TRAFFIC SIGNAL INSTALLATION and INTERCONNECT PLAN

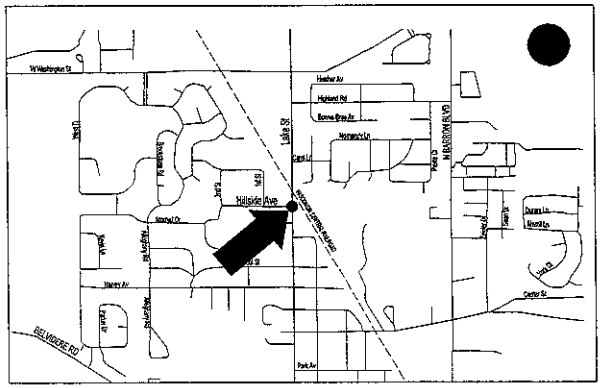
LAKE STREET @ HILLSIDE AVENUE

GRAYSLAKE, ILLINOIS

INDEX

1. TITLE SHEET
2-5. ILLINOIS DEPARTMENT OF TRANSPORTATION DISTRICT 1 STANDARD TRAFFIC SIGNAL DESIGN DETAILS
6. TRAFFIC SIGNAL AND RAILROAD INTERCONNECT INSTALLATION PLAN - LAKE STREET @ HILLSIDE AVENUE
7. CABLE PLAN, PHASE DESIGNATION DIAGRAM AND SCHEDULE OF QUANTITIES - LAKE STREET @ HILLSIDE AVENUE
8. SEQUENCE OF OPERATIONS, EMERGENCY VEHICLE SEQUENCE OF OPERATIONS and RAILROAD PRE-EMPTION SEQUENCE OF OPERATIONS LAKE STREET @ HILLSIDE AVENUE
9. MEDIAN REMOVAL AND REPLACEMENT PLAN
10. MAST ARM MOUNTED STREET NAME SIGNS
11-13. CONSTRUCTION DETAILS

WARNING
CALL JULIE TOLL FREE
1-800-892-0123
CALL BEFORE YOU DIG



LOCATION MAP

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS		
NO.	DATE	DESCRIPTION

TITLE SHEET

LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

FILE NAME: 01_ts.dgn
DATE: SEPT 14, 2005
PROJECT NO.:

SHEET NO.: 1 OF 13

EXHIBIT
C

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
STA.	TO STA.			
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT		

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 ISTANDARD 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.

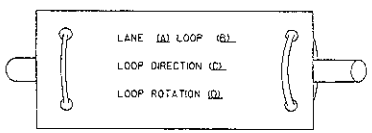
4. ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.

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 ISPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

LOOP LEAD-IN CABLE TAG

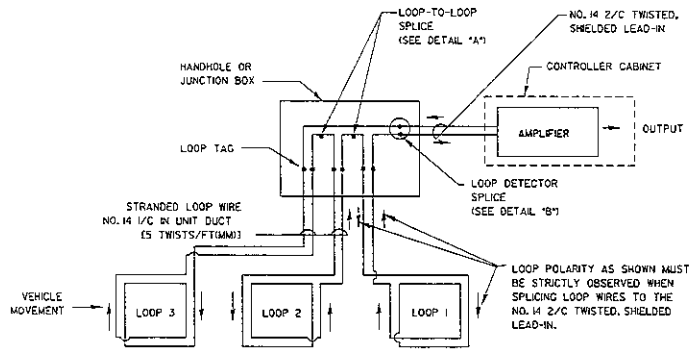


A. LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY

B. LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.

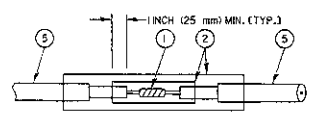
C. LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".

D. LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.

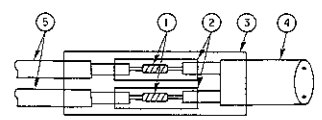


DETECTOR LOOP WIRING SCHEMATIC

- 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.



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 LENGHT 6" (150 mm), UNDERWATER GRADE.
4. NO. 14 2/C TWISTED, SHIELDED CABLE.
5. LOOP CONDUCTOR WITH FLEXIBLE PLASTIC TUBE.

FILE NAME:	SHEET NO.:
std_1.dgn	2
DATE: SEPT 14, 2005	OF 13
PROJECT NO.: H0411-07	

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
STANDARD TRAFFIC SIGNAL
DESIGN DETAILS

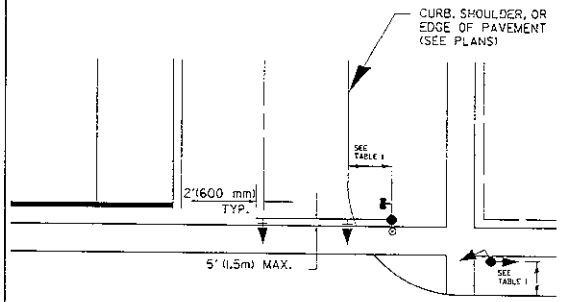
SCALE: VERT. NONE HORIZ.
DATE 1-01-02

DRAWN BY: RWP
DESIGNED BY: DAD
CHECKED BY: DAZ
SHEET 1 OF 4

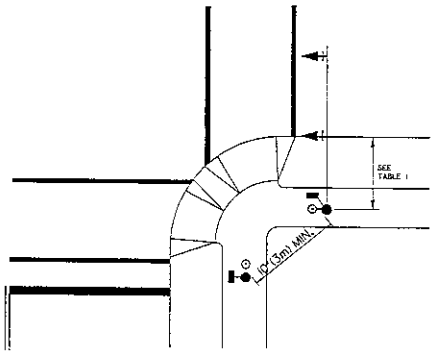
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
STA.		TO STA.		
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT		

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:

1. 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

2. 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.

3. 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.

4. 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

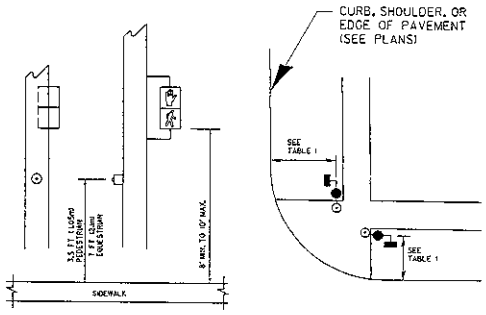


TABLE 1

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

FILE NAME: 03_std_2.dgn	SHEET NO.: 3 OF 13
DATE: SEPT 14, 2005	
PROJECT NO.: N0411-07	

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

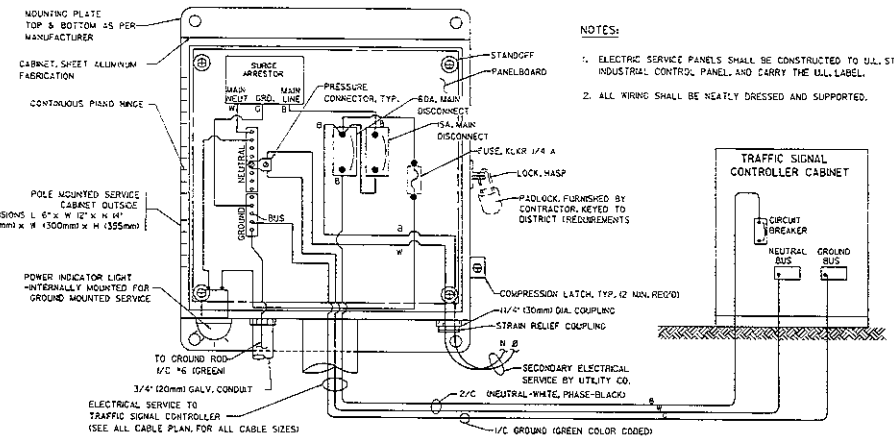
DISTRICT 1
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: VERT. HORIZ. NONE
DATE 1-01-02

DRAWN BY: RWP
DESIGNED BY: DAD
CHECKED BY: DAZ
SHEET 2 OF 4

TS05

F.A.I.M. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
STA.		TO STA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



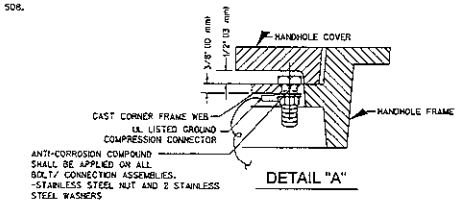
ELECTRICAL SERVICE - PANEL DIAGRAM (TYPICAL FOR POLE AND GROUND MOUNTED SERVICE)

SERVICE INSTALLATION POLE MOUNT (SHOWN)

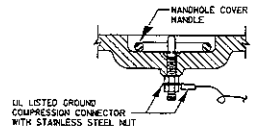
(NOT TO SCALE)

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.



DETAIL "A"

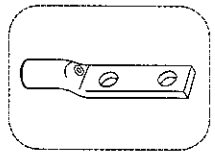


DETAIL "B"

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.
5. ALL CONDUIT ENTERING THE CONTROLLER CABINET SHALL HAVE GROUNDING BUSHINGS.

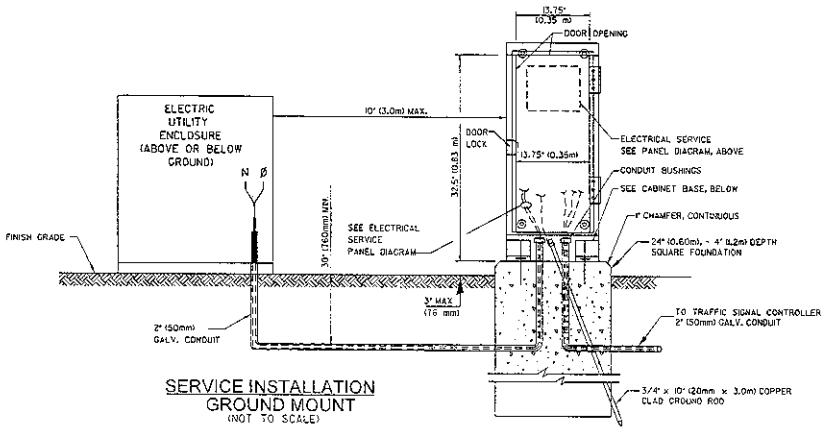


HEAVY-DUTY COMPRESSION TERMINAL (BURNDY TYPE YGHA OR APPROVED EQUAL)

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

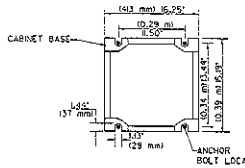
NOTES:

- 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.



