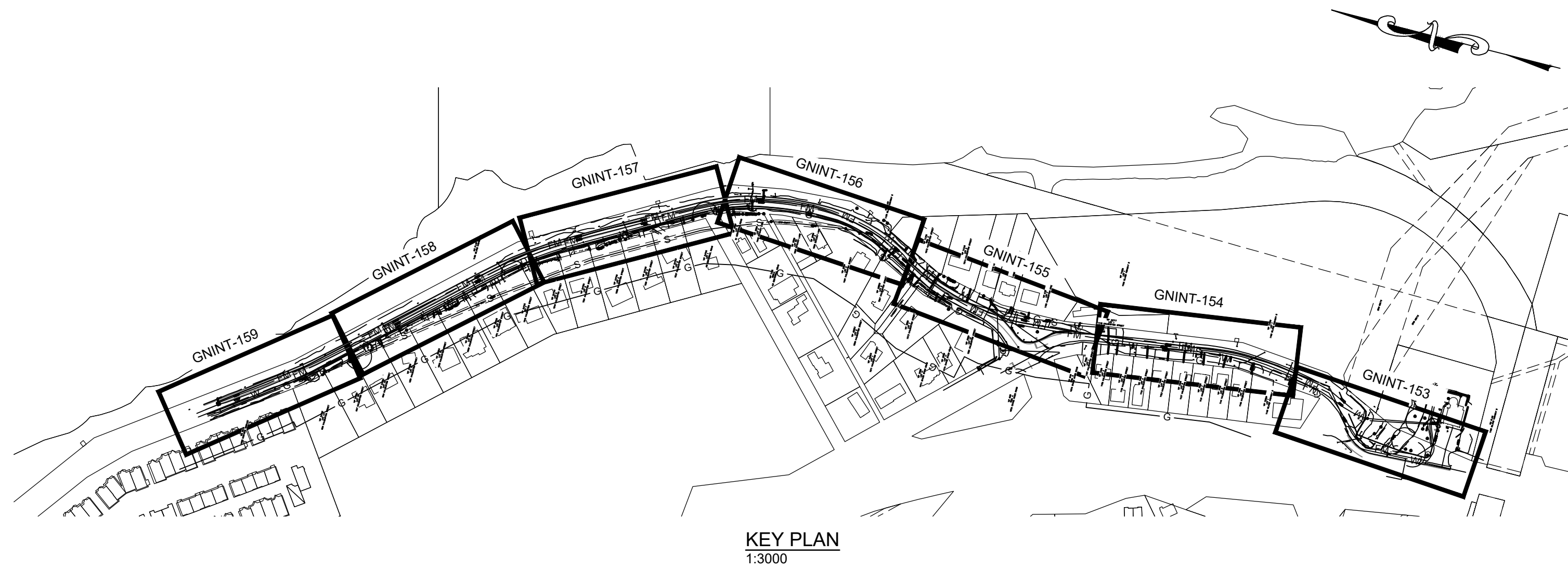
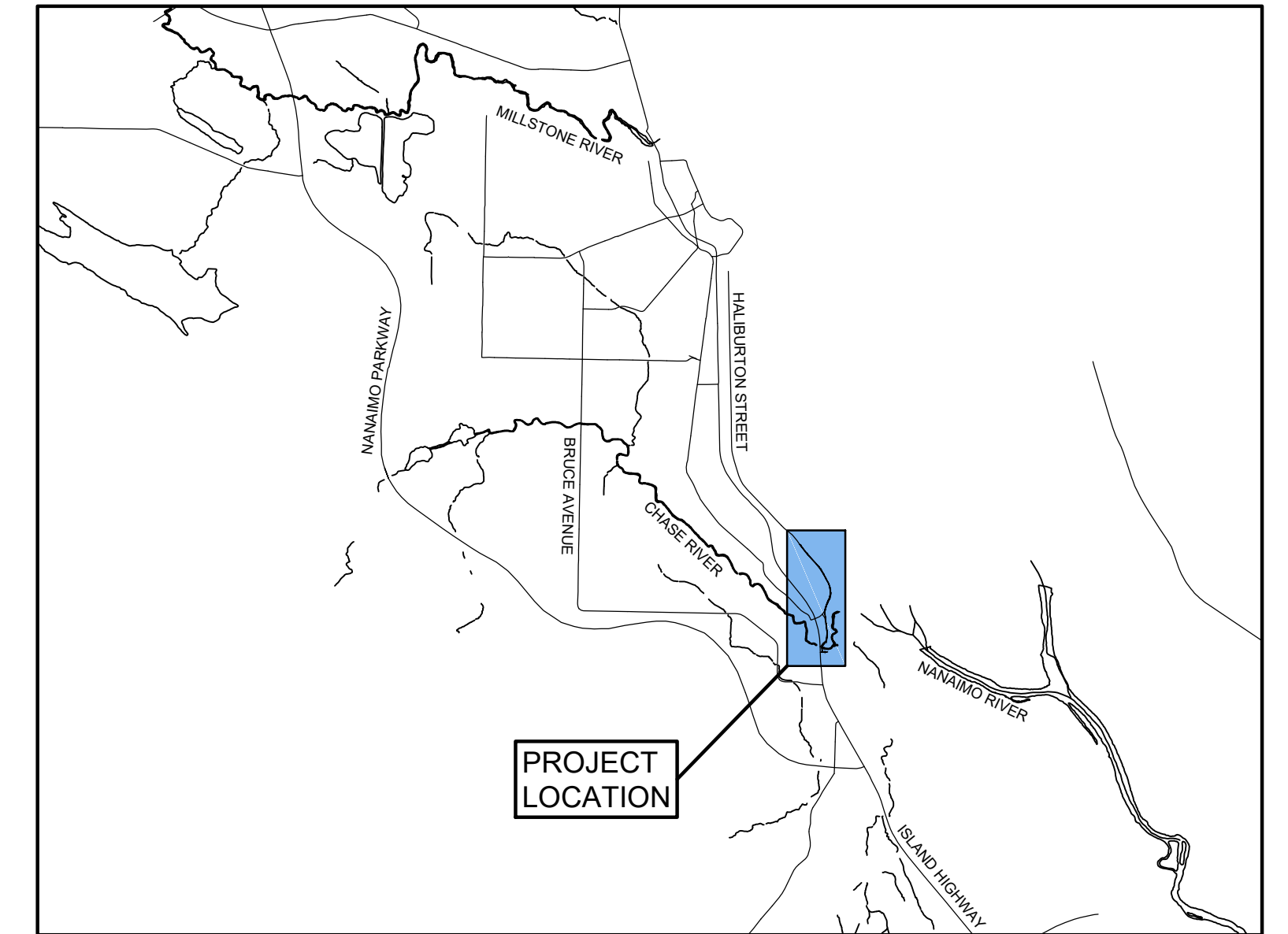


# CHASE RIVER - FORCEMAIN NO. 1 & WATERMAIN REPLACEMENT



KEY PLAN  
1:3000

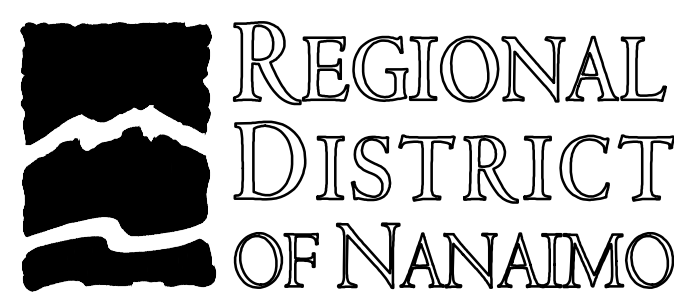


LOCATION PLAN  
1:50000

SHEET No.	DRAWING No.	PROJECT	TITLE	REVISION	SHEET No.	DRAWING No.	PROJECT	TITLE	REVISION	LEGEND	
001	GNINT-151	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	COVER SHEET KEY PLAN AND DRAWING INDEX	0	001	GNINT-200	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+000 TO STA. 0+034.400	0	⊕	STREET LIGHT
001	GNINT-152	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	NOTES AND SPECIFICATIONS	0	001	GNINT-201	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+038.788 TO STA. 0+059.434	0	⊔	POWER POLE
002	GNINT-152	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	NOTES AND SPECIFICATIONS	0	001	GNINT-202	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+060.349 TO STA. 0+082.500	0	⊕	JUNCTION BOX
001	GNINT-153	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+00 TO 0+150	0	001	GNINT-203	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+086 TO STA. 0+120	0	⊕	WATER MANHOLE
001	GNINT-154	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+150 TO 0+300	0	001	GNINT-204	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+124.489 TO STA. 0+175	0	⊕	SEWER MANHOLE
001	GNINT-155	CHASE RIVER FORECMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+300 TO 0+450	0	001	GNINT-205	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+180 TO STA. 0+240	0	⊕	STORM MANHOLE
001	GNINT-156	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+450 TO 0+600	0	001	GNINT-206	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+242.366 TO STA. 0+284.208	0	⊕	HYDRANT
001	GNINT-157	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+600 TO 0+750	0	001	GNINT-207	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+290 TO STA. 0+337.200	0	⊕	ROUND CATCH BASIN
001	GNINT-158	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+750 TO STA. 0+900	0	001	GNINT-208	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+388.868 TO STA. 0+382.800	0	⊕	AIR VALVE
001	GNINT-159	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	PLAN AND PROFILE STA. 0+900 TO STA. 1+031	0	001	GNINT-209	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+386.200 TO STA. 0+420	0	⊕	BORE HOLE
001	GNINT-160	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	CHASE RIVER CROSSING STEEL PLAN AND DETAILS	0	001	GNINT-210	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+421.552 TO STA. 0+462.500	0	⊕	SIGN
001	GNINT-161	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	AIR VALVE CHAMBER DETAILS	0	001	GNINT-211	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+463.727 TO STA. 0+500	0	⊕	VALVE
001	GNINT-162	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	BLOW DOWN CHAMBER DETAILS	0	001	GNINT-212	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+505.510 TO STA. 0+560	0	⊕	CATCH BASIN
001	GNINT-163	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT	MANHOLE CONNECTION	0	001	GNINT-213	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+563 TO STA. 0+610.618	0	⊕	WATER METER
001	GNINT-170	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	PLAN AND PROFILE STA. 0+000 TO STA. 0+175	0	001	GNINT-214	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+617.500 TO STA. 0+660	0	⊕	TREE
001	GNINT-171	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	PLAN AND PROFILE STA. 0+175 TO STA. 0+360	0	001	GNINT-215	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	DETAILED ROAD CROSS SECTIONS STA. 0+663.010 TO STA. 0+702.500	0	⊕	ANCHOR
001	GNINT-172	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	PLAN AND PROFILE STA. 0+360 TO STA. 0+545	0						⊕	PROPOSED BLOW DOWN CHAMBER
001	GNINT-173	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	PLAN AND PROFILE STA. 0+545 TO STA. 0+720	0						⊕	PROPOSED AIR VALVE CHAMBER
001	GNINT-180	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	SIGNAGE, PAVEMENT MARKINGS AND SPOT ELEVATIONS STA. 0+000 TO STA. 0+360	0						⊕	PROPOSED MILL AND ASPHALT OVERLAY
001	GNINT-181	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	SIGNAGE, PAVEMENT MARKINGS AND SPOT ELEVATIONS STA. 0+360 TO STA. 0+720	0						⊕	PROPOSED ASPHALT
001	GNINT-190	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	TYPICAL SECTIONS	0							
001	GNINT-191	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	BUS PAD DETAILS	0							
001	GNINT-192	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	TYPICAL SECTIONS	0							

WATER METER LEGEND:	
●	REPLACE WATER METER
■	REPLACE WATER METER AND BOX
□	REPLACE BOX
○	USE EXISTING

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT COVER SHEET KEY PLAN & DRAWING INDEX	<b>JACOBS</b>
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG	DRAWING NUMBER	GNINT-151
		SHEET	001
		PROJECT NO.	707564
		SCALE	AS SPECIFIED
		DATE	JAN 07, 2019
		REV	0



**GENERAL NOTES:**

- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH CITY OF NANAIMO ENGINEERING STANDARDS AND SPECIFICATIONS. WHERE THIS IS IN CONFLICT THESE DRAWINGS SHALL PREVAIL.
- ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ALL OR ANY STRUCTURES NOT NECESSARILY SHOWN. THE CONTRACTOR SHALL LOCATE, PRESERVE AND PROTECT ALL EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION.
- COORDINATES ARE GROUND LEVEL (UTM NAD 83 WITH COMBINED SCALE FACTOR OF 1/0.99965) AND ALL ELEVATIONS ARE TO GEODETIC DATUM.
- LOCATION OF SERVICE CONNECTIONS TO BE DETERMINED ON SITE UNLESS SHOWN OTHERWISE. LOCATIONS OF SERVICE CONNECTIONS ARE INDICATIVE ONLY AND THE EXACT LOCATIONS ARE TO BE DETERMINED BY THE CONTRACTOR ON SITE.
- ANY ALTERNATIVES TO SPECIFIED MATERIALS OR APPURTENANCES TO BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- THE LOCATIONS OF EXISTING SERVICES ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION. EXISTING AND PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS, THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.
- ALL DISTURBED SURFACES TO BE RESTORED TO EXISTING CONDITION OR BETTER.
- CUTTING OR REMOVAL OF ASBESTOS CONCRETE PIPE SHALL CONFORM TO WORKSAFE BC REQUIREMENTS.
- OBSERVE AND ENFORCE ALL CONSTRUCTION SAFETY MEASURES REQUIRED BY THE CORPORATION, WORKSAFE BC, BY-LAWS, AND BUILDING CODE REQUIREMENTS.
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PROTECT EXISTING STRUCTURES, PIPING, AND SERVICES AGAINST DAMAGE AND DISRUPTION DURING DEMOLITION AND CONSTRUCTION. REPAIR, REPLACE, OR RECONSTRUCT TO ITS ORIGINAL CONDITION, AT NO ADDITIONAL COST TO THE CORPORATION, ANY DAMAGE TO EXISTING STRUCTURES, PIPING, OR SERVICES.
- REFER TO THURBER ENGINEERING LTD. GEOTECHNICAL DESIGN REPORT FOR EXISTING GROUND CONDITIONS.
- ALL DISTURBED SURFACES TO BE RESTORED TO WITHIN 100mm OF FINAL GRADE FOR NON-TRAVELLED AREAS. LANDSCAPING TO BE COMPLETED BY OTHERS.

**SANITARY FORCEMAIN NOTES:**

- ALL MAINS SHALL HAVE A MINIMUM 1.5m OF COVER IN ROAD RIGHT-OF-WAYS AND 1.0m IN UNTRAVELLED AREAS, UNLESS APPROVED BY ENGINEER.
- EXISTING 450mm DUCTILE IRON FORCEMAIN TO BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AS NEW 650mm FORCEMAIN IS INSTALLED. THE NEW FORCEMAIN CAN BE INSTALLED ABOVE EXISTING FORCEMAIN IF REQUIRED DEPTH OF COVER CAN BE MAINTAINED AND THE EXISTING FORCEMAIN IS CAPPED AND FILLED WITH A GROUT OF A MINIMUM COMPRESSIVE STRENGTH OF 0.5 MPa AT 28 DAYS.
- FORCEMAIN WORKING PRESSURE IS 365 kPa AND FORCEMAIN TEST PRESSURE IS 548 kPa.
- PIPE DEFLECTION TO BE UP TO MANUFACTURER'S RECOMMENDED MINIMUM RADIUS.
- FORCEMAIN TO BE 650mm, DR 21, PE 4710 HPDE.
- FORCEMAIN NO. 2 IS REQUIRED TO STAY IN SERVICE DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MANAGING BYPASS FLOWS AS REQUIRED FOR TIE-IN CONNECTIONS.

**WATERMAIN NOTES:**

- MINIMUM COVER OVER WATERMAIN TO BE 1.2m.
- EXISTING PIPE TO BE ABANDONED IN PLACE ONCE EXISTING WATERMAIN IS DECOMMISSIONED OR AS APPROVED BY THE ENGINEER.
- ALL WATERMAIN JOINTS WITHIN 3.0m HORIZONTAL OR 0.45m VERTICAL OF SANITARY OR STORM DRAIN MAINS TO BE PROTECTED BY SHRINK WRAP OR PETROLEUM TAPE.
- WATERMAIN WORKING PRESSURE IS 860 kPa AND WATERMAIN TEST PRESSURE IS 1290 kPa.
- ALL HYDRANTS SHALL BE REPLACED.
- UNLESS OTHERWISE NOTED ALL WATER SERVICES SHALL BE 25mm CTS POLYETHYLENE TO AWWA C901 PRESSURE CL 200 TUBING CERTIFIED TO CSA B137.1.
- ALL SERVICE FITTINGS ARE TO BE AS PER MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD) PLATINUM EDITION SECTION 33 11 01, 2.5 AND 2.7
- TRACER WIRE (BLUE IN COLOUR) SUITABLE FOR DIRECT BURY TO BE INSTALLED AS A CONTINUOUS LENGTH ALONG THE CENTERLINE OF THE SERVICE PIPE. AFFIXED TO PIPE AT 1.0m INTERVALS RUN WIRE FROM CORP STOP TO METER BOX AND COIL NEATLY AT TERMINAL POINTS WITH 600mm SURPLUS LENGTH AS PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR IS REQUIRED TO PROVIDE CONTINUED WATER AND MAINTAIN SERVICE UNTIL COMPLETION OF NEW SYSTEM. CONTRACTOR TO PROVIDE OVERLAND SERVICING PLAN FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. TEMPORARY SYSTEM TO PASS CITY OF NANAIMO TESTING STANDARDS PRIOR TO USE.
- MAXIMUM JOINT DEFLECTION TO BE 1".
- ALL WATERMAINS TO BE 200mm PVC C900 DR 14 UNLESS OTHERWISE NOTED.
- ALL FITTINGS TO BE COMPLETE WITH JOINT RESTRAINTS 3.0m IN ALL DIRECTIONS AND CONCRETE THRUST BLOCK AS PER CON STD. DWG W-8.

**CONTAMINATED SOILS:**

- ALL CONTAMINATED SOILS NEED TO BE MANAGED IN ACCORDANCE WITH ALL ACTS AND REGULATIONS, INCLUDING BUT NOT LIMITED TO THE BC ENVIRONMENTAL MANAGEMENT ACT AND ITS GOVERNING REGULATIONS: CONTAMINATED SITE REGULATION AND HAZARDOUS WASTE REGULATION.
- ALL MATERIAL DEEMED TO BE CONTAMINATED BY THE REGIONAL DISTRICT OF NANAIMO WILL BE REQUIRED TO GO TO APPROVED DISPOSAL FACILITY AS DIRECTED BY THE ENVIRONMENTAL MONITOR.

**REINFORCEMENT**

- DEFORMED BARS TO CSA G30.18, GRADE 400W.
- PROVIDE THE FOLLOWING CLEAR CONCRETE COVER FOR REINFORCEMENT, UNLESS NOTED OTHERWISE ON THE DRAWINGS:  
CAST AGAINST & PERMANENTLY EXPOSED TO EARTH: 75mm  
EXPOSED TO WEATHER: 60mm
- DO NOT WELD OR FIELD BEND REINFORCING BARS, EXCEPT AS APPROVED BY ENGINEER.
- MINIMUM LAP SPLICES Ld FOR UNCOATED GRADE 400W REINFORCEMENT SHALL BE AS FOLLOWS:

FOR 35MPa CONCRETE:						
BAR SIZE	BARS IN COMPRESSION		BARS IN TENSION			
	DEVELOPMENT LENGTH	SPLICE LENGTH	DEVELOPMENT LENGTH		SPLICE LENGTH	
			TOP BARS	OTHER BARS	TOP BARS	OTHER BARS
10M	180	300	320	250	420	320
15M	270	440	480	370	620	480
20M	350	590	640	490	830	650
25M	440	750	1000	770	1300	1000

- PROVIDE SUFFICIENT CHAIRS AND SUPPORT BARS TO MAINTAIN COVER AS SPECIFIED.
- REINFORCEMENT SPACING SHOWN ON ALL DRAWINGS IS CENTRE TO CENTRE OF BAR. PLACE BARS SYMMETRICALLY OVER SUPPORTS IN SPANS UNLESS NOTED OTHERWISE.

**CONCRETE**

- PROVIDE REINFORCED CONCRETE CONFORMING TO THE GOVERNING CODES, SPECIFICATIONS AND STANDARDS INCLUDING:
  - NATIONAL BUILDING CODE OF CANADA 2015
  - BRITISH COLUMBIA BUILDING CODE 2012
  - CSA A23.1 - CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION
  - CSA A23.2 - TEST METHODS AND STANDARD PRACTICES FOR CONCRETE
  - CSA A23.3 DESIGN OF CONCRETE STRUCTURES
  - SPECIFICATIONS - DIVISION 03
- CONCRETE MATERIALS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH, fc, AS FOLLOWS:

ELEMENT	EXPOSURE CLASS	MINIMUM COMPRESSIVE STRENGTH (fc)
ALL ELEMENTS	C-1	35 MPa @ 28 DAYS

- PROPORTION CONCRETE MIXES IN ACCORDANCE WITH CAN/CSA-A23.1 LATEST EDITION TO MEET THE PERFORMANCE REQUIREMENTS AS PER THE SPECIFICATIONS.
- CHAMFER EXPOSED EDGES OF CONCRETE 20mm UNLESS OTHERWISE NOTED.
- COORDINATE EQUIPMENT PAD AND CURB LOCATIONS, DIMENSIONS AND HEIGHTS. VERIFY WITH MANUFACTURER'S REQUIREMENTS.
- NOTIFY THE STRUCTURAL ENGINEER 48 HOURS IN ADVANCE FOR INSPECTION OF REINFORCEMENT BEFORE EACH CONCRETE POUR.
- LEAVE FORMWORK IN PLACE UNTIL CONCRETE HAS ATTAINED SUFFICIENT STRENGTH TO SUPPORT ITS OWN WEIGHT TOGETHER WITH CONSTRUCTION LOADS LIKELY TO BE IMPOSED, BUT NOT LESS THAN THE FOLLOWING MINIMUM PERIODS:  
FOOTINGS..... 2 DAYS

**FIBREGLASS GRATING**

- ALL GRATING FOR PLATFORMS AND STAIR TREADS SHALL BE PULTRUDED FIBREGLASS TYPE DURADEX SERIES T-5000 WITH 51mm DEEP BEARING BARS AND CROSSRODS AT 150mm SPACING AS MANUFACTURED BY STRONGWELL-CHATFIELD OR APPROVED EQUAL. ALL STAIR TREADS SHALL COME WITH NOSING.
- ALL GRATING AND STAIR COLOUR SHALL BE SAFETY YELLOW IN COLOUR U.N.O. WITH A NON-SKID BONDED GRIT TOP SURFACE.
- ALL CUT AND MACHINED EDGES, HOLES AND ABRASIONS SHALL BE SEALED WITH RESIN COMPATIBLE WITH THE RESIN MATRIX USED IN THE BEARING BARS AND CROSS RODS.
- HOLD DOWN CLAMPS FOR ALL GRATING PANELS AND STAIR TREADS SHALL BE TYPE 316L STAINLESS STEEL SADDLE CLIPS C/W 6mm DIA HEX BOLTS, NUTS AND WASHERS. 'HILTI' X-FCM ELECTRO GALVANIZED GRATING FASTENING SYSTEM CAN BE USED AS AN ALTERNATIVE METHOD TO FASTEN GRATING PANELS TO SUPPORTING STEEL.
- MAXIMUM HOLD DOWN CLAMPS SPACING SHALL BE 900mm O/C WITH A MINIMUM OF 4 EACH PER PANEL. FOR CANTILEVERED GRATING PANEL OR FOR GRATING PANEL WITH A CUT-OUT FOR EQUIPMENT, MAXIMUM HOLD DOWN CLAMPS SPACING SHALL BE 450mm O/C
- ALL GRATING OPENING AND EDGES SHALL BE BANDED TO MATCH BEARING BARS.

**DISCHARGE OF GROUNDWATER:**

- THE CONTRACTOR IS RESPONSIBLE TO MANAGE GROUNDWATER ON THE SITE. THE CONTRACTOR SHALL DEVELOP A MONITORING PROGRAM TO ENSURE THAT EFFLUENT WILL COMPLY WITH APPLICABLE WATER QUALITY RELEASE STANDARDS PRIOR TO DISCHARGE INTO THE ENVIRONMENT. THE MONITORING PROGRAM IS TO BE SUBMITTED TO THE REGIONAL DISTRICT OF NANAIMO FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

**MISCELLANEOUS METALS**

- PROVIDE STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION COMPLYING WITH THE GOVERNING CODES, SPECIFICATIONS AND STANDARDS INCLUDING:
  - CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL
  - CSA S16 - DESIGN OF STEEL STRUCTURES
  - CSA W59 - WELDED STEEL CONSTRUCTION
  - CSA W47.1 - CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL STRUCTURES
  - CSA G40.20/G40.21 - ROLLED OR WELDED STRUCTURAL QUALITY STEEL
  - SPECIFICATIONS - DIVISION 05
- STRUCTURAL STEEL SHAPES CONFORM TO CAN/CSA G40.21:
 

W SHAPES	350W
S, C AND MC SHAPES	300W
L SHAPES	300W
PLATES AND BARS	300W
- CONNECTION BOLTS FOR STEEL MEMBERS: M20 MIN. ASTM F3125 GALVANIZED
- CAST-IN PLACE ANCHOR BOLTS: 19mmØ MINIMUM DIA: ASTM F1554 GRADE 36 HOT-DIP GALV.
- DRILLED-IN ANCHOR: 19mmØ MINIMUM DIA: HILTI HIT HAS-E THREADED WITH HILTI HIT E525 ADHESIVE
- WELD STRUCTURAL STEEL TO CSA W59 BY FABRICATOR CERTIFIED TO CSA W47.1 DIV. 1 OR DIV. 2.
- ALL STRUCTURAL STEEL AND RELATED MISC. STEEL SHALL BE HOT DIPPED GALVANIZED STEEL AS CAN/CSA G164. UNO
- UNLESS NOTE OTHERWISE, DESIGN ALL BOLTED STRUCTURAL CONNECTIONS AS BEARING TYPE IN ACCORDANCE WITH CISC STANDARDS USING A MINIMUM OF TWO M20 BOLTS.
- DESIGN BEAM CONNECTIONS IN ACCORDANCE WITH CISC HANDBOOK LIMIT STATE DESIGN.
- ALL BOLT HOLES IN STRUCTURAL STEEL SHALL BE DRILLED OR PUNCHED IN ACCORDANCE WITH CISC STANDARDS.
- USE STANDARD BOLT HOLES IN ACCORDANCE WITH CISC STANDARDS U.N.O.
- DESIGN CONNECTIONS SO THAT NO ECCENTRIC LOADS WILL BE INTRODUCED INTO AXIALLY LOADED MEMBERS
- CONTACT SURFACE OF CONNECTIONS WHEN ASSEMBLED IN FIELD SHALL BE FREE FROM OIL, LOOSE SCALE, AND ANY FOREIGN MATERIAL THAT WOULD PREVENT THE SOLID SEATING OF THE PARTS.
- TIGHTEN AND INSPECT BOLTS BY TURN OF-NUT METHOD AS PER CAN/CSA S16.1-01
- SHOP WELD CONNECTIONS (6mm MINIMUM FILLET WELD) UNLESS NOTED OTHERWISE ON THE DESIGN DRAWING.
- WELD IN ACCORDANCE WITH CSA W59 - WELDED STEEL CONSTRUCTION.
- ALL WELDING OPERATORS SHALL BE CERTIFIED IN ACCORDANCE WITH CSA W47.1-03 (DIVISION 1 OR 2.1) QUALIFICATION REQUIREMENTS.
- HANDRAILS:
  - ALL HANDRAILS, KICK PLATES AND POSTS SHALL BE HOT DIP GALVANIZED U.N.O.
  - GRIND SMOOTH ALL SHARP CORNERS, ROUGH EDGES AND HANDRAIL SURFACES.

**PRE FABRICATED BUILDING:**

- DESIGN AND CONSTRUCTION IN CONFORMANCE WITH THE BRITISH COLUMBIA BUILDING CODE 201 (BCBC 2012) AND THE NATIONAL BUILDING CODE OF CANADA 2015.
- VALVE CHAMBER DESIGN LOADS:  
GENERAL DESIGN LOADS ARE SHOWN BELOW:  
  
DESIGN LIVE LOADS:  
CHAMBER FLOOR SLAB 15.0kPa  
ACCESS PLATFORM 5.0kPa  
SNOW LOAD (1/50) Ss = 2.1 kPa  
Sr = 0.4 kPa  
WIND LOAD (1/50) 0.50 KPA  
  
SEISMIC DESIGN DATA:  
SITE CLASS B  
  
SEISMIC DATA:  
1 IN 2475 YEAR PER NBCC 2015.  
Sa(0.2) 1.041  
Sa(0.5) 0.962  
Sa(1.0) 0.555  
Sa(2.0) 0.335  
Sa(5.0) 0.106  
Sa(10.0) 0.037  
PGA 0.0456  
PGV 0.703
- STRUCTURAL STEEL SHAPES TO BE IN ACCORDANCE WITH "MISCELLANEOUS STEEL".
- ALL CLADDING AND ROOFING PANELS SHALL BE 22GA CL 938 PROFILE MANUFACTURED BY VICWEST.
- ALL CLADDING AND ROOFING PANEL ARE TO BE PRE-PAINTED (STONE GRAY).
- FLASHING AND GUTTERS SHALL BE FABRICATED FROM THE SAME MATERIAL GAUGE AND FINISH AS THE CLADDING.
- PROFILE CLOSURE STRIPS SHALL BE PROVIDED AND FABRICATED FROM METAL OR SYNTHETIC RUBBER.
- STEEL DOORS AND FRAMES SHALL BE INSTALLED PLUMB AND FASTENED TO ACHIEVE MAXIMUM OPERATIONAL EFFECTIVENESS AND APPEARANCE.
- THE DOORS SHALL BE 1 3/4" THICK, INSULATED HOLLOW METAL AND SHALL HAVE POLYURETHANE INSULATION IN THEIR CORE. THE DOORS SHALL BE FABRICATED FROM 16GA WIPE COAT GALVANIZED STEEL PAINTED PER THE DRAWING. THE DOORS SHALL BE MORTISED, REINFORCED, DRILLED AND TAPPED FOR THREE HINGES AND HARDWARE. THE HINGE LOCK AND CLOSER REINFORCING SHALL BE 5/32" STEEL PLATE. OTHER REINFORCING AS REQUIRED TO INDUSTRY STANDARDS.

**PRE FABRICATED BUILDING (CONT.):**

- THE DOORS SHALL COME WITH TOP CAPS FOR WEATHER PROTECTION. THE DOORS SHALL COME WITH CLOSERS, STAINLESS STEEL KICK PLATES, ALUMINUM THRESHOLDS AND PAINC HARDWARE. THE DOORS SHALL HAVE EXTERIOR MOUNTED STAINLESS STEEL LOCKSETS BY SCHLAGE OR APPROVED EQUAL.
- THE FRAMES SHALL BE FABRICATED FROM 16GA WIPE COAT GALVANIZED STEEL PAINTED PER THE DRAWING. FRAMES SHALL BE KNOCK-DOWN TYPE AND SHALL BE MORTISED, REINFORCED, DRILLED AND TAPPED FOR HINGES. FRAMES SHALL COME WITH 6 WALL ANCHORS AND 2 BASE ANCHORS.
- ALL STEEL DOOR FRAMES SHALL BE PROVIDED WITH FACTORY INSTALLED RUBBER BUMBERS, THREE (3) PER STRIKE JAMB.
- SUBMIT SHOP DRAWINGS FOR REVIEW, INDICATE DESIGN LOADING AND ANCHOR BOLT LAYOUT. DRAWINGS ARE TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA.

