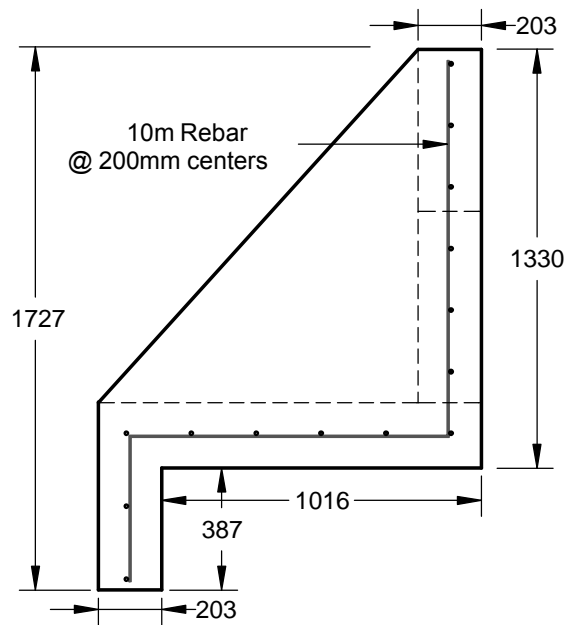


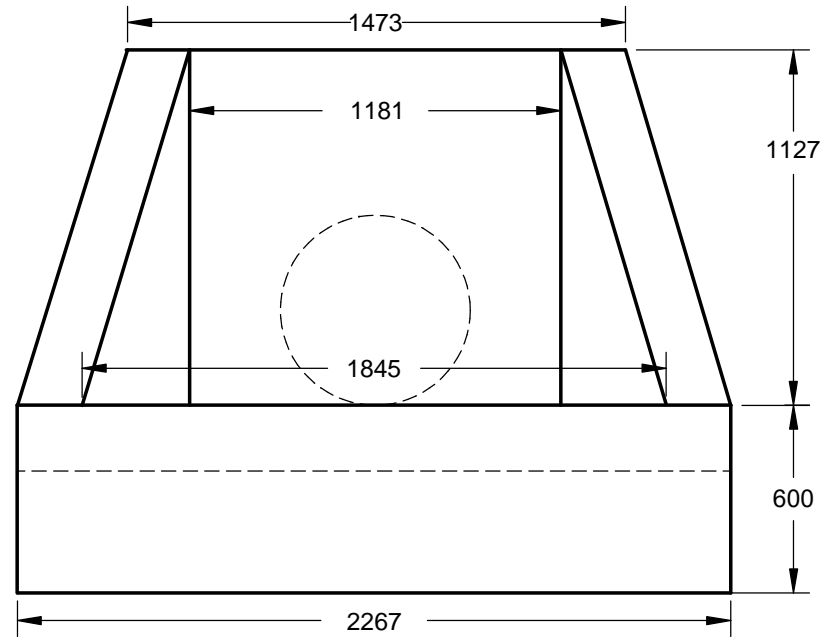
- Notes:
- Dimensions are in mm, (unless otherwise noted)
 - Rough core as shown (Max 400mm)
 - Includes embedded threaded inserts
 - Approx weight - 3300 lbs
 - Min concrete strength - 30 MPa
 - Min rebar yield strength - 414 MPa



TRI-KON PRECAST PRODUCTS LTD. 601 PATTERSON ST WEST CRANBROOK BC, VIC 613 250-426-8162					
Drawn by: TF	Checked by: XX	Approved date: XX/XX/XX	Date Drawn: 08/01/20	Scale: 1:1	Page #: 1/1
Tri-Kon Precast Products Ltd.			Type 1 Headwall & Grill		



SIDE ELEVATION



FRONT ELEVATION

REINFORCING

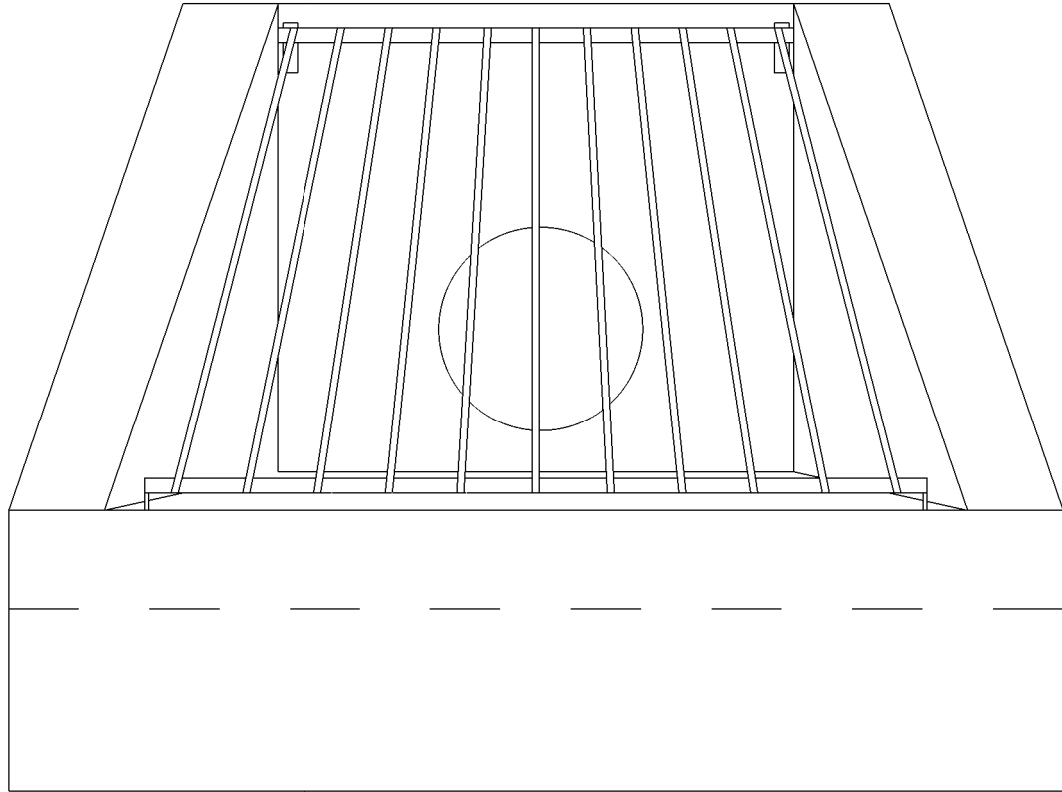
1. REINFORCING STEEL IS TO CONFORM TO CSA G30.12M - GRADE 400 MPa.
2. REINFORCING STEEL IS TO BE PLACED AS DETAILED TO 10mm TOLERANCE AND IS TO BE SUPPORTED BY METAL OR PLASTIC SUPPORTS AND/OR HANGERS IN ACCORDANCE WITH CAN/CSA A23.1.
3. LAP ALL REINFORCING BAR SPLICES 32 BAR DIAMETERS MINIMUM UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
4. REINFORCING STEEL IS TO BE CLEAN, FREE OF CORROSION & UNDAMAGED.
5. DO NOT WELD BARS OR USE HEAT TO BEND REINFORCING STEEL.
6. CONCRETE COVER OVER REINFORCEMENT IS TO BE 50mm UNLESS OTHERWISE NOTED ON DRAWINGS

ITEM	AGG SIZE	STRENGTH	W/C	AIR %	CEMENT TYPE	EXPOSURE
HEADWALL	20mm	45Mpa	0.40	4-7	HS	F-2

11-13 HEADWALL

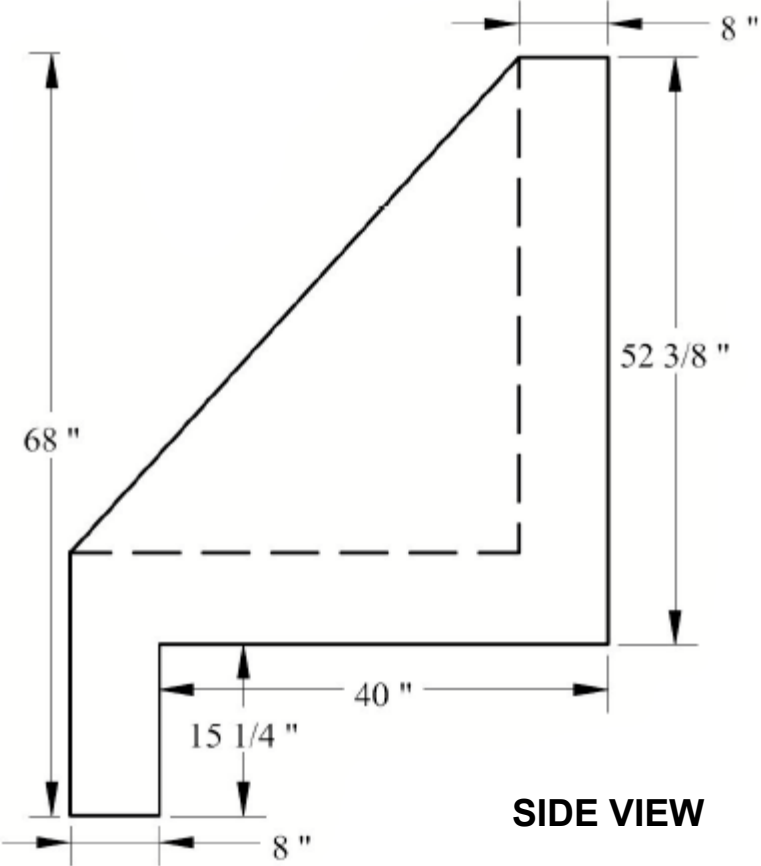
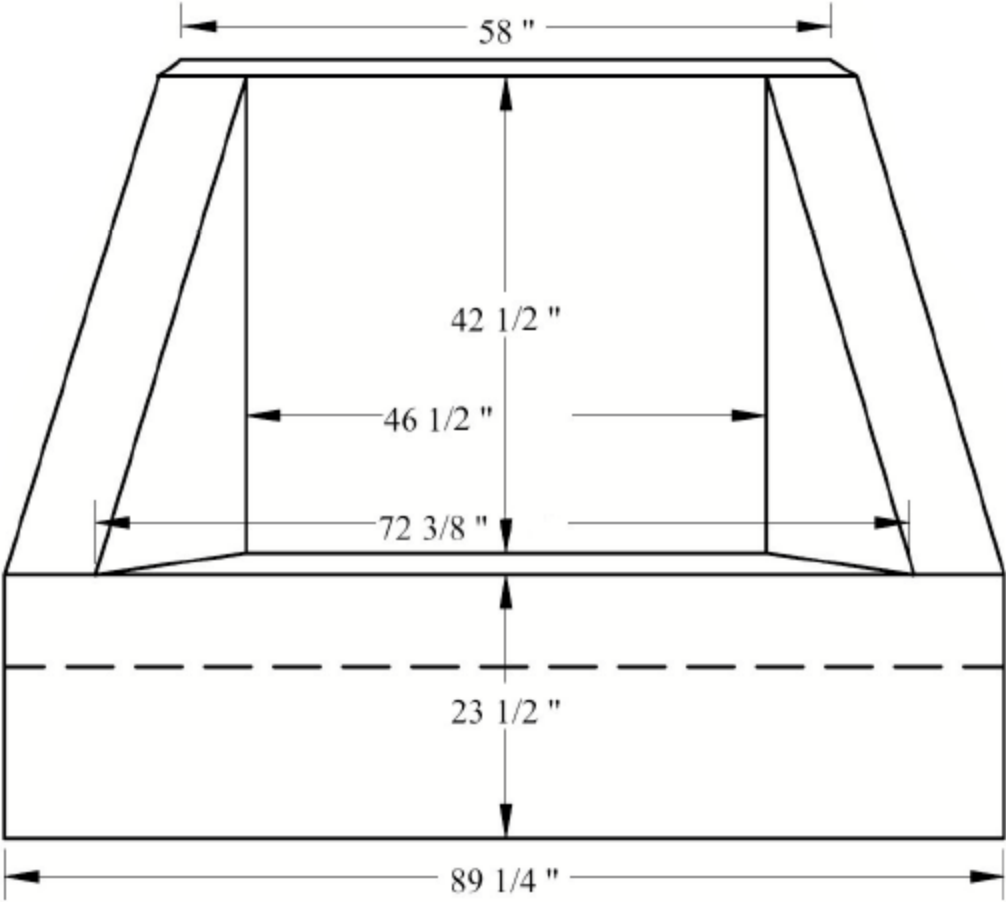
TRIKON
Precast
Concrete Products

601 Patterson Street West
Cranbrook BC, V1C 6T3
P: (250) 426-8162
F: (250) 489-4013
E: info@trikonprecast.com



FRONT VIEW w/ GRATE

FRONT VIEW



SIDE VIEW

REVISIONS		REMARKS
MM/DD/YY		
1	--/--/--	...
2	--/--/--	...
3	--/--/--	...
4	--/--/--	...
5	--/--/--	...

11-13

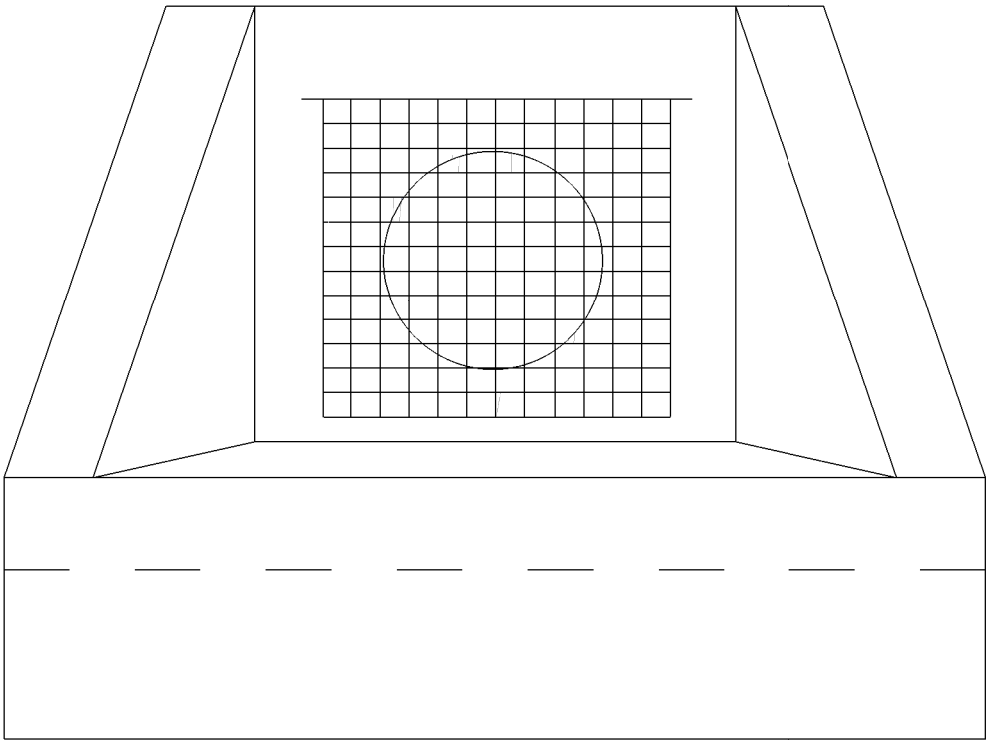
Headwall &
Inlet Grate

TRI

KON

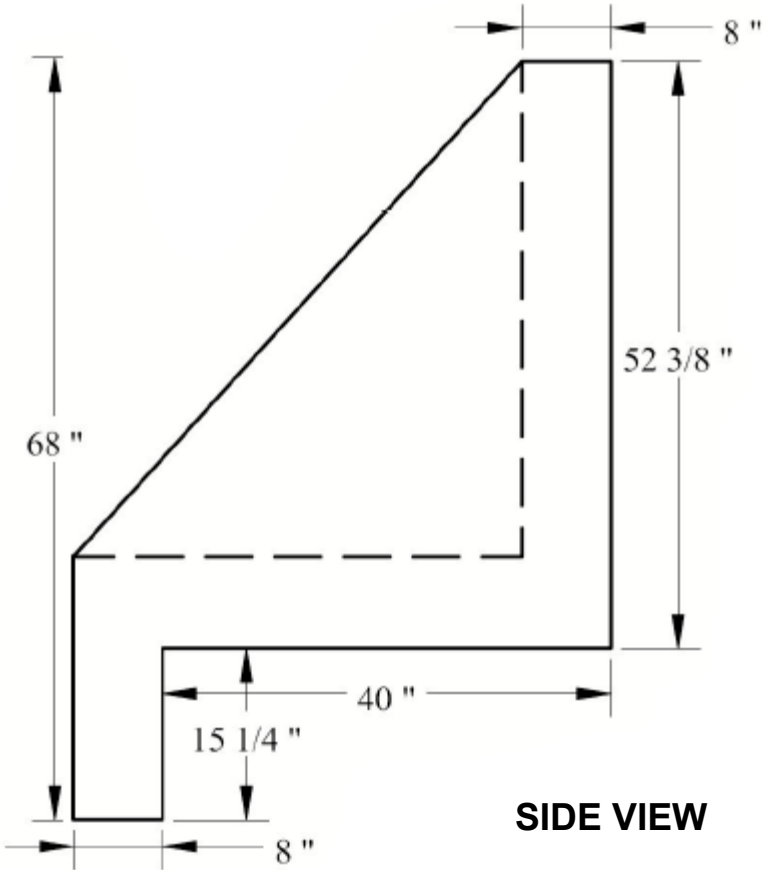
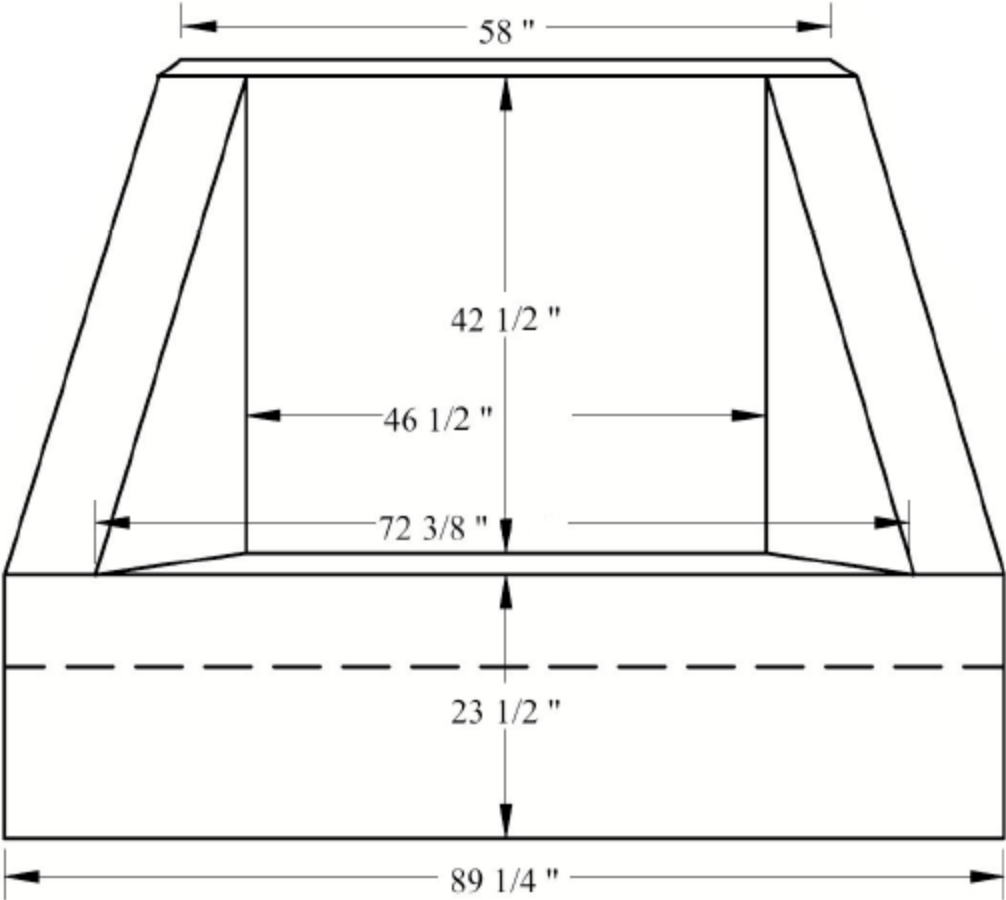
Precast
Concrete Products

A	001
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FRONT VIEW w/ HINGED GRATE

FRONT VIEW



SIDE VIEW

REVISIONS		REMARKS
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2	MM/DD/YY	...
3	MM/DD/YY	...
4	MM/DD/YY	...
5	MM/DD/YY	...

