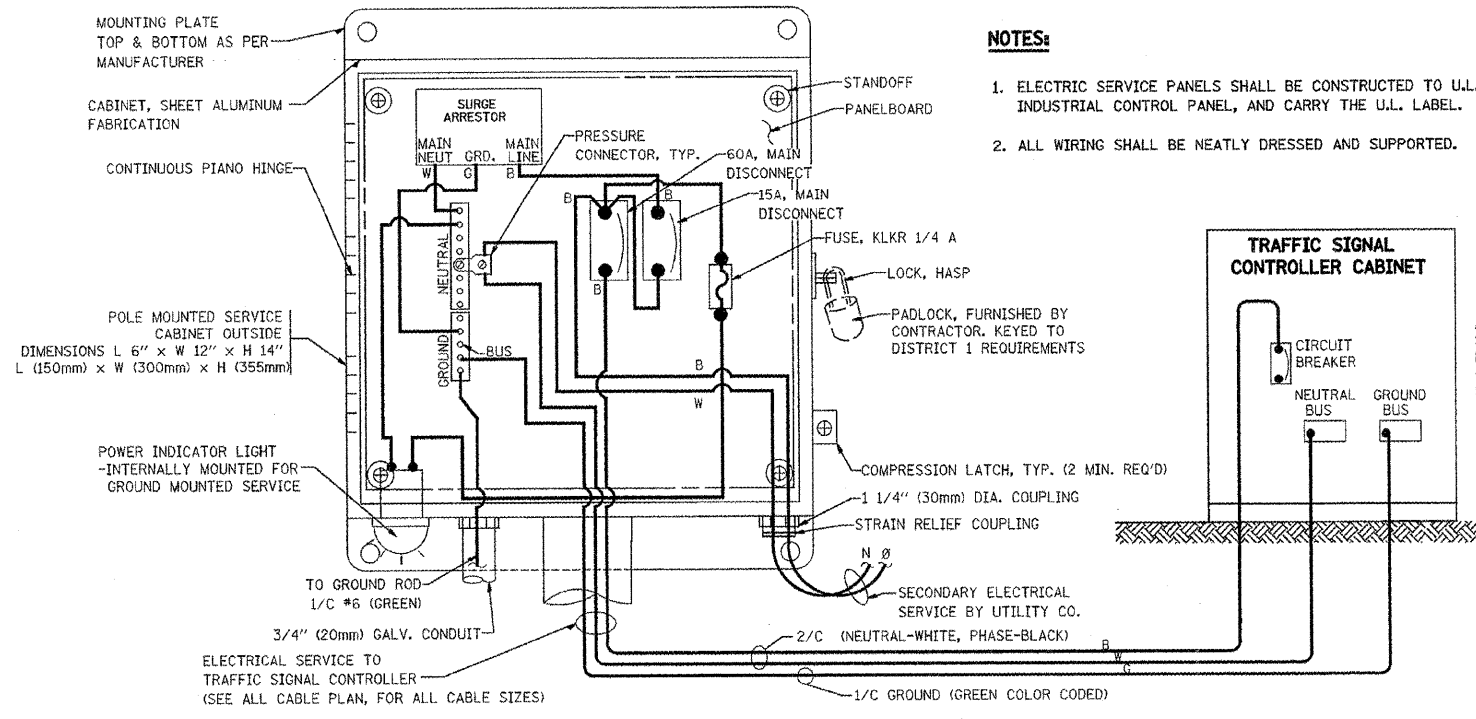
DISTRICT ONE STANDARD
 TRAFFIC SIGNAL DESIGN DETAILS

REVISIONS	
NAME	DATE

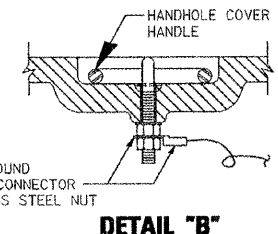
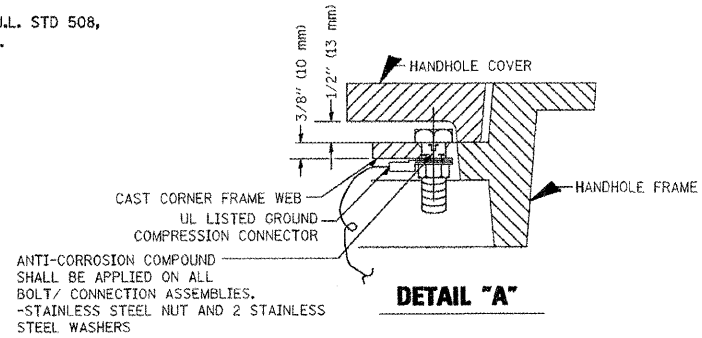
ILLINOIS DEPARTMENT OF TRANSPORTATION
 DISTRICT ONE
 STANDARD TRAFFIC SIGNAL
 DESIGN DETAILS

SCALE: N.T.S. DRAWN BY: RWP
 DATE: 01-31-2006 CHECKED BY: DAZ

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	PLOT DATE = 1/23/2009	DATE -	REVISED -

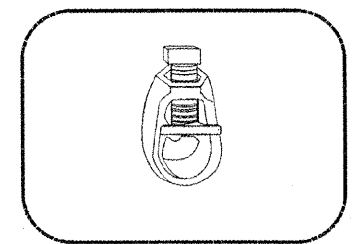
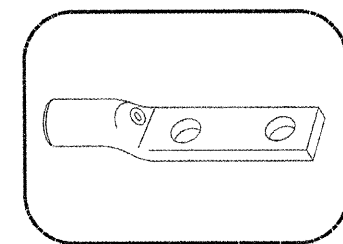


- NOTES:**
1. ELECTRIC SERVICE PANELS SHALL BE CONSTRUCTED TO U.L. STD 508, INDUSTRIAL CONTROL PANEL, AND CARRY THE U.L. LABEL.
 2. ALL WIRING SHALL BE NEATLY DRESSED AND SUPPORTED.



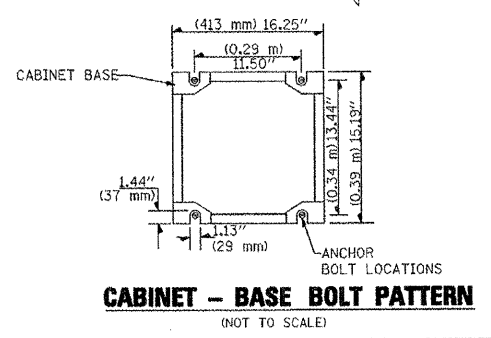
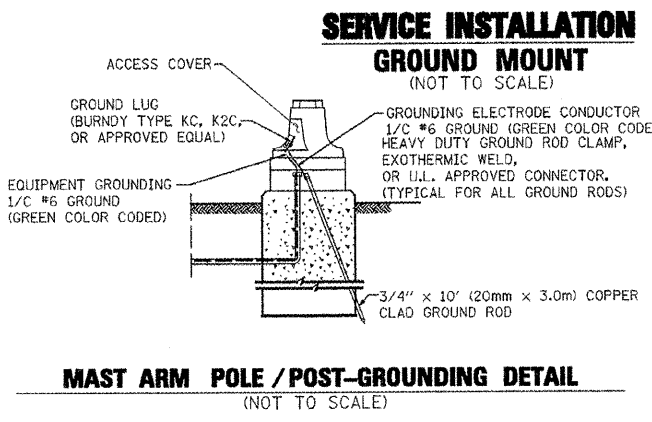
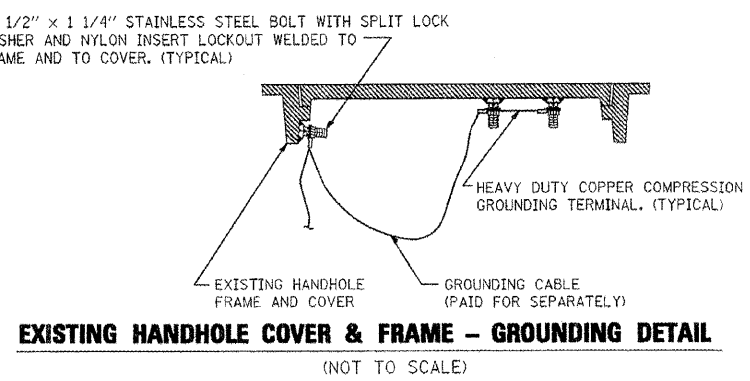
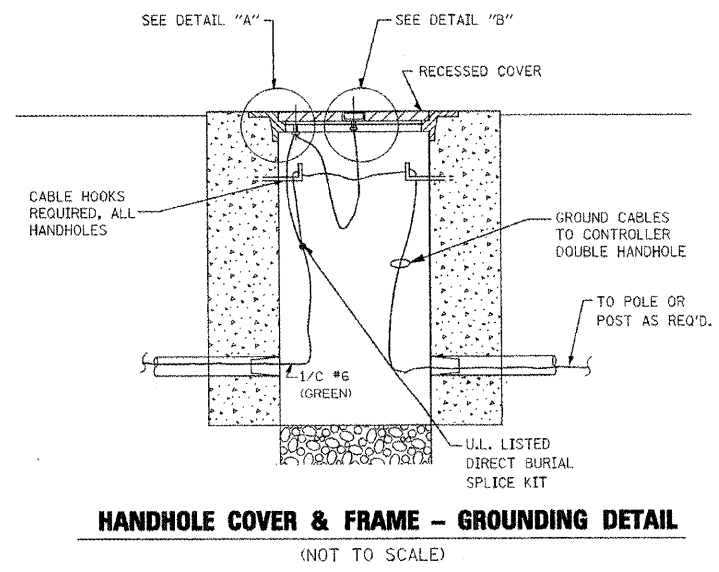
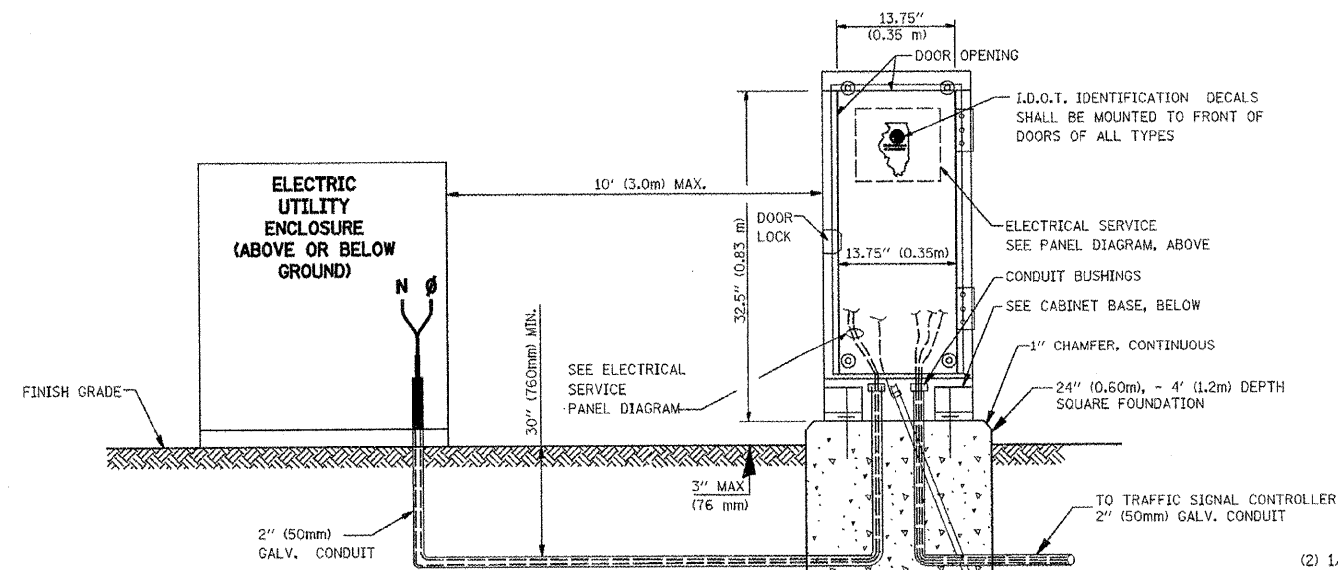
- NOTES:**
- GROUNDING SYSTEM**
1. THE GROUNDING SYSTEM SHALL CONSIST OF AN INSULATED CONDUCTOR TYPE XLP, NO. 6 A.W.G., STRANDED COPPER TO BE INSTALLED IN RACEWAYS. THE GROUNDING CABLE SHALL BE INSTALLED IN A CONTINUOUS MANNER AS SHOWN ON THE CABLE PLAN PROVIDED. ALL GROUNDING CONDUCTORS SHALL BE BONDED TO METAL ENCLOSURE (HANDHOLE, POST, MAST ARM, CONTROLLER, ETC.). GROUND ROD SHALL BE 3/4" DIA. x 10'-0" (20mm x 3.0m) LONG, COPPER CLAD. ONE GROUND ROD SHALL BE INSTALLED AT ALL POST FOUNDATIONS, POLE FOUNDATIONS, CONTROLLER CABINET FOUNDATION AND ELECTRICAL SERVICE INSTALLATION AS INDICATED ON THE CABLE PLAN. IF THERE ARE ANY SPECIAL CONDITIONS SUCH AS SUB-SURFACE CONDITIONS OR INSTALLATION PROBLEMS, THE RESIDENT ENGINEER SHALL BE NOTIFIED OR CONTACT THE BUREAU OF TRAFFIC, ILLINOIS DEPARTMENT OF TRANSPORTATION DISTRICT ONE AT (847) 705-4139.
 2. THE NEUTRAL CONDUCTOR AND THE GROUND CONDUCTOR SHALL BE CONNECTED IN THE SERVICE INSTALLATION. AT NO OTHER POINT IN THE TRAFFIC SIGNAL SYSTEM SHALL THE NEUTRAL AND GROUND CONDUCTORS BE CONNECTED.
 3. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL TERMINATE AT THE GROUND BUS IN THE CONTROLLER CABINET.
 4. THE CONTRACTOR SHALL PROVIDE A GROUND CABLE WITH CONNECTORS BETWEEN THE HANDHOLE COVER AND HANDHOLE FRAME.

ELECTRICAL SERVICE - PANEL DIAGRAM (TYPICAL FOR POLE AND GROUND MOUNTED SERVICE) SERVICE INSTALLATION POLE MOUNT (SHOWN) (NOT TO SCALE)



HEAVY-DUTY COMPRESSION TERMINAL (BURNDY TYPE YGHA OR APPROVED EQUAL) 3/4" (20mm) HEAVY-DUTY GROUND ROD CLAMP (BURNDY TYPE GRC OR APPROVED EQUAL)

- NOTES:**
- ALL CLAMPS SHALL BE BRONZE OR COPPER, UL APPROVED.
 - GROUND CABLE SHALL BE LOOPED OVER HOOKS IN THE HANDHOLES 6.5' (2.0m) SLACK SHALL BE PROVIDED IN SINGLE HANDHOLES 13' (4.0m) OF SLACK SHALL BE PROVIDED IN DOUBLE HANDHOLES. 5' (1.4m) OF SLACK SHALL BE PROVIDED BETWEEN FRAME AND COVER.



INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL. 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

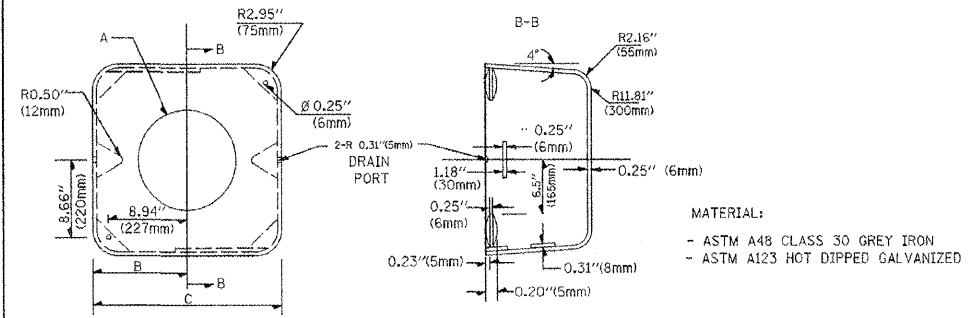
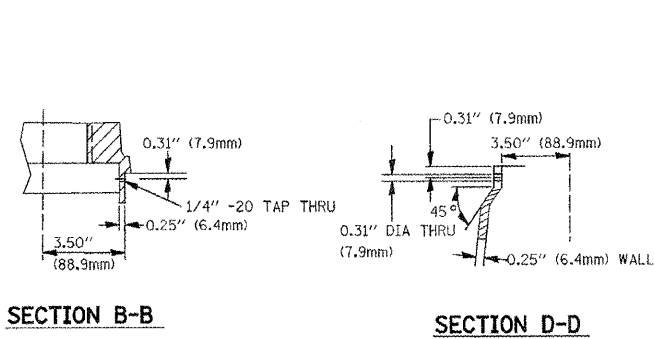
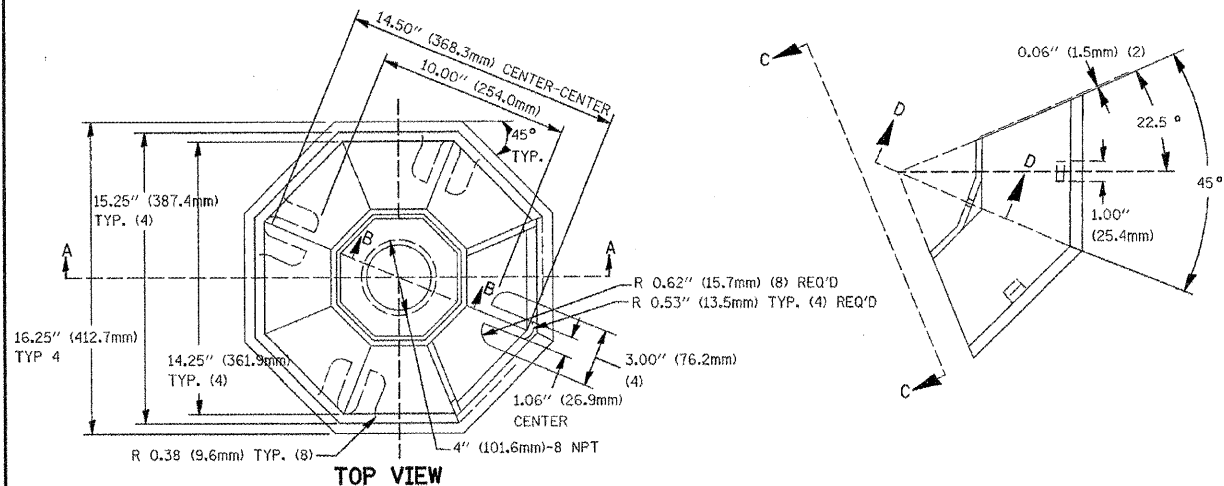
DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS

REVISIONS	
NAME	DATE

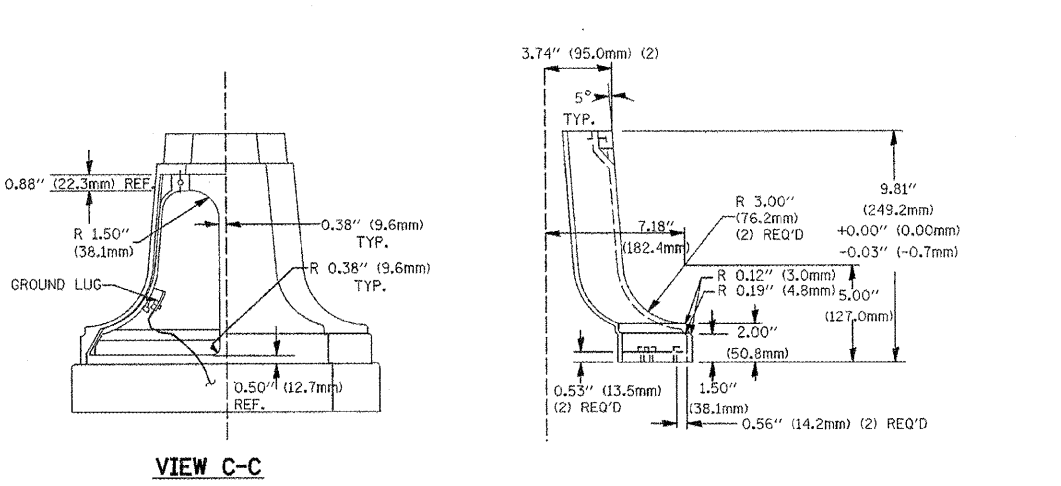
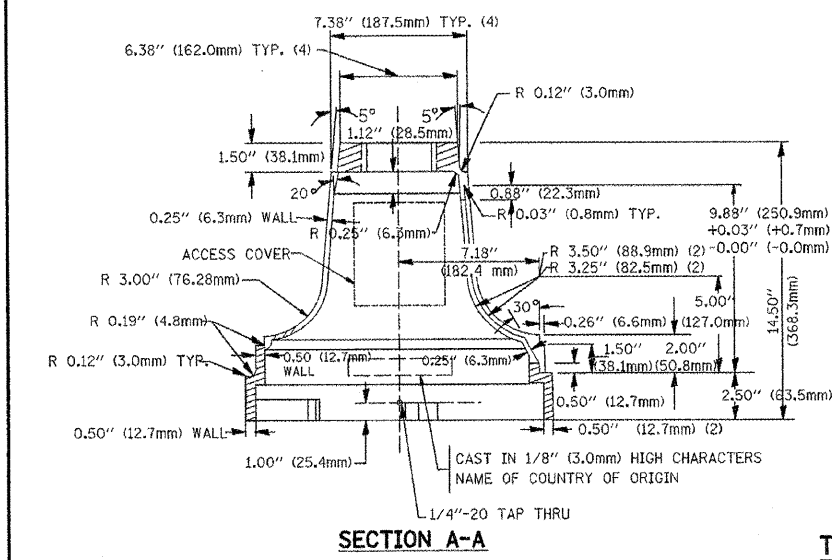
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DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS				
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DATE: 01-31-2006				

