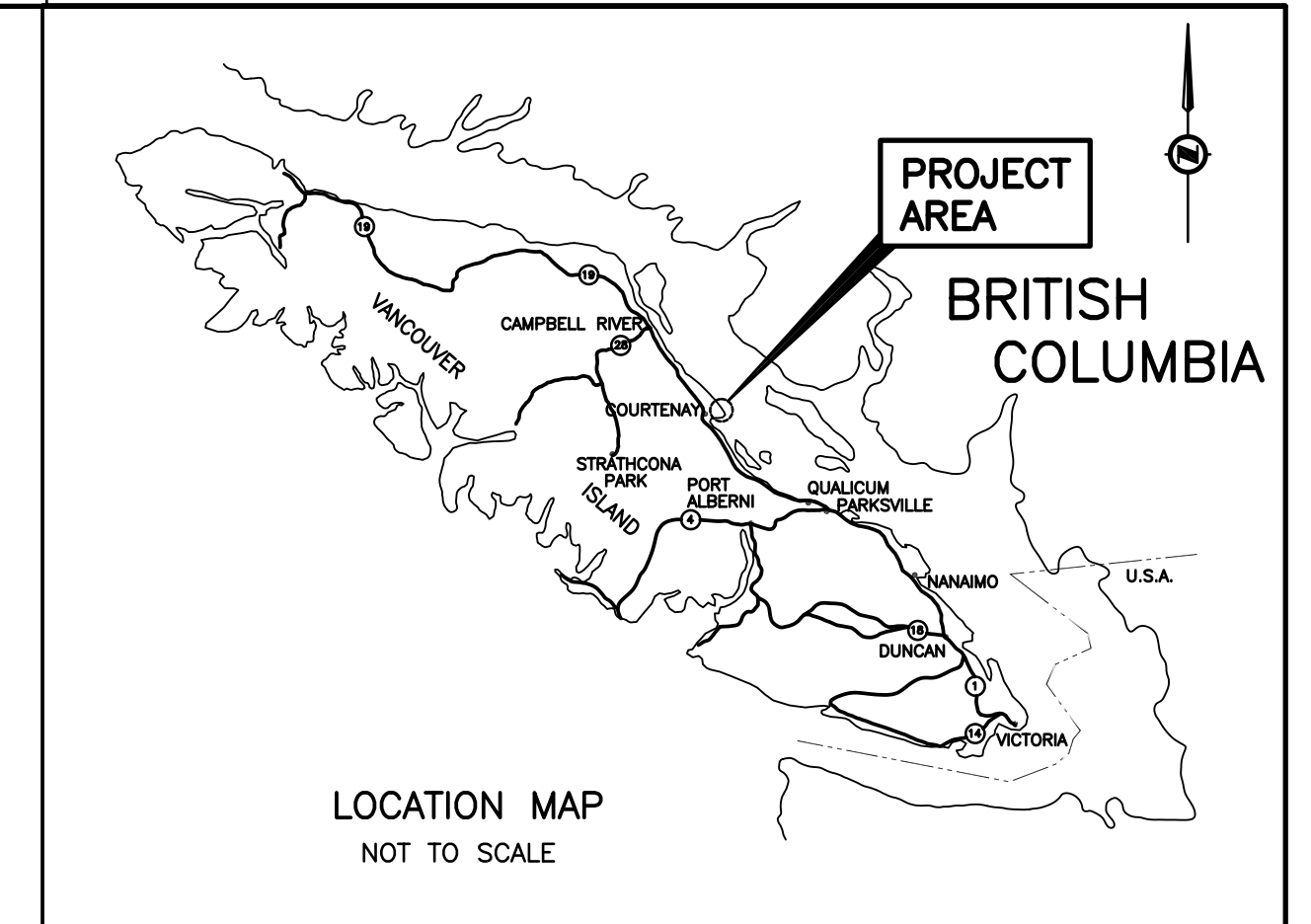


DRAWING INDEX	
DRAWING No.	DESCRIPTION
R1-541-001	LOCATION MAP & GENERAL NOTES
R1-541-002	LOCATION MAP, PLAN, PROFILE, & GEN. SECTION
R1-541-003	DETAILS

PROVINCE OF BRITISH COLUMBIA
MINISTRY OF TRANSPORTATION
SOUTH COAST REGION

KYE BAY HILL SOLDIER PILE WALL ADDITION

STA 1+124.046 TO STA 1+172.507



GENERAL NOTES

- THESE DRAWINGS INCLUDING DIMENSIONS SHALL BE READ IN CONJUNCTION WITH ALL OTHER PROJECT DRAWINGS AND SPECIFICATIONS. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE STRUCTURAL ENGINEER FOR CLARIFICATION PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL BE FAMILIAR WITH ALL PROJECT DRAWINGS INCLUDING THOSE OF OTHER DISCIPLINES AND SHALL MAKE ALLOWANCES FOR ALL ITEMS SHOWN ON OTHER DRAWINGS THAT AFFECT THIS CONTRACTOR'S WORK.
- THESE DRAWINGS SHOW THE COMPLETED STRUCTURE ONLY. THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SHORING FOR THE CONSTRUCTION LOADING CONDITIONS AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION. CONSTRUCTION LOADS SHALL NOT EXCEED DESIGN LOADS.
- THE CONTRACTOR SHALL RETAIN A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA TO DESIGN AND TAKE RESPONSIBILITY FOR ANY TEMPORARY SHORING, BRACING OR OTHER DESIGNS REQUIRED TO COMPLETE CONSTRUCTION.
- UNDER NO CIRCUMSTANCES SHALL DRAWINGS BE SCALED.
- CONTRACTOR AND ALL SUB-TRADES SHALL VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING FABRICATION.

LIST OF SUBMISSIONS

THE FOLLOWING SUBMISSIONS ARE REQUIRED FOR THIS PROJECT:

- CONCRETE MIX DESIGNS
- STRUCTURAL STEEL SHOP DRAWINGS.
- LAGGING PANEL DRAWINGS & ERECTION DRAWINGS *
- WELDABLE REINFORCING MILL CERTIFICATES

* INDICATES THE REQUIREMENT THAT SUBMISSION BE SEALED BY AN ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA

FIELD REVIEWS

- THE CONTRACTOR ON PROJECTS WITHIN 30 MINUTES OF NANAIMO SHALL PROVIDE THE MINISTRY REPRESENTATIVE WITH A MINIMUM OF 24 HOURS (1 WORKING DAY) ADVANCE NOTICE FOR FIELD REVIEWS. IF MORE THAN 100 KM (60 MILES) OF TRAVEL IS NECESSARY FOR THE ENGINEER, 48 HOURS (2 WORKING DAYS) NOTICE SHALL BE PROVIDED.
- THE FOLLOWING FIELD REVIEWS ARE CONSIDERED TO BE THE MINIMUM NUMBER OF STRUCTURAL FIELD REVIEWS REQUIRED FOR THE PROJECT:
 - PRECAST CONCRETE: REINFORCING STEEL SHALL BE REVIEWED PRIOR TO PLACING CONCRETE. REINFORCING IN CONCRETE WALLS SHALL BE REVIEWED PRIOR TO "BUTTONING UP" WALL FORMS.
 - REVIEW OF H-PILE SECTIONS ONCE IN POSITION PRIOR TO CONCRETE POUR.
 - REVIEW OF WALL LAGGING PANEL SECTIONS ONCE IN PLACE, INCLUDING STRUCTURAL STEEL AND CONNECTIONS PRIOR TO BACKFILL.
 - FINAL INSPECTION OF WALL ONCE BACKFILLED.
 - MINISTRY REPRESENTATIVE TO MONITOR AND APPROVE ALL PILE INSTALLATIONS.
- IF THE MINISTRY REPRESENTATIVE IS NOT PROVIDED WITH THE OPPORTUNITY TO PERFORM THE REQUIRED FIELD REVIEWS, FINAL CERTIFICATION OF THE PROJECT WILL NOT BE ISSUED.

