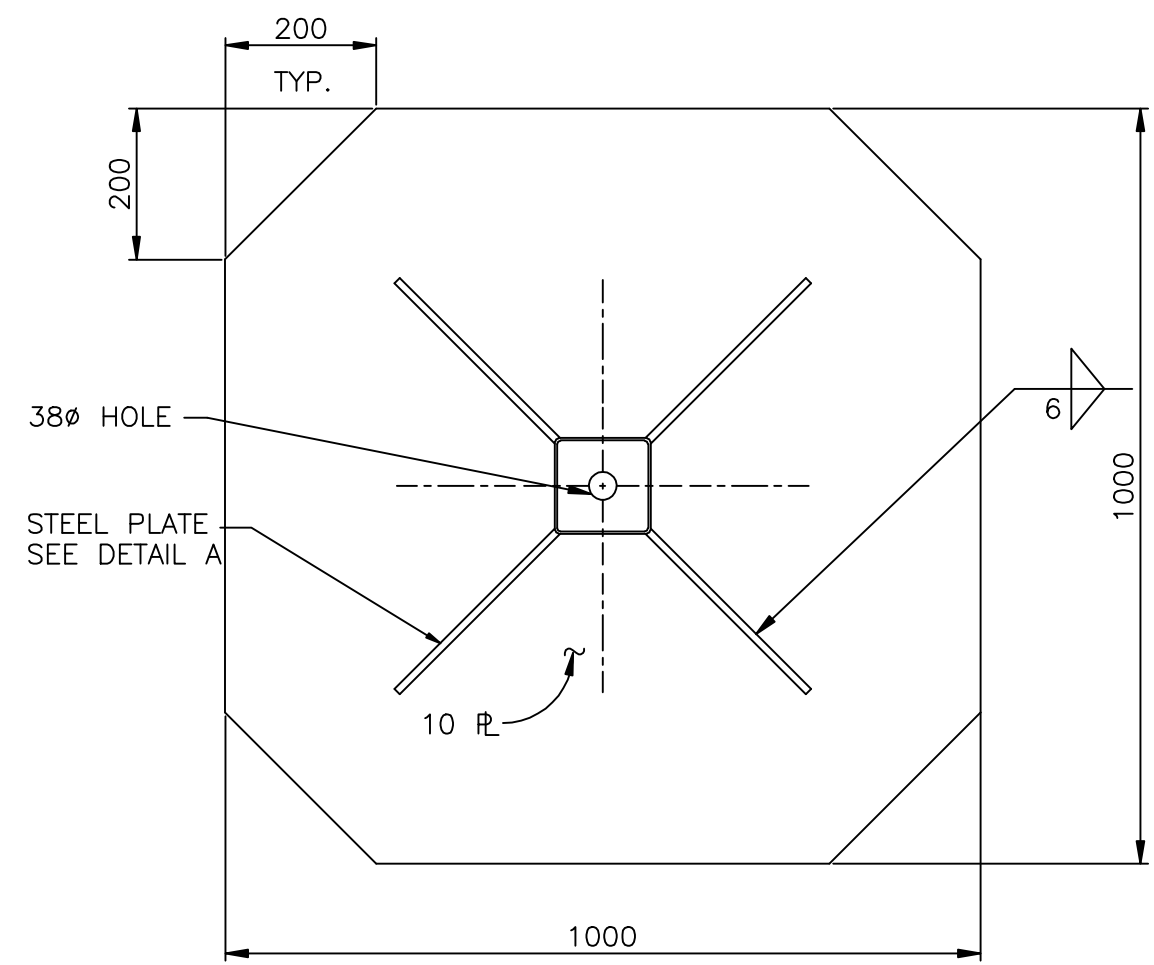
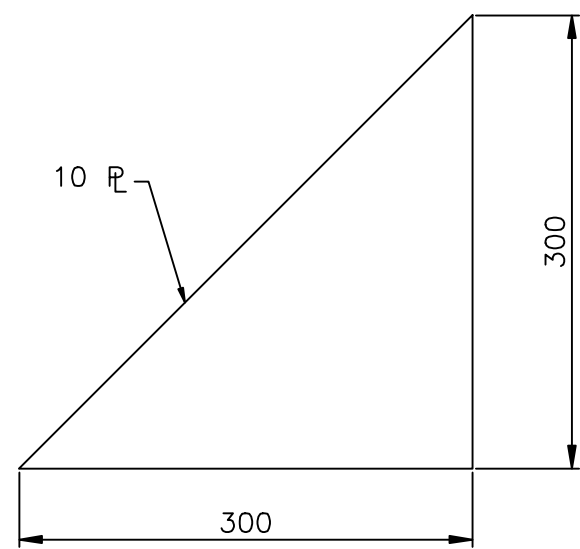


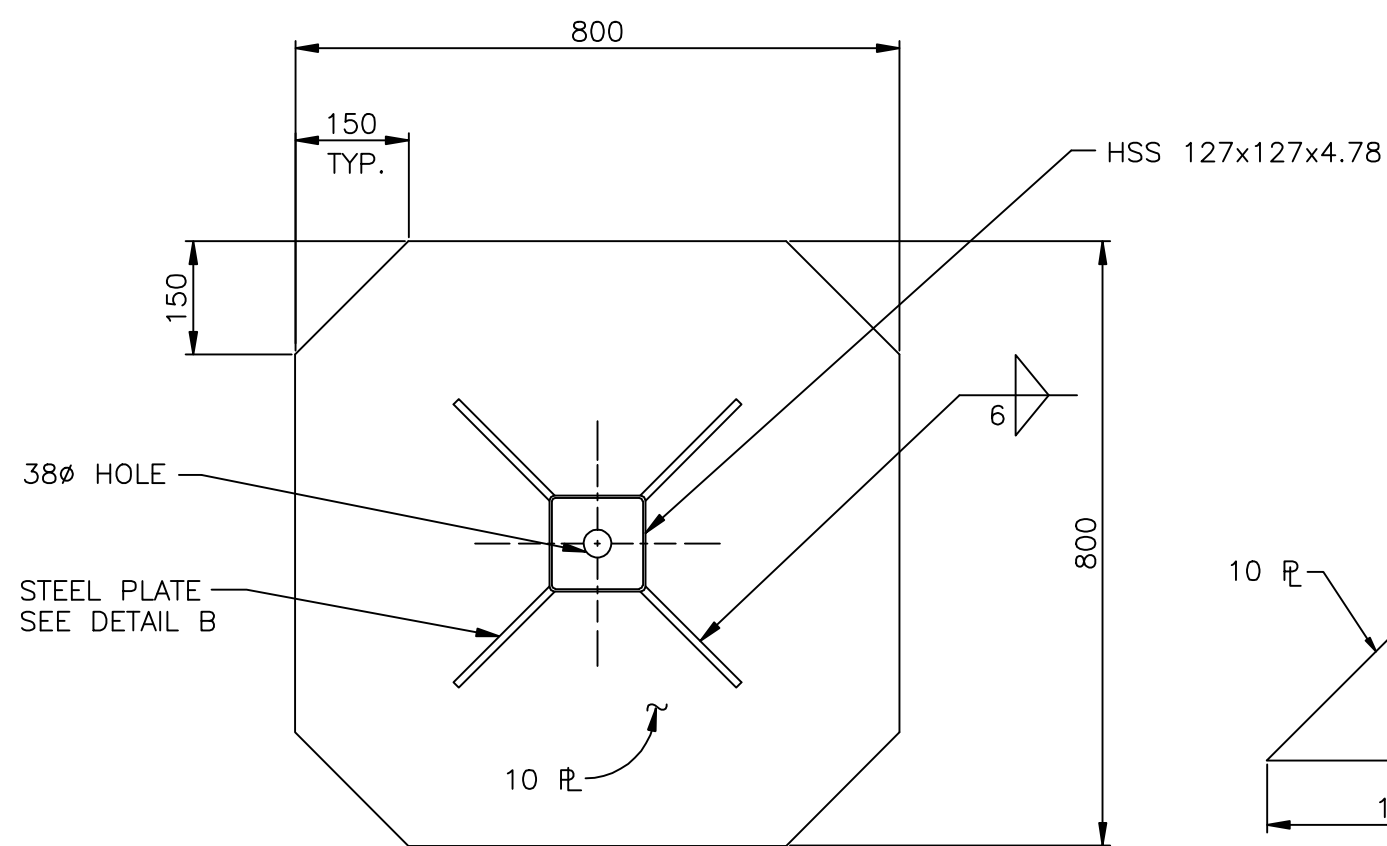
BRACED PLATE STEEL FOOTINGS  
SCALE 1:10



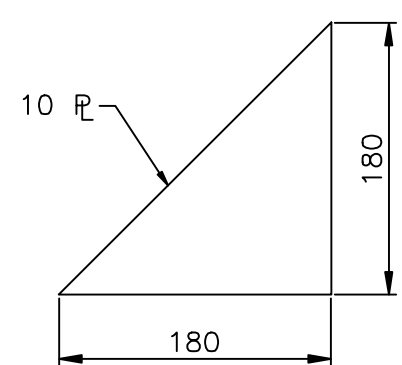
SECTION C-C  
BASE PLATE  
SCALE 1:10



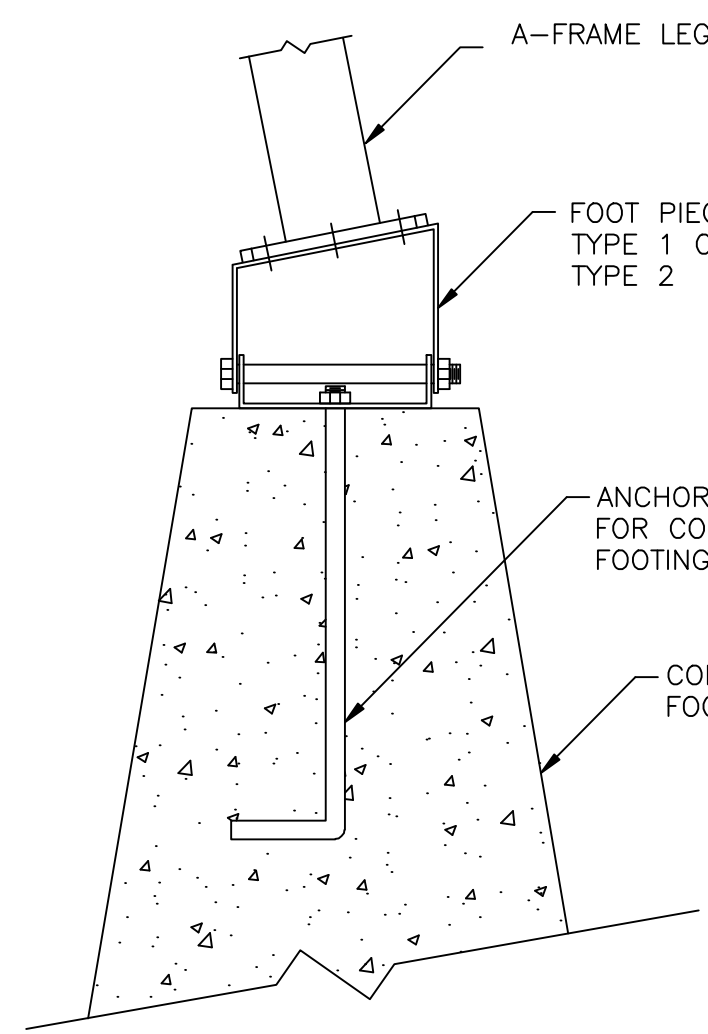
STEEL PLATE A  
SCALE 1:20



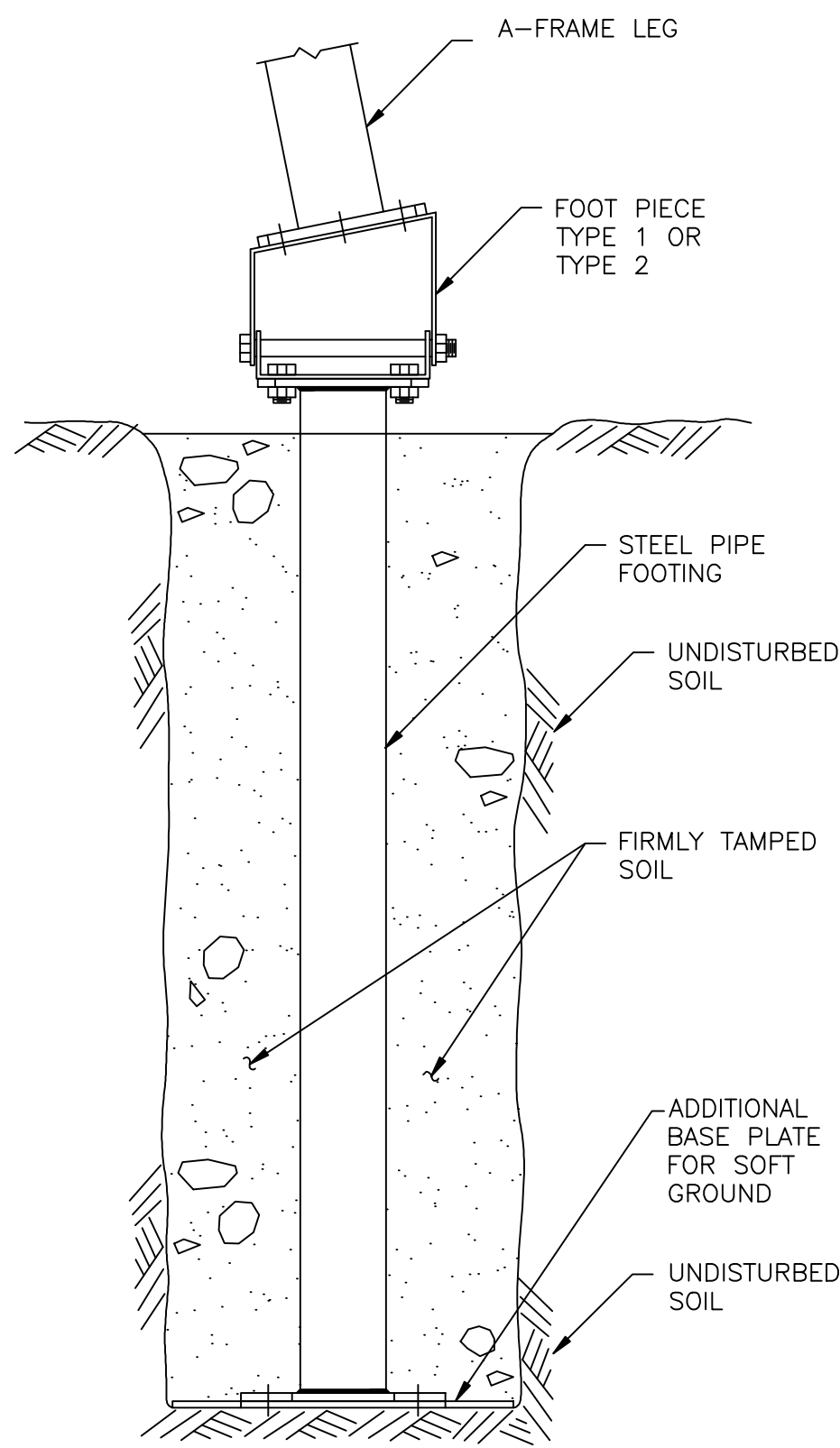
SECTION D-D  
BASE PLATE  
SCALE 1:10



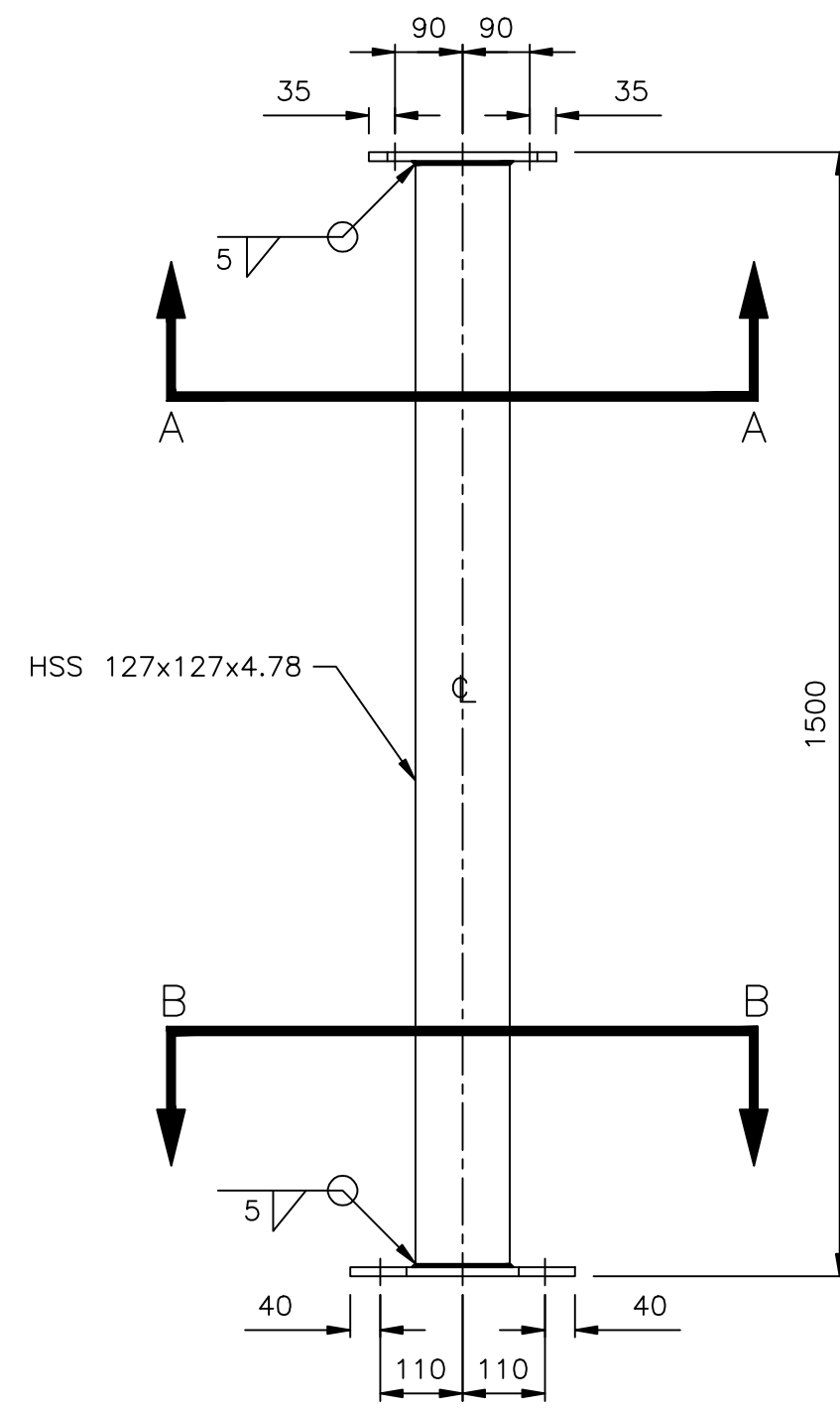
STEEL PLATE B  
SCALE 1:20



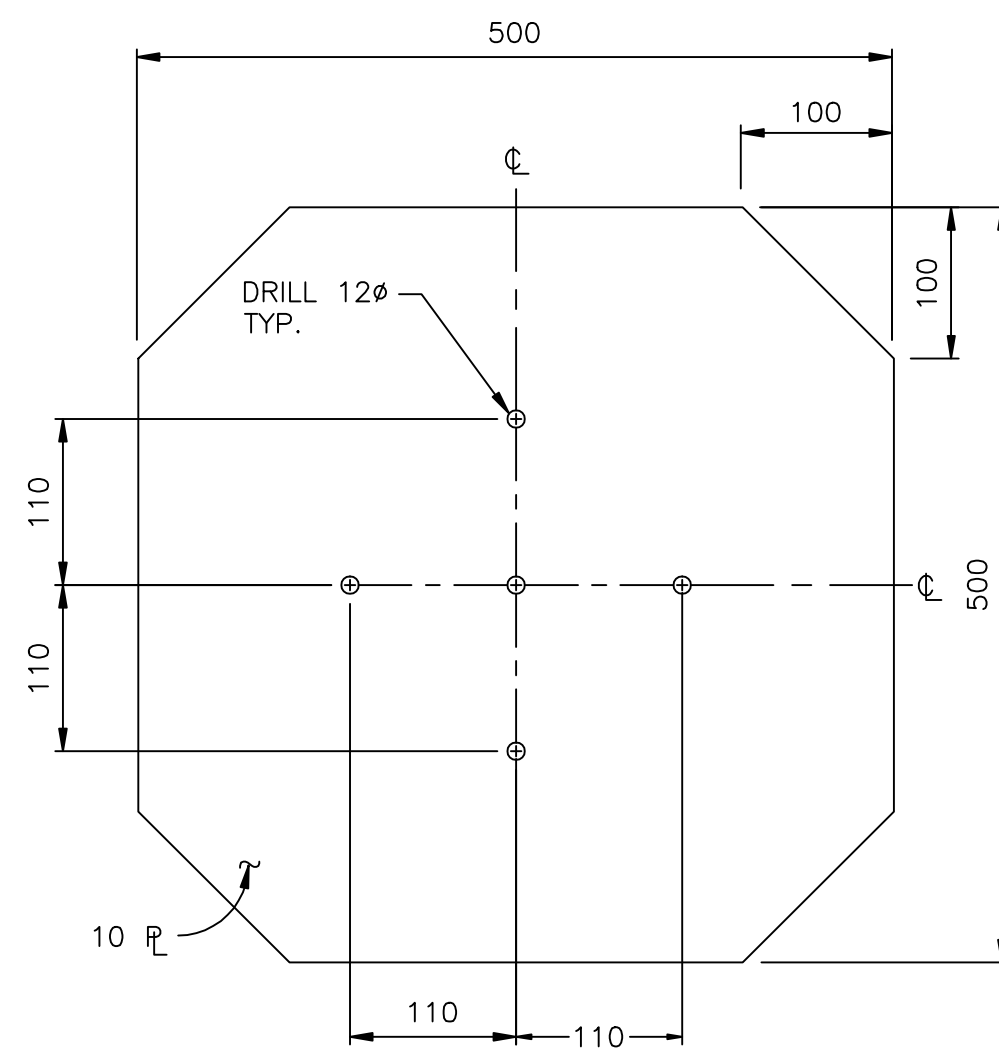
CONCRETE FOOTING ARRANGEMENT  
SCALE 1:10



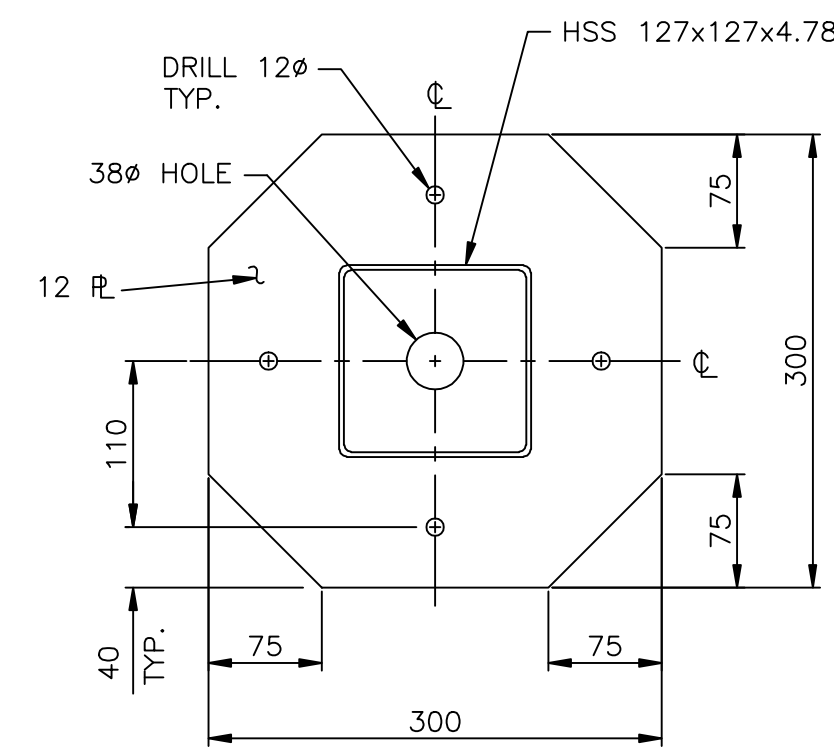
SOIL FOOTING ARRANGEMENT  
SCALE 1:10



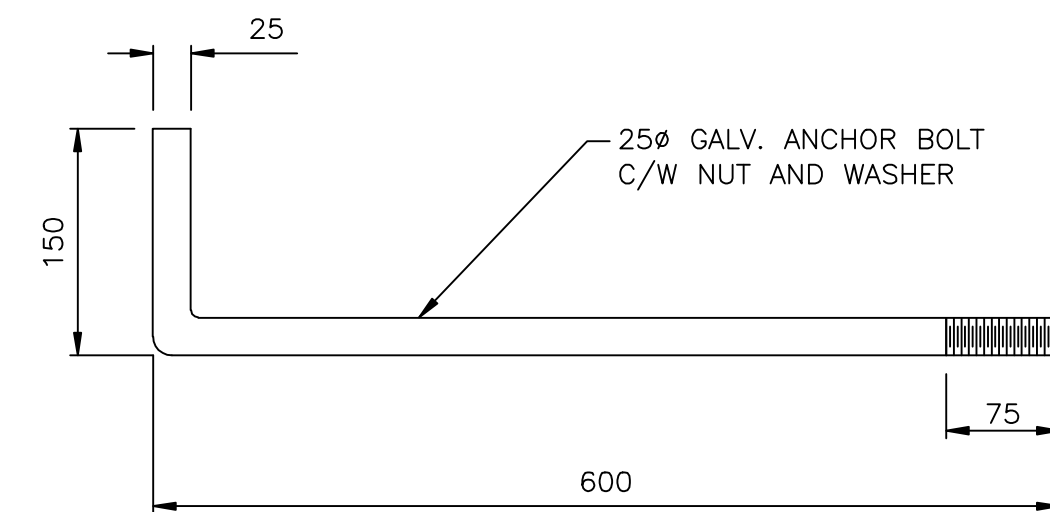
STEEL PIPE FOOTING  
SCALE 1:10



ADDITIONAL BASE PLATE FOR SOFT GROUND  
SCALE 1:5



SECTION B-B  
BASE PLATE  
SCALE 1:5



ANCHOR BOLT FOR CONCRETE FOOTING  
SCALE 1:5

- NOTES:
1. ALL PARTS TO BE HOT-DIPPED GALVANIZED AS PER C.S.A. G-164
  2. ALL BOLTS & NUTS TO BE M16 A325M TYPE 2 GALVANIZED, UNLESS NOTED OTHERWISE
  3. ALL STEEL SHALL CONFORM TO C.S.A. G40.21M GRADE 350W.