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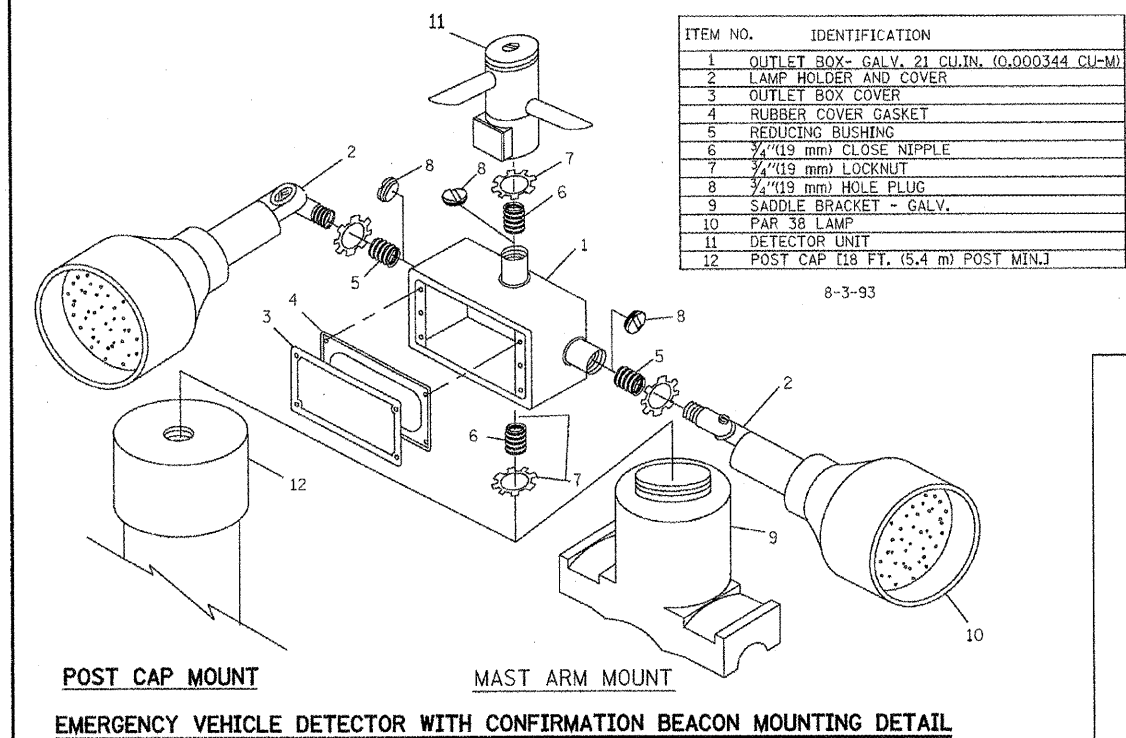
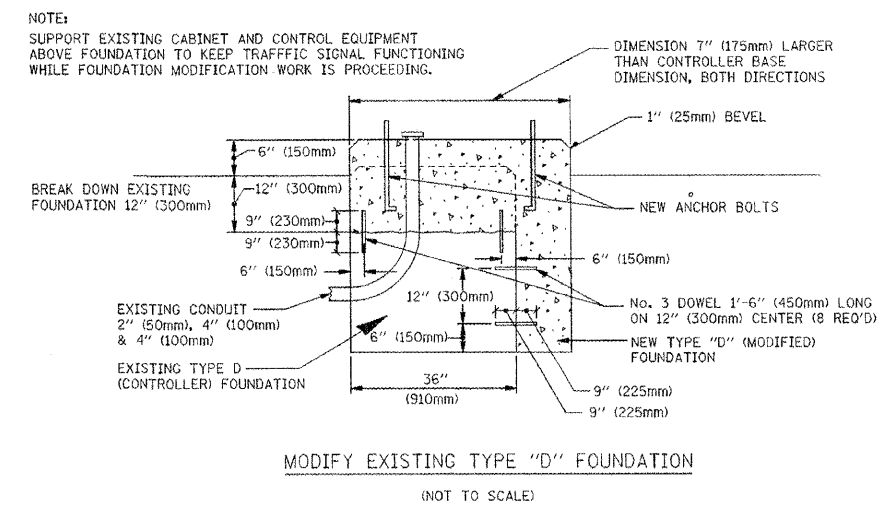
SCALE: N.T.S.	SHEET NO. 3 OF 4 SHEETS	STA. TO STA.	F.A. RTE. IL 31	SECTION 2001-125R	COUNTY Mc HENRY	TOTAL SHEETS 31	SHEET NO. 5
			FED. ROAD DIST. NO. ILLINOIS		FED. AID PROJECT		



TYPE	A	B	C	HEIGHT	WEIGHT
I	Ø 10.125\" (257mm)	9.5\" (241mm)	19\" (483mm)	12\" (300mm)	24kg
II	Ø 11.125\" (283mm)	10.75\" (273mm)	21.5\" (546mm)	12\" (300mm)	26kg

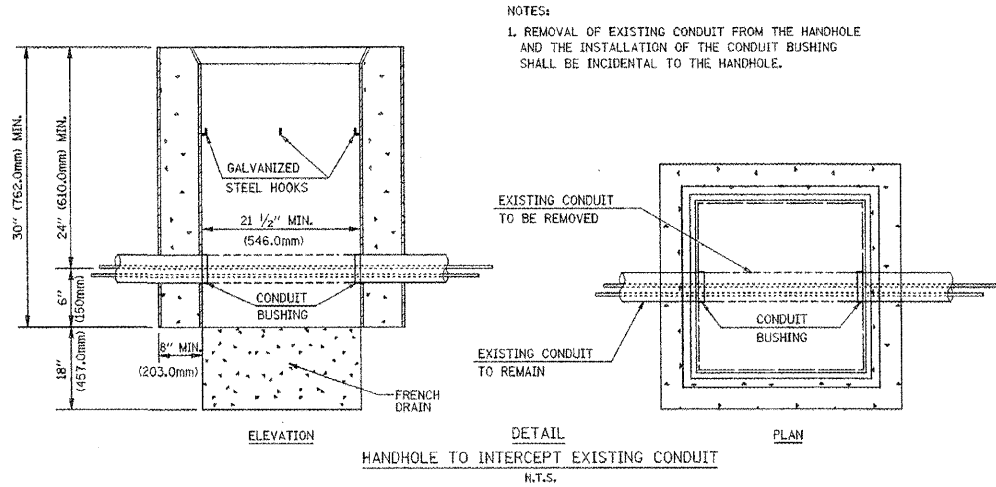
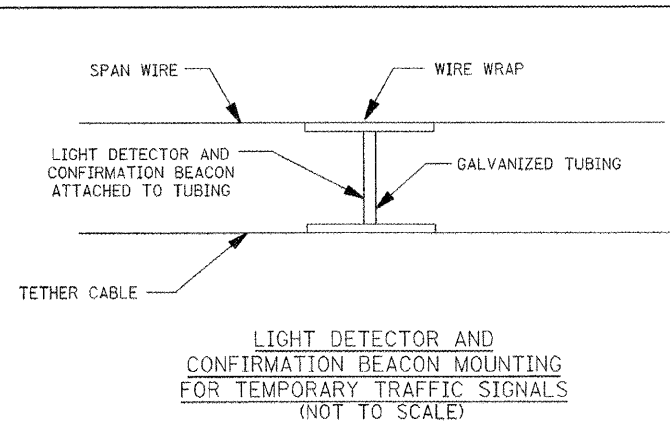


TRAFFIC SIGNAL POST - MOUNTING BASE - TYPE A



ITEM NO.	IDENTIFICATION
1	OUTLET BOX - GALV. 21 CU.IN. (0.000344 CU-M)
2	LAMP HOLDER AND COVER
3	OUTLET BOX COVER
4	RUBBER COVER GASKET
5	REDUCING BUSHING
6	3/4\" (19 mm) CLOSE NIPPLE
7	3/4\" (19 mm) LOCKNUT
8	3/4\" (19 mm) HOLE PLUG
9	SADDLE BRACKET - GALV.
10	PAR 38 LAMP
11	DETECTOR UNIT
12	POST CAP [18 FT. (5.4 m) POST MIN.]

- NOTES:
- ALL ELECTRICAL ITEMS, EXCEPT ITEMS #2 AND #11 SHALL BE ALUMINUM OR GALVANIZED
 - ITEM #1- OZ/GEDNEY FSX-1-50 OR EQUIVALENT
ITEM #2- MULBERRY CON-O-SHADE LAMP SHIELD OR EQUIVALENT
ITEM #9- "BAND-IT" SADDLE BRACKET OR EQUIVALENT
 - WHEN POST MOUNTING IS SPECIFIED, ITEM #9 SHALL NOT BE REQUIRED. THE DETECTION UNIT SHALL BE MOUNTED DIRECTLY ON TOP OF THE CAP BY DRILLING AND TAPPING A 3/4\" (19 mm) HOLE WITH PIPE THREADS. THE POST CAP SHALL EITHER BE SCREWED TO THE TOP OF THE POST OR A MINIMUM OF 3 TIGHTENING SCREWS SHALL BE REQUIRED ON EACH CAP.



FILE NAME =	USER NAME = (1224_user)	DESIGNED - LC	REVISED -
P:\P-00\1224\Task 8\IGN\Sheets\8G-1224_S-Detail-04.dgn		DRAWN - BID	REVISED -
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		DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
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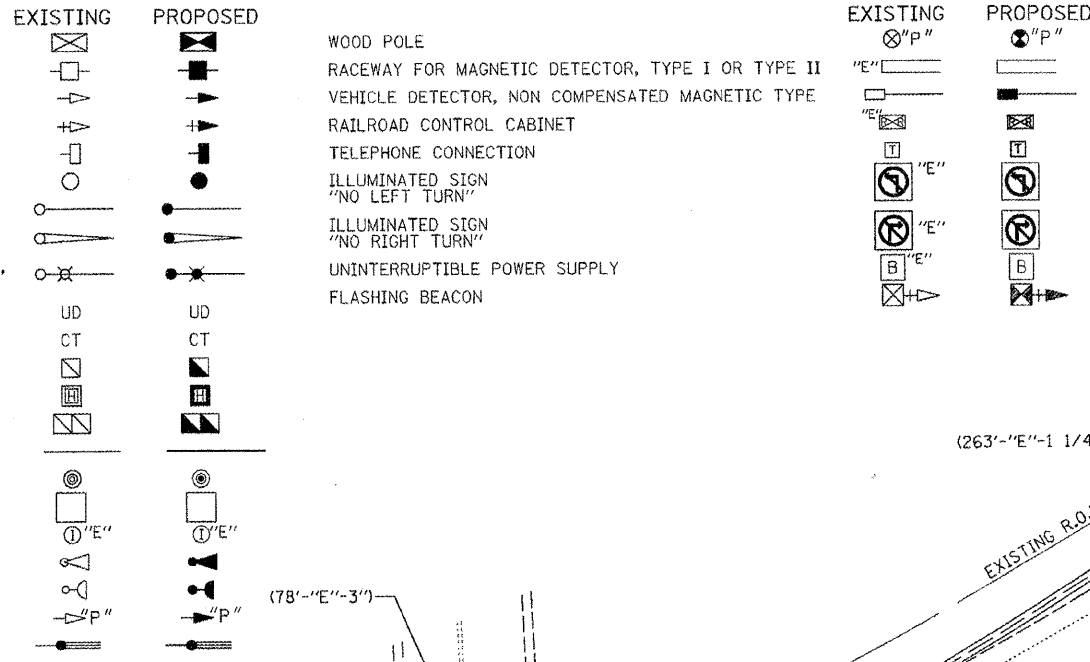
DISTRICT ONE STANDARD
TRAFFIC SIGNAL DESIGN DETAILS

REVISIONS	
NAME	DATE

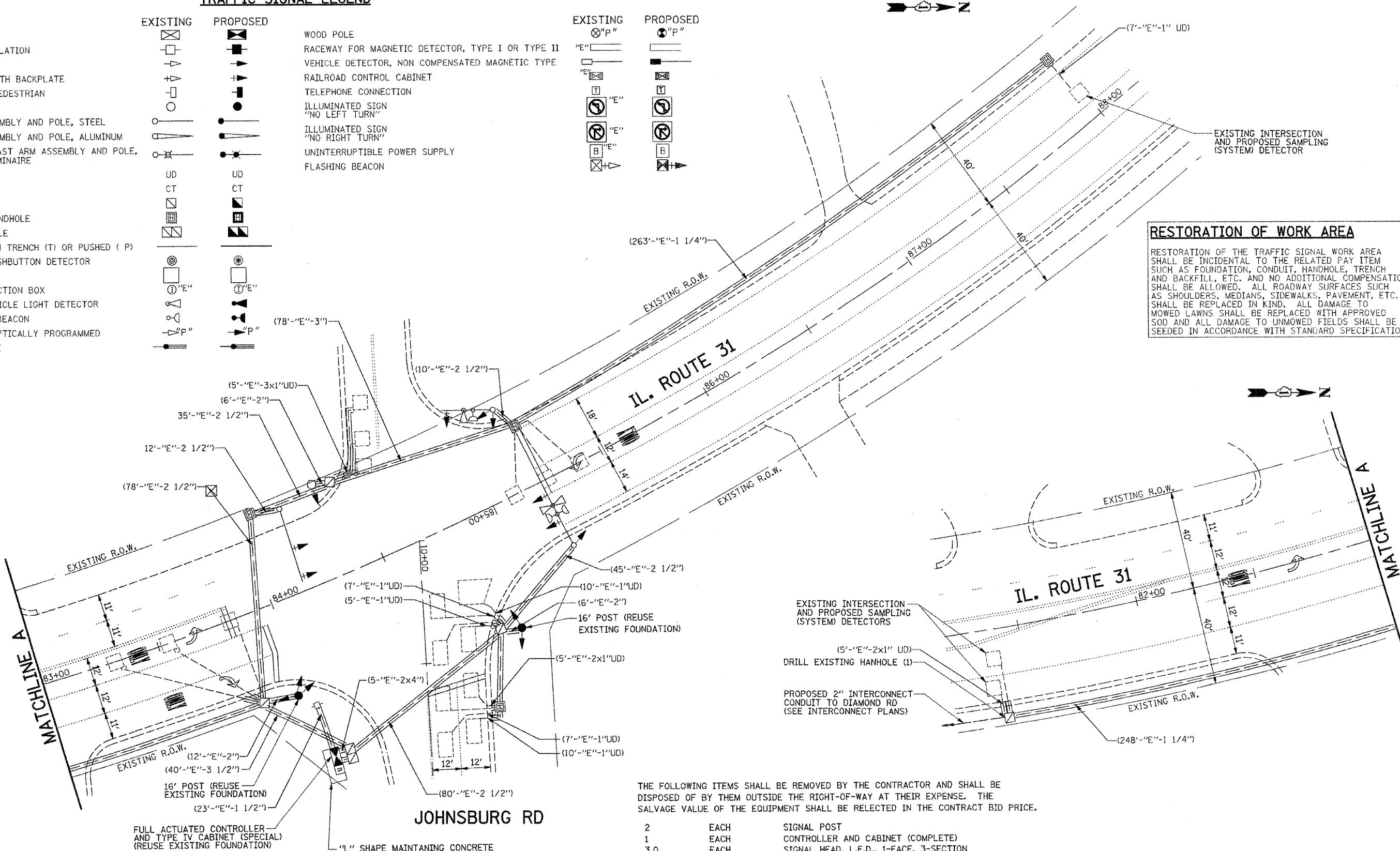
ILLINOIS DEPARTMENT OF TRANSPORTATION			
DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS			
SCALE: NTS	DRAWN BY: RWP		CHECKED BY: DAZ
DATE: 01-31-2006	TOTAL SHEETS: 31		SHEET NO.: 6
F.A. RTE. IL 31	SECTION 2001-125R	COUNTY Mc HENRY	CONTRACT NO. 60F79
SCALE: N.T.S. SHEET NO. 4 OF 4 SHEETS STA. TO STA. FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			

TRAFFIC SIGNAL LEGEND

- CONTROLLER
- SERVICE INSTALLATION
- SIGNAL HEAD
- SIGNAL HEAD WITH BACKPLATE
- SIGNAL HEAD, PEDESTRIAN
- SIGNAL POST
- MAST ARM ASSEMBLY AND POLE, STEEL
- MAST ARM ASSEMBLY AND POLE, ALUMINUM
- COMBINATION MAST ARM ASSEMBLY AND POLE, STEEL WITH LUMINAIRE
- UNIT DUCT
- COMMON TRENCH
- HANDHOLE
- HEAVY DUTY HANDHOLE
- DOUBLE HANDHOLE
- G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)
- PEDESTRIAN PUSHBUTTON DETECTOR
- DETECTOR LOOP
- CAST IRON JUNCTION BOX
- EMERGENCY VEHICLE LIGHT DETECTOR
- CONFIRMATION BEACON
- SIGNAL HEAD OPTICALLY PROGRAMMED
- CONDUIT SPLICE



RESTORATION OF WORK AREA
 RESTORATION OF THE TRAFFIC SIGNAL WORK AREA SHALL BE INCIDENTAL TO THE RELATED PAY ITEM SUCH AS FOUNDATION, CONDUIT, HANDHOLE, TRENCH AND BACKFILL, ETC. AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIANS, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH APPROVED SOD AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.



THE FOLLOWING ITEMS SHALL BE REMOVED BY THE CONTRACTOR AND SHALL BE DISPOSED OF BY THEM OUTSIDE THE RIGHT-OF-WAY AT THEIR EXPENSE. THE SALVAGE VALUE OF THE EQUIPMENT SHALL BE RELECTED IN THE CONTRACT BID PRICE.

2	EACH	SIGNAL POST
1	EACH	CONTROLLER AND CABINET (COMPLETE)
3.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 3-SECTION
3.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 3-SECTION
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 4-SECTION
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 4-SECTION
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 5-SECTION
1.0	EACH	SIGNAL HEAD, L.E.D., 2-FACE, 1-3 SECTION
1.0	EACH	SIGNAL HEAD, L.E.D., 3-FACE, 1-3 SECTION

CONSTRUCTION NOTE:
 INSTALL NEW CONTROLLER AND TYPE IV CABINET (SPECIAL). RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM PHASING UNIT TO NEW CONTROLLER CABINET. RELOCATION OF THE EMERGENCY PRIORITY SYSTEM EQUIPMENT SHALL BE INCLUDED IN THE NEW CONTROLLER UNIT PRICE.

INFRASTRUCTURE ENGINEERING, INC.
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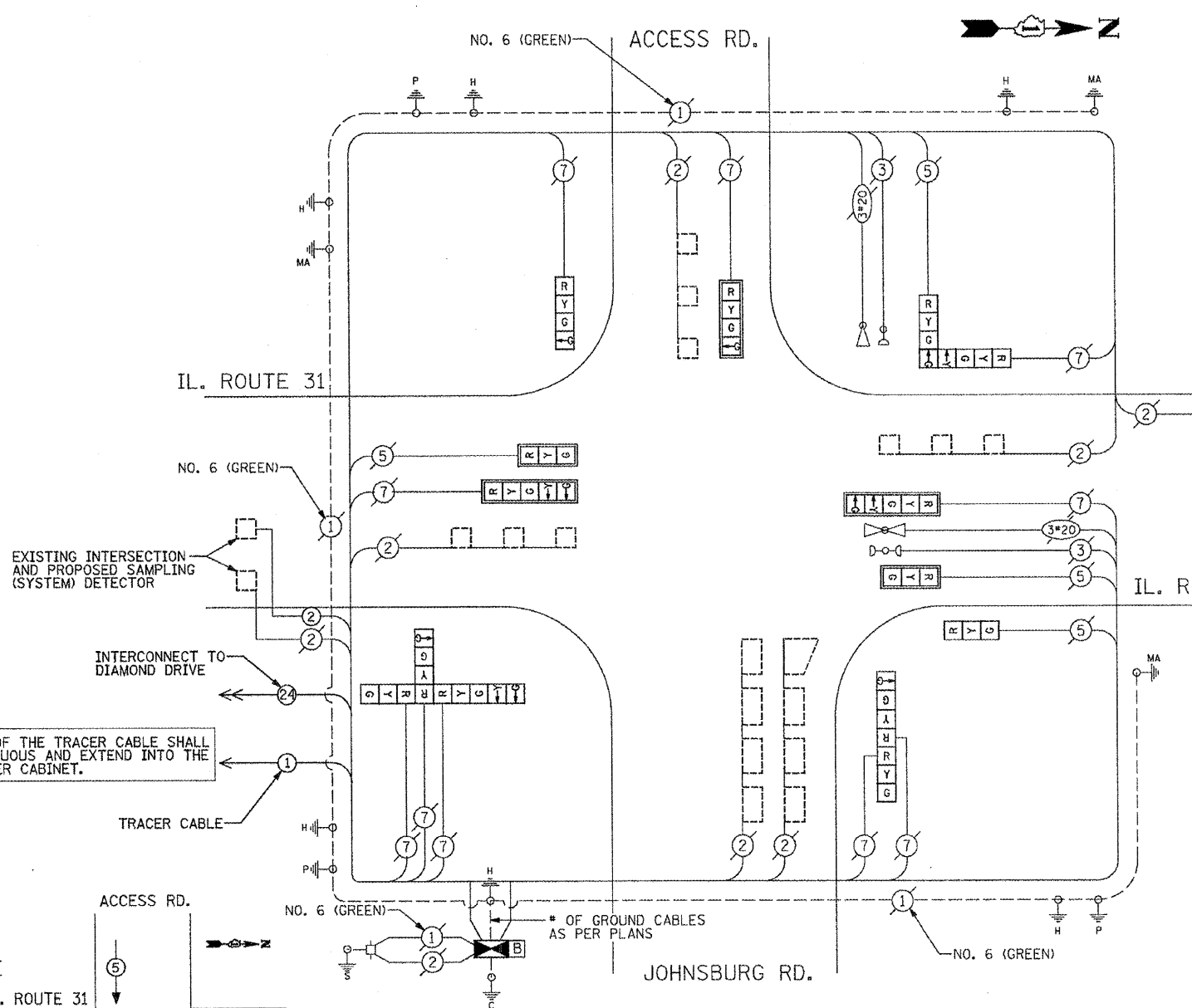
CABLE PLAN LEGEND

EXISTING PROPOSED

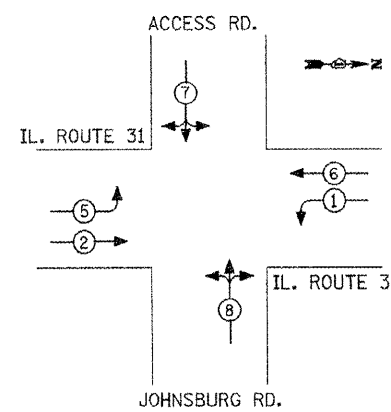
- Ⓢ 8" (200mm) TRAFFIC SIGNAL SECTION
- Ⓡ 12" (300mm) TRAFFIC SIGNAL SECTION
- Ⓦ 12" (300mm) PEDESTRIAN SIGNAL SECTION
- Ⓟ 12" (300mm) PEDESTRIAN SIGNAL SECTION
- ☒ CONTROLLER CABINET
- ☐ SERVICE INSTALLATION
- ☐ TELEPHONE CONNECTION
- ☐ VEHICLE DETECTOR, INDUCTION LOOP
- ☐ MAGNETIC DETECTOR
- ☐ EMERGENCY VEHICLE LIGHT DETECTOR
- ☐ CONFIRMATION BEACON
- ☐ PUSHBUTTON DETECTOR
- ② DENOTES NUMBER OF CONDUCTORS. ALL CABLE NO. 14 EXCEPT AS INDICATED. ALL LOOP DETECTOR CABLE TO BE SHIELDED.
- ① GROUND CABLE IN CONDUIT NO. 6 SOLID COPPER (GREEN)
- ② FIBER OPTIC CABLE IN CONDUIT NO. 62.5/125 MM12F SM12F
- Ⓡ SIGNAL FACE WITH BACKPLATE. "P" INDICATES PROGRAMMED HEAD.
- ☒ RAILROAD CONTROL CABINET
- ☐ ILLUMINATED SIGN "NO LEFT TURN"
- ☐ ILLUMINATED SIGN "NO RIGHT TURN"
- Ⓡ GROUND ROD AT HANDHOLE (H), DOUBLE HANDHOLE (H), OR CONTROLLER (C)
- Ⓡ GROUND ROD AT POST (P) OR MAST ARM POLE (MA)
- Ⓡ GROUND ROD AT ELECTRIC SERVICE INSTALLATION
- ☐ VIDEO VEHICLE SENSOR
- Ⓡ UNINTERRUPTIBLE POWER SUPPLY

NOTE:
THE TRAFFIC SIGNAL CONTROLLER EQUIPMENT FOR THE PROJECT SHALL BE "EAGLE" TO MATCH THE EXISTING ADJACENT SYSTEM INSTALLATION

PROPOSED CABLE PLAN



CONTROLLER SEQUENCE



- LEGEND**
- ↔ DUAL ENTRY PHASE
 - SINGLE ENTRY PHASE
 - ◊ OVERLAP
 - ↔ PEDESTRIAN PHASE
 - NUMBER REFERS TO ASSOCIATED PHASE

PHASE DESIGNATION DIAGRAM

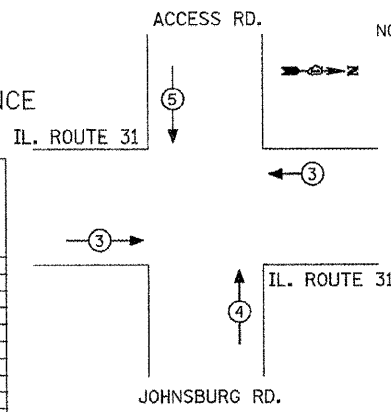
DUAL ENTRY - ALL LEGS
PROTECTED/ PERMITTED LEFT TURN PHASING
NOTE: E/W SPLIT Ø

NOTES:
EQUIPMENT GROUND CONDUCTOR (GREEN COLOR CODED) SPLICE TO FRAME AND COVER IS REQUIRED FOR ALL HANDHOLES OR DOUBLE HANDHOLES THAT CARRY SIGNAL CABLES AND SERVICE CABLES.