STRUCTURAL STEEL

- ALL STEEL WORK SHALL BE IN ACCORDANCE WITH CAN/CSA-S16.1
- ALL WELDING SHALL BE IN ACCORDANCE WITH CSA W59-M 1989 AND SHALL BE PERFORMED BY FABRICATORS "FULLY APPROVED" BY THE CANADIAN WELDING BUREAU UNDER CSA W59. FABRICATING SHOP TO HAVE A MINIMUM DIVISION 2.1 CERTIFICATION BY THE CANADIAN WELDING BUREAU TO THE REQUIREMENTS OF CSA W47.1 AND CSA W55.3 FOR RESISTANCE WELDING OF STRUCTURAL COMPONENTS. THE FABRICATOR SHALL SUBMIT PROOF OF CERTIFICATION PRIOR TO START OF WORK.
- ALL CONNECTIONS NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED FOR THE LOADS INDICATED ON THE DRAWINGS. CONNECTION DETAILS ARE SCHEMATIC ONLY UNLESS NOTED OTHERWISE. FINAL CONNECTION CONFIGURATION IS THE RESPONSIBILITY OF THE FABRICATOR.
- ALL WELDED, HEADED STUDS, AND WELDED DEFORMED BAR ANCHORS SHALL BE INSTALLED AS PER THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS IN ACCORDANCE WITH CSA W55.3.
- ALL STEEL WORK TO BE COATED AND PAINTED AS PER THE BOOK SPECIFICATION. ITEMS SPECIFIED TO BE GALVANIZED SHALL BE HOT DIPPED GALVANIZED TO CSA G164, MINIMUM ZINC COATING OF 600g/sq.m. FIELD TOUCHUP ALL ABRASIONS, SCRATCHES, WELDS OR BOLTS.
- PROVIDE STRUCTURAL STEEL TO CSA G40.21 WITH THE FOLLOWING GRADES:

H-PILES	350W
MISCELLANEOUS STEEL PLATES	300W
- THE CONTRACTOR SHALL PROVIDE TEMPORARY BRACING DURING CONSTRUCTION. THE BRACING SHALL BE DESIGNED, INSTALLED, AND MAINTAINED BY THE CONTRACTOR.
- ALL STEEL TO BE GALVANIZED AS PER ASTM A385-98, WITH EXCEPTION OF EMBED STUDS.

CAST-IN-PLACE CONCRETE

- ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF CAN/CSA A23.1 AND A23.2.
- CONCRETE MIXES SHALL CONFORM TO CAN/CSA A23.1 AND A23.2 AND SHALL HAVE THE FOLLOWING PROPERTIES:

CLASS	28 DAY STRENGTH	MAX. AGG. SIZE	MAX. SLUMP	AIR CONTENT	EXPOSURE
PILE CASINGS	25MPa	19 mm (3/4")	75 mm (3")	4-7%	N
- CONCRETE TESTING SHALL BE CARRIED OUT BY THE OWNER AND SHALL BE IN ACCORDANCE WITH CAN/CSA A23.1 AND A23.2. THE MINIMUM NUMBER OF TESTS PERFORMED SHALL BE AS PER CSA A23.2. ADDITIONAL TESTING SHALL BE PERFORMED AT THE DIRECTION OF THE STRUCTURAL ENGINEER. CONTRACTOR SHALL PROVIDE TESTING AGENCY WITH ADEQUATE NOTICE TO PROVIDE TESTING AS REQUIRED.
- ALL CONCRETE CURING SHALL BE IN ACCORDANCE WITH CAN/CSA A23.1. SPECIAL PRECAUTIONS SHALL BE TAKEN AS NOTED IN CSA A23.1 FOR PLACING AND CURING CONCRETE ABOVE 30° C AND BELOW 5° C.
- MIN. CLEAR COVER TO H-PILE 75mm.

PRECAST CONCRETE

THE FOLLOWING SHALL APPLY TO PRECAST CONCRETE CONSTRUCTION:

- DESIGN, FABRICATION AND ERECTION SHALL CONFORM TO CSA CAN3-A23.4, CSA S413 AND ACI A135.
- PRECAST MANUFACTURER SHALL BE CERTIFIED IN ACCORDANCE WITH CSA A251.
- PRECAST CONCRETE MIXES SHALL CONFORM TO CAN/CSA A23.1, A232.2, AND SHALL HAVE THE FOLLOWING PROPERTIES:

CONCRETE MIX SPECIFICATIONS	
MINIMUM 28 DAY STRENGTH	30 MPa
MAXIMUM AGGREGATE SIZE	20
DESIGN SLUMP	80
AIR ENTRAINMENT	5-8%
CEMENT TYPE	TYPE 10

CONCRETE STRENGTH SPECIFICATIONS	
MINIMUM 28 DAY STRENGTH	30 MPa
MINIMUM CONCRETE STRENGTH FOR APPLYING BUILDING LOADS	28 MPa
MINIMUM CONCRETE STRENGTH FOR ERECTION OF PANELS	20 MPa
MINIMUM CONCRETE STRENGTH FOR DEMOULDING OF PANELS	12 MPa
MINIMUM CONCRETE STRENGTH FOR HANDLING OF PANELS	12 MPa

- ALL REINFORCING STEEL, BOLTS, PLATES, INSERTS ETC FOR PRECAST CONNECTIONS SHALL BE DETAILED AND SUPPLIED BY PRECAST MANUFACTURER. ANY PROPOSED ALTERNATE CONNECTIONS MUST BE PRE APPROVED BY STRUCTURAL ENGINEER IN WRITING.
- FIELD CUTTING AND DRILLING IS NOT PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.
- NON-PRESTRESSED REINFORCEMENT SHALL BE IN ACCORDANCE WITH REINFORCING STEEL SPECIFICATION.
- PRESTRESSED TENDONS SHALL BE UNCOATED, SEVEN-WIRE, 12.7 MM DIAMETER, LOW RELAXATION STRANDS WITH A MINIMUM ULTIMATE TENSILE STRENGTH OF 1860 MPa. MATERIALS SHALL CONFORM TO CSA G279.
- POWDER ACTUATED FASTENERS SHALL NOT BE USED FOR FASTENING TO PRECAST MEMBERS. SEE DRAWINGS FOR CONNECTION DETAILS. STRUCTURAL ENGINEER SHALL APPROVE ALL LOCATIONS AND TYPES OF FASTENINGS.
- REFER TO STRUCTURAL DRAWINGS FOR SIZE, SHAPE AND EXTENT OF STRUCTURAL PRECAST CONCRETE. PRECAST SUPPLIER SHALL PROVIDE CONNECTION AND LIFT DESIGN FOR ALL STRUCTURAL PRECAST CONCRETE UNLESS DETAILED ON THE DRAWINGS. CONNECTION DESIGN SHALL PROVIDE FOR ALL GRAVITY AND LATERAL LOADS INTO THE STRUCTURE. CONNECTION AND LIFT SHOP DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL.
- ALL TOLERANCES AND COVERS AS SHOWN ON DRAWINGS,

