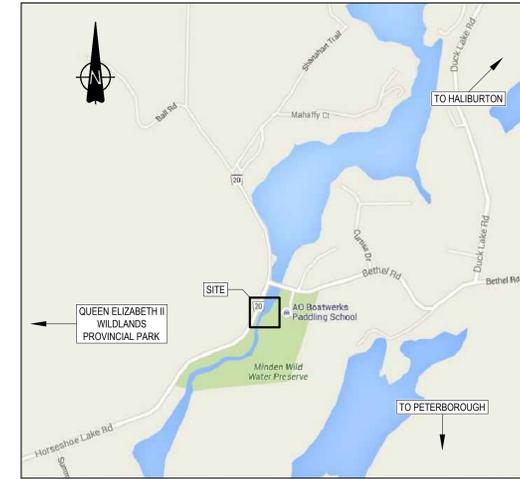


HORSESHOE LAKE DAM REPLACEMENT

MINDEN HILLS, ONTARIO



DWG No.	DESCRIPTION
100	COVER SHEET AND DRAWING LIST
101	GENERAL NOTES
102	EXISTING CONDITIONS - PLAN VIEW
103	EXISTING CONDITIONS - ELEVATION AND SECTION
104	PROPOSED CONSTRUCTION STAGING - PLAN STAGE 1 TO 4
105	PROPOSED CONSTRUCTION STAGING - PLAN STAGE 5 TO 8
106	REMOVALS
107	CONSTRUCTION - NEW GENERAL ARRANGEMENT
108	CONSTRUCTION - ELEVATION AND SECTIONS
109	REINFORCING - DECK
110	REINFORCING - PIER SECTIONS AND SILL SLAB
111	CONSTRUCTION - WEST ABUTMENT AND STAIRS
112	CONSTRUCTION - EAST ABUTMENT AND PEDESTRIAN WALKWAY
113	TYPICAL DETAILS - GAIN EMBEDDED PARTS
114	MISCELLANEOUS METAL DETAILS
115	MISCELLANEOUS DETAILS
116	PUBLIC SAFETY PLAN
117	FALL ARREST SYSTEM



No.	Description	Dwn.By (Des.Par)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
COVER SHEET AND DRAWING LIST

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet
JOHN JUFFS

HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 100
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1

1. GENERAL NOTES:

- 1.1. THE GENERAL NOTES AND STRUCTURAL STANDARD DETAILS ARE GENERAL AND APPLY TO THE STRUCTURES EXCEPT WHERE THERE ARE SPECIFIC INDICATIONS TO THE CONTRARY.
- 1.2. CONSTRUCTION TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO AND NATIONAL BUILDING CODES. THE ABOVE TO GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR THE FOLLOWING NOTES ARE MORE RESTRICTIVE.
- 1.3. PROVIDE ALL REQUIRED TEMPORARY BRACING AND SUPPORTS FOR ALL SLABS, BEAMS, WALLS AND FRAMES. TEMPORARY BRACING AND SUPPORTS MUST BE CAPABLE OF TRANSFERRING ALL IMPOSED CONSTRUCTION AND DEAD LOADS TO THE STRUCTURE WITHOUT EXCEEDING SPECIFIED DESIGN LOADS.
- 1.4. REINFORCEMENT STEEL FABRICATING AND PLACING TOLERANCES SHALL NOT REDUCE THE CONCRETE COVER TO LESS THAN THE SPECIFIED MINIMUM CONCRETE COVER NOTED IN THE GENERAL NOTES.
- 1.5. SUBMIT PROPOSALS FOR CONSTRUCTION JOINT LOCATIONS OTHER THAN THOSE SHOWN ON DRAWINGS TO DEPARTMENTAL REPRESENTATIVE FOR REVIEW.
- 1.6. BEFORE CASTING CONCRETE, ENSURE THAT ALL EMBEDDED ITEMS, SUCH AS ANCHOR BOLTS, SLEEVES AND WATER STOPS ARE IN POSITION AND SECURELY FASTENED IN PLACE TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- 1.7. ENSURE THAT THE ROCK BELOW A FOUNDATION IS NOT ALLOWED TO FREEZE, EITHER DURING OR AFTER CONSTRUCTION, UNDER NO CIRCUMSTANCES SHALL CONCRETE BE PLACED ON FROZEN SOIL.
- 1.8. INTERNAL WATERSTOPS ARE REQUIRED IN ALL JOINTS OF WATER RETAINING STRUCTURES. TERMINATE INTERNAL WATERSTOPS AT GRADE IN NON-WATER RETAINING EXTERIOR WALLS.
- 1.9. ALL WORKS SHALL CONFORM TO THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT.
- 1.10. INSTALL ROCK DOWELS AS PER MANUFACTURERS RECOMMENDATIONS.
- 1.11. PROVIDE ADDITIONAL REINFORCEMENTS AROUND OPENINGS. GENERAL DETAIL IS SHOWN ON REINFORCING SHOP DRAWINGS WHEN ADDITIONAL REINFORCEMENTS AROUND OPENINGS ARE NOT SPECIFICALLY SHOWN ON DRAWINGS.
- 1.12. THE EXISTING CONCRETE SURFACES/INTERFACES SHALL BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF AT LEAST 5MM U.N.O. TO RECEIVE NEW CONCRETE ELEMENTS, WHEN NEW CONCRETE STRUCTURAL ELEMENTS ARE TO BE CONSTRUCTED ON EXISTING CONCRETE STRUCTURES WHETHER SHOWN ON DRAWINGS OR NOT.
- 1.13. BUILDING CONTROL LINES, REFERENCE LINES, GRID LINES AND TEMPORARY BENCH MARKS TO BE CLEARLY IDENTIFIED AND MAINTAINED DURING THE ENTIRE CONSTRUCTION PERIOD.
- 1.14. ALL EXISTING ADJACENT STRUCTURES SHALL BE MONITORED CLOSELY DURING CONSTRUCTION BY THE CONTRACTOR.
- 1.15. CONTRACTOR IS RESPONSIBLE FOR COMPLETING OUT THE TEMPORARY SHORING WORK IN SUCH A MANNER THAT EXCESSIVE VIBRATION IS MINIMIZED. ALL COST OF DAMAGES IMPOSED BY THE TEMPORARY SHORING WORK AS IDENTIFIED FROM THE POST CONSTRUCTION SURVEY OF NEIGHBOURING PROPERTIES AND EXISTING ADJACENT STRUCTURES SHALL BE BORNE BY THE CONTRACTOR.
- 1.16. CONTRACTOR IS RESPONSIBLE FOR THE RESTORATION OF ALL DISTURBED AREAS BACK TO ORIGINAL CONDITIONS OR BETTER AFTER THE COMPLETION OF WORKS.
- 1.17. ALL EXISTING FACILITIES HAVE TO REMAIN OPERATIONAL UNLESS NOTED OTHERWISE. CONTRACTOR IS RESPONSIBLE TO COORDINATE AND LIAISE WITH THE DAM OPERATOR DURING CONSTRUCTION PERIOD WITH RESPECT TO AVAILABLE WORK AREA. ACCESS MUST BE PROVIDED DURING STAGED DEMOLITION AND CONSTRUCTION TO OPERATE AND MAINTAIN THE EXISTING FACILITY.
- 1.18. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES. THE OWNER AND THE DEPARTMENTAL REPRESENTATIVE ASSUME NO RESPONSIBILITY FOR THE ACCURACY OF UTILITIES INDICATED ON THE DRAWINGS.
- 1.19. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE CLEANLINESS OF THE FACILITY ROADS FROM THE ENTRANCE TO THE WORK AREA.
- 1.20. ALL DIMENSIONS ARE IN MILLIMETRES. ALL ELEVATIONS IN METRES. (U.N.O.)
- 1.21. ALL DRY VISIBLE CRACKS SHALL BE STRUCTURALLY REPAIRED WITH INJECTION.
- 1.22. THE STRUCTURE SHALL BE WATERTIGHT. CRACKS SHALL BE INJECTED AS NECESSARY TO ELIMINATE WET SURFACE.
- 1.23. SHOP DRAWINGS TO BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
- 1.24. IF THE CONTRACTOR SHOULD ENCOUNTER CONDITIONS WHICH WERE NOT PROVIDED FOR BY THE DRAWINGS AND SPECIFICATIONS, THEY SHALL IMMEDIATELY NOTIFY THE DEPARTMENTAL REPRESENTATIVE, WHO WILL MAKE THE NECESSARY ALTERATIONS TO DESIGN. FAILURE OF THE CONTRACTOR TO NOTIFY THE DEPARTMENTAL REPRESENTATIVE SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FULLY COMPLETING THE WORK.
- 1.25. THE CONTRACTOR SHALL ARRANGE FOR AND CONSTRUCT, WITHOUT ADDITIONAL COMPENSATION, SUCH ACCESS STRUCTURES AND/OR ROADS ON THE SITE AS THEY FIND NECESSARY. THE LOCATION OF SUCH ROADS SHALL BE SUBJECT TO THE APPROVAL OF THE DEPARTMENTAL REPRESENTATIVE. UPON COMPLETION OF THE WORK, THE ACCESS POINTS AND ROADS SHALL BE REMOVED AND THE SITE REHABILITATED AS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
- 1.26. THE CONTRACTOR SHALL CARRY ON THEIR WORK IN SUCH A MANNER AS TO BE SAFE TO THEMSELVES, THEIR WORKERS, THEIR SUB-CONTRACTORS AND THE PUBLIC. THEY SHALL TAKE ALL NECESSARY STEPS FOR SUCH PROTECTION TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE, MINISTRY OF LABOUR AND THE CONSTRUCTION SAFETY ASSOCIATION.
- 1.27. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS AND TO PROVIDE ALL TRAFFIC SAFETY AND CONTROL MEASURES IN ACCORDANCE WITH THE ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, TEMPORARY CONDITIONS. THE CONTRACTOR SHALL MAKE ARRANGEMENTS WITH THE LOCAL AUTHORITY AT LEAST 14 DAYS PRIOR TO UTILIZING ANY PUBLIC ROAD.
- 1.28. FINAL CONSTRUCTION STAGING AND COFFERDAM DESIGN MUST BE PREPARED BY THE CONTRACTOR, SUBMITTED TO AND APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.

2. CONCRETE

- 2.1. CONCRETE 28-DAYS SPECIFIED COMPRESSIVE STRENGTH:

STRUCTURAL CONCRETE	35 MPa (U.N.O)
LEAN CONCRETE	20 MPa
FILL CONCRETE	10 MPa
NON-SHRINK FILL	0.4 MPa
- 2.2. MINIMUM CONCRETE STRENGTH TO SPECIFICATIONS.
- 2.3. USE 5%-8% AIR CONTENT FOR CLASS F-1 CONCRETE. MAXIMUM AGGREGATE SIZE 20 mm FOR CONCRETE THICKNESS UNDER 300 mm OR IN CONGESTED REINFORCING; 40 mm FOR ALL OTHER CONCRETE
- 2.4. CARE SHOULD BE TAKEN TO ENSURE COVER TO REINFORCEMENT WHEN POURING ON PREPARED ROCK SURFACE. ALL CONCRETE MUST BE PLACED AGAINST ROCK SURFACE, VOIDS IN THE ROCK, SOIL OR CONCRETE INTERFACE ARE NOT ALLOWED.
- 2.5. THE CONTRACTOR SHALL COMPLY WITH MAXIMUM POUR HEIGHTS, AND POUR RATES STATED ON THE EMBEDDED PARTS MANUFACTURERS DRAWINGS. THE SPECIFICATIONS AND FRAMEWORK LIMITATIONS, WHERE ANY DISCREPANCIES OCCUR, THE MOST STRINGENT REQUIREMENTS SHALL APPLY.
- 2.6. CONCRETE FINISH ON THE DECK TO BE A LIGHT BROOM FINISH.
- 2.7. CONCRETE EDGES IN DAM PIERS AND WALLS TO HAVE A 3" RADIUS FILLET, UNLESS NOTED OTHERWISE.

3. REINFORCEMENT:

- 3.1. REINFORCEMENT TO CSA G30.18M GRADE 400 U.N.O.
- 3.2. ALL HOOKS SHOWN ON DRAWINGS TO BE STANDARD HOOKS CONFORMING TO CAN/CSA A23.3 (U.N.O.)
- 3.3. CONCRETE COVER:

MINIMUM CONCRETE COVER	50 mm (U.N.O.)
CONCRETE POURED AGAINST ROCK/SOIL (U.N.O.)	75 mm
ALL WATER PASSAGES (U.N.O.)	75 mm
- 3.4. UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING MINIMUM LAP LENGTHS:

	TOP BARS		OTHER BARS		DOWELS	
	CLASS A	CLASS B	CLASS A	CLASS B	CLASS A	CLASS B
10M	360	470	300	360	300	360
15M	510	660	390	510	390	510
20M	620	800	480	620	480	620
25M	1000	1300	770	1000	770	1000
30M	1190	1540	910	1190	910	1190
35M	1440	1900	1090	1440	1100	1440

- NOTE: TOP BARS ARE (a) ALL HORIZONTAL BAR IN BEAMS AND SLABS WITH MORE THAN 300 mm CONCRETE BELOW, (b) ALL HORIZONTAL BARS IN WALLS.
- PROVIDE CLASS B LAP UNLESS NOTED OTHERWISE
 - TABLE APPLIES UNLESS NOTED OTHERWISE
 - DEVELOPMENT LENGTHS ARE EQUAL TO CLASS A LAP SPLICES

- 3.5. REINFORCEMENT REQUIREMENTS ARE SHOWN ON DETAIL DRAWINGS. WHERE DETAILS OF BAR SIZING AND SPACING ARE NOT SHOWN, ALLOW FOR MINIMUM REINFORCEMENT IN ACCORDANCE WITH CAN/CSA A23.3 ALL REINFORCEMENT SHOWN SHALL BE CONTINUOUS UNLESS AS DETAILED OTHERWISE, BUT SHALL NOT BE LESS THAN THAT SHOWN FOR SIMILAR ITEM. ALL CONCRETE ITEMS ARE REINFORCED CONCRETE UNLESS SPECIFICALLY NOTED OTHERWISE. WHERE BAR SIZE NOT SHOWN, USE MAXIMUM SIZE OF BARS WHICH ARE LAPPED.

4. STRUCTURAL STEEL:

- 4.1. STANDARD STRUCTURAL SECTIONS: TO CSA G40.21M GRADE 350W HOLLOW STRUCTURAL SECTIONS; TO CSA G40.21M GRADE 350W
- 4.2. DESIGN AND CONSTRUCTION TO CONFORM TO THE FOLLOWING CODES/STANDARDS (LATEST EDITIONS/REVISIONS):
 - 4.2.1. CAN/CSA S16-09 LIMIT STATES DESIGN, CISC HANDBOOK OF STEEL CONSTRUCTION, CISC FUNDAMENTALS OF SHOP DRAWING, CISC DESIGN GUIDE FOR HOLLOW STRUCTURAL SECTION CONNECTION.
 - 4.2.2. ALL STRUCTURAL STEEL SECTIONS, HSS, WELDED PLATE MEMBERS TO BE DESIGNED ACCORDING TO CSA S16-09.
 - 4.2.3. HOT ROLLED SECTIONS SHALL CONFORM TO CSA STANDARD G40.21 AND GR 350W (ASTM A592 OR A572 GR50).
 - 4.2.4. HOT ROLLED STEEL SHEET, PLATE AND STRIP USED IN THE FABRICATION OF WELDED ASSEMBLIES TO CONFORM TO CSA STANDARD G40.21 GR 300W.
 - 4.2.5. HOLLOW STRUCTURAL STEEL SECTIONS SHALL CONFORM TO CSA STANDARD G40.21 GR 350W CLASS H.
- 4.3. ALL MATERIAL USED FOR THIS PROJECT SHALL BE NEW, FREE FROM DEFECTS IMPAIRING STRENGTH, DURABILITY AND APPEARANCE.
- 4.4. SHOP CONNECTIONS (WHERE PRACTICAL AND POSSIBLE) TO BE WELDED.
- 4.5. FIELD CONNECTIONS (WHERE PRACTICAL AND POSSIBLE) TO BE BOLTED.
- 4.6. THE FABRICATOR SHALL BE FULLY APPROVED IN ACCORDANCE WITH CSA STANDARD W47.1.
- 4.7. ALL WELDS TO CONFORM TO CAN/CSA W59. USE STITCH WELDS FOR EMBEDDED PLATES AND ANGLES U.N.O. ALL BUTT WELDS AT JOINTS TO BE COMPLETE JOINT PENETRATION (U.N.O.) CONNECTIONS TO BE DETAILED SUCH THAT THEY MINIMIZE WATER AND DIRT ACCUMULATION. ANGLE AND CHANNEL MEMBERS TO BE TOE DOWN WHERE PRACTICAL. WIDE FLANGE AND CHANNEL MEMBERS WITH HORIZONTAL WEBS TO HAVE ADEQUATE DRAINAGE HOLES. PROVIDE WASHER PLATES MIN. 6mm THICK WITH OVERSIZED HOLES OR SLOTTED HOLES.
- 4.8. BOLTED CONNECTIONS WITH MINIMUM 2-M20 GALVANIZED BOLTS TO ASTM A325M AND SUPPLIED WITH GALVANIZED HARDENED WASHER TO ASTM F436 AND GALVANIZED HEAVY HEX NUTS TO ASTM A563. GENERAL CONTRACTOR TO DESIGN BOLTED CONNECTION WHERE NOT INDICATED IN THE DRAWINGS. SUBMIT FOR CONNECTION ONLY STAMPED SHOP DRAWINGS FOR REVIEW.
- 4.9. ALL STEEL TO BE HOT DIPPED GALVANIZED AFTER FABRICATION.
- 4.10. ALL STAINLESS STEEL TO BE GRADE 316.

5. GRADING & SURFACE TREATMENT NOTES:

- 5.1. EXCAVATION

THE CONTRACTOR SHALL CLEAR VEGETATION AND SURFACE MATERIALS IN THE WORK AREAS ON THE SITE. SHALL MAKE EXCAVATION IN EARTH AND ROCK FOR STRUCTURES. SHALL EXCAVATE AND DISPOSE OFF-SITE THE MATERIALS AT LOCATIONS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE. SHALL SHAPE SUCH EXCAVATIONS TO THE EXTENT NECESSARY TO ACHIEVE THE CONTOURS ON THE DESIGN DRAWINGS. SHALL STOCKPILE MATERIALS FOR REUSE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE SEPARATELY AND LOCATE STOCKPILE OUT OF THE RIVER AND LAKE CHANNEL. SHALL PROVIDE EROSION PROTECTION AT THE STOCKPILE. SHALL FURNISH THE NECESSARY MATERIAL AND CONSTRUCT COFFERDAMS TO UNDERTAKE STRUCTURE EXCAVATION IN THE DRY. AND SHALL MAKE MISCELLANEOUS EARTH EXCAVATIONS AND DO MISCELLANEOUS GRADING. ALL SUCH WORK SHALL BE DONE AS INDICATED ON THE DRAWINGS AND AS HEREIN SPECIFIED.

THE PROGRAM OF EXCAVATION AND DEWATERING SHALL BE CARRIED OUT IN SUCH A MANNER AS TO ELIMINATE ALL POSSIBILITY OF UNDERMINING OR DISTURBING THE FOUNDATIONS OF EXISTING OR TEMPORARY STRUCTURES OR OF WORK PREVIOUSLY COMPLETED UNDER THIS CONTRACT.

