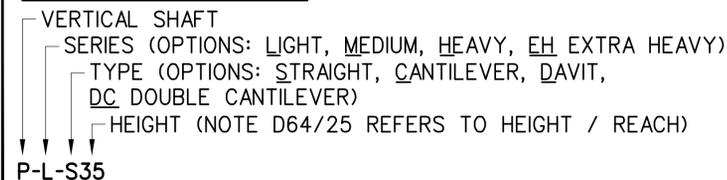


MANITOBA INFRASTRUCTURE
STANDARD DRAWINGS FOR TRAFFIC SIGNAL
AND PEDESTRIAN CORRIDOR STRUCTURES
DRAWING LIST

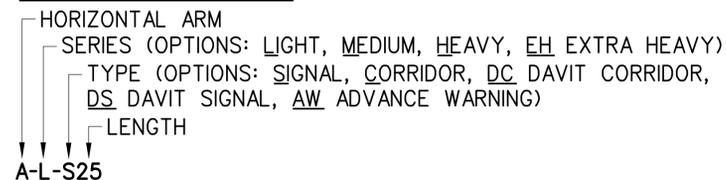


DRAWING No.	DESCRIPTION	PART No.	DRAWING No.	DESCRIPTION	PART No.
CONCRETE PILE FOUNDATIONS			S10	Heavy Series Cantilever - 6.8 m Vertical Shaft	P-H-C68
F1	Light Series Foundation: a) 610 mm Dia. Pile b) 610 mm Dia. Pile for Breakaway Base	F-L F-L(BR)	S11	Heavy Series Cantilever: a) 7.5 m Signal Arm b) 9.0 m Signal Arm c) 10.5 m Signal Arm d) 12.8 m Signal Arm e) 15.0 m Signal Arm	A-H-S75 A-H-S90 A-H-S105 A-H-S128 A-H-S150
F2	Medium Series Foundation - 762 mm Dia. Pile	F-M			
F3	Heavy Series Foundation - 915 mm Dia. Pile	F-H			
F4	Extra Heavy Series Foundation - 1220 mm Dia. Pile	F-EH	S12	Heavy Series Cantilever: a) 7.5 m Advance Warning Sign Arm b) 9.0 m Advance Warning Sign Arm	A-H-AW75 A-H-AW90
A1	Anchor Bolts: a) 32 mm (1 1/4") Dia. Anchor Bolt b) 38 mm (1 1/2") Dia. Anchor Bolt c) 51 mm (2") Dia. Anchor Bolt	AB1 AB2 AB3	S13	Extra Heavy Series Cantilever - 6.8 m Vertical Shaft	P-EH-C68
STRUCTURES			S14	Extra Heavy Series Cantilever: a) 17.0 m Signal Arm b) 18.5 m Signal Arm	A-EH-S170 A-EH-S185
S1	Light Series - 3.5 m Straight Pole	P-L-S35	S15	Extra Heavy Series Cantilever: a) 10.5 m Advance Warning Sign Arm b) 15.0 m Advance Warning Sign Arm	A-EH-AW105 A-EH-AW150
S2	Light Series - 5.0 m Straight Pole	P-L-S50	S16	Luminaire Davit Extension	E-D38/30
S3	Light Series Cantilever - 6.5 m Vertical Shaft	P-L-C65	S17	Tenon Extension Shafts: a) 5.4 m Extension Shaft b) 6.9 m Extension Shaft c) 8.4 m Extension Shaft d) Tenon Cap	E-S54 E-S69 E-S84 TC1
S4	Light Series Cantilever: a) 2.5 m Signal Arm b) 5.0 m Signal Arm c) 3.0 m Corridor Arm d) 5.0 m Corridor Arm	A-L-S25 A-L-S50 A-L-C30 A-L-C50	S18	Stub Extension Shafts: a) 1.5 m Stub Extension Shaft b) 3.0 m Stub Extension Shaft c) 4.5 m Stub Extension Shaft d) 6.1 m Stub Extension Shaft	E-STUB15 E-STUB30 E-STUB45 E-STUB61
S5	Light Series Davit - 6.4 m Shaft	P-L-D64/25	S19	Hydro Luminaire Adaptor	HLA
S6	Light Series Davit: a) 2.5 m Signal Extension Arm b) 2.5 m Corridor Extension Arm	A-L-DS25 A-L-DC25	S20	Shaft Access Details: a) Access Panel b) Handhole	AP1 H1
S7	Medium Series Double Cantilever - 6.5 m Vertical Shaft	P-M-DC65	S21	Wind Deflector Assembly	WD1
S8	Medium Series Cantilever - 6.5 m Vertical Shaft	P-M-C65			
S9	Medium Series Cantilever: a) 5.0 m Signal Arm b) 6.0 m Signal Arm c) 7.5 m Signal Arm d) 3.0 m Corridor Arm e) 5.0 m Corridor Arm f) 6.0 m Corridor Arm g) 7.5 m Corridor Arm	A-M-S50 A-M-S60 A-M-S75 A-M-C30 A-M-C50 A-M-C60 A-M-C75			

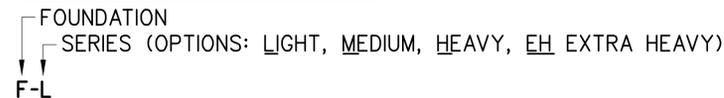
POLE NAMING CONVENTION



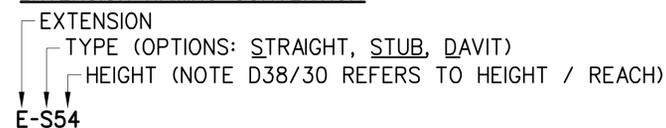
ARM NAMING CONVENTION



FOUNDATION NAMING CONVENTION

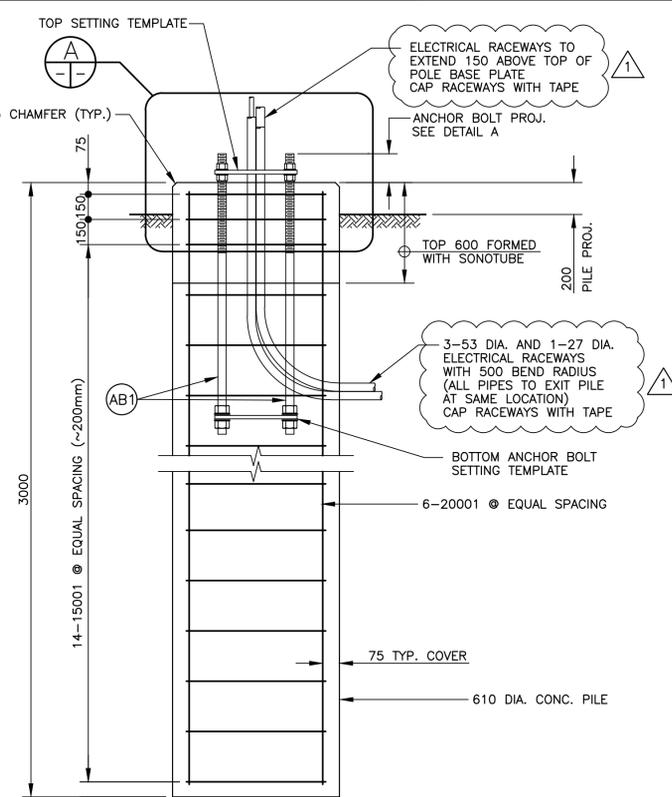


EXTENSION NAMING CONVENTION

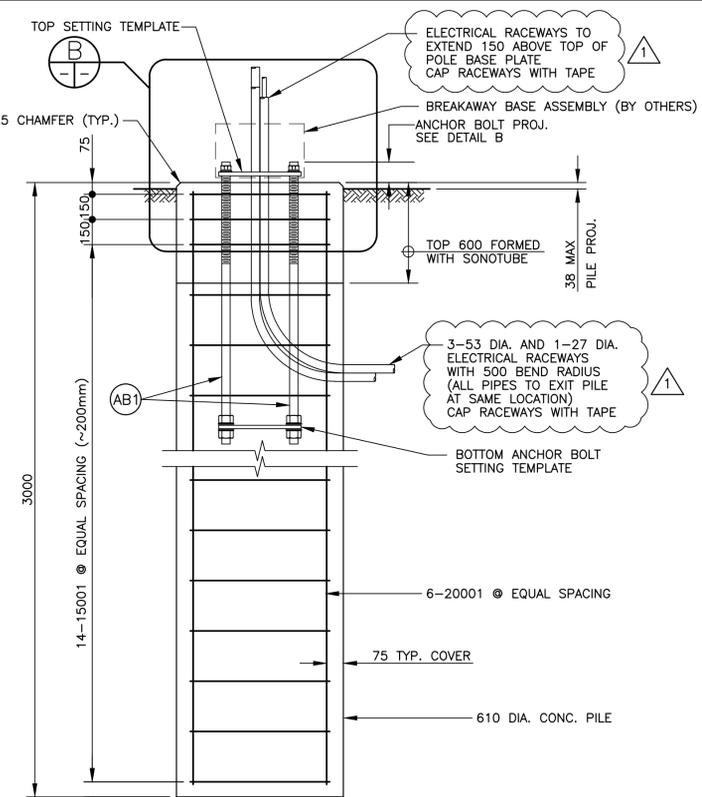


REVISIONS			
DATE	BY	DATE	DESCRIPTION
2020/12/09	DRA		ISSUED FOR REVISION 1
2019/11/13	SSR		ISSUED FOR CONSTRUCTION

PLOT DATE: 2020/12/08 8:33:50 PM LAST SAVED BY: 40MG
C:\PW\WORKING DIRECTORY\PROJECTS TO 2017\40MG\0626232\F1.DWG



F-L FOUNDATION DETAIL
N.T.S.
ELEVATION WITHOUT BREAKAWAY BASE



F-L(BR) FOUNDATION DETAIL
N.T.S.
ELEVATION WITH BREAKAWAY BASE

GENERAL NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.

CONCRETE FOUNDATION PILES

- PRIOR TO INSTALLING PILES, CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SURFACE OR SUBSURFACE UTILITIES.
- INSTALL PILES TO INDICATED DEPTHS ENSURING THAT SHAFTS ARE DRY AND FREE OF DEBRIS UNTIL CONCRETE IS PLACED.
- CONCRETE**
 - CSA A23.1 EXPOSURE CLASS S-1
 - MIN. COMPRESSIVE STRENGTH @ 28 DAYS - 35 MPa
 - AIR CONTENT: CATEGORY 1
 - CEMENT: TYPE HS
- NOTIFY THE OWNER AND TESTING FIRM A MINIMUM OF TWENTY FOUR HOURS PRIOR TO COMMENCEMENT TO CONCRETE OPERATIONS.
- REFER TO SPECIFICATIONS FOR CONCRETE TESTING REQUIREMENTS.
- REINFORCING STEEL SHALL BE GRADE 400W, DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.18.
- GALVANIZED STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

ANCHOR BOLT PLACEMENT:

- THE ANCHOR BOLTS SHALL BE ALIGNED WITH TOP AND BOTTOM SETTING TEMPLATES MATCHING THE BOLT HOLE LAYOUT.
- THE TOP SETTING TEMPLATE SHALL BE HELD IN PLACE BY ALL NUTS SUPPLIED WITH THE ANCHOR BOLTS.
- PLACEMENT OF ANCHOR BOLTS WITHOUT THE SETTING TEMPLATES WILL NOT BE PERMITTED.
- PROTECT ANCHOR BOLT THREADS PROJECTING ABOVE TOP OF PILE FROM FOULING DURING CONCRETE PLACEMENT USING TAPE OR EQUIVALENT.
- TOP SETTING TEMPLATE SHALL BE REMOVED FOLLOWING A MINIMUM 24 HOUR CONCRETE CURING PERIOD.

TOP SETTING TEMPLATE:

- TEMPORARY TOP SETTING TEMPLATE SHALL BE SUPPLIED BY THE CONTRACTOR.
- TEMPORARY TOP SETTING TEMPLATE SHALL BE SIMILAR IN SIZE AND CONFIGURATION TO THE PERMANENT BOTTOM SETTING TEMPLATE. SEE DETAIL ON THIS SHEET.

BOTTOM SETTING TEMPLATE:

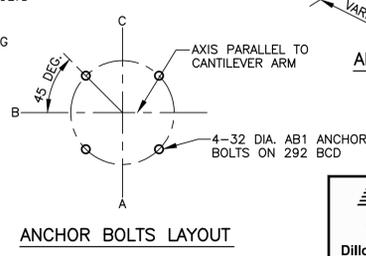
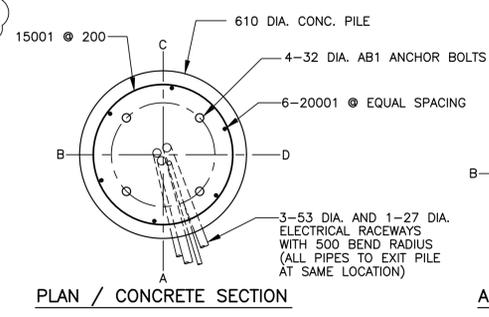
- PERMANENT HOT DIP GALVANIZED STEEL PLATE, CSA G40.21 GRADE 300W.

GROUNDING CONDUCTOR:

- GROUND WIRE SHALL RUN THROUGH THE 27 DIA. RACEWAY INSTALLED IN CENTRE OF PILE.

BREAKAWAY BASE:

- BREAKAWAY BASE ASSEMBLY COMPONENTS WILL BE SUPPLIED BY THE DEPARTMENT AND INSTALLED BY THE POLE STRUCTURE INSTALLER AT SPECIFIED LOCATIONS.
- CONTRACTOR SHALL ENSURE PROJECTION OF ANCHOR BOLTS ABOVE PILE TOP IS IN ACCORDANCE WITH ASSEMBLY DETAILS TO SUIT SPECIFIED BREAKAWAY BASE CONFIGURATION.
- BREAKAWAY BASE ASSEMBLY SHALL USE C7 COUPLERS BY SAFETY BASE LIMITED OR APPROVED EQUIVALENT.



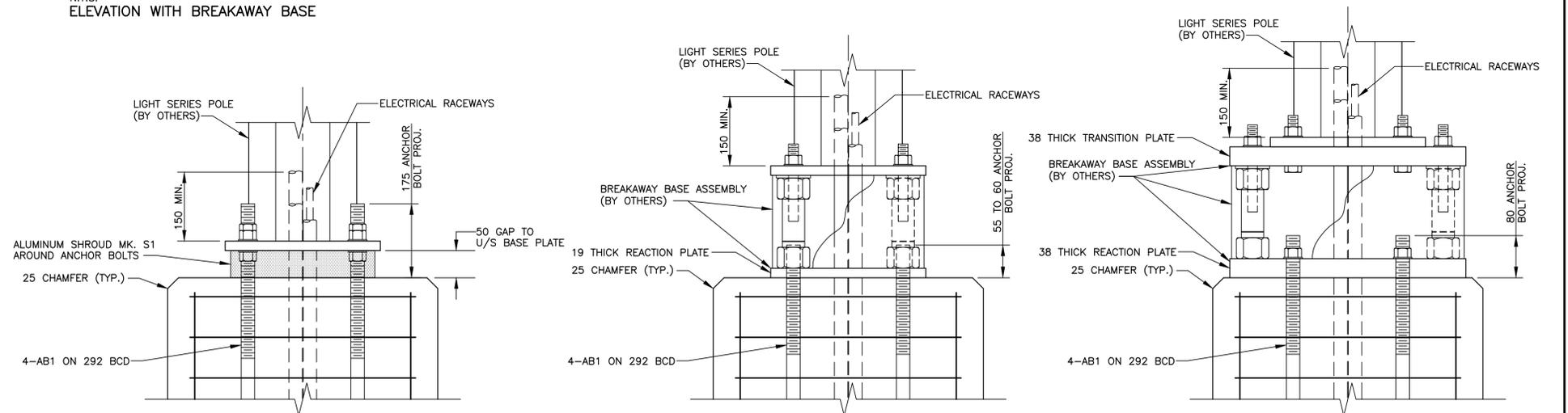
PLAN / CONCRETE SECTION

ANCHOR BOLTS LAYOUT

BILL OF ANCHOR BOLTS					
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	REMARKS	LINE NO.
AB1	4	ANCHOR BOLT ASSEMBLY AB1	32 (1 1/4") DIA. x 1650	SEE SHEET A1	1
					2
					3

BILL OF REINFORCING STEEL						BENDING DIAGRAM	
MK. NO.	SIZE	QTY. REQ'D.	LENGTH (mm)	MASS (kg)	LINE NO.		
20001	20M	6	2850	40.27	1		
15001	15M	16	1715	43.08	2		
					3		
					4		
					5		
					6		
					7		
					8		
TOTAL MASS OF REINFORCING STEEL = 83.35 kg							
TOTAL VOLUME OF C.I.P. CONC. PILES = 0.877 m ³							

MATERIAL SUPPLIED AND INSTALLED BY OTHERS					
MK. NO.	QTY. REQ'D.	DESCRIPTION	REMARKS	LINE NO.	
S1	1	ALUMINUM SHROUD	DIMENSIONS TO SUIT BCD OF ANCHOR BOLTS AND HEIGHT OF BASE PLATE ABOVE CONCRETE PILE. MATERIAL TO BE 12ga (2.1mm) 6061-T6 ALUMINUM SHEET. ATTACHMENT SCREWS TO BE SELF-DRILLING TYPE 316 S/S - #10 X 19mm.	1	
-	1	BREAKAWAY BASE ASSEMBLY (BR1, BR2, BR3)	TO BE INSTALLED ONLY WHERE SPECIFIED BY THE ENGINEER, C/W COUPLERS, SHROUD, REACTION PLATE, AND TRANSITION PLATE (IF REQUIRED)	2	

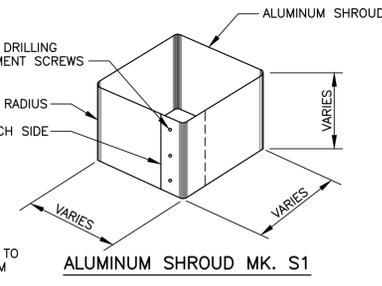


F-L ASSEMBLY DETAIL
N.T.S.
WITHOUT BREAKAWAY BASE

FOR BR1 BREAKAWAY BASE

FOR BR2 AND BR3 BREAKAWAY BASE

F-L(BR) ASSEMBLY DETAIL
N.T.S.
WITH BREAKAWAY BASE



ALUMINUM SHROUD MK. S1

REVISIONS	
DATE	DESCRIPTION
2020/12/09	DRA ISSUED FOR REVISION 1
2019/11/13	SSR ISSUED FOR CONSTRUCTION

LIGHT SERIES FOUNDATION
610 mm DIA. PILE
TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES



DESIGN SEAL	RECORD SEAL

DESIGN	BY: SSR	RELEASED FOR CONSTRUCTION BY:	DATE
CHECKED: TAE/DRA	SCALE:	DIRECTOR OF TRAFFIC ENGINEERING	
DETAILS	BY: MDG	SHEET No. F1	
CHECKED: SSR		PART No. F-L, F-L(BR)	

GENERAL NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.

CONCRETE FOUNDATION PILES

- PRIOR TO INSTALLING PILES, CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SURFACE OR SUBSURFACE UTILITIES.
- INSTALL PILES TO INDICATED DEPTHS ENSURING THAT SHAFTS ARE DRY AND FREE OF DEBRIS UNTIL CONCRETE IS PLACED.
- CONCRETE**
 - CSA A23.1 EXPOSURE CLASS S-1
 - MIN. COMPRESSIVE STRENGTH @ 28 DAYS = 35 MPa
 - AIR CONTENT: CATEGORY 1
 - CEMENT: TYPE HS
- NOTIFY THE OWNER AND TESTING FIRM A MINIMUM OF TWENTY FOUR HOURS PRIOR TO COMMENCEMENT TO CONCRETE OPERATIONS.
- REFER TO SPECIFICATIONS FOR CONCRETE TESTING REQUIREMENTS.
- REINFORCING STEEL SHALL BE GRADE 400W, DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.18.
- GALVANIZED STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

ANCHOR BOLT PLACEMENT:

- THE ANCHOR BOLTS SHALL BE ALIGNED WITH TOP AND BOTTOM SETTING TEMPLATES MATCHING THE BOLT HOLE LAYOUT.
- THE TOP SETTING TEMPLATE SHALL BE HELD IN PLACE BY ALL NUTS SUPPLIED WITH THE ANCHOR BOLTS.
- PLACEMENT OF ANCHOR BOLTS WITHOUT THE SETTING TEMPLATES WILL NOT BE PERMITTED.
- PROTECT ANCHOR BOLT THREADS PROJECTING ABOVE TOP OF PILE FROM FOULING DURING CONCRETE PLACEMENT USING TAPE OR EQUIVALENT.
- TOP SETTING TEMPLATE SHALL BE REMOVED FOLLOWING A MINIMUM 24 HOUR CONCRETE CURING PERIOD.

