LEGEND OF SYMBOLS	
	CABLE TRAY
	CONDUIT - INPLACE
	CONDUIT - F&I
	CONDUIT FIBER ONLY - INPLACE
	CONDUIT FIBER ONLY - F&I
	DIRECT BURIED COMMUNICATION CABLE - INPLACE
	DIRECT BURIED COMMUNICATION CABLE - F&I
	DIRECT BURIED POWER CABLE - INPLACE
	DIRECT BURIED POWER CABLE - F&I
	LOOP DETECTOR (SPECIFY) - (SPECIFY)
	FLASHER - INPLACE
	FLASHER - F&I
	FLASHING BEACON - F&I
	FOUNDATION INPLACE, GATE ARM - F&I
	FOUNDATION F&I, GATE ARM - F&I
	GATE ARM - INPLACE
	GUARDRAIL END TREATMENT (SPECIFY)
	GUARDRAIL (PLATE BEAM) - (SPECIFY)
H	HANDHOLE - INPLACE
	HANDHOLE - F&I
	JUNCTION BOX OR CONDULET - INPLACE
	JUNCTION BOX OR CONDULET - F&I
	LANE ARROW
	OVERHEAD SIGN - INPLACE
	OVERHEAD SIGN - F&I
	PAD (SPECIFY) - INPLACE
	PAD (SPECIFY) - F&I
	PEDESTAL - INPLACE
	PEDESTAL - F&I

LEGEND OF SYMBOLS	
	RAMP CONTROL SIGNAL (DESIGN ONE-WAY) - INPLACE
	RAMP CONTROL SIGNAL (DESIGN ONE-WAY) - F&I
	RAMP CONTROL SIGNAL (DESIGN TWO-WAY) - INPLACE
	RAMP CONTROL SIGNAL (DESIGN TWO-WAY) - F&I
	RAMP CONTROL SIGNAL (DESIGN ONE-WAY)(SCREW IN BASE) - INPLACE
	RAMP CONTROL SIGNAL (DESIGN ONE-WAY)(SCREW IN BASE) - F&I
	RAMP CONTROL SIGNAL (DESIGN TWO-WAY)(SCREW IN BASE) - INPLACE
	RAMP CONTROL SIGNAL (DESIGN TWO-WAY)(SCREW IN BASE) - F&I
	SHELTER (TMS) - INPLACE
	SHELTER (TMS) - F&I
	SIGN (TYPE A OR D) - (SPECIFY)
	SIGN (TYPE C) - (SPECIFY)
	SIGN (TYPE CMS) - (SPECIFY)
	SIGNAL FACE - INPLACE
	SIGNAL FACE - F&I
S	SPLICE CABINET (SPECIFY) - (SPECIFY)
FO	SPLICE VAULT (FIBER OPTIC) - (SPECIFY)
TV	TELEVISION CAMERA (CCTV) - (SPECIFY)
	WOOD POLE - F&I
	WOOD POLE - INPLACE
	WOOD POLE F&I, SERVICE INSTALLATION - F&I
	WOOD POLE INPLACE, SERVICE INSTALLATION - F&I
	WOOD POLE INPLACE, SERVICE INSTALLATION - INPLACE
	FIBER PATCHING SHELTER - F&I
	OUTDOOR FIBER SPLICE ENCLOSURE - F&I
PV	PULL VAULT
E	ELECTRICAL SERVICE
T	TRANSFORMER

I HEREBY CERTIFY THAT SHEETS TM1 THROUGH TM13 OF THIS PLAN WERE 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.

Leonard E Palek

LEONARD E. PALEK, JR

DATE Jan. 4, 2006 LIC. NO. 41525

DESIGNER Scott Coozennoy

2-16-06 TMS COMPONENTS

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard E Palek LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM1 OF TM26 SHEETS

BB

TABULATION OF ESTIMATED QUANTITIES - SP 6284-137			
ITEM	**NOTES**	**UNIT**	**ESTIMATED QUANTITY**
REMOVE BD-4 CABINET FOUNDATION		EACH	1
REMOVE CABINET FOUNDATION		EACH	1
SALVAGE BD-4 CABINET		EACH	1
SALVAGE CHANGEABLE MESSAGE SIGN		EACH	1
SALVAGE FIBEROPTIC SPLICE VAULT	3	EACH	1
SALVAGE CABINET	2	EACH	1
CABINET FOUNDATION		EACH	1
PEDESTAL FOUNDATION	1	EACH	1
SERVICE FOUNDATION		EACH	2
HANDHOLE TYPE-PVC METAL COVER		EACH	4
FIBEROPTIC SPLICE VAULT		EACH	1
OUTDOOR FIBER SPLICE ENCLOSURE		EACH	1
BURIED CABLE SIGN		EACH	8
1.5" NON-METALLIC CONDUIT		LIN FT	2780
2" NON-METALLIC CONDUIT		LIN FT	670
TELEPHONE CABLE 12 PR NO 19		LIN FT	800
POWER CABLE 1 CONDUCTOR NO 6		LIN FT	1500
CMS CONTROL CABLE 7.5 PAIR COND NO 24		LIN FT	175
FIBEROPTIC TRUNK CABLE 12MM-18SM		LIN FT	1800
LOOP DETECTOR SPLICE		EACH	1
INSTALL CABINET		EACH	1
SERVICE CABINET		EACH	2

TABULATION OF ESTIMATED QUANTITIES - SP 6284-137			
ITEM	**NOTES**	**UNIT**	**ESTIMATED QUANTITY**
FIBER OPTIC CABLE TESTING		LUMP SUM	1
FIBER OPTIC PIGTAIL TERMINATION		EACH	2
FIBER OPTIC CABLE SPLICING		EACH	2
INSTALL BD-4 CABINET		EACH	1
INSTALL CHANGEABLE MESSAGE SIGN		EACH	1
1.5" BORED CONDUIT		LIN FT	220
ARMORED FIBER OPTIC PIGTAIL CABLE 6SM		LIN FT	725
CONCRETE FOOTINGS (TYPE OH SPREAD)		CU YD	22
STRUCT STEEL-POSTS FOR OH SIGNS (DESIGN B)		POUND	6148
STRUCT STEEL-TRUSSES FOR OH SIGNS (DESIGN B)	(P)	POUND	8705
STRUCT STEEL-WLKWY SUPPORTS FOR OH SIGNS (DESIGN B)	(P)	POUND	198
STRUCT STEEL-WLKWY GRATING FOR OH SIGNS (DESIGN B)	(P)	POUND	360

1 BD-4 PEDESTAL FOUNDATION
2 CMS CONTROLLER CABINET
3 INCLUDES OUTDOOR FIBER SPLICE ENCLOSURE

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

(1) INPLACE 1-FO CABLE (12MM, 18SM)
& 1-12/PR NO.19

(2) INPLACE 1-FO CABLE (12MM, 18SM)
& 1-12/PR NO.19
HAND DIG SUFFICIENT CABLE LENGTH TO
SEVER AND ROUTE CABLES TO SPLICE VAULT
AND TO BD-4

(3) F&I BD-4 FOUNDATION
INSTALL SALVAGED BD-4

(4) F&I FO SPLICE VAULT & OUTDOOR FIBER SPLICE ENCL.
F&I FO CABLE SPLICING

(5) F&I 1.5" NMC & 1-12/PR NO.19
F&I 1.5" NMC & 1-FO CABLE (12MM, 18SM)

(6) ABANDON INPLACE FO CABLE (12MM, 18SM)
& 1-12/PR NO.19

(7) F&I 1.5" NMC BORE & 1-12/PR NO.19
F&I 1.5" NMC BORE & 1-FO CABLE (12MM, 18SM)
NOTE: VERIFY BORED CONDUITS LOCATIONS-SEE
ROADWAY AND BRIDGE PLANS FOR REMOVALS, INSTALLATIONS
AND BRIDGE PILE WORK TO AVOID CONFLICTS.

(8) SALVAGE INPLACE LED CMS & JB

(9) SALVAGE INPLACE CMS CABINET & REMOVE FOUNDATION

(10) ABANDON INPLACE 2" NMC, 3-1/C NO.6 & 1-7.5/PR NO.24

(11) SALVAGE INPLACE FO SPLICE VAULT & OUTDOOR FIBER SPLICE ENCL.

(12) SALVAGE INPLACE BD4
REMOVE INPLACE BD4 FOUNDATION

(13) ABANDON INPLACE 2" RSC & 3-1/C NO.4

(14) ABANDON INPLACE 2" NMC, 1-6/PR NO.19 & 1-FO PIGTAIL

(15) ABANDON INPLACE 1-12/PR NO.19 & 1-FO CABLE (12MM, 18SM)

(16) INPLACE 334Z CAB (35W-30.8)
REMOVE INPLACE FO PIGTAIL FROM CAB.

(17) INPLACE 1-12/PR NO.19 & 1-FO CABLE (12MM, 18SM)
HAND-DIG SUFFICIENT CABLE LENGTH TO SEVER AND ROUTE
BOTH CABLES INTO INPLACE 334Z CABINET

(18) INPLACE 1.5" RSC, 3-1/C NO.6 & 1-6/PR NO.19
INPLACE 4" RSC, 1-3/C NO.4, 6-2/C NO.14,
1-6/PR NO.19, 1-FO PIGTAIL, 1-27/C NO.18,
3-1/C NO.10 & 1-RG11
REMOVE 1-FO PIGTAIL
F&I 1-12/PR NO.19

(19) ABANDON INPLACE 2" RSC & 3-1/C NO.6

(20) F&I 1.5" NMC & 1-12/PR NO.19

(21) F&I 1.5" NMC & 1-FO CABLE (12MM, 18SM)

(22) F&I 1.5" NMC BORE & 1-FO CABLE (12MM, 18SM)

(23) INPLACE LOOP DETECTOR

(24) SEVER INPLACE LOOP SPLICE
F&I LOOP DETECTOR SPLICE

(25) INPLACE 2" NMC & 1-2/C NO.14-PULL 2/C NO.14 TO HH10
FOR REINSTALLATION

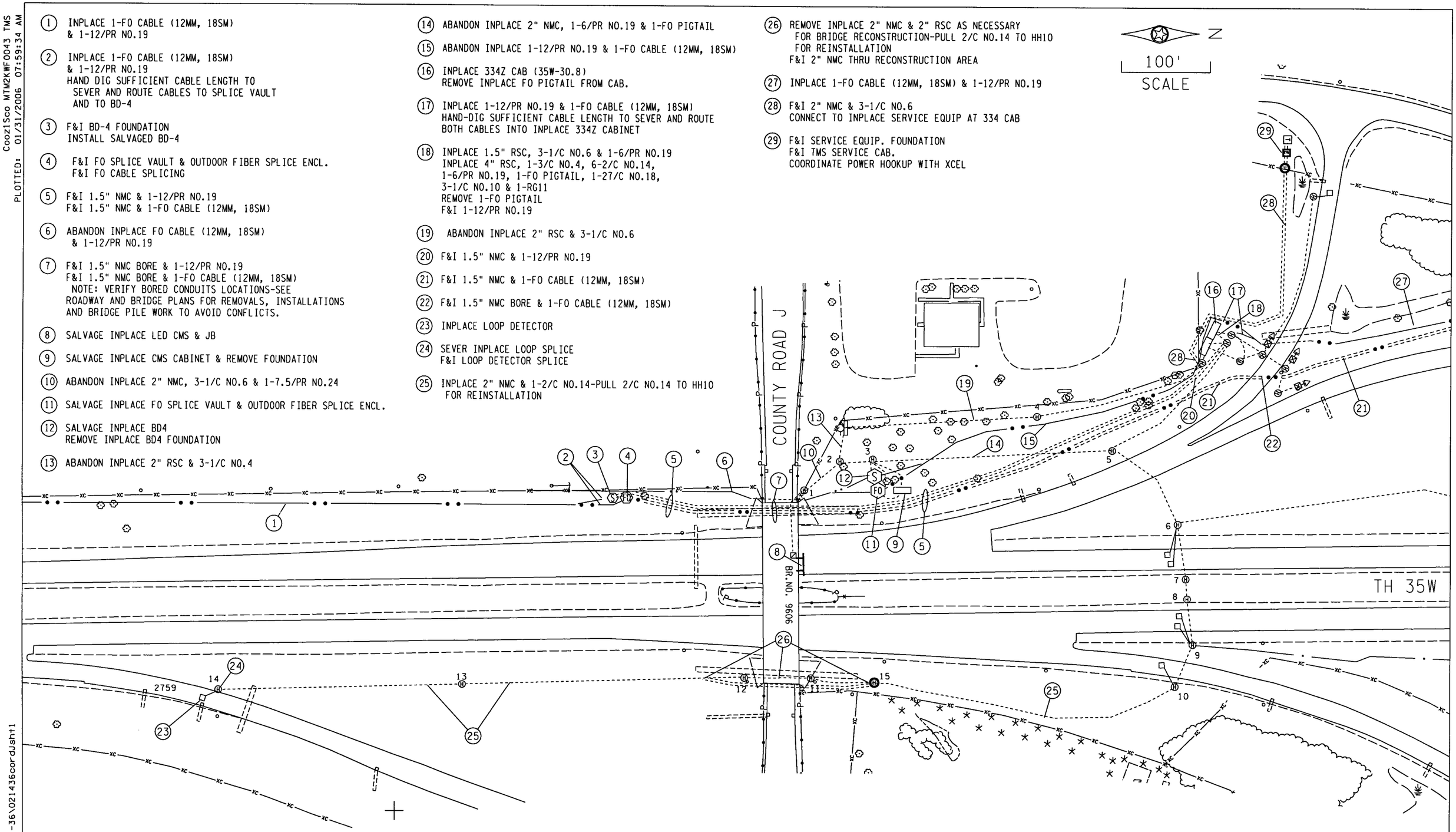
(26) REMOVE INPLACE 2" NMC & 2" RSC AS NECESSARY
FOR BRIDGE RECONSTRUCTION-PULL 2/C NO.14 TO HH10
FOR REINSTALLATION
F&I 2" NMC THRU RECONSTRUCTION AREA

(27) INPLACE 1-FO CABLE (12MM, 18SM) & 1-12/PR NO.19

(28) F&I 2" NMC & 3-1/C NO.6
CONNECT TO INPLACE SERVICE EQUIP AT 334 CAB

(29) F&I SERVICE EQUIP. FOUNDATION
F&I TMS SERVICE CAB.
COORDINATE POWER HOOKUP WITH XCEL

N
100'
SCALE



TRAFFIC MANAGEMENT SYSTEM
TH 35W AT CO. RD. J

2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard E Pahl LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM3 OF TM26 SHEETS

PLOTTED: 01/31/2006 08:00:12 AM
Coozl5co WTM2KWF0043 TMS

(1) INPLACE 1-FO CABLE (12MM, 18SM)
& 1-12/PR NO.19

(2) F&I 1.5" NMC & 1-FO CABLE (12MM, 18SM)

(3) INPLACE FO SPLICE VAULT & OUTDOOR FIBER SPLICE ENCL.
F&I FO CABLE SPLICING

(4) F&I 1.5" NMC & 1-FO PIGTAIL (6SM)

(5) F&I 334 FOUNDATION & SERVICE CABINET
W/100A MAIN & 1-1/P 60A CB
INSTALL SALVAGED CMS CONTROLLER CAB.

(6) F&I 2" NMC, 3-1/C NO.6 & 1-7.5/PR NO.24

(7) F&I SIGN BRIDGE (SEE SIGNING SHEETS)
INSTALL LED CMS (OH XX-35W)
F&I 2" RSC & 1-7.5/R FROM POST TO CMS
F&I 2" RSC & 3-1/C NO.6 FROM POST TO CMS

(8) F&I 3-1/C NO.6

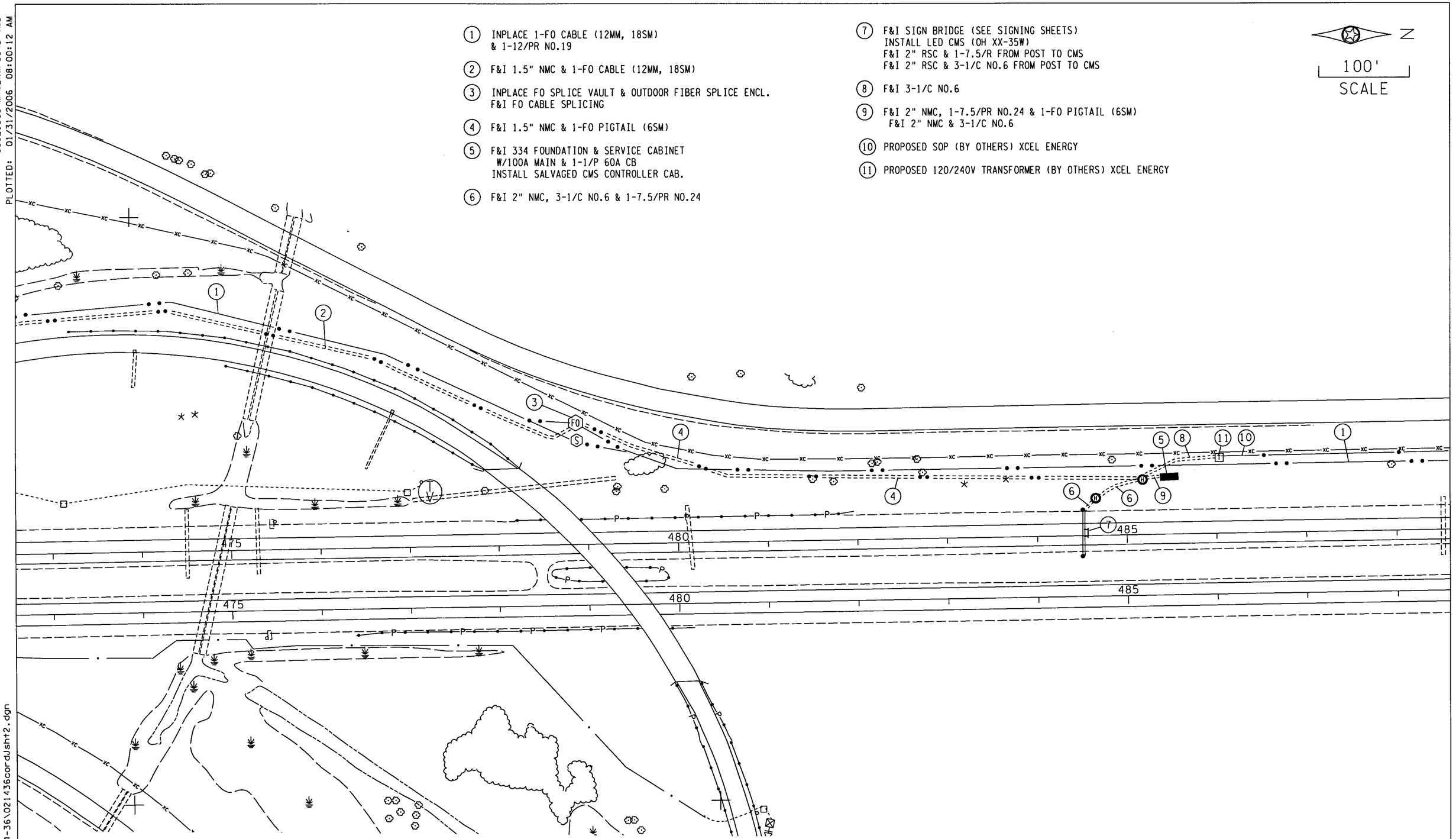
(9) F&I 2" NMC, 1-7.5/PR NO.24 & 1-FO PIGTAIL (6SM)
F&I 2" NMC & 3-1/C NO.6

(10) PROPOSED SOP (BY OTHERS) XCEL ENERGY

(11) PROPOSED 120/240V TRANSFORMER (BY OTHERS) XCEL ENERGY

N

100'
SCALE



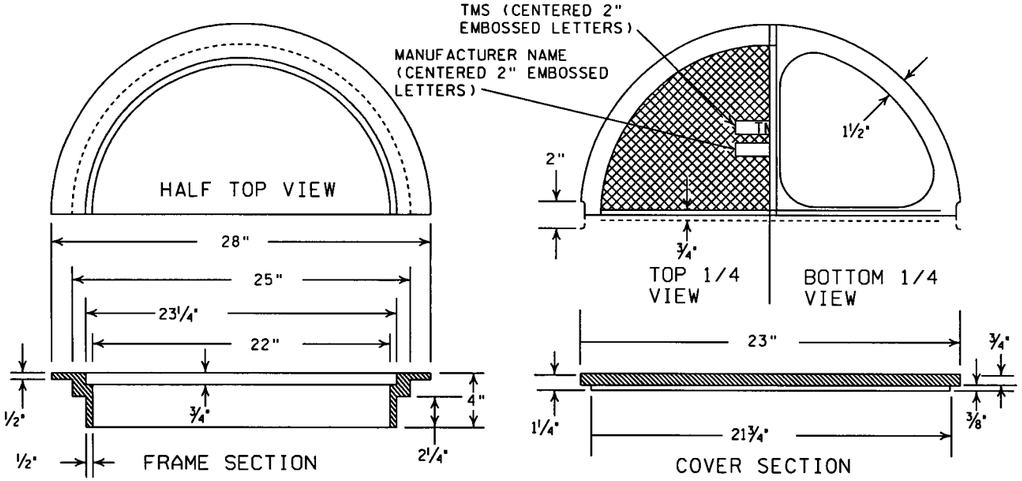
TRAFFIC MANAGEMENT SYSTEM
TH 35W AT LAKE DRIVE 2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM4 OF TM26 SHEETS