EXCAVATION IN THE WET FOR SITE WORKS SHALL ONLY BE UNDERTAKEN WITH THE APPROVAL OF THE DEPARTMENTAL REPRESENTATIVE. THE CONTRACTOR SHALL PROVIDE A PLAN WITH METHODOLOGY IDENTIFYING HOW DESIGN GRADES ARE TO BE ACHIEVED AND TO CONTROL SEDIMENT.

THE CONTRACTOR SHALL CLEAR AND GRUB THE SITE IN THE WORK AREAS IN ORDER TO COMPLETE THE EXCAVATIONS AND CONSTRUCTION OF WORKS. THE LIMITS OF CLEARING AND GRUBBING SHALL BE CAREFULLY DEFINED ON THE SITE PRIOR TO UNDERTAKING THE WORK TO PROTECT VEGETATION AND NATURAL FEATURES ON THE SITE AND SHALL BE APPROVED BY THE DEPARTMENTAL REPRESENTATIVE. SEE WORK RESTRICTIONS FOR CLEARING AND GRUBBING AS IT PERTAINS TO BIRD NESTING WITHIN SPECIFICATIONS.

FOLLOWING SELECTION AND APPROVAL, THE WORK AREA SHALL BE CAREFULLY DELINEATED ON THE GROUND AND SURROUNDED BY A CONSTRUCTION FENCE TO PREVENT DAMAGE TO VEGETATION AND NATURAL FEATURES BEYOND THE LIMITS OF THE WORK AREA. ANY DAMAGE TO AREAS BEYOND THE AGREED LIMITS SHALL BE RESTORED ENTIRELY AT THE CONTRACTORS EXPENSE. REFER TO SPECIFICATIONS FOR REPTILE EXCLUSION FENCING AND SILT FENCE REQUIREMENTS.

EXCAVATED MATERIALS INCLUDING EARTH EXCAVATION NOT SUITABLE OR NECESSARY FOR BACKFILL SHALL BE DISPOSED OFF-SITE AT A LOCATION APPROVED BY APPLICABLE REGULATIONS.
- 5.2. GRADING

FOR GRADING, EXCAVATE OVERBURDEN TO MINIMUM OF AREA SHOWN TO ACHIEVE UNRESTRICTED FLOW OF WATER AT THE STRUCTURE, AND FOR EMBANKMENT GRADING. MAKE ALLOWANCE FOR EROSION PROTECTION, SURFACE DRAINAGE AND OTHER SITE MATERIALS AS SHOWN ON THE DRAWINGS OR AS REQUIRED BY THE INSPECTOR. EXCAVATED MATERIALS NOT NECESSARY FOR BACKFILL SHALL BE DELIVERED TO AN APPROVED DISPOSAL AREA. MATERIALS TO BE USED FOR BACKFILL SHALL BE APPROVED BY THE INSPECTOR AND STOCKPILED SEPARATELY. LOCATE STOCKPILE OUT OF THE LAKE AND RIVER CHANNEL AND PROVIDE EROSION PROTECTION AT THE STOCKPILE.
- 5.3. SITE RESTORATION

UNDERTAKE RESTORATION TO LINES AND GRADES IDENTIFIED INCLUDING EXCAVATION AND/OR PLACEMENT OF APPROVED MATERIALS TO ACHIEVE SUBGRADE AND TRACK PACKING FILL MATERIALS TO THE SATISFACTION OF THE INSPECTOR, TRIMMING, PLACEMENT OF TOPSOIL AND SEED. TEMPORARY SITE WORKS SHALL BE RETURNED TO THE ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- 5.4. WHERE INDICATED ON DESIGN DRAWINGS, GRANULAR "A" AND GRANULAR "B" ARE AS PER OPS PROV 1010, NOVEMBER 2013.
- 5.5. PARKING AREA SURFACE TREATMENT TO CONSIST OF:
 - BASE: 150 mm OF GRANULAR "A" COMPACTED TO 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
 - SUB-BASE: 300 mm OF GRANULAR "B" COMPACTED TO 98% OF SPMDD.
 - GEOTEXTILE LAYER.

6. ALUMINUM

- 6.1. ASTM B221M, ALLOY 6061-T6, FOR STRUCTURAL EXTRUDED SHAPES, (U.N.O.)
 - 6.2. UNLESS OTHERWISE INDICATED, STRUCTURAL ALUMINUM SHALL BE CSA HA SERIES M80 TYPE 6061 - T6
 - 6.3. ALUMINUM IN CONTACT WITH CONCRETE OR MASONRY TO RECEIVE TWO COATS OF ALKALI RESISTANT BITUMINOUS PAINT. UPON INSTALLATION AND PRIOR TO CASTING CONCRETE THE ALUMINUM IN CONTACT WITH CONCRETE OR MASONRY SHALL RECEIVE ONE COAT OF ALKALI RESISTANT BITUMINOUS PAINT WHERE THE ORIGINAL COATING HAS BEEN DAMAGED.
- 7.1. ENVIRONMENTAL CONTROL
- AIRBORNE MATERIALS FROM CONSTRUCTION OPERATIONS SHALL BE CONTAINED AND NOT PERMITTED TO ENTER SURFACE WATERS.
- CONCRETE WASTE FROM CONSTRUCTION ACTIVITIES SHALL NOT BE PERMITTED TO ENTER SURFACE WATERS.
- 7.2. DISPOSAL OF VEGETATION AND COMBUSTIBLE MATERIAL
- VEGETATION AND COMBUSTIBLE MATERIALS RESULTING FROM THE CONSTRUCTION OPERATIONS SHALL BE DISPOSED OFF-SITE TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- 7.3. ENVIRONMENTAL MONITORING
- MAINTAIN ALL SEDIMENT CONTROL MEASURES TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- REPLACE GEOTEXTILE AT DEWATERING TRAP TO MAINTAIN TREATMENT PERFORMANCE.
- MONITOR WATER QUALITY AT DEWATERING TRAP RELEASE POINT TO RIVER AS PER THE REQUIREMENTS OF THE ISSUED PTTW. TURBIDITY SHALL NOT EXCEED 8 NTU COMPARED TO RIVER FLOW (UNLESS PERMIT SPECIFIES OTHERWISE). WHEN TURBIDITY ISSUES ARE OBSERVED, MODIFY OPERATIONS AND/OR ENVIRONMENTAL CONTROLS. THE DEPARTMENTAL REPRESENTATIVE MAY PERIODICALLY UNDERTAKE THEIR OWN TURBIDITY MEASUREMENTS USING A TURBIDITY METER. SHOULD TEST RESULTS SHOW AN INCREASE OF 2 NTU (OR EQUIVALENT) ABOVE THAT AT THE RIVER, THE DEPARTMENTAL REPRESENTATIVE WILL ADVISE THE CONTRACTOR ACCORDINGLY.

7. ENVIRONMENTAL PROTECTION:

- ENVIRONMENTAL PROTECTION IN THIS SECTION SHALL BE DEEMED TO BE PART OF THE GENERAL WORK PROGRAM.
- 7.1. GENERAL
- THE FOLLOWING ENVIRONMENTAL REQUIREMENTS WILL BE MET DURING CONSTRUCTION OF THE PROJECT:
- A. CLEARING OF VEGETATION BEYOND THE LIMITS NEEDED FOR CONSTRUCTION AND EQUIPMENT MOVEMENT WILL NOT BE ALLOWED.
 - B. MAINTENANCE, REPAIR AND CLEANING OF CONSTRUCTION EQUIPMENT SHALL NOT BE UNDERTAKEN IN AREAS WHICH MAY IMPACT NEGATIVELY ON SURFACE WATERS.
 - C. THE CONTRACTOR SHALL PROVIDE A SEDIMENT AND EROSION CONTROL PLAN, PREPARED BY A CONSULTING FIRM WITH RELATED ENVIRONMENTAL EXPERIENCE. UPON ACCEPTANCE BY THE DEPARTMENTAL REPRESENTATIVE, THE CONTRACTOR SHALL IMPLEMENT, MAINTAIN AND REPLACE AS NECESSARY SEDIMENT AND EROSION CONTROL WORKS TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
 - D. SEDIMENT FROM CONSTRUCTION ACTIVITIES SHALL NOT BE ALLOWED TO ENTER SURFACE WATERS AND WATER COURSES.
 - E. ALL SPILLS OF DELETERIOUS SUBSTANCES SHALL BE REPORTED TO THE DEPARTMENTAL REPRESENTATIVE AND THE ONTARIO MINISTRY OF ENVIRONMENT (MOE) IMMEDIATELY AND CLEAN-UP SHALL BE IN ACCORDANCE WITH CURRENT ENVIRONMENTAL PRACTICE AND THE MOST APPROPRIATE TECHNOLOGY AVAILABLE.
 - F. THE CONTRACTOR SHALL MAINTAIN ON SITE MATERIALS AND PRODUCTS TO CONTAIN AND ABSORB ANY DELETERIOUS SPILLS BOTH FOR DRY AND WET CONDITIONS.
 - G. DUMPING OF EXCAVATED MATERIAL, WASTE MATERIALS, DEBRIS OR OTHER FOREIGN SUBSTANCES INTO OR NEAR WATERWAYS IS NOT ALLOWED.
- 7.1. DRAINAGE
- THE CONTRACTOR SHALL UNDERTAKE THEIR OWN EVALUATION AS TO THE MEASURES REQUIRED TO DIVERT FLOW IN GULL RIVER THROUGH OR AROUND THE WORK AREA. THE METHODOLOGY SHALL BE PRESENTED IN THE RESPECTIVE DEWATERING AND DIVERSION PLANS.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED AT ALL TEMPORARY DRAINAGE WORKS AND AT EXISTING WORKS DISTURBED BY CONSTRUCTION ACTIVITIES.
- 7.2. SEDIMENT CONTROL
- SEDIMENT CONTROL PLAN SHALL INCLUDE SILT FENCING, AND SEDIMENT TRAPS AS SHOWN ON THE DRAWINGS AS A MINIMUM. THE PLAN SHALL BE INSTALLED AND MAINTAINED IN GOOD ORDER UNTIL WORK IS COMPLETED. AFTER ACCEPTANCE OF WORKS BY THE DEPARTMENTAL REPRESENTATIVE, ALL SEDIMENT CONTROL WORKS ARE TO BE REMOVED AND SITE RESTORED TO THE ORIGINAL CONDITION OR AS NOTED, TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
- THE FOLLOWING PROCEDURES FOR SEDIMENT AND EROSION CONTROL ARE TO BE FOLLOWED AS A MINIMUM:
- A. INSTALLATION OF COFFERDAMS / DEWATERING BARRIER:
 - ISOLATE THE IN-WATER WORK AREA.
 - UNDERTAKE THE INSTALLATION OF WORKS UNDER NO FLOW CONDITIONS TO THE GREATEST EXTENT POSSIBLE.
 - B. SITE DIVERSION:
 - ISOLATE THE DIVERSION AREA WITH SUITABLE BARRIERS DESIGNED BY A PROFESSIONAL ENGINEER TO CONTAIN THE DESIGN FLOW.
 - INSTALL SEDIMENT FENCE WHERE APPLICABLE DIRECT ANY PUMP DISCHARGE TO A SETTLING POND OR OTHER APPROVED DESILTATION STRUCTURE.
 - REMOVE ALL FISH. CAPTURE AND RELEASE TO BE UNDERTAKEN BY A QUALIFIED (ENVIRONMENTAL) CONSULTANT TO THE REQUIREMENTS OF THE ISSUED PERMIT.
 - C. DRAINAGE WORKS (OPEN CHANNEL):
 - INSTALL CHECK DAMS TO MINIMIZE SEDIMENT TRANSPORT (OPSD 219.211).
 - D. STOCKPILES:
 - PROVIDE HEAVY DUTY SEDIMENT FENCE AT ALL STOCKPILES DESIGNATED BY THE CONTRACTOR AS LONG TERM.
 - COLLECT RUNOFF AND DIRECT IT TO A SEDIMENT BASIN.
 - E. WORKING IN THE DRY:
 - DIRECT ANY PUMP DISCHARGE TO A SETTLING POND OR OTHER APPROVED STRUCTURE.
 - CARRY OUT ALL SITE PREPARATION FOR AND INCLUDING STRUCTURAL WORKS AND GRADING WITH EROSION PROTECTION.
 - F. REMOVAL OF COFFERDAMS:
 - UNDERTAKE THE REMOVAL OF WORKS UNDER NO FLOW CONDITIONS TO THE GREATEST EXTENT POSSIBLE.



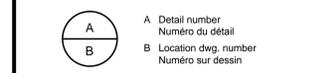
Canada



No.	Description	Drawn By (Des./Pj)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Revision / Révision

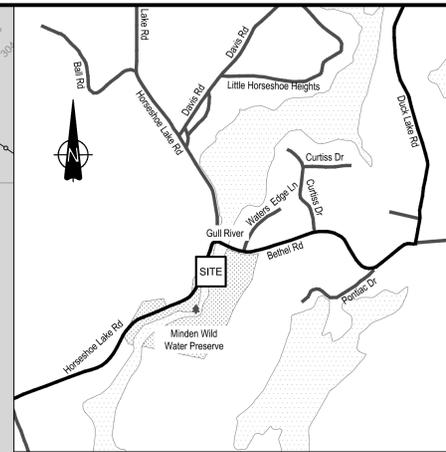
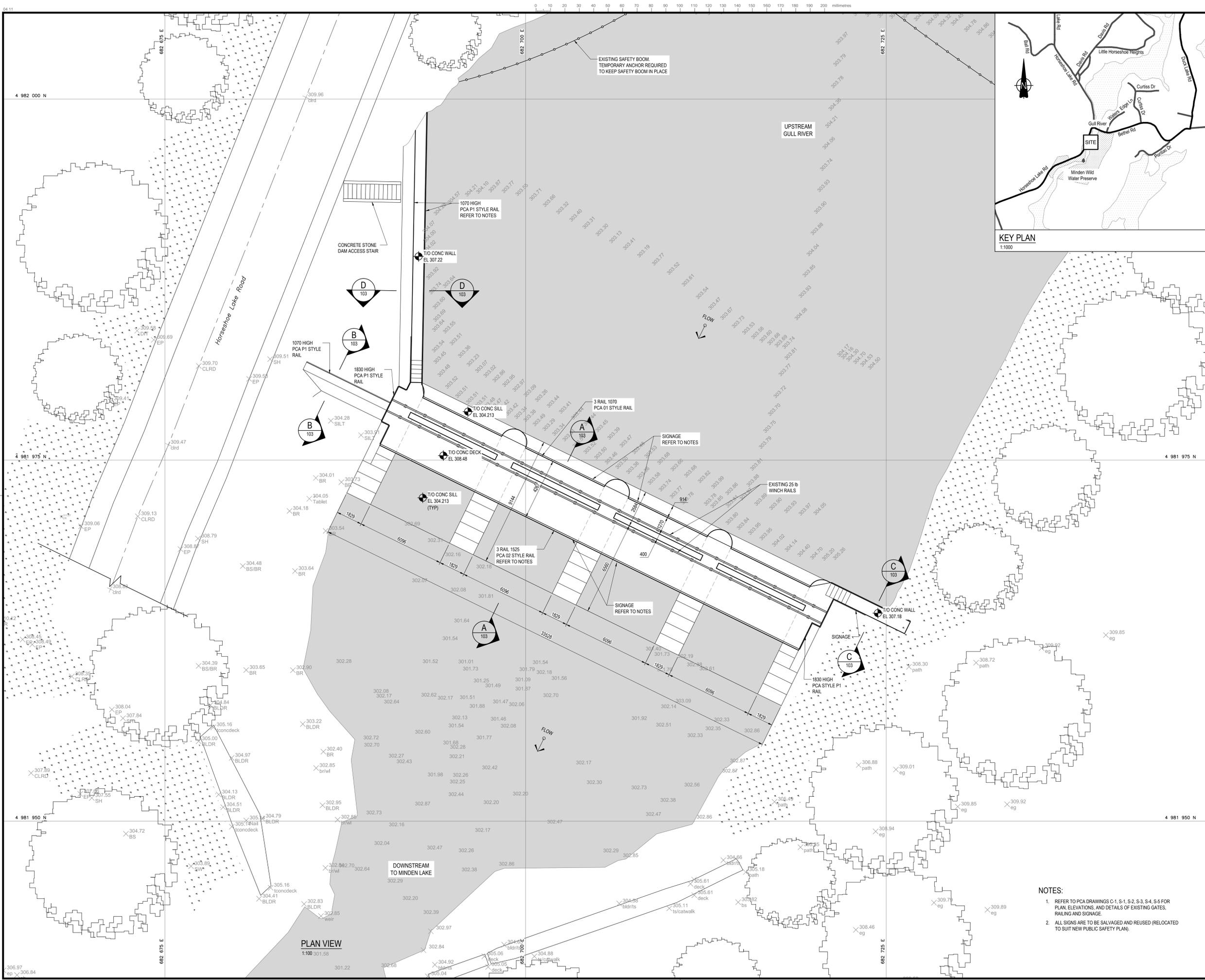
Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.



HORSESHOE LAKE DAM REPLACEMENT

GENERAL NOTES

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHT1 30025849	Drawing Number / Numéro du Dessin 101
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



LEGEND:

- DIRECTION OF WATER FLOW
- TREES
- BRUSH (PLAN VIEW)
- EARTH (SECTION)
- ROCK (SECTION)
- WATER

No.	Description	Drawn By / Des.P.	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

Revision / Révision	
A	Detail number / Numéro du détail
B	Location dwg. number / Numéro sur dessin



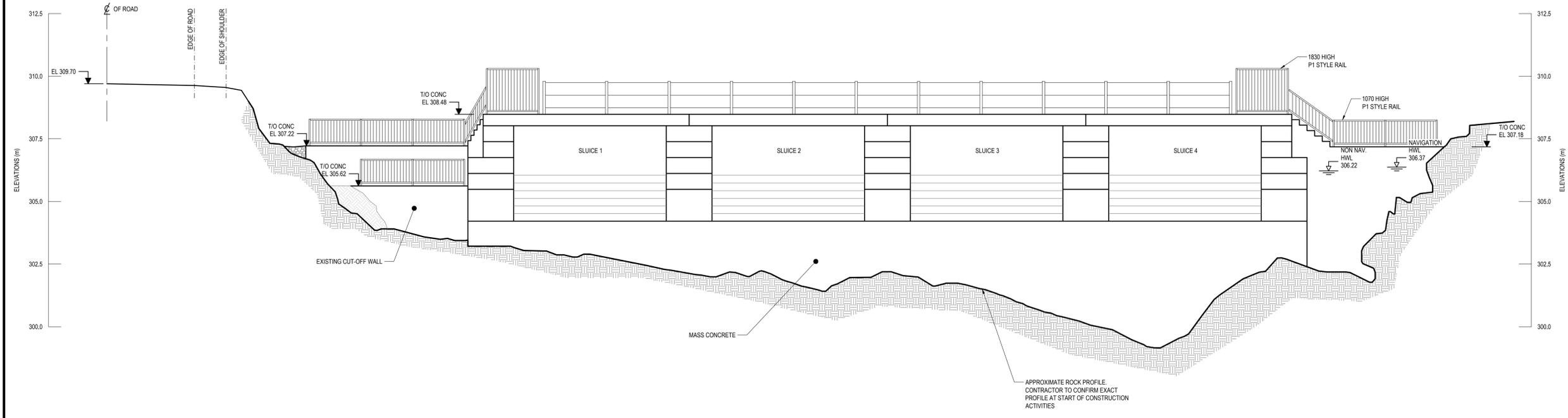
Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
EXISTING CONDITIONS PLAN VIEW

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro de Dessin 102
Project Number / Numéro du projet 121-15275-51	
Sheet / Feuille 1 of 1	

NOTES:

- REFER TO PCA DRAWINGS C-1, S-1, S-2, S-3, S-4, S-5 FOR PLAN, ELEVATIONS, AND DETAILS OF EXISTING GATES, RAILING AND SIGNAGE.
- ALL SIGNS ARE TO BE SALVAGED AND REUSED (RELOCATED TO SUIT NEW PUBLIC SAFETY PLAN).

