

ABBREVIATIONS

APS	ACCESSIBLE PEDESTRIAN SIGNAL
AWF	ADVANCE WARNING FLASHER
C.D.	COUNT DOWN
D2-1 (e.g.)	DETECTOR (PHASE 2, NO. 1)
DEG	DEGREES
DWK	DON'T WALK INDICATION
EQ.G	EQUIPMENT GROUND
EVP	EMERGENCY VEHICLE PRE-EMPTION
F&I	FURNISH AND INSTALL
FL	FLASH/FLASHING
FYA	FLASHING YELLOW ARROW
FYLA	FLASHING YELLOW LEFT ARROW
GLA	GREEN LEFT ARROW
GRN	GREEN INDICATION
GR. RD.	GROUND ROD
GRA	GREEN RIGHT ARROW
GTA	GREEN THRU ARROW
HH	HANDHOLE
HPS	HIGH PRESSURE SODIUM
IND	INDICATION
IMC	INTERMEDIATE METAL CONDUIT
INP	IN PLACE
INS. GR.	INSULATED GROUND
JB	JUNCTION BOX
LED	LIGHT EMITTING DIODE
LUM	LUMINAIRE
NEU	NEUTRAL
NMC	NONMETALLIC CONDUIT
P1-1 (e.g.)	PEDESTRIAN HEAD (PHASE 1, NO. 1)
PB	PUSH BUTTON
PB2-1 (e.g.)	PUSH BUTTON (PHASE 2, NO. 1)
PEC	PHOTOELECTRIC CELL
PED	PEDESTRIAN
PVC	POLYVINYL CHLORIDE (CONDUIT)
RED	RED INDICATION
R&S	REMOVE AND SALVAGE
RLA	RED LEFT ARROW
RSC	RIGID STEEL CONDUIT
S&I	SALVAGE AND INSTALL
SOP	SOURCE OF POWER
SPR	SPARE
STA	STATION
WLK	WALK INDICATION
YEL	YELLOW INDICATION
YLA	YELLOW LEFT ARROW
YRA	YELLOW RIGHT ARROW

SYMBOLS

■	HANDHOLE
⊖	EQ.G CONNECTION
←	EVP CONFIRMATORY LIGHT
⇒	EVP DETECTOR
⇄	EVP DETECTOR AND CONFIRMATORY LIGHT
⓪	FIBER OPTIC VAULT
△	LUMINAIRE NO.
③	SIGNAL BASE NO.
⊙	SIGNAL HEAD NO./FLASHER HEAD NO.
Ⓜ	BARREL MOUNT BASE NO.
Ⓜ	WOOD POLE NO.
—●—	SPLICE
—V—	VIDEO DETECTION
—M—	MICROWAVE DETECTION
—S—	SONIC DETECTION

FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL

# ANOKA COUNTY HIGHWAY DEPARTMENT

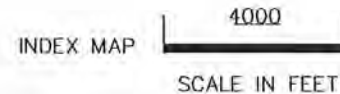
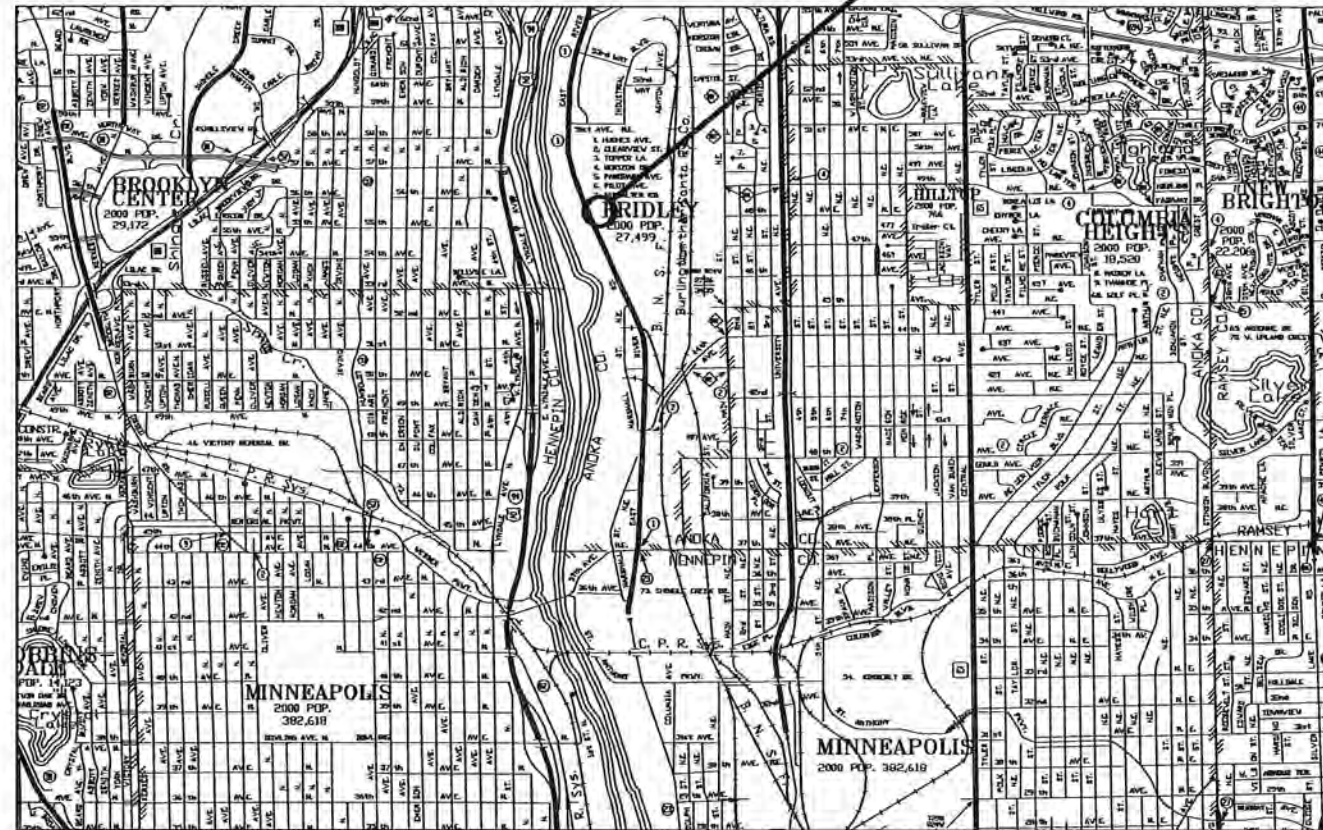
## CONSTRUCTION PLAN FOR TRAFFIC CONTROL SIGNAL SYSTEMS, INTERCONNECT AND ADA IMPROVEMENTS

AT THE INTERSECTION OF: CO. RD. 1 (EAST RIVER RD.) AT NORTHERN STACKS CT., FRIDLEY MN, ANOKA COUNTY

AND REMOVAL AT THE INTERSECTION OF:

CO. RD. 1 (EAST RIVER RD.) AT SOUTHWEST EGRESS DRIVEWAY OF NORTHERN STACKS, FRIDLEY MN, ANOKA COUNTY

**CO. RD. 1 (EAST RIVER RD.)  
AT NORTHERN STACKS CT.**



FED. PROJ. NO. \_\_\_\_\_ STATE FUNDS \_\_\_\_\_

GOVERNING SPECIFICATIONS

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MN MUTCD, INCLUDING FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

INDEX

1	TITLE SHEET	17	INTERSECTION "B" LAYOUT
2	ESTIMATED QUANTITIES	18	INTERSECTION "C" LAYOUT
3-11	DETAIL SHEETS		
12	INTERSECTION LAYOUT		
13	FIELD WIRING DIAGRAMS		
14	PAVEMENT MARKINGS & SIGNS		
15	INTERCONNECTION LAYOUT		
16	SYSTEM "A" EXISTING UTILITIES LAYOUT		

THIS PLAN CONTAINS 18 SHEETS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

*Stephen J. Manhart* UC. NO. 22428 DATE: 4/9/15  
STEPHEN J. MANHART

DESIGN SQUAD \_\_\_\_\_ ETHAN D. PETERSON

APPROVED *[Signature]* DATE: 4/15/15  
CITY OF FRIDLEY ENGINEER

APPROVED *[Signature]* DATE: 4/17/15  
COUNTY ENGINEER

RECOMMENDED FOR APPROVAL \_\_\_\_\_ DATE: \_\_\_\_\_

STANDARD PLATES – SIGNAL SYSTEMS

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT

PLATE NO.	DESCRIPTION	PLATE NO.	DESCRIPTION
▶ 7038	A DETECTABLE WARNING SURFACE TRUNCATED DOMES	▶ 8122	F PEDESTAL AND PEDESTAL BASE
▶ 7113	A CONCRETE APPROACH NOSE DETAIL	▶ 8123	G POLE AND MAST ARM
▶ 8111	E TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED)	▶ 8126	K POLE FOUNDATION (PA90 AND PA100)
▶ 8112	G PEDESTAL FOUNDATION	▶ 8129	A SHIM AND WASHER
▶ 8117	F PRECAST CONCRETE HAND HOLE	▶ 8130	E SAW CUT LOOP DETECTORS
▶ 8118	D SERVICE EQUIPMENT AND POLE	▶ 8132	B PREFORMED RIGID PVC CONDUIT LOOP DETECTOR
▶ 8119	C GROUND MOUNTED CABINET FOUNDATION		
▶ 8120	P POLE FOUNDATION (PA-85)		
▶ 8121	H TRANSFORMER BASE AND POLE BASE PLATE		

▶ STANDARD PLATES APPLICABLE TO THIS PROJECT

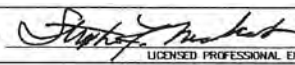
PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

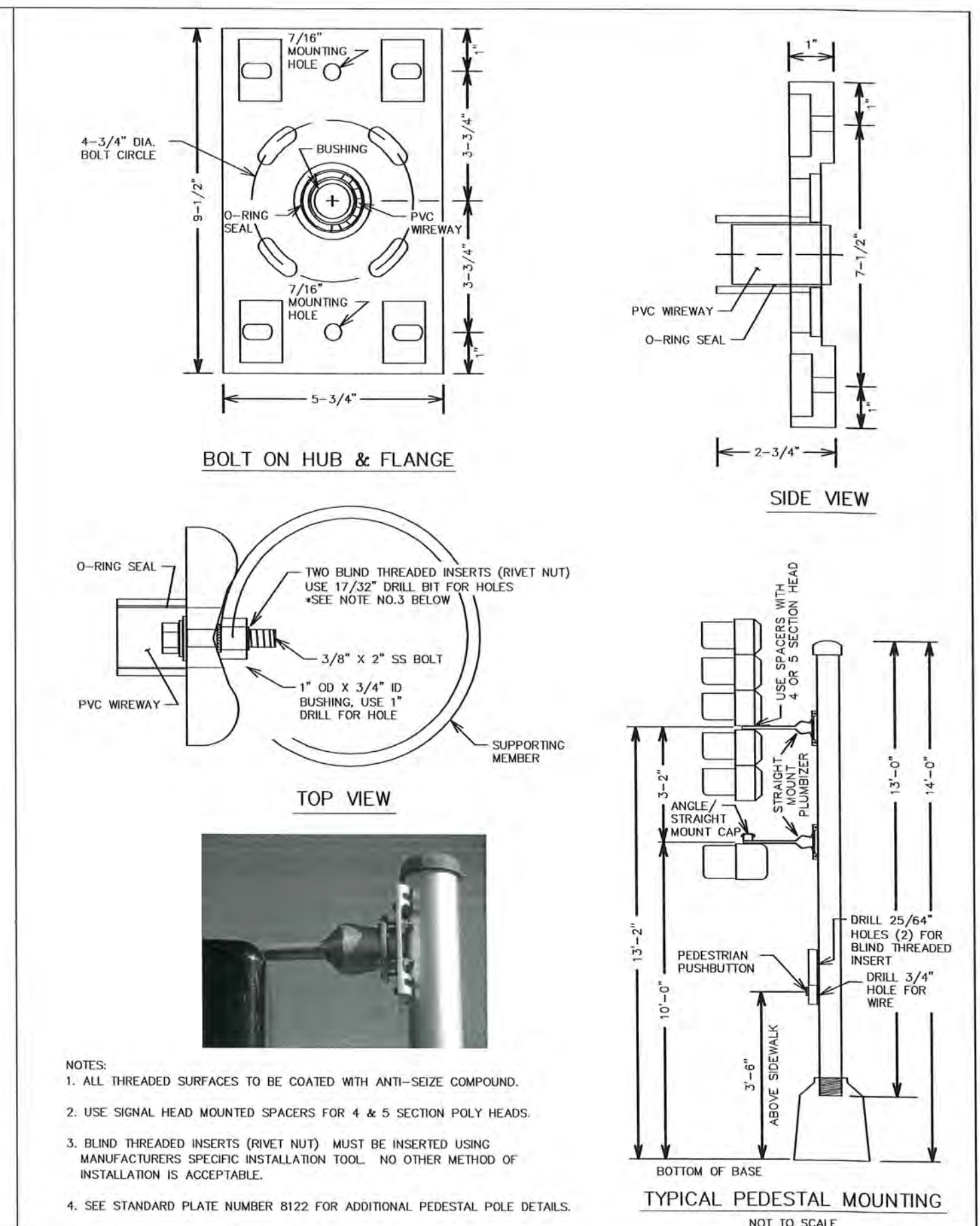
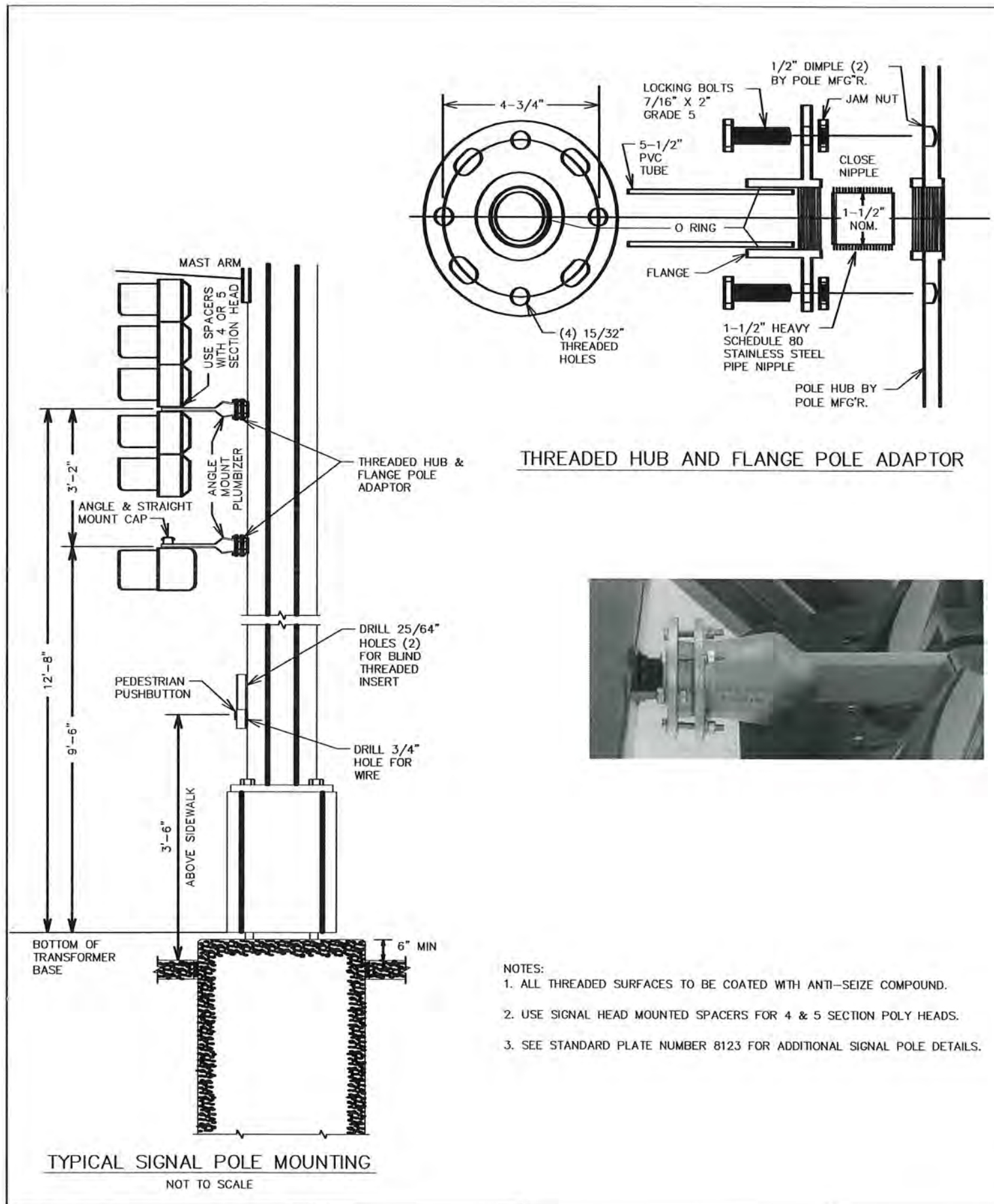
I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: \_\_\_\_\_ LIC. NO. \_\_\_\_\_ DATE: \_\_\_\_\_

*STATEMENT OF ESTIMATED QUANTITIES*

ITEM NO.	DESCRIPTION	UNIT	TOTAL ESTIMATED QUANTITIES
2021.501	MOBILIZATION	LUMP SUM	1
2104.509	REMOVE SIGNAL SYSTEM "B"	SIG SYS	1
2565.511	TRAFFIC CONTROL SIGNAL SYSTEM "A"	SIG SYS	1
2565.601	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1
2565.601	TRAFFIC CONTROL INTERCONNECTION	LUMP SUM	1