TOP SETTING TEMPLATE:

- TEMPORARY TOP SETTING TEMPLATE SHALL BE SUPPLIED BY THE CONTRACTOR.
- TEMPORARY TOP SETTING TEMPLATE SHALL BE SIMILAR IN SIZE AND CONFIGURATION TO THE PERMANENT BOTTOM SETTING TEMPLATE. SEE DETAIL ON THIS SHEET.

BOTTOM SETTING TEMPLATE:

- PERMANENT HOT DIP GALVANIZED STEEL PLATE, CSA G40.21 GRADE 300W.

GROUNDING CONDUCTOR:

- GROUND WIRE SHALL RUN THROUGH THE 27 DIA. RACEWAY INSTALLED IN CENTRE OF PILE.

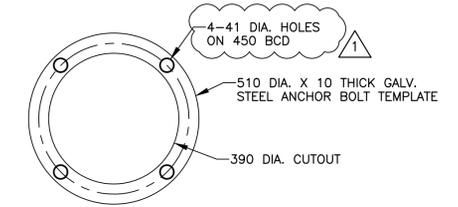
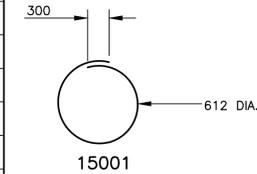
BILL OF ANCHOR BOLTS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	REMARKS	LINE NO.
AB2	4	ANCHOR BOLT ASSEMBLY AB2	38 (1 1/2") DIA. x 1750	SEE SHEET A1	1
					2
					3

BILL OF REINFORCING STEEL

MK. NO.	SIZE	QTY. REQ'D.	LENGTH (mm)	MASS (kg)	LINE NO.
20001	20M	8	4850	91.37	1
15001	15M	25	2223	87.25	2
					3
					4
					5
					6
					7
					8
TOTAL MASS OF REINFORCING STEEL				= 178.62 kg	9
TOTAL VOLUME OF CONC. C.I.P. PILES				= 2.280 m ³	10

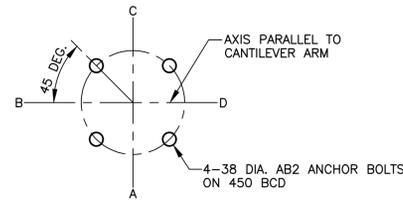
BENDING DIAGRAM



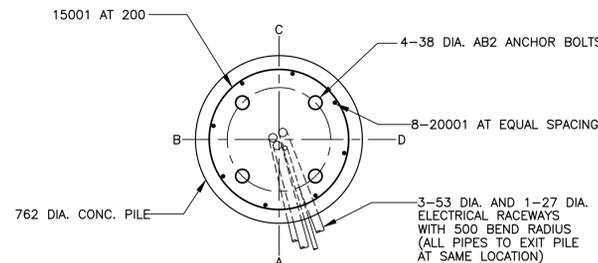
BOTTOM ANCHOR BOLT SETTING TEMPLATE

MATERIAL SUPPLIED AND INSTALLED BY OTHERS

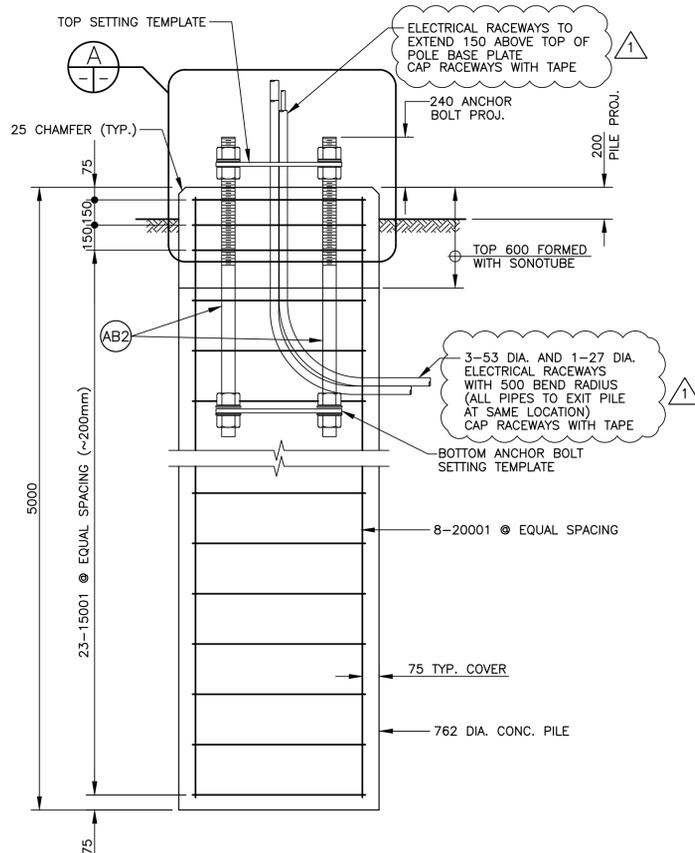
MK. NO.	QTY. REQ'D.	DESCRIPTION	REMARKS	LINE NO.
S1	1	ALUMINUM SHROUD	DIMENSIONS TO SUIT BCD OF ANCHOR BOLTS AND HEIGHT OF BASE PLATE ABOVE CONCRETE PILE. MATERIAL TO BE 12ga (2.1mm) 6061-T6 ALUMINUM SHEET. ATTACHMENT SCREWS TO BE SELF-DRILLING TYPE 316 S/S - #10 X 19mm.	1



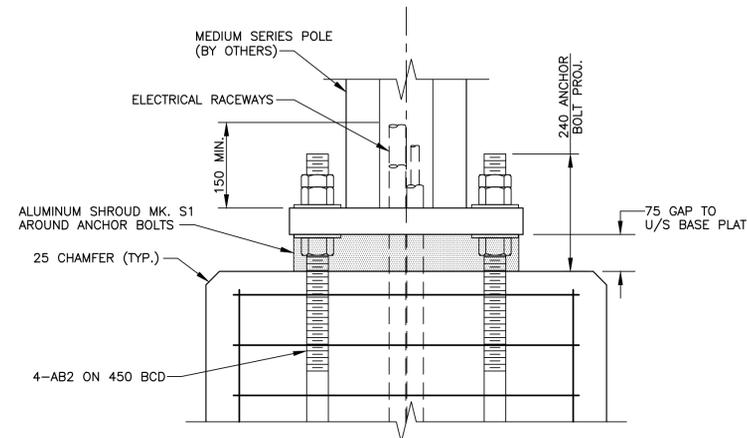
ANCHOR BOLTS LAYOUT



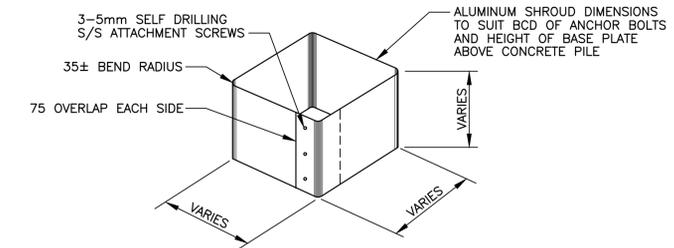
PLAN / CONCRETE SECTION



**F-M FOUNDATION DETAIL
N.T.S.
ELEVATION**



**F-M ASSEMBLY DETAIL
N.T.S.**



ALUMINUM SHROUD MK. S1

REVISIONS		MEDIUM SERIES FOUNDATION 762 mm DIA. PILE	
2020/12/09	DRA	ISSUED FOR REVISION 1	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DATE	BY	DESCRIPTION	
		DESIGN SEAL	RECORD SEAL
Certificate of Authorization Dillon Consulting Limited (MB) No. 1789 Date: 2019/11/13		RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING	
CONSULTANT PROJECT NO. 17-6801		SCALE: _____ SHEET No. F2 PART No. F-M	
DESIGN	BY: _____ SSR _____	CHECKED: _____ TAE/DRA _____	
DETAILS	BY: _____ MDG _____	CHECKED: _____ SSR _____	

GENERAL NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
2. ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
3. ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.

CONCRETE FOUNDATION PILES

1. PRIOR TO INSTALLING PILES, CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SURFACE OR SUBSURFACE UTILITIES.
2. INSTALL PILES TO INDICATED DEPTHS ENSURING THAT SHAFTS ARE DRY AND FREE OF DEBRIS UNTIL CONCRETE IS PLACED.
3. **CONCRETE**
 - a) CSA A23.1 EXPOSURE CLASS S-1
 - b) MIN. COMPRESSIVE STRENGTH @ 28 DAYS = 35 MPa
 - c) AIR CONTENT: CATEGORY 1
 - d) CEMENT: TYPE HS
4. NOTIFY THE OWNER AND TESTING FIRM A MINIMUM OF TWENTY FOUR HOURS PRIOR TO COMMENCEMENT TO CONCRETE OPERATIONS.
5. REFER TO SPECIFICATIONS FOR CONCRETE TESTING REQUIREMENTS.
6. REINFORCING STEEL SHALL BE GRADE 400W, DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.18.
7. GALVANIZED STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

ANCHOR BOLT PLACEMENT:

- a) THE ANCHOR BOLTS SHALL BE ALIGNED WITH TOP AND BOTTOM SETTING TEMPLATES MATCHING THE BOLT HOLE LAYOUT.
- b) THE TOP SETTING TEMPLATE SHALL BE HELD IN PLACE BY ALL NUTS SUPPLIED WITH THE ANCHOR BOLTS.
- c) PLACEMENT OF ANCHOR BOLTS WITHOUT THE SETTING TEMPLATES WILL NOT BE PERMITTED.
- d) PROTECT ANCHOR BOLT THREADS PROJECTING ABOVE TOP OF PILE FROM FOULING DURING CONCRETE PLACEMENT USING TAPE OR EQUIVALENT.
- e) TOP SETTING TEMPLATE SHALL BE REMOVED FOLLOWING A MINIMUM 24 HOUR CONCRETE CURING PERIOD.

TOP SETTING TEMPLATE:

- a) TEMPORARY TOP SETTING TEMPLATE SHALL BE SUPPLIED BY THE CONTRACTOR.
- b) TEMPORARY TOP SETTING TEMPLATE SHALL BE SIMILAR IN SIZE AND CONFIGURATION TO THE PERMANENT BOTTOM SETTING TEMPLATE. SEE DETAIL ON THIS SHEET.

BOTTOM SETTING TEMPLATE:

- a) PERMANENT HOT DIP GALVANIZED STEEL PLATE, CSA G40.21 GRADE 300W.

GROUNDING CONDUCTOR:

- a) GROUND WIRE SHALL RUN THROUGH THE 27 DIA. RACEWAY INSTALLED IN CENTRE OF PILE.

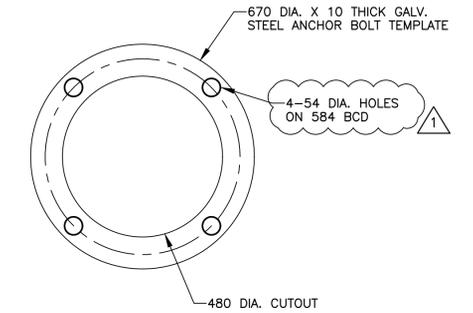
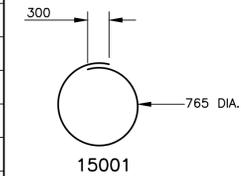
BILL OF ANCHOR BOLTS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	REMARKS	LINE NO.
AB3	4	ANCHOR BOLT ASSEMBLY AB3	51 (2") DIA. x 1750	SEE SHEET A1	1
					2
					3

BILL OF REINFORCING STEEL

MK. NO.	SIZE	QTY. REQ'D.	LENGTH (mm)	MASS (kg)	LINE NO.
20001	20M	12	4850	137.06	1
15001	15M	25	2705	106.17	2
					3
					4
					5
					6
					7
					8
TOTAL MASS OF REINFORCING STEEL				= 243.23 kg	9
TOTAL VOLUME OF CONC. C.I.P. PILES				= 3.280 m ³	10

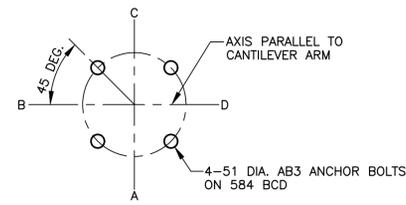
BENDING DIAGRAM



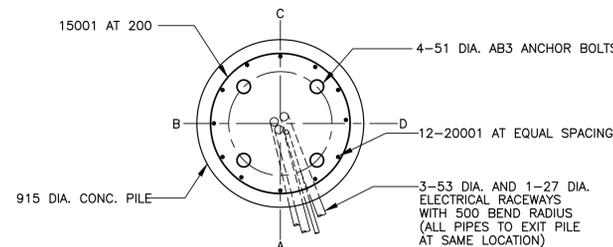
BOTTOM ANCHOR BOLT SETTING TEMPLATE

MATERIAL SUPPLIED AND INSTALLED BY OTHERS

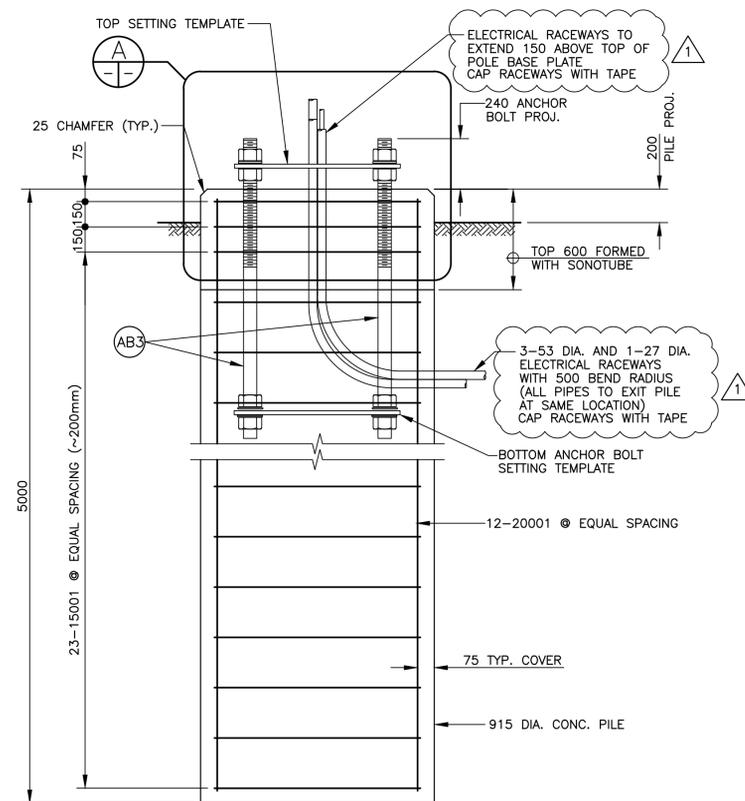
MK. NO.	QTY. REQ'D.	DESCRIPTION	REMARKS	LINE NO.
S1	1	ALUMINUM SHROUD	DIMENSIONS TO SUIT BCD OF ANCHOR BOLTS AND HEIGHT OF BASE PLATE ABOVE CONCRETE PILE. MATERIAL TO BE 12ga (2.1mm) 6061-T6 ALUMINUM SHEET. ATTACHMENT SCREWS TO BE SELF-DRILLING TYPE 316 S/S - #10 X 19mm.	1



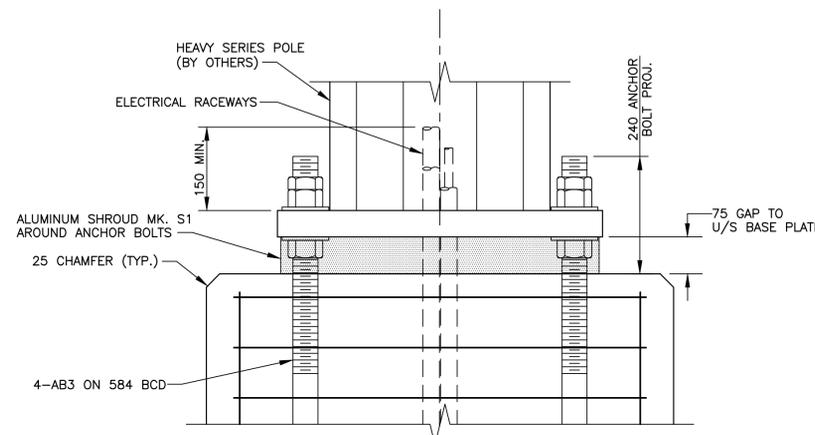
ANCHOR BOLTS LAYOUT



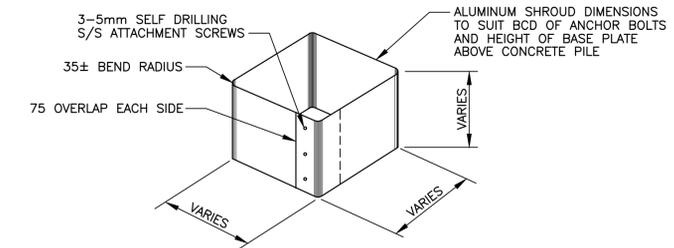
PLAN / CONCRETE SECTION



**F-H FOUNDATION DETAIL
N.T.S.
ELEVATION**



**F-H ASSEMBLY DETAIL
N.T.S.**



ALUMINUM SHROUD MK. S1

REVISIONS		HEAVY SERIES FOUNDATION 915 mm DIA. PILE	
2020/12/09	DRA	ISSUED FOR REVISION 1	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DATE	BY	DESCRIPTION	
		DESIGN SEAL	RECORD SEAL
DESIGN BY: SSR CHECKED: TAE/DRA		RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING	
DETAILS BY: MDG CHECKED: SSR		SCALE: _____ SHEET No. F3 PART No. F-H	

APEGM
Certificate of Authorization
Dillon Consulting Limited (MB)
No. 1789 Date: 2019/11/13

DILLON CONSULTING
CONSULTANT PROJECT NO. 17-6801

PROVINCE OF MANITOBA
ORIGINAL STAMPED BY
S.S. RIHAL
2019/11/13
REGISTERED PROFESSIONAL ENGINEER

GENERAL NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.

CONCRETE FOUNDATION PILES

- PRIOR TO INSTALLING PILES, CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SURFACE OR SUBSURFACE UTILITIES.
- INSTALL PILES TO INDICATED DEPTHS ENSURING THAT SHAFTS ARE DRY AND FREE OF DEBRIS UNTIL CONCRETE IS PLACED.
- CONCRETE**
 - CSA A23.1 EXPOSURE CLASS S-1
 - MIN. COMPRESSIVE STRENGTH @ 28 DAYS = 35 MPa
 - AIR CONTENT: CATEGORY 1
 - CEMENT: TYPE HS
- NOTIFY THE OWNER AND TESTING FIRM A MINIMUM OF TWENTY FOUR HOURS PRIOR TO COMMENCEMENT TO CONCRETE OPERATIONS.
- REFER TO SPECIFICATIONS FOR CONCRETE TESTING REQUIREMENTS.
- REINFORCING STEEL SHALL BE GRADE 400W, DEFORMED BILLET STEEL BARS FOR CONCRETE REINFORCEMENT CONFORMING TO CSA G30.18.
- GALVANIZED STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

ANCHOR BOLT PLACEMENT:

- THE ANCHOR BOLTS SHALL BE ALIGNED WITH TOP AND BOTTOM SETTING TEMPLATES MATCHING THE BOLT HOLE LAYOUT.
- THE TOP SETTING TEMPLATE SHALL BE HELD IN PLACE BY ALL NUTS SUPPLIED WITH THE ANCHOR BOLTS.
- PLACEMENT OF ANCHOR BOLTS WITHOUT THE SETTING TEMPLATES WILL NOT BE PERMITTED.
- PROTECT ANCHOR BOLT THREADS PROJECTING ABOVE TOP OF PILE FROM FOULING DURING CONCRETE PLACEMENT USING TAPE OR EQUIVALENT.
- TOP SETTING TEMPLATE SHALL BE REMOVED FOLLOWING A MINIMUM 24 HOUR CONCRETE CURING PERIOD.