SCHEDULE OF QUANTITIES

QTY	UNIT	ITEM DESCRIPTION
1.0	CAL MO	ENGINEER'S FIELD OFFICE, TYPE A
0.25	L SUM	MOBILIZATION
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701
1.0	EACH	MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION
1.0	EACH	FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL
1.0	EACH	TRANSCEIVER - FIBER OPTIC
640.0	FOOT	ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 14 1C
2.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 3-SECTION, MAST ARM MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 3-SECTION, BRACKET MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 4-SECTION, BRACKET MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 4-SECTION, MAST ARM MOUNTED
2.0	EACH	SIGNAL HEAD, L.E.D., 1-FACE, 5-SECTION, MAST ARM MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 2-FACE, 1-3 SECTION, 1-4 SECTION BRACKET MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 2-FACE, 1-3 SECTION, 1-5 SECTION BRACKET MOUNTED
1.0	EACH	SIGNAL HEAD, L.E.D., 3-FACE, 1-3 SECTION, 1-4 SECTION, 1-5 SECTION BRACKET MOUNTED
2.0	EACH	TRAFFIC SIGNAL POST, GALVANIZED STEEL 16 FT.
53.4	SQ FT	P.C.C. SIDEWALK 5-INCH
1.0	EACH	DRILL EXISTING HANDHOLE
5.0	EACH	TRAFFIC SIGNAL BACKPLATE, LOUVERED, ALUMINUM
8.0	EACH	INDUCTIVE LOOP DETECTOR
1.0	EACH	REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT
1.0	EACH	UNINTERRUPTIBLE POWER SUPPLY
1.0	EACH	RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM-LEVEL II

EMERGENCY VEHICLE PREEMPTION SEQUENCE



PROPOSED EMERGENCY VEHICLE PREEMPTORS

EMERGENCY VEHICLE PREEMPTOR	3	4	5
MOVEMENT	←	↑	↓

I.D.O.T. TRAFFIC SIGNAL INSTALLATION ELECTRICAL SERVICE REQUIREMENTS

TYPE	NO. LAMPS	WATTAGE INCAND.	LED	%OPERATION	TOTAL WATTAGE
SIGNAL (RED)	14	17	0.50	0.50	119.0
(YELLOW)	14	25	0.25	0.25	87.5
(GREEN)	14	15	0.25	0.25	52.5
ARROW	12	12	0.10	0.10	14.4
PED. SIGNAL	-	25	1.00	-	-
CONTROLLER	1	100	1.00	1.00	100.0
ILLUM. SIGN	-	-	0.05	-	-
FLASHER	-	-	0.50	-	-
TOTAL =					373.4

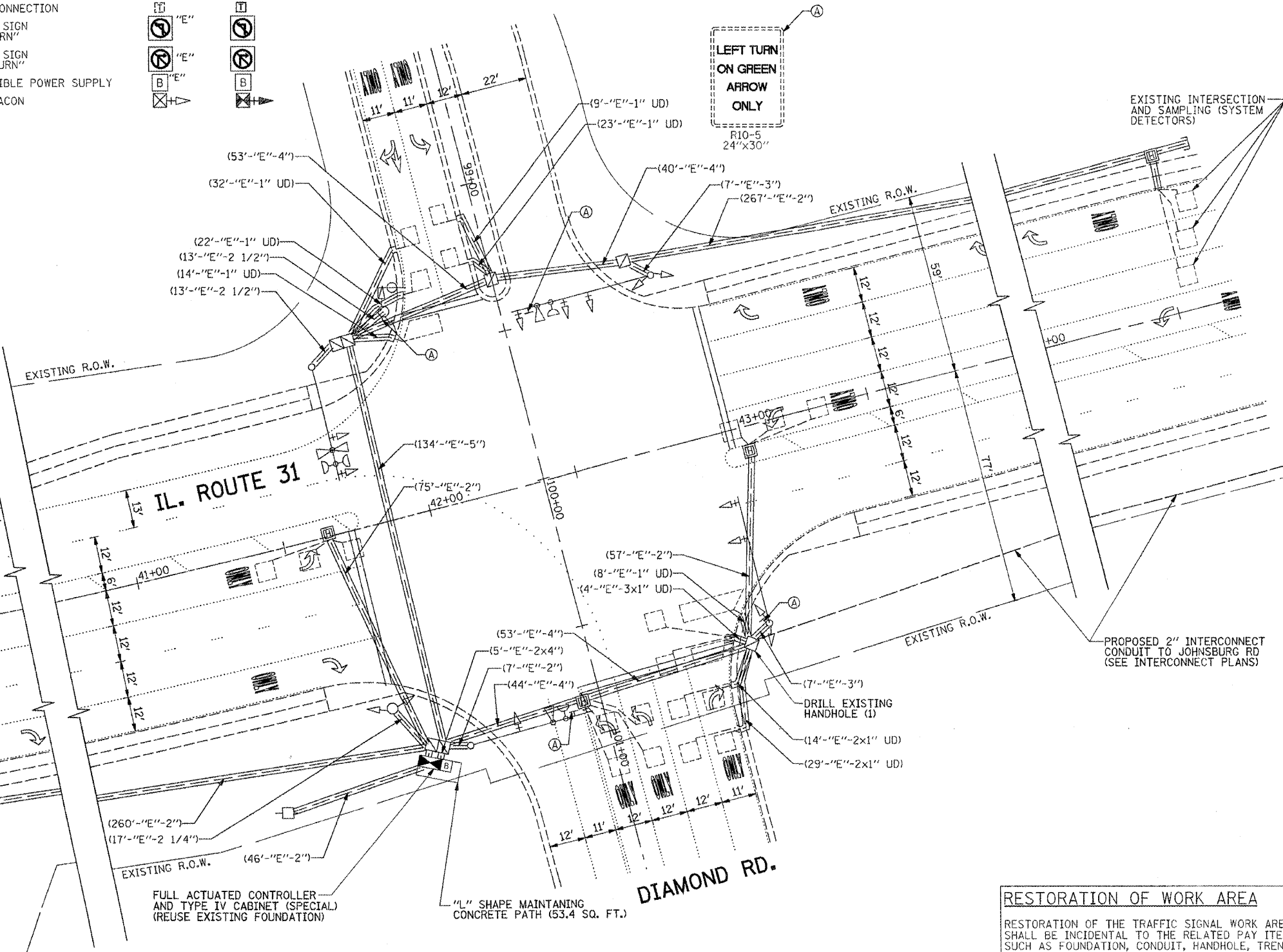
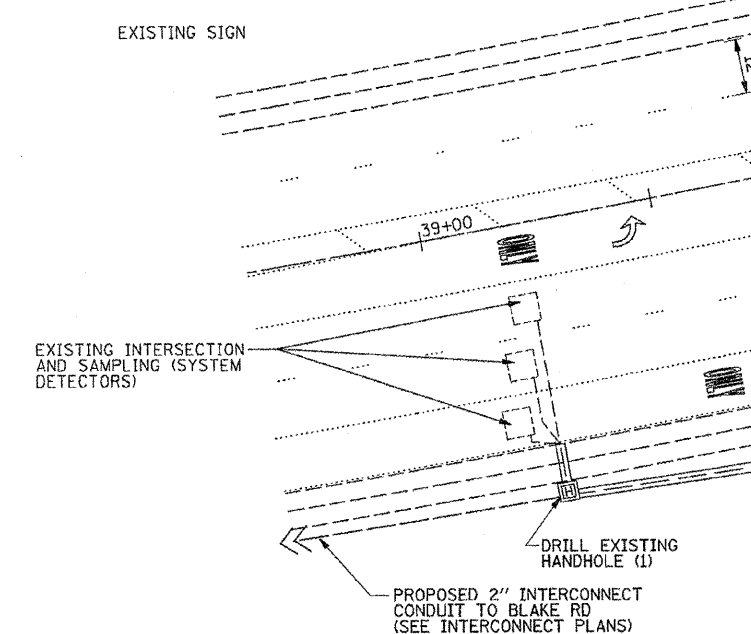
ENERGY COSTS TO:
CITY OF MCHENRY
333 SOUTH GREEN STREET
MCHENRY, ILLINOIS 60050

ENERGY SUPPLY CONTACT: ROBERT KOLLAR (847) 204-2859
PHONE: (847) 204-2859
COMPANY: COMED

FOUNDATION (DEPTH)	FT. (m)	CABLE SLACK	FT. (m)	VERTICAL	FT. (m)
TYPE A - POST	4 (1.2)	HANDHOLE	6.5 (2.0)	ALL FOUNDATIONS	3.5 (1.0)
D - CONTROLLER	4 (1.2)	DOUBLE HANDHOLE	13 (4.0)	MAST ARM (L) POLE	20'±L-2"
E - M. ARM POLE	-	SIGNAL POST	2 (1.0)	BRACKET MOUNTED	6m±L-0.6m±
24" (600mm)	10 (3.0)	CONTROLLER CAB.	1 (0.5)	PED. PUSHBUTTON	13 (4.0)
30" (750mm)	15 (4.6)	FIBER OPTIC	13 (4.0)	ELECTRIC SERVICE	13.5 (4.1)
36" (900mm)	15 (4.6)	ELECTRIC SERVICE	1 (0.5)	SERVICE TO GROUND	13.5 (4.1)
		GROUND CABLE	1 (0.5)	POST MOUNTED	6 (1.8)

TRAFFIC SIGNAL LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
CONTROLLER			RAILROAD CONTROL CABINET		
SERVICE INSTALLATION			TELEPHONE CONNECTION		
SIGNAL HEAD			ILLUMINATED SIGN "NO LEFT TURN"		
SIGNAL HEAD WITH BACKPLATE			ILLUMINATED SIGN "NO RIGHT TURN"		
SIGNAL HEAD, PEDESTRIAN			UNINTERRUPTIBLE POWER SUPPLY		
SIGNAL POST			FLASHING BEACON		
MAST ARM ASSEMBLY AND POLE, STEEL					
MAST ARM ASSEMBLY AND POLE, ALUMINUM					
COMBINATION MAST ARM ASSEMBLY AND POLE, STEEL WITH LUMINAIRE					
UNIT DUCT	US	UD			
COMMON TRENCH	CT	CT			
HANDHOLE					
HEAVY DUTY HANDHOLE					
DOUBLE HANDHOLE					
G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)					
PEDESTRIAN PUSHBUTTON DETECTOR					
DETECTOR LOOP					
CAST IRON JUNCTION BOX					
EMERGENCY VEHICLE LIGHT DETECTOR					
CONFIRMATION BEACON					
SIGNAL HEAD OPTICALLY PROGRAMMED					
CONDUIT SPLICE					
WOOD POLE					
RACEWAY FOR MAGNETIC DETECTOR, TYPE I OR TYPE II					
VEHICLE DETECTOR, NON COMPENSATED MAGNETIC TYPE					



THE FOLLOWING ITEMS SHALL BE REMOVED BY THE CONTRACTOR, SHALL REMAIN THE PROPERTY OF THE STATE AND SHALL BE DELIVERED BY STATE "TRAFFIC SIGNAL MAINTENANCE CONTRACTORS" MAIN FACILITY AS PER THE TRAFFIC THE TRAFFIC SIGNAL SPECIFICATIONS

1 EACH CONTROLLER AND CABINET (COMPLETE)

CONSTRUCTION NOTE:
 INSTALL NEW CONTROLLER AND TYPE IV CABINET (SPECIAL). RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM PHASING UNIT TO NEW CONTROLLER CABINET. RELOCATION OF THE EMERGENCY PRIORITY SYSTEM EQUIPMENT SHALL BE INCLUDED IN THE NEW CONTROLLER UNIT PRICE.

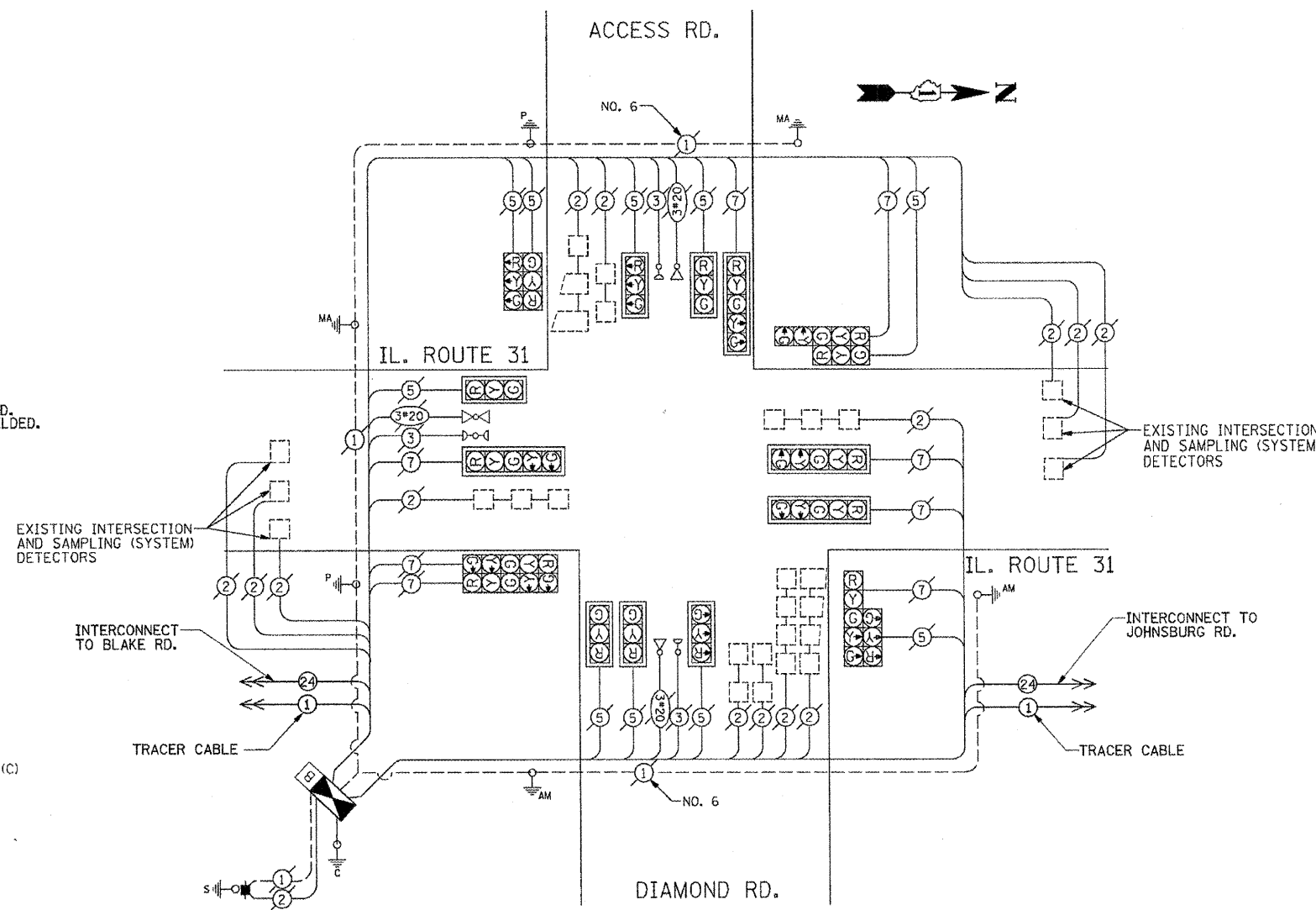
RESTORATION OF WORK AREA
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PLOT SCALE = 28.0000 "/> <td>PLOT DATE = 1/27/2009</td> <td>CHECKED - ER</td> <td>REVISED -</td> <td>SCALE: 1"=20'</td> <td>SHEET NO. OF SHEETS</td> <td>STA. TO STA.</td> <td colspan="4">CONTRACT NO. 60F79</td>	PLOT DATE = 1/27/2009	CHECKED - ER	REVISED -			SCALE: 1"=20'	SHEET NO. OF SHEETS	STA. TO STA.	CONTRACT NO. 60F79			
						FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT						
INFRASTRUCTURE ENGINEERING, INC. 33 W. MONROE ST., SUITE 1540 CHICAGO, IL 60603-5322 PHONE 312.425.9560 FAX 312.425.9564												

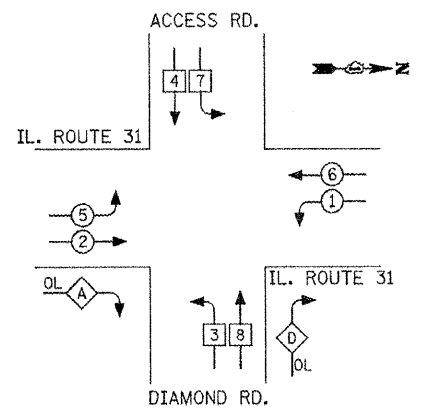
CABLE PLAN LEGEND

- | | | |
|-----------------|-----------------|---|
| EXISTING | PROPOSED | |
| Ⓞ | Ⓢ | 8" (200mm) TRAFFIC SIGNAL SECTION |
| Ⓡ | Ⓡ | 12" (300mm) TRAFFIC SIGNAL SECTION |
| Ⓦ | Ⓦ | 12" (300mm) PEDESTRIAN SIGNAL SECTION |
| Ⓡ | Ⓡ | 12" (300mm) PEDESTRIAN SIGNAL SECTION |
| Ⓢ | Ⓢ | CONTROLLER CABINET |
| Ⓢ | Ⓢ | SERVICE INSTALLATION |
| Ⓢ | Ⓢ | TELEPHONE CONNECTION |
| Ⓢ | Ⓢ | VEHICLE DETECTOR, INDUCTION LOOP |
| Ⓢ | Ⓢ | MAGNETIC DETECTOR |
| Ⓢ | Ⓢ | EMERGENCY VEHICLE LIGHT DETECTOR |
| Ⓢ | Ⓢ | CONFIRMATION BEACON |
| Ⓢ | Ⓢ | PUSHBUTTON DETECTOR |
| ② | ② | DENOTES NUMBER OF CONDUCTORS. ALL CABLE NO. 14 EXCEPT AS INDICATED. ALL LOOP DETECTOR CABLE TO BE SHIELDED. |
| ① | ① | GROUND CABLE IN CONDUIT NO. 6 SOLID COPPER (GREEN) |
| ②④ | ②④ | FIBER OPTIC CABLE IN CONDUIT NO. 62.5/125 MM12F SM12F |
| Ⓡ | Ⓡ | SIGNAL FACE WITH BACKPLATE. "P" INDICATES PROGRAMMED HEAD. |
| Ⓡ | Ⓡ | RAILROAD CONTROL CABINET |
| Ⓡ | Ⓡ | ILLUMINATED SIGN "NO LEFT TURN" |
| Ⓡ | Ⓡ | ILLUMINATED SIGN "NO RIGHT TURN" |
| H/C | H/C | GROUND ROD AT HANDHOLE (H), DOUBLE HANDHOLE (H), OR CONTROLLER (C) |
| P | P | GROUND ROD AT POST (P) OR MAST ARM POLE (MA) |
| S | S | GROUND ROD AT ELECTRIC SERVICE INSTALLATION |
| Ⓢ | Ⓢ | VIDEO VEHICLE SENSOR |
| B | B | UNINTERRUPTIBLE POWER SUPPLY |

PROPOSED CABLE PLAN



CONTROLLER SEQUENCE

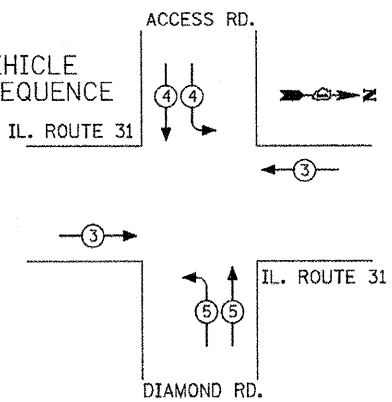


- LEGEND**
- Ⓢ (with arrow) DUAL ENTRY PHASE
 - Ⓢ (with dot) SINGLE ENTRY PHASE
 - Ⓢ (with OL) OVERLAP
 - Ⓢ (with circle) PEDESTRIAN PHASE
 - NUMBER REFERS TO ASSOCIATED PHASE

PHASE DESIGNATION DIAGRAM

OVERLAP LETTER	PERMISSIVE PHASE	PROTECTED PHASE
A	= 2	+ 3
D	= 8	+ 1

EMERGENCY VEHICLE PREEMPTION SEQUENCE



NOTE:
THE TRAFFIC SIGNAL CONTROLLER EQUIPMENT FOR THE PROJECT SHALL BE "EAGLE" TO MATCH THE EXISTING ADJACENT SYSTEM INSTALLATION

PROPOSED EMERGENCY VEHICLE PREEMPTORS

EMERGENCY VEHICLE PREEMPTOR	3	4	5
MOVEMENT	←	↓	↑

NOTES:
EQUIPMENT GROUND CONDUCTOR (GREEN COLOR CODED) SPLICE TO FRAME AND COVER IS REQUIRED FOR ALL HANDHOLES OR DOUBLE HANDHOLES THAT CARRY SIGNAL CABLES AND SERVICE CABLES.