REINFORCING STEEL

- REINFORCING STEEL SHALL BE DEFORMED STEEL 400 GRADE AND SHALL CONFORM TO CSA G30.18.
- WELDABLE LOW ALLOY DEFORMED STEEL REINFORCING BARS, GRADE 400W, SHALL CONFORM TO CSA G30.18. MILL CERTIFICATES SHALL BE SUPPLIED TO THE STRUCTURAL ENGINEER FOR ALL WELDABLE REINFORCING STEEL USED IN THE PROJECT.
- WELDING OF REINFORCING STEEL SHALL CONFORM TO CSA W186 "WELDING OF REINFORCING BARS IN REINFORCED CONCRETE CONSTRUCTION". WELDING OF REINFORCING SHALL BE ALLOWED ONLY AS NOTED ON PLANS. WHERE WELDING OF REINFORCING IS REQUIRED MILL CERTIFICATES WELDABLE REINFORCING SHALL BE PROVIDED PRIOR TO WELDING. WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER IS REQUIRED FOR ANY ADDITIONAL WELDING.
- ALL REINFORCING BARS SHALL BE TIED SECURELY TO PREVENT DISPLACEMENT.
- STAGGER LAP LENGTHS FOR REINFORCING STEEL 1220mm, UNLESS NOTED OTHERWISE, AS FOLLOWS:

	UNCOATED
10M	400 mm (16")
15M	600 mm (24")
20M	900 mm (36")
25M	1200 mm (48")
30M	1600 mm (64")
35M	1900 mm (76")

- NO SPLICES OTHER THAN THOSE NOTED ON THE DRAWINGS ARE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE STRUCTURAL ENGINEER.
- WHERE CONCRETE SURFACES ARE TO BE EXPOSED ONLY NON-CORROSIVE TYPE REINFORCING CHAIRS SHALL BE USED TO SUPPORT THE REINFORCING STEEL.
- DOWELS ARE TO BE TIED IN PLACE PRIOR TO POURING CONCRETE - "WET DOWELING" OF ANY REINFORCING STEEL IS NOT PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER.
- HOOKS ON ALL TIES SHALL BE BENT AT LEAST 135° AND HAVE A MINIMUM LEG OF 12 TIMES THE TIE BAR DIAMETER.

WELDING INSPECTIONS

- ALL WELDS ARE TO BE VISUALLY INSPECTED BY THE MINISTRY REPRESENTATIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING INSPECTIONS.
- ALL FAILURES IDENTIFIED BY THE TESTING AND INSPECTIONS SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE. COST OF ADDITIONAL TESTING TO CONFIRM CONFORMANCE WITH SPECIFICATIONS SHALL BE BORNE BY THE CONTRACTOR.



DESIGNED JDD	DATE JULY 06
DRAWN GMW	DATE JULY 06
CHECKED DCB	DATE JULY 06
APPROVED DCB	DATE JULY 06

Rev	Date	Description	Signature
A	10JUL06	ISSUED FOR 80% REVIEW	GMW
B	18JUL06	RE-ISSUED FOR REVIEW	GMW
C	03AUG06	ISSUED FOR FINAL REVIEW	GMW

DATE	FILE No.	PROJECT No.	REG.	DRAWING No.
		16066	0	R1-541-001

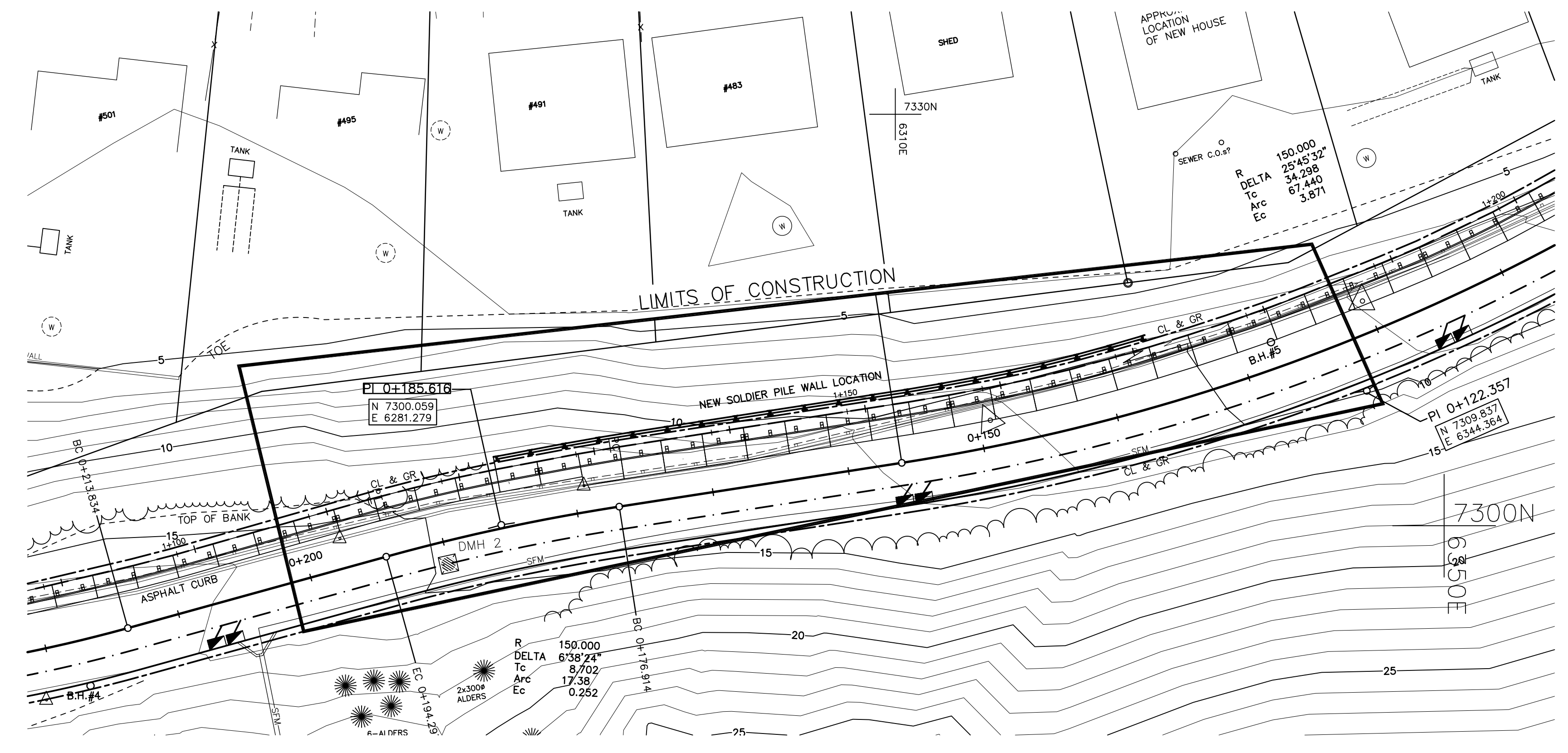
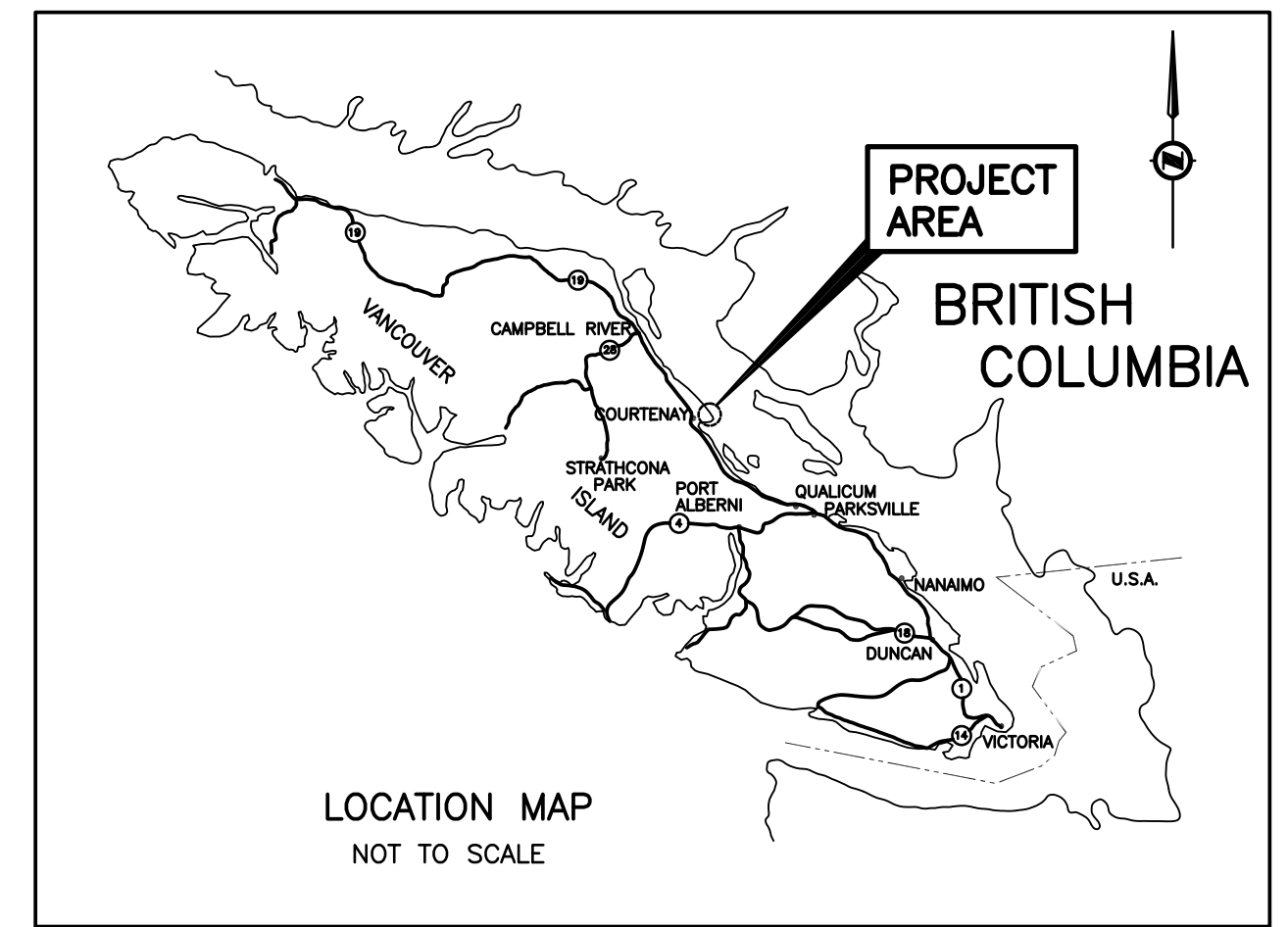
REVISIONS