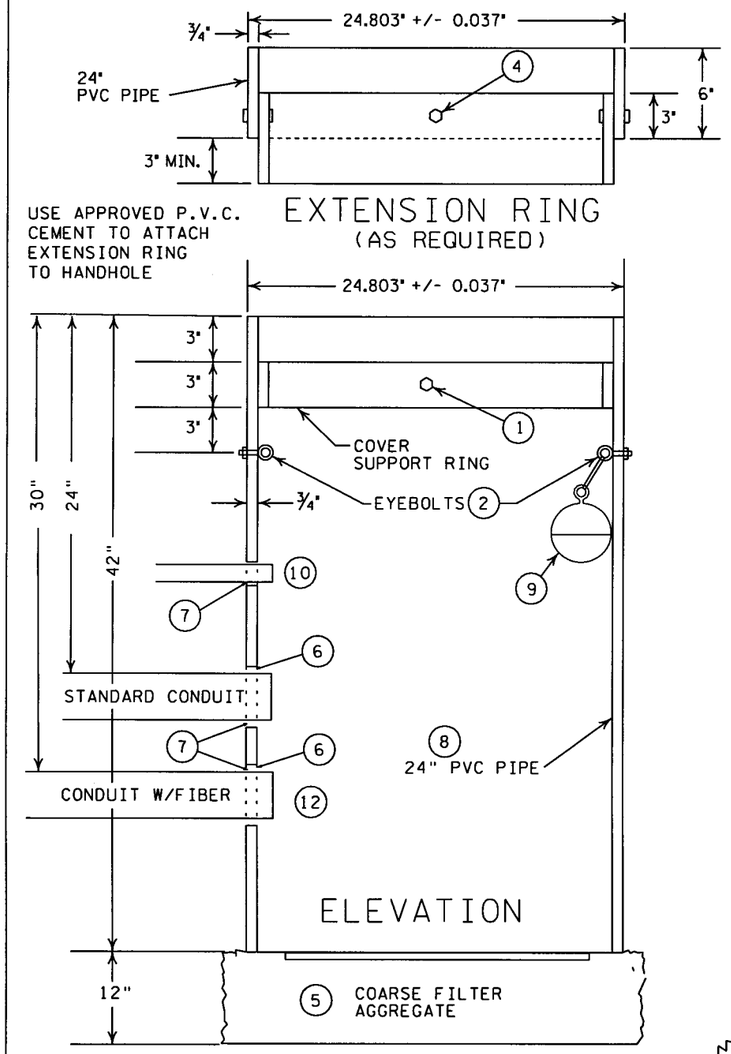
S:\tmc\MN\PRJ\0214-36\021436cordJsht2.dgn

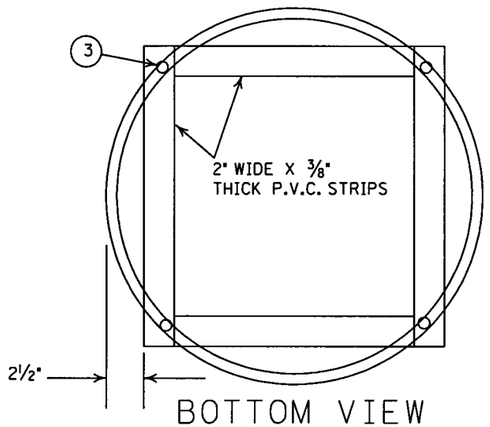


FRAME AND COVER CASTING

NOTE:
ALL CASTINGS ARE GRAY IRON PER MN/DOT SPEC. 3321 CLASS 35B

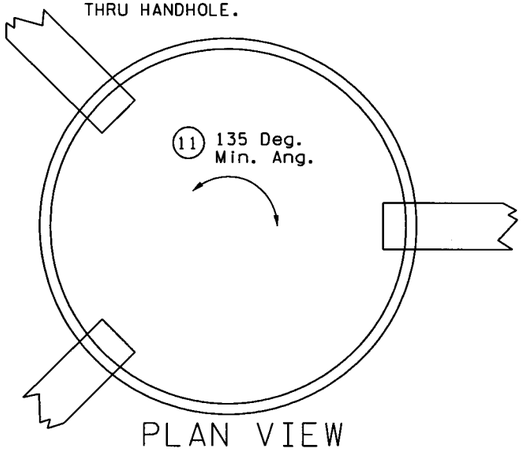
LIGHT DUTY METAL COVER





NOTES:

1. ATTACH SPLIT 24" DIA. P.V.C. COVER SUPPORT RING WITH FOUR 3/8 " DIA. X 2" LONG BOLTS AND NUTS AT 90° APART.
2. TWO TYPE 2 SHOULDER EYEBOLTS, 3/8 " DIA. X 1 1/4 " SHANK LENGTH, WITH HEX. NUTS AT 180° APART (FOR LIFTING HANDHOLES AND SUPPORTING ELECTRICAL CABLES).
3. FOUR 1/4 " X 1 1/4 " LONG GALVANIZED LAG SCREWS.
4. ATTACH SPLIT 24" DIA. PVC EXTENSION RING WITH FOUR 3/8 " DIA. X 2" LONG BOLTS AT 90° APART. THE BOLTS & NUTS COMPLY WITH MN/DOT 3391.2E, THE OTHER HARDWARE WITH 3392.
5. COMPACT COARSE FILTER AGGREGATE COMPLYING WITH MN/DOT 3149.2H TO A 12" DEPTH.
6. CONDUIT ENTRANCES IN THE BARREL ARE SIZED 1.0" LARGER THAN THE CONDUIT USED.
7. PLUG HANDHOLE AT CONDUIT INSTALLATION, PROVIDING A WATER TIGHT SEAL.
8. THE PVC PIPE COMPLIES WITH ASTM F 9T-1.
9. INSTALL ORANGE LOCATER BALL WITH TIE WRAP TO EYE BOLT
10. MINIMUM CONDUIT DEPTH FOR LOOP WIRES SHALL BE 1.5'.
11. INSTALL CONDUITS NO SHARPER THAN 135 DEG. FOR INSTALLATIONS OF CONDUIT WHERE FIBER WILL PASS THRU.
12. INSTALL CONDUITS WITH FIBER PASSING THRU AT 30" DEPTH THRU HANDHOLES. TRANSITION TO/FROM STANDARD 36" FIBER DEPTH OR PUSH DEPTH OUTSIDE HANDHOLES. NOTE:PROVIDE 36" CONDUIT STUB OUT FOR DIRECT BURIED FIBER PASSING THRU HANDHOLE.



HANDHOLE DETAIL 2-16-06

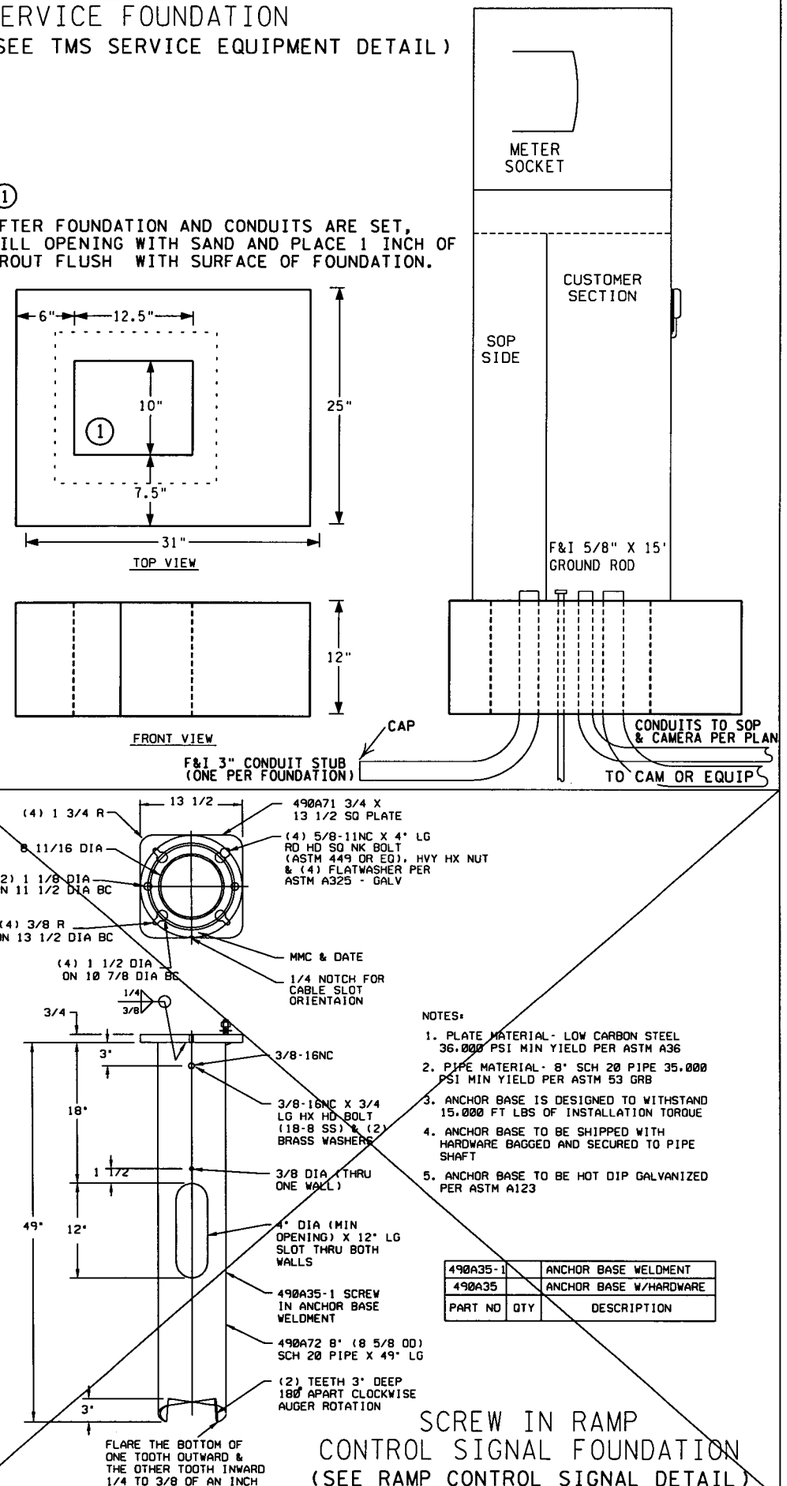
REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C. Pahl LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM5 OF TM26 SHEETS

STAND ALONE SERVICE FOUNDATION

(SEE TMS SERVICE EQUIPMENT DETAIL)



NOTES:

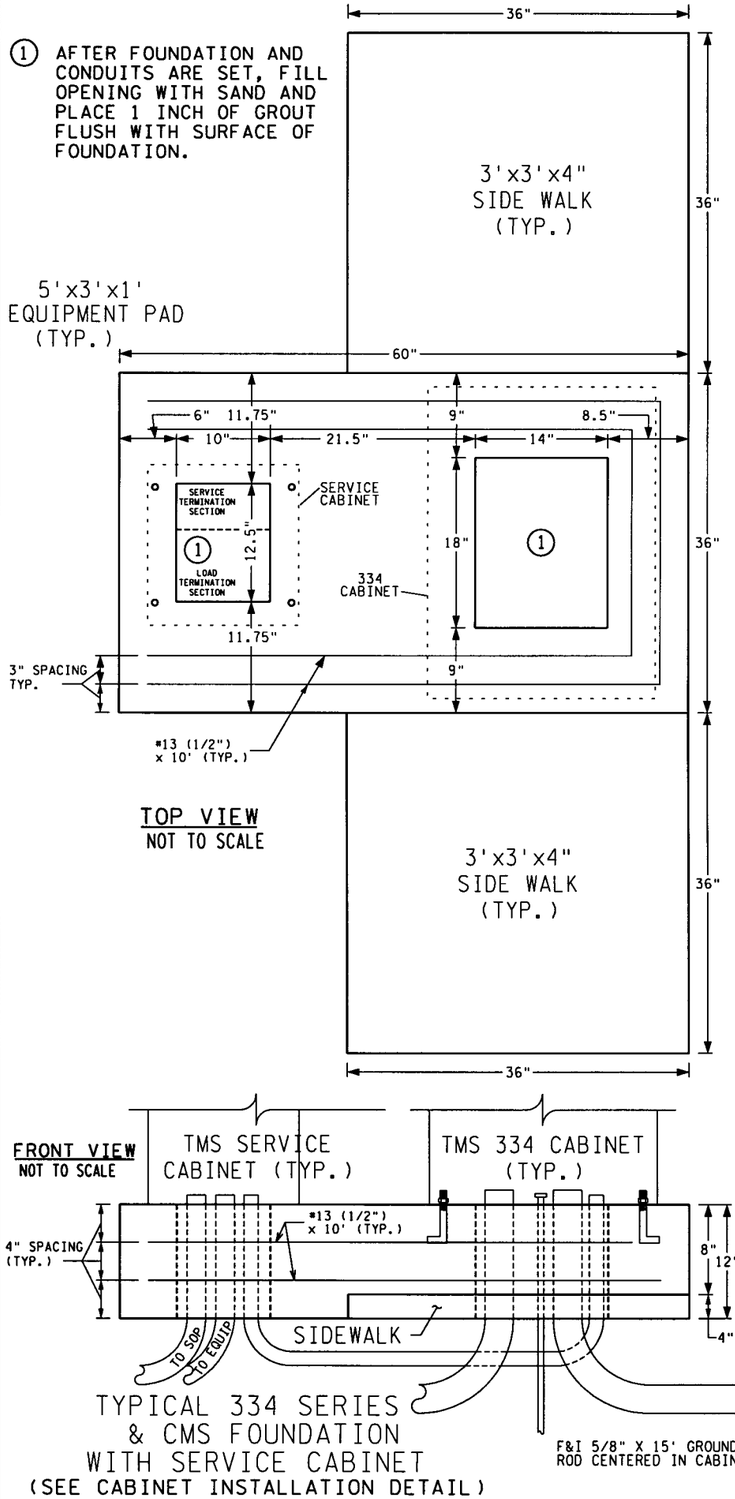
1. PLATE MATERIAL- LOW CARBON STEEL 36,000 PSI MIN YIELD PER ASTM A36
2. PIPE MATERIAL- 8" SCH 20 PIPE 35,000 PSI MIN YIELD PER ASTM 53 GRB
3. ANCHOR BASE IS DESIGNED TO WITHSTAND 15,000 FT LBS OF INSTALLATION TORQUE
4. ANCHOR BASE TO BE SHIPPED WITH HARDWARE BAGGED AND SECURED TO PIPE SHAFT
5. ANCHOR BASE TO BE HOT DIP GALVANIZED PER ASTM A123

PART NO	QTY	DESCRIPTION
490A35-1		ANCHOR BASE WELDMENT
490A35		ANCHOR BASE W/HARDWARE

SCREW IN RAMP CONTROL SIGNAL FOUNDATION

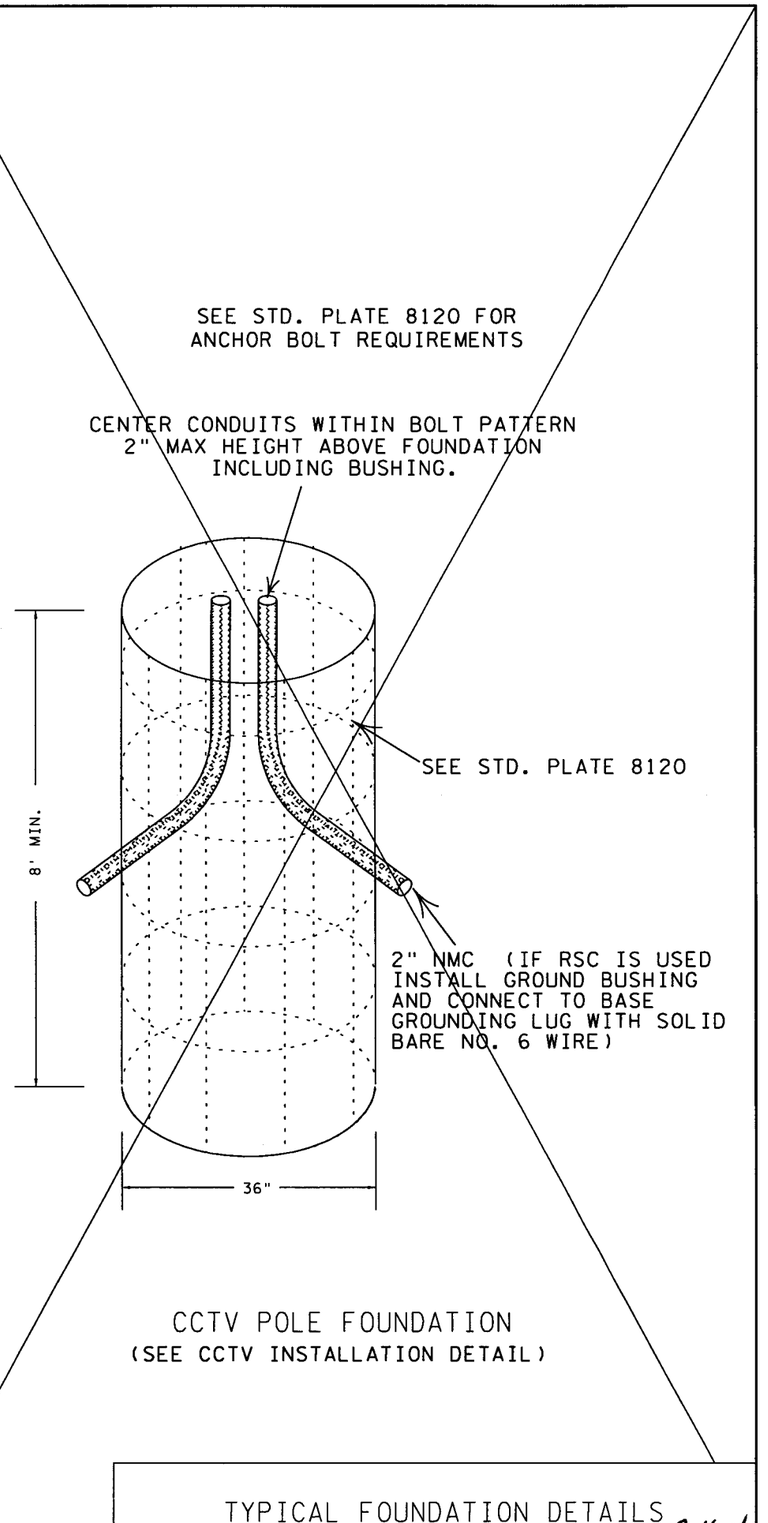
(SEE RAMP CONTROL SIGNAL DETAIL)

① AFTER FOUNDATION AND CONDUITS ARE SET, FILL OPENING WITH SAND AND PLACE 1 INCH OF GROUT FLUSH WITH SURFACE OF FOUNDATION.



TYPICAL 334 SERIES & CMS FOUNDATION WITH SERVICE CABINET

(SEE CABINET INSTALLATION DETAIL)



CCTV POLE FOUNDATION

(SEE CCTV INSTALLATION DETAIL)

TYPICAL FOUNDATION DETAILS

2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

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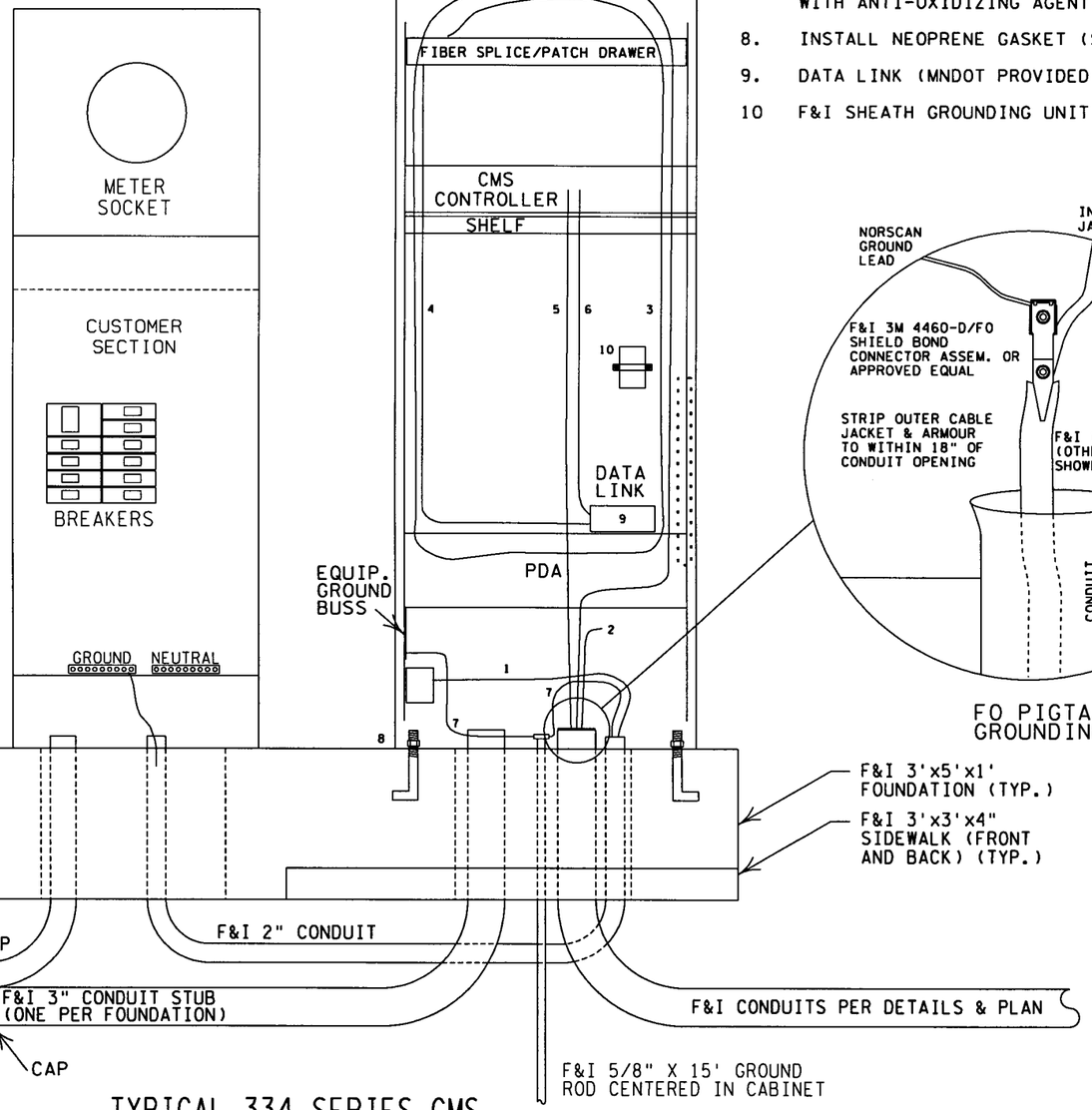
LICENSED PROFESSIONAL ENGINEER

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM6 OF TM26 SHEETS

F&I SERVICE EQUIPMENT AS CALLED IN PLANS

INSTALL 334 CMS CONTROL CABINET (MNDOT PROVIDED)