I.D.O.T. TRAFFIC SIGNAL INSTALLATION ELECTRICAL SERVICE REQUIREMENTS

TYPE	NO. LAMPS	WATTAGE INCAND.	WATTAGE LED	XOPERATION	TOTAL WATTAGE
SIGNAL (RED)	14	17	0.50		119.0
(YELLOW)	14	25	0.25		87.5
(GREEN)	14	15	0.25		52.5
ARROW	28	12	0.10		33.6
PED. SIGNAL	-	25	1.00		-
CONTROLLER	1	100	1.00		100.0
ILLUM. SIGN			0.05		
FLASHER			0.50		
TOTAL =					392.6

ENERGY COSTS TO:
CITY OF MCHENRY
333 SOUTH GREEN STREET
MCHENRY, ILLINOIS 60050

ENERGY SUPPLY CONTACT:
PHONE: (847) 204-2859
COMPANY: COMED

ROBERT KOLLAR
(847) 204-2859
COMED

FOUNDATION (DEPTH)	FT. (m)	CABLE SLACK	FT. (m)	VERTICAL	FT. (m)
TYPE A - POST	4 (1.2)	HANDHOLE	6.5 (2.0)	ALL FOUNDATIONS	3.5 (1.0)
D - CONTROLLER	4 (1.2)	DOUBLE HANDHOLE	13 (4.0)	MAST ARM (L) POLE	20'±L-2" (6m±L-0.6m)
E - M. ARM POLE	2 (1.0)	SIGNAL POST	2 (1.0)	BRACKET MOUNTED	13 (4.0)
24" (600mm)	10 (3.0)	CONTROLLER CAB.	1 (0.5)	PED. PUSHBUTTON	4 (1.2)
30" (750mm)	15 (4.6)	FIBER OPTIC	13 (4.0)	ELECTRIC SERVICE	13.5 (4.1)
36" (900mm)	15 (4.6)	ELECTRIC SERVICE	1 (0.5)	SERVICE TO GROUND	13.5 (4.1)
		GROUND CABLE	1 (0.5)	IPOST MOUNTED	6 (1.8)

SCHEDULE OF QUANTITIES

QTY	UNIT	ITEM DESCRIPTION
1.0	CAL MO	ENGINEER'S FIELD OFFICE, TYPE A
0.25	L SUM	MOBILIZATION
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701
1.0	EACH	MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION
1.0	EACH	FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL
1.0	EACH	TRANSCIVER - FIBER OPTIC
53.4	SQ FT	P.C.C. SIDEWALK 5-INCH
2.0	EACH	DRILL EXISTING HANDHOLE
14.0	EACH	INDUCTIVE LOOP DETECTOR
1.0	EACH	REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT
1.0	EACH	UNINTERRUPTIBLE POWER SUPPLY
1.0	EACH	RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM-LEVEL II

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PLOT SCALE = 20.0000' / IN.	PLOT DATE = 1/27/2009	DRAWN - BID	REVISED -
		CHECKED - ER	REVISED -
		DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**CABLE PLAN, PHASE DESIGNATION DIAGRAM, SCHEDULE OF QUANTITIES
IL. RTE. 31 AT DIAMOND RD.**

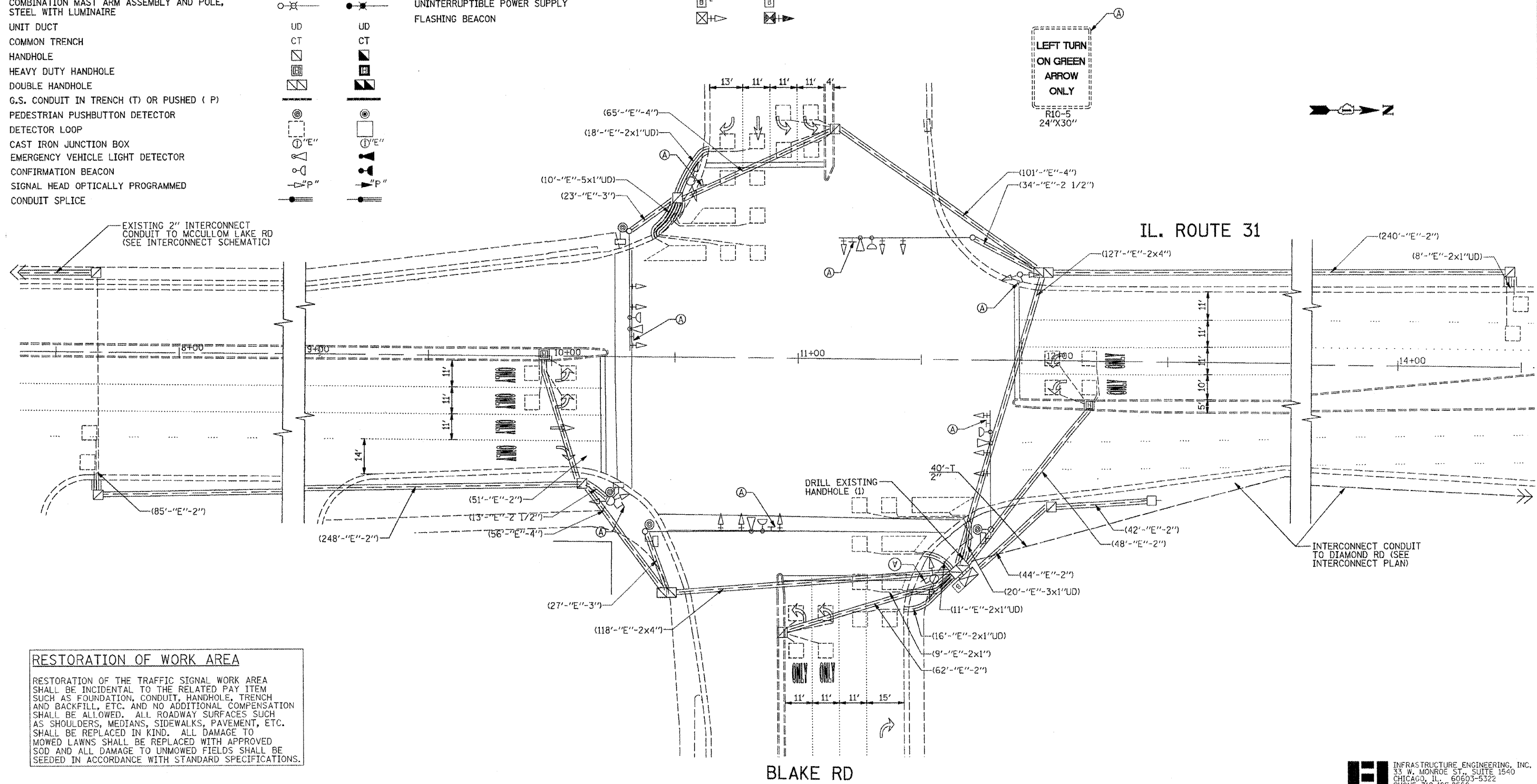
SCALE: N.T.S. SHEET NO. OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	10
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

TRAFFIC SIGNAL LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
CONTROLLER			WOOD POLE		
SERVICE INSTALLATION			RACEWAY FOR MAGNETIC DETECTOR, TYPE I OR TYPE II		
SIGNAL HEAD			VEHICLE DETECTOR, NON COMPENSATED MAGNETIC TYPE		
SIGNAL HEAD WITH BACKPLATE			RAILROAD CONTROL CABINET		
SIGNAL HEAD, PEDESTRIAN			TELEPHONE CONNECTION		
SIGNAL POST			ILLUMINATED SIGN "NO LEFT TURN"		
MAST ARM ASSEMBLY AND POLE, STEEL			ILLUMINATED SIGN "NO RIGHT TURN"		
MAST ARM ASSEMBLY AND POLE, ALUMINUM			UNINTERRUPTIBLE POWER SUPPLY		
COMBINATION MAST ARM ASSEMBLY AND POLE, STEEL WITH LUMINAIRE			FLASHING BEACON		
UNIT DUCT					
COMMON TRENCH					
HANDHOLE					
HEAVY DUTY HANDHOLE					
DOUBLE HANDHOLE					
G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)					
PEDESTRIAN PUSHBUTTON DETECTOR					
DETECTOR LOOP					
CAST IRON JUNCTION BOX					
EMERGENCY VEHICLE LIGHT DETECTOR					
CONFIRMATION BEACON					
SIGNAL HEAD OPTICALLY PROGRAMMED					
CONDUIT SPLICE					



RESTORATION OF WORK AREA
 RESTORATION OF THE TRAFFIC SIGNAL WORK AREA SHALL BE INCIDENTAL TO THE RELATED PAY ITEM SUCH AS FOUNDATION, CONDUIT, HANDHOLE, TRENCH AND BACKFILL, ETC. AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIANS, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH APPROVED SOD AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.

FILE NAME =	USER NAME = (1224_usr)	DESIGNED - LC	REVISED -
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		CHECKED - ER	REVISED -
		DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNAL MODIFICATION
IL. ROUTE 31 AT BLAKE ROAD

SCALE: 1"=20'
 SHEET NO. OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL. 31	2001-125R	Mc HENRY	31	11
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

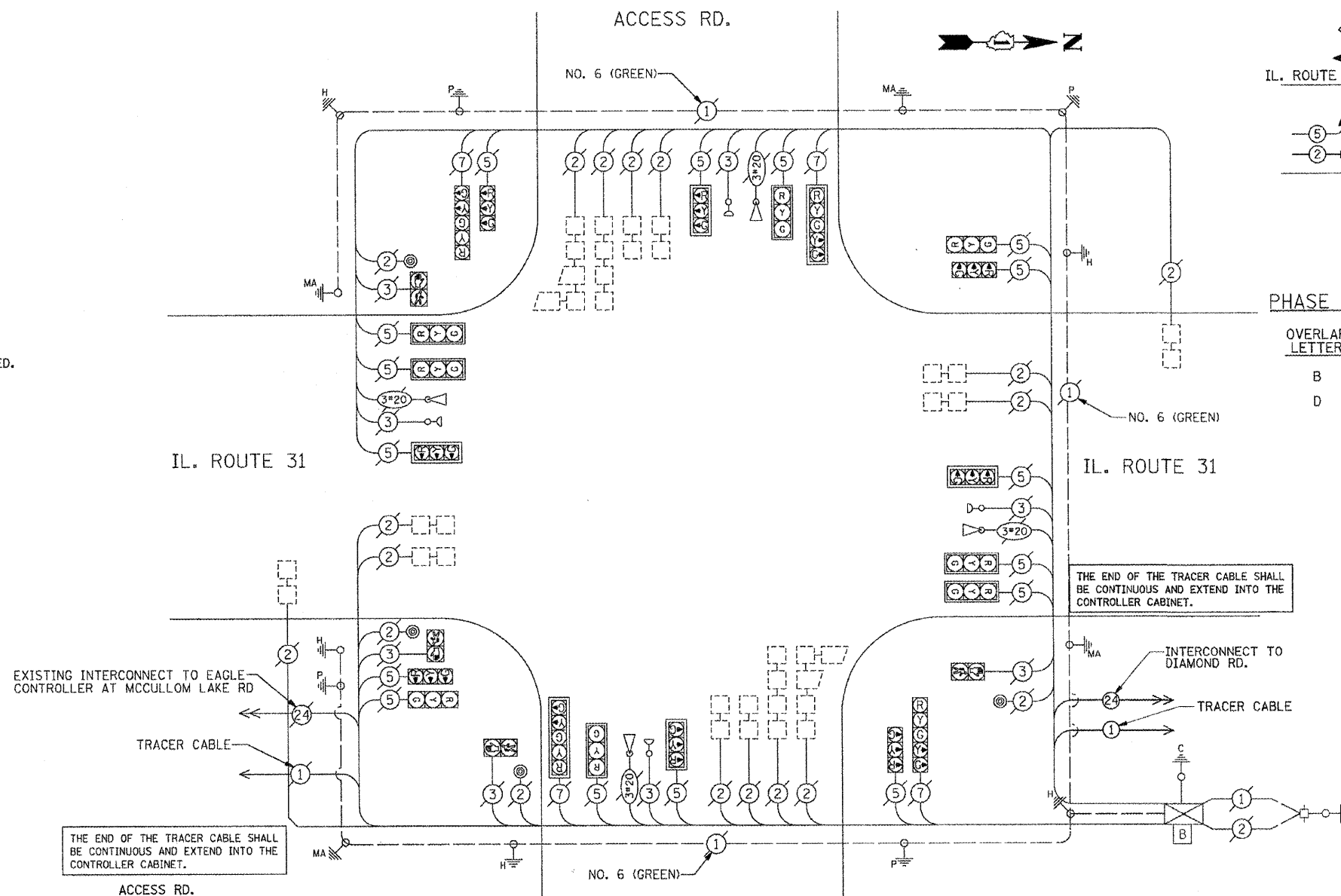
INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL. 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

CABLE PLAN LEGEND

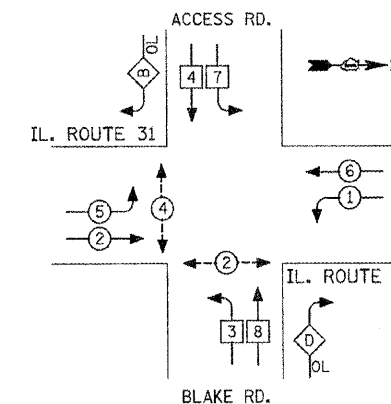
EXISTING PROPOSED

- Ⓞ 8" (200mm) TRAFFIC SIGNAL SECTION
- Ⓡ 12" (300mm) TRAFFIC SIGNAL SECTION
- Ⓢ 12" (300mm) PEDESTRIAN SIGNAL SECTION
- Ⓣ 12" (300mm) PEDESTRIAN SIGNAL SECTION
- Ⓚ CONTROLLER CABINET
- Ⓛ SERVICE INSTALLATION
- Ⓜ TELEPHONE CONNECTION
- Ⓨ VEHICLE DETECTOR, INDUCTION LOOP
- Ⓩ MAGNETIC DETECTOR
- ⓐ EMERGENCY VEHICLE LIGHT DETECTOR
- ⓑ CONFIRMATION BEACON
- ⓓ PUSHBUTTON DETECTOR
- ② DENOTES NUMBER OF CONDUCTORS. ALL CABLE NO. 14 EXCEPT AS INDICATED. ALL LOOP DETECTOR CABLE TO BE SHIELDED.
- ① GROUND CABLE IN CONDUIT NO. 6 SOLID COPPER (GREEN)
- ④ FIBER OPTIC CABLE IN CONDUIT NO. 62.5/125 MM12F SM12F
- Ⓡ RAILROAD CONTROL CABINET
- Ⓢ ILLUMINATED SIGN "NO LEFT TURN"
- Ⓣ ILLUMINATED SIGN "NO RIGHT TURN"
- Ⓛ GROUND ROD AT HANDHOLE (H), DOUBLE HANDHOLE (HH), OR CONTROLLER (C)
- Ⓜ GROUND ROD AT POST (P) OR MAST ARM POLE (MA)
- Ⓨ GROUND ROD AT ELECTRIC SERVICE INSTALLATION
- Ⓩ VIDEO VEHICLE SENSOR
- ⓑ UNINTERRUPTIBLE POWER SUPPLY

PROPOSED CABLE PLAN



CONTROLLER SEQUENCE



LEGEND

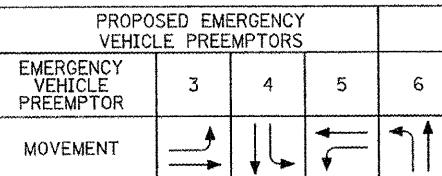
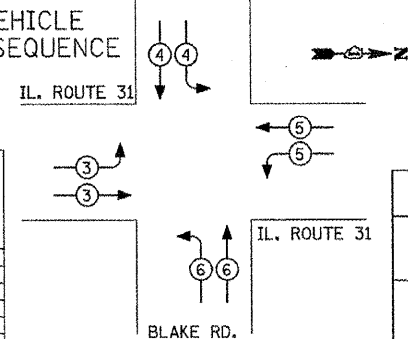
- Ⓢ DUAL ENTRY PHASE
- Ⓡ SINGLE ENTRY PHASE
- Ⓚ OVERLAP
- Ⓣ PEDESTRIAN PHASE
- * NUMBER REFERS TO ASSOCIATED PHASE

PHASE DESIGNATION DIAGRAM

OVERLAP LETTER	PERMISSIVE PHASE	PROTECTED PHASE
B	= 4 + 5	
D	= 8 + 1	

NOTE:
THE TRAFFIC SIGNAL CONTROLLER EQUIPMENT FOR THE PROJECT SHALL BE "EAGLE" TO MATCH THE EXISTING ADJACENT SYSTEM INSTALLATION

EMERGENCY VEHICLE PREEMPTION SEQUENCE



SCHEDULE OF QUANTITIES

QTY	UNIT	ITEM DESCRIPTION
1.0	CAL MO	ENGINEER'S FIELD OFFICE, TYPE A
0.25	L SUM	MOBILIZATION
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701
1.0	EACH	MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION
1.0	EACH	TRANSCEIVER - FIBER OPTIC
1.0	EACH	DRILL EXISTING HANDHOLE
14.0	EACH	INDUCTIVE LOOP DETECTOR
1.0	EACH	UNINTERRUPTIBLE POWER SUPPLY

I.D.O.T. TRAFFIC SIGNAL INSTALLATION ELECTRICAL SERVICE REQUIREMENTS

TYPE	NO. LAMPS	WATTAGE INCAND.	LED	%OPERATION	TOTAL WATTAGE
SIGNAL (RED)	12		17	0.50	102.0
(YELLOW)	12		25	0.25	75.0
(GREEN)	12		15	0.25	45.0
ARROW	32		12	0.10	38.4
PED. SIGNAL	4		25	1.00	100.0
CONTROLLER	1		100	1.00	100.0
ILLUM. SIGN					0.50
FLASHER LED					0.50
TOTAL =					460.4

ENERGY COSTS - BILLED TO: CITY OF MCHENRY (ADDRESS)
ENERGY SUPPLY - CONTACT MR. DENNIS HRURY
PHONE: 815 334-3313
COMPANY: COM-ED

FOUNDATION (DEPTH)	FT. (m)	CABLE SLACK	FT. (m)	VERTICAL	FT. (m)
TYPE A - POST	4 (1.2)	HANDHOLE	6.5 (2.0)	ALL FOUNDATIONS	3.5 (1.0)
D - CONTROLLER	4 (1.2)	DOUBLE HANDHOLE	13 (4.0)	MAST ARM (L) POLE	20'±L-2" (6m±L-0.6m)±
E - M. ARM POLE	2 (1.0)	SIGNAL POST	2 (1.0)	BRACKET MOUNTED	13 (4.0)
		24" (600mm)	10 (3.0)	CONTROLLER CAB.	1 (0.5)
		30" (750mm)	15 (4.6)	FIBER OPTIC	13 (4.0)
		36" (900mm)	15 (4.6)	ELECTRIC SERVICE	1 (0.5)
				ELECTRIC SERVICE	13.5 (4.1)
				SERVICE TO GROUND	13.5 (4.1)
				GROUND CABLE	1 (0.5)
				POST MOUNTED	6 (1.8)

FILE NAME = USER NAME = (1224_user)
DESIGNED - LC
DRAWN - BID
PLOT SCALE = 28,0000' / IN.
PLOT DATE = 1/23/2009

REVISOR -
REVISOR -
REVISOR -
REVISOR -

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

**CABLE PLAN, PHASE DESIGNATION DIAGRAM, SCHEDULE OF QUANTITIES
IL RTE. 31 (RICHMOND RD.) AT BLAKE ROAD**

SCALE: N.T.S. SHEET NO. OF SHEETS STA. TO STA.

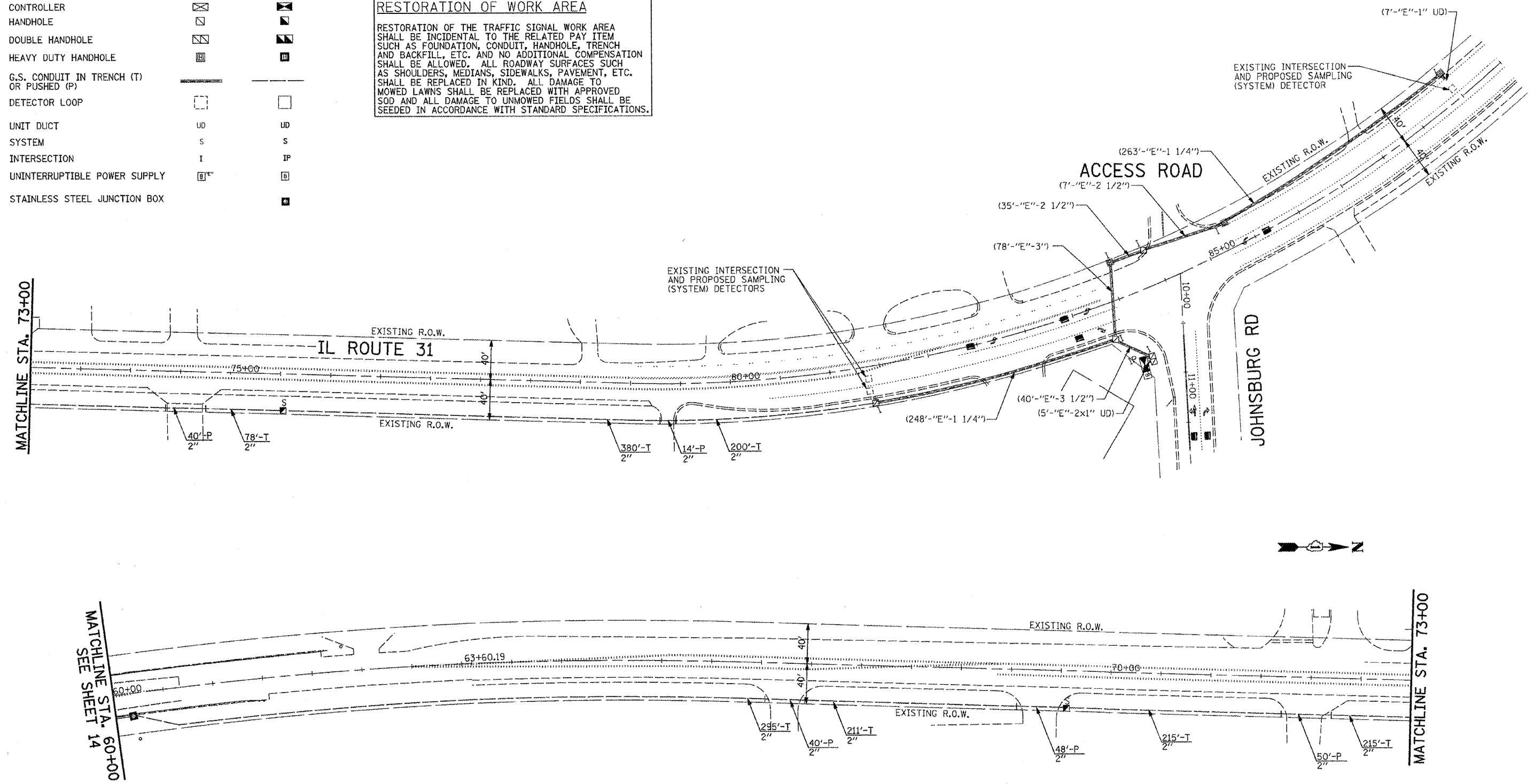
F.A. RTE. SECTION COUNTY TOTAL SHEETS SHEET NO.
IL 31 2001-125R Mc HENRY 31 12
CONTRACT NO. 60F79
FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT

INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

INTERCONNECT PLAN LEGEND

	EXISTING	PROPOSED
CONTROLLER		
HANDHOLE		
DOUBLE HANDHOLE		
HEAVY DUTY HANDHOLE		
G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)		
DETECTOR LOOP		
UNIT DUCT	UD	UD
SYSTEM	S	S
INTERSECTION	I	IP
UNINTERRUPTIBLE POWER SUPPLY		
STAINLESS STEEL JUNCTION BOX		

RESTORATION OF WORK AREA
 RESTORATION OF THE TRAFFIC SIGNAL WORK AREA SHALL BE INCIDENTAL TO THE RELATED PAY ITEM SUCH AS FOUNDATION, CONDUIT, HANDHOLE, TRENCH AND BACKFILL, ETC. AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIANS, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH APPROVED SOD AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.