LOCATION MAP & GENERAL NOTES

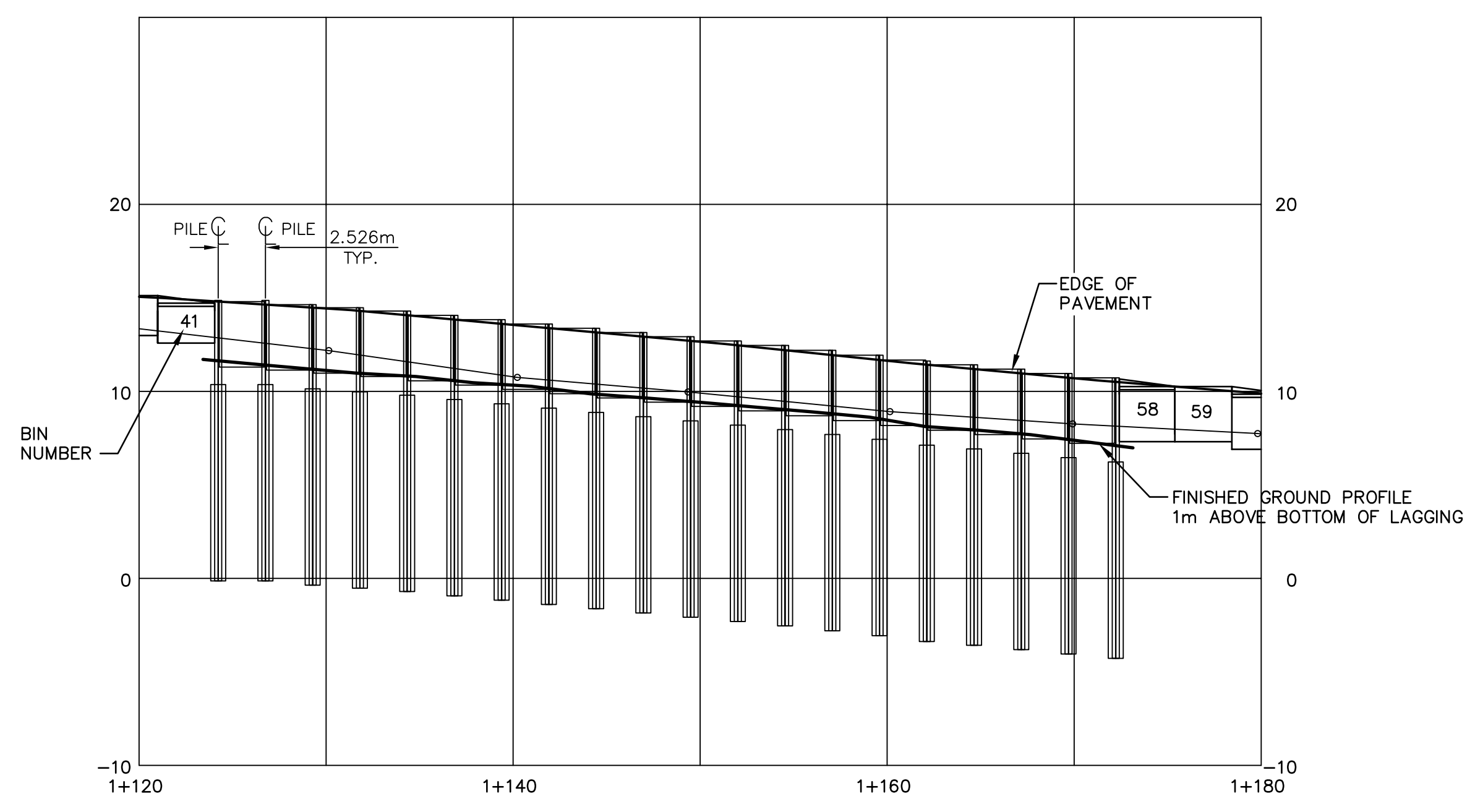
KYE BAY HILL
SOLDIER PILE WALL ADDITION

CONSULTING ENGINEER	REGIONAL MANAGER, ENGINEERING	REGIONAL DIRECTOR

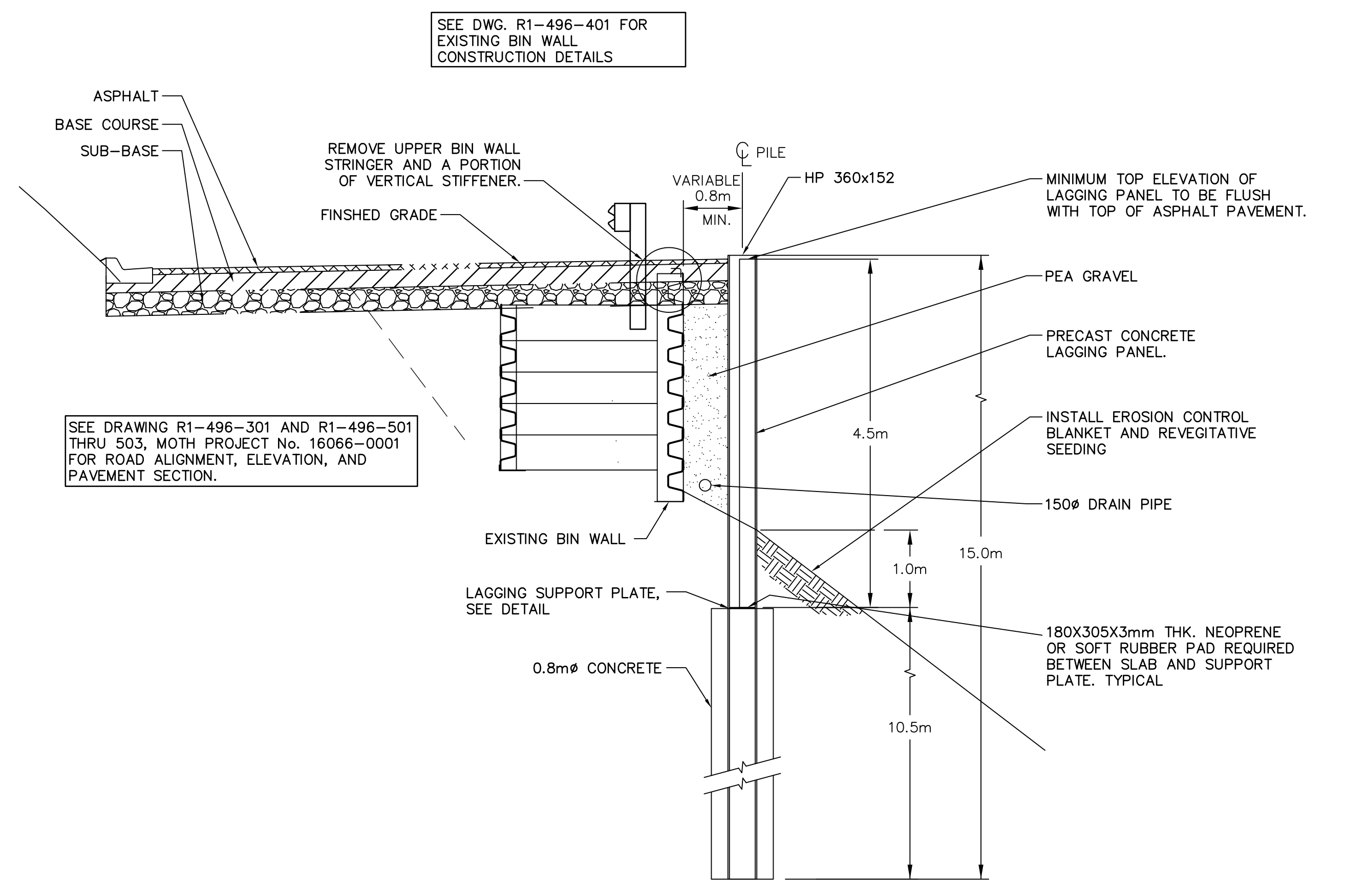
CANCEL PRINTS BEARING PREVIOUS LETTER



KEY PLAN
0 1:250 10



PROFILE ALONG FACE OF SOLDIER PILE WALL STATION 1+124.046 - 1+172.507
0 1:250 10