**STEEL PIPE PILE NOTES:**

- PILES SHALL BE SCH. 40 PIPE (MINIMUM). IN ACCORDANCE WITH ASTM A252 GRADE 2 OR 3 OR A53 GRADE B, MATERIAL SHALL BE NEW.
- ALL PIPE PILE SPLICES SHALL BE FIELD WELDED USING FULL STRENGTH WELDS.
- A MAXIMUM OF ONE FULL SPLICE IS ALLOWED PER PILE. THE SPLICE SHALL BE BUTT WELDED AND MADE TO ENSURE A GOOD ALIGNMENT OF THE SPLICE PARTS. WELDING SHALL CONFORM TO CSA STANDARD W59. SPLICING SHALL BE FULL STRENGTH COMPLETE PENETRATION WELDS.
- CONTRACTOR SHALL PROVIDE AN OPEN ENDED "PILE SHOE" ON ALL PILES PRIOR TO DRIVING TO MINIMIZE PILE TIP DAMAGE.
- PILES SHALL NOT BE MORE THAN 2% OF LENGTH OUT OF PLUMB AND NOT MORE THAN 75mm (3") OFF CENTRE AT THE TOP. PILES SHALL NOT HEAVE MORE THAN 6mm (1/4") DURING DRIVING OF ADJACENT PILES. WHERE PILES EXCEED THOSE LIMITS THE DESIGN ENGINEER SHALL BE NOTIFIED AND FURTHER INSTRUCTIONS SHALL BE PROVIDED.
- IF PILES ARE STRUCTURALLY DAMAGED OR IMPROPERLY PLACED, CHANGES OR REPAIRS, AS DIRECTED BY THE ENGINEER AND SHALL BE AT THE CONTRACTORS EXPENSE.
- STEEL PIPE PILES SHALL BE DRIVEN USING THE FOLLOWING DRIVING ENERGY REQUIREMENTS:

PILE DIA. (mm)	MIN. WALL THK. (mm)	DRIVING ENERGY KILOJOULES (FOOT LBS)
324	12.7	34 (25000)

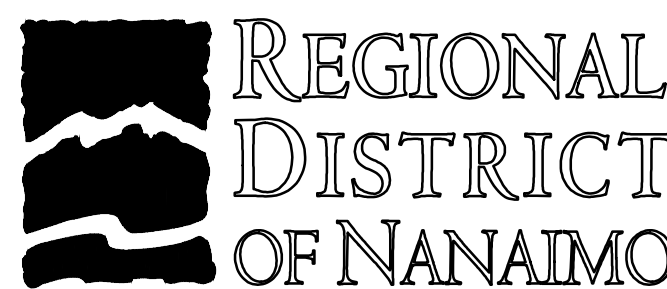
- AS A GUIDELINE A MINIMUM RATED ENERGY OF 30 kJ IS RECOMMENDED FOR LIGHTLY LOADED PILES AND 50 kJ FOR HEAVILY LOADED PILES. THE MAXIMUM DRIVING ENERGY SHOULD NOT EXCEED 630 J PER SQUARE cm OF STEEL CROSS-SECTIONAL AREA TO AVOID DAMAGE TO THE PILE SECTION. SET CRITERIA SHOULD BE DEVELOPED USING WAVE EQUATION (WEAP) ANALYSES FOR THE PILE SIZES AND LOADING SPECIFIED.
- PILES SHALL NOT BE DRIVEN BEYOND PRACTICAL REFUSAL, WHICH MAY BE TAKEN AS 10 BLOWS PER 300mm (12") FOR THE DRIVING ENERGY IN NOTE 7.
  - PILE DRIVING SHALL BE DISCONTINUED IMMEDIATELY IF ABRUPT HIGH RESISTANCE TO PENETRATION IS ENCOUNTERED. IN SUCH CASES THE RECORD AND DEPTH OF PENETRATION SHALL BE REVIEWED BY THE DESIGN ENGINEER AND FURTHER INSTRUCTIONS SHALL BE PROVIDED.
  - LEADS SHALL BE USED TO SECURE PILES AGAINST LATERAL MOVEMENT DURING DRIVING.
  - PILE CUTOFF TO BE LEVEL AND TRUE TO THE ELEVATIONS SHOWN. DURING PILE INSTALLATION ALLOW SUFFICIENT LENGTH OF PILE ABOVE CUTOFF ELEVATION SO THAT NO PART OF THE PILE THAT HAS BEEN DAMAGED OR DEFORMED DURING DRIVING REMAINS IN THE WORK.
  - DRIVING OF DEEP STEEL PILES MAY CAUSE VOID NEAR GRADE SURFACE DUE TO PILE "FLUTTER" DURING DRIVING. VOIDS SHALL BE GROUTED TO MAINTAIN CONTACT BETWEEN THE PILE AND GROUND RESISTANCE TO VERTICAL AND LATERAL LOADS.
  - AFTER EACH PILE IS DRIVEN TO ITS REQUIRED DEPTH AN ELEVATION SHOULD BETAKEN OF THE PILE TOP OR OF A SUITABLE MARK ON THE SIDE OF THE PILE. THIS ELEVATION SHOULD BE CHECKED PERIODICALLY TO ENSURE THAT THE PILE IS NOT HEAVED BY THE DRIVING OF ADJACENT PILES. PILES THAT ARE HEAVED MUST BE RE-DRIVEN.
  - THE CONTRACTOR SHALL MAINTAIN PILE DRIVING RECORDS FOR EACH PILE INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
    - TYPE AND MAKE OF HAMMER AND ENERGY OF EACH STROKE
    - PILE NUMBER, SIZE AND LENGTH
    - BLOW COUNT FOR EACH 300mm (12") OF PENETRATION
    - OTHER INFORMATION, SUCH AS INTERRUPTION OF CONTINUOUS DRIVING, PILE DAMAGE, LOCATION DEVIATIONS, FIELD SPLICES AND OBSTRUCTIONS ENCOUNTERED
    - ONE COPY OF THESE RECORDS SHALL BE SENT TO THE DESIGN ENGINEER

THE PILES SPECIFIED SHALL ONLY BE USED IF SOIL CONDITIONS ARE EQUAL OR BETTER THAN STATED BELOW:

**PILE DESIGN PARAMETERS:**

- SOIL PROPERTIES:
- PILE SKIN FRICTION (UNFACTORED ULTIMATE LIMIT STATES RESISTANCE OF PILE) = 0 kPa: 0 TO 1.2m  
= Ø x 40 kPa: 1.2m TO 7.5m  
= Ø x 70 kPa: 7.5m TO 9m
  - END BEARING (UNFACTORED ULTIMATE LIMIT STATES RESISTANCE OF PILE) = Ø x 1500 kPa: FOR DEPTH BELOW GRADE > 6m
  - Ø = 0.4 FOR FACTORED RESISTANCE TO DOWNWARD LOADS  
= 0.3 FOR FACTORED RESISTANCE TO UPLIFT LOADS
  - MINIMUM EMBEDMENT = 15m
  - FROST DEPTH = 1.2m
  - UNDRAINED SHEAR STRENGTH = 50 kPa

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



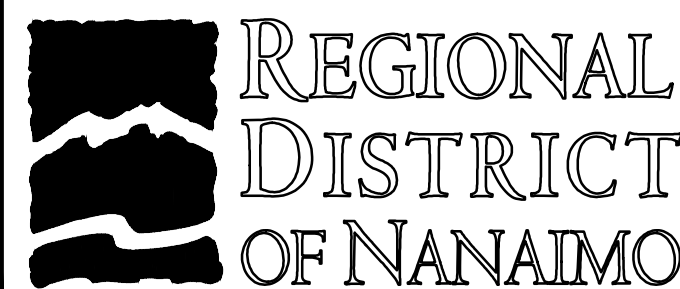
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES			
DRAWN JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT NOTES AND SPECIFICATIONS		
DESIGNED MP			
CHECKED CW			
APPROVED JG	DRAWING NUMBER GNINT-152	SHEET 001	DATE JAN 07, 2018
		SCALE AS SPECIFIED	REV 0



**STORM DRAINAGE NOTES:**

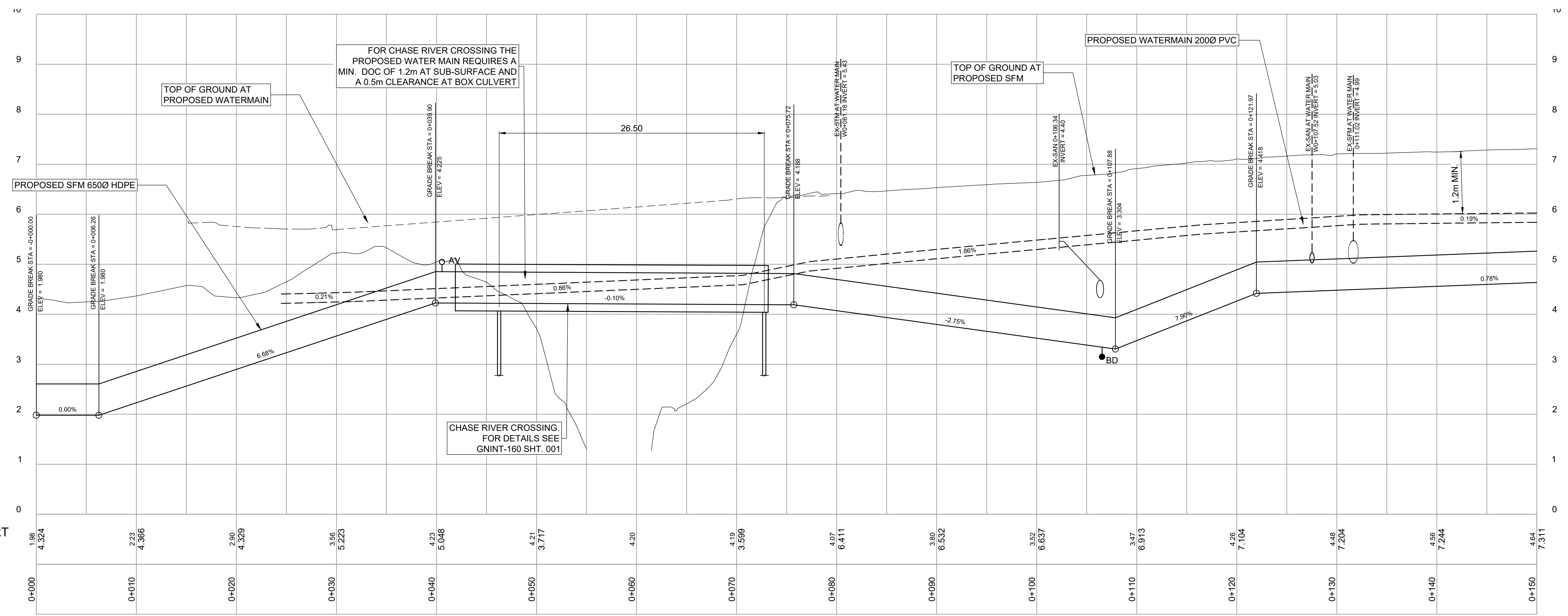
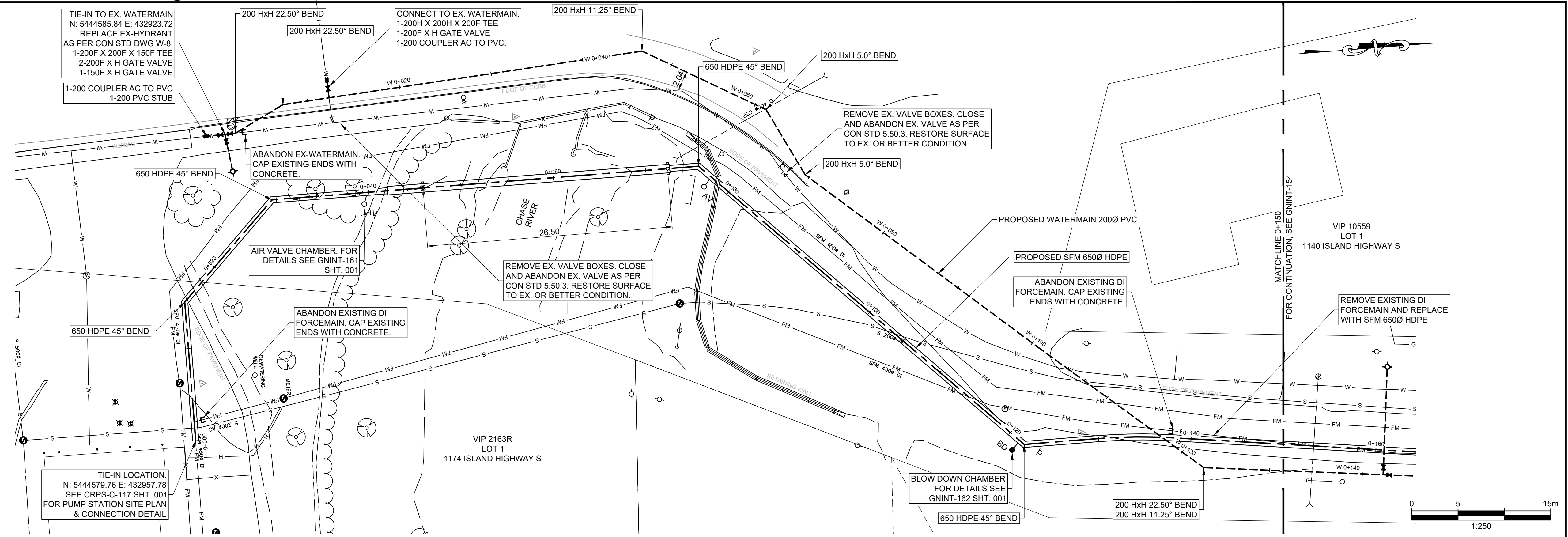
1. ALL MAINS SHALL HAVE A MINIMUM 1.5M OF COVER IN ROAD RIGHT-OF-WAYS AND 1.0M IN UNTRAVELED AREAS, UNLESS APPROVED BY ENGINEER.
2. ALL CATCH BASINS TO BE CITY OF NANAIMO TYPE 1 AS PER STD SW-1, UNLESS NOTED OTHERWISE.
3. ALL CATCH BASIN LEADS TO BE 200MM DIA PVC SDR35, UNLESS NOTED OTHERWISE.
4. DO NOT PLUG OR ABANDON AN EXISTING STORM DRAINAGE CONNECTION WITHOUT WRITTEN APPROVAL FROM THE CITY OF NANAIMO.
5. ALL STORM DRAINAGE SERVICES SHALL BE 100MM DIA PVC SDR28 FOR SINGLE FAMILY DWELLINGS. SERVICES SHALL BE 150MM DIA PVC SDR28 FOR DUPLEX LOTS, UNLESS OTHERWISE NOTED.
6. ALL STORM DRAINAGE SERVICE BOXES SHALL BE IN ACCORDANCE WITH CITY OF NANAIMO STD SW-21 AND ST-23.
7. PROPOSED STORM DRAINAGE SERVICES ARE TO BE INSTALLED BELOW EXISTING BASEMENT ELEVATION OR AT THE SAME INVERT AS THE SANITARY SERVICES WHERE POSSIBLE, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER OR AS INDICATED ON THE DRAWINGS.
8. CONTRACTOR TO LOCATE ALL EXISTING STORM SERVICES AND DOWNSPOUTS AND THEIR TERMINATION LOCATION PRIOR TO CONSTRUCTION. THESE SERVICES SHALL BE PROTECTED BY THE CONTRACTOR AND CONNECTED TO THE NEW STORM DRAINAGE SERVICE AS REQUIRED.
9. ALL EXISTING CULVERTS AND STORM DRAIN SYSTEMS THAT ARE TO BE ABANDONED SHALL BE INSPECTED FOR EXISTING STORM SERVICE LEADS. ALL EXISTING LEADS ARE TO BE CONNECTED TO THE NEW STORM SEWER SYSTEM.
10. ALL PIPING AND RELATED APPURTENANCES TO BE INSPECTED AND APPROVED PRIOR TO BACKFILLING OF TRENCH.
11. THE CONTRACTOR IS TO FLUSH AND PROVIDE THE CITY OF NANAIMO CCTV INSPECTION OF ALL MAINS PRIOR TO ASPHALT RESTORATION.

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



PROJECT NAME				CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES			
DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT NOTES AND SPECIFICATIONS		<b>JACOBS</b>		PROJECT NO.	SCALE
DESIGNED	MP					707564	AS SPECIFIED
CHECKED	CW						
APPROVED	JG	DRAWING NUMBER	GNINT-152	SHEET	002	DATE	JAN 07, 2018
		REV	0				



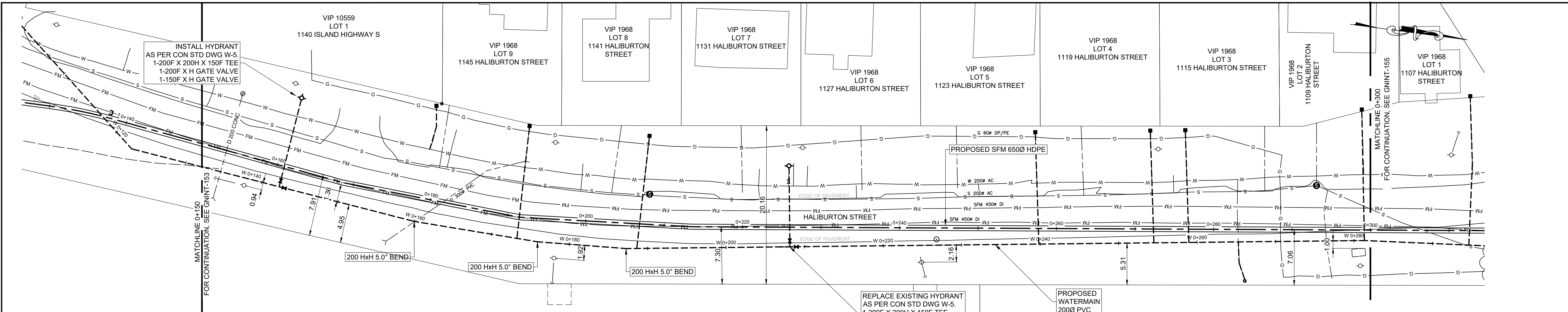


CRPS-C-117 SHT 001	CHASE RIVER PUMP STATION UPGRADES: SITE PLAN								
GNINT-162 SHT 001	BLOW DOWN CHAMBER DETAILS								
GNINT-161 SHT 001	AIR VALVE CHAMBER DETAILS								
GNINT-160 SHT 001	CHASE RIVER CROSSING: STEEL PLAN AND DETAILS	0	APRIL 2019	ISSUED FOR TENDER		JH	CW	JG	
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP		
	REFERENCE DRAWINGS			REVISIONS					



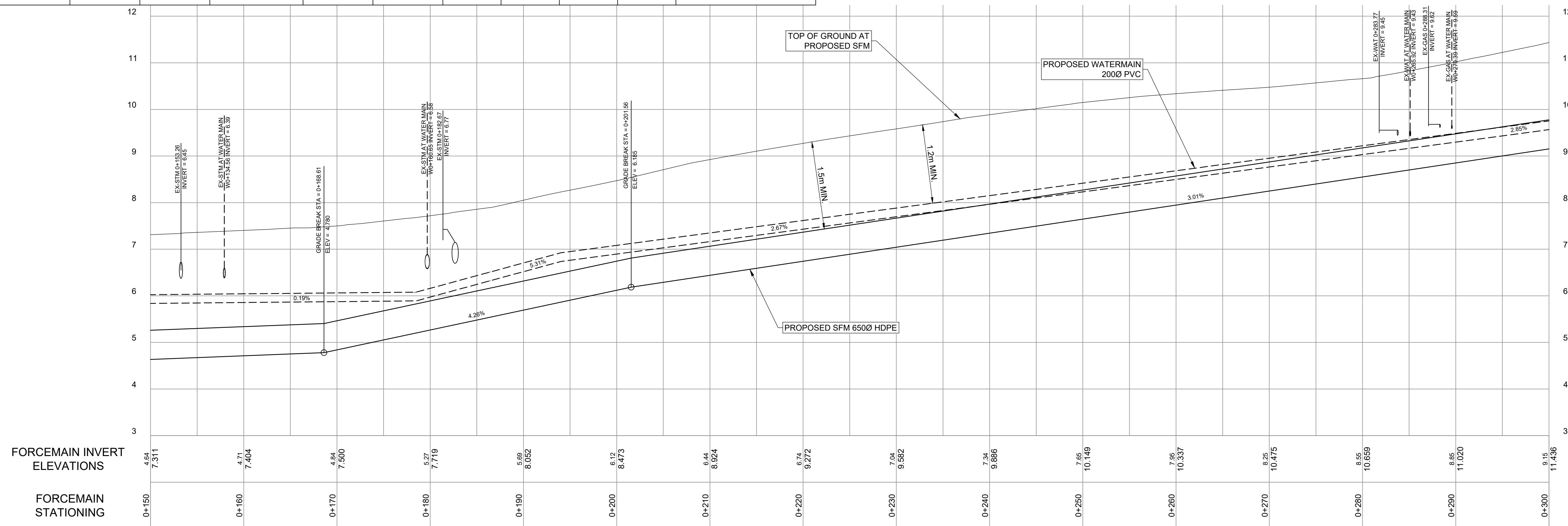
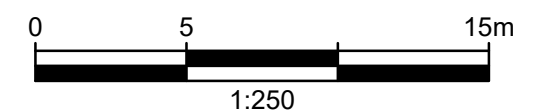
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DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT PLAN AND PROFILE	
DESIGNED	MP	STA. 0+000 TO STA. 0+150	
CHECKED	CW	PROJECT NO.	707564
APPROVED	JG	SCALE	H 1:250 V 1:50
DRAWING NUMBER	GNINT-153	DATE	JAN 07, 2018
SHEET	001	REV	0



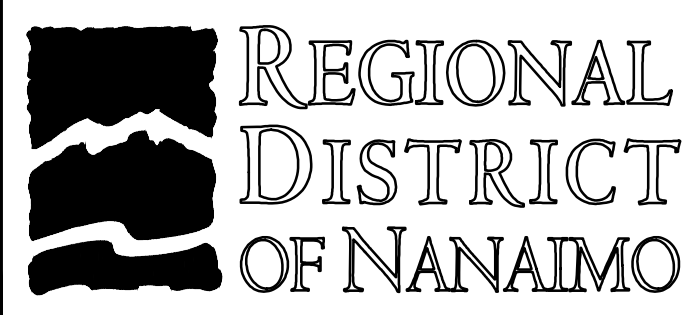


**HALIBURTON STREET METER SURVEY**

ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH (mm)	REPLACE BOX	RELOCATE BOX	COMMENTS
1109 HALIBURTON	N	Y	20 c/u	Y	N	N	457	Y	N	-
1115 HALIBURTON	N	Y	20 c/u	N	Y	N	457	Y	Y	MOVE OUT FROM UNDER RETAINING WALL
1119 HALIBURTON	N	Y	20 c/u	N	Y	N	457	Y	N	-
1123 HALIBURTON	N	Y	20 c/u	Y	N	Y	660	Y	N	-
1127 HALIBURTON	N	Y	20 c/u	N	Y	Y	610	Y	N	-
1131 HALIBURTON	Y	Y	20 c/u	N	Y	Y	610	Y	N	-
1141 HALIBURTON	N	Y	20 c/u	Y	N	N	457	Y	N	-
1145 HALIBURTON	Y	Y	20 c/u	N	Y	Y	610	Y	N	-
1140 ISLAND HWY	N	Y	20 c/u	Y	N	Y	610	Y	N	METER IS ON HALIBURTON
1110 HALIBURTON	Y	N	20 c/u	Y	N	N	457	N	N	-



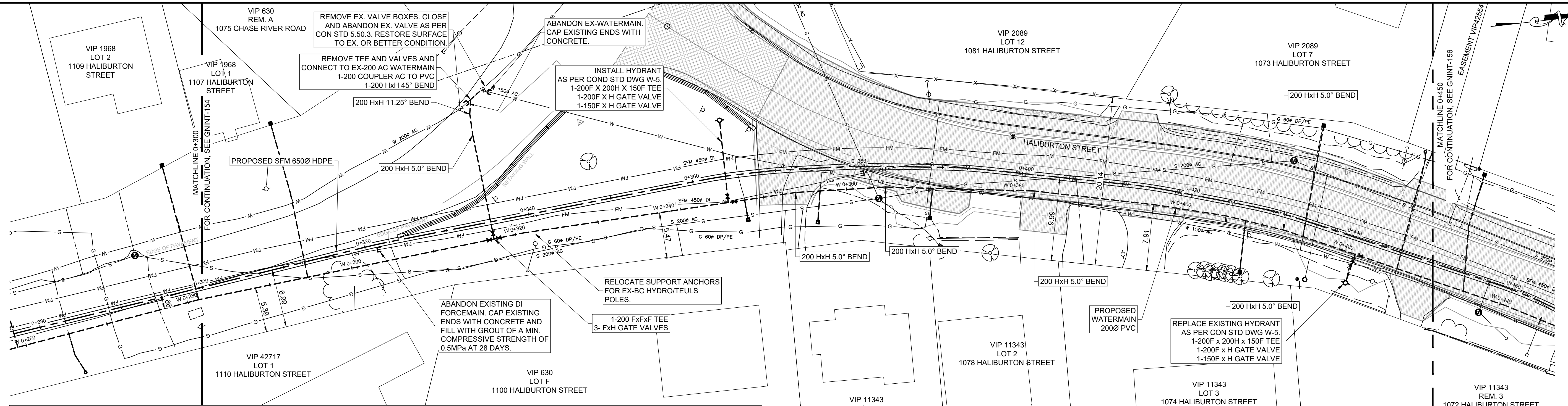
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	JH	CW	JG
				REVISIONS			



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT PLAN AND PROFILE STA. 0+150 TO STA. 0+300	
DESIGNED	MP		
CHECKED	CW	DRAWING NUMBER	
APPROVED	JG		
SHEET		001	SCALE
DATE		JAN 07, 2018	REV
PROJECT NO.		707564	SCALE
DATE		JAN 07, 2018	REV
PROJECT NO.		707564	SCALE
DATE		JAN 07, 2018	REV

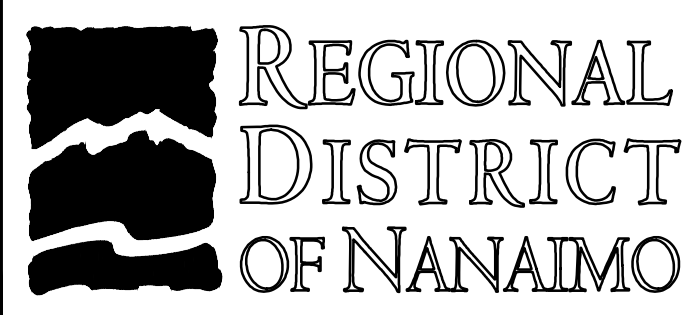
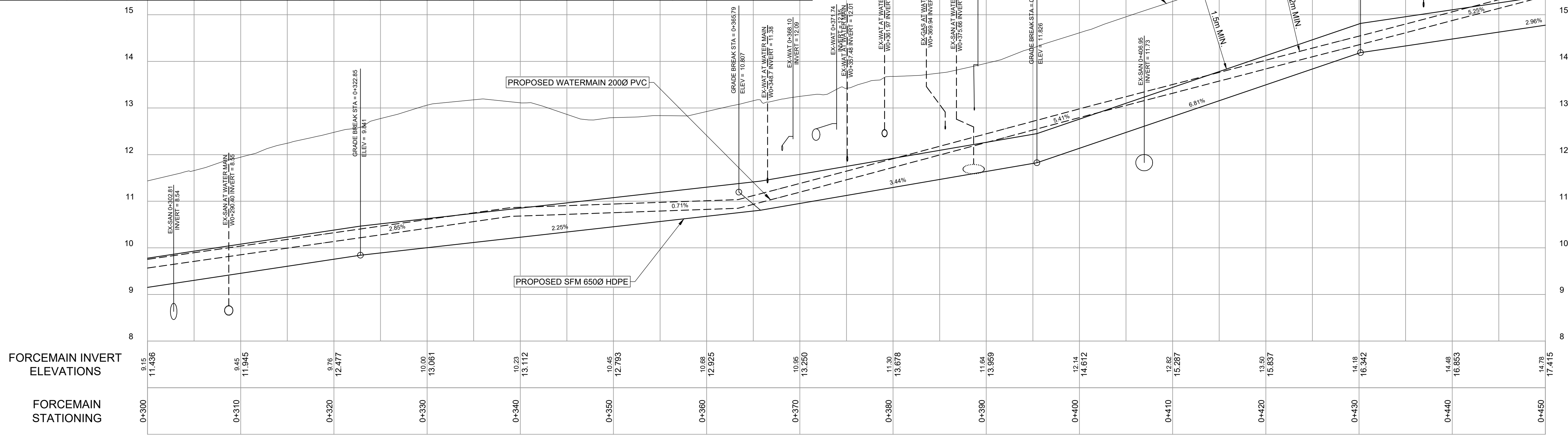
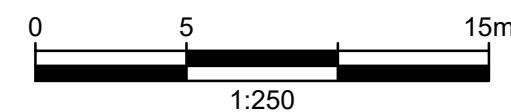






HALIBURTON STREET METER SURVEY

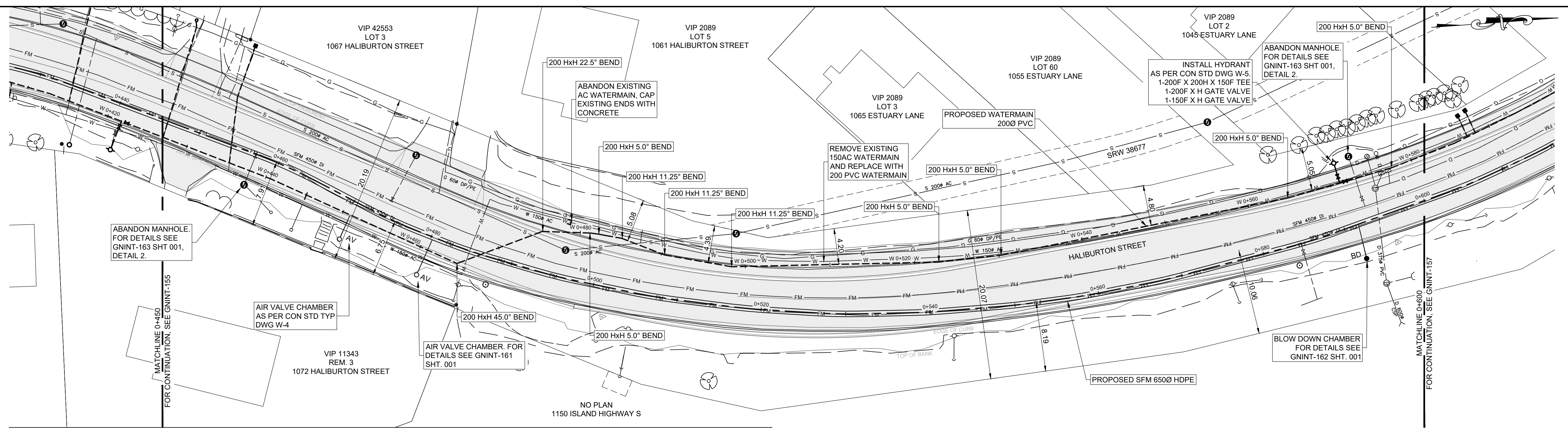
ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH (mm)	REPLACE BOX	RELOCATE BOX	COMMENTS
1073 HALIBURTON	N	Y	20 c/u	N	Y	N	457	Y	CONFIRM	OWNER'S SERVICE UNDER CEDAR TREE
1107 HALIBURTON	N	Y	20 c/u	N	Y	Y	1016	Y	Y	RAISE SERVICE & MOVE TO OTHER SIDE OF SIDEWALK
1072 HALIBURTON	N	Y	20 c/u	N	Y	Y	610	Y	N	-
1074 HALIBURTON	Y	N	20 c/u	N	Y	Y	610	Y	N	-
1078 HALIBURTON	Y	Y	20 c/u	N	Y	Y	610	Y	N	HEDGE NEEDS TO BE CUT
1082 HALIBURTON	Y	N	20 c/u	Y	N	Y	711	Y	N	REMOVE METER SETTER
1100 HALIBURTON	Y	N	20 c/u	Y	N	Y	711	Y	N	REMOVE METER SETTER
1110 HALIBURTON	Y	N	20 c/u	Y	N	N	457	N	N	-



PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		<b>JACOBS</b>
DRAWN JH	DESIGNED MP	
CHECKED CW		PROJECT NO. 707564
APPROVED JG		SCALE H 1:250 V 1:50
DRAWING NUMBER GNINT-155		SHEET 001
DATE JAN 07, 2018		REV 0

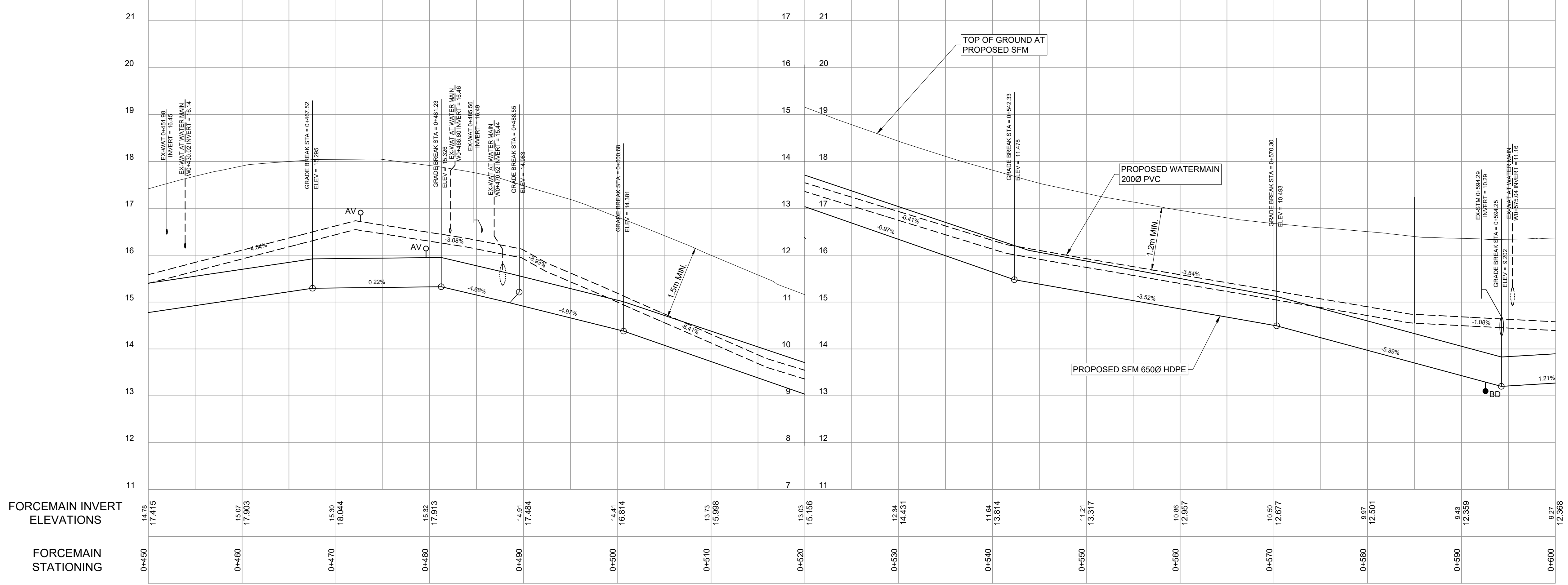
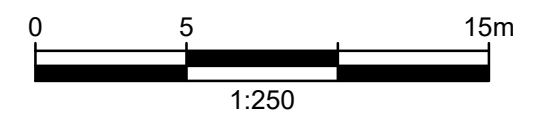
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	JH	CW	JG
	REFERENCE DRAWINGS				DRN	CHK	APP
		0	APRIL 2019	ISSUED FOR TENDER			





**HALIBURTON STREET METER SURVEY**

ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH (mm)	REPLACE BOX	RELOCATE BOX	COMMENTS
1067 HALIBURTON	N	Y	20 c/u	N	Y	N	457	Y	N	-