TOP SETTING TEMPLATE:

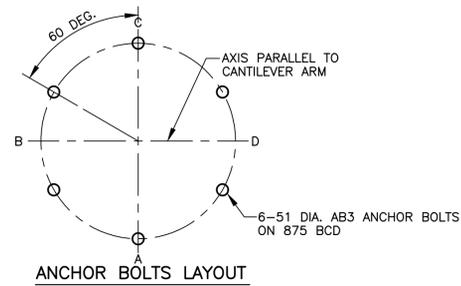
- TEMPORARY TOP SETTING TEMPLATE SHALL BE SUPPLIED BY THE CONTRACTOR.
- TEMPORARY TOP SETTING TEMPLATE SHALL BE SIMILAR IN SIZE AND CONFIGURATION TO THE PERMANENT BOTTOM SETTING TEMPLATE. SEE DETAIL ON THIS SHEET.

BOTTOM SETTING TEMPLATE:

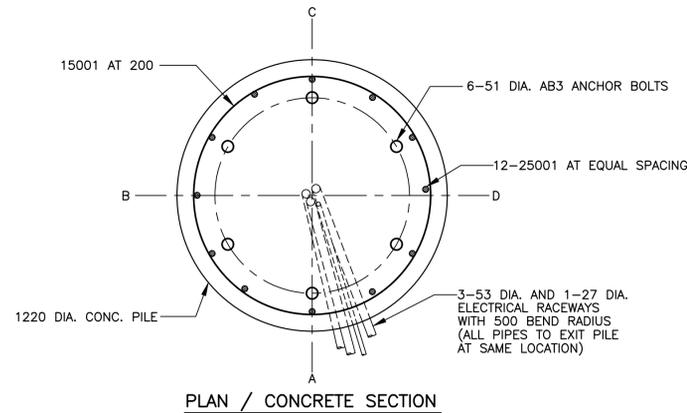
- PERMANENT HOT DIP GALVANIZED STEEL PLATE, CSA G40.21 GRADE 300W.

GROUNDING CONDUCTOR:

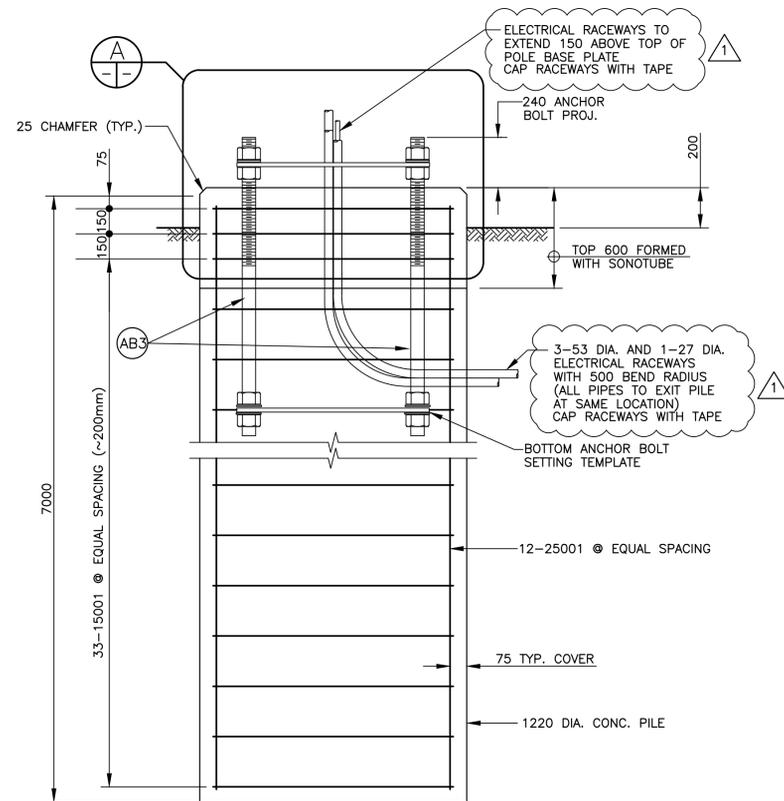
- GROUND WIRE SHALL RUN THROUGH THE 27 DIA. RACEWAY INSTALLED IN CENTRE OF PILE.



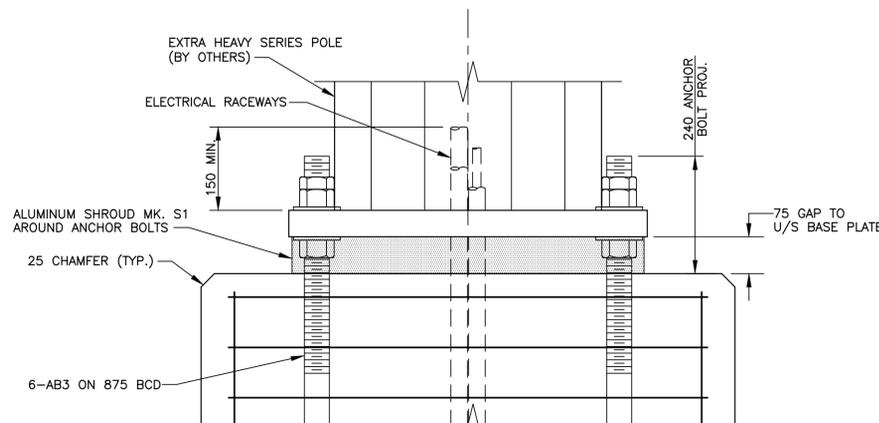
ANCHOR BOLTS LAYOUT



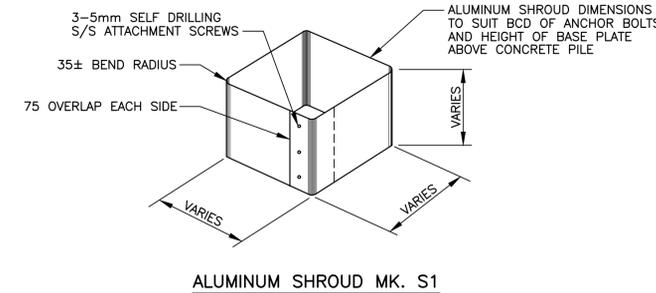
PLAN / CONCRETE SECTION



F-EH FOUNDATION DETAIL
N.T.S.
ELEVATION



F-EH ASSEMBLY DETAIL
N.T.S.



ALUMINUM SHROUD MK. S1

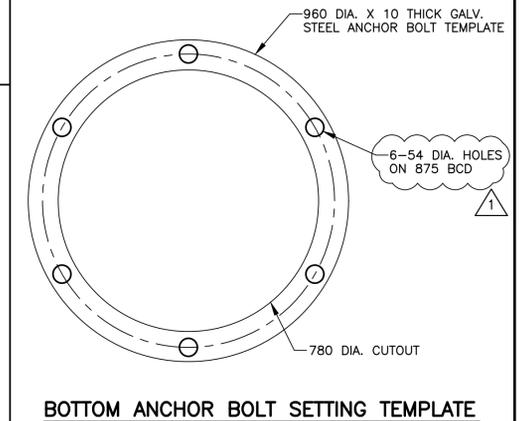
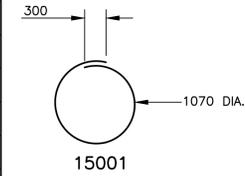
BILL OF ANCHOR BOLTS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	REMARKS	LINE NO.
AB3	6	ANCHOR BOLT ASSEMBLY AB3	51 (2") DIA. x 1750	SEE SHEET A1	1
					2
					3

BILL OF REINFORCING STEEL

MK. NO.	SIZE	QTY. REQ'D.	LENGTH (mm)	MASS (kg)	LINE NO.
25001	25M	12	6850	322.64	1
15001	15M	35	3660	201.11	2
					3
					4
					5
					6
					7
					8
TOTAL MASS OF REINFORCING STEEL				= 523.75 kg	9
TOTAL VOLUME OF CONC. C.I.P. PILES				= 8.180 m ³	10

BENDING DIAGRAM



BOTTOM ANCHOR BOLT SETTING TEMPLATE

MATERIAL SUPPLIED AND INSTALLED BY OTHERS

MK. NO.	QTY. REQ'D.	DESCRIPTION	REMARKS	LINE NO.
S1	1	ALUMINUM SHROUD	DIMENSIONS TO SUIT BCD OF ANCHOR BOLTS AND HEIGHT OF BASE PLATE ABOVE CONCRETE PILE. MATERIAL TO BE 12ga (2.1mm) 6061-T6 ALUMINUM SHEET. ATTACHMENT SCREWS TO BE SELF-DRILLING TYPE 316 S/S - #10 X 19mm.	1

REVISIONS

DATE	BY	DESCRIPTION
2020/12/09	DRA	ISSUED FOR REVISION 1
2019/11/13	SSR	ISSUED FOR CONSTRUCTION

**EXTRA HEAVY SERIES FOUNDATION
1220 mm DIA. PILE**

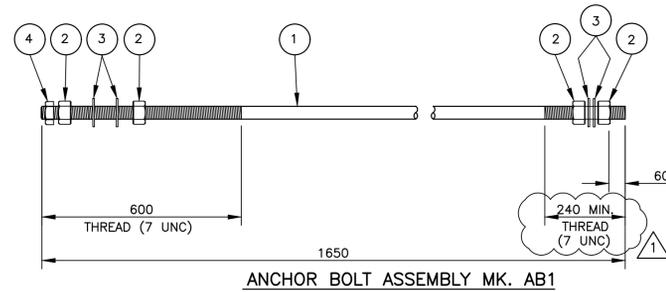
TRAFFIC SIGNAL AND PEDESTRIAN
CORRIDOR STRUCTURES



DESIGN	BY: ___ SSR ___	CHECKED: ___ TAE/DRA ___
DETAILS	BY: ___ MDG ___	CHECKED: ___ SSR ___
RELEASED FOR CONSTRUCTION BY:	DATE	SCALE:
		SHEET No. F4
		PART No. F-EH

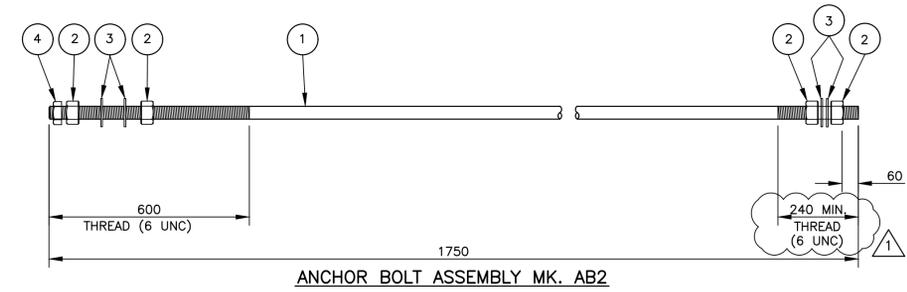
BILL OF ANCHOR BOLTS (ASSEMBLY MK. AB1)

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL	REMARKS	LINE NO.
1	1	ANCHOR BOLT THREADED BOTH ENDS	32 (1 1/4") DIA. x 1650	ASTM F1554 GRADE 55 (380 MPa)	SEE DETAIL BELOW	1
2	4	HEAVY HEX NUT	32 (1 1/4") DIA.	ASTM A563 GRADE A		2
3	4	HEAVY WASHER	32 (1 1/4") DIA.	ASTM F436 TYPE 1		3
4	1	HALF-NUT	32 (1 1/4") DIA.	ASTM A563 GRADE A		4
						5



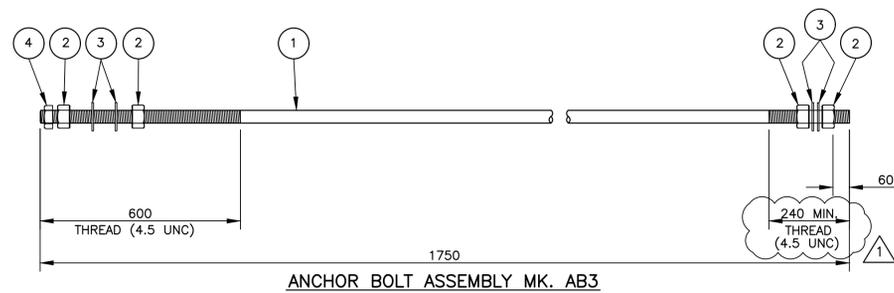
BILL OF ANCHOR BOLTS (ASSEMBLY MK. AB2)

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL	REMARKS	LINE NO.
1	1	ANCHOR BOLT THREADED BOTH ENDS	38 (1 1/2") DIA. x 1750	ASTM F1554 GRADE 55 (380 MPa)	SEE DETAIL BELOW	1
2	4	HEAVY HEX NUT	38 (1 1/2") DIA.	ASTM A563 GRADE A		2
3	4	HEAVY WASHER	38 (1 1/2") DIA.	ASTM F436 TYPE 1		3
4	1	HALF-NUT	38 (1 1/2") DIA.	ASTM A563 GRADE A		4
						5



BILL OF ANCHOR BOLTS (ASSEMBLY MK. AB3)

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL	REMARKS	LINE NO.
1	1	ANCHOR BOLT THREADED BOTH ENDS	51 (2") DIA. x 1750	ASTM F1554 GRADE 55 (380 MPa)	SEE DETAIL BELOW	1
2	4	HEAVY HEX NUT	51 (2") DIA.	ASTM A563 GRADE A		2
3	4	HEAVY WASHER	51 (2") DIA.	ASTM F436 TYPE 1		3
4	1	HALF-NUT	51 (2") DIA.	ASTM A563 GRADE A		4
						5



GENERAL NOTES:

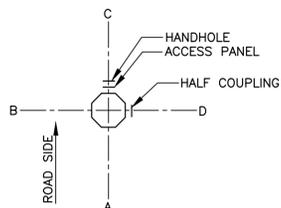
1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
2. ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
3. ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.

ANCHOR BOLTS

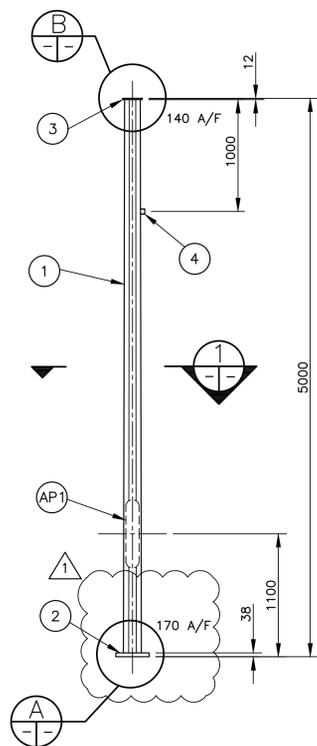
1. ANCHOR BOLTS SHALL BE SUPPLIED AND INSTALLED BY THE FOUNDATION CONTRACTOR.
2. SEE SHEETS F1, F2, F3, AND F4 FOR PILE FOUNDATION DETAILS.
3. ANCHOR BOLTS SHALL BE ASTM F1554, MINIMUM YIELD STRENGTH 55 ksi (380 MPa).
4. ALL PARTS OF ANCHOR BOLT ASSEMBLY SHALL BE HOT DIP GALVANIZED (FULL LENGTH) IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
5. ALL NUTS SHALL BE TAPPED OVERSIZE PRIOR TO GALVANIZING.
6. ALL NUTS AND WASHERS SHALL BE ASSEMBLED BY THE SUPPLIER PRIOR TO DELIVERY.

REVISIONS		ANCHOR BOLTS		
		TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES		
2020/12/09	DRA ISSUED FOR REVISION 1			
2019/11/13	SSR ISSUED FOR CONSTRUCTION			
DATE	BY	DESIGN SEAL	RECORDED SEAL	RELEASED FOR CONSTRUCTION BY:
				BY: _____ DATE _____
				DIRECTOR OF TRAFFIC ENGINEERING
				SCALE: _____
				SHEET No. A1
				PART No. AB1, AB2, AB3



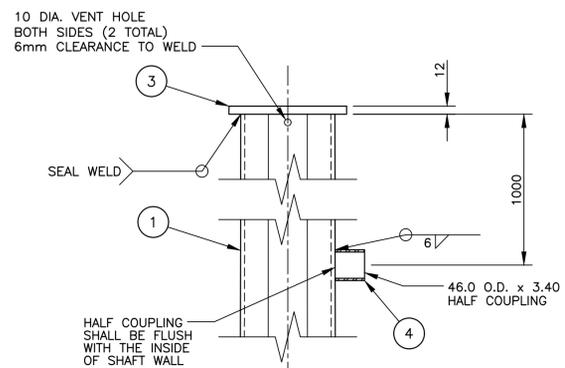


ORIENTATION

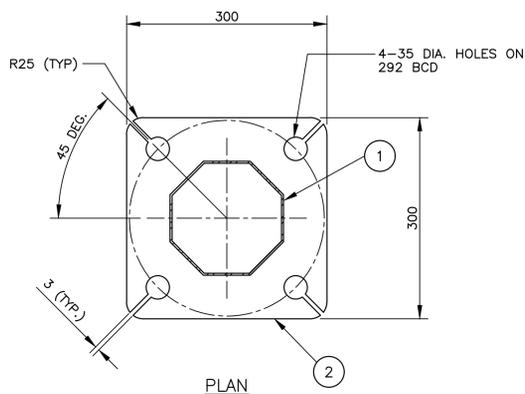


POLE ELEVATION

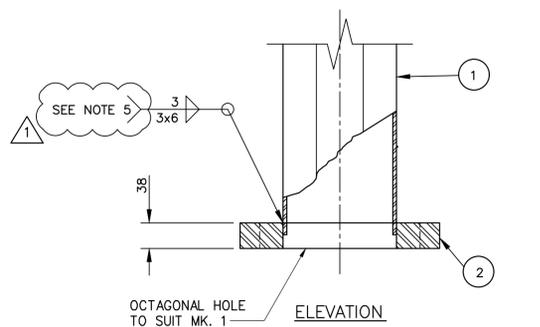
1:30
(PART No: P-L-S50)



DETAIL
1:5



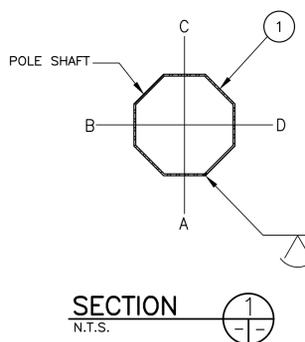
PLAN



ELEVATION

BASE PLATE DETAIL

1:5



SECTION

N.T.S.

BILL OF MATERIALS						
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
		LIGHT SERIES 5.0 m STRAIGHT POLE (PART No. P-L-S50)				1
1	1	OCTAGONAL SECTION SHAFT	170 A/F-140 A/F x 3.038			2
2	1	BASE PLATE	38 x 300 x 300			3
3	1	CAP PLATE	12 x 180 DIA.			4
4	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL B SEE NOTES 8 AND 9	5
						6
AP1	1	ACCESS PANEL			SEE SHEET NO. S20	7
						8
						9
						10
						11
						12
						13
						14

- NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 - ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 - ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 - ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 - EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 - PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 - GRIND ALL SHARP POINTS AND EDGES.
 - RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 - SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPPLUG, OR APPROVED EQUIVALENT.
 - SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.