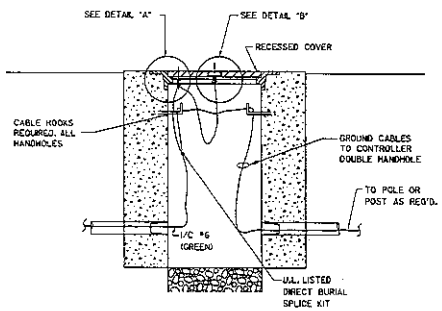
SERVICE INSTALLATION GROUND MOUNT

(NOT TO SCALE)



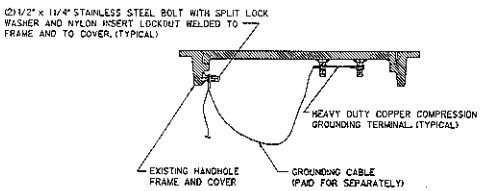
CABINET - BASE BOLT PATTERN

(NOT TO SCALE)



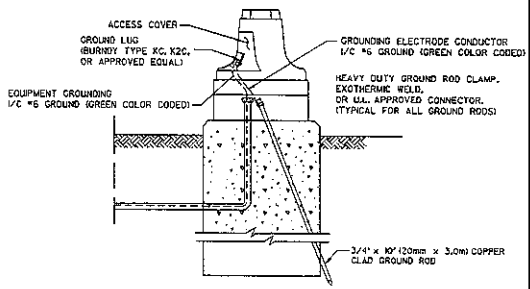
HANDHOLE COVER & FRAME - GROUNDING DETAIL

(NOT TO SCALE)



EXISTING HANDHOLE COVER & FRAME - GROUNDING DETAIL

(NOT TO SCALE)



MAST ARM POLE / POST-GROUNDING DETAIL

(NOT TO SCALE)

FILE NAME: std_3.dgn	SHEET NO.: 4 OF 13
DATE: SEPT 14, 2005	
PROJECT NO.: H0411-07	

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

DISTRICT 1

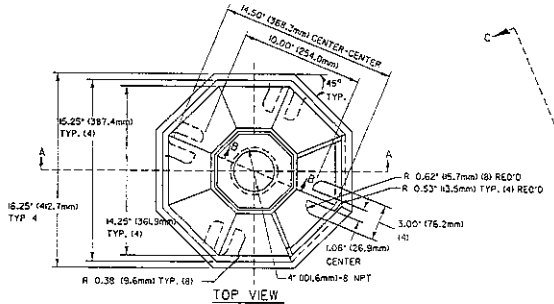
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: VERT. HORIZ. NONE

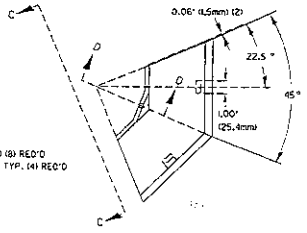
DATE 1-01-02

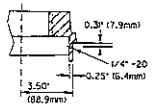
DRAWN BY: RWP
DESIGNED BY: DAD
CHECKED BY: DAZ
SHEET 3 OF 4

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
STA.		TO STA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

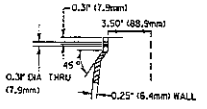


TOP VIEW

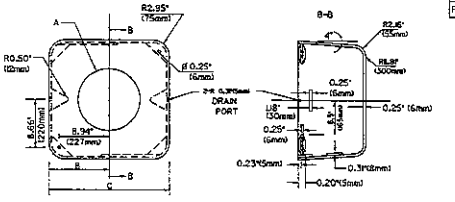




SECTION B-B



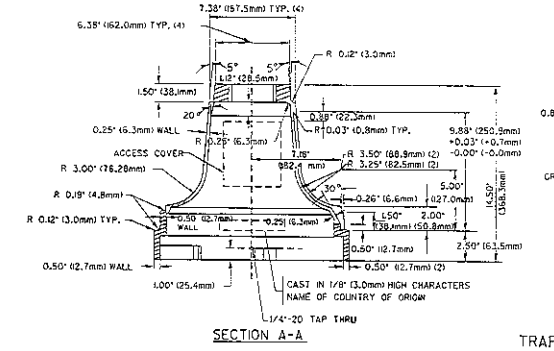
SECTION D-D



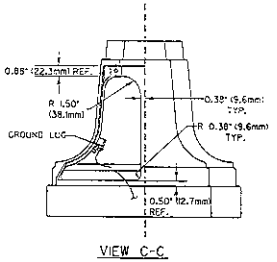
MATERIAL:
- ASTM A48 CLASS 30 GREY IRON
- ASTM A123 HOT DIPPED GALVANIZED

TYPE	A	B	C	HEIGHT	WEIGHT
I	ø 10.25"(257mm)	9.5"(241mm)	19"(483mm)	12" (300mm)	24kg
II	ø 11.25"(283mm)	10.75"(273mm)	21.5"(546mm)	12" (300mm)	26kg

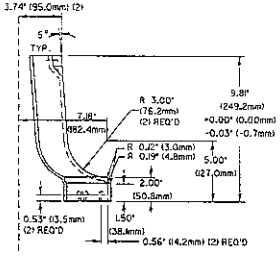
SHROUD DETAIL



SECTION A-A

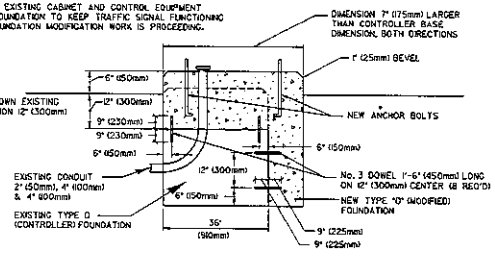


VIEW C-C



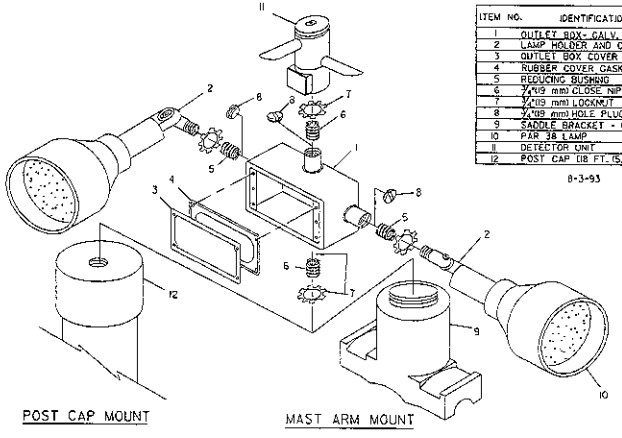
TRAFFIC SIGNAL POST - MOUNTING BASE - TYPE A

NOTE:
SUPPORT EXISTING CABINET AND CONTROL EQUIPMENT ABOVE FOUNDATION TO KEEP TRAFFIC SIGNAL FUNCTIONING WHILE FOUNDATION MODIFICATION WORK IS PROCEEDING.



MODIFY EXISTING TYPE "0" FOUNDATION

(NOT TO SCALE)



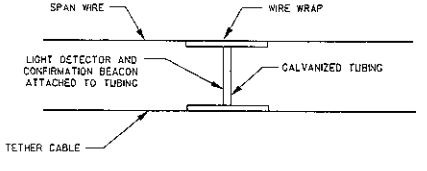
EMERGENCY VEHICLE DETECTOR WITH CONFIRMATION BEACON MOUNTING DETAIL

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.)

8-3-93

NOTES:

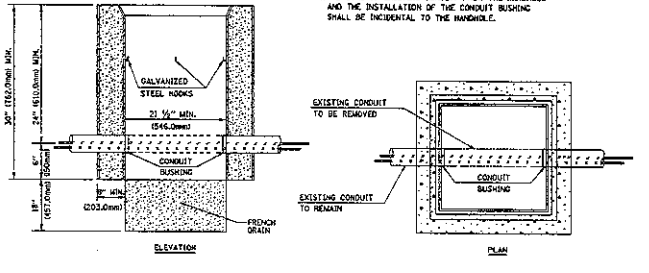
1. ALL ELECTRICAL ITEMS, EXCEPT ITEMS #2 AND #11 SHALL BE ALUMINUM OR GALVANIZED
2. ITEM #1- OZ/GEDNEY FSX-4-50 OR EQUIVALENT
   ITEM #2- MULBERRY CON-O-SHADE LAMP SHIELD OR EQUIVALENT
   ITEM #9- "BAND-IT" SADDLE BRACKET OR EQUIVALENT
3. WHEN POST MOUNTING IS SPECIFIED, ITEM #9 SHALL NOT BE REQUIRED. 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.



LIGHT DETECTOR AND CONFIRMATION BEACON MOUNTING FOR TEMPORARY TRAFFIC SIGNALS

(NOT TO SCALE)

NOTES:
1. REMOVAL OF EXISTING CONDUIT FROM THE HANDHOLE AND THE INSTALLATION OF THE CONDUIT BUSHING SHALL BE INCIDENTAL TO THE HANDHOLE.



DETAIL
HANDHOLE TO INTERCEPT EXISTING CONDUIT
N.T.S.