BILLS OF MATERIAL			
A COMPLETE PIPE FOOTING ASSEMBLY CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	STEEL PIPE FOOTING	3136-7	FABRICATOR
4	BOLTS 16MX60 C/W NUT & WASHER		FABRICATOR

EST. W.T. 40.8 kg

A COMPLETE ADDITIONAL BASE FOR SOFT GROUND CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	ADDITIONAL BASE PLATE FOR SOFT GROUND	3136-7	FABRICATOR
4	M10 HOT-DIPPED GALVANIZED BOLT C/W NUT & WASHER		FABRICATOR

EST. W.T. 18.2 kg

A COMPLETE ANCHOR BOLT FOR CONCRETE FOOTING CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	ANCHOR BOLT FOR CONCRETE FOOTING C/W NUT & WASHERS	3136-7	FABRICATOR

EST. W.T. 3.1 kg

A COMPLETE BRACED PLATE STEEL FOOTING CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	STEEL PIPE FOOTING SPECIFY LENGTH & FOOTING SIZE	3136-7	FABRICATOR
4	BOLTS 16MX60 C/W NUT & WASHER		FABRICATOR

1	JUNE/02	APPROVED AND REDRAWN BY MCSL	KDW	AAW	
No.	Date	Revision	Dr	Ch	



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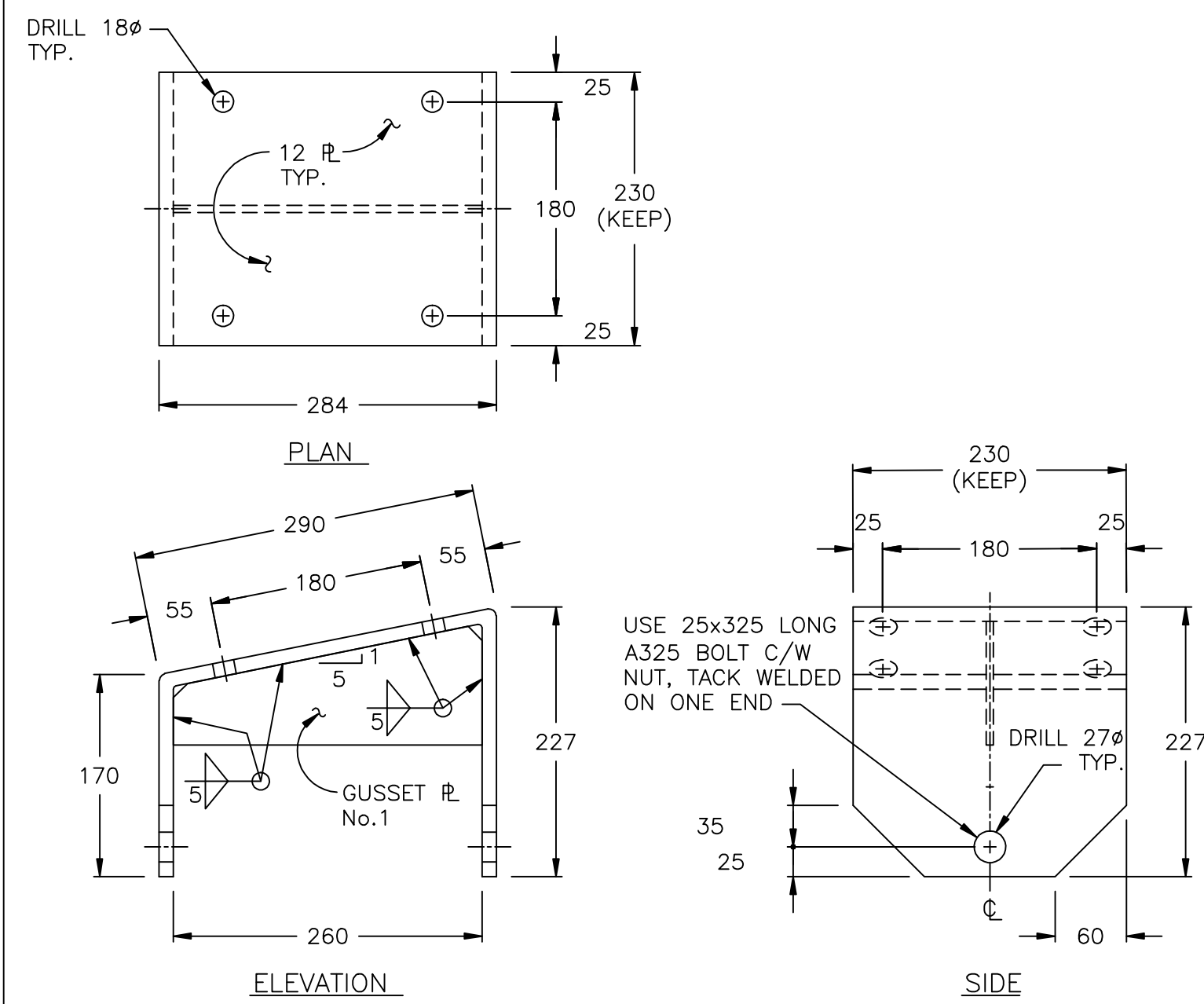
DEPT. OF THE ENVIRONMENT  
WATER SURVEY OF CANADA, VANCOUVER, B.C.  
HEAVY DUTY A-FRAMES  
VARIOUS FOOTING TYPES  
VANCOUVER, B.C.

Designed D.O.E.	Job No. 2111-01745-1	Drawing No.  3136-7  of 10
Drawn K.D.W.	Scale AS SHOWN	
Checked A.A.W.	Date APRIL 2002	
Approved	Revision 1	

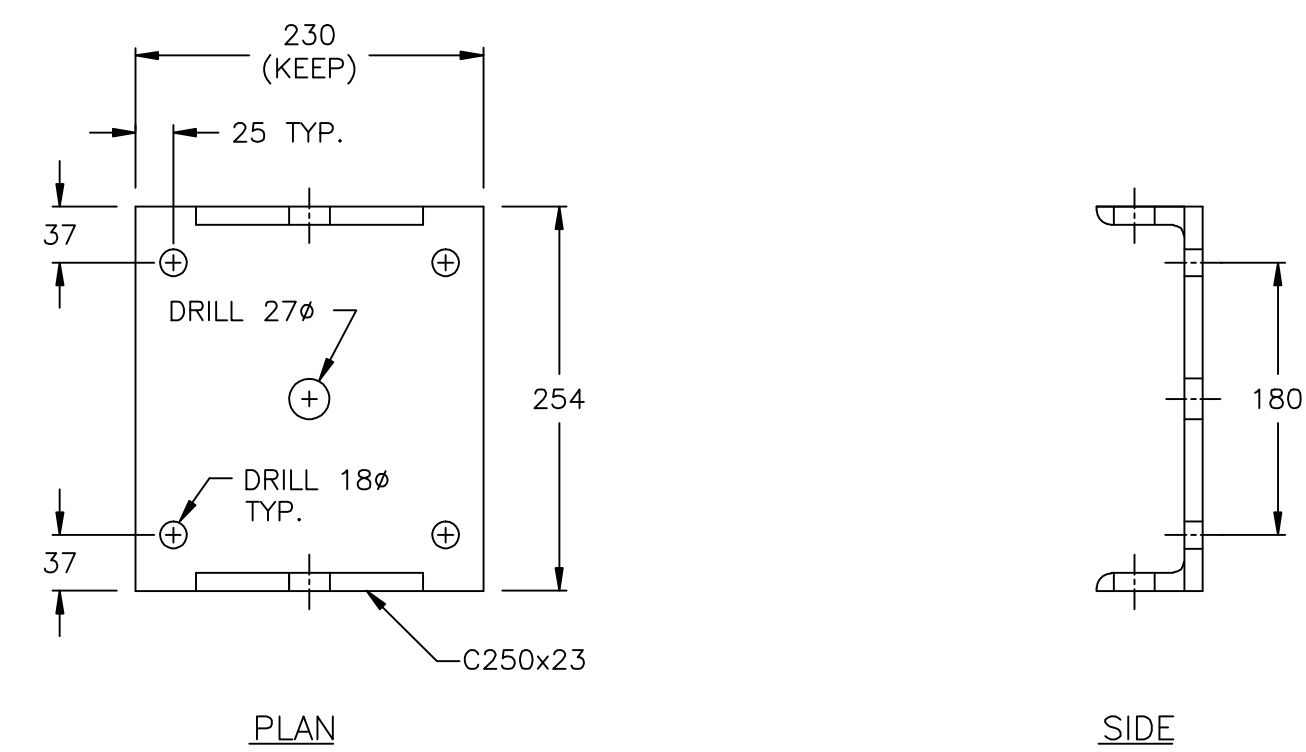
Destroy all prints bearing previous number—T

FOOT PIECE FOR A-FRAME: TYPE 1

NEW STYLE STEEL A-FRAME (DWG. 3136) ON NEW STYLE PIPE FOOTING (DWG. 3136), WOODEN CRIB OR CONCRETE FOOTING



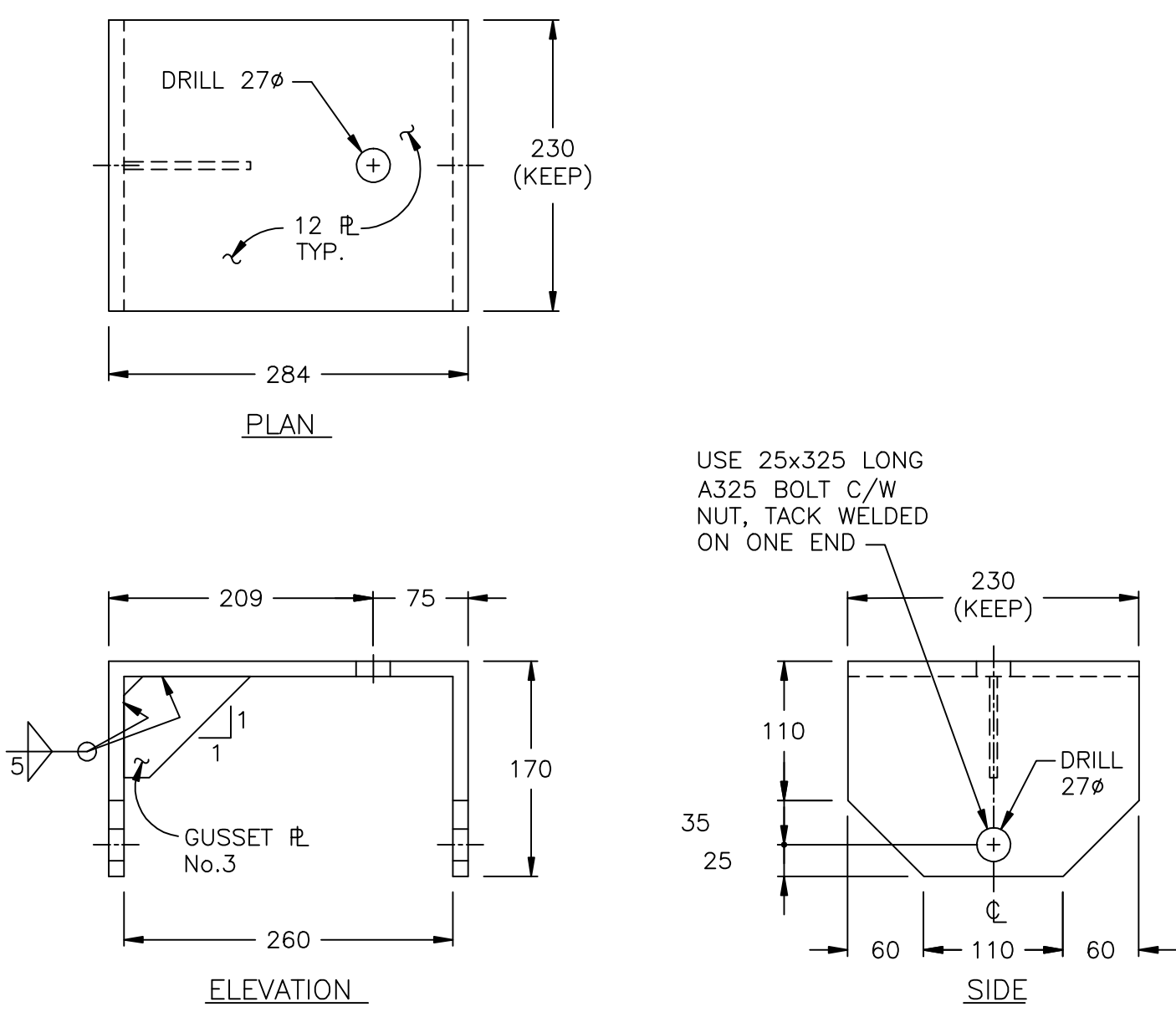
UPPER BRACKET (TYPE 1)



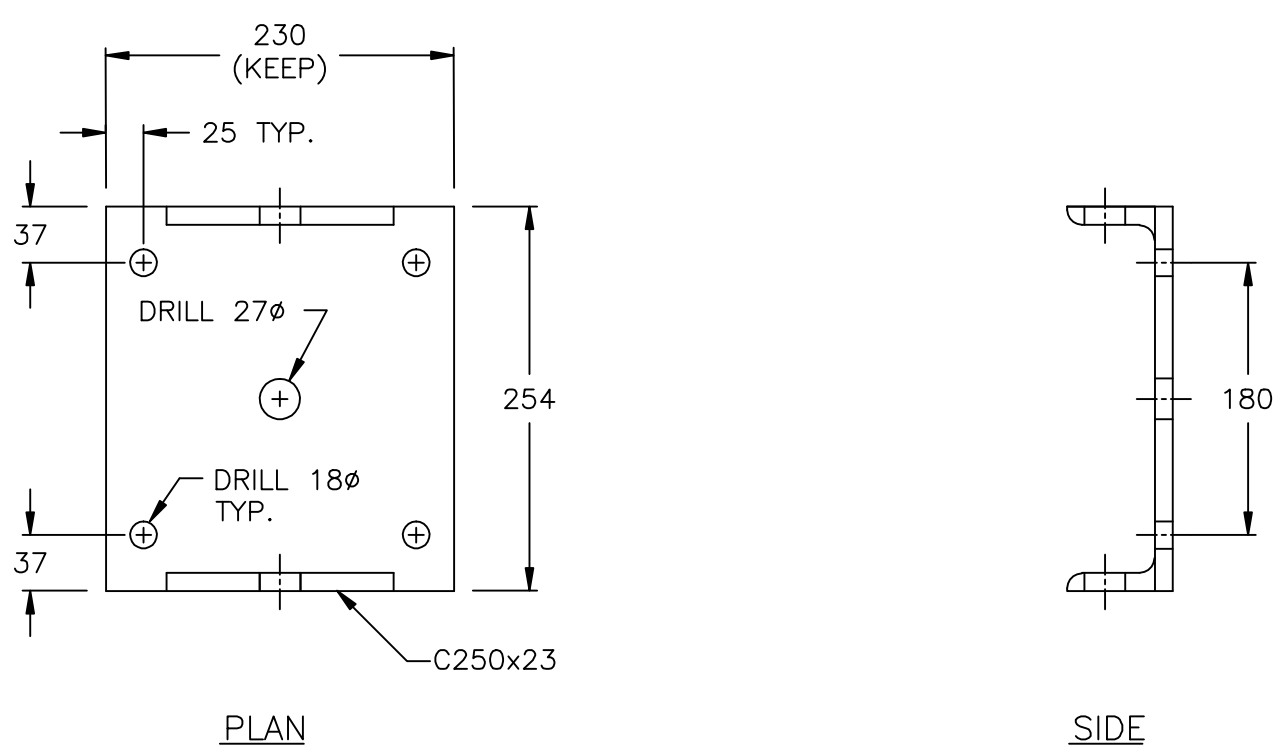
LOWER BRACKET (TYPE 1)\*

FOOT PIECE FOR A-FRAME: TYPE 2

OLD STYLE STEEL A-FRAME (DWG. 2705 and 2895) ON NEW STYLE PIPE FOOTING (DWG. 3136), WOODEN CRIB OR CONCRETE FOOTING



UPPER BRACKET (TYPE 2)

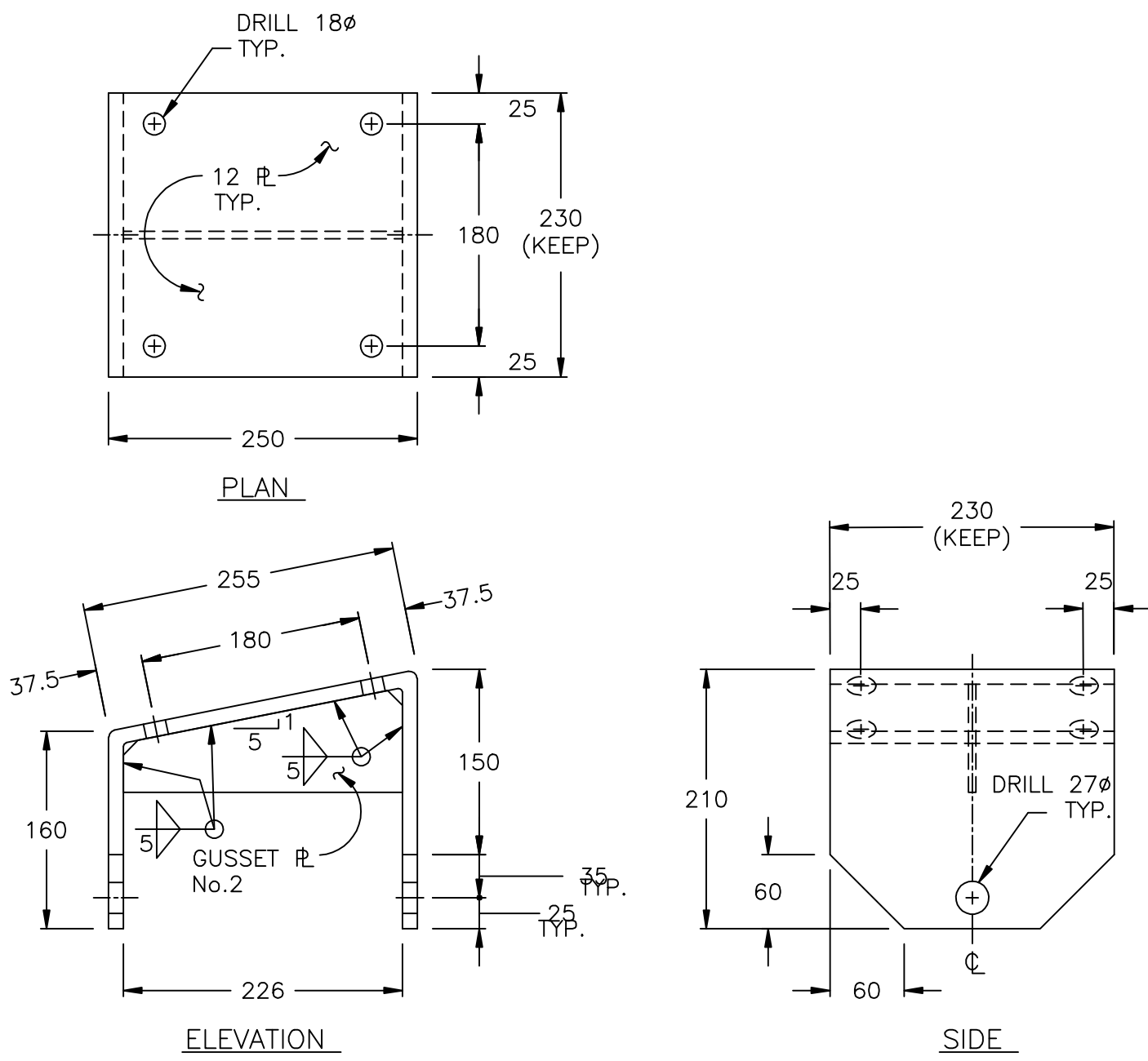


LOWER BRACKET (TYPE 2)\*

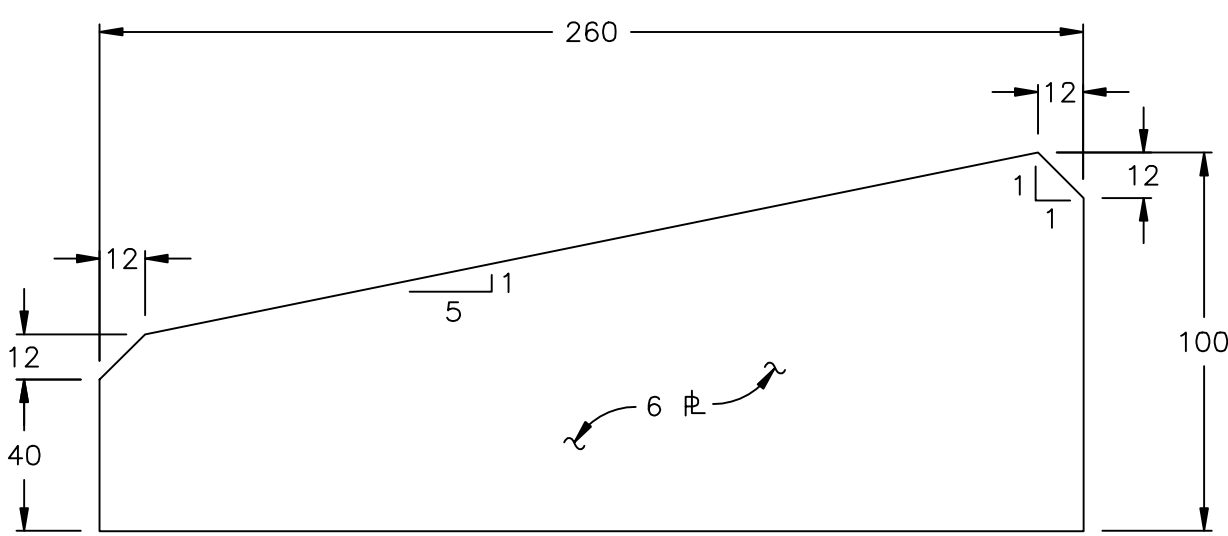
\* TYPE 1 AND 2 LOWER BRACKETS ARE THE SAME

FOOT PIECE FOR A-FRAME: TYPE 3

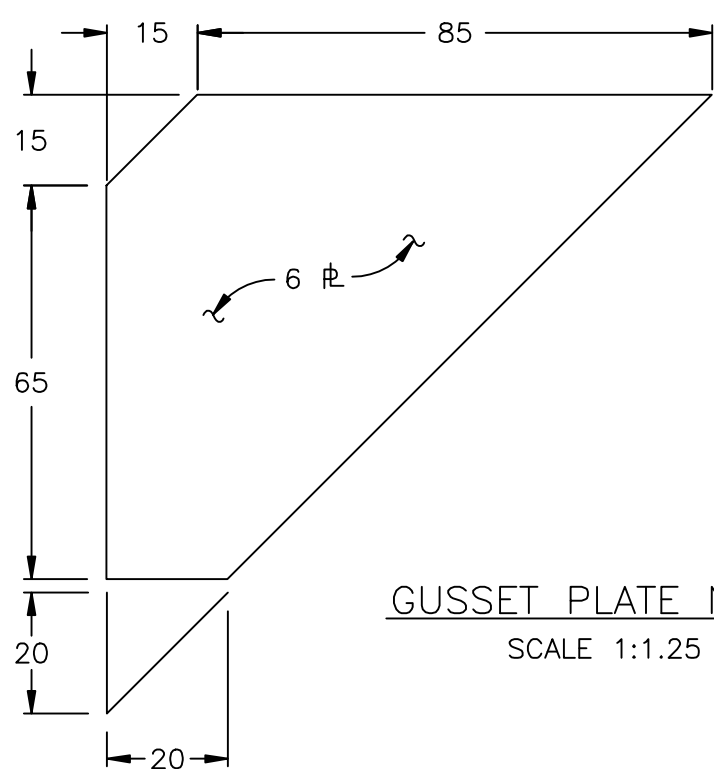
NEW STYLE STEEL A-FRAME (DWG. 3136) ON OLD STYLE PIPE FOOTING (DWG. 2612-2)



UPPER BRACKET (TYPE 3)



GUSSET PLATE No. 1  
SCALE 1:2



GUSSET PLATE No. 3  
SCALE 1:1.25

BILLS OF MATERIAL

A COMPLETE FOOT PIECE TYPE 1 ASSEMBLY CONSISTS OF THE FOLLOWING:

QTY	DESCRIPTION	DWG No.	SUPPLIER
1	UPPER BRACKET, TYPE 1	3136-8	FABRICATOR
1	LOWER BRACKET, TYPE 1	3136-8	FABRICATOR
1	25Øx330 LONG A325 BOLT		FABRICATOR

EST. W.T. 27.2 kg

A COMPLETE FOOT PIECE TYPE 2 ASSEMBLY CONSISTS OF THE FOLLOWING:

QTY	DESCRIPTION	DWG No.	SUPPLIER
1	UPPER BRACKET, TYPE 2	3136-8	FABRICATOR
1	LOWER BRACKET, TYPE 2	3136-8	FABRICATOR
1	25Øx330 LONG A325 BOLT		FABRICATOR

EST. W.T. 25.3 kg

A COMPLETE FOOT PIECE TYPE 3 ASSEMBLY CONSISTS OF THE FOLLOWING:

QTY	DESCRIPTION	DWG No.	SUPPLIER
1	UPPER BRACKET, TYPE 3	3136-8	FABRICATOR

EST. W.T. 12.9 kg

- NOTES:
- ALL PARTS TO BE HOT-DIPPED GALVANIZED AS PER C.S.A. G-164
  - ALL BOLTS & NUTS TO BE A325M TYPE 2 GALVANIZED, UNLESS NOTED OTHERWISE
  - ALL STEEL SHALL CONFORM TO C.S.A. G40.21M GRADE 350W GALVANIZED.