FORCEMAIN INVERT ELEVATIONS

FORCEMAIN STATIONING

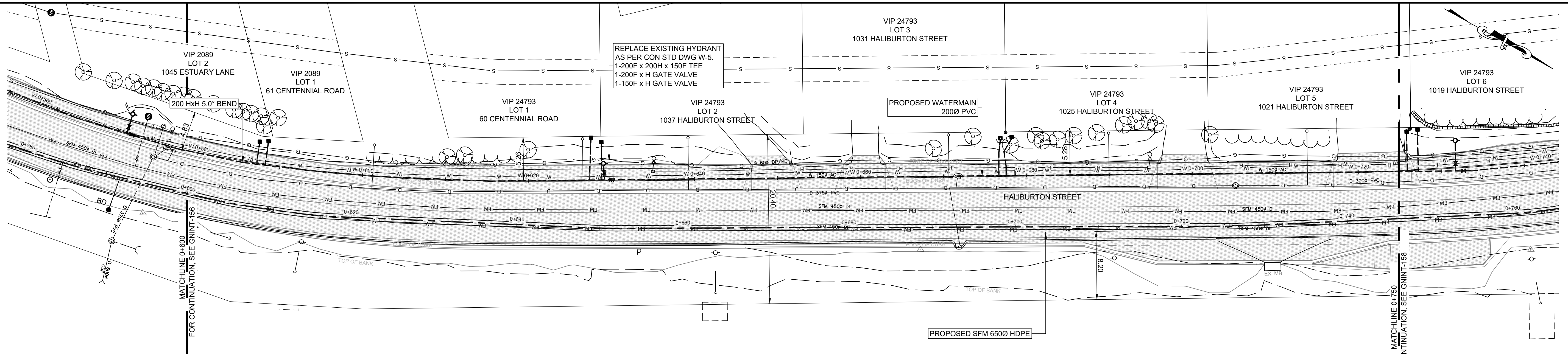
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
GNINT-162 SHT 001	BLOW DOWN CHAMBER DETAILS						
GNINT-161 SHT 001	AIR VALVE CHAMBR DETAILS						
	REFERENCE DRAWINGS			REVISIONS			

**REGIONAL DISTRICT OF NANAIMO**

PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	<p style="text-align: center;"><b>CHASE RIVER FORCEMAIN NO. 1 &amp; WATER REPLACEMENT PLAN AND PROFILE</b></p> <p style="text-align: center;">STA. 0+450 TO STA. 0+600</p>	
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG		
DRAWING NUMBER		GNINT-156	SHEET
			001
PROJECT NO.		707564	SCALE
			H 1:250 V 1:50
DATE		JAN 07, 2018	REV
			0



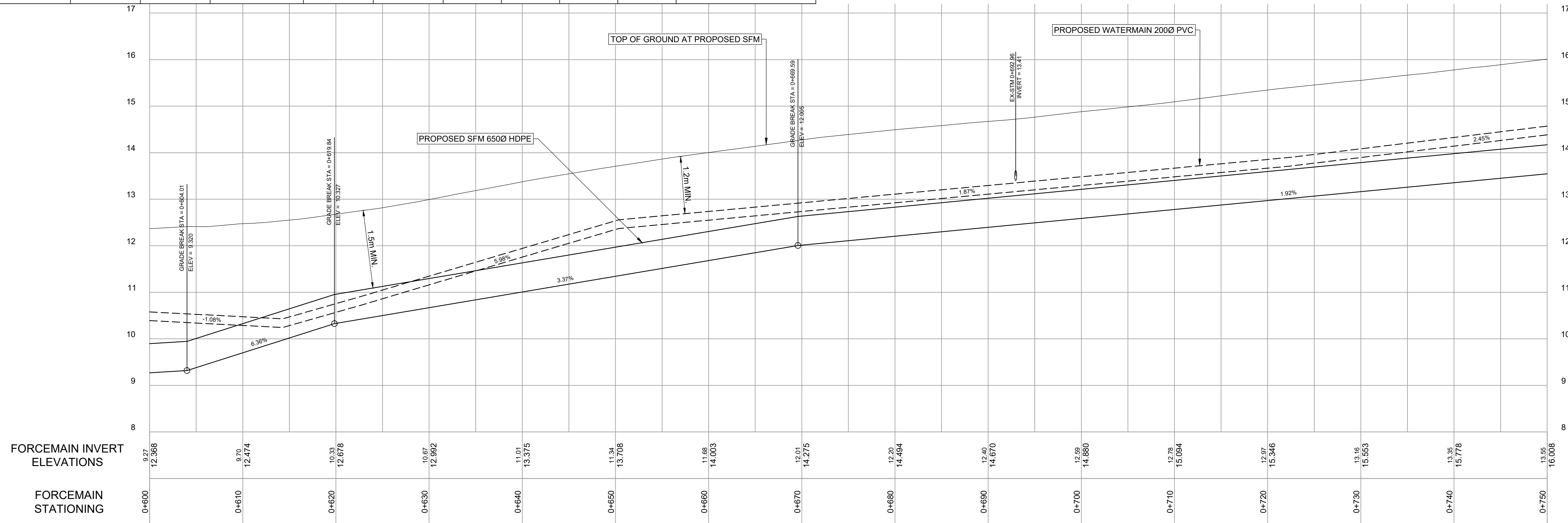
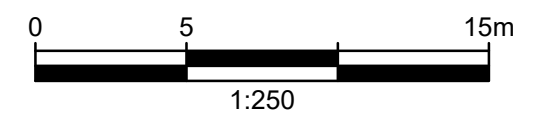




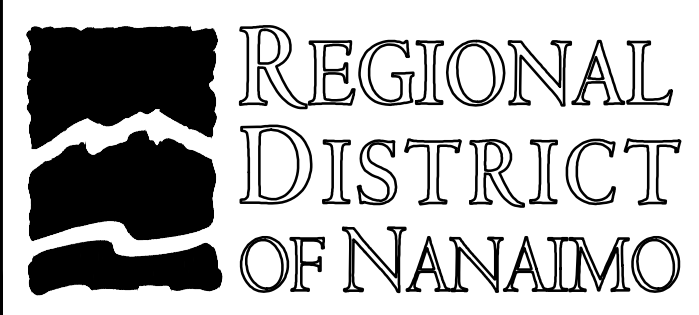
HALIBURTON STREET METER SURVEY

ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH (mm)	REPLACE BOX	RELOCATE BOX	COMMENTS
1021 HALIBURTON	N	Y	20 c/u	N	Y	Y	305	Y	N	-
1025 HALIBURTON	N	Y	20 c/u	N	Y	Y	305	Y	N	READJUST BOXES
1031 HALIBURTON	Y	N	20 c/u	N	Y	N	457	Y	N	READJUST BOXES
1037 HALIBURTON	N	Y	20 c/u	N	Y	N	457	Y	N	-
60 CENTENNIAL	N	Y	20 c/u	N	Y	N	457	Y	N	METER IS OFF HALIBURTON
61 CENTENNIAL	N	Y	20 c/u	Y	N	Y	305	Y	N	-
1045 ESTUARY LANE	N	Y	20 c/u	Y	N	Y	305	Y	N	METER IS OFF HALIBURTON

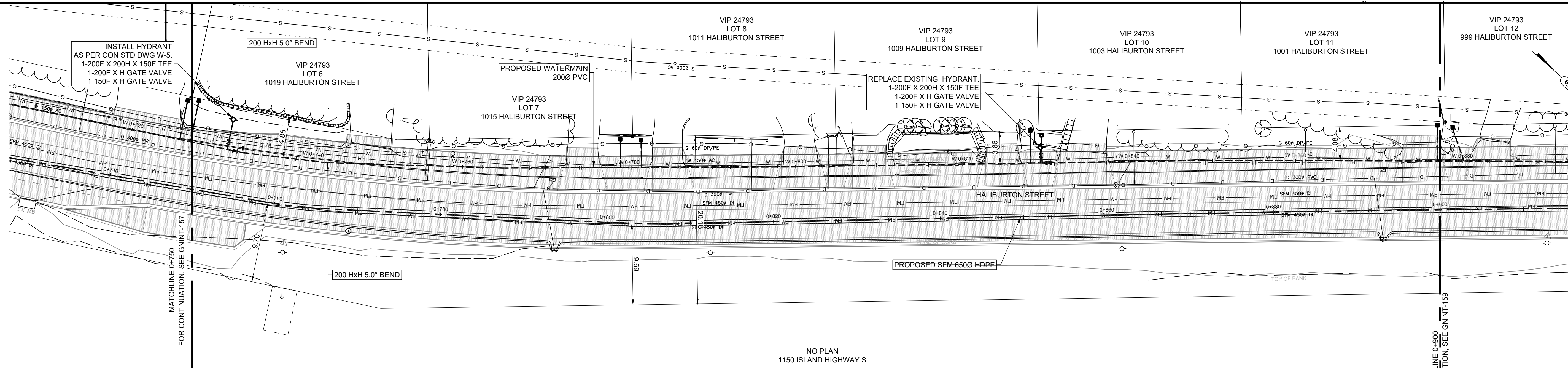
NO PLAN  
1150 ISLAND HIGHWAY S



DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	JH	CW	JG
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	JH	CW	JG
				REVISIONS	DRN	CHK	APP

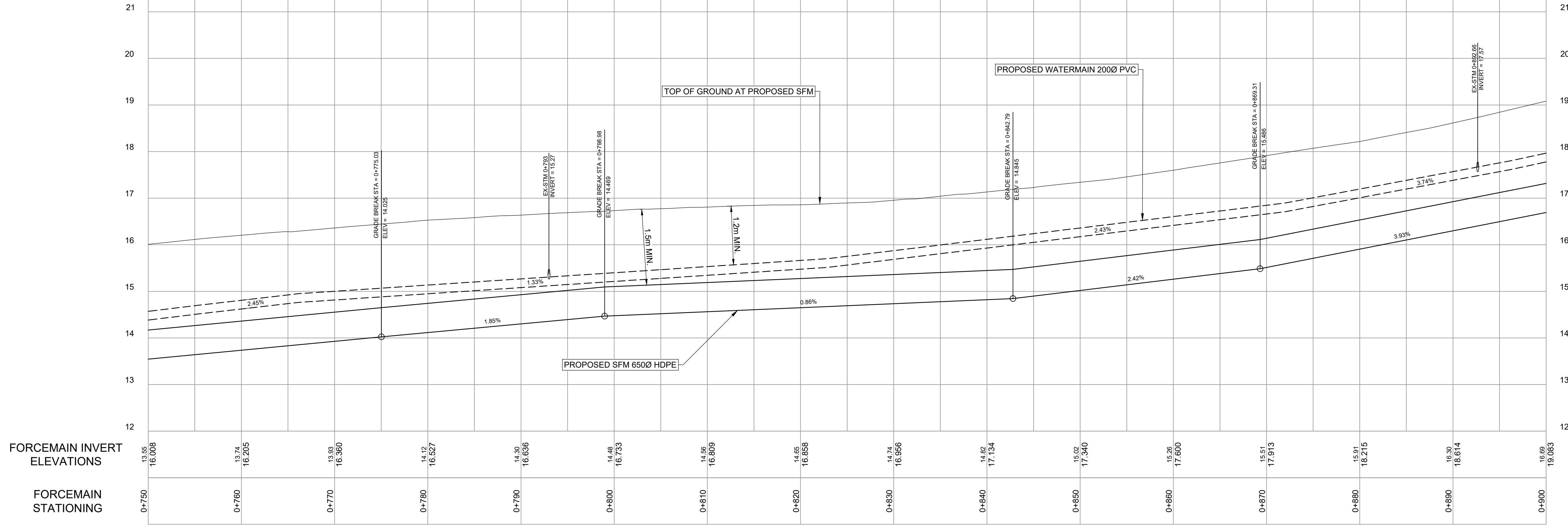
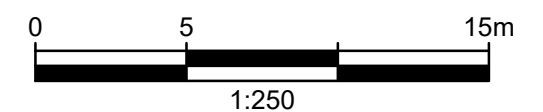


PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		<b>JACOBS</b>	
DRAWN JH	DESIGNED MP		
CHECKED CW		APPROVED JG	
PROJECT NO. 707564		SCALE H 1:250 V 1:50	
DRAWING NUMBER GNINT-157		SHEET 001	
DATE JAN 07, 2018		REV 0	



**HALIBURTON STREET METER SURVEY**

ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH (mm)	REPLACE BOX	RELOCATE BOX	COMMENTS
1001 HALIBURTON	Y	Y	20 c/u	N	Y	Y	305	Y	N	-
1003 HALIBURTON	Y	N	20 c/u	N	Y	Y	762	Y	N	-
1009 HALIBURTON	N	Y	20 c/u	N	Y	Y	660	Y	N	-
1011 HALIBURTON	N	Y	20 c/u	Y	N	N	457	Y	N	-
1015 HALIBURTON	N	Y	20 c/u	Y	N	Y	610	Y	N	-
1019 HALIBURTON	N	Y	20 c/u	N	Y	Y	305	Y	N	-

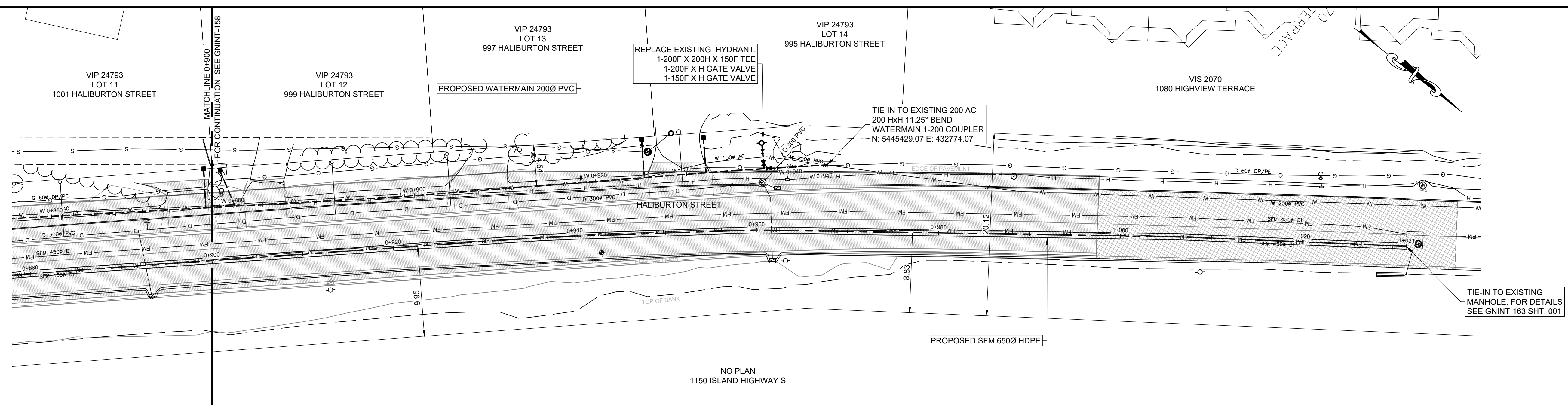


DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	JH	CW	JG
				REVISIONS			



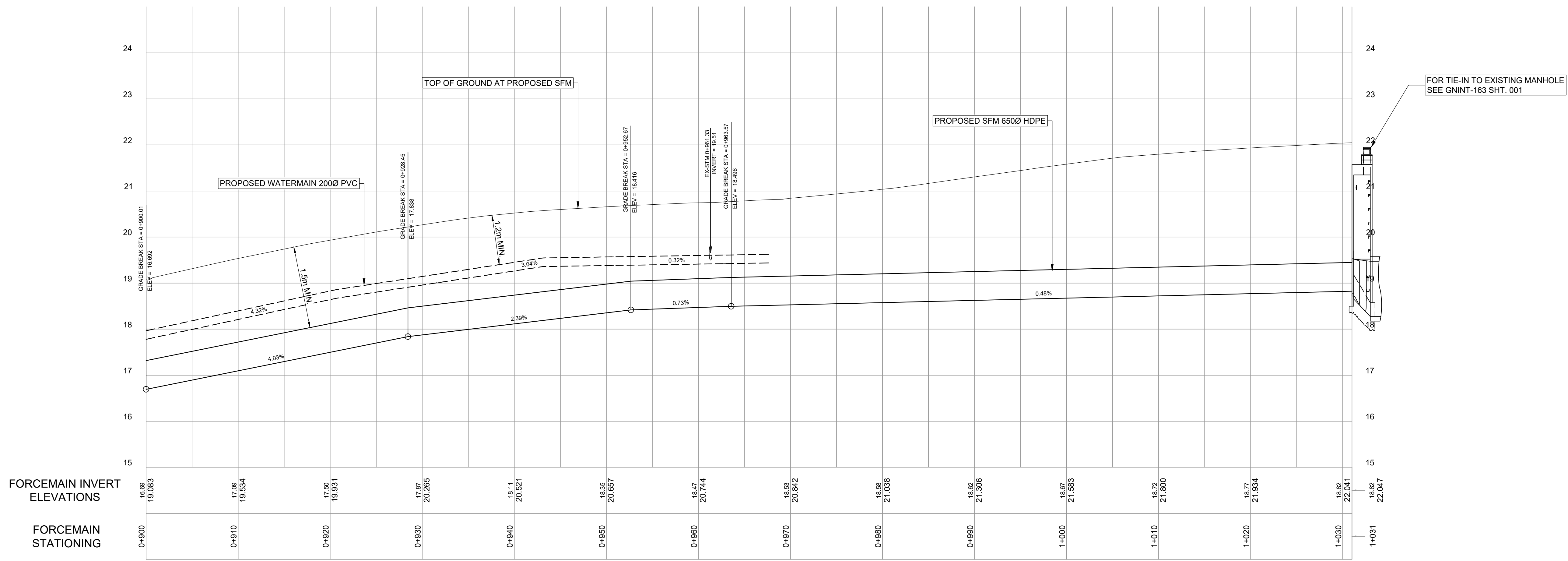
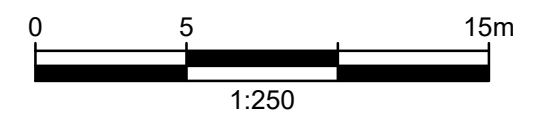
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		<b>JACOBS</b>
DRAWN JH		
DESIGNED MP		PROJECT NO. 707564
CHECKED CW		
APPROVED JG		SCALE H 1:250 V 1:50
DRAWING NUMBER GNINT-158		
SHEET 001		DATE JAN 07, 2018
		REV 0



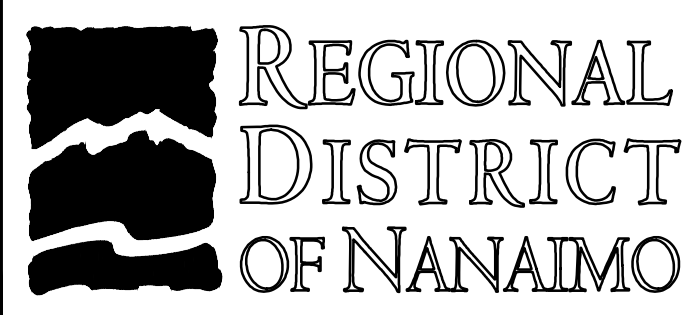


**HALIBURTON STREET METER SURVEY**

ADDRESS	TOUCH READ ALREADY	UPGRADE TO TOUCH READ	SERVICE SIZE AND TYPE	CONCRETE BOX	PLASTIC BOX	ADJUST DEPTH	METER DEPTH	REPLACE BOX	RELOCATE BOX	COMMENTS
995 HALIBURTON	Y	Y	20mm C/U	Y	N	Y	30"	Y	N	-
997 HALIBURTON	N	Y	20mm C/U	N	Y	Y	28"	Y	N	-
999 HALIBURTON	Y	Y	20mm C/U	N	Y	Y	12"	Y	N	-
1001 HALIBURTON	Y	Y	20mm C/U	N	Y	Y	12"	Y	N	-



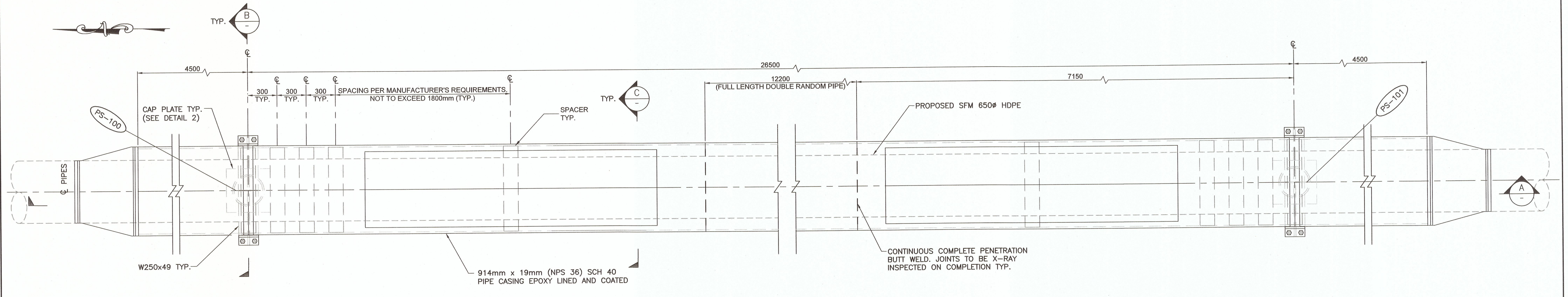
GNINT-163 SHT 001	MANHOLE CONNECTION	0	APRIL 2019	ISSUED FOR TENDER	JH	CW	JG
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



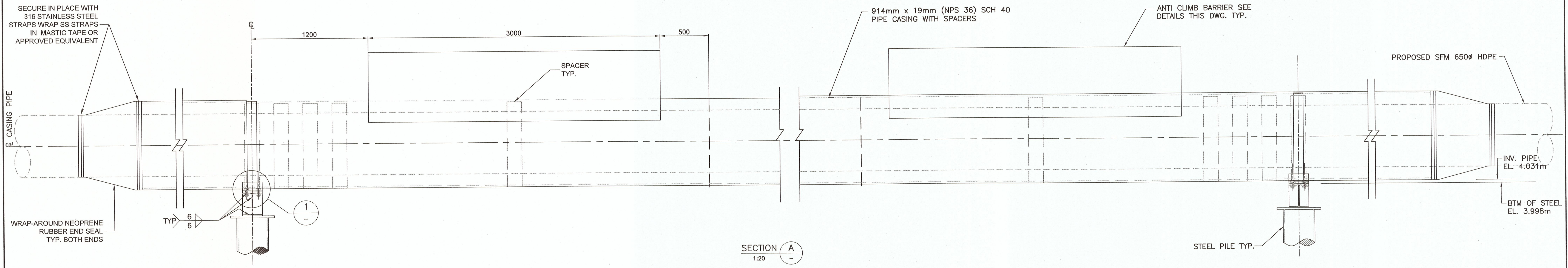
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES			
DRAWN JH	DESIGNED MP	CHECKED CW	APPROVED JG
CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT PLAN AND PROFILE STA. 0+900 TO STA. 1+031			
DRAWING NUMBER GNINT-159		SHEET 001	
PROJECT NO. 707564		SCALE H 1:250 V 1:50	
DATE JAN 07, 2018		REV 0	



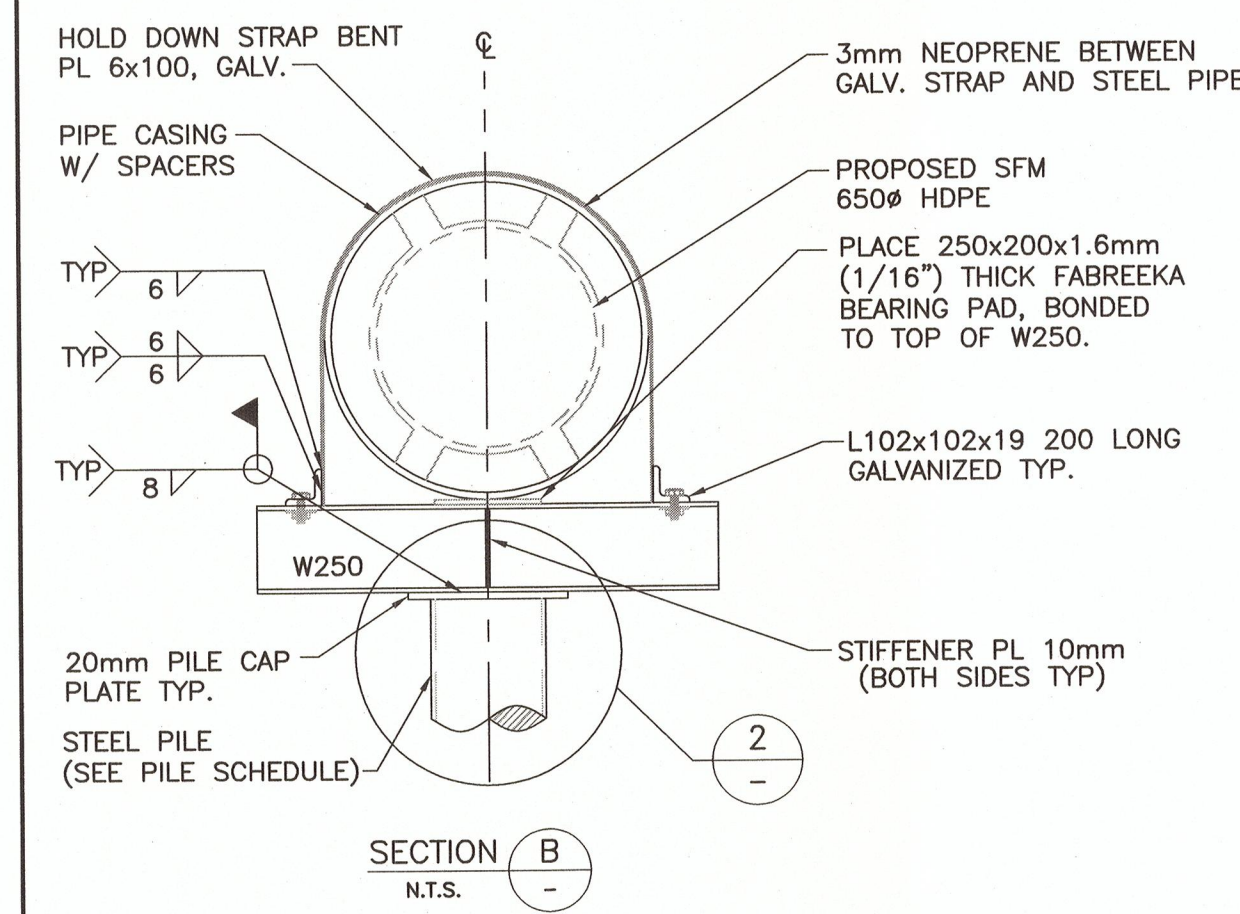




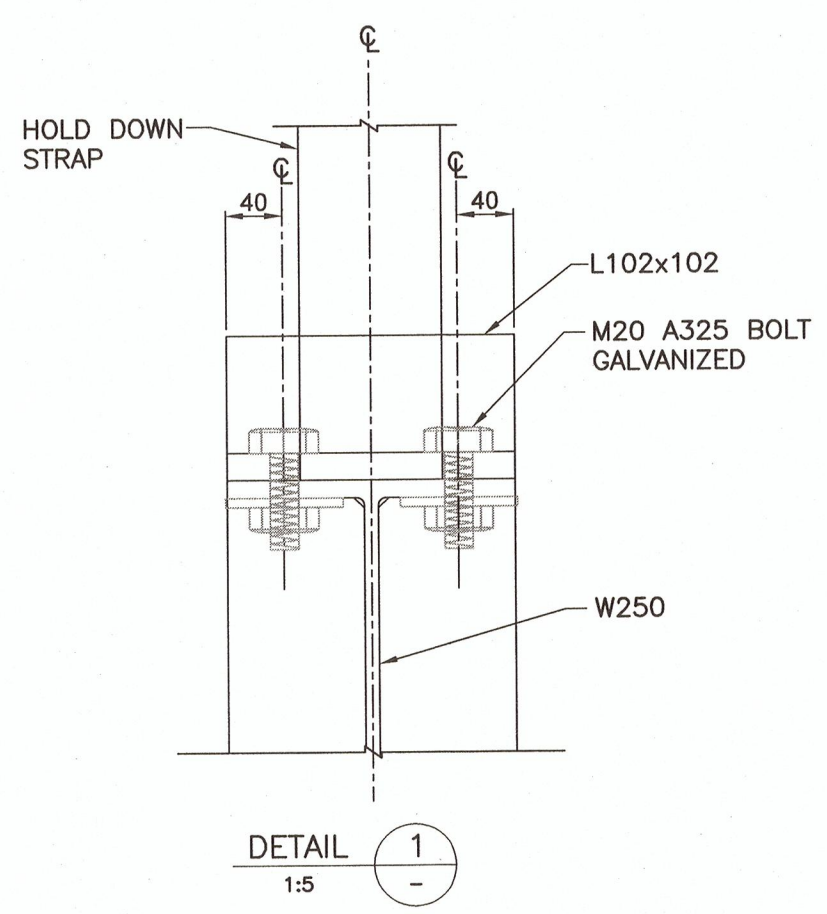
**RIVER CROSSING PIPE SUPPORT PLAN**  
1:20  
FOR LOCATION SEE DWG. GNINT-153 SHT. 001



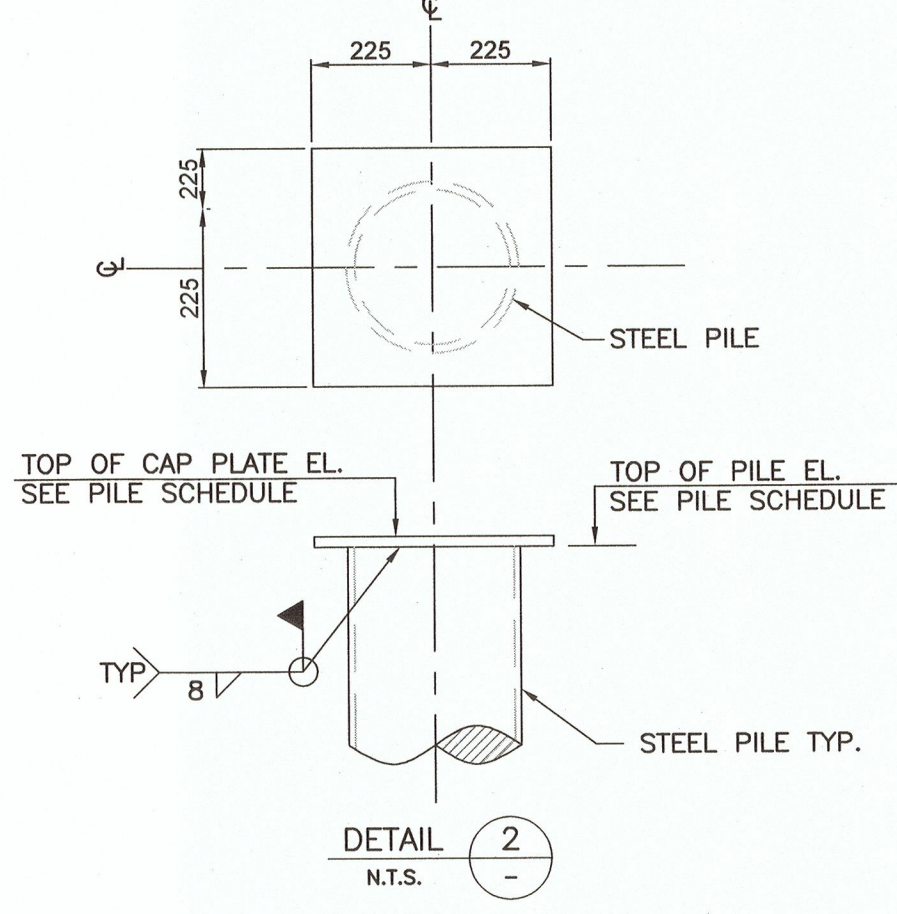
**SECTION A**  
1:20



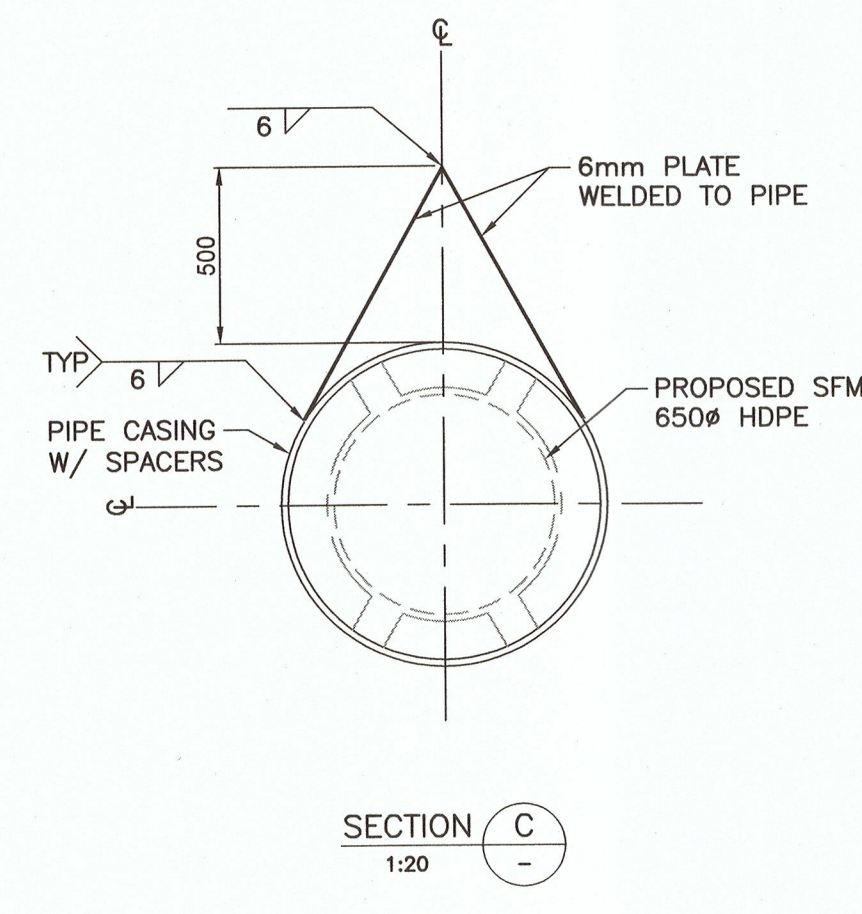
**SECTION B**  
N.T.S.