FILE NAME:	SHEET NO.:
std_4.dgn	5
DATE: SEPT 14, 2005	OF 13
PROJECT NO.: H0411-07	

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

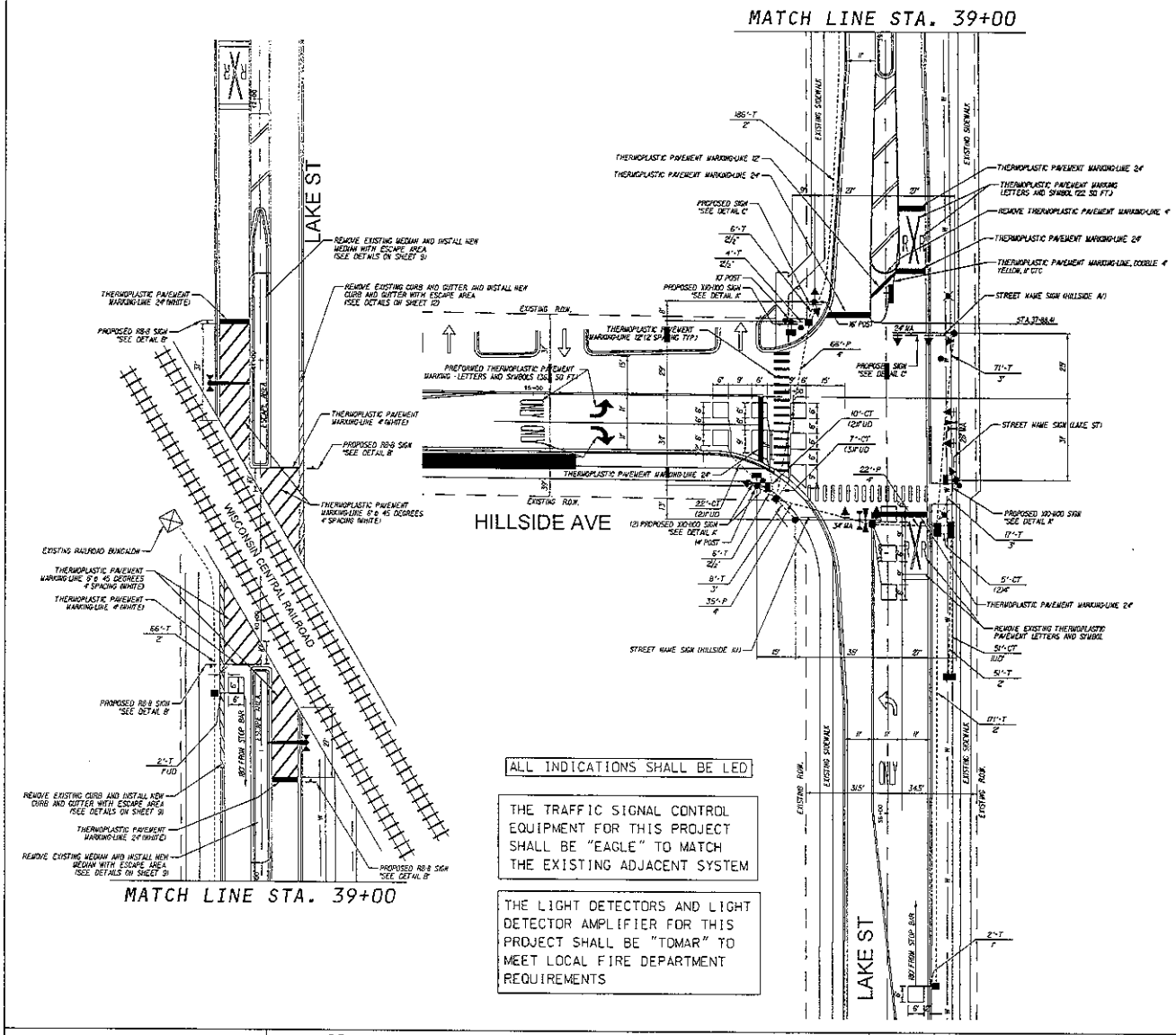
DISTRICT 1

STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: VERT. NONE HORIZ.
DATE: 1-01-02

DRAWN BY: RBP
DESIGNED BY: DAD
CHECKED BY: DAZ
SHEET 4 OF 4

TS05



SCALE: 1"=20'

TRAFFIC SIGNAL LEGEND

	PROPOSED	EXISTING		PROPOSED	EXISTING
CONTROLLER			DETECTOR LOOP		
SERVICE INSTALLATION			CAST IRON JUNCTION BOX		
SIGNAL HEAD			EMERGENCY VEHICLE SYSTEM DETECTOR		
SIGNAL HEAD WITH BACKPLATE			CONFIRMATION BEACON		
SIGNAL HEAD, PEDESTRIAN			SIGNAL HEAD OPTICALLY PROGRAMMED		
SIGNAL POST			CONDUIT SPLICE		
MAST ARM ASSEMBLY AND POLE, STEEL			WOOD POLE		
MAST ARM ASSEMBLY AND POLE, ALUMINUM			RACEWAY FOR MAGNETIC DETECTOR, TYPE I OR TYPE II		
COMMON TRENCH	CT		VEHICLE DETECTOR, NON COMPENSATED MAGNETIC TYPE		
UNIT DUCT	UD		RAILROAD BUNGALOW		
HANDHOLE			STREET LIGHT		
HEAVY DUTY HANDHOLE			TELEPHONE SERVICE		
DOUBLE HANDHOLE			RAILROAD PEDESTRIAN CROSSING GATE		
G.S. CONDUIT IN TRENCH OR PUSHED			EXISTING RAILROAD CROSSING GATE		
PEDESTRIAN PUSHBUTTON DETECTOR					

DETAIL A

CAUTION
WALK TIME SHORTENED WHEN TRAIN APPROACHES

X10-1100
4 REQUIRED
18" X 24"

DETAIL B

DO NOT STOP ON TRACKS

R8-8
4 REQUIRED
24" X 30"

DETAIL C

ONCOMING TRAFFIC MAY HAVE LONGER GREEN

2 REQUIRED
24" X 36"

ALL INDICATIONS SHALL BE LED

THE TRAFFIC SIGNAL CONTROL EQUIPMENT FOR THIS PROJECT SHALL BE "EAGLE" TO MATCH THE EXISTING ADJACENT SYSTEM

THE LIGHT DETECTORS AND LIGHT DETECTOR AMPLIFIER FOR THIS PROJECT SHALL BE "TOMAR" TO MEET LOCAL FIRE DEPARTMENT REQUIREMENTS

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 EXTRA COMPENSATION SHALL BE ALLOWED. ALL ROADWAYS SURFACES SUCH AS SHOULDERS, MEDIAN, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH AN APPROVED SOD, AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS 252 AND 250 RESPECTIVELY.

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS

NO.	DATE	DESCRIPTION

TRAFFIC SIGNAL AND RAILROAD INTERCONNET INSTALLATION PLAN

LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

FILE NAME: 06_sp.dgn
DATE: SEPT 14, 2005
PROJECT NO.: H0411-07

SCHEDULE OF QUANTITIES

QTY	UNIT	ITEM DESCRIPTION
20	CU YD	EARTH EXCAVATION
40	SQ YD	FURNISHING AND PLACING TOPSOIL, 4"
60	SQ YD	SODDING, SALT TOLERANT
15	CU YD	AGGREGATE BASE COURSE, TYPE B
35	SQ YD	BITUMINOUS BASE COURSE, 6"
0.5	TON	BITUMINOUS CONCRETE SURFARE COURSE, MIXTURE D, CLASS I, TYPE 2
70	SQ YD	BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH)
60	SQ YD	PAVEMENT REMOVAL
350	FOOT	COMBINATION CURB AND GUTTER REMOVAL
110	FOOT	COMBINATION CONCRETE CURB AND GUTTER, TYPE B-6.12
315	FOOT	COMBINATION CONCRETE CURB AND GUTTER, TYPE M-2.12
320	SQ FT	CONCRETE MEDIAN SURFACE, 4"
1	L SUM	TRAFFIC CONTROL AND PROTECTION
67	SQ FT	SIGN PANEL - TYPE 1
48	SQ FT	METAL POST - TYPE A
96	SQ FT	THERMOPLASTIC PAVEMENT MARKING LETTERS AND SYMBOLS
124	FOOT	THERMOPLASTIC PAVEMENT MARKING-LINE 4"
342	FOOT	THERMOPLASTIC PAVEMENT MARKING-LINE 6"
112	FOOT	THERMOPLASTIC PAVEMENT MARKING-LINE 12"
85	FOOT	THERMOPLASTIC PAVEMENT MARKING-LINE 24"
32	FOOT	THERMOPLASTIC PAVEMENT MARKING REMOVAL
22	SQ FT	THERMOPLASTIC PAVEMENT MARKING LETTERS AND SYMBOLS REMOVAL
1	EACH	SERVICE INSTALLATION, POLE MOUNTED
474	FOOT	CONDUIT IN TRENCH, 2" DIA., GALVANIZED STEEL
18	FOOT	CONDUIT IN TRENCH, 2 1/2" DIA., GALVANIZED STEEL
86	FOOT	CONDUIT IN TRENCH, 3" DIA., GALVANIZED STEEL
10	FOOT	CONDUIT IN TRENCH, 4" DIA., GALVANIZED STEEL
123	FOOT	CONDUIT PUSHED, 4" DIA., GALVANIZED STEEL
3	EACH	HANDHOLE
2	EACH	HEAVY-DUTY HANDHOLE
1	EACH	DOUBLE HANDHOLE
586	FOOT	TRENCH AND BACKFILL FOR ELECTRICAL WORK
1	EACH	FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL
353	FOOT	ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6 1C
343	FOOT	ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 2C
715	FOOT	ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 3C
1070	FOOT	ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 5C
535	FOOT	ELECTRIC CABLE IN CONDUIT, SIGNAL NO. 14 7C
787	FOOT	ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 14 1 PAIR
435	FOOT	ELECTRIC CABLE IN CONDUIT, RAILROAD NO. 14 3/C INDIVIDUALLY SHIELDED CABLE
235	FOOT	ELECTRIC CABLE IN CONDUIT, NO. 20 3/C, TWISTED, SHIELDED
103	FOOT	ELECTRIC CABLE IN CONDUIT, SERVICE, NO. 6 2C
1	EACH	TRAFFIC SIGNAL POST, PAINTED STEEL 30 FT
1	EACH	TRAFFIC SIGNAL POST, PAINTED STEEL 14 FT.
1	EACH	TRAFFIC SIGNAL POST, PAINTED STEEL 16 FT.
1	EACH	STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL), 24 FT.
1	EACH	STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL), 28 FT.
1	EACH	STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL), 34 FT.
12	FOOT	CONCRETE FOUNDATION, TYPE A
4	FOOT	CONCRETE FOUNDATION, TYPE D
45	FOOT	CONCRETE FOUNDATION, TYPE E 30-INCH DIAMETER
5	EACH	SIGNAL HEAD, LED, 1-FACE, 3-SECTION, MAST ARM MOUNTED
3	EACH	SIGNAL HEAD, LED, 1-FACE, 3-SECTION, BRACKET MOUNTED
1	EACH	SIGNAL HEAD, LED, 2-FACE, 1-3 SECTION, 1-5 SECTION, BRACKET MOUNTED
2	EACH	PEDESTRIAN SIGNAL HEAD, LED, 1-FACE, BRACKET MOUNTED
1	EACH	PEDESTRIAN SIGNAL HEAD, LED, 2-FACE, BRACKET MOUNTED
6	EACH	TRAFFIC SIGNAL BACKPLATE
5	EACH	INDUCTIVE LOOP DETECTOR
345	FOOT	DETECTOR LOOP, TYPE I
2	EACH	LIGHT DETECTOR
1	EACH	LIGHT DETECTOR AMPLIFIER
3	EACH	PEDESTRIAN PUSH-BUTTON
60	SQ YD	AGGREGATE SUBGRADE, 12"
1	LSUM	RAILROAD PROTECTIVE LIABILITY INSURANCE
650	SQ FT	CONCRETE MEDIAN SURFACE REMOVAL, 4"
15	CU YD	MEDIAN AGGREGATE BASE COURSE REMOVAL
1	LSUM	METRA RIGHT OF ENTRY AGREEMENT