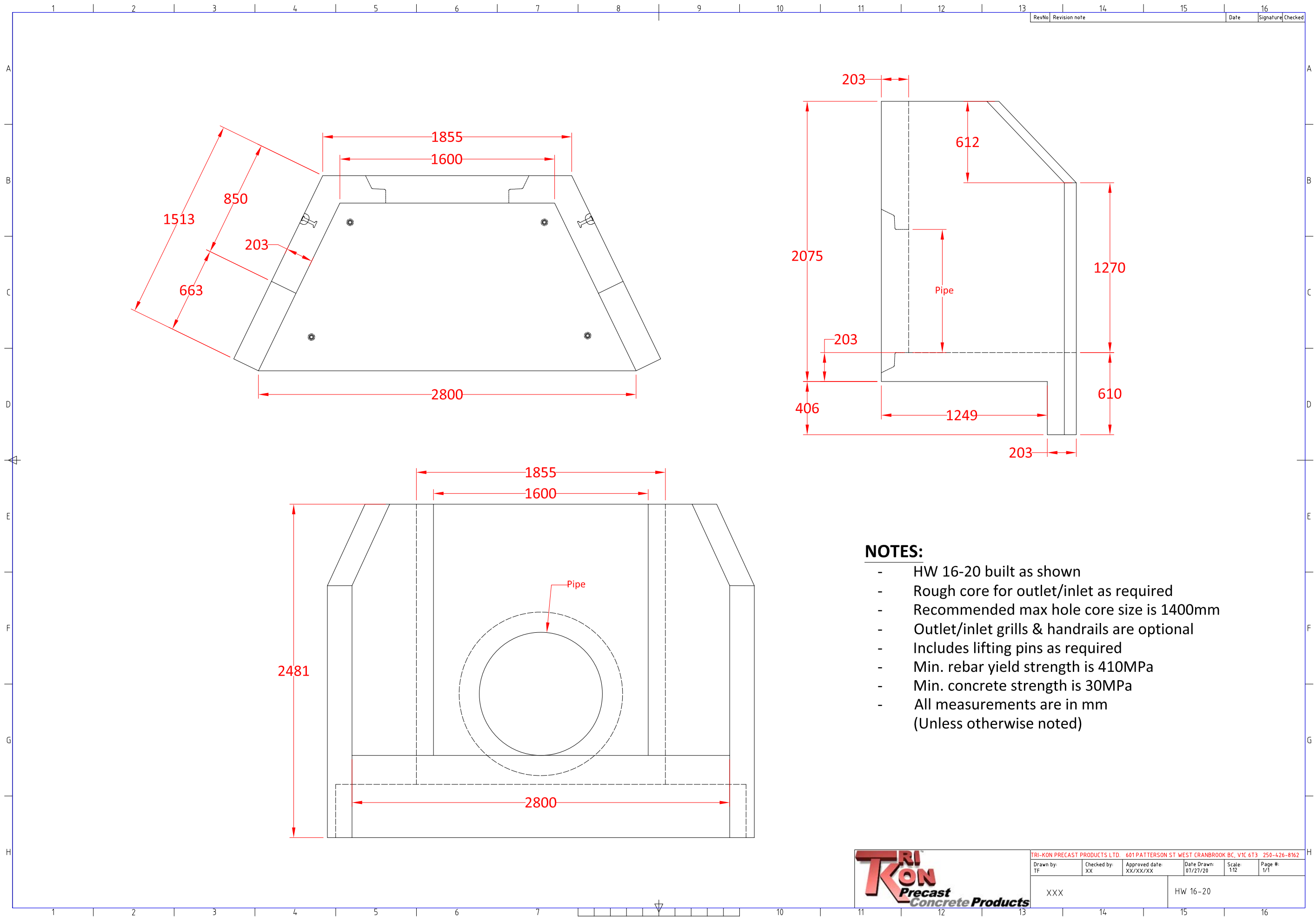
11-13
Headwall &
Outlet Grate

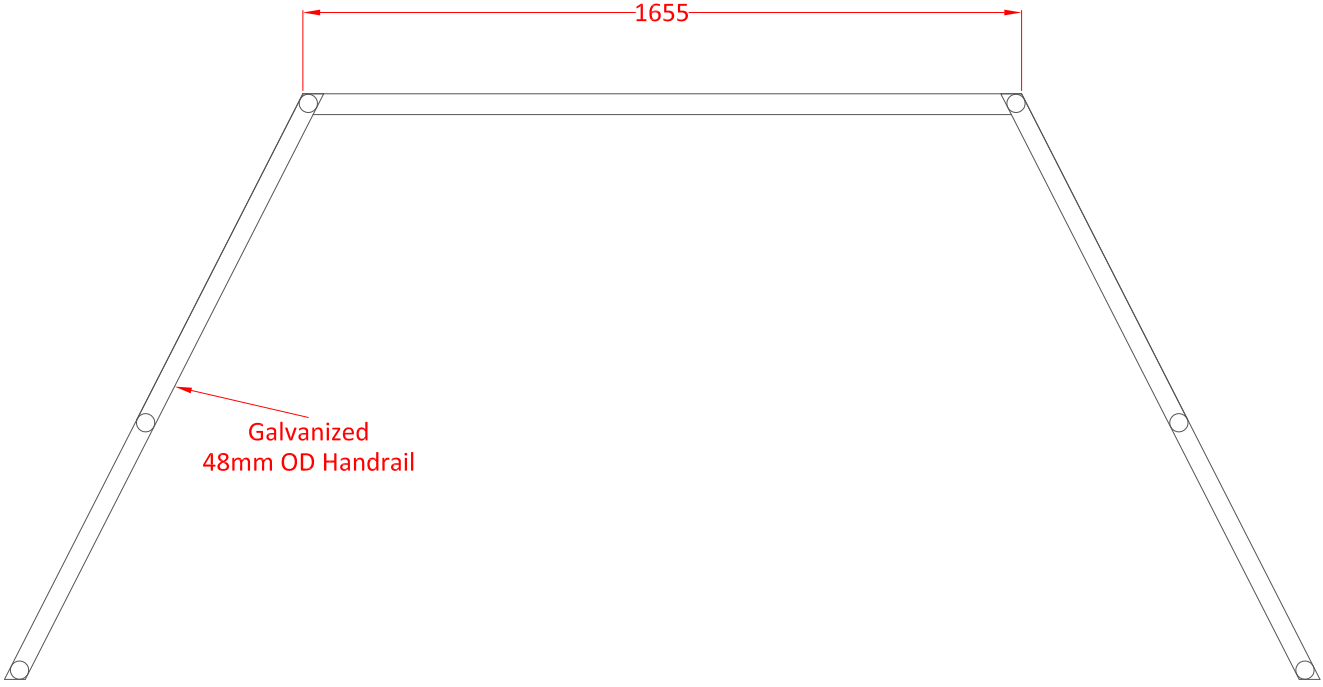
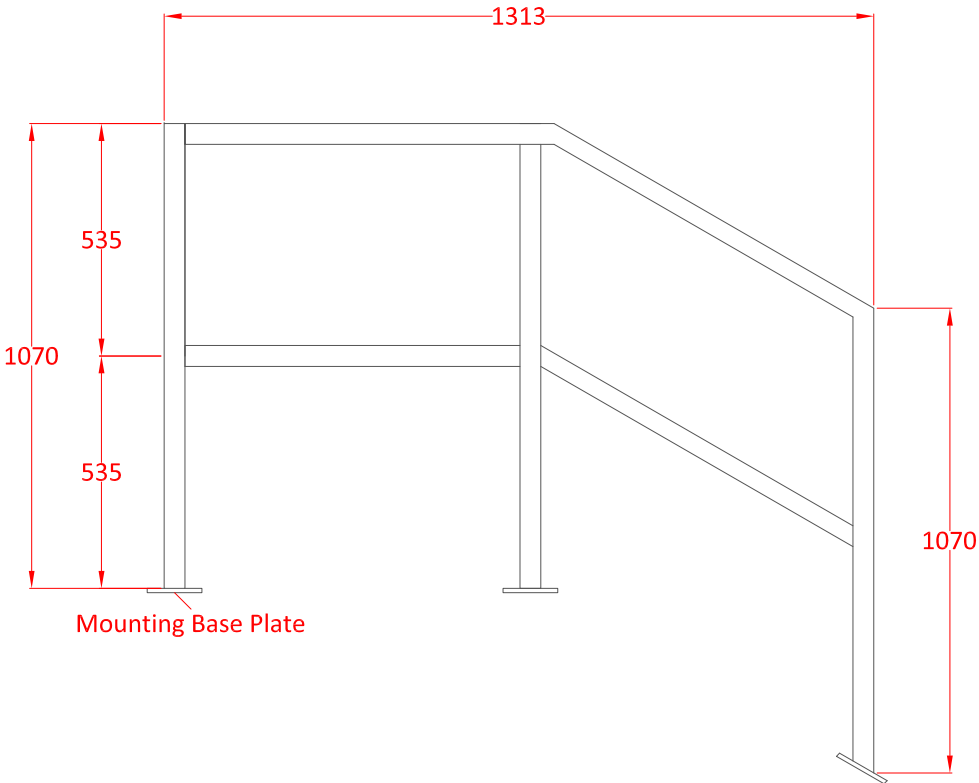
TRI
KON

Precast
Concrete Products

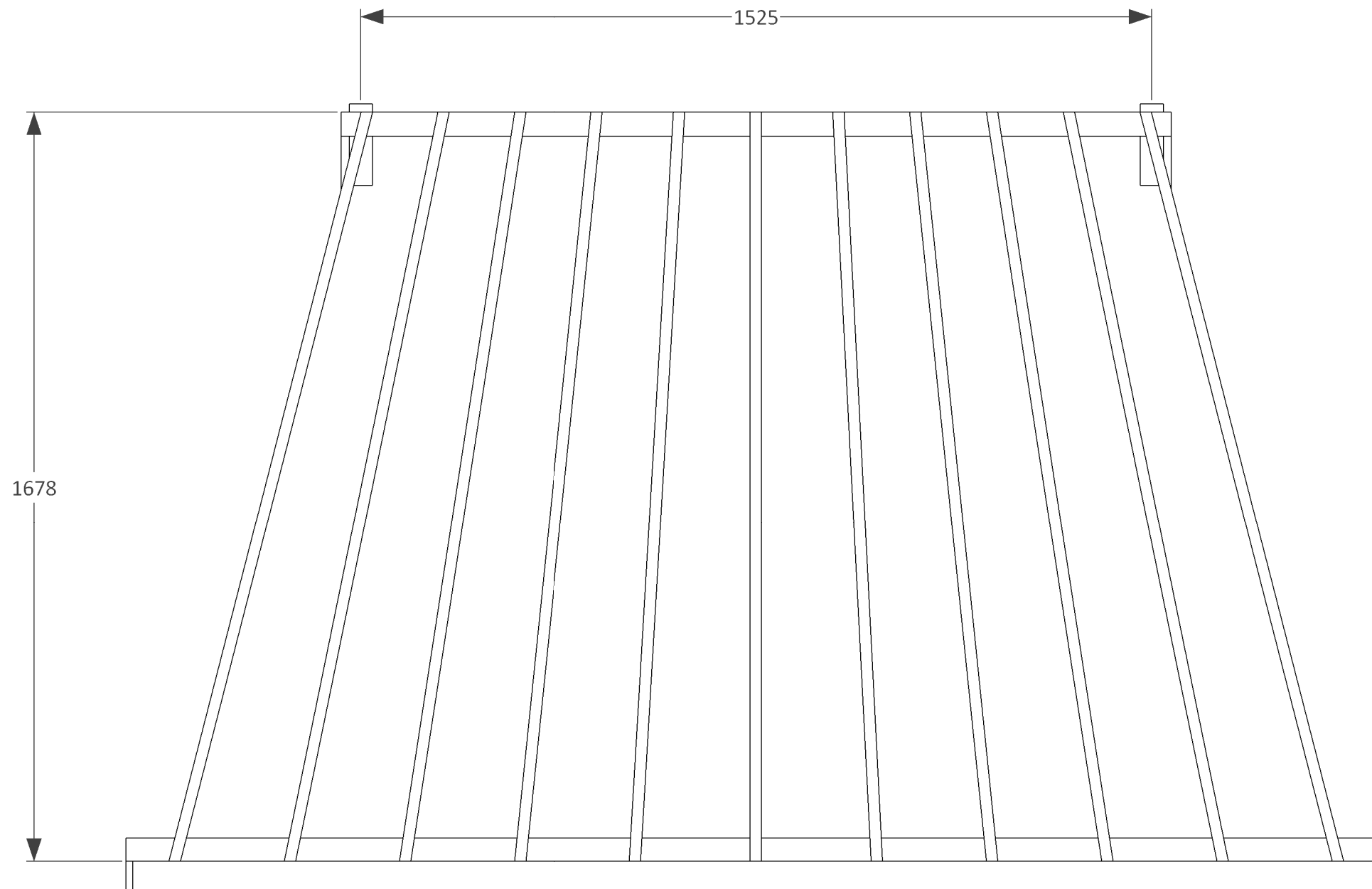
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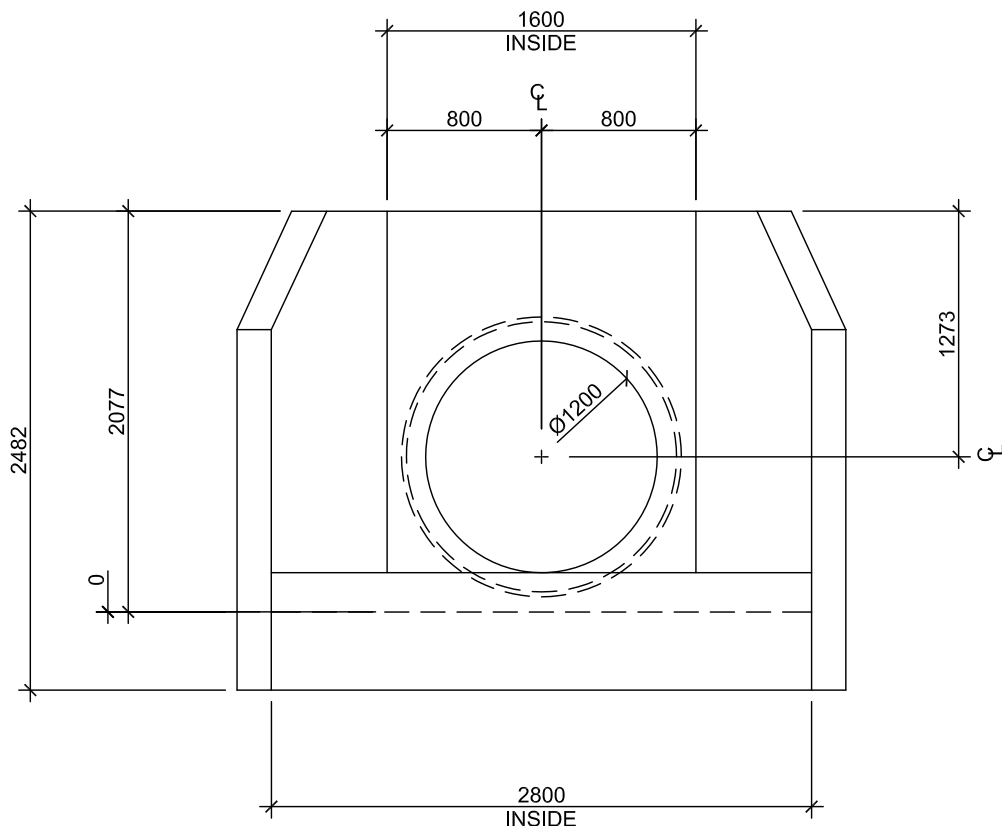
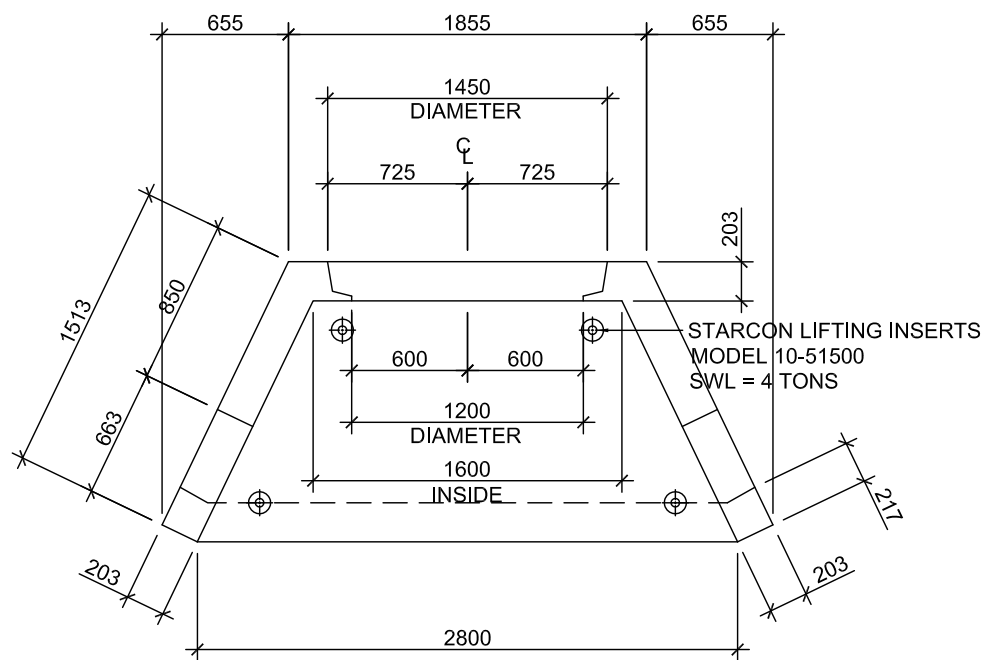
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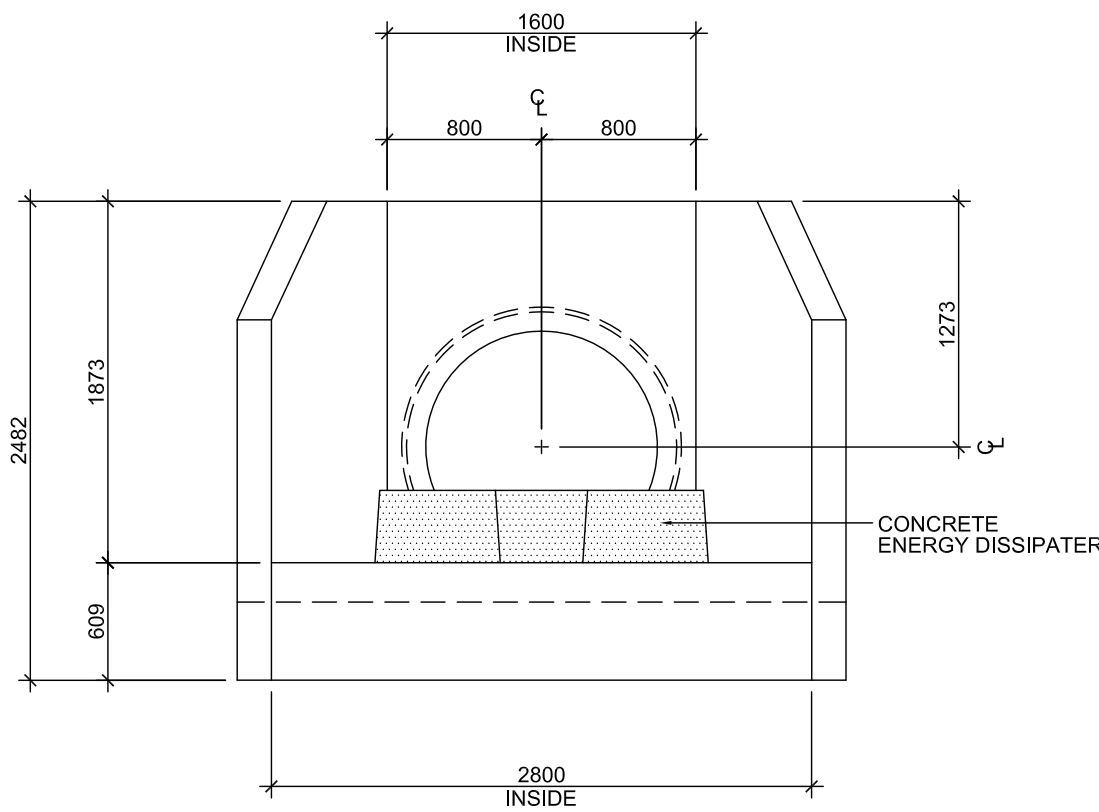
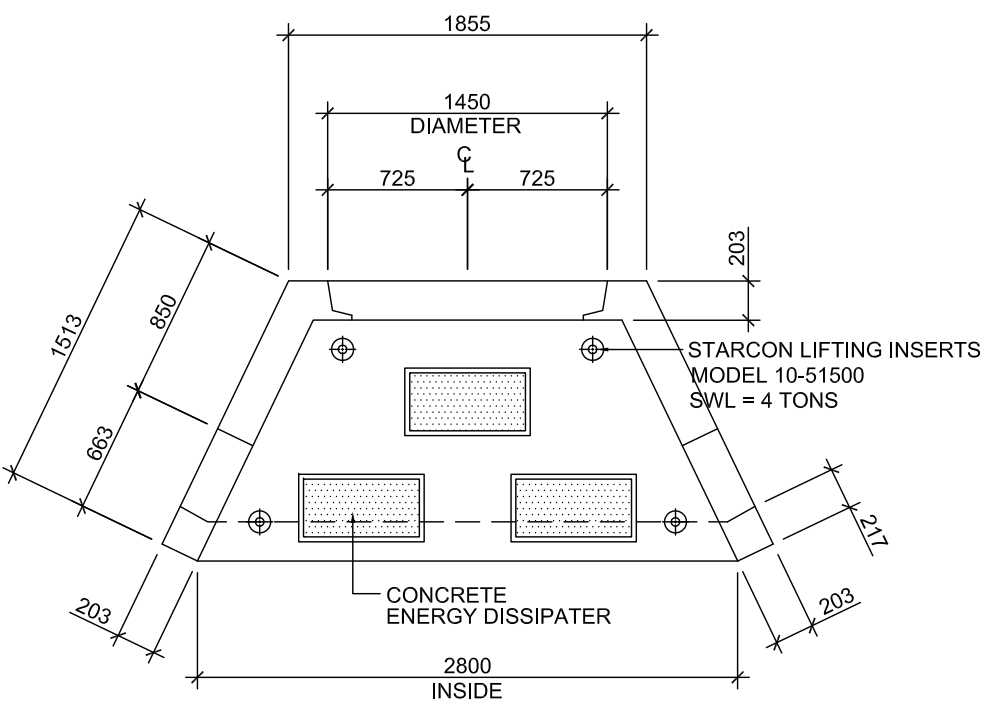