INFRASTRUCTURE ENGINEERING, INC.
 35 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

FILE NAME =	USER NAME = (1224.user)	DESIGNED - LC	REVISED -
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	PLOT SCALE = 50.0000' / IN.	CHECKED - ER	REVISED -
	PLOT DATE = 1/23/2009	DATE -	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**INTERSECTION PLAN IL RTE 31
 FROM JOHNSBURG RD TO BLAKE RD**

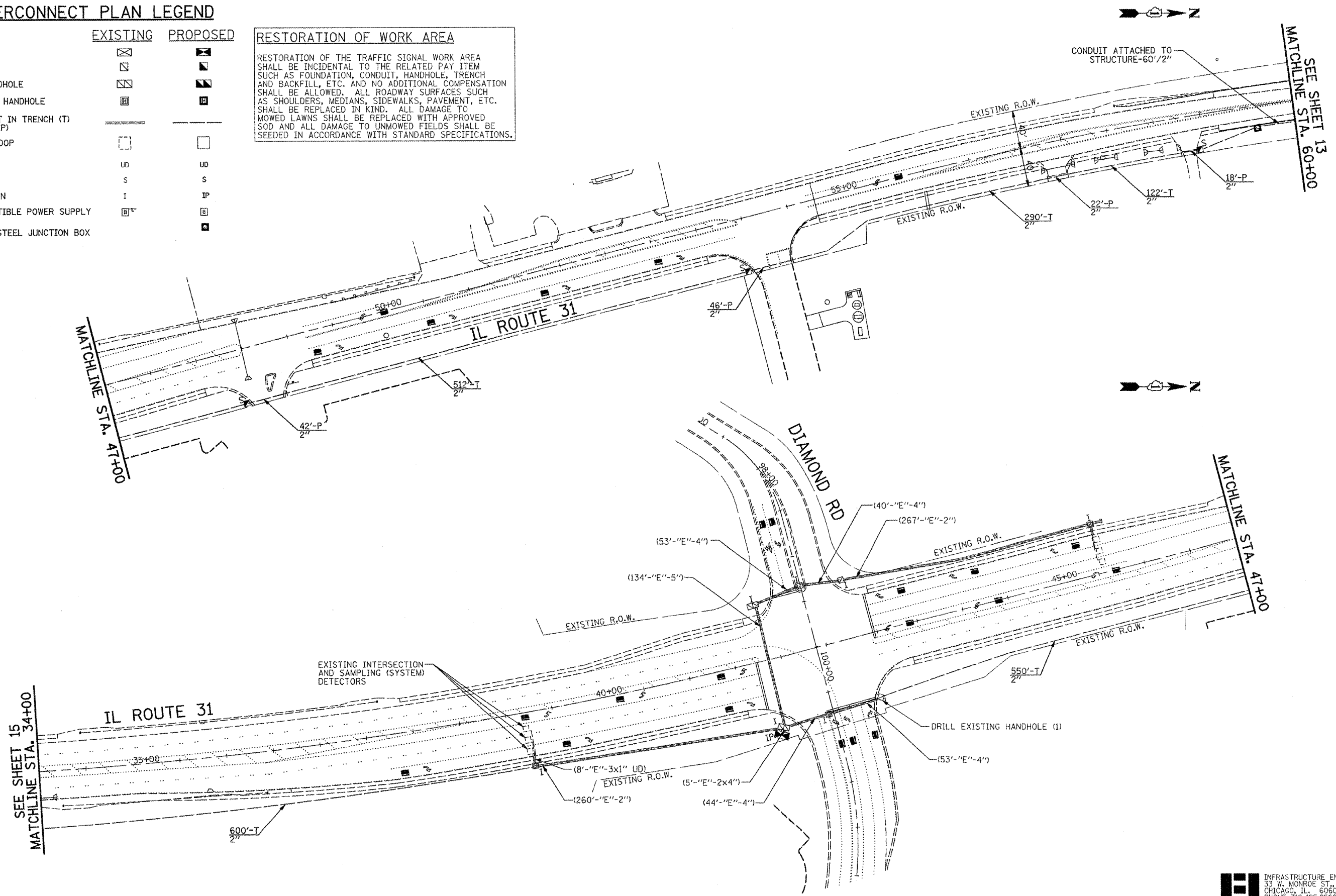
SCALE: 1"=50' SHEET NO. 1 OF 3 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	13
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

INTERCONNECT PLAN LEGEND

	EXISTING	PROPOSED
CONTROLLER		
HANDHOLE		
DOUBLE HANDHOLE		
HEAVY DUTY HANDHOLE		
G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)		
DETECTOR LOOP		
UNIT DUCT	UD	UD
SYSTEM	S	S
INTERSECTION	I	IP
UNINTERRUPTIBLE POWER SUPPLY		
STAINLESS STEEL JUNCTION BOX		

RESTORATION OF WORK AREA
 RESTORATION OF THE TRAFFIC SIGNAL WORK AREA SHALL BE INCIDENTAL TO THE RELATED PAY ITEM SUCH AS FOUNDATION, CONDUIT, HANDHOLE, TRENCH AND BACKFILL, ETC. AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIANS, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH APPROVED SOD AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.



INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

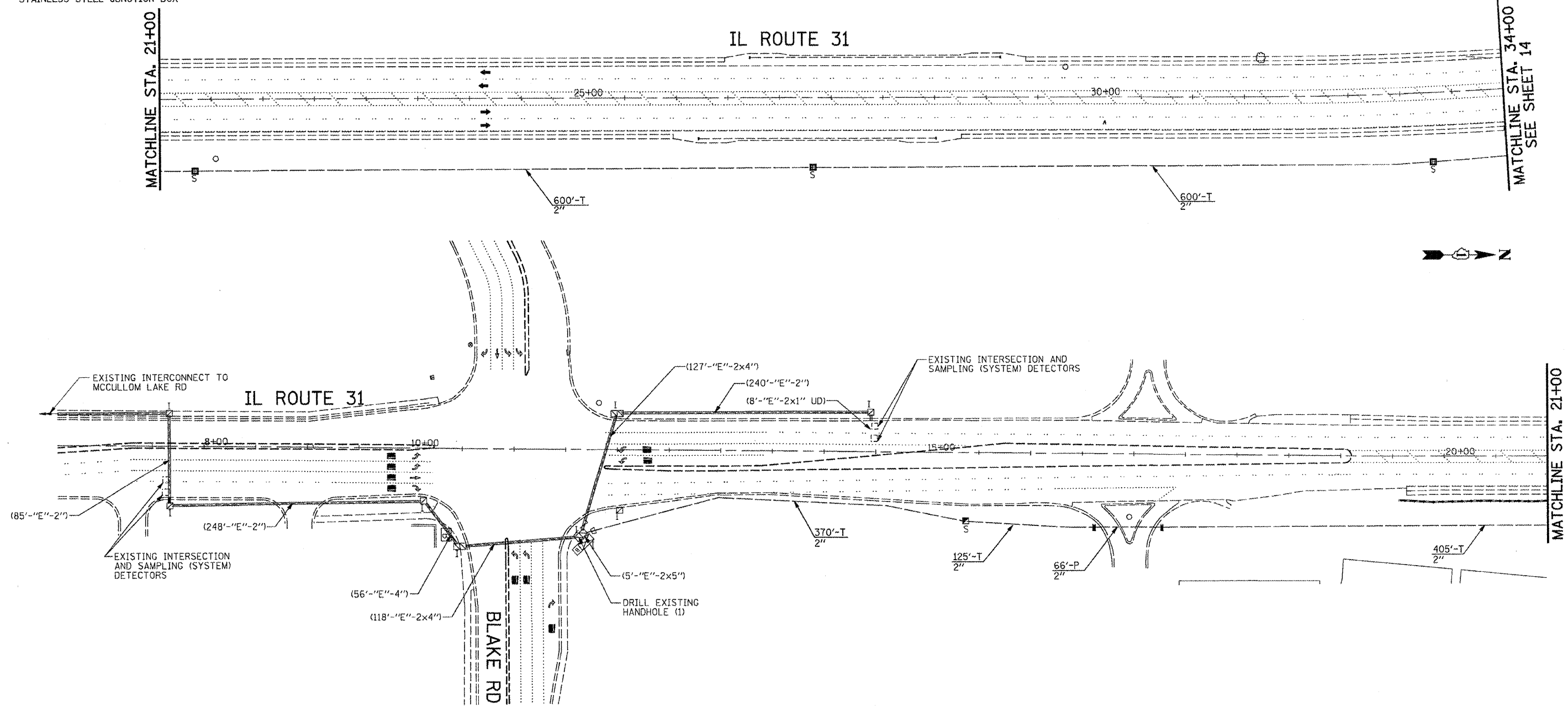
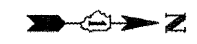
FILE NAME =	USER NAME = (1224_user1)	DESIGNED - LC	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	INTERCONNECT PLAN IL RTE 31 FROM JOHNSBURG RD TO BLAKE RD		F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
P:\P-00\1224\Task 8\DGN\Sheets\14-1224.5-INTERCONNECT-02.dgn		DRAWN - BID	REVISED -		SCALE: 1"=50'	SHEET NO. 2 OF 3 SHEETS	STA. TO STA.	IL 31	2001-125R	Mc HENRY	31	14
		PLOT SCALE = 50,0000 ' / IN.	CHECKED - ER		REVISED -							
		PLOT DATE = 1/23/2009	DATE -		REVISED -			FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F79

INTERCONNECT PLAN LEGEND

	EXISTING	PROPOSED
CONTROLLER		
HANDHOLE		
DOUBLE HANDHOLE		
HEAVY DUTY HANDHOLE		
G.S. CONDUIT IN TRENCH (T) OR PUSHED (P)		
DETECTOR LOOP		
UNIT DUCT	UD	UD
SYSTEM	S	S
INTERSECTION	I	IP
UNINTERRUPTIBLE POWER SUPPLY		
STAINLESS STEEL JUNCTION BOX		

RESTORATION OF WORK AREA

RESTORATION OF THE TRAFFIC SIGNAL WORK AREA SHALL BE INCIDENTAL TO THE RELATED PAY ITEM SUCH AS FOUNDATION, CONDUIT, HANDHOLE, TRENCH AND BACKFILL, ETC. AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIANS, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH APPROVED SOD AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS.



INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

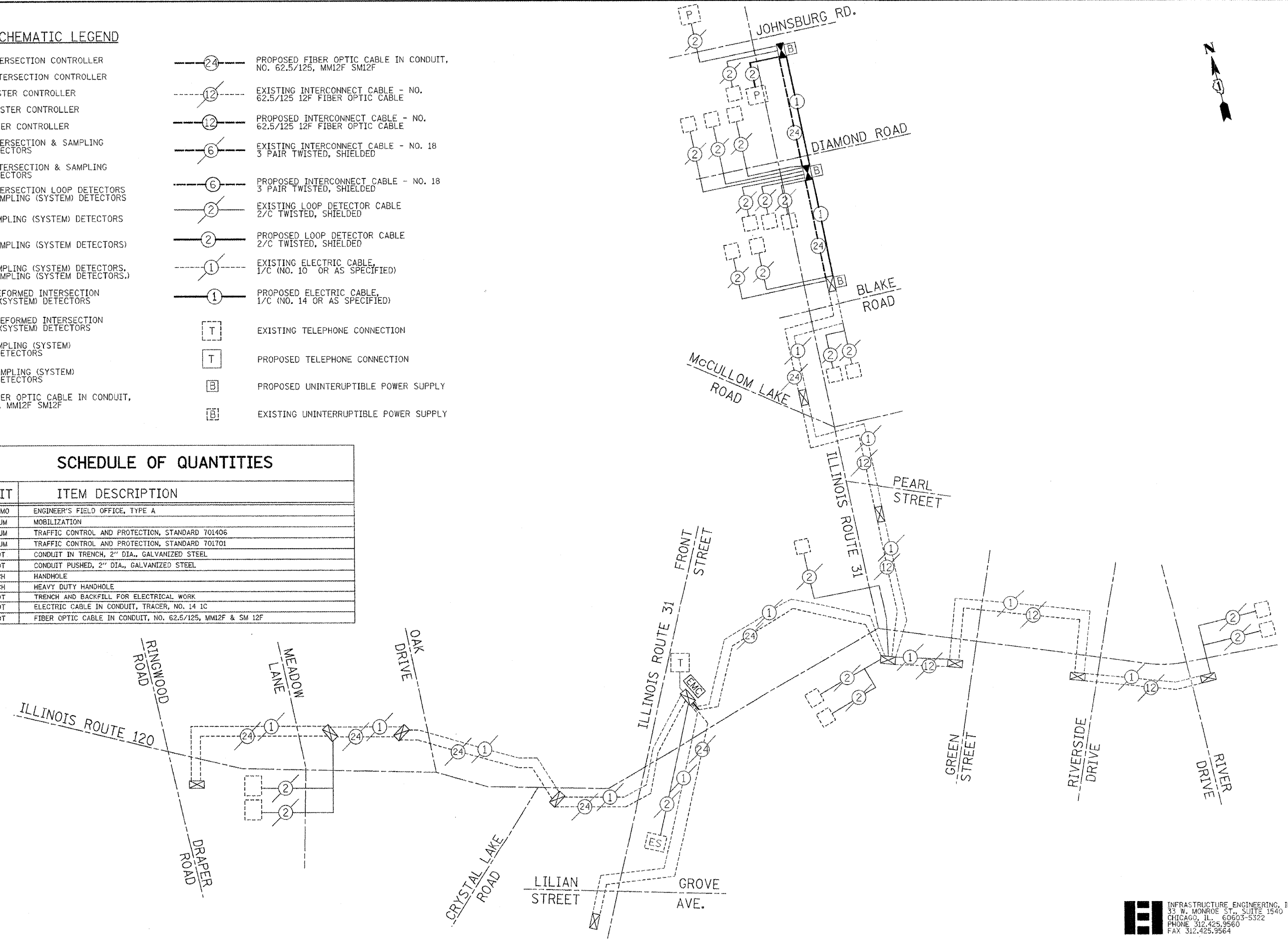
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PLOT SCALE = 5/8"=1'-0" IN.	CHECKED - ER	REVISED -	REVISED -		SCALE: 1"=50'	SHEET NO. 3 OF 3 SHEETS	STA. TO STA.	CONTRACT NO. 60F79				
PLOT DATE = 1/23/2009	DATE -	REVISED -	REVISED -		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT							

INTERCONNECT SCHEMATIC LEGEND

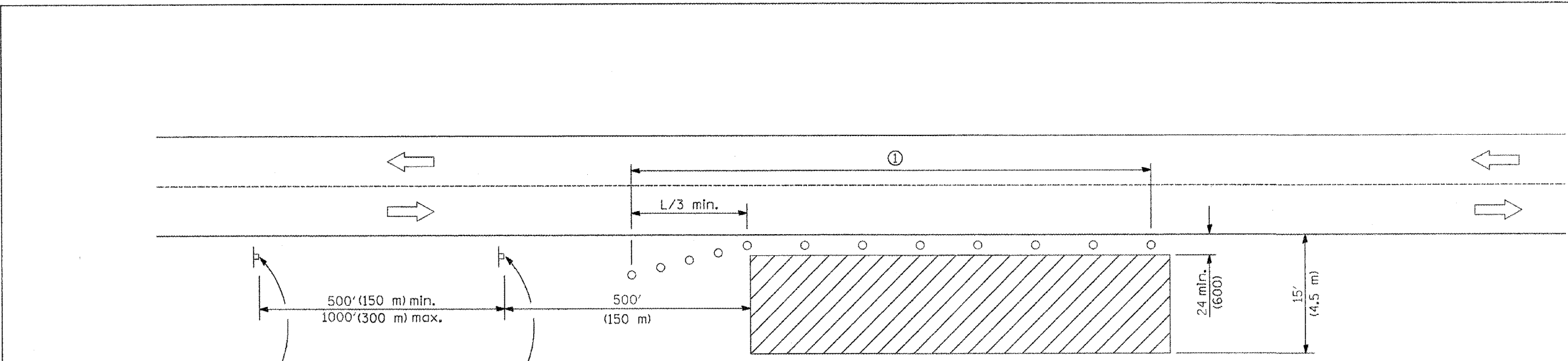
- | | | | |
|--|---|--|--|
| | EXISTING INTERSECTION CONTROLLER | | PROPOSED FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F SM12F |
| | PROPOSED INTERSECTION CONTROLLER | | EXISTING INTERCONNECT CABLE - NO. 62.5/125 12F FIBER OPTIC CABLE |
| | EXISTING MASTER CONTROLLER | | PROPOSED INTERCONNECT CABLE - NO. 62.5/125 12F FIBER OPTIC CABLE |
| | PROPOSED MASTER CONTROLLER | | EXISTING INTERCONNECT CABLE - NO. 18 3 PAIR TWISTED, SHIELDED |
| | MASTER MASTER CONTROLLER | | PROPOSED INTERCONNECT CABLE - NO. 18 3 PAIR TWISTED, SHIELDED |
| | EXISTING INTERSECTION & SAMPLING (SYSTEM) DETECTORS | | EXISTING LOOP DETECTOR CABLE 2/C TWISTED, SHIELDED |
| | PROPOSED INTERSECTION & SAMPLING (SYSTEM) DETECTORS | | PROPOSED LOOP DETECTOR CABLE 2/C TWISTED, SHIELDED |
| | EXISTING INTERSECTION LOOP DETECTORS | | EXISTING ELECTRIC CABLE, 1/C (NO. 10 OR AS SPECIFIED) |
| | EXISTING SAMPLING (SYSTEM) DETECTORS | | PROPOSED ELECTRIC CABLE, 1/C (NO. 14 OR AS SPECIFIED) |
| | PROPOSED SAMPLING (SYSTEM DETECTORS) | | EXISTING TELEPHONE CONNECTION |
| | EXISTING SAMPLING (SYSTEM) DETECTORS, PROPOSED SAMPLING (SYSTEM DETECTORS.) | | PROPOSED TELEPHONE CONNECTION |
| | EXISTING PREFORMED INTERSECTION & SAMPLING (SYSTEM) DETECTORS | | PROPOSED UNINTERRUPTIBLE POWER SUPPLY |
| | PROPOSED PREFORMED INTERSECTION & SAMPLING (SYSTEM) DETECTORS | | EXISTING UNINTERRUPTIBLE POWER SUPPLY |
| | EXISTING SAMPLING (SYSTEM) PREFORMED DETECTORS | | |
| | PROPOSED SAMPLING (SYSTEM) PREFORMED DETECTORS | | |
| | EXISTING FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F SM12F | | |

SCHEDULE OF QUANTITIES

QTY	UNIT	ITEM DESCRIPTION
1.0	CAL MO	ENGINEER'S FIELD OFFICE, TYPE A
0.25	L SUM	MOBILIZATION
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406
0.25	L SUM	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701
5919.0	FOOT	CONDUIT IN TRENCH, 2" DIA., GALVANIZED STEEL
386.0	FOOT	CONDUIT PUSHED, 2" DIA., GALVANIZED STEEL
6.0	EACH	HANDHOLE
3.0	EACH	HEAVY DUTY HANDHOLE
5919	FOOT	TRENCH AND BACKFILL FOR ELECTRICAL WORK
6962	FOOT	ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1C
6975	FOOT	FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F & SM 12F



INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564



For contract construction projects

ROAD CONSTRUCTION AHEAD

W20-1103(O)-48

W21-1a(O)-48
OR

For maintenance and utility projects

ROAD WORK AHEAD

W20-1(O)-48

WORKERS

W21-1110(O)-48

TYPICAL APPLICATIONS

- Utility operations
- Culvert extensions
- Side slope changes
- Guardrail installation and maintenance
- Delineator installation
- Landscaping operations
- Shoulder repair
- Sign installation and maintenance

① When the work operation exceeds one hour, cones, drums or barricades shall be placed at 25' (8 m) centers for L/3 distance, and at 50' (15 m) centers through the remainder of the work area.

SYMBOLS

- Work area
- Sign
- Cone, drum or barricade

GENERAL NOTES

This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24' (600) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
	English	(Metric)
40 mph (70 km/h) or less:	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

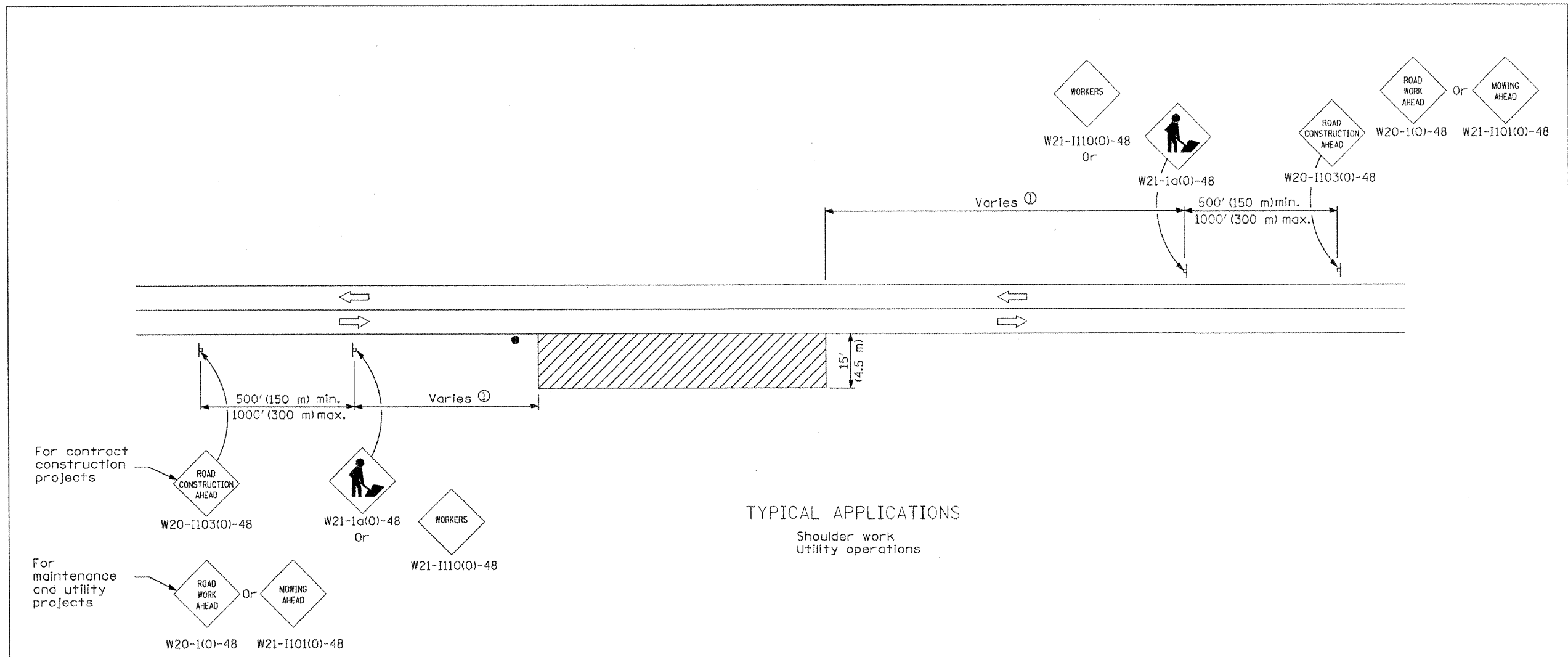
All dimensions are in inches (millimeters) unless otherwise shown.