ALL DIMENSIONS IN MILLIMETRES  
UNLESS OTHERWISE NOTED



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DEPT. OF THE ENVIRONMENT  
WATER SURVEY OF CANADA, VANCOUVER, B.C.

HEAVY DUTY A-FRAMES  
VARIOUS DETAILS, FOOT PIECES - TYPE 1, TYPE 2, TYPE 3

VANCOUVER, B.C.

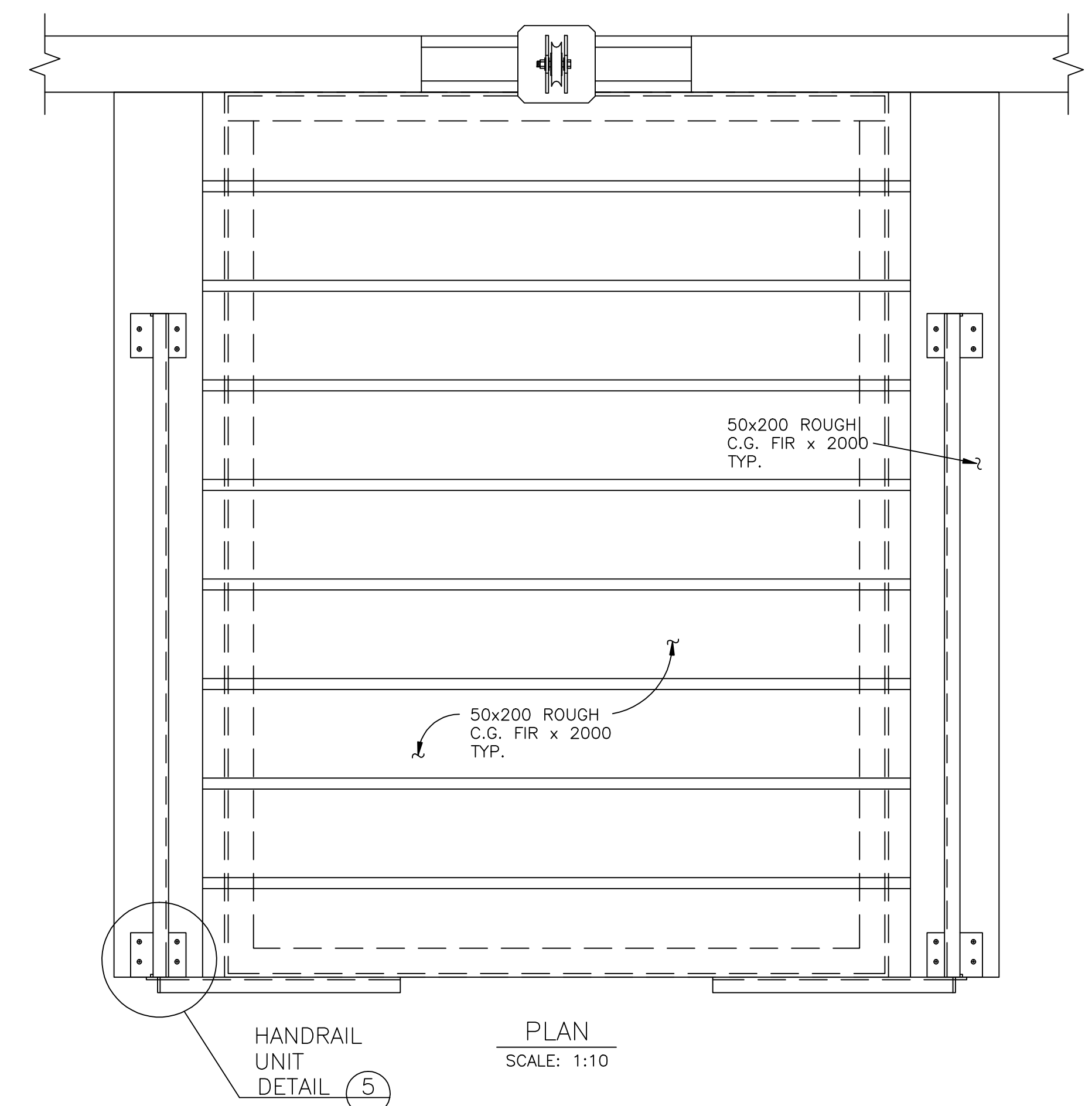
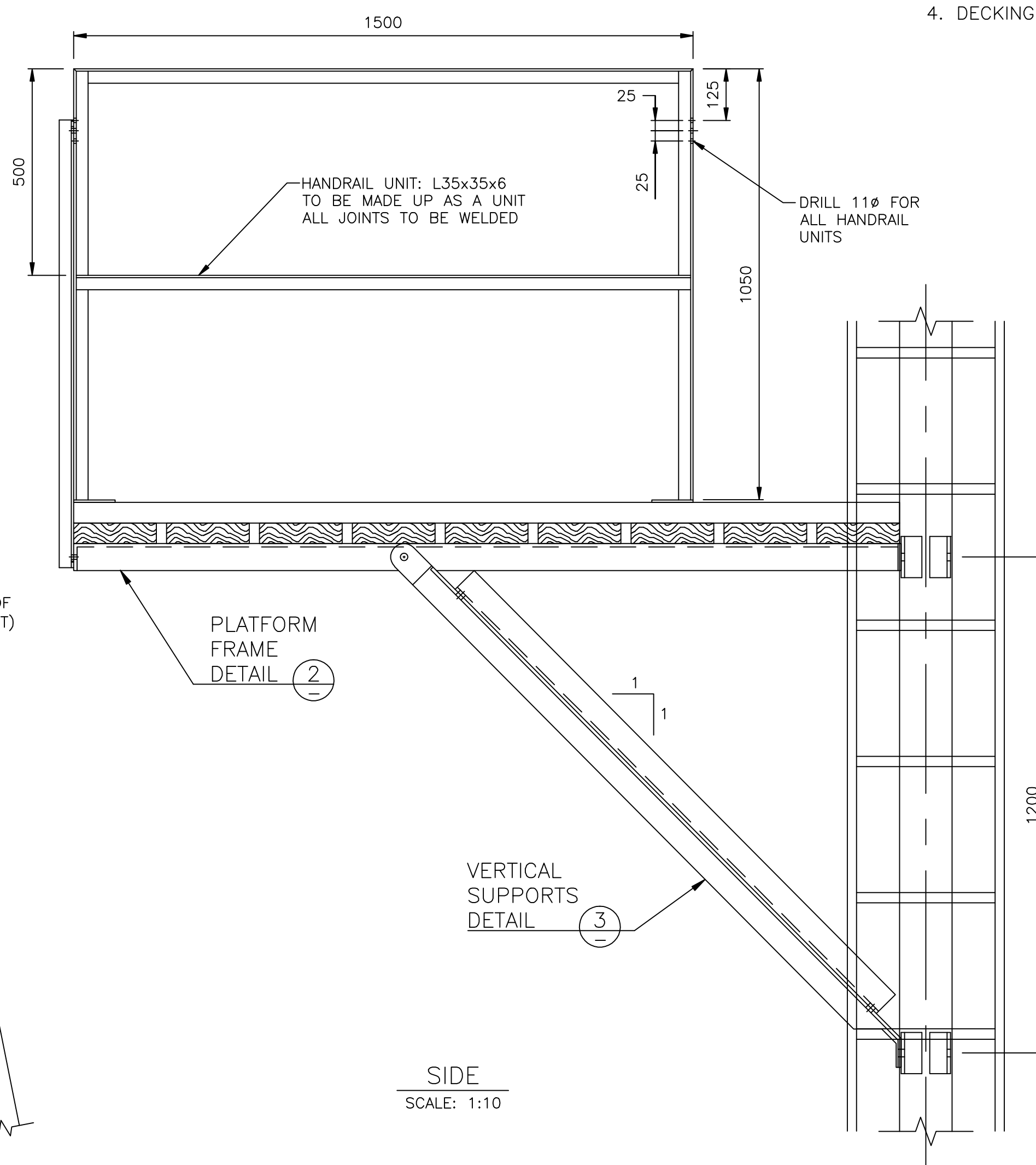
Designed D.O.E.	Job No. 2111-01745-1	Drawing No.
Drawn K.D.W.	Scale 1:5 UNLESS NOTED	3136-8
Checked A.A.W.	Date APRIL 2002	of 10
Approved	Revision 1	

Destroy all prints bearing previous number



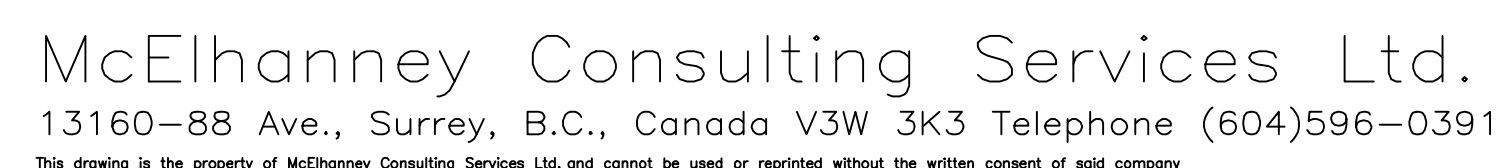
* WATER SURVEY OF CANADA	EST. W.T. STEEL 142.3 kg
	EST. W.T. WOOD 120.0 kg
164.	TOTAL W.T. 267.3 kg

1. ALL PARTS TO BE HOT-DIPPED GALVANIZED C.S.A. G-164.
2. ALL BOLTS & NUTS TO BE M16 A325M TYPE 2, GALVANIZED UNLESS NOTED OTHERWISE.
3. ALL STEEL SHALL CONFORM TO C.S.A. G40.21M GR 350W.
4. DECKING AND KICK PLATES TO BE SUPPLIED BY W.S.C.



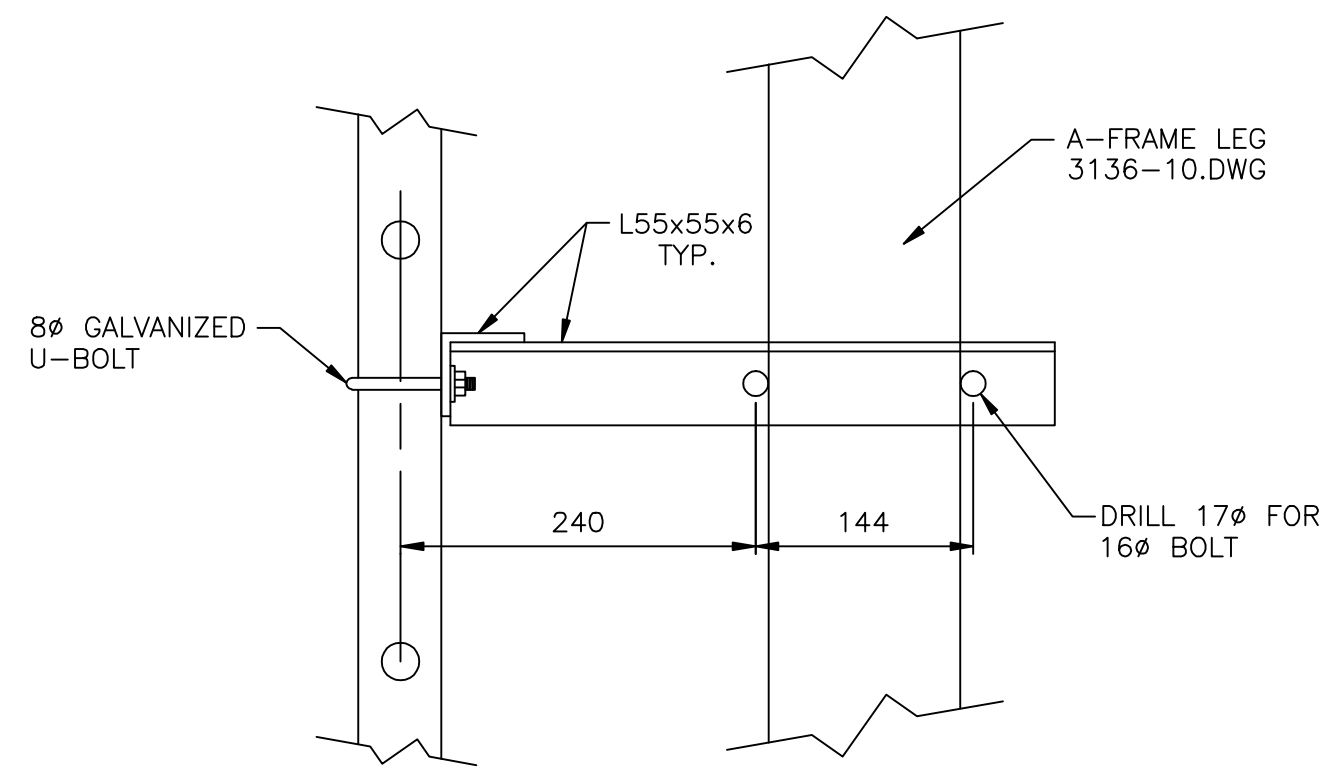
ALL DIMENSIONS IN MILLIMETRES  
UNLESS OTHERWISE NOTED

1	JUNE/02	APPROVED AND REDRAWN BY MCSL		KDW AAW
No.	Date	Revision		Dr Ch



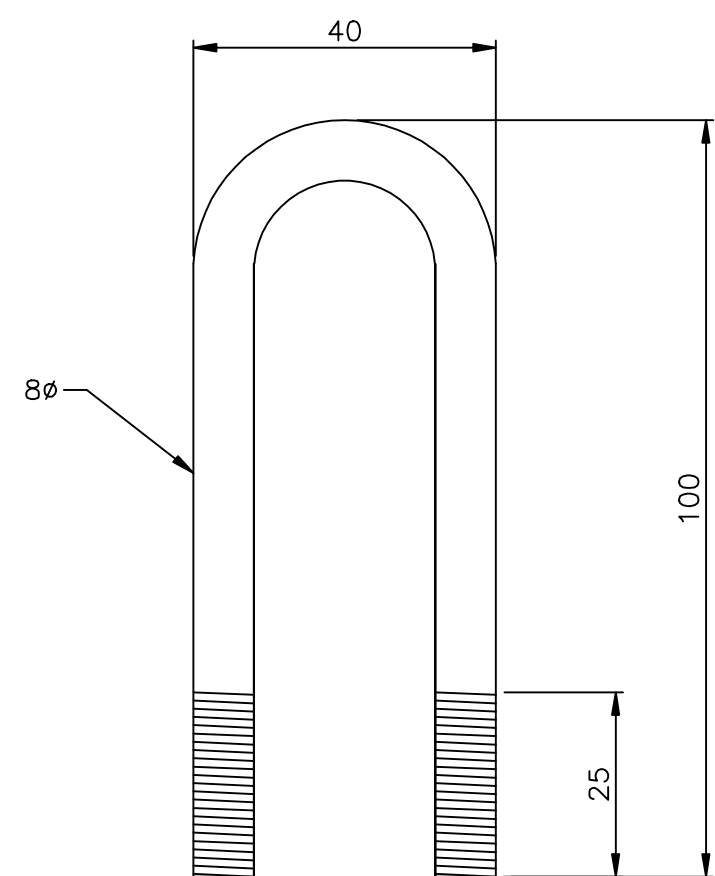
VANCOUVER, B.C.

Designed D.O.E.	Job No. 2111-01745-1	Drawing No.  3136-9  of 10
Drawn K.D.W	Scale AS SHOWN	
Checked A.A.W.	Date APRIL 2002	
Approved	Revision 1	

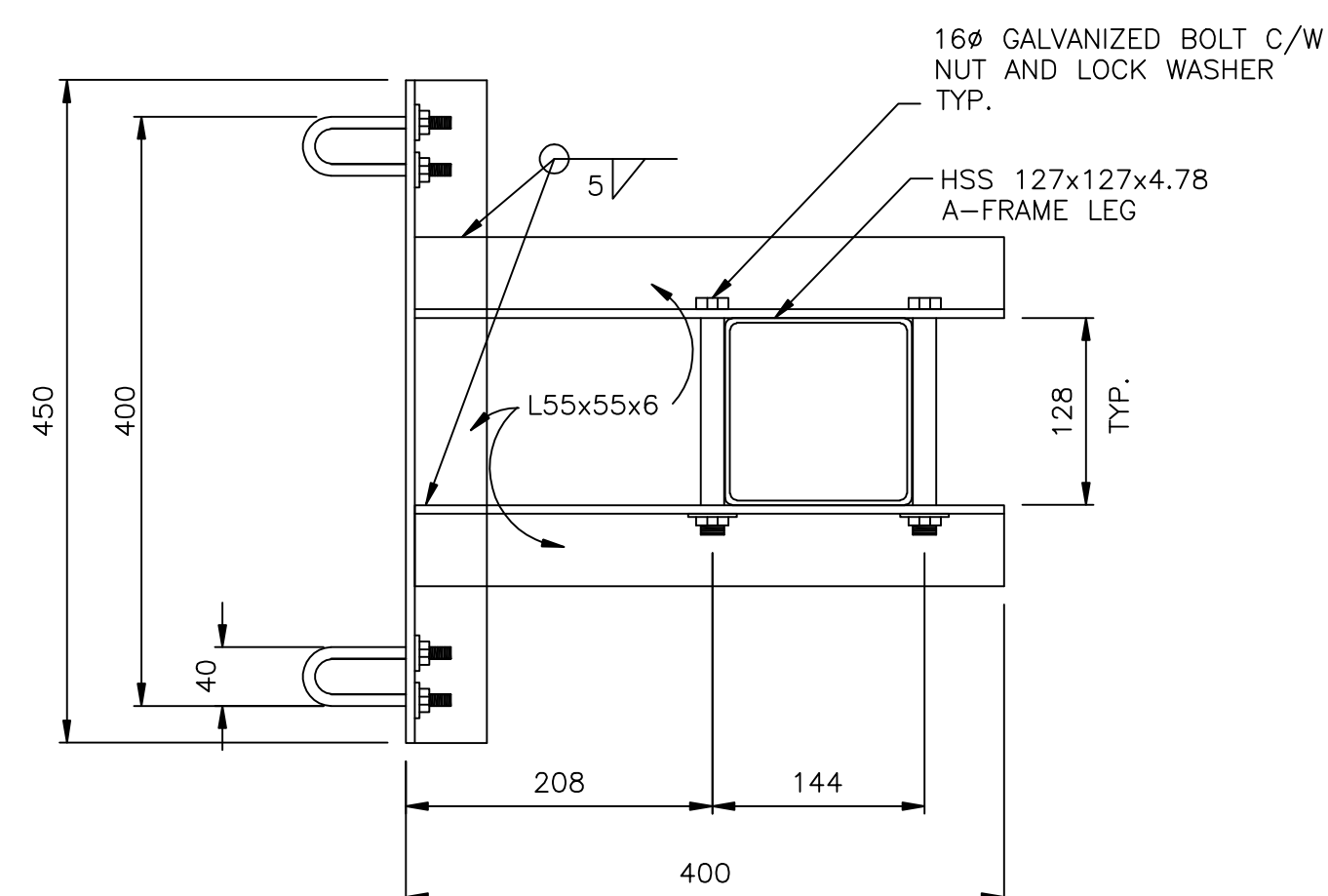


FRONT VIEW

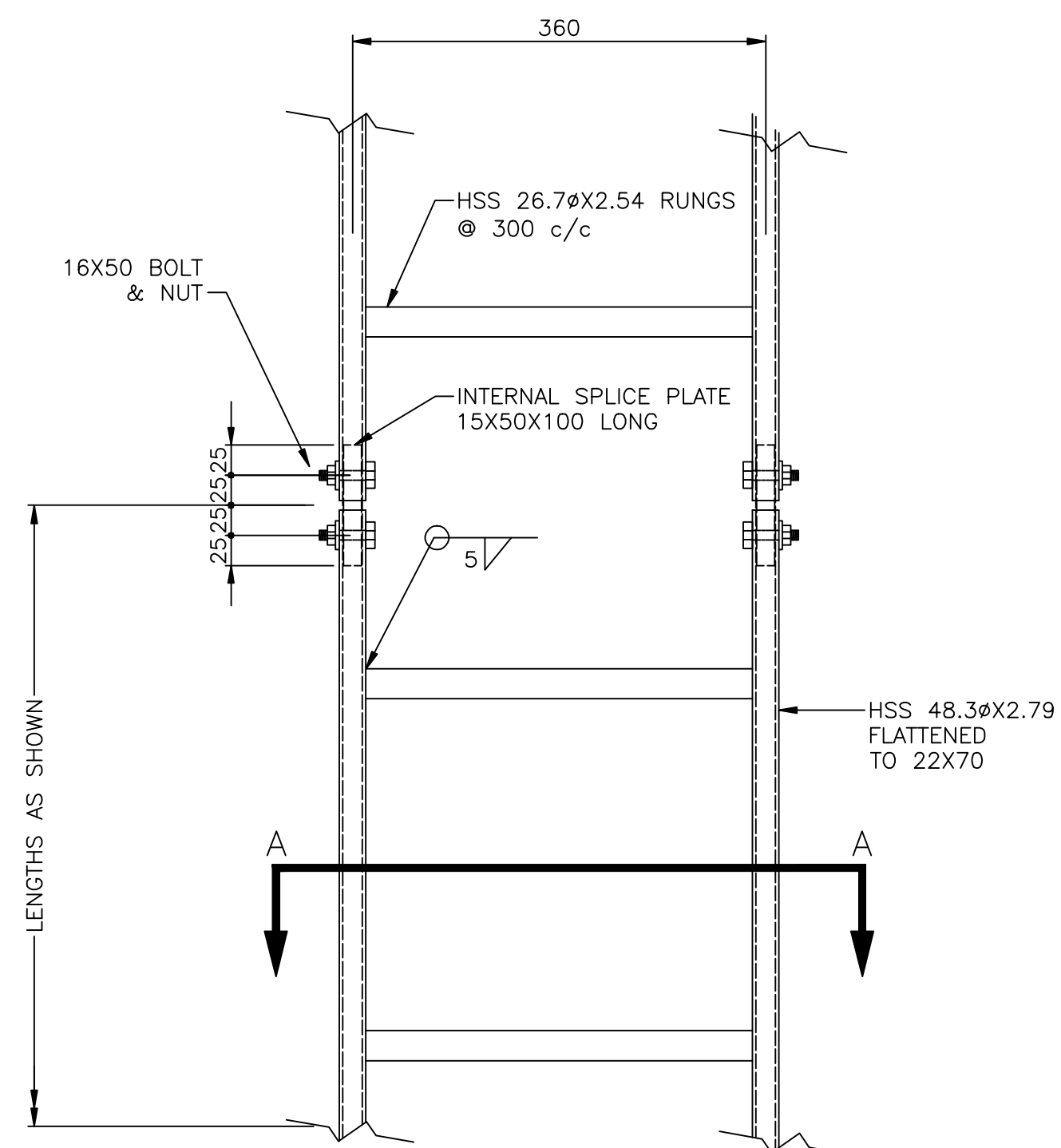
LADDER BRACKET ASSEMBLY  
SCALE 1:5



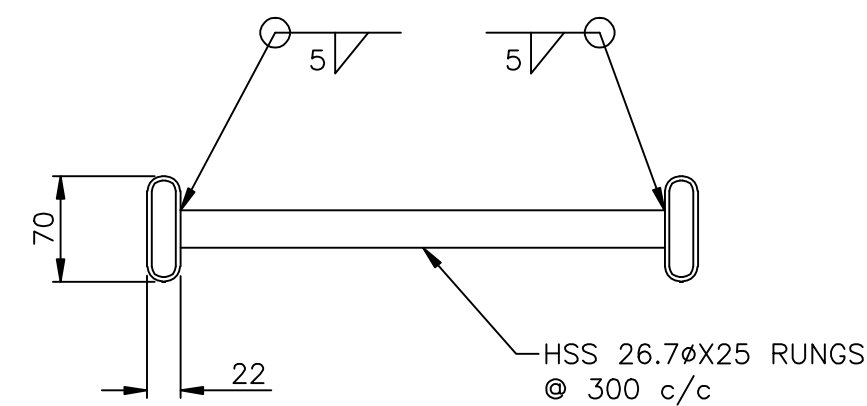
U-BOLT  
SCALE 1:1



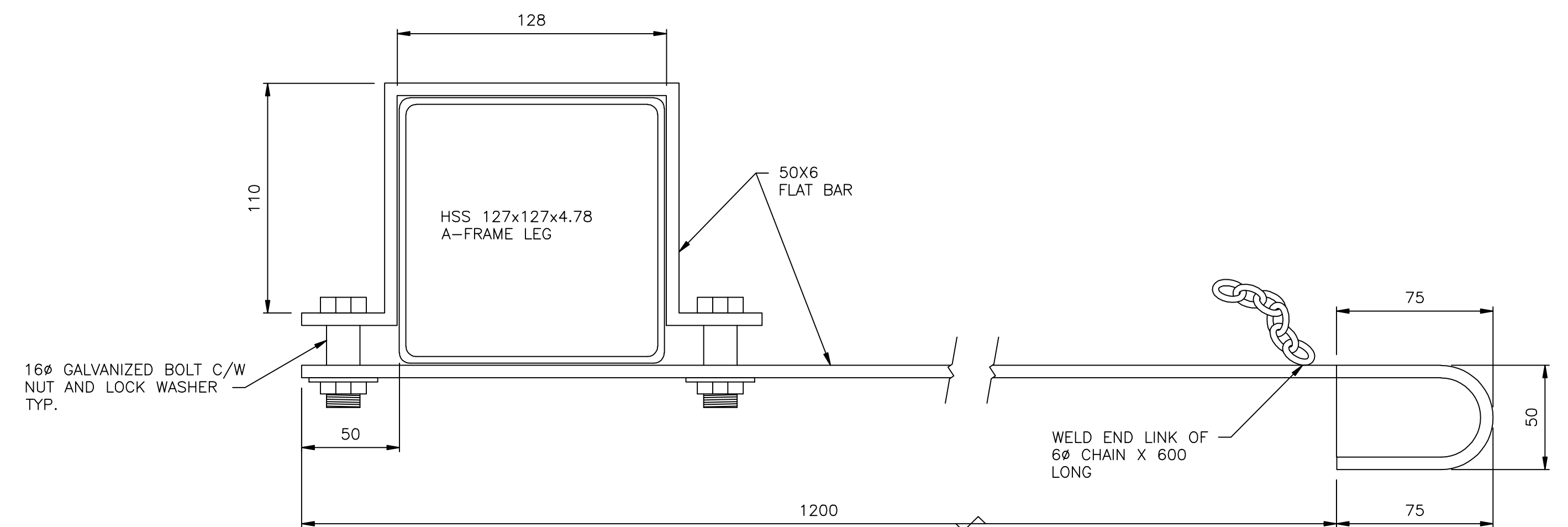
PLAN VIEW FROM BELOW  
LADDER BRACKET ASSEMBLY  
SCALE 1:5



LADDER  
SCALE 1:5



SECTION A  
SCALE 1:5



CAR HOOK ASSEMBLY LEG  
SCALE 1:2

## BILLS OF MATERIAL

A COMPLETE LADDER BRACKET ASSEMBLY CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	LADDER BRACKET	3136-10	FABRICATOR
2	8ø GALVANIZED U-BOLT TO SUIT LADDER C/W NUT & WASHER		FABRICATOR
2	BOLTS, M16x170 C/W NUT & WASHER		FABRICATOR

EST. W.T. 7.2 kg

A COMPLETE CAR HOOK ASSEMBLY CONSISTS OF THE FOLLOWING:			
QTY	DESCRIPTION	DWG No.	SUPPLIER
1	CAR HOOK C/W BRACKET	3136-10	FABRICATOR
2	BOLTS, M16x55 C/W NUT & WASHER		FABRICATOR

EST. W.T. 5.4 kg

## NOTES:

- ALL PARTS TO BE HOT-DIPPED GALVANIZED AS PER C.S.A. G-164.
- ALL BOLTS & NUTS TO BE A325M TYPE 2 GALV., UNLESS NOTED OTHERWISE
- ALL STEEL SHALL CONFORM TO C.S.A. G.40.21M GRADE 350W.