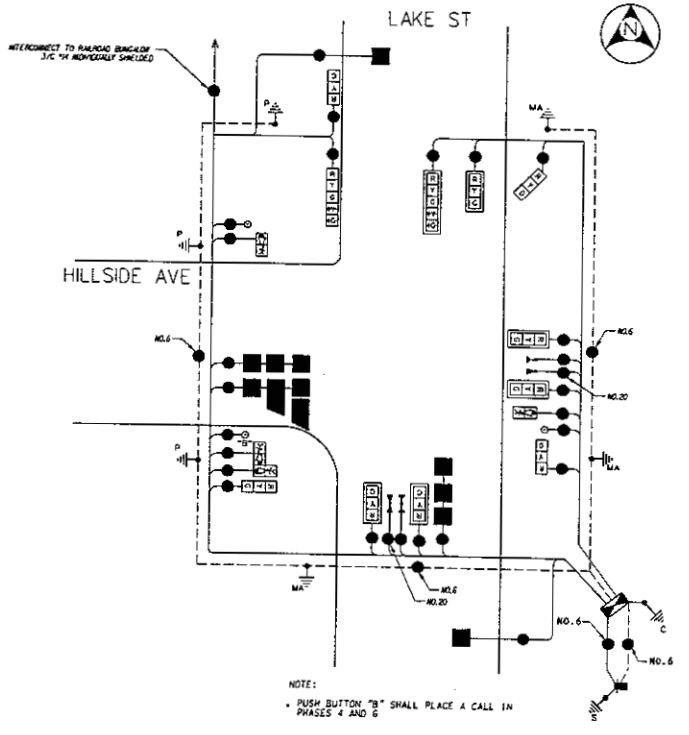
CABLE PLAN LEGEND

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
- DENOTES NUMBER OF CONDUCTORS. ALL CABLE NO. 14 EXCEPT AS INDICATED. ALL LOOP DETECTOR CABLE TO BE SHIELDED. GROUND CABLE IN CONDUIT, NO. 6 SOLID COPPER (GREEN)
- NO. 62.5/125 MM 12F & SM 12F, FIBER OPTIC CABLE
- SIGNAL FACE WITH BACKPLATE "P" INDICATES PROGRAMMED HEAD
- RAILROAD CONTROL CABINET
- ILLUMINATED SIGN, FIBER OPTIC "NO LEFT TURN"
- ILLUMINATED SIGN, FIBER OPTIC "NO RIGHT TURN"
- H/C — GROUND ROD AT HANDHOLE (H), DOUBLE HANDHOLE (HH) OR CONTROLLER (C)
- P — GROUND ROD AT POST (P) OR MAST ARM POLE (MA)
- S — GROUND ROD AT ELECTRIC SERVICE INSTALLATION

ALL INDICATIONS SHALL BE LED

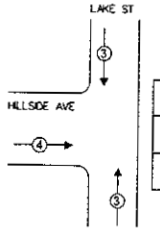
PROPOED CABLE PLAN



NOTE:

- PUSH BUTTON "B" SHALL PLACE A CALL IN PHASES 4 AND 6

EMERGENCY VEHICLE PREEMPTION SEQUENCE



PROPOSED EMERGENCY VEHICLE PREEMPTORS		
EMERGENCY VEHICLE PREEMPTOR	3	4
MOVEMENT	↓↑	→

I.D.O.T. TRAFFIC SIGNAL INSTALLATION ELECTRICAL SERVICE REQUIREMENTS					TOTAL WATTAGE
TYPE	NO. OF LAMPS	WATTAGE INCAND	WATTAGE LED	XX OPERATIONS	
SIGNAL (RED)	11	135	17	0.50	93.5
(YELLOW)	11	135	25	0.25	68.75
(GREEN)	11	135	15	0.25	41.25
ARROW	4	135	12	0.10	6.8
PED. SIGNAL	4	90	25	1.00	100
CONTROLLER	1	100	100	1.00	100
ILLUM. SIGN		84		0.05	
FLASHER				0.50	
				TOTAL =	408.3

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 EXTRA COMPENSATION SHALL BE ALLOWED. ALL ROADWAY SURFACES SUCH AS SHOULDERS, MEDIAN, SIDEWALKS, PAVEMENT, ETC. SHALL BE REPLACED IN KIND. ALL DAMAGE TO MOWED LAWNS SHALL BE REPLACED WITH AN APPROVED SOD, AND ALL DAMAGE TO UNMOWED FIELDS SHALL BE SEEDED IN ACCORDANCE WITH STANDARD SPECIFICATIONS 252 AND 250 RESPECTIVELY.

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 (1.1)
D - CONTROLLER	4 (1.2)	DOUBLE HANDHOLE	13 (4.0)	MAST ARM (L) POLE	20'-L-2 = (6.59L-1.0)=
E - M ARM POLE		SIGNAL POST	2 (1.0)		
24" (600mm)	10 (3.0)	CONTROLLER CAB.	1 (0.5)	BRACKET MOUNTED	13 (4.0)
30" (750mm)	15 (4.6)	FIBER OPTIC	13 (4.0)	PED. PUSHBUTTON	4 (1.2)
		ELECTRIC SERVICE	1 (0.5)	ELECTRIC SERVICE	13.5 (4.1)
		GROUND CABLE	1 (0.5)	SERVICE TO GROUND	13.5 (4.1)
				POST MOUNTED	6 (1.8)

ENERGY COSTS TO:

VILLAGE OF HANOVER PARK
2121 W. LAKE ST
HANOVER PARK, ILLINOIS 60133

ENERGY SUPPLY - CONTACT: JUDY KNELL
PHONE: (630) 691-4608
COMPANY: COMED

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS		
NO.	DATE	DESCRIPTION

CABLE PLAN, PHASE DESIGNATION DIAGRAM AND SCHEDULE OF QUANTITIES

LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

FILE NAME: 07_cp.dgn
DATE: SEPT 14, 2005
PROJECT NO.: N0411-07

PROPOSED NORMAL SEQUENCE OF OPERATIONS

MOVEMENT	5	2	P 6	2	4 P→P					FLASH
PHASE	2+5		2+6		4					
INTERVAL	1	2	3	4	5A	5B	6	7	8A	8B
CHANGE TO / STREET		2+6			4				2+5 2+6	
LAKE ST, NORTHBOUND RIGHT MAST ARM SIGNAL	G	G	G	G	Y	R	R	R	R	R
LAKE ST, NORTHBOUND FAR LEFT AND LEFT MAST ARM SIGNALS	G ←G	G ←Y	G	G	Y	R	R	R	R	R
LAKE ST, SOUTHBOUND ALL SIGNALS	R	R	G	G	Y	R	R	R	R	R
HILLSIDE AVE, EASTBOUND ALL SIGNALS	R	R	R	R	R	R	G	G	Y	R
PEDESTRIAN CROSSING LAKE ST. SOUTH SIDE OF HILLSIDE AVE.	DW	DW	DW	DW	DW	DW	W *	FL** DW	DW	DW
PEDESTRIAN CROSSING HILLSIDE AVE. WEST SIDE OF LAKE ST.	DW	DW	W *	FL** DW	DW	DW	DW	DW	DW	DW

DARK

PHASE 2+6 SHALL BE PLACED ON MIN. RECALL

PROPOSED EMERGENCY VEHICLE SEQUENCE OF OPERATIONS

INTERVAL FROM NORMAL SEQUENCE	1	1	3	3			6				6	PREEMPTOR NUMBER 3	PREEMPTOR NUMBER 4	CLEAR TO NORMAL
EMERGENCY VEHICLE PRE-EMPTION INTERVAL	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	1K	2	3	
CHANGE TO PRE-EMPTION INTERVAL	2	1C	3	2	1G	1H	3	1J	1K	2	3			♦
LAKE ST, NORTHBOUND RIGHT MAST ARM SIGNAL	G	Y	R	G	G	Y	R	R	R	R	R	G	R	♦
LAKE ST, NORTHBOUND FAR LEFT AND LEFT MAST ARM SIGNALS	G ←Y	Y	R	G	G	Y	R	R	R	R	R	G	R	♦
LAKE ST, SOUTHBOUND ALL SIGNALS	R	R	R	G	G	Y	R	R	R	R	R	G	R	♦
HILLSIDE AVE, EASTBOUND ALL SIGNALS	R	R	R	R	R	R	R	G	Y	R	G	R	G	♦
PEDESTRIAN CROSSING LAKE ST. SOUTH SIDE OF HILLSIDE AVE.	DW	DW	DW	DW	DW	DW	DW	FL DW	DW	DW	FL DW	DW	DW	♦
PEDESTRIAN CROSSING HILLSIDE AVE. WEST SIDE OF LAKE ST.	DW	DW	DW	FL DW	FL DW	DW	DW	DW	DW	DW	DW	DW	DW	♦

♦ EMERGENCY VEHICLE SEQUENCE SHALL PROVIDE THE PROPER CLEARANCE INTERVAL TO RESUME THE NORMAL SEQUENCE OF OPERATION OR PROPER CLEARANCE INTERVAL TO DISPLAY A DIFFERENT EMERGENCY VEHICLE INTERVAL AFTER EMERGENCY VEHICLE INTERVAL 2 OR 3 IS TERMINATED.

* TO APPEAR ONLY UPON PUSH BUTTON ACTIVATION

** FLASHING "DON'T WALK" IS TO TERMINATE AT THE COMPLETION OF THE PEDESTRIAN CLEARANCE INTERVAL.

Ø THIS "WALK" OR FLASHING "DON'T WALK" INTERVAL MAY FINISH TIMING IN THE BIDIRECTIONAL STRAIGHT THROUGH MOVEMENT IF THE LEFT ARROW TIME IS NOT SUFFICIENT TO COMPLETE "WALK" OR FLASHING "DON'T WALK" INTERVALS.

"WALK" AND FLASHING "DON'T WALK" TIMINGS TO BE SET ONLY ON PHASES WHERE "WALK" AND FLASHING "DON'T WALK" ARE INDICATED IN THE SEQUENCE OF OPERATIONS.