OFF-RD OPERATIONS, 2L, 2W, 15' (4.5 m) TO 24" (600 mm) FROM PAVEMENT EDGE

STANDARD 701006-03




IE INFRASTRUCTURE ENGINEERING, INC.
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CHICAGO, IL 60603-6322
PHONE 312.425.9560
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FILE NAME =	USER NAME = (1224_user)	DESIGNED - LC	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
P:\NP-00\1224\Task 8\DGN\Sheets\17-1224-S-Standard-01.dgn	DRAWN - BID	REVISOR -	REVISOR -		IL 31	2001-125R	MC HENRY	31	17
PLOT SCALE = 1:8000' / IN.	CHECKED - ER	REVISOR -	REVISOR -		CONTRACT NO. 60F79				
PLOT DATE = 1/23/2009	DATE -	REVISOR -	REVISOR -		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



TYPICAL APPLICATIONS
Shoulder work
Utility operations

SYMBOLS

-  Work area
-  Sign
-  Flagger with traffic control sign when required

① Minimum distance is 200' (60 m). Maximum distance to be determined by the Engineer but should not exceed 1/2 the length required for one normal working day's operation, or 4 miles (6.4 km) which ever is less.

GENERAL NOTES

This Standard is used where at any time, any vehicle, equipment, workers or their activities require an intermittent or continuous moving operation on the shoulder, where the average speed is 1 mph (2 km/h) or less.

When the work operation does not exceed 60 minutes, traffic control may be according to Standard 701301.

All dimensions are in inches (millimeters) unless otherwise shown.

**OFF-RD MOVING OPERATIONS,
2L, 2W, DAY ONLY**

STANDARD 701011-02

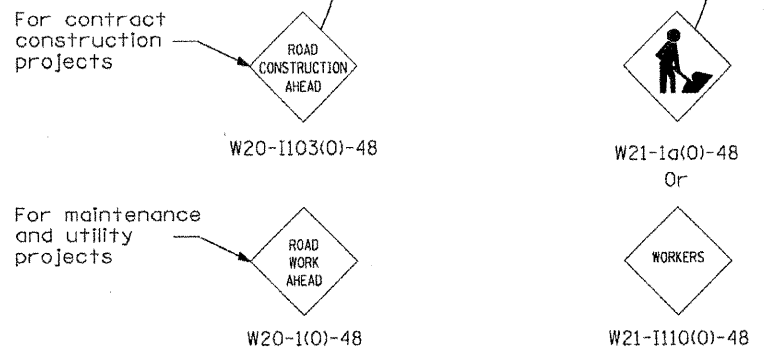
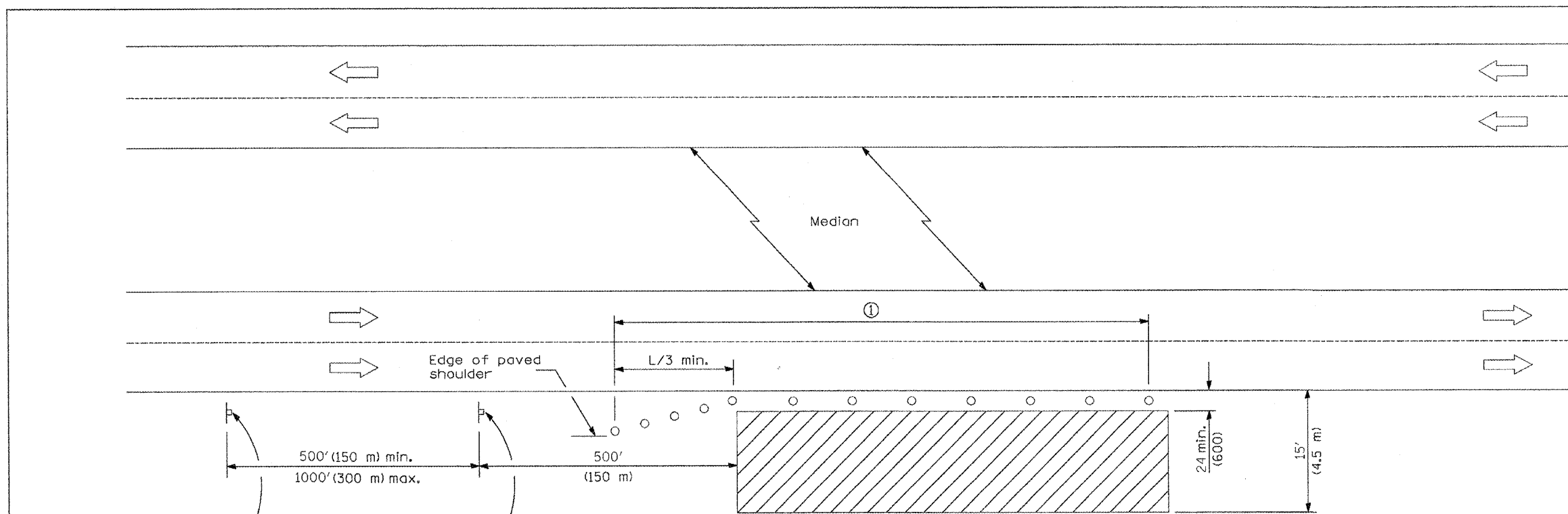
IE INFRASTRUCTURE ENGINEERING, INC.
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PHONE 312.425.9560
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	PLOT DATE = 1/23/2009	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET NO. OF SHEETS	STA.	TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	18
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



TYPICAL APPLICATIONS

- Utility operations
- Culvert extensions
- Side slope changes
- Guardrail installation and maintenance
- Delineator installation
- Landscaping operations
- Shoulder repair
- Sign installation and maintenance

SYMBOLS

- Work area
- Sign
- Cone, drum or barricade

① When the work operation exceeds one hour, cones, drums or barricades shall be placed at 8 m (25') centers for L/3 distance, and at 15 m (50') centers through the remainder of the work area.

GENERAL NOTES

This Standard is used where any vehicles, equipment, workers or their activities will encroach in the area 15' (4.5 m) to 24' (600 mm) from the edge of pavement.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
40 mph (70 km/h) or less:	English $L = \frac{WS^2}{60}$	(Metric) $L = \frac{WS^2}{150}$
45 mph (80 km/h) or greater:	$L = (W)(S)$	$L = 0.65(W)(S)$

W = Width of offset in feet (meters).
S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

**OFF-RD OPERATIONS, MULTILANE,
15' (4.5 m) TO 24' (600 mm)
FROM PAVEMENT EDGE**

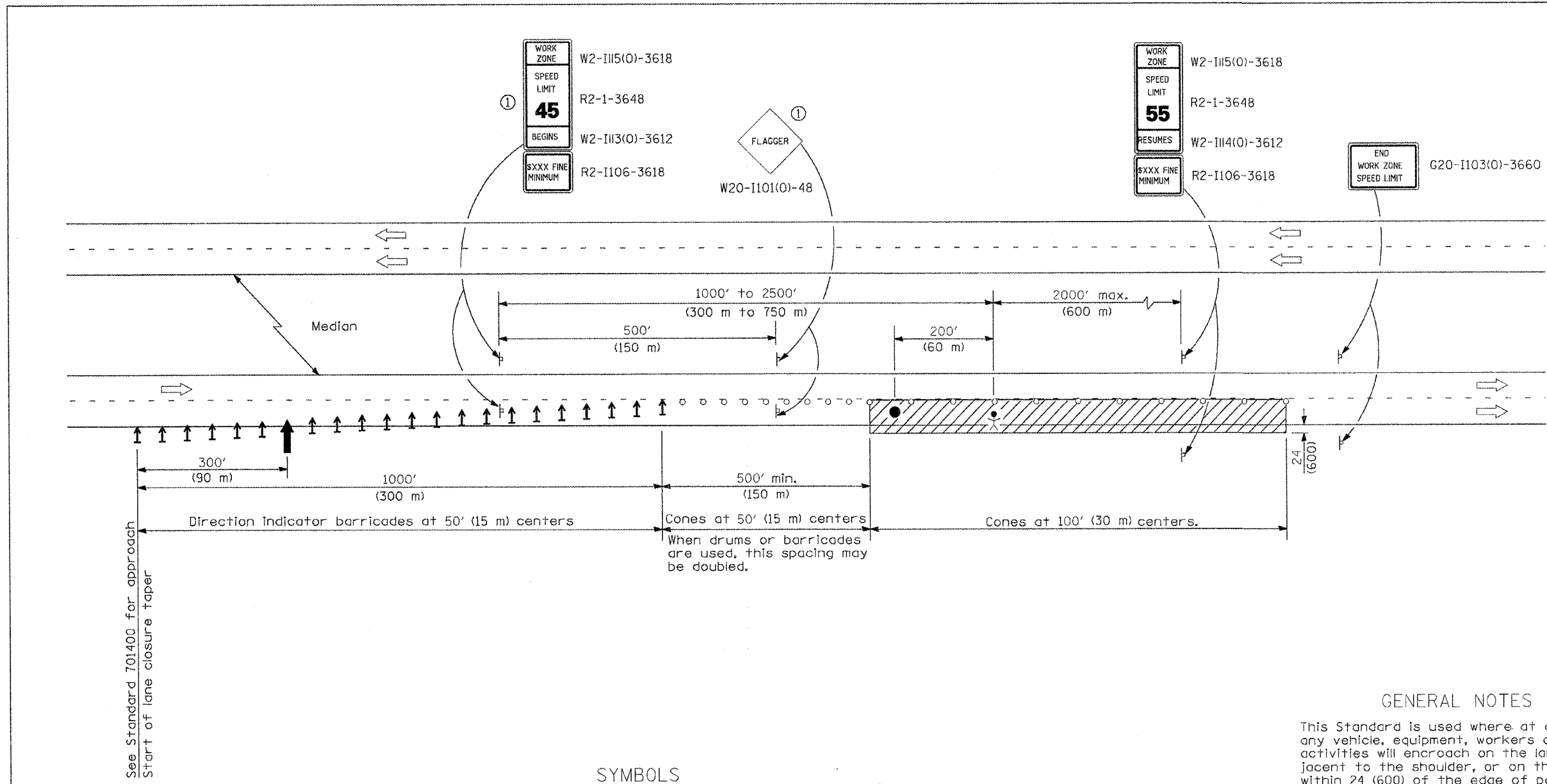
STANDARD 701101-02

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FILE NAME =	USER NAME = (1224_user)	DESIGNED - LC	REVISED -
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**








SCALE:	SHEET NO. OF SHEETS	STA. TO STA.	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
			IL 31	2001-125R	MC HENRY	31	19
			CONTRACT NO. 60F79				
			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



TYPICAL APPLICATIONS

- Pavement patch
- Utility operations
- Bituminous resurfacing

SYMBOLS

-  Arrow board
-  Work area
-  Worker
-  Sign
-  Direction indicator barricade
-  Cone, drum or barricade
-  Flagger with traffic control sign

① Work zone speed limit signs and FLAGGER signs shall be moved as necessary to maintain the required spacing between the signs and the workers in each separate work activity.

GENERAL NOTES

This Standard is used where at any time, any vehicle, equipment, workers or their activities will encroach on the lane adjacent to the shoulder, or on the shoulder within 24 (600) of the edge of pavement for day light operation.

This Standard must always be used in combination with Standard 701400.

This Standard also applies when work is being performed in the left lane. Under these conditions, the set up would be a mirror image to what is shown.

All dimensions are in Inches (millimeters) unless otherwise shown.

**LANE CLOSURE,
FREEWAY/EXPRESSWAY,
DAY OPERATIONS ONLY**

STANDARD 701406-05

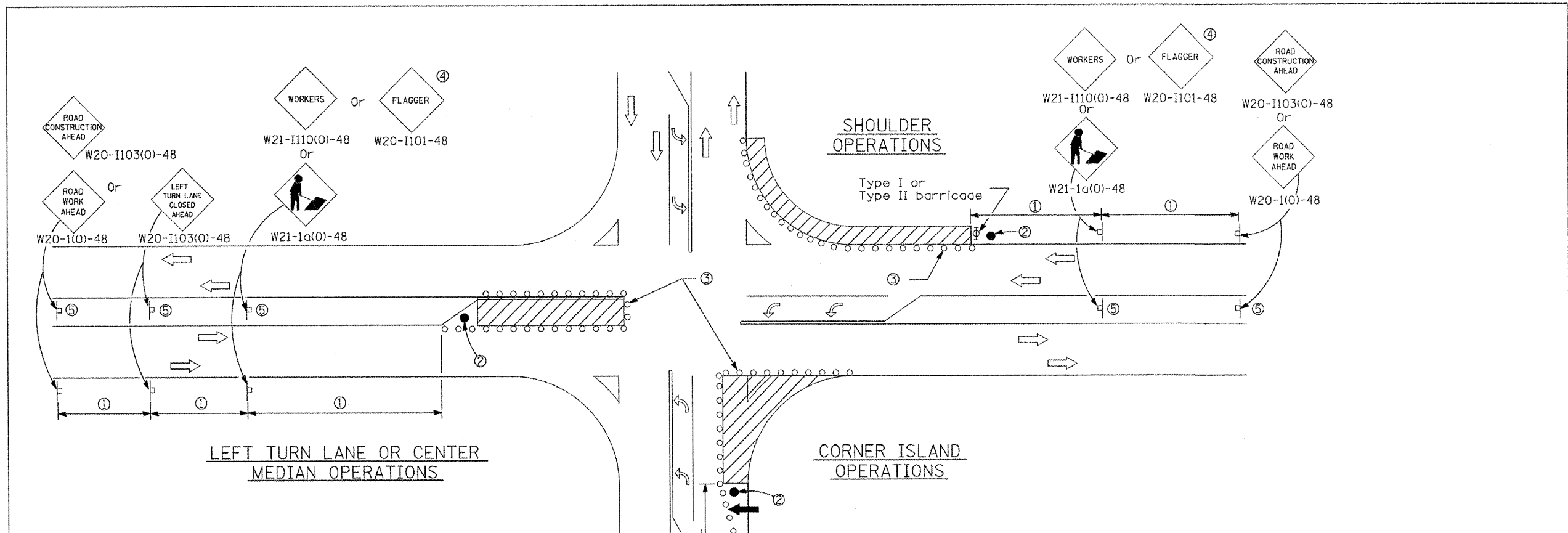
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET NO. OF SHEETS	STA. TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	20
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F79	

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SIGN SPACING	
Posted Speed	Sign Spacing
55	500' (150 m)
50-45	350' (100 m)
<45	200' (60 m)

- ① Refer to SIGN SPACING TABLE for distance.
- ② Required for speed > 40 mph.
- ③ Cones at 25' (8 m) centers for 250' (75 m). Additional cones may be placed at 50' (15 m) centers. When drums or Type I or Type II barricades are used, the interval between devices may be doubled.
- ④ Use flagger sign only when flagger is present.
- ⑤ Omit this sign when median is less than 10' (3 m) or for bi-directional turn lanes.
- ⑥ Cones, drums or barricades at 20' (6 m) centers in taper.

SYMBOLS

- Work area
- Cone, drum or barricade
- Sign on portable or permanent support
- Arrow board
- Barricade or drum with flashing light
- Flagger with traffic control sign

GENERAL NOTES

This Standard is used where at anytime, day or night, any vehicle, equipment, workers or their activities encroach on the pavement during shoulder operations or where construction requires lane closures in an urban area.

Calculate L as follows:

SPEED LIMIT	FORMULAS	
40 mph (70 km/h) or less:	English	(Metric)
	$L = \frac{WS^2}{60}$	$L = \frac{WS^2}{150}$

45 mph (80 km/h) or greater: $L = (W)(S)$ $L = 0.65(W)(S)$

W = Width of offset in feet (meters).

S = Normal posted speed mph (km/h).

All dimensions are in inches (millimeters) unless otherwise shown.

**URBAN LANE CLOSURE,
MULTILANE INTERSECTION**

STANDARD 701701-06

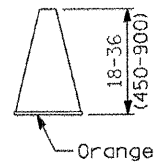
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**STATE OF ILLINOIS
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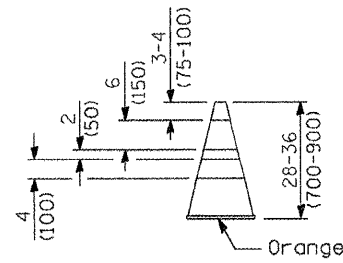
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		CONTRACT NO. 60F79		

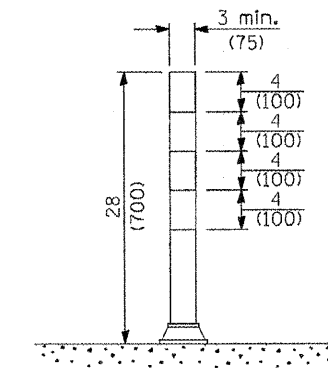
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CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564



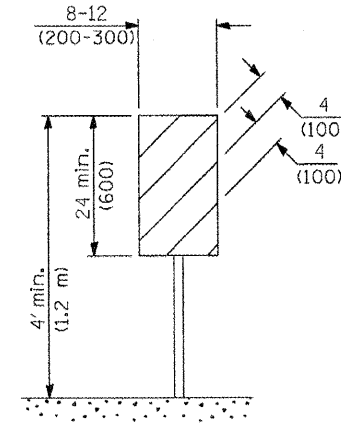
CONE



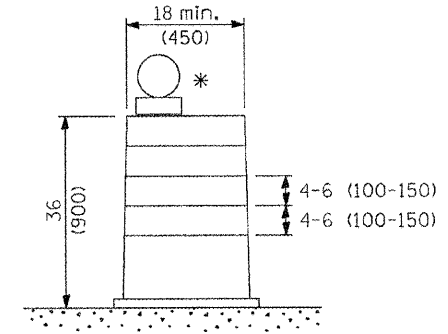
REFLECTORIZED CONE



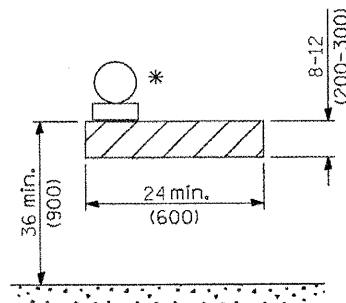
FLEXIBLE DELINEATOR



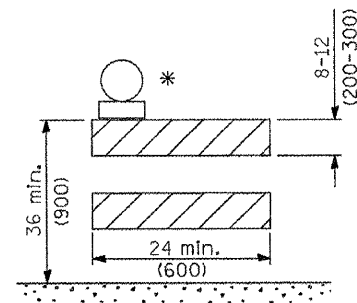
VERTICAL PANEL
POST MOUNTED



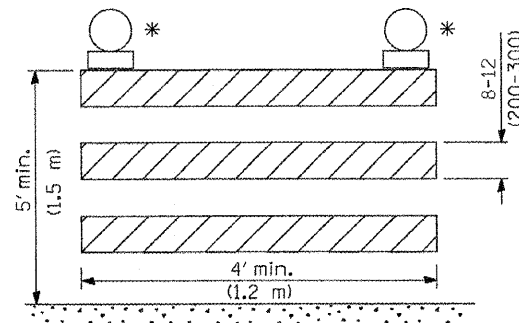
DRUM



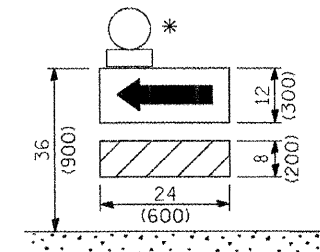
TYPE I BARRICADE



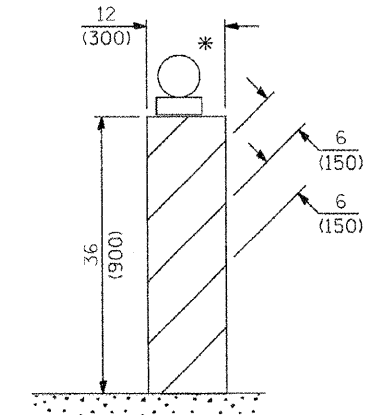
TYPE II BARRICADE



TYPE III BARRICADE



DIRECTION INDICATOR
BARRICADE



VERTICAL BARRICADE

* Warning lights (if required)

GENERAL NOTES

All heights shown shall be measured above the pavement surface.

All dimensions are in inches (millimeters) unless otherwise shown.

TRAFFIC CONTROL
DEVICES

(Sheet 1 of 3)

STANDARD 701901-01

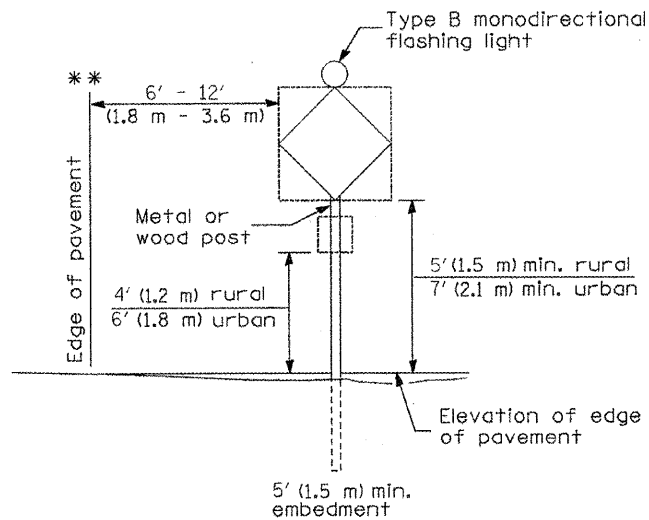
INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

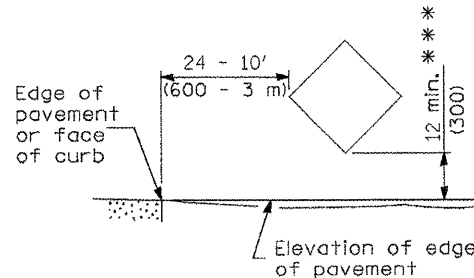
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



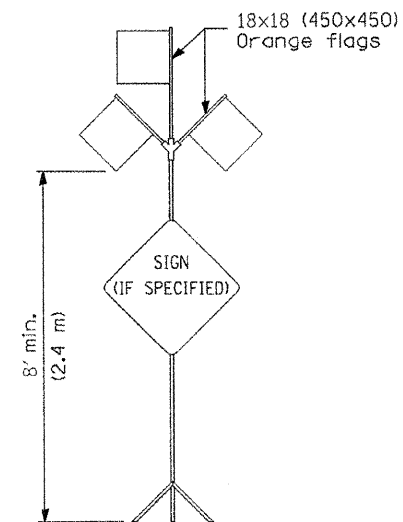
POST MOUNTED SIGNS

** When curb or paved shoulder are present this dimension shall be 24 (600) to the face of curb or 6' (1.8 m) to the outside edge of the paved shoulder.



SIGNS ON TEMPORARY SUPPORTS

*** When work operations exceed four days, this dimension shall be 5' (1.5 m) min. If located behind other devices, the height shall be sufficient to be seen by motorists.