TYPICAL SOLDIER PILE WALL SECTION
SCALE 1:50

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Province of British Columbia
MINISTRY OF TRANSPORTATION
SOUTH COAST REGION

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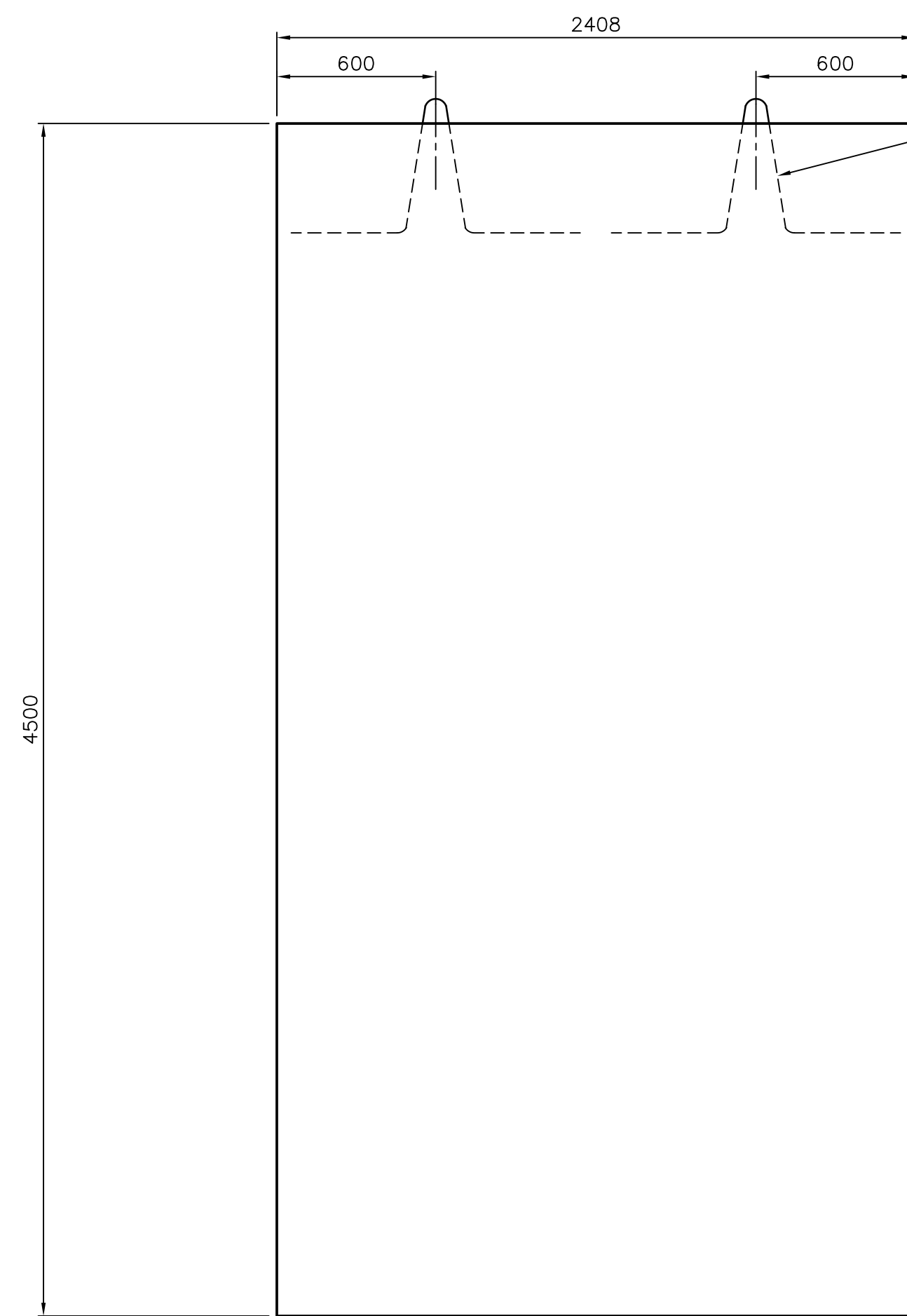
SOLDIER PILE ADDITION
TO EXISTING BIN WALL SECTIONS 42 TO 57
KYE BAY HILL
STA. 1+124.046 TO STA. 1+172.507