**DETAIL 1**  
1:5



**DETAIL 2**  
N.T.S.



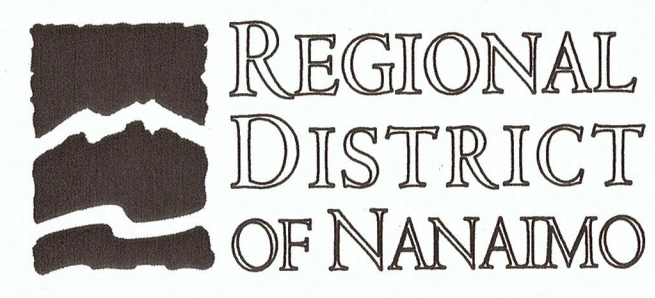
**SECTION C**  
1:20

PILE SCHEDULE							
PILE NUMBER	GROUND NORTHING	EASTING	PILE DIAMETER (mm)	PILE WALL THICKNESS (mm)	MINIMUM DEPTH (m)	PILE CUT-OFF ELEVATION (m)	TOP OF CAP PLATE ELEVATION (m)
P-100	5444634.861	432932.487	323.9	12.7	15	3.771	3.751
P-101	5444608.361	432932.487	323.9	12.7	15	3.771	3.751

**NOTES:**

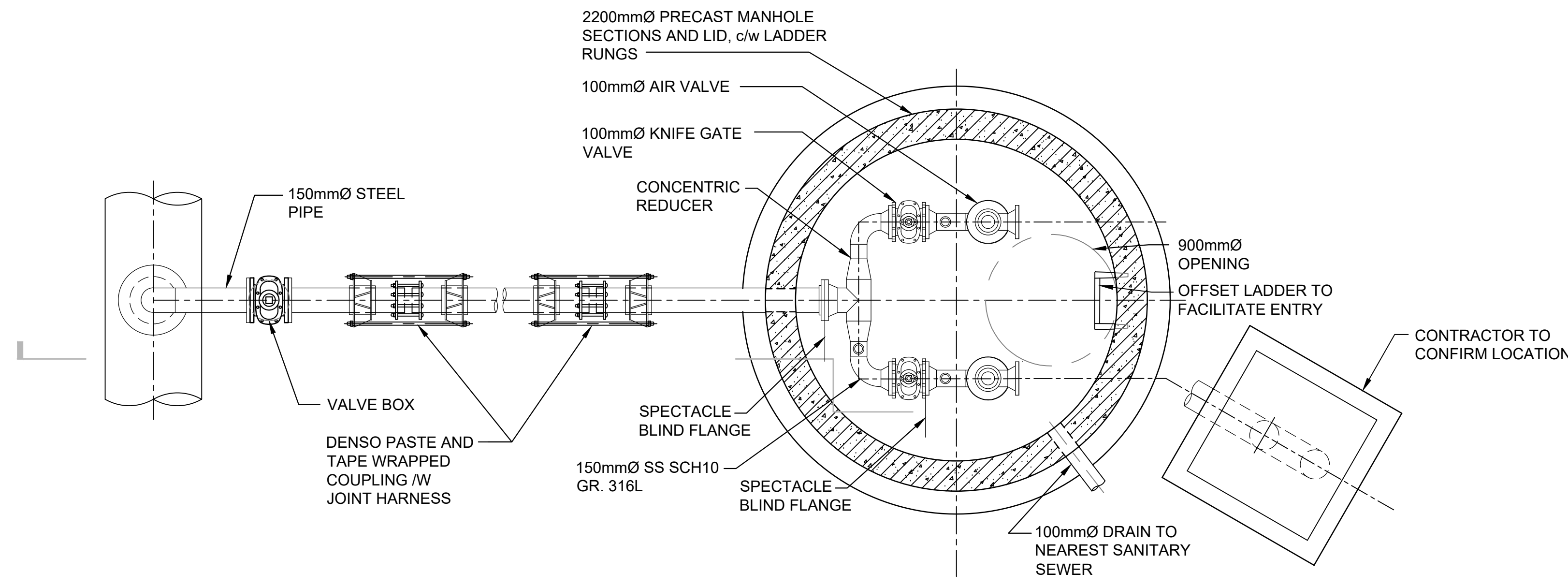
- ALL DIMENSIONS SHOWN IN PLAN, ELEVATION AND SECTIONS ARE METRIC MEASUREMENTS. MATERIAL STRENGTHS ARE IN MEGAPASCAL.
- THE CONTRACTOR SHALL VERIFY ON SITE ALL THE EXISTING FIELD CONNECTIONS, DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCING WORK. ANY DISCREPANCY SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY. DO NOT SCALE DRAWINGS.
- FOR STRUCTURAL STEEL NOTES REFER TO NOTES PAGE, GNINT-152 SHT. 001

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
GNINT-153 SHT 001	FORCEMAIN NO. 1 & WATER REPLACEMENT-PLAN AND PROFILE	0	APRIL 2019	ISSUED FOR TENDER	YZ	MBC	JG

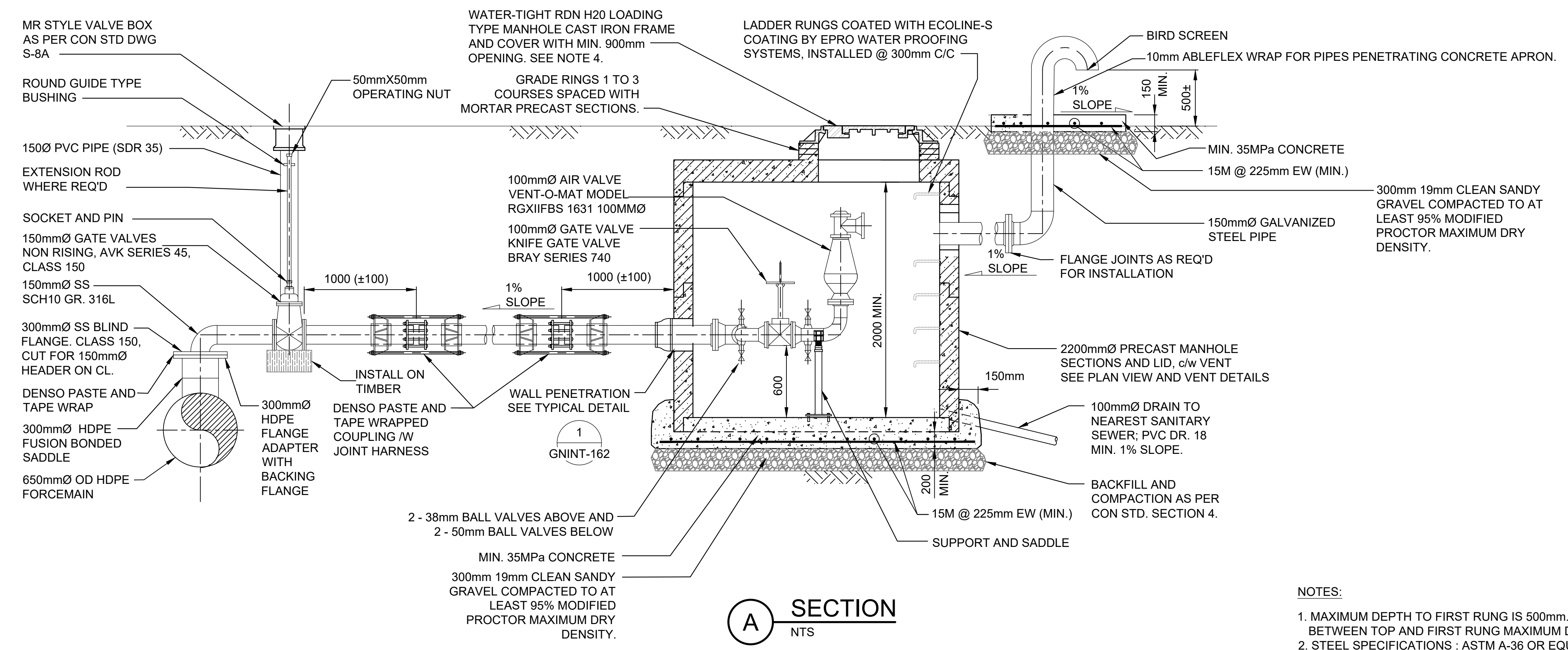


PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		PROJECT NO. 707564		SCALE AS SPECIFIED	
DRAWN JH	CHASE RIVER RIVER CROSSING STEEL PLAN AND DETAILS	DATE JAN 07, 2019		REV 0	
DESIGNED LC		DRAWING NUMBER GNINT-160		SHEET 001	
CHECKED MBC					
APPROVED JG					





**DUAL AIR VENT**  
NTS



**A SECTION**  
NTS

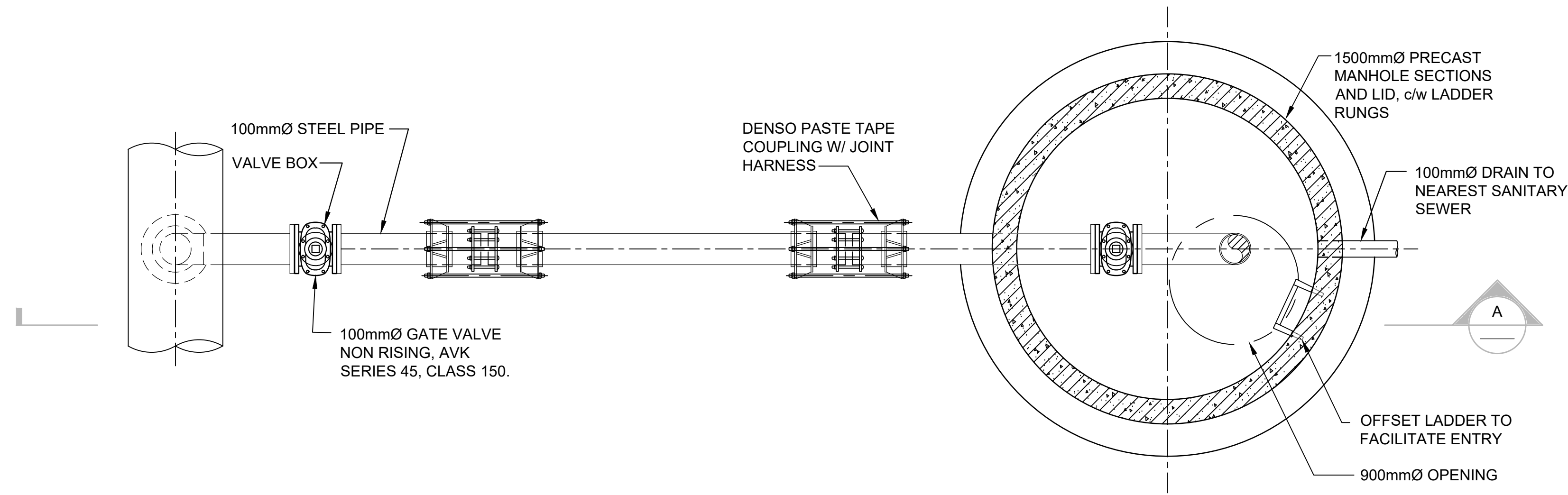
- NOTES:**
1. MAXIMUM DEPTH TO FIRST RUNG IS 500mm. WHEN HANDHOLD IS INSTALLED BETWEEN TOP AND FIRST RUNG MAXIMUM DEPTH MAY BE INCREASED TO 660mm.
  2. STEEL SPECIFICATIONS : ASTM A-36 OR EQUAL.
  3. UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE IN MILLIMETERS.
  4. TYPE C-2 BOLT DOWN COVERS ARE TO BE USED IN HIGH TRAFFIC AREAS OR PRESSURE APPLICATIONS.
  5. FOR GENERAL NOTES SEE GNINT-152 SHT. 001

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			

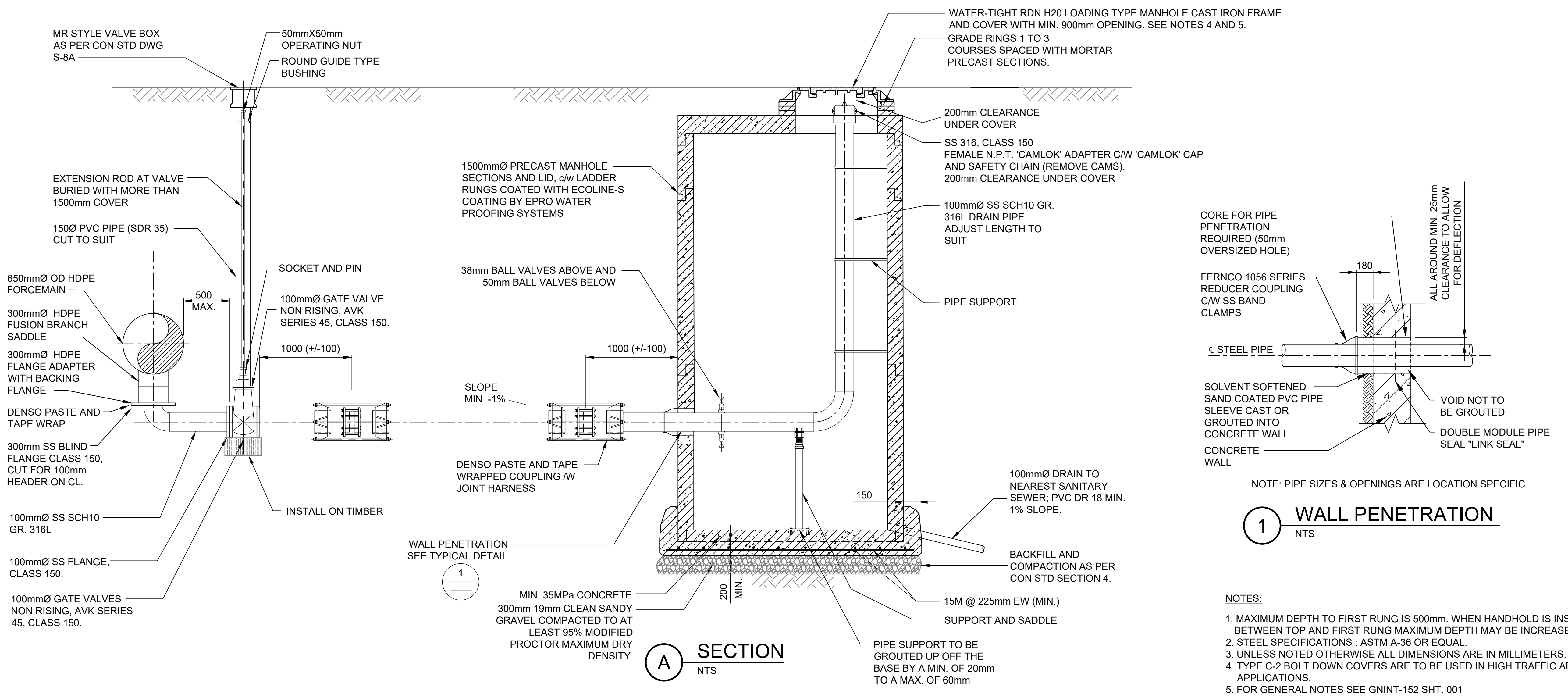


PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT AIR VALVE CHAMBER DETAILS	<b>JACOBS</b>
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG		
DRAWING NUMBER	GNINT-161	SHEET	001
PROJECT NO.	707564	SCALE	NOT TO SCALE
DATE	NOV 28, 2018	REV	0





**BLOW DOWN CHAMBER PLAN**  
NTS

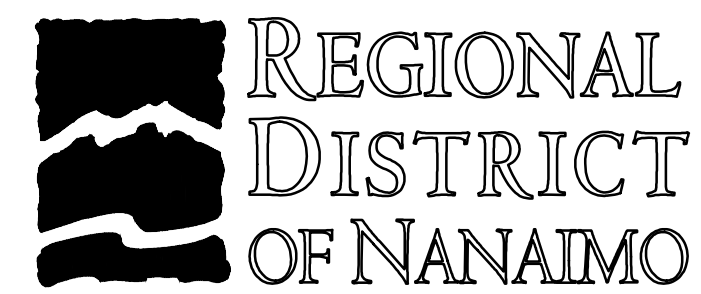


NOTE: PIPE SIZES & OPENINGS ARE LOCATION SPECIFIC

**1 WALL PENETRATION**  
NTS

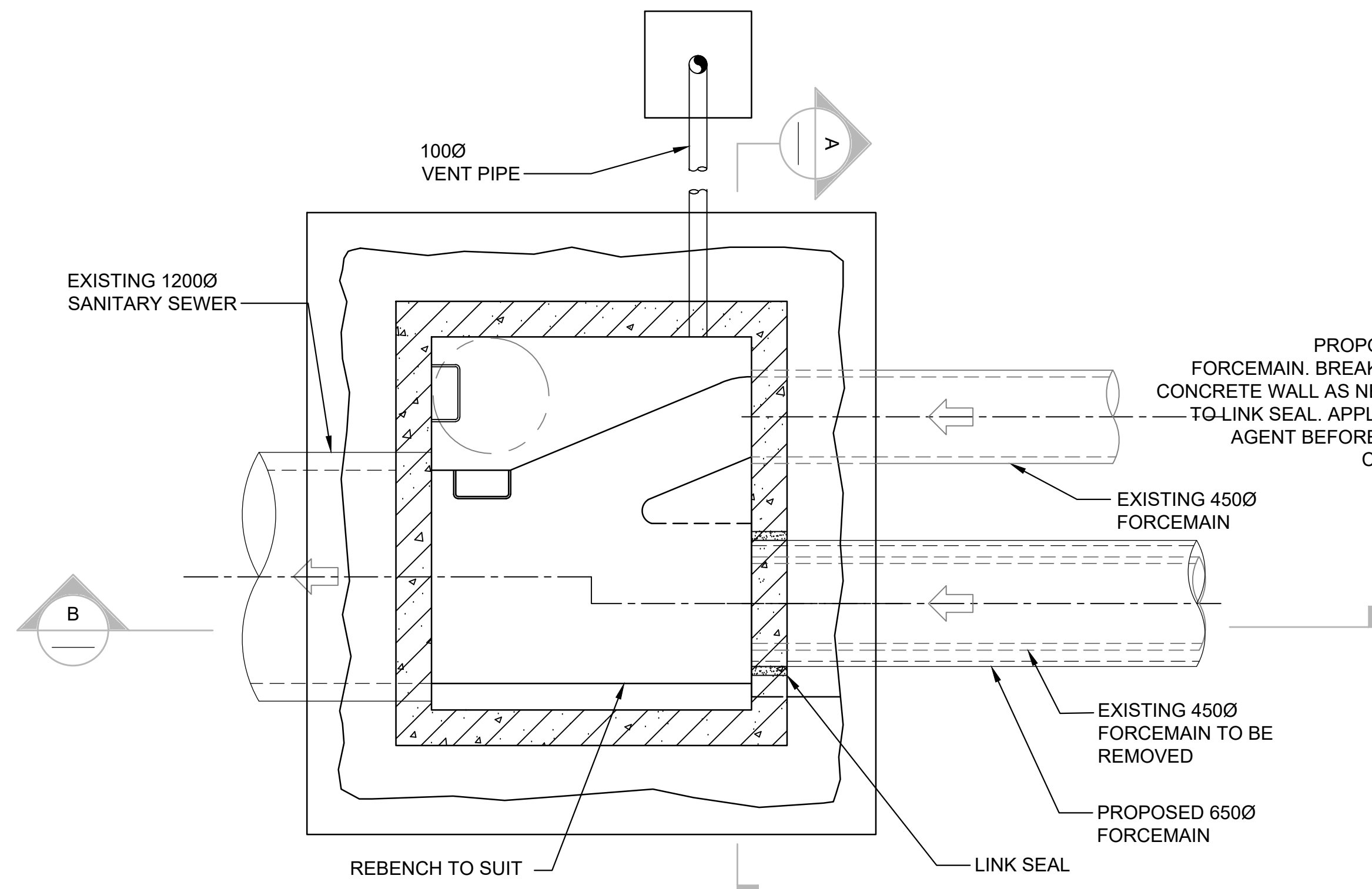
- NOTES:**
1. MAXIMUM DEPTH TO FIRST RUNG IS 500mm. WHEN HANDHOLD IS INSTALLED BETWEEN TOP AND FIRST RUNG MAXIMUM DEPTH MAY BE INCREASED TO 660mm.
  2. STEEL SPECIFICATIONS : ASTM A-36 OR EQUAL.
  3. UNLESS NOTED OTHERWISE ALL DIMENSIONS ARE IN MILLIMETERS.
  4. TYPE C-2 BOLT DOWN COVERS ARE TO BE USED IN HIGH TRAFFIC AREAS OR PRESSURE APPLICATIONS.
  5. FOR GENERAL NOTES SEE GNINT-152 SHT. 001

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



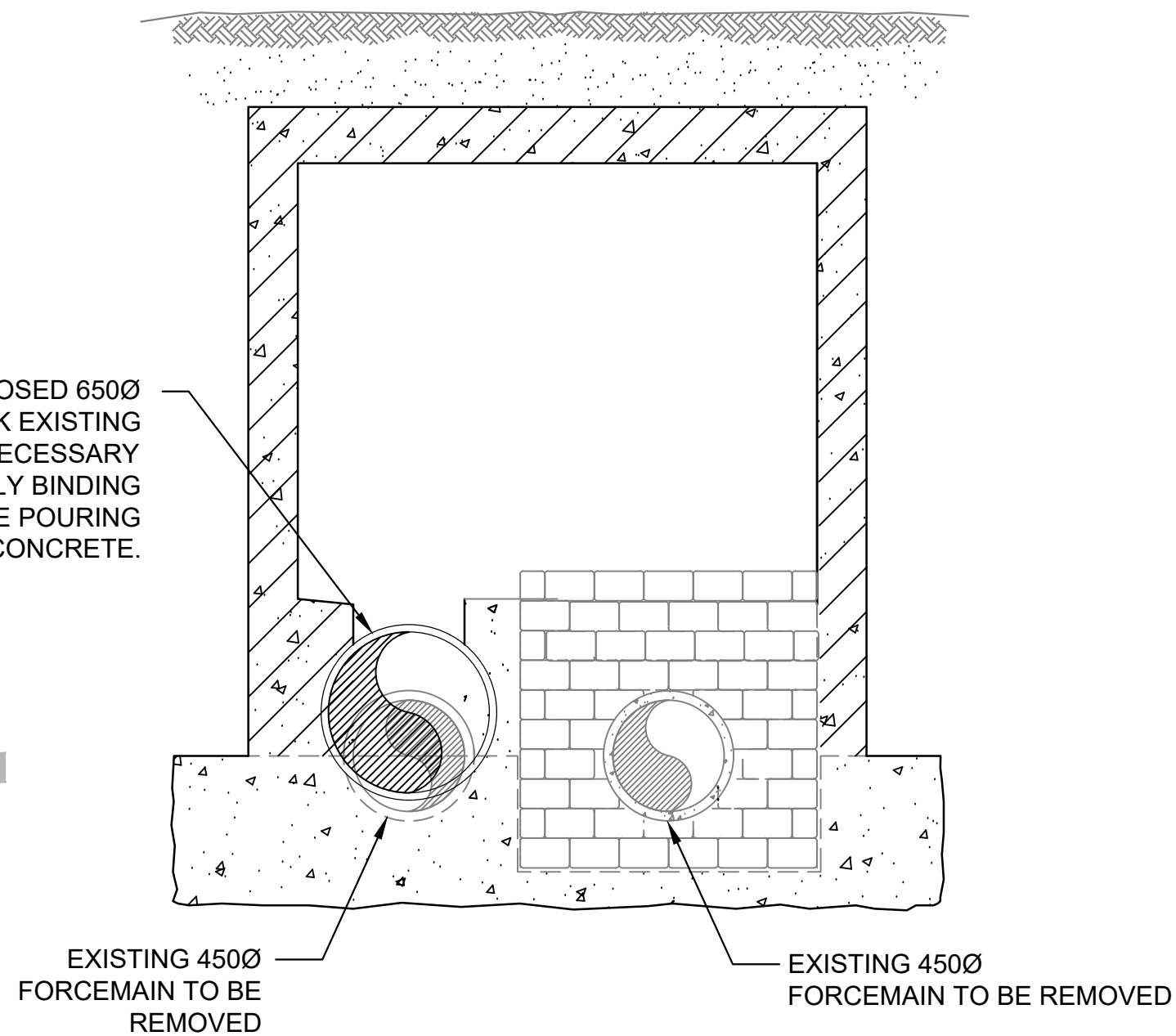
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	<b>CHASE RIVER FORCEMAIN NO. 1 &amp; WATER REPLACEMENT BLOW DOWN CHAMBER DETAILS</b>	
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG		
DRAWING NUMBER	GNINT-162	SHEET	001
PROJECT NO.	707564	SCALE	NOT TO SCALE
DATE	NOV 28, 2018	REV	0





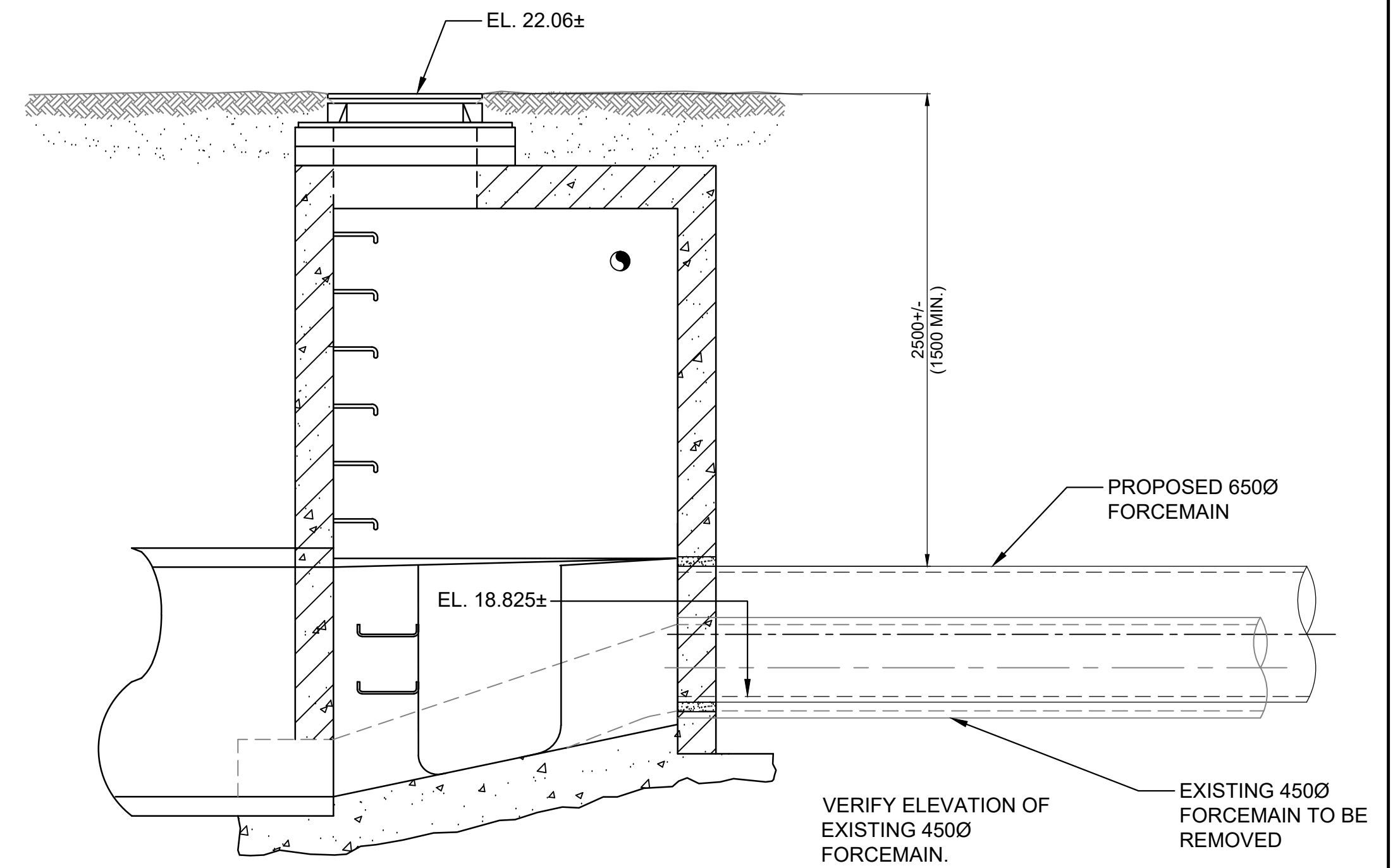
**SECTIONAL PLAN**

**1** **DETAIL**  
NTS

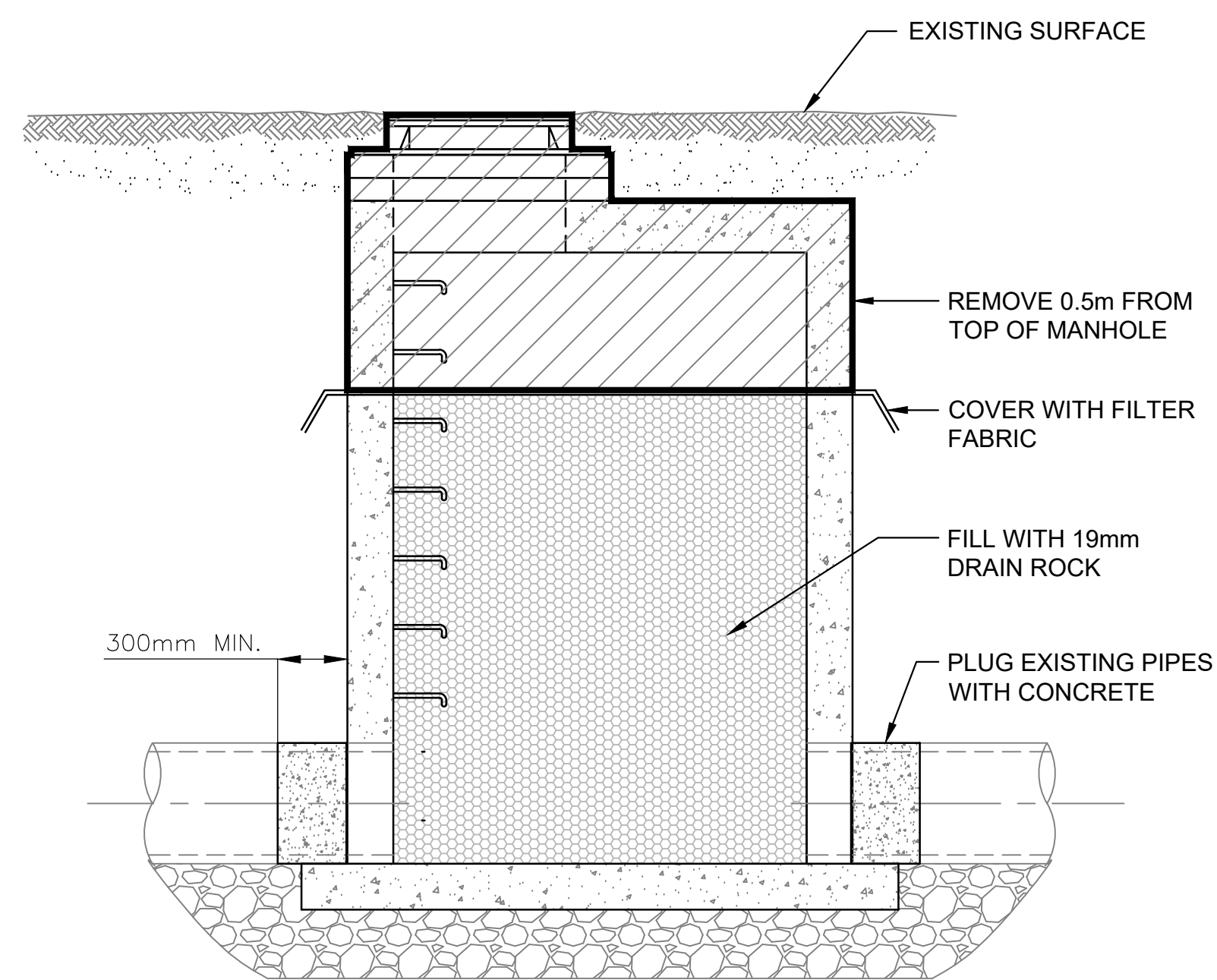


**CONNECTION AT MH No. 54**

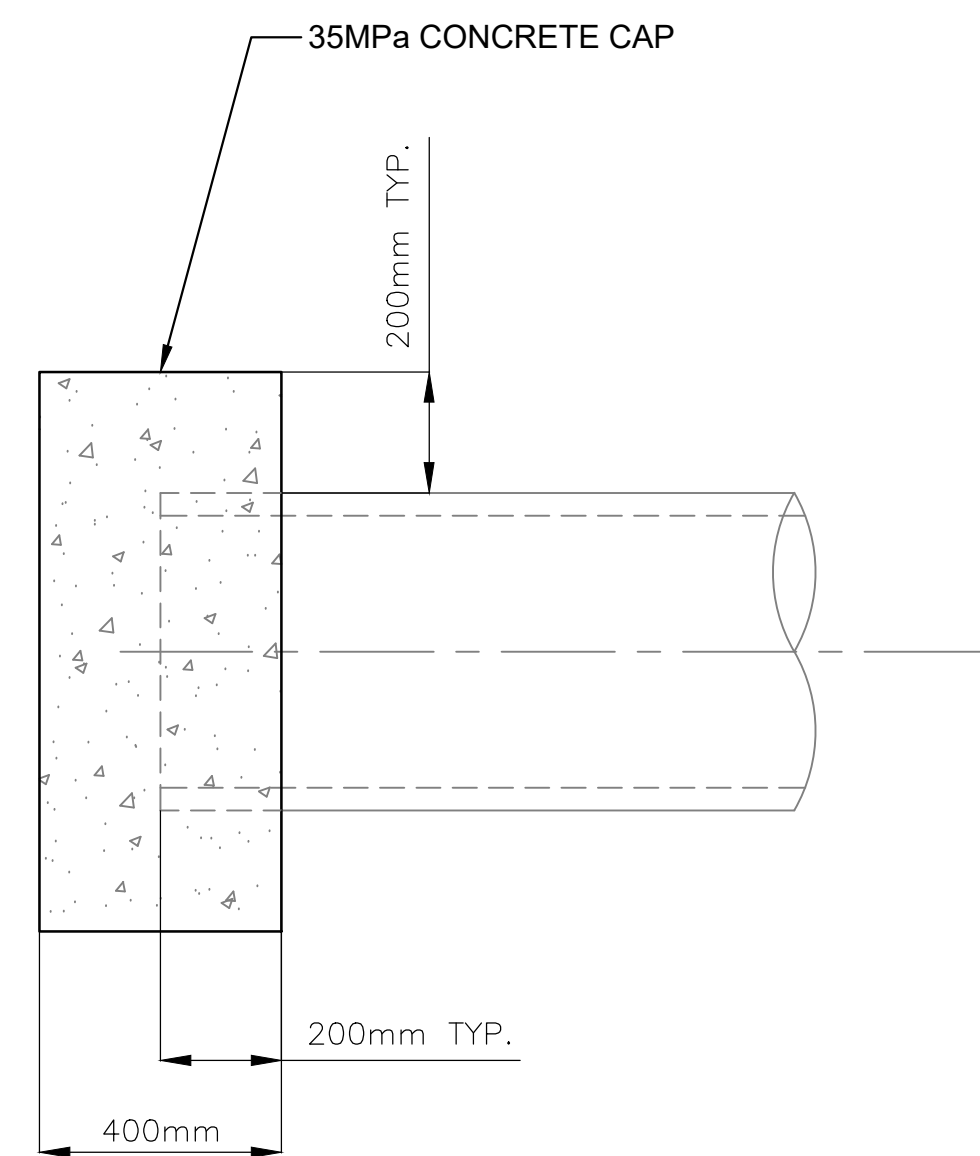
**A** **SECTION**  
NTS



**B** **SECTION**  
NTS

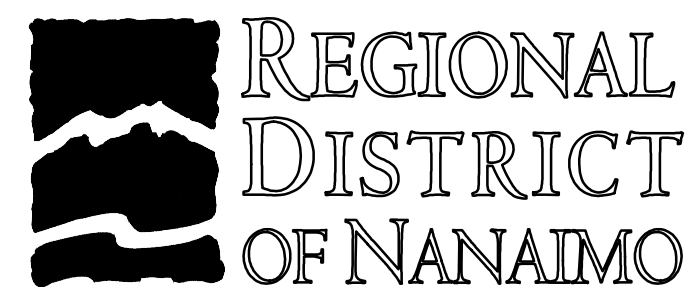


**2** **MANHOLE ABANDONMENT DETAIL**  
NTS



**3** **CONCRETE CAP DETAIL**  
NTS

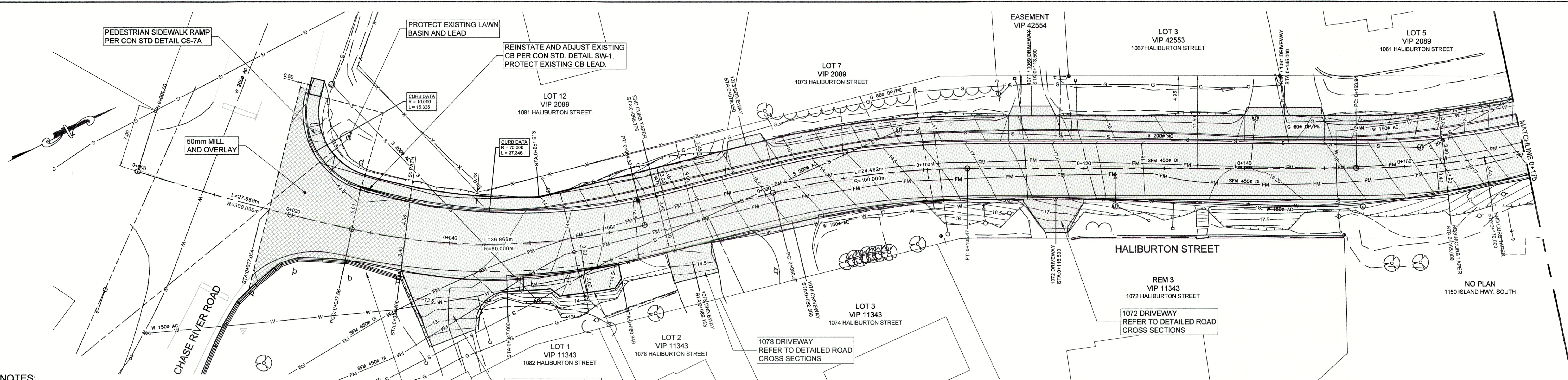
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