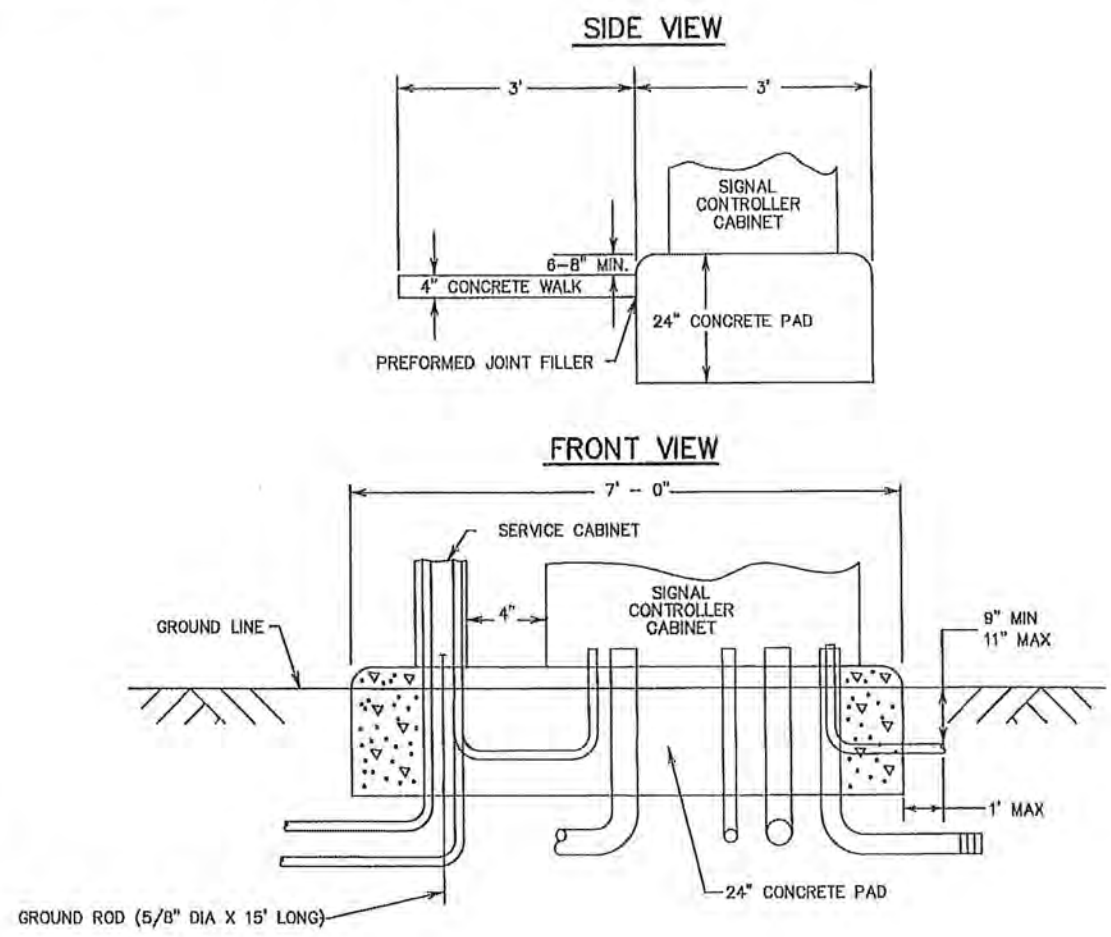
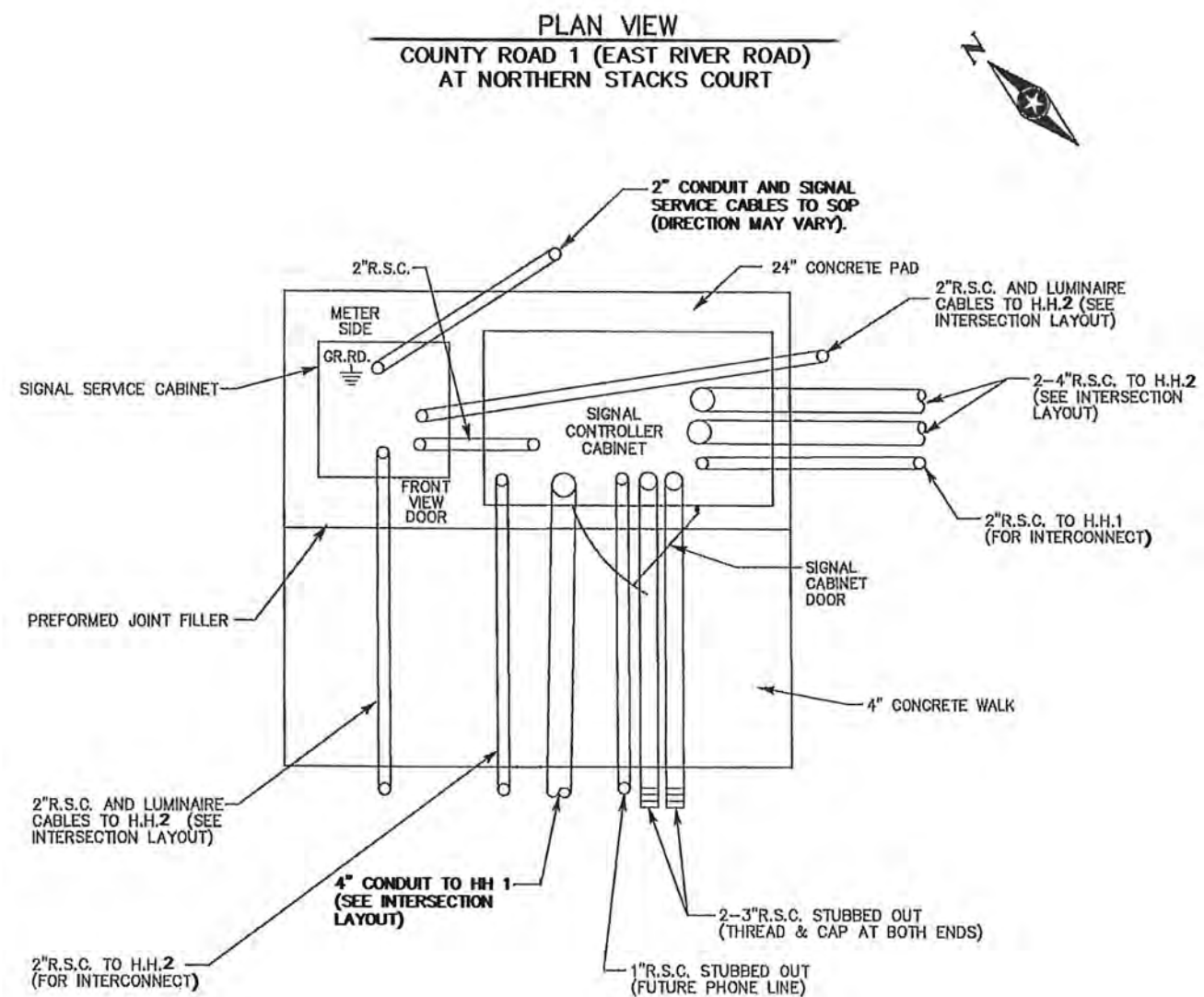
BY	DATE	REVISIONS	SYSTEM ID: XXXXX _____ T.E. XXXX METER ADDRESS: _____ MASTER ID: _____ T.E. _____	STATEMENT OF ESTIMATED QUANTITIES CO. HWY 1 AND NORTHERN STACKS CT. IN FRIDLEY, ANOKA COUNTY	DRAWN BY: EDP    CKD BY: SJM    DATE: 4/9/15 CERTIFIED BY:  LIC. NO. 22428    DATE: 4/9/15 <small>LICENSED PROFESSIONAL ENGINEER</small>
SHEET NO. 2 OF 18 SHEETS					



BY	DATE	REVISIONS	SYSTEM ID: XXXXX _____ T.E. XXXX	POLE MOUNT DETAIL	DRAWN BY: EDP	CKD BY: SUM	DATE: 4/9/15
			METER ADDRESS: _____		CERTIFIED BY: <i>[Signature]</i>	LIC. NO. 22428	DATE: 4/9/15
			MASTER ID: _____ T.E. _____		SHEET NO. 3 OF 18 SHEETS		

# TYPICAL PAD WITH CONTROLLER CABINET AND SERVICE CABINET

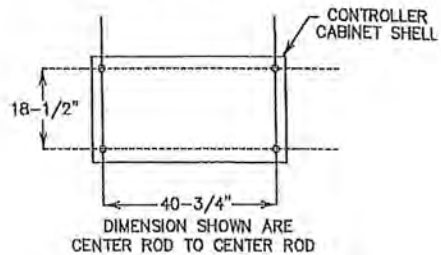
SEE INTERSECTION LAYOUT FOR CABLE INFORMATION (NOT TO SCALE)



### NOTES:

1. THE ANCHOR RODS, NUTS AND WASHERS FOR THE COUNTY FURNISHED CONTROLLER AND CABINET SHALL BE FURNISHED BY THE COUNTY AND INSTALLED BY THE CONTRACTOR.
2. THE UPPER PART OF THE NEW EQUIPMENT PAD SHALL BE BEVELLED OR CHAMFERED IN A NEAT MANNER AS DIRECTED BY THE ENGINEER.
3. THE TOP OF THE CONDUITS SHALL BE THREADED AND CAPPED AFTER INSTALLATION (UNTIL CABLES ARE INSTALLED).
4. CONDUIT SHALL PROJECT A MINIMUM OF 2" ABOVE THE CONCRETE AND SHALL BE LOCATED INSIDE THE CABINET WHERE DIRECTED BY THE ENGINEER, BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
5. CONCRETE MIX 3A32 OR EQUAL SHALL BE USED FOR THE EQUIPMENT PAD AND SIDEWALK.
6. CONDUITS WITH BOTH ENDS TERMINATING WITHIN THE PAD SHALL NOT BE INSTALLED BELOW THE CONCRETE.
7. THE EXACT LOCATION OF CONDUITS WITHIN THE PAD SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.
8. ANCHOR RODS SHALL PROJECT A MINIMUM OF 3" ABOVE THE CONCRETE BUT SHALL NOT INTERFERE WITH THE CABINET FUNCTIONS (SUPPORTING MEMBERS, ETC.).
9. CONTRACTOR SHALL PROVIDE MINIMUM 4-INCH CLEARANCE BETWEEN CONTROLLER AND SERVICE CABINETS ON THE EQUIPMENT PAD FOUNDATION AS SHOWN.

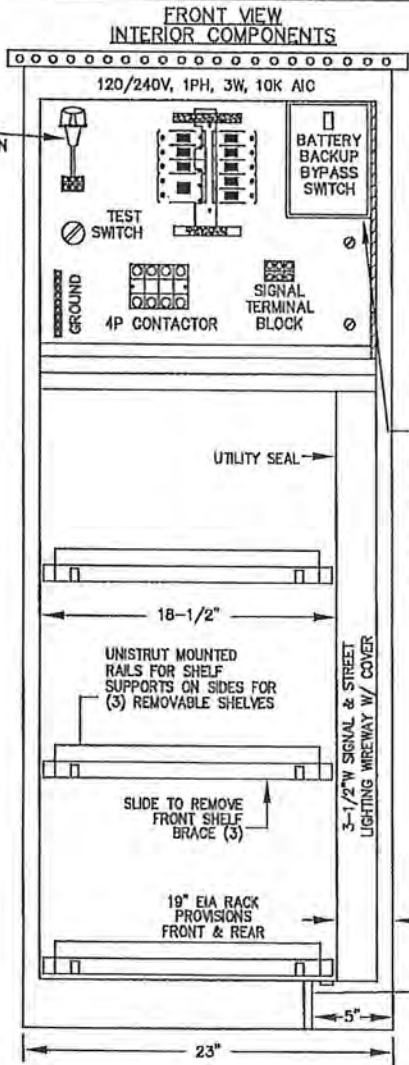
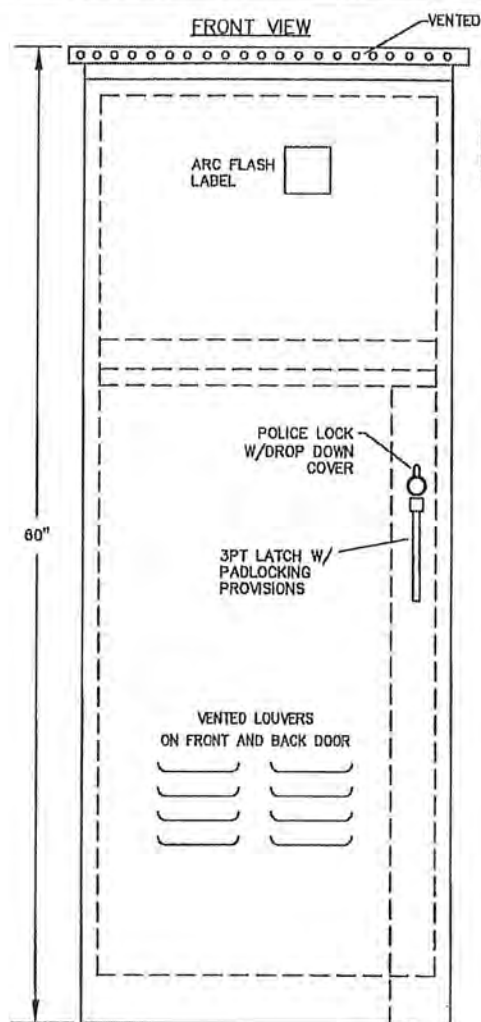
### CONTROLLER CABINET TYPE "P" & "R" BOLT PATTERN



BY	DATE	REVISIONS	SYSTEM ID: XXXXX	T.E. XXXX
			METER ADDRESS: _____	
			MASTER ID: _____	T.E. _____

EQUIPMENT PAD LAYOUT  
(TYPE SSB SERVICE CABINET)  
CO. HWY 1 AND NORTHERN STACKS CT.  
IN FRIDLEY, ANOKA COUNTY

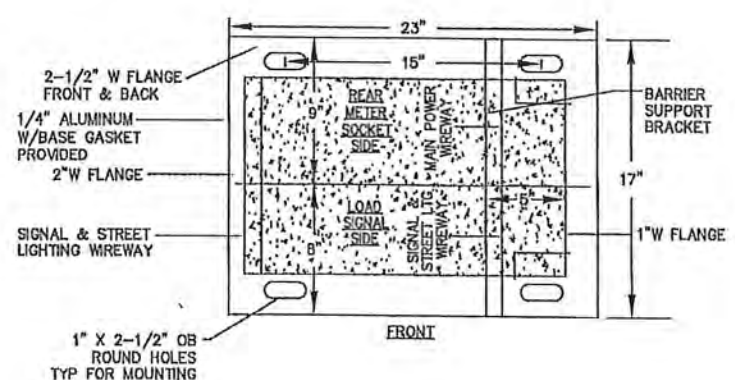
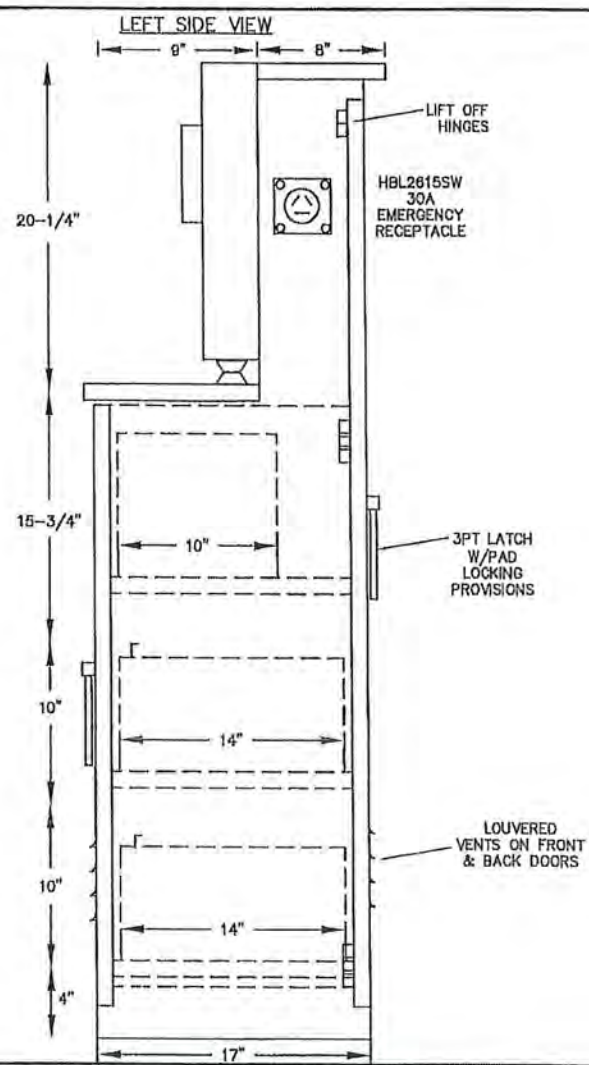
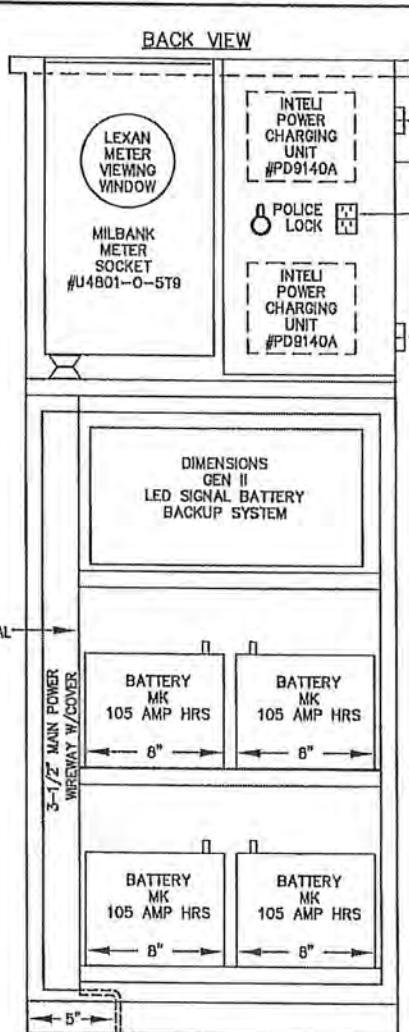
CERTIFIED BY: <i>[Signature]</i> LICENSED PROFESSIONAL ENGINEER	DRAWN BY: EDP	CKD BY: SJM	DATE: 4/9/15
	LIC. NO. 22428	DATE: 4/9/15	
SHEET NO. 4 OF 18 SHEETS			



- LOAD CENTER  
CIRCUIT  
BREAKERS  
ITE "Q" TYPE  
1-100A/2P  
SERVICE  
DISCONNECT  
1-20A/1P GFCI  
RECEPTACLE  
1-15/1P  
PHOTOCELL  
4-15A/1P  
LUMINAIRES  
1-30A/1P  
SIGNAL SVC  
1 SPARE