SENIOR DESIGNER	DATE
FILE No.	PROJECT No.
	16066-0002
REG.	DRAWING No.
1	R1-541-002

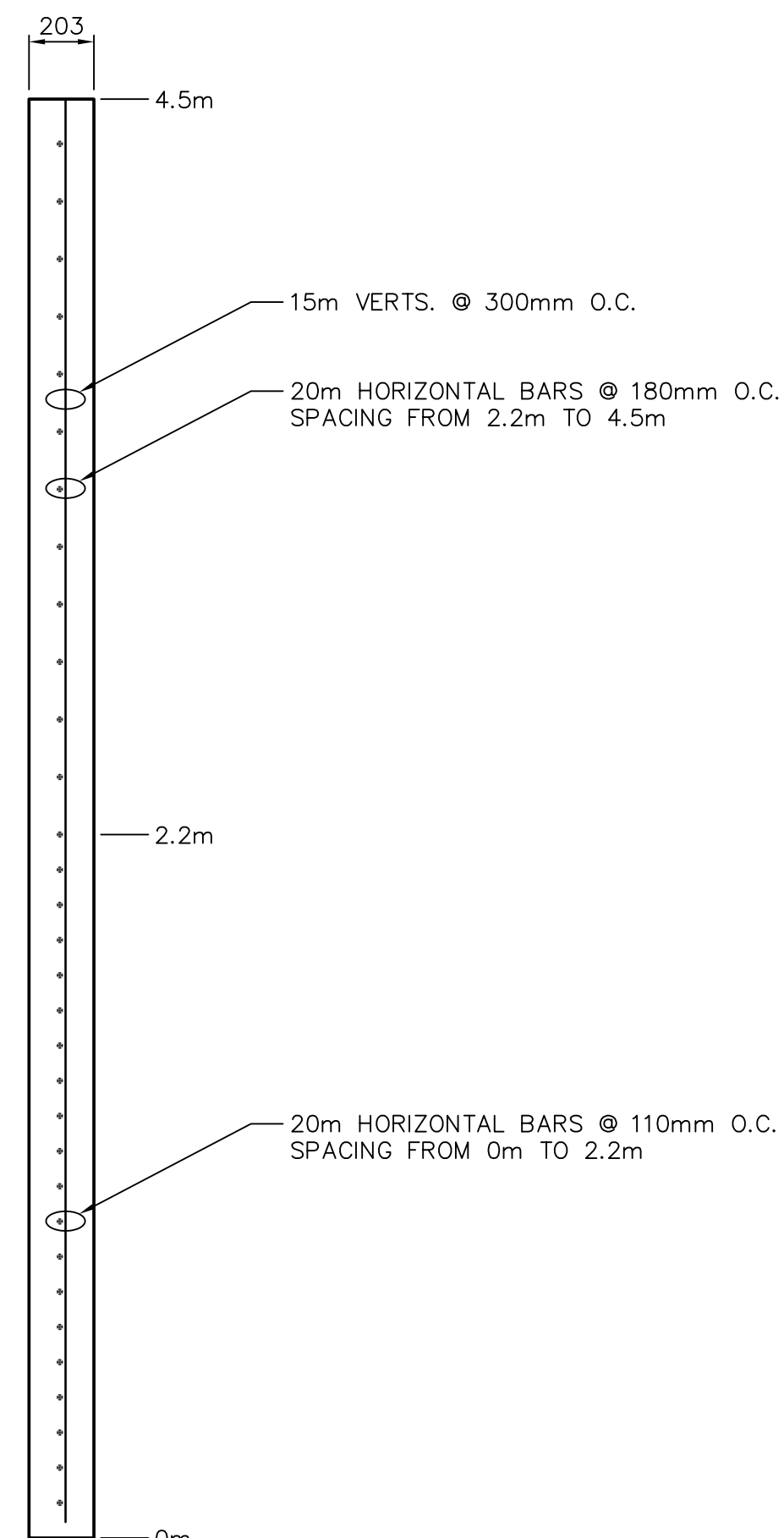
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CANCEL PRINTS BEARING PREVIOUS LETTER

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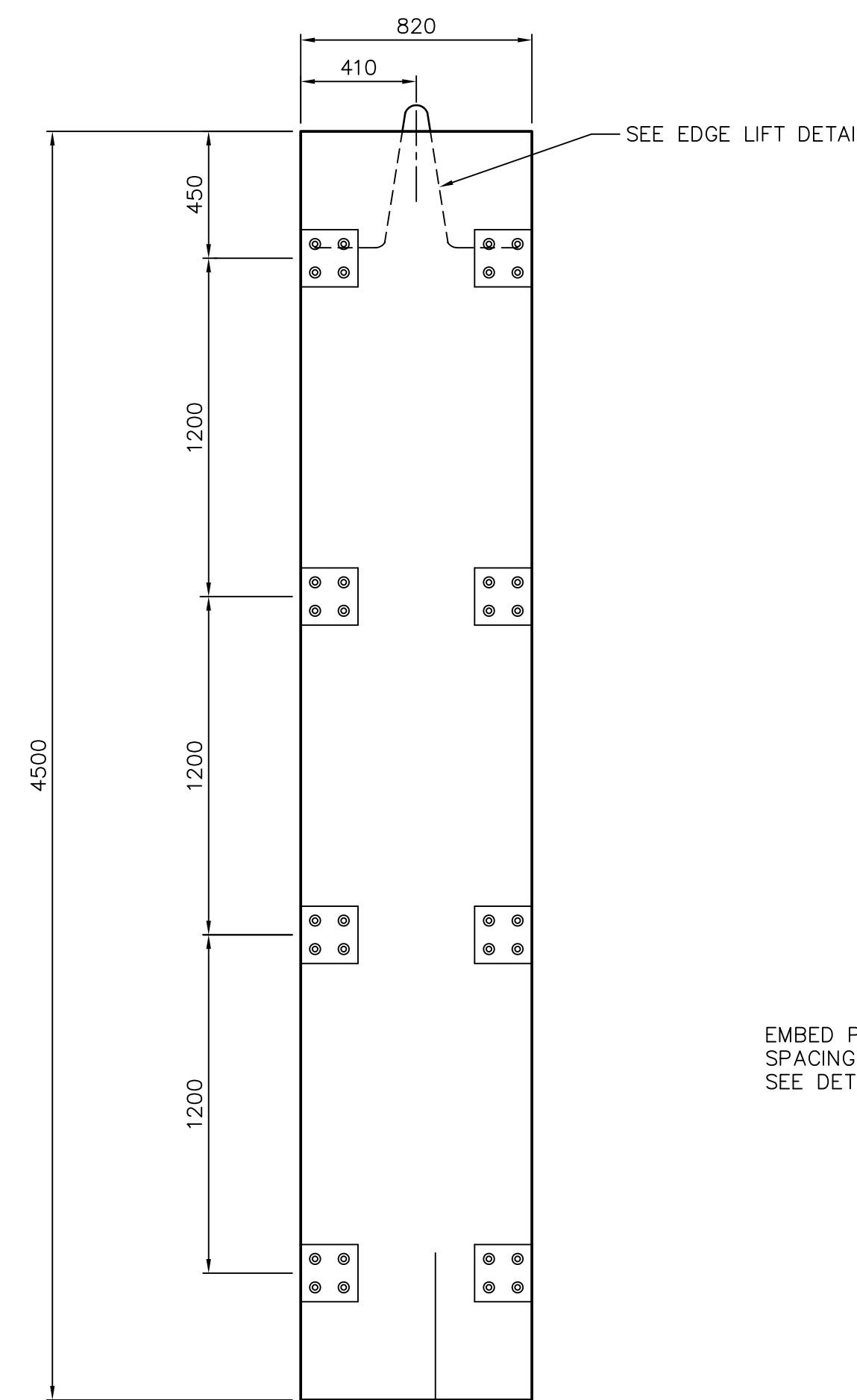