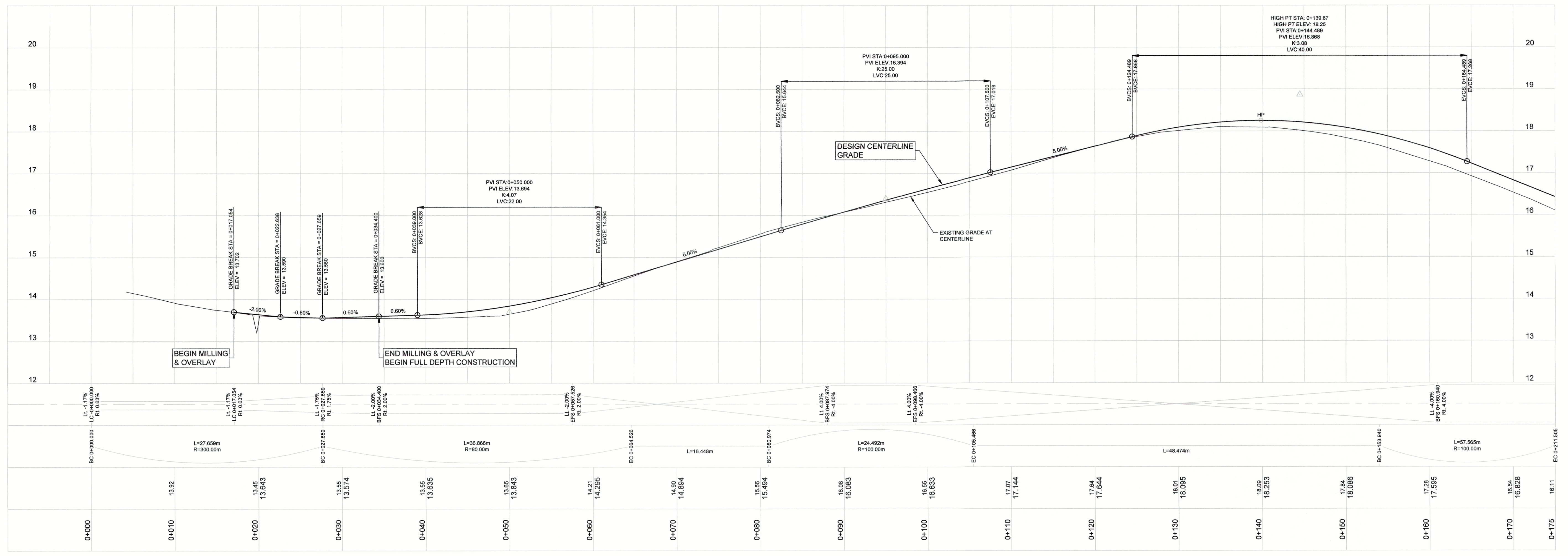
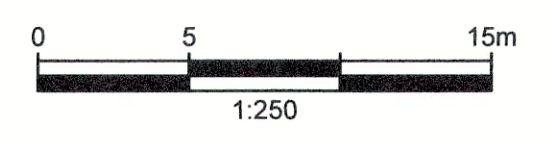
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER FORCEMAIN NO. 1 & WATER REPLACEMENT MANHOLE CONNECTION	
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG	DRAWING NUMBER	GNINT-163
		SHEET	001
		PROJECT NO.	707564
		SCALE	NOT TO SCALE
		DATE	JAN 07, 2019
		REV	0



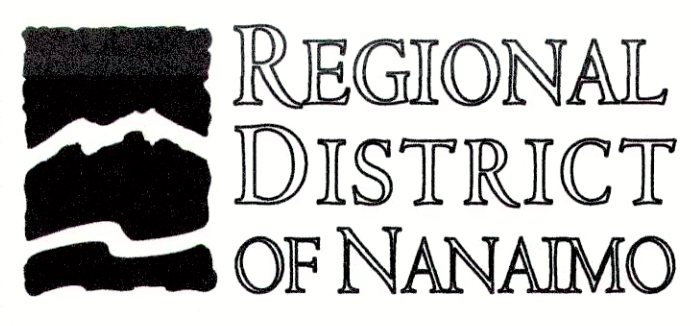




- NOTES:**
- FOR ROADWORKS AND STORM GENERAL NOTES REFER TO DWG. GNINT-152 SHT. 002.
  - UNLESS NOTED OTHERWISE RE-GRADE AND RESTORE EXISTING DRIVEWAYS PER DETAIL ON DWG. GNINT-192 SHT. 001.
  - PROTECT AND REGRADE AROUND EXISTING STREET LIGHTS AS REQUIRED PER DETAIL ON DWG GNINT-192 SHT. 001. PROTECT EXISTING STREET LIGHT CONDUIT AND WIRING. ADJUST EXISTING STREET LIGHT JUNCTION BOXES TO SUIT FINISHED GRADES.



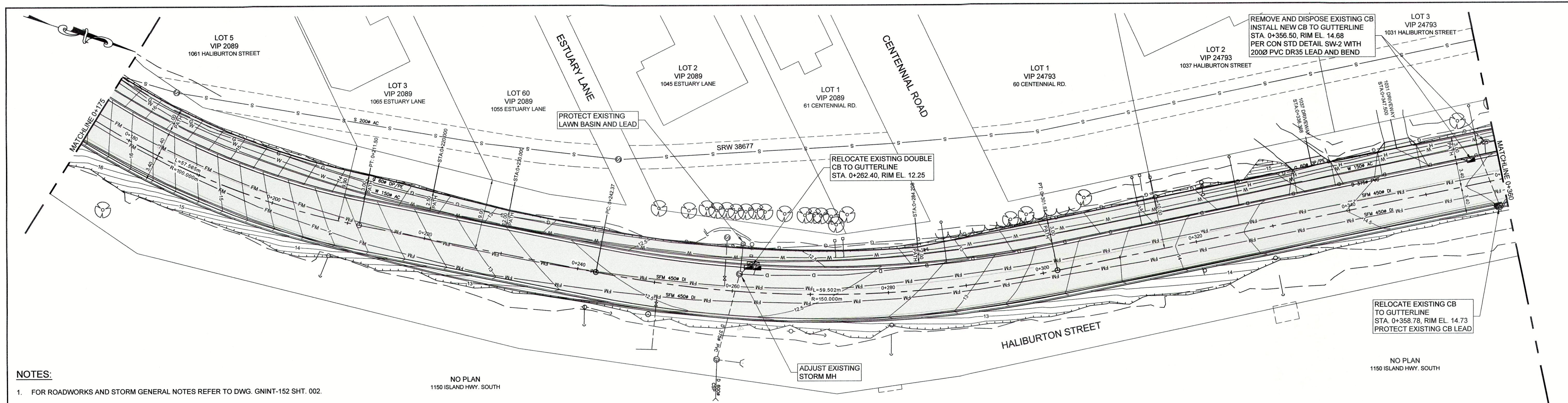
DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS							
		0	APRIL 2019	ISSUED FOR TENDER		KP	SL	JG
					REVISIONS			



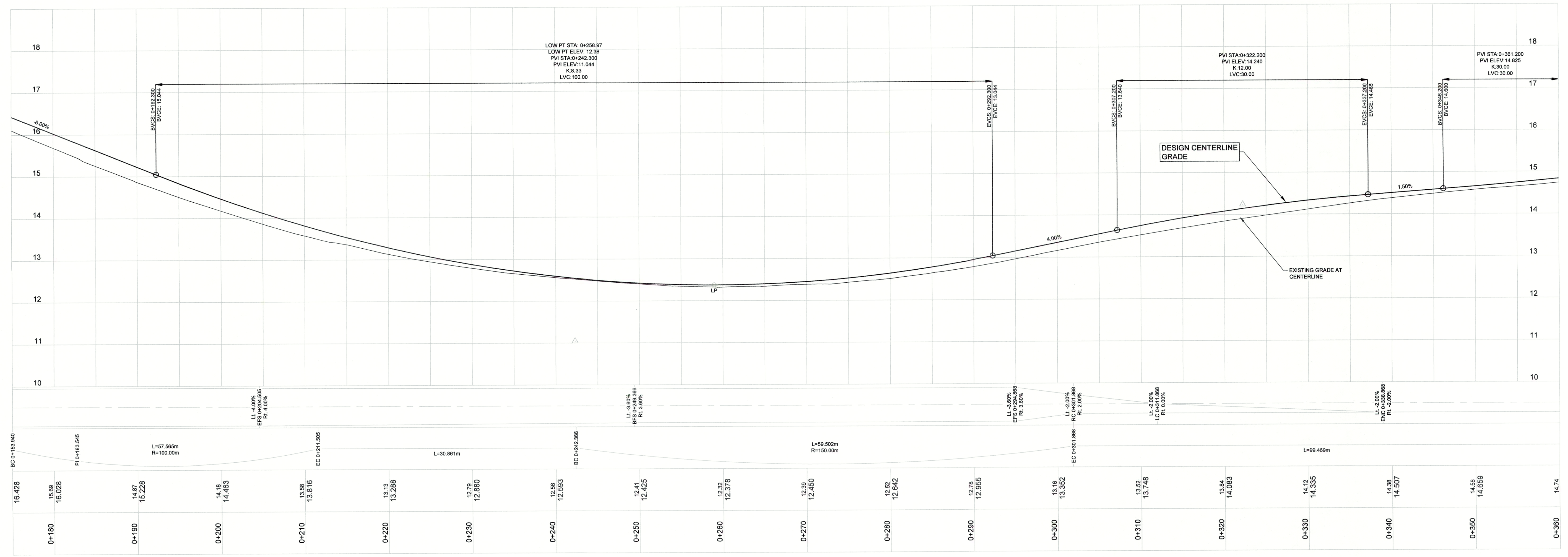
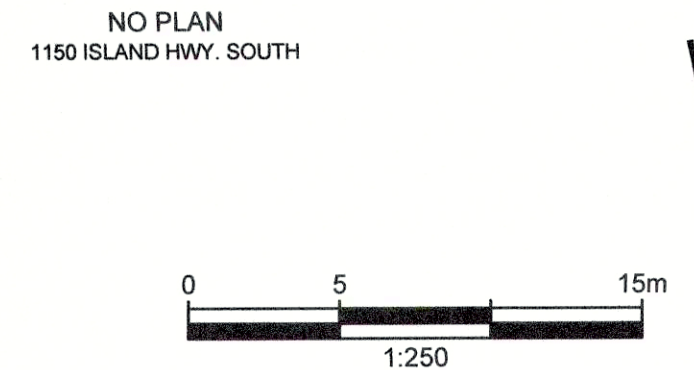
PROFESSIONAL ENGINEER  
S. G. GILL  
APR 22, 2019

PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES			
DRAWN KP	DESIGNED KP		
CHECKED SL		CHASE RIVER HALIBURTON ST. ROAD RESTORATION ROADWORKS AND STORM PLAN/PROFILE STA. 0+000 TO STA. 0+175	
APPROVED JG	DRAWING NUMBER GNINT-170	SHEET 001	PROJECT NO. 707564 SCALE H:1:250 V:1:50 DATE JAN 07, 2018 REV 0

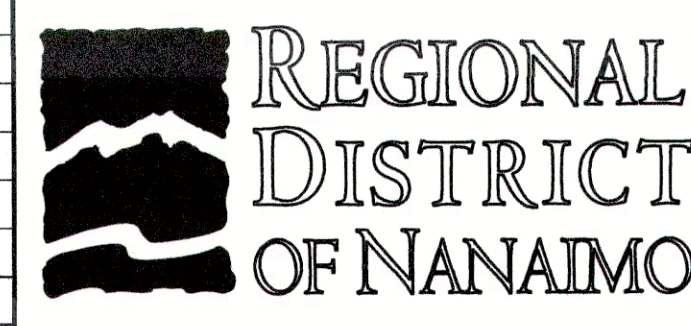




- NOTES:**
- FOR ROADWORKS AND STORM GENERAL NOTES REFER TO DWG. GNINT-152 SHT. 002.
  - UNLESS NOTED OTHERWISE RE-GRADE AND RESTORE EXISTING DRIVEWAYS PER DETAIL ON DWG. GNINT-192 SHT. 001.
  - PROTECT AND REGRADE AROUND EXISTING STREET LIGHTS AS REQUIRED PER DETAIL ON DWG GNINT-192 SHT. 001. PROTECT EXISTING STREET LIGHT CONDUIT AND WIRING. ADJUST EXISTING STREET LIGHT JUNCTION BOXES TO SUIT FINISHED GRADES.



DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG

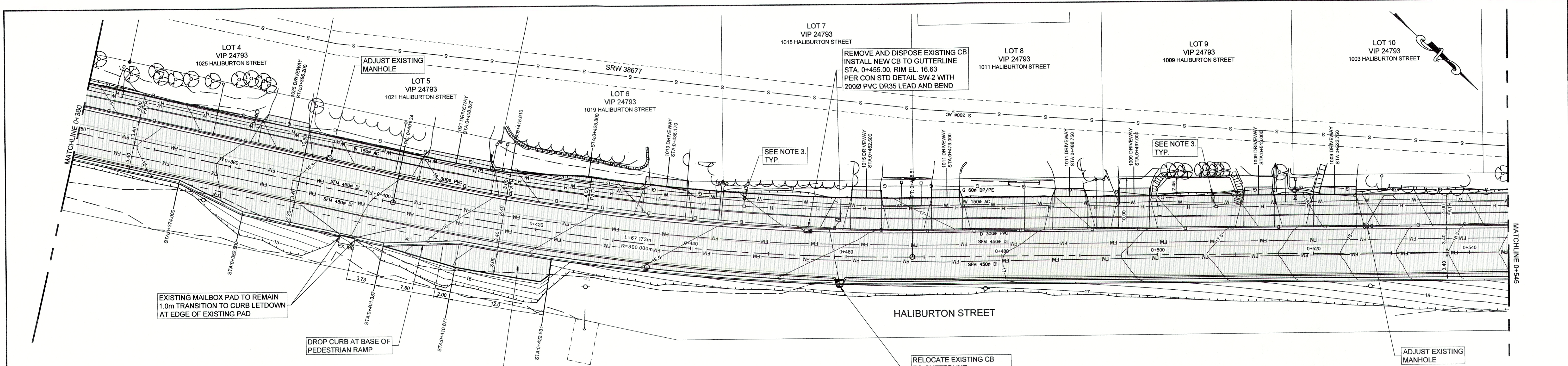


PROFESSIONAL  
S.A.C.U.  
# 20760  
Date: Apr 22, 2019

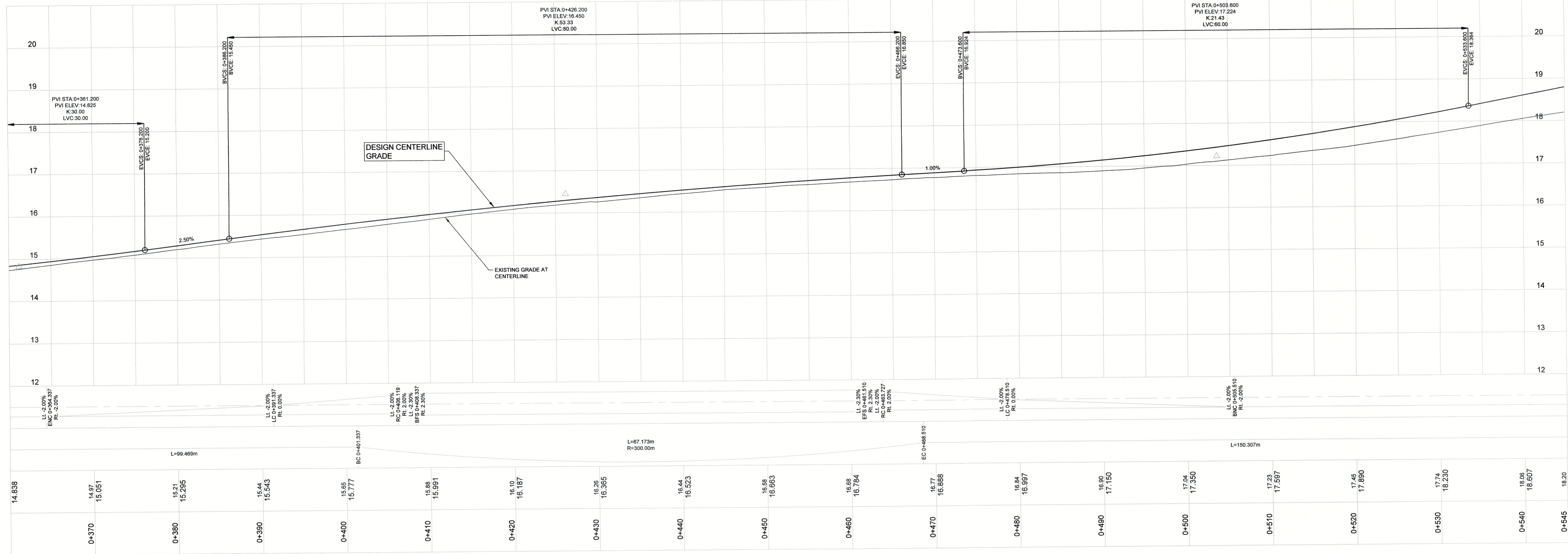
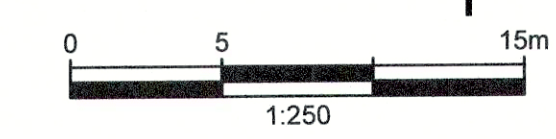
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		DRAWN KP	
DESIGNED KP		CHASE RIVER HALIBURTON ST. ROAD RESTORATION ROADWORKS AND STORM PLAN/PROFILE STA. 0+175 TO STA. 0+360	
CHECKED SL		PROJECT NO. 707564	
APPROVED JG		SCALE H 1:250 V 1:50	
DRAWING NUMBER GNINT-171		SHEET 001	
DATE JAN 07, 2018		REV 0	



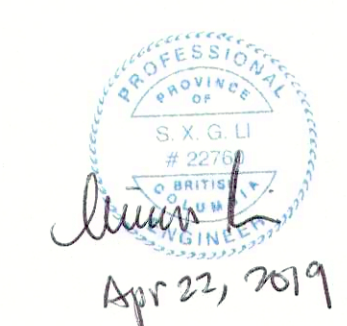
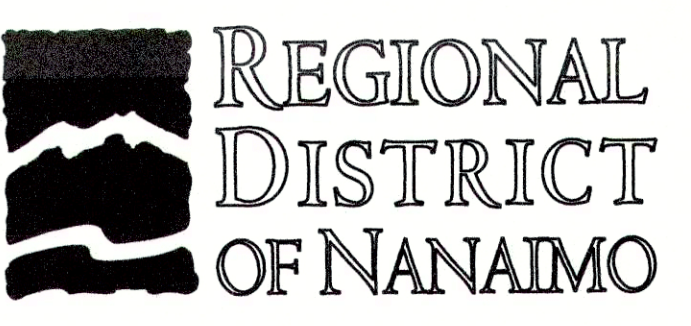




- NOTES:**
- FOR ROADWORKS AND STORM GENERAL NOTES REFER TO DWG. GNINT-152 SHT. 002.
  - UNLESS NOTED OTHERWISE RE-GRADE AND RESTORE EXISTING DRIVEWAYS PER DETAIL ON DWG. GNINT-192 SHT. 001.
  - PROTECT AND REGRADE AROUND EXISTING STREET LIGHTS AS REQUIRED PER DETAIL ON DWG GNINT-192 SHT. 001. PROTECT EXISTING STREET LIGHT CONDUIT AND WIRING. ADJUST EXISTING STREET LIGHT JUNCTION BOXES TO SUIT FINISHED GRADES.



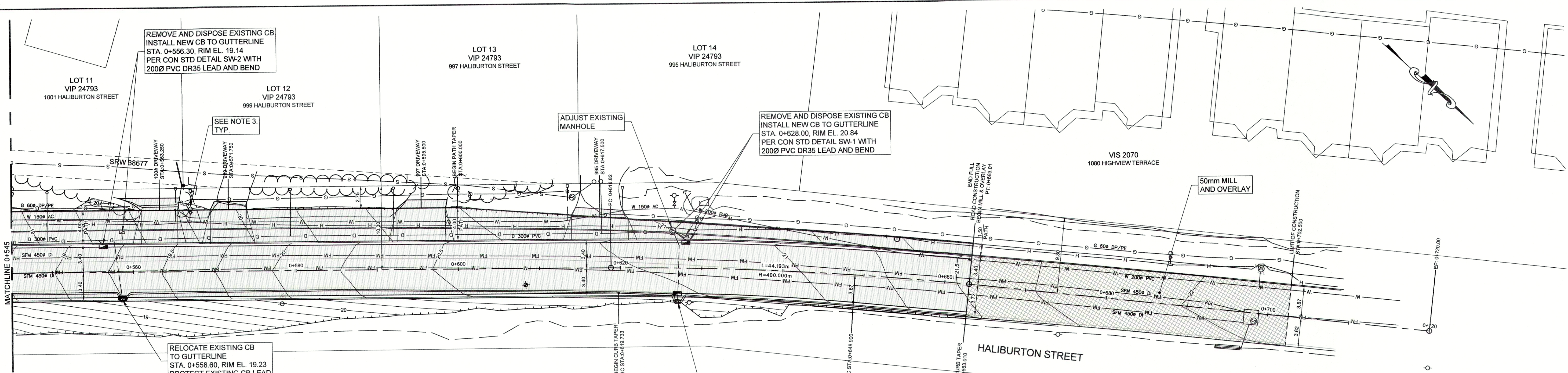
DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS							
		0	APRIL 2019	ISSUED FOR TENDER		KP	SL	JG



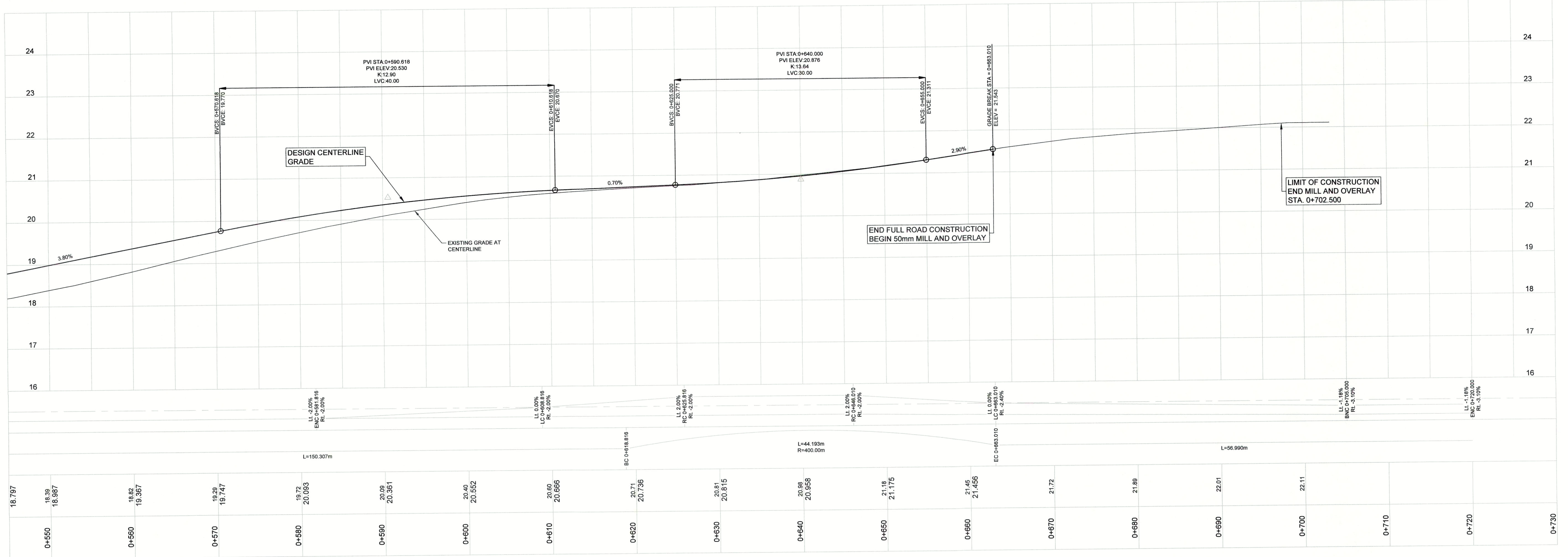
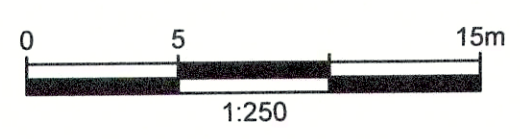
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	<b>CHASE RIVER HALIBURTON ST. ROAD RESTORATION ROADWORKS AND STORM PLAN/PROFILE</b> STA. 0+360 TO STA. 0+545	
DESIGNED	KP		
CHECKED	SL		
APPROVED	JG	DRAWING NUMBER	GNINT-172
		SHEET	001
		DATE	JAN 07, 2018
		SCALE	H 1:250 V 1:50
		REV	0



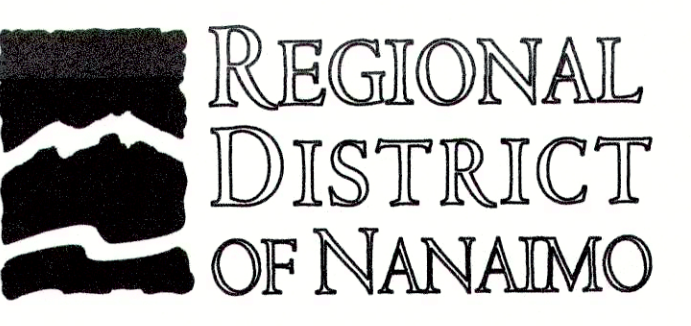




- NOTES:**
- FOR ROADWORKS AND STORM GENERAL NOTES REFER TO DWG. GNINT-152 SHT. 002.
  - UNLESS NOTED OTHERWISE RE-GRADE AND RESTORE EXISTING DRIVEWAYS PER DETAIL ON DWG. GNINT-192 SHT. 001.
  - PROTECT AND REGRADE AROUND EXISTING STREET LIGHTS AS REQUIRED PER DETAIL ON DWG GNINT-192 SHT. 001. PROTECT EXISTING STREET LIGHT CONDUIT AND WIRING. ADJUST EXISTING STREET LIGHT JUNCTION BOXES TO SUIT FINISHED GRADES.