CUTOUT PROVISIONS IN  
DEAD FRONT FOR BATTERY  
BACKUP BYPASS SWITCH

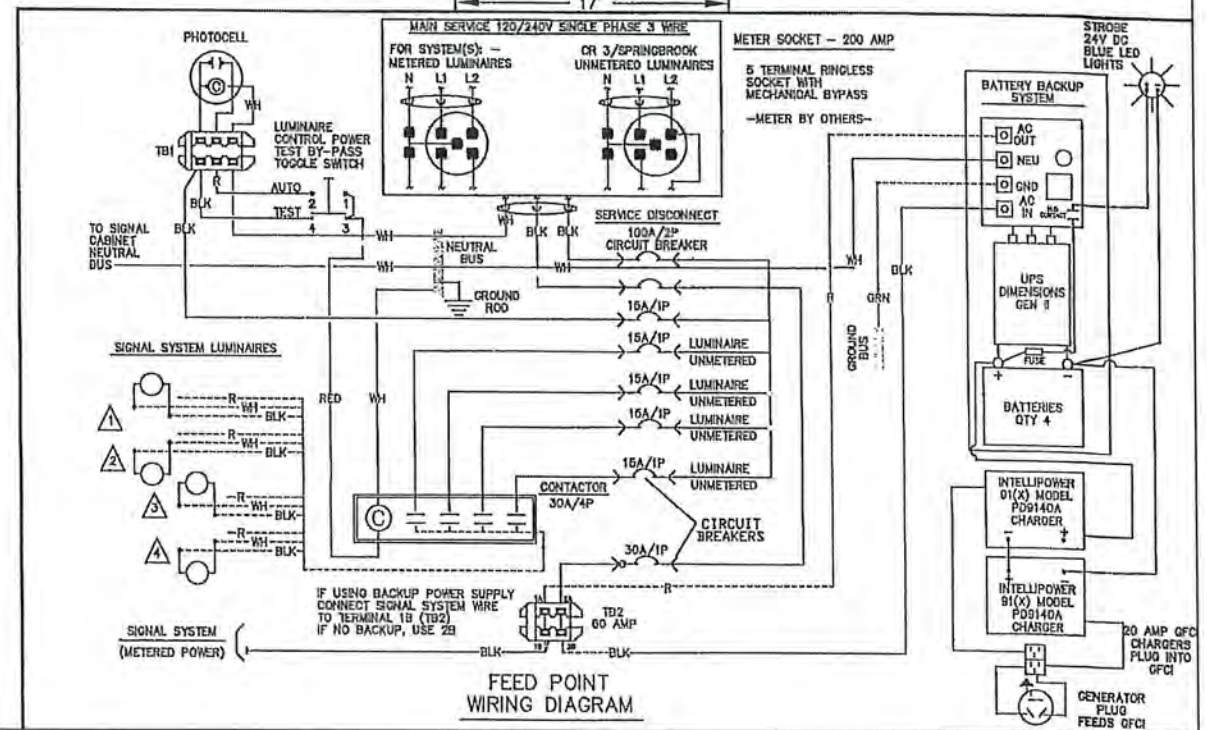
INTERIOR  
COMPONENTS  
BEHIND HINGED  
DEAD FRONT  
W/ (2)-1/4  
TURN LATCHES



**CABINET CONSTRUCTION**

- NEMA 3R
- 1/8" ALUMINUM 5052-H32
- ANODIZED 30 MINUTE CLEAR
- NEOPRENE GASKETED DOORS
- NON-CORRODING HARDWARE
- ETL LISTED IN ACCORDANCE W/UL508A

SEE SPECIAL PROVISIONS AND STATEMENT OF ESTIMATED QUANTITIES REGARDING SEPARATE PAY ITEM FOR FURNISHING & INSTALLING NEW BATTERY BACK-UP SIGNAL SERVICE CABINET.



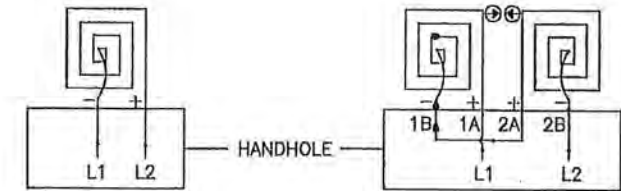
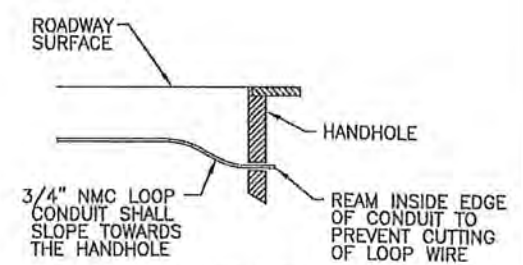
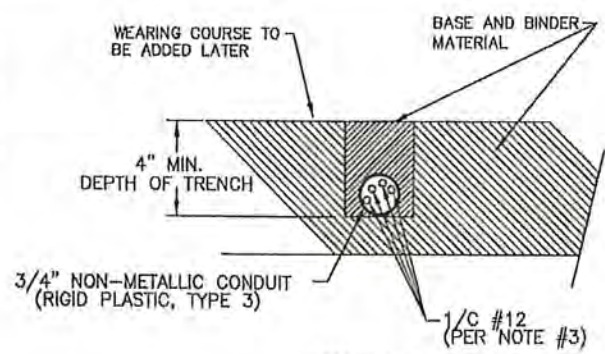
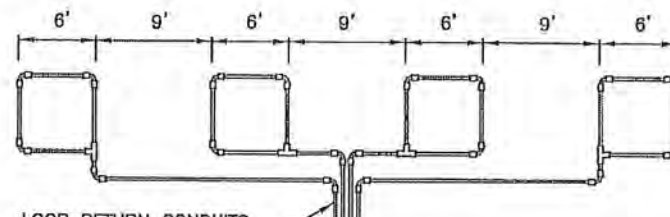
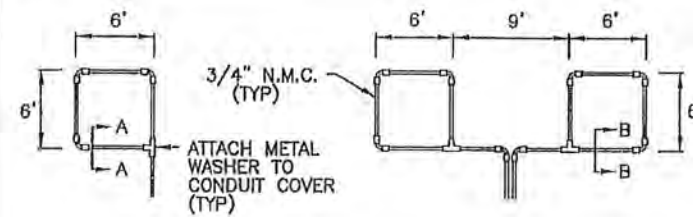
BY	DATE	REVISIONS	SYSTEM ID: XXXXX	T.E. XXXX
			METER ADDRESS: _____	
			MASTER ID: _____	T.E. _____

SERVICE CABINET DETAILS  
CO. HWY 1 AND NORTHERN STACKS CT.  
IN FRIDLEY, ANOKA COUNTY

CERTIFIED BY *[Signature]*  
LICENSED PROFESSIONAL ENGINEER

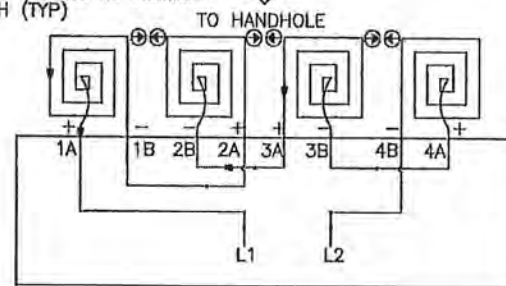
DRAWN BY: EDP    CKD BY: SJM    DATE: 4/9/15

UC. NO. 22428    DATE: 4/9/15



LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

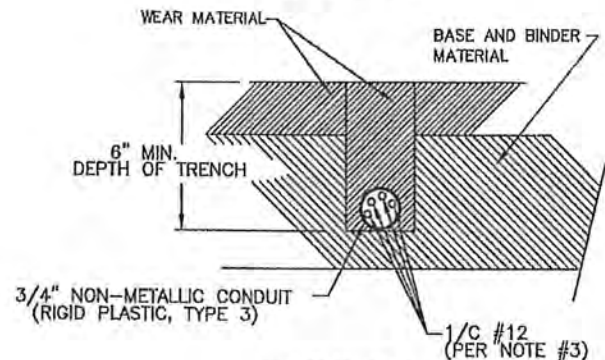
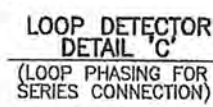
- L1 TO 1A
- 1B TO 2A
- 2B TO L2



LOOP CONNECTIONS SHALL BE LABELED AND SPLICED IN THE HANDHOLE AS FOLLOWS:

- L1 TO 1A
- 1B TO 2A
- 2B TO 3A
- 3B TO 4A
- 4B TO L2

SPLICE CONTROL CABLE TO L1 & L2 IN HANDHOLE. ALL CONDUCTORS SHALL BE TAGGED IN HANDHOLE (1A, 1B, ECT)



**LOOP DETECTOR WIRING**

- 1) ALL CORNERS SHALL BE 90° CONDUIT BENDS.
- 2) CONNECT WIRES IN HANDHOLES USING SPLICE KIT METHOD DESCRIBED IN THE SPECIAL PROVISIONS.
- 3) LOOP DETECTOR WIRES SHALL BE #12 AWG CROSSED LINKED POLYETHYLENE (XLP). SEE SPECIAL PROVISIONS.
- 4) LOOP LEAD IN WIRES SHALL BE TWISTED A MIN. OF (6) TURNS PER FOOT THROUGH THE CONDUIT TO THE HANDHOLE.
- 5) NMC DESIGNATES NON-METALLIC CONDUIT (SPEC. 3803)
- 6) LOOPS 6' x 6' THRU 6' x 14' SHALL HAVE (4) TURNS.
- 7) LOOPS 6' x 15' AND LARGER SHALL HAVE (2) TURNS.

**LEGEND OF SYMBOLS**

CONTROLLER AND SERVICE EQUIP. NO's	Ⓐ
SIGNAL BASE NO.	Ⓛ
SIGNAL FACE NO.	Ⓜ
LUMINAIRE NO.	Ⓝ
CONTROLLER AND CABINET	Ⓢ
CONTROLLER AND CABINET - IN PLACE	Ⓢ
HANDHOLE	Ⓜ
HANDHOLE - IN PLACE	Ⓜ
RIGID STEEL CONDUIT (RSC)	—
RIGID STEEL CONDUIT (RSC) - IN PLACE	—
SIGNAL FACE WITH BACKGROUND SHIELD	→
SIGNAL FACE W/O BACKGROUND SHIELD	→
SIGNAL FACE - IN PLACE	→
PEDESTRIAN INDICATORS	→
PEDESTRIAN INDICATORS - IN PLACE	→
PEDESTRIAN PUSH BUTTONS ON PEDESTAL OR POLE	→
PEDESTRIAN PUSH BUTTON STATION	→
TRAFFIC SIGNAL PEDESTAL	Ⓢ
TRAFFIC SIGNAL PEDESTAL - INPLACE	Ⓢ
TRAFFIC SIGNAL POLE AND MAST ARM	Ⓢ
TRAFFIC SIGNAL POLE AND MAST ARM - IN PLACE	Ⓢ
STREET LIGHT POLE AND LUMINAIRE	Ⓢ
STREET LIGHT POLE AND LUMINAIRE - IN PLACE	Ⓢ
MAST ARM AND LUMINAIRE	Ⓢ
MAST ARM AND LUMINAIRE - INPLACE	Ⓢ
WOOD POLE	Ⓢ
WOOD POLE - IN PLACE	Ⓢ
SOURCE OF POWER	Ⓢ
RAILROAD SIGNAL - IN PLACE	Ⓢ
RIGHT OF WAY LINE	—
CENTERLINE	—
EDGE OF ROADWAY	—
SHOULDERLINE	—
CURB LINE	—
STOP BAR	—
EMERGENCY VEHICLE PREEMPTION DETECTOR	→

**ABBREVIATIONS**

3-1(EG)	SIGNAL HEAD PHASE "3" - NO. "1"	P2-1(EG)	PED INDICATION PHASE "2" - NO. "1"
BR. GR.	BARE GROUND	PB	PUSH BUTTON
CH. SW.	CHECK SWITCH	PB2-1(EG)	PUSH BUTTON PHASE "2" - NO. "1"
CLR	CLEAR	PEC	PHOTOELECTRIC CELL
D2-1(EG)	DETECTOR PHASE "2" - NO. "1"	PED	PEDESTRIAN
DWK	DON'T WALK	R	RED
EQG	EQUIPMENT GROUND	R&S	REMOVE AND SALVAGE
EVP	EMERGENCY VEHICLE PRE-EMPTION	RLTA	RED LEFT TURN ARROW
F&I	FURNISH AND INSTALL	RRTA	RED RIGHT TURN ARROW
FL	FLASH/FLASHING	RSC	RIGID STEEL CONDUIT
G	GREEN	SOP	SOURCE OF POWER
QLTA	GREEN LEFT TURN ARROW	SPR	SPARE
GRN	GREEN	ST, LHT	STREET LIGHT
GR. R	GROUND ROD	STA	STATION
GRTA	GREEN RIGHT TURN ARROW	SW	SWITCH
GTHA	GREEN THRU ARROW	SWD	SWITCHED
HH	HANDHOLE	S&R	SALVAGE AND REINSTALL
HPS	HIGH PRESSURE SODIUM	TDW	TELEPHONE DROP WIRE
JB	JUNCTION BOX	WLK	WALK
LUM	LUMINAIRE	YEL	YELLOW
NEU	NEUTRAL	YLTA	YELLOW LEFT TURN ARROW
NMC	NONMETALLIC CONDUIT	YRTA	YELLOW RIGHT TURN ARROW
		YTHA	YELLOW THRU ARROW

**CONDUCTOR COLOR CODE**

R	RED
O	ORANGE
BL	BLUE
WH	WHITE
R/BLK	RED WITH BLACK TRACER
O/BLK	ORANGE WITH BLACK TRACER
BL/BLK	BLUE WITH BLACK TRACER
WH/BLK	WHITE WITH BLACK TRACER
BLK	BLACK
BLK/WH	BLACK WITH WHITE TRACER
G/BLK	GREEN WITH BLACK TRACER
G	GREEN

**TRAFFIC SIGNAL TABULATION**

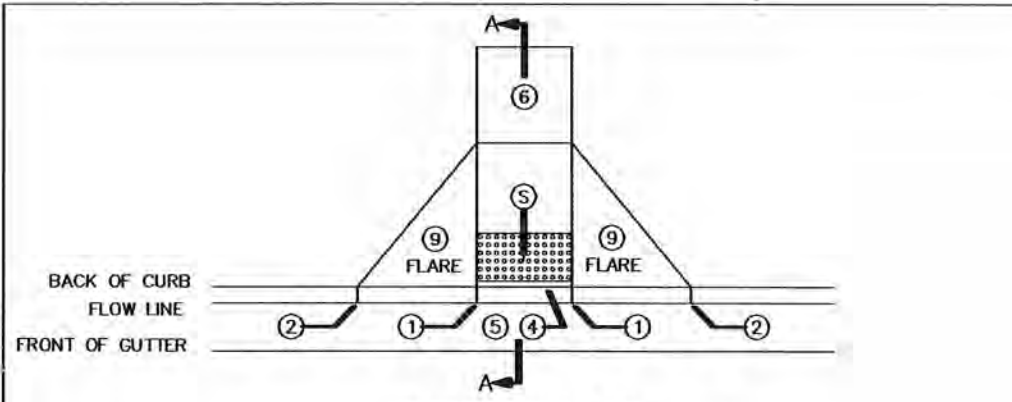
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2565	TRAFFIC CONTROL SIGNAL SYSTEM	SIG. SYS.	1
2565	EMERGENCY VEHICLE PREEMPTION SYSTEM	LUMP SUM	1
2565	TRAFFIC CONTROL INTERCONNECTION	LUMP SUM	1
2565	SIGNAL SERVICE CABINET	EACH	1
2565	TEMPORARY SIGNAL SYSTEM	SYSTEM	1

**TRAFFIC SIGNAL STANDARD PLATES**

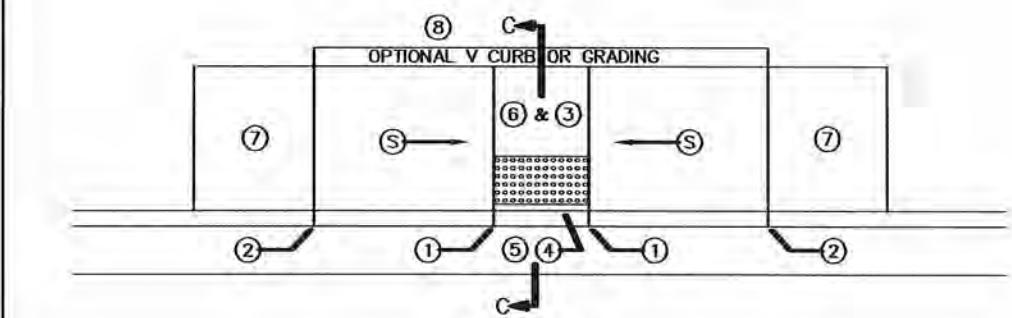
THESE TRAFFIC SIGNAL STANDARD PLATES AS APPROVED BY FHWA SHALL APPLY:

PLATE NO.	DESCRIPTION
* 8110 E	TRAFFIC SIGNAL BRACKETING (POLE MOUNTED)
* 8111 E	TRAFFIC SIGNAL BRACKETING (PEDESTAL MOUNTED) (3 SHEETS)
* 8112 G	PEDESTAL FOUNDATION (TRAFFIC CONTROL SIGNALS)
* 8114 A	PVC HANDHOLE/PULLBOX (NO VEHICLE LOAD) (2 SHEETS)
* 8118 D	SERVICE EQUIPMENT & POLE-TRAFFIC CONTROL SIGNALS
* 8119 C	GROUND MOUNTED CABINET FOUNDATION
* 8121 H	TRANSFORMER BASE & POLE BASE PLATE (2 SHEETS)
* 8122 F	PEDESTAL & PEDESTAL BASE (FOR TRAFFIC CONTROL SIGNALS SUPPORT)
* 8123 G	POLE & MAST ARM-LUMINAIRES & TRAFFIC LIGHTS ASSEMBLY (2 SHEETS)
* 8126 K	POLE FOUNDATION (PAGO & PA100)
* 8129 A	SHIM AND WASHER (TRAFFIC CONTROL SIGNALS AND ROADWAY LIGHTING)

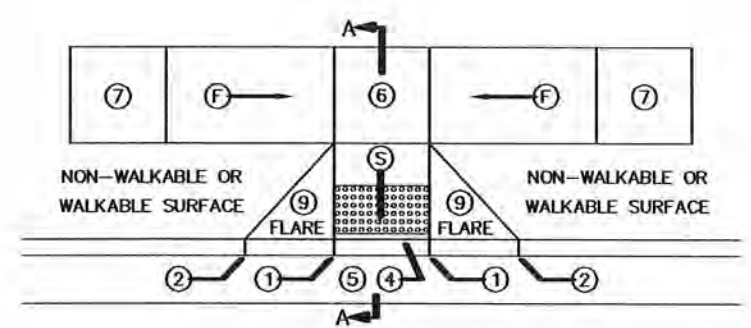
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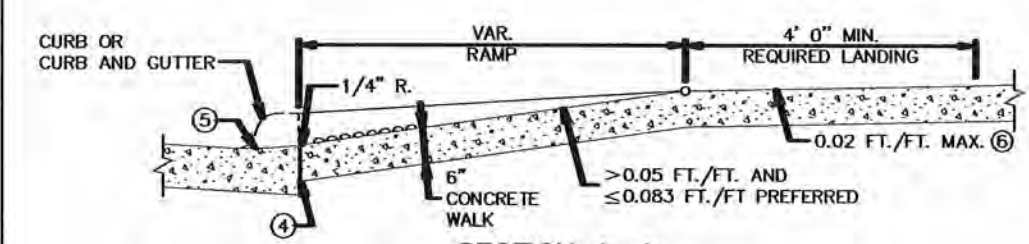
PERPENDICULAR