TRI-KON PRECAST PRODUCTS LTD. 601 PATTERSON ST WEST CRANBROOK BC, VIC 613 250-426-8162					
Drawn by: TF	Checked by: XX	Date Drawn: XX/XX/XX	Approved Date: 07/28/20	Scale: 1:8	Page #: 1/1
XXXXXX			HW16-20 Handrail		

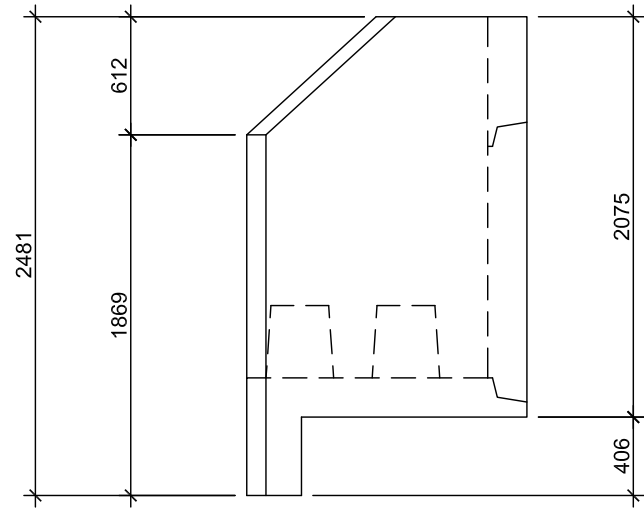
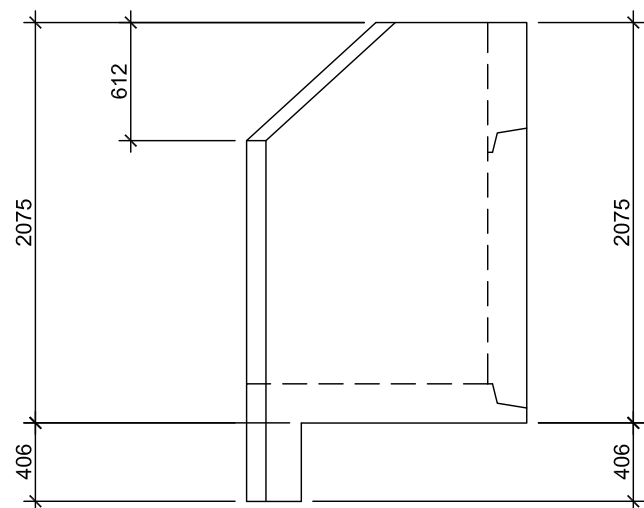




A HEADWALL TYPE "HW-1"
SCALE: 1:40



B HEADWALL TYPE "HW-1A"
SCALE: 1:40



STRUCTURAL SPECIFICATION

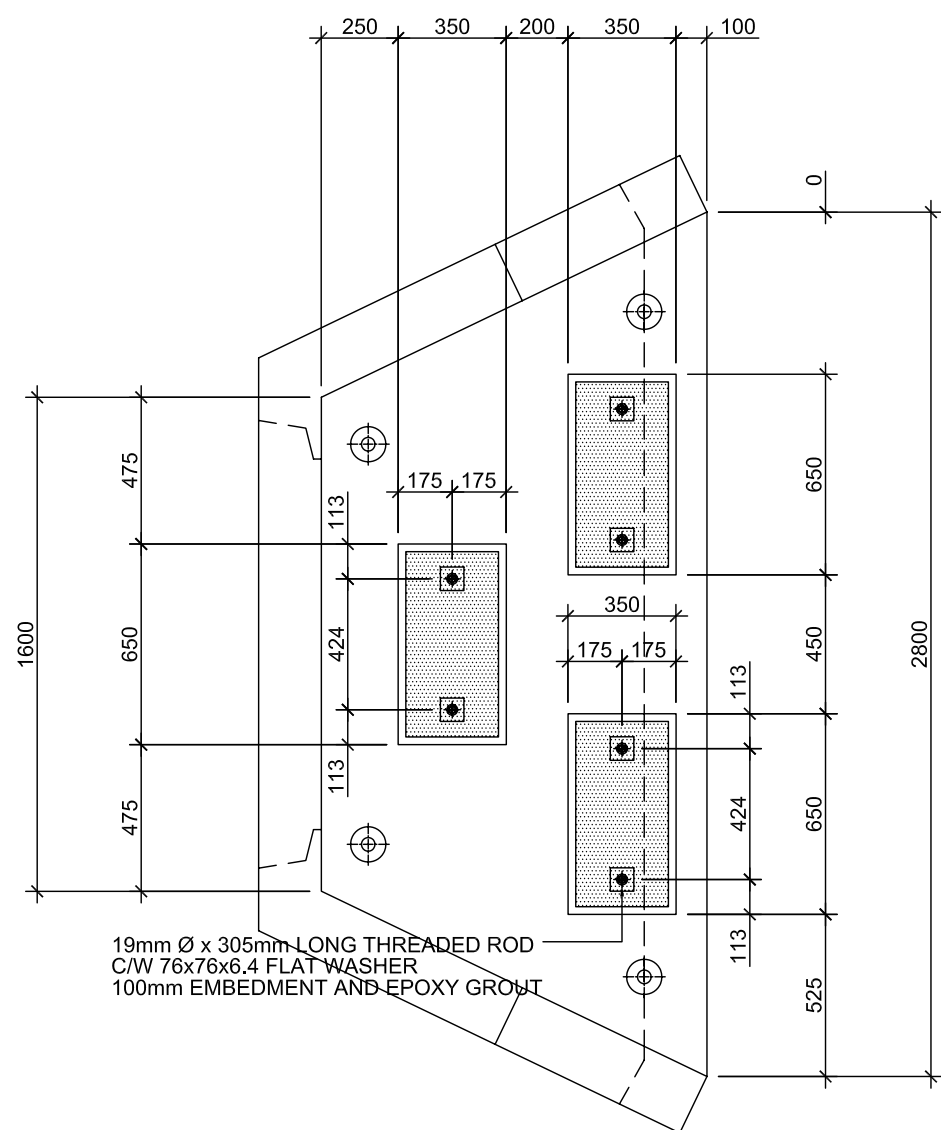
GENERAL

- ALL CONSTRUCTION SHALL CONFORM TO THE CSA STANDARDS A23.1-09, A23.2 AND A23.4
- ALL REFERENCES TO STANDARDS SHALL REFER TO THE LATEST REVISED ISSUE.
- McELHANNEY ENGINEERING ASSUMES NO RESPONSIBILITY FOR INSPECTION OF CONSTRUCTION OR VERIFICATION OF CONSTRUCTION UNLESS EXPRESSLY RETAINED TO DO SO.
- THE MANUFACTURER IS TO RETAIN A REGISTERED PROFESSIONAL ENGINEER TO VERIFY THE CONSTRUCTION.

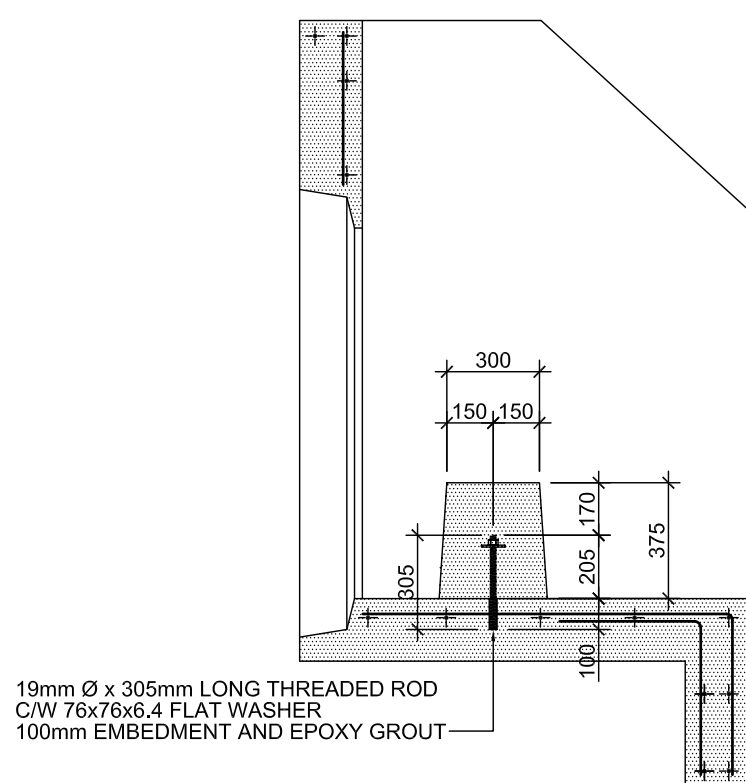
DESIGN STANDARDS:

- DESIGN METHODOLOGY : LIMIT STATES DESIGN.
- ALLOWABLE SOIL BEARING PRESSURE IS 100 KPa AS PER PRELIMINARY SOIL REPORT PREPARED BY BRYAN SALE P.ENG. THE WATER TABLE WAS REPORTED TO BE APPROXIMATELY 4.0m BELOW TOP OF BOX. THE SOIL INTERNAL ANGLE OF FRICTION WAS REPORTED TO BE 30°.
- INTERIOR BAFFLE DESIGNED FOR FULL HYDROSTATIC PRESSURE.
- LID DESIGN LIVE LOAD = 4.8 KPa
- OUTLET BOX HAS BEEN DESIGNED AND MANUFACTURED TO ASTM C1433M SPECIFICATIONS.
- JOINTS MEET ASTM C990M SPECIFICATIONS.
- REFER TO THE INSTALLATION GUIDE SUPPLIED BY TRI-KON PRECAST PRODUCTS LTD. FOR ASSEMBLY DETAILS.
- ESTIMATED WEIGHT OF SECTIONS:

= 6500 kg (14,500 lbs)



19mm Ø x 305mm LONG THREADED ROD
C/W 76x76x6.4 FLAT WASHER
100mm EMBEDMENT AND EPOXY GROUT



19mm Ø x 305mm LONG THREADED ROD
C/W 76x76x6.4 FLAT WASHER
100mm EMBEDMENT AND EPOXY GROUT

C DISSIPATER DETAIL
SCALE: 1:25

PRECAST COMPONENT LIFTING AND RIGGING

- THE PRECAST CONTRACTOR IS RESPONSIBLE FOR ALL RIGGING AND LIFTING PROCEDURES REQUIRED TO ENSURE SAFE LIFTING AND PLACEMENT OF PRECAST CONCRETE COMPONENTS IN ACCORDANCE WITH INDUSTRY STANDARDS AND WORKSAFE BC REQUIREMENTS.
- THE CONTRACTOR IS TO ENSURE THAT THE HOISTING DEVICES INCLUDING ALL ASSOCIATED ACCESSORIES (SHACKLES, SLINGS, PINS ETC.) ARE RATED TO THE APPLICABLE LOAD AND ARE IN GOOD WORKING CONDITION.
- THE CONTRACTOR IS TO ENSURE THAT ALL PERSONNEL OPERATING OR WORKING WITH THE HOISTING DEVICES ARE PROPERLY TRAINED, EXPERIENCED AND CERTIFIED ON THE HOISTING DEVICE.

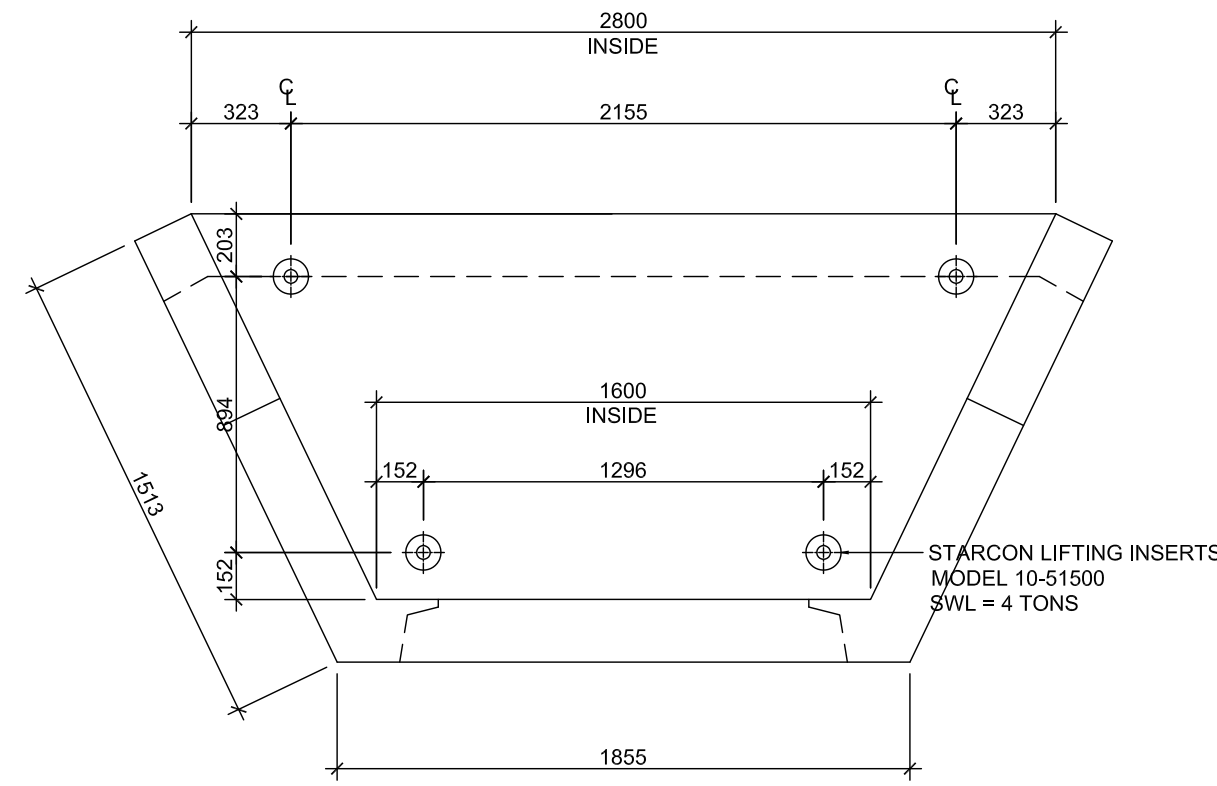
CONCRETE

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND CSA STANDARD CAN/CSA - A23.1, CAN/CSA - A23.2 AND CAN/CSA - A23.4
- BEFORE PLACING CONCRETE, THE CONTRACTOR SHALL CHECK ALL APPLICABLE DRAWINGS FOR ALL ANCHOR BOLTS, INSERTS, EMBEDS, RECESS, SLEEVES, BLOCK-OUTS LOCATIONS AND DIMENSIONS.
- UNLESS NOTED OTHERWISE MINIMUM CONCRETE COVER IS TO BE 50mm CLEAR.
- CONCRETE PROPERTIES:-

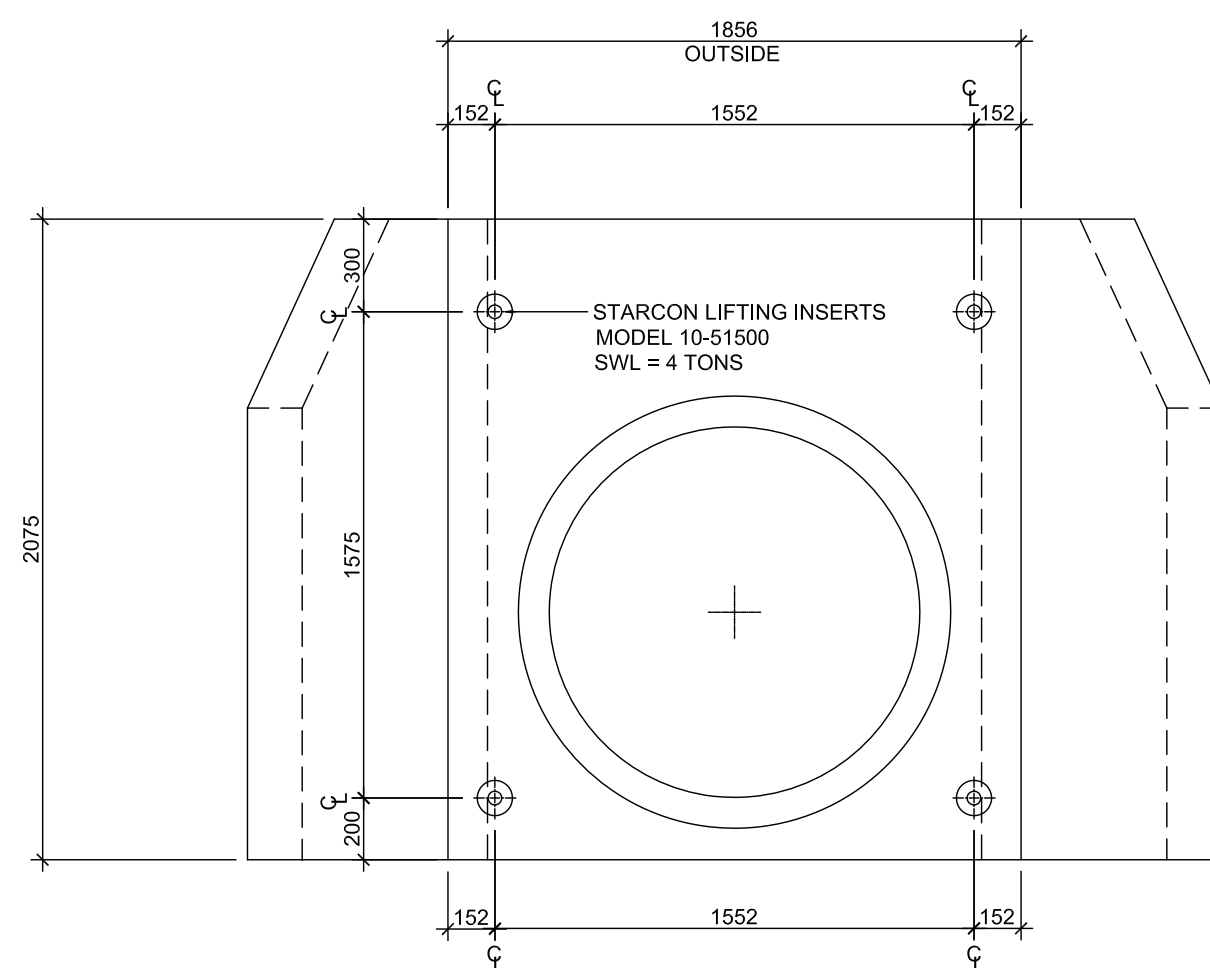
ITEM	AGG. SIZE (mm)	28 DAY STRENGTH	W/C	AIR (%)	CEMENT TYPE	EXPOSURE
ALL	20	45 Mpa	.44	4 - 7	HS	F-1

REINFORCING

- STEEL REINFORCEMENT MATS/MESH SHALL BE MINIMUM GRADE 480 MPa. DEFORMED BARS CONFORMING TO CAN/SA G30.18M 9R2002 AND ALSO SHALL BE WELDABLE MATERIAL CONFORMING TO ASTM A-1064. BAR DIAMETERS AS SHOWN ON DRAWINGS.
- REINFORCING STEEL BARS ARE TO BE DEFORMED BARS TO CONFORMING TO CSA G30.12M - GRADE 400 MPa.
- REINFORCING STEEL BENDS AND OTHER DETAILS OF REINFORCEMENT PLACEMENT SHALL BE IN ACCORDANCE WITH CAN/CSA A23.1. AND ALSO THE REINFORCING STEEL INSTITUTE OF CANADA "MANUAL OF STANDARD PRACTICE".
- REINFORCING STEEL IS TO BE PLACED AS DETAILED TO 10mm TOLERANCE AND IS TO BE SUPPORTED BY METAL OR PLASTIC SUPPORTS AND/OR HANGERS IN ACCORDANCE WITH CAN/CSA A23.1.
- REINFORCING STEEL SHALL BE SPLICED AT LOCATIONS SHOWN ON THE DRAWINGS OR AS APPROVED BY THE ENGINEER
- LAP ALL REINFORCING BAR SPLICES 32 BAR DIAMETERS MINIMUM UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- REINFORCING STEEL IS TO BE CLEAN, FREE OF CORROSION AND UNDAMAGED.
- UNLESS NOTED OTHERWISE MINIMUM CONCRETE COVER IS TO BE 50mm CLEAR.