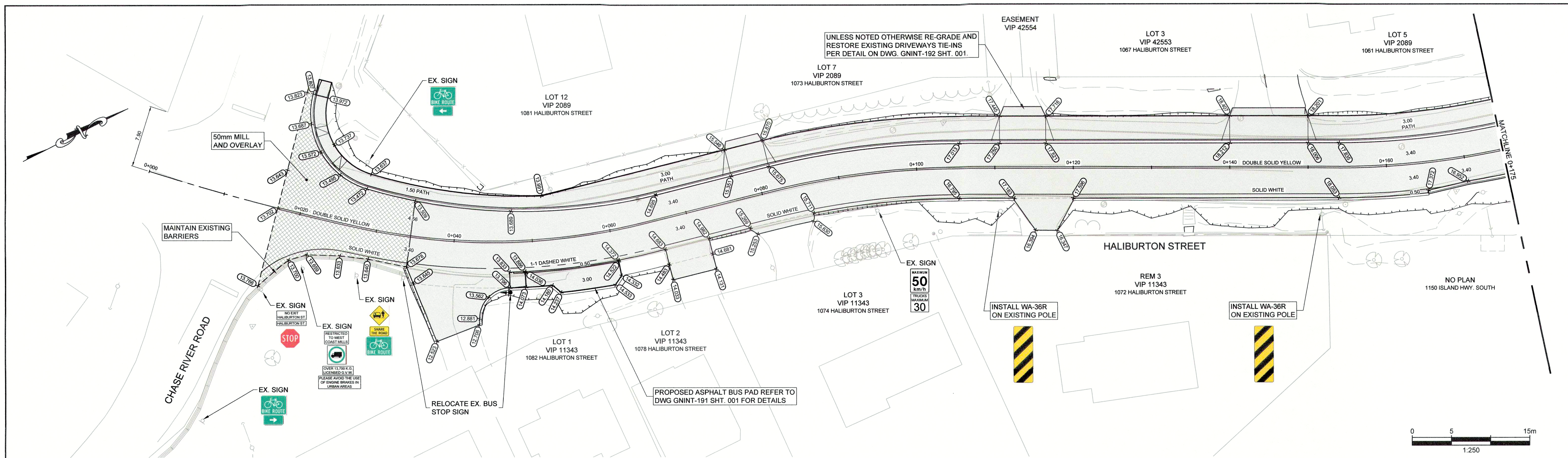
DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	<b>CHASE RIVER HALIBURTON ST. ROAD RESTORATION ROADWORKS AND STORM PLAN/PROFILE STA. 0+545 TO STA. 0+720</b>	
DESIGNED	KP		
CHECKED	SL		
APPROVED	JG	DRAWING NUMBER	GNINT-173
		SHEET	001
		DATE	JAN 07, 2018
		SCALE	H 1:250 V 1:50
		REV	0

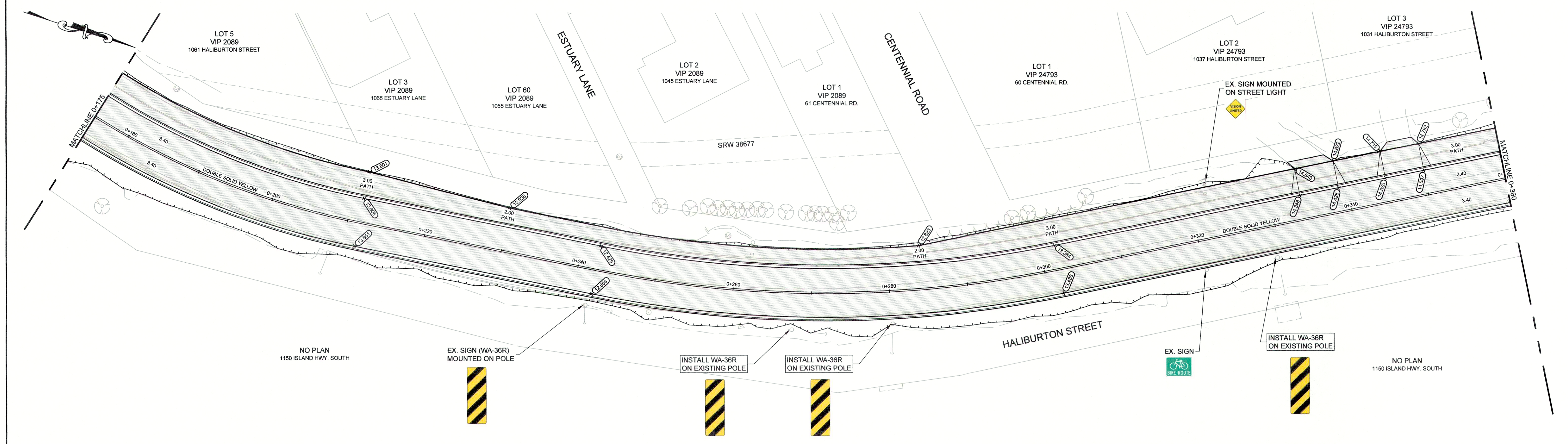




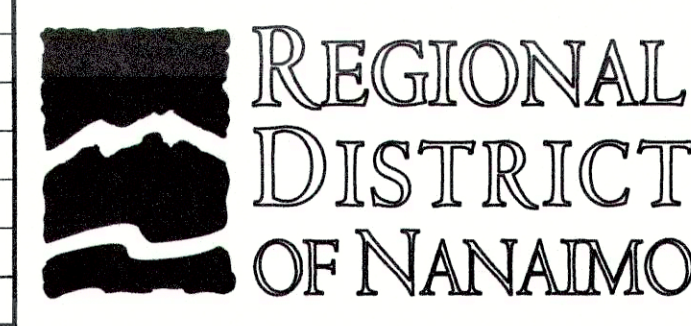


**NOTES:**

1. REINSTATE ALL EXISTING SIGNS UNLESS NOTED OTHERWISE.
2. ALL SIGNAGE TO BE INSTALLED PER CITY OF NANAIMO STANDARD DETAILS R-S1 THROUGH R-S8 INCLUSIVE.



DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
				REVISIONS			

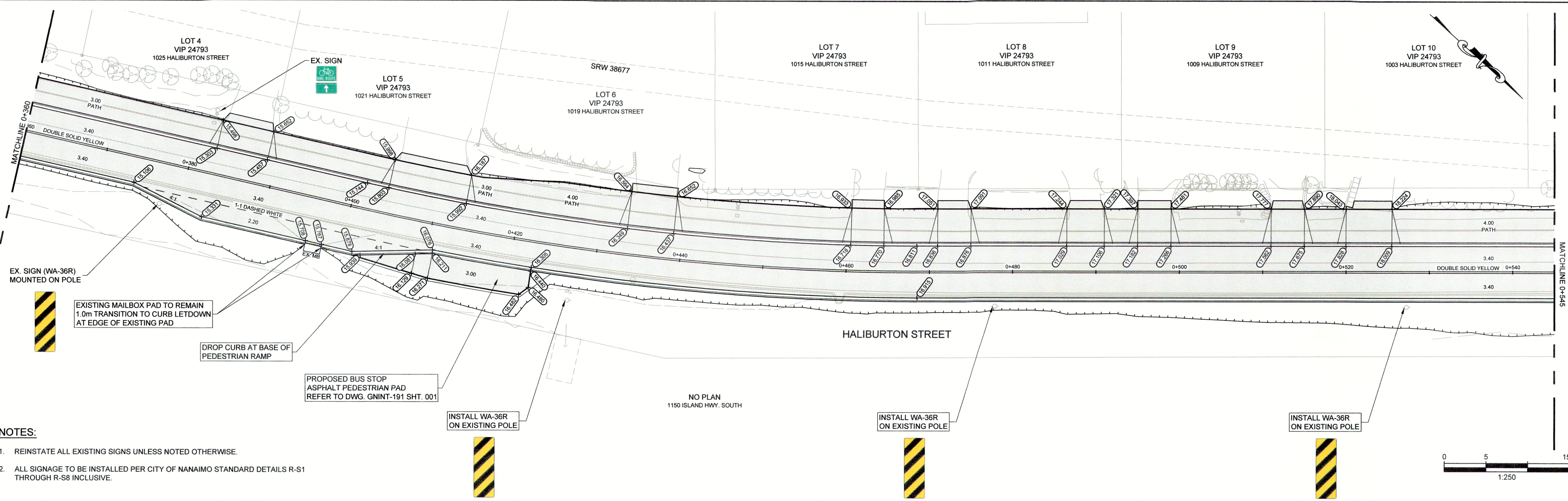


PROFESSIONAL  
S.G.I.  
# 2279  
Apr 23, 2019

PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	HALIBURTON ST. ROAD RESTORATION SIGNAGE, PAVEMENT MARKINGS AND SPOT ELEVATIONS	
DESIGNED	KP	STA. 0+000 TO STA. 0+360	
CHECKED	SL	DRAWING NUMBER	GNINT-180
APPROVED	JG	SHEET	001
		PROJECT NO.	707564
		SCALE	H 1:250 V 1:50
		DATE	JAN 07, 2018
		REV	0

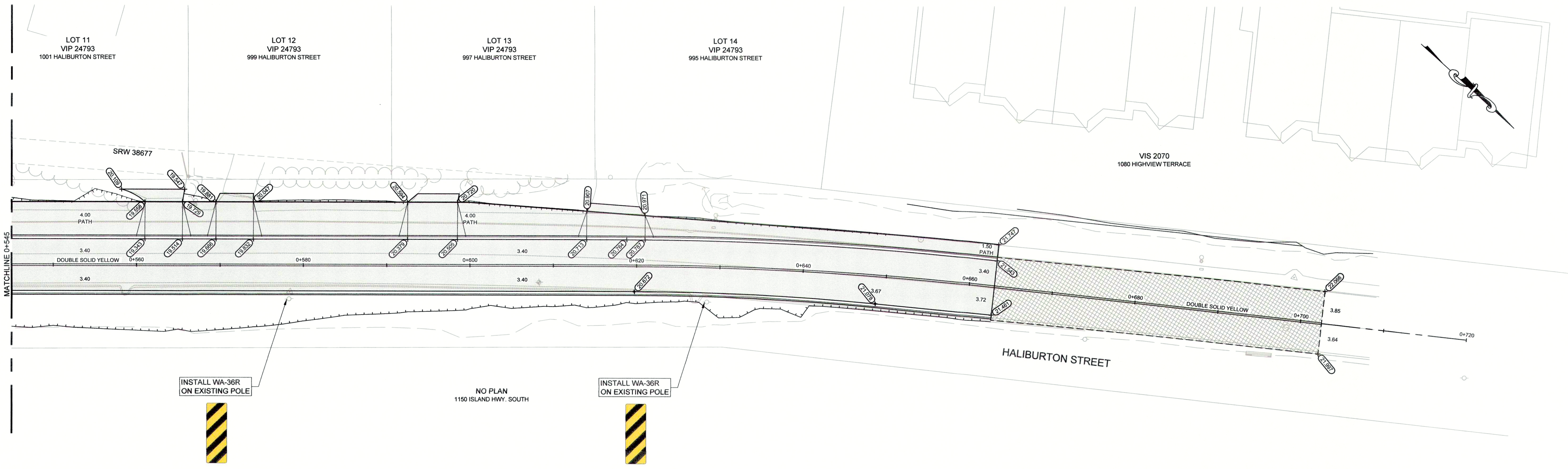






**NOTES:**

1. REINSTATE ALL EXISTING SIGNS UNLESS NOTED OTHERWISE.
2. ALL SIGNAGE TO BE INSTALLED PER CITY OF NANAIMO STANDARD DETAILS R-S1 THROUGH R-S8 INCLUSIVE.



DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
				REVISIONS			



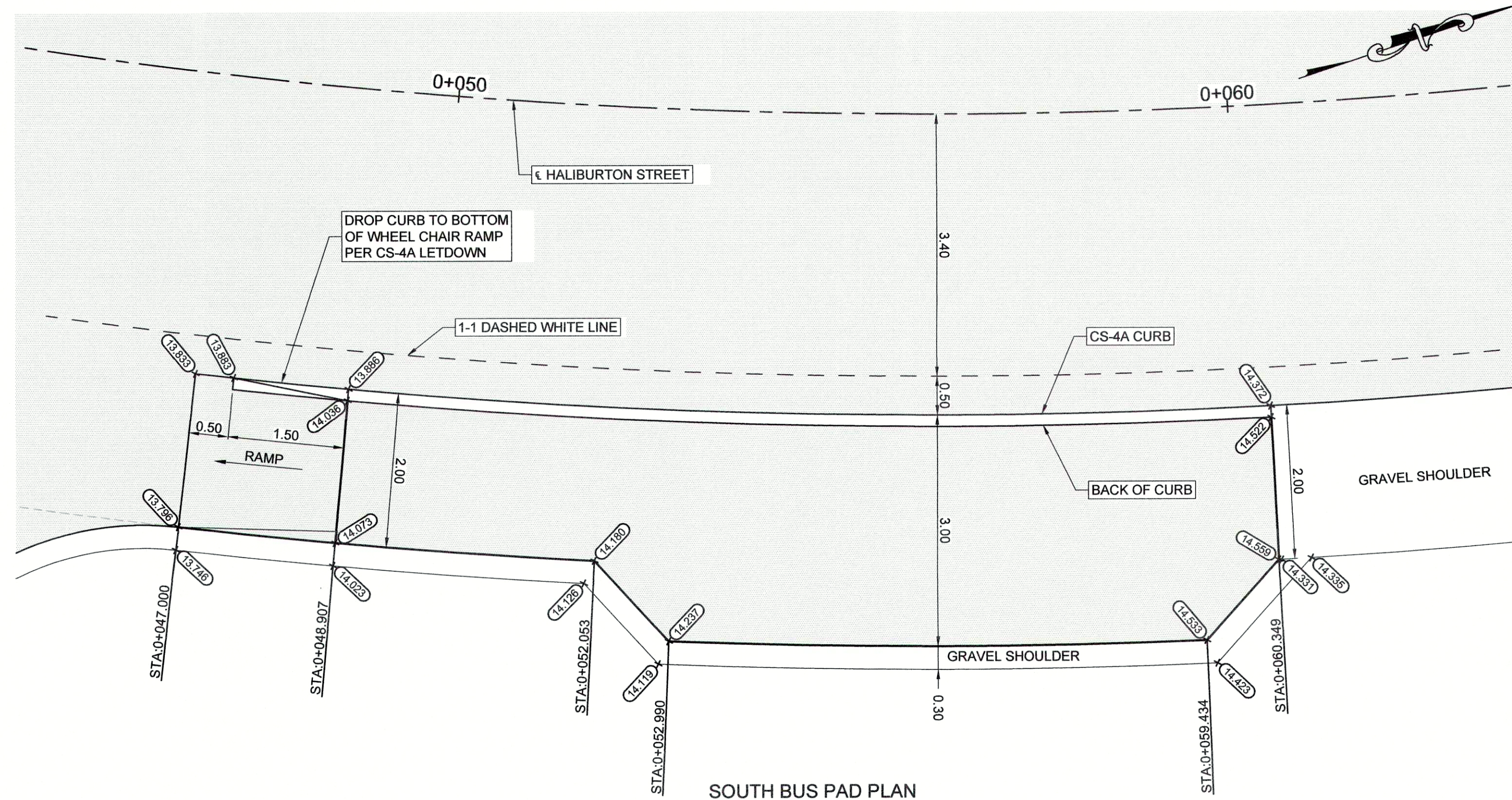
PROFESSIONAL ENGINEER  
 S X G U  
 # 22103  
 C. BENTON  
 Apr 22, 2019

PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES					
DRAWN KP	<b>HALIBURTON ST. ROAD RESTORATION          SIGNAGE, PAVEMENT MARKINGS AND          SPOT ELEVATIONS</b> STA. 0+360 TO STA. 0+720				
DESIGNED KP					
CHECKED SL				PROJECT NO. 707564	SCALE H 1:250 V 1:50
APPROVED JG				DRAWING NUMBER GNINT-181	SHEET 001
		DATE JAN 07, 2018	REV 0		

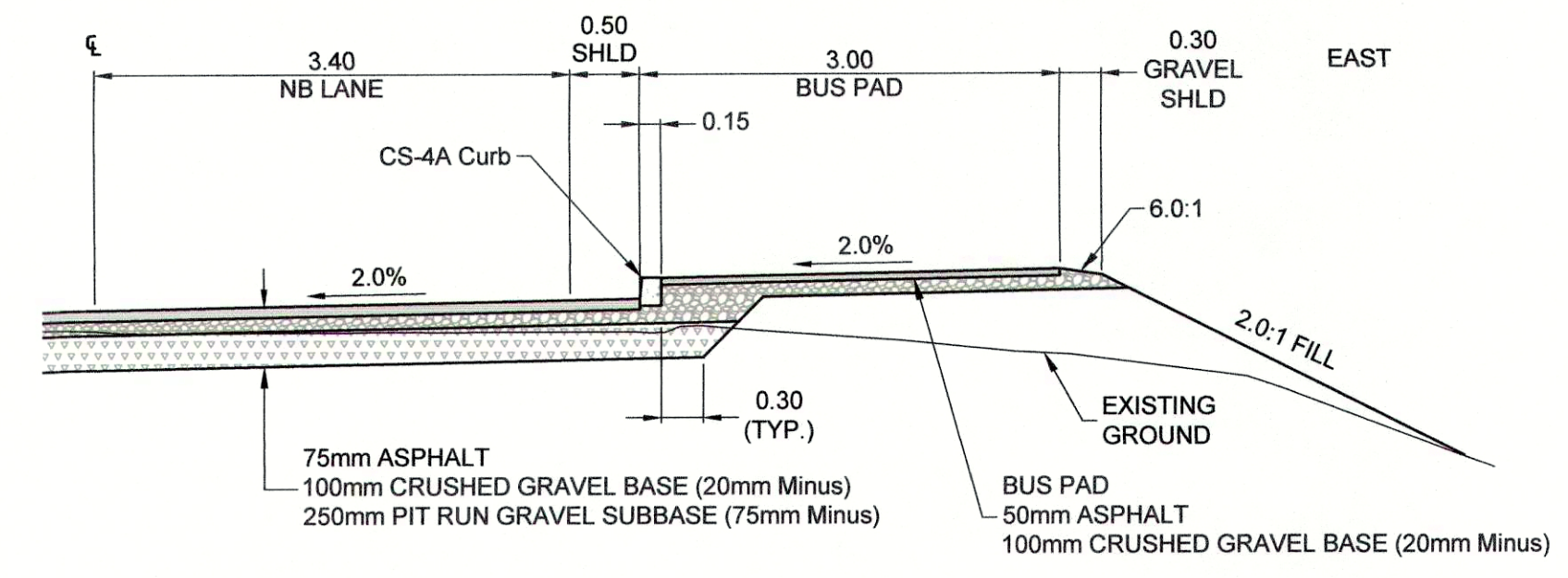




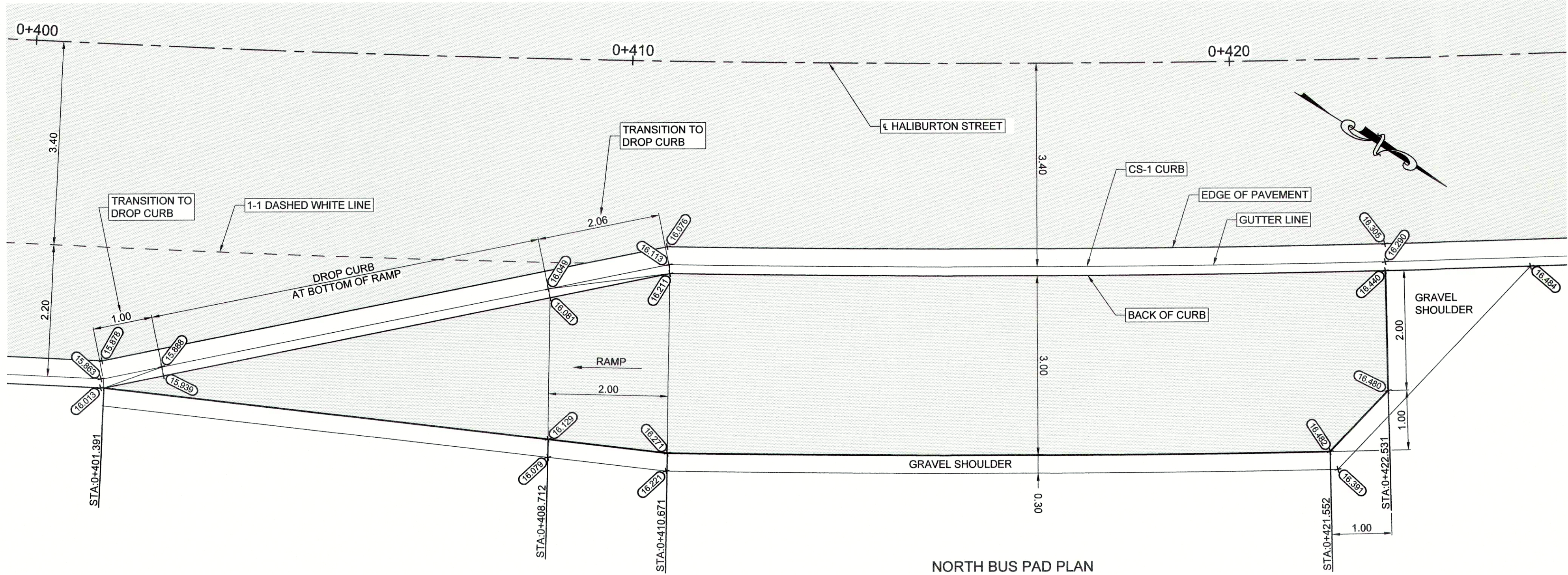




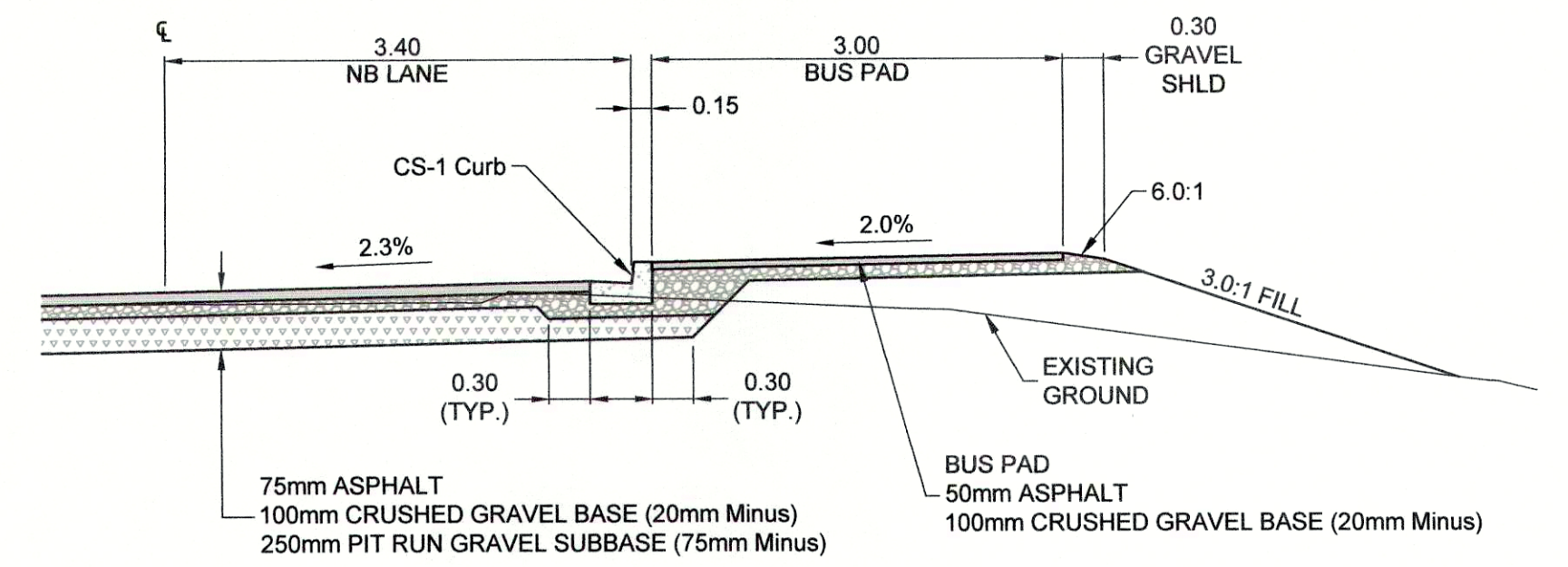
SOUTH BUS PAD PLAN



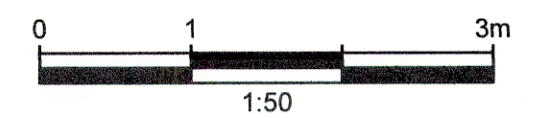
SOUTH BUS PAD SECTION  
STA. 0+055.000



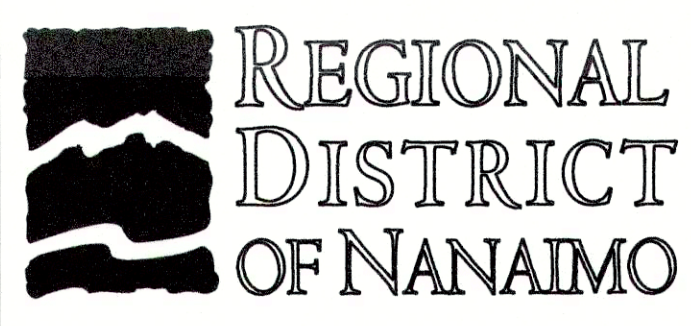
NORTH BUS PAD PLAN



NORTH BUS PAD SECTION  
STA. 0+420.000



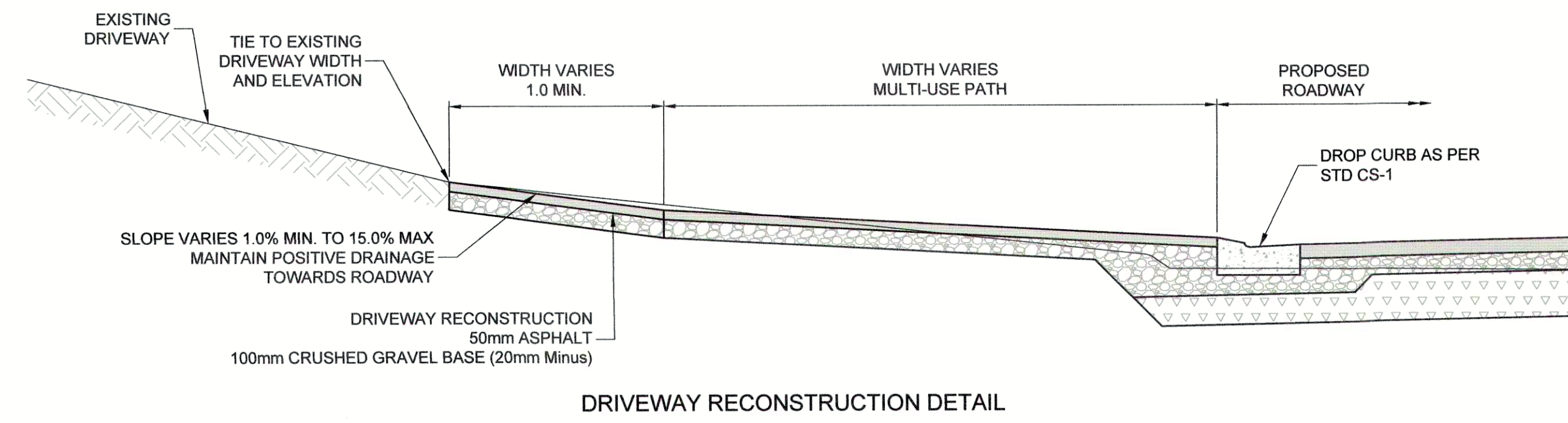
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG



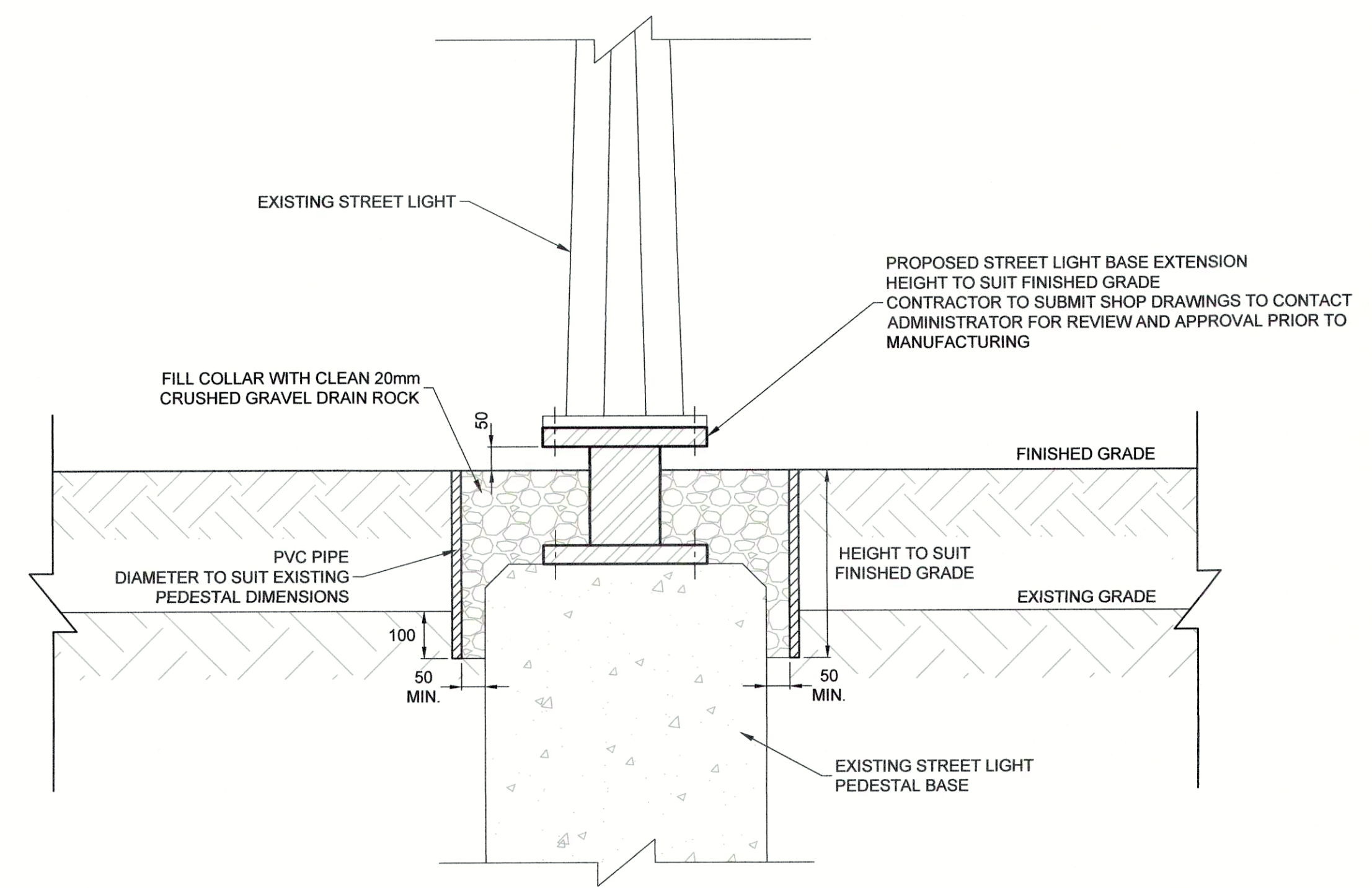
PROFESSIONAL  
S. X. G. I.  
# 22765  
18th 23, 2019

PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		PROJECT NO. 707564		SCALE AS SPECIFIED	
DRAWN KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	JACOBS		DATE JAN 07, 2018	REV 0
DESIGNED KP					
CHECKED SL	BUS PAD DETAILS				
APPROVED JG	DRAWING NUMBER GNINT-191	SHEET 001			

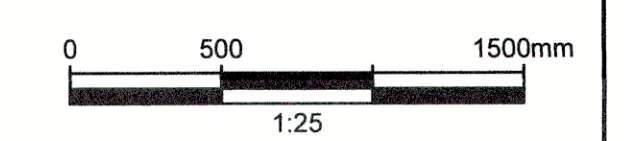




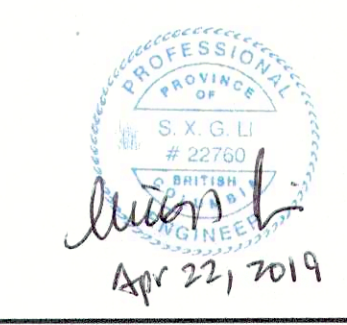
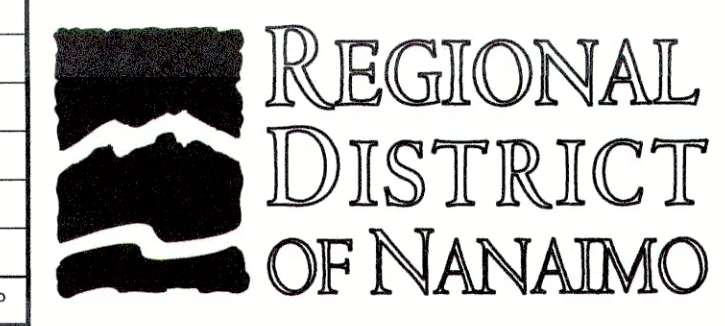
DRIVEWAY RECONSTRUCTION DETAIL



