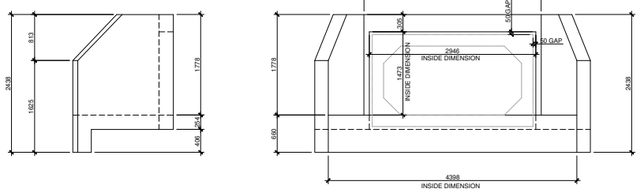
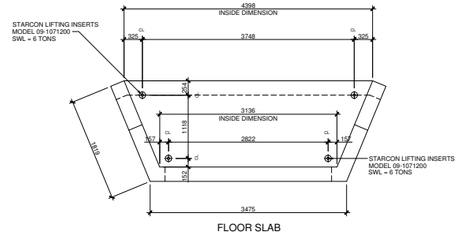


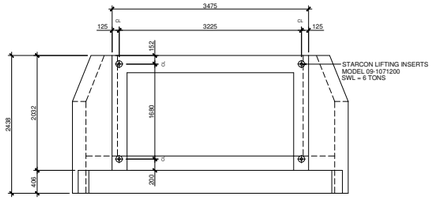
ESTIMATED WEIGHT = 103 KN (23,100 LBS)



A S301 HEADWALL TYPE "HW -1"
SCALE: 1:40

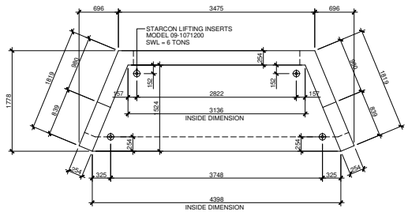


FLOOR SLAB

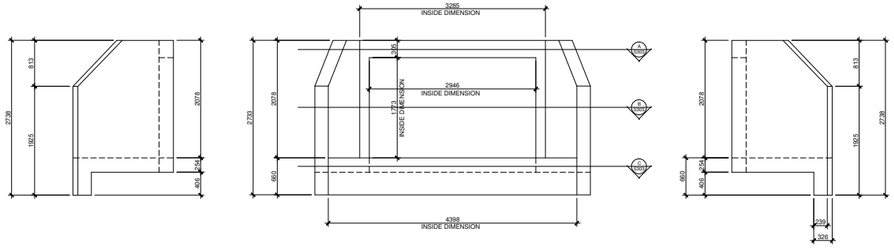


BACK WALL

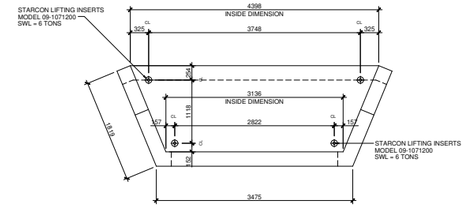
B S301 "HW-1" LIFTING INSERT LOCATIONS
SCALE: 1:40



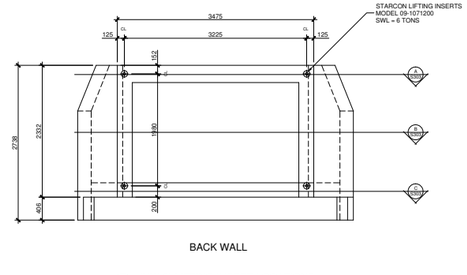
ESTIMATED WEIGHT = 112 KN (25,100 LBS)



C S301 HEADWALL TYPE "HW -2"
SCALE: 1:40



FLOOR SLAB



BACK WALL

D S301 "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:

		28 DAY			
ITEM	AGG. SIZE	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/OMMISSIONS 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	Appd
1	AUG.12, 2016	GENERAL REVISION	BN	BN	BN
0	AUG.5, 2016	ISSUED FOR "CONSTRUCTION"	BN	BN	BN

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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 2441-00440-00

Rev. 1

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PRODUCT
Headwall

DRAWING
Yoho National Park: Headwall Types HW-1 and HW-2

WEIGHT

DRAWING NO.
S301

DATE
16-05-24

SHEET
04 of 4

UNITS / SCALE
As per drawing

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