PROPOSED RAILROAD PRE-EMPTION SEQUENCE OF OPERATIONS

									PREEMPTOR NUMBER 3		PREEMPTOR NUMBER 4		PREEMPTOR NUMBER 2			
CHANGE FROM NORMAL SEQUENCE OF OPERATION INTERVAL NUMBER	1		3		6											
CHANGE FROM EMERGENCY VEHICLE PEEMPTION SEQUENCE OF OPERATION INTERVAL NUMBER									2		3					
RAILROAD PREEMPTION SEQUENCE OF OPERATION INTERVAL NUMBER	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	2	3	4	5	RESUME NORMAL SEQUENCE
CHANGE TO RAILROAD PREEMPTION SEQUENCE OF OPERATION INTERVAL NUMBER	1B	2	1D	2	1E	2	1H	2	1H	2	3	3	4	/	▲
LAKE ST, NORTHBOUND RIGHT MAST ARM SIGNAL	Y	R	Y	R	R	R	Y	R	R	R	R	R	R	R	▲
LAKE ST, NORTHBOUND FAR LEFT AND LEFT MAST ARM SIGNALS	Y	R	Y	R	R	R	Y	R	R	R	R	R	R	R	▲
LAKE ST, SOUTHBOUND ALL SIGNALS	R	R	G	G	R	R	G	G	R	R	G	Y	R	R	▲
HILLSIDE AVE, EASTBOUND ALL SIGNALS	R	R	R	R	Y	R	R	R	Y	R	R	R	R	G	▲
PEDESTRIAN CROSSING LAKE ST. SOUTH SIDE OF HILLSIDE AVE.	DW	DW	DW	DW	FL++ DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	▲
PEDESTRIAN CROSSING HILLSIDE AVE. WEST SIDE OF LAKE ST.	DW	DW	FL++ DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	▲
														HOLD	

++ FLASHING "DON'T WALK" IS TO TERMINATE AT THE COMPLETION OF THE VEHICLE INTERVAL CLEARENCE

▲ RAILROAD PREEMPTION SEQUENCE SHALL PROVIDE THE PROPER CLEARANCE INTERVAL TO RESUME THE NORMAL SEQUENCE OF OPERATION OR PROPER CLEARENCE INTERVAL TO DISPLAY AN EMERGENCY VEHICLE INTERVAL (IF APPLICABLE) AFTER RAILROAD PREEMPTION INTERVAL 5 IS TERMINATED.

NOTE. THE CONTROLLER SHALL BE ALLOWED TO CYCLE BETWEEN EASTBOUND HILLSIDE AVENUE AND THE NORTHBOUND LAKE STREET LEFT-TURN PHASE DURING THE HOLD PHASE.

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING
AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS

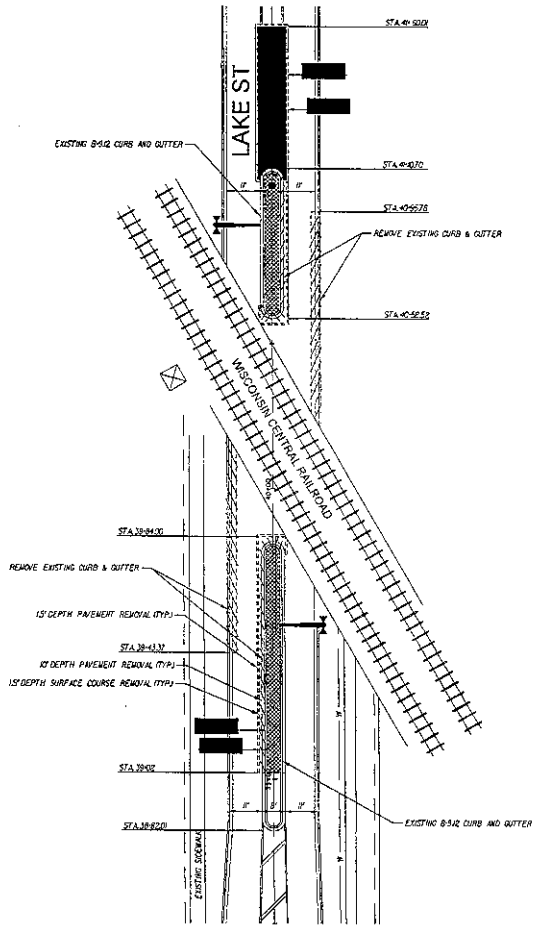
NO.	DATE	DESCRIPTION

SEQUENCE OF OPERATIONS, EMERGENCY VEHICLE SEQUENCE OF OPERATIONS and RAILROAD PRE-EMPTION SEQUENCE OF OPERATIONS

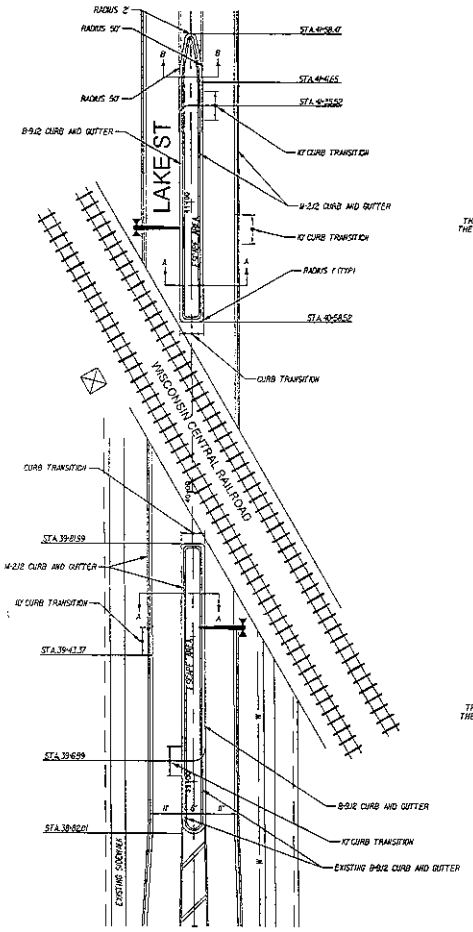
LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

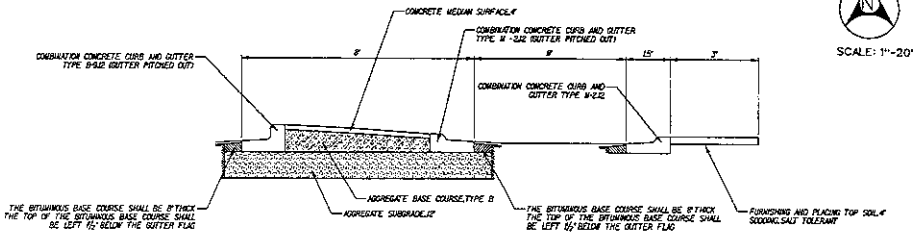
FILE NAME: SEQ.dgn
DATE: SEPT 14, 2005
PROJECT NO.: H0431-07

EXISTING/REMOVAL



PROPOSED



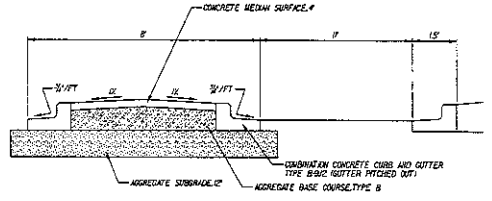


SCALE: 1"=20'

SECTION A-A

PROPOSED MEDIAN DETAIL

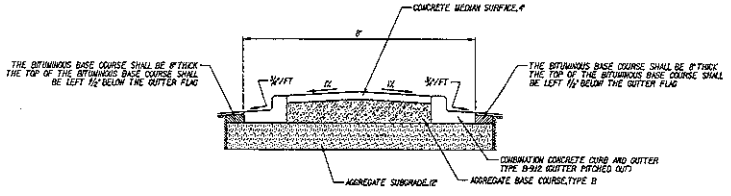
STA.38+82.01 TO 39+81.99
NOT TO SCALE



SECTION A-A

EXISTING MEDIAN DETAIL

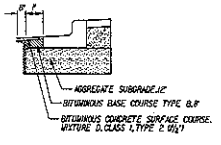
STA.38+82.01 TO 39+82.50
STA.40+58.52 TO 41+58.47



SECTION B-B

PROPOSED MEDIAN DETAIL

STA.41+35.52 TO 41+58.47
NOT TO SCALE



CONSTRUCTION NOTES

- SAWCUTS ARE INCIDETAL TO CONTRACT

LEGEND

- REMOVAL CURB & GUTTER
- SAWCUT
- CONCRETE MEDIAN SUTACE, 4" AND AGGREGAATE BASE COURSE, TYPE B REMOVAL
- PAVEMENT REMOVAL, 20" DEPTH

METRO

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING
AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS

NO.	DATE	DESCRIPTION

MEDIAN REMOVAL AND REPLACEMENT PLAN

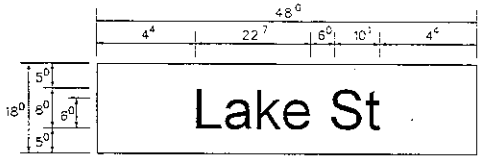
LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

FILE NAME: 05_sp.dgn
DATE: SEPT 14, 2005
PROJECT NO.: R0411-07

SHEET NO.: 9 OF 13

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		COOK	20	13
STA.		TO STA.		
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT		

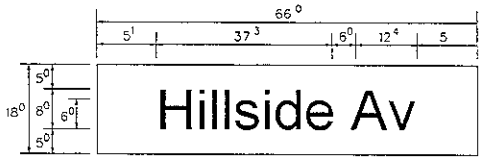
PANEL SIGN DESIGN TYPE I



___ Sq. M. each
6.0 Sq. Ft. each
1 Required
Design Series D

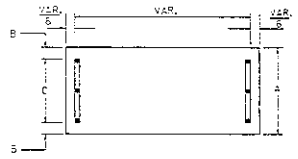
NOTE: SIGN DIMENSIONS ARE IN ENGLISH UNITS

PANEL SIGN DESIGN TYPE I

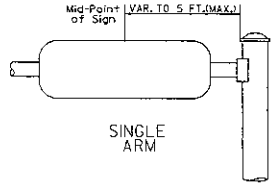


___ Sq. M. each
8.25 Sq. Ft. each
2 Required
Design Series D

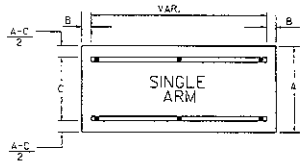
SUPPORTING CHANNELS



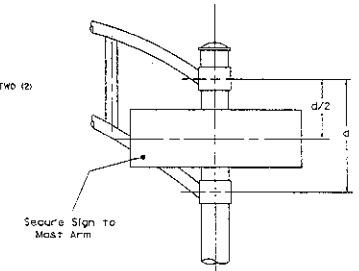
A	B	C
18"	2"	14"



SUPPORTING CHANNELS



A	B	C
18"	2"	12"
30"	2"	22"



SIGNFIX ALUMINUM CHANNEL FRAMING SYSTEM
Shall be used. See Note #5.