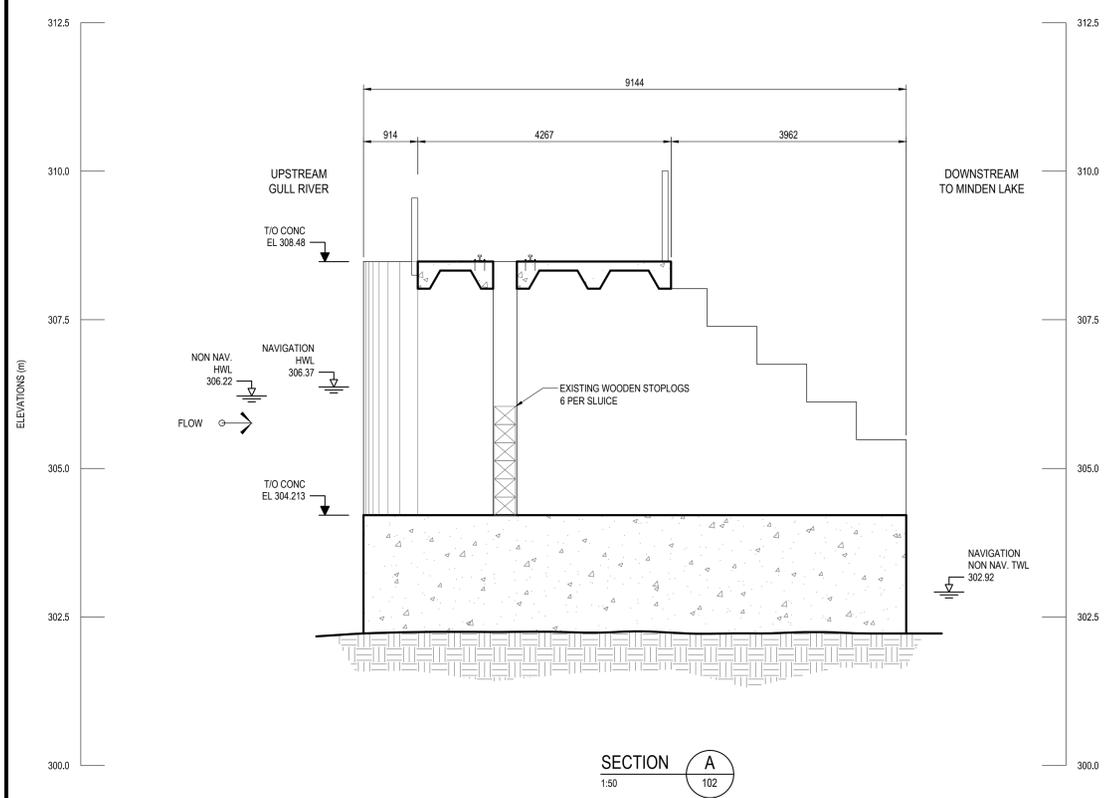


DOWNSTREAM ELEVATION
1:75

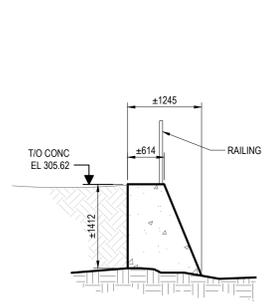
LEGEND:

	DIRECTION OF WATER FLOW
	TREES
	BRUSH (PLAN VIEW)
	EARTH (SECTION)
	ROCK (SECTION)

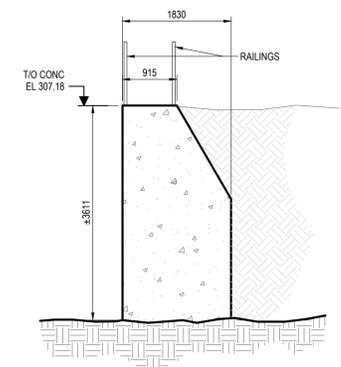
No.	Description	Drawn By (Des.Par)	Date
E	ISSUED FOR TENDER		SEP-23-2016
D	ISSUED FOR TENDER		SEP-14-2016
C	ISSUED FOR 100% REVIEW		SEP-02-2016
B	ISSUED FOR 95% REVIEW		AUG-05-2016
A	ISSUED FOR 80%		MAY-27-2016



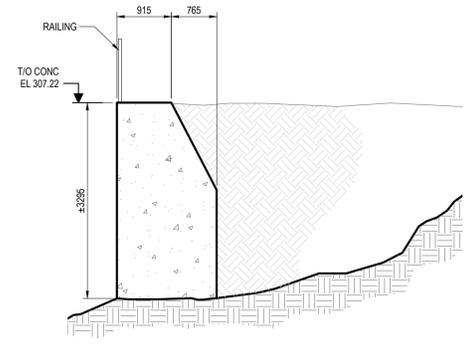
SECTION A
1:50



SECTION B
1:50



SECTION C
1:50



SECTION D
1:50

	A Detail number Numéro du détail
	B Location dwg. number Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
EXISTING CONDITIONS ELEVATION AND SECTION

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet JOHN JUFFS	Drawing Number / Numéro de CHTI 30025849	Sheet 1 of 1
Project Number / Numéro du projet 121-15275-51	103	

- NOTES:
- REFER TO PCA DRAWINGS C-1, S-1, S-2, S-3, S-4, S-5 FOR PLAN, ELEVATIONS, AND DETAILS OF EXISTING GATES, RAILING AND SIGNAGE.
 - ALL SIGNS ARE TO BE SALVAGED AND REUSED (RELOCATED TO SUIT NEW DAM PLAN).
 - DIMENSIONS OF EXISTING STRUCTURES ARE APPROXIMATE.

NOTE:
 1. THE PROPOSED STAGING AND COFFERDAM CONFIGURATION IS FOR PLANNING AND PERMITTING PURPOSES ONLY. CONTRACTOR TO PROVIDE FINAL STAGING AND COFFERDAM DESIGN TO DEPARTMENTAL REPRESENTATIVE FOR APPROVAL AT LEAST 7 DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.



LEGEND:

	DIRECTION OF WATER FLOW
	TREES
	BRUSH (PLAN VIEW)
	EARTH (SECTION)
	ROCK (SECTION)
	WATER
	REMOVALS

No.	Description	Drawn By	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	Detail number Numéro du détail
B	Location dwg. number Numéro sur dessin



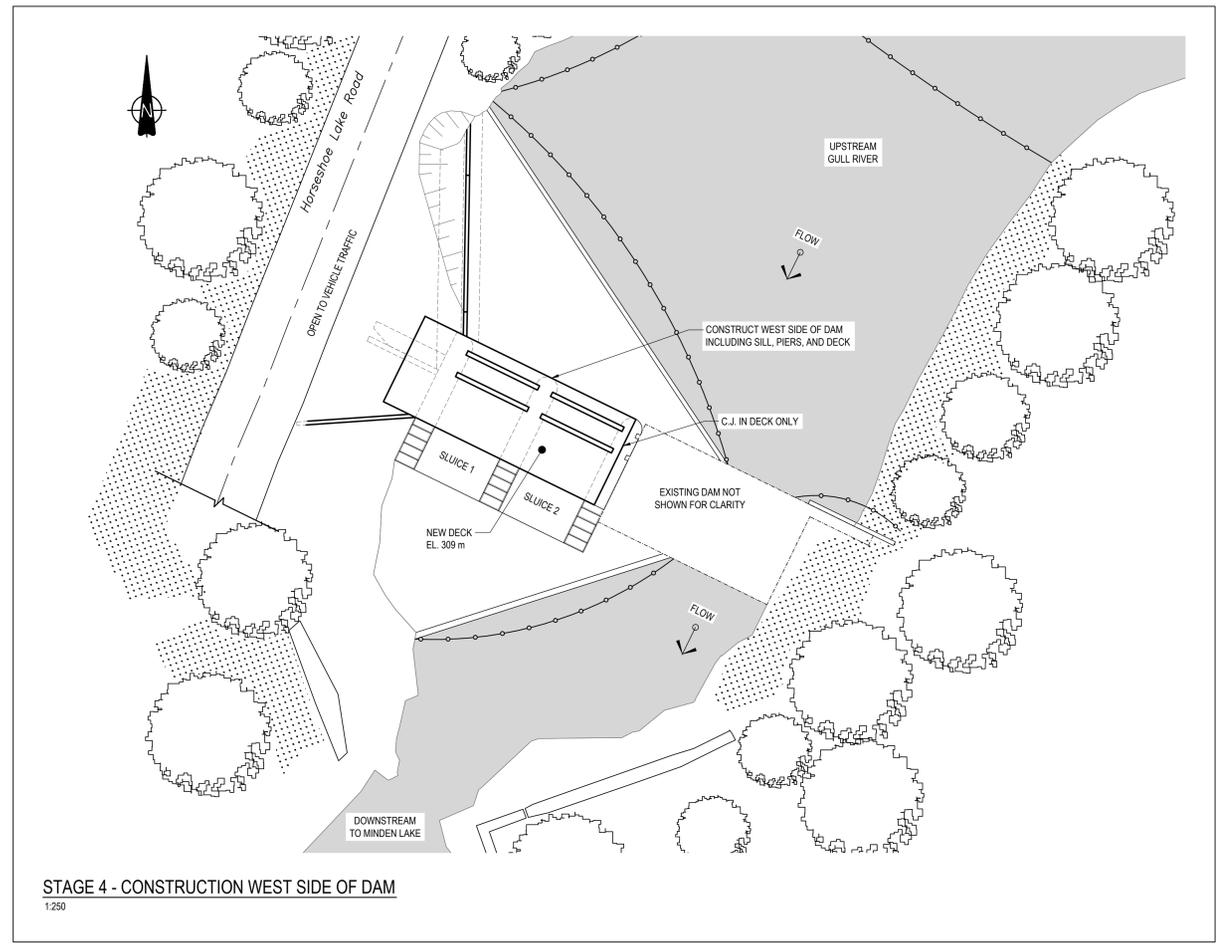
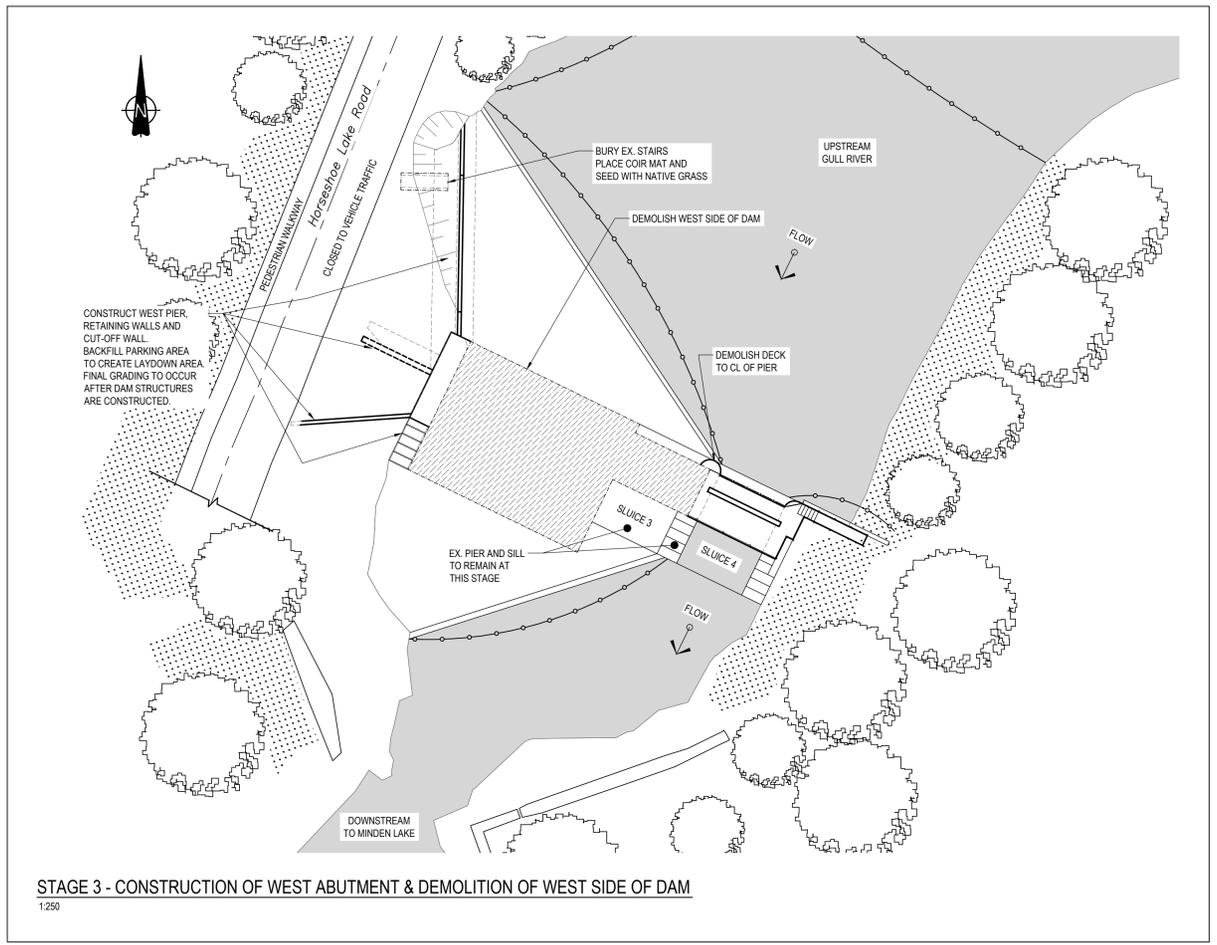
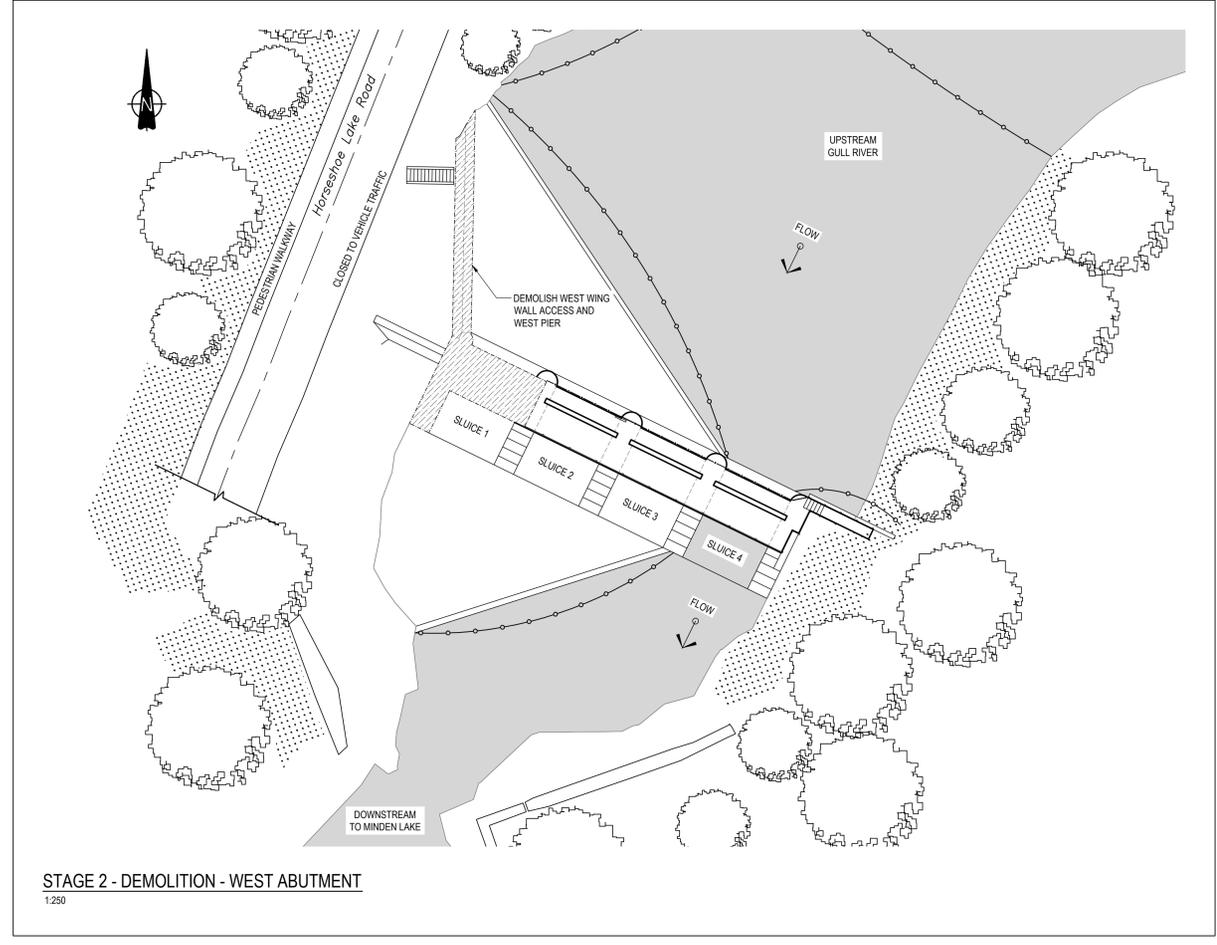
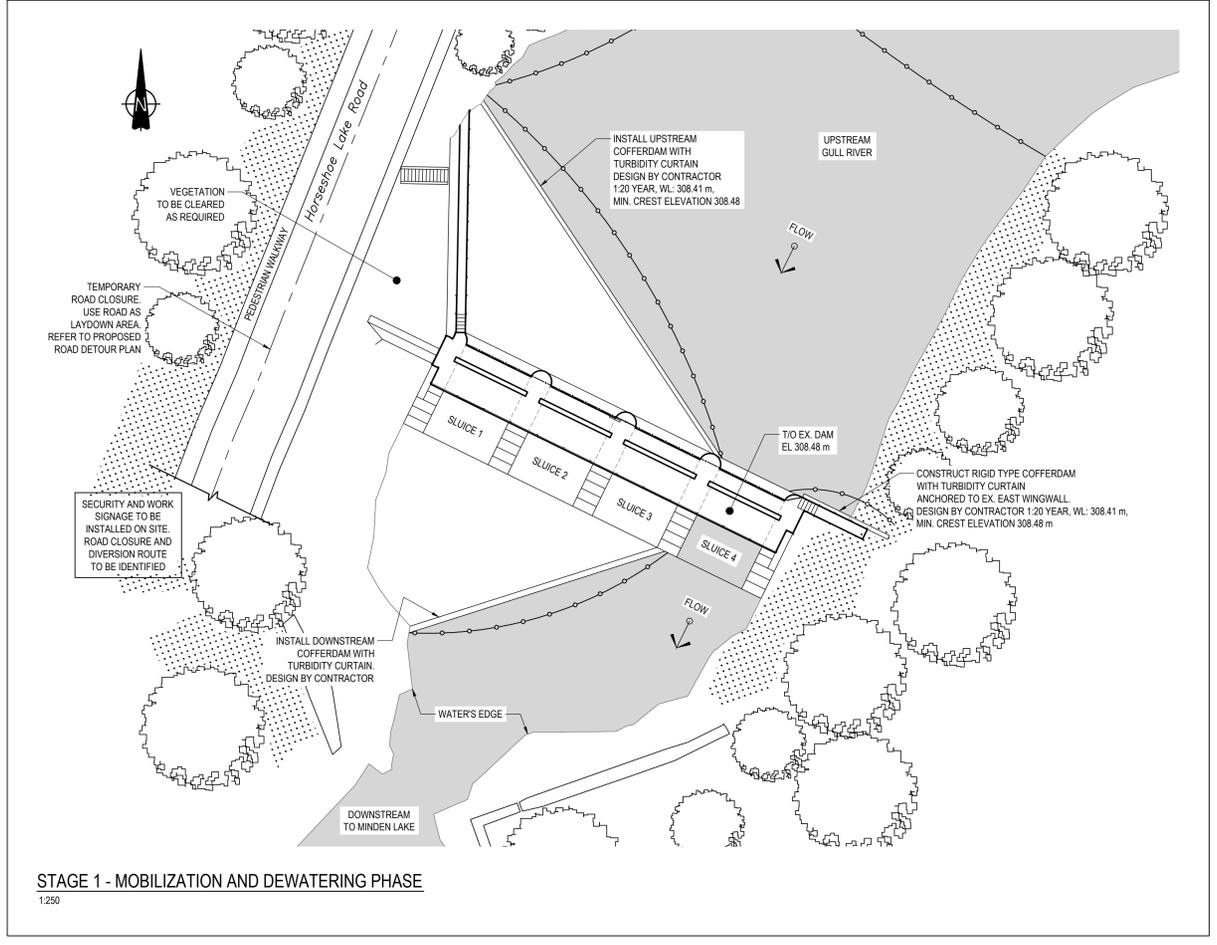
Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
PROPOSED CONSTRUCTION STAGING PLAN STAGE 1 TO 4

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet
 JOHN JUFFS

HCEW Number / Numéro de CHT1 30025849	Drawing Number / Numéro du Dessin 104
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



NOTE:
 1. THE PROPOSED STAGING AND COFFERDAM CONFIGURATION IS FOR PLANNING AND PERMITTING PURPOSES ONLY. CONTRACTOR TO PROVIDE FINAL STAGING AND COFFERDAM DESIGN TO DEPARTMENTAL REPRESENTATIVE FOR APPROVAL AT LEAST 7 DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.