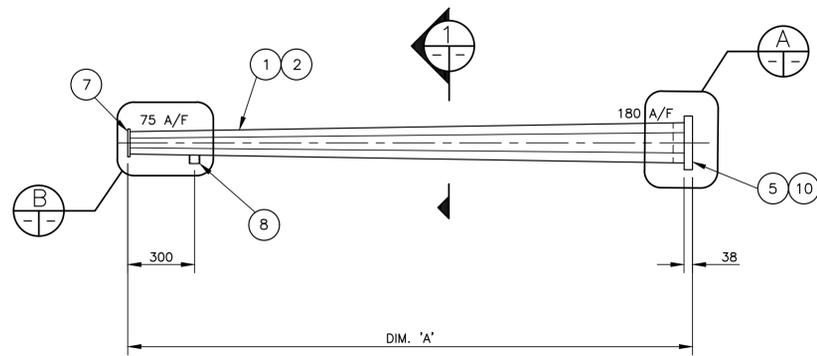
PLOT DATE: 2020/12/08 8:34:38 PM LAST SAVED BY: 40MG
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REVISIONS		DESIGN SEAL		RECORD SEAL		RELEASED FOR CONSTRUCTION BY:	
2020/12/09	DRA	ISSUED FOR REVISION 1				DIRECTOR OF TRAFFIC ENGINEERING DATE	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION				SCALE:	
DATE	BY	DESIGN SEAL		RECORD SEAL		SHEET No. S2	
		DESIGN SEAL		RECORD SEAL		PART No. P-L-S50	

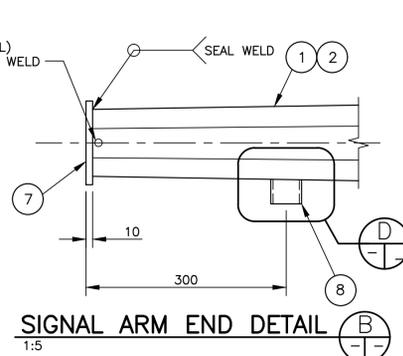


PLOT DATE: 2020/10/08 8:34:47 PM LAST SAVED BY: 40MG

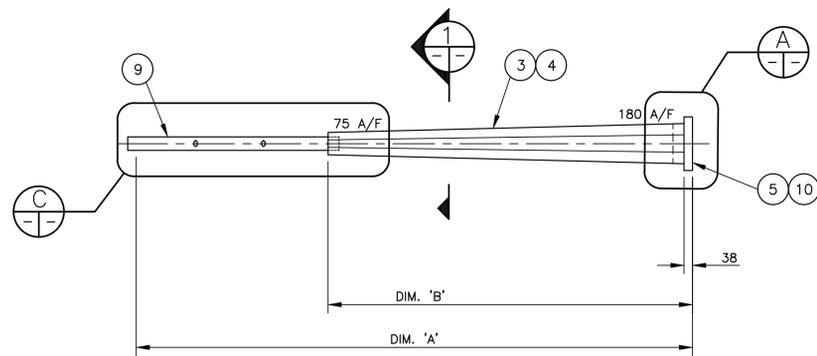
C:\PW\WORKING DIRECTORY\PROJECTS TO 2017\40MG\0626232\LIGHT_CANTL ARMS.DWG



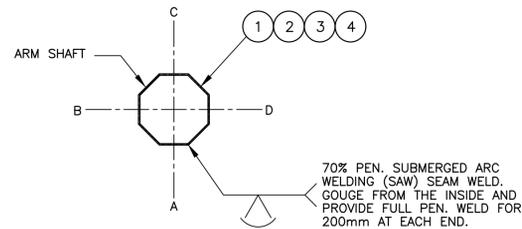
SIGNAL ARM ELEVATION
1:15



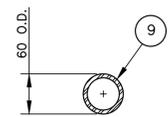
SIGNAL ARM END DETAIL
1:15



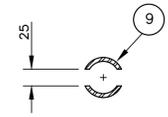
CORRIDOR ARM ELEVATION
1:15



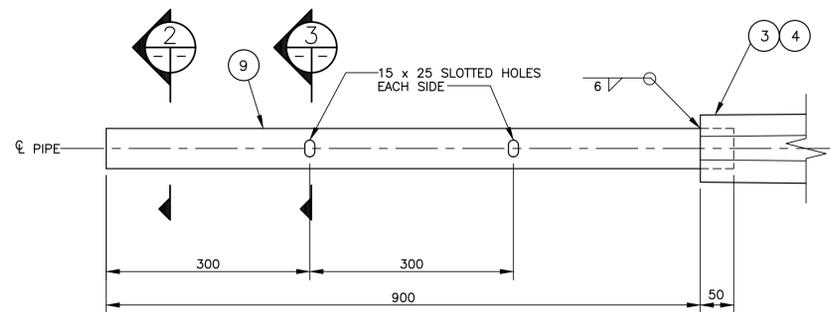
SECTION
N.T.S.



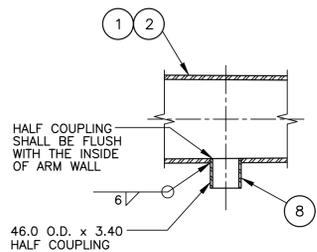
SECTION
1:15



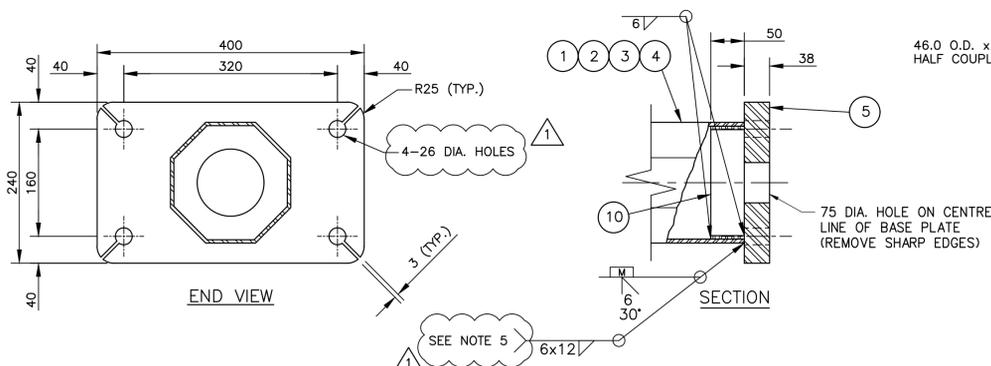
SECTION
1:15



CORRIDOR ARM TENON DETAIL
1:15



DETAIL
1:15



ARM FLANGE PLATE DETAIL
1:15

- NOTES:**
1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 2. ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 3. ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 4. ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 5. EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 6. PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 7. GRIND ALL SHARP POINTS AND EDGES.
 8. RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 9. SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 10. SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.
 11. PROVIDE RAISED 'T' ON TOP OF ARM NEAR FLANGE PLATE USING WELDING ELECTRODE.

BILL OF MATERIALS

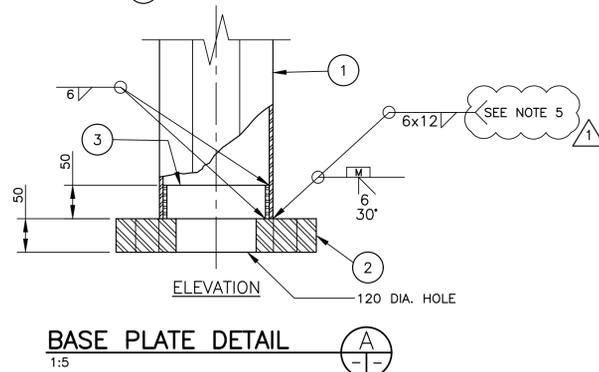
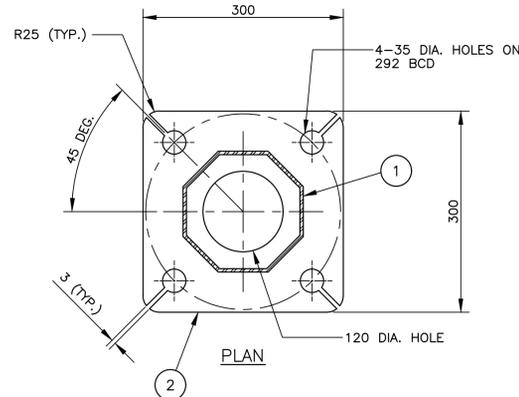
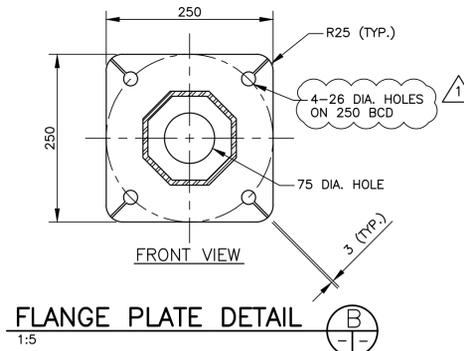
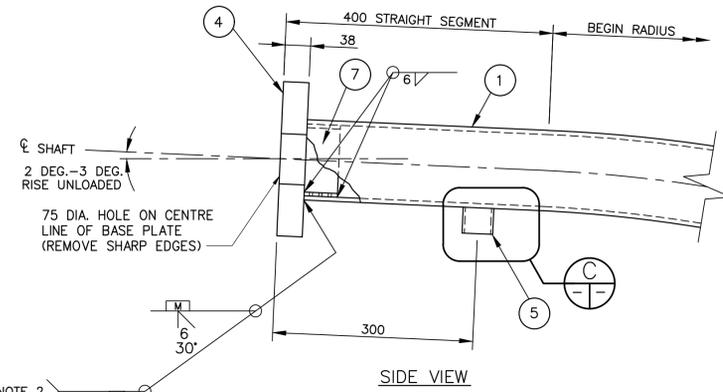
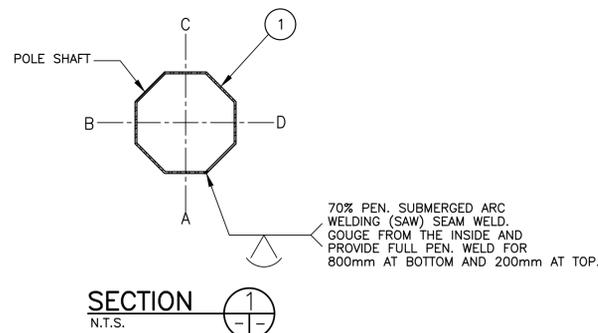
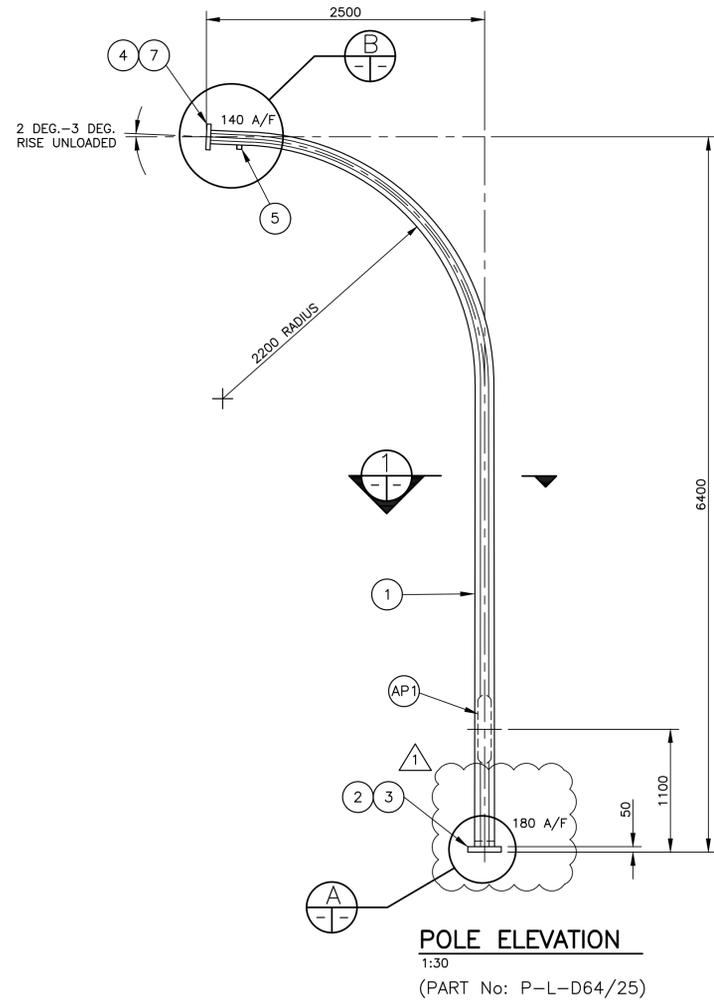
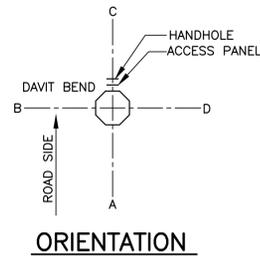
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
LIGHT SERIES CANTILEVER 2.5 m SIGNAL ARM (PART No. A-L-S25)						
1	1	OCTAGONAL SECTION SHAFT	180 A/F-75 A/F x 4.763			1
5	1	FLANGE PLATE	38 x 240 x 400			2
6	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	3
7	1	CAP PLATE	10 x 110 DIA.			4
8	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	5
10	1	BACKUP STRIP PLATE	6 x 50			6
LIGHT SERIES CANTILEVER 5.0 m SIGNAL ARM (PART No. A-L-S50)						
2	1	OCTAGONAL SECTION SHAFT	180 A/F-75 A/F x 4.763			7
5	1	FLANGE PLATE	38 x 240 x 400			8
6	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	9
7	1	CAP PLATE	10 x 110 DIA.			10
8	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	11
10	1	BACKUP STRIP PLATE	6 x 50			12
LIGHT SERIES CANTILEVER 3.0 m CORRIDOR ARM (PART No. A-L-C30)						
3	1	OCTAGONAL SECTION SHAFT	180 A/F-75 A/F x 4.763			13
5	1	FLANGE PLATE	38 x 240 x 400			14
6	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	15
8	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	16
9	1	TENON PIPE	HSS 60 x 3.9 x 950	ASTM A500 CLASS C		17
10	1	BACKUP STRIP PLATE	6 x 50			18
LIGHT SERIES CANTILEVER 5.0 m CORRIDOR ARM (PART No. A-L-C50)						
4	1	OCTAGONAL SECTION SHAFT	180 A/F-75 A/F x 4.763			19
5	1	FLANGE PLATE	38 x 240 x 400			20
6	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	21
8	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	22
9	1	TENON PIPE	HSS 60 x 3.9 x 950	ASTM A500 CLASS C		23
10	1	BACKUP STRIP PLATE	6 x 50			24

PART No.	DESCRIPTION	DIM. 'A'	DIM. 'B'
A-L-S25	2.5 m SIGNAL ARM	2500	N/A
A-L-S50	5.0 m SIGNAL ARM	5000	N/A
A-L-C30	3.0 m CORRIDOR ARM	3000	2100
A-L-C50	5.0 m CORRIDOR ARM	5000	4100

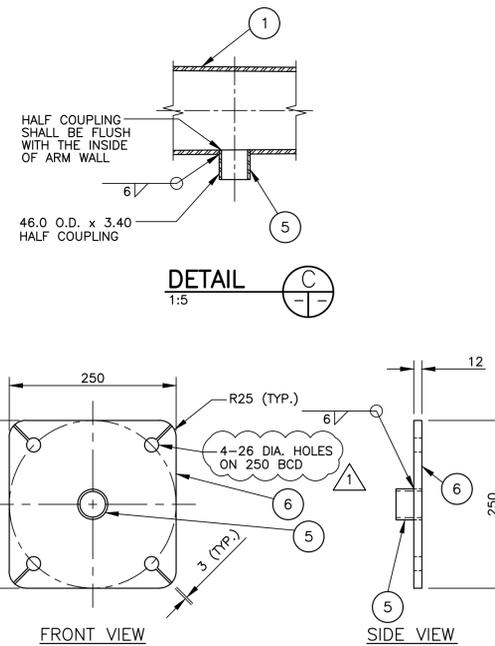
REVISIONS		LIGHT SERIES CANTILEVER 2.5 m AND 5.0 m SIGNAL ARMS 3.0 m AND 5.0 m CORRIDOR ARMS TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES
DATE	DESCRIPTION	
2020/12/09	DRA ISSUED FOR REVISION 1	
2019/11/13	SSR ISSUED FOR CONSTRUCTION	
DESIGN SEAL	RECORD SEAL	RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING
DESIGN BY: _____ SSR CHECKED: _____ TAE/DRA	DETAILS BY: _____ MDG CHECKED: _____ SSR	SCALE: _____ SHEET No. S4 PART No. _____



CONSULTANT PROJECT NO. 17-6801



BILL OF MATERIALS						
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
		LIGHT SERIES DAVIT 6.4 m SHAFT (PART No. P-L-D64/25)				1
1	1	OCTAGONAL SECTION SHAFT	180 A/F-140 A/F x 6.350			2
2	1	BASE PLATE	50 x 300 x 300			3
3	1	BACKUP STRIP PLATE	6 x 50			4
4	1	FLANGE PLATE	38 x 250 x 250			5
5	2	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL C SEE NOTES 8 AND 9	6
6	1	FLANGE COVER PLATE	12 x 250 x 250			7
7	1	BACKUP STRIP PLATE	6 x 50			8
8	4	FLANGE BOLTS	22 DIA. x 89	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	9
AP1	1	ACCESS PANEL			SEE SHEET NO. S20	11
						12
						13
						14
						15
						16
						17
						18
						19
						20



- NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 - ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 - ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 - ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 - EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 - PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 - GRIND ALL SHARP POINTS AND EDGES.
 - RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 - SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 - SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/DRAIN HOLES.

REVISIONS		LIGHT SERIES DAVIT 6.4 m SHAFT	
2020/12/09	DRA	ISSUED FOR REVISION 1	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DATE	BY	DESCRIPTION	
	DESIGN SEAL	RECORD SEAL	

RELEASED FOR CONSTRUCTION BY: _____ DATE: _____

Manitoba
Infrastructure
Traffic Engineering

DESIGN BY: _____ SSR _____
CHECKED: TAE/DRA _____
SCALE: _____

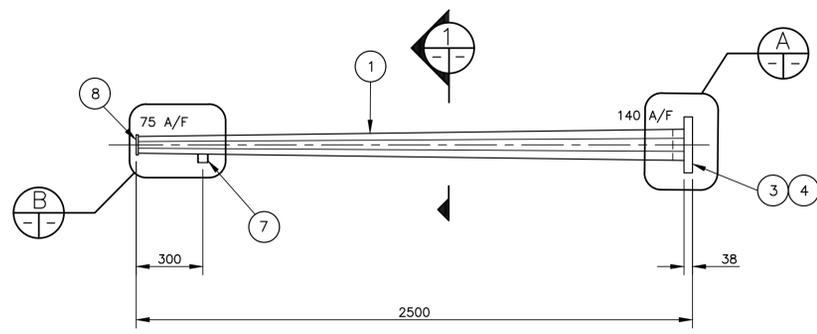
DETAILS BY: _____ MDG _____
CHECKED: _____ SSR _____

SHEET No. **S5**
PART No. P-L-D64/25



PLOT DATE: 2020/12/08 8:34:54 PM LAST SAVED BY: 40MG
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C:\PW\WORKING DIRECTORY\PROJECTS TO 2017\MMG\062622\LIGHT_DAVIT_EXT ARMIS.DWG PLOT DATE: 2020/12/08 8:35:02 PM LAST SAVED BY: 40MG

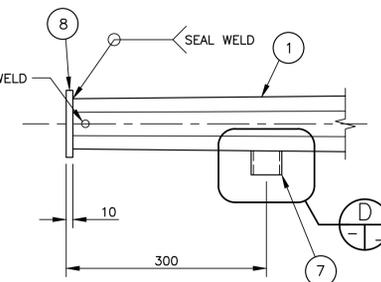


SIGNAL ARM ELEVATION

1:15

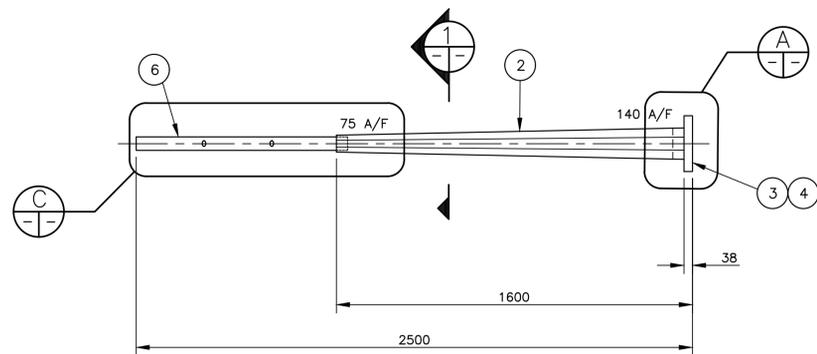
(PART No: A-L-DS25)

10 DIA. VENT HOLE BOTH SIDES (2 TOTAL) 6mm CLEARANCE TO WELD



SIGNAL ARM END DETAIL

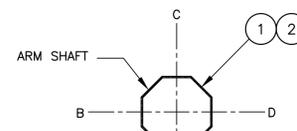
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CORRIDOR ARM ELEVATION

1:15

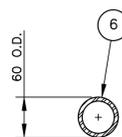
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SECTION

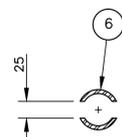
N.T.S.