HIGH LEVEL WARNING DEVICE



G20-1(0)-6036 G20-2a(0)-6024

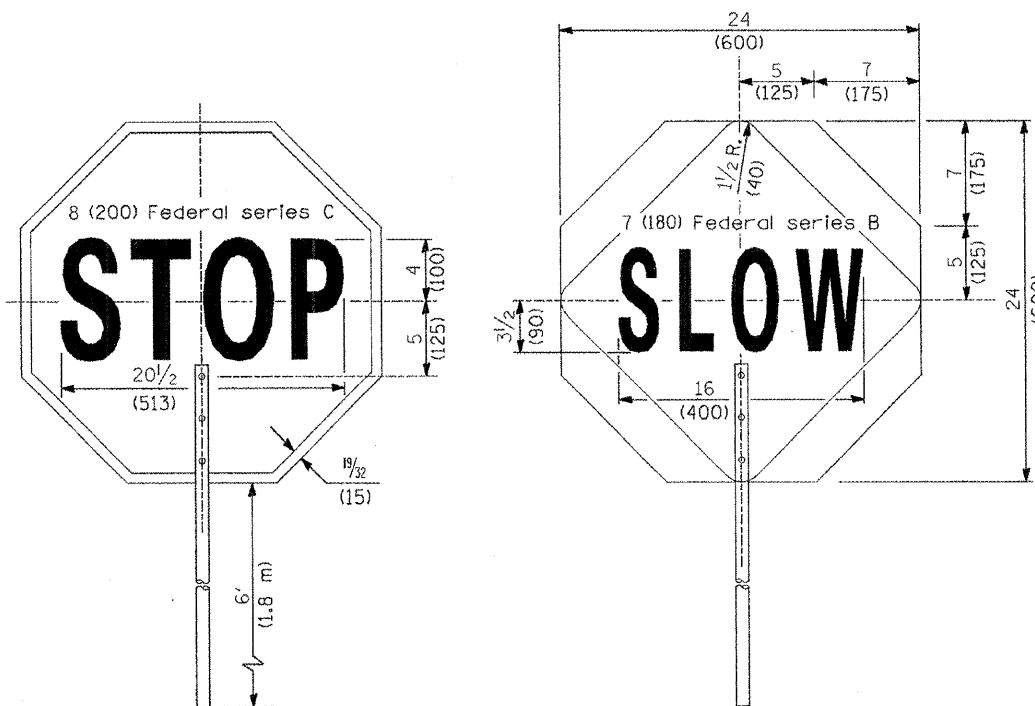
This signing is required for all projects 2 miles (3200 m) or more in length.

ROAD CONSTRUCTION NEXT X MILES sign shall be placed 500' (150 m) in advance of project limits.

END CONSTRUCTION sign shall be erected at the end of the job unless another job is within 2 miles (3200 m).

Dual sign displays shall be utilized on multi-lane highways.

WORK LIMIT SIGNING



FRONT SIDE

REVERSE SIDE

FLAGGER TRAFFIC CONTROL SIGN

All dimensions are in inches (millimeters) unless otherwise shown.

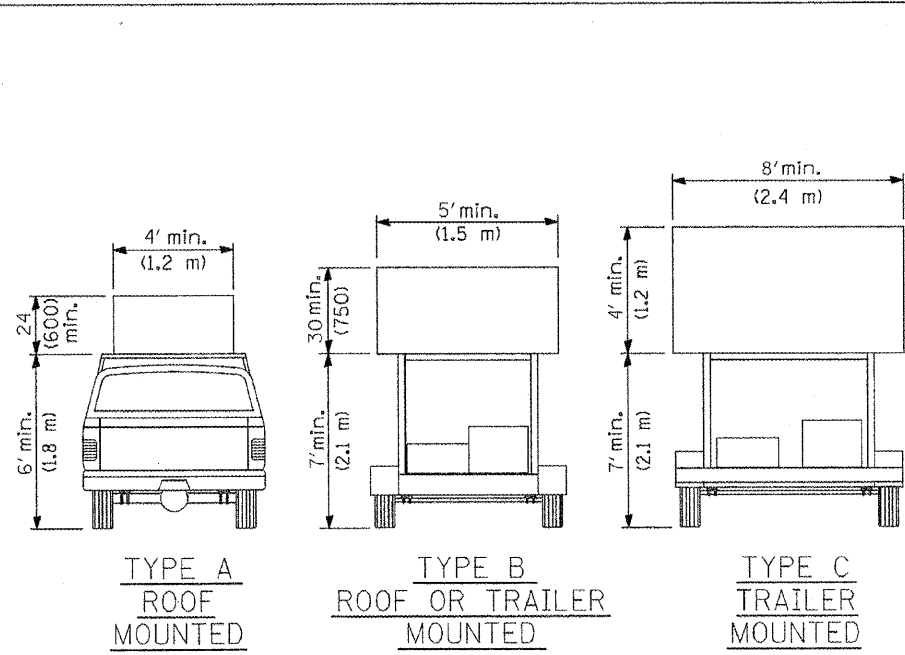
TRAFFIC CONTROL DEVICES

(Sheet 2 of 3)

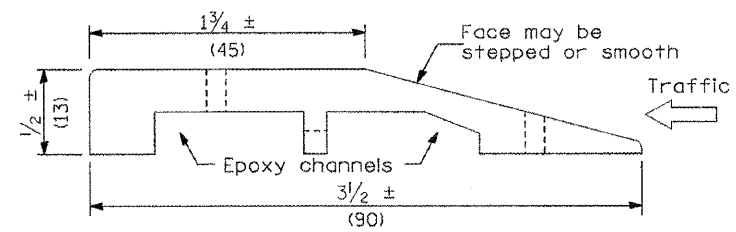
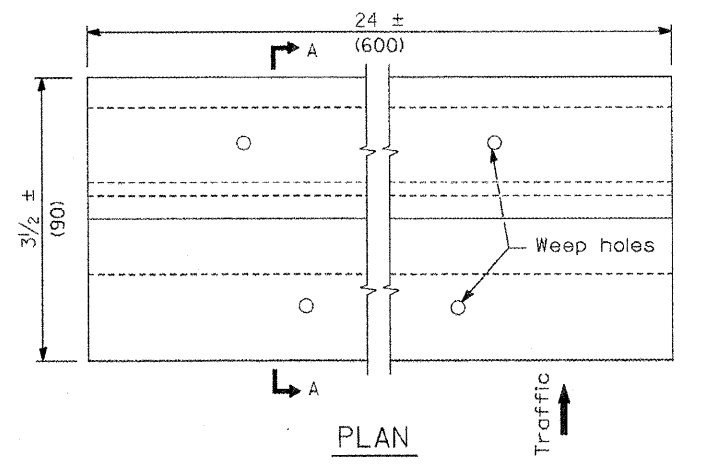
STANDARD 701901-01

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33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

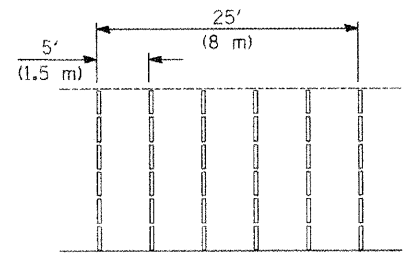
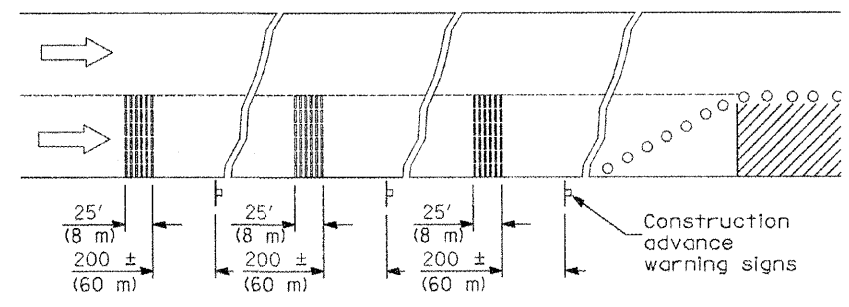
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ARROW BOARDS

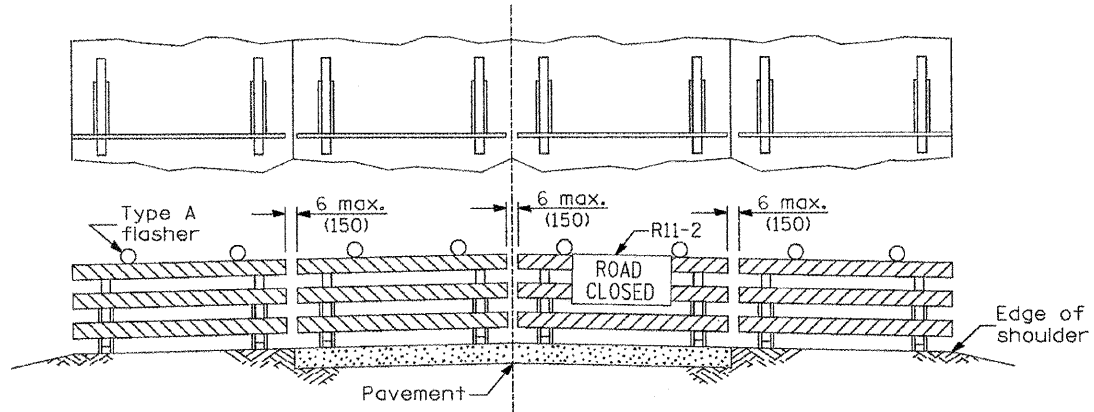


SECTION A-A



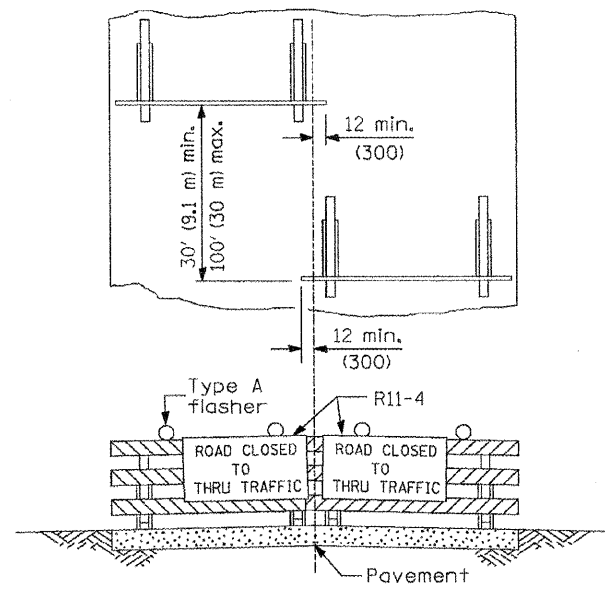
TYPICAL INSTALLATION

TEMPORARY RUMBLE STRIPS



ROAD CLOSED TO ALL TRAFFIC
ReflectORIZED striping may be omitted on the back side of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the sign may be mounted on an NCHRP 350 temporary sign support directly in front of the barricade.

TYPICAL APPLICATIONS OF TYPE III BARRICADES CLOSING A ROAD



ROAD CLOSED TO THRU TRAFFIC
ReflectORIZED striping shall appear on both sides of the barricades. If a Type III barricade with an attached sign panel which meets NCHRP 350 is not available, the signs may be mounted on NCHRP 350 temporary sign supports directly in front of the barricade.

All dimensions are in inches (millimeters) unless otherwise shown.

TRAFFIC CONTROL DEVICES

(Sheet 3 of 3)

STANDARD 701901-01

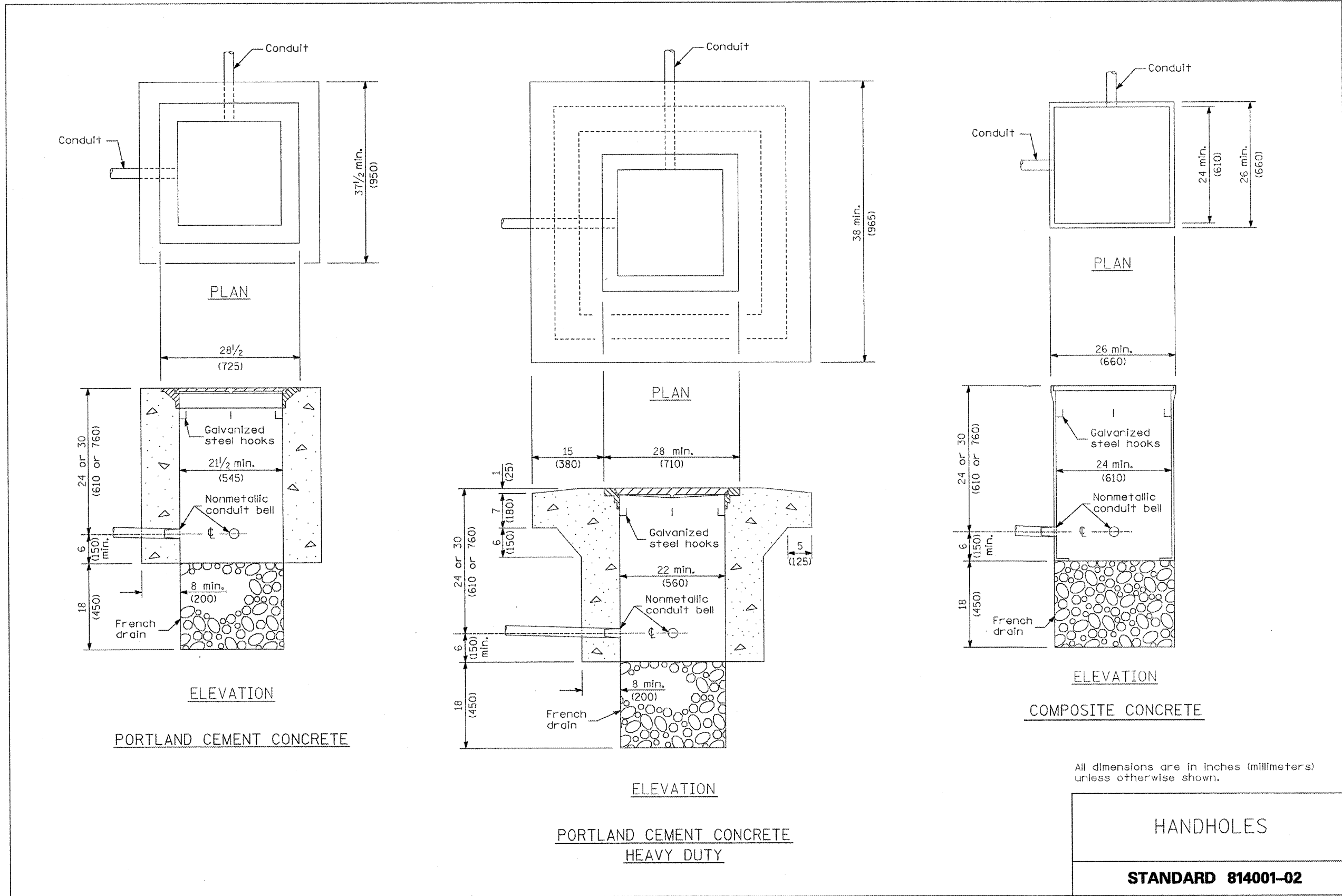
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET NO. OF SHEETS	STA. TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	24
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

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CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564



All dimensions are in inches (millimeters) unless otherwise shown.

HANDHOLES

STANDARD 814001-02

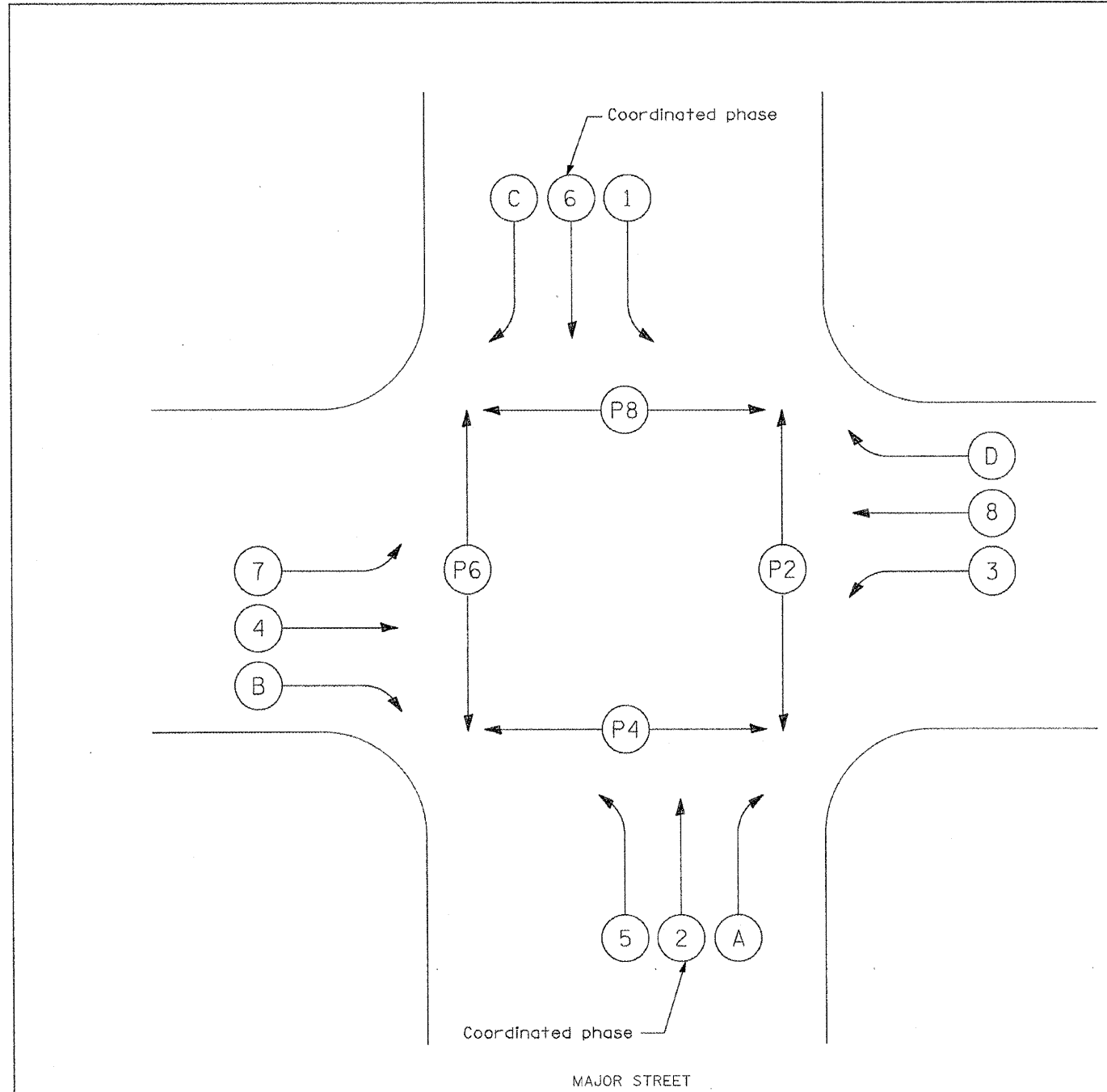
INFRASTRUCTURE ENGINEERING, INC.
 33 W. MONROE ST., SUITE 1540
 CHICAGO, IL 60603-5322
 PHONE 312.425.9560
 FAX 312.425.9564

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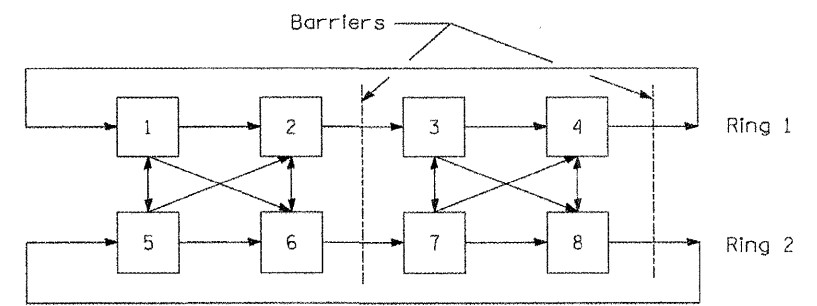
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE:	SHEET NO.	OF	SHEETS	STA.	TO	STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	MC HENRY	31	25
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



STANDARD PHASE DESIGNATION DIAGRAM (NEMA)



NEMA EIGHT PHASE DUAL RING
ACTUATED CONFIGURATION

LEGEND

- (X) , [X] Vehicular phase no. x
- (PX) Pedestrian phase no. x
- (A) , (B) , (C) , (D) Right turn overlaps where:
 - (A) = (2) + (3)
 - (B) = (4) + (5)
 - (C) = (6) + (7)
 - (D) = (8) + (1)
- NEMA National Electrical Manufacturers Association

STANDARD PHASE
DESIGNATION DIAGRAMS
AND PHASE SEQUENCES
(Sheet 1 of 2)

STANDARD 857001-01

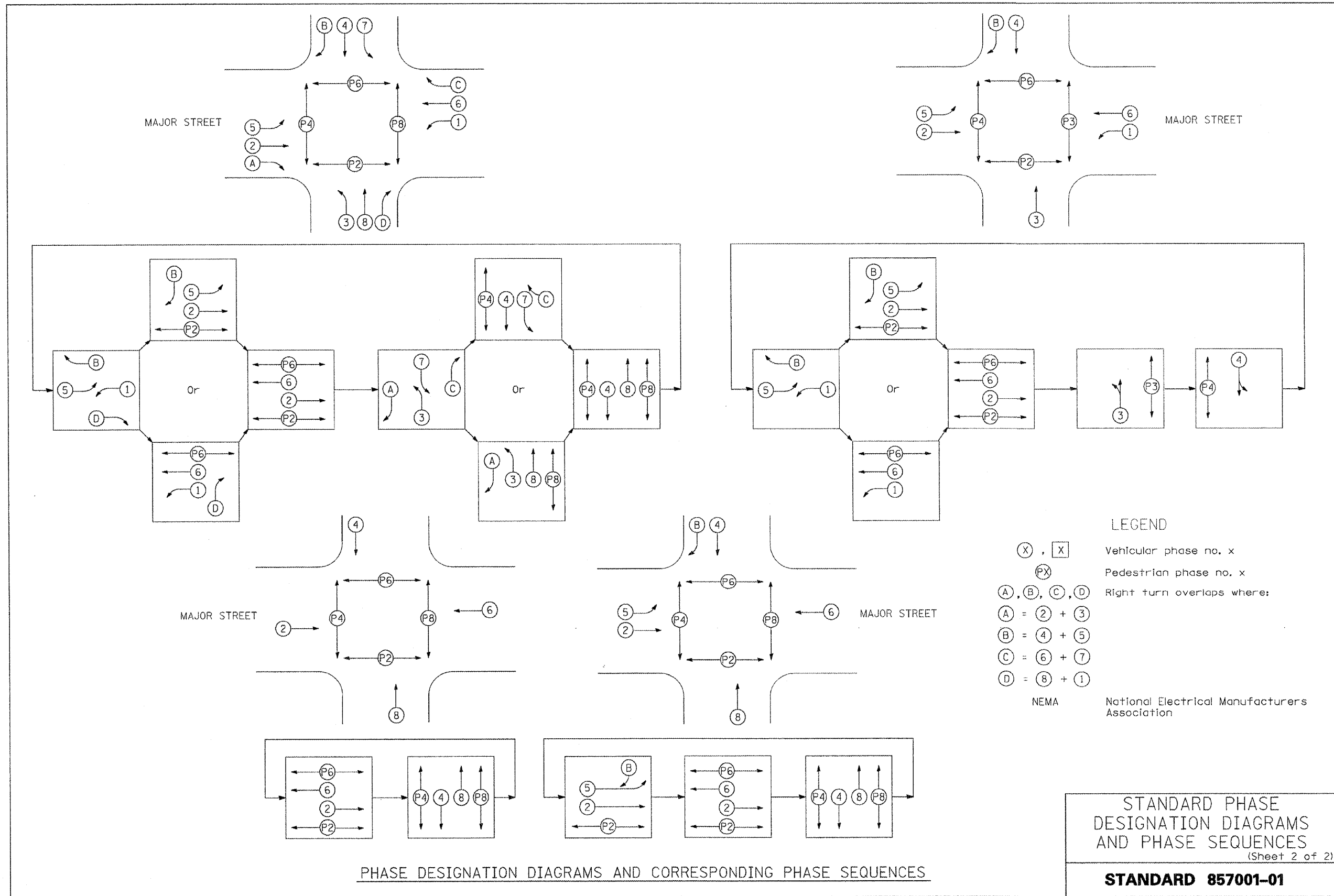
IE INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL. 60603-5322
PHONE 312.425.9560
FAX 312.425.9564