FLOOR SLAB



BACK WALL

D LIFTING INSERT LOCATIONS
SCALE: 1:25

Rev	Date	Description	DP	BN	BN
0	MAR 10, 2016	ISSUED FOR "CONSTRUCTION"			

THIS DRAWING AND DESIGN IS THE PROPERTY OF McELHANNEY CONSULTING SERVICES LTD. (McELHANNEY) AND SHALL NOT BE USED, REUSED OR REPRODUCED WITHOUT THE CONSENT OF McELHANNEY.	
McELHANNEY WILL NOT BE HELD RESPONSIBLE FOR THE IMPROPER OR UNAUTHORIZED USE OF THIS DRAWING AND DESIGN.	
THIS DRAWING AND DESIGN HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES AT THE TIME OF PREPARATION.	
McELHANNEY, ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS WILL NOT BE LIABLE FOR ANY LOSSES OR OTHER CONSEQUENCES RESULTING FROM THE USE OR RELIANCE UPON, OR ANY CHANGES MADE TO, THIS DRAWING, BY ANY THIRD PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, WITHOUT McELHANNEY'S PRIOR WRITTEN CONSENT.	

ORIGINAL DWG SIZE: ARCH D (24" x 36")



McElhanney

McElhanney Consulting Services Ltd.

42 - 8th Avenue S
Suite 200
Cranbrook BC
Canada V1C 2K3
Tel 250-489-3013

Approved Sealed

TRI-KON PRECAST PRODUCTS LTD.
CRANBROOK, BC

REINFORCED CONCRETE HEADWALL STRUCTURES
HEADWALL TYPE "HW-1" AND HEADWALL TYPE "HW-1A"
GENERAL NOTES

Drawing No.

S101

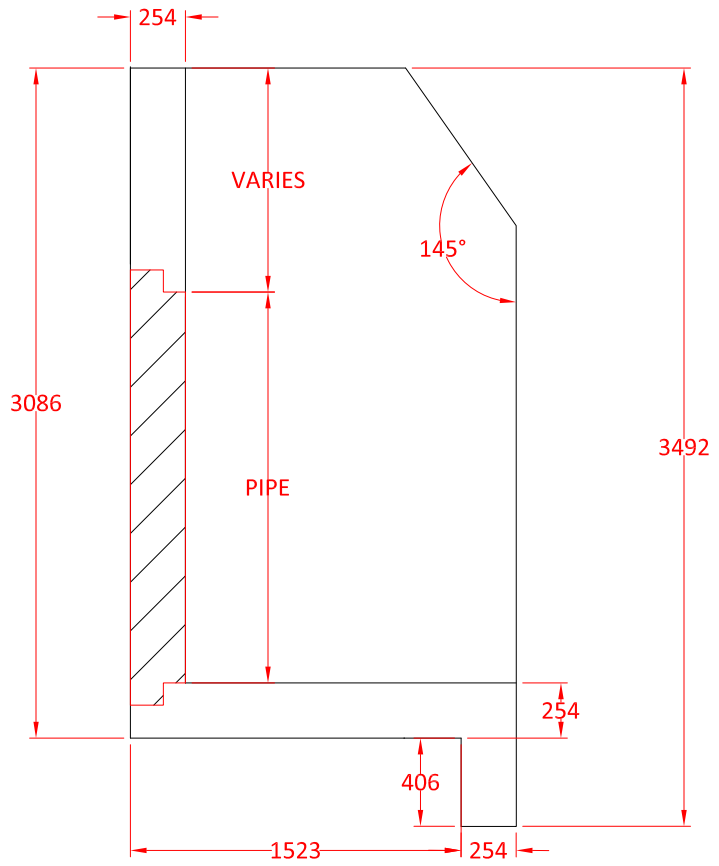
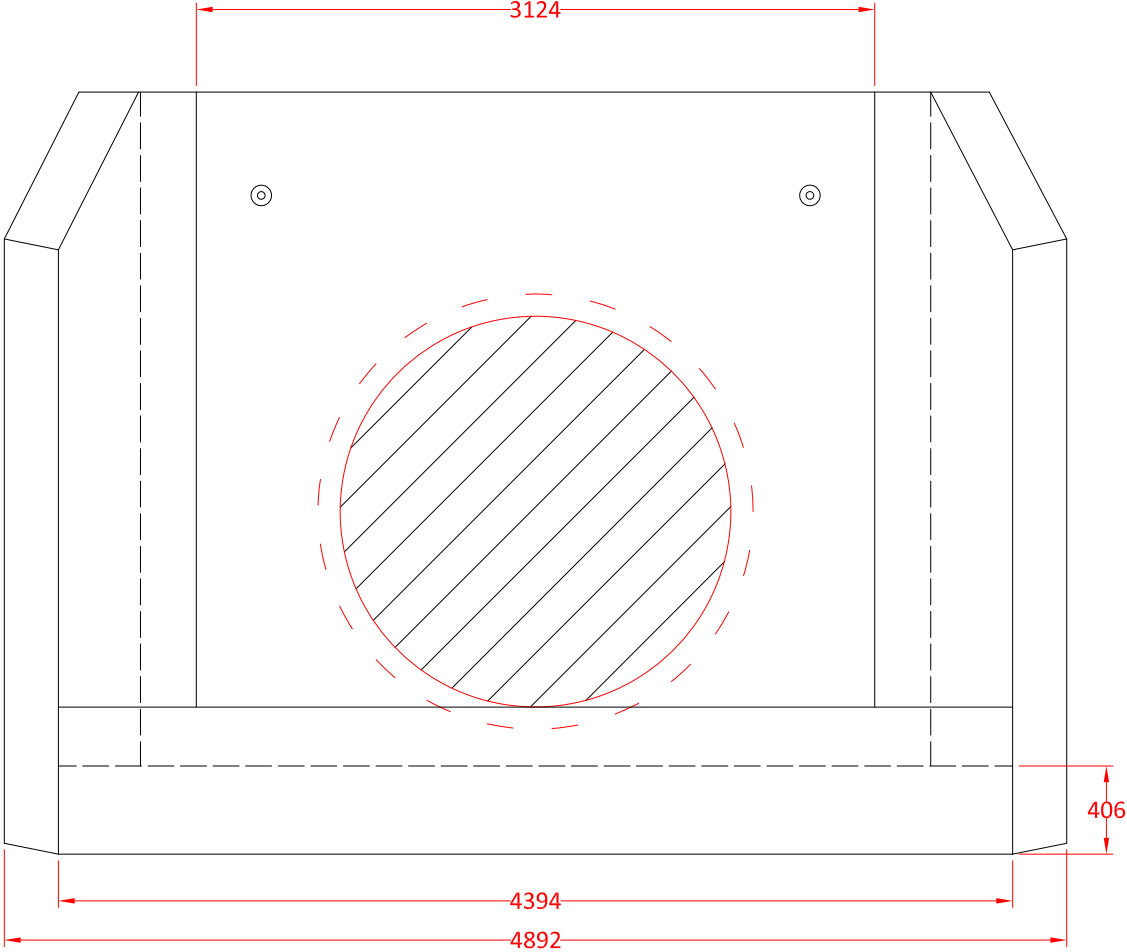
Project Number

2441-00375-00

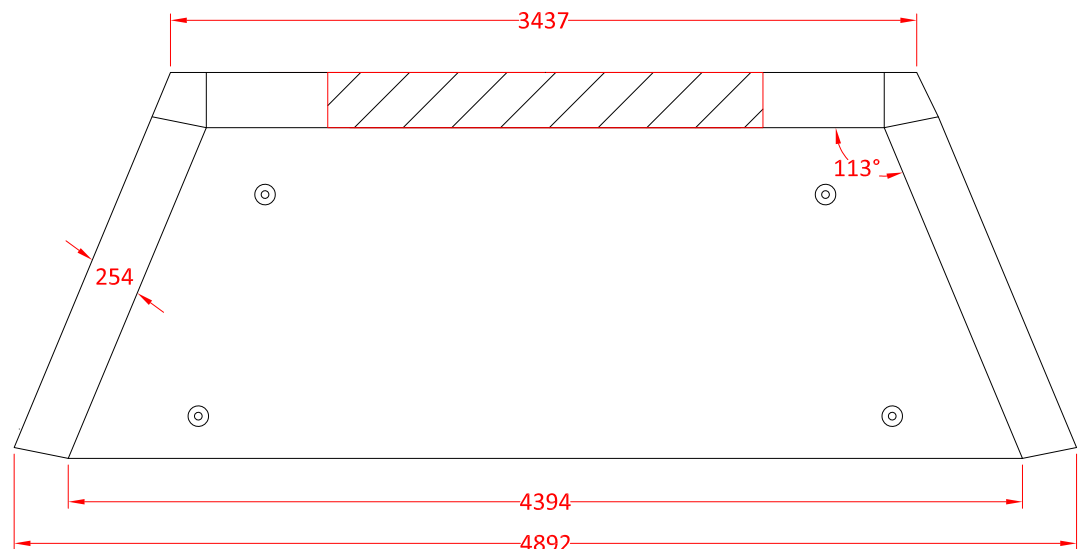
Rev.

0

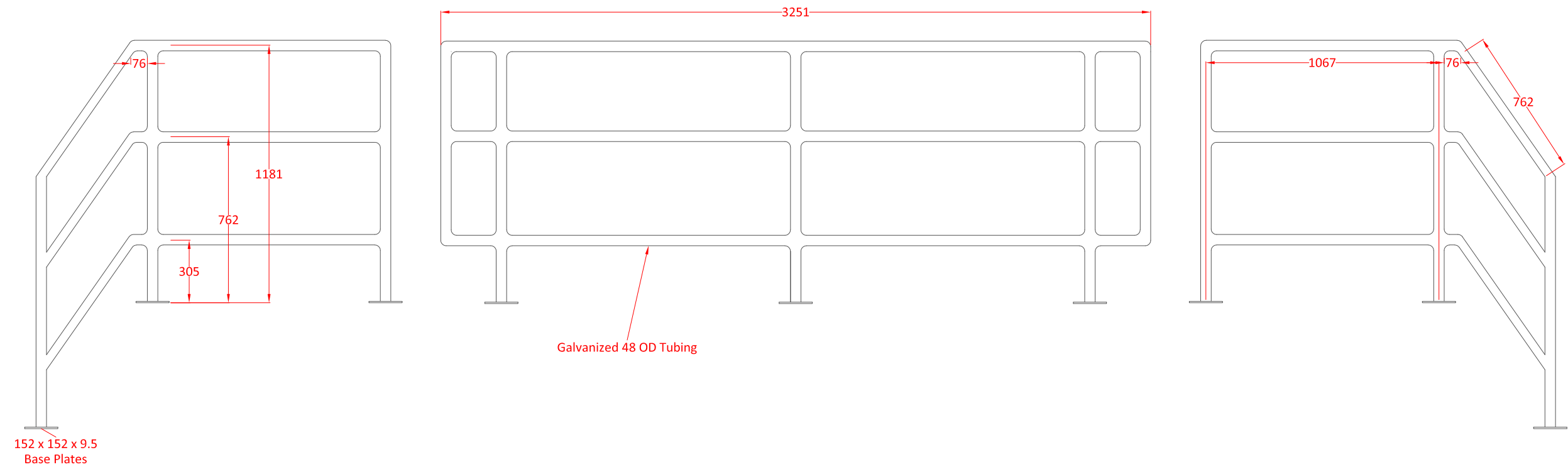
DESTROY ALL PRINTS BEARING PREVIOUS REVISION



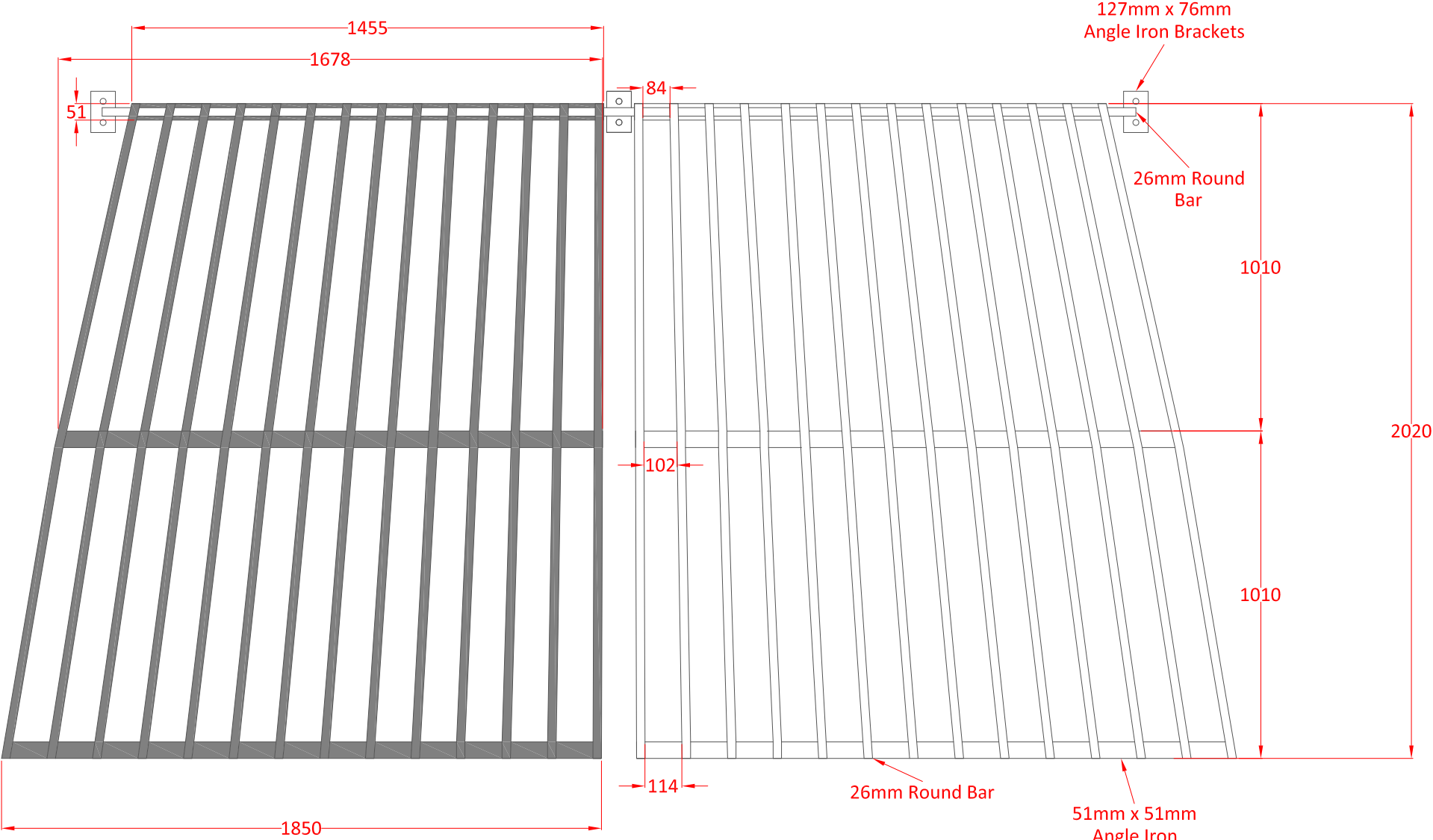
- NOTES:**
- HW 26-28 built as shown
 - Rough core for outlet/inlet as required
 - Outlet/inlet grills & handrails are optional
 - Includes lifting pins as required
 - Min. rebar yield strength is 410MPa
 - Min. concrete strength is 30MPa
 - All measurements are in mm (Unless otherwise noted)



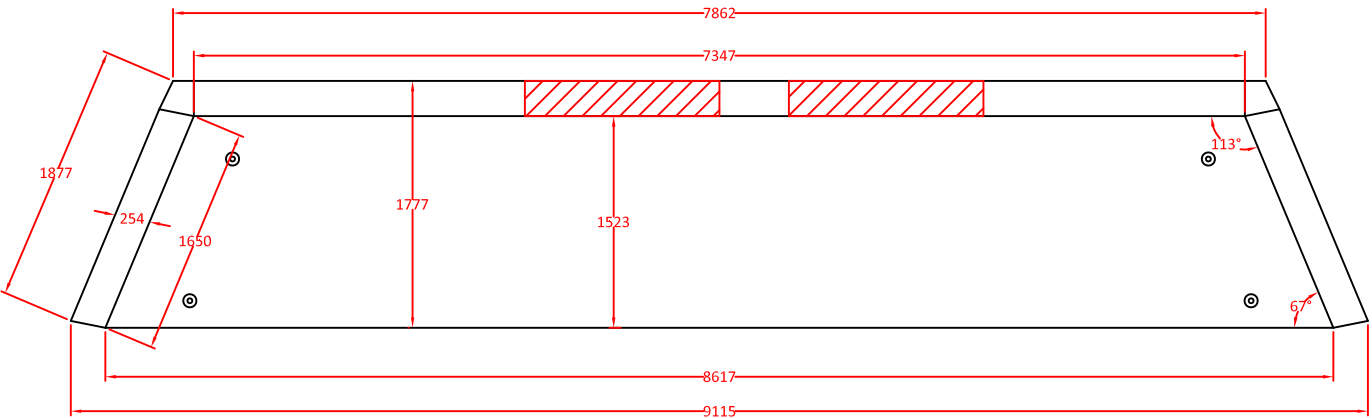
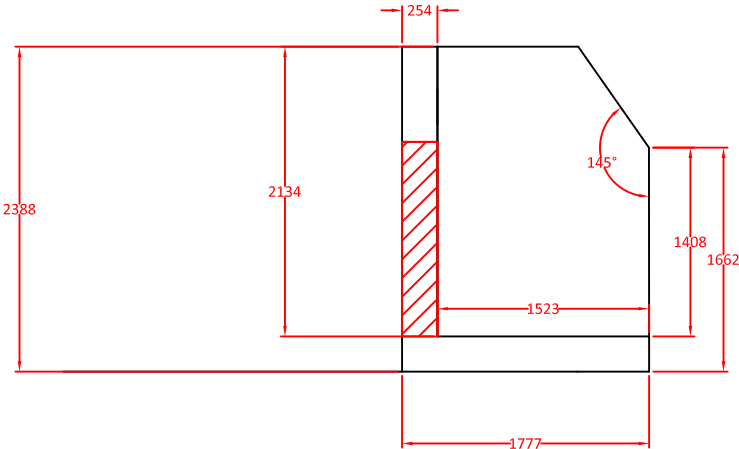
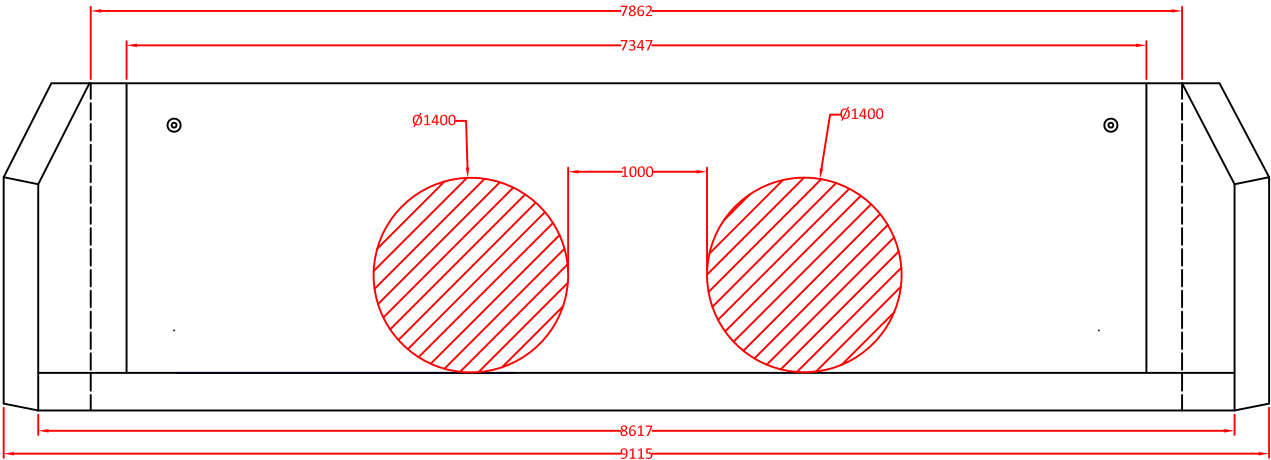
TRI-KON PRECAST PRODUCTS LTD. 601 PATTERSON ST WEST CRANBROOK BC, VIC 6T3 250-426-8162					
Drawn by: TF	Checked by: XX	Approved date: XX/XX/XX	Date Drawn: 03/27/19	Scale: 1:16	Page #: 1/1
XXXXXX			HW 26-28		