1	JUNE/02	APPROVED AND REDRAWN BY MCSL	KDW	AAW	
No.	Date	Revision	Dr	Ch	



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DEPT. OF THE ENVIRONMENT  
WATER SURVEY OF CANADA, VANCOUVER, B.C.

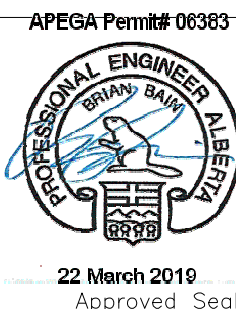
HEAVY DUTY A-FRAMES  
LADDER BRACKET & CAR HOOK, VARIOUS DETAILS  
ASSEMBLY LEG  
VANCOUVER, B.C.

Designed D.O.E.	Job No. 2111-01745-1	Drawing No.  3136-10  of 10
Drawn K.D.W.	Scale AS NOTED	
Checked A.A.W.	Date APRIL 2002	
Approved	Revision 1	

Destroy all prints bearing previous number—T



MOVED LADDER DETAILS TO 3136-11



# LIGHT DUTY A-FRAME

## LADDER DETAILS

Revision 1

[illegible]

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Canmore, AB T1W 1N9  
PH 403-609-3992

Designed: KEL	Checked:	Date: MARCH 2010
Drawn: LLP	Surveyed:	

~~APEGA Permit# 06383~~

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

# LIGHT DUTY A-FRAME

## LADDER DETAILS

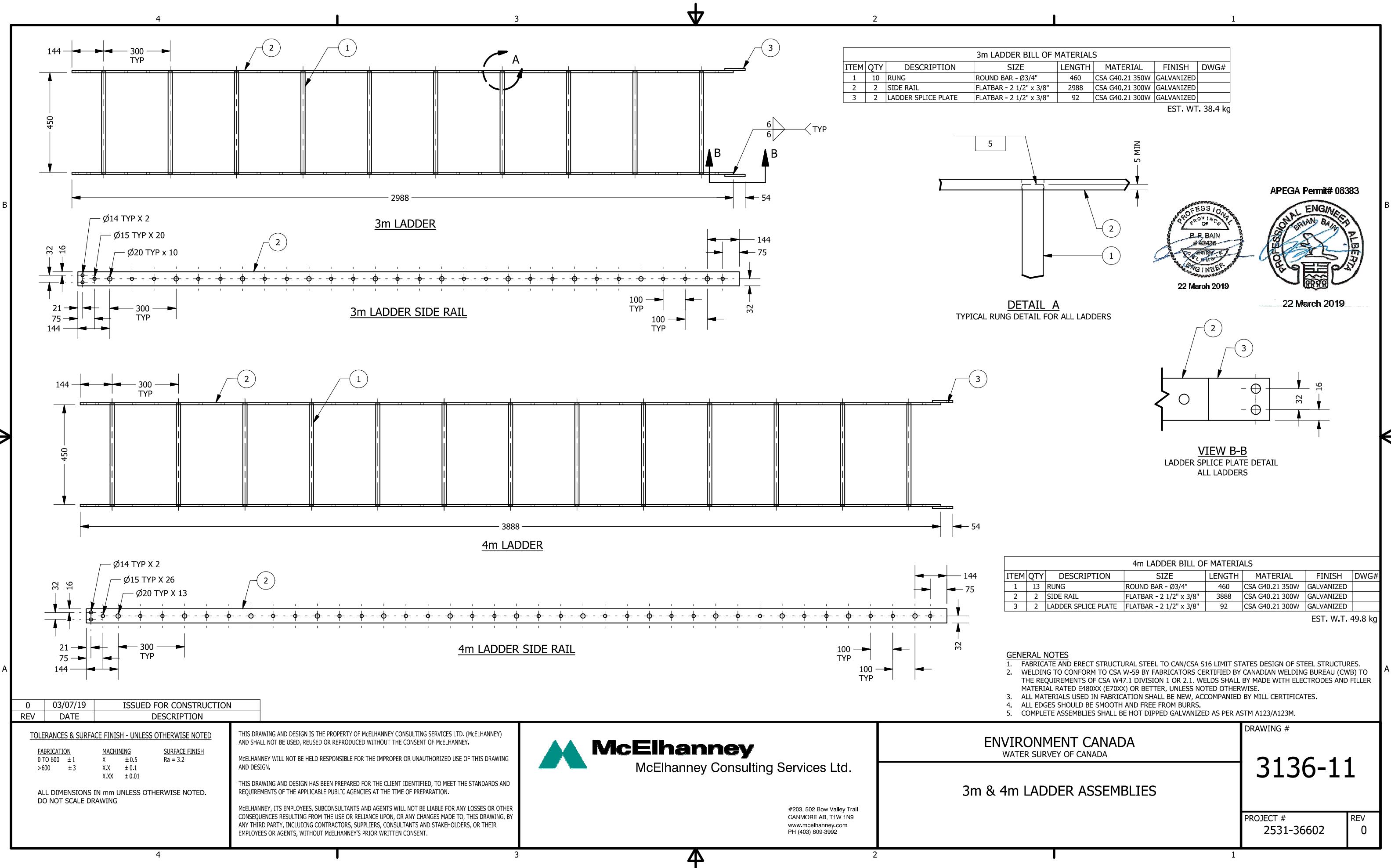
Client Project No

MCSL Project No. 2111-01745-5

Drawing No.  
**3182-5**

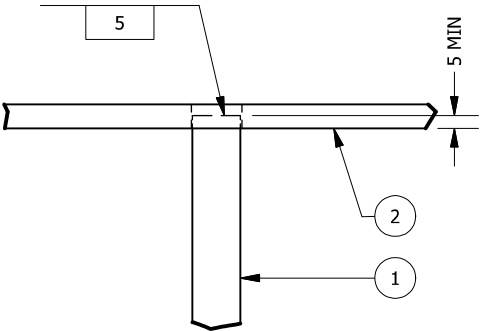
Revision 1



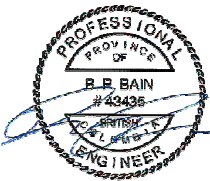


3m LADDER BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	10	RUNG	ROUND BAR - Ø3/4"	460	CSA G40.21 350W	GALVANIZED	
2	2	SIDE RAIL	FLATBAR - 2 1/2" x 3/8"	2988	CSA G40.21 300W	GALVANIZED	
3	2	LADDER SPLICE PLATE	FLATBAR - 2 1/2" x 3/8"	92	CSA G40.21 300W	GALVANIZED	

EST. WT. 38.4 kg

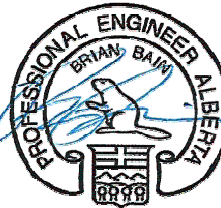


DETAIL A  
TYPICAL RUNG DETAIL FOR ALL LADDERS

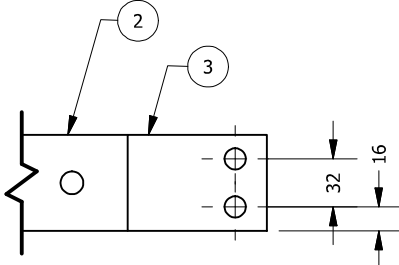


22 March 2019

APEGA Permit# 06383



22 March 2019



VIEW B-B  
LADDER SPLICE PLATE DETAIL  
ALL LADDERS

4m LADDER BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	13	RUNG	ROUND BAR - Ø3/4"	460	CSA G40.21 350W	GALVANIZED	
2	2	SIDE RAIL	FLATBAR - 2 1/2" x 3/8"	3888	CSA G40.21 300W	GALVANIZED	
3	2	LADDER SPLICE PLATE	FLATBAR - 2 1/2" x 3/8"	92	CSA G40.21 300W	GALVANIZED	

EST. W.T. 49.8 kg

GENERAL NOTES

- FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
- WELDING TO CONFORM TO CSA W-59 BY FABRICATORS CERTIFIED BY CANADIAN WELDING BUREAU (CWB) TO THE REQUIREMENTS OF CSA W47.1 DIVISION 1 OR 2.1. WELDS SHALL BE MADE WITH ELECTRODES AND FILLER MATERIAL RATED E480XX (E70XX) OR BETTER, UNLESS NOTED OTHERWISE.
- ALL MATERIALS USED IN FABRICATION SHALL BE NEW, ACCOMPANIED BY MILL CERTIFICATES.
- ALL EDGES SHOULD BE SMOOTH AND FREE FROM BURRS.
- COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.

0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X.X ±0.1	
	X.XX ±0.01	

ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.  
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CANMORE AB, T1W 1N9  
www.mcelhanney.com  
PH (403) 609-3992

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

3m & 4m LADDER ASSEMBLIES

DRAWING #

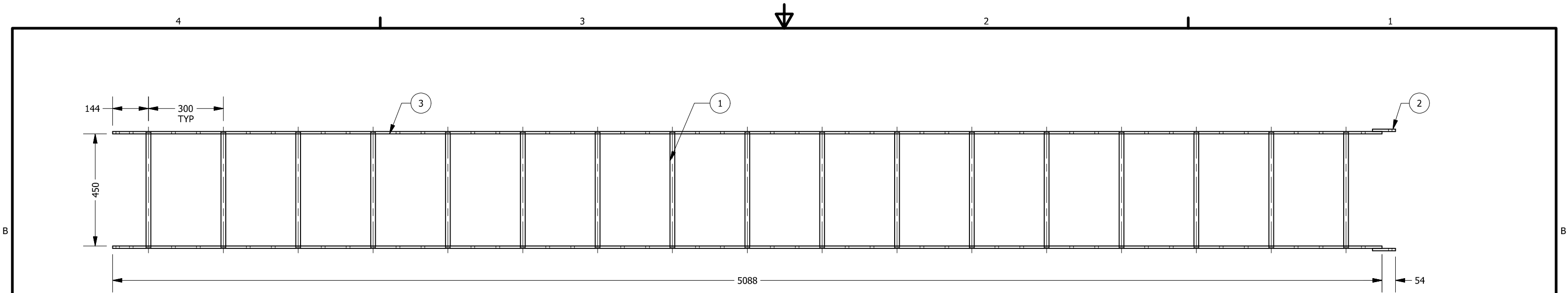
3136-11

PROJECT #

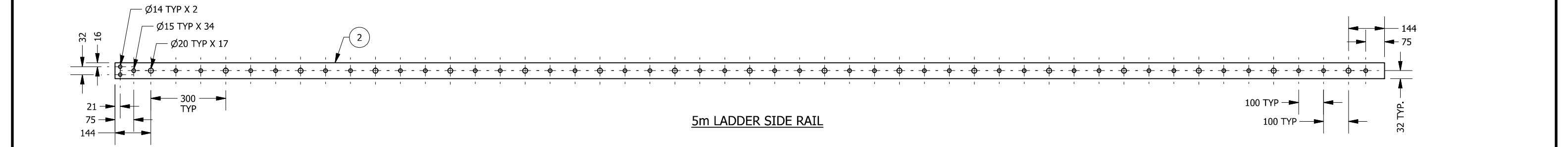
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REV

0



5m LADDER

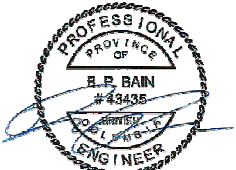


5m LADDER SIDE RAIL

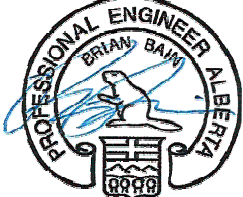
5m LADDER BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	17	RUNG	ROUND BAR - Ø3/4"	460	CSA G40.21 350W	GALVANIZED	
2	2	LADDER SPLICE PLATE	FLATBAR - 2 1/2" x 3/8"	92	CSA G40.21 300W	GALVANIZED	
3	2	SIDE RAIL	FLATBAR - 2 1/2" x 3/8"	5088	CSA G40.21 300W	GALVANIZED	

EST. W.T. 64.9 kg

APEGA Permit# 06383



22 March 2019



22 March 2019

GENERAL NOTES

- FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
- WELDING TO CONFORM TO CSA W-59 BY FABRICATORS CERTIFIED BY CANADIAN WELDING BUREAU (CWB) TO THE REQUIREMENTS OF CSA W47.1 DIVISION 1 OR 2.1. WELDS SHALL BY MADE WITH ELECTRODES AND FILLER MATERIAL RATED E480XX (E70XX) OR BETTER, UNLESS NOTED OTHERWISE.
- ALL MATERIALS USED IN FABRICATION SHALL BE NEW, ACCOMPANIED BY MILL CERTIFICATES.
- ALL EDGES SHOULD BE SMOOTH AND FREE FROM BURRS.
- COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.

0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X,X ±0.1	
	X,XX ±0.01	

ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.  
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ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

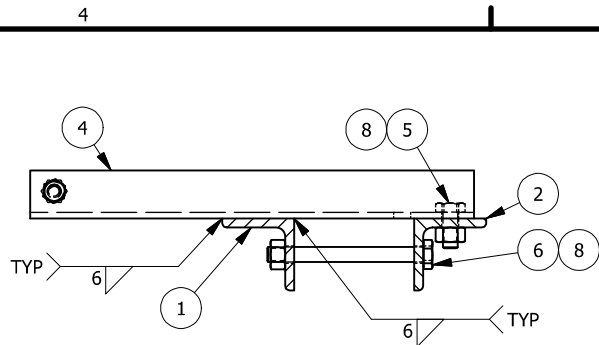
5m LADDER ASSEMBLY

DRAWING #

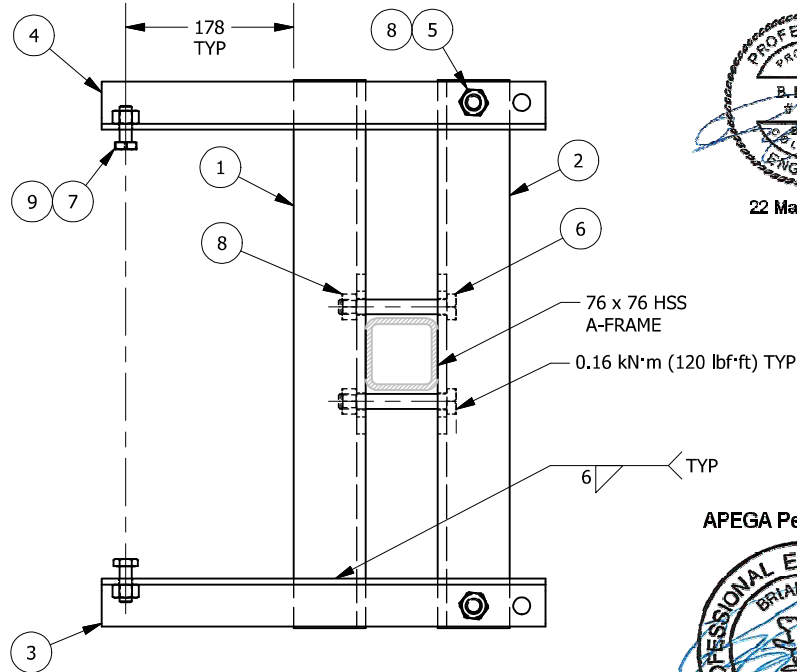
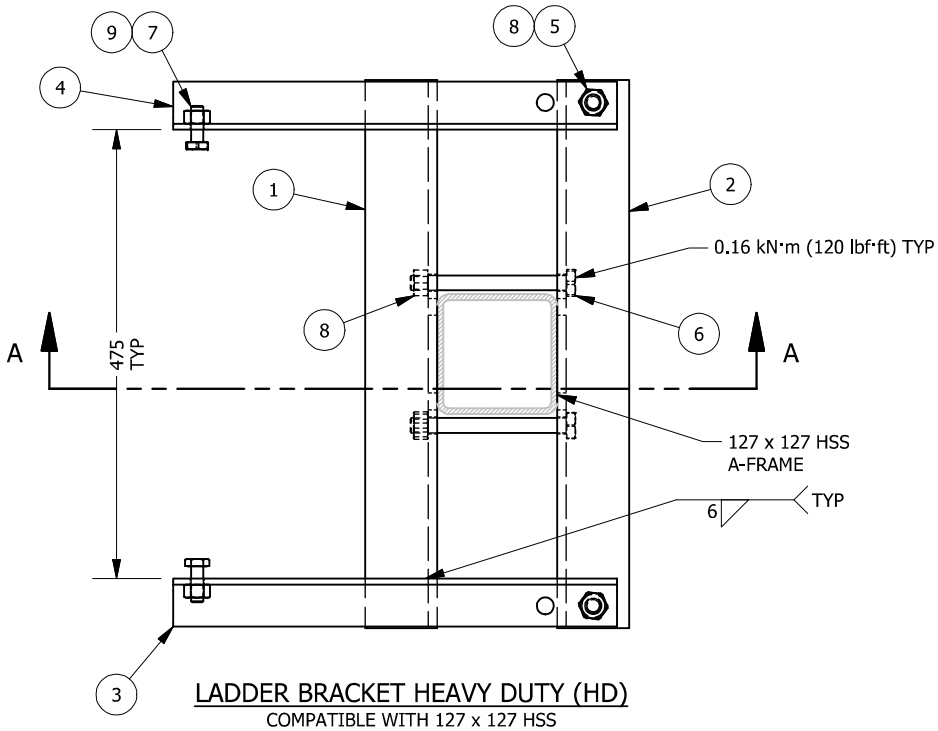
3136-12

PROJECT #  
2531-36602

REV  
0



SECTION A-A  
A-FRAME HSS OMITTED FOR CLARITY



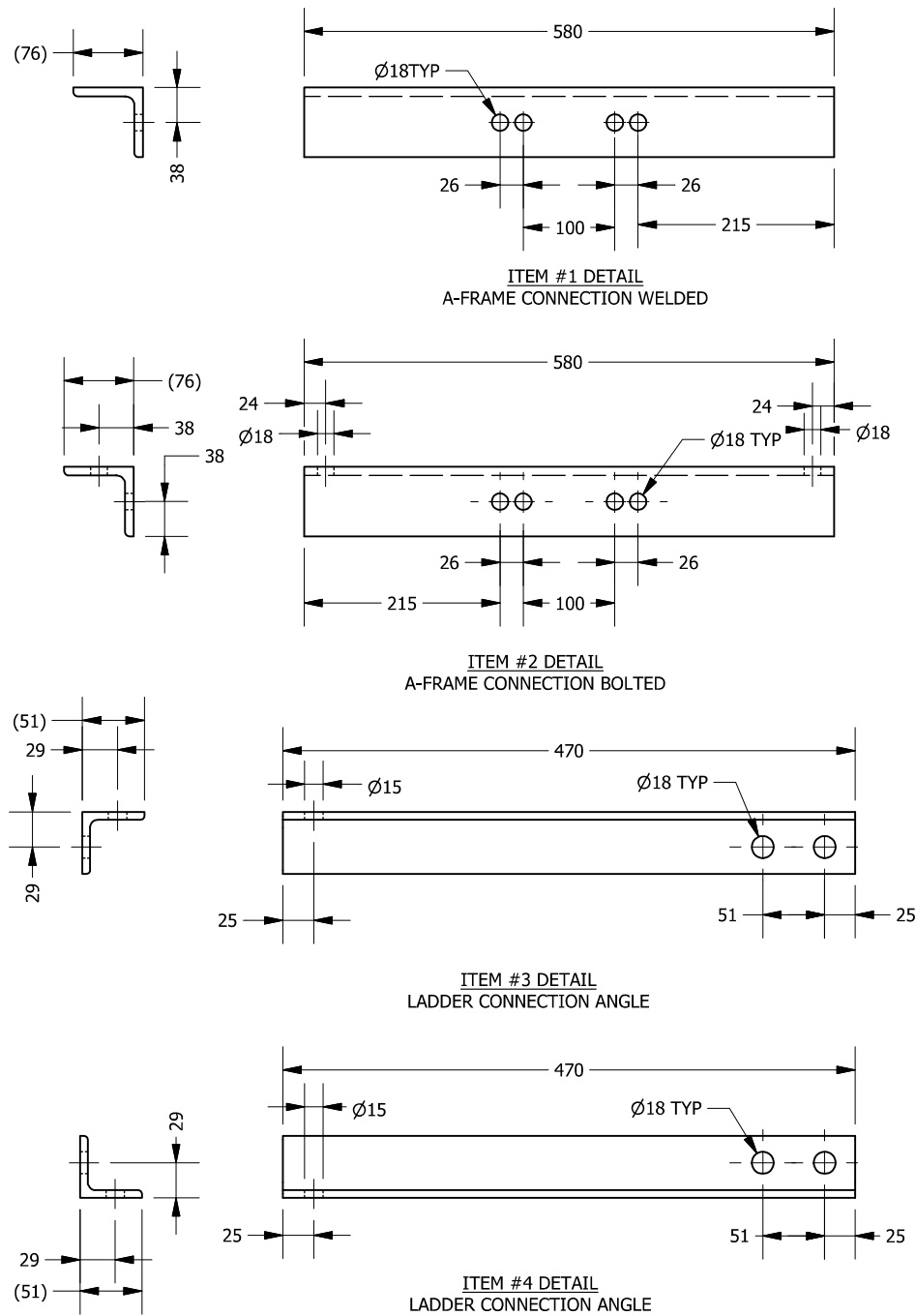
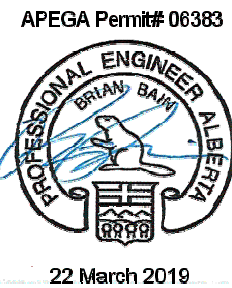
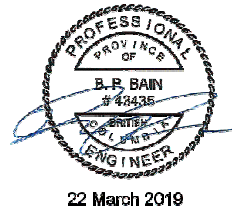
LADDER BRACKET LIGHT DUTY (LD)  
COMPATIBLE WITH 76 x 76 HSS

HD LADDER BRACKET BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	1	A-FRAME WELDED	ANGLE - 3" x 3" x 3/8"	580	CSA G40.21 350W	GALVANIZED	
2	1	A-FRAME BOLTED	ANGLE - 3" x 3" x 3/8"	580	CSA G40.21 350W	GALVANIZED	
3	1	LADDER MOUNT ANGLE LEFT	ANGLE - 2" x 2" x 1/4"	470	CSA G40.21 350W	GALVANIZED	
4	1	LADDER MOUNT ANGLE RIGHT	ANGLE - 2" x 2" x 1/4"	470	CSA G40.21 350W	GALVANIZED	
5	2	HEX BOLT	5/8" - 11	1-1/2"	ASTM A325M	GALVANIZED	
6	2	HEX BOLT	5/8" - 11	6-1/2"	ASTM A325M	GALVANIZED	
7	2	HEX BOLT	1/2" - 13	1-1/2"	ASTM A325M	GALVANIZED	
8	4	HEX NUT	5/8" - 11		ASTM A325M	GALVANIZED	
9	2	HEX NUT	1/2" - 13		ASTM A325M	GALVANIZED	

EST. W.T. 18.0 kg

LD LADDER BRACKET BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	1	A-FRAME WELDED	ANGLE - 3" x 3" x 3/8"	580	CSA G40.21 350W	GALVANIZED	
2	1	A-FRAME BOLTED	ANGLE - 3" x 3" x 3/8"	580	CSA G40.21 350W	GALVANIZED	
3	1	LADDER MOUNT ANGLE LEFT	ANGLE - 2" x 2" x 1/4"	470	CSA G40.21 350W	GALVANIZED	
4	1	LADDER MOUNT ANGLE RIGHT	ANGLE - 2" x 2" x 1/4"	470	CSA G40.21 350W	GALVANIZED	
5	2	HEX BOLT	5/8" - 11	1-1/2"	ASTM A325M	GALVANIZED	
6	2	HEX BOLT	5/8" - 11	4-1/2"	ASTM A325M	GALVANIZED	
7	2	HEX BOLT	1/2" - 13	1-1/2"	ASTM A325M	GALVANIZED	
8	4	HEX NUT	5/8" - 11		ASTM A325M	GALVANIZED	
9	2	HEX NUT	1/2" - 13		ASTM A325M	GALVANIZED	

EST. W.T. 17.8 kg



- GENERAL NOTES**
- FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
  - WELDING TO CONFORM TO CSA W-59 BY FABRICATORS CERTIFIED BY CANADIAN WELDING BUREAU (CWB) TO THE REQUIREMENTS OF CSA W47.1 DIVISION 1 OR 2.1. WELDS SHALL BE MADE WITH ELECTRODES AND FILLER MATERIAL RATED E480XX (E70XX) OR BETTER, UNLESS NOTED OTHERWISE.
  - ALL MATERIALS USED IN FABRICATION SHALL BE NEW, ACCOMPANIED BY MILL CERTIFICATES.
  - ALL EDGES SHOULD BE SMOOTH AND FREE FROM BURRS.
  - COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.