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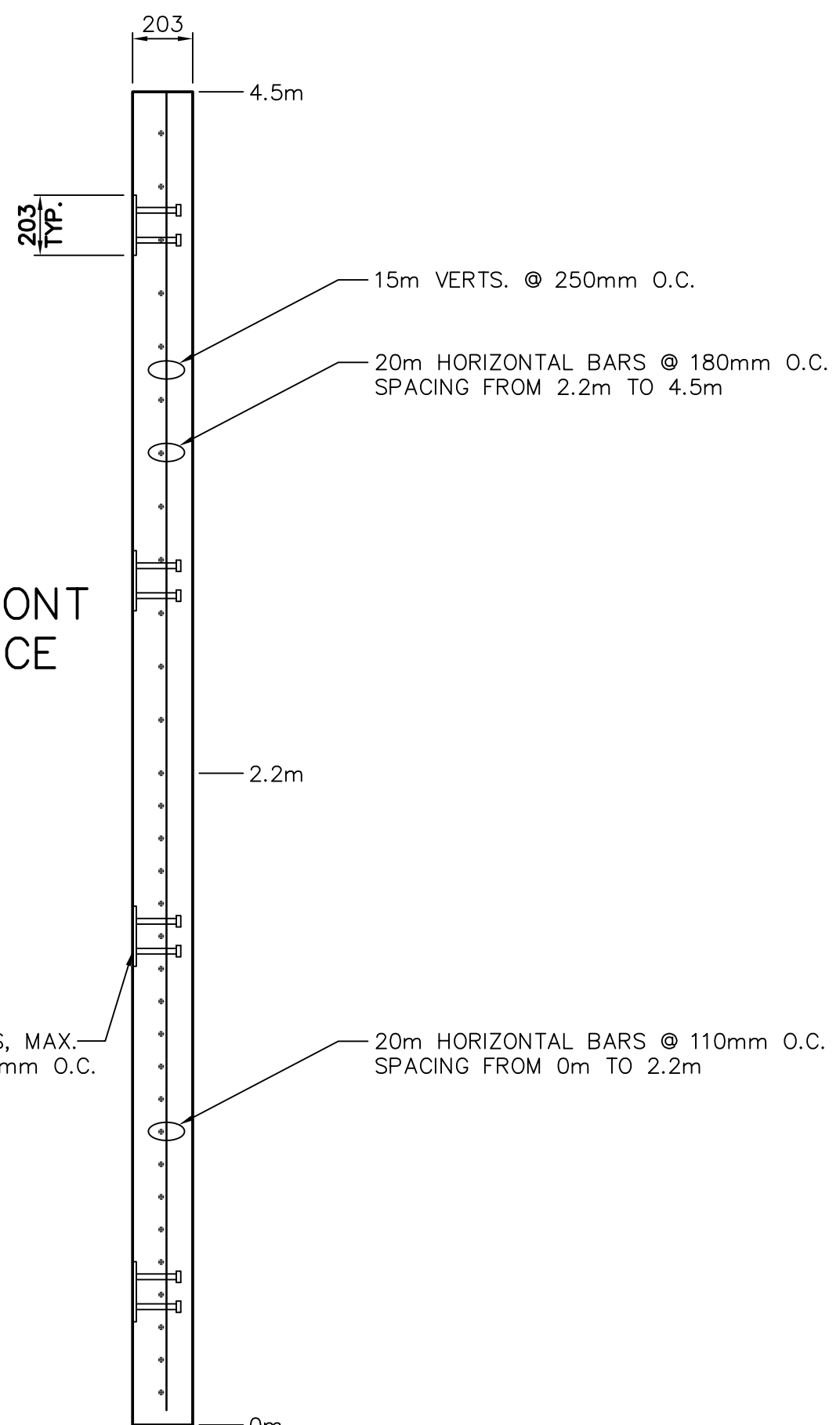
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SECTION B 1:20