STREET LIGHT GRADE COLLAR DETAIL

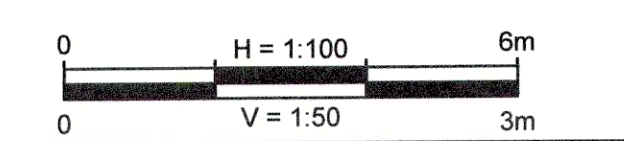
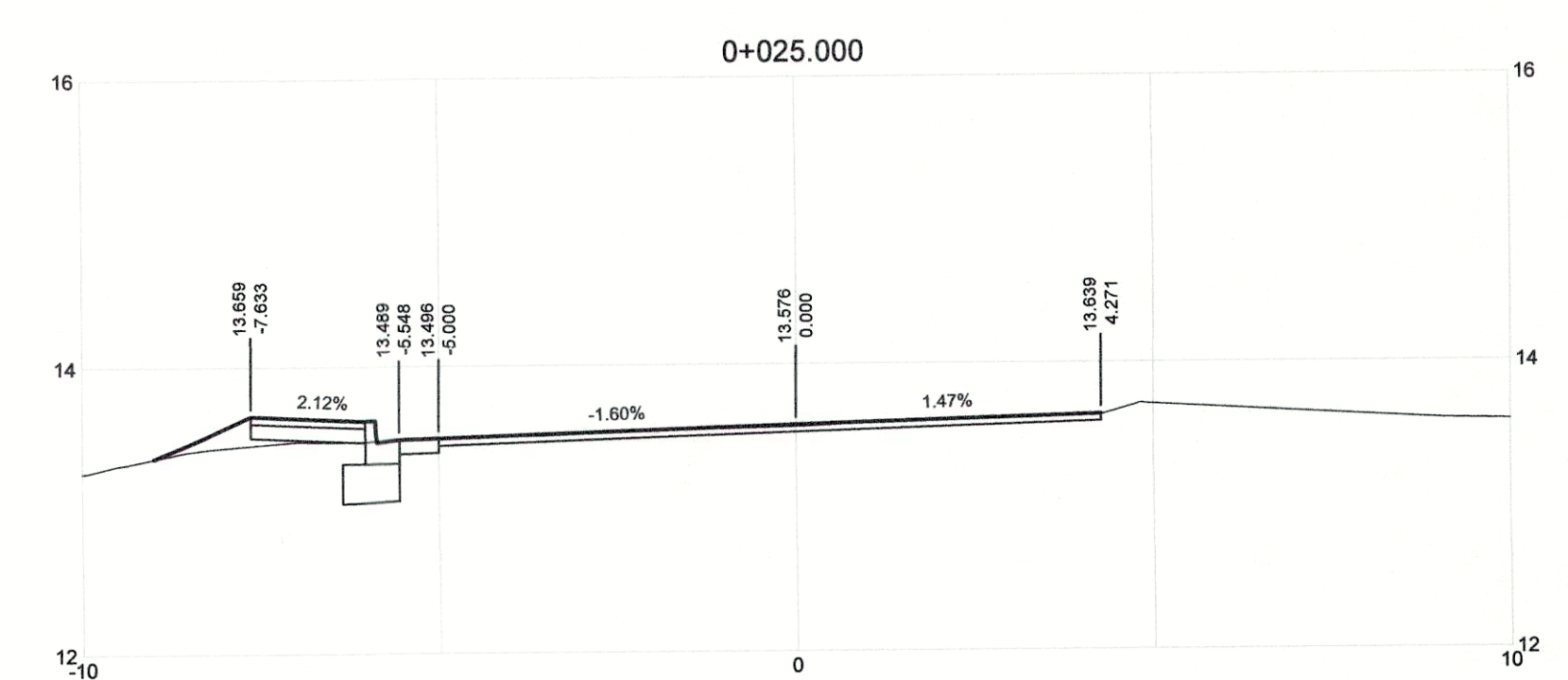
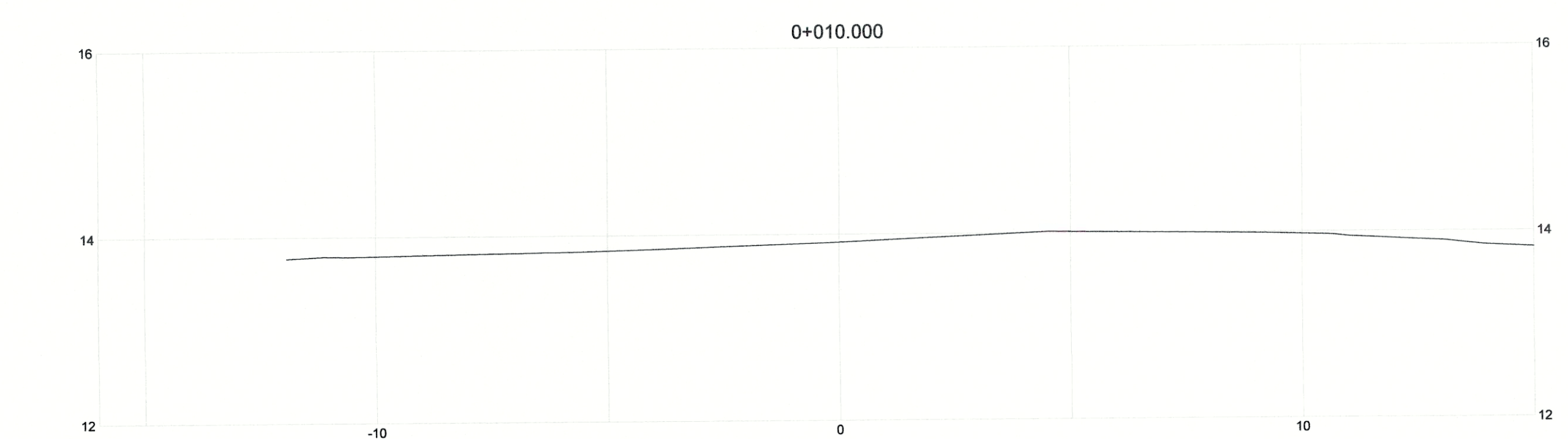
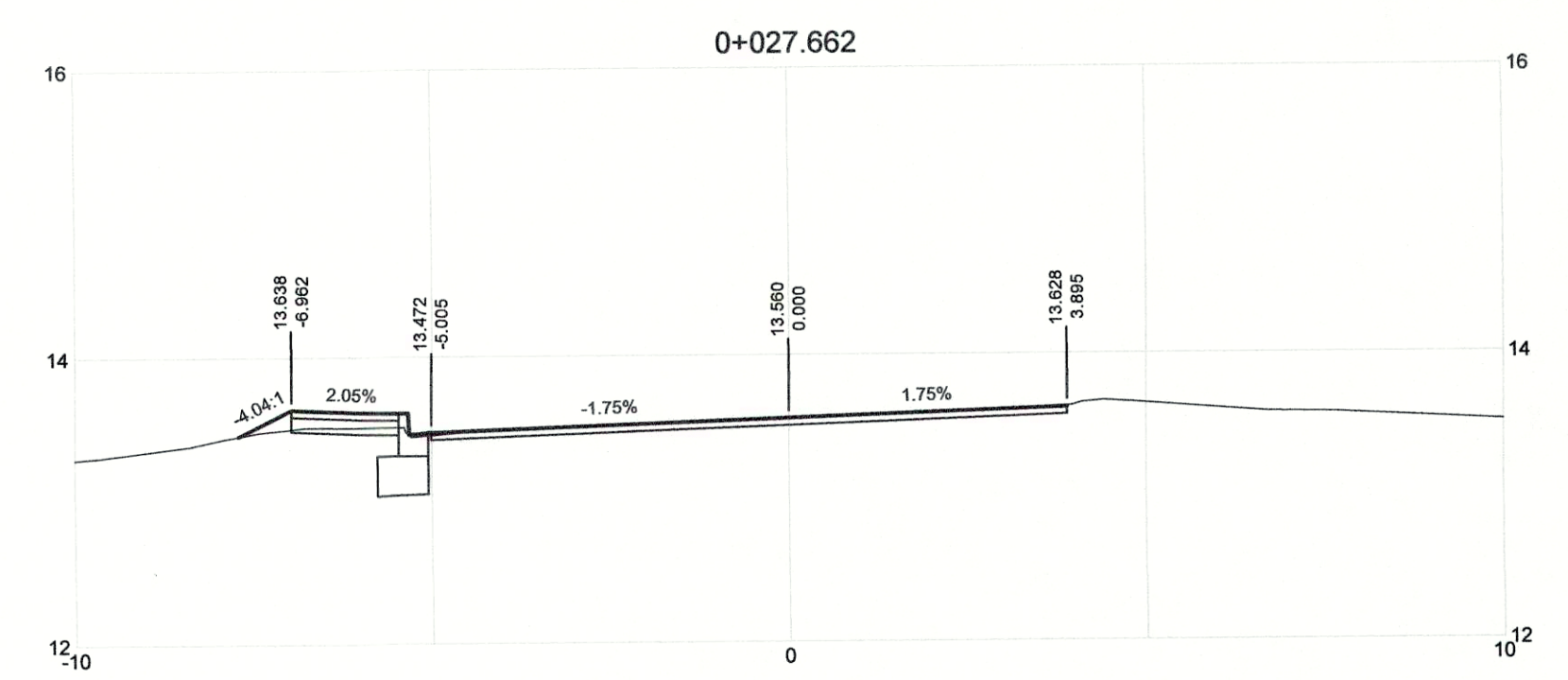
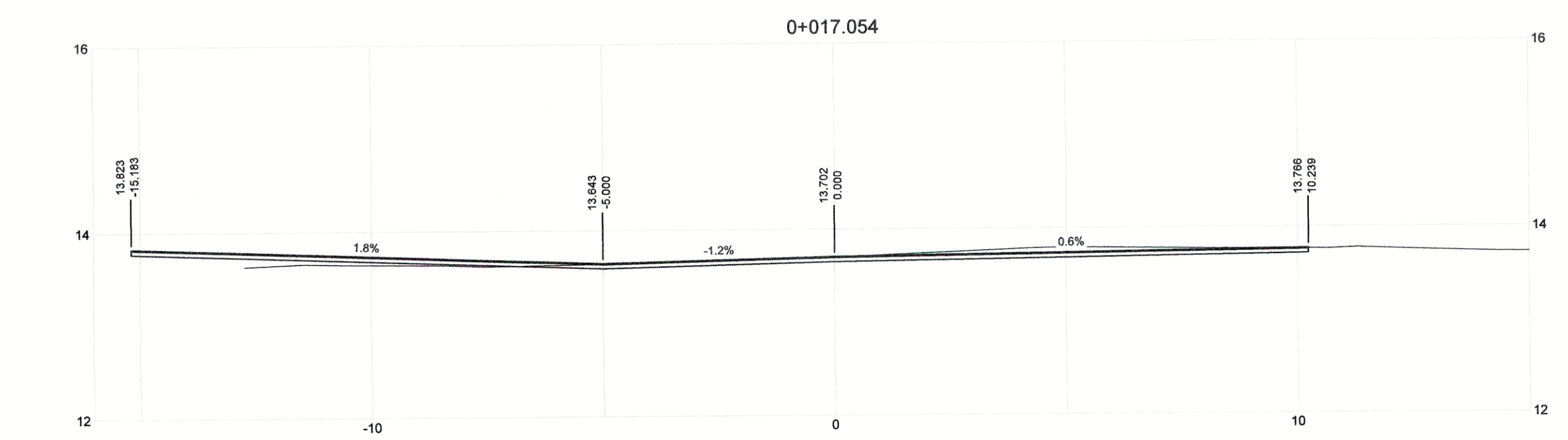
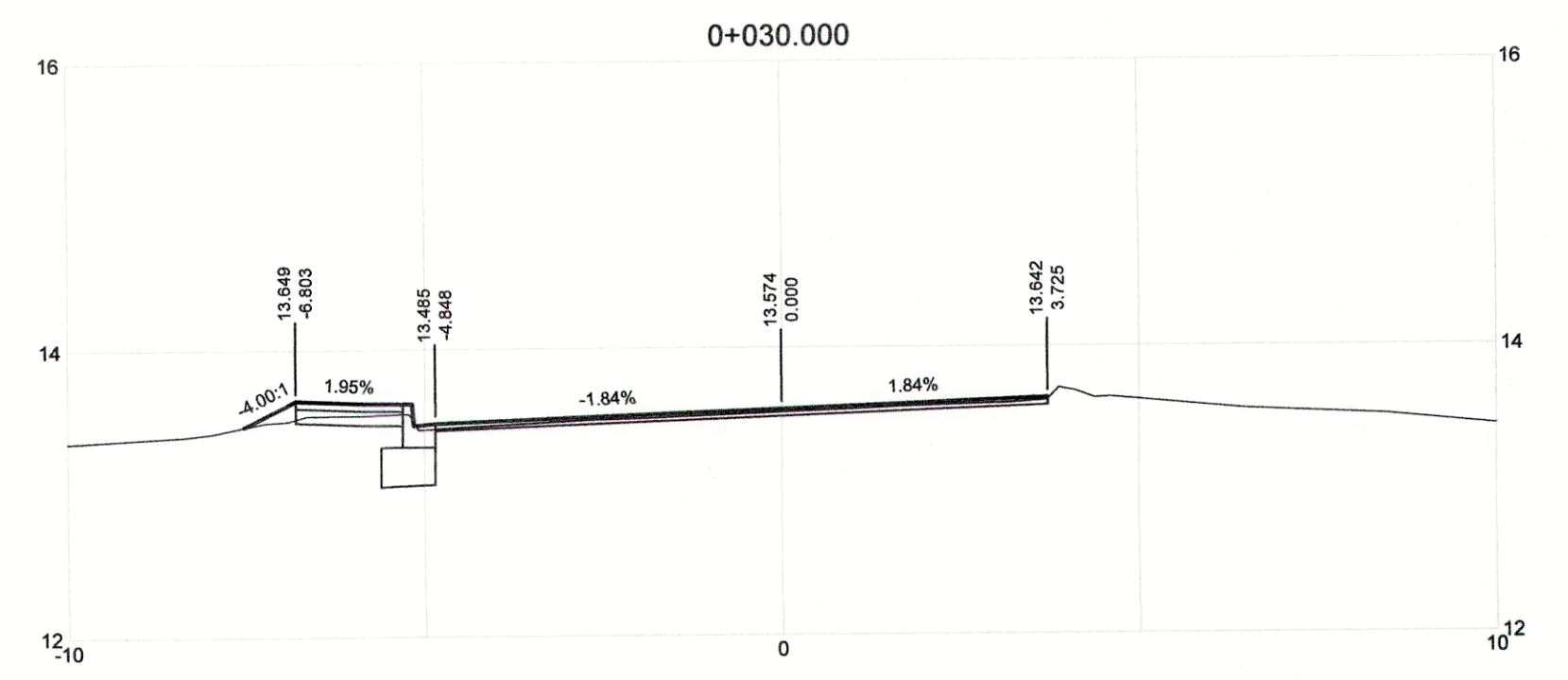
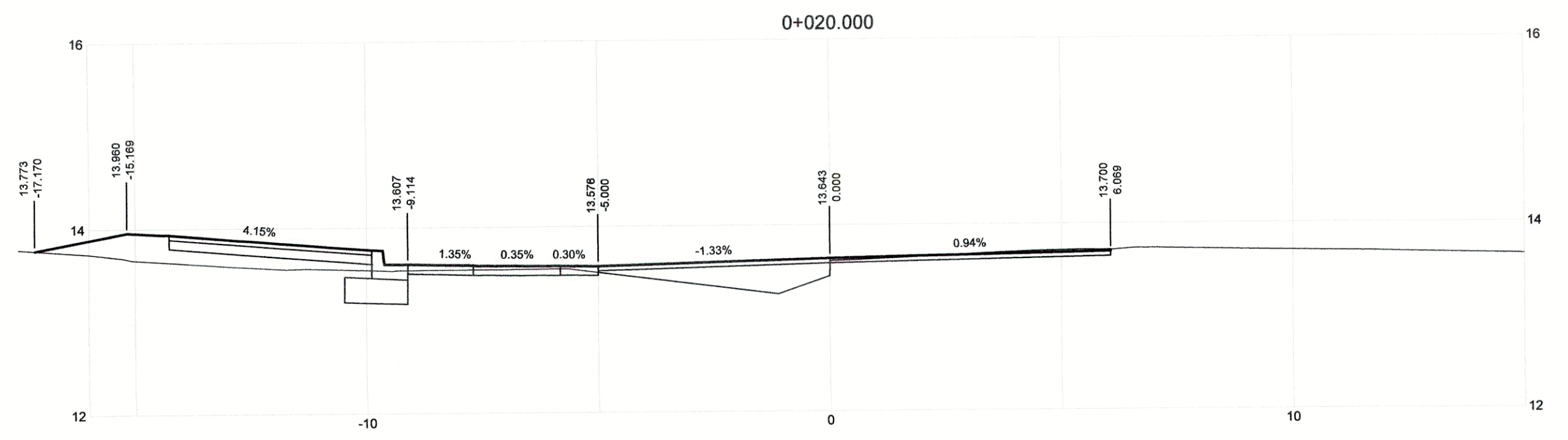
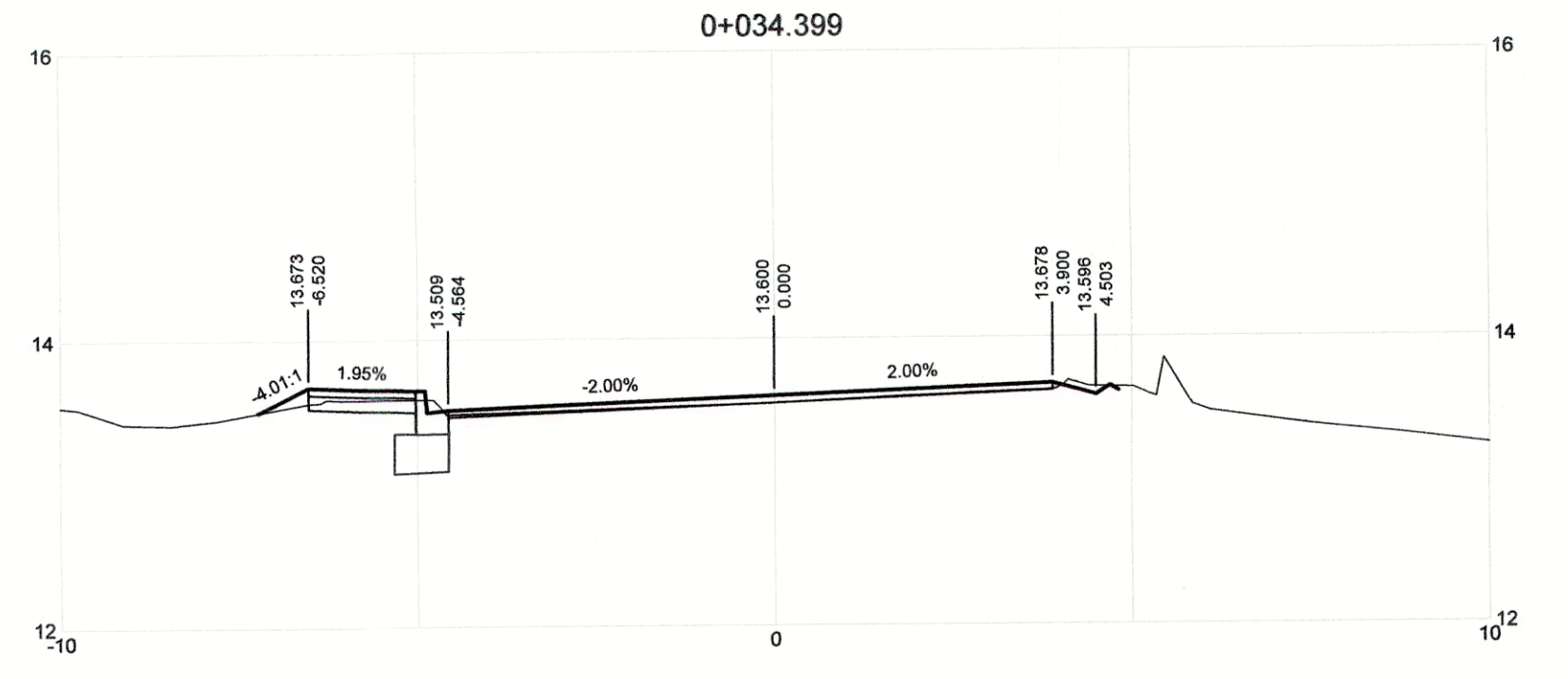
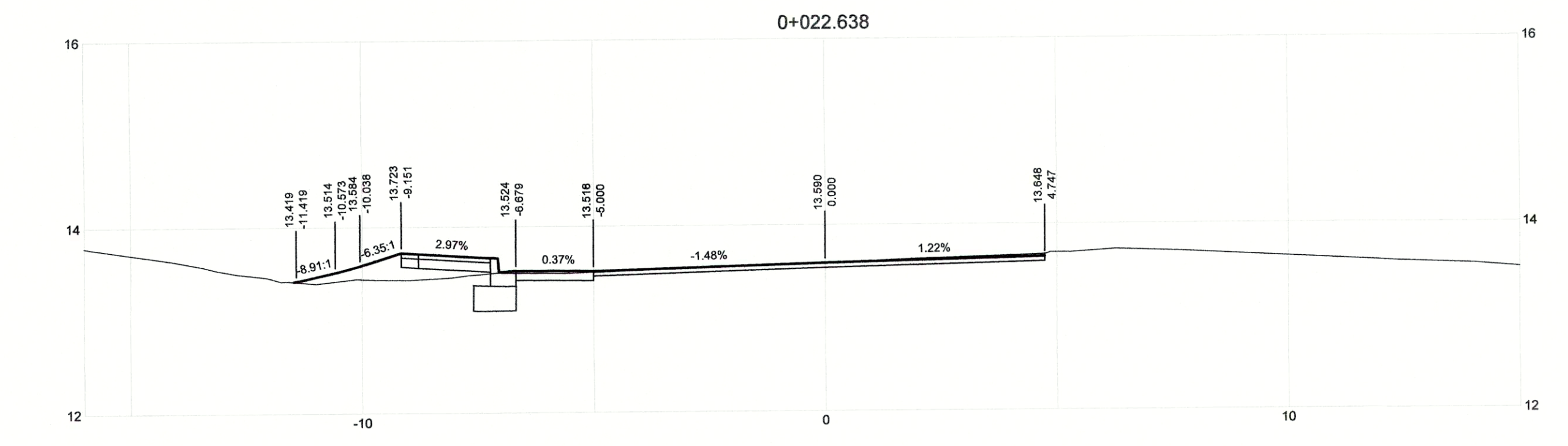


DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
				REVISIONS			

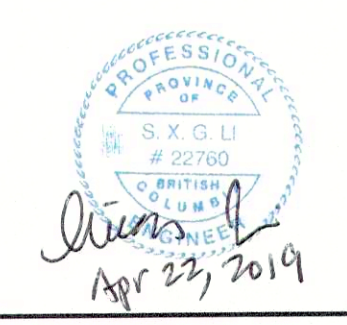
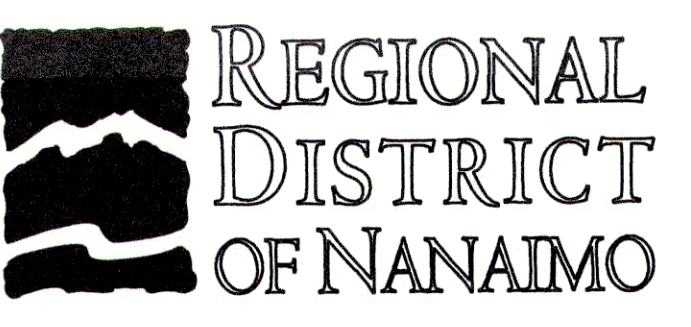


PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	<b>JACOBS</b>
DESIGNED	KP		
CHECKED	SL	TYPICAL DETAILS	PROJECT NO. 707564
APPROVED	JG	DRAWING NUMBER GNINT-192	SCALE AS SPECIFIED
		SHEET 001	DATE JAN 07, 2018
			REV 0