0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

**TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED**

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X.X ±0.1	
	X.XX ±0.01	

ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.  
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ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

LADDER BRACKETS

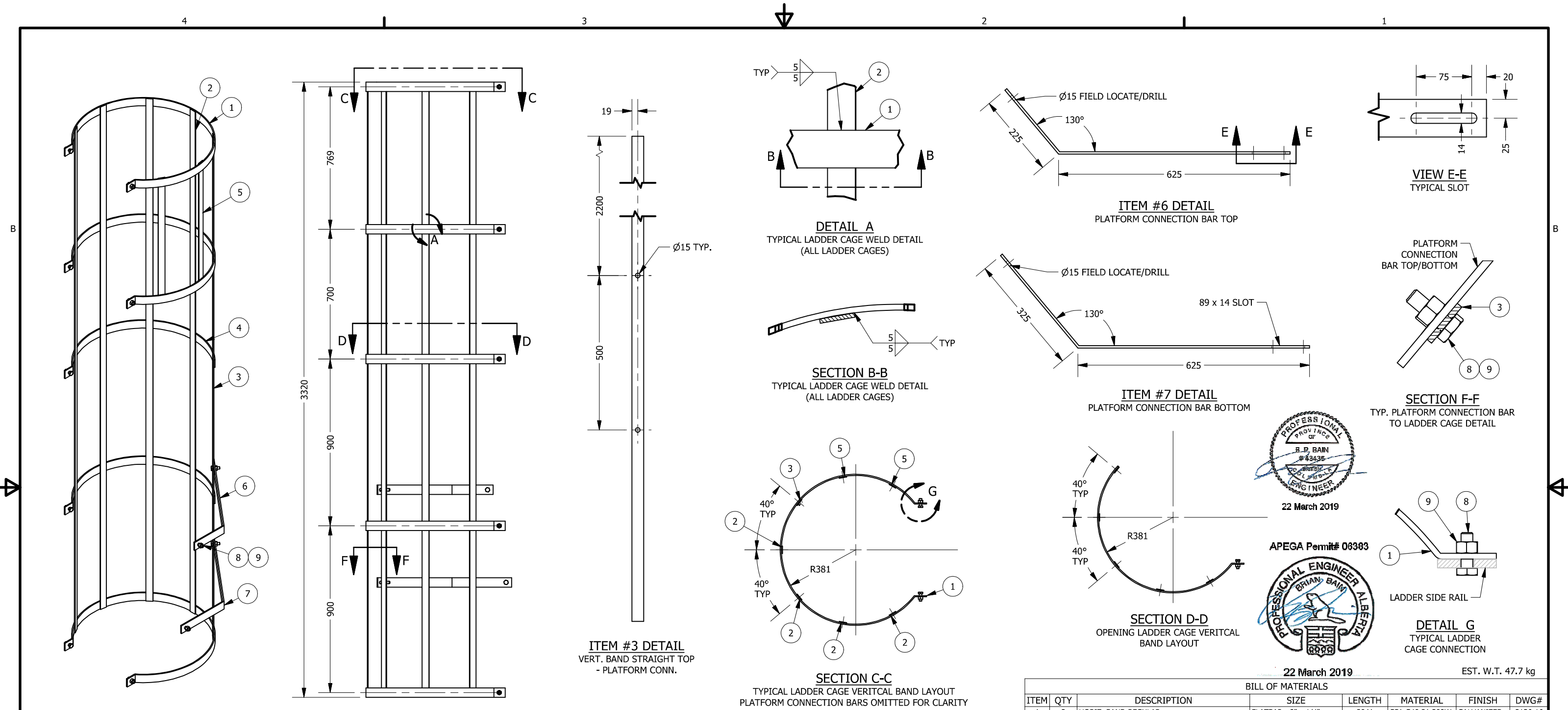
DRAWING #

**3136-13**

PROJECT #  
2531-36602

REV  
0





GENERAL NOTES

1. FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
2. WELDING TO CONFORM TO CSA W-59 BY FABRICATORS CERTIFIED BY CANADIAN WELDING BUREAU (CWB) TO THE REQUIREMENTS OF CSA W47.1 DIVISION 1 OR 2.1. WELDS SHALL BY MADE WITH ELECTRODES AND FILLER MATERIAL RATED E480XX (E70XX) OR BETTER, UNLESS NOTED OTHERWISE.
3. ALL MATERIALS USED IN FABRICATION SHALL BE NEW, ACCOMPANIED BY MILL CERTIFICATES.
4. ALL EDGES SHOULD BE SMOOTH AND FREE FROM BURRS.
5. COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.
6. PLATFORM CONNECTION BAR TOP/BOTTOM ITEMS FIELD INSTALLED BASED ON MODIFIED PLATFORM RAILING LOCATION.

BILL OF MATERIALS						
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH
1	3	HORIZ. BAND REGULAR	FLATBAR - 2" x 1/4"	2041	CSA G40.21 300W	GALVANIZED
2	4	VERT. BAND STRAIGHT TOP	FLATBAR - 1 1/2" x 3/16"	3320	CSA G40.21 300W	GALVANIZED
3	1	VERT. BAND STRAIGHT TOP - PLATFORM CONN.	FLATBAR - 1 1/2" x 3/16"	3320	CSA G40.21 300W	GALVANIZED
4	2	HORIZ. BAND OPENING	FLATBAR - 2" x 1/4"	1311	CSA G40.21 300W	GALVANIZED
5	2	VERT. BAND OPENING	FLATBAR - 1 1/2" x 3/16"	820	CSA G40.21 300W	GALVANIZED
6	1	PLATFORM CONNECTION BAR TOP	FLATBAR - 2" x 1/4"	850	CSA G40.21 300W	GALVANIZED
7	1	PLATFORM CONNECTION BAR BOTTOM	FLATBAR - 2" x 1/4"	950	CSA G40.21 300W	GALVANIZED
8	12	HEX BOLT	1/2" - 13	1 1/2"	ASTM A325	GALVANIZED
9	12	HEX NUT	1/2" - 13		ASTM A325	GALVANIZED

0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X,X ±0.1	
	X,XX ±0.01	

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ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

TOP LADDER CAGE

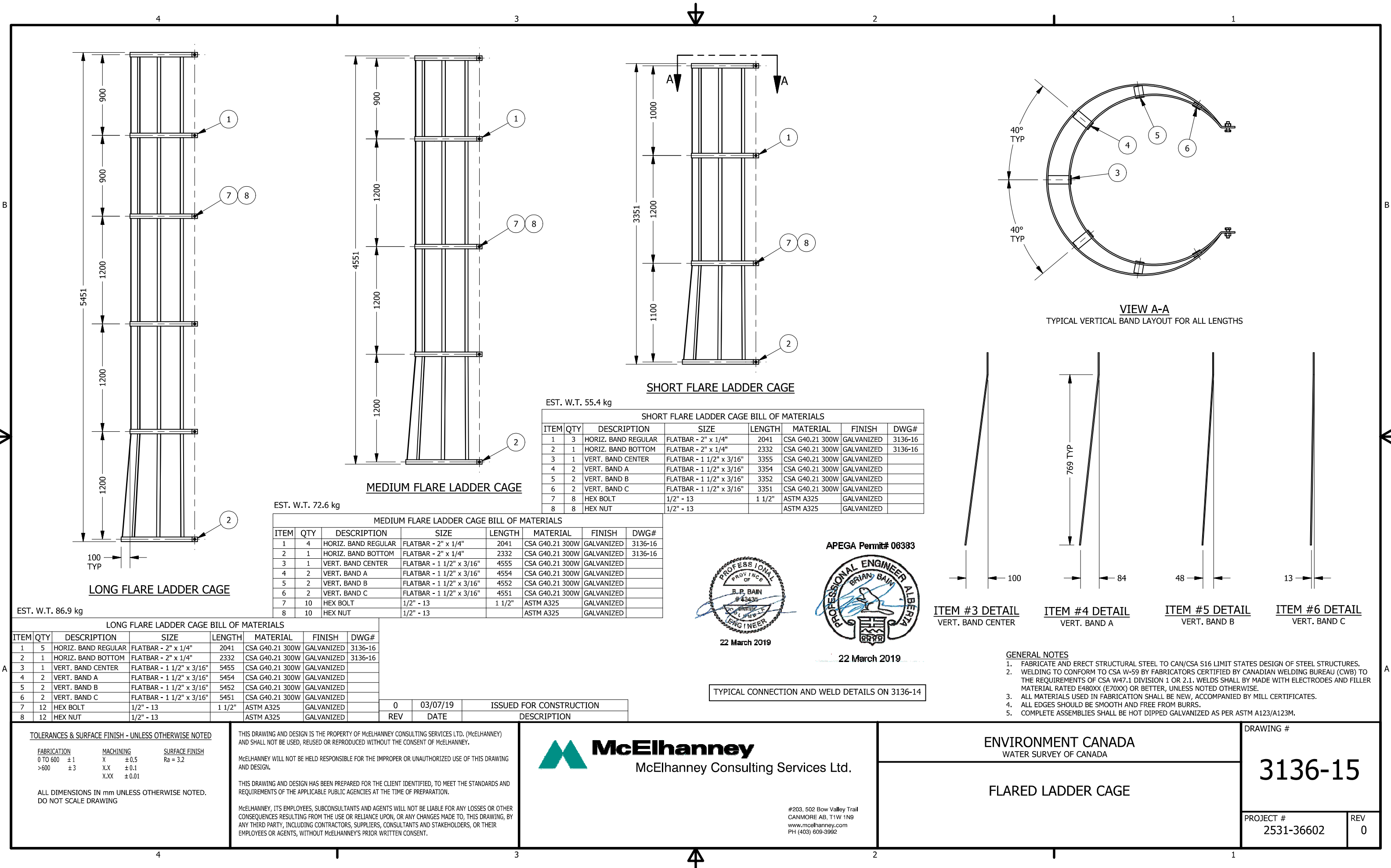
DRAWING #

3136-14

PROJECT #  
2531-36602

REV  
0

EST. W.T. 47.7 kg



4

3

2

1

4

3

2

1

4

3

2

1

4

3

2

1

LONG FLARE LADDER CAGE BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	5	HORIZ. BAND REGULAR	FLATBAR - 2" x 1/4"	2041	CSA G40.21 300W	GALVANIZED	3136-16
2	1	HORIZ. BAND BOTTOM	FLATBAR - 2" x 1/4"	2332	CSA G40.21 300W	GALVANIZED	3136-16
3	1	VERT. BAND CENTER	FLATBAR - 1 1/2" x 3/16"	5455	CSA G40.21 300W	GALVANIZED	
4	2	VERT. BAND A	FLATBAR - 1 1/2" x 3/16"	5454	CSA G40.21 300W	GALVANIZED	
5	2	VERT. BAND B	FLATBAR - 1 1/2" x 3/16"	5452	CSA G40.21 300W	GALVANIZED	
6	2	VERT. BAND C	FLATBAR - 1 1/2" x 3/16"	5451	CSA G40.21 300W	GALVANIZED	
7	12	HEX BOLT	1/2" - 13	1 1/2"	ASTM A325	GALVANIZED	
8	12	HEX NUT	1/2" - 13		ASTM A325	GALVANIZED	

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X,X ±0.1	
	X,XX ±0.01	

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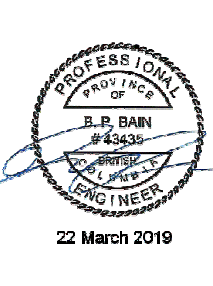
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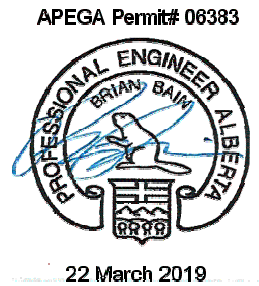
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TYPICAL CONNECTION AND WELD DETAILS ON 3136-14



22 March 2019

APEGA Permit# 06383



22 March 2019

ITEM #3 DETAIL  
VERT. BAND CENTER

ITEM #4 DETAIL  
VERT. BAND A

ITEM #5 DETAIL  
VERT. BAND B

ITEM #6 DETAIL  
VERT. BAND C

- GENERAL NOTES
- FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
  - WELDING TO CONFORM TO CSA W-59 BY FABRICATORS CERTIFIED BY CANADIAN WELDING BUREAU (CWB) TO THE REQUIREMENTS OF CSA W47.1 DIVISION 1 OR 2.1. WELDS SHALL BY MADE WITH ELECTRODES AND FILLER MATERIAL RATED E480XX (E70XX) OR BETTER, UNLESS NOTED OTHERWISE.
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  - COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.

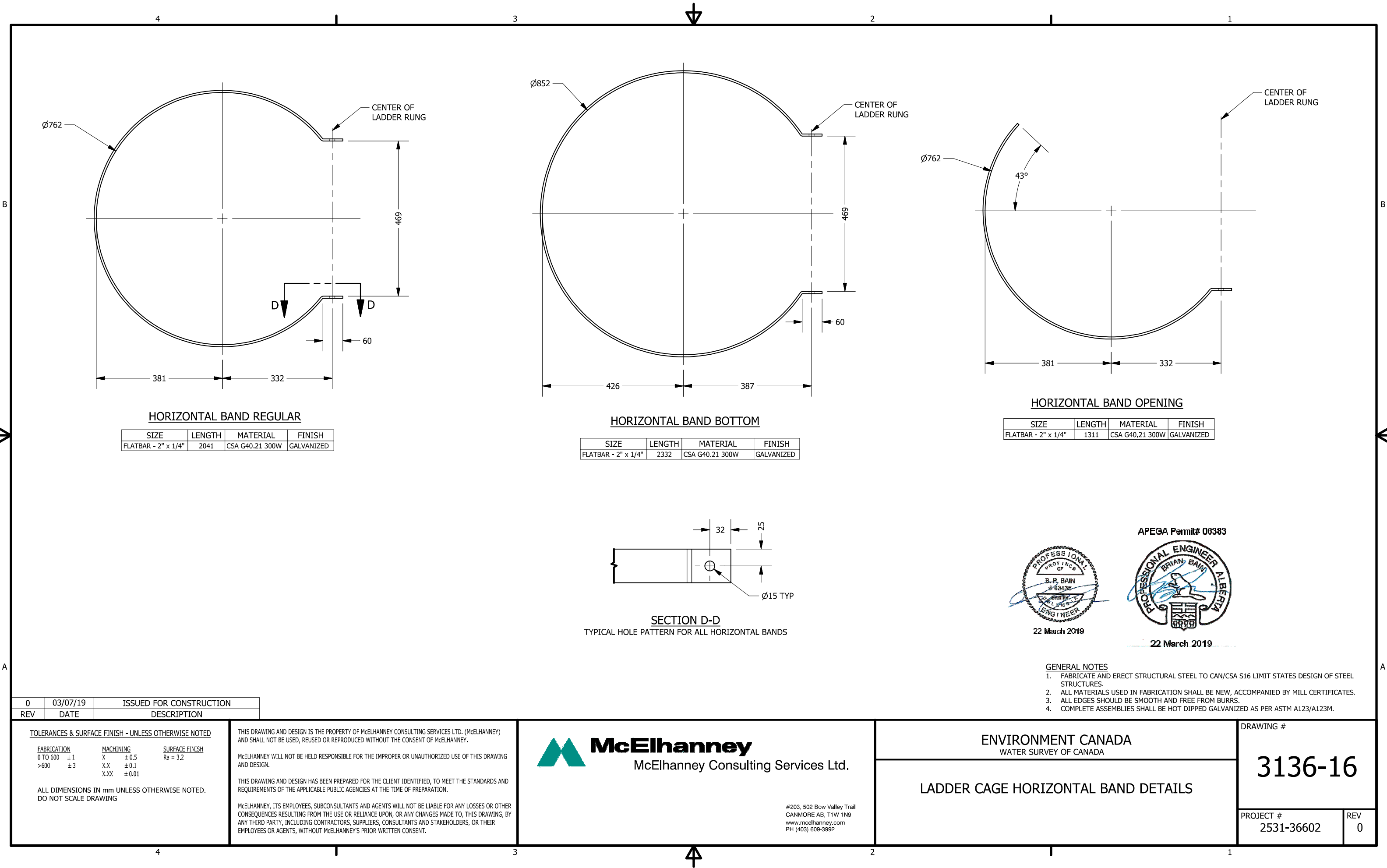
ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

FLARED LADDER CAGE

DRAWING #  
**3136-15**

PROJECT #  
2531-36602

REV  
0



HORIZONTAL BAND REGULAR

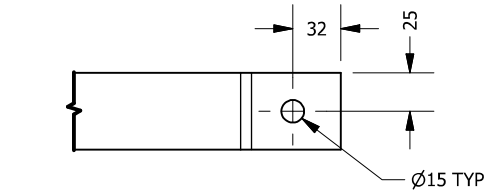
SIZE	LENGTH	MATERIAL	FINISH
FLATBAR - 2" x 1/4"	2041	CSA G40.21 300W	GALVANIZED

HORIZONTAL BAND BOTTOM

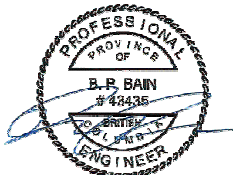
SIZE	LENGTH	MATERIAL	FINISH
FLATBAR - 2" x 1/4"	2332	CSA G40.21 300W	GALVANIZED

HORIZONTAL BAND OPENING

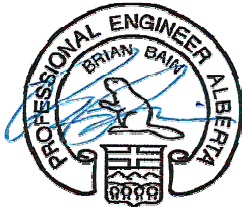
SIZE	LENGTH	MATERIAL	FINISH
FLATBAR - 2" x 1/4"	1311	CSA G40.21 300W	GALVANIZED



APEGA Permit# 003883



22 March 2019



22 March 2019

GENERAL NOTES

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0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X,X ±0.1	
	X,XX ±0.01	

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ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

LADDER CAGE HORIZONTAL BAND DETAILS

DRAWING #

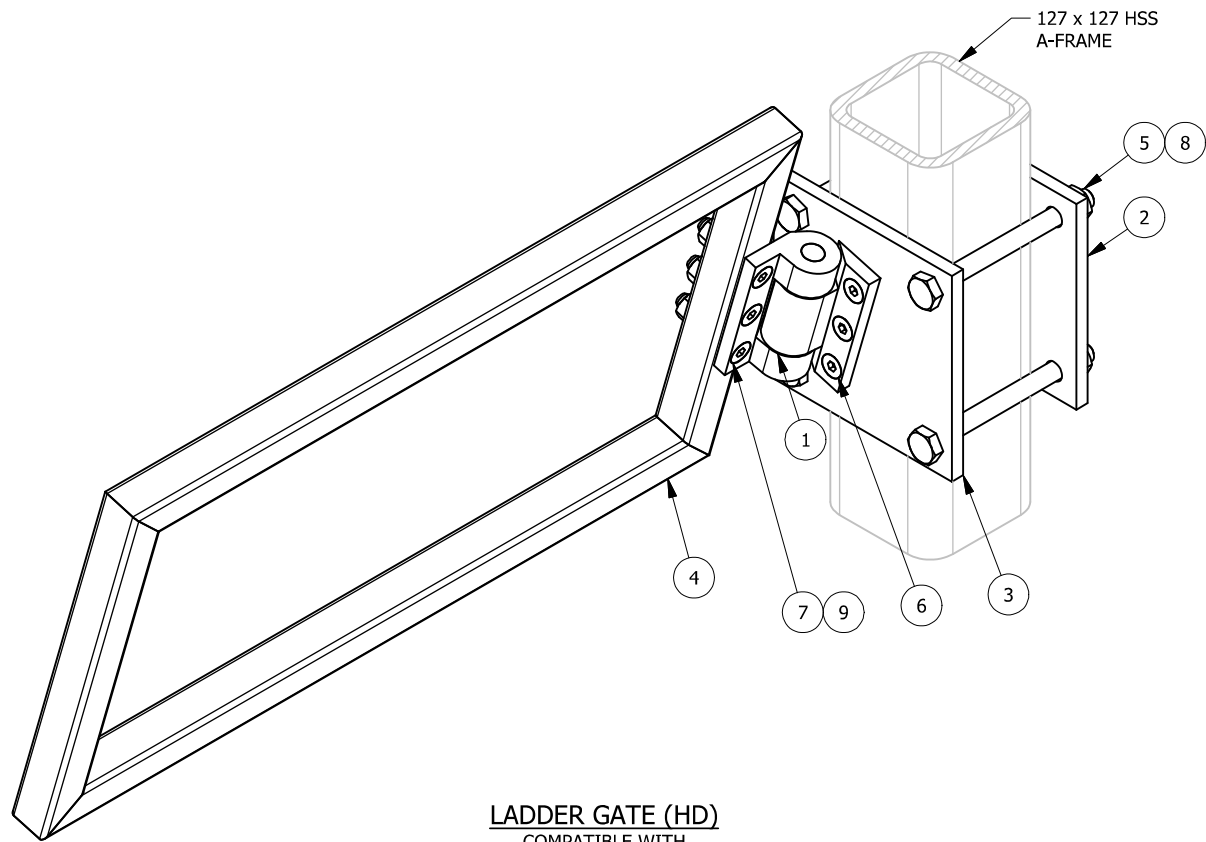
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PROJECT #

2531-36602

REV

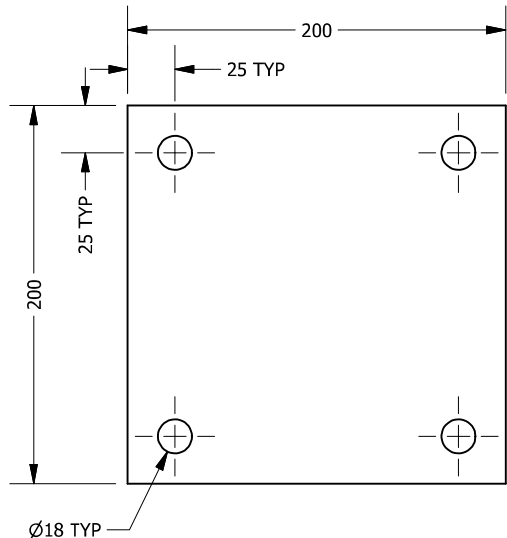
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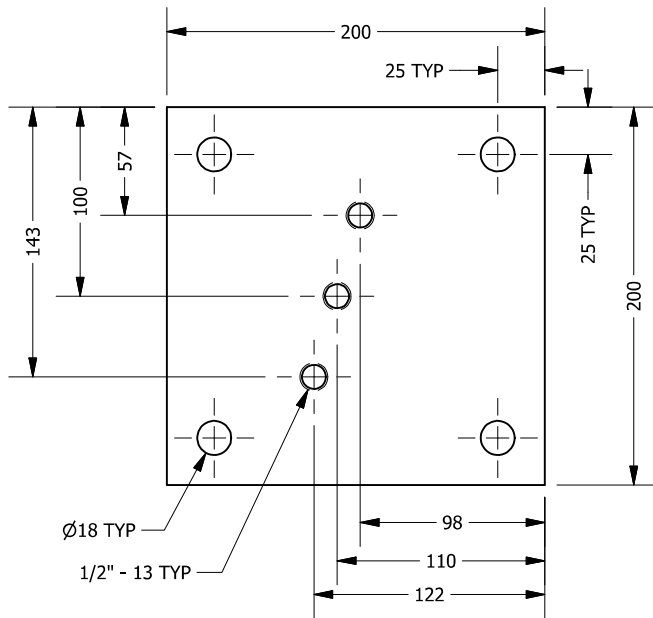
LADDER GATE (HD)  
COMPATIBLE WITH  
127 x 127 HSS