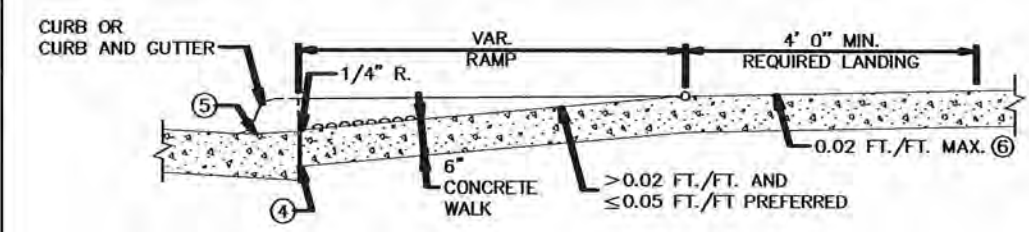
PARALLEL



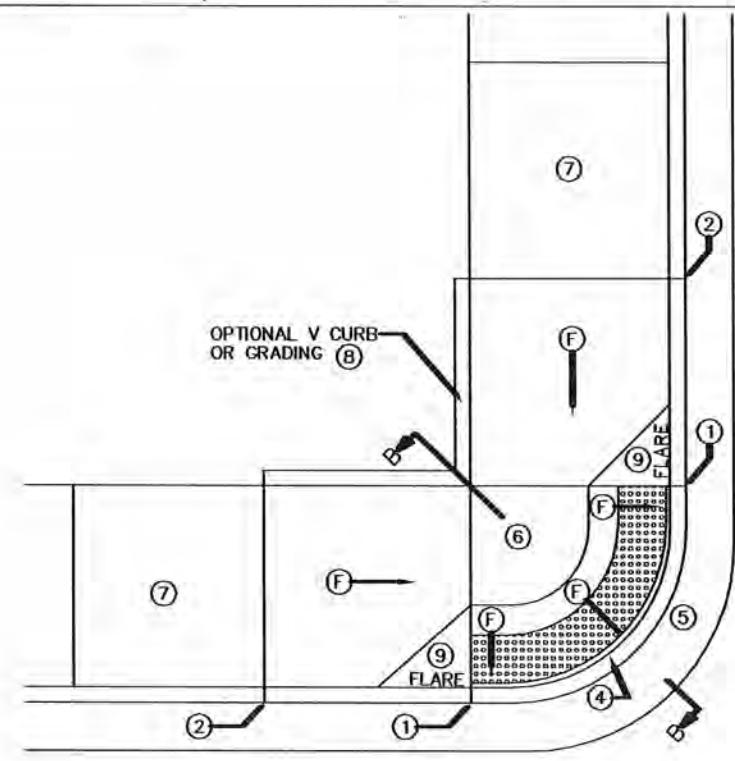
TIERED PERPENDICULAR



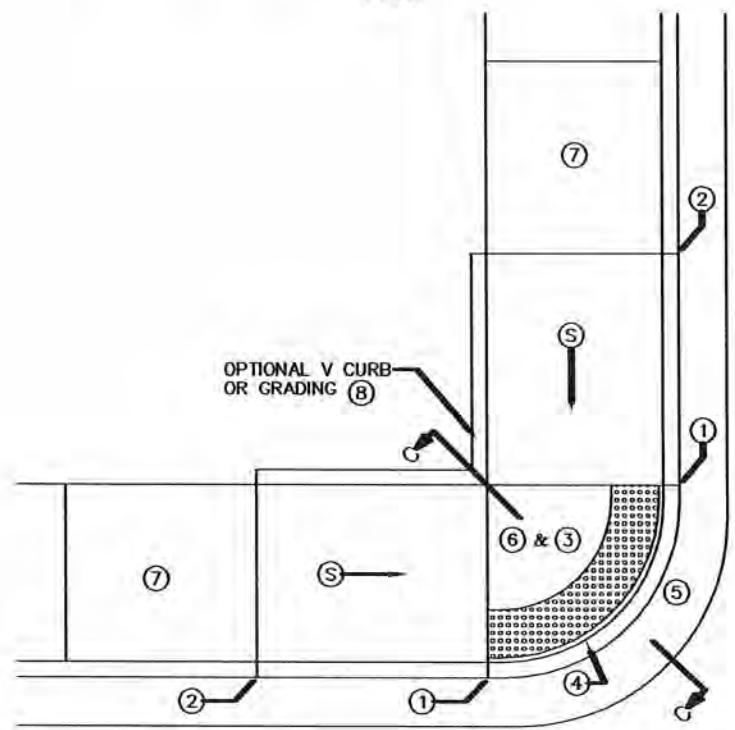
SECTION A-A  
PERPENDICULAR/TIERED/DIAGONAL



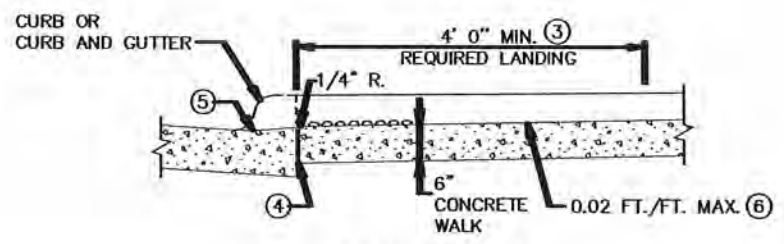
SECTION B-B  
FAN



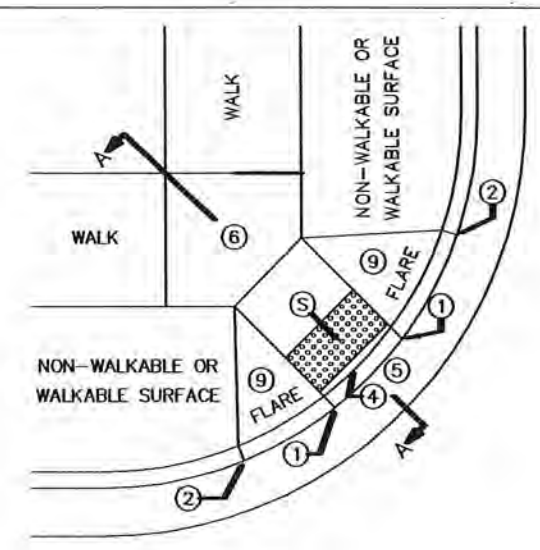
FAN



DEPRESSED CORNER



SECTION C-C  
PARALLEL/DEPRESSED CORNER



DIAGONAL 10

NOTES:

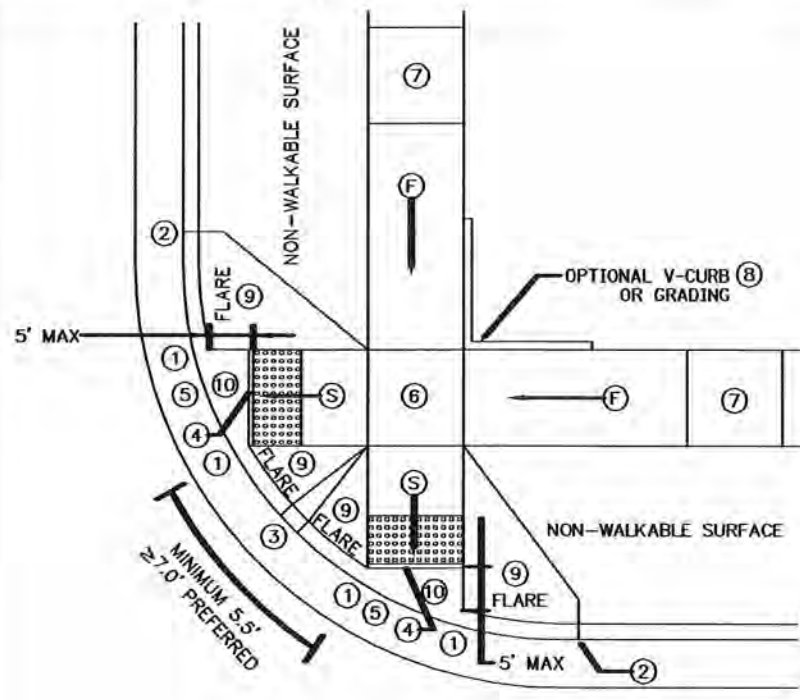
- LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.
- INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.
- SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30° OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.
- CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.
- ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.
- ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES. TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.
- 4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.
- SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ DETECTABLE WARNINGS MAY BE PART OF 4' X 4' LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
- ④ 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.
- ⑤ SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
- ⑥ 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
- ⑦ IF LONGITUDINAL SLOPE IS GREATER THAN 5.0%, 4' X 4' MIN. LANDING WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
- ⑧ V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. SEE SHEET 5 OF 5.
- ⑨ SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
- ⑩ DIAGONAL RAMPS SHOULD ONLY BE USED AFTER ALL OTHER CURB RAMP TYPES HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.

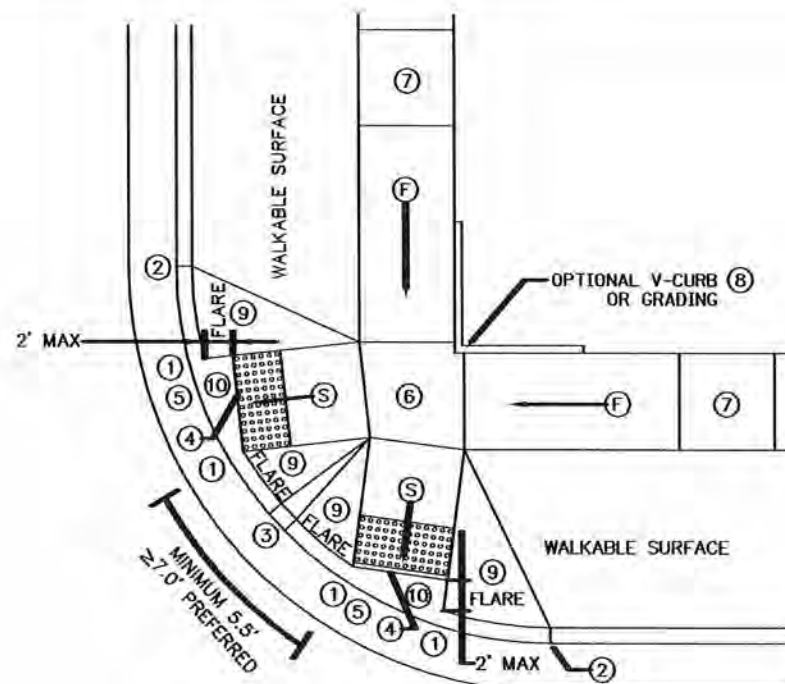
LEGEND	
THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.	
(S)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%
(F)	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

STANDARD PLAN SHEET NO.  
5-297.250 (1 OF 5)  
STANDARD APPROVED:  
APRIL 10, 2013

PEDESTRIAN CURB RAMP DETAILS

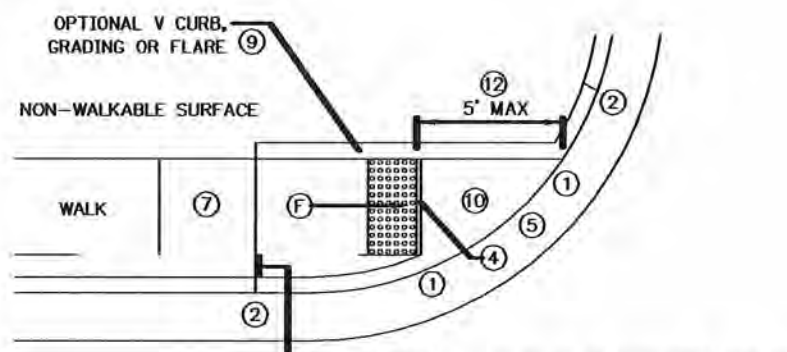


ADJACENT TO NON-WALKABLE SURFACE



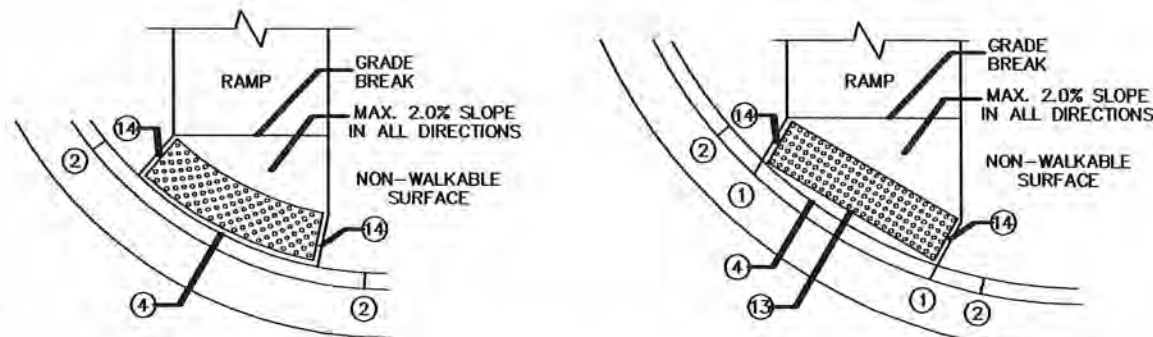
ADJACENT TO WALKABLE SURFACE

COMBINED DIRECTIONAL 15

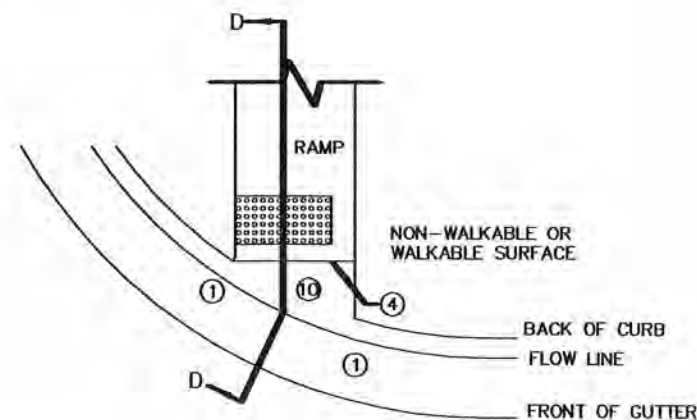


ONE-WAY DIRECTIONAL

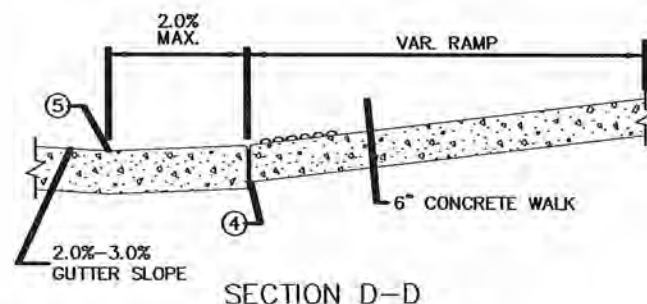
IF NON-CONCRETE BLVD. IS CONSTRUCTED AND IS LESS THAN 2' IN WIDTH AT TOP OF CURB TRANSITION, PAVE CONCRETE RAMP WIDTH TO ADJACENT BACK OF CURB.



DETECTABLE WARNING PLACEMENT WHEN SETBACK CRITERIA IS EXCEEDED



CURB FOR DIRECTIONAL RAMPS 11



SECTION D-D

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0% AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30° OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 5 WHEN LANDINGS ARE CAST SEPARATELY.

ALL SLOPES ARE ABSOLUTE, RATHER THAN RELATIVE TO SIDEWALK/ROADWAY GRADES.

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. SHARED USE PATHS SHALL HAVE DETECTABLE WARNING ACROSS THE ENTIRE WIDTH OF PATH WHEN THE PATH CROSSES A ROAD.

SEE STANDARD PLATE 7038 AND SHEET 4 OF 5 FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

- 1 0" CURB HEIGHT.
- 2 FULL CURB HEIGHT.
- 3 3" MINIMUM CURB HEIGHT, 4" PREFERRED.
- 4 1/2" PREFORMED JOINT FILLER MATERIAL AASHTO M 213. JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MIN. TO 6" MAX. FROM THE BACK OF CURB.
- 5 SEE PEDESTRIAN ACCESS ROUTE CURB AND GUTTER DETAIL FOR INFORMATION ON CONSTRUCTING CURB AND GUTTER AT CURB OPENINGS. SEE SHEET NO. 3 OF 5.
- 6 4' BY 4' MIN. LANDING WITH MAX. 2.0% SLOPE IN ALL DIRECTIONS.
- 7 IF LONGITUDINAL SLOPE IS GREATER THAN 5.0% 4' X 4' MIN. LANDING WITH MAX 2.0% SLOPE IN ALL DIRECTIONS REQUIRED.
- 8 V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
- 9 SEE SHEET 4 OF 5, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
- 10 MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
- 11 TO BE USED FOR ALL DIRECTIONAL RAMPS.
- 12 PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
- 13 RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
- 14 WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- 15 FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