LEGEND:

	DIRECTION OF WATER FLOW
	TREES
	BRUSH (PLAN VIEW)
	EARTH (SECTION)
	ROCK (SECTION)
	WATER
	REMOVALS

E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016
No.	Description	Drawn By (Des./Par.)	Date
Revision / Révision			

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

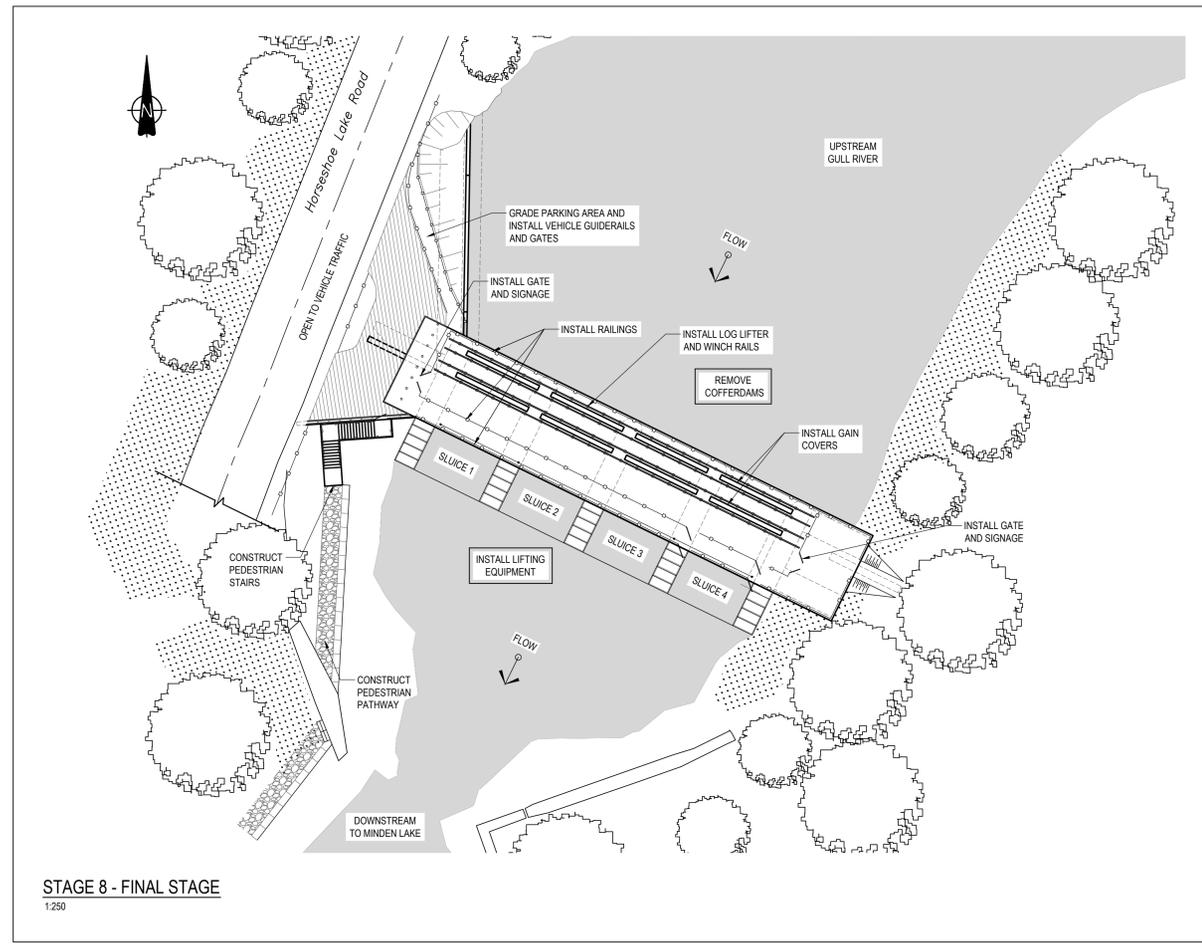
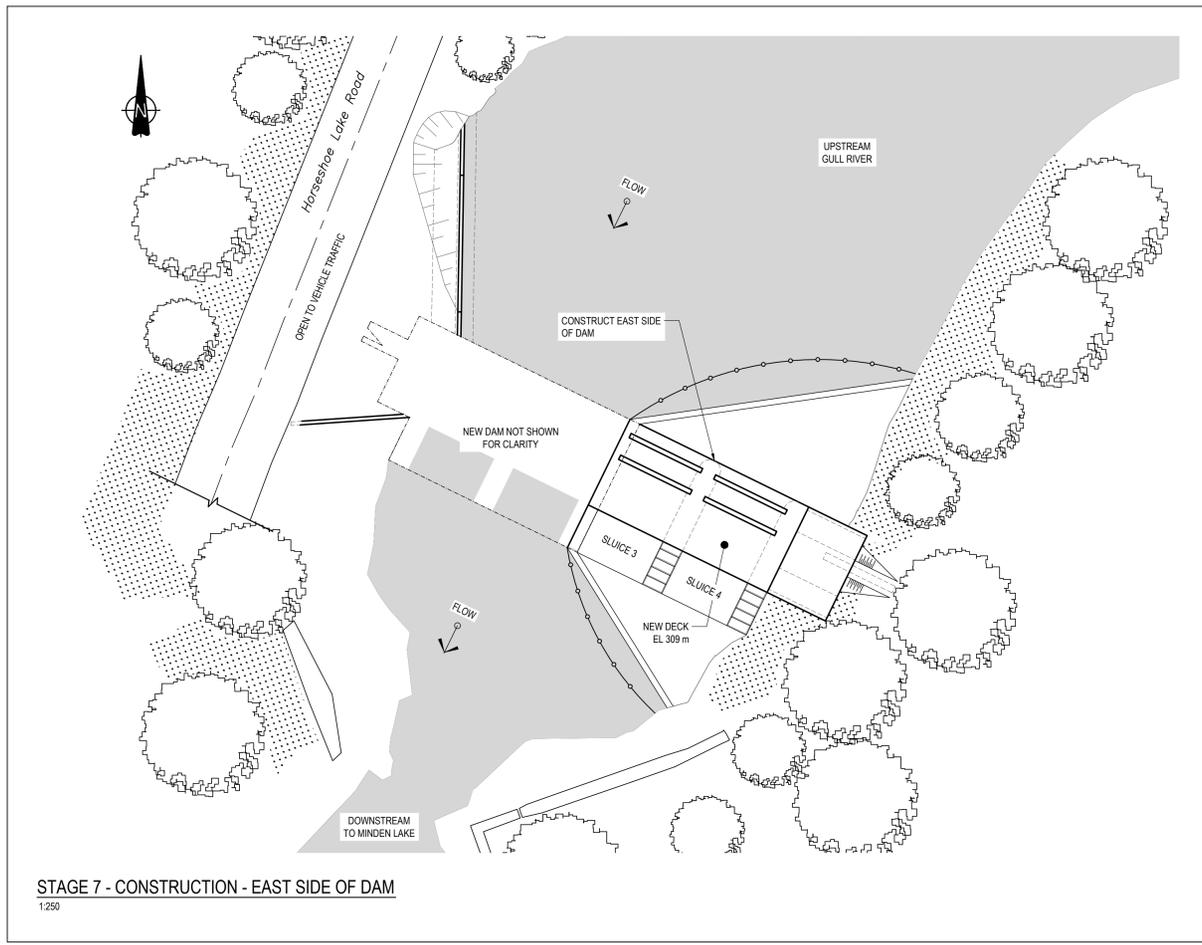
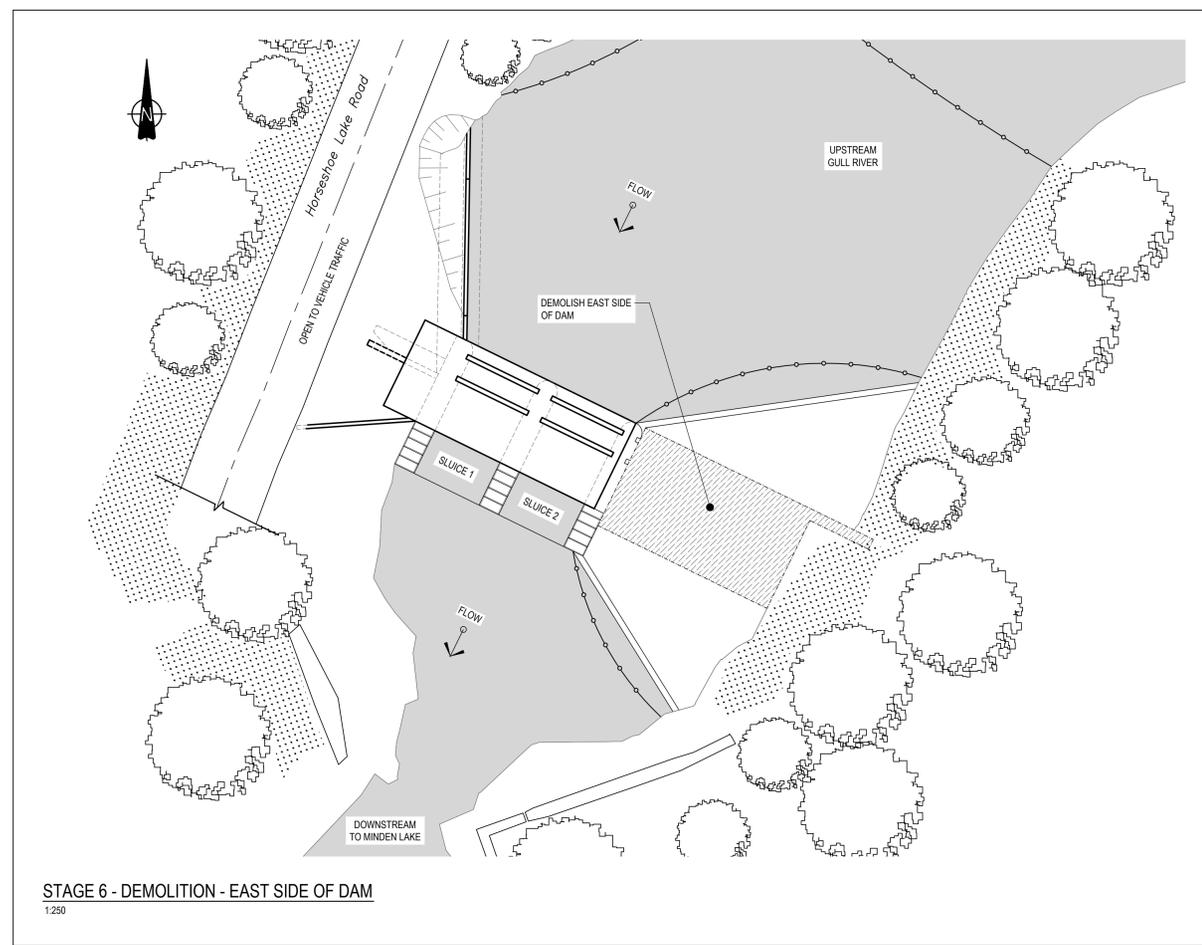
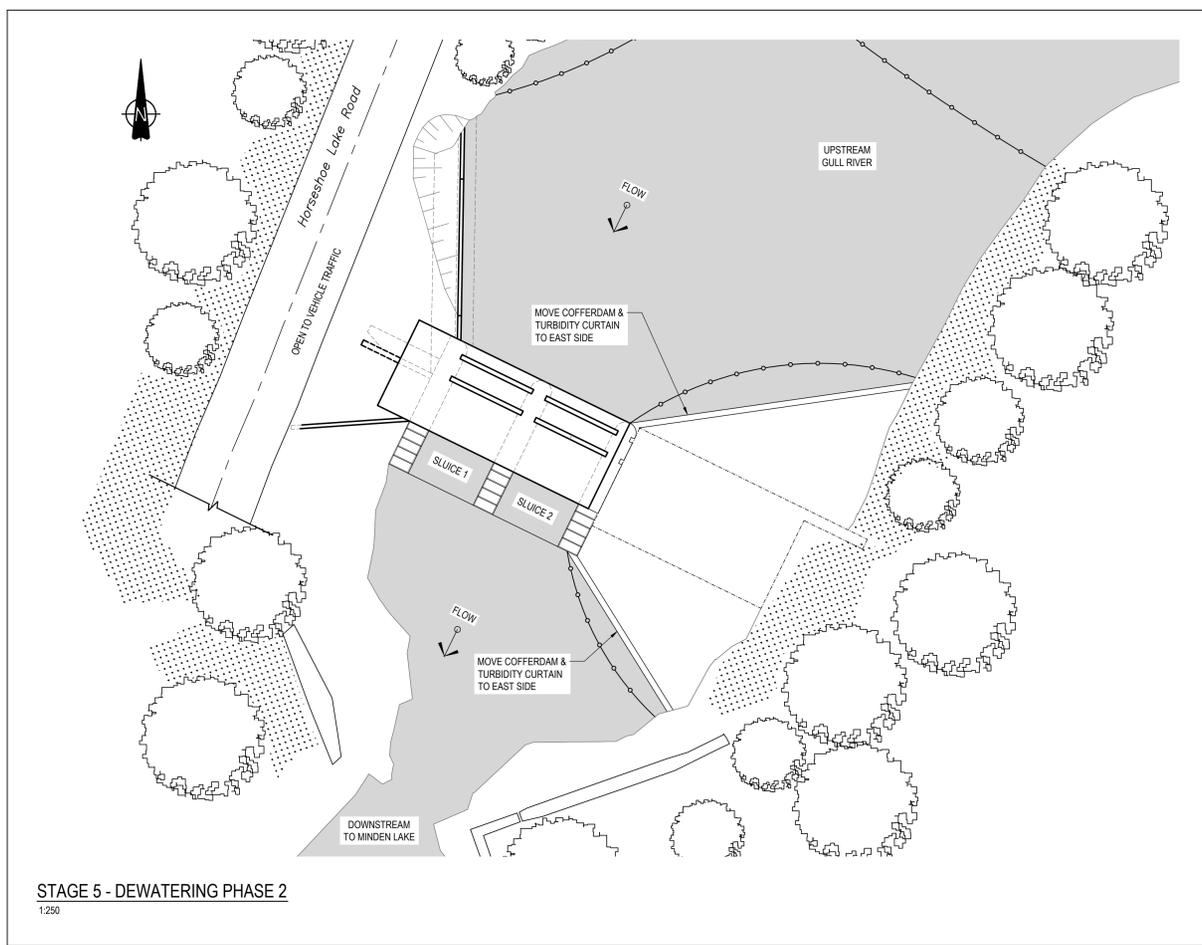
A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
PROPOSED CONSTRUCTION STAGING PLAN STAGE 5 TO 8

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHT1 30025849	Drawing Number / Numéro du Dessin 105
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1





LEGEND:

- DIRECTION OF WATER FLOW
- TREES
- BRUSH (PLAN VIEW)
- EARTH (SECTION)
- ROCK (SECTION)
- WATER
- REMOVALS

No.	Description	Drawn By (Des.P)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

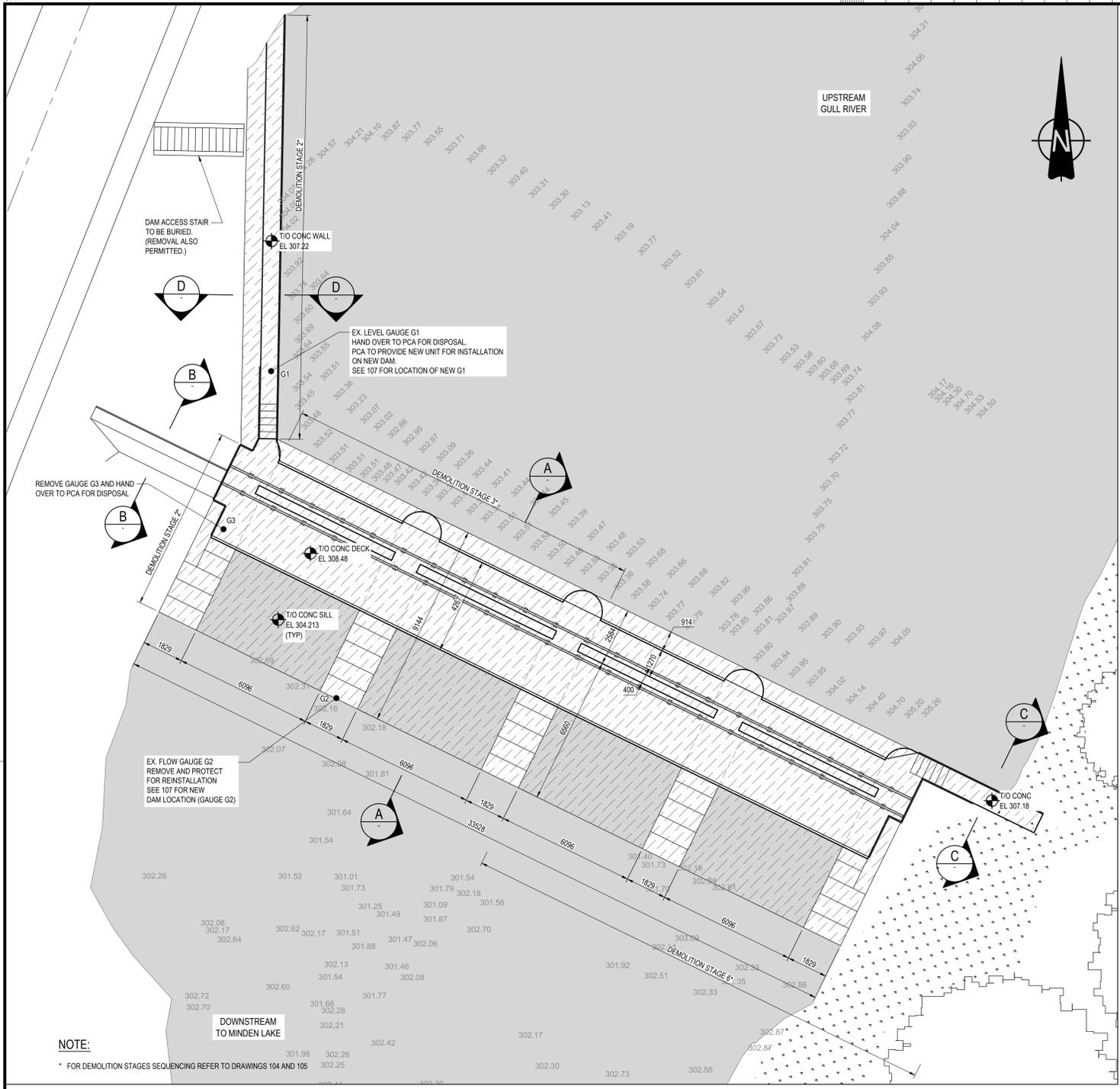
	A Detail number Numéro du détail
	B Location dwg. number Numéro sur dessin