TYPICAL 334 SERIES CMS CABINET INSTALLATION

1. F&I POWER CABLE FROM SOURCE OF POWER-TERMINATE AT TERMINAL BLOCK
2. F&I 3-1/C NO.6 TO CMS-TERMINATE AT EACH END
3. F&I 1-FO PIGTAIL-PLACE 1 LOOP OF PIGTAIL CABLE WITHIN CABINET-TERMINATE END & LAND IN PATCH PANEL
4. FIBER OPTIC PATCH CORDS (MNDOT PROVIDED & INSTALLED)
5. F&I 7.5/PR NO.24 TO CMS-CONNECTED BY CMS MANUFACTURER (PROVIDE 10' SLACK IN CABINET & 40' SLACK IN SIGN)
6. RS232 LINE (MNDOT PROVIDED & INSTALLED)
7. F&I 1-1/C NO.6 BARE GROUND WIRE-COAT CONNECTION WITH ANTI-OXIDIZING AGENT
8. INSTALL NEOPRENE GASKET (SUPPLIED BY MNDOT)
9. DATA LINK (MNDOT PROVIDED & INSTALLED)
10. F&I SHEATH GROUNDING UNIT (NORSCAN #2706)

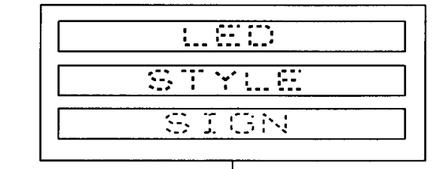
FO PIGTAIL GROUNDING

MNDOT PROVIDED

1. TMS 334Z CONTROL CABINET INCLUDING:
   - A) CMS CONTROLLER
   - B) FIBER OPTIC PATCH PANEL
   - C) CB ENCL. & BREAKER INSIDE CABINET
   - D) NEOPRENE CAB. GASKET

MNDOT PROVIDED & INSTALLED

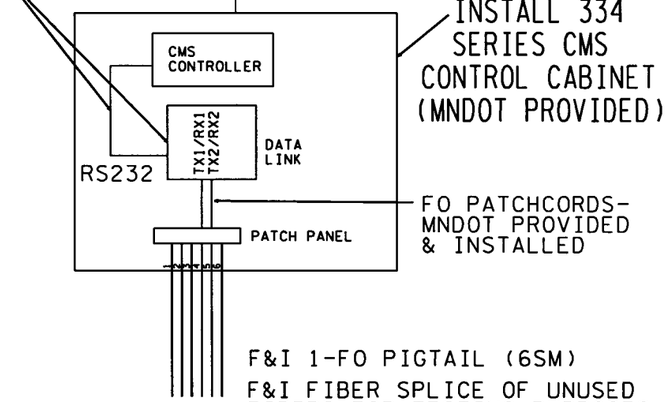
1. FIBER OPTIC PATCH CORDS
2. FO PIGTAIL & PATCH PANEL LABELS WITHIN CMS CABINET
3. DATA LINK



INSTALL LED SIGN (MNDOT PROVIDED)

MNDOT PROVIDED & INSTALLED

F&I 1-7.5/PR NO.24 (TO BE TERMINATED BY CMS MANUFACTURER AT SIGN & CMS AFTER INSTALLATION)



TYPICAL FIBER OPTIC CONTROLLED CMS EQUIPMENT INSTALLATION

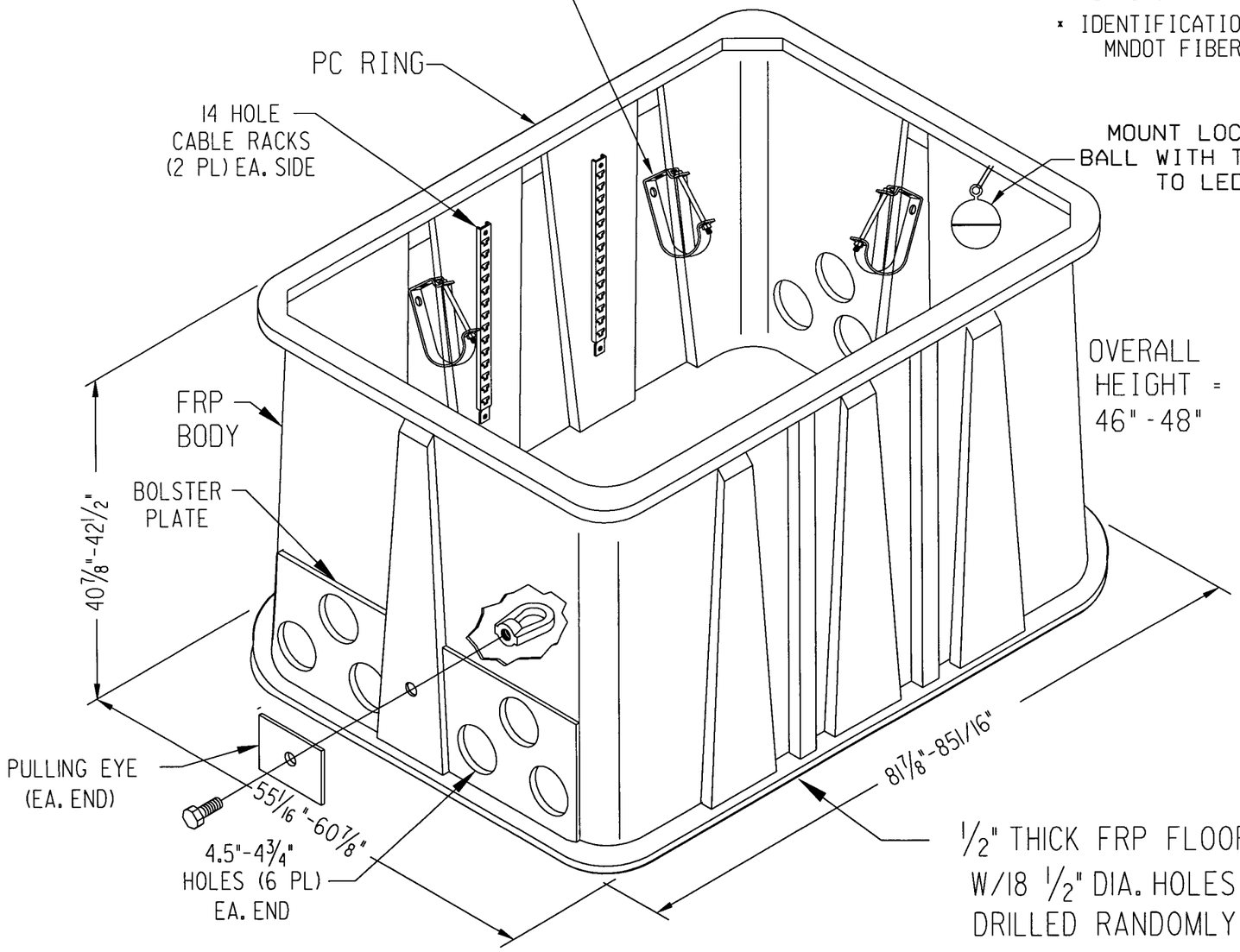
TYPICAL DMS CABINET INSTALLATION 2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard E Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM7 OF TM26 SHEETS

STAINLESS STEEL COILING BRACKETS,
SIZED FOR 4" PIPE
& 8-3/8" IN HEIGHT (6 EACH).
PLACE 12" BELOW TOP OF PC RING.
FASTEN WITH SS HH BOLTS 5/8" X 4-1/2"
LONG AND SS "NYLOCK" STYLE LOCKNUT

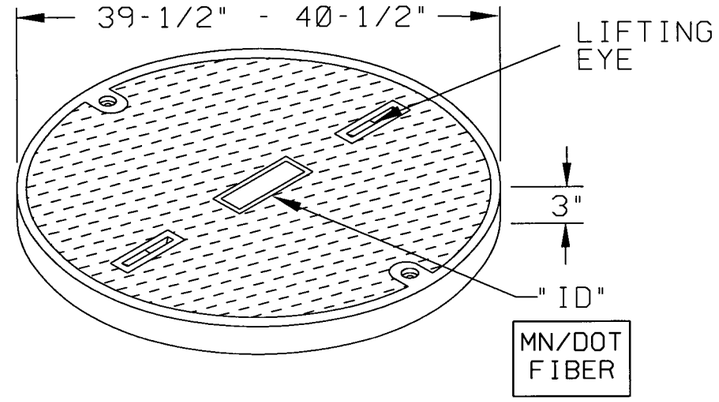


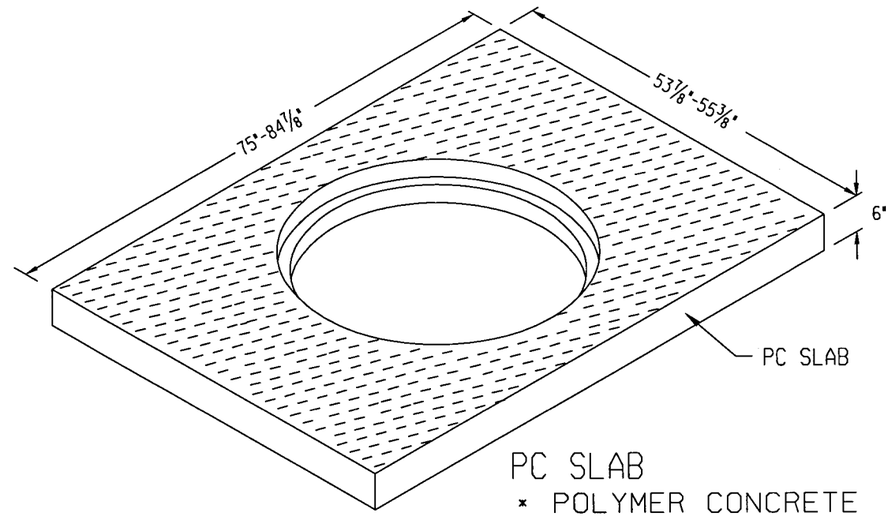
DRAWING NOT TO SCALE

* ALL BOLTS STAINLESS STEEL

COVER FEATURES

* 20845 LB WHEEL LOADING
* APPROX. WT. = 180 LBS.
* (2) 3/8"-16 X 3-1/2" LONG SS HH BOLTS
* POLYMER CONCRETE FRP CONSTRUCTION
* NON-SKID SURFACE
* IDENTIFICATION LOGO: MNDOT FIBER





PC SLAB

* POLYMER CONCRETE
* NON-SKID SURFACE

FRP VAULT FEATURES

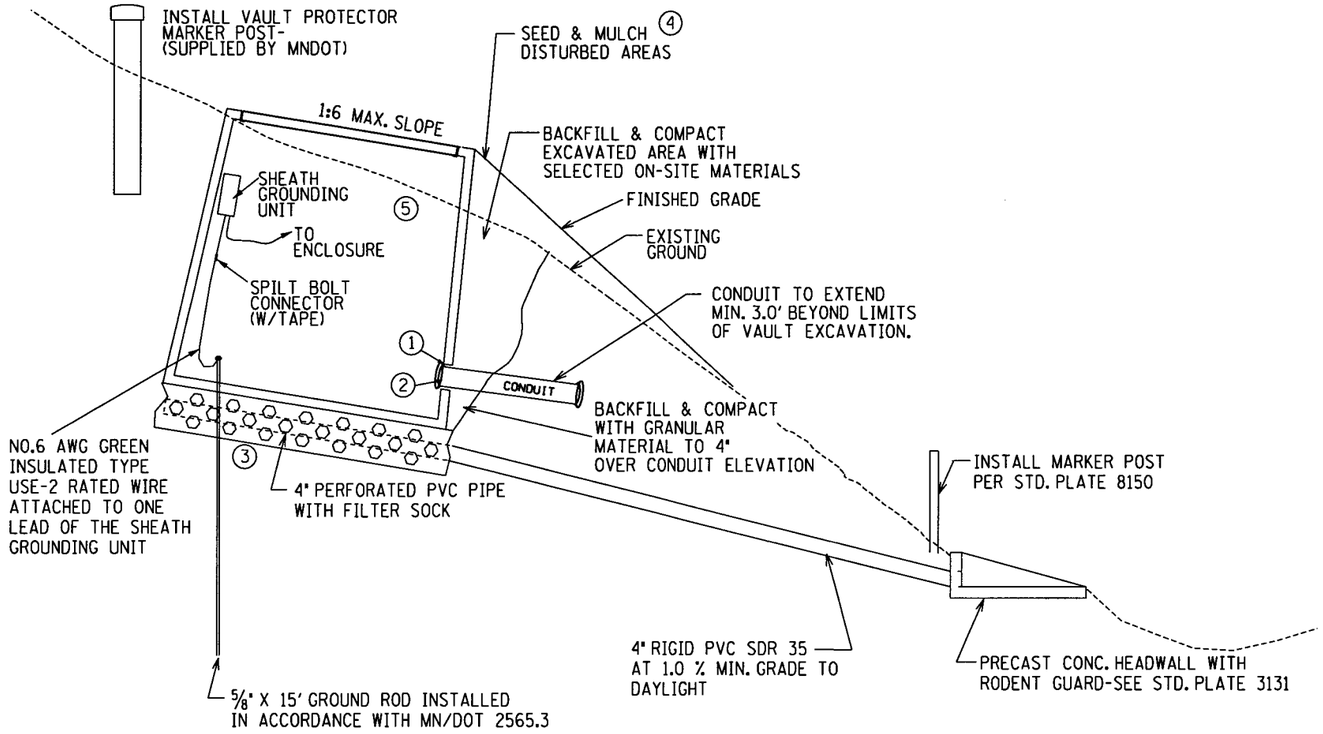
* FIBERGLASS REINFORCED POLYMER (FRP) CONSTRUCTION
* POLYMER CONCRETE RING

FIBER OPTIC SPLICE VAULT 2-16-06

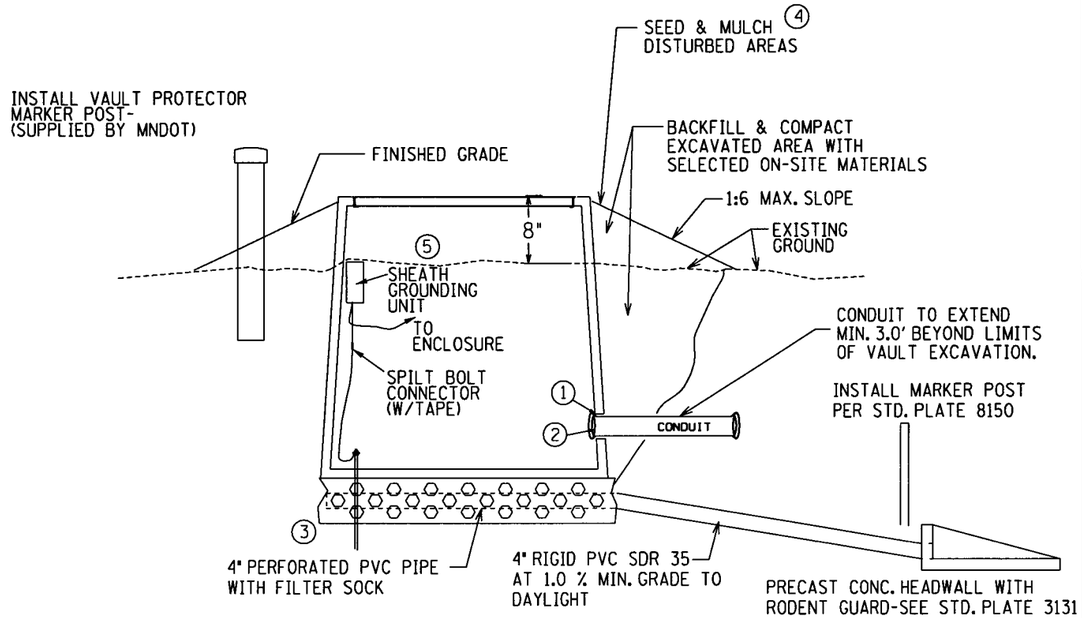
REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM8 OF TM26 SHEETS

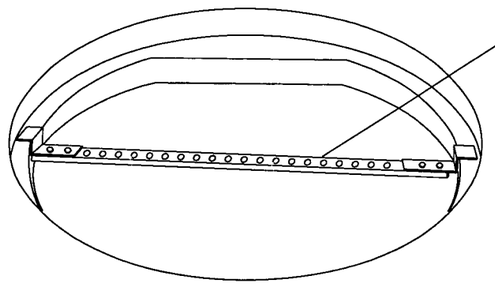


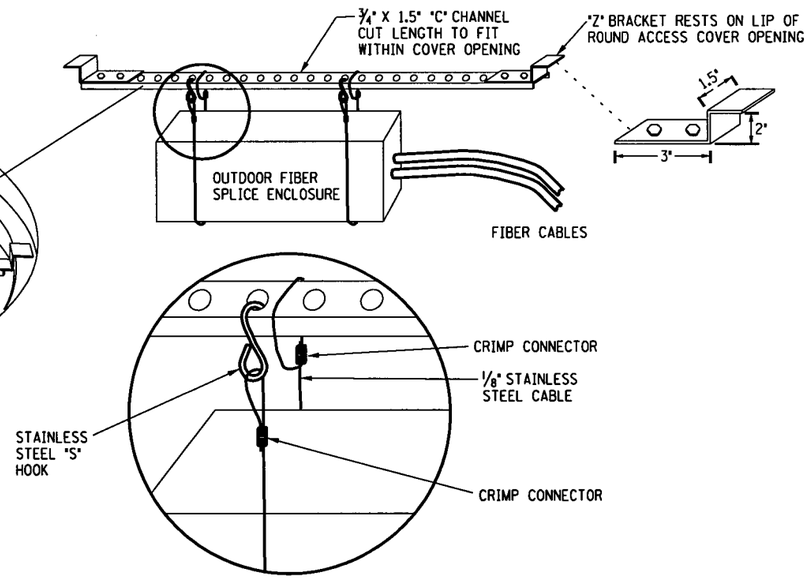
VAULT INSTALLATION & DRAINAGE SYSTEM (SLOPED AREAS)



VAULT INSTALLATION & DRAINAGE SYSTEM (LEVEL GROUND AREAS)

COVER OPENING IN VAULT PC SLAB





OUTDOOR FIBER SPLICE ENCLOSURE HANGER BRACKETING

SPLICE ENCLOSURE HANGER DETAIL

SPECIFIC NOTES

① OPENINGS FOR CONDUIT SHALL BE SEALED WITH MATERIAL COMPATIBLE SEALANT.

② PLUG CONDUIT OPENING WITH A DRAINABLE COMPOUND

③ INSTALL 1.0' COARSE FILTER AGGREGATE UNDER BASE COMPLYING WITH MN/DOT 3149.2H. INSTALL 4" PERFERATED PVC PIPE WITH FILTER SOCK TO PROVIDE DRAINAGE.

④ RESTORE DISTURBED AREAS WITH SEED MIXTURE 60B AND TYPE 1 MULCH PER MNDOT 2575.3

⑤ STRIP TOPSOIL FROM VAULT AND SLOPE AREAS PRIOR TO VAULT INSTALLATION

GENERAL NOTES

1. GROUND CONNECTIONS SHALL BE COATED WITH OXIDATION PROHIBITING COMPOUND.
2. CABLE SHALL ENTER BELOW THE SUPPORT BRACKETS WITH 50' OF EXTRA CABLE FOR EACH CABLE COILED AROUND INSIDE OF SUPPORT BRACKETS. CABLES SHALL BE CUT TO THE SAME LENGTH
3. ALL HARDWARE SHALL BE STAINLESS STEEL WITH EXCEPTION OF THE "C" CHANNEL MOUNTING BAR.
4. THE FRAME AND LID OF THE VAULT SHALL BE IN ACCORDANCE WITH AASHTO LOAD RATING H-10

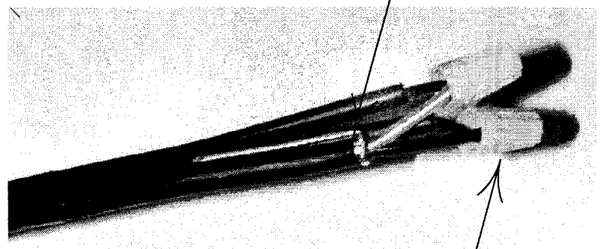
FIBER OPTIC SPLICE VAULT INSTALLATION 2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LIC.NO. 41525 DEC 30 2005
LICENSED PROFESSIONAL ENGINEER

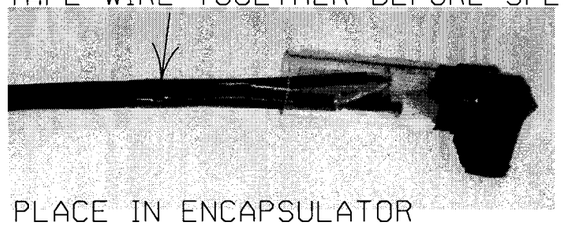
STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM9 OF TM26 SHEETS