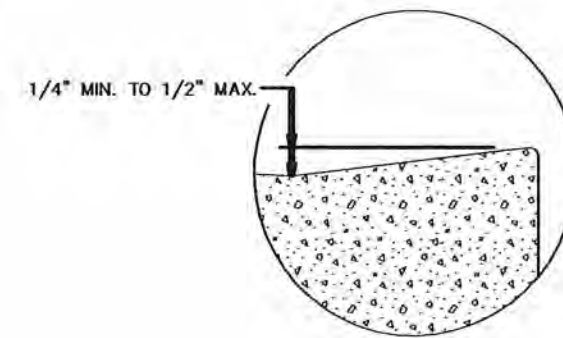
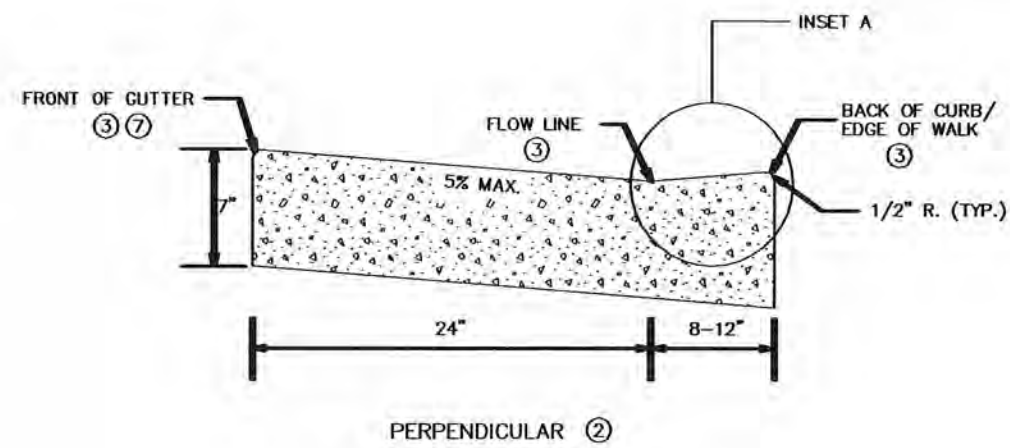
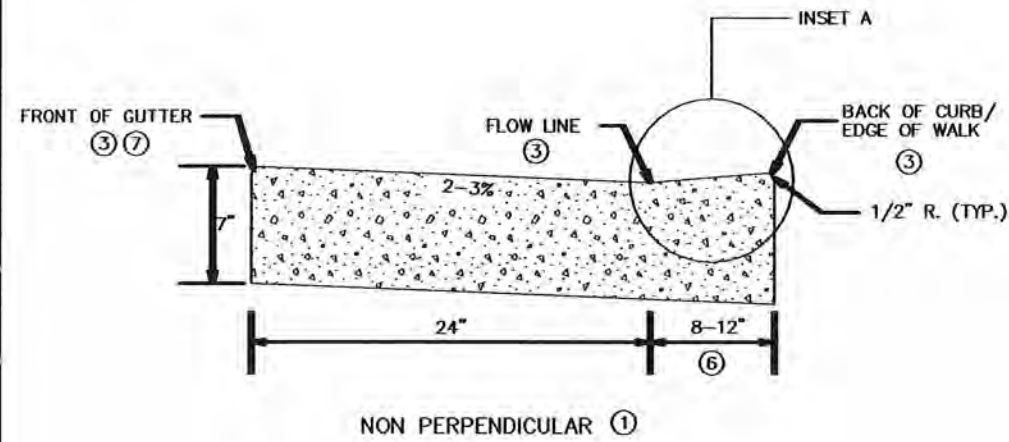
- S INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%
- F INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%

STANDARD PLAN SHEET NO.  
5-297.250 (2 OF 5)

STANDARD APPROVED:  
APRIL 10, 2013

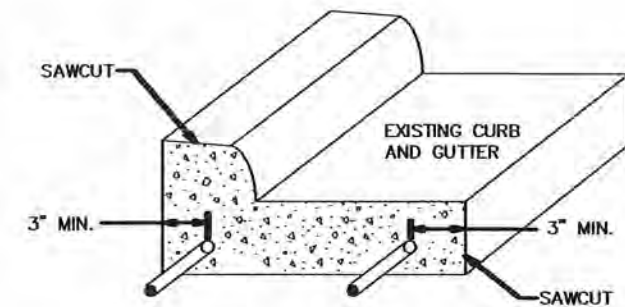
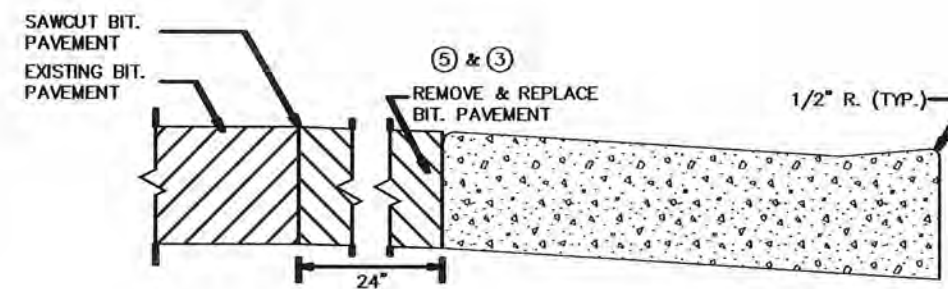
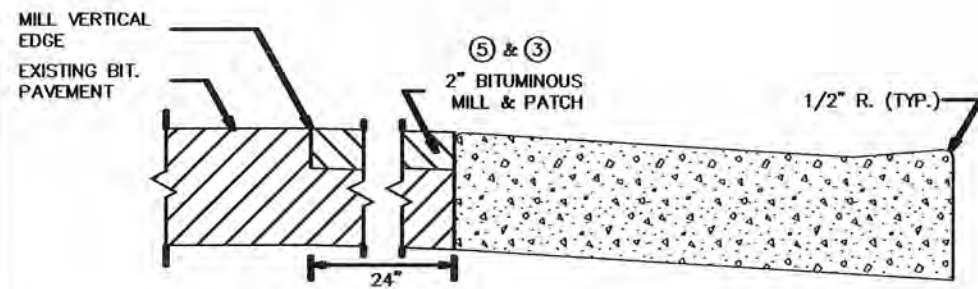
PEDESTRIAN CURB RAMP DETAILS



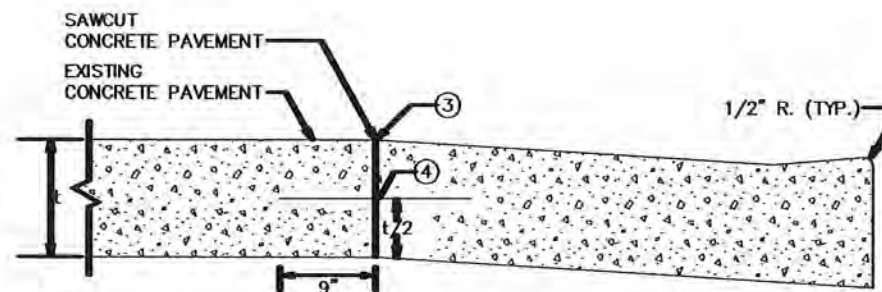
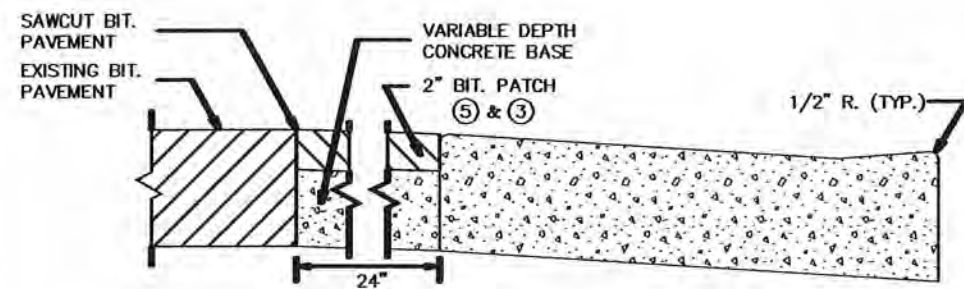


INSET A

PEDESTRIAN ACCESS ROUTE  
CURB & GUTTER DETAIL



CURB AND GUTTER <sup>(8)</sup>  
REINFORCEMENT  
FOR USE ON CURB RAMP RETROFITS



PAVEMENT TREATMENT OPTIONS  
IN FRONT OF CURB & GUTTER  
FOR USE ON CURB RAMP RETROFITS

**NOTES:**

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.  
NO PONDING SHALL BE PRESENT IN THE PAR.  
ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

- ① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS, DEPRESSED CORNERS, & ONE WAY AND COMBINED DIRECTIONALS.
- ② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
- ③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4\".
- ④ DRILL AND GROUT NO. 4 EPOXY-COATED 18\" LONG TIE BARS AT 30\" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT.
- ⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
- ⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.
- ⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PAR GUTTER SHALL NOT BE OVERLAID.
- ⑧ WHERE PLAN SPECIFIES, DRILL AND GROUT 2 - NO. 4 X 12\" LONG REINFORCEMENT BARS (EPOXY COATED).

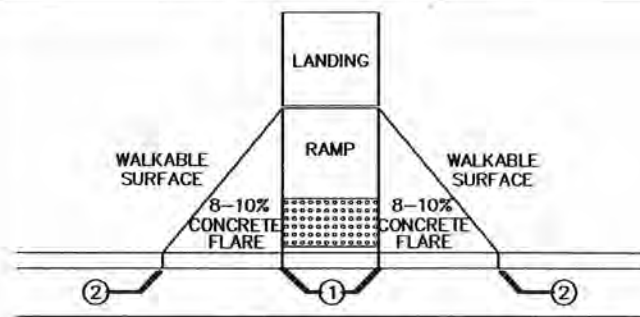
STANDARD PLAN SHEET NO.  
5-297.250 (3 OF 5)

STANDARD APPROVED:  
APRIL 10, 2013

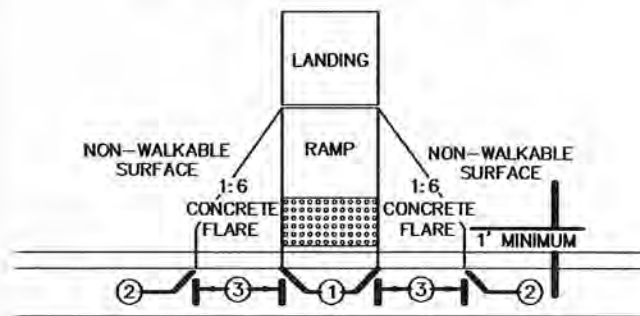
PEDESTRIAN CURB RAMP DETAILS

COUNTY ROAD 1 (EAST RIVER ROAD) PROJECT

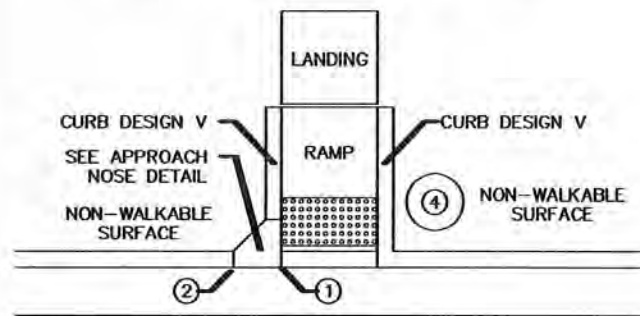
SHEET NO. 9 OF 18 SHEETS



PAVED FLARES ADJACENT TO WALKABLE SURFACE

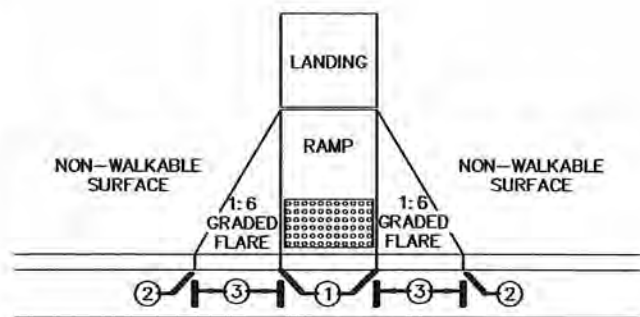


PAVED FLARES ADJACENT TO NON-WALKABLE SURFACE



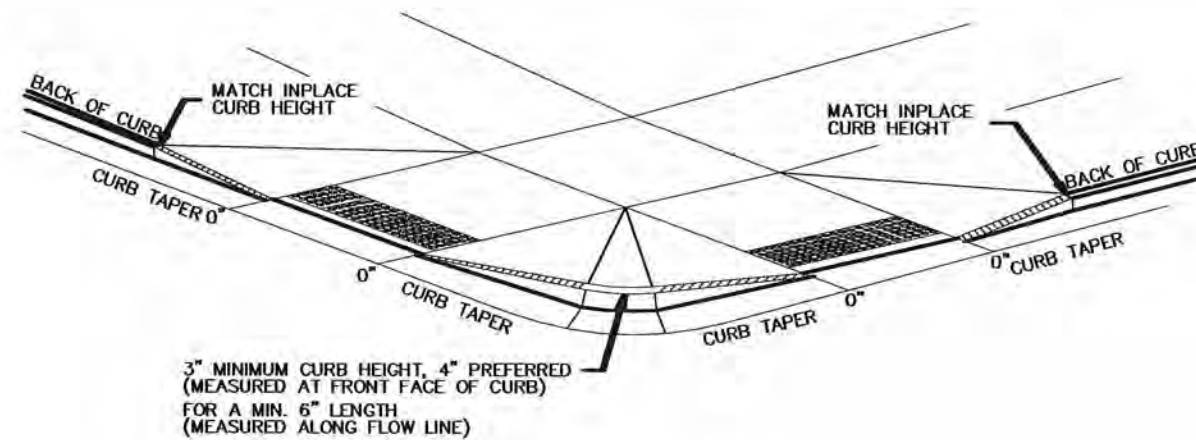
DIRECTION OF TRAFFIC

RETURNED CURB

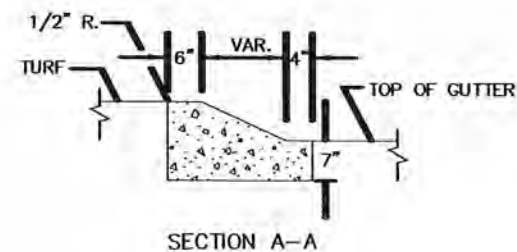
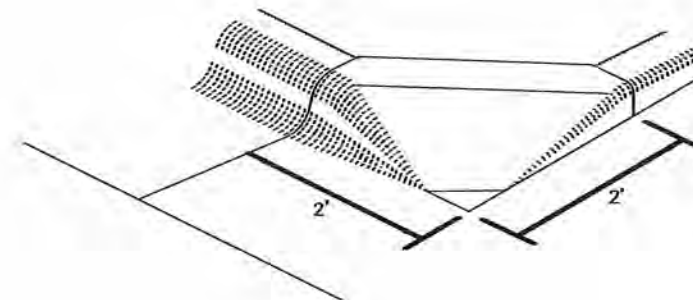


GRADED FLARES

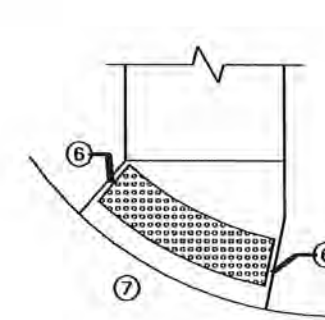
TYPICAL SIDE TREATMENT OPTIONS ⑤



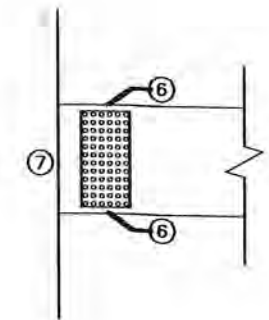
DETECTABLE EDGE WITH CURB AND GUTTER ⑧



APPROACH NOSE DETAIL FOR DOWNSTREAM SIDE OF TRAFFIC



RADIAL DETECTABLE WARNING



RECTANGULAR DETECTABLE WARNING

DETECTABLE EDGE WITHOUT CURB AND GUTTER

NOTES:

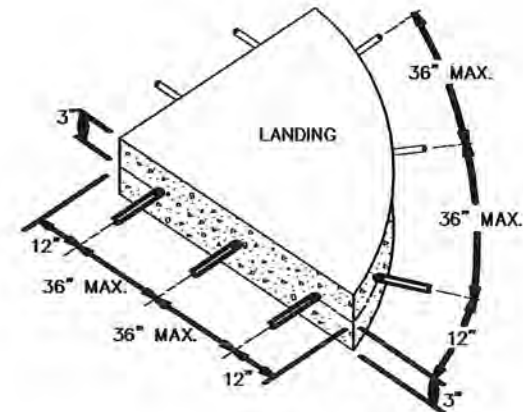
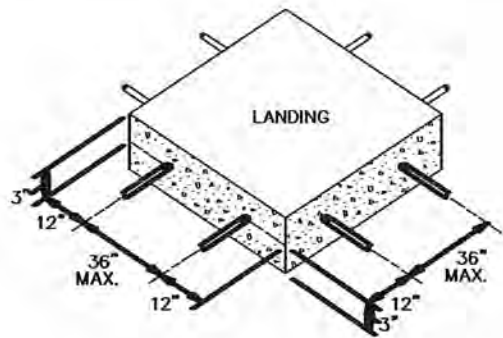
SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING. WHETHER A SURFACE IS WALKABLE OR NOT SHALL BE DETERMINED BY THE ENGINEER. CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

- ① 0" CURB HEIGHT.
- ② FULL CURB HEIGHT.
- ③ 2' - 3' FLARE.
- ④ IMMOVABLE OBJECT OR OBSTRUCTION.
- ⑤ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED ON ALL RAMPS AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
- ⑥ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
- ⑦ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF ROADWAY TO PROVIDE VISUAL CONTRAST.
- ⑧ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.