HORSESHOE LAKE DAM REPLACEMENT

REMOVALS

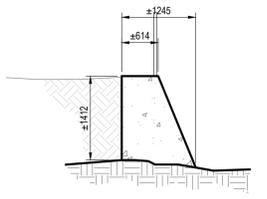
Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 106
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



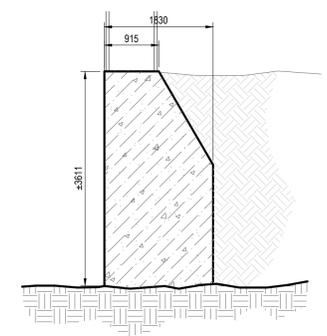
NOTE:
* FOR DEMOLITION STAGES SEQUENCING REFER TO DRAWINGS 104 AND 105

PLAN VIEW
1:100

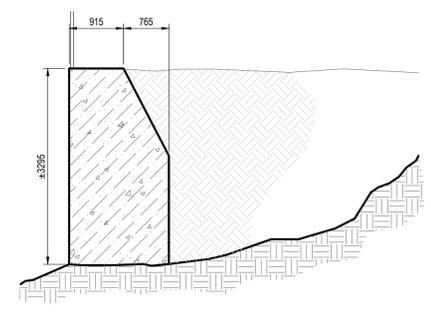
- NOTES:
- EXISTING CRAB WINCHES TO BE PROTECTED AND LEFT ON THE DAM AT ALL TIMES DURING CONSTRUCTION IN ORDER TO MAINTAIN STAGED OPERATIONS OF THE DAM. DAM OPERATORS MUST BE PROVIDED ACCESS TO THE OPERATING EQUIPMENT AT ALL TIMES.
 - REFER TO PCA DRAWING S6 FOR DETAILS OF EXISTING GAUGE CONNECTION.
 - PCA WILL BE INSTALLING TEMPORARY LEVEL GAUGE AT BETHEL RD. BRIDGE IN ADVANCE OF CONSTRUCTION. CONTRACTOR TO CONFIRM WITH PCA THAT TEMPORARY GAUGE IS RUNNING BEFORE DISCONNECTING EXISTING PERMANENT GAUGES.
 - ALL EXISTING CONDUIT TO BE DISPOSED OF. NEW CONDUIT TO SUIT NEW GAUGE LAYOUT ON DRAWING 107 TO BE SUPPLIED BY CONTRACTOR.
 - DIMENSIONS ON DRAWING ARE APPROXIMATE AND TAKEN FROM RECORD DRAWINGS. ACTUAL DIMENSION MAY VARY.
 - TEMPORARY ANCHOR IS REQUIRED TO KEEP EXISTING SAFETY BOOM IN PLACE.
 - PRIOR TO DEMOLITION OF EXISTING STRUCTURE, CONTRACTOR TO ESTABLISH REFERENCE POINTS (MIN. 4) TO ALLOW TRANSFER OF COORDINATES AND ELEVATIONS OF THE EXISTING GEODETIC BENCHMARK TO THE NEW GEODETIC BENCHMARK ON THE NEW STRUCTURE.



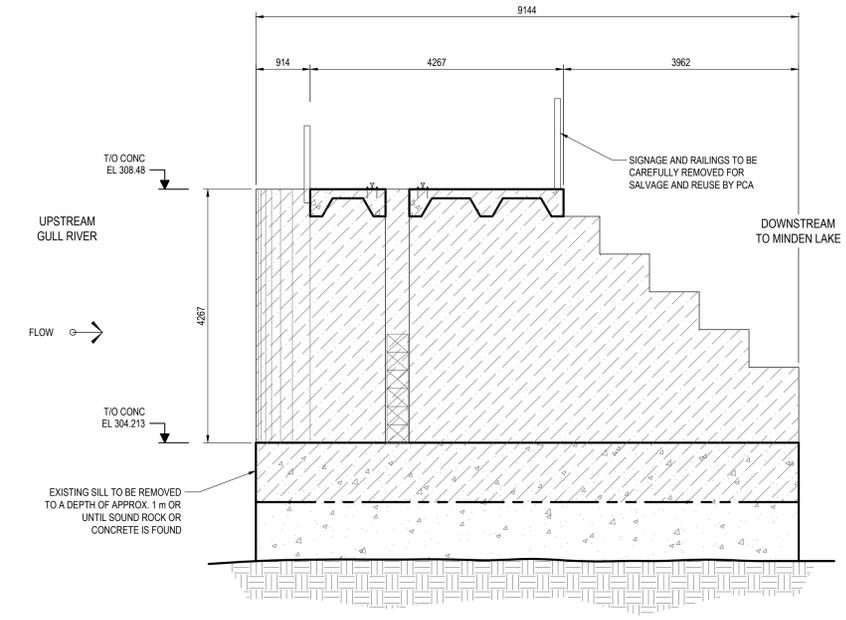
SECTION B
1:50



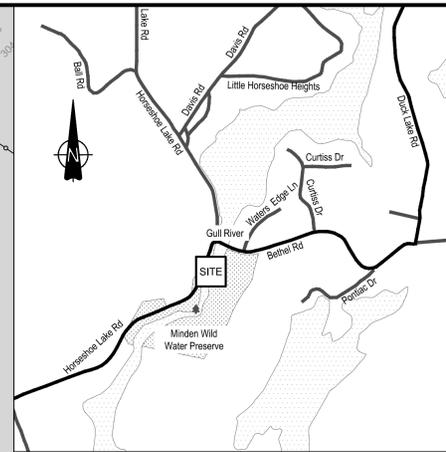
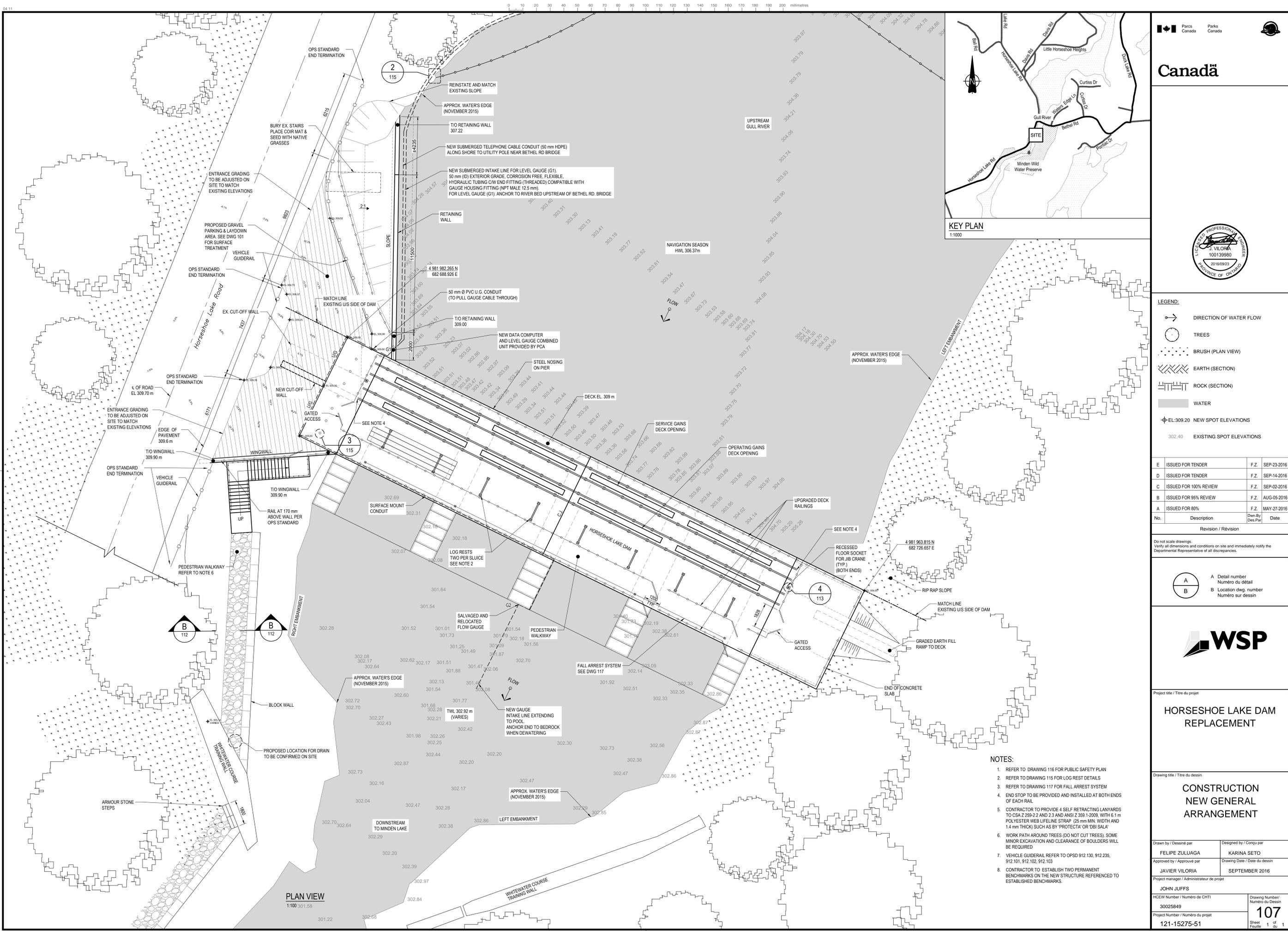
SECTION C
1:50



SECTION D
1:50



SECTION A
1:50



LEGEND:

- DIRECTION OF WATER FLOW
- TREES
- BRUSH (PLAN VIEW)
- EARTH (SECTION)
- ROCK (SECTION)
- WATER
- EL: 309.20 NEW SPOT ELEVATIONS
- 302.40 EXISTING SPOT ELEVATIONS

No.	Description	Drawn By	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	B
A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet

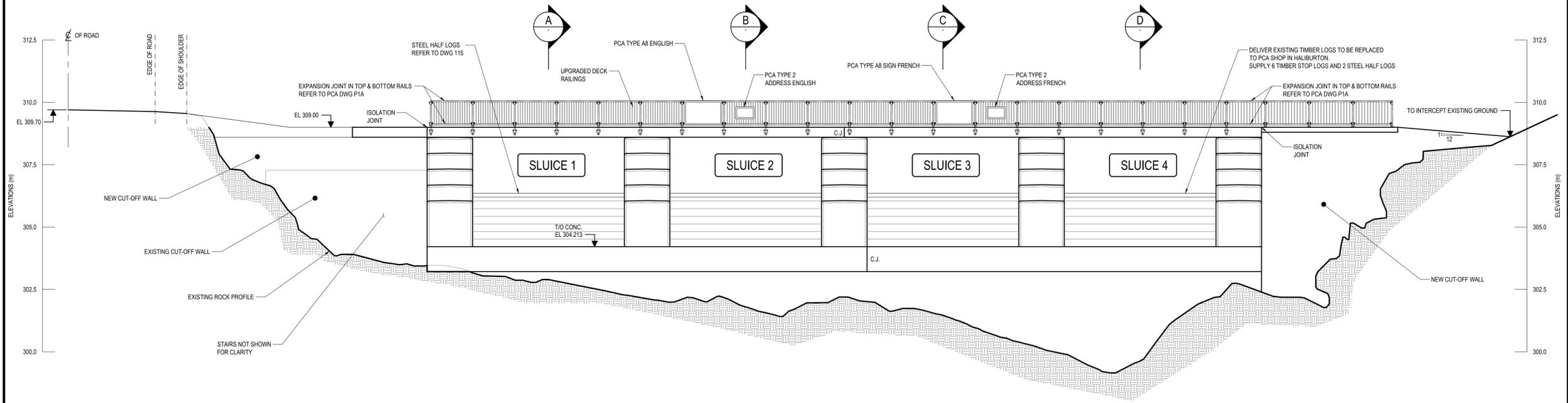
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin

**CONSTRUCTION
NEW GENERAL
ARRANGEMENT**

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHT1 30025849	Drawing Number / Numéro du Dessin 107
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1

- NOTES:**
- REFER TO DRAWING 116 FOR PUBLIC SAFETY PLAN
 - REFER TO DRAWING 115 FOR LOG REST DETAILS
 - REFER TO DRAWING 117 FOR FALL ARREST SYSTEM
 - END STOP TO BE PROVIDED AND INSTALLED AT BOTH ENDS OF EACH RAIL
 - CONTRACTOR TO PROVIDE 4 SELF RETRACTING LANYARDS TO CSA Z 259-2.2 AND ANSI Z 359.1-2009, WITH 6.1 m POLYESTER WEB LIFELINE STRAP (25 mm MIN. WIDTH AND 1.4 mm THICK) SUCH AS BY 'PROTECTA' OR 'DBI SALA'
 - WORK PATH AROUND TREES (DO NOT CUT TREES). SOME MINOR EXCAVATION AND CLEARANCE OF BOULDERS WILL BE REQUIRED
 - VEHICLE GUIDERAIL REFER TO OPSD 912.130, 912.235, 912.101, 912.102, 912.103
 - CONTRACTOR TO ESTABLISH TWO PERMANENT BENCHMARKS ON THE NEW STRUCTURE REFERENCED TO ESTABLISHED BENCHMARKS.



LEGEND:

- DIRECTION OF WATER FLOW
- TREES
- BRUSH (PLAN VIEW)
- EARTH (SECTION)
- ROCK (SECTION)

NOTE:
1. REFER TO DRAWING 116 FOR PUBLIC SAFETY PLAN

DOWNSTREAM ELEVATION VIEW
1:75

No.	Description	Drawn By (Des.Par.)	Date	Revision / Révision
E	ISSUED FOR TENDER		SEP-23-2016	F.Z.
D	ISSUED FOR TENDER		SEP-14-2016	F.Z.
C	ISSUED FOR 100% REVIEW		SEP-02-2016	F.Z.
B	ISSUED FOR 95% REVIEW		AUG-05-2016	F.Z.
A	ISSUED FOR 80%		MAY-27-2016	F.Z.

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

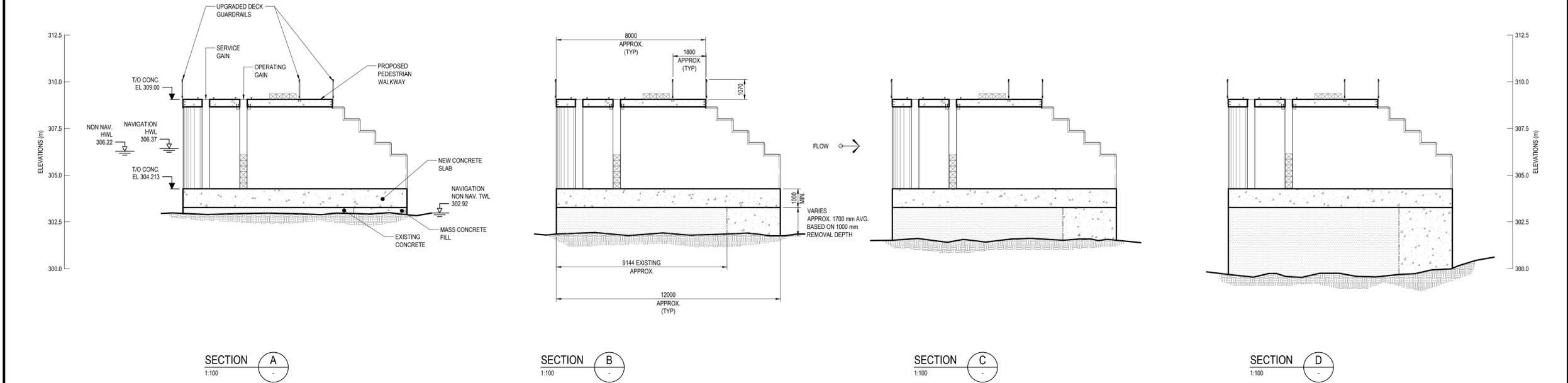
	A Detail number Numéro du détail
	B Location dwg. number Numéro sur dessin