GENERAL NOTES

1. WHERE MAST ARM MOUNTED STREET NAME SIGNS ARE SPECIFIED, THE MAST ARM ASSEMBLY AND POLES SHALL BE DESIGNED TO SUPPORT THE LOADINGS CALLED FOR ON STANDARDS 834001, 834006 AND 834014 AS APPLICABLE, PLUS TWO (2) SIGN PANELS 2'-6" x 6'-0" MOUNTED AS SHOWN. THE DESIGN SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS FOR 80 M.P.H. WIND VELOCITY.
2. ALL SIGNS SHALL HAVE A WHITE REFLECTORIZED LEGEND AND BORDER ON A GREEN REFLECTORIZED BACKGROUND, TYPE A SHEETING.
3. THE SIGN LENGTH SHOULD BE INCREASED IN 6-INCH INCREMENTS, BUT THE OVERALL LENGTH SHOULD NOT EXCEED 6'-0".
4. ALL BORDERS SHALL BE ¾" WIDE AND CORNER RADIUS SHALL BE 2-1/4".
5. SIGNFIX ALUMINUM CHANNEL FRAMING SYSTEM SHALL BE USED FOR ALL SIGNS ATTACHED TO SIGNAL POLES AND POSTS. LOCAL SUPPLIERS OF THE SIGNFIX ALUMINUM CHANNEL FRAMING SYSTEM ARE:
   - A.K.T. CORPORATION, SCHAUMBURG, IL
   - TUCKER COMPANY, INC., WAUWATOSA, WI
   - AMERICAN FABRICATION CO., CHICAGO HEIGHTS, IL
   - WESTERN TRAFFIC CONTROL INC., CICERO, IL

PARTS LISTING:

SIGN CHANNEL	PART #HPN053 (NEO. CHANNEL)
SIGN SCREWS	1/4" x 14 x 1" H.W.H. #3 SELF TAPPING WITH NEOPRENE WASHER
BRACKETS	PART #HPN034 (UNIVERSAL) CHANNEL CLAMPS WITH STAINLESS STEEL STRAPPING

OTHER BRANDS OF MOUNTING HARDWARE ARE ACCEPTABLE, BASED UPON THE DEPARTMENT'S APPROVAL AND COMPATIBILITY WITH THE CHANNEL/BRACKET OF THE ABOVE PRODUCT.

Upper Case To Lower Case
Spacing Chart 8-6 Inch Series "C & D"

EXAMPLE, 2 (3) — DENOTES 3"/8

FIRST LETTER	SECOND LETTER: a c d e g o q		b h i k l m n p r u		f w		j		s t		v y		x		z	
SERIES	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
A W X	1 2	1 4	1 4	1 5	1 2	1 4	0 6	1 0	1 1	1 4	0 6	1 0	1 1	1 2	1 2	1 4
B	1 4	1 5	2 0	2 1	1 4	1 5	1 1	1 2	1 4	1 5	1 2	1 4	1 2	1 4	1 6	1 7
C E C	1 4	1 5	2 0	2 1	1 2	1 4	0 6	1 0	1 2	1 4	1 2	1 4	1 4	1 5	1 4	1 5
D O Q R	1 4	1 5	2 0	2 1	1 4	1 5	0 6	1 0	1 2	1 4	1 2	1 4	1 4	1 5	1 4	1 5
F	0 5	0 6	1 4	1 5	0 6	1 0	0 5	0 6	0 6	1 0	0 6	1 0	0 6	1 0	1 1	1 2
H I M N	2 0	2 1	2 2	2 4	2 0	2 1	1 4	1 5	1 6	1 7	1 6	1 7	2 0	2 1	2 0	2 1
J U	2 0	2 1	2 0	2 1	1 6	1 7	1 4	1 5	1 6	1 7	1 6	1 7	1 6	1 7	2 0	2 1
K L	1 1	1 2	1 6	1 7	1 1	1 2	0 5	0 6	1 1	1 2	1 1	1 2	1 1	1 2	1 2	1 4
P	1 2	1 4	1 4	1 5	1 2	1 4	0 5	0 6	1 1	1 2	1 1	1 2	1 2	1 4	1 2	1 4
S	1 2	1 4	1 6	1 7	1 2	1 4	0 6	1 0	1 2	1 4	1 2	1 4	1 2	1 4	1 2	1 4
T	1 1	1 2	1 6	1 7	0 6	1 0	0 6	1 0	1 1	1 2	1 1	1 2	1 1	1 2	1 2	1 4
V	0 6	1 0	1 4	1 5	1 1	1 2	0 6	1 0	1 2	1 4	1 2	1 4	1 2	1 4	1 2	1 4
Y	0 5	0 6	1 4	1 5	0 6	1 0	0 5	0 6	0 5	0 7	0 5	0 6	0 6	1 0	1 1	1 2
Z	1 6	1 7	2 2	2 4	1 6	1 7	1 2	1 4	1 6	1 7	1 6	1 7	1 6	1 7	2 0	2 1

Lower Case To Lower Case
Spacing Chart 6 Inch Series "C & D"

FIRST LETTER	SECOND LETTER: a c d e g o q		b h i k l m n p r u		f w		j		s t		v y		x		z	
SERIES	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
a d h g i j l m n q u	1 6	1 7	2 2	2 4	1 6	1 7	1 2	1 4	1 4	1 5	1 4	1 5	1 6	1 7	1 6	1 7
b f k o p s	1 2	1 4	1 6	1 7	1 1	1 2	0 5	0 6	1 1	1 2	1 1	1 2	1 2	1 4	1 2	1 4
c e	1 2	1 4	1 6	1 7	1 2	1 4	0 6	1 0	1 2	1 4	1 2	1 4	1 2	1 4	1 2	1 4
r	0 6	1 0	1 2	1 4	0 6	1 0	0 3	0 3	0 5	0 6	0 5	0 6	0 6	1 0	0 6	1 0
t z	1 2	1 4	1 6	1 7	1 2	1 4	0 6	1 0	1 1	1 2	1 1	1 2	1 2	1 4	1 2	1 4
v y	1 1	1 2	1 4	1 5	1 1	1 2	0 5	0 6	0 6	1 0	0 6	1 0	1 1	1 2	1 1	1 2
w	1 1	1 2	1 4	1 5	1 1	1 2	0 5	0 6	1 1	1 2	1 1	1 2	1 1	1 2	1 2	1 4
x	1 2	1 4	1 6	1 7	1 1	1 2	0 5	0 6	1 1	1 2	1 1	1 2	1 1	1 2	1 2	1 4

Number To Number
Spacing Chart 8 Inch Series "C & D"

FIRST NUMBER	SECOND NUMBER: 0		1		2		3		4		5		6		7		8		9	
SERIES	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D	C	D
0 9	1 6	1 7	1 6	1 7	1 4	1 5	1 2	1 4	1 4	1 5	1 4	1 5	1 6	1 7	1 2	1 4	1 6	1 7	1 6	1 7
1	2 0	2 1	2 0	2 1	2 0	2 1	1 6	1 7	1 4	1 5	2 0	2 1	2 0	2 1	1 4	1 5	2 0	2 1	2 0	2 1
2 3 4	1 4	1 5	1 4	1 5	1 4	1 5	1 2	1 4	1 2	1 4	1 4	1 5	1 4	1 5	1 1	1 2	1 6	1 7	1 4	1 5
5	1 4	1 5	1 4	1 5	1 4	1 5	1 1	1 2	1 1	1 2	1 4	1 5	1 4	1 5	1 1	1 2	1 4	1 5	1 4	1 5
6	1 6	1 7	1 4	1 5	1 4	1 5	1 2	1 5	1 2	1 4	1 4	1 5	1 4	1 5	1 1	1 2	1 4	1 5	1 4	1 5
7	1 2	1 4	1 2	1 4	1 4	1 5	1 2	1 5	0 5	0 6	1 2	1 4	1 4	1 5	1 1	1 2	1 4	1 5	1 2	1 4
8	1 6	1 7	1 6	1 7	1 4	1 5	1 2	1 5	1 2	1 4	1 4	1 5	1 6	1 7	1 2	1 4	1 6	1 7	1 4	1 5

UPPER AND LOWER CASE LETTER WIDTHS

LETTERS	6 INCH UPPER CASE LETTERS SERIES C	6 INCH UPPER CASE LETTERS SERIES D	8 INCH UPPER CASE LETTERS SERIES C	8 INCH UPPER CASE LETTERS SERIES D	LETTERS	6 INCH LOWER CASE LETTERS SERIES C	6 INCH LOWER CASE LETTERS SERIES D
A	3 6	5 0	5 0	6 5	a	3 5	4 2
B	3 2	4 0	4 3	5 3	b	3 5	4 2
C	3 2	4 0	4 3	5 3	c	3 5	4 1
D	3 2	4 0	4 3	5 3	d	3 5	4 2
E	3 0	3 5	4 0	4 7	e	3 5	4 2
F	3 0	3 5	4 0	4 7	f	2 3	2 6
G	3 2	4 0	4 3	5 3	g	3 5	4 2
H	3 2	4 0	4 3	5 3	h	3 5	4 2
I	0 7	0 7	1 1	1 2	i	1 1	1 1
J	3 0	3 6	4 0	5 0	j	2 0	2 2
K	3 2	4 1	4 3	5 4	k	3 5	4 2
L	3 0	3 5	4 0	4 7	l	1 1	1 1
M	3 7	4 5	5 1	6 1	m	6 0	7 0
N	3 2	4 0	4 3	5 3	n	3 5	4 2
O	3 4	4 2	4 5	5 5	o	3 6	4 3
P	3 2	4 0	4 3	5 3	p	3 5	4 2
Q	3 4	4 2	4 5	5 5	q	3 5	4 2
R	3 2	4 0	4 3	5 3	r	2 6	3 2
S	3 2	4 0	4 3	5 3	s	3 6	4 2
T	3 0	3 5	4 0	4 7	t	2 7	3 2
U	3 2	4 0	4 3	5 3	u	3 5	4 2
V	3 5	4 4	4 7	6 0	v	4 2	4 7
W	4 4	5 2	6 0	7 0	w	5 5	6 4
X	3 4	4 0	4 5	5 3	x	4 4	5 1
Y	3 6	5 0	5 0	6 6	y	4 6	5 3
Z	3 2	4 0	4 3	5 3	z	3 6	4 3