CUT & REMOVE DRAIN WIRE

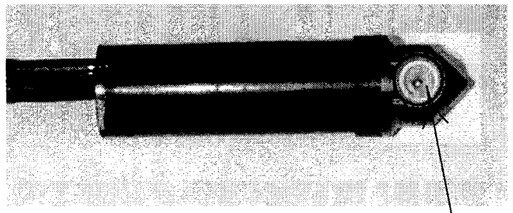


SOLDERED BUTT SPLICE IN WIRE NUT

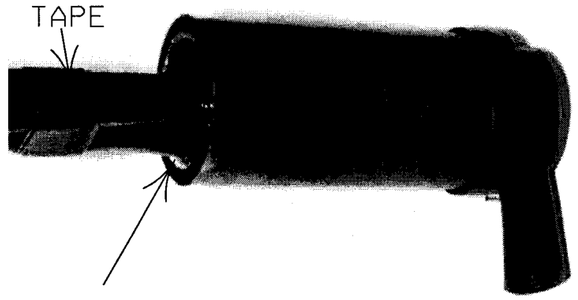
TAPE WIRE TOGETHER BEFORE SPLICE



PLACE IN ENCAPSULATOR

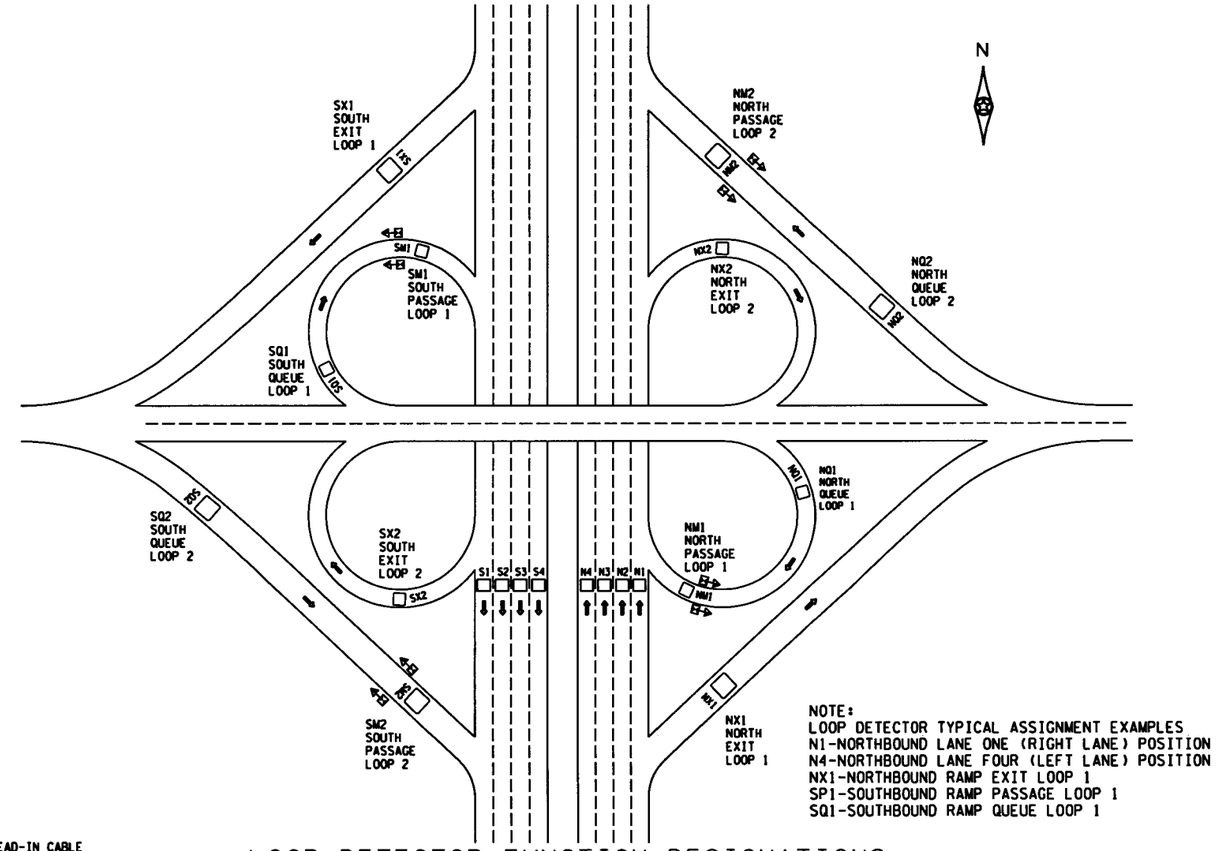


PLACE WIRE NUT IN ONE END TO BLOCK OPENING

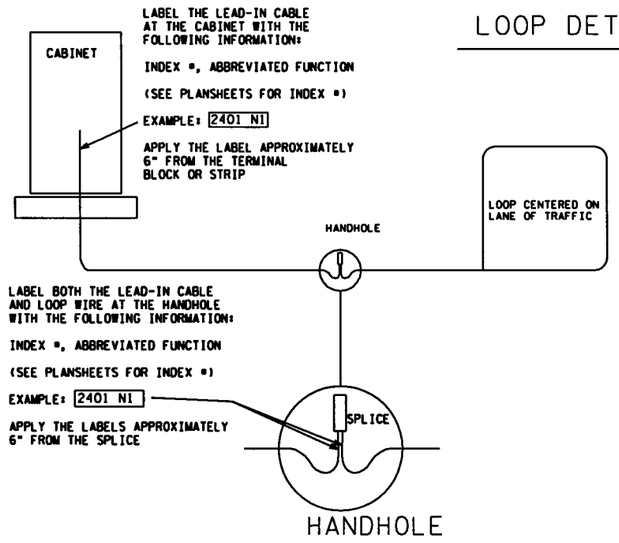


FILL ENCAPSULATOR COMPLETELY-ALLOW FINISHED SPLICE TO CURE SO EPOXY DOES NOT RUN OUT

LOOP DETECTOR SPLICE FOR SAWCUT AND PREFORMED LOOPS



LOOP DETECTOR FUNCTION DESIGNATIONS



LOOP DETECTOR CABLE LABELING

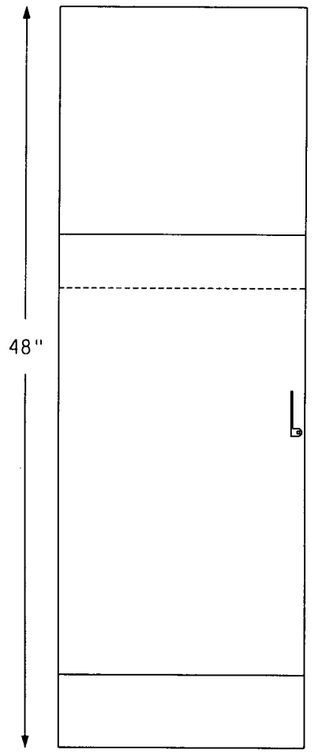
TMS LOOP DETECTOR TYPICAL-PART TWO 276-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

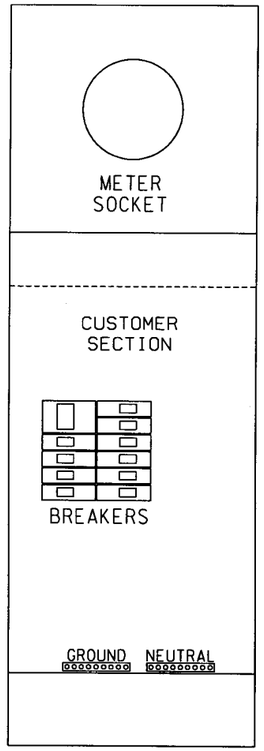
CERTIFIED BY Leonard C Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM10 OF TM26 SHEETS

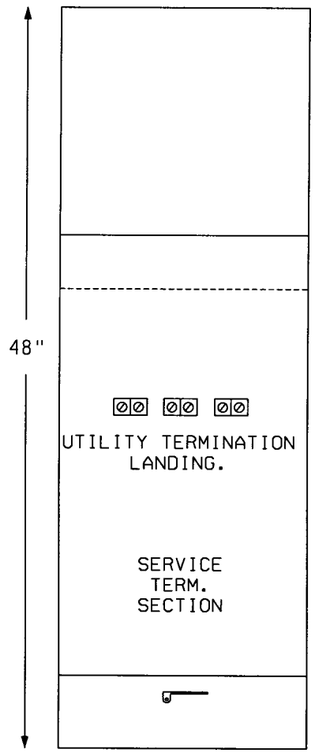
FRONT VIEW



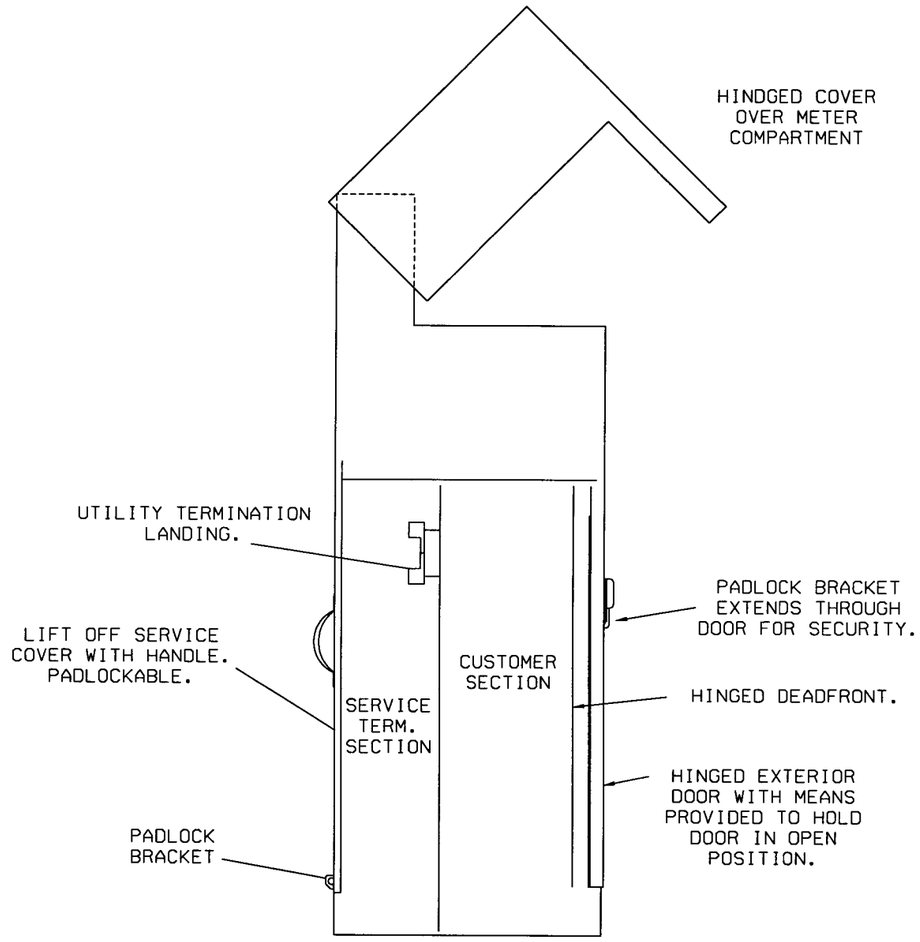
FRONT VIEW (INTERIOR)

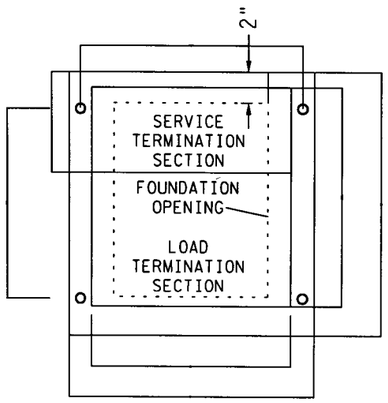


REAR VIEW



SIDE VIEW





CABINET CONSTRUCTION:

-NEMA3R
-1/8" ALUMINUM 5052-H32
-ANODIZED 1 HOUR CLEAR
-NEOPRENE GASKETED DOORS
-NON-CORRODING HARDWARE
-ETL LISTED IN ACCORDANCE W/UL508A

STANDARD TMS SERVICE CABINET SHALL COME EQUIPPED WITH 60A MAIN BREAKER, 1-30A CB & 1-20A CB WITH OPENINGS FOR 6 CIRCUITS TOTAL, UNLESS MODIFIED AT INDIVIDUAL LOCATIONS AS NOTED IN THE PLANS.

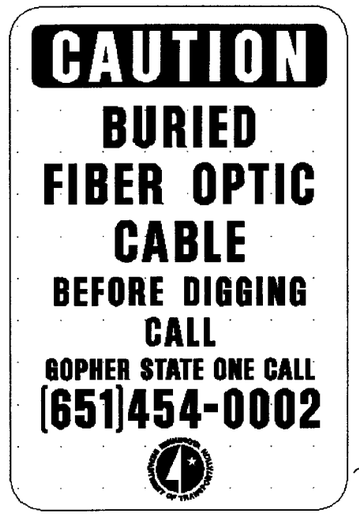
TMS SERVICE CABINET 2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM11 OF TM26 SHEETS

PLOTTED: 01/31/2006 07:57:44 AM Coozl5co MTM2KWF0043 TMS



8" X 12" .75"R.

TYPICAL SIGN DETAIL AT FIBER OPTIC SPLICE VAULT

FIBER OPTIC CABLE

▲ = BURIED CABLE SIGN

INSTALL BURIED CABLE SIGN A MAXIMUM OF 500 FEET APART.
INSTALL ONE SIGN AT CHANGE IN CABLE DIRECTION TO INDICATE CHANGE POINT AND NEW DIRECTION.
INSTALL BURIED CABLE SIGNS 16 FEET BEHIND CURB OR EDGE OF ROADWAY AT ROADWAY CROSSINGS.
INSTALL BURIED CABLE SIGNS 25 FEET FROM RAILROAD OR AS DIRECTED IN CROSSING PERMIT.
AT VAULT LOCATIONS MARKER POST IS PER VAULT DETAIL.
INSTALL ADDITION BURIED CABLE SIGN IF UNABLE TO SEE FROM SIGN TO SIGN (THIS INCLUDES CHANGES IN ELEVATION).
INSTALL BURIED CABLE SIGNS BETWEEN CABLE AND R/W FENCE, 3.0' FROM CABLE WITH SIGN PANEL PARALLEL TO BURIED CABLE

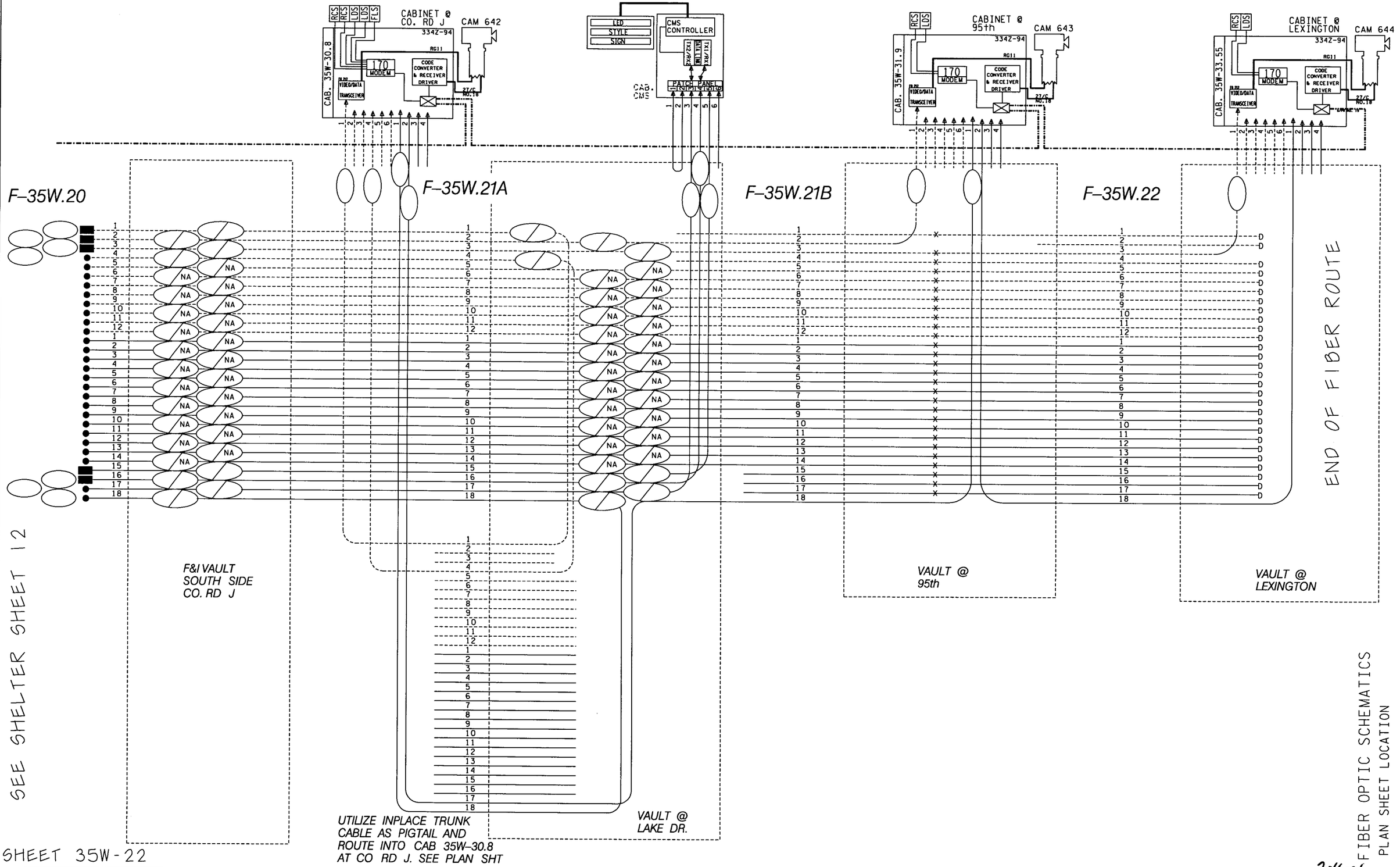
BURIED CABLE SIGN PLACEMENT TYPICAL 2-16-06

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM12 OF TM26 SHEETS

S:\tmc\MN\PRJ\0214-36\021436det.dgn



SHEET 35W-22

REV. NO.	DATE: / /
REV. NO.	DATE: / /

CERTIFIED BY Leonard C Pahl LICENSED PROFESSIONAL ENGINEER LIC.NO. 41525 DEC 30 2005

2-16-06

STATE PROJ. NO. 6284-137 (TH 35W) SHEET NO. TM13 OF TM26 SHEETS

CC TABULATION OF SIGNING QUANTITIES

SHEET NO.	ITEM	UNIT	SIGNING QUANTITIES
TM15	CONCRETE FOOTINGS (TYPE OH SPREAD)	CU. YD.	22
TM15	STRUCT. STEEL - POSTS FOR OH SIGNS (DESIGN B)	POUND	6148
TM15	STRUCT. STEEL - TRUSSES FOR OH SIGNS (DESIGN B)	POUND	8705(P)
TM15	STRUCT. STEEL - WLKWY. SUPPORTS FOR OH SIGNS (DESIGN B)	POUND	198(P)
TM15	STRUCT. STEEL - WLKWY. GRATING FOR OH SIGNS (DESIGN B)	POUND	360(P)

I HEREBY CERTIFY THAT SHEETS TM14-TM26 OF THIS PLAN WERE 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.

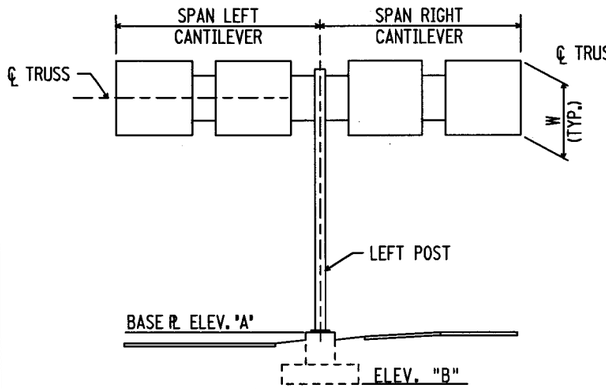
DATE 1/31/06 LIC. NO. 10502 ENGR. Michael B. Weiss

MICHEAL B. WEISS

DESIGN SQUAD: RICK SUNSTROM

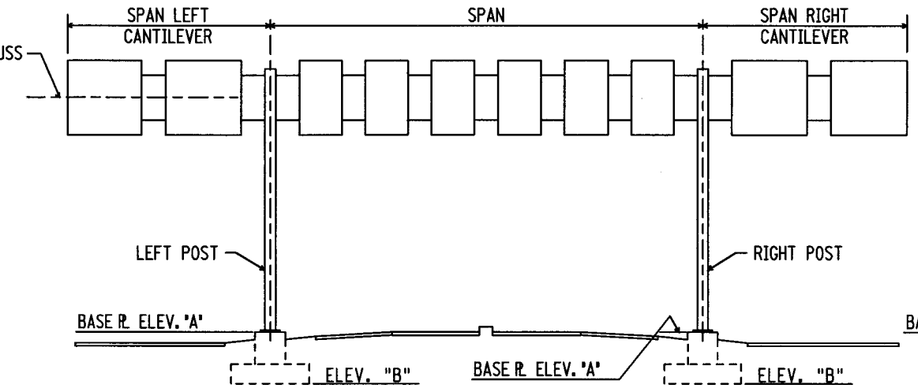
QUANTITIES

2-16-06



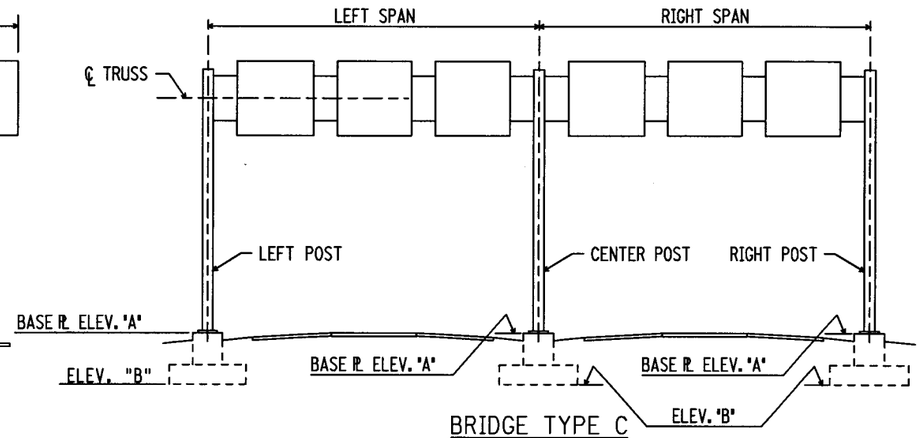
BRIDGE TYPE BC

BUTTERFLY AND CANTILEVER SPANS



BRIDGE TYPE S

SIMPLE SPAN WITH CANTILEVERS



BRIDGE TYPE C

CONTINUOUS SPANS

OVERHEAD SIGN STRUCTURE

SIGN NO.	STATION	BRIDGE TYPE	TRUSS TYPE	SPAN LENGTHS				LOW STEEL ELEVATION SEE ST-1	LEFT POST			CENTER POST			RIGHT POST		
				LEFT CANT.	RIGHT CANT.	SPAN OR LEFT SPAN	RIGHT SPAN		ELEVATION (1)		TYPE	ELEVATION (1)		TYPE	ELEVATION (1)		TYPE
									A	B		A	B		A	B	
OH 364-35W	480+00 SB	S	A			63'-6"		117.33	98.95	93.18	1				99.13	91.79	1E

TABULATION OF OVERHEAD SIGN STRUCTURE QUANTITIES (2)

SIGN NO.		OH 364-35W				TOTALS
STRUCT. STEEL POSTS	LBS.	6148				6148
STRUCT. STEEL TRUSSES	LBS.	8705 (3)				8705
STRUCT. STEEL WALKWAY SUPPORTS	LBS.	198				198
STRUCT. STEEL WALKWAY GRATING	LBS.	360				360
STRUCT. STEEL PANEL MTG. POSTS	LBS.					
CONCRETE FOOTINGS (SPREAD)	CU. YD.	22.5				22.5

SPECIFIC NOTES:

(1) Center line elevation = 100.00.