TRI-KON PRECAST PRODUCTS LTD. 601 PATTERSON ST WEST CRANBROOK BC, VIC 613 250-426-8162					
Drawn by: TF	Checked by: XX	Date Drawn: XX/XX/XX	Approved Date: 07/28/20	Scale: 1:10	Page #: 1/1
XXXXXX			HW26-28 Handrail		



TRI-KON PRECAST PRODUCTS LTD. 601 PATTERSON ST WEST CRANBROOK BC, VIC 613 250-426-8162					
Drawn by: TF	Checked by: XX	Date Drawn: XX/XX/XX	Approved Date: 07/28/20	Scale: 1:8	Page #: 1/1
XXXXXX			HW26-28 Trash Rack		



STRUCTURAL NOTES

GENERAL

- ALL CONSTRUCTION IS TO CONFORM TO THE BRITISH COLUMBIA BUILDING CODE (2012)
- ALL REFERENCES TO STANDARDS NOTED ON THESE DRAWINGS REFER TO THE LATEST REVISED ISSUE.
- THESE DRAWING PREPARED BY McELHANNEY CONSULTING SERVICES LTD. (McELHANNEY) ARE INTENDED FOR STRUCTURAL REQUIREMENTS OF THIS PROJECT ONLY. ALL OTHER ASPECTS ASSOCIATED WITH THIS PROJECT WHICH INCLUDE BUT ARE NOT LIMITED TO, ARCHITECTURAL, HYDROLOGY, ENVIRONMENTAL, CIVIL, GEOTECHNICAL, MECHANICAL, ELECTRICAL, OCCUPANT SAFETY, ACCESSIBILITY AND BUILDING ENVELOPE ARE TO BE DESIGNED, SPECIFIED AND APPROVED BY OTHERS AND ARE CONSIDERED BEYOND McELHANNEY SCOPE OF WORK
- STRUCTURAL ELEMENTS PRESENTED ON THESE DRAWINGS ARE FOR PERMANENT STRUCTURE AND FOUNDATIONS ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY AND CONSTRUCTION BRACING AND SUPPORT INCLUDING GEOTECHNICAL REQUIREMENTS UNTIL THE PROJECT IS COMPLETED.
- REFER TO GENERAL ARRANGEMENT, ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR DIMENSIONS, GRADES, ELEVATIONS AND FOR DIMENSIONS AND LOCATIONS OF RECESSES, SLEEVES, EQUIPMENT, SHAFTS, INSERTS, CHAMFERS, ETC.. DIMENSIONS AND ELEVATIONS SHOWN ON STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY AND MUST BE CONFIRMED WITH GENERAL ARRANGEMENT DRAWINGS AND/OR SITE CONDITIONS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT THE JOB SITE, FOR INFORMATION THAT PERTAINS SOLELY TO FABRICATION PROCESSES OR TO TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR COORDINATION OF THE WORK OF ALL SUB-TRADES.

REFERENCED DRAWINGS

- LAYOUT AND STRUCTURAL SIZING IS BASED ON DESIGN DRAWINGS SUPPLIED BY THE CLIENT.
- McELHANNEY HAS RELIED ON THE PROVIDED DRAWING SET AS ACCURATE AND TRUE. McELHANNEY IS NOT RESPONSIBLE FOR ANY ERROR/OMISSIONS ON THESE DRAWINGS AS A RESULT OF ERRORS OR SUBSEQUENT CHANGES TO THE PROVIDED DRAWING SET OR UNKNOWN SITE AND AS-BUILT CONDITIONS.
- IF CHANGES ARE MADE TO THE LAYOUT OF THE STRUCTURE, OR SITE CONDITIONS VARY FROM ASSUMED, OR THE ASSUMED LOAD PATHS ARE ALTERED (RELOCATED ELEMENTS, ETC), THE STRUCTURAL ENGINEER SHOULD BE NOTIFIED SUCH THAT CHANGES CAN BE MADE TO THE DESIGN IF REQUIRED.

FIELD REVIEWS BY McELHANNEY CONSULTING SERVICES LTD.

- McELHANNEY ASSUMES NO RESPONSIBILITY FOR FIELD REVIEWS OF THE CONSTRUCTION OR VERIFICATION OF THE CONSTRUCTION UNLESS EXPRESSLY RETAINED TO DO SO.
- McELHANNEY CONSULTING SERVICES LTD. (McELHANNEY) PROVIDE FIELD REVIEWS ONLY FOR THE WORK SHOWN ON THESE DRAWINGS. FIELD REVIEWS BY McELHANNEY ARE PERIODIC AND AT THE SOLE DISCRETION OF McELHANNEY IN ORDER TO ASCERTAIN THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE DESIGN DRAWINGS AND SUPPORTING DOCUMENTS.
- FIELD REVIEWS BY McELHANNEY ARE NOT FOR THE CONTRACTORS BENEFIT NOR DOES IT MAKE McELHANNEY GUARANTORS OF THE CONTRACTORS WORK. IT REMAINS THE CONTRACTOR'S RESPONSIBILITY TO BUILD THE WORK IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.
- McELHANNEY WILL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUB-CONTRACTOR, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- IF McELHANNEY IS RETAINED FOR FIELD REVIEWS THEN THE CONTRACTOR IS TO PROVIDE 24 HOUR NOTICE PRIOR TO CONCRETE POURS AND BEFORE ENCLOSING FRAMING ELEMENTS. FIELD REVIEWS ARE TO BE SCHEDULED AND TO BE CARRIED OUT DURING NORMAL BUSINESS HOURS UNLESS SPECIAL ARRANGEMENTS ARE MADE WITH McELHANNEY.

DESIGN STANDARDS:

1) DESIGN METHODOLOGY: LIMIT STATES DESIGN

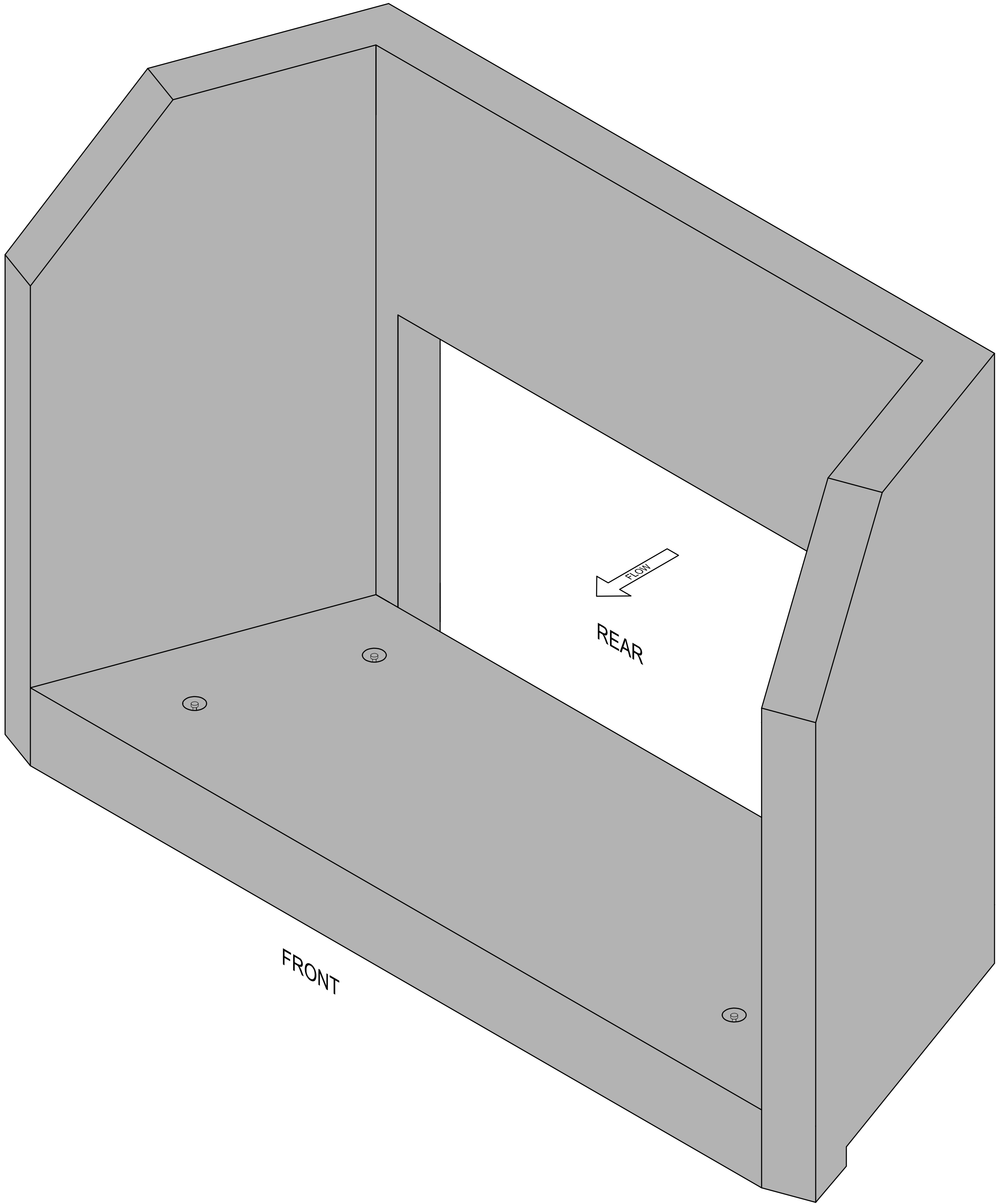
CONCRETE

- PREPARATION, PLACING AND FINISHING OF CONCRETE IS TO CONFORM TO CSA A23.1.
- TESTING OF CONCRETE IS TO CONFORM TO CSA A23.2. THE FREQUENCY AND NUMBER OF TESTS IS NOT TO BE LESS THAN ONE STRENGTH, SLUMP AND AIR TEST FOR PANELS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE TESTING SCHEDULE AND TIMING WITH THE TESTING AGENCY.
- CONCRETE PROPERTIES:

ITEM	AGG. SIZE (mm)	28 DAY STRENGTH	W/C	AIR (%)	CEMENT TYPE	EXPOSURE
STRUCTURE	20	45 Mpa	.40	4 - 7	HS	F-2

REINFORCING

- REINFORCING STEEL IS TO CONFORM TO CSA G30.12M - GRADE 400 MPa.
- REINFORCING STEEL IS TO BE PLACED AS DETAILED TO 10mm TOLERANCE AND IS TO BE SUPPORTED BY METAL OR PLASTIC SUPPORTS AND/OR HANGERS IN ACCORDANCE WITH CAN/CSA A23.1
- LAP ALL REINFORCING BAR SPLICES 32 BAR DIAMETERS MINIMUM UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- REINFORCING STEEL IS TO BE CLEAN, FREE OF CORROSION AND UNDAMAGED.
- DO NOT WELD BARS OR USE HEAT TO BEND REINFORCING STEEL.
- CONCRETE COVER OVER REINFORCEMENT IS TO BE 50mm UNLESS OTHERWISE NOTED ON DRAWINGS



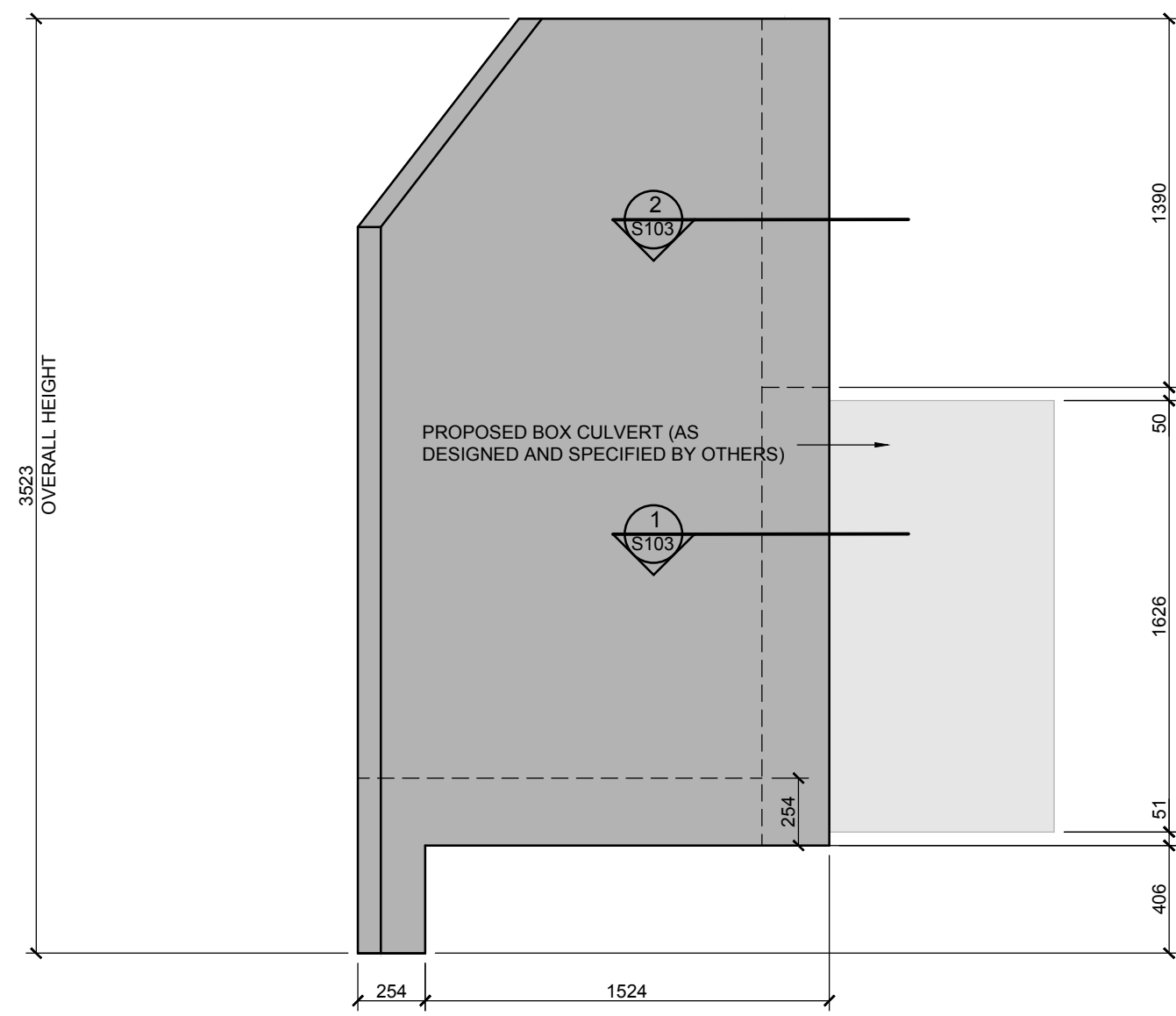
HEAD WALL STRUCTURE - ISOMETRIC VIEW
SCALE: NTS

STRUCTURAL DRAWING LIST

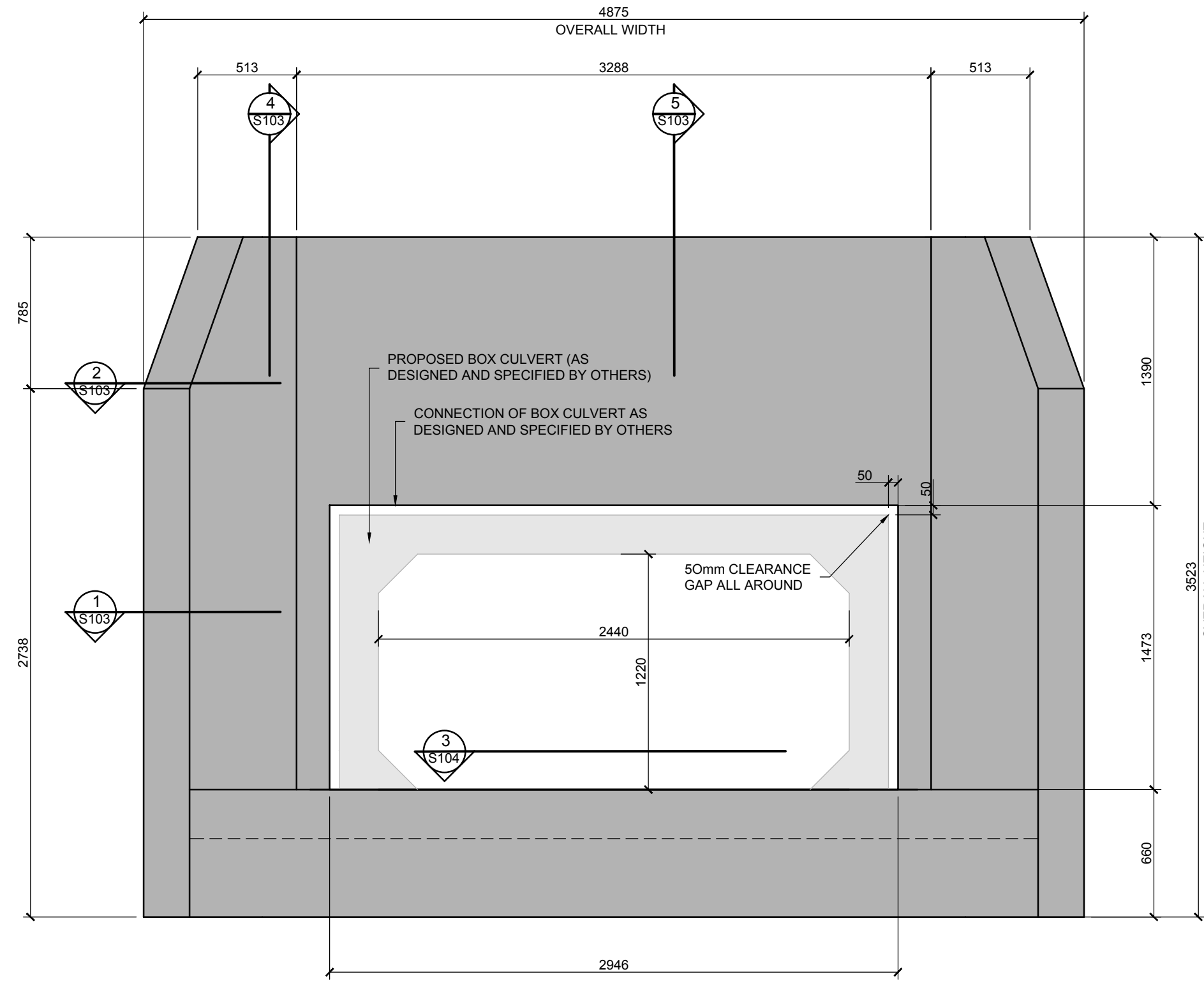
S101	STRUCTRAL NOTES AND STRUCTURE ISOMETRIC VIEW
S102	LAYOUT DETAILS
S103	SECTIONS AND DETAILS
S104	REINFORCEMENT LAYOUT DETAILS