EST. W.T. 11.3kg

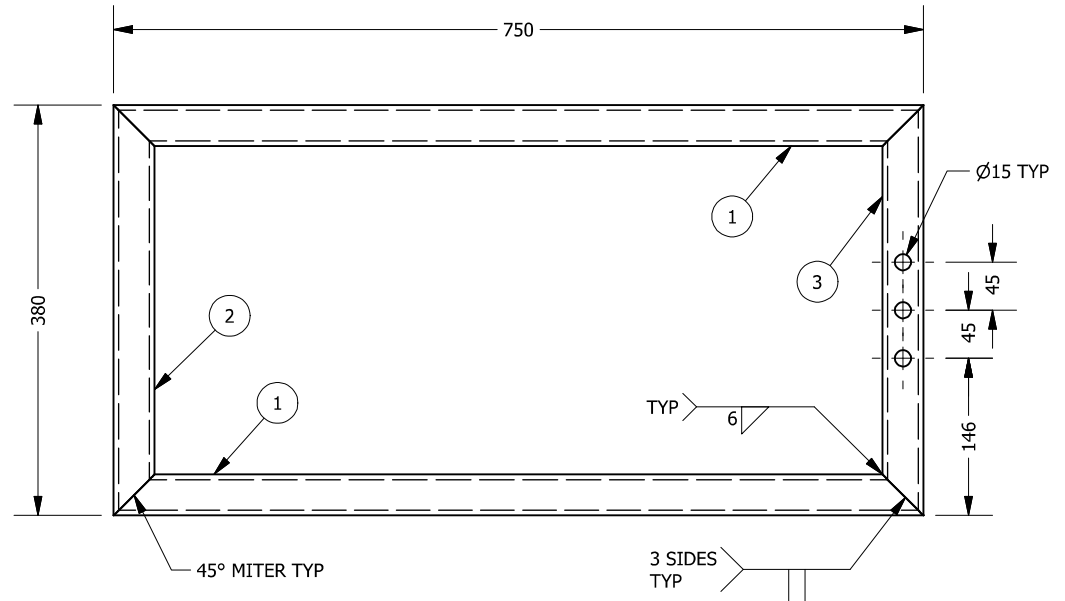
LADDER GATE (HD) BILL OF MATERIALS						
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH
1	1	HINGE - McMaster-Carr 1484A31			STEEL	
2	1	HD BACKING PLATE	PLATE - 1/2"	200 x 200	CSA G40.21 300W	GALVANIZED
3	1	HINGE MOUNT HD	PLATE - 1/2"	200 x 200	CSA G40.21 300W	GALVANIZED
4	1	GATE				GALVANIZED
6	3	HEX SOCKET COUNTERSUNK BOLT	1/2" - 13	1"	ASTM F835	BLACK OXIDE
7	3	HEX SOCKET COUNTERSUNK BOLT	1/2" - 13	2-3/4"	ASTM F835	BLACK OXIDE
5	4	HEX BOLT	5/8" - 11	7"	ASTM A325M	GALVANIZED
8	4	HEX NUT	5/8" - 11		ASTM A325M	GALVANIZED
9	3	HEX NUT	1/2" - 13		ASTM A325M	GALVANIZED



ITEM #2 DETAIL  
HD BACKING PLATE

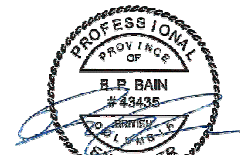


ITEM #3 DETAIL  
HINGE MOUNT HD



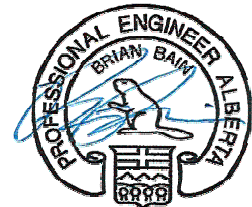
ITEM #4 DETAIL  
GATE

GATE BILL OF MATERIALS						
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH
1	2	HORIZONTAL BAR	HSS - 1 1/2" x 1 1/2" x 1/4"	750	CSA G40.21 350W	GALVANIZED
2	1	VERTICAL BAR	HSS - 1 1/2" x 1 1/2" x 1/4"	380	CSA G40.21 350W	GALVANIZED
3	1	VERTICAL BAR BOLTED	HSS - 1 1/2" x 1 1/2" x 1/4"	380	CSA G40.21 350W	GALVANIZED



22 March 2019

APEGA Permit# 06383



22 March 2019

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- COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.

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REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X.X ±0.1	
	X.XX ±0.01	

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CANMORE AB, T1W 1N9  
www.mcelhanney.com  
PH (403) 609-3992

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

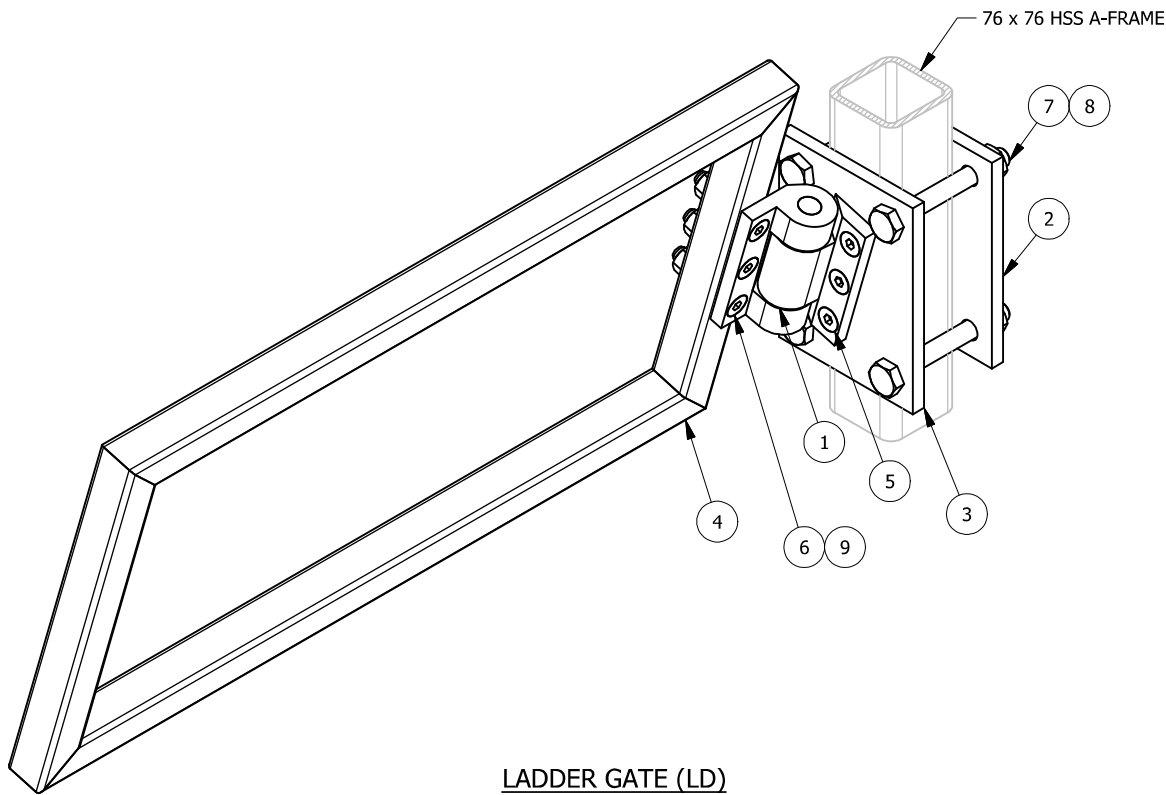
LADDER GATE (HD)

DRAWING #

3136-17

PROJECT #  
2531-36602

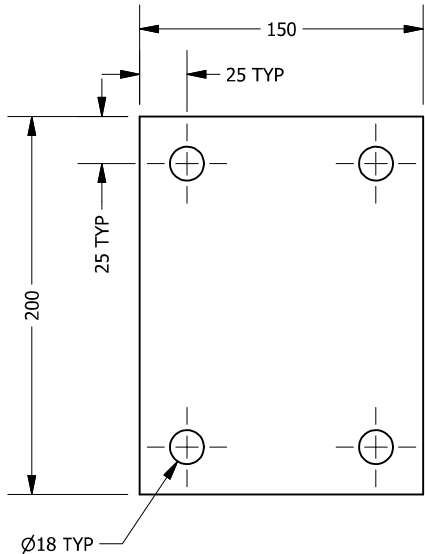
REV  
0



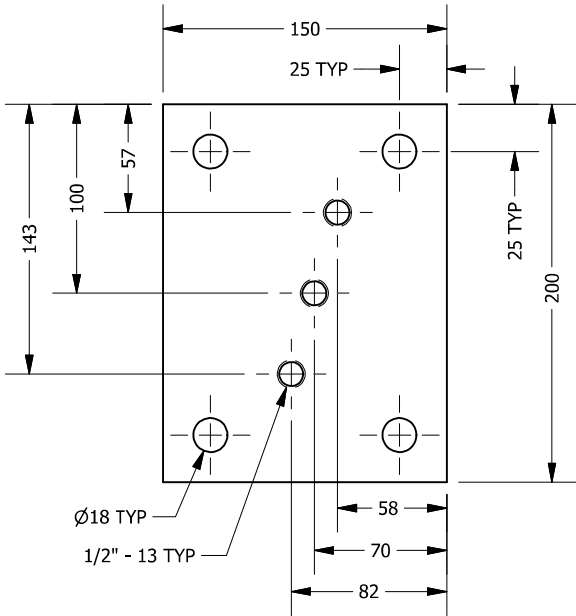
LADDER GATE (LD)  
COMPATIBLE WITH  
76 x 76 HSS

EST. W.T. 9.0 kg

LADDER GATE (LD) BILL OF MATERIALS							
ITEM	QTY	DESCRIPTION	SIZE	LENGTH	MATERIAL	FINISH	DWG#
1	1	HINGE - MCMMASTER-CARR 1484A31			STEEL		
2	1	LD BACKING PLATE	PLATE - 1/2"	200 x 150	CSA G40.21 300W	GALVANIZED	
3	1	HINGE MOUNT LD	PLATE - 1/2"	200 x 150	CSA G40.21 300W	GALVANIZED	
4	1	GATE			CSA G40.21 350W	GALVANIZED	3136-17
5	3	HEX SOCKET COUNTERSUNK BOLT	1/2" - 13	1"	ASTM F835	BLACK OXIDE	
6	3	HEX SOCKET COUNTERSUNK BOLT	1/2" - 13	2-3/4"	ASTM F835	BLACK OXIDE	
7	4	HEX BOLT	5/8" - 11	5"	ASTM A325M	GALVANIZED	
8	4	HEX NUT	5/8" - 11		ASTM A325M	GALVANIZED	
9	3	HEX NUT	1/2" - 13		ASTM A325M	GALVANIZED	



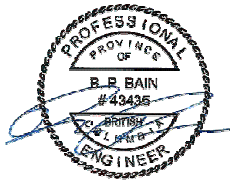
ITEM #2 DETAIL  
LD BACKING PLATE



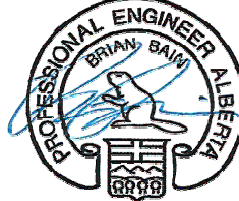
ITEM #3 DETAIL  
HINGE MOUNT LD

GENERAL NOTES

1. FABRICATE AND ERECT STRUCTURAL STEEL TO CAN/CSA S16 LIMIT STATES DESIGN OF STEEL STRUCTURES.
2. ALL MATERIALS USED IN FABRICATION SHALL BE NEW, ACCOMPANIED BY MILL CERTIFICATES.
3. ALL EDGES SHOULD BE SMOOTH AND FREE FROM BURRS.
4. COMPLETE ASSEMBLIES SHALL BE HOT DIPPED GALVANIZED AS PER ASTM A123/A123M.



22 March 2019



22 March 2019

0	03/07/19	ISSUED FOR CONSTRUCTION
REV	DATE	DESCRIPTION

TOLERANCES & SURFACE FINISH - UNLESS OTHERWISE NOTED

FABRICATION	MACHINING	SURFACE FINISH
0 TO 600 ±1	X ±0.5	Ra = 3.2
>600 ±3	X.X ±0.1	
	X.XX ±0.01	

ALL DIMENSIONS IN mm UNLESS OTHERWISE NOTED.  
DO NOT SCALE DRAWING

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ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

LADDER GATE (LD)

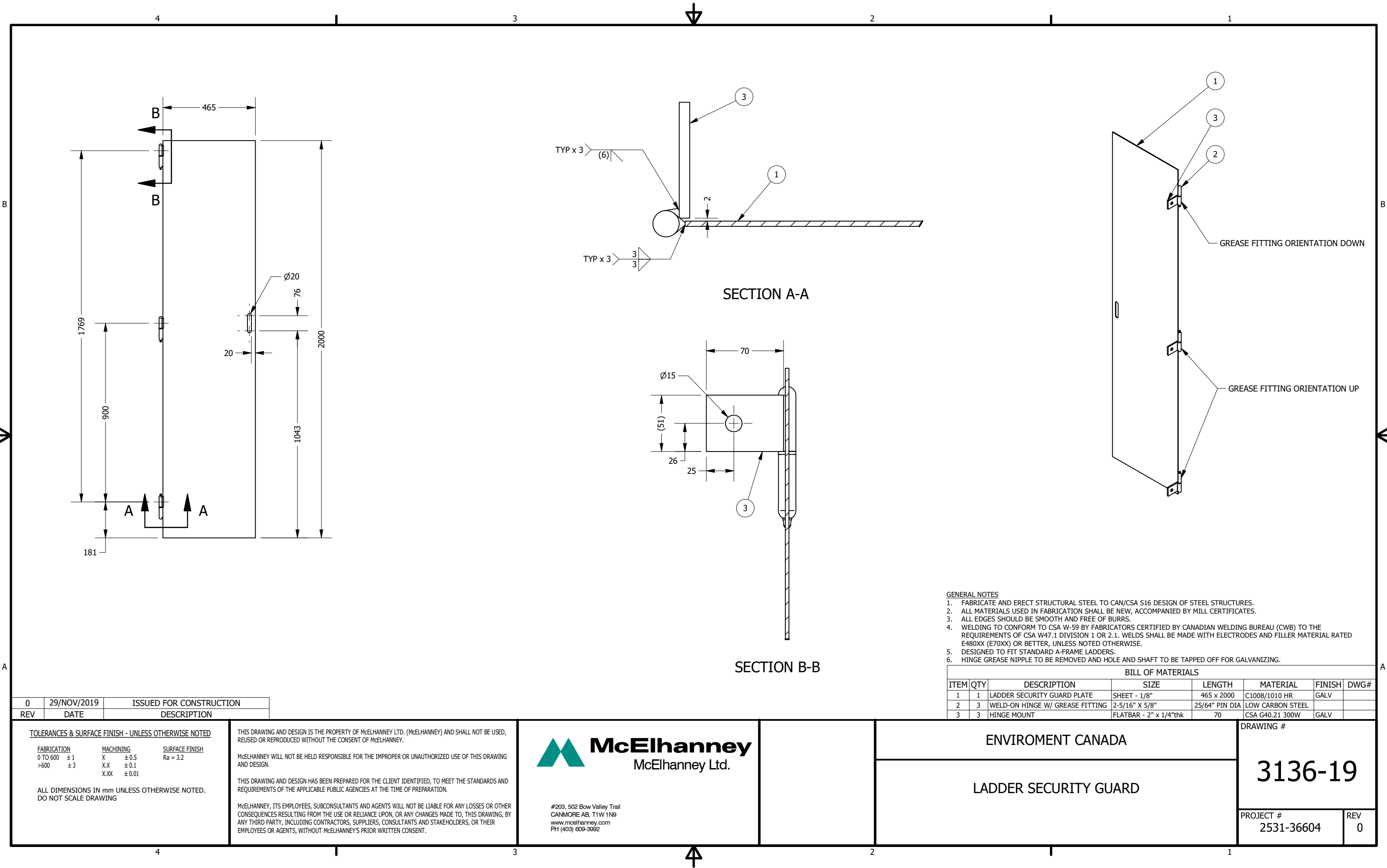
DRAWING #

3136-18

PROJECT #  
2531-36602

REV  
0



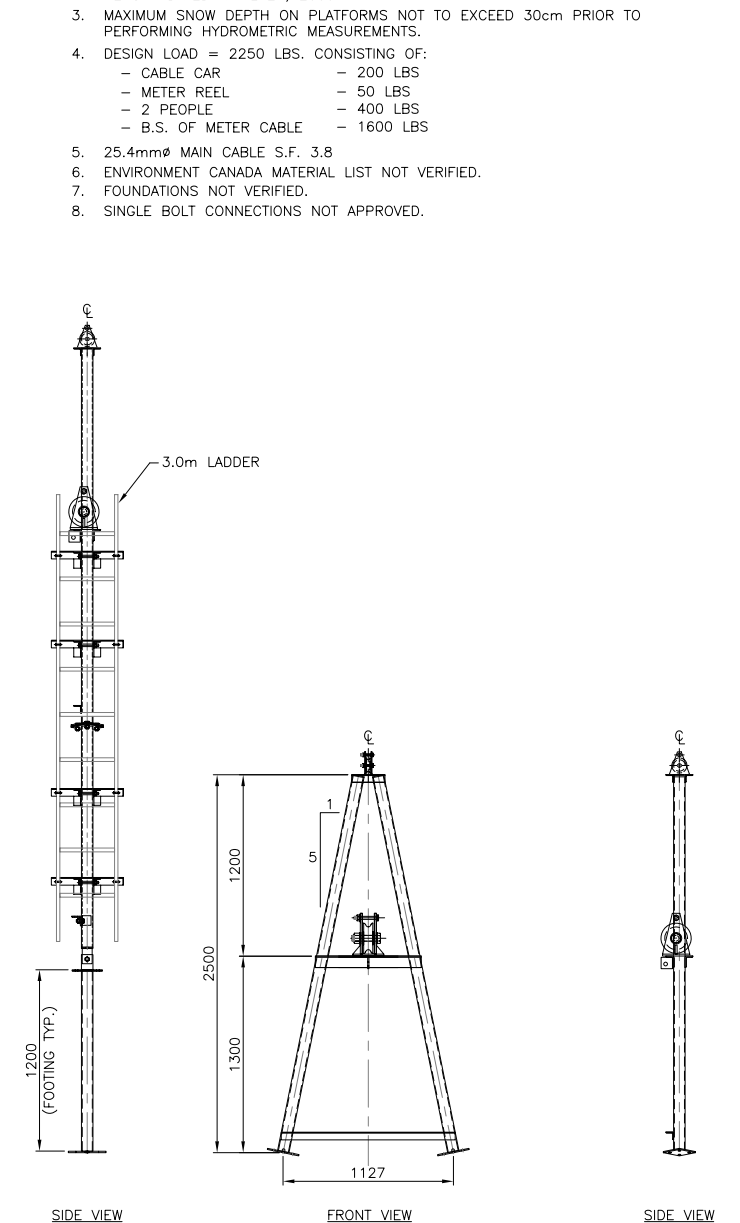


1.5 m LIGHT A-FRAME

QTY.	DESCRIPTION	DWG.	SUPPLIER
1	1.5m A-FRAME TOP	3182-2	FABRICATOR
2	1.5m A-FRAME SPICE PLATES	3182-2	FABRICATOR
2	FOOTINGS OR FOOTING PLATES (FOR CRIBBING)	3182-3	FABRICATOR
1	1.15m LATERAL BRACE	3182-2	FABRICATOR

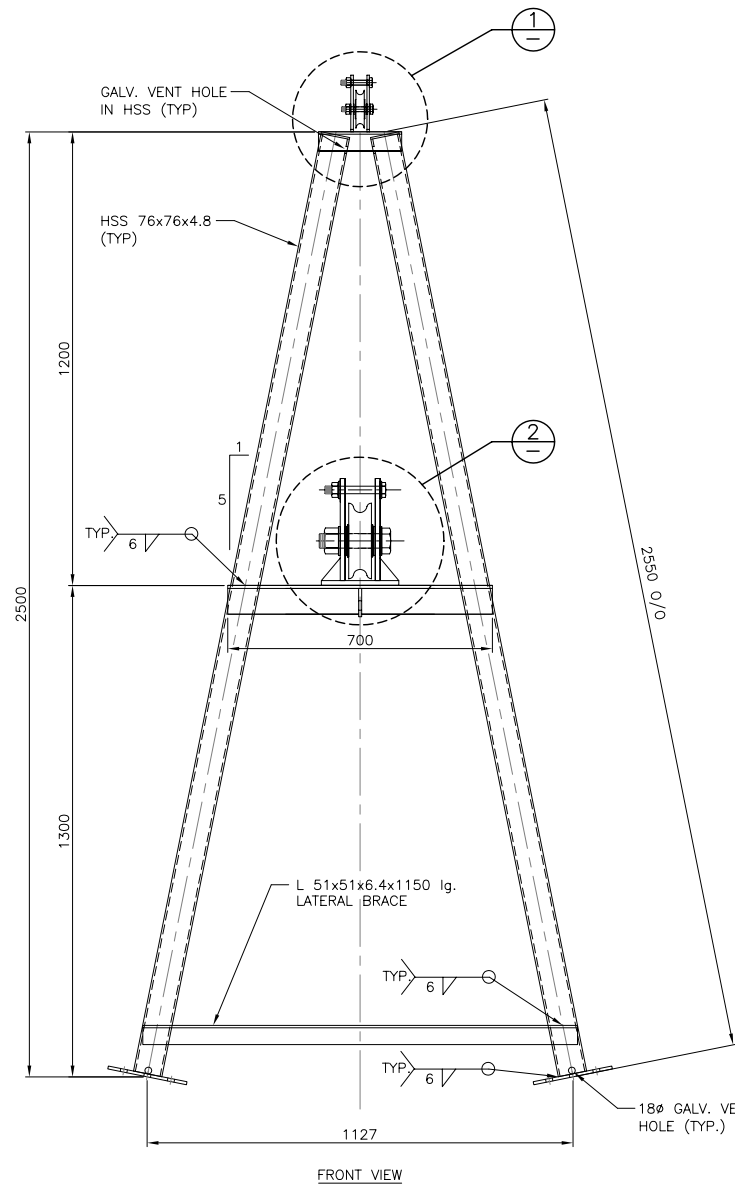
1. ALL STEEL SHALL CONFORM TO CSA G40.21M STRUCTURAL QUALITY STEEL.
2. ALL PARTS TO BE HOT DIP GALVANIZED.
3. ALL NUTS AND BOLTS TO BE M16, A325M, GALVANIZED, UNLESS NOTED OTHERWISE.
4. ALL BOLT HOLES TO BE DRILLED 2mm LARGER THAN BOLTS UNLESS NOTED OTHERWISE.
5. THIS STRUCTURE IS DESIGNED FOR SPANS UP TO 5000 WITH MAX. A-FRAME HEIGHT = 5m IN AREAS NOT SUBJECT TO HEAVY ICE OR SNOW LOADS OVER 4.5kN/m
6. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
7. ALL TOLERANCES SHOULD BE CHECKED PRIOR TO SHIPMENT.

1. ORIGINAL DESIGN BY ENVIRONMENT CANADA.
2. McELHANNEY CHECKED AND APPROVED A—FRAME STRUCTURE ONLY,  
INCLUDING THE PLATFORM AND BRACING. ALL OTHER COMPONENTS  
SUCH AS SHEAVES, LADDER BRACKETS, CAR HOOKS, AND FOOTING  
PLATES ETC. WERE NOT REVIEWED. FOR DETAILS REFER TO LETTER  
REPORT DATED APRIL 27, 2000.
3. MAXIMUM SNOW DEPTH ON PLATFORMS NOT TO EXCEED 30cm PRIOR TO  
PERFORMING HYDROMETRIC MEASUREMENTS.
4. DESIGN LOAD = 2250 LBS. CONSISTING OF:
  - CABLE CAR - 200 LBS
  - METER REEL - 50 LBS
  - 2 PEOPLE - 400 LBS
  - B.S. OF METER CABLE - 1600 LBS
5. 25.4mmØ MAIN CABLE S.F. 3.8
6. ENVIRONMENT CANADA MATERIAL LIST NOT VERIFIED.
7. FOUNDATIONS NOT VERIFIED.
8. SINGLE BOLT CONNECTIONS NOT APPROVED.