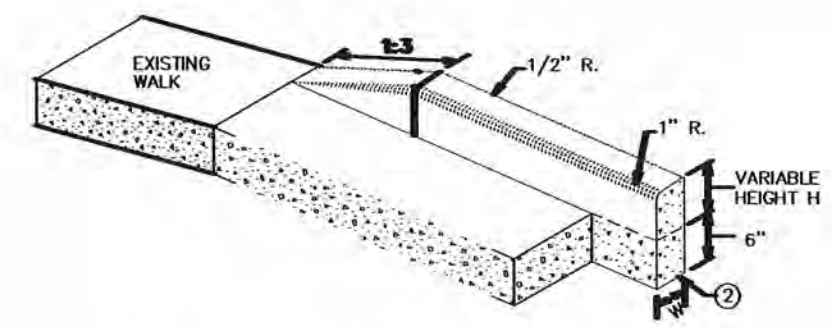
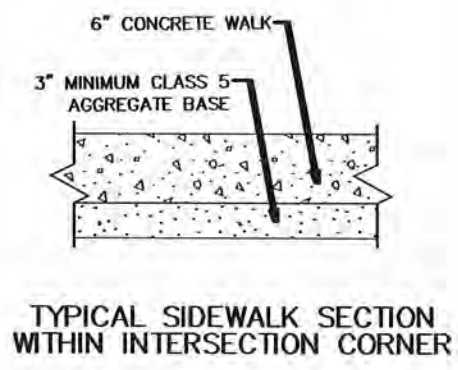
STANDARD PLAN SHEET NO.  
5-297.250 (4 OF 5)

STANDARD APPROVED:  
APRIL 10, 2013

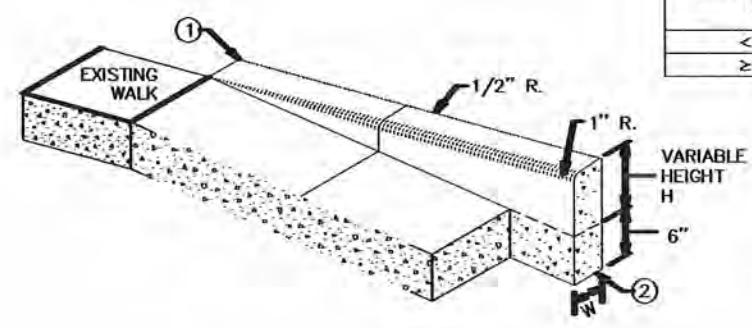
PEDESTRIAN CURB RAMP DETAILS



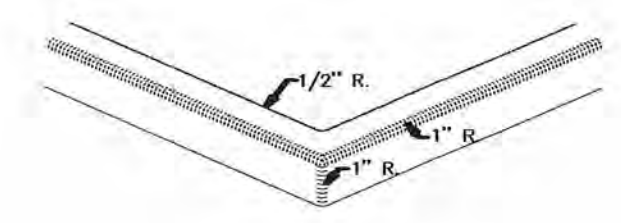
SIDEWALK REINFORCEMENT ⑤ ⑥



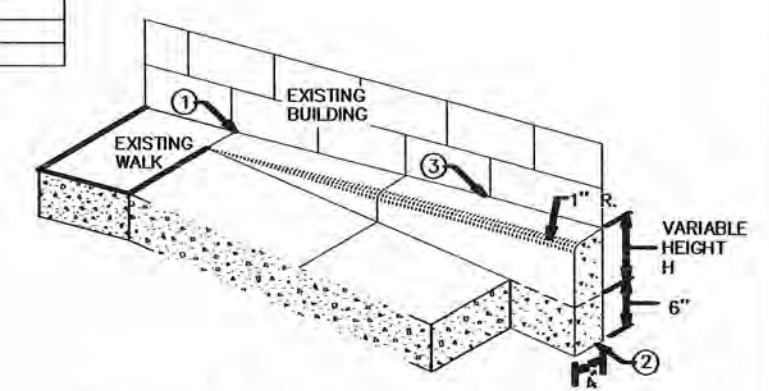
V CURB ADJACENT TO LANDSCAPE  
CURB WITHIN SIDEWALK LIMITS



V CURB ADJACENT TO LANDSCAPE  
CURB OUTSIDE SIDEWALK LIMITS

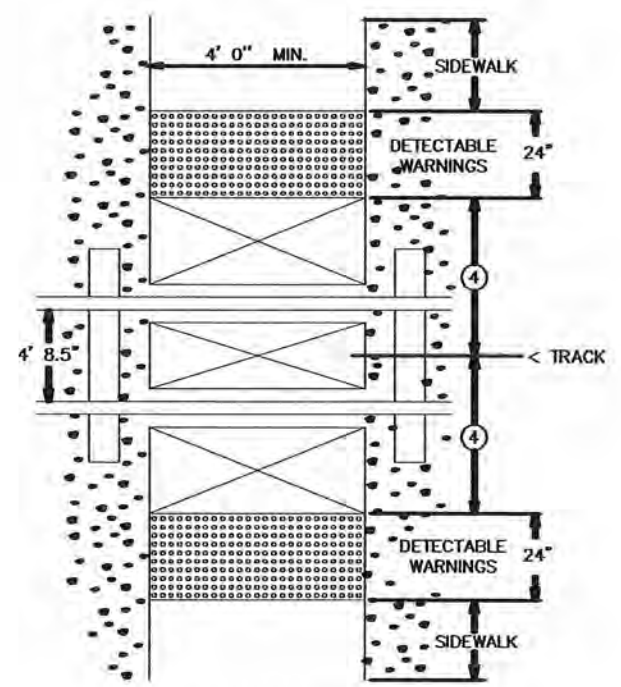


V CURB INTERSECTION

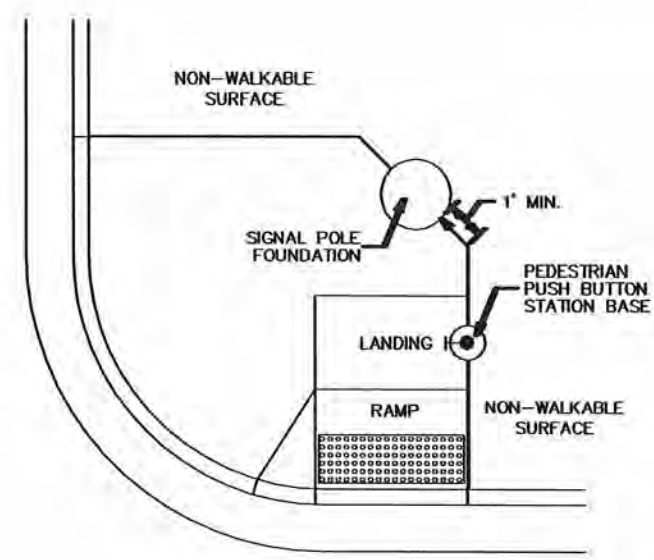


V CURB ADJACENT TO BUILDING  
OR BARRIER

CONCRETE CURB DESIGN V	
CURB HEIGHT H	CURB WIDTH W
< 6"	4"
≥ 6"	6"



RAILROAD CROSSING  
PLAN VIEW



CONCRETE WALK EDGES ADJACENT  
TO CONCRETE STRUCTURES

**NOTES:**

- ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.
- WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.
- V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.
- V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.
- ① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
- ② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
- ③ EDGE BETWEEN NEW V CURB AND INPLACE STRUCTURE SHALL BE SEALED AND BOND BREAKER SHALL BE USED BETWEEN EXISTING STRUCTURE AND PLACED V-CURB.
- ④ EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 15' MAXIMUM FROM THE CENTERLINE OF THE TRACK. WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 17" - 19" FROM THE APPROACHING SIDE OF THE GATE ARM.
- ⑤ WHEN PLAN SPECIFIES, DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS AT 36" MAX. CENTER TO CENTER (EPOXY COATED).
- ⑥ TO ENSURE RAMP AND LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS MAY BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET WHEN LANDINGS ARE CAST SEPARATELY.

STANDARD PLAN SHEET NO.  
5-297.250 (5 OF 5)  
STANDARD APPROVED:  
APRIL 10, 2013

PEDESTRIAN CURB RAMP DETAILS

### SIGNAL HEAD CHART

FACE	R	Y	FYA	G
2-1, 2-2, 2-3	●	●		●
4-1, 4-2, 4-3	●	●	←	●
5-1, 5-2	←	←		
6-1, 6-2, 6-3	●	●		●

-ALL SIGNAL INDICATIONS SHALL BE 12" LED  
 -ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONITE WITH BACKGROUND SHIELDS  
 -FYA DENOTES FLASHING YELLOW ARROW

\*SEE PAGE 15 FOR INTERCONNECT LAYOUT

- 4** PA100 POLE FOUNDATION  
 TYPE PA100-A-35-D30-9 (DAVIT AT 350 DEG)  
 1-PAIR SWING AWAY HINGES  
 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0°  
 1-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12°  
 1-ANGLE MOUNT SIGNAL AT 90 DEG  
 1-ANGLE MOUNT C. D. PED HEADS AT 90 DEG
- \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (PHASES 6)  
 LUMINAIRE-30" LED  
 1-PED PB AND SIGN (LT ARROW) (PB6-2)  
 1-TYPE D SIGN (D-1) (SEE SIGN DETAILS)  
 3" RSC CONDUIT TO HH 8:  
 2-12/C #14  
 1-3/C #14  
 1-3/C #14 (LUM)  
 1-2/C #14  
 1-3/C #20  
 1-1/C #6 INS. GR.

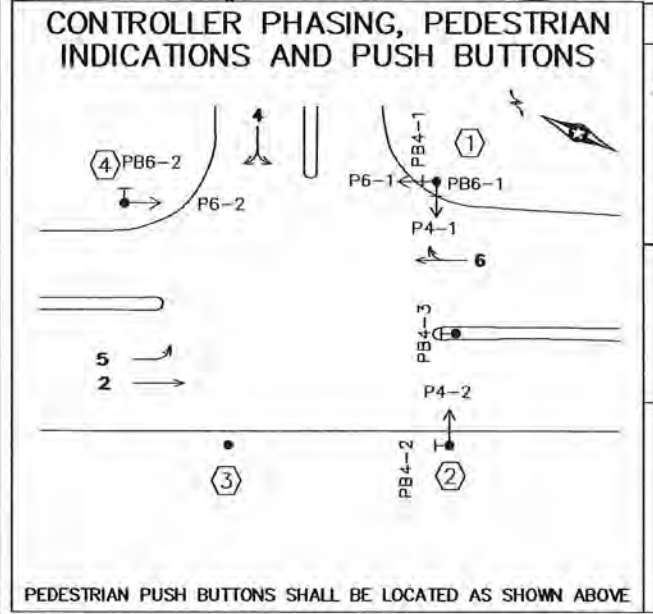
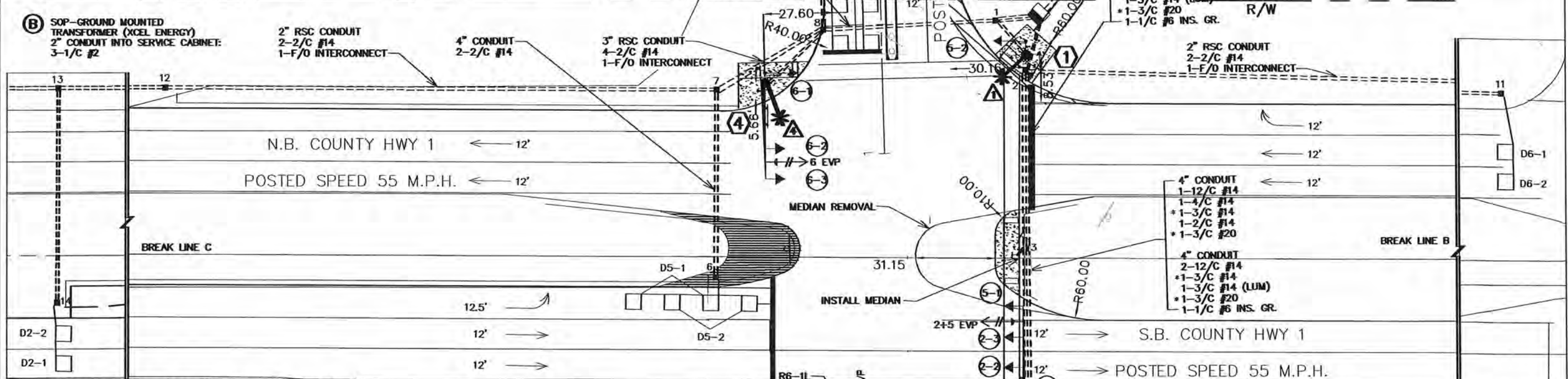
- 1** PA100 POLE FOUNDATION  
 TYPE PA100-A-D30-9 (DAVIT AT 350 DEG)  
 2-STRAIGHT MOUNT C. D. PED HEADS AT 0 & 90 DEG  
 1-ANGLE MOUNT SIGNAL AT 90 DEG  
 LUMINAIRE-30" LED  
 1-PED PB AND SIGN (RT ARROW) (PB4-1)  
 1-PED PB AND SIGN (LT ARROW) (PB6-1)  
 3" RSC CONDUIT TO HH 1:  
 1-12/C #14  
 2-4/C #14  
 1-3/C #14 (LUM)  
 2-2/C #14  
 1-1/C #6 INS. GR.

- A** EQUIPMENT PAD (SEE DETAIL SHEET)  
 SERVICE CABINET (SSB)  
 CONTROLLER AND CABINET (COUNTY FURNISHED)
- B** SOP-GROUND MOUNTED TRANSFORMER (XCEL ENERGY)  
 2" CONDUIT INTO SERVICE CABINET:  
 3-1/C #2

### LOOP DETECTOR CHART

NUMBER	SIZE (FT)	LOCATION	FUNCTION
D5-1	2-6x6	20 & 50	CALL & EXTEND
D5-2	2-6x6	5 & 35	CALL & EXTEND
D4-1	1-6x6	120	EXTEND ONLY
D4-2	1-6x6	120	CALL & EXTEND
D4-3	2-6x6	5 & 20	DELAY CALL IMMEDIATE EXTEND
D4-4	2-6x6	5 & 20	CALL
D2-1, D2-2	6x6	475	CALL & EXTEND
D6-1, D6-2	6x6	475	CALL & EXTEND

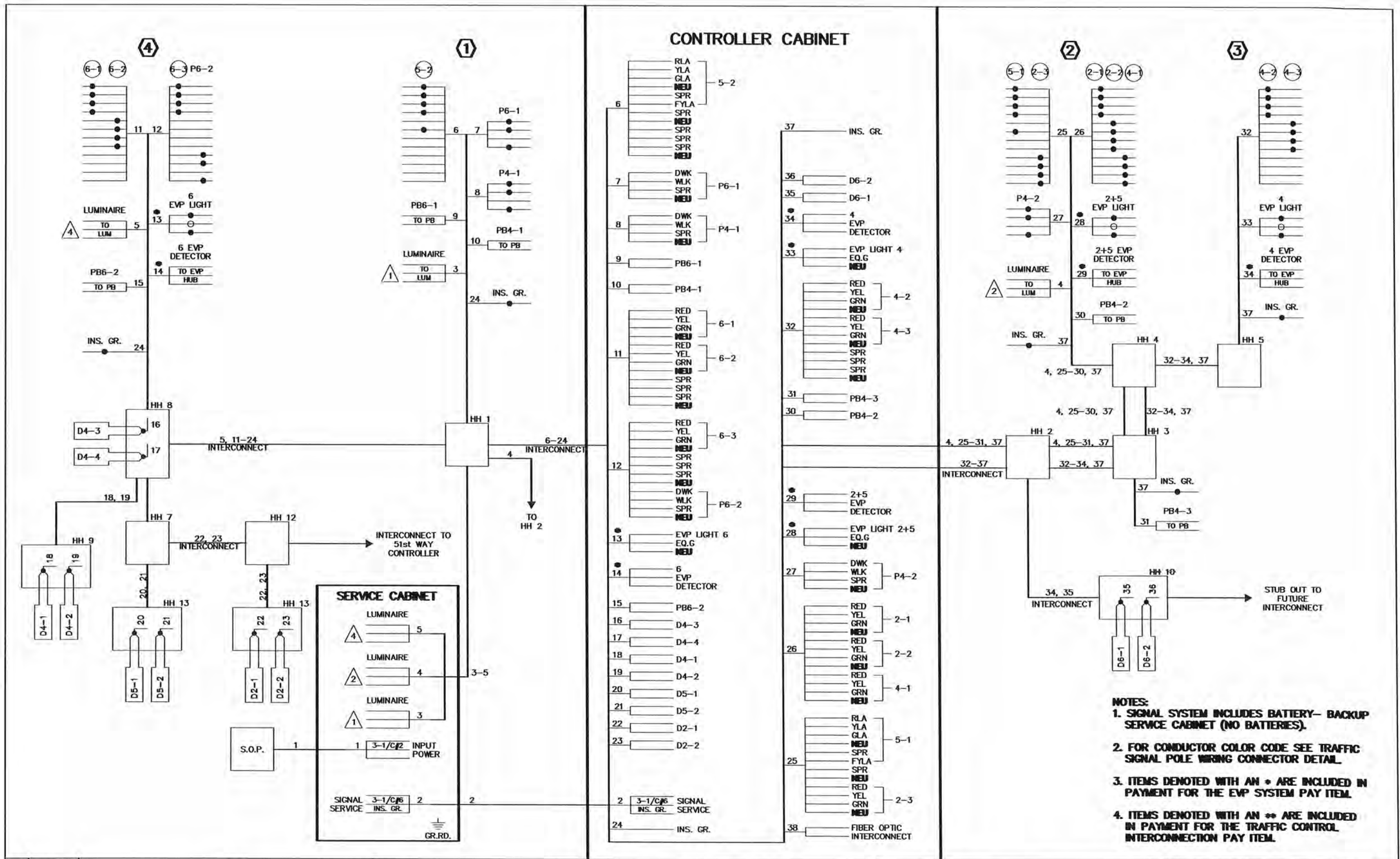
-ALL LOOP DETECTORS SHALL BE PVC UNLESS NOTED OTHERWISE  
 -LOCATION: DISTANCE FROM CROSSWALK/STOP BAR IN FEET



- 3** PA100 POLE FOUNDATION  
 TYPE PA100-A-45  
 1-PAIR SWING AWAY HINGES  
 1-ANGLE MOUNT SIGNAL OVERHEAD AT 0°  
 1-ANGLE MOUNT SIGNAL AT 180 DEG
- \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (LED) (PHASE 4)  
 1-TYPE D SIGN (D-2) (SEE SIGN DETAILS)  
 3" RSC CONDUIT TO HH 5:  
 1-12/C #14  
 \* 1-3/C #14  
 \* 1-3/C #20  
 1-1/C #6 INS. GR.
- ### SIGNAL SYSTEM OPERATION
- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
  - NORMAL OPERATION IS 8 PHASE, WITH PHASE 5 BEING FLASHING YELLOW ARROWS BY TIME OF DAY.
  - PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.

- 2** PA100 POLE FOUNDATION  
 TYPE PA100-A-45-D30-9 (DAVIT AT 350 DEG)  
 1-PAIR SWING AWAY HINGES  
 2-STRAIGHT MOUNT SIGNALS OVERHEAD AT 12° AND 24°  
 1-ANGLE MOUNT SIGNAL AT 0 DEG  
 1-ANGLE MOUNT C. D. PED HEAD AT 0 DEG
- \* 1-ONE WAY EVP DETECTOR AND CONFIRMATORY LIGHT (LED) (PHASES 2+5)  
 1-PED PB AND SIGN (LT ARROW) (PB4-2)  
 LUMINAIRE-30" LED  
 1-R10-X12 SIGN ADJACENT TO HEAD (5-1)  
 1-TYPE D SIGN (D-1) (SEE SIGN DETAILS)  
 3" RSC CONDUIT TO HH 4:  
 2-12/C #14  
 1-4/C #14  
 \* 1-3/C #14  
 \* 1-3/C #14 (LUM)  
 1-2/C #14  
 \* 1-3/C #20  
 1-1/C #6 INS. GR.

- ### NOTES:
- SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED MATERIALS.
  - THE EXACT LOCATION OF HANDHOLES, POLES, LOOP DETECTORS AND EQUIPMENT PAD, SHALL BE VERIFIED IN THE FIELD BY ANOKA COUNTY TRAFFIC OFFICE PERSONNEL.
  - THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM.
  - FOR TYPE D SIGNS SEE DETAIL SHEET. ALL SIGNS REQUIRED ARE INCIDENTAL.
  - FOR PAVEMENT MARKINGS SEE DETAIL SHEET. PAVEMENT MARKINGS ARE INCIDENTAL.
  - FOR CONSTRUCTION OF PEDESTRIAN CURB RAMPS, CONCRETE WALK AND MEDIAN WORK SEE DETAIL SHEET.
  - THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
  - ALL NEW CONDUIT SHALL CARRY 1/C #6 GREEN INSULATED GROUNDING CONDUCTOR AS SHOWN IN THE PLAN.
  - ITEMS DENOTED WITH AN \* ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.