(2) Based on tabulated elevations and dimensions. Revise if necessary using quantity tables on ST-2.

(3) Includes mounting angles and stanchion.

GENERAL NOTES:

1. The subscript E on the post type denotes the post which has the hand hole and provisions for grounding, i.e. post type 3E.
2. Tabulated elevations and dimensions are approximate only. Fabrication dependent on these elevations and dimensions shall not be started until the Engineer has made final determination of them in the field.
3. Left and right designations are shown looking in direction of traffic flow. When two directions of traffic are spanned the designations are shown looking up stationing.
4. See sheets TM19-TM25 for details.
5. See sheet TM26 for cross section.

OH SIGN DATA SHEET

(DESIGN B)

2-16-06

CERTIFIED BY Michael B. Weiss LICENSED PROFESSIONAL ENGINEER LIC. NO. 10502

State Proj. No. 6284-137

BLAINE

COUNTY ROAD J

LED CMS ③

OH 344-35W ②

460

465

470

T.H. 35W

460

465

470

BR. 9606

NOTES:

② Inplace

③ See TMC portion of plan

ROADWAY LAYOUT

T.H. 35W STA. 456+60 - 472+60

2/6-06

CERTIFIED BY Michael B. Welas LIC. NO. 10502

LICENSED PROFESSIONAL ENGINEER

State Proj. No. 6284-137

Sheet No. TM16 of TM26 Sheets

BLAINE

LED CMS ③

OH 364-35W ①

475

480

485

T.H. 35W

475

480

485

BR. 9607

NOTES:

① F. & I.

③ See TMC portion of plan

ROADWAY LAYOUT

T.H. 35W STA. 472+60 - 488+60

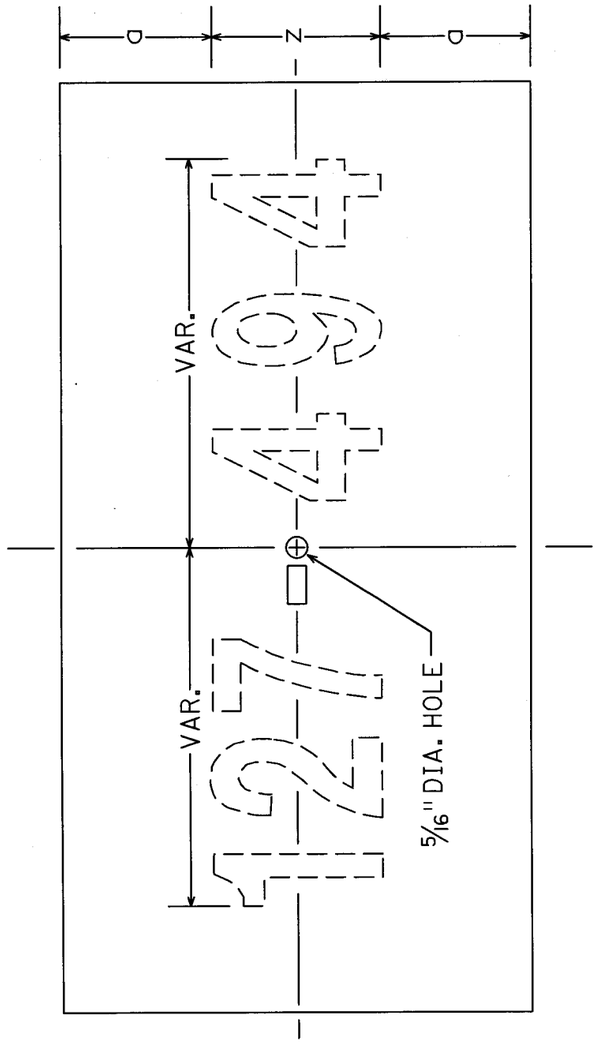
2-16-06

CERTIFIED BY Michael B. Weiss LIC. NO. 10502

LICENSED PROFESSIONAL ENGINEER

State Proj. No. 6284-137

Sheet No. TM17 of TM26 Sheets



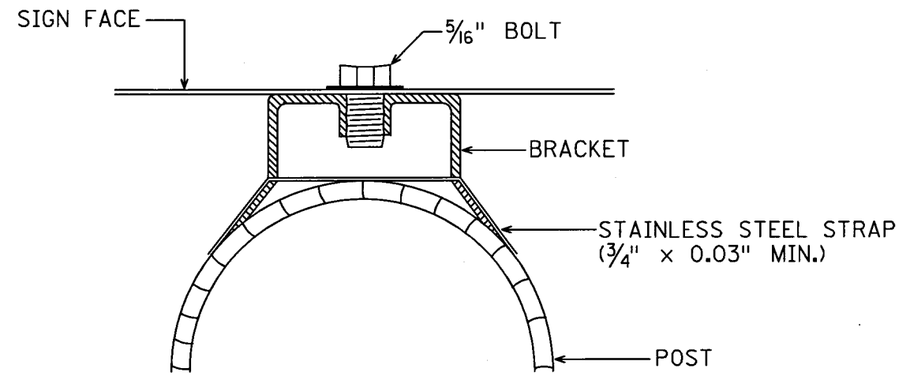
SIZE / DIMENSION	12×6
RADIUS	
MARGIN	
BORDER	2
a	
b	
c	
d	
e	
f	
g	
h	
i	
j	
k	
l	
m	
n	
o	
p	
q	
r	
s	
t	
u	
v	
w	
x	
y	
z	2-C
PUNCH CODE	

NOTES: 1) ALL DIMENSIONS AND SIZES SHOWN ARE IN INCHES.
2) USE APPROPRIATE NUMERALS.
3) PLATE MATERIAL - (MN/DOT 3352.2A1b).
4) GREEN BACKGROUND - (MN/DOT 3352.2A2b).
5) WHITE NUMERALS OR LETTERS - (MN/DOT 3352.2A2b).

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
STANDARD SIGN DRAWING

OH SIGN IDENTIFICATION PLATE

I.D. PLATE STR. (SHT.56) 11-01-01

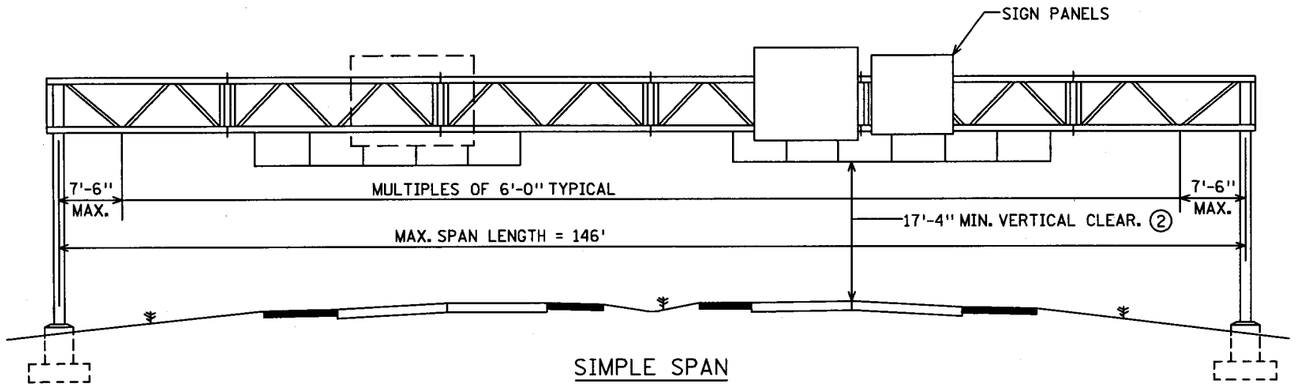


GALVANIZED OR STAINLESS STEEL BRACKET, BOLT AND WASHER.

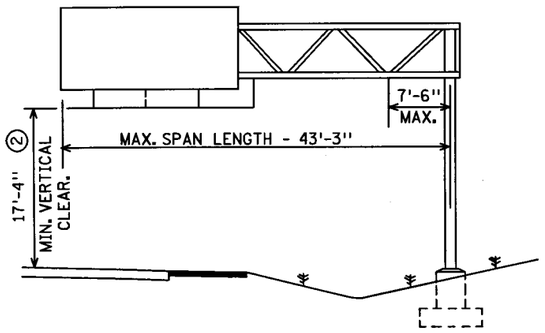
STRAP MOUNTING DETAIL

2-16-06

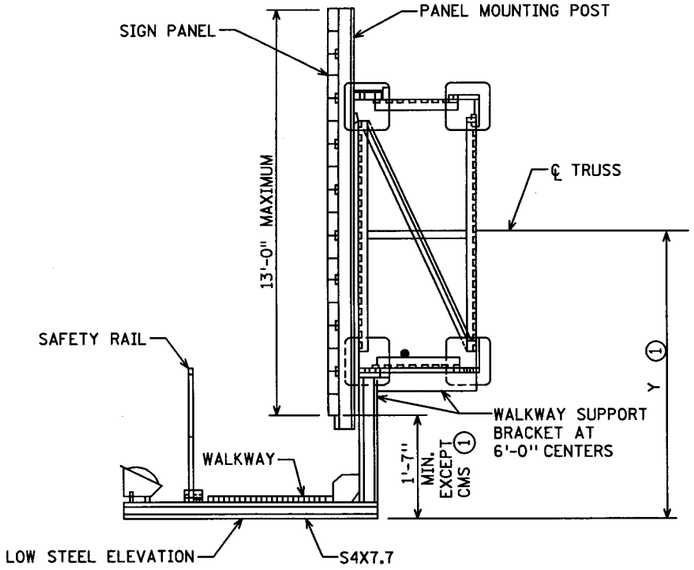
State Proj. No. 6284-137 Sheet No. TM18 of TM26 Sheets



SIMPLE SPAN



CANTILEVER



SECTION

INDEX OF STANDARD SIGN DRAWINGS

SIGN HEIGHT	Y ①	
6'-6"	4'-4"	CMS (NEW LED)
7'-0"	4'-7"	
7'-6"	4'-10"	
8'-0"	5'-1"	CMS (LED)
8'-6"	5'-4"	
9'-0"	5'-7"	CMS (DRUM)
9'-6"	5'-10"	
10'-0"	6'-1"	
10'-6"	6'-4"	
11'-0"	6'-7"	
11'-6"	6'-10"	
12'-0"	7'-1"	
12'-6"	7'-4"	
13'-0"	7'-7"	

SPECIFIC NOTES:
① DIMENSION Y IS CONSTANT AND BASED ON THE DEEPEST SIGN PANEL ABOVE THAT WALKWAY. WHEN STANDARD SIGN PANEL(S) AND CMS ARE MOUNTED ON THE SAME SPAN, DIMENSION Y SHALL BE GOVERNED BY THE CMS.
② MINIMUM CLEARANCE WILL BE MEASURED FROM THE HIGHEST ELEVATION OF PAVEMENT, SHOULDERS, AND MOUNTABLE CURBS, OR IF INSURMOUNTABLE CURBS ARE USED, THE HIGHEST ELEVATION BETWEEN CURB LINES.

GENERAL NOTES:

DESIGN SPECIFICATIONS:
TRUSS, POST, & HARDWARE:
AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS DATED 1999.

LOADING:
WIND LOAD 90 M.P.H. NORMAL TO SIGN FACE IN COMBINATION WITH OTHER LOADS OUTLINED IN THE DESIGN SPECIFICATIONS.

UNIT STRESSES:
CONCRETE---------- Fc = 1,600 PSI
REINFORCEMENT STEEL---------- Fs = 24,000 PSI
FOOTING SOIL PRESSURE---------- 1-1/4 TONS PER SQ. FT.

MATERIALS:
STRUCTURAL STEEL (EXCEPT POST, TUBES)- Mn/DOT 3306
POST STEEL---------- VARIES
HIGH STRENGTH BOLTS--------- Mn/DOT 3391.2B
ANCHOR RODS---------- Mn/DOT 3385
CASTINGS---------- Mn/DOT 3322
REINFORCEMENT
BARS---------- Mn/DOT 3301
SPIRAL---------- Mn/DOT 3305 NO SPLICES
WALKWAY GRATING---------- FEDERAL SPECIFICATIONS RR-G-661b, TYPE 1, STEEL
CONCRETE---------- Mn/DOT 2461 (MIX 3Y43)

FINISH:
ALL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION EXCEPT REINFORCEMENT BARS, LOWER PORTION OF ANCHOR RODS, ALUMINUM, AND OTHER NON FERROUS INCIDENTALS. GALVANIZING SHALL CONFORM TO Mn/DOT 3392 OR Mn/DOT 3394 AS APPLICABLE.
BEARING SURFACES MUST BE SMOOTH.

FABRICATION:
FABRICATION OF STRUCTURAL METALS SHALL BE IN ACCORDANCE WITH Mn/DOT 2471, Mn/DOT 2564 AND THE APPLICABLE SPECIAL PROVISIONS. ALL WELDING TO BE CONTINUOUS. ALL CONTACT SURFACES MUST BE COMPLETELY SEALED.

INSPECTION:
INSPECTION BEFORE AND AFTER GALVANIZING PER Mn/DOT 1511 AND Mn/DOT 2471.

REVISED 2/08/00

STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

GENERAL ELEVATIONS AND NOTES

DRAWING ST-1

276-06

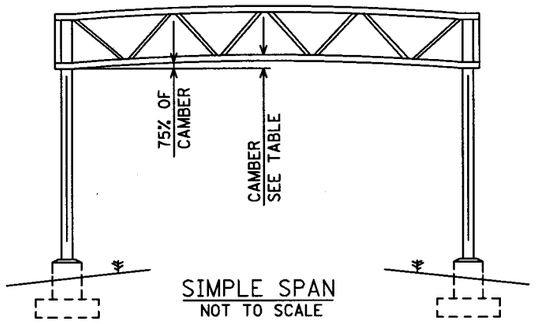
State Proj. No. 6284-137 Sheet No. TM19 of TM26 Sheets

ST.DGN ST1 10-5-98

SIMPLE SPAN

SIMPLE SPAN TRUSS CAMBER												
SPAN	40	50	60	70	80	90	100	110	120	130	140	150
CAMBER	1/4	7/16	5/8	13/16	1 1/16	1 3/8	1 11/16	2	2 3/8	2 13/16	3 1/4	3 3/4
DL DEFLECTION	0	1/16	1/16	1/8	1/4	3/8	9/16	13/16	1 1/8	1 1/2	2 1/16	2 11/16
RESIDUAL CAMBER	1/4	3/8	9/16	11/16	13/16	1	1 1/8	1 3/16	1 1/4	1 5/16	1 3/16	1 1/16

NOTE:
CAMBER AND DEFLECTIONS SHOWN ARE AT ℄ SPAN. THE DEFLECTIONS AND CAMBER AT THE QUARTER POINTS SHALL BE APPROXIMATELY 75% OF THESE VALUES.



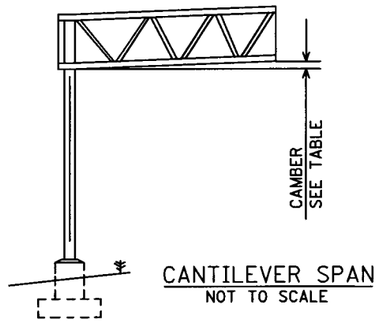
SIMPLE SPAN
NOT TO SCALE

CANTILEVER SPAN

CANTILEVER SPAN TRUSS CAMBER					
SPAN	15'	20'	30'	40'	45'
CAMBER	1/8	1/4	5/8	1 1/16	1 1/4
DL DEFLECTION	0	0	1/16	3/16	1/4
RESIDUAL CAMBER	1/8	1/4	9/16	7/8	1

NOTE:
CAMBER AND DEFLECTIONS SHOWN ARE SHOWN AT END OF CANTILEVER.

WHEN ERECTING CANTILEVER TRUSSES, THE POSTS SHALL BE SET 1/8" PER FOOT OUT OF PLUMB TO COMPENSATE FOR THE BENDING OF THE POSTS.



CANTILEVER SPAN
NOT TO SCALE

FOR FOUNDATION QUANTITIES SEE DRAWING ST-3

WALKWAY WEIGHTS:
1. USE 3'-4 3/4" WIDE GRATING @ 44 LBS/FT.
2. WEIGHT INCLUDES HANDRAIL (12 LBS/FT.) AND FIXTURE MOUNTING CHANNELS (4 LBS/FT.).

TRUSS QUANTITIES		
USE LENGTH FROM ℄ POST WHEN CALCULATING TOTAL WEIGHTS.		
TRUSS TYPE A	TRUSS TYPE B	TRUSS TYPE C
123 LBS./FT.	168 LBS./FT.	196 LBS./FT.

PANEL MOUNTING POST QUANTITIES INCLUDES MOUNTING ANGLES	
PANEL HEIGHT	WEIGHT/POST
6'-6"	70
7'-0"	74
7'-6"	78
8'-0"	82
8'-6"	86
9'-0"	90
9'-6"	93
10'-0"	97
10'-6"	101
11'-0"	105
11'-6"	160
12'-0"	166
12'-6"	172
13'-0"	178

WALKWAY SUPPORT QUANTITIES

USE MAXIMUM PANEL HEIGHT ON SPAN TO CALCULATE QUANTITIES. WHEN CONVENTIONAL SIGN PANEL(S) AND CMS ARE MOUNTED ON THE SAME SPAN, QUANTITIES SHALL BE GOVERNED BY THE CMS.

	PANEL HEIGHT	TRUSS TYPE (WEIGHT/SUPPORT) A	B	C
CMS(NEW LED)	6'-6"	99	105	113
	7'-0"	101	107	115
	7'-6"	103	109	117
CMS (LED)	8'-0"	105	111	119
	8'-6"	107	113	121
CMS (DRUM)	9'-0"	109	115	123
	9'-6"	111	117	125
	10'-0"	113	119	127
	10'-6"	115	121	129
	11'-0"	135	142	151
	11'-6"	138	144	153
	12'-0"	141	147	156
	12'-6"	143	150	159
	13'-0"	146	153	162

TABLE 1 - POST IDENTIFICATION					
POST IDENTIFICATION NUMBER	BASEPLATE DESIGN	PERMISSIBLE PIPE SECTIONS			
		MIN. YIELD=35 KSI		MIN. YIELD=42 KSI	
		OUTSIDE DIAMETER (INCH)	WALL THICKNESS (INCH)	OUTSIDE DIAMETER (INCH)	WALL THICKNESS (INCH)
1	A	N.A.	N.A.	18	0.250
2	A	18	0.375	18	0.312
3	A	18	0.500	18	0.375
4	A	18	0.562	18	0.500
5	B	18	0.938	18	0.750
6	B	20	0.594	20	0.500
7	B	N.A.	N.A.	20	0.812
WALL THICKNESS IS MINIMUM, THINNER WALLS WILL NOT BE APPROVED					

POST IDENTIFICATION NOTES:

POST MATERIAL SHALL CONFORM TO ONE OF THE FOLLOWING SPECIFICATIONS:
ASTM A709, GRADE 36
ASTM A53, GRADE B
API 5L, GRADES B, X42, X46, X52, X56, X60, X65

CONTRACTOR SHALL DEMONSTRATE THAT THE POST MATERIAL MEETS THE REQUIREMENTS OF ONE OF THE ABOVE CITED SPECIFICATIONS AND THE MINIMUM YIELD STRENGTH.

NO SPLICES OF ANY KIND WILL BE PERMITTED IN POSTS INTENDED FOR USE IN CANTILEVER TYPE STRUCTURES (BRIDGE TYPE BC).

ONE OF TWO POSTS FOR SIMPLE SPAN STRUCTURES (BRIDGE TYPE S) MAY INCORPORATE ONE WELDED CIRCUMFERENTIAL BUTT SPLICE CONFORMING TO AWS D1.1 DETAIL B-U2 IN THE UPPER 1/3 OF ITS LENGTH. BACK UP RINGS FOR THESE WELDED SPLICES SHALL BE COMMERCIAL PRODUCTS. BUTT WELDS REQUIRE RADIOGRAPHIC INSPECTION (Mn/DOT 2471.3).

ALL RADIOGRAPHIC INSPECTIONS AND MAGNETIC PARTICLE TESTING REPORTS AND RADIOGRAPHIC FILMS SHALL BECOME THE PROPERTY OF THE DEPARTMENT.

SEE DRAWING ST-4 FOR BASEPLATE DETAILS.

POST QUANTITIES					
QUANTITIES INCLUDE ANCHORAGE ASSEMBLY AND TRUSS CONNECTION PLATES. PAY LENGTH OF POSTS IS FROM THE BOTTOM OF THE BASE PLATE (ELEV. A) TO THE TOP OF THE TRUSS. POST QUANTITIES ARE BASED ON GRADE 42 STEEL. NO ADJUSTMENTS WILL BE MADE IN THE QUANTITIES FOR THE USE OF GRADE 35 STEEL POSTS.					
	CANTILEVER		SIMPLE SPAN		
POST TYPE	TRUSS TYPE A	TRUSS TYPE B	TRUSS TYPE A	TRUSS TYPE B	TRUSS TYPE C
1	1880+47 LBS/FT	2470+47 LBS/FT	1870+47 LBS/FT	1890+47 LBS/FT	1915+47 LBS/FT
2	1880+59 LBS/FT	2470+59 LBS/FT	1870+59 LBS/FT	1890+59 LBS/FT	1915+59 LBS/FT
3	1880+71 LBS/FT	2470+71 LBS/FT	1870+71 LBS/FT	1890+71 LBS/FT	1915+71 LBS/FT
4	1880+94 LBS/FT	2470+94 LBS/FT	1870+94 LBS/FT	1890+94 LBS/FT	1915+94 LBS/FT
5	1910+138 LBS/FT	2500+138 LBS/FT	2460+138 LBS/FT	2480+138 LBS/FT	2505+138 LBS/FT
6	N/A	2500+104 LBS/FT	N/A	2545+104 LBS/FT	2570+104 LBS/FT
7	N/A	2500+167 LBS/FT	N/A	2545+167 LBS/FT	2570+167 LBS/FT

ST.DGN ST2 10-5-98

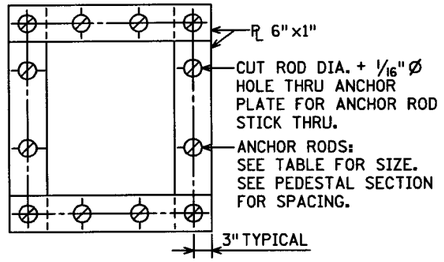
REVISED 12/23/99

2-16-06

STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

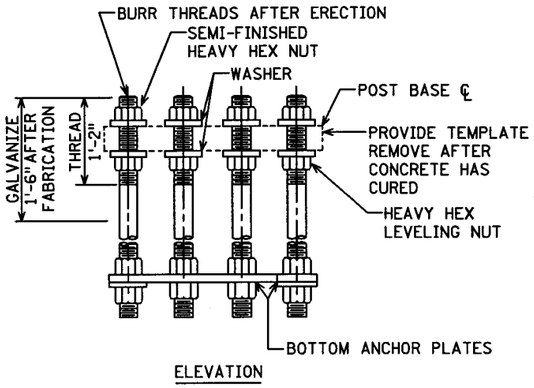
CAMBER, POST IDENTIFICATION AND ESTIMATED QUANTITIES

DRAWING ST-2

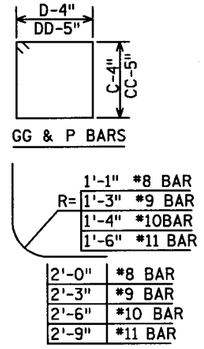


NOTE: ANCHOR PLATES SHOWN TYPICAL FOR ALL ANCHOR ROD SPACING.