70% PEN. SUBMERGED ARC WELDING (SAW) SEAM WELD. GOUGE FROM THE INSIDE AND PROVIDE FULL PEN. WELD FOR 200mm AT EACH END.



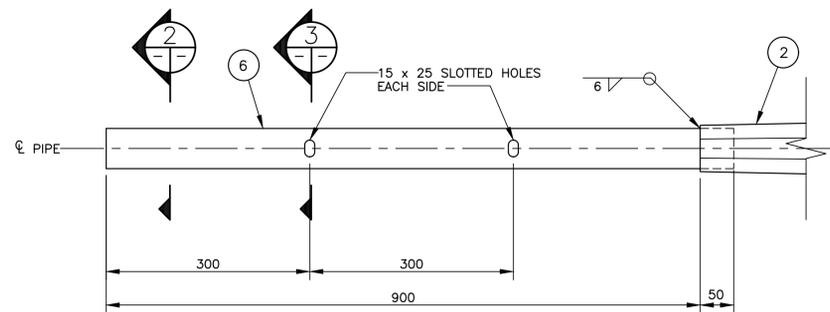
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1:5



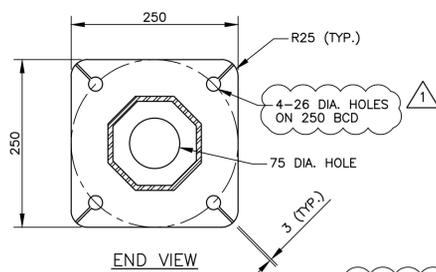
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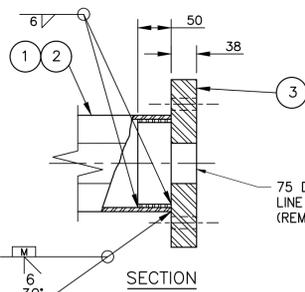


CORRIDOR ARM TENON DETAIL

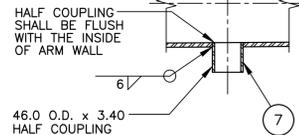
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END VIEW



SECTION



DETAIL

1:5

ARM FLANGE PLATE DETAIL

1:5

BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
LIGHT SERIES DAVIT 2.5 m LONG SIGNAL EXTENSION ARM (PART No. A-L-DS25)						
1	1	OCTAGONAL SECTION SHAFT	140 A/F-75 A/F x 4.763			2
3	1	FLANGE PLATE	38 x 250 x 250			3
4	1	BACKUP STRIP PLATE	6 x 50			4
5	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	5
7	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	6
8	1	CAP PLATE	10 x 110 DIA.			7
LIGHT SERIES DAVIT 2.5 m LONG CORRIDOR EXTENSION ARM (PART No. A-L-DC25)						
2	1	OCTAGONAL SECTION SHAFT	140 A/F-75 A/F x 4.763			10
3	1	FLANGE PLATE	38 x 250 x 250			11
4	1	BACKUP STRIP PLATE	6 x 50			12
5	4	FLANGE BOLTS	22 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT AND 2 GALV. WASHERS	13
6	1	TENON PIPE	HSS 60 x 3.9 x 950	ASTM A500 CLASS C	SEE TENON DETAIL C	14
						15
						16
						17
						18
						19
						20

NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
- ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
- EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
- PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
- GRIND ALL SHARP POINTS AND EDGES.
- RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
- SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
- SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/DRAIN HOLES.
- PROVIDE RAISED 'T' ON TOP OF ARM NEAR FLANGE PLATE USING WELDING ELECTRODE.

REVISIONS	
DATE	DESCRIPTION
2020/12/09	DRA ISSUED FOR REVISION 1
2019/11/13	SSR ISSUED FOR CONSTRUCTION

LIGHT SERIES DAVIT
2.5 m SIGNAL EXTENSION ARM
2.5 m CORRIDOR EXTENSION ARM
TRAFFIC SIGNAL AND PEDESTRIAN
CORRIDOR STRUCTURES

APEGM
 Certificate of Authorization
Dillon Consulting Limited (MB)
 No. 1789 Date: 2019/11/13

DILLON CONSULTING

CONSULTANT PROJECT NO. 17-6801

PROVINCE OF MANITOBA
 ORIGINAL STAMPED BY
S.S. RIHAL
 2019/11/13
 REGISTERED PROFESSIONAL ENGINEER

Manitoba
 Infrastructure
 Traffic Engineering

RELEASED FOR CONSTRUCTION BY: _____ DATE _____

DESIGN BY: _____ SSR _____
 CHECKED: _____ TAE/DRA _____

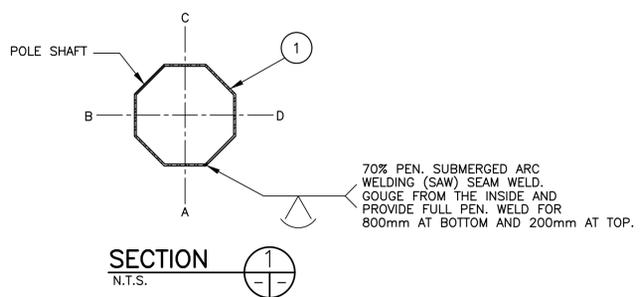
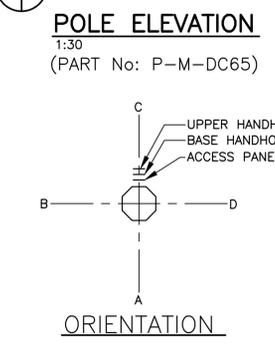
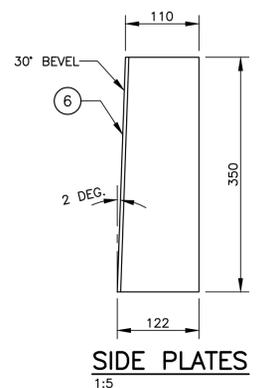
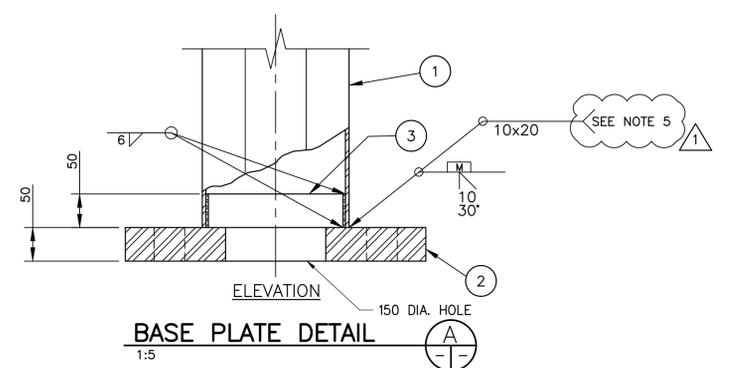
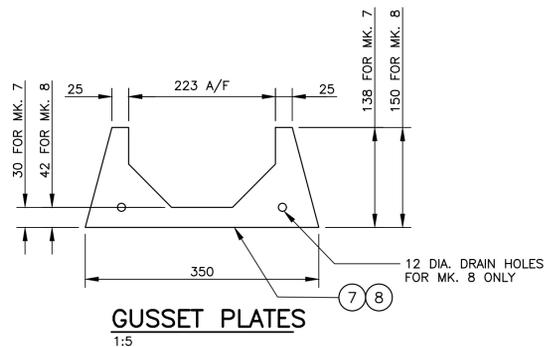
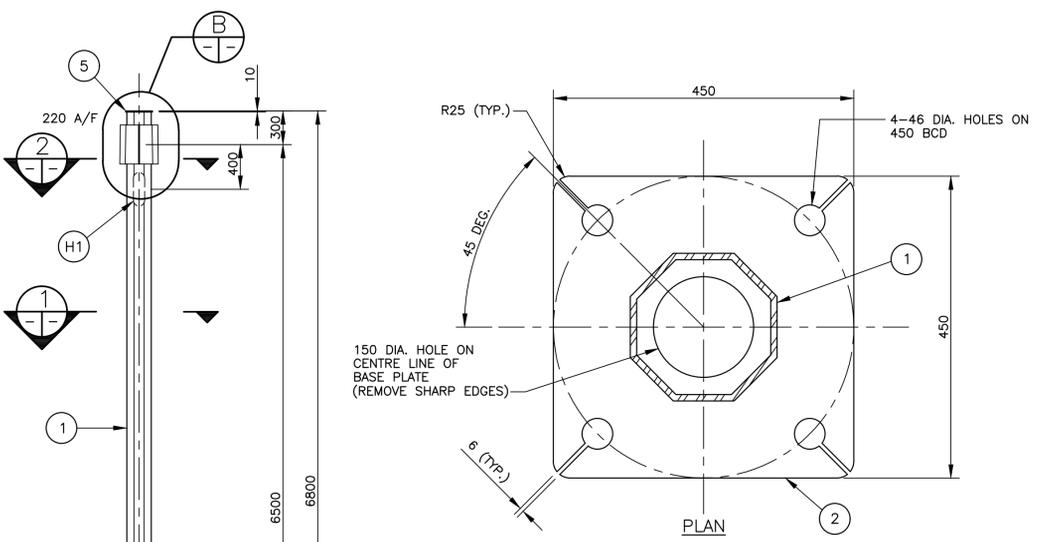
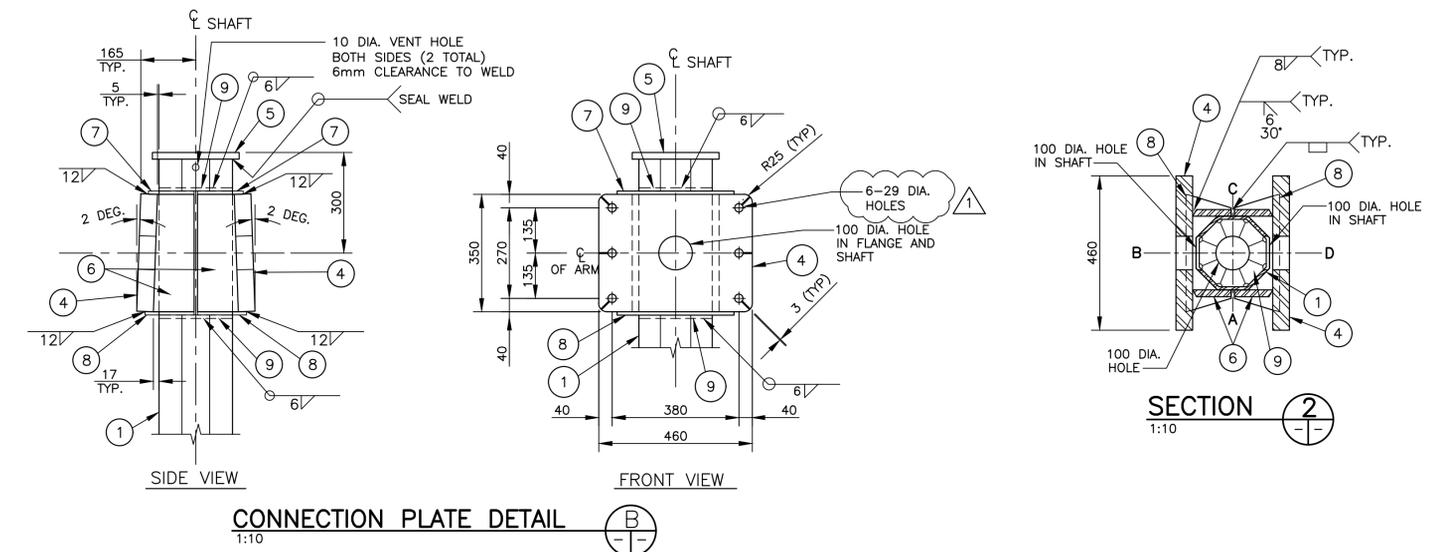
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SCALE: _____ SHEET No. **S6**
 PART No. _____

PLOT DATE: 2020/10/08 8:35:08 PM LAST SAVED BY: 40MG
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BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
MEDIUM SERIES DOUBLE CANTILEVER 6.5 m VERTICAL SHAFT (PART No. P-M-DC65)						
1	1	OCTAGONAL SECTION SHAFT	220 A/F x 6.350			1
2	1	BASE PLATE	50 x 380 x 380			2
3	1	BACKUP STRIP PLATE	6 x 50			3
4	2	FLANGE PLATE	50 x 350 x 460			4
5	1	SHAFT CAP PLATE	10 x 270 DIA.			5
6	4	SIDE PLATE	20 x 122 x 350			6
7	2	TOP GUSSET PLATE	10 x 138 X 350			7
8	2	BOTTOM GUSSET PLATE	10 x 150 x 350			8
9	2	OCTAGONAL INTERIOR GUSSET PLATE	8 THICK			9
AP1	1	ACCESS PANEL			SEE SHEET NO. S20	12
H1	2	HANDHOLE			SEE SHEET NO. S20	13
						14
						15



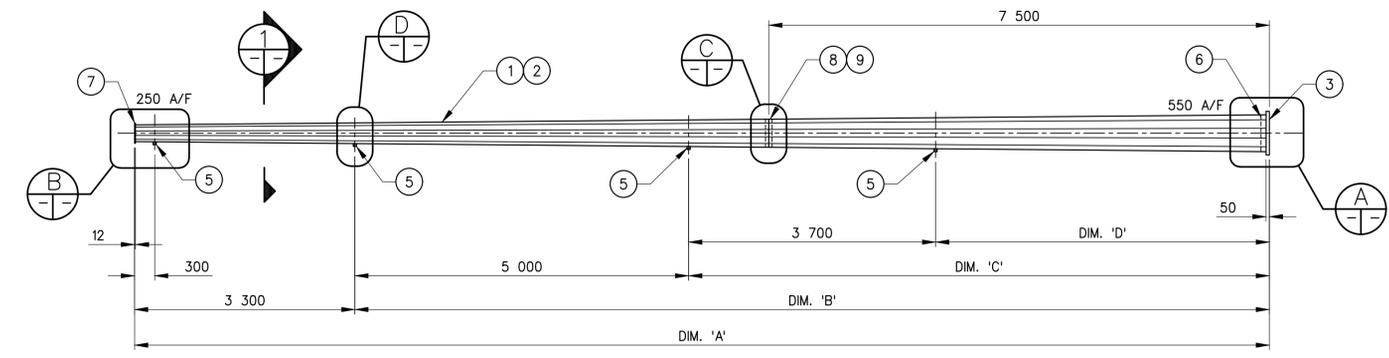
- NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 - ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 - ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 - ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 - EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 - PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 - GRIND ALL SHARP POINTS AND EDGES.
 - RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 - SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 - SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.

REVISIONS		MEDIUM SERIES DOUBLE CANTILEVER 6.5 m VERTICAL SHAFT	
		TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES	
		RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING	
		SCALE: _____ SHEET No. S7 PART No. P-M-DC65	

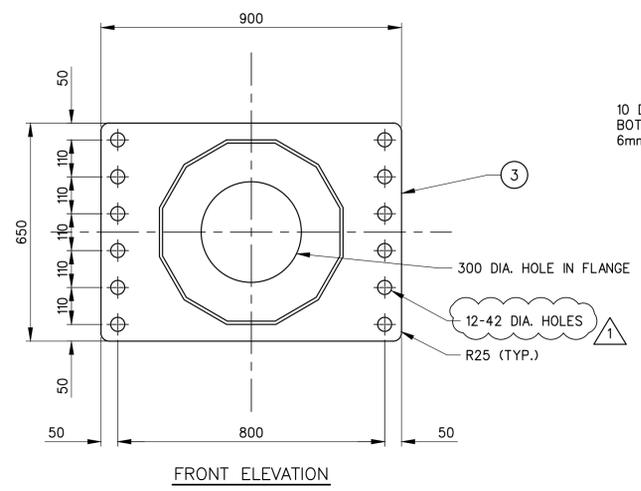
Certificate of Authorization
Dillon Consulting Limited (MB)
 No. 1789 Date: 2019/11/13

CONSULTANT PROJECT NO.
17-6801

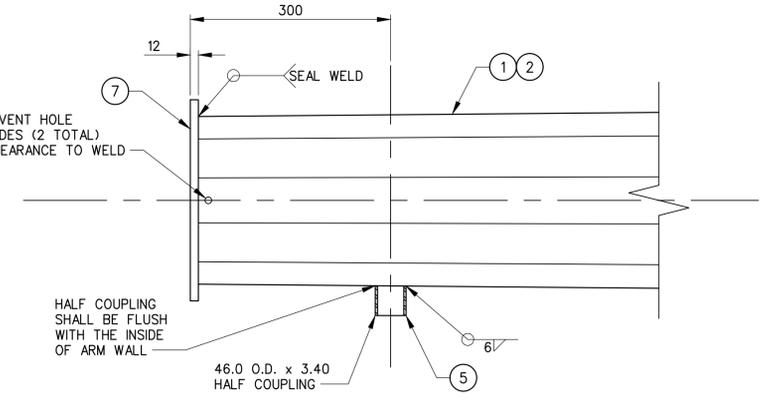
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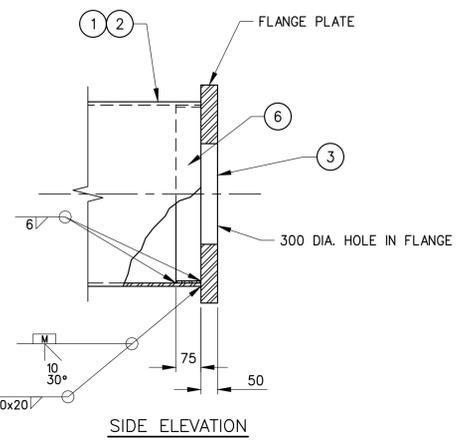
SIGNAL ARM ELEVATION
SCALE: 1:50



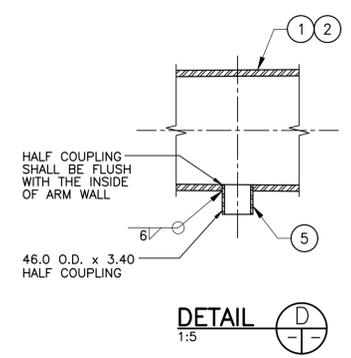
FRONT ELEVATION



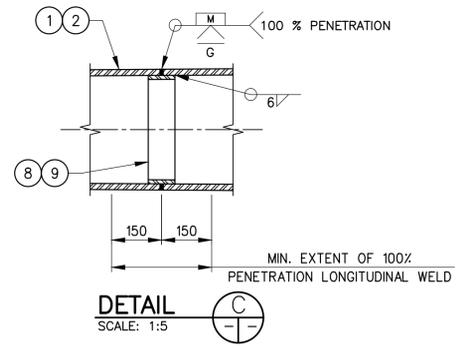
DETAIL B
SCALE: 1:5



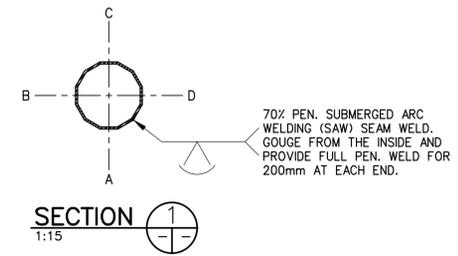
ARM FLANGE PLATE DETAIL
SCALE: 1:10



DETAIL D
SCALE: 1:5



DETAIL C
SCALE: 1:5



SECTION
SCALE: 1:15

BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
EXTRA HEAVY SERIES CANTILEVER 17.0 m SIGNAL ARM (PART No. A-EH-S170)						
1	1	DODECAGONAL SECTION SHAFT	550 A/F-250 A/F x 9.525			1
3	1	FLANGE PLATE	50 x 650 x 900			2
4	12	FLANGE BOLTS	38 DIA. x 150	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	3
5	4	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	4
6	1	BACKUP STRIP PLATE	6 x 75			5
7	1	CAP PLATE	12 x 275 DIA.			6
8	1	BACKUP STRIP PLATE	6 x 75		FOR BUTT JOINT, SEE DETAIL C	7
EXTRA HEAVY SERIES CANTILEVER 18.5 m SIGNAL ARM (PART No. A-EH-S185)						
2	1	DODECAGONAL SECTION SHAFT	550 A/F-250 A/F x 9.525			8
3	1	FLANGE PLATE	50 x 650 x 900			9
4	12	FLANGE BOLTS	38 DIA. x 150	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	10
5	4	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL D SEE NOTES 8 AND 9	11
6	1	BACKUP STRIP PLATE	6 x 75			12
7	1	CAP PLATE	12 x 275 DIA.			13
9	1	BACKUP STRIP PLATE	6 x 75		FOR BUTT JOINT, SEE DETAIL C	14
						15
						16
						17
						18
						19
						20

- NOTES:**
1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 2. ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 3. ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 4. ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 5. EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 6. PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 7. GRIND ALL SHARP POINTS AND EDGES.
 8. RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 9. SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 10. SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/DRAIN HOLES.
 11. PROVIDE RAISED 'T' ON TOP OF ARM NEAR FLANGE PLATE USING WELDING ELECTRODE.