						THIS DRAWING AND DESIGN IS THE PROPERTY OF McELHANNEY CONSULTING SERVICES LTD. (McELHANNEY) AND SHALL NOT BE USED, REUSED OR REPRODUCED WITHOUT THE CONSENT OF McELHANNEY. McELHANNEY WILL NOT BE HELD RESPONSIBLE FOR THE IMPROPER OR UNAUTHORIZED USE OF THIS DRAWING AND DESIGN. THIS DRAWING AND DESIGN HAS BEEN PREPARED FOR THE CLIENT IDENTIFIED, TO MEET THE STANDARDS AND REQUIREMENTS OF THE APPLICABLE PUBLIC AGENCIES AT THE TIME OF PREPARATION. McELHANNEY, ITS EMPLOYEES, SUBCONSULTANTS AND AGENTS WILL NOT BE LIABLE FOR ANY LOSSES OR OTHER CONSEQUENCES RESULTING FROM THE USE OR RELIANCE UPON, OR ANY CHANGES MADE TO, THIS DRAWING, BY ANY THIRD PARTY, INCLUDING CONTRACTORS, SUPPLIERS, CONSULTANTS AND STAKEHOLDERS, OR THEIR EMPLOYEES OR AGENTS, WITHOUT McELHANNEY'S PRIOR WRITTEN CONSENT.			ORIGINAL DWG SIZE: ARCH D (24" x 36")			<div>McElhanney McElhanney Consulting Services Ltd.</div> <div>42 - 8th Avenue S Suite 200 Cranbrook BC Canada V1C 2K3 Tel (250) 489-3013</div>			<div></div> <div>Approved Sealed</div>			TRIKON PRECAST 601 PATTERSON STREET WEST, CRANBROOK, BC, V1C 6T3 FORT NELSON WWTP HEAD WALL STRUCTURE STRUCTURAL NOTES AND ISOMETRIC VIEW			Drawing No. S101	
1	AUG 3, 2016	ISSUED FOR "CONSTRUCTION"	BRB	BRB	BRN																Project Number 2441-00428-00	
Rev	Date	Description	Drawn	Design	App'd																	

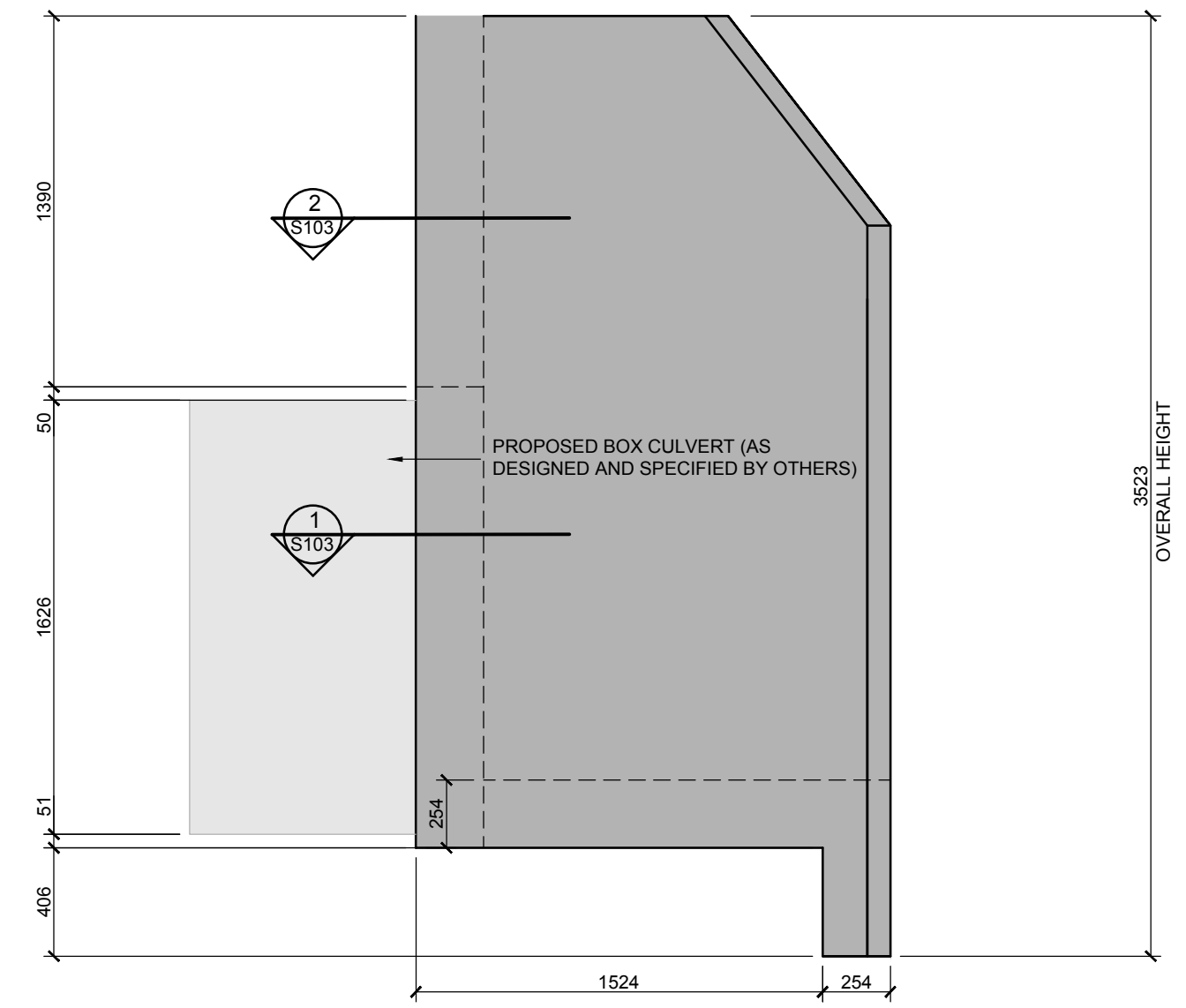
REVIEW ALL PRINTS BEARING PREVIOUS REVISION



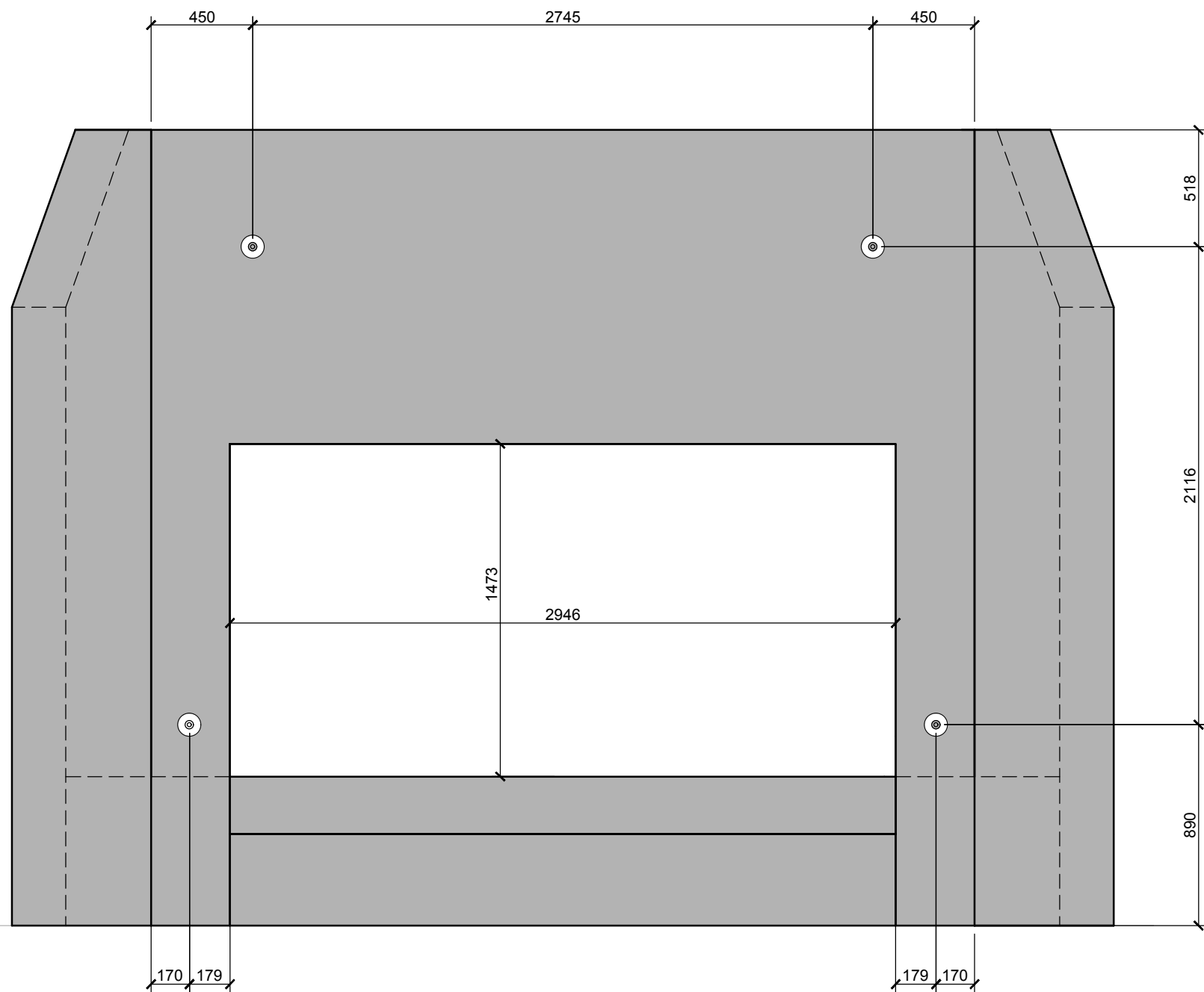
A SIDE ELEVATION VIEW
SCALE: 1:25



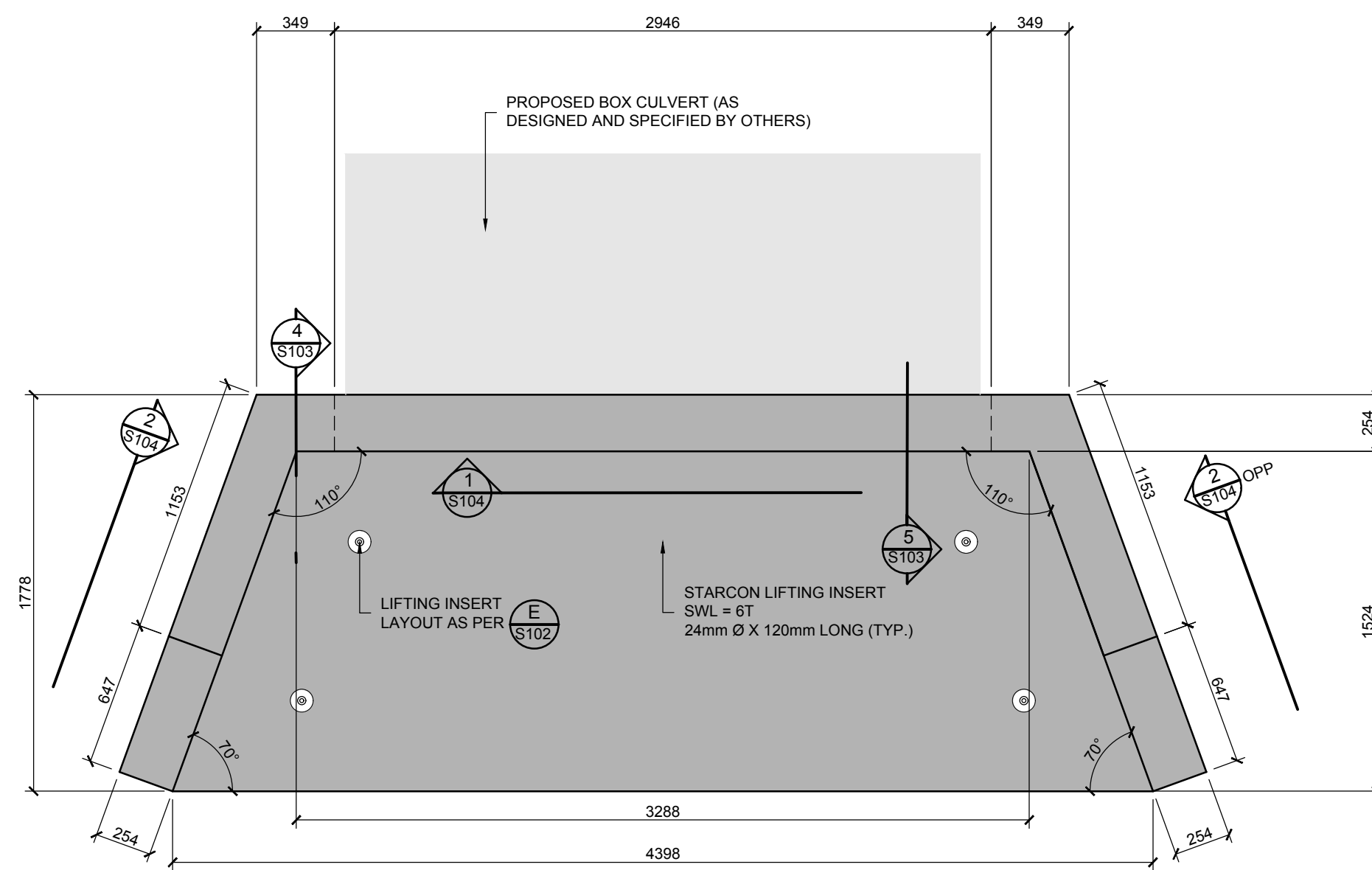
B FRONT ELEVATION VIEW
SCALE: 1:25



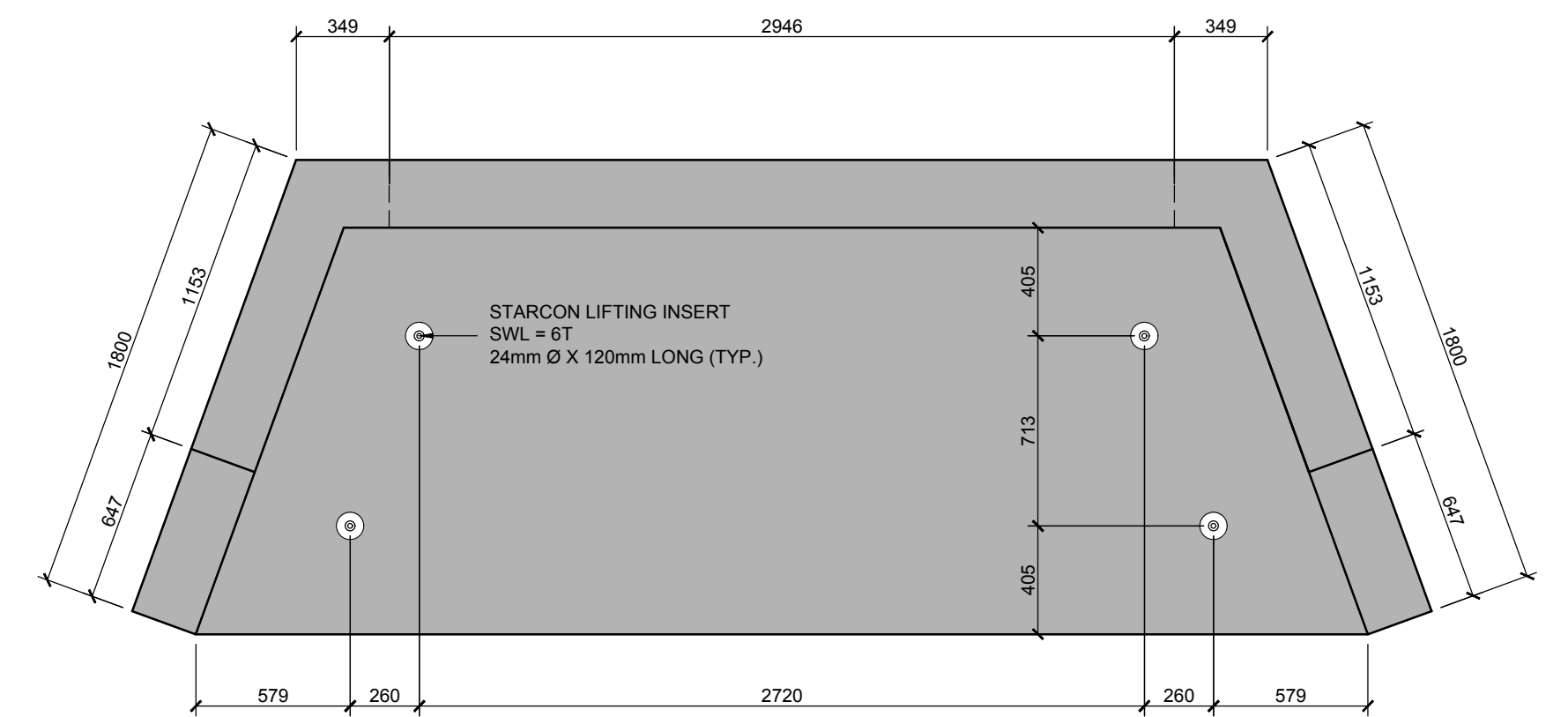
C SIDE ELEVATION VIEW
SCALE: 1:25



D LIFTING INSERT LAYOUT - REAR ELEVATION
SCALE: 1:25



E PLAN VIEW
SCALE: 1:25



F LIFTING INSERT LAYOUT - PLAN
SCALE: 1:25

Rev	Date	Description	Drawn	Design	App'd
1	AUG 3, 2016	ISSUED FOR "CONSTRUCTION"	BRB	BRB	BRN

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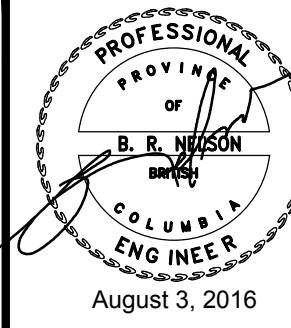
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ORIGINAL DWG SIZE: ARCH D (24" x 36")



McElhanney
McElhanney Consulting Services Ltd.

42 - 8th Avenue S
Suite 200
Cranbrook BC
Canada V1C 2K3
Tel (250) 489-3013



Approved Sealed

TRIKON PRECAST
601 PATTERSON STREET WEST, CRANBROOK, BC, V1C 6T3

FORT NELSON WWTP
HEAD WALL STRUCTURE
LAYOUT DETAILS

Drawing No.

S102

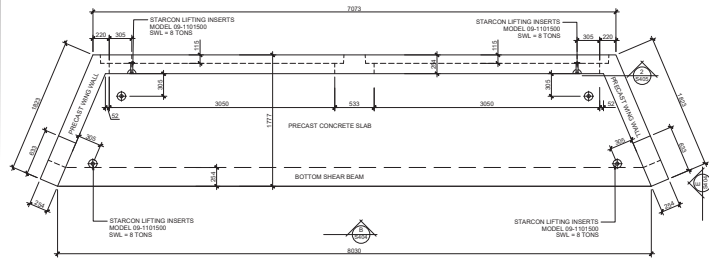
Project Number

2441-00428-00

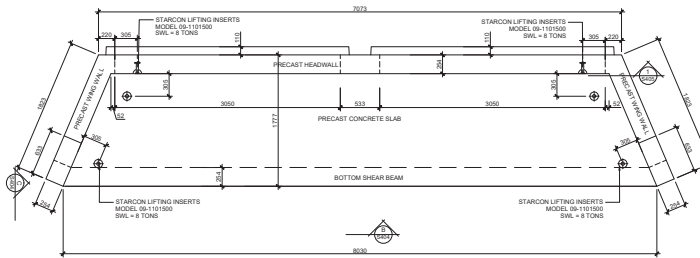
Rev.