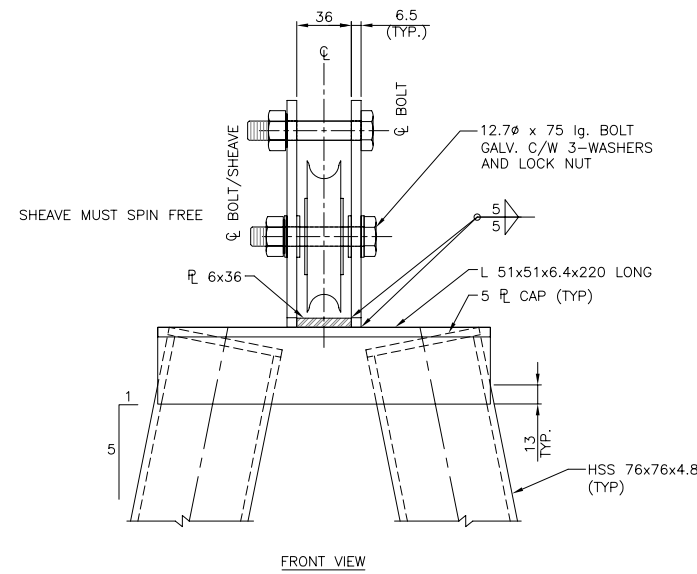
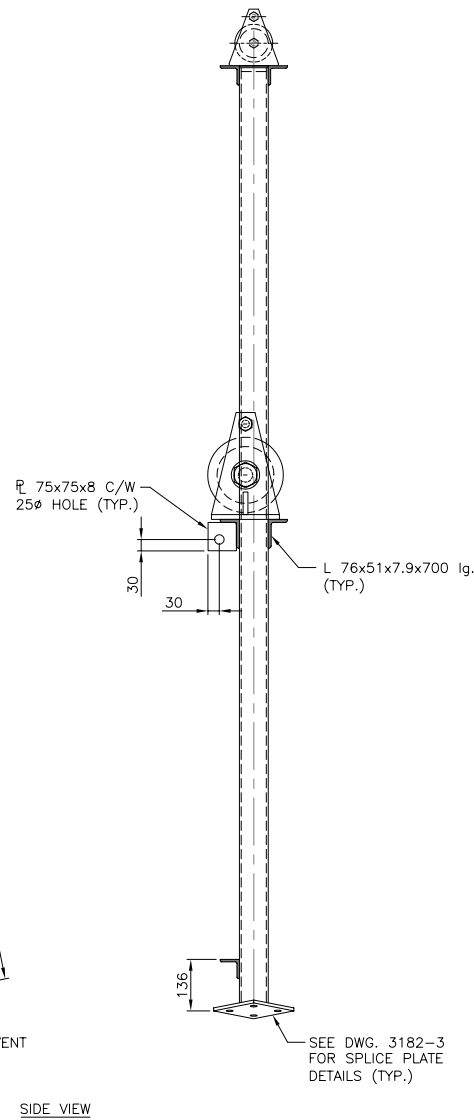


1.5 m LIGHT A-FRAME TOP  
1:25

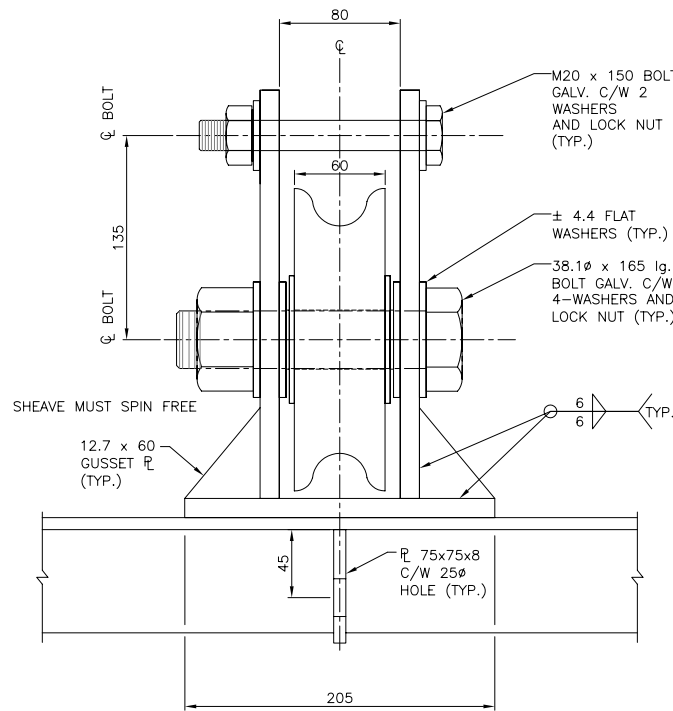
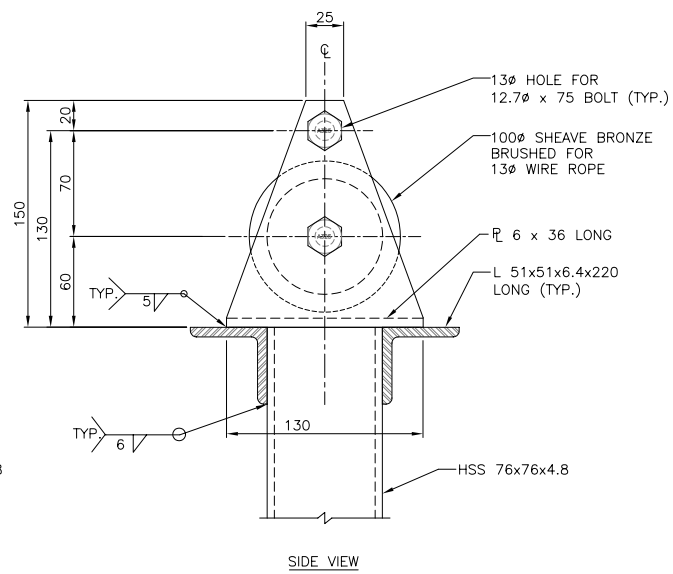
Plotted: March 24, 2010, 16:28:55  
Filename: MsProj\2111-01745-5 - Environment Canada A-Frames\01745-5 LD A-frame.dwg



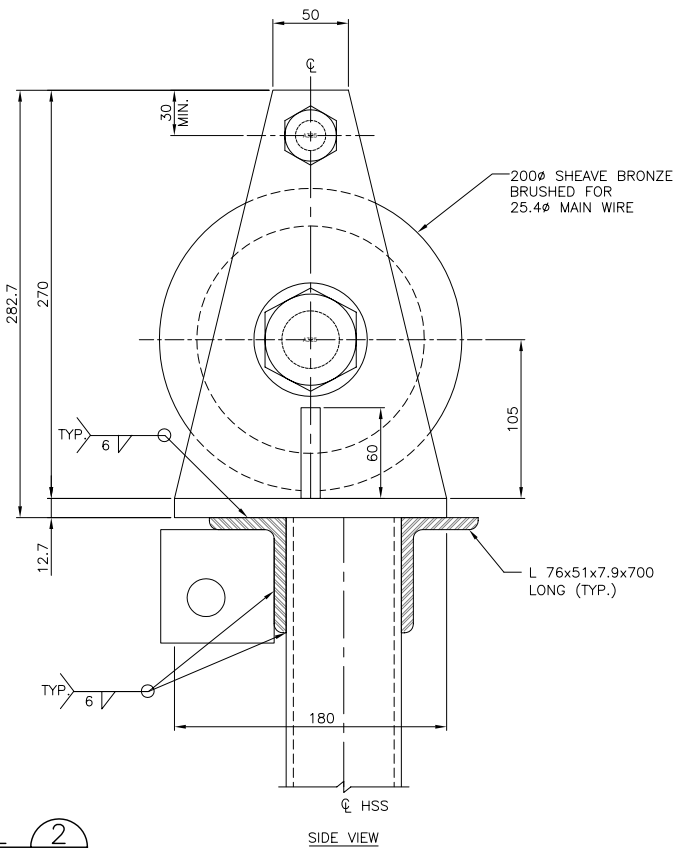
1.5 m LIGHT A-FRAME TOP  
1:10



DETAIL 1  
1:2.5



DETAIL 2  
1:2.5



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Designed: KEL  
Drawn: LLP

Checked:  
Surveyed:

Date: MARCH 2010

Approved Sealed

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

**LIGHT DUTY A-FRAME TOP  
DETAILS**

Client Project No.

MCSL Project No. 2111-01745-5

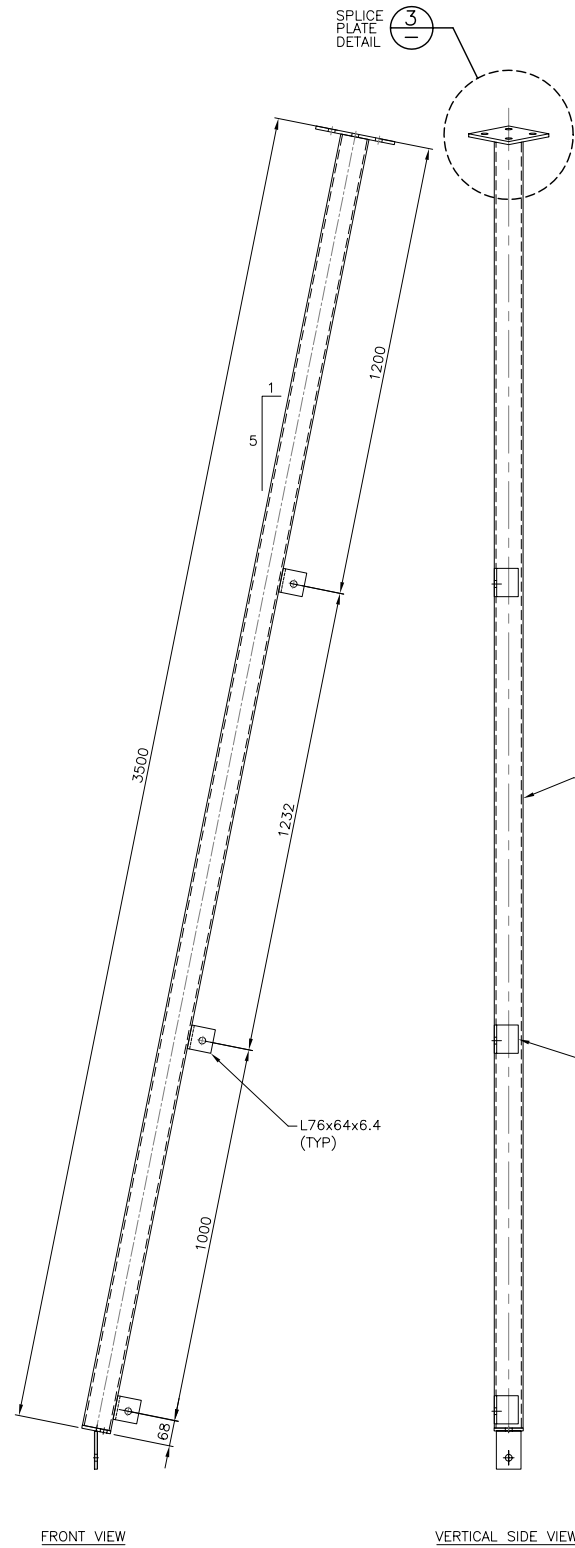
Drawing No.

**3182-2**

Revision

Destroy all prints bearing previous number

Plotted: March 24, 2010, 16:28:50  
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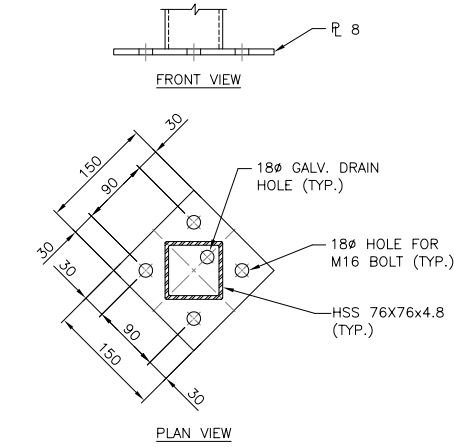


FRONT VIEW

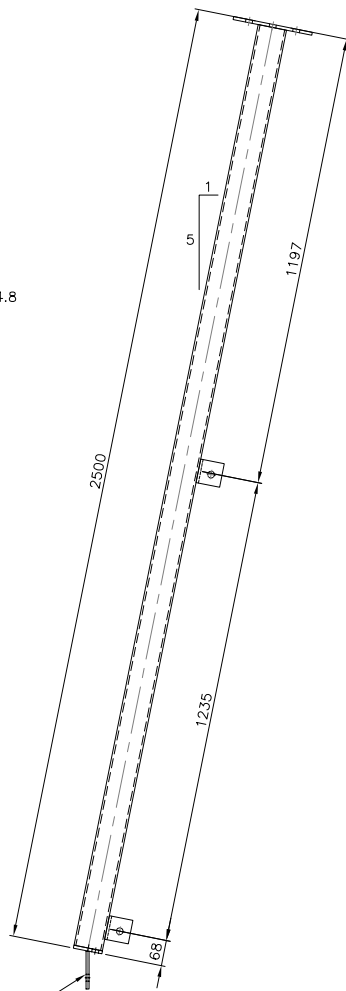
VERTICAL SIDE VIEW

3.5 m LEG ASSEMBLY

1:10



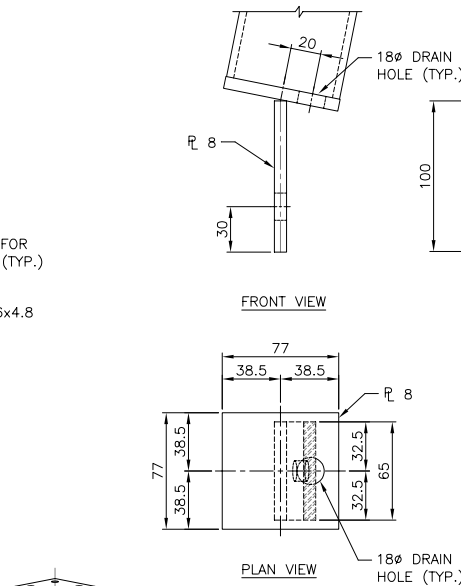
SPLICE PLATE DETAIL 1:5



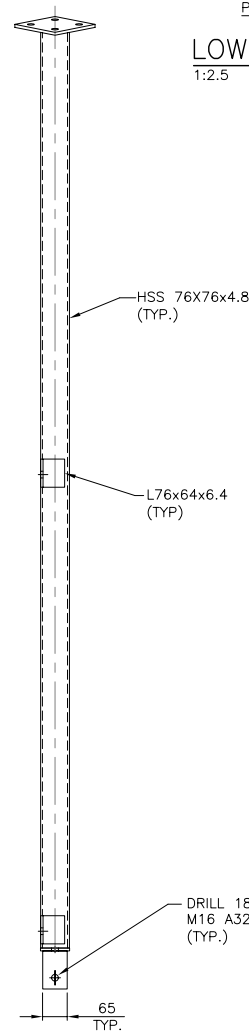
FRONT VIEW

2.5 m LEG ASSEMBLY

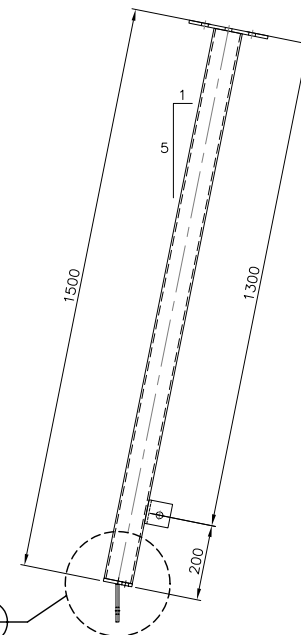
1:10



LOWER CAP PLATE DETAIL 1:2.5



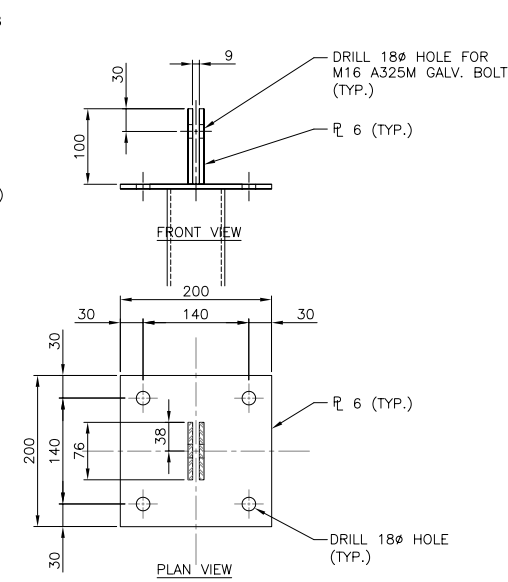
VERTICAL SIDE VIEW



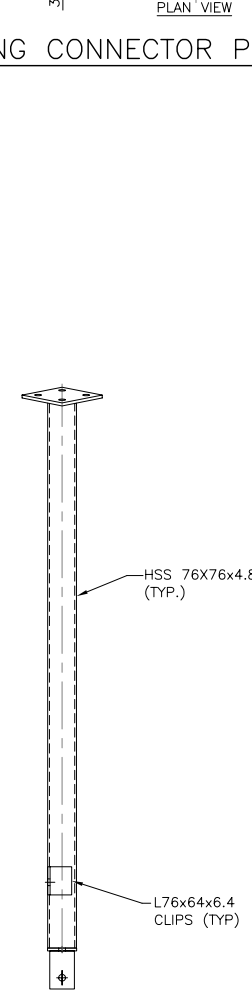
FRONT VIEW

1.5 m LEG ASSEMBLY

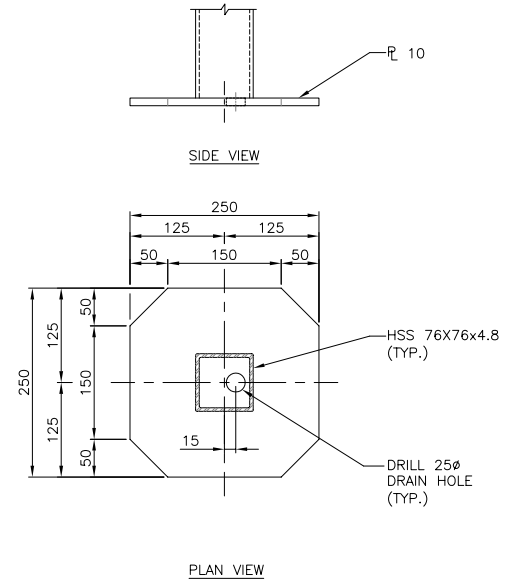
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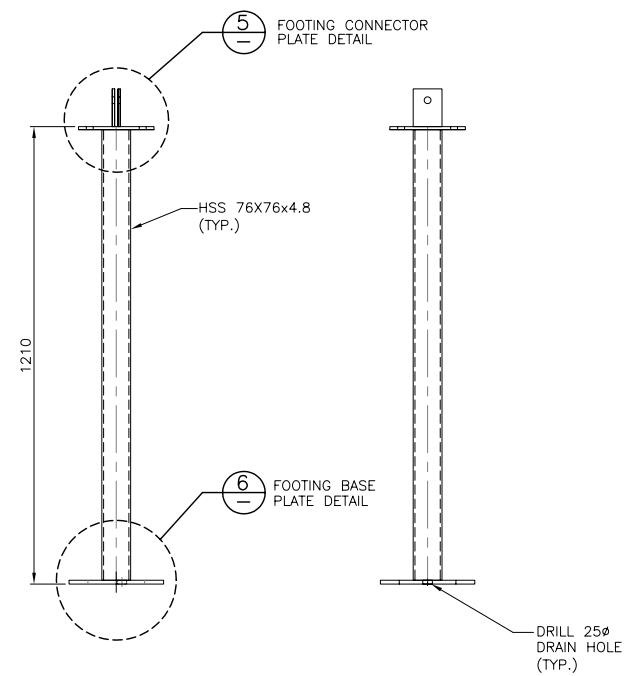
FOOTING CONNECTOR PLATE DETAIL 1:5



VERTICAL SIDE VIEW



FOOTING BASE PLATE DETAIL 1:5



FRONT VIEW

VERTICAL SIDE VIEW

FOOTING

1:10

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Designed: KEL  
Drawn: LLP  
Checked: Surveyed:  
Date: MARCH 2010

Approved Sealed

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

**LIGHT DUTY A-FRAME  
LEG ASSEMBLY**

Client Project No.

MCSL Project No. 2111-01745-5

Drawing No.

**3182-3**

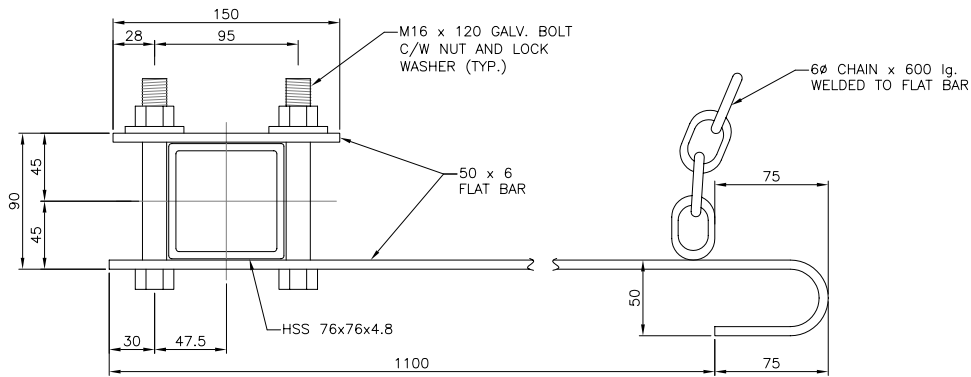
Revision

Destroy all prints bearing previous number

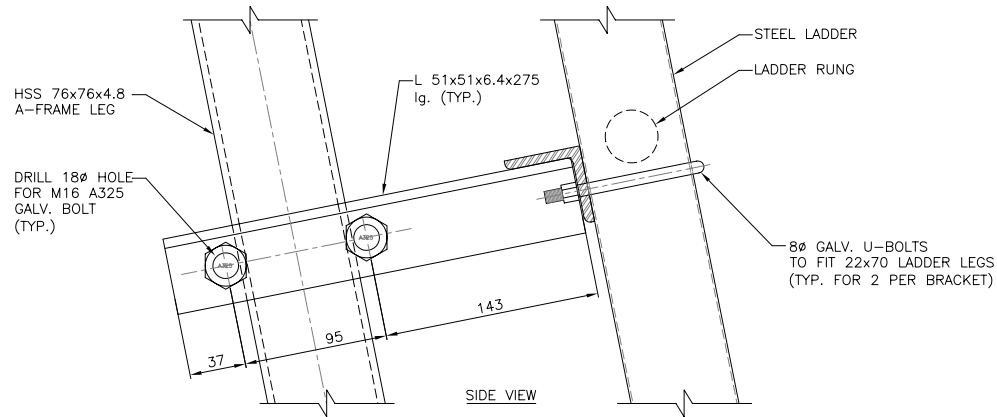




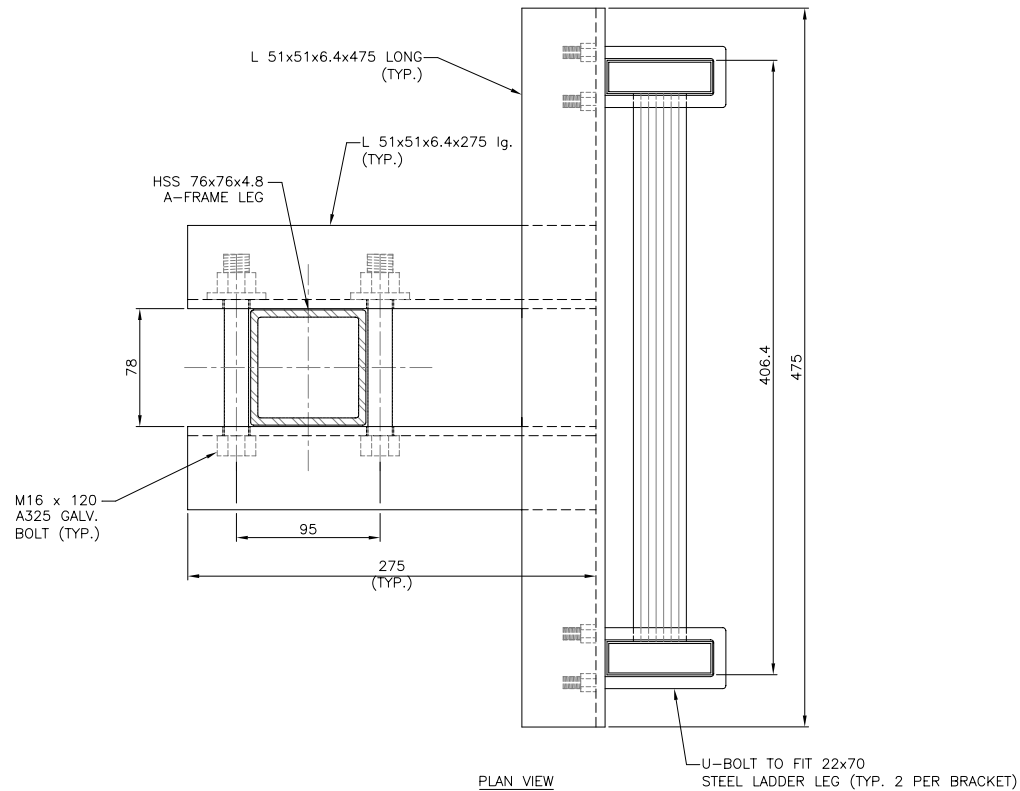
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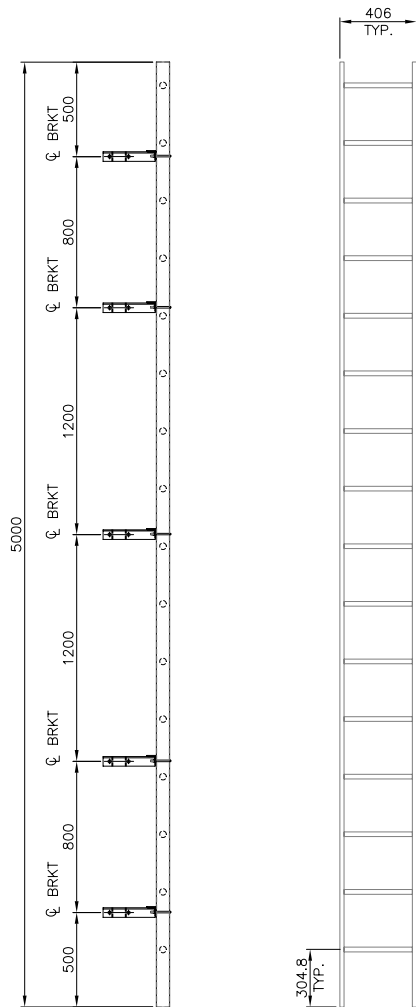
PLAN VIEW  
**CAR HOOK** ①  
1:2.5