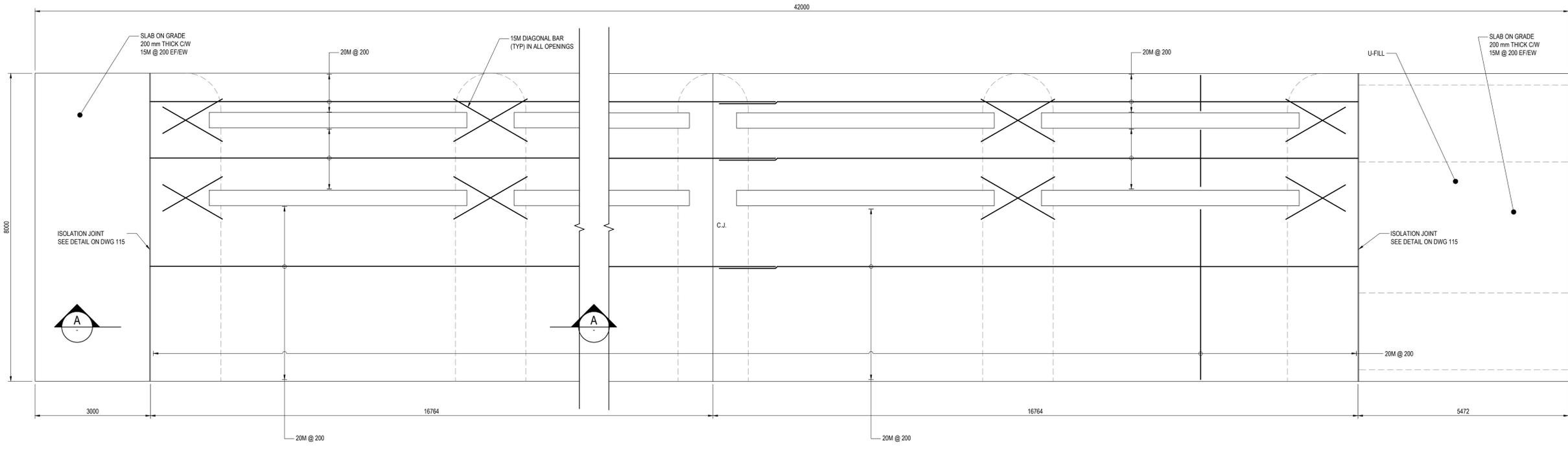


Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

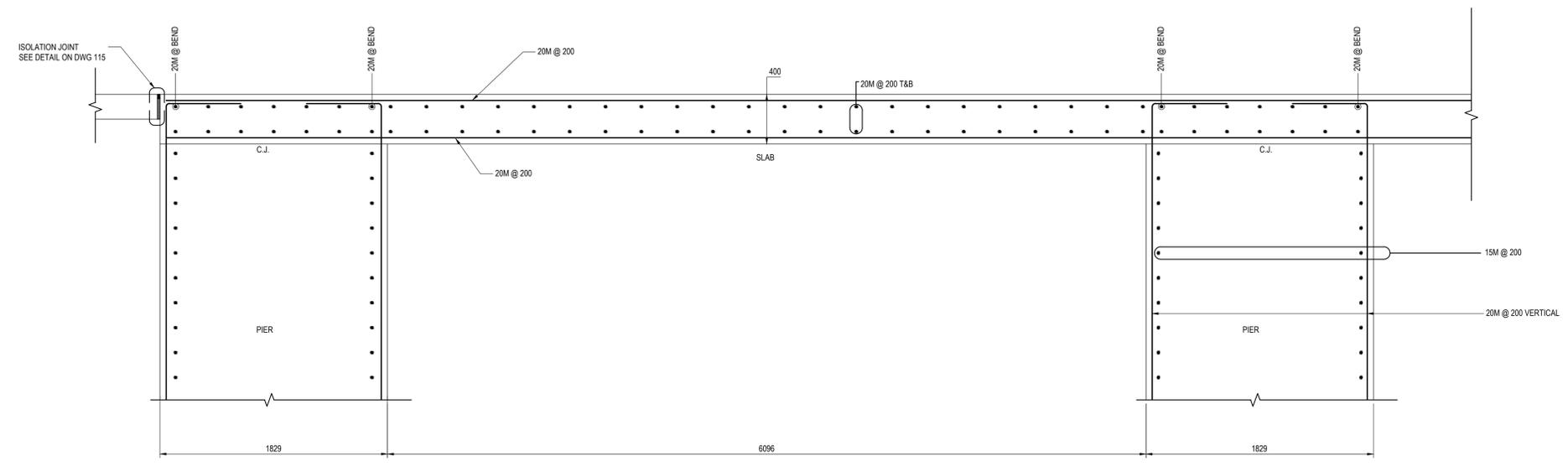
Drawing title / Titre du dessin
CONSTRUCTION ELEVATION AND SECTIONS

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 108
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1





DECK PLAN VIEW
1:75



SECTION A
1:20

No.	Description	Drawn By (Des.Par)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A Detail number
Numéro du détail
B Location dwg. number
Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
REINFORCING DECK

Drawn by / Dessiné par: FELIPE ZULUAGA
Designed by / Conçu par: KARINA SETO
Approved by / Approuvé par: JAVIER VILORIA
Drawing Date / Date du dessin: SEPTEMBER 2016

Project manager / Administrateur de projet: JOHN JUFFS
HCEW Number / Numéro de CHTI: 30025849
Drawing Number / Numéro du Dessin: 109
Project Number / Numéro du projet: 121-15275-51
Sheet / Feuille: 1 of 1



No.	Description	Drawn By (Des.P)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	Detail number Numéro du détail
B	Location dwg. number Numéro sur dessin

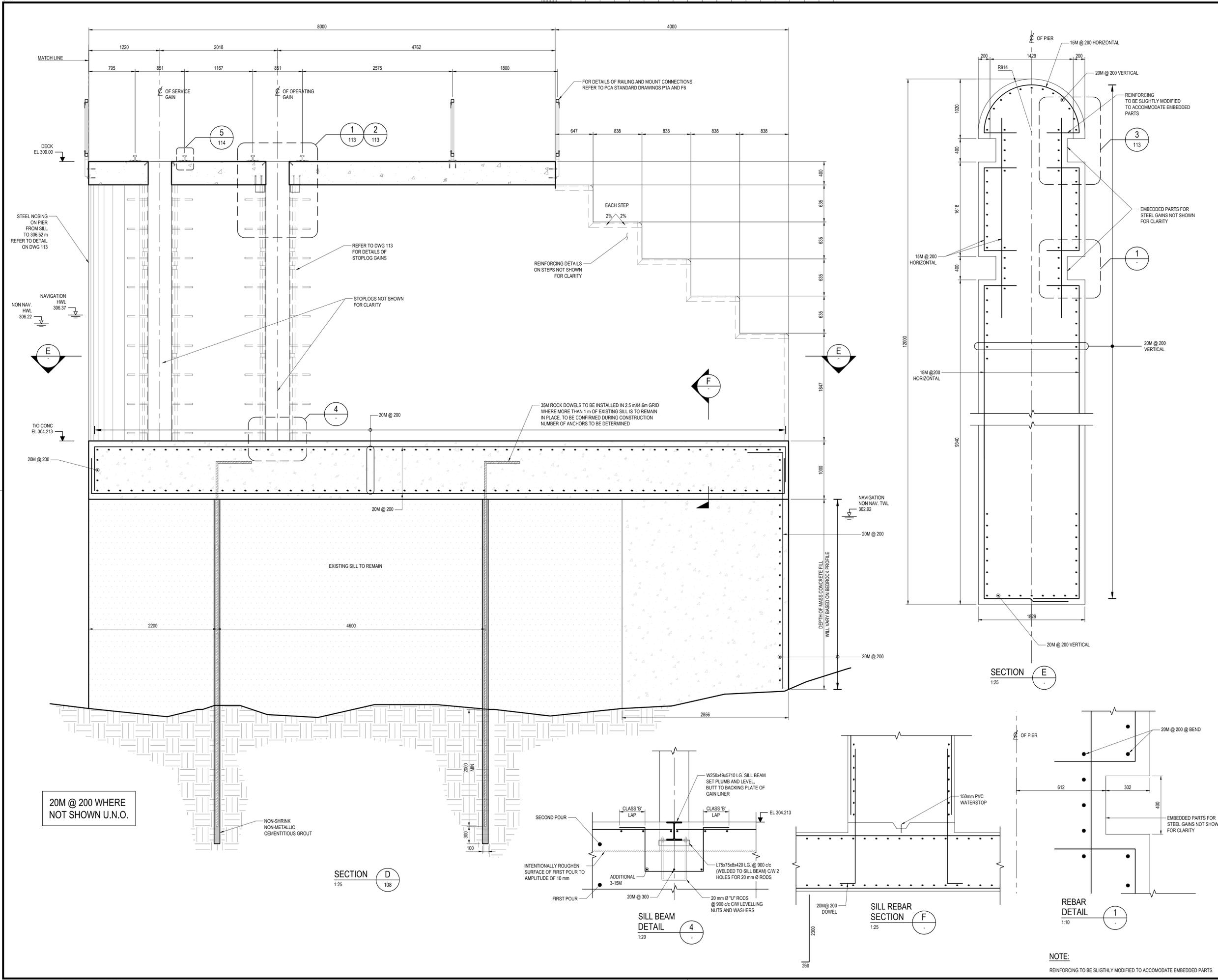


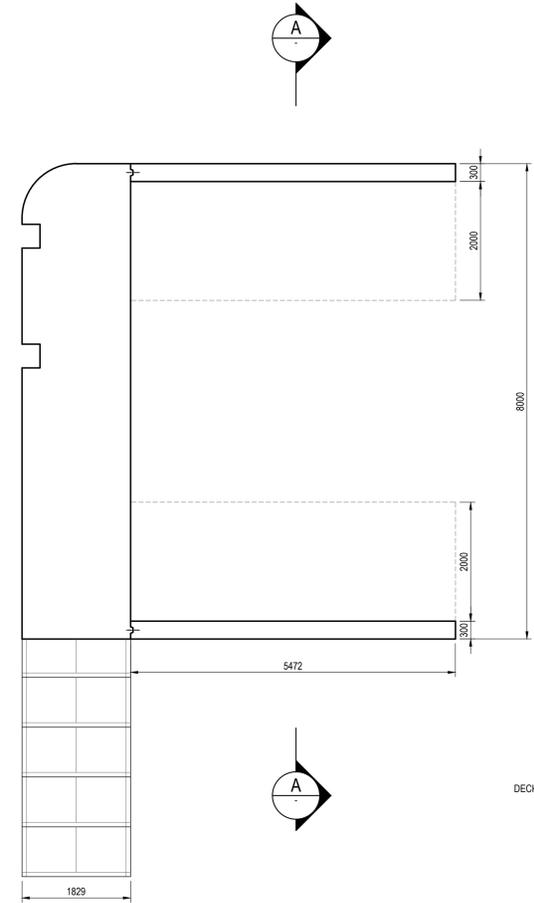
Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
REINFORCING PIER SECTIONS AND SILL SLAB

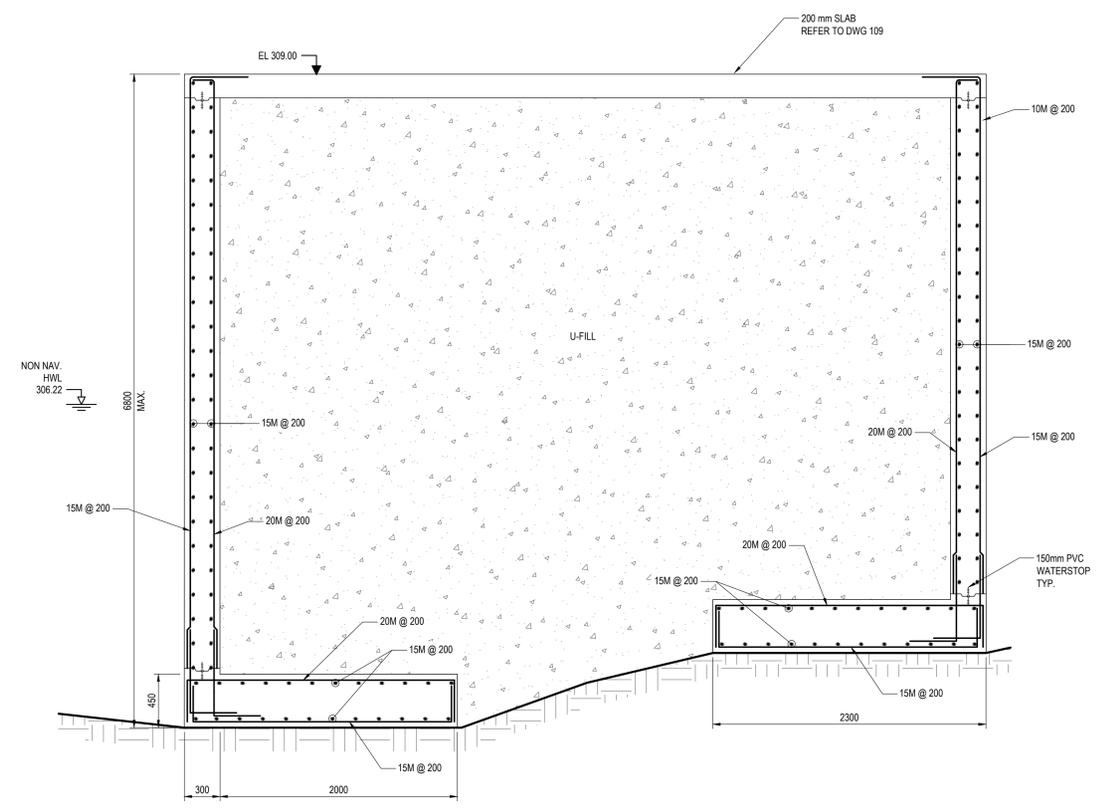
Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet JOHN JUFFS	Drawing Number / Numéro de CHTI 30025849
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 110 1 of 1



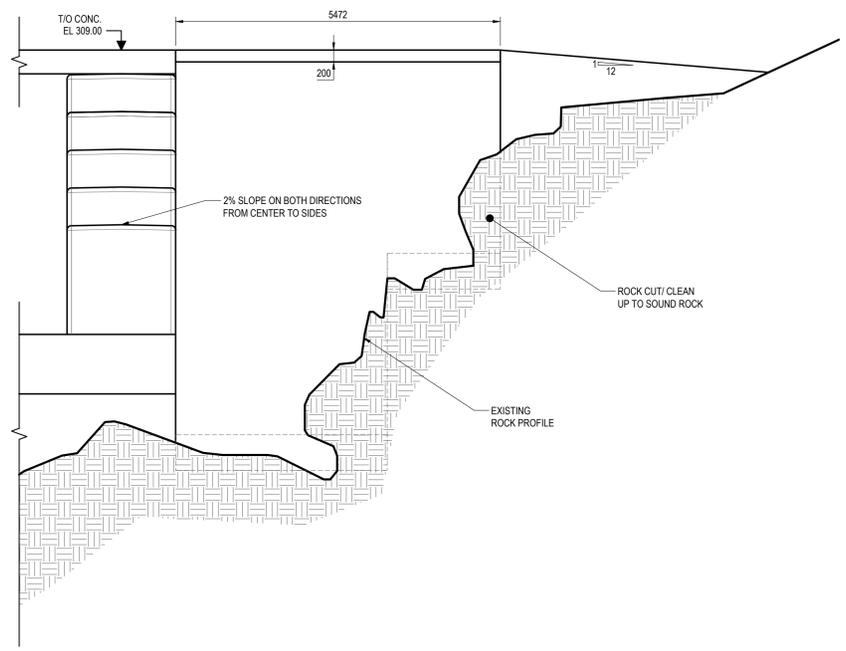


EAST ABUTMENT PLAN VIEW
1:50

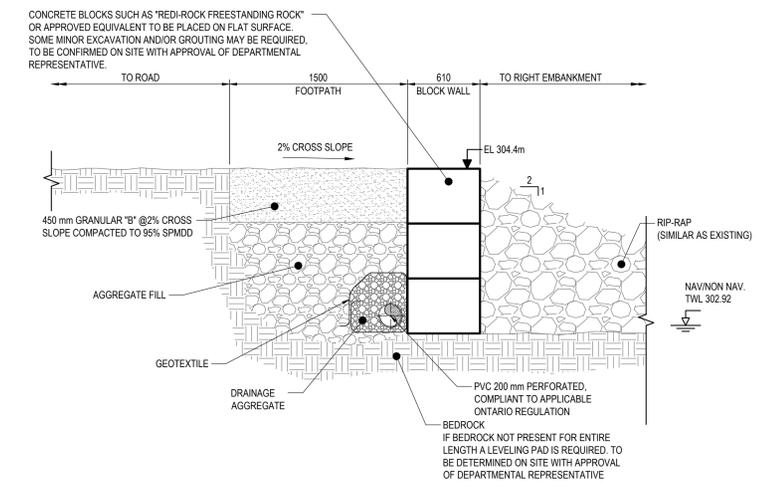


SECTION A
1:25

- NOTE:
- FOR FIRST LIFT U-FILL TO A MAX HEIGHT OF 1.5 m. PLACE FOLLOWING U-FILL LIFT ONCE PREVIOUS LIFT IS SET.
 - FOR LAP DIMENSIONS REFER TO GENERAL NOTES ON DWG 101.



DOWNSTREAM ELEVATION
1:50



PEDESTRIAN WALKWAY
SECTION B
1:25



No.	Description	Drawn By (Des./Par.)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	JUN-14-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
CONSTRUCTION EAST ABUTMENT AND PEDESTRIAN WALKWAY

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet JOHN JUFFS	Drawing Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 112
	Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



No.	Description	Drawn By (Des.P)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