1

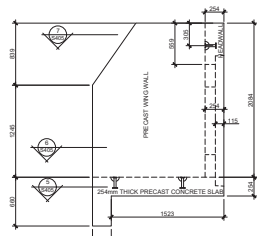
TESTIFY ALL PRINTS BEARING PREVIOUS REVISION



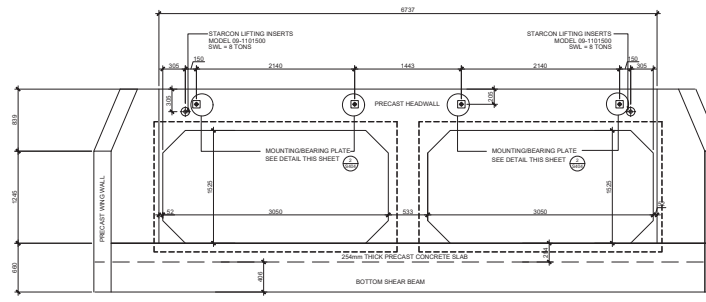
FEMALE HEADWALL - PLAN VIEW
SCALE: 1:30



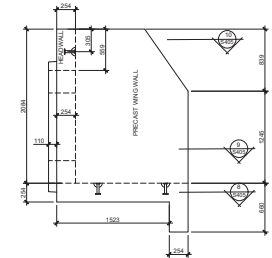
MALE HEADWALL - PLAN VIEW
SCALE: 1:30



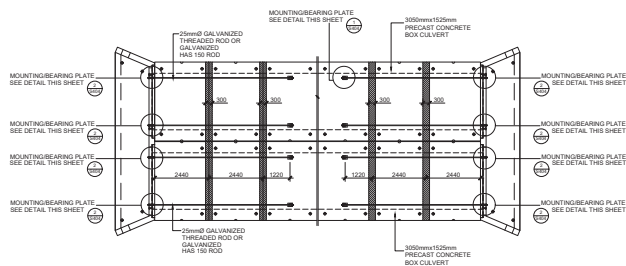
HEADWALL - SIDE VIEW
SCALE: 1:30



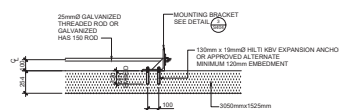
HEADWALL - FRONT VIEW
SCALE: 1:30



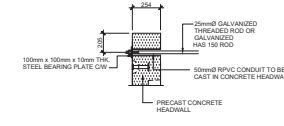
HEADWALL - SIDE VIEW
SCALE: 1:30



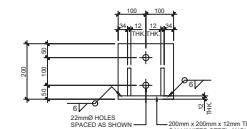
HEADWALL TIE BACK LAYOUT
SCALE: 1:30



CONNECTION DETAIL
SCALE: 1:20



CONNECTION DETAIL
SCALE: 1:20



MOUNTING BRACKET - DETAIL
SCALE: 1:8

NOTES:
1) DESIGN PARAMETER AND STRUCTURAL SPECIFICATION
SEE DRAWING S401

Rev	Date	Description	Drawn	Design	Appr
1	May 30, 2019	GENERAL REVISION	km	km	km
2	May 16, 2019	ISSUED FOR "CONSTRUCTION"	km	km	km

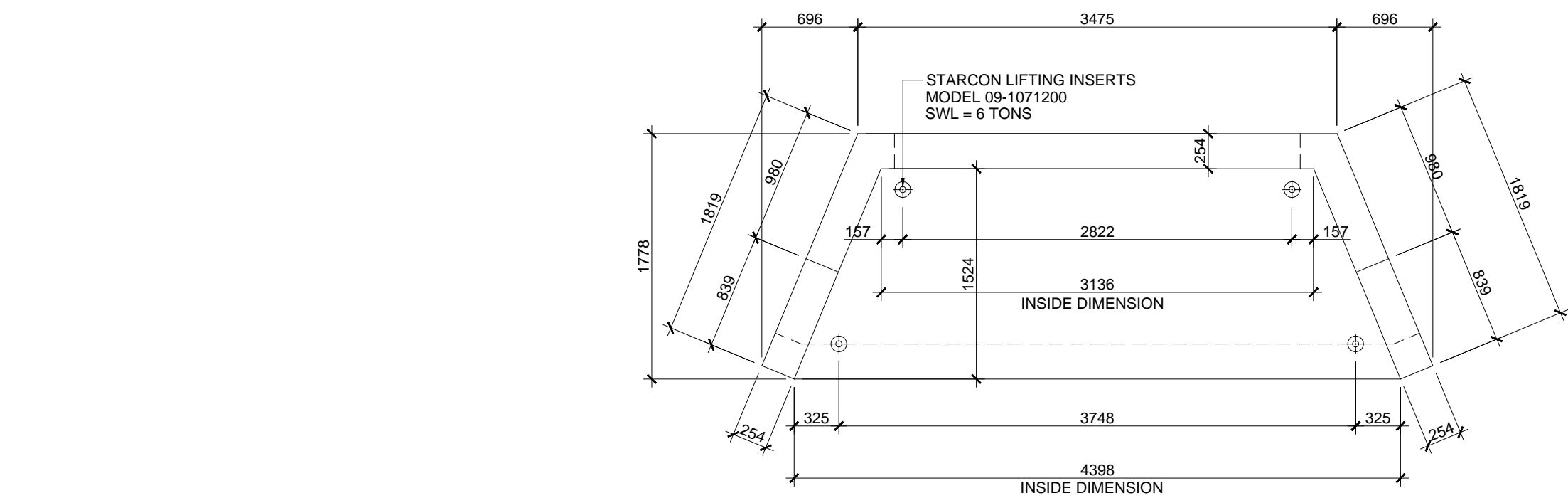
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ORIGINAL DWG SIZE ARCH D (34" x 36")

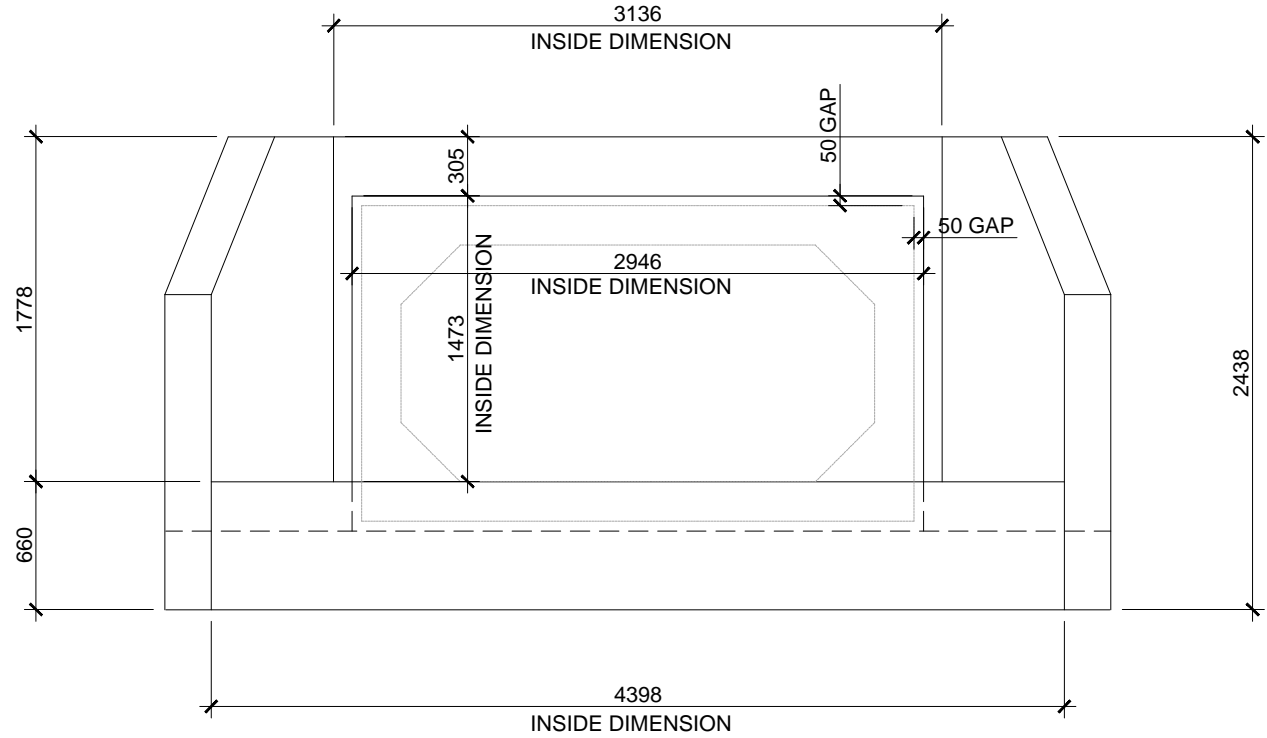
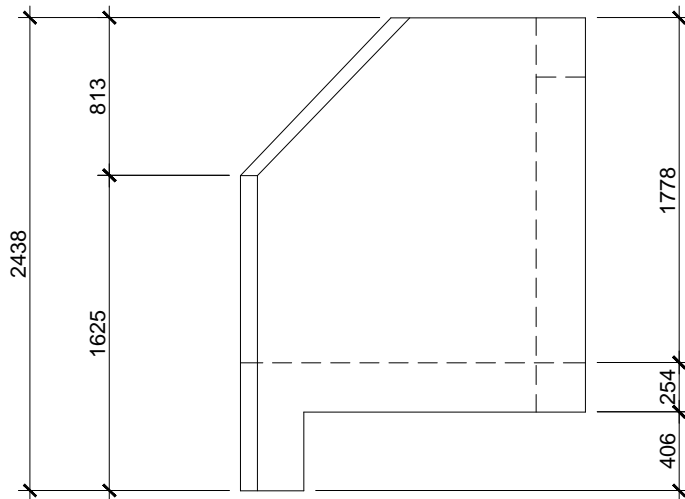


TRI-KON PRECAST CONCRETE PRODUCTS Ltd.
601 PATTERSON STREET WEST, CRAWBROOK, BC
BOW VALLEY PARKWAY CULVERT REPLACEMENT
STA 11+1500
BOX CULVERT (3050mm x 1525mm) HEAD WALL
PLAN, SECTIONS, AND DETAILS

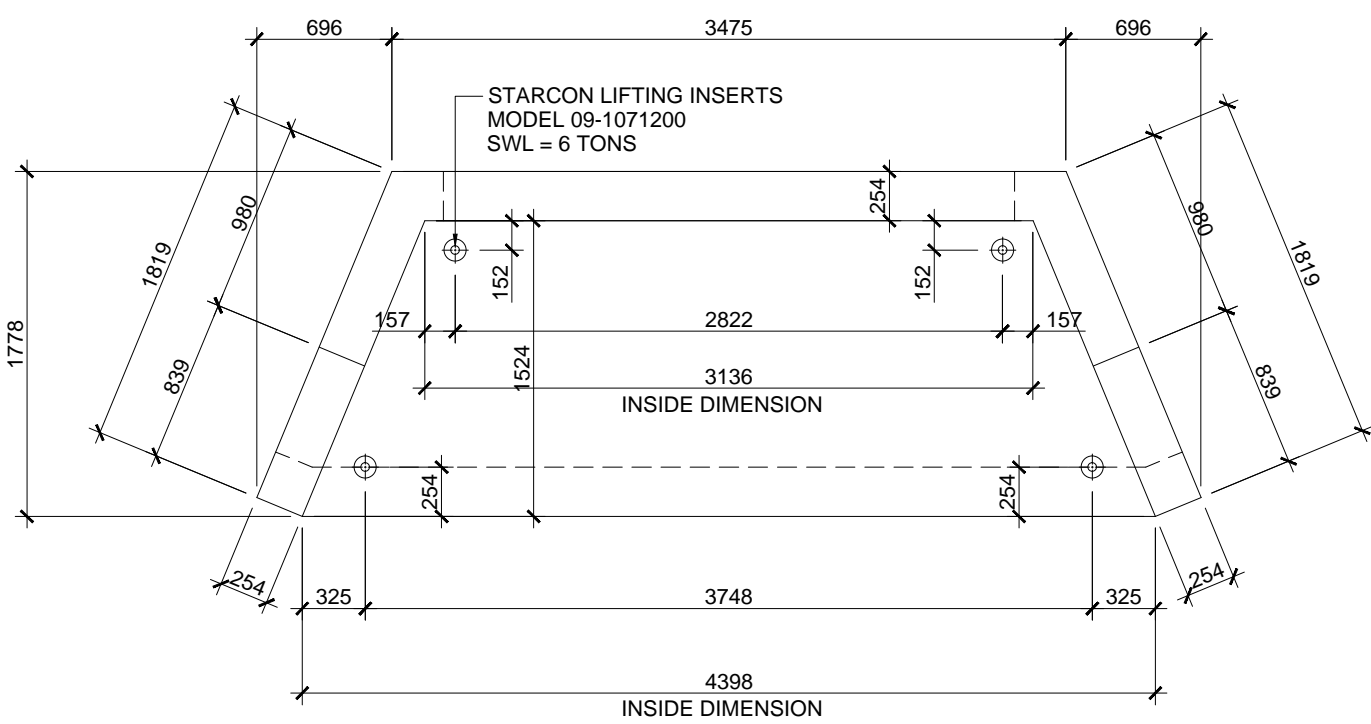
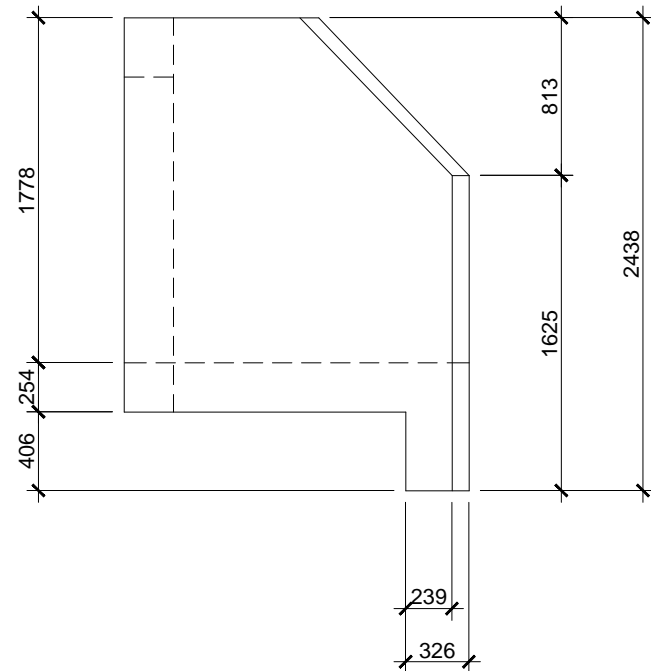
Drawing No. **S404**
Project Number
2441-00857-00
Rev. 1



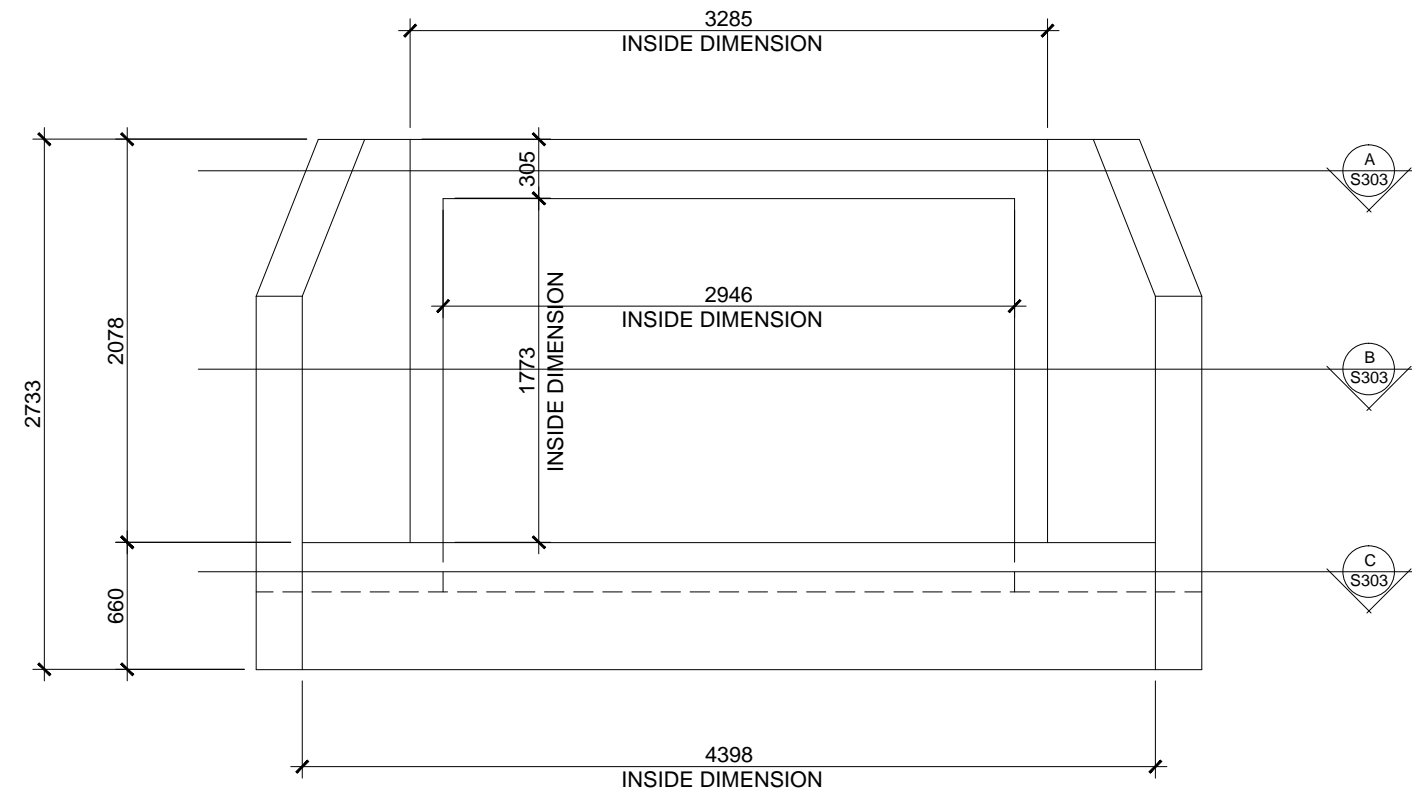
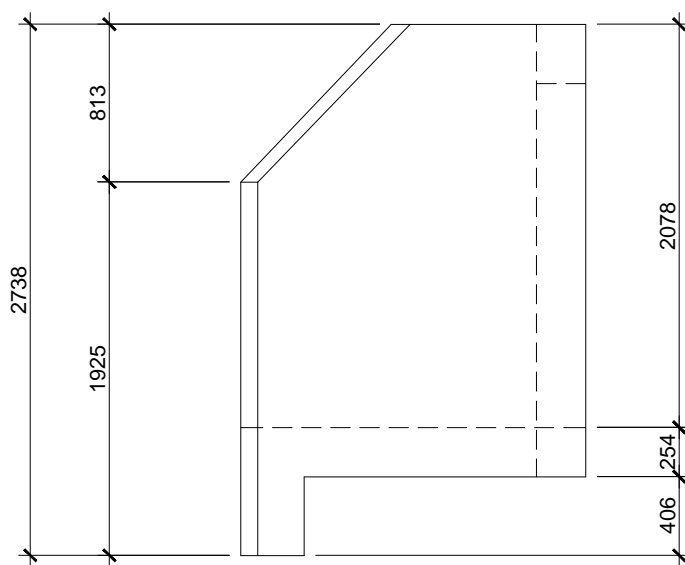
ESTIMATED WEIGHT = 103 kN (23,100 LBS)