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET NO. OF SHEETS	STA. TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	26
FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT				



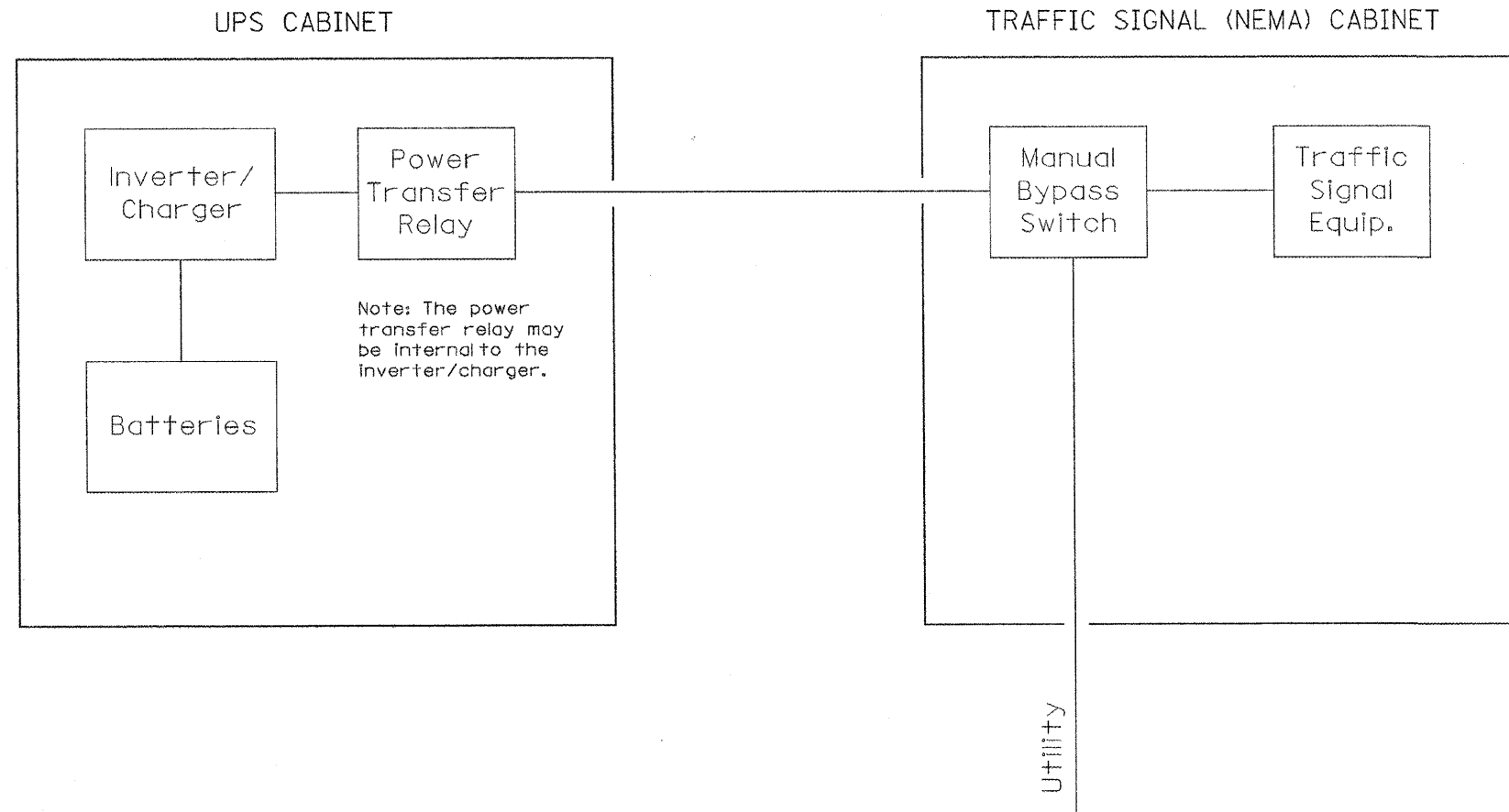
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

SCALE:	SHEET NO.	OF	SHEETS	STA.	TO	STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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FED. ROAD DIST. NO.			ILLINOIS FED. AID PROJECT	
			CONTRACT NO. 60F79	

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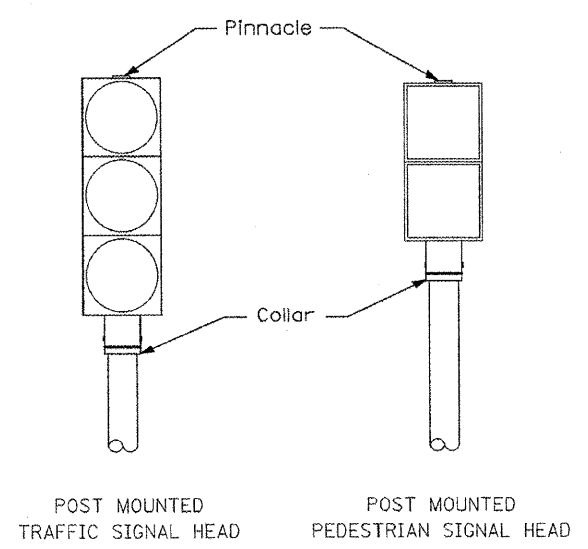
SINGLE LINE BLOCK DIAGRAM

UNINTERRUPTABLE
POWER SUPPLY (UPS)

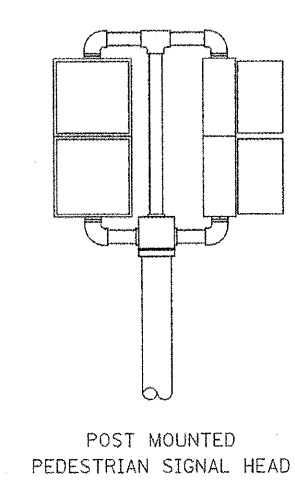
STANDARD 862001-01

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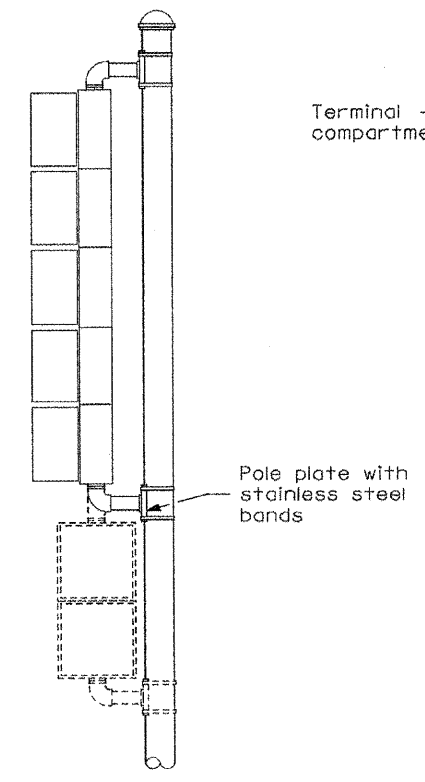
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PLOT DATE = 1/23/2009					DATE -	REVISED -							



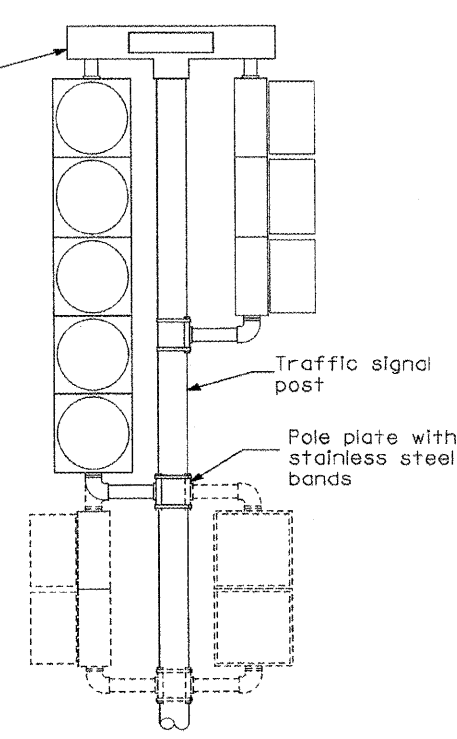
ONE WAY



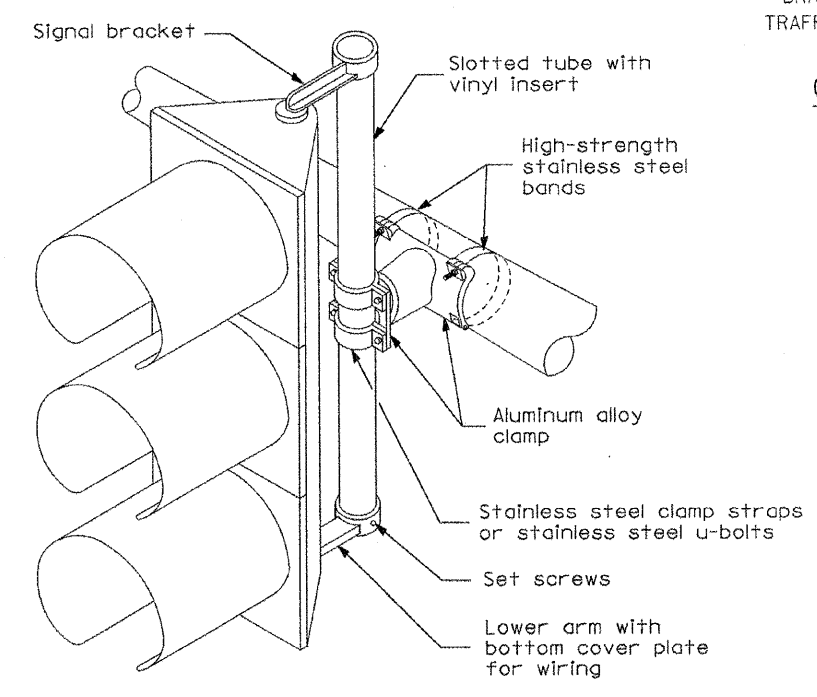
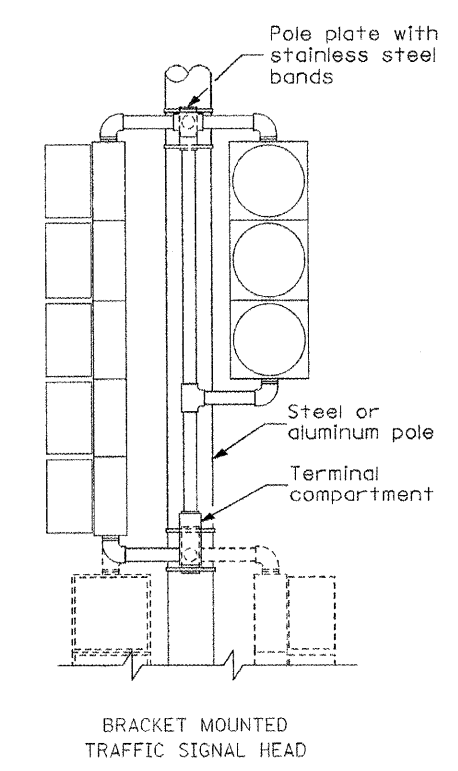
TWO WAY



ONE WAY



TWO WAY



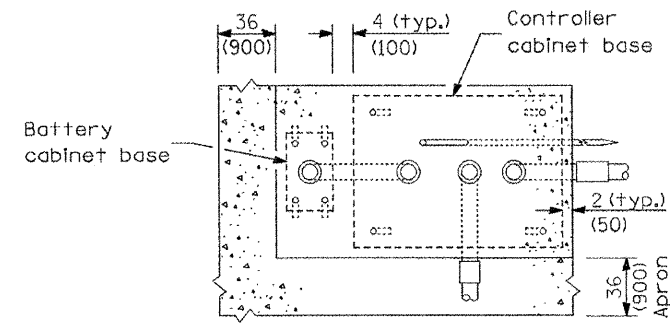
STEEL MAST ARM MOUNTING

TRAFFIC SIGNAL MOUNTING DETAILS

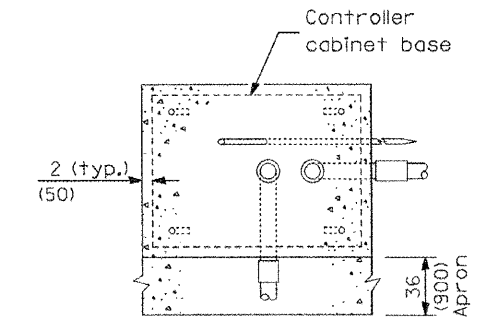
STANDARD 880006-01

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		DATE -	REVISED -													

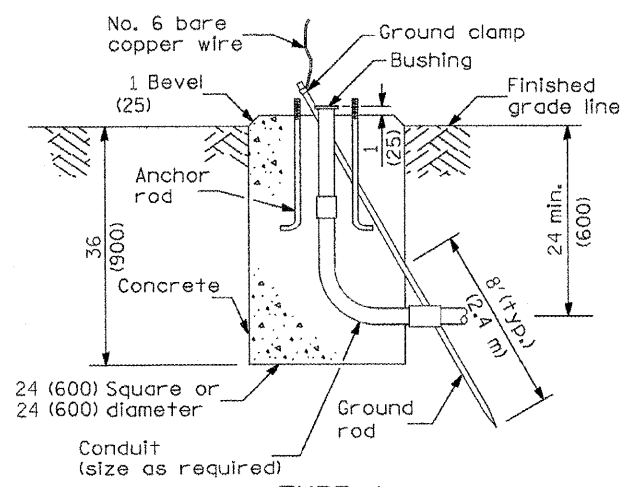
IE INFRASTRUCTURE ENGINEERING, INC.
33 W. MONROE ST., SUITE 1540
CHICAGO, IL 60603-5322
PHONE 312.425.9560
FAX 312.425.9564



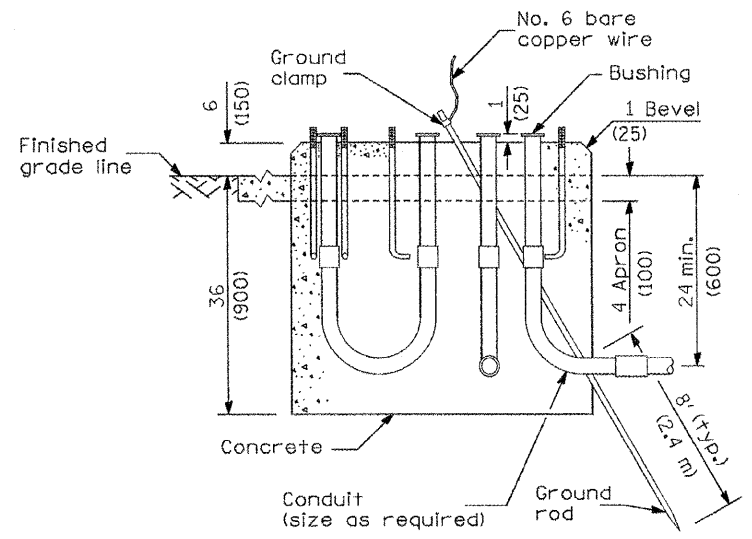
TOP VIEW



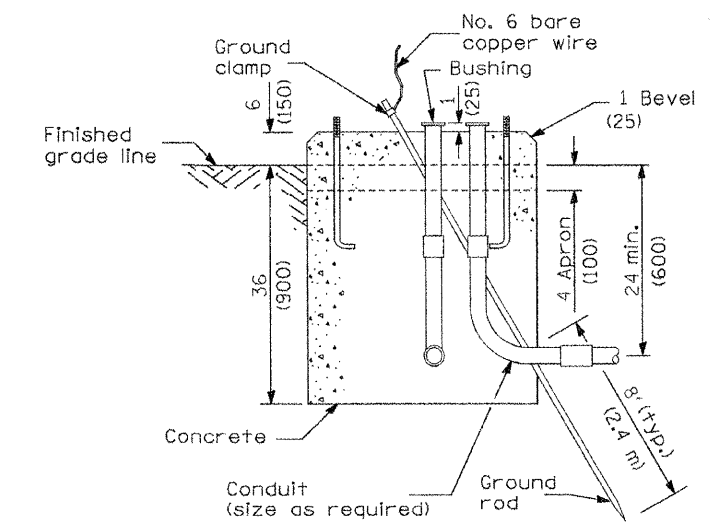
TOP VIEW



TYPE A



TYPE C
FOR GROUND MOUNTED
CONTROLLER CABINET
AND UPS BATTERY CABINET



TYPE D
FOR GROUND MOUNTED
CONTROLLER CABINET

All dimensions are in inches (millimeters) unless otherwise shown.

CONCRETE
FOUNDATION DETAILS
(Sheet 1 of 2)
STANDARD 878001-07

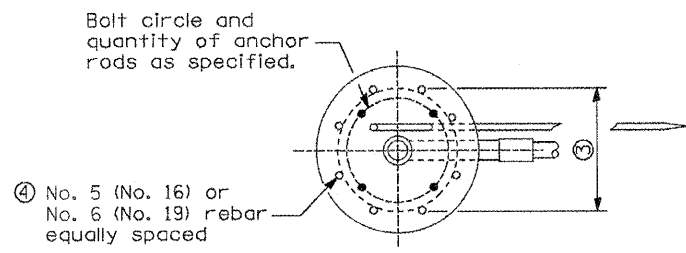
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		DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

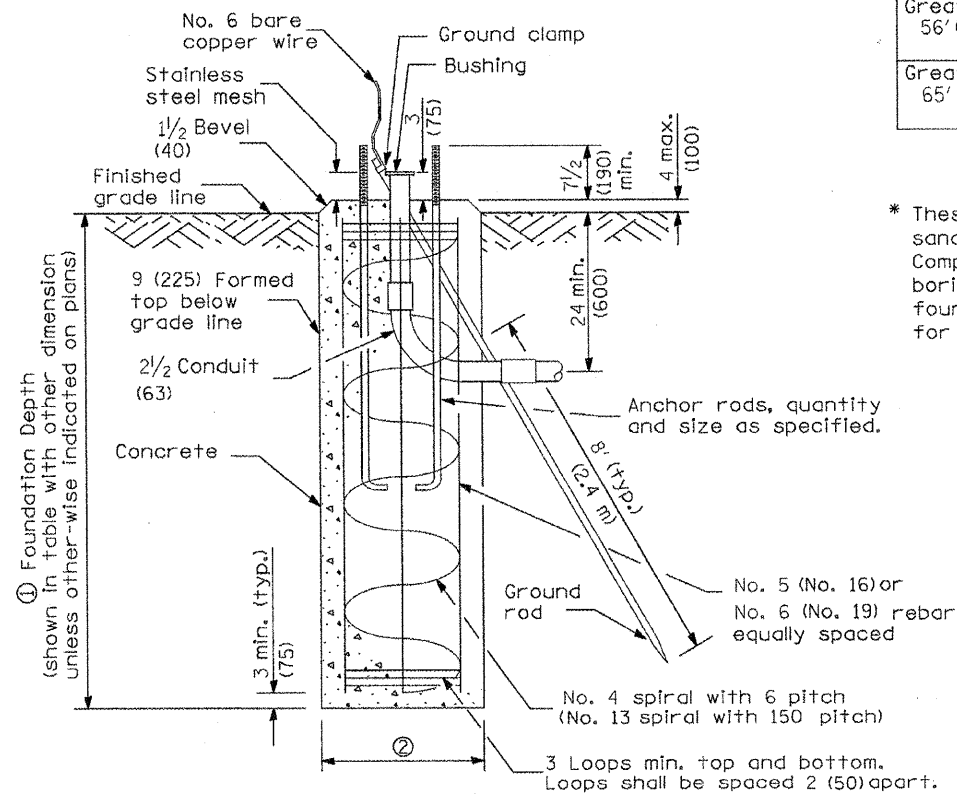
SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.
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F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	30
CONTRACT NO. 60F79				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

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TOP VIEW



TYPE E

For standard and combination mast arm assemblies. Mast arm assemblies with dual arms require a special foundation design.

Mast Arm Length	① Foundation Depth*	② Foundation Diameter	③ Spiral Diameter	④ Quantity of Rebars	Size of Rebars
Less than 30' (9.1 m)	10'-0" (3.0 m)	30 (750)	24 (600)	8	5 (16)
Greater than or equal to 30' (9.1 m) and less than 40' (12.2 m)	13'-6" (4.1 m)	30 (750)	24 (600)	8	5 (16)
	11'-0" (3.4 m)	36 (900)	30 (750)	12	5 (16)
Greater than or equal to 40' (12.2 m) and less than 50' (15.2 m)	13'-0" (4.0 m)	36 (900)	30 (750)	12	5 (16)
	15'-0" (4.6 m)	36 (900)	30 (750)	12	6 (19)
Greater than or equal to 50' (15.2 m) and up to 55' (16.8 m)	15'-0" (4.6 m)	36 (900)	30 (750)	12	6 (19)
Greater than or equal to 56' (16.8 m) and less than 65' (19.8 m)	21'-0" (6.4 m)	42 (1060)	36 (900)	16	6 (19)
	25'-0" (7.6 m)	42 (1060)	36 (900)	16	6 (19)
Greater than or equal to 65' (19.8 m) and up to 75' (22.9 m)	25'-0" (7.6 m)	42 (1060)	36 (900)	16	6 (19)

* These foundation depths are for sites which have cohesive soils (clayey silt, sandy clay, etc.) along the length of the shaft, with an average Unconfined Compressive Strength (Q_u) > 1.0 tsf (100 kpa). This strength shall be verified by boring data prior to construction or with testing by the Engineer during foundation drilling. The Bureau of Bridges & Structures should be contacted for a revised design if other conditions are encountered.

CONCRETE FOUNDATION DETAILS
(Sheet 2 of 2)

STANDARD 878001-07

INFRASTRUCTURE ENGINEERING, INC.
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FILE NAME =	USER NAME = (1224.user)	DESIGNED - LC	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCALE: SHEET NO. OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
IL 31	2001-125R	Mc HENRY	31	31
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 60F79	