PART No.	DESCRIPTION	DIM. 'A'	DIM. 'B'	DIM. 'C'	DIM. 'D'
A-EH-S170	17.0 m SIGNAL ARM	17000	13700	8700	5000
A-EH-S185	18.5 m SIGNAL ARM	18500	15200	10200	6500

REVISIONS

DATE	BY	DESCRIPTION
2020/12/09	DRA	ISSUED FOR REVISION 1
2019/11/13	SSR	ISSUED FOR CONSTRUCTION

**EXTRA HEAVY SERIES CANTILEVER
17.0 m AND 18.5 m SIGNAL ARMS**

TRAFFIC SIGNAL AND PEDESTRIAN
CORRIDOR STRUCTURES



DESIGN SEAL RECORD SEAL

Manitoba Infrastructure Traffic Engineering

RELEASED FOR CONSTRUCTION BY: _____ DATE _____

DIRECTOR OF TRAFFIC ENGINEERING

DESIGN BY: _____ SSR _____

CHECKED: _____ TAE/DRA _____

SCALE: _____

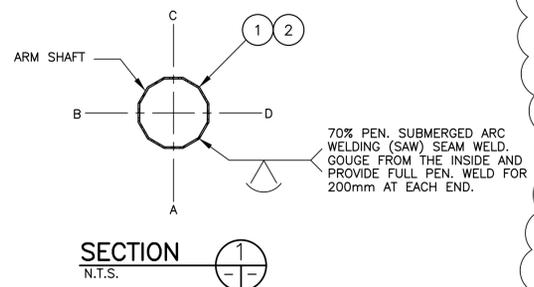
DETAILS BY: _____ MDG _____

CHECKED: _____ SSR _____

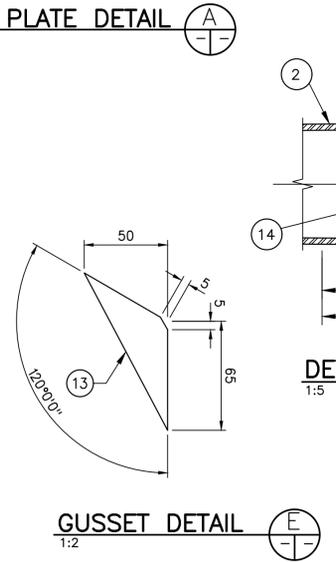
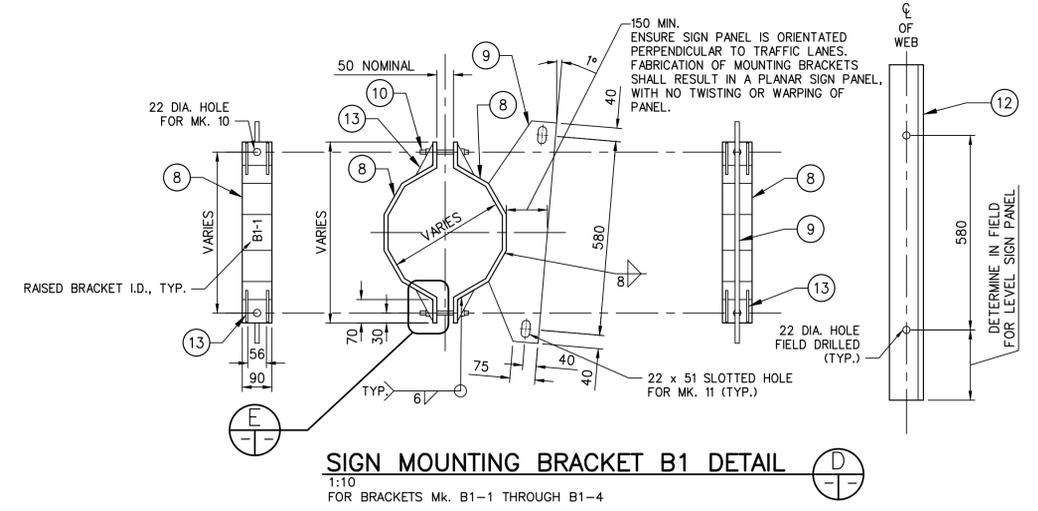
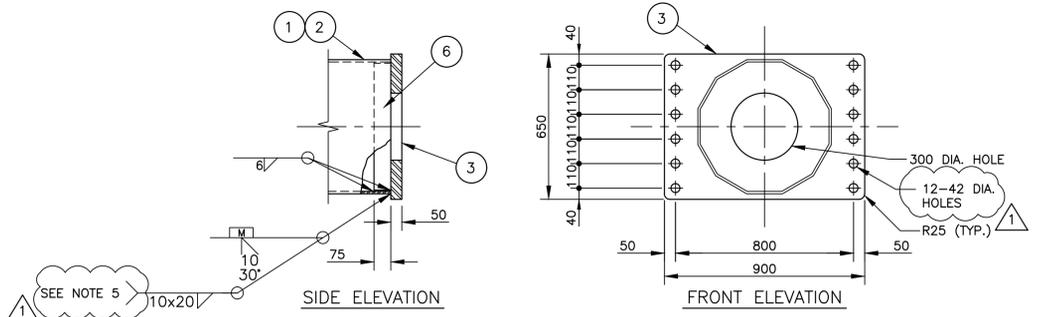
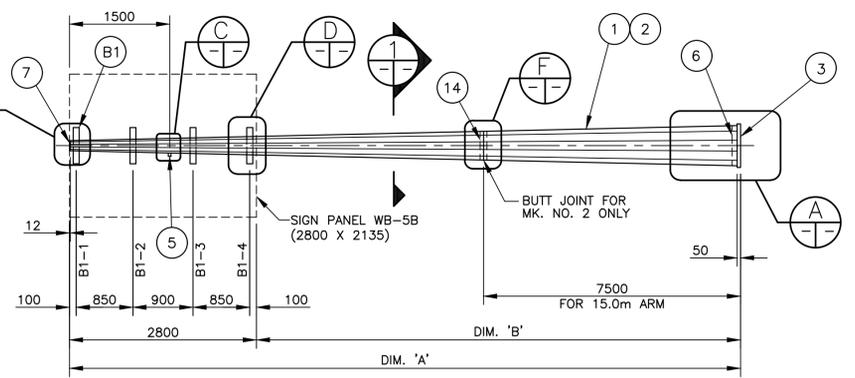
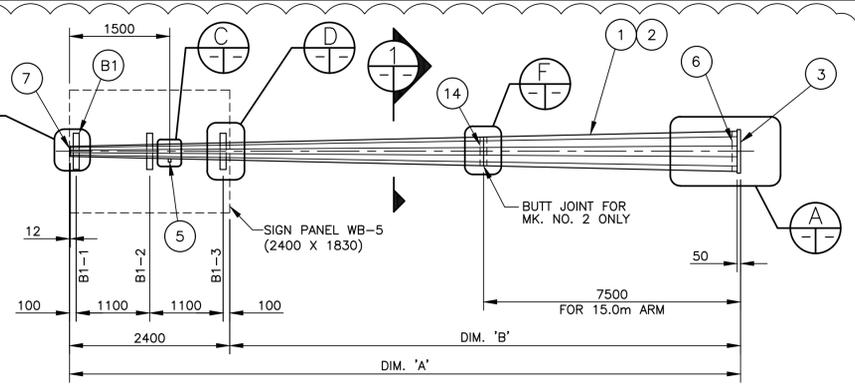
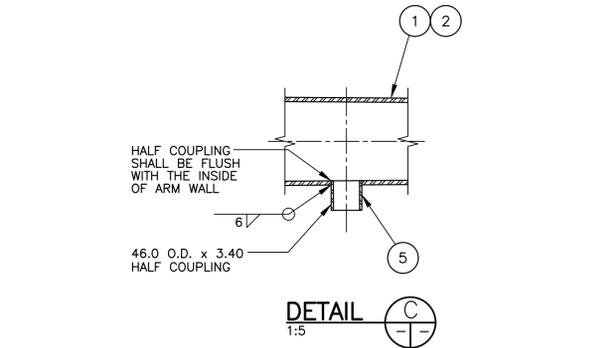
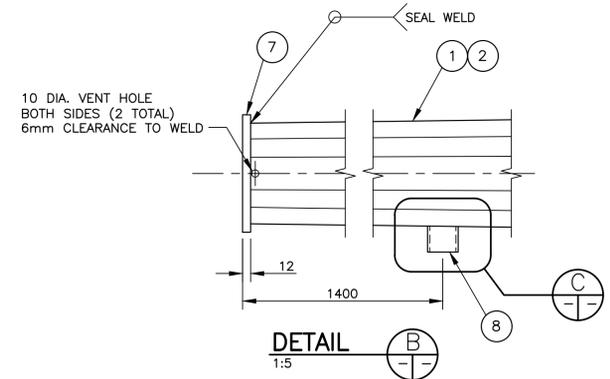
SHEET No. **S14**

PART No. _____

PLOT DATE: 2020/12/11 11:21:27 AM LAST SAVED BY: 40MG
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70% PEN. SUBMERGED ARC WELDING (SAW) SEAM WELD. GOUGE FROM THE INSIDE AND PROVIDE FULL PEN. WELD FOR 200mm AT EACH END.



BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
EXTRA HEAVY SERIES CANTILEVER 10.5 m ADVANCE WARNING SIGN ARM (PART No. A-EH-AW105)						
1	1	DODECAGONAL SECTION SHAFT	500 A/F-125 A/F x 9.525			1
3	1	FLANGE PLATE	50 x 650 x 900			2
4	12	FLANGE BOLTS	38 DIA. x 150	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	3
5	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL C SEE NOTES 8 AND 9	4
6	1	BACKUP STRIP PLATE	6 x 75			5
7	1	CAP PLATE	12 x 150 DIA.			6
B1	3	SIGN MOUNTING BRACKET	VARIES, SEE DETAIL D		SEE SIGN MOUNTING BRACKET NOTE	7
EXTRA HEAVY SERIES CANTILEVER 15.0 m ADVANCE WARNING SIGN ARM (PART No. A-EH-AW150)						
2	1	DODECAGONAL SECTION SHAFT	600 A/F-150 A/F x 9.525			8
3	1	FLANGE PLATE	50 x 650 x 900			9
4	12	FLANGE BOLTS	38 DIA. x 150	A325 TYPE 1 AS PER ASTM F3125	C/W GALV. HEAVY HEX NUT (ASTM A563 GRADE DH) AND 2 GALV. WASHERS (ASTM F436 TYPE 1)	10
5	1	HALF COUPLING	46.0 O.D. x 3.40 x 44	ASTM A105 - 3000 lb	SEE DETAIL C SEE NOTES 8 AND 9	11
6	1	BACKUP STRIP PLATE	6 x 75			12
7	1	CAP PLATE	12 x 175 DIA.			13
14	1	BACKUP STRIP PLATE	6 x 75		FOR BUTT JOINT, SEE DETAIL F	14
B1	3	SIGN MOUNTING BRACKET	VARIES, SEE DETAIL D		SEE SIGN MOUNTING BRACKET NOTE	15
SIGN MOUNTING BRACKET B1 (3 REQ'D FOR ENGLISH SIGN PANEL, 4 REQ'D FOR BILINGUAL SIGN PANEL)						
8	2	DODECAGONAL CLAMP BAR	12 x 90 (LENGTH TO SUIT)			16
9	1	BRACKET PLATE	12 THICK			17
10	2	THREADED ROD	19 DIA. (LENGTH TO SUIT)	ASTM F1554 GRADE 55	C/W 2 ASTM A563 GRADE A NUTS, F436 TYPE 1 WASHER AND LOCK WASHER	18
11	2	S/S BOLT	19 DIA. x 50	ASTM A193 GRADE B8	C/W 1 NUT, 2 WASHERS, AND 1 LOCK WASHER	19
12	1	ALUMINUM T-BAR	8 x 102 x 76	ASTM B221	LENGTH TO MATCH HEIGHT OF ADVANCE WARNING SIGN	20
13	8	GUSSET PLATE	6 THICK			21

NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZING FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
- ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
- EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
- PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
- GRIND ALL SHARP POINTS AND EDGES.
- RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
- SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
- SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/DRAIN HOLES.
- PROVIDE RAISED 'T' ON TOP OF ARM NEAR FLANGE PLATE USING WELDING ELECTRODE.

PART No.	DESCRIPTION	DIM. 'A'	DIM. 'B'
A-EH-AW105	10.5 m ADVANCE WARNING SIGN ARM	10500	7700
A-EH-AW150	15.0 m ADVANCE WARNING SIGN ARM	15000	12200

SIGN MOUNTING BRACKET NOTE:
FOR SIGN MOUNTING BRACKET Mk. B1, MANUFACTURER TO SUPPLY BRACKETS APPROPRIATE FOR THE ENGLISH SIGN PANEL UNLESS SPECIFIED BY THE OWNER. ENGLISH SIGN PANEL WB-5 (BY OTHERS) REQUIRES THREE Mk. B1 BRACKETS AS SHOWN IN 'ADVANCE WARNING SIGN ARM ELEVATION (ENGLISH)' ON THIS SHEET. BILINGUAL SIGN PANEL WB-5B (BY OTHERS) REQUIRES FOUR Mk. B1 BRACKETS AS SHOWN IN 'ADVANCE WARNING SIGN ARM ELEVATION (BILINGUAL)' ON THIS SHEET.

REVISIONS	
DATE	DESCRIPTION
2020/12/09	ISSUED FOR REVISION 1
2019/11/13	ISSUED FOR CONSTRUCTION

**EXTRA HEAVY SERIES CANTILEVER
10.5 m AND 15.0 m ADVANCE WARNING SIGN ARMS**

TRAFFIC SIGNAL AND PEDESTRIAN
CORRIDOR STRUCTURES



DESIGN SEAL
RECORD SEAL

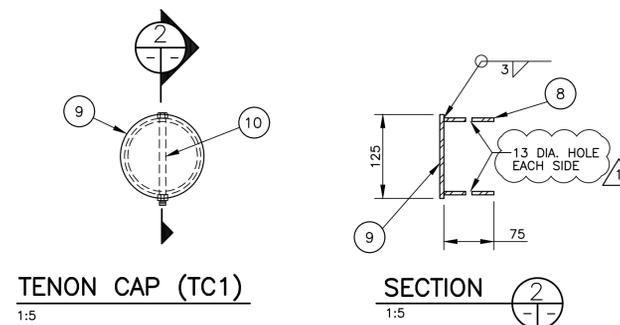
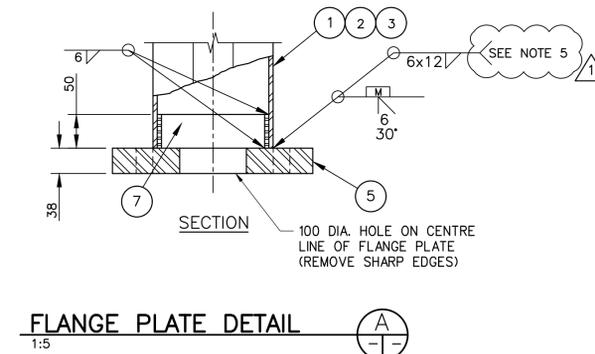
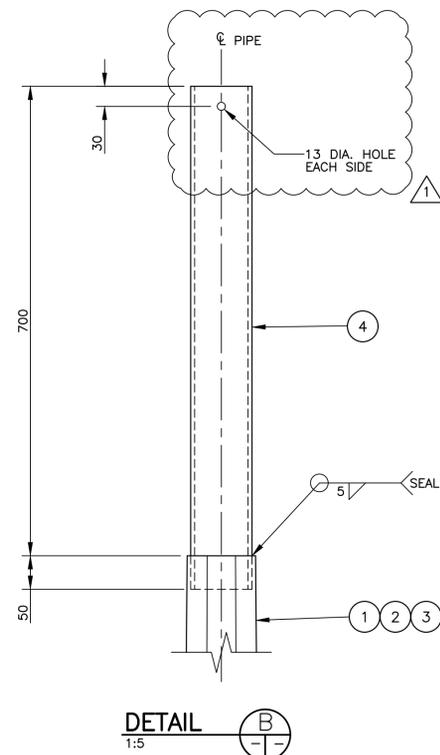
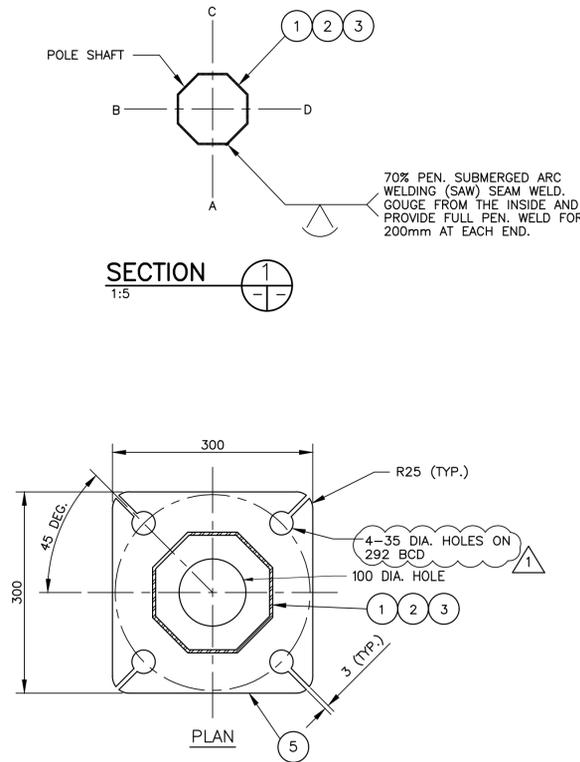
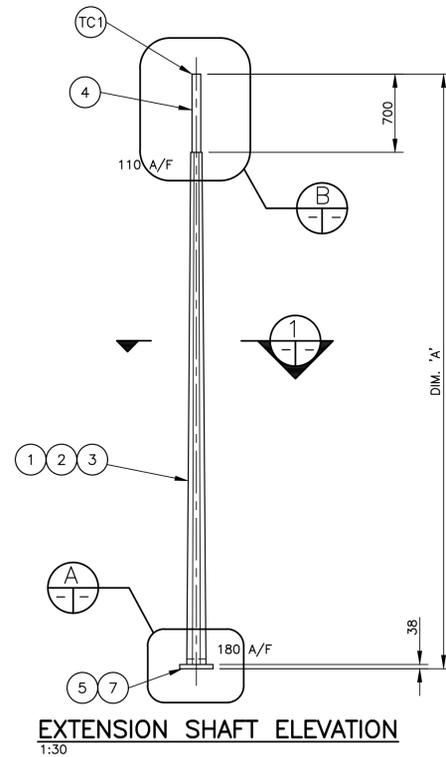
Manitoba Infrastructure Traffic Engineering

RELEASED FOR CONSTRUCTION BY: _____ DATE _____

DESIGN BY: _____ SSR _____
CHECKED: TAE/DRA _____

DETAILS BY: _____ MDG _____
CHECKED: _____ SSR _____

SCALE: _____
SHEET No. **S15**
PART No. _____



BILL OF MATERIALS						
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
5.4 m TENON EXTENSION SHAFT (PART No. E-S54)						
1	1	OCTAGONAL SECTION SHAFT	180 A/F-110 A/F x 4.763			2
4	1	TENON PIPE	HSS 102 x 6.4 x 750	ASTM A500 CLASS C		3
5	1	FLANGE PLATE	38 x 300 x 300			4
6	4	FLANGE BOLTS	32 DIA x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	5
7	1	BACKUP STRIP PLATE	6 x 50			6
6.9 m TENON EXTENSION SHAFT (PART No. E-S69)						
2	1	OCTAGONAL SECTION SHAFT	180 A/F-110 A/F x 4.763			9
4	1	TENON PIPE	HSS 102 x 6.4 x 750	ASTM A500 CLASS C		10
5	1	FLANGE PLATE	38 x 300 x 300			11
6	4	FLANGE BOLTS	32 DIA x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	12
7	1	BACKUP STRIP PLATE	6 x 50			13
8.4 m TENON EXTENSION SHAFT (PART No. E-S84)						
3	1	OCTAGONAL SECTION SHAFT	180 A/F-110 A/F x 4.763			16
4	1	TENON PIPE	HSS 102 x 6.4 x 750	ASTM A500 CLASS C		17
5	1	FLANGE PLATE	38 x 300 x 300			18
6	4	FLANGE BOLTS	32 DIA x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	19
7	1	BACKUP STRIP PLATE	6 x 50			20
TENON CAP (TC1)						
8	1	PIPE	HSS 114 x 4.8 x 40	ASTM A500 CLASS C		23
9	1	CAP PLATE	125 DIA. x 6			24
10	1	HEX BOLT	10 DIA. x 127	ASTM 276, TYPE 316 S/S	C/W NYLON NUT	25
						26
						27
						28

- NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 - ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 - ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 - ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 - EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 - PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 - GRIND ALL SHARP POINTS AND EDGES.
 - RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 - SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 - SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.