ANCHOR PLATE PLAN



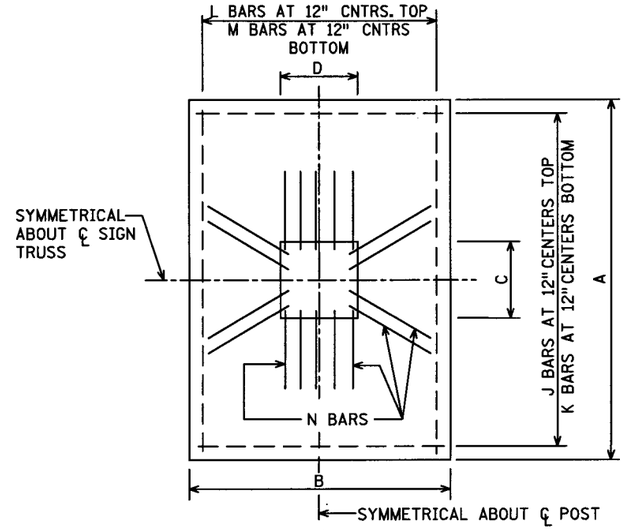
ELEVATION



2'-0"	*8 BAR
2'-3"	*9 BAR
2'-6"	*10 BAR
2'-9"	*11 BAR

N BARS

J, K, L, M, FF AND HH ARE STRAIGHT BARS
BAR BENDING DIAGRAMS



PLAN

SPECIFIC NOTES:

1. G IS IN FEET. ROUND UP TO WHOLE NUMBER. E.G. G=4.10/2G=8.2 NO. REQ'D=9.
2. G AND R ARE IN FEET.
3. BEND AS REQUIRED TO FORM A CLOSED LOOP.
4. FOR STRUCTURE STEEL SEE SPREAD FOOTING.
5. MUST BE FORMED A MIN. OF 6" BELOW THE GROUND SURFACE. THE SOIL EXCAVATED FOR FORMING SHALL BE BACKFILLED AND TAMPED TO EQUIVALENT COMPACTION AS SURROUNDING MATERAL.
6. SPECIAL LARGE RADIUS BENDS ARE REQUIRED. SEE "BAR BENDING DIAGRAMS" FOR SIZES OF RADII.

GENERAL NOTES:

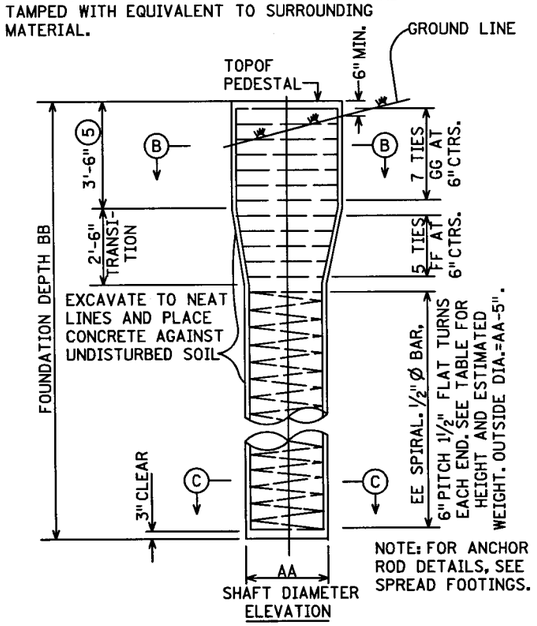
1. SEE THE FORMAT SHEET FOR FOOTING LOCATIONS. POST DESIGNATIONS, TOP OF PEDESTAL ELEVATIONS AND BOTTOM OF FOOTING ELEVATIONS.
2. ALL CONCRETE SHALL CONFORM TO CONCRETE MIX 3Y43 (MN/DOT 2461).
3. ALL BAR DIMENSIONS ARE OUT TO OUT OF BARS.
4. ALL SPREAD FOOTINGS HAVE AN ALLOWABLE DESIGN BEARING PRESSURE OF 1 1/4 T PER SQUARE FOOT.
5. DRILLED SHAFTS SHALL BE USED ONLY WHEN SPECIFIED IN THE CONTRACT PLANS.
6. THE DRILLED SHAFTS HAVE AN ALLOWABLE DESIGN LATERAL BEARING PRESSURE OF 250 LBS. PER SQ. FT. PER FOOT OF DEPTH.
7. UNLESS OTHERWISE NOTED, ALL REINFORCEMENT BARS SHALL BE EPOXY COATED IN ACCORDANCE WITH MN/DOT 3301. SPIRAL BARS AND J, K, L, & M BARS NEED NOT BE EPOXY COATED.
8. THE FOLLOWING TORQUE VALUES SHALL BE USED WHEN INSTALLING ALL ANCHOR NUTS FOR OVERHEAD SIGN STRUCTURES:

ANCHOR BOLT DIAMETER	TORQUE (FT./LBS.)
2 1/4"	375
2 1/2"	450

THE CONTRACTOR SHALL BURR THE THREADS OF THE ANCHOR BOLTS IN ACCORDANCE WITH MN/DOT 2402.3H AFTER TORQUEING NUTS.

ANCHOR ROD DETAILS

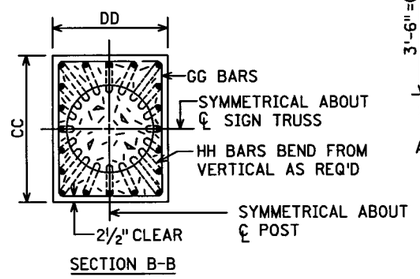
NOTE (5): MUST BE FORMED A MINIMUM OF 6" BELOW THE GROUND SURFACE. THE EXCAVATED AREA FOR FORMING SHALL BE BACKFILLED AND TAMPED WITH EQUIVALENT TO SURROUNDING MATERIAL.



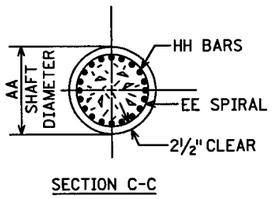
NOTE: FOR ANCHOR ROD DETAILS, SEE SPREAD FOOTINGS.

ELEVATION

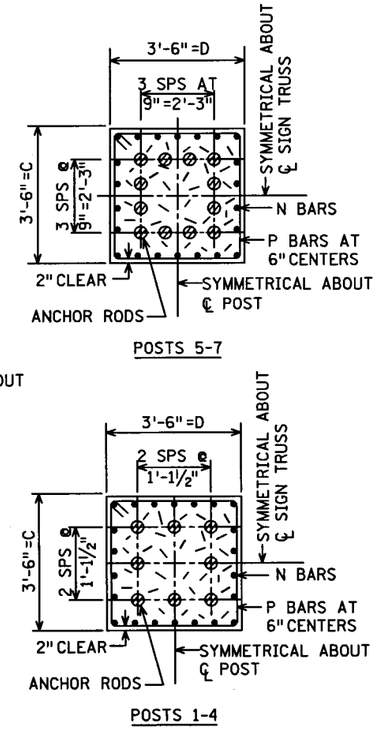
DRILLED SHAFT



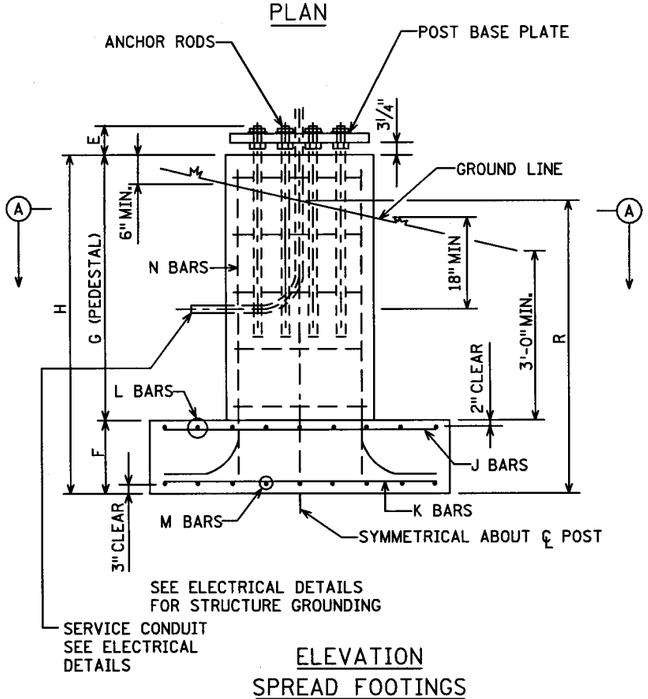
SECTION B-B



SECTION C-C



PEDESTAL CROSS SECTIONS A-A



ELEVATION
SPREAD FOOTINGS

DRILLED SHAFT										SPREAD FOOTINGS			
POST NO.	DIMENSIONS				REINFORCING BARS				ESTIMATED QUANTITIES (4)	SUMMARY OF ESTIMATED QUANTITIES			
	AA	BB	CC	DD	EE	FF (3)	GG	HH	CONCRETE CY	REIN STEEL LBS.	CONCRETE CY (2)	REIN. STEEL LBS. (2)	ANCH. ASSM. LBS	ST. EXC. C.Y. (2)
1-4	3'-0"Ø	23'-0"	3'-6"	3'-6"	16'-6"x 197 LBS.	5 *5 x 14'-1"	7 *5 x 14'-1"	20 *9 x 22'-7"	6.9	1910	9.3 + 0.46 G	945 + 98G	781	7.4 R
5-7	4'-0"Ø	29'-0"	4'-0"	4'-0"	22'-6"x 362 LBS.	5 *5 x 16'-1"	7 *5 x 16'-1"	24 *10x 28'-7"	14.1	3490	16.7 + 0.46 G	2333 + 133G	1320	12.1 R

SPREAD FOOTINGS																											
POST NO.							ANCHOR RODS			J REIN. BARS			K REIN. BARS			L REIN. BARS			M REIN. BARS			(6) N REIN. BARS			P REIN. BARS (1)		
	A	B	C	D	E	F	NO. REQ'D	DIA.	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH	NO. REQ'D	SIZE	LENGTH
1-4	14'-0"	9'-0"	3'-6"	3'-6"	8 1/2"	2'-0"	8	2 1/4"	3'-10 1/2"	14	#4	8'-6"	14	#6	8'-6"	10	#5	13'-6"	10	#7	13'-6"	20	#9	H + 2'-6"	2G	#5	14'-3"
5-7	18'-0"	12'-6"	3'-6"	3'-6"	9"	2'-0"	12	2 1/2"	4'-0"	19	#4	12'-0"	19	#6	12'-0"	13	#6	17'-6"	13	#10	17'-6"	24	#10	H + 2'-9"	2G	#5	14'-3"

STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

FOUNDATIONS AND ANCHOR RODS

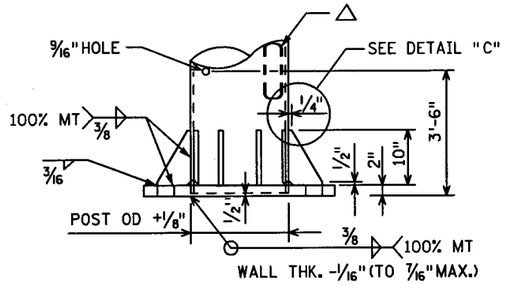
DRAWING ST-3

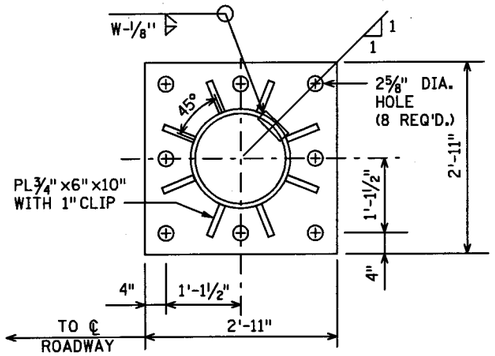
2-16-06

REVISED 10/5/98

ST.DGN ST3 10-5-98

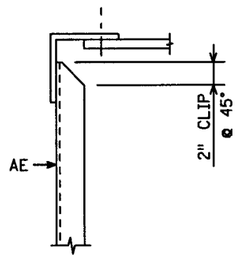
State Proj. No. 6284-137



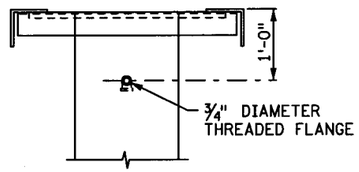


PLAN & ELEVATION - BASEPLATE TYPE A

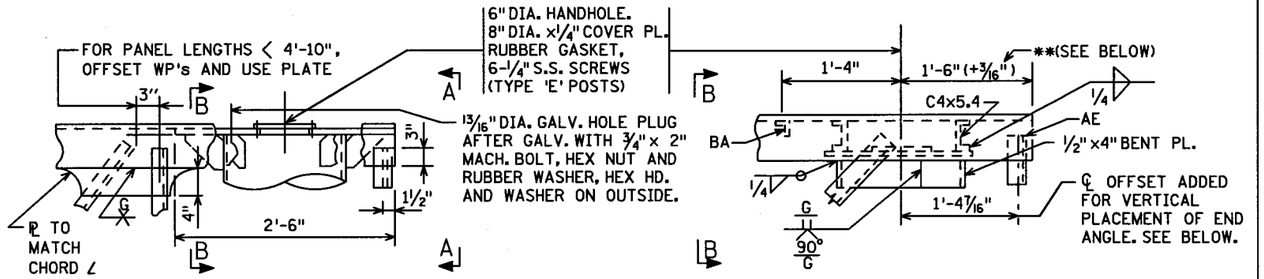
POST NO. 1 THRU 4

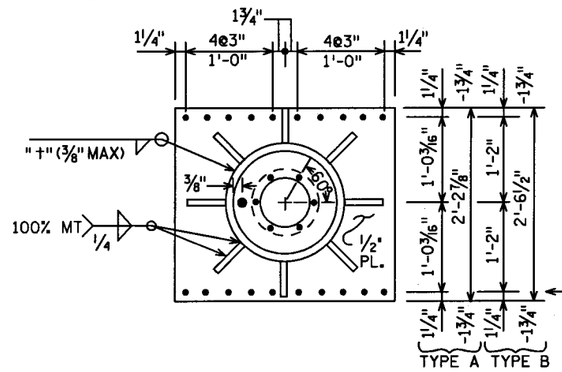


VIEW A-A

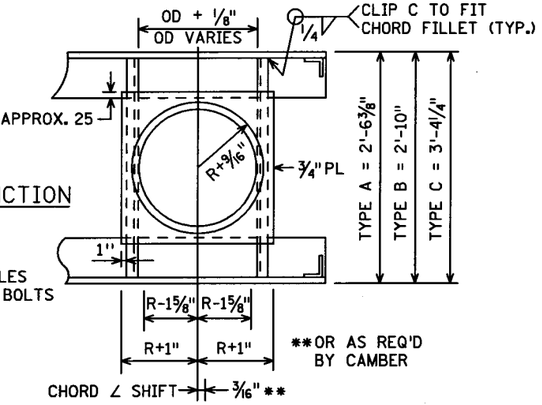


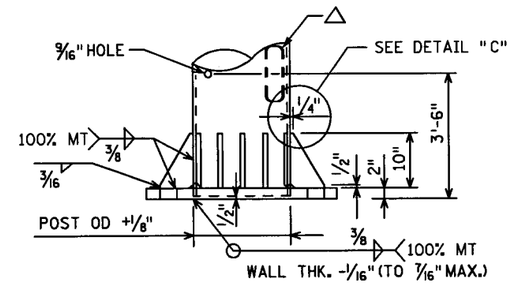
VIEW B-B
(TYPE 'E' POSTS)

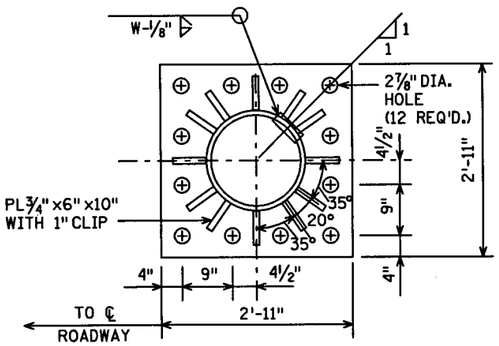




UPPER JUNCTION

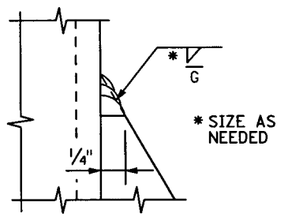




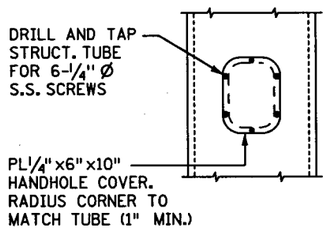


PLAN & ELEVATION - BASEPLATE TYPE B

POST NO. 5 THRU 7

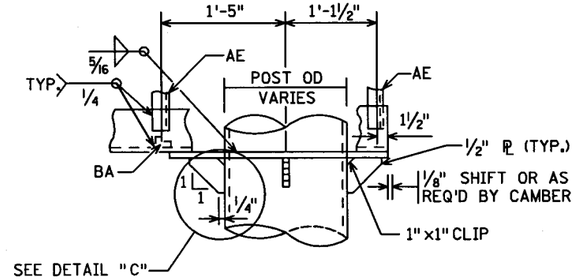


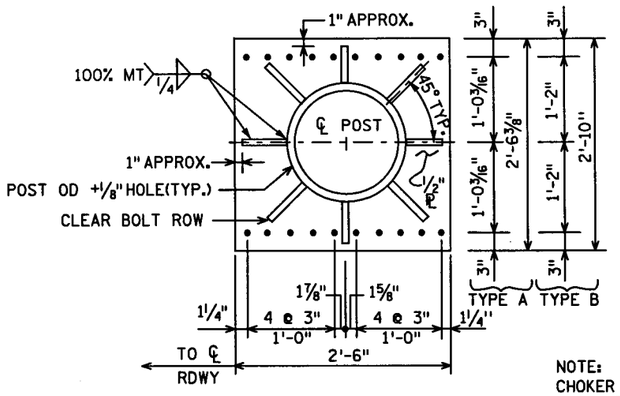
DETAIL "C"



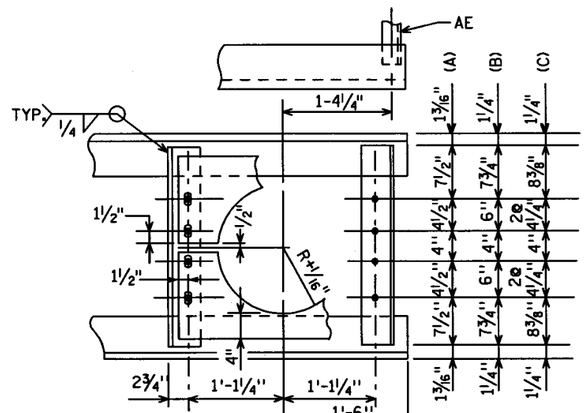
HANDHOLE & COVER PLATE DETAIL
(TYPE 'E' POSTS)

△ = FOR TYPE 'E' POST ONLY: LOCATE 45° AWAY FROM TRAFFIC. 10" x 6" x 1/2" x 0'-2" STRUCTURAL TUBE OR EQUAL W/1/4" RUBBER GASKET.





CANTILEVER TRUSS



LOWER JUNCTION

13/16" DIA. HOLES IN 4" x 4" x 1/4" ANGLES
13/16" x 1 1/4" SLOTS IN 1/2" CHOKER PLATES FOR 3/4" DIA. BOLTS.

SIMPLE TRUSS

NOTE:
CHOKER PLATES AND HANDHOLE COVERS SHALL BE GALVANIZED SEPARATELY.

STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

TRUSS/POST CONNECTION
&
BASEPLATES

DRAWING ST-4

2-16-06

REVISED 12/13/02

ST.DGN ST4 10-5-98

State Proj. No. 6284-137 Sheet No. TM22 of TM26 Sheets

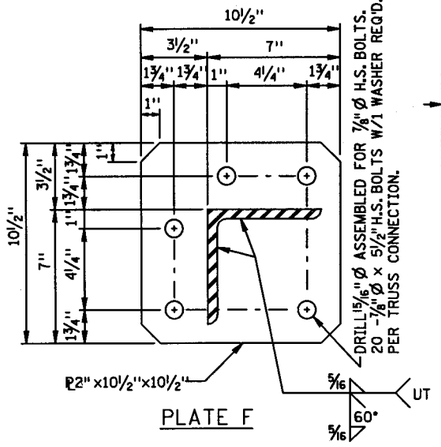
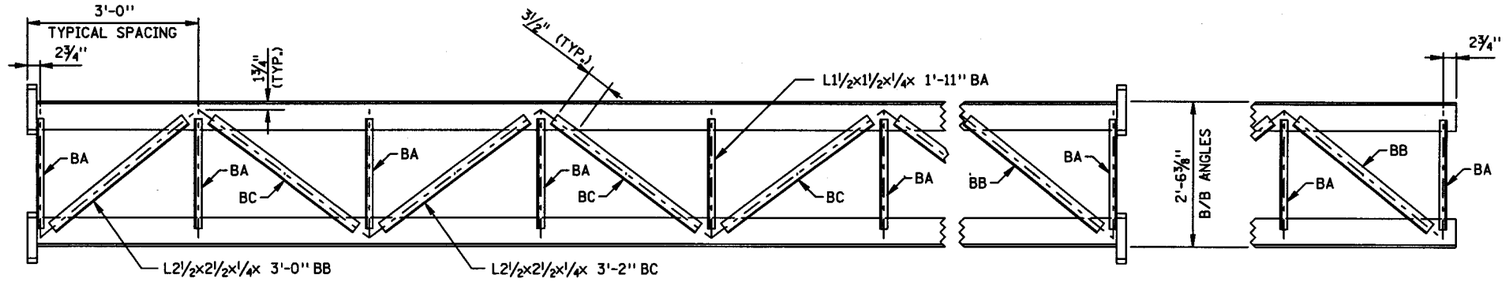


PLATE F



TOP VIEW

TOP VIEW

NOTES:

TRUSS SECTIONS SHALL BE MADE IN MULTIPLES OF 6'-0", EXCEPT THAT THE BRACING PANEL NEAREST EACH POST MAY VARY TO MAKE UP THE NEEDED SECTION LENGTH. WELDED CHORD SPLICES ARE NOT PERMITTED EXCEPT IN CANTILEVER TRUSSES AS NOTED BELOW.