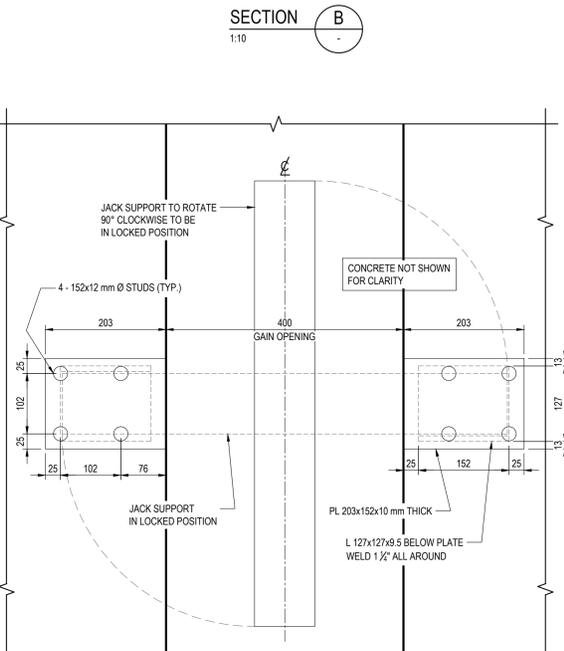
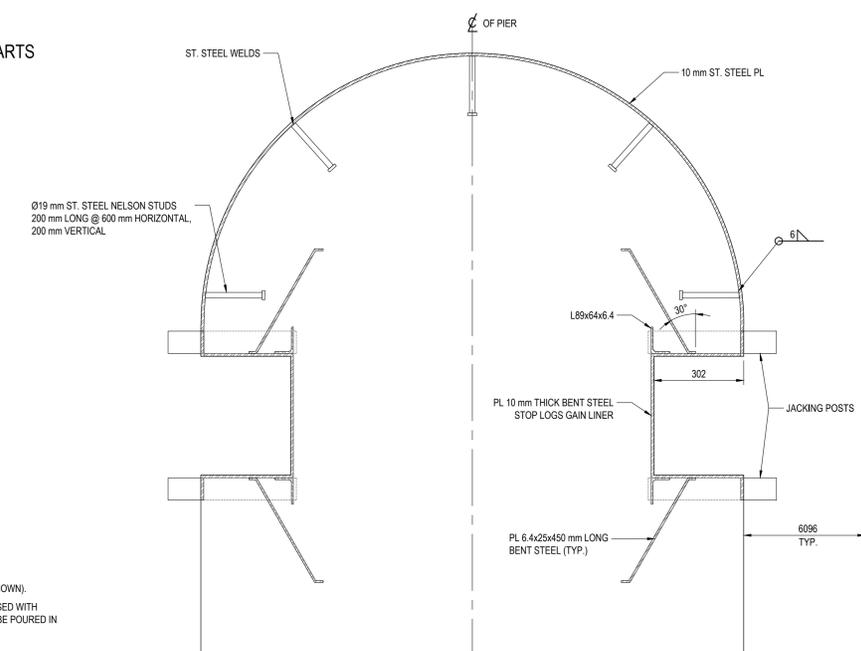
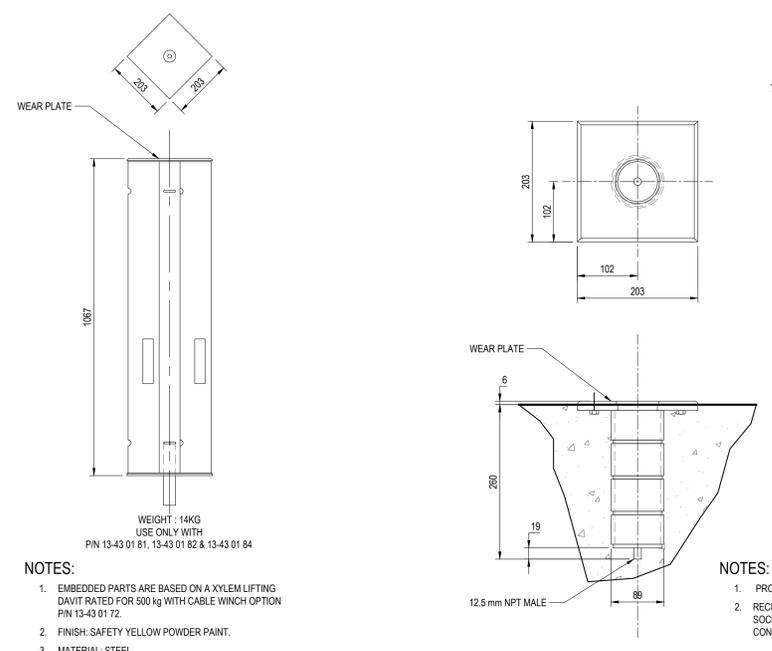
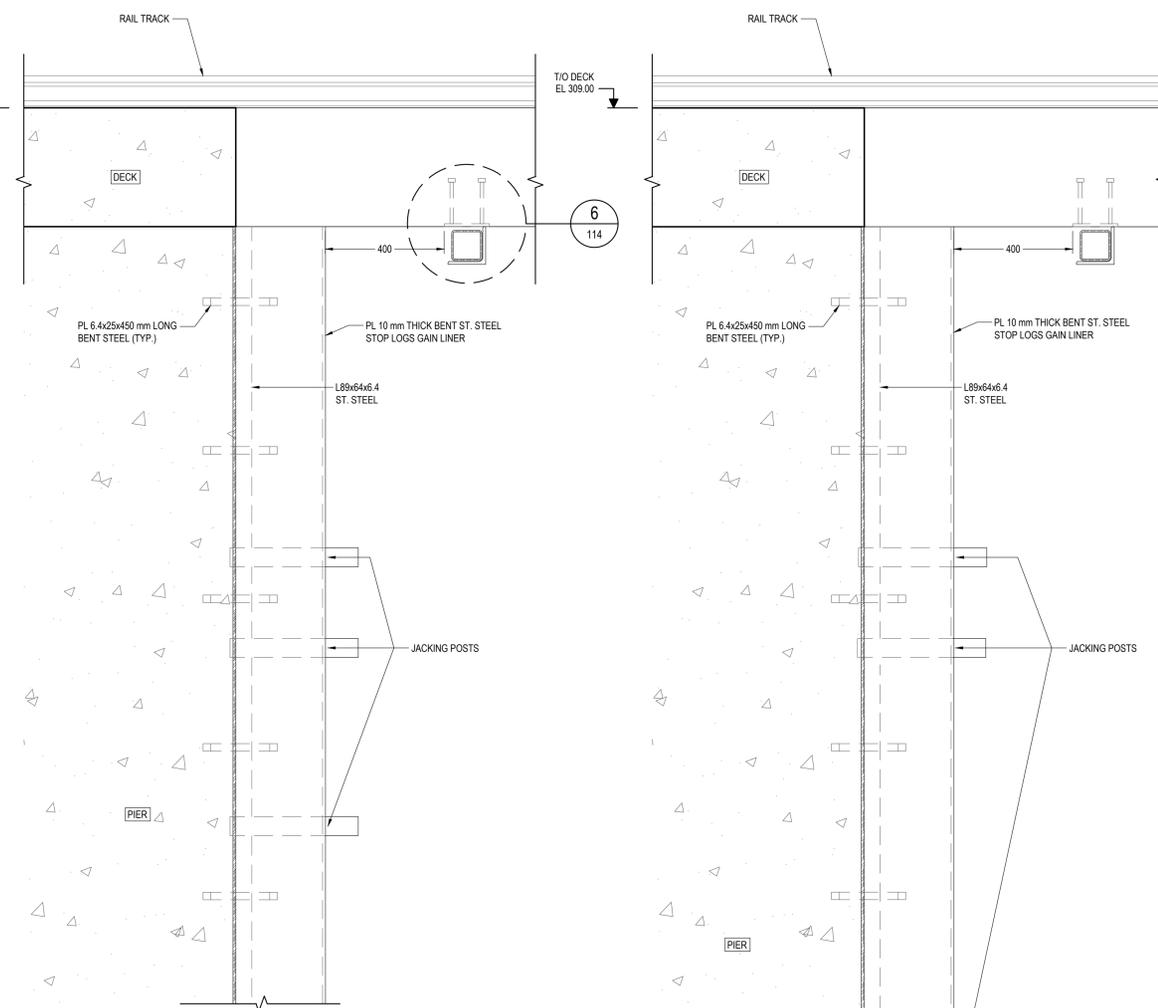
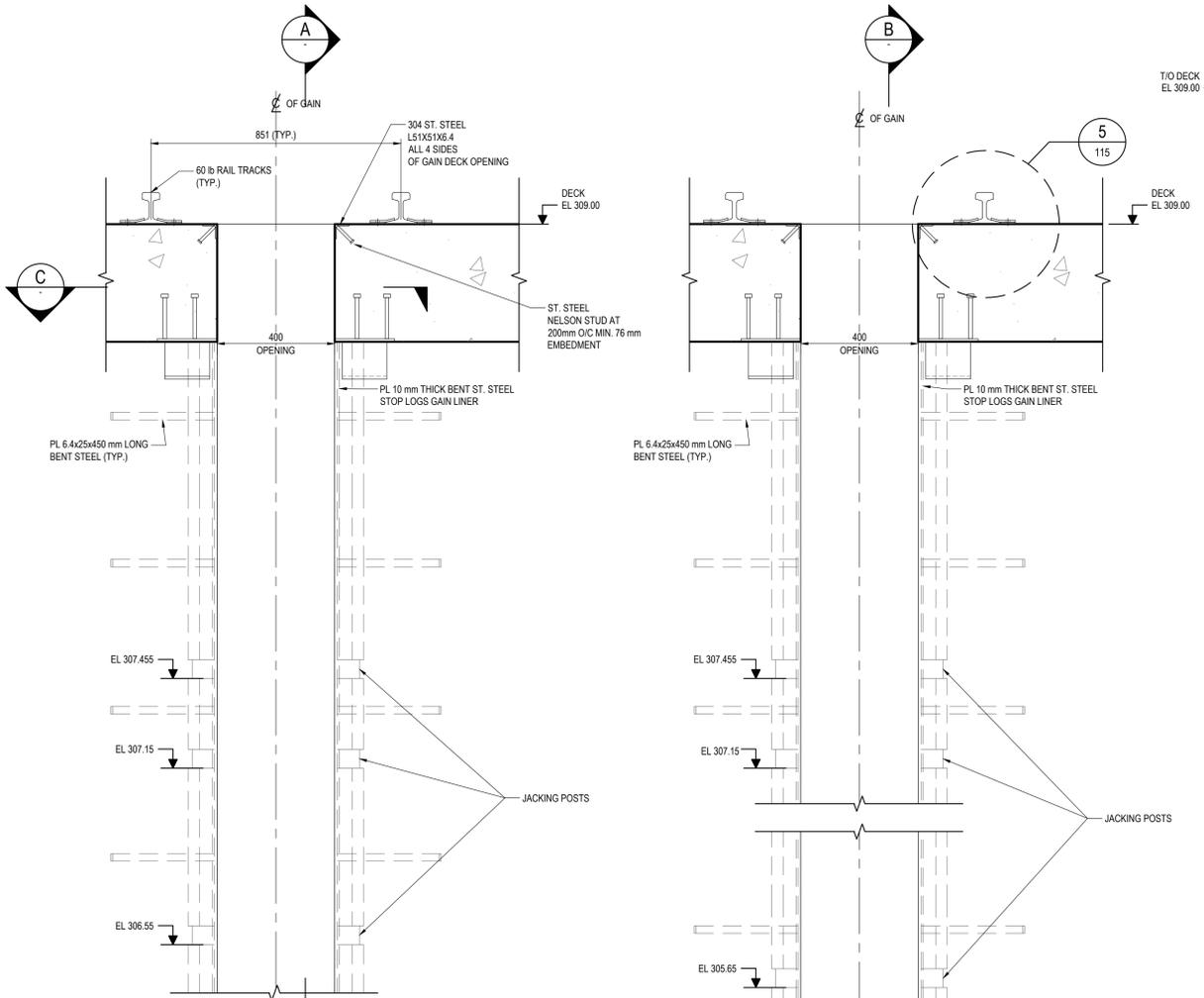
Revision / Révision	Detail number / Numéro du détail	Location dwg. number / Numéro sur dessin
A		
B		



HORSESHOE LAKE DAM REPLACEMENT

TYPICAL DETAILS GAIN EMBEDDED PARTS

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHT 30025849	Drawing Number / Numéro du Dessin 113
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



- NOTES:**
- EMBEDDED PARTS ARE BASED ON A XYLEM LIFTING DAVIT RATED FOR 500 kg WITH CABLE WINCH OPTION P/N 13-43 01 72.
 - FINISH: SAFETY YELLOW POWDER PAINT.
 - MATERIAL: STEEL.

- NOTES:**
- PROVIDE WITH A DUST COVER (NOT SHOWN).
 - RECESSED FLOOR SOCKET MUST BE USED WITH SOCKET EXTENDER P/N 13-43 01 86 TO BE POURED IN CONCRETE.



No.	Description	Drawn By (Des.Pai)	Date	Revision / Révision
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016	
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016	
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016	
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016	
A	ISSUED FOR 80%	F.Z.	MAY-27-2016	

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin

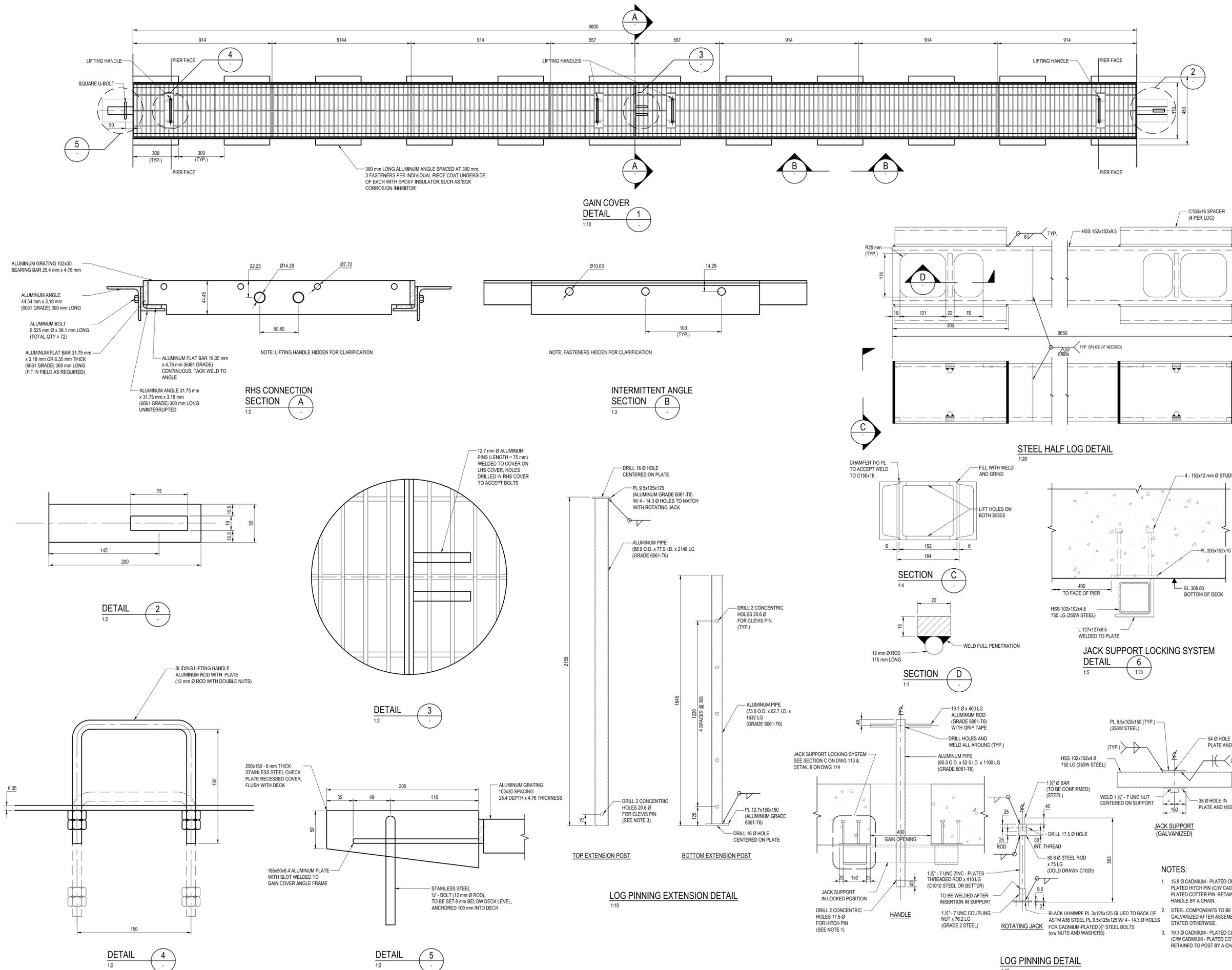


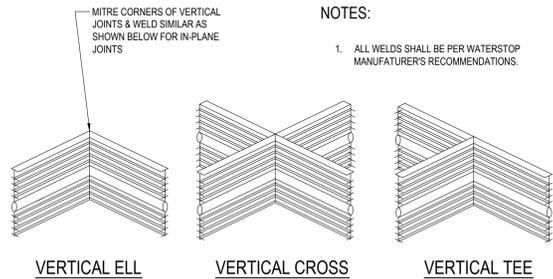
Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
MISCELLANEOUS METAL DETAILS

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

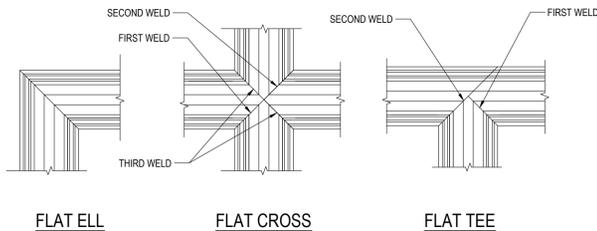
Project manager / Administrateur de projet JOHN JUFFS	Drawing Number / Numéro de CHTI 30025849	Sheet / Feuille 114
Project Number / Numéro du projet 121-15275-51		1 of 1



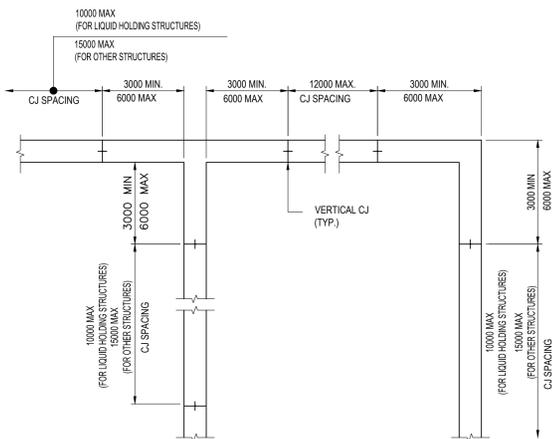


NOTES:

1. ALL WELDS SHALL BE PER WATERSTOP MANUFACTURER'S RECOMMENDATIONS.

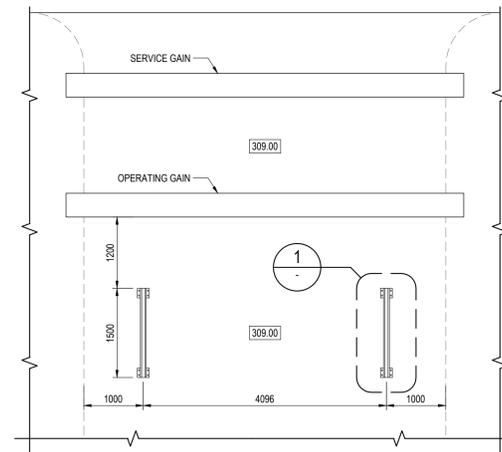


WATERSTOP JOINTS
N.T.S.



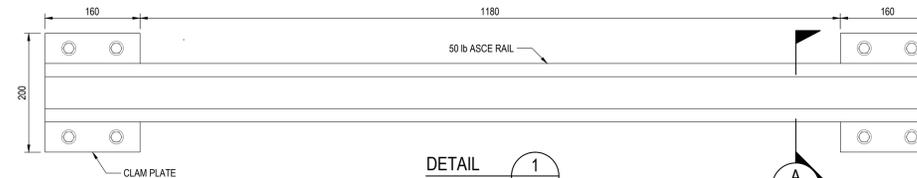
NOTES:

- COORDINATE CONSTRUCTION JOINT LOCATIONS AND TIME BETWEEN CONCRETE POURS WITH SPECIFICATION 03300.
- LOCATE WALL CONSTRUCTION JOINTS AS SHOWN, UNLESS INDICATED OTHERWISE.
- FOR VERTICAL DIRECTION 3000mm MAX. C.J. SPACING.



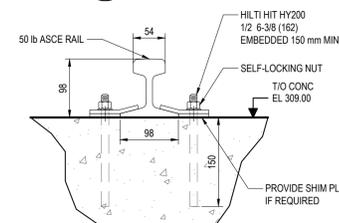
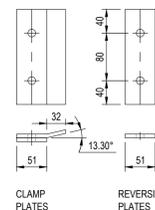
PLAN - LOG RESTS

1:50



DETAIL 1

1:5

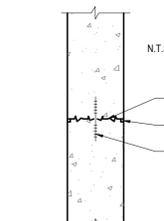


SECTION A

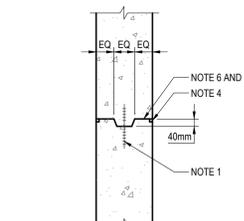
1:5

NOTES:

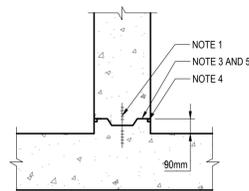
- 150mmx10mm P.V.C. WATERSTOP.
- CONTINUOUS 10M REINF. BARS TIED TO WATERSTOP AT 300mm C/C AND TIED TO MAIN REINF. AT 600mm C/C. (REQ'D ONLY IF SPECIFIED)
- CLEAN FIRST POUR SURFACE THOROUGHLY OF ALL CONTAMINANTS LAITANCE OR INFERIOR CONCRETE BEFORE SECOND POUR AND ROUGHEN TO FULL 5mm AMPLITUDE.
- 13mm DEEP 20mm WIDE REGLET FOR EXTERIOR FACE ONLY. APPLY CONCRETE SEALANT TO REGLET AFTER WALL COATING.
- LEAVE SURFACE ROUGH BETWEEN POUR AT HORIZONTAL JOINTS.
- FORM JOINTS AT VERTICAL AND SLOPING JOINTS.
- ITEMS 1 AND 2 MAY BE OMITTED WHERE SPECIFIED.



SECTION (IN WALLS)



SECTION PLAN (IN WALLS)

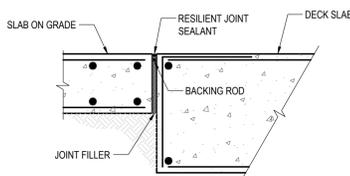


SECTION

N.T.S.