NUMBER	6 INCH SERIES C	6 INCH SERIES D	8 INCH SERIES C	8 INCH SERIES D
1	1 2	1 4	1 5	2 0
2	3 2	4 0	4 3	5 3
3	3 2	4 0	4 3	5 3
4	3 5	4 3	4 7	5 7
5	3 2	4 0	4 3	5 3
6	3 2	4 0	4 3	5 3
7	3 2	4 0	4 3	5 3
8	3 2	4 0	4 3	5 3
9	3 2	4 0	4 3	5 3
0	3 4	4 2	4 5	5 5

REVISIONS	
NAME	DATE
D.A.Z./D.A.C.	11/90
	6/98
CADD	10/00

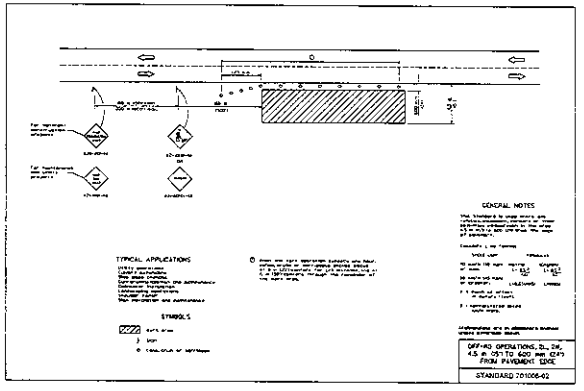
FILE NAME: 10_sign.dgn
DATE: SEPT 14, 2005
PROJECT NO.: H0411-07
SHEET NO.: 10 OF 13

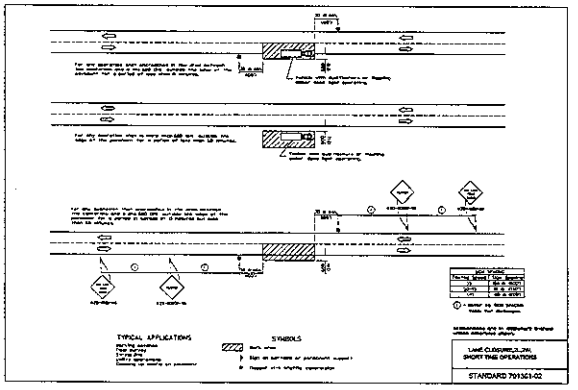
Illinois Department of Transportation
DISTRICT 1

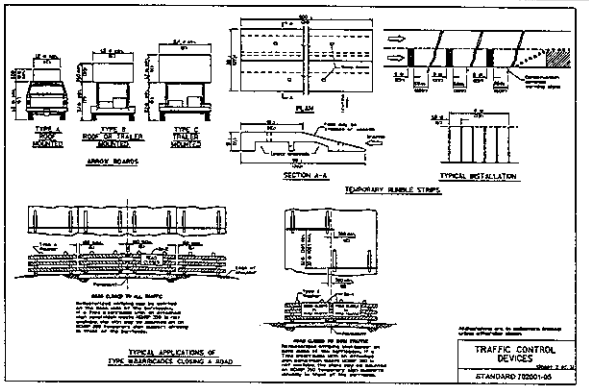
MAST ARM MOUNTED STREET NAME SIGNS

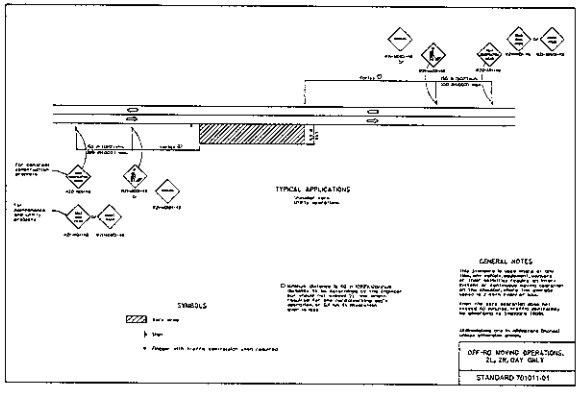
SCALE: NONE
DATE:

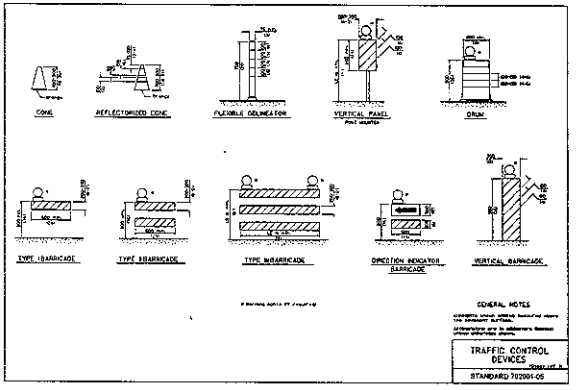
DRAWN BY: RDB
DESIGNED BY: JKE
CHECKED BY: DAD

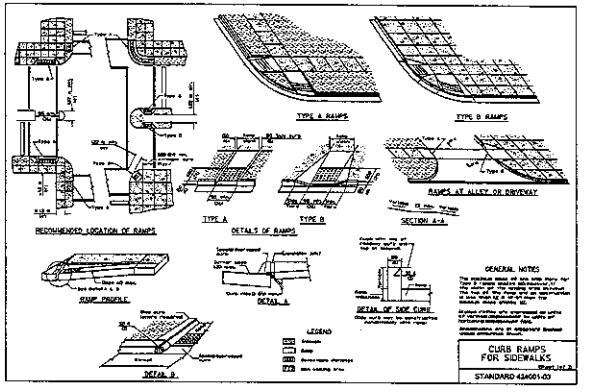


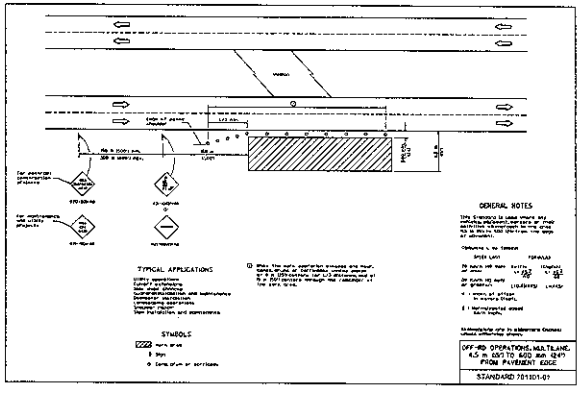


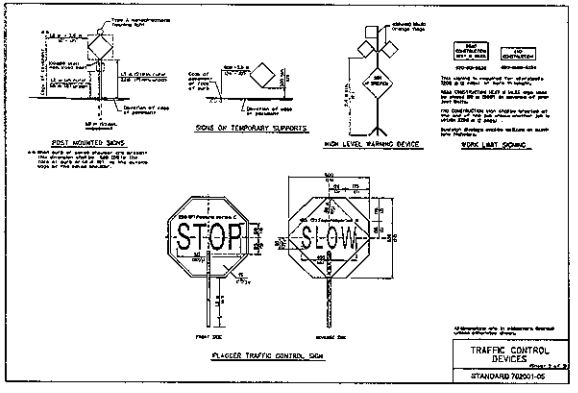


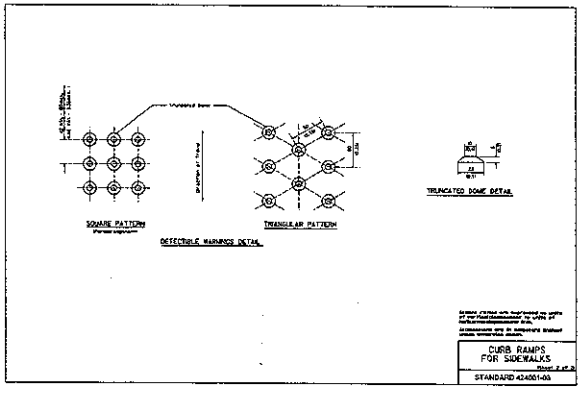












METRO

METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING
AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

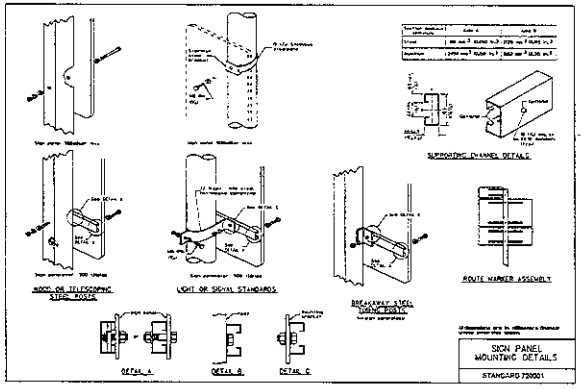
REVISIONS		
NO.	DATE	DESCRIPTION

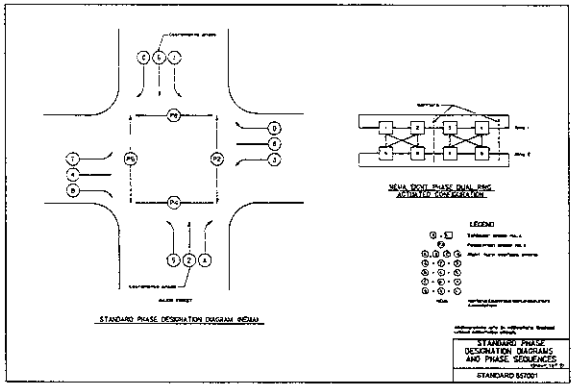
CONSTRUCTION DETAILS

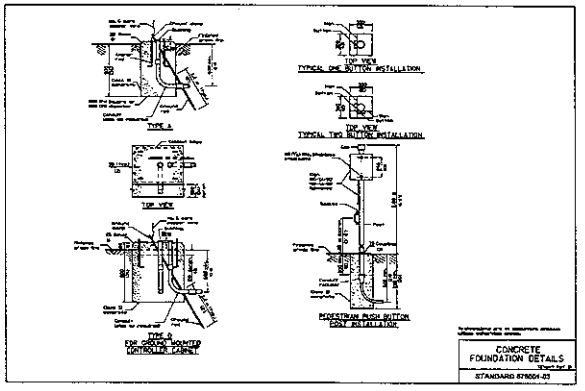
LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