- NOTES:**
1. SIGNAL SYSTEM INCLUDES BATTERY- BACKUP SERVICE CABINET (NO BATTERIES).
  2. FOR CONDUCTOR COLOR CODE SEE TRAFFIC SIGNAL POLE WIRING CONNECTOR DETAIL.
  3. ITEMS DENOTED WITH AN \* ARE INCLUDED IN PAYMENT FOR THE EVP SYSTEM PAY ITEM.
  4. ITEMS DENOTED WITH AN \*\* ARE INCLUDED IN PAYMENT FOR THE TRAFFIC CONTROL INTERCONNECTION PAY ITEM.

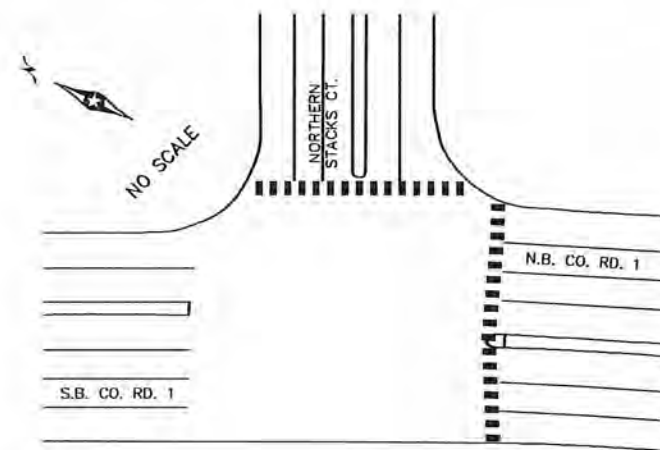
BY	DATE	REVISIONS

SYSTEM ID: XXXXX T.E. XXXX  
METER ADDRESS: \_\_\_\_\_  
MASTER ID: \_\_\_\_\_ T.E. \_\_\_\_\_

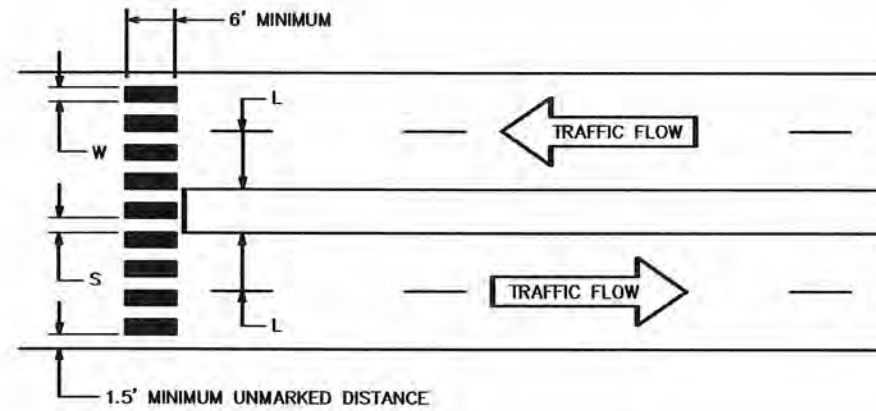
INTERSECTION LAYOUT  
TRAFFIC CONTROL SIGNAL SYSTEM  
CO. HWY 1 AND NORTHERN STACKS CT.  
IN FRIDLEY, ANOKA COUNTY

DRAWN BY: EDP CKD BY: SJM DATE: 4/9/15  
CERTIFIED BY: *[Signature]* LIC. NO. 22428 DATE: 4/9/15  
SHEET NO. 13 OF 18 SHEETS

PAVEMENT MARKINGS LAYOUT



PAVEMENT MARKINGS DETAIL



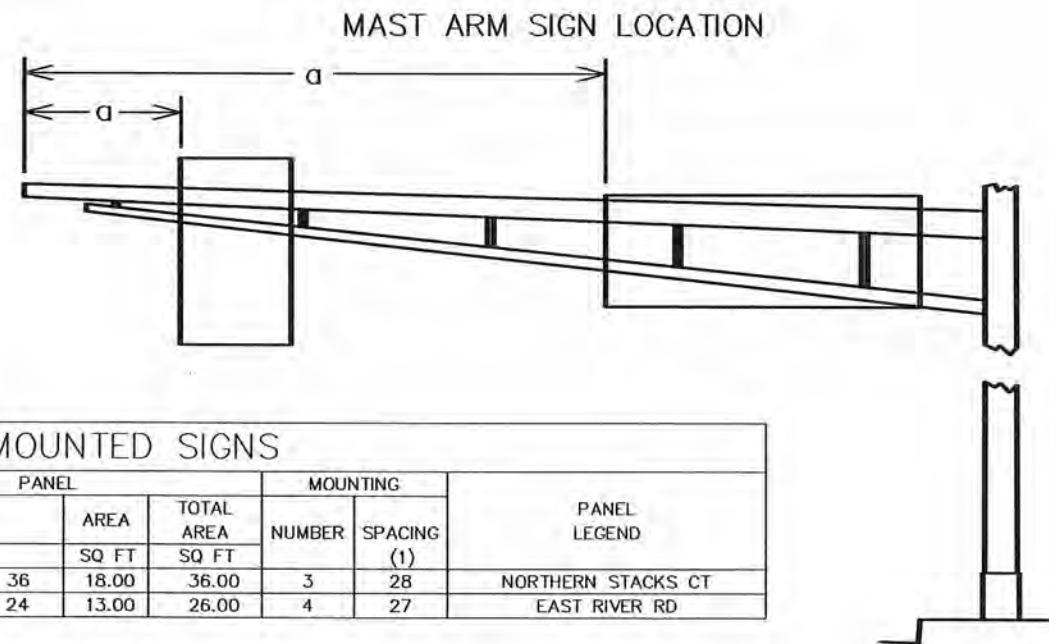
WIDTH OF INSIDE LANE (L)	WIDTH OF TAPED AREA (W)	WIDTH OF SPACE (S)
9'	2.0'	2.5'
10'	2.5'	2.5'
11'	2.5'	3.0'
12'	3.0'	3.0'
13'	3.0'	3.5'

NOTES:

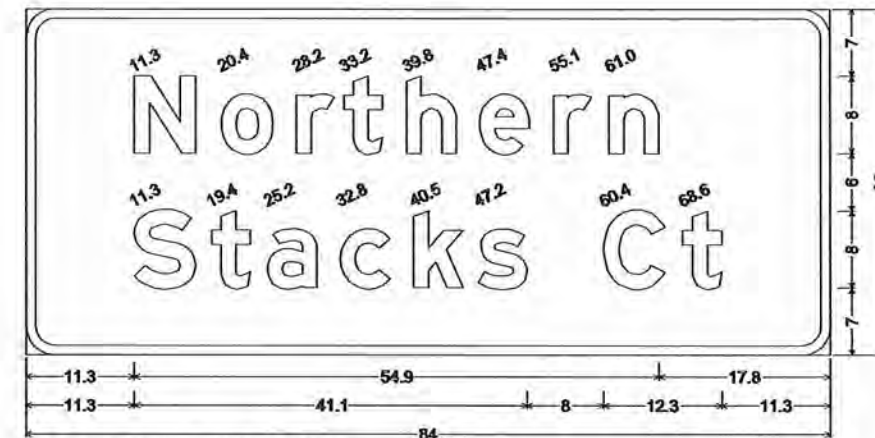
1. INSTALL PREFORMED PAVEMENT MARKING TAPE FOR PERMANENT TRAFFIC LANE DELINEATION AND LEGENDS IN ACCORDANCE WITH 2582 AND AS FOLLOWS...
2. TAPED AREAS TO BE CENTERED AND ALIGNED ON CENTER LINE AND LANE LINES.
3. ZEBRA CROSSWALKS SHALL BE REFLECTORIZED WHITE POLYMER PREFORMED TAPE.
4. A MINIMUM OF 1.5' CLEAR DISTANCE MUST BE LEFT ADJACENT TO CURB. IF LAST TAPED AREA FALLS INTO THIS DISTANCE, IT MUST BE OMITTED.
5. FURNISHING & INSTALLING PEDESTRIAN MARKINGS SHALL BE INCIDENTAL.
6. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE TAPED AREAS SHOULD BE MADE IN THE MEDIAN SO THAT THE TAPED AREAS ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVELED PORTION OF THE ROADWAY.
7. AT SKEWED CROSSWALKS, THE TAPED AREAS ARE TO REMAIN PARALLEL TO THE LANE LINES.
8. CONCRETE PAVEMENT SURFACES AND BITUMINOUS SURFACES, WHERE PAVEMENT MARKINGS CANNOT BE INLAYED IN THE HOT MAT, SHALL BE GROOVED FOR THE INSTALLATION OF THE POLY-PREFORMED MARKINGS. GROOVING SPECIFICATIONS ARE DETAILED IN MN/DOT DIVISION 5 SPECIAL PROVISIONS.

NOT TO SCALE

SIGN DETAILS

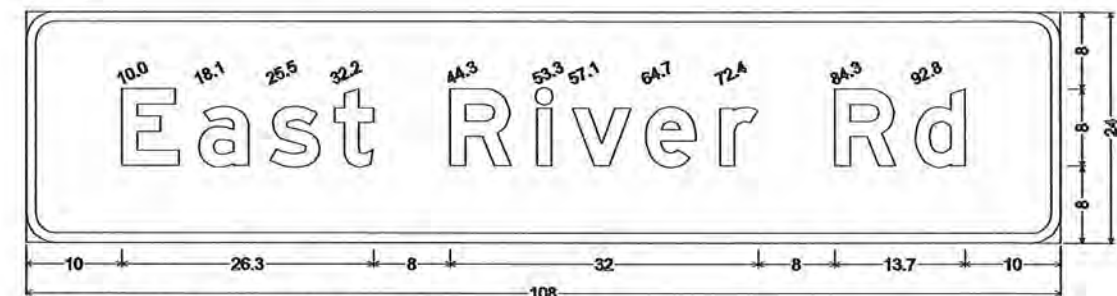


D-1



3.0" Radius, 1.0" Border, White on Green; "Northern" E Mod; "Stacks Ct" E Mod;

D-2



3.0" Radius, 1.0" Border, White on Green; "East River Rd" E Mod;

MAST ARM MOUNTED SIGNS

SIGN NO	POLE NO	QTY	a	PANEL				MOUNTING		PANEL LEGEND
				SIZE	AREA	TOTAL AREA	NUMBER	SPACING (1)		
			FEET	INCH	SQ FT	SQ FT				
D-1	2,4	2	31,19	84 x 36	18.00	36.00	3	28	NORTHERN STACKS CT	
D-2	3	1	7	108 x 24	13.00	26.00	4	27	EAST RIVER RD	

SPECIFIC NOTES:

- (1) SPACING BETWEEN STIFFENERS SHALL NOT EXCEED 36 INCHES AND SHALL BE UNIFORMLY SPACED. SEE STANDARD SIGNS MANUAL, PAGE 105A FOR BRACKET SPACING REQUIREMENTS.

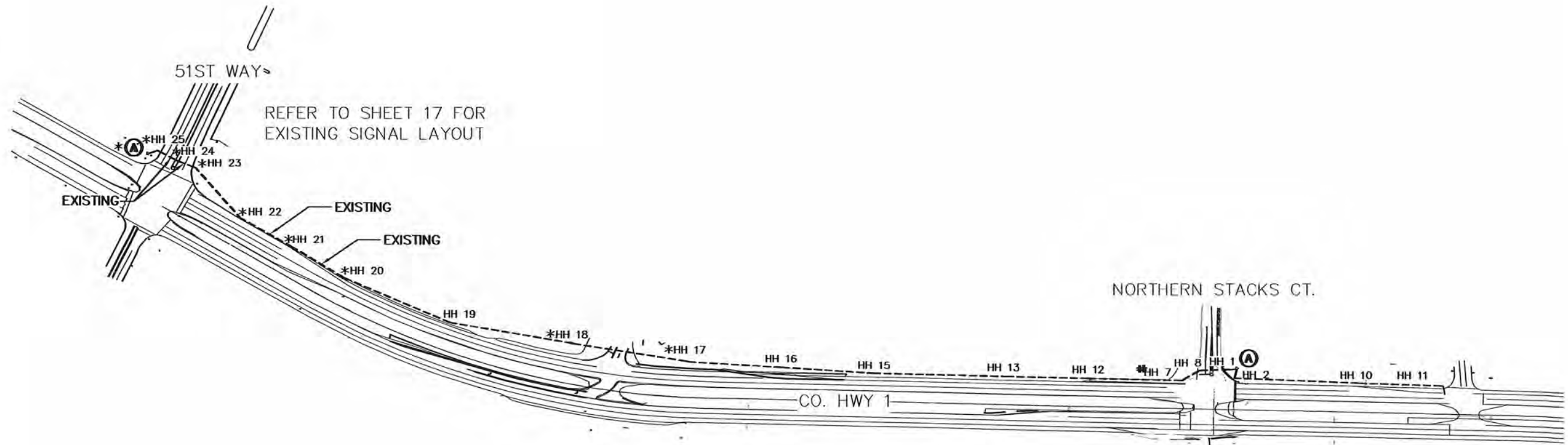
GENERAL NOTES:

1. CORNERS OF STANDARD SIGN PANELS WITH MARGINS SHALL BE TRIMMED.
2. TYPE D SIGN PANELS EXTENDING BEYOND THE BORDER SHALL NOT BE TRIMMED.
3. FOR STRUCTURAL DETAILS OF MAST ARM MOUNTED SIGNS SEE STANDARD SIGNS MANUAL, PAGE 105A.
4. FOR TYPE D STRINGER AND PANEL JOINT DETAILS SEE STANDARD SIGNS MANUAL, PAGE 105.
5. THE MAST ARM MOUNTED SIGNS ARE INCIDENTAL.
6. AT INTERSECTIONS WITH MEDIAN WIDTHS LESS THAN 30', ONE WAY (R6-1) SIGNS SHALL NOT BE PLACED AS PART OF THE SIGNALS PLAN.

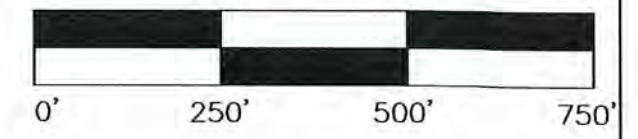
BY	DATE	REVISIONS	SYSTEM ID: XXXXX	T.E. XXXX

PAVEMENT MARKINGS LAYOUT/DETAIL AND TYPE "D" SIGNS DETAILS  
CO. HWY 1 AND NORTHERN STACKS CT.  
IN FRIDLEY, ANOKA COUNTY

CERTIFIED BY <i>[Signature]</i> LICENSED PROFESSIONAL ENGINEER	DRAWN BY: EDP	CKD BY: SJM	DATE: 4/9/15
	LIC. NO. 22428	DATE: 4/9/15	
SHEET NO. 14 OF 18 SHEETS			



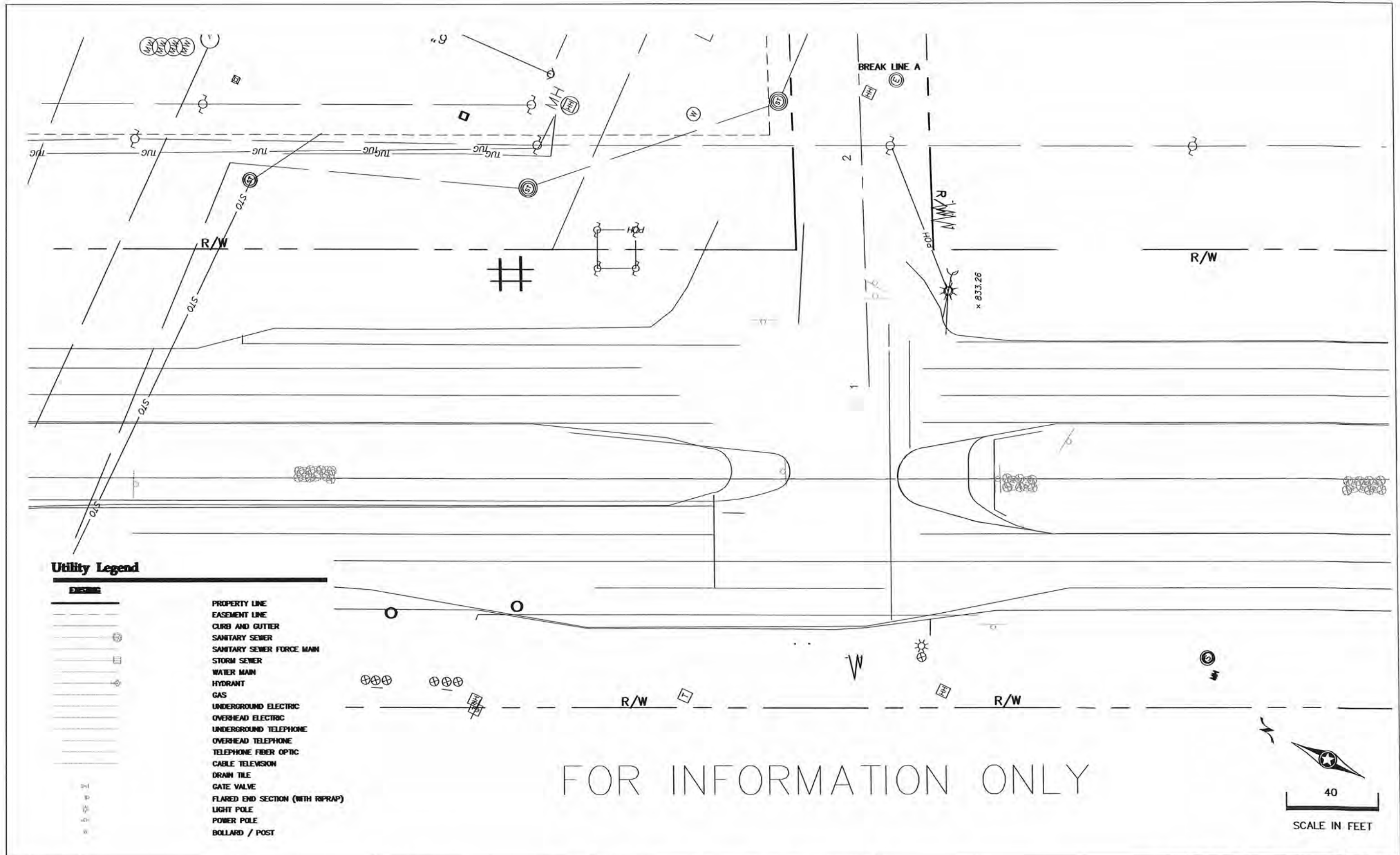
\* DENOTES EXISTING



NOTES:

1. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO UTILIZE THE "ONE CALL EXCAVATION NOTICE SYSTEM" (TELEPHONE NUMBER 800-252-1166). THIS IS REQUIRED BY MINNESOTA STATUTE 2160.
2. UNLESS NOTED AS INPLACE, ALL INTERCONNECT SYSTEMS SHALL BE FURNISHED AND INSTALLED.