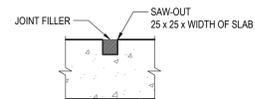
TYPICAL CONSTRUCTION JOINT
N.T.S.

N.T.S.



TYPICAL ISOLATION JOINT - SECTION

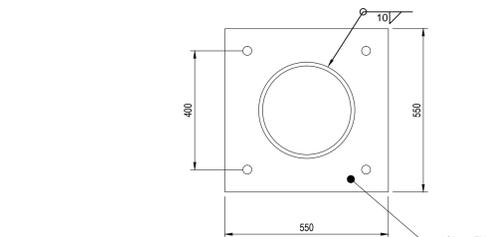
N.T.S.



TYPICAL CONTROL JOINT - DETAIL

EAST & WEST SLABS ON GRADE

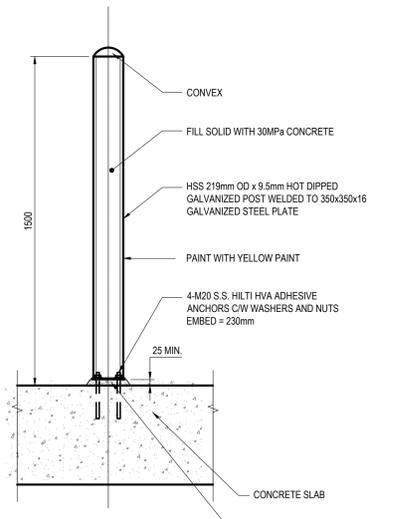
N.T.S.



TYP. SHORELINE ANCHOR

DETAIL 2

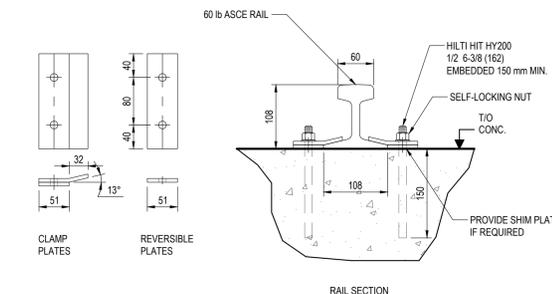
1:10



TYP. BOLLARD ON CONCRETE SLAB

DETAIL 3

N.T.S.



TEE RAIL (60 LB)

DETAIL 5

1:5

No.	Description	Drawn By (Des.P)	Date
E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-14-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016

Revision / Révision

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	Detail number Numéro du détail
B	Location dwg. number Numéro sur dessin



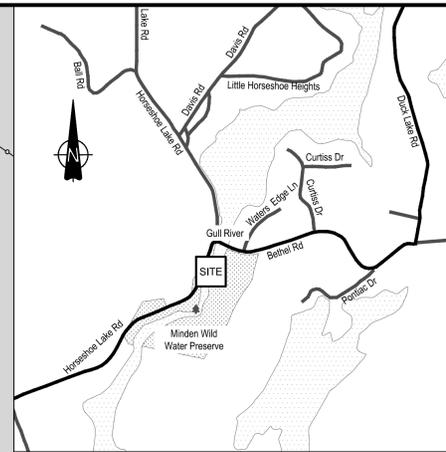
Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
MISCELLANEOUS DETAILS

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

Project manager / Administrateur de projet
JOHN JUFFS

HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 115
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



LEGEND:

- DIRECTION OF WATER FLOW
- TREES
- BRUSH (PLAN VIEW)
- EARTH (SECTION)
- ROCK (SECTION)
- WATER

No.	Description	Drawn By (Des.P)	Date	Revision / Révision
E	ISSUED FOR TENDER		F.Z. SEP-23-2016	
D	ISSUED FOR TENDER		F.Z. SEP-14-2016	
C	ISSUED FOR 100% REVIEW		F.Z. SEP-02-2016	
B	ISSUED FOR 95% REVIEW		F.Z. AUG-05-2016	
A	ISSUED FOR 80%		F.Z. MAY-27-2016	

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet

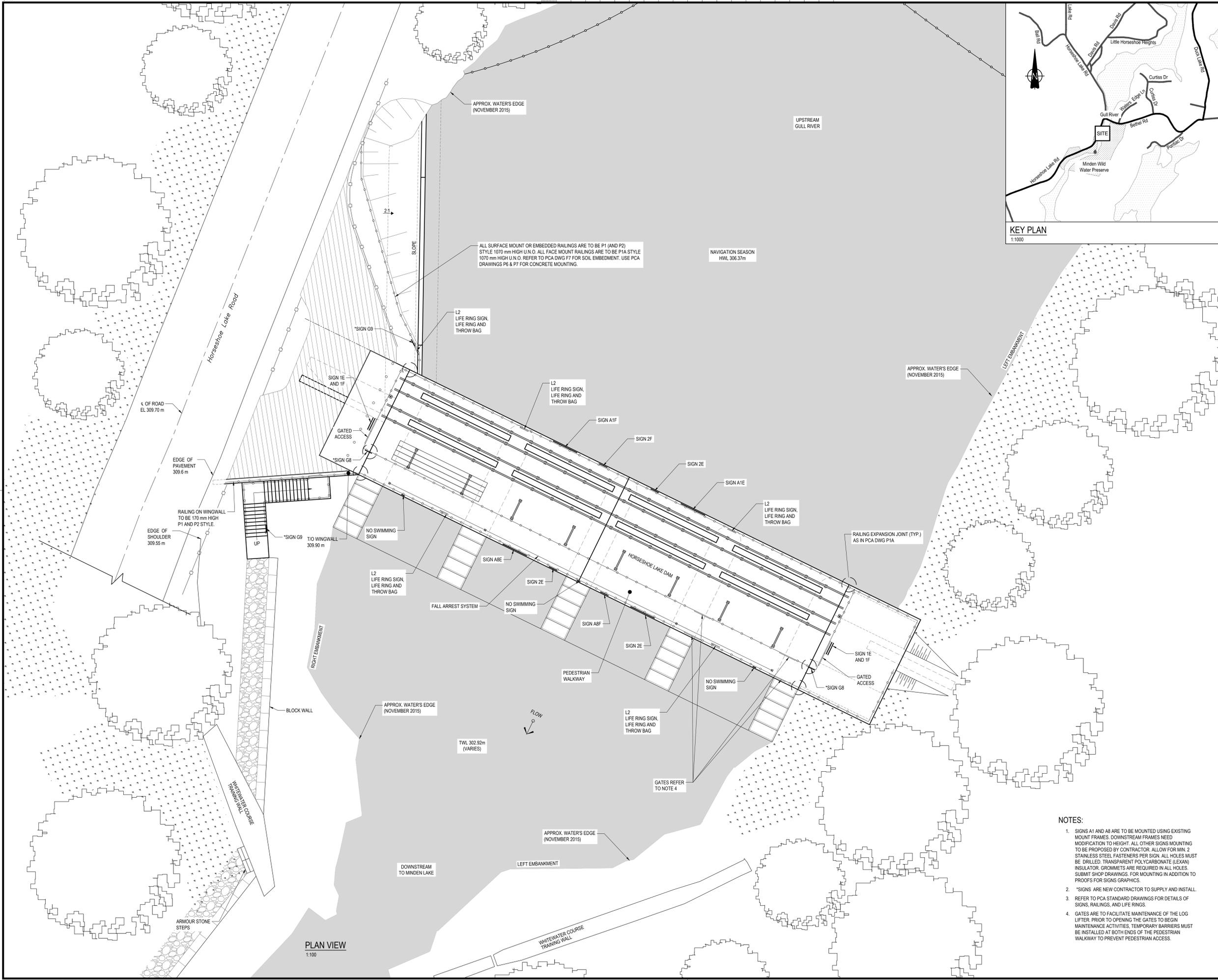
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin

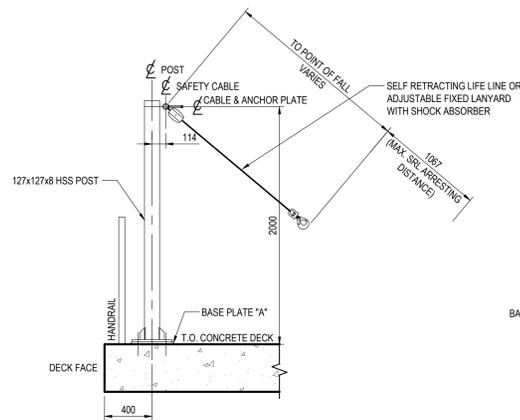
PUBLIC SAFETY PLAN

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016

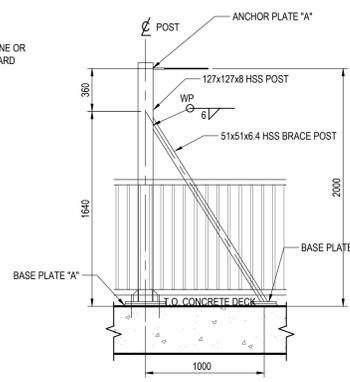
Project manager / Administrateur de projet JOHN JUFFS	Drawing Number / Numéro de Dessin 30025849
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 116 1 of 1



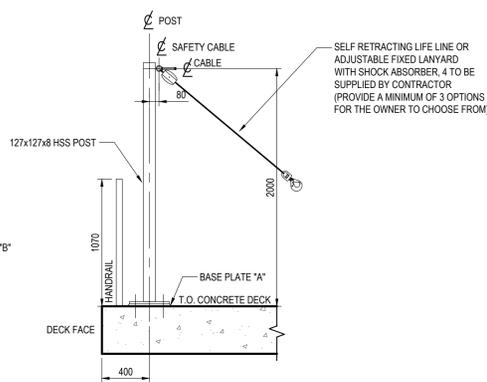
- NOTES:**
- SIGNS A1 AND A8 ARE TO BE MOUNTED USING EXISTING MOUNT FRAMES. DOWNSTREAM FRAMES NEED MODIFICATION TO HEIGHT. ALL OTHER SIGNS MOUNTING TO BE PROPOSED BY CONTRACTOR. ALLOW FOR MIN. 2 STAINLESS STEEL FASTENERS PER SIGN. ALL HOLES MUST BE DRILLED. TRANSPARENT POLYCARBONATE (LEXAN) INSULATOR. GROMMETS ARE REQUIRED IN ALL HOLES. SUBMIT SHOP DRAWINGS FOR MOUNTING IN ADDITION TO PROFILES FOR SIGNS GRAPHICS.
 - *SIGNS ARE NEW CONTRACTOR TO SUPPLY AND INSTALL.
 - REFER TO PCA STANDARD DRAWINGS FOR DETAILS OF SIGNS, RAILINGS, AND LIFE RINGS.
 - GATES ARE TO FACILITATE MAINTENANCE OF THE LOG LIFTER. PRIOR TO OPENING THE GATES TO BEGIN MAINTENANCE ACTIVITIES, TEMPORARY BARRIERS MUST BE INSTALLED AT BOTH ENDS OF THE PEDESTRIAN WALKWAY TO PREVENT PEDESTRIAN ACCESS.



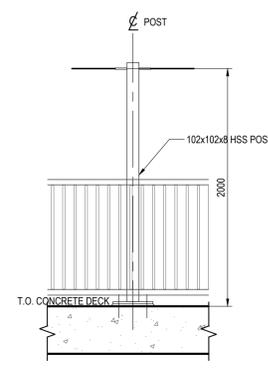
SOUTH END POST ELEVATION (LOOKING SOUTH) 1:25



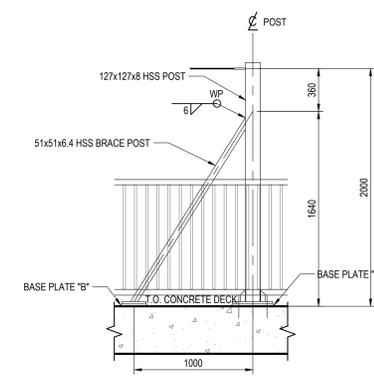
SOUTH END POST ELEVATION (LOOKING DOWNSTREAM) 1:25



INTERMEDIATE POST ELEVATION (LOOKING SOUTH) 1:25

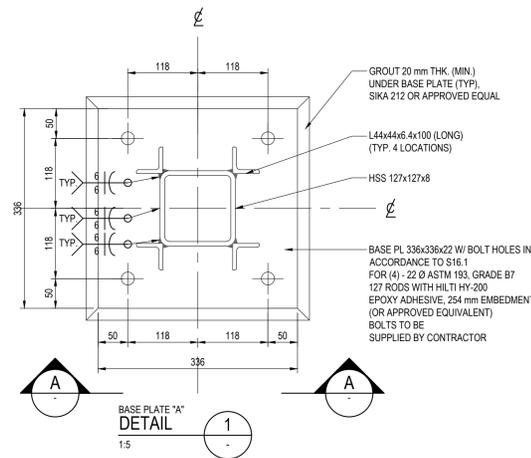


INTERMEDIATE POST ELEVATION (LOOKING DOWNSTREAM) 1:25

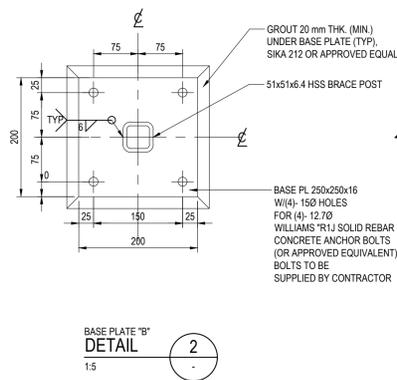


NORTH END POST ELEVATION (LOOKING DOWNSTREAM) 1:25

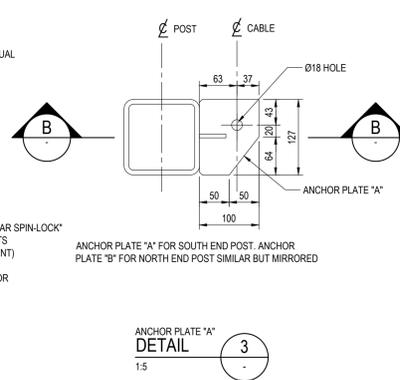
- NOTES:
- ALL STEEL COMPONENTS OF THE NEW FALL ARREST SYSTEM ARE TO HAVE GALVANIZED FINISH AS PER THE SPECIFICATIONS.
 - TOGGLE SWAGE TERMINATION TO BE DROP-FORGED GALVANIZED STEEL TOGGLE ASSEMBLY COMPLETE WITH OPEN TYPE SWAGE SOCKET AND CLEVIS PIN, MINIMUM BREAKING STRENGTH 100 kN.
 - TENSIONER UNIT/TOGGLE SWAGE TERMINATION TO BE DROP-FORGED GALVANIZED STEEL TOGGLE ASSEMBLY COMPLETE WITH SWAGE TUBE, TURNBUCKLE BODY, JAW END WITH CLEVIS PIN AND LOCKING NUT, MINIMUM BREAKING STRENGTH 100 kN.
 - INTERMEDIATE BRACKET TO BE DROP-FORGED GALVANIZED STEEL SHOULDER EYE BOLT COMPLETE WITH GALVANIZED WASHER AND LOCK NUT. TORQUE EYE BOLT AS FOLLOWS (183N-M FOR 5/8" THREAD, 355N-M FOR 3/4" THREAD).



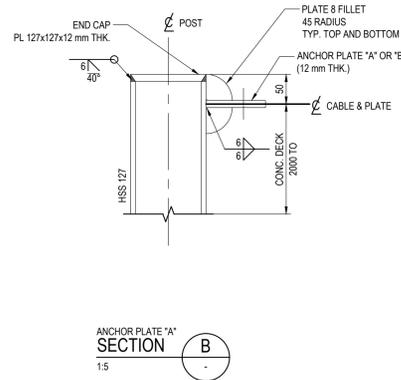
BASE PLATE "A" DETAIL 1:5



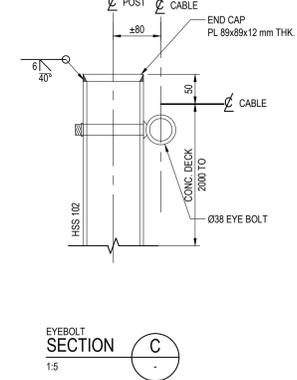
BASE PLATE "B" DETAIL 1:5



ANCHOR PLATE "A" DETAIL 1:5



ANCHOR PLATE "A" SECTION 1:5



EYEBOLT SECTION 1:5

E	ISSUED FOR TENDER	F.Z.	SEP-23-2016
D	ISSUED FOR TENDER	F.Z.	SEP-14-2016
C	ISSUED FOR 100% REVIEW	F.Z.	SEP-02-2016
B	ISSUED FOR 95% REVIEW	F.Z.	AUG-05-2016
A	ISSUED FOR 80%	F.Z.	MAY-27-2016
No.	Description	Drawn By (Des./Par.)	Date
Revision / Révision			

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

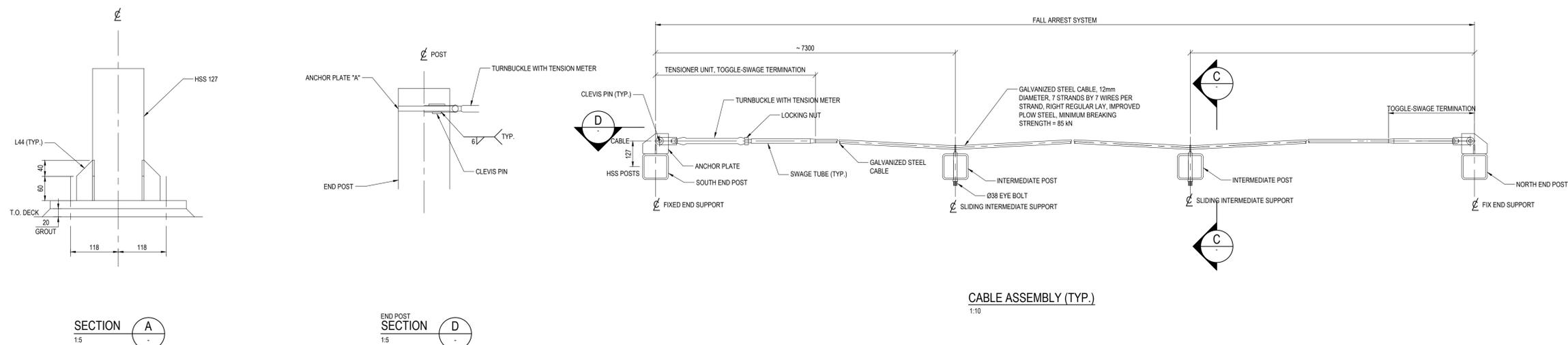
A	A Detail number Numéro du détail
B	B Location dwg. number Numéro sur dessin



Project title / Titre du projet
HORSESHOE LAKE DAM REPLACEMENT

Drawing title / Titre du dessin
FALL ARREST SYSTEM

Drawn by / Dessiné par FELIPE ZULUAGA	Designed by / Conçu par KARINA SETO
Approved by / Approuvé par JAVIER VILORIA	Drawing Date / Date du dessin SEPTEMBER 2016
Project manager / Administrateur de projet JOHN JUFFS	
HCEW Number / Numéro de CHTI 30025849	Drawing Number / Numéro du Dessin 117
Project Number / Numéro du projet 121-15275-51	Sheet / Feuille 1 of 1



CABLE ASSEMBLY (TYP.) 1:10

SECTION A 1:5

END POST SECTION D 1:5