CANTILEVER TRUSSES SHALL BE SUPPLIED AS A SINGLE UNIT WHENEVER POSSIBLE. WHEN CANTILEVER TRUSS LENGTH EXCEEDS 40'-0" CHORDS MAY BE SPLICED, AS SHOWN, IN THE END BRACING PANEL ONLY. CHORD SPLICE WELD SHALL BE COMPLETE PENETRATION, WITH 100% UT AND MT TESTING PER 2471.3M.

UNLESS OTHERWISE SHOWN, ALL WELDS SHALL BE ¼" FILLET WELDS ALL AROUND.

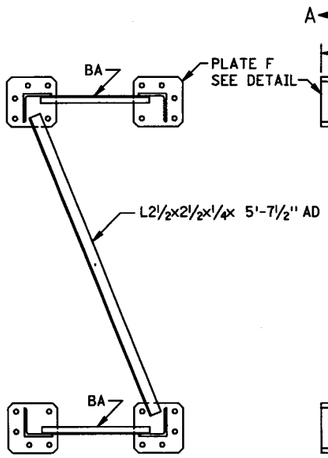
BOLTED SPLICES SHALL NOT BE LOCATED BEHIND CMS SIGNS.

PROVIDE 2- 1/16" BRASS, STAINLESS STEEL OR GALVANIZED STEEL SHIMS AT EACH FLANGE TO BRING TRUSS INTO CORRECT CAMBER AND ALIGNMENT.

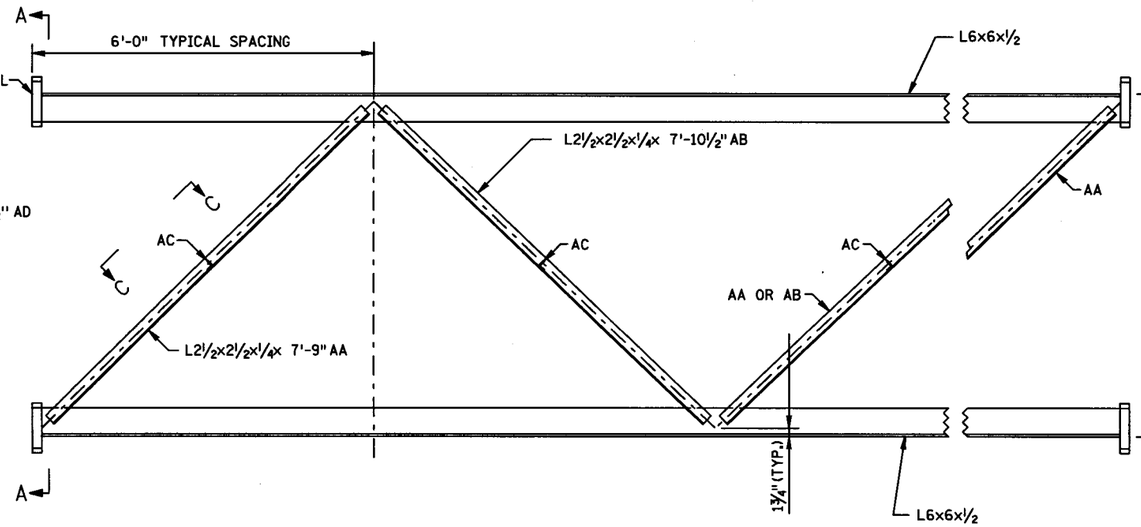
TRUSSES SHALL BE SHOP ASSEMBLED AND MATCH MARKED.

ALL VIEWS OF THE TRUSSES ARE DRAWN FROM THE INSIDE OF THE TRUSS LOOKING OUT.

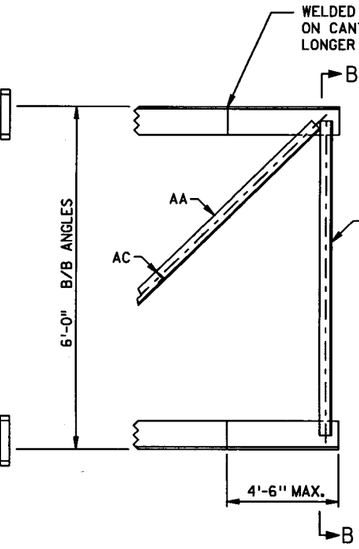
SEE DRAWING ST-4 FOR POST CONNECTION DETAILS.



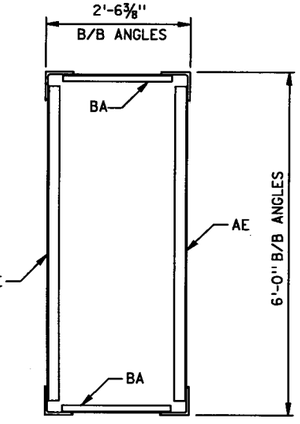
SECTION A-A



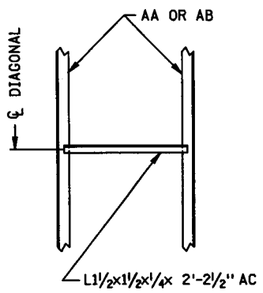
ELEVATION



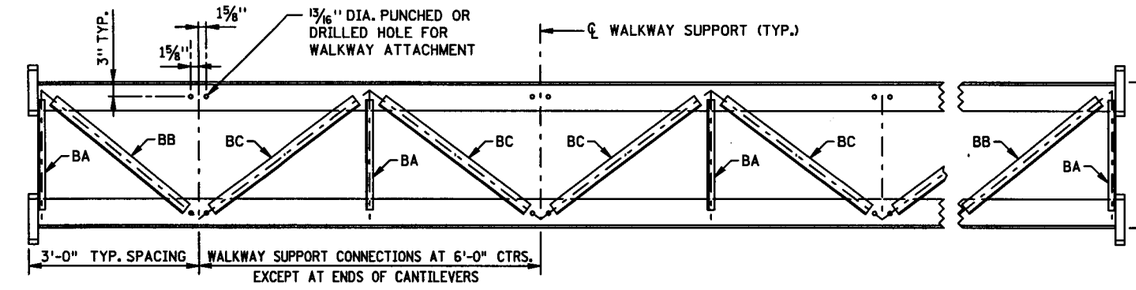
ELEVATION



SECTION B-B

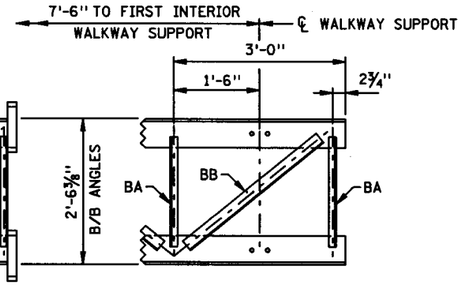


SECTION C-C



NOTE:
THE BOTTOM VIEW IS DETAILED TO PROVIDE FOR WALKWAY ATTACHMENT. WHERE THE WALKWAY IS OMITTED, PROVIDE STRUT BA AS INDICATED IN THE TOP VIEW.

BOTTOM VIEW
SIMPLE SPAN



BOTTOM VIEW
CANTILEVER END

DETAILS SHOWN ARE FOR THE FREE ENDS OF THE CANTILEVER SPANS. ALL OTHER DETAILS FOR CANTILEVER TRUSSES SHALL BE AS SHOWN FOR THE SIMPLE SPANS.

2-16-06

ST.DGN ST5 10-5-98

REVISED 2/8/00

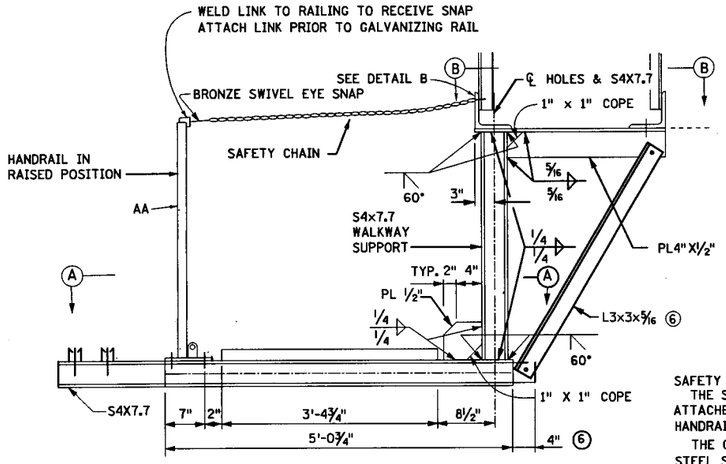
STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

SIGN TRUSS DETAILS
TRUSS TYPE A

DRAWING ST-5

State Proj. No. 6284-137

Sheet No. TM23 of TM26 Sheets

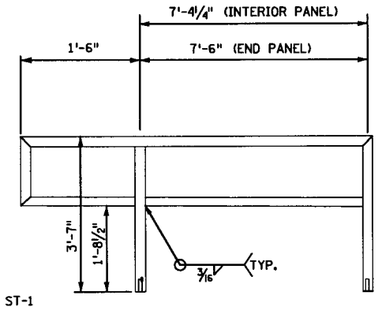


TYPICAL WALKWAY DETAILS

SIGN HEIGHT	X ①
6'-6"	1'-0" ⑤
7'-0"	1'-3"
7'-6"	1'-6"
8'-0"	1'-9" ③
8'-6"	2'-0"
9'-0"	2'-3" ④
9'-6"	2'-6"
10'-0"	2'-9"
10'-6"	3'-0"
11'-0"	3'-3"
11'-6"	3'-6"
12'-0"	3'-9"
12'-6"	4'-0"
13'-0"	4'-3"

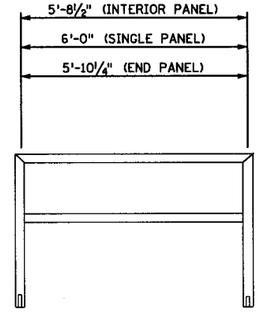
① SEE NOTE 1 ON DRAWING ST-1

SAFETY CHAIN NOTES:
THE SAFETY CHAIN SHALL BE ATTACHED AT EACH END OF THE HANDRAIL.
THE CHAIN SHALL BE 3/16" STAINLESS STEEL STRAIGHT LENGTH CHAIN WITH APPROXIMATELY 12 LINKS PER FOOT.
THE CHAIN AND ITS CONNECTIONS SHALL HAVE A MINIMUM RATED WORK LOAD OF 700 LBS.



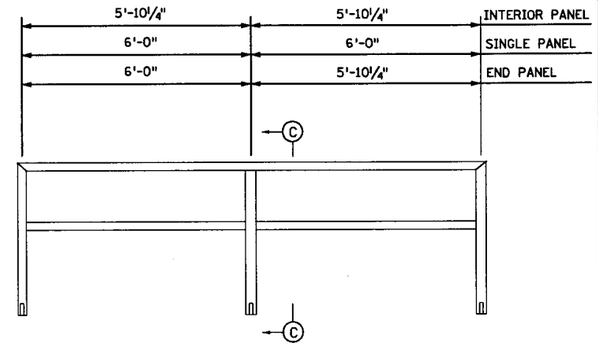
STRUCTURAL TUBING 1 1/2 X 1 1/2 X 3/16 (TYP.)

RAILING ELEVATION AT END OF CANTILEVER



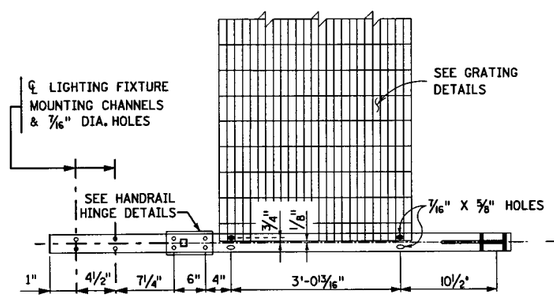
STRUCTURAL TUBING 1 1/2 X 1 1/2 X 3/16 (TYP.)

RAILING ELEVATION 6' PANEL

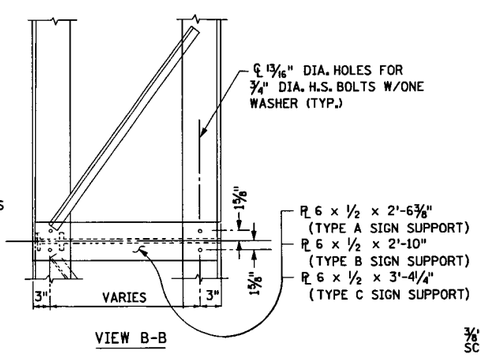


STRUCTURAL TUBING 1 1/2 X 1 1/2 X 3/16 (TYP.)

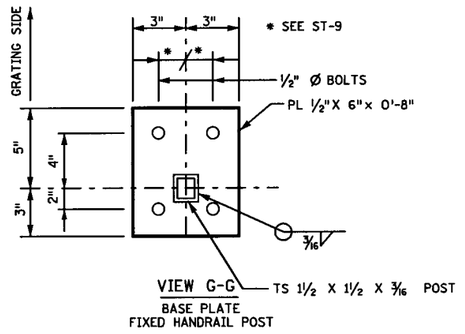
RAILING ELEVATION 12' PANEL

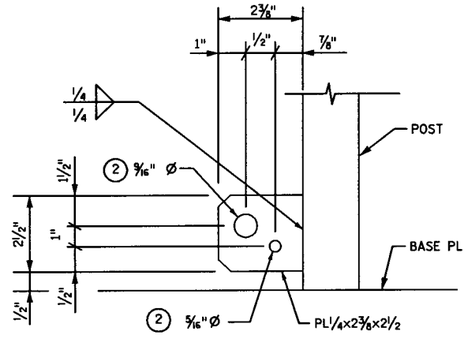


VIEW A-A

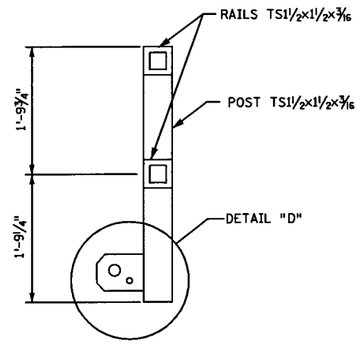


VIEW B-B

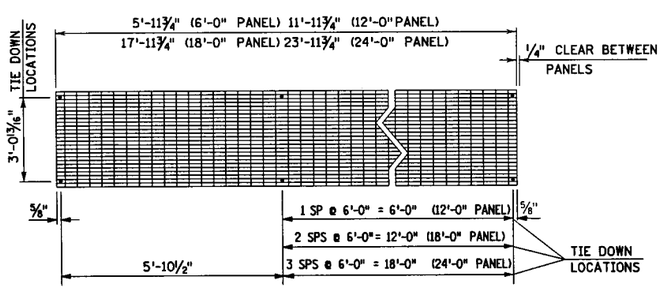




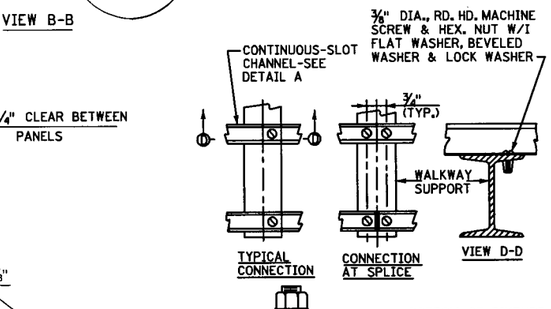
DETAIL 'D'



VIEW C-C
FOLDING HANDRAIL POST

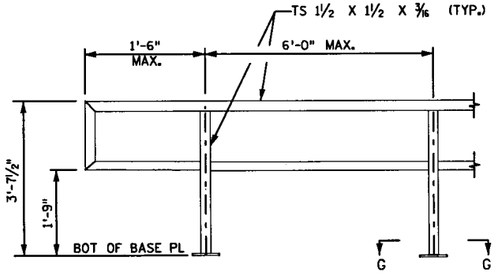


GRATING PLAN - 6'-0", 12'-0", 18'-0", OR 24'-0" PANELS

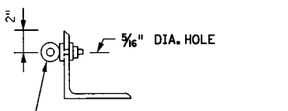


DETAIL A

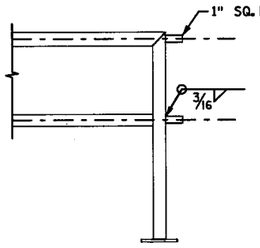
FIXTURE MOUNTING DETAILS



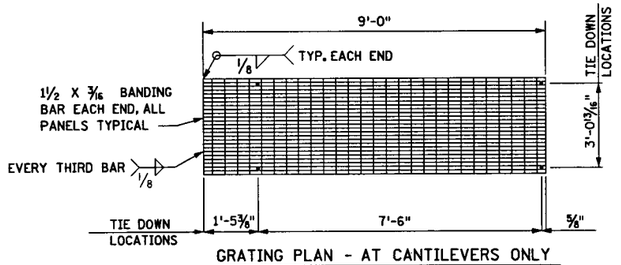
FIXED HANDRAIL FOR OH SIGN



DETAIL B



FIXED RAIL SPLICE DETAIL



GRATING PLAN - AT CANTILEVERS ONLY

NOTE:
ALL GRATING SHALL BE 3'-4 3/4" WIDE AND SHALL BE 1 1/2"x 3/16" SERRATED BEARING BARS AT 1 3/16" CENTERS WITH CROSS BARS AT 4" CENTERS. ATTACH GRATING AT EACH TIE DOWN LOCATION WITH A STAINLESS STEEL SADDLE ANCHOR DESIGNED FOR THIS SPECIFIC USE.

FIXTURE MOUNTING CHANNEL NOTES:
FIXTURE MOUNTING CHANNELS SHALL EXTEND THE FULL LENGTH OF THE WALKWAY AND SHALL BE CONTINUOUS OVER AS MANY WALKWAY SUPPORT SPANS AS PRACTICABLE CONSISTENT WITH EASE OF HANDLING AND ASSEMBLING.
JOINTS IN THE CHANNELS SHALL BE CENTERED ON THE WALKWAY SUPPORTS WITH A MAX 1/8" GAP BETWEEN SECTIONS.
CHANNELS SHALL HAVE A 1/4" DRAIN HOLE IN EACH WALKWAY SUPPORT SPAN.

GENERAL NOTES:
WALKWAY DETAILS SHOWN ARE TYPICAL FOR CANTILEVER AND SIMPLE SPAN SIGNS
WHEN THE FORMAT SHEET INDICATES THAT THE WALKWAY IS CONTINUOUS FROM ONE SPAN TO ANOTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE SPECIAL LENGTH GRATING AND HANDRAIL PANELS REQUIRED.
FOLDING HANDRAIL PANELS ARE TO BE CONTINUOUS OVER A MAX. OF TWO WALKWAY SUPPORT SPANS.
THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LENGTH OF GRATING AND HANDRAIL PANELS REQUIRED FOR BRIDGE MOUNTED SIGNS AND CANTILEVERS WHERE THE SPECIFIED LENGTH DOES NOT AGREE WITH THE DETAILS.
PROVIDE ADEQUATE WEEP HOLES FOR HOT-DIP GALVANIZING.

SPECIFIC NOTES:
① SEE NOTE 1 ON DRAWING ST-1
② REAM RAILING SUPPORT BOLT AND LOCKING PIN HOLES AFTER GALVANIZING TO ENSURE BOLT AND PIN FIT.
③ LED CMS
④ DRUM CMS
⑤ NEW LED CMS
⑥ USE FOR SIGN HEIGHTS OF 11'-0" OR GREATER. EXTEND S4x7.7 BY 4" AND COPE FLANGES.