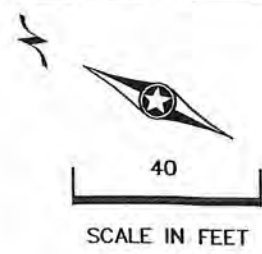
BY	DATE	REVISIONS	SYSTEM ID: xxxxx _____ T.E. xxxx	INTERCONNECTION LAYOUT TRAFFIC CONTROL SIGNAL SYSTEM CO. HWY 1 AND NORTHERN STACKS CT. IN FRIDLEY, ANOKA COUNTY	DRAWN BY: EDP CKD BY: SJM DATE: 4/9/15
			METER ADDRESS: _____		CERTIFIED BY: <i>[Signature]</i> LIC. NO. 22428 DATE: 4/9/15
			MASTER ID: _____ T.E. _____		SHEET NO. 15 OF 18 SHEETS



**Utility Legend**

- EASEMENT LINE
- PROPERTY LINE
- CURB AND GUTTER
- SANITARY SEWER
- SANITARY SEWER FORCE MAIN
- STORM SEWER
- WATER MAIN
- HYDRANT
- GAS
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- UNDERGROUND TELEPHONE
- OVERHEAD TELEPHONE
- TELEPHONE FIBER OPTIC
- CABLE TELEVISION
- DRAIN TILE
- GATE VALVE
- FLARED END SECTION (WITH RIPRAP)
- LIGHT POLE
- POWER POLE
- BOLLARD / POST

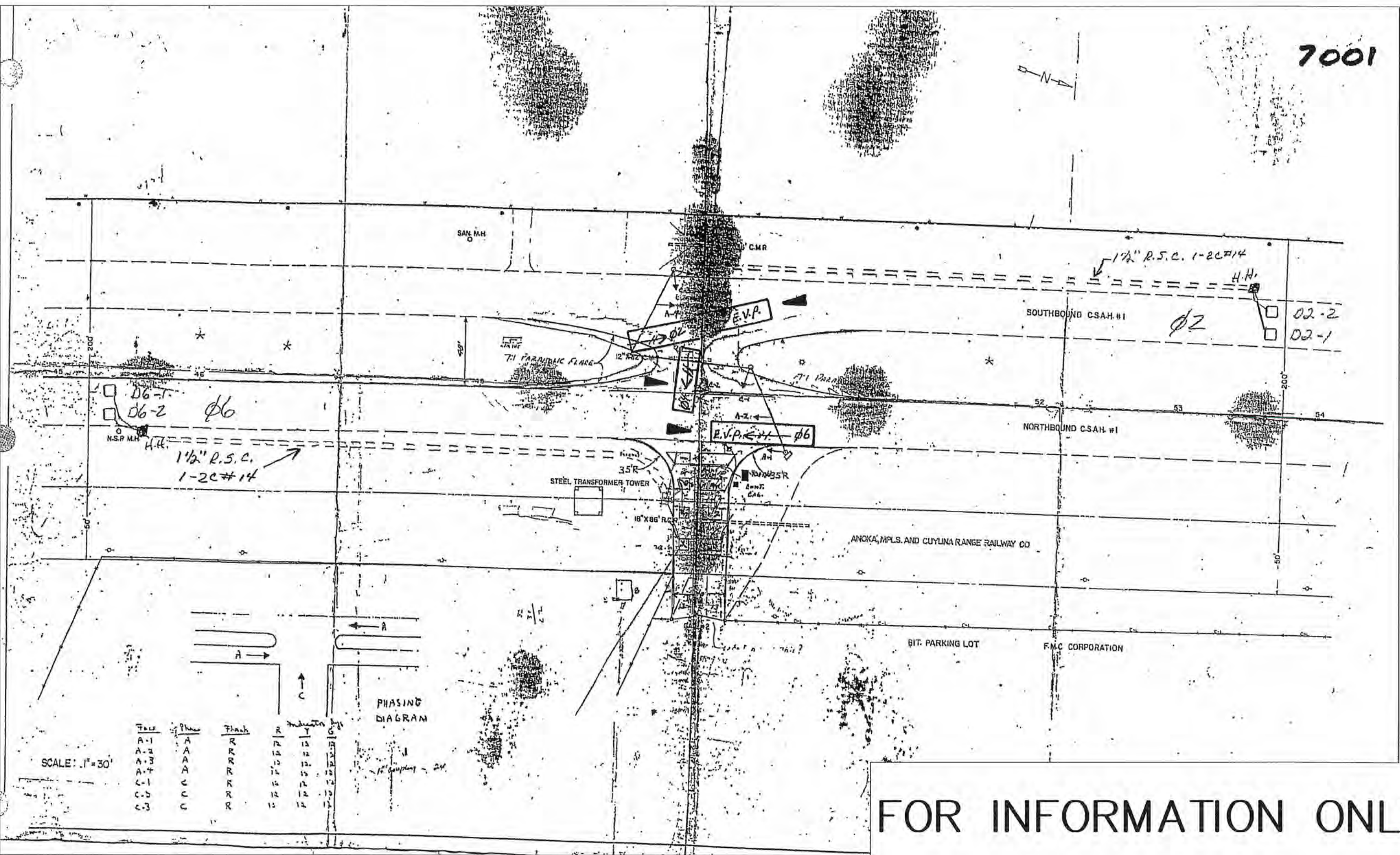
FOR INFORMATION ONLY



BY	DATE	REVISIONS	SYSTEM ID: XXXXX	T.E. XXXX	INTERSECTION "A" EXISTING UTILITIES LAYOUT TRAFFIC CONTROL SIGNAL SYSTEM CO. HWY 1 AND NORTHERN STACKS CT. IN FRIDLEY, ANOKA COUNTY	DRAWN BY: EDP	CKD BY: SJM	DATE: 4/9/15
			METER ADDRESS:			CERTIFIED BY: <i>[Signature]</i>	LIC. NO. 22428	DATE: 4/9/15
			MASTER ID:	T.E.		LICENSED PROFESSIONAL ENGINEER		
						SHEET NO. 16 OF 18 SHEETS		



7001



FOR INFORMATION ONLY

BY	DATE	REVISIONS	SYSTEM ID: XXXX	T.E. XXXX	INTERSECTION "B" LAYOUT TRAFFIC CONTROL SIGNAL SYSTEM CO. HWY 1 AND NORTHERN STACKS CT. IN FRIDLEY, ANOKA COUNTY	DRAWN BY: EDP	CKD BY: SJM	DATE: 4/9/15
			METER ADDRESS:		CERTIFIED BY: <i>[Signature]</i>	LIC. NO. 22428	DATE: 4/9/15	
			MASTER ID:	T.E.				SHEET NO. 17 OF 18 SHEETS

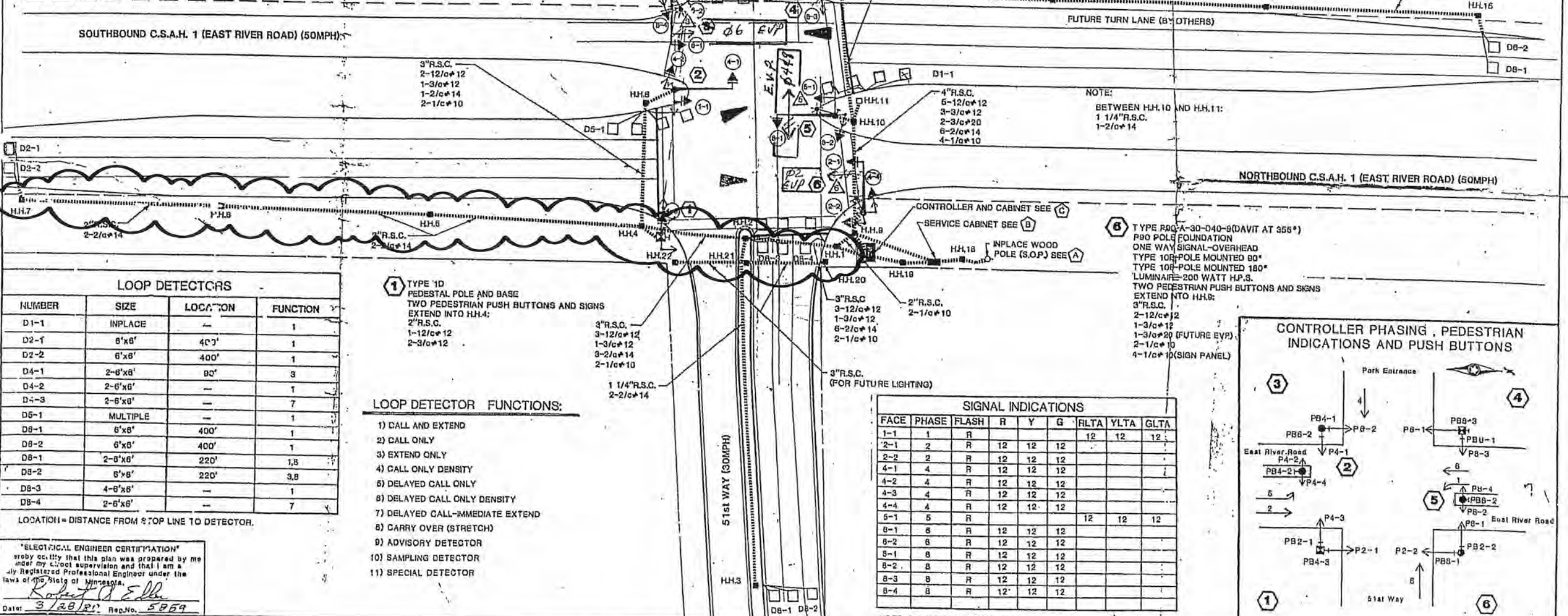
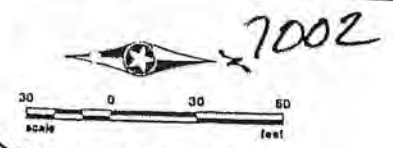
**NOTES:**

- SEE SPECIAL PROVISIONS FOR CONTRACTORS RESPONSIBILITY FOR LOCATION OF UTILITIES.
- ALL SIGNAL FACES SHALL HAVE BACKGROUND SHIELDS.
- LUMINAIRE **2** AND **4** WITH P.E.C. AND CHECK SWITCH.  
SEE SPECIAL PROVISIONS FOR COUNTY FURNISHED EQUIPMENT.
- INTERNALLY ILLUMINATED OVERHEAD MOUNTED SIGN PANELS SHALL BE FURNISHED AND INSTALLED ON EACH MAST ARM. SIGN PANELS **3** AND **5** WITH P.E.C. AND CHECK SWITCH. SEE SPECIAL PROVISIONS
- SEE SPECIAL PROVISIONS FOR SERVICE CABINET DETAILS.
- LOOP DETECTORS SHALL BE CROSS LINKED POLYETHYLENE (XLP) IN 1" N.M.C. SEE DETAIL SHEET.
- ALL PEDESTRIAN INDICATIONS SHALL BE 12"x12".
- FOUR HUBS FOR SIGNAL BRACKETING SHALL BE INSTALLED ON EACH MAST ARM POLE, ONE EACH AT 0°, 90°, 180°, AND 270°.
- A 3/4" HALF COUPLING, 3/4" PIPE NIPPLE AND CONDUIT OUTLET BODY FOR FUTURE INSTALLATION OF EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT SHALL BE INSTALLED 4 FEET FROM THE END OF MAST ARMS AT **3**, **5** AND **6**.
- CONTRACTOR SHALL ADJUST HANDHOLES 11, 18 AND 17 AS DIRECTED BY THE ENGINEER.
- REMOVE AND SALVAGE EXISTING SIGNAL SYSTEM. SEE SPECIAL PROVISIONS.
- ALL HANDHOLES SHALL BE CONCRETE HANDHOLES WITH TYPE "C" COVERS.

- TYPE P100-A-35  
P100 POLE FOUNDATION  
ONE WAY SIGNAL-OVERHEAD  
TYPE 10B-POLE MOUNTED 90°  
TYPE 10B-POLE MOUNTED 180°  
ONE PEDESTRIAN PUSH BUTTON AND SIGN  
EXTEND INTO H.H.8:  
3" R.S.C.  
2-12/c#12  
1-3/c#12  
2-1/c#10(SIGN PANEL)
- TYPE P80-A-30-D40-9(DAVIT AT 355°)  
P80 POLE FOUNDATION  
ONE WAY SIGNAL-OVERHEAD  
TYPE 10B-POLE MOUNTED 90°  
TYPE 10B-POLE MOUNTED 180°  
LUMINAIRE-200 WATT H.P.S.  
TWO PEDESTRIAN PUSH BUTTONS AND SIGNS  
EXTEND INTO H.H.16:  
3" R.S.C.  
2-12/c#12  
1-3/c#12  
1-3/c#20 (FUTURE EVP)  
2-1/c#10  
2-1/c#10(SIGN PANEL)

- TYPE 1D  
PEDESTAL POLE AND FOUNDATION  
TWO PEDESTRIAN PUSH BUTTONS AND SIGNS  
EXTEND INTO H.H.12:  
2" R.S.C.  
1-12/c#12  
1-3/c#12
- TYPE P100-A-35-D40-9 (DAVIT AT 45°)  
P100 POLE FOUNDATION  
ONE WAY SIGNAL-OVERHEAD  
TYPE 10B-POLE MOUNTED 90°  
TYPE 10B-POLE MOUNTED 180°  
ONE PEDESTRIAN PUSH BUTTON AND SIGN  
EXTEND INTO H.H.10:  
3" R.S.C.  
2-12/c#12  
1-3/c#12  
1-3/c#20 (FUTURE EVP)  
4-1/c#10  
4-1/c#10(SIGN PANEL)

- INPLACE WOOD POLE (S.O.P.)  
1 1/4" R.S.C. RISER AND WEATHERHEAD  
3-1/c#8  
EXTEND INTO H.H.18:  
1 1/4" R.S.C.  
3-1/c#8
- SERVICE CABINET  
CABINET FOUNDATION  
EXTEND INTO H.H.18:  
1 1/4" R.S.C.  
3-1/c#8  
EXTEND INTO H.H.19:  
METERED SIGNAL SERVICE  
1 1/4" R.S.C.  
3-1/c#8  
EXTEND INTO H.H.10:  
UNMETERED STREET LIGHT AND SIGN  
PANEL SERVICE  
1 1/4" R.S.C.  
8-1/c#10
- CONTROLLER AND CABINET  
CABINET FOUNDATION  
EXTEND INTO H.H.19:  
METERED SIGNAL SERVICE  
1 1/4" R.S.C.  
3-1/c#8  
EXTEND INTO H.H.1:  
4" R.S.C.  
3-12/c#12  
1-3/c#12  
7-2/c#14  
EXTEND INTO H.H.9:  
4" R.S.C.  
7-12/c#12  
4-3/c#12  
3-3/c#20  
6-2/c#14



NOTE:  
BETWEEN H.H.10 AND H.H.11:  
1 1/4" R.S.C.  
1-2/c#14

- TYPE P80-A-30-D40-9(DAVIT AT 355°)  
P80 POLE FOUNDATION  
ONE WAY SIGNAL-OVERHEAD  
TYPE 10B-POLE MOUNTED 90°  
TYPE 10B-POLE MOUNTED 180°  
LUMINAIRE-200 WATT H.P.S.  
TWO PEDESTRIAN PUSH BUTTONS AND SIGNS  
EXTEND INTO H.H.8:  
3" R.S.C.  
2-12/c#12  
1-3/c#12  
1-3/c#20 (FUTURE EVP)  
2-1/c#10  
2-1/c#10(SIGN PANEL)

LOOP DETECTORS			
NUMBER	SIZE	LOCATION	FUNCTION
D1-1	INPLACE	—	1
D2-1	6'x8'	400'	1
D2-2	6'x8'	400'	1
D4-1	2-6'x8'	90'	3
D4-2	2-6'x8'	—	1
D4-3	2-6'x8'	—	7
D6-1	MULTIPLE	—	1
D8-1	6'x8'	400'	1
D8-2	6'x8'	400'	1
D8-1	2-6'x8'	220'	1,5
D8-2	6'x8'	220'	3,8
D8-3	4-6'x8'	—	1
D8-4	2-6'x8'	—	7

LOCATION 1 = DISTANCE FROM TOP LINE TO DETECTOR.

"ELECTRICAL ENGINEER CERTIFICATION"  
I hereby certify that this plan was prepared by me  
under my direct supervision and that I am a  
 duly Registered Professional Engineer under the  
 laws of the State of Minnesota.  
*Robert D. Edler*  
Date: 3/28/15 Rep. No. 5959

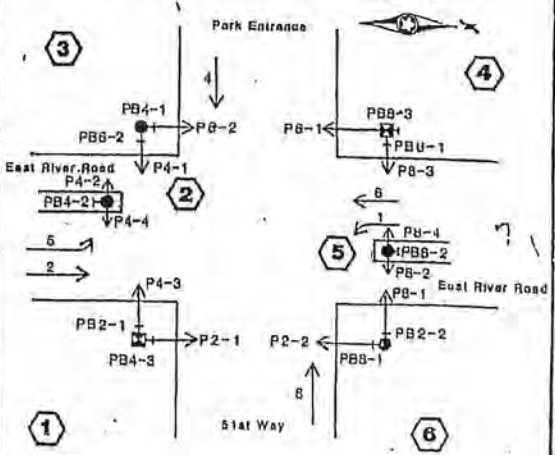
**LOOP DETECTOR FUNCTIONS:**

- CALL AND EXTEND
- CALL ONLY
- EXTEND ONLY
- CALL ONLY DENSITY
- DELAYED CALL ONLY
- DELAYED CALL ONLY DENSITY
- DELAYED CALL-IMMEDIATE EXTEND
- CARRY OVER (STRETCH)
- ADVISORY DETECTOR
- SAMPLING DETECTOR
- SPECIAL DETECTOR

SIGNAL INDICATIONS										
FACE	PHASE	FLASH	R	Y	G	RLTA	YLTA	GLTA		
1-1	1		R							
2-1	2		R	12	12	12				
2-2	2		R	12	12	12				
4-1	4		R	12	12	12				
4-2	4		R	12	12	12				
4-3	4		R	12	12	12				
4-4	4		R	12	12	12				
5-1	5		R				12	12	12	
6-1	6		R	12	12	12				
6-2	6		R	12	12	12				
8-1	8		R	12	12	12				
8-2	8		R	12	12	12				
8-3	8		R	12	12	12				
8-4	8		R	12	12	12				

NOTE: ALL DIMENSIONS SHOWN ARE IN INCHES.

**CONTROLLER PHASING, PEDESTRIAN INDICATIONS AND PUSH BUTTONS**



**FOR INFORMATION ONLY**