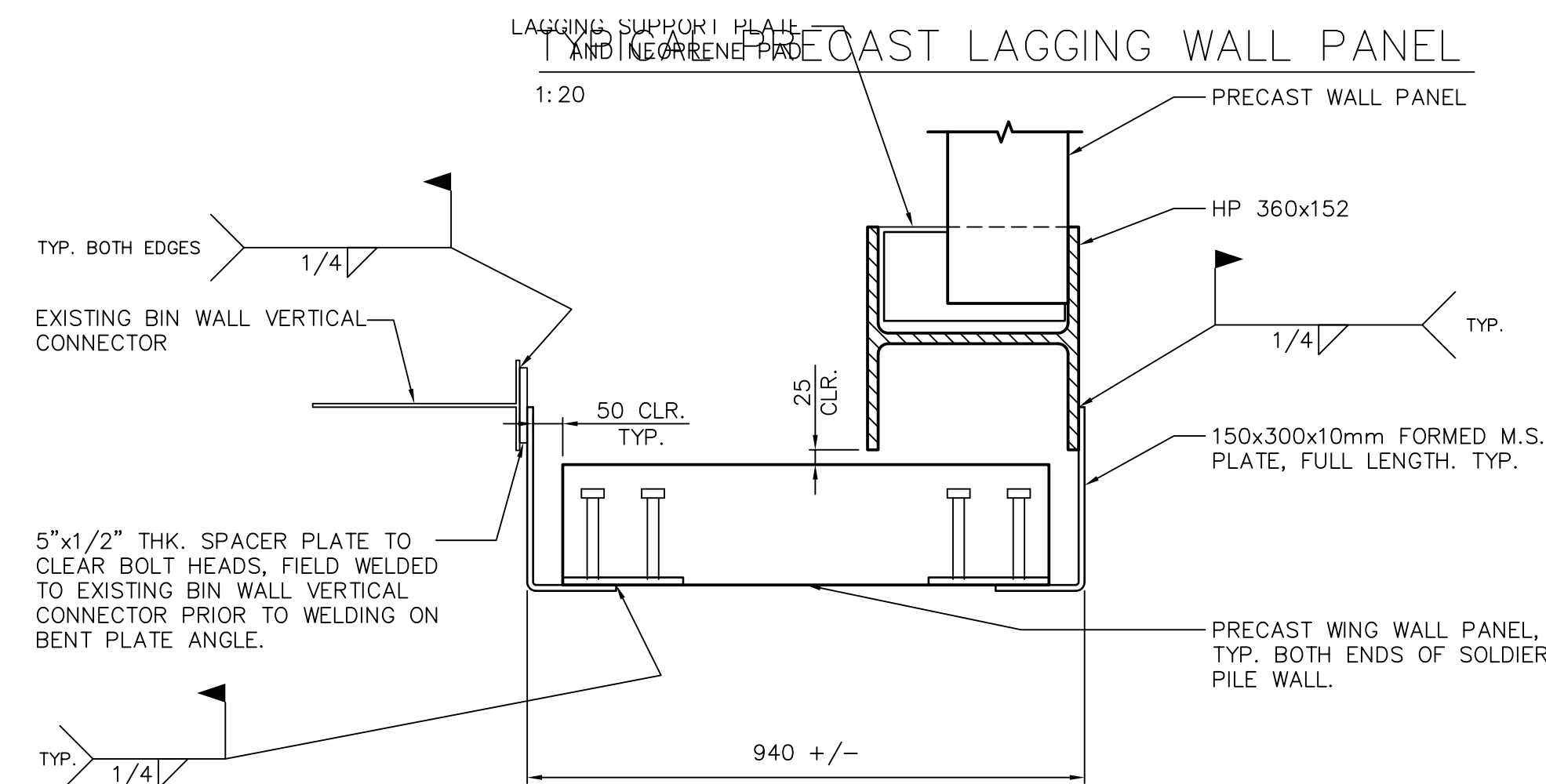


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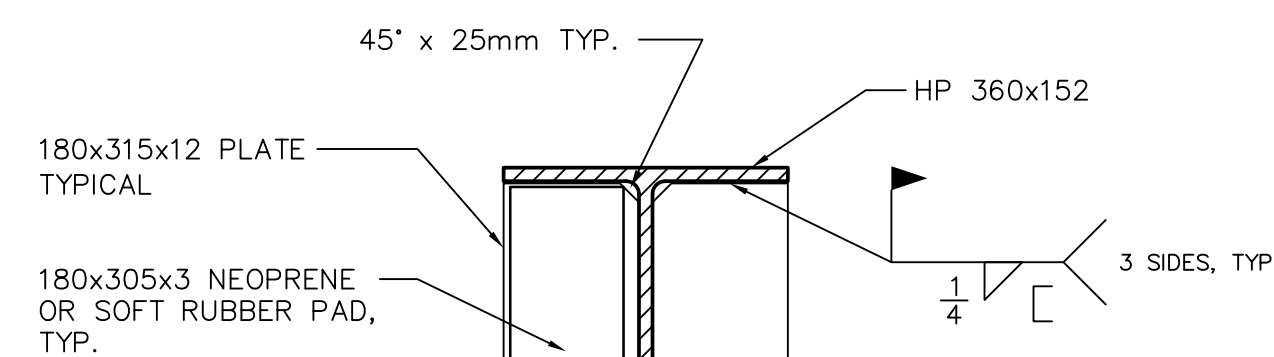
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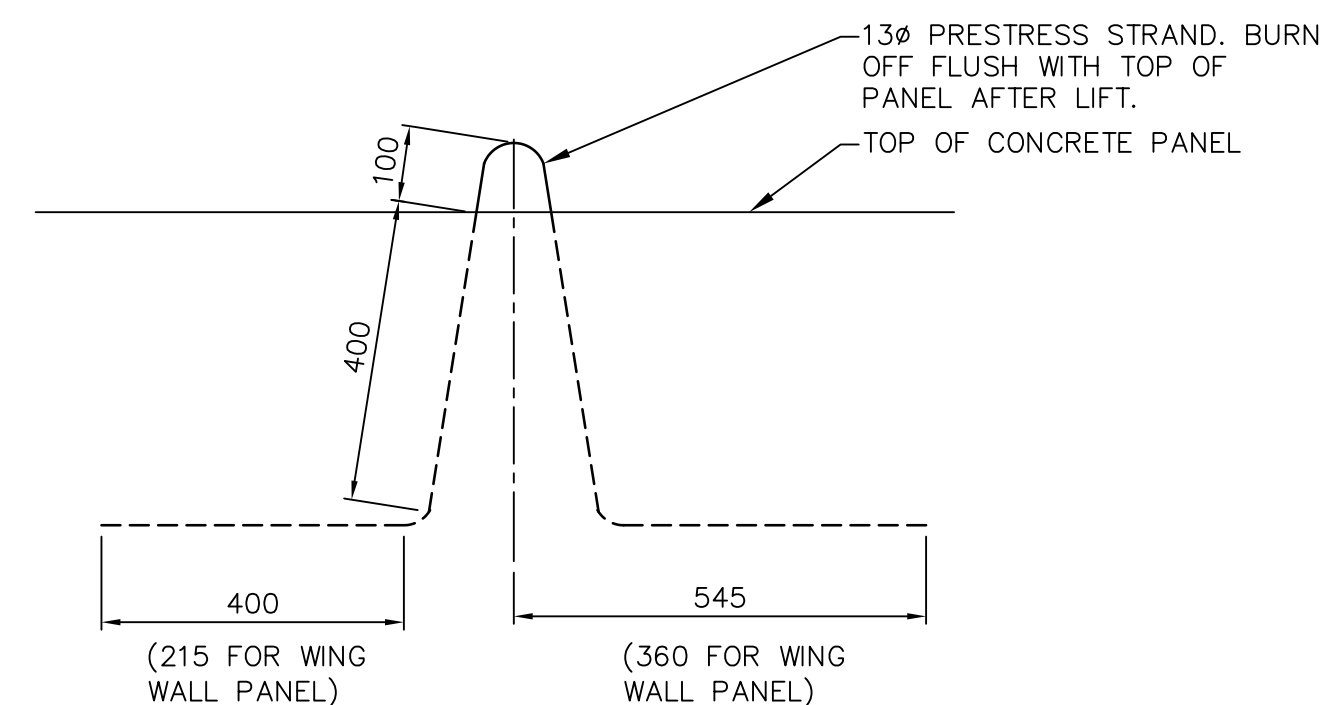
CAST LAGGING WALL PANEL



PLAN VIEW - TYP. WING WALL CONNECTION 1:10



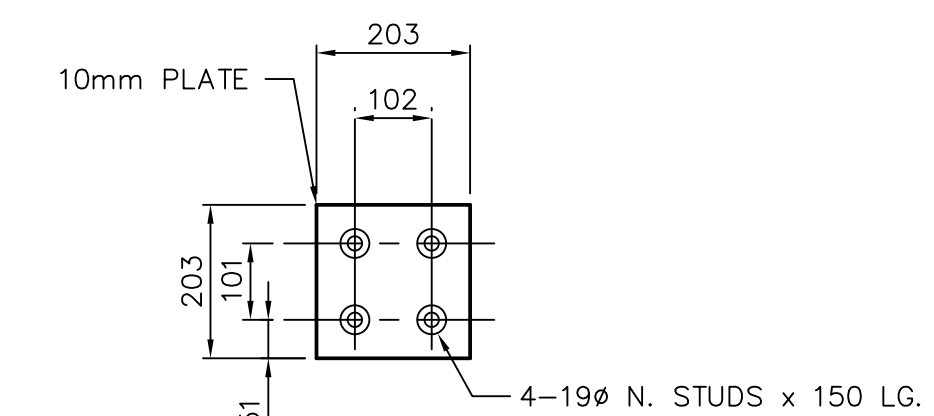
LAGGING SUPPORT PLATES 1:10



EDGE LIFT DETAIL 1:10

TYPICAL PRECAST WING WALL PANEL

1:20



EMBED PLATE DETAIL 1:10

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FILE No.	PROJECT No.	REG.	DRAWING No.
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Province of British Columbia
 MINISTRY OF TRANSPORTATION
 SOUTH COAST REGION



SOLDIER PILE ADDITION DETAILS
 TO EXISTING BIN WALL SECTIONS 42 TO 57
 KYE BAY HILL
 STA. 1+124.046 TO STA. 1+172.507

SENIOR DESIGNER _____ DATE _____

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	16066	1	R1-541-003

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