PART No.	DESCRIPTION	DIMENSION 'A'
E-S54	5.4 m TENON EXTENSION SHAFT	5400
E-S69	6.9 m TENON EXTENSION SHAFT	6900
E-S84	8.4 m TENON EXTENSION SHAFT	8400
TC1	TENON CAP	N/A

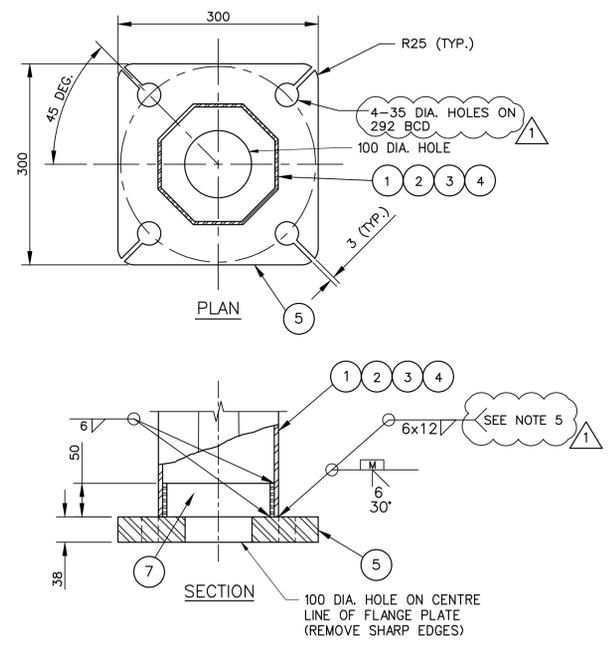
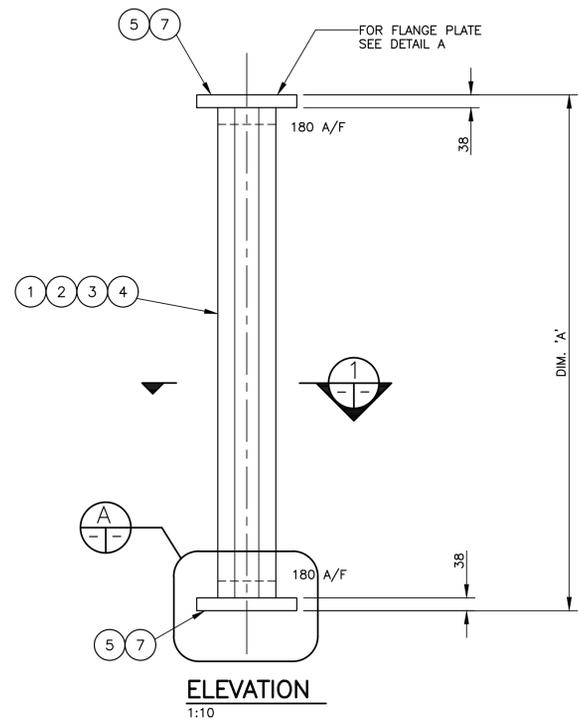
NOTE: TENON CAP MK. TC1 TO BE SUPPLIED ONLY WHEN SPECIFIED BY THE OWNER.

REVISIONS		TENON EXTENSION SHAFTS 5.4 m, 6.9 m, AND 8.4 m	
2020/12/09	DRA	ISSUED FOR REVISION 1	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DATE	BY	DESCRIPTION	
	DESIGN SEAL	RECORD SEAL	
		RELEASED FOR CONSTRUCTION BY: _____ DATE _____	
No. 1789 Date: 2019/11/13		DIRECTOR OF TRAFFIC ENGINEERING _____	
CONSULTANT PROJECT NO. 17-6801		SCALE: _____	
		SHEET No. S17	
DESIGN BY: _____ SSR		PART No. _____	
CHECKED: _____ TAE/DRA		_____	
BY: _____ MDG		_____	
CHECKED: _____ SSR		_____	

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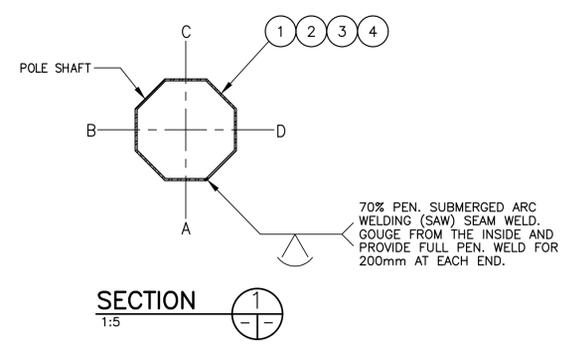
PLOT DATE: 2020/10/08 8:38:38 PM LAST SAVED BY: 400G

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FLANGE PLATE DETAIL

1:5
(BOTTOM FLANGE PLATE SHOWN, TOP FLANGE PLATE SIMILAR)



SECTION

1:5

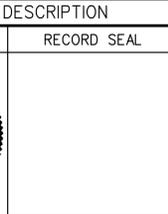
BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
1.5 m STUB EXTENSION SHAFT (PART No. E-STUB15)						
1	1	OCTAGONAL SECTION SHAFT	180 A/F x 6.350			2
5	2	FLANGE PLATE	38 x 300 x 300			3
6	4	FLANGE BOLTS	32 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	4
7	1	BACKUP STRIP PLATE	6 x 50			5
3.0 m STRAIGHT STUB SHAFT (PART No. E-STUB30)						
2	1	OCTAGONAL SECTION SHAFT	180 A/F x 6.350			8
5	2	FLANGE PLATE	38 x 300 x 300			9
6	4	FLANGE BOLTS	32 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	10
7	1	BACKUP STRIP PLATE	6 x 50			11
4.5 m STUB EXTENSION SHAFT (PART No. E-STUB45)						
3	1	OCTAGONAL SECTION SHAFT	180 A/F x 6.350			14
5	2	FLANGE PLATE	38 x 300 x 300			15
6	4	FLANGE BOLTS	32 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	16
7	1	BACKUP STRIP PLATE	6 x 50			17
6.1 m STUB EXTENSION SHAFT (PART No. E-STUB61)						
4	1	OCTAGONAL SECTION SHAFT	180 A/F x 9.525			20
5	2	FLANGE PLATE	38 x 300 x 300			21
6	4	FLANGE BOLTS	32 DIA. x 114	A325 TYPE 1 AS PER ASTM F3125	C/W 1 GALV. WASHER (ASTM F436 TYPE 1)	22
7	1	BACKUP STRIP PLATE	6 x 50			23
						24

- NOTES:**
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
 - ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
 - ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
 - ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
 - EXTERIOR WELD JOINING ARM TO TRANSVERSE PLATE SHALL BE AN UNEQUAL LEG FILLET WELD WITH THE LONG LEG ALONG THE ARM, TERMINATING AT 30° FROM THE ARM'S SURFACE.
 - PROVIDE 'RAISED' PART No. AND YEAR OF FABRICATION (YYYY) WITH WELDING ELECTRODE.
 - GRIND ALL SHARP POINTS AND EDGES.
 - RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
 - SUPPLY PLASTIC THREADED PLUGS WITH ALL HALF COUPLINGS. PLUGS SHALL BE HEX SOCKET THREADED PLUG TH-11 BY CAPLUG, OR APPROVED EQUIVALENT.
 - SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.

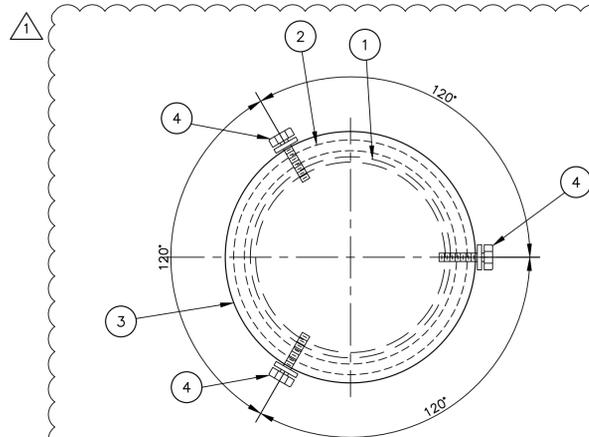
PART No.	DESCRIPTION	DIMENSION 'A'
E-STUB15	1.5 m STUB EXTENSION SHAFT	1500
E-STUB30	3.0 m STUB EXTENSION SHAFT	3000
E-STUB45	4.5 m STUB EXTENSION SHAFT	4500
E-STUB61	6.1 m STUB EXTENSION SHAFT	6100

REVISIONS		STUB EXTENSION SHAFTS 1.5 m, 3.0 m, 4.5 m, AND 6.1 m TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES	
DATE	BY		
2020/12/09	DRA	ISSUED FOR REVISION 1	RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DESIGN SEAL: _____ RECORD SEAL: _____		SCALE: _____ SHEET No. S18 PART No. _____	

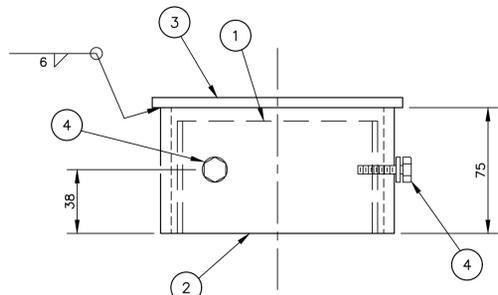


PLOT DATE: 2020/10/08 8:38:41 PM LAST SAVED BY: 40MG

C:\PW\WORKING DIRECTORY\PROJECTS TO 2017\40MG\0626232\HYDRO LUMINAIRE ADAPTOR.DWG

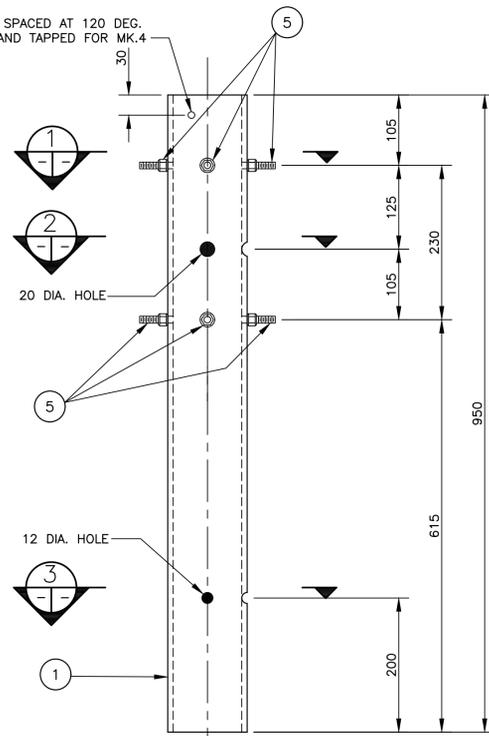


CAP PLAN
1:2



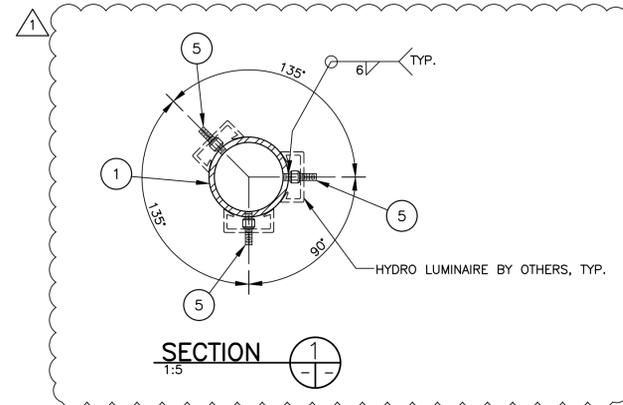
CAP ELEVATION
1:2

3 HOLES SPACED AT 120 DEG.
DRILLED AND TAPPED FOR MK.4

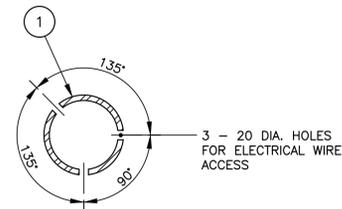


SHAFT ELEVATION
1:5

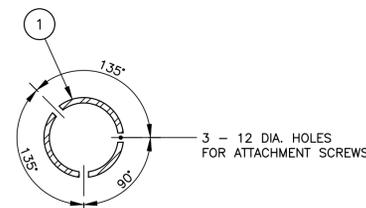
LUMINAIRE ADAPTOR



SECTION 1
1:5



SECTION 2
1:5



SECTION 3
1:5

BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL (G40.21-M-350W U/N)	REMARKS	LINE NO.
HYDRO LUMINAIRE ADAPTOR (HLA)						
1	1	LUMINAIRE ADAPTOR TENON	HSS 121 x 6.35 x 950	ASTM A500 CLASS C		1
2	1	CAP PIPE	HSS 140 x 6.35 x 75	ASTM A500 CLASS C		2
3	1	CAP COVER PLATE	6 x 150 DIA.			3
4	3	CAP BOLT	6 DIA. x 25	TYPE 316 S/S	C/W LOCKNUTS & LOCKWASHER EACH BOLT	4
5	6	THREADED ROD	16 DIA. x 50		C/W 1-NUT & 1-LOCKWASHER EACH ROD	5
6	3	ATTACHMENT SCREW	10 DIA. x 25	S/S HEX HEAD SELF DRILLING		6
						7
						8
						9
						10

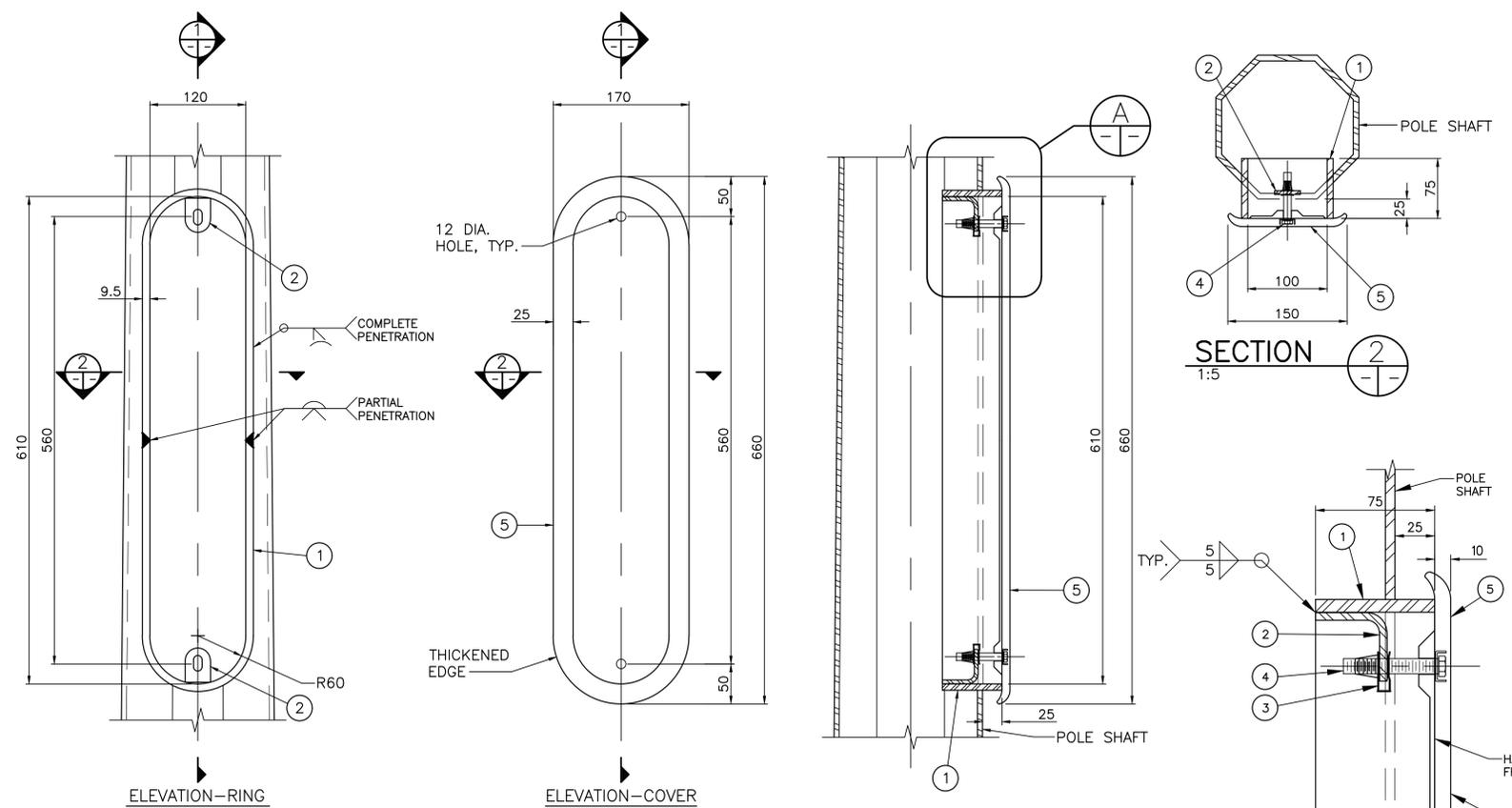
NOTES:

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
- ALL IMPERIAL SIZES HAVE BEEN HARD CONVERTED TO METRIC EQUIVALENTS (ie. 1" = 25mm).
- ALL HOLES IN GALVANIZED MEMBERS UTILIZING GALVANIZED FASTENERS HAVE BEEN OVERSIZED BY AT LEAST 3mm (1/8"). THE FABRICATOR SHALL CONFIRM FASTENER CLEARANCE TOLERANCES AND SHALL BE RESPONSIBLE FOR ENSURING ALL FASTENERS CAN BE INSTALLED AND TIGHTENED AS INTENDED AFTER GALVANIZING.
- ALL MATERIALS, EXCEPT STAINLESS STEEL ITEMS, SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM A123 WITH NET RETENTION OF 610 g/m².
- GRIND ALL SHARP POINTS AND EDGES.