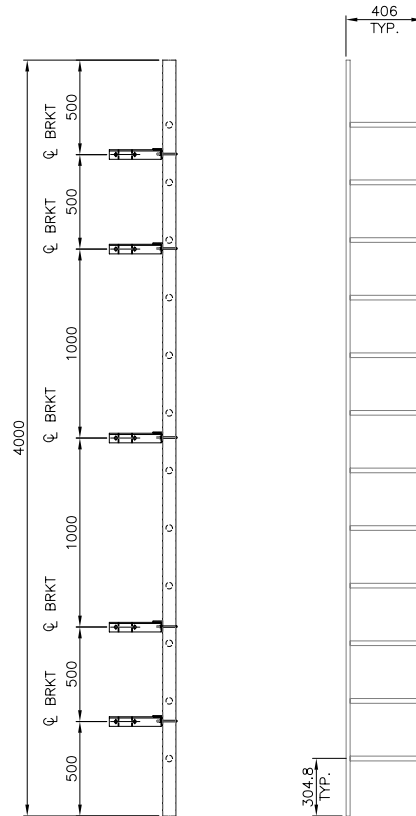
SIDE VIEW



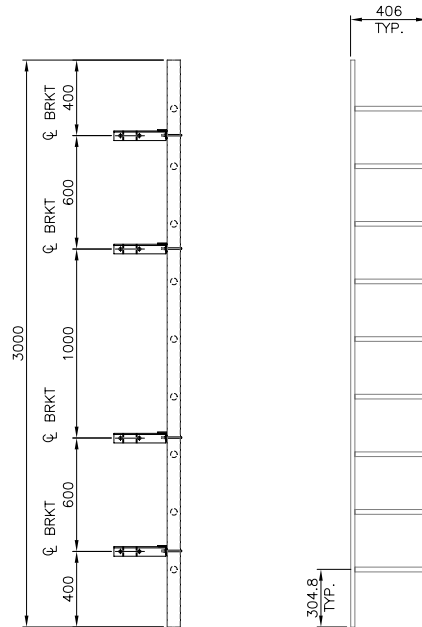
PLAN VIEW  
**LADDER MOUNTING BRACKETS DETAIL** ②  
1:2.5



**5.0m STEEL LADDER**  
1:20



**4.0m STEEL LADDER**  
1:20



**3.0m STEEL LADDER**  
1:20

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Drawn: LLP  
Checked:  
Surveyed:  
Date: MARCH 2010

Approved Sealed

ENVIRONMENT CANADA  
WATER SURVEY OF CANADA

**LIGHT DUTY A-FRAME**  
LADDER DETAILS

Client Project No

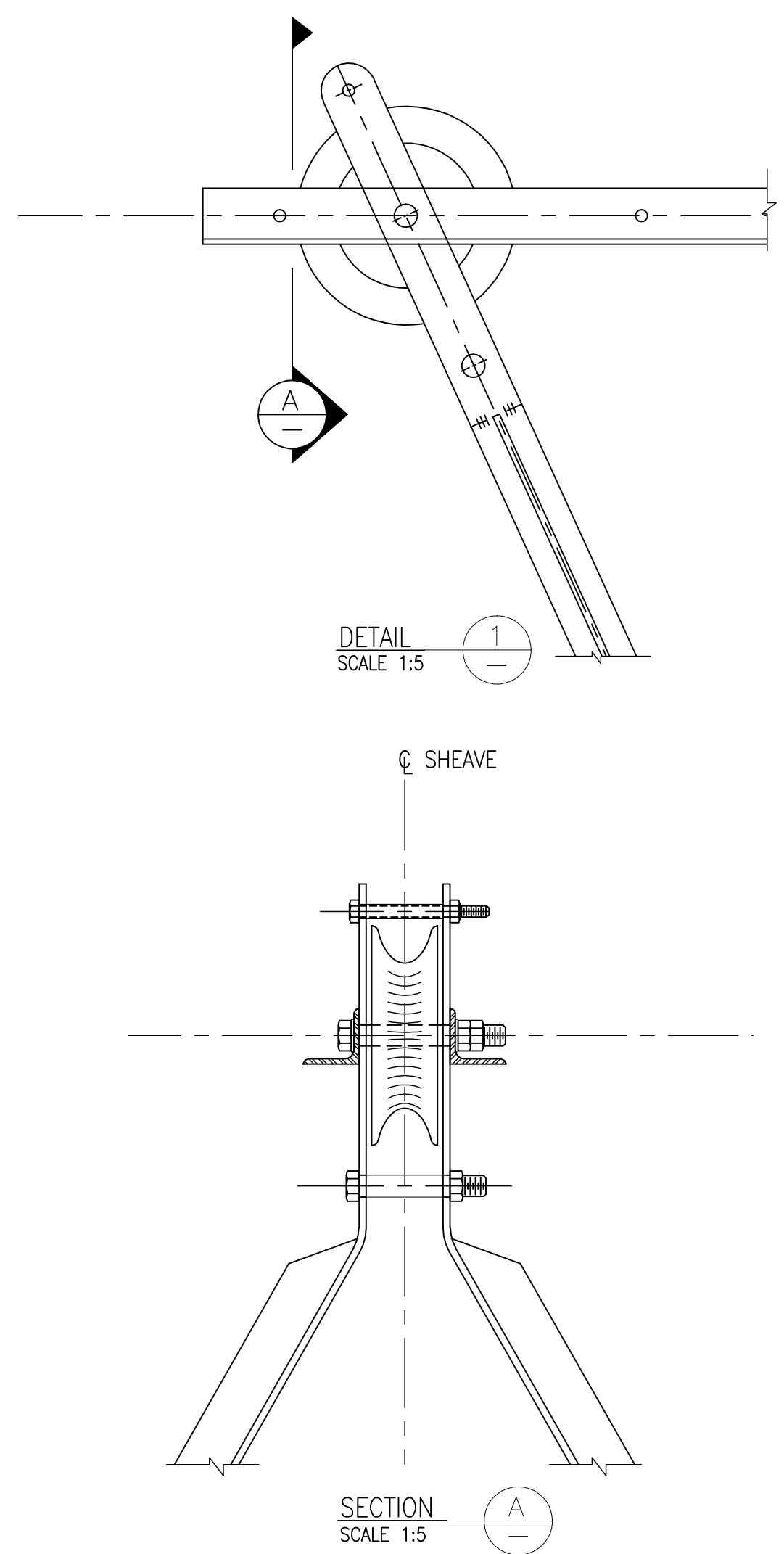
MCSL Project No. 2111-01745-5

Drawing No.




**3182-5**

Revision

Destroy all prints bearing previous number



**NOTES:**

1. NOTATION F,B,L,R REFERS TO ITEM LOCATIONS
2. KEY  = ITEM  
 = BOLT LENGTH  
 = SPACER SIZE & LENGTH
3. FOR DETAILS SEE DWG. 4000-2



LLP	KEL		<b>McElhanney</b> McElhanney Consulting Services Ltd. 13160-88 Ave., Surrey, B.C., Canada V3W 3K3 Telephone (604)596-0391 <small>This drawing is the property of McElhanney Consulting Services Ltd. and cannot be used or reprinted without the written consent of said company.</small>
LLP	KEL		
KDW	AW		
Dr	Ch		

DEPT. OF THE ENVIRONMENT  
WATER SURVEY OF CANADA, VANCOUVER, B.C.

---

LIGHT STAND UP CABLE CAR  
ASSEMBLY

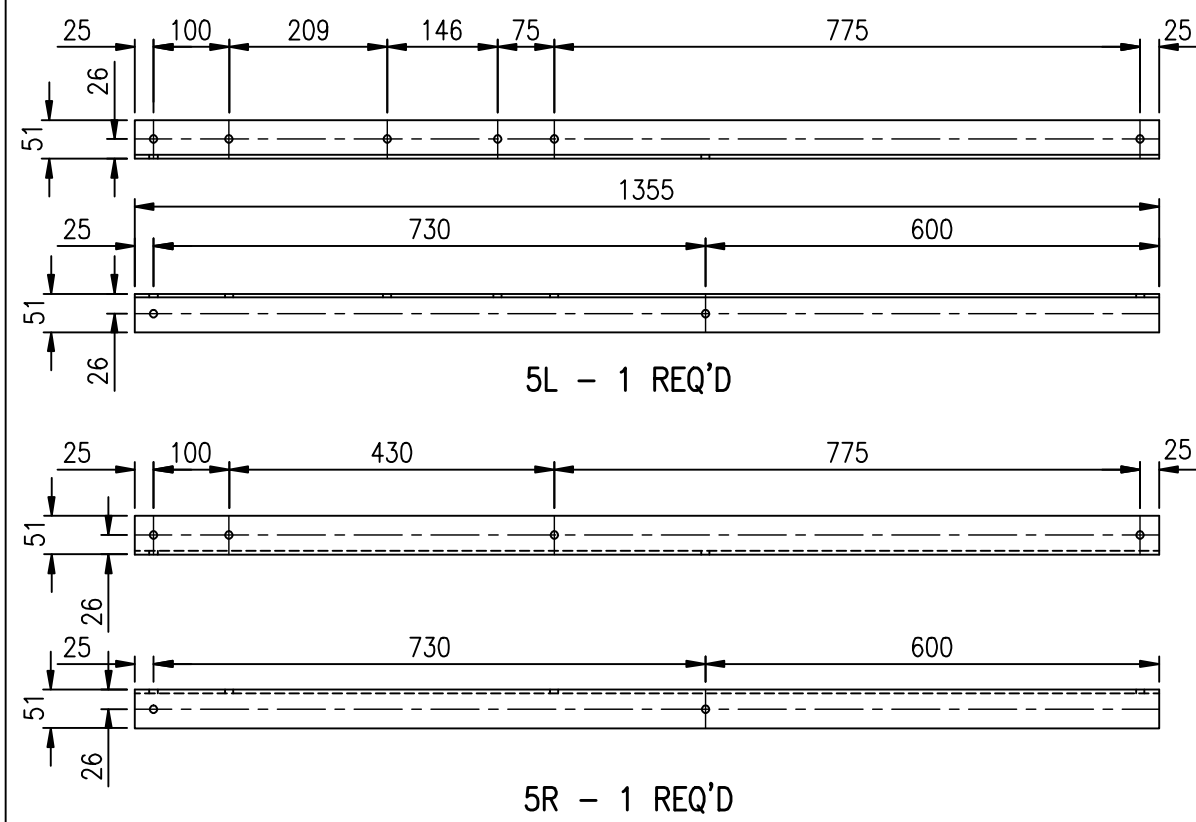
VANCOUVER, B.C.

Designed	Job No. 2111-01745-2
Drawn K.D.W.	Scale 1:10
Checked A.A.W.	Date JULY 2002
Approved	Revision 4

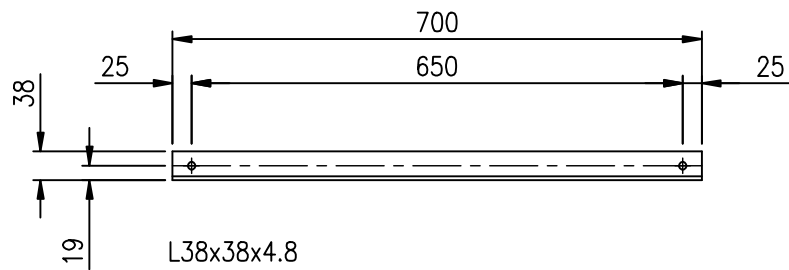
Drawing No.

4000-1

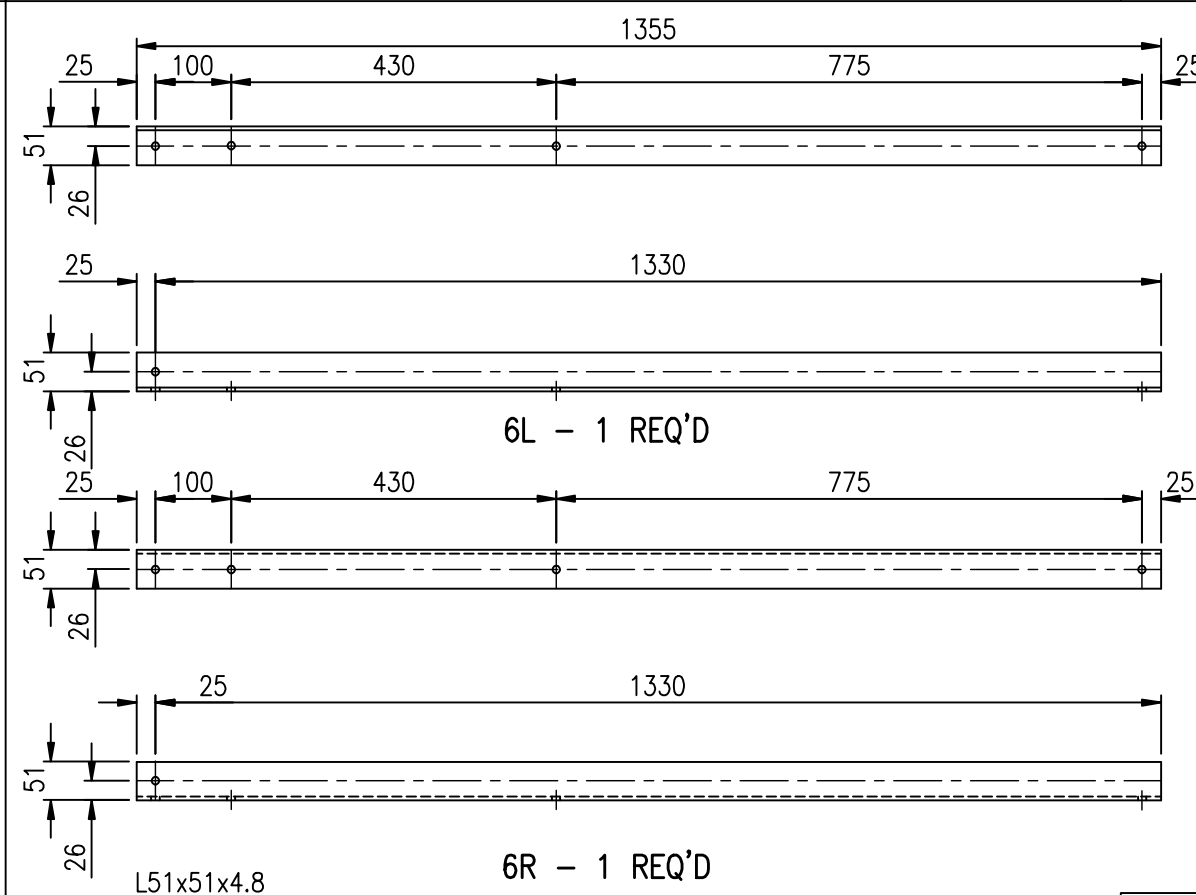
of 2 4



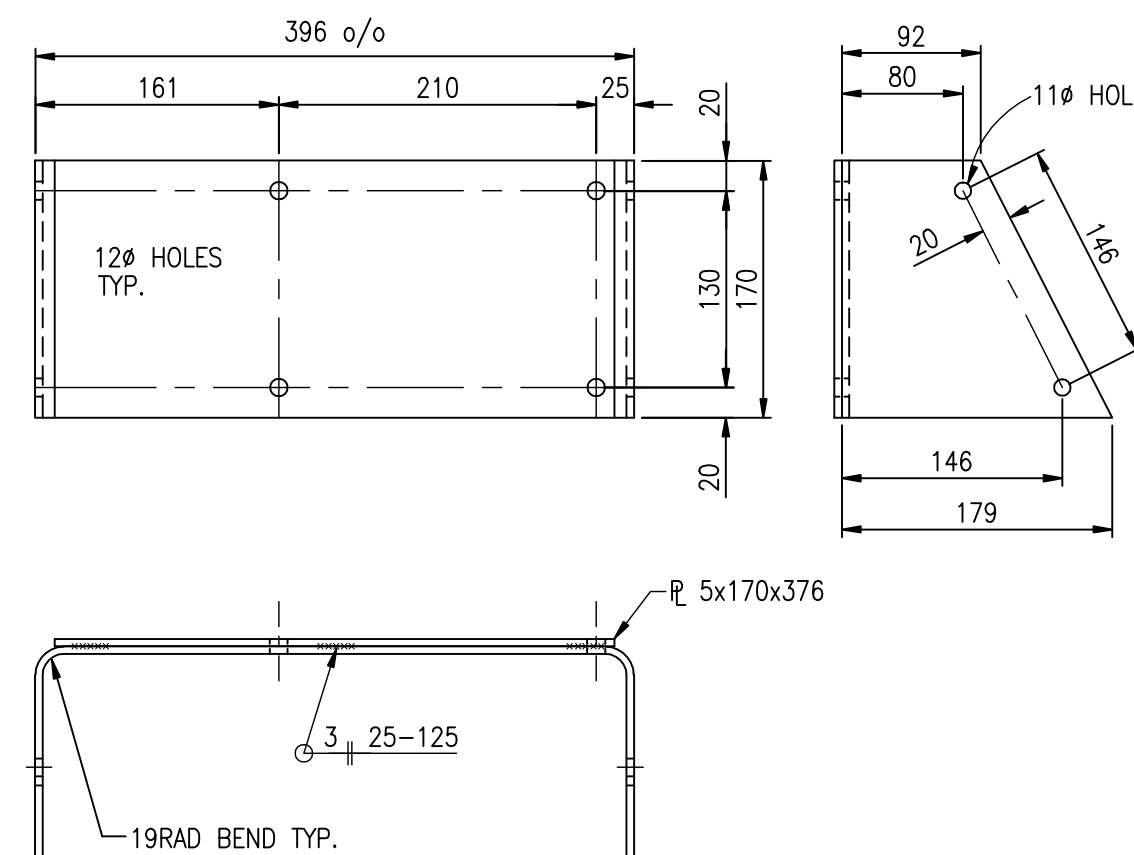
ALUMINUM 6061-T6 HOLES 11Ø DRILLED - HANGERS



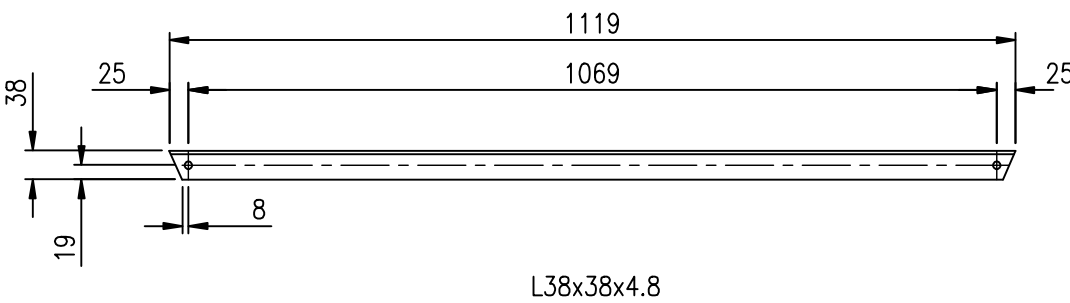
ALUMINUM 6061-T6 HOLES 11Ø DRILLED - 1 REQ'D - FLOOR SUPPORT



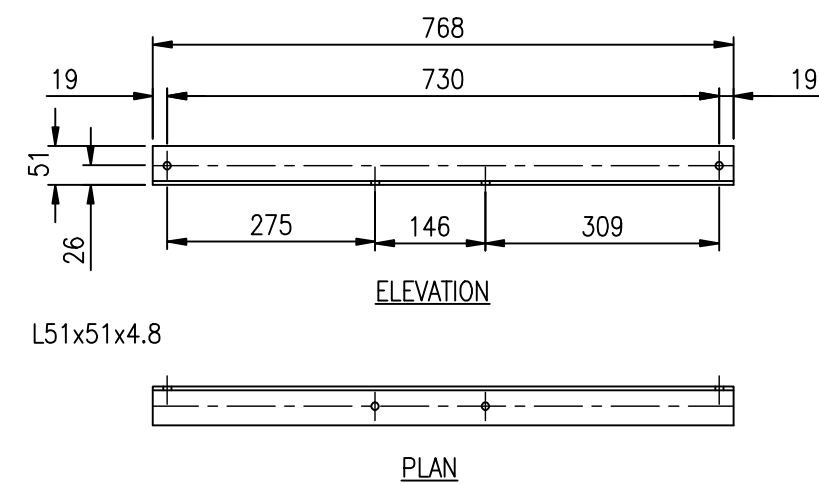
ALUMINUM 6061-T6 HOLES 11Ø DRILLED - HANGERS



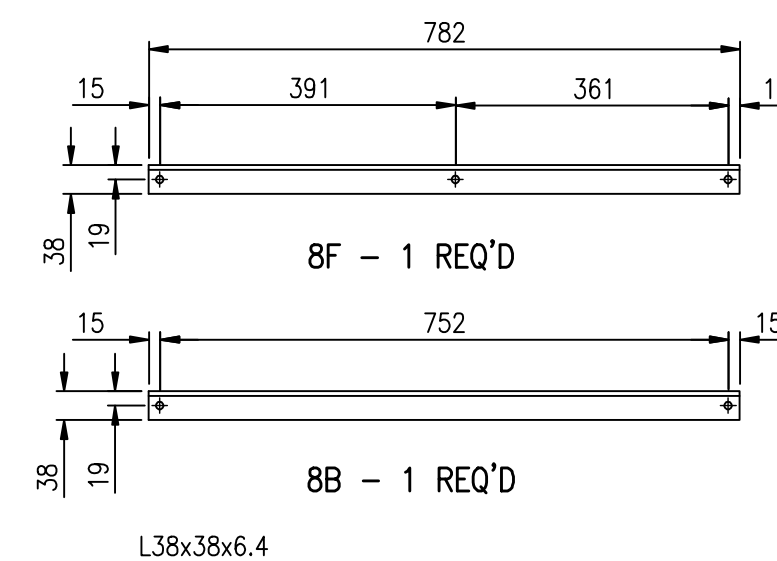
ALUMINUM 6061-T6 5mm THICK - REEL MOUNT - 1 REQ'D



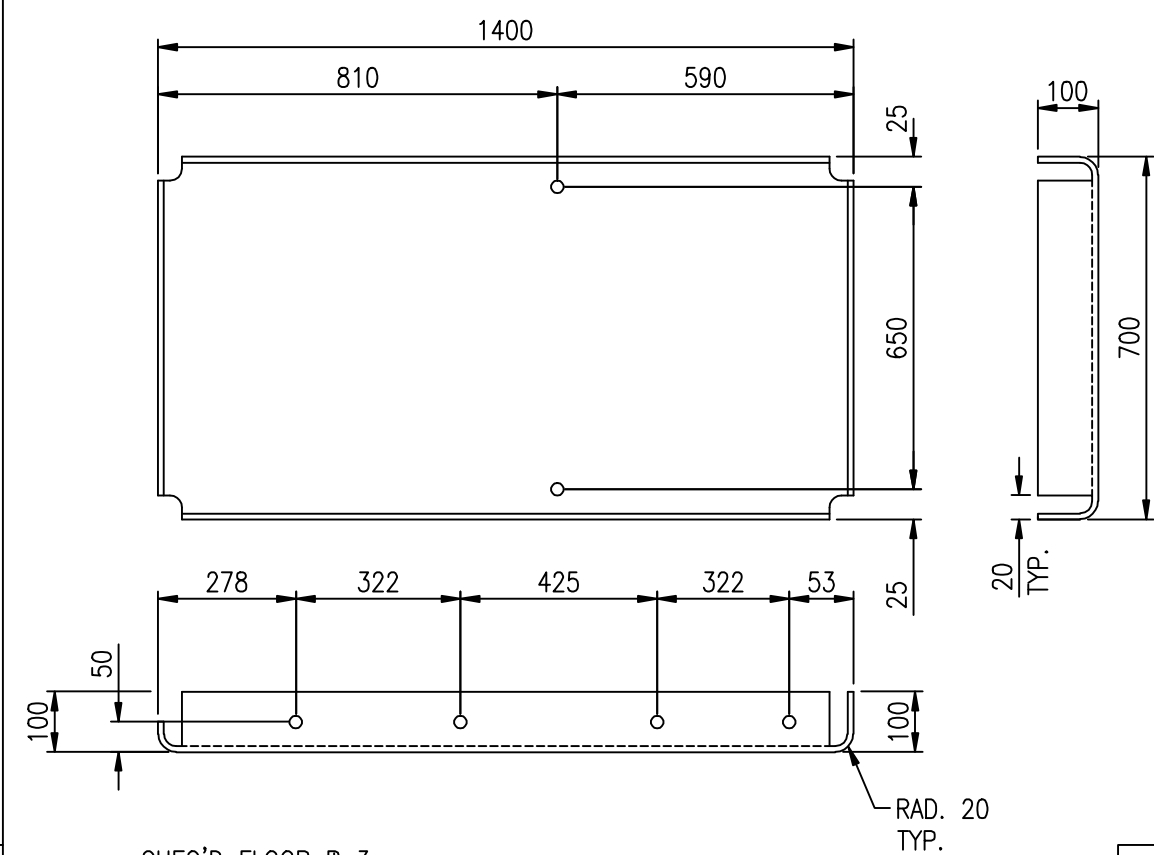
ALUMINUM 6061-T6 HOLES 11Ø DRILLED - 2 REQ'D - LOWER RAIL



ALUMINUM 6061-T6 HOLES 11Ø DRILLED - 1 REQ'D - REEL SUPPORT

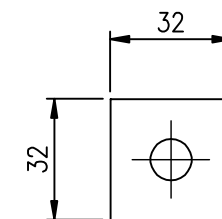


ALUMINUM 6061-T6 HOLES 11Ø DRILLED - CROSS SUPPORT



CHEQ'D FLOOR PL 3mm

ALUMINUM 6061-T6 HOLES 11Ø DRILLED - 1 REQ'D - FLOOR



ALUMINUM SPACER-11Ø HOLES DRILLED - 4 REQ'D - 3 mm PLATE

Destroy all prints bearing previous number 5