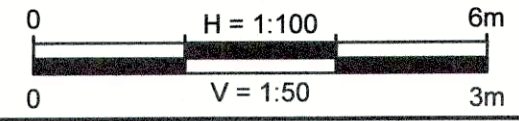
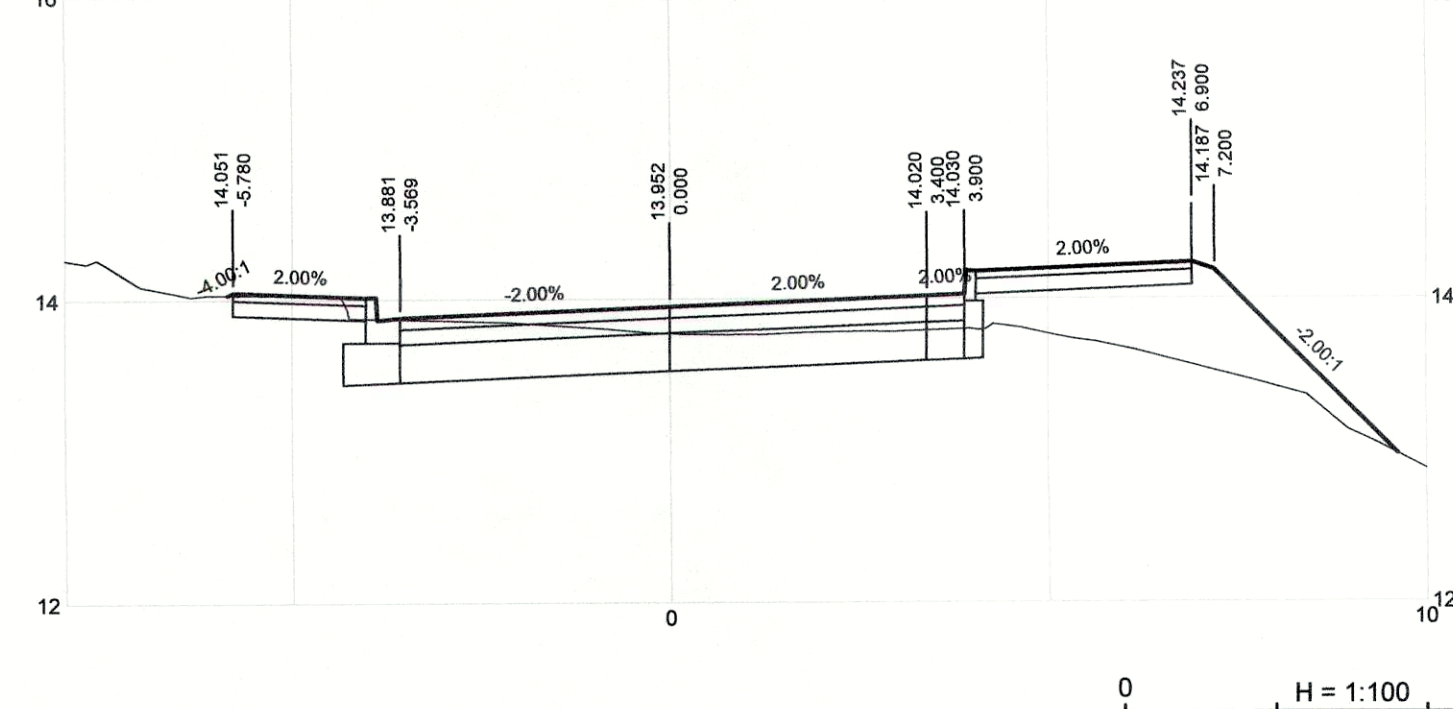
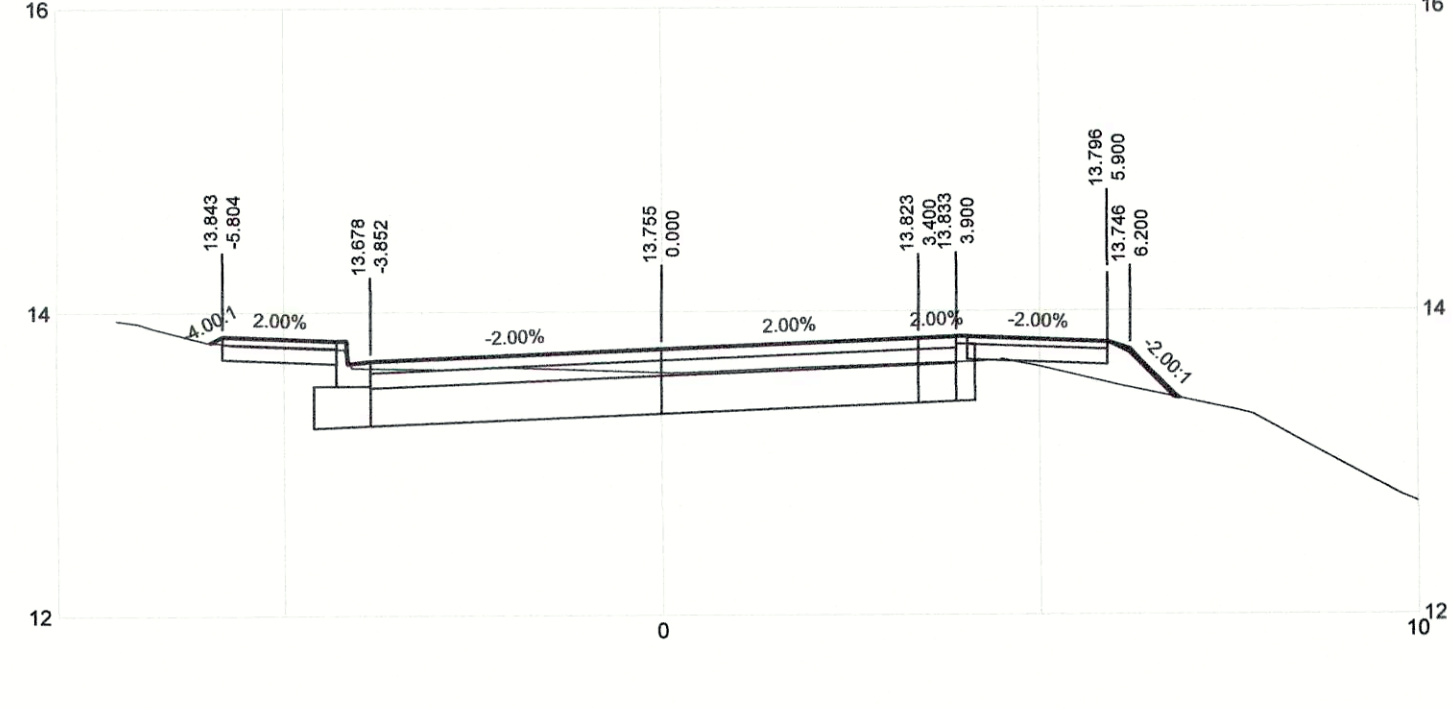
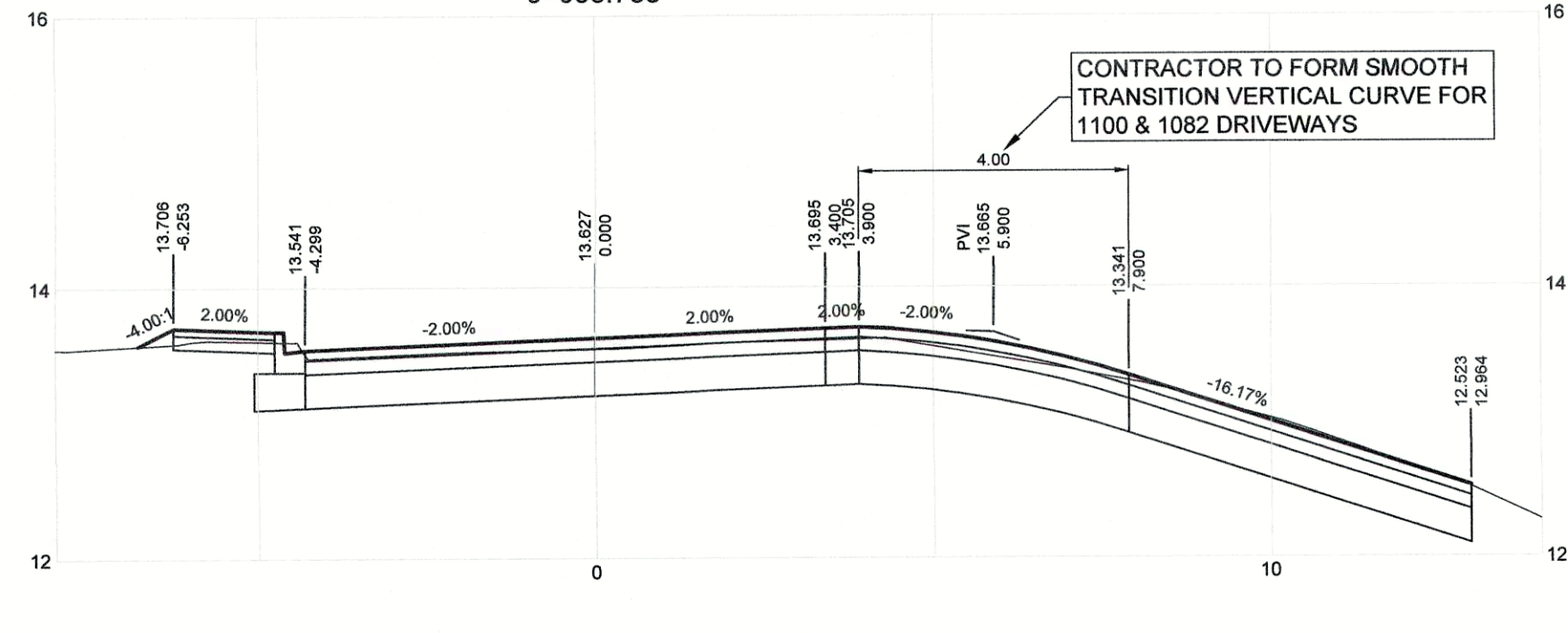
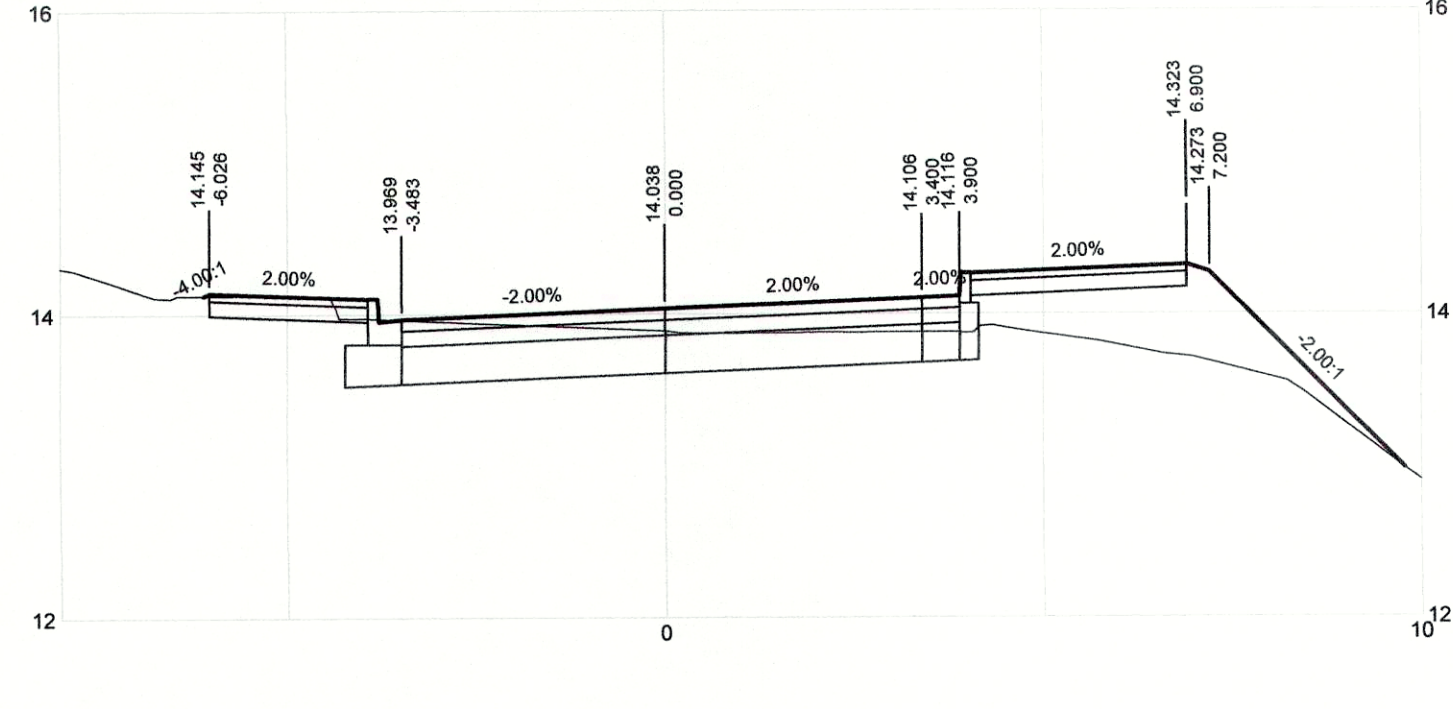
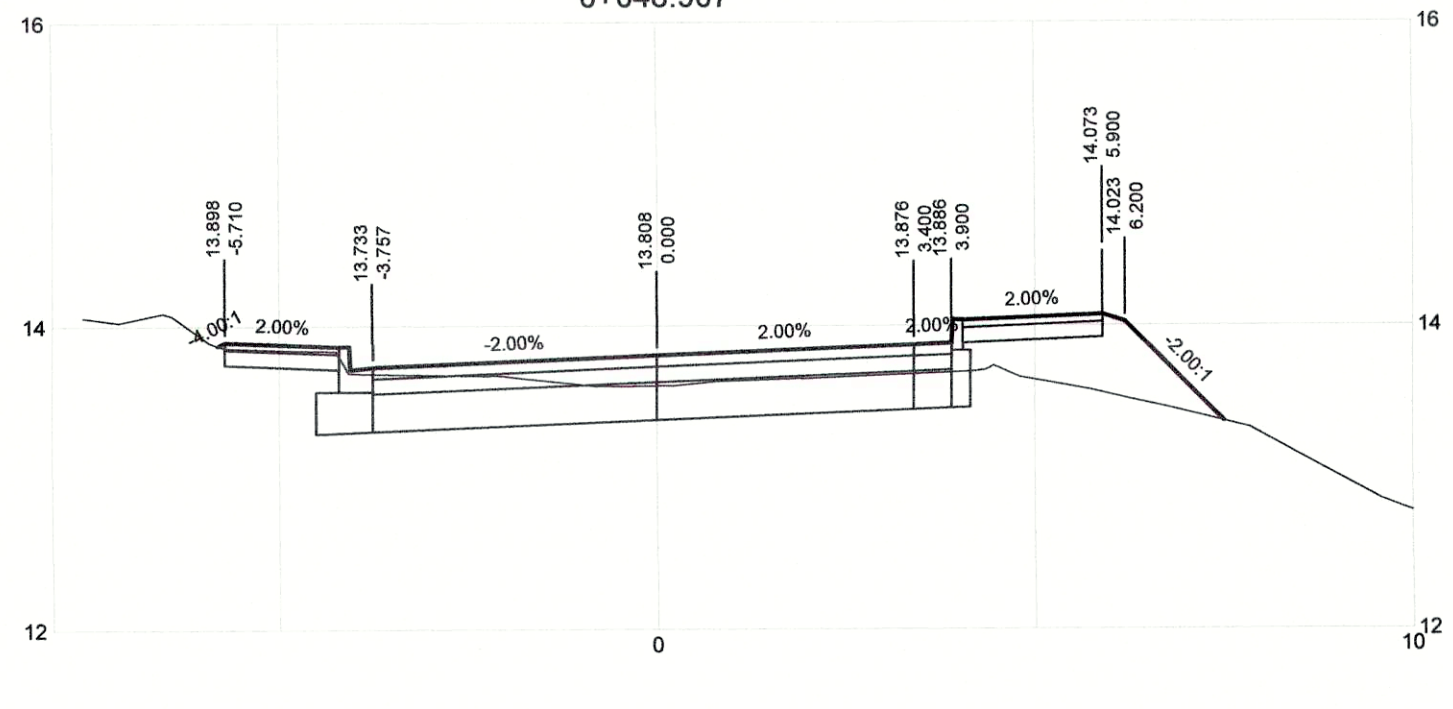
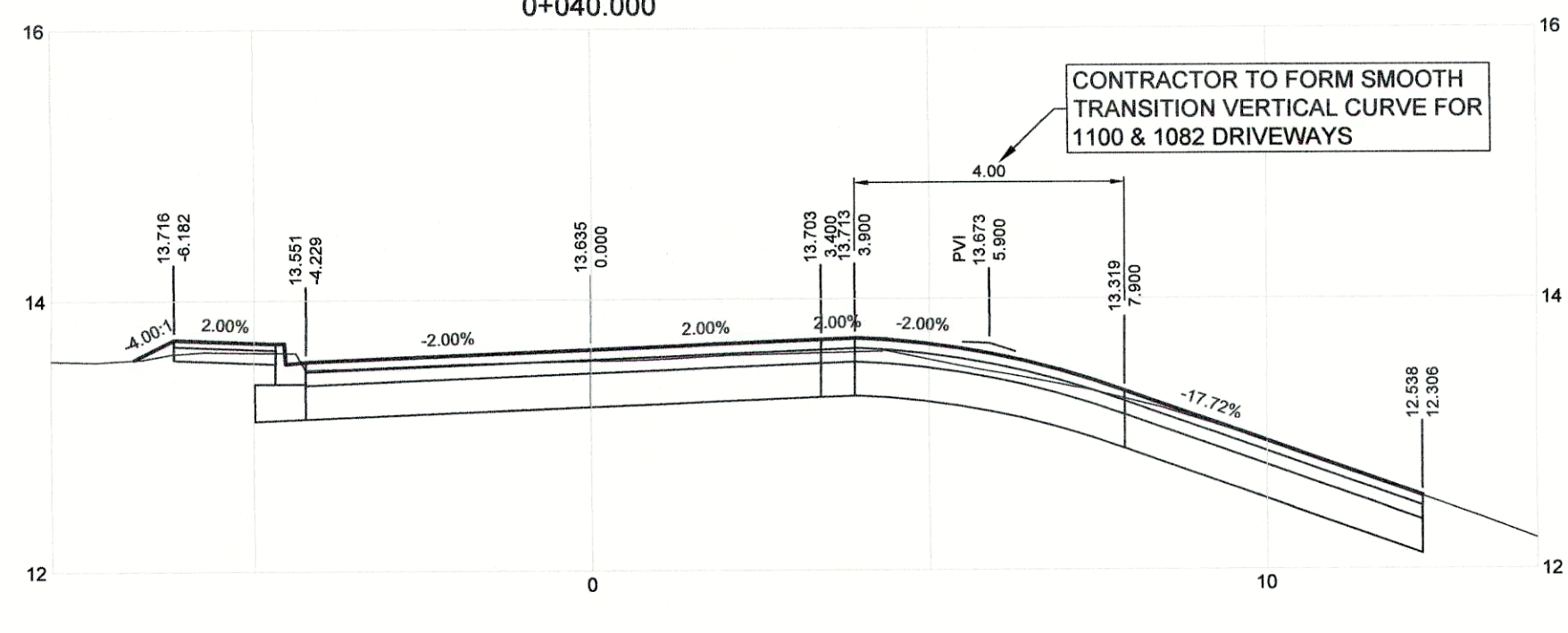
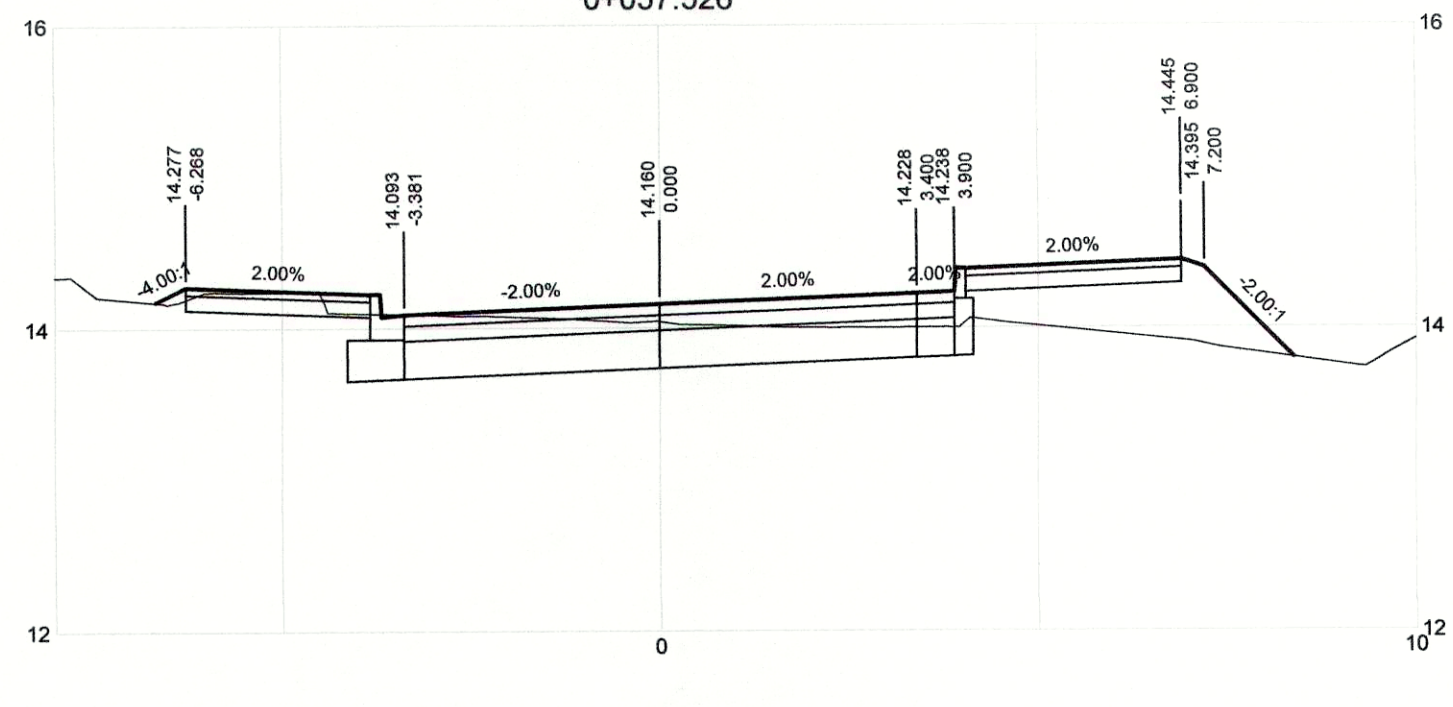
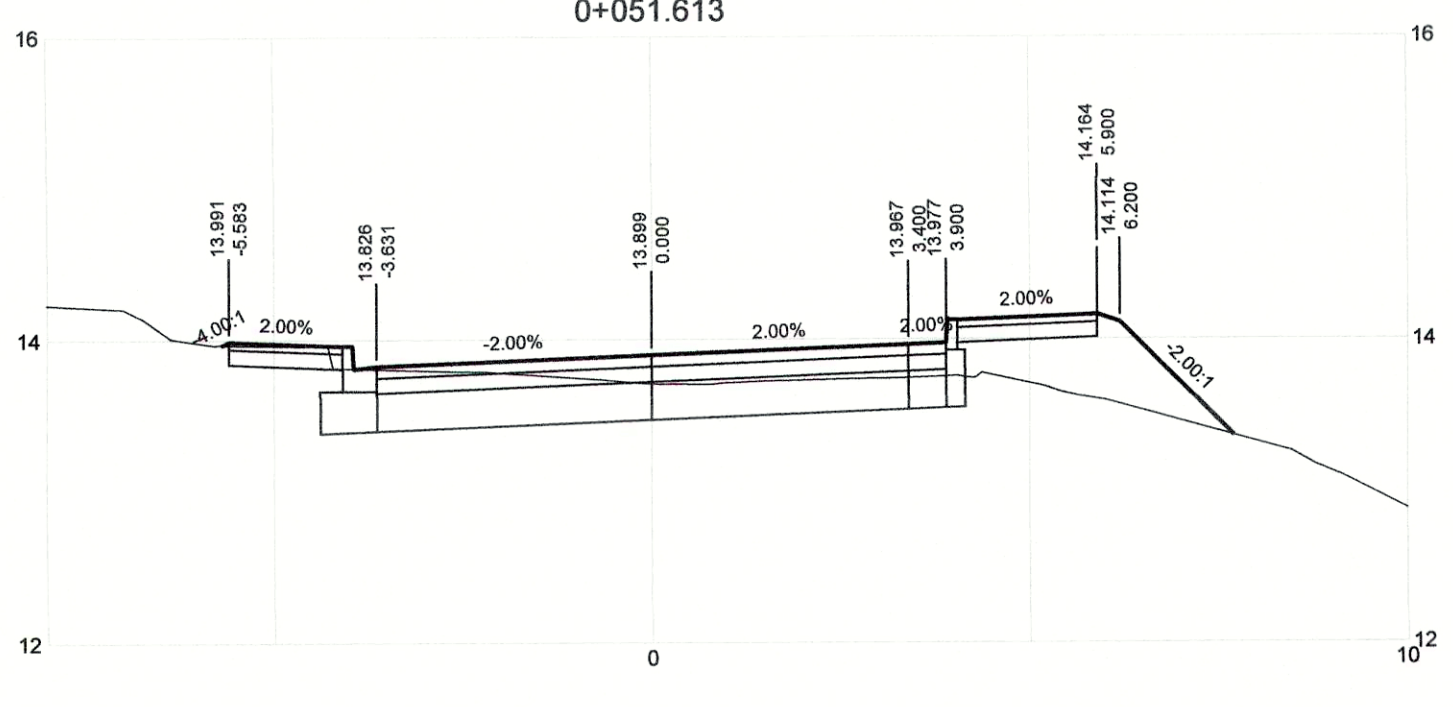
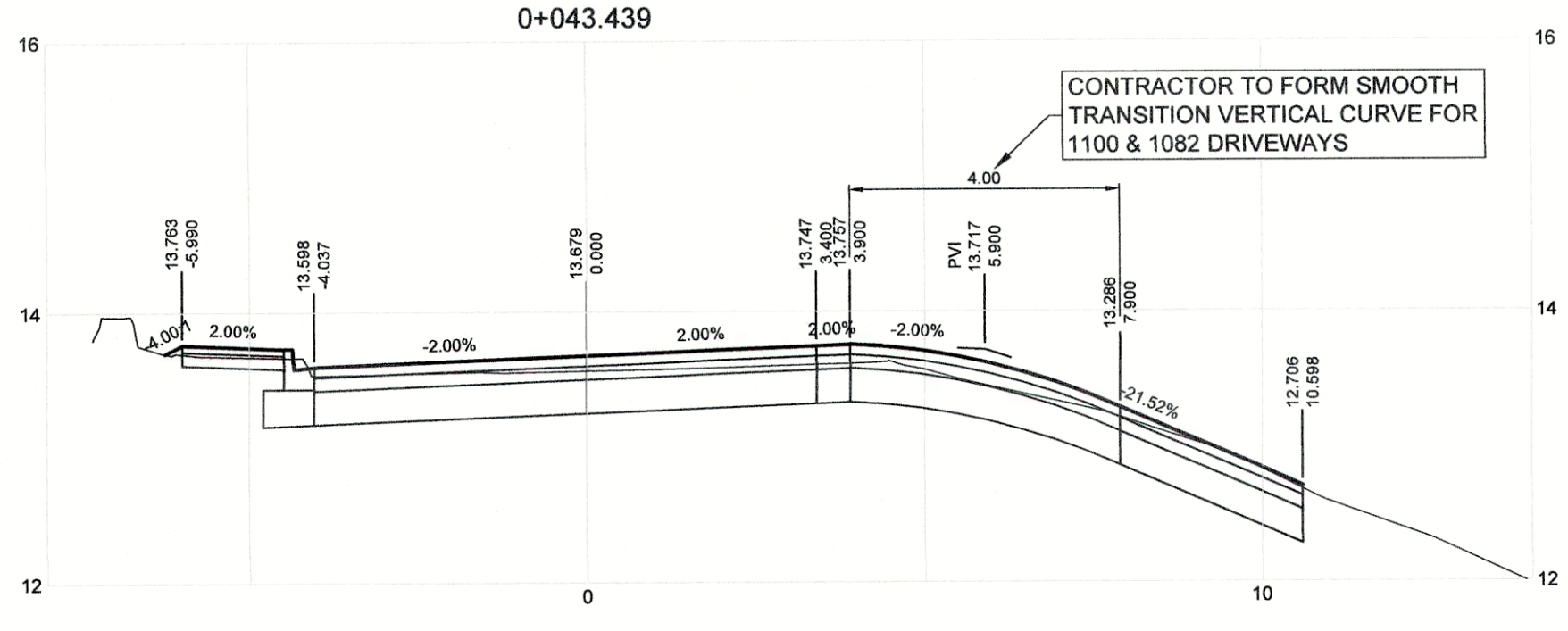
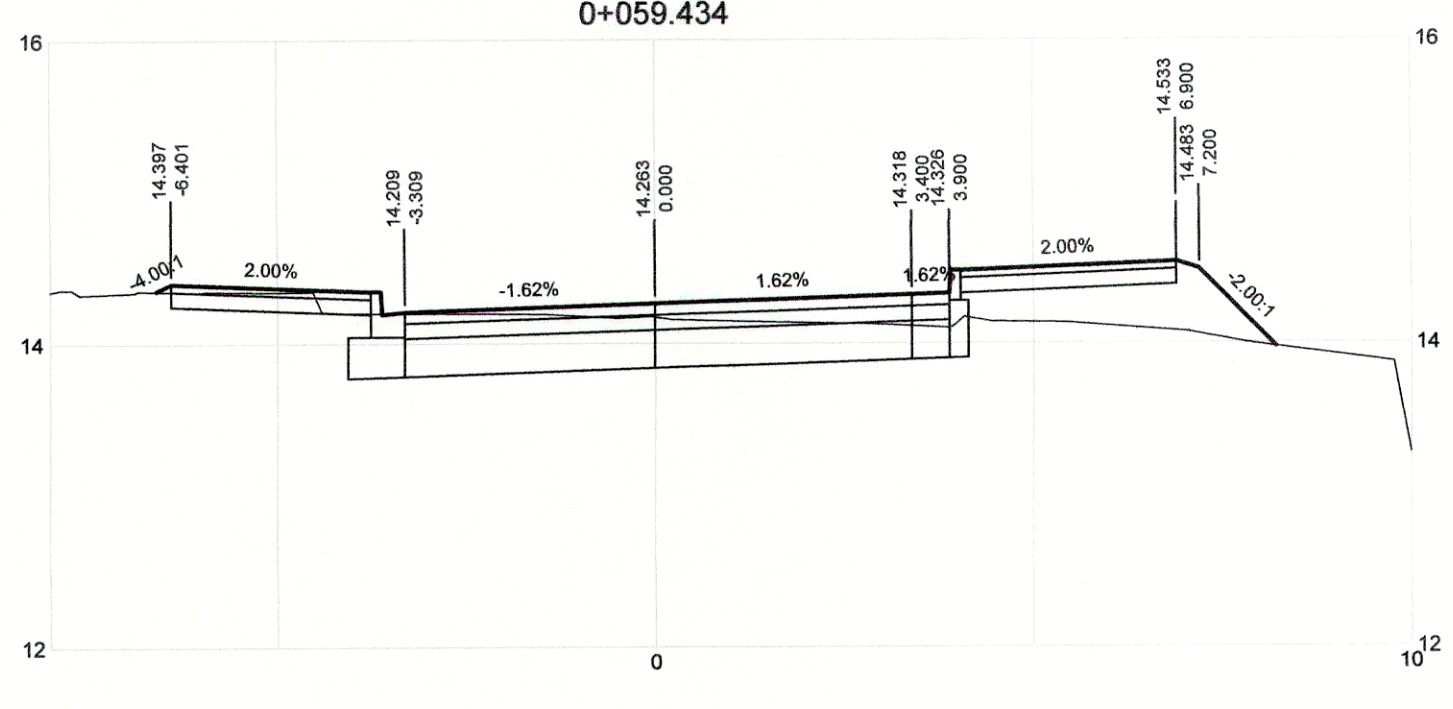
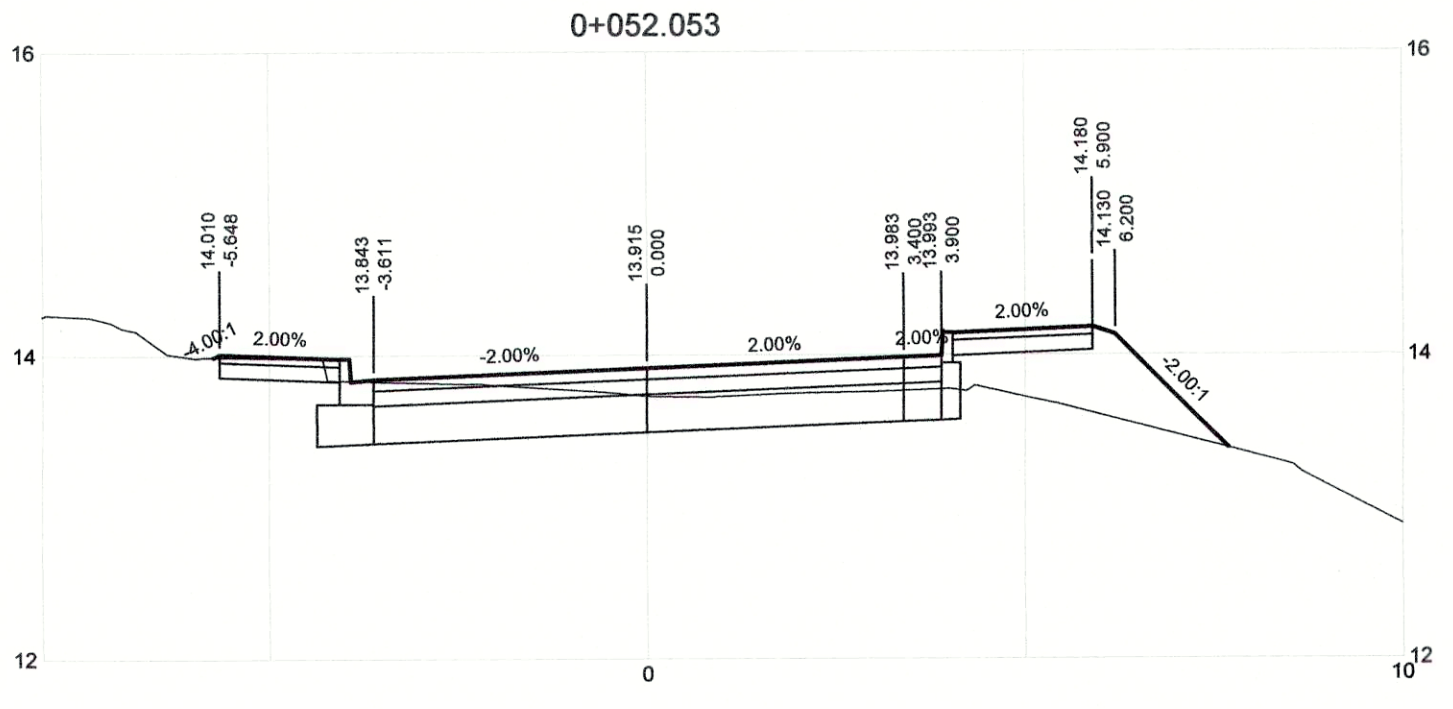
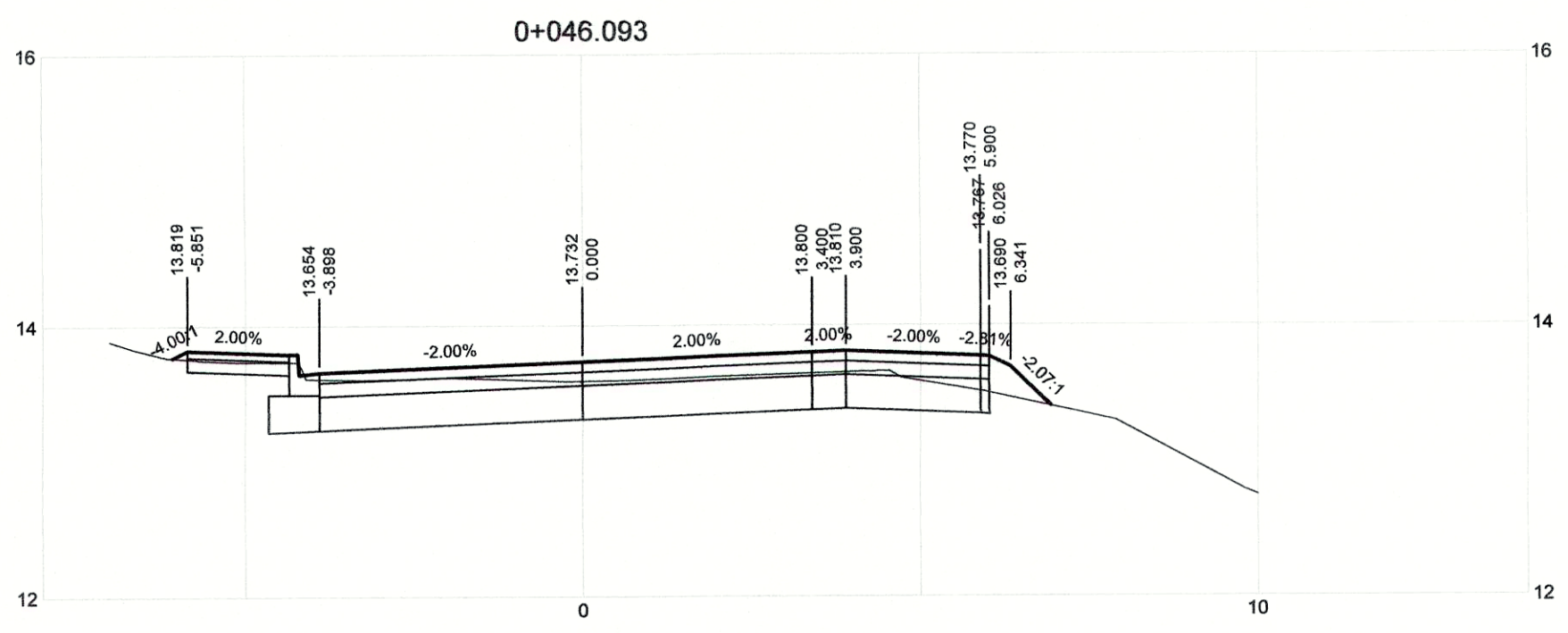
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG



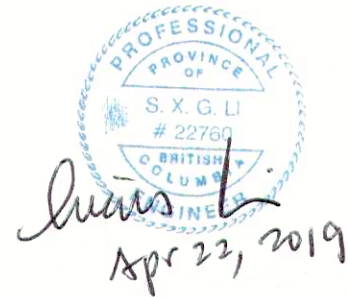
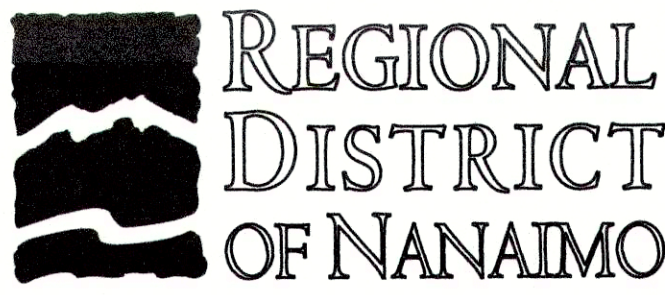
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		PROJECT NO. 707564		SCALE H 1:100 V 1:50	
DRAWN KP	DESIGNED KP	CHECKED SL	APPROVED JG	DRAWING NUMBER GNINT-200	SHEET 001
CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+000 TO STA. 0+034.400				DATE JAN 07, 2018	REV 0





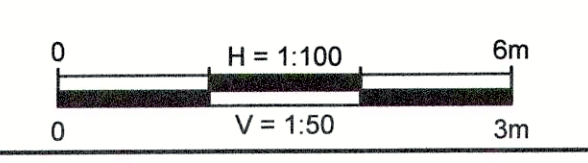
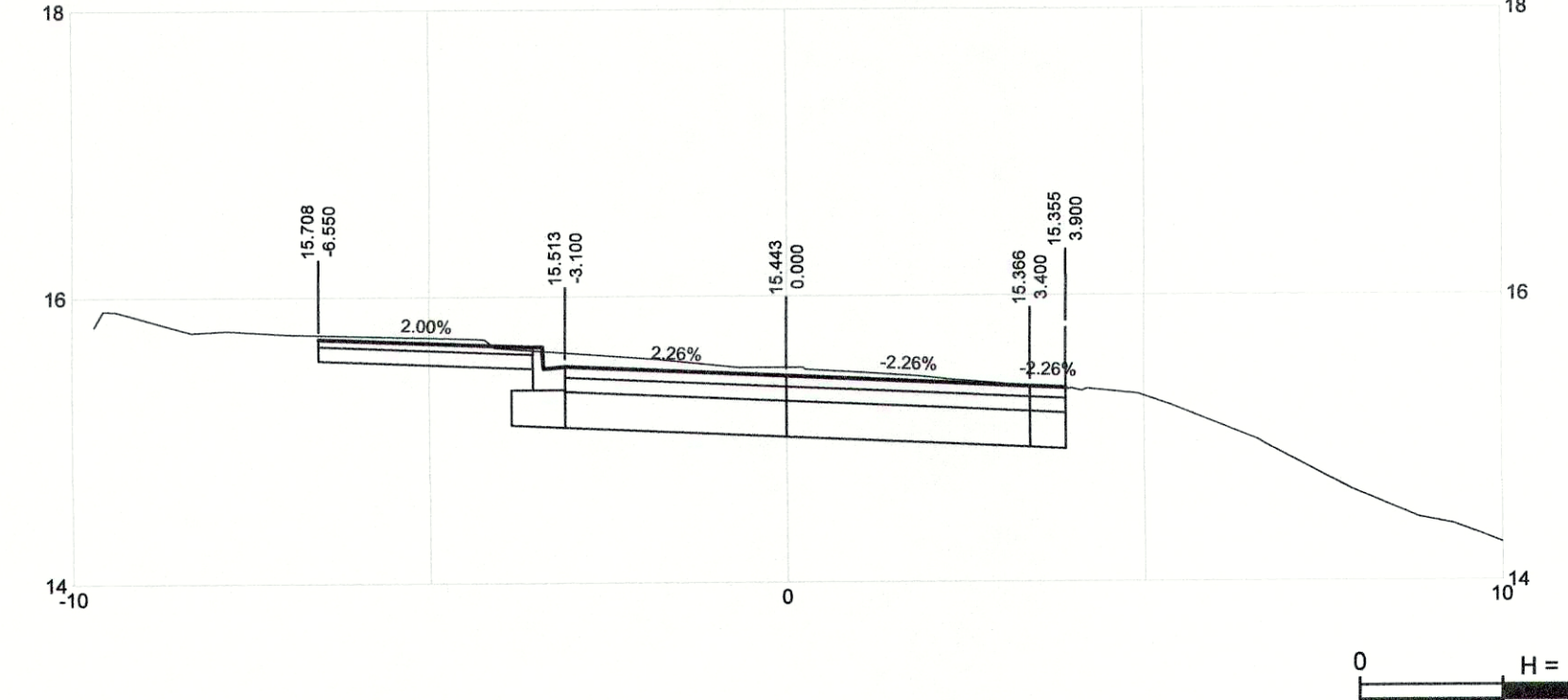
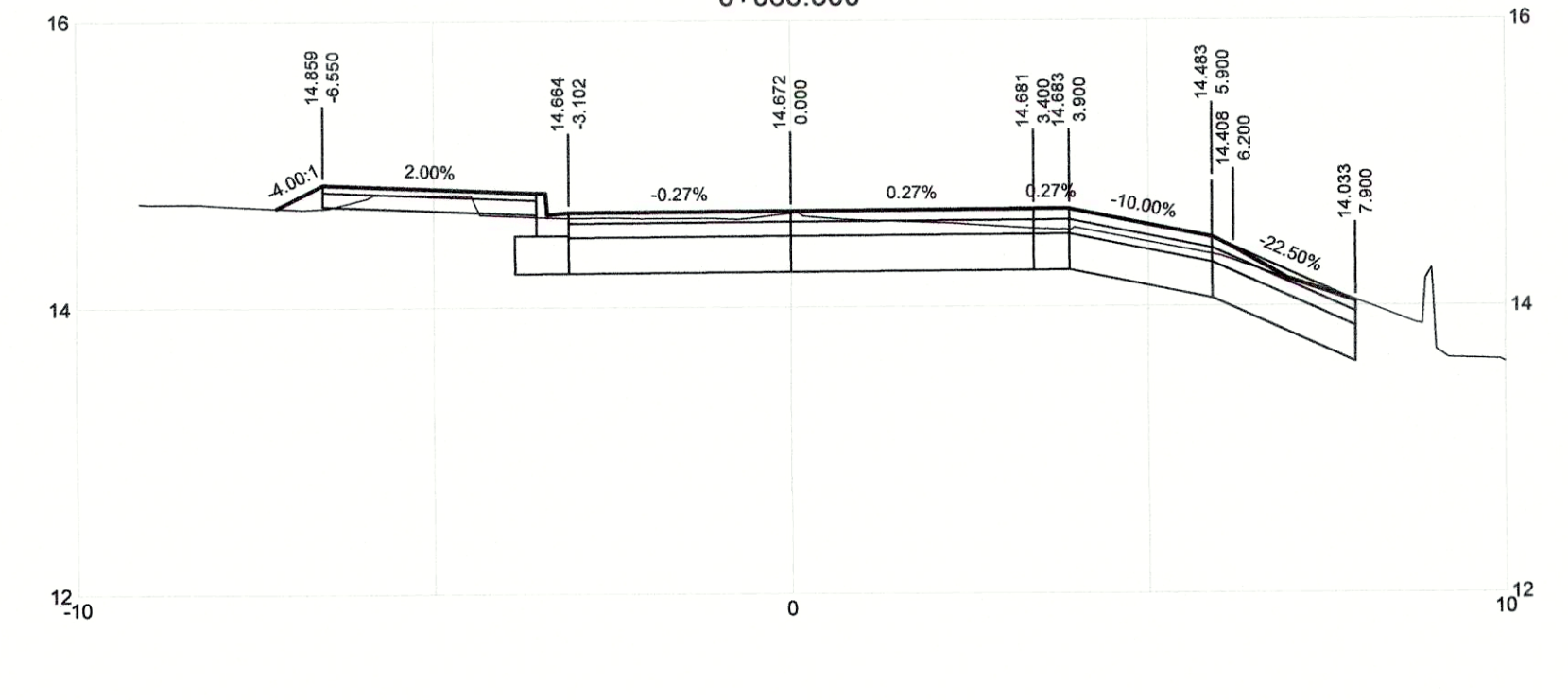