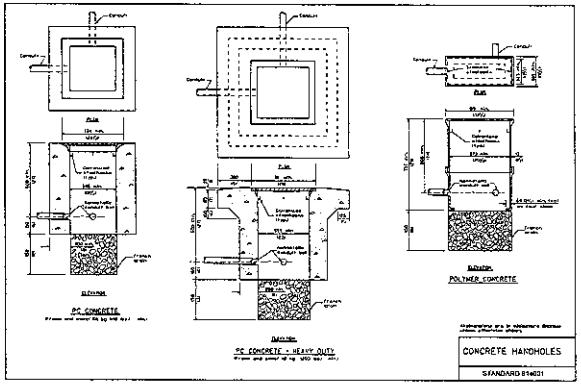
FILE NAME: cons1.dgn
DATE: SEPT 14, 2005
PROJECT NO.: H0411-07

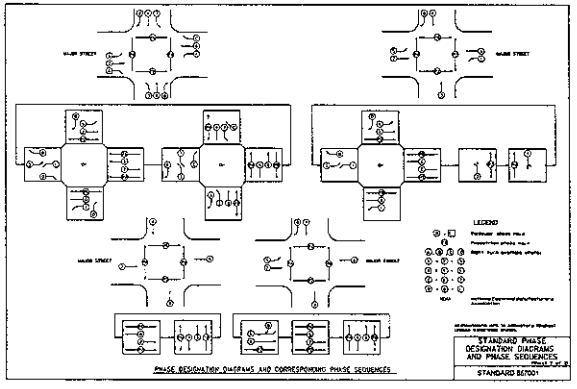
SHEET NO.: 11 OF 13

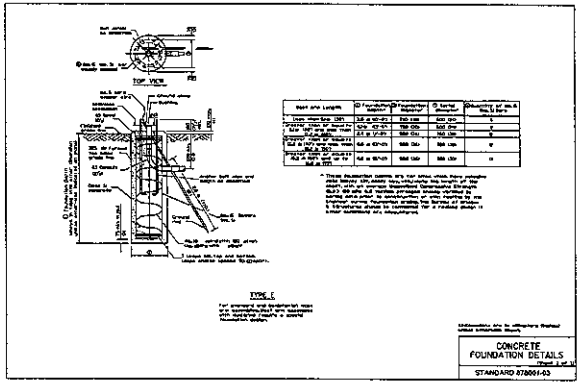


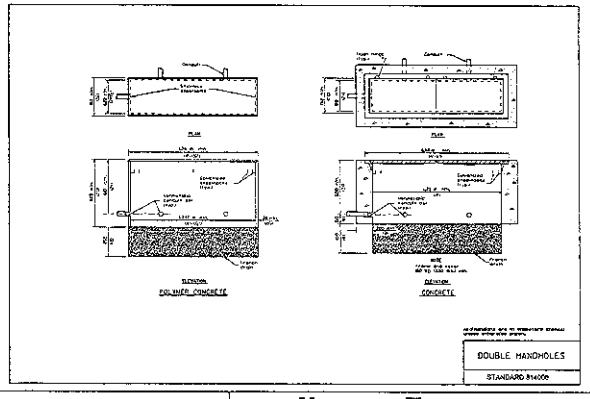


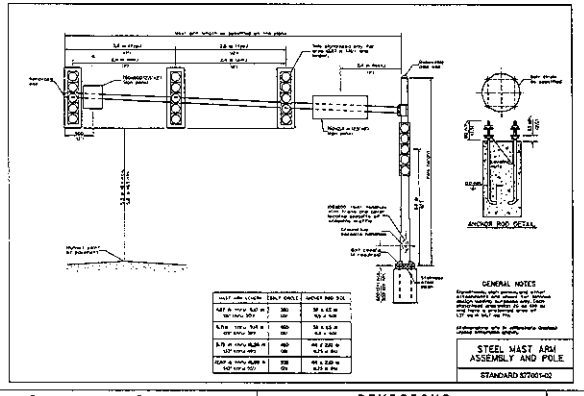


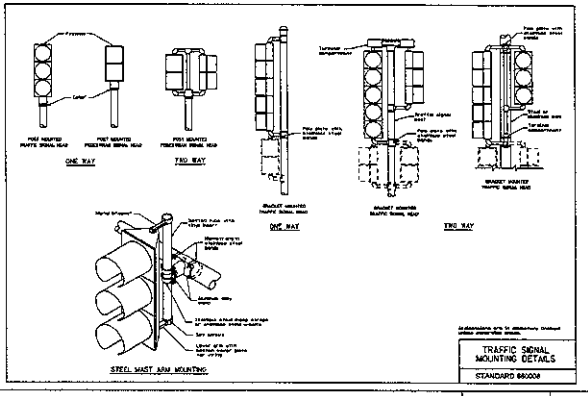












METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING
AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

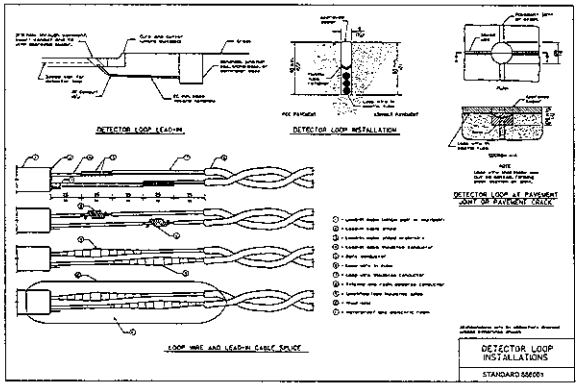
REVISIONS

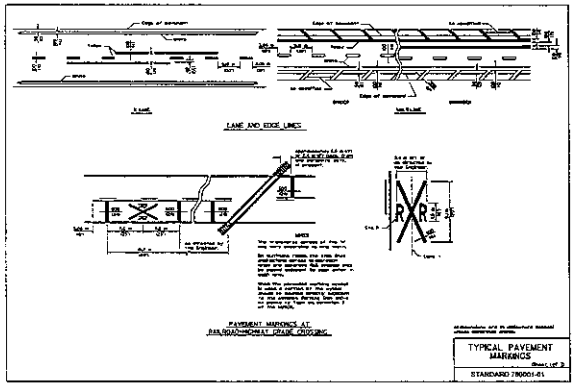
NO.	DATE	DESCRIPTION

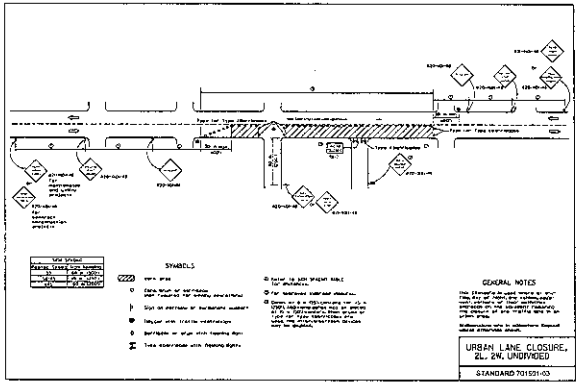
CONSTRUCTION DETAILS

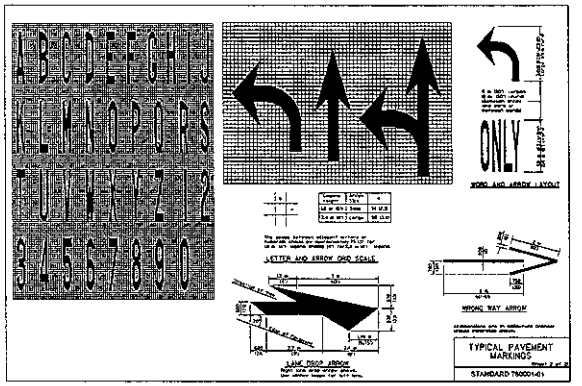
LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

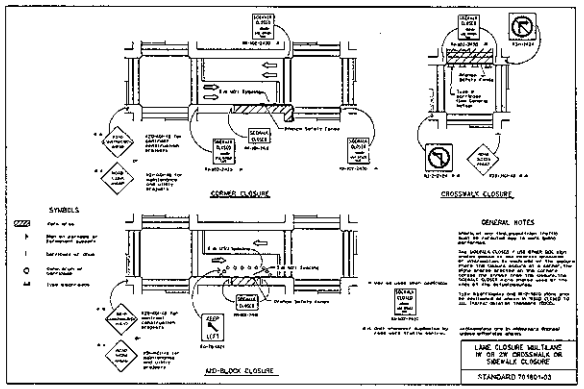
FILE NAME: con1.dgn
DATE: SEPT 14, 2005
PROJECT NO.: H0411-07

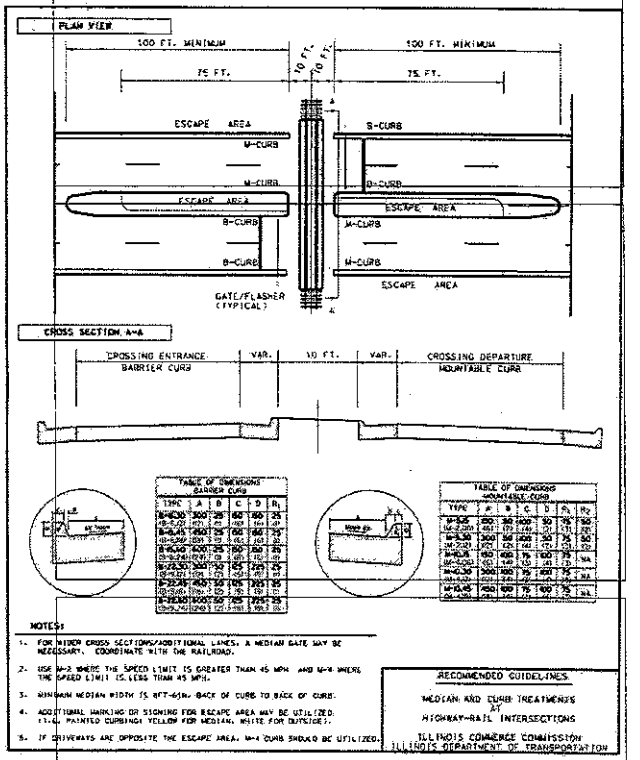












METRO TRANSPORTATION GROUP, INC.
TRAFFIC ENGINEERING, TRANSPORTATION PLANNING
AND SIGNAL SYSTEMS/DESIGN
3100 W. HIGGINS ROAD, HOFFMAN ESTATES, IL 60195 PH# 630 213-1000

REVISIONS		
NO.	DATE	DESCRIPTION

CONSTRUCTION DETAILS

LAKE STREET @ HILLSIDE AVENUE
GRAYSLAKE, ILLINOIS

FILE NAME: cont.dgn
DATE: SEPT 14, 2006
PROJECT NO.: N0411-07