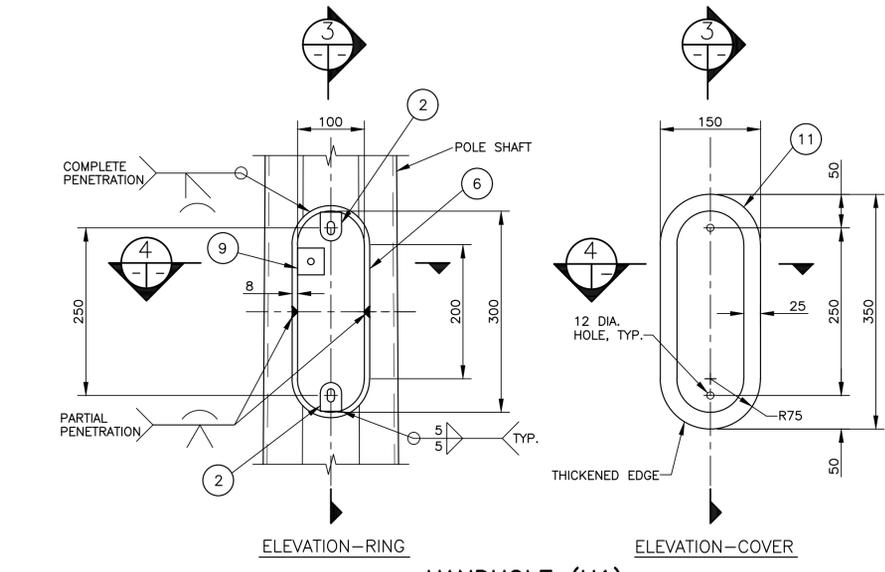
REVISIONS		HYDRO LUMINAIRE ADAPTOR (HLA)	
2020/12/09	DRA	ISSUED FOR REVISION 1	
2019/11/13	SSR	ISSUED FOR CONSTRUCTION	
DATE	BY	DESCRIPTION	
		DESIGN SEAL	RECORD SEAL
Dillon Consulting Limited (MB) No. 1789 Date: 2019/11/13		RELEASED FOR CONSTRUCTION BY: _____ DATE _____ DIRECTOR OF TRAFFIC ENGINEERING	
CONSULTANT PROJECT NO. 17-6801		SCALE: _____ SHEET No. S19 PART No. HLA	
DESIGN BY: _____ CHECKED: TAE/DRA		BY: _____ CHECKED: _____	
DETAILS BY: _____ CHECKED: _____		BY: _____ CHECKED: _____	



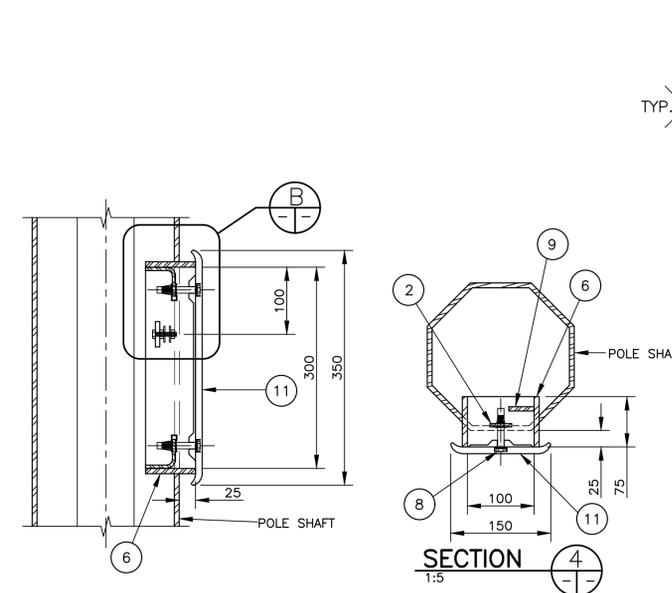
PLOT DATE: 2020/12/08 8:36:50 PM LAST SAVED BY: 40MG
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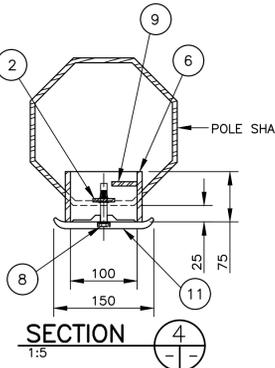
ACCESS PANEL (AP1)
1:5



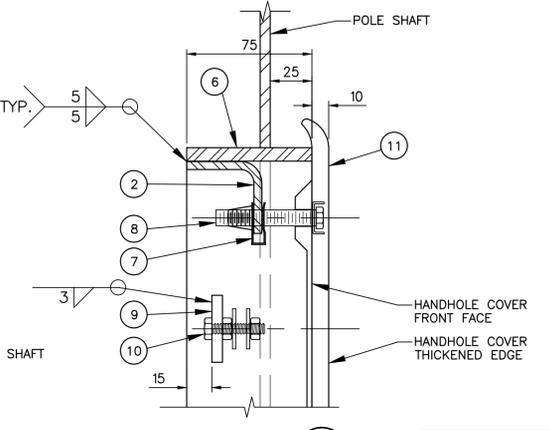
HANDHOLE (H1)
1:5



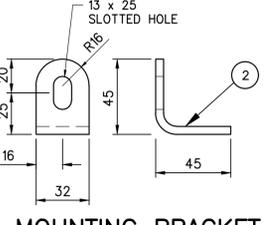
SECTION 3
1:5



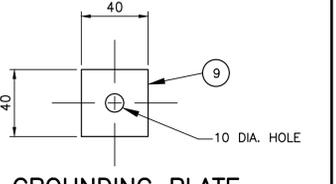
SECTION 4
1:5



DETAIL B
1:2



MOUNTING BRACKET
1:2



GROUNDING PLATE
1:2

BILL OF MATERIALS

MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL	REMARKS	LINE NO.
		ACCESS PANEL (AP1)				1
1	2	ACCESS PANEL HALF-REINFORCING RING	9.5 x 75	CSA G40.21 350W		2
2	2	MOUNTING BRACKET	4.76 x 32 x 90	CSA G40.21 350W		3
3	2	AU-VE-CO NO. 10055 NUT OR EQUAL	3/8"-16 UNC	STEEL PLATED		4
4	2	COVER PLATE HEX BOLT	9.5 x 50 LONG	ASTM A593 TYPE 316	C/W STAINLESS STEEL CUP WASHER	5
5	1	ACCESS PANEL COVER PLATE	11 GA. x 660 x 170	CSA G40.21 350W		6
		HANDHOLE (H1)				8
6	2	HANDHOLE HALF-REINFORCING RING	8 x 75	CSA G40.21 350W		9
2	2	MOUNTING BRACKET	4.76 x 32 x 90	CSA G40.21 350W		10
7	2	AU-VE-CO NO. 10055 NUT OR EQUAL	3/8"-16 UNC	STEEL PLATED		11
8	2	COVER PLATE HEX BOLT	9.5 x 50 LONG	ASTM A593 TYPE 316	C/W STAINLESS STEEL CUP WASHER	12
9	1	GROUNDING PLATE	6.35 x 40 x 40	CSA G40.21 350W		13
10	1	HEX BOLT (GROUND LUG) C/W 2 HEX NUTS & 2 FLAT WASHERS	1/2"-20 UNC FULL THREAD x 2" LONG	ASTM F593 TYPE 316	RE-TAP AFTER GALVANIZING	14
11	1	HANDHOLE COVER PLATE	11 GA. x 150 x 350	CSA G40.21 350W		15
						16
						17
						18

NOTES:

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- GRIND ALL SHARP POINTS AND EDGES.
- RE-TAP THREADS AFTER HOT-DIP GALVANIZING.
- SHIP STRUCTURE WITH STEEL HANDHOLE AND ACCESS PANEL COVERS INSTALLED, PLASTIC PLUGS THREADED INTO HALF COUPLINGS, AND BALLISTIC NYLON PLUGS IN ALL EXTERNAL VENT/RAIN HOLES.

*ENTIRE DRAWING REVISED FOR REVISION 1

DATE	BY	DESCRIPTION
2020/12/09	DRA	ISSUED FOR REVISION 1
2019/11/13	SSR	ISSUED FOR CONSTRUCTION

SHAFT ACCESS DETAILS
ACCESS PANEL (AP1)
HANDHOLE (H1)
TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES



RELEASSED FOR CONSTRUCTION BY: _____ DATE: _____

DESIGN BY: _____ TAE/DRA _____

DETAILS BY: _____ MDG _____

CHECKED: _____ SSR _____

SCALE: _____

SHEET No. **S20**

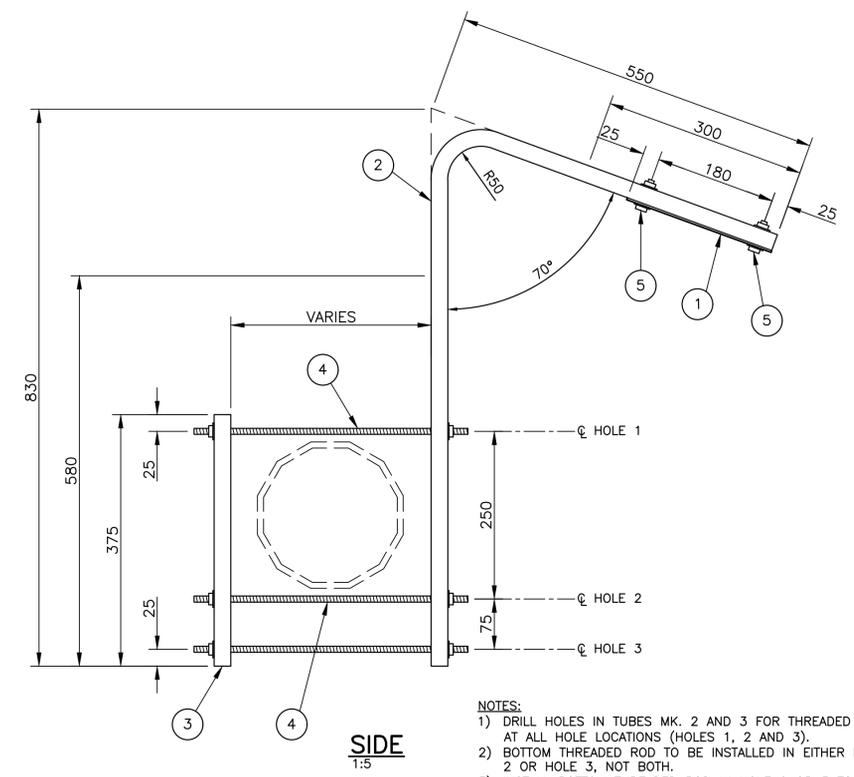
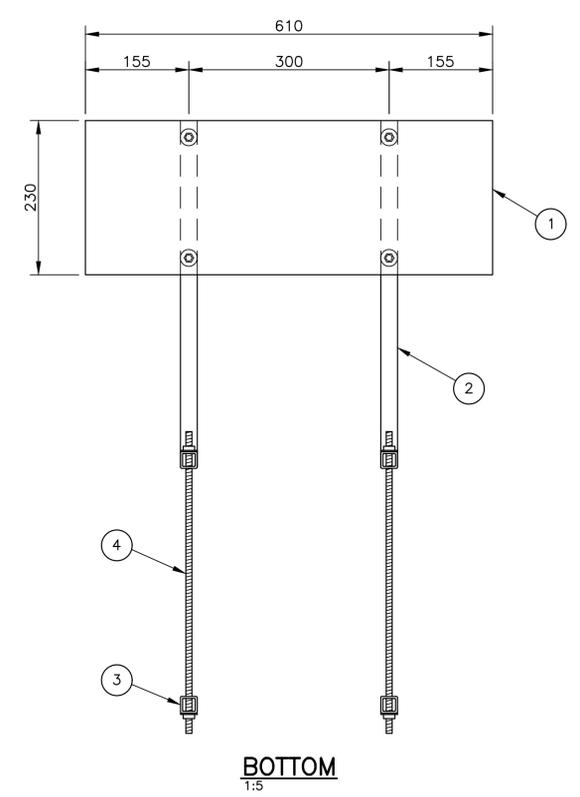
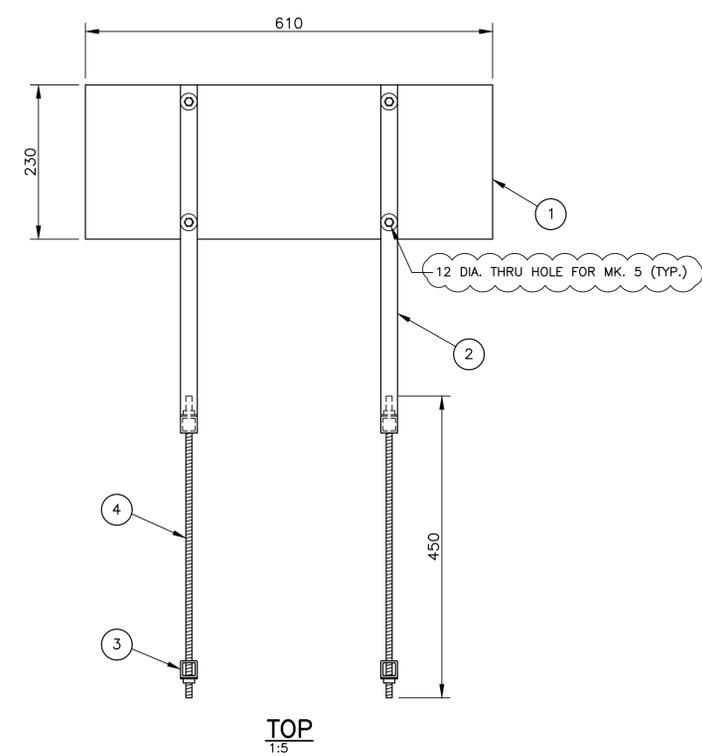
PART No. _____

C:\PW\WORKING DIRECTORY\PROJECTS TO 2017\MMG\0626232\WIND DEFLECTOR.DWG PLOT DATE: 2020/12/08 8:36:58 PM LAST SAVED BY: 40MG

NOTES:

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE LATEST EDITION OF THE MANITOBA INFRASTRUCTURE SPECIFICATION No. 230 SUPPLY OF STEEL TRAFFIC SIGNALS AND PEDESTRIAN CORRIDOR STRUCTURES.
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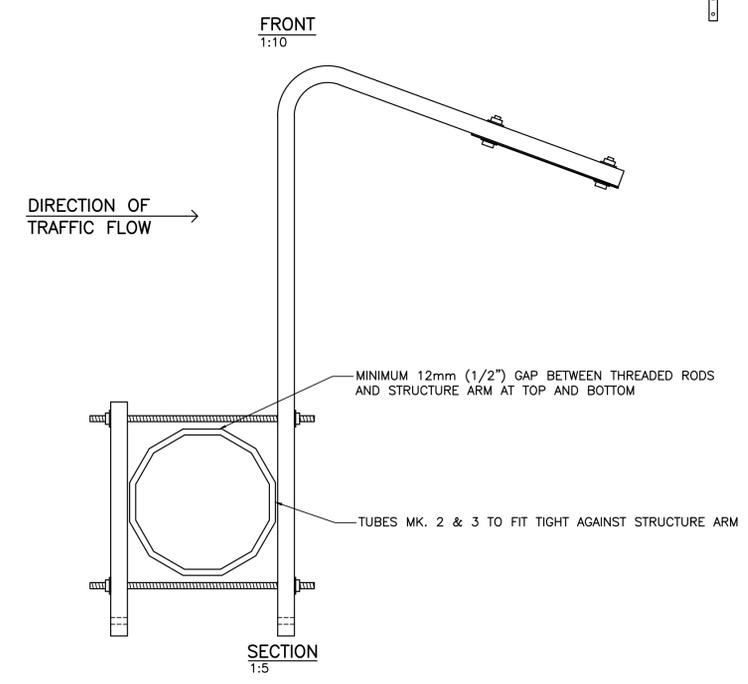
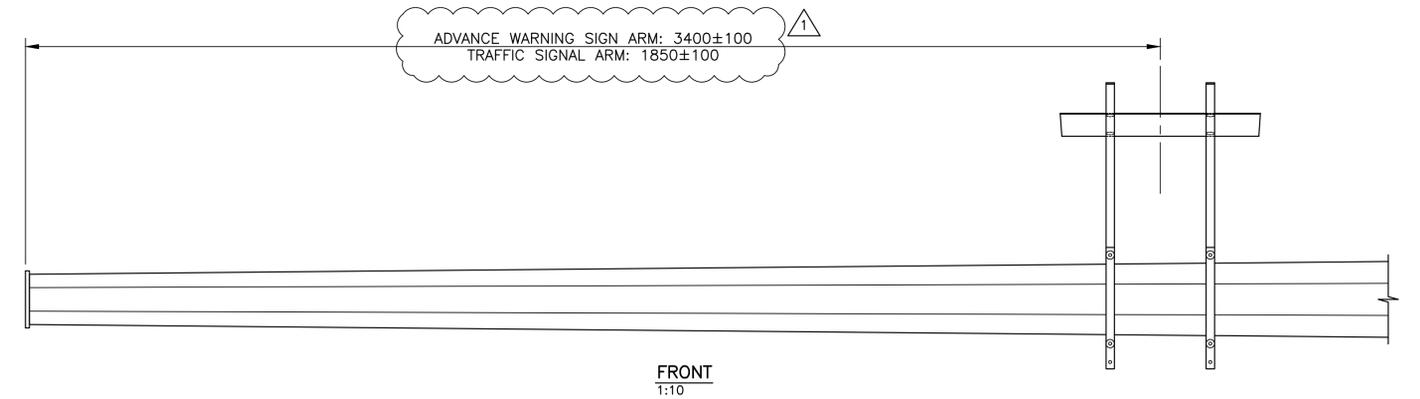
BILL OF MATERIALS						
MK. NO.	QTY. REQ'D.	DESCRIPTION	SIZE	MATERIAL	REMARKS	LINE NO.
		WIND DEFLECTOR ASSEMBLY (WD1)			MASS = 12 kg	1
1	1	DEFLECTOR PLATE	610 x 230 x 2 THICK	ASTM A480 TYPE 316 S/S		2
2	2	SUPPORT BRACKET	1380 LONG x 25 x 25 x 3 THICK TUBE	ASTM A276 TYPE 316 S/S		3
3	2	CLAMP BAR	375 LONG x 25 x 25 x 3 THICK TUBE	ASTM A276 TYPE 316 S/S		4
4	4	THREADED ROD C/W 2 NYLOCK NUTS & 2 WASHERS	9.5 (3/8") DIA. x 450 LONG	ASTM F593 TYPE 316 S/S	FULLY THREADED	5
5	4	HEX BOLT C/W 1 NYLOCK NUT & 2 WASHERS	9.5 (3/8") DIA. x 45 LONG	ASTM F593 TYPE 316 S/S		6



NOTES:

- 1) DRILL HOLES IN TUBES MK. 2 AND 3 FOR THREADED ROD AT ALL HOLE LOCATIONS (HOLES 1, 2 AND 3).
- 2) BOTTOM THREADED ROD TO BE INSTALLED IN EITHER HOLE 2 OR HOLE 3, NOT BOTH.
- 3) INSTALL BOTTOM THREADED ROD IN HOLE 2 OR 3 TO BEST SUIT THE SIZE OF STRUCTURE ARM.

WIND DEFLECTOR ASSEMBLY – MARK WD1
1:5



TYPICAL INSTALLATION DETAIL
NOTE: FRONT VIEW IS VIEWED IN THE SAME DIRECTION AS THE DIRECTION OF TRAFFIC FLOW

REVISIONS		WIND DEFLECTOR ASSEMBLY (WD1)	
		TRAFFIC SIGNAL AND PEDESTRIAN CORRIDOR STRUCTURES	
		RELEASED FOR CONSTRUCTION BY: _____ DATE _____	
		DIRECTOR OF TRAFFIC ENGINEERING	
		SCALE: _____	SHEET No. S21
			PART No. WD1

DESIGN	BY: _____ SSR _____	DESIGN SEAL	RECORD SEAL
CHECKED:	TAE/DRA		
DETAILS	BY: _____ MDG _____		
CHECKED:	SSR		

APEGM
Certificate of Authorization
Dillon Consulting Limited (MB)
No. 1789 Date: 2019/11/13

DILLON CONSULTING
CONSULTANT PROJECT NO. 17-6801

PROVINCE OF MANITOBA
ORIGINAL STAMPED BY
S.S. RIHAL
2019/11/13
REGISTERED PROFESSIONAL ENGINEER