REVISED 2/8/00

ST.DGN ST8 10-5-98

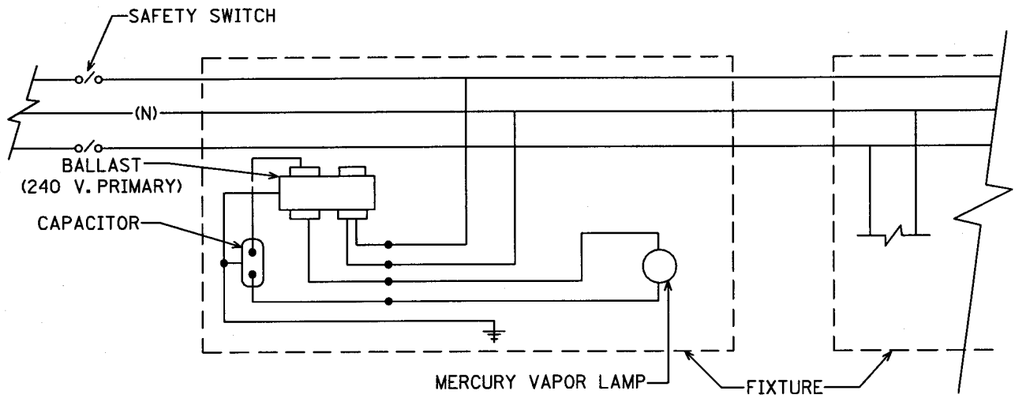
STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

WALKWAY DETAILS

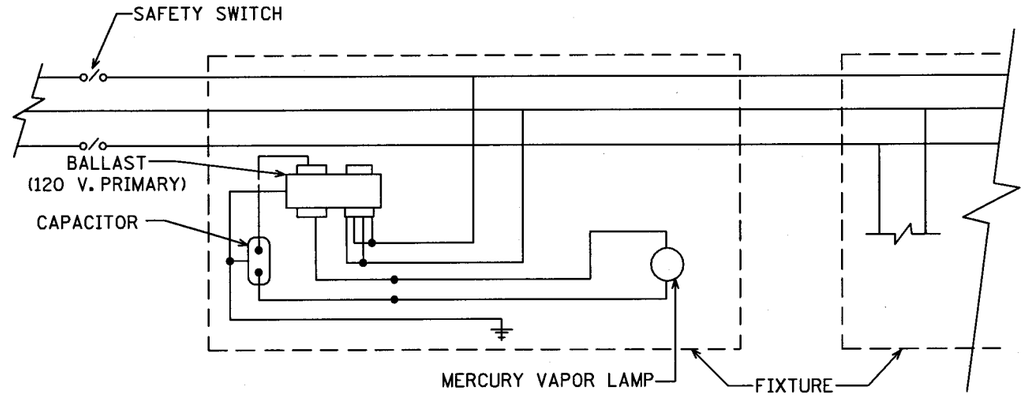
DRAWING ST-8

2-16-06

State Proj. No. 6284-137 Sheet No. TM24 of TM26 Sheets

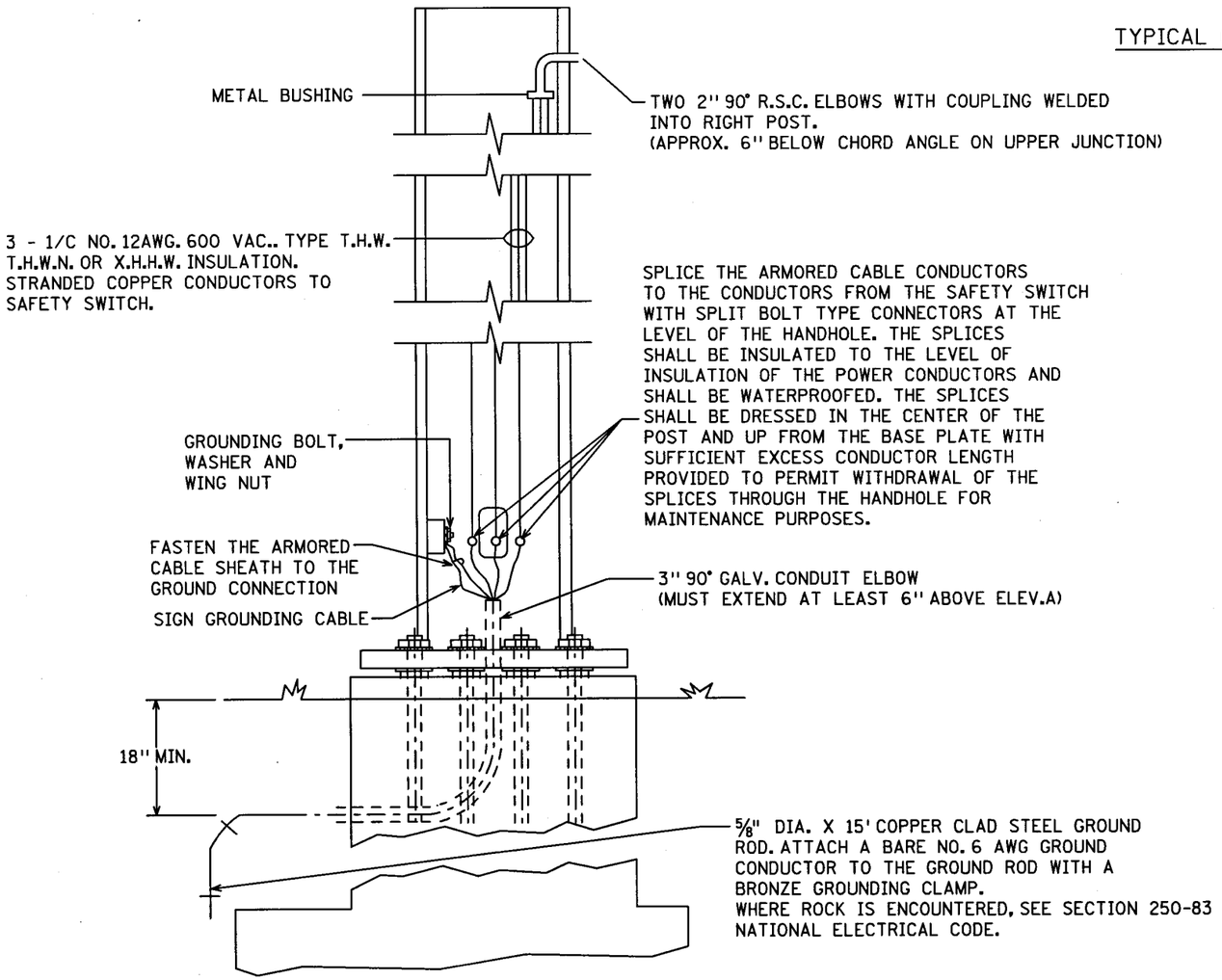


240/480 V. CIRCUIT



120/240 V. CIRCUIT

TYPICAL CIRCUIT DIAGRAMS



SIGN BASE DETAIL

ELECTRICAL NOTES:

1. WHEN SIGN LIGHTING SYSTEMS HAVE BEEN COMPLETED, THE CONTRACTOR SHALL, WITHOUT FURTHER COMPENSATION, CONDUCT BURNING AND RESISTANCE TESTS FOR FINAL ACCEPTANCE. THE RESISTANCE TO GROUND OF EACH UNGROUNDED CONDUCTOR SHALL BE NOT LESS THAN 8 MEGOHMS.
2. ALL FITTINGS, HUBS, UNIONS, BUSHINGS, ETC. SHALL BE SUPPLIED AS PART OF CONDUIT, CONDUIT ENTERING SIGN POSTS SHALL HAVE INSULATED GROUNDING BUSHINGS INSTALLED BEFORE PULLING WIRE.
3. CONDUIT ON STRUCTURE SHALL BE SURFACED MOUNTED, STRAPPED AT EVERY ANGLE BRACE WITH U-BOLT TYPE CLAMPS.
4. SUCCESSIVE LIGHTING FIXTURES SHALL BE CONNECTED ON ALTERNATE SIDES OF THE 3-WIRE CIRCUIT.
5. THE CABLE SHEATH SHALL EXTEND AT LEAST 4" ABOVE THE TOP OF THE CONDUIT END AND THE TAPE ARMOR OF ARMORED CABLE SHALL BE CONNECTED TO THE GROUNDING BOLT IN THE SIGN POSTS.
6. WIRING FROM THE SAFETY SWITCH TO LIGHTING FIXTURES SHALL BE 1/C NO. 12 AWG AND SHALL BE RUN IN 3/4" R.S.C. ALL SPLICING SHALL BE ACCOMPLISHED WITH A WIRE NUT AND WATERPROOF COATING. ALL CONDUIT CONNECTIONS SHALL BE RAIN TIGHT.

REVISED 12/13/02

ST.DGN ST13 10-5-98

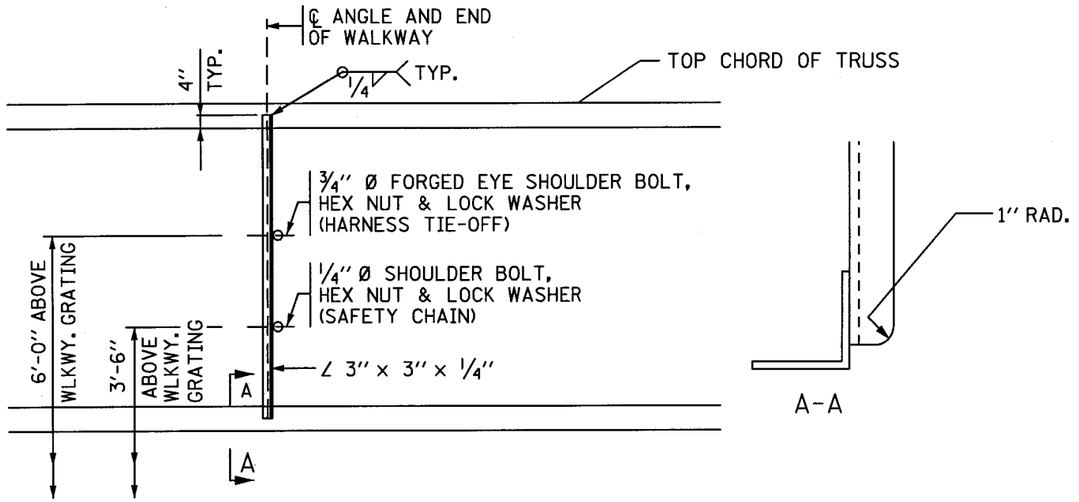
STANDARD OVERHEAD SIGN SUPPORTS
INTERIM DESIGN B

MODIFIED
ELECTRICAL DETAILS

2-16-06

DRAWING ST-13

State Proj. No. 6284-137 Sheet No. TM25 of TM26 Sheets



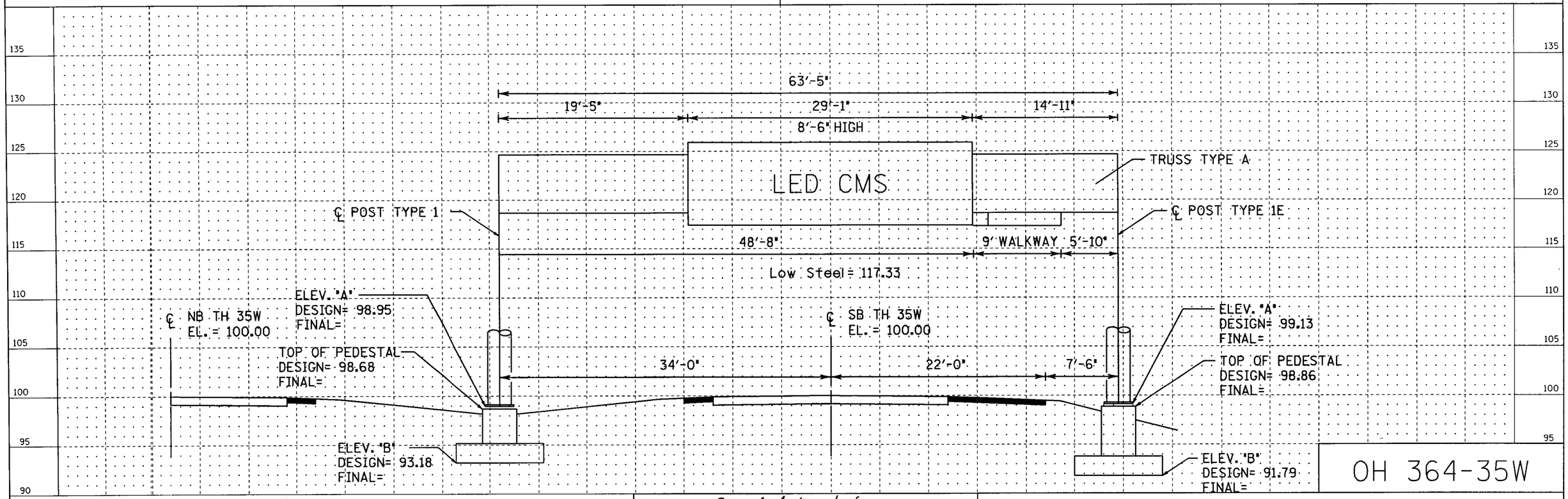
TIE OFF STANCHION FOR CMS
TRUSS-MTD.

OH 366-35W
S.B. T.H. 35W
STA. 484+50

QUANTITIES

	DESIGN	FINAL
POST STEEL	6148 LBS	
TRUSS STEEL	8705 LBS	
WALKWAY SUPPORT STEEL	198 LBS	
WALKWAY GRATING STEEL	360 LBS	
PANEL MOUNTING POST STEEL	LBS	
CONCRETE (SHAFT) FOOTINGS	CU YDS	
CONCRETE (SPREAD) FOOTINGS	22.5 CU YDS	

NOTES:
1. "Y" DIMENSION = 4.33 FT.
2. F. & I. TWO 6" x 6" x 3/8" x 29'-1" MOUNTING ANGLES AND ONE 3" x 3" x 1/4" x 5'-9" ANGLE FOR LED CMS.
3. USE FIXED HANDRAIL, SEE WALKWAY DETAIL DRAWING ST-8.



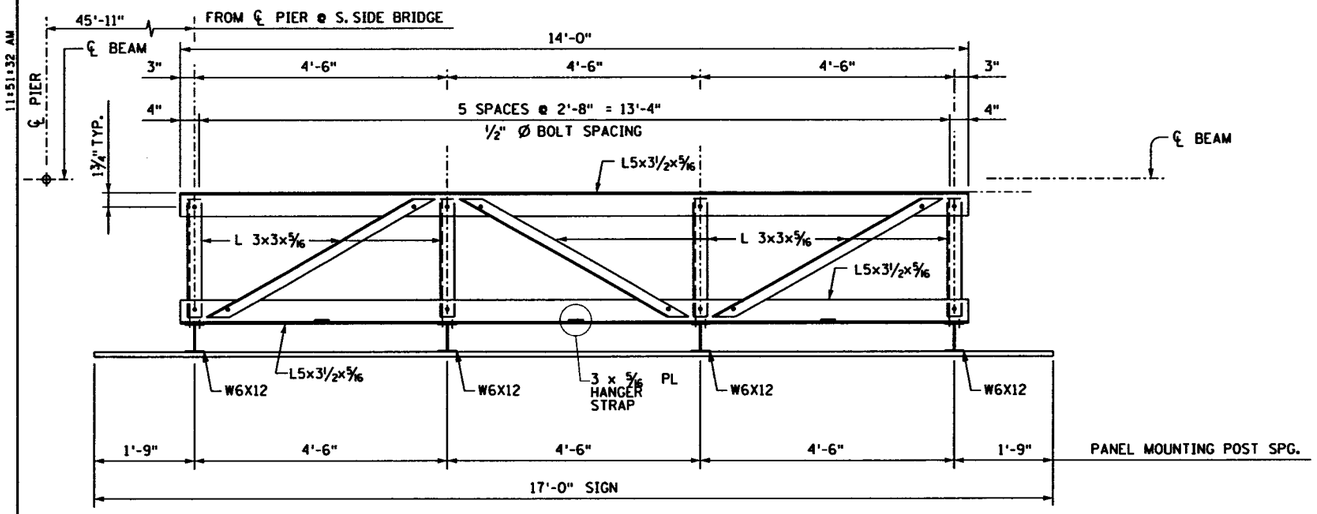
CERTIFIED BY Michael R. Wessel LIC. NO. 10502
LICENSED PROFESSIONAL ENGINEER

State Proj. No. 6284-137

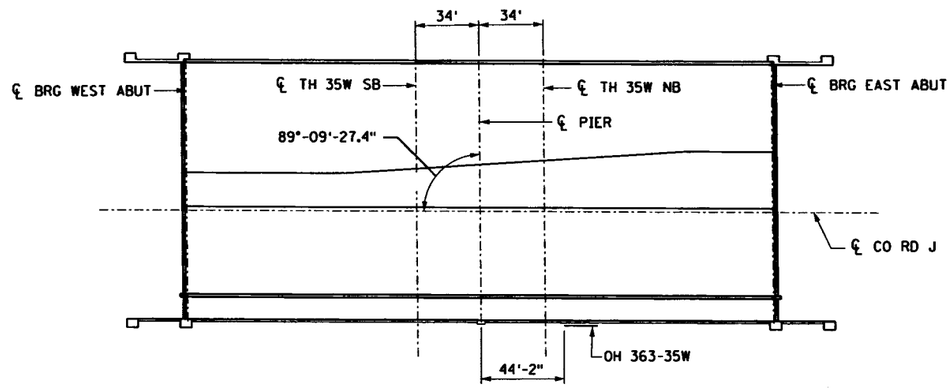
OH 364-35W

Sheet No. TM26 of TM26 Sheets

2-16-06

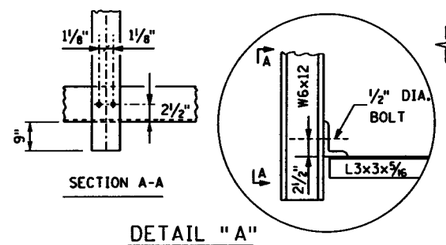


PLAN VIEW



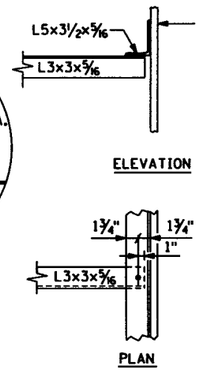
SIGN LOCATION OH 363-35W

BR 02571 - TH 35 UNDER CO RD J
IN ANOKA & RAMSEY COUNTY

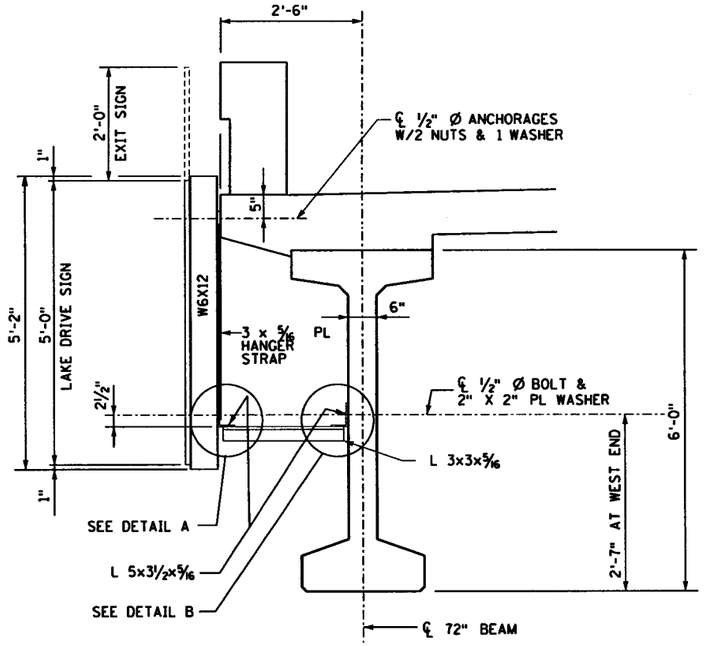


SECTION A-A

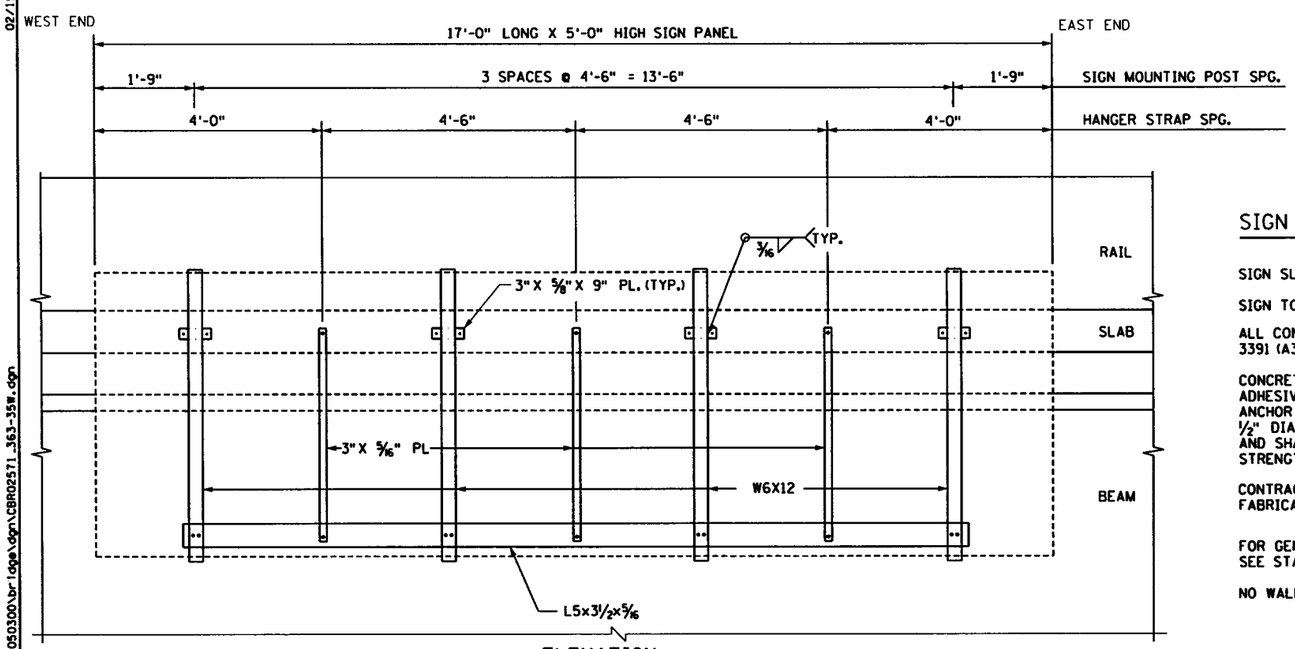
DETAIL "A"
TYP. AT PANEL MOUNTING POST



DETAIL "B"



TYPICAL SECTION



ELEVATION
LOOKING NORTH @ BR. 02571

SIGN NOTES

SIGN SUPPORTS TO BE VERTICAL.

SIGN TO BE PLACED IN A HORIZONTAL POSITION.

ALL CONNECTIONS TO BE ⅞" DIA. BOLTS PER MN/DOT 3391 (A325), HOLES TO BE 15/16" DIA. EXCEPT AS NOTED.

CONCRETE ANCHORAGES SHALL BE CHEMICAL ADHESIVE TYPE AS APPROVED BY THE ENGINEER. ANCHOR RODS, PER 3385 TYPE A , SHALL BE ½" DIA. WITH A MIN. EMBEDMENT DEPTH OF 4½", AND SHALL HAVE A MIN. ULTIMATE PULL-OUT STRENGTH OF 8000#.

CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE FABRICATION.

FOR GENERAL NOTES AND DETAILS NOT SHOWN SEE STANDARD SHEETS.

NO WALKWAY REQUIRED.

TRUSS QUANTITY

POUNDS 690

SEH
3535 VADNAIS CENTER DRIVE
ST PAUL, MN 55110
PHONE (651) 490-2000
FAX (651) 490-2150

I hereby certify that this plan, specification, or report 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
Signature: John D Steenberg Date: 2-15-2006
Printed Name: JOHN D STEENBERG Reg. No. 13865

TITLE: OVERHEAD SIGN DETAILS OH 363-35W

SP 6284-137 (TH35W=394)

DES: MAW	DR: MAW	APPROVED: 2-16-06
CHK: JDS	CHK: JDS	

SHEET NO OH1 OF 1 SHEETS

BRIDGE NO 02571

02/15/2006 11:51:32 AM
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