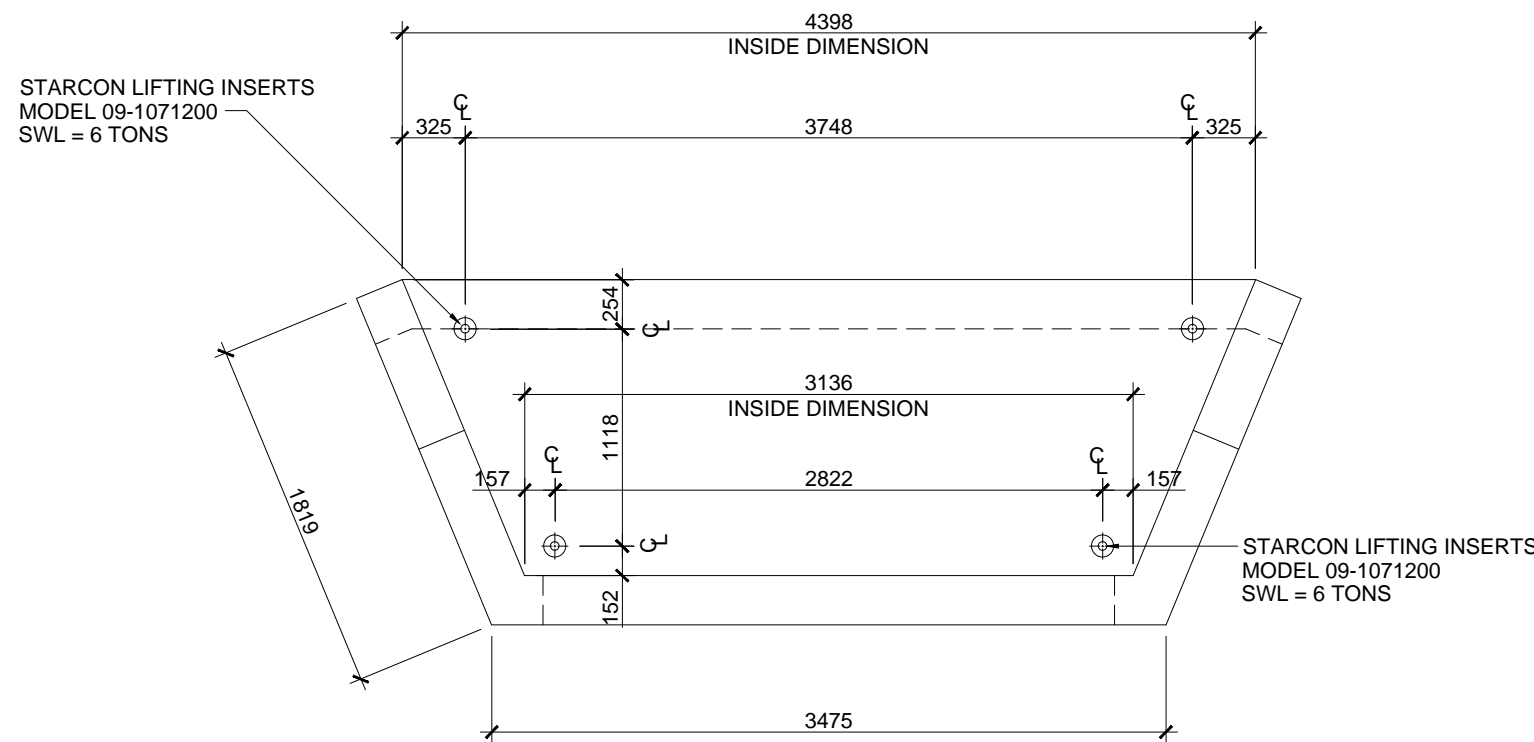
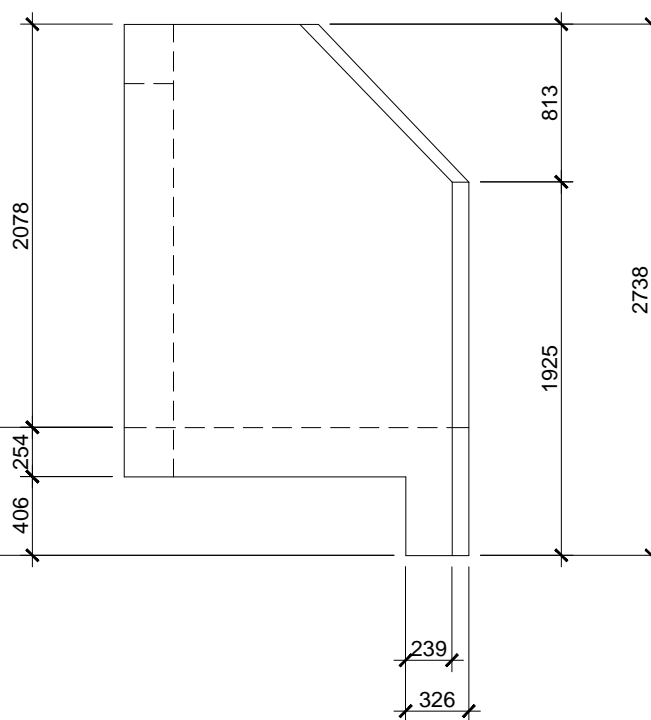
HEADWALL TYPE "HW -1"
SCALE: 1:40



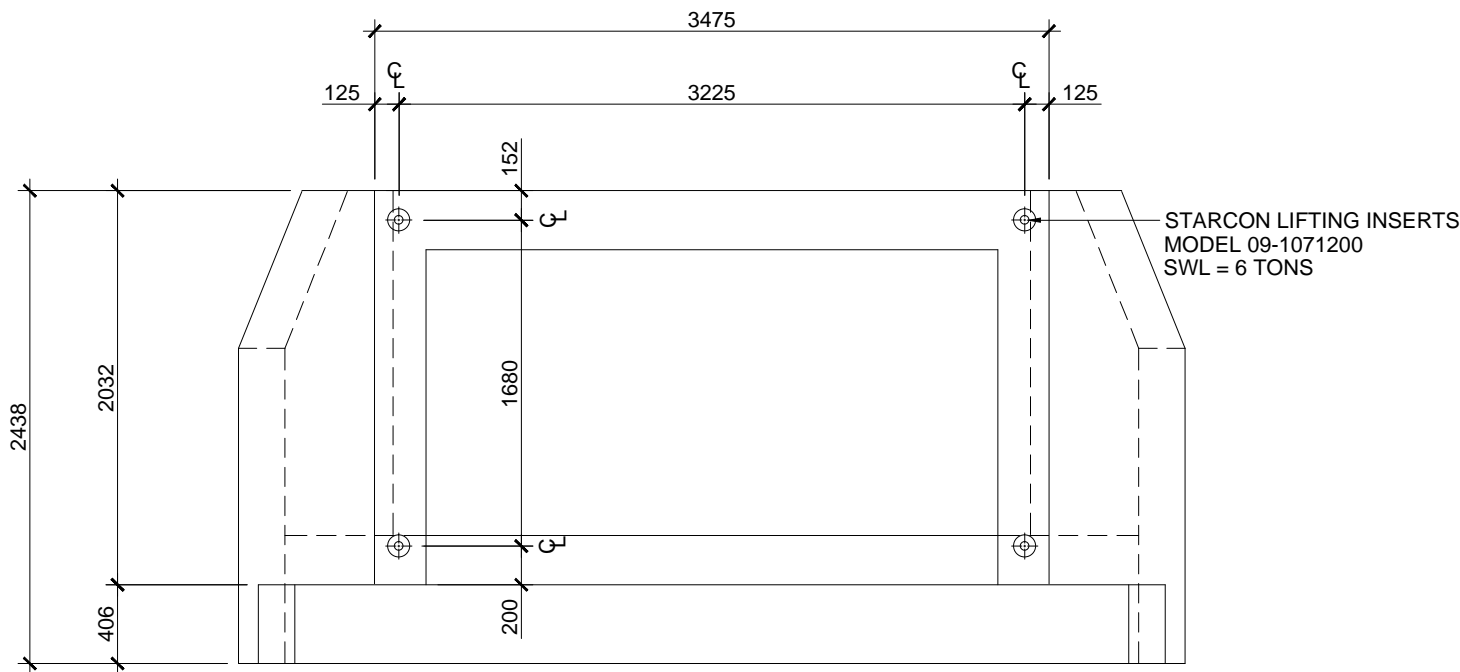
ESTIMATED WEIGHT = 112 kN (25,100 LBS)



HEADWALL TYPE "HW -2"
SCALE: 1:40

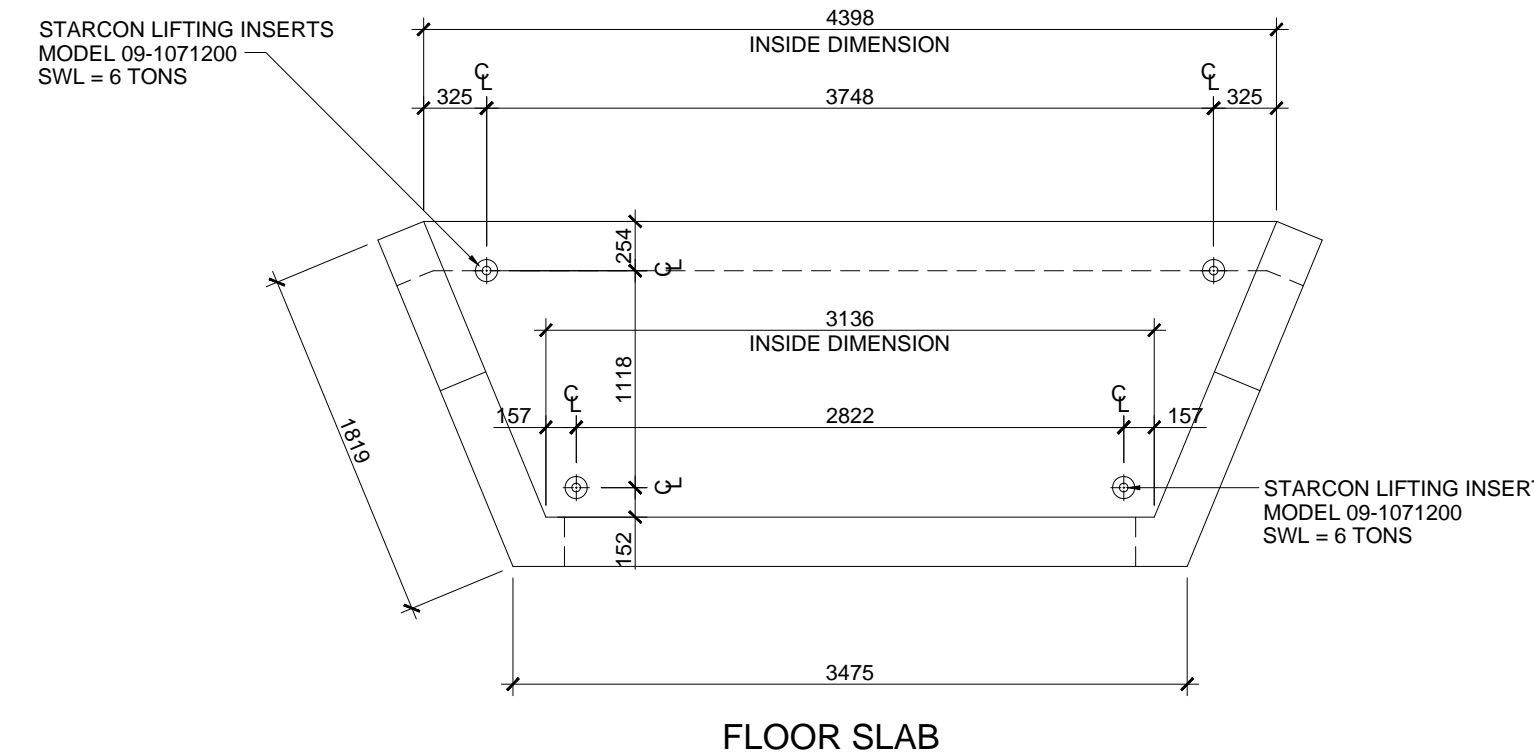


FLOOR SLAB

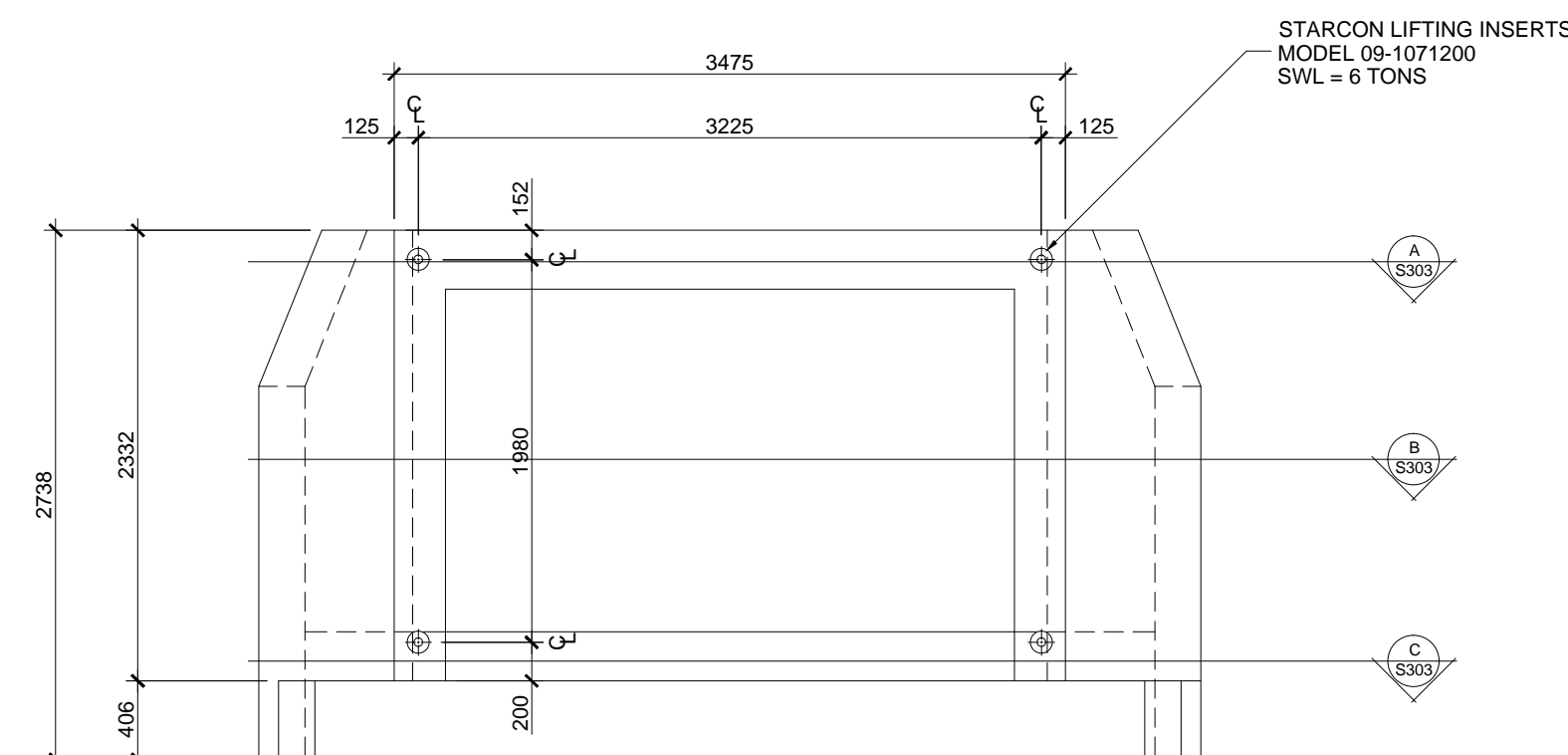


BACK WALL

"HW-1" LIFTING INSERT LOCATIONS
SCALE: 1:40



FLOOR SLAB



BACK WALL

"HW-2" LIFTING INSERT LOCATIONS
SCALE: 1:40

STRUCTURAL SPECIFICATION

GENERAL

- 1) ALL CONSTRUCTION SHALL CONFORM TO ASTM C1433M STANDARDS AND SUBSEQUENT REVISIONS.
- 2) ALL REFERENCES TO STANDARDS SHALL REFER TO THE LATEST REVISED ISSUE
- 3) THE STRUCTURAL ENGINEER ASSUMES NO RESPONSIBILITY FOR INSPECTION OF CONSTRUCTION OR VERIFICATION OF CONSTRUCTION UNLESS EXPRESSLY RETAINED TO DO SO.
- 4) INSTALLATION POSITIONING, BEDDING AND BACKFILL IS TO BE SPECIFIED BY OTHERS.

CONCRETE

- 1) ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND CSA STANDARD CAN/CSA-A23.1-09/CAN/CSA-A23.2-09
- 2) CONCRETE PROPERTIES:

ITEM	AGG. SIZE	28 DAY STRENGTH	W/C RATIO	AIR	TYPE
ALL	20mm	45 MPa.	0.40	4%-7%	HS
- 3) BEFORE PLACING CONCRETE, THE CONTRACTOR SHALL CHECK ALL APPLICABLE DRAWINGS FOR ANCHOR BOLTS, INSERTS, EMBEDS, RECESSES AND BLOCKOUTS. THEIR LOCATIONS SHALL BE CONFIRMED BY THE VARIOUS SUBTRADES.
- 4) CONCRETE COVER OVER REINFORCEMENT IS TO BE:
 - a. FORMED SURFACE EXPOSED TO GROUND OR WEATHER =50mm

REINFORCING STEEL

- 1) STEEL REINFORCEMENT SHALL BE MINIMUM GRADE 400 MPa. DEFORMED BARS CONFORMING TO CAN/CSA G30.18M92 9R2002)
- 2) WWM REINFORCEMENT SHALL BE MINIMUM GRADE 480 MPa. DEFORMED BARS CONFORMING TO CAN/CSA G30.18M92 9R2002. DIAMETER AS NOTED ON THE DRAWINGS (10mmØ AND 13mmØ)
- 3) REINFORCING STEEL IS TO BE PLACED AS DETAILED TO 10mm TOLERANCE AND IS TO BE SUPPORTED BY METAL OR PLASTIC SUPPORTS AND/OR HANGERS IN ACCORDANCE WITH CAN/CSA A23.1
- 4) LAP ALL REINFORCING BAR SPLICES 32 BAR DIAMETERS MINIMUM UNLESS INDICATED OTHERWISE ON THE DRAWINGS.
- 5) REINFORCING STEEL IS TO BE CLEAN, FREE OF CORROSION AND UNDAMAGED.
- 6) DO NOT WELD BARS OR USE HEAT TO BEND REINFORCING STEEL.

LIFTING INSERTS

- 1) LIFTING INSERTS ARE TO BE AS MANUFACTURED BY STARCON MODEL 09-1071200 WITH RATED CAPACITY OF 6 TONS. CONTRACTOR IS TO GROUT ALL INSERT POCKETS PRIOR TO BACK FILLING THE BOX CULVERT.

REFERENCE DRAWINGS

- 1) LAYOUT AND STRUCTURAL SIZING IS BASED ON DESIGN DRAWINGS PREPARED BY McELHANNEY DATED 16-05-24. (YOHO CULVERT REPLACEMENTS AND REPAIRS)
- 2) McELHANNEY HAS RELIED ON THE PROVIDED DRAWING SET AS ACCURATE AND TRUE. CONSULTANT IS NOT RESPONSIBLE FOR ANY ERROR/OMISSIONS ON THESE DRAWINGS AS A RESULT OF ERRORS OR SUBSEQUENT CHANGES TO THE PROVIDED DRAWING SET OR UNKNOWN SITE AND AS-BUILT CONDITIONS.
- 3) IF CHANGES ARE MADE TO THE LAYOUT OF THE STRUCTURE, OR SITE CONDITIONS VARY FROM ASSUMED, OR THE ASSUMED LOAD PATHS ARE ALTERED (RELOCATED ELEMENTS, ETC), THE STRUCTURAL ENGINEER SHOULD BE NOTIFIED SUCH THAT CHANGES CAN BE MADE TO THE DESIGN IF REQUIRED.

PRECAST COMPONENT LIFTING AND RIGGING

- 1) THE PRECAST CONTRACTOR IS RESPONSIBLE FOR ALL RIGGING AND LIFTING PROCEDURES REQUIRED TO ENSURE SAFE LIFTING AND PLACEMENT OF PRECAST CONCRETE COMPONENTS IN ACCORDANCE WITH INDUSTRY STANDARDS AND WORKSAFE BC REQUIREMENTS.
- 2) THE CONTRACTOR IS TO ENSURE THAT THE HOISTING DEVICES INCLUDING ALL ASSOCIATED ACCESSORIES (SHACKLES, SLINGS, PINS ETC.) ARE RATED TO THE APPLICABLE LOAD AND ARE IN GOOD WORKING CONDITION.
- 3) THE CONTRACTOR IS TO ENSURE THAT ALL PERSONNEL OPERATING OR WORKING WITH THE HOISTING DEVICES ARE PROPERLY TRAINED, EXPERIENCED AND CERTIFIED ON THE HOISTING DEVICE.

Rev	Date	Description	Drawn	Design	App'd
1	AUG.12, 2016	GENERAL REVISION	BN	BN	BN
0	AUG.5, 2016	ISSUED FOR "CONSTRUCTION"	BN	BN	BN

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42 - 8th Avenue S Suite 200 Cranbrook BC Canada V1C 2K3 Tel 250-489-3013		

TRI-KON PRECAST PRODUCTS Ltd. 601 PATTERSON STREET WEST, CRANBROOK, BC	
YOHO NATIONAL PARK, BRITISH COLUMBIA CULVERT REPLACEMENTS AND REPAIRS REINFORCED CONCRETE HEADWALL STRUCTURES HEADWALL TYPE "HW-1" AND HEADWALL TYPE "HW-2"	

Drawing No.	
S301	
Project Number	Rev.
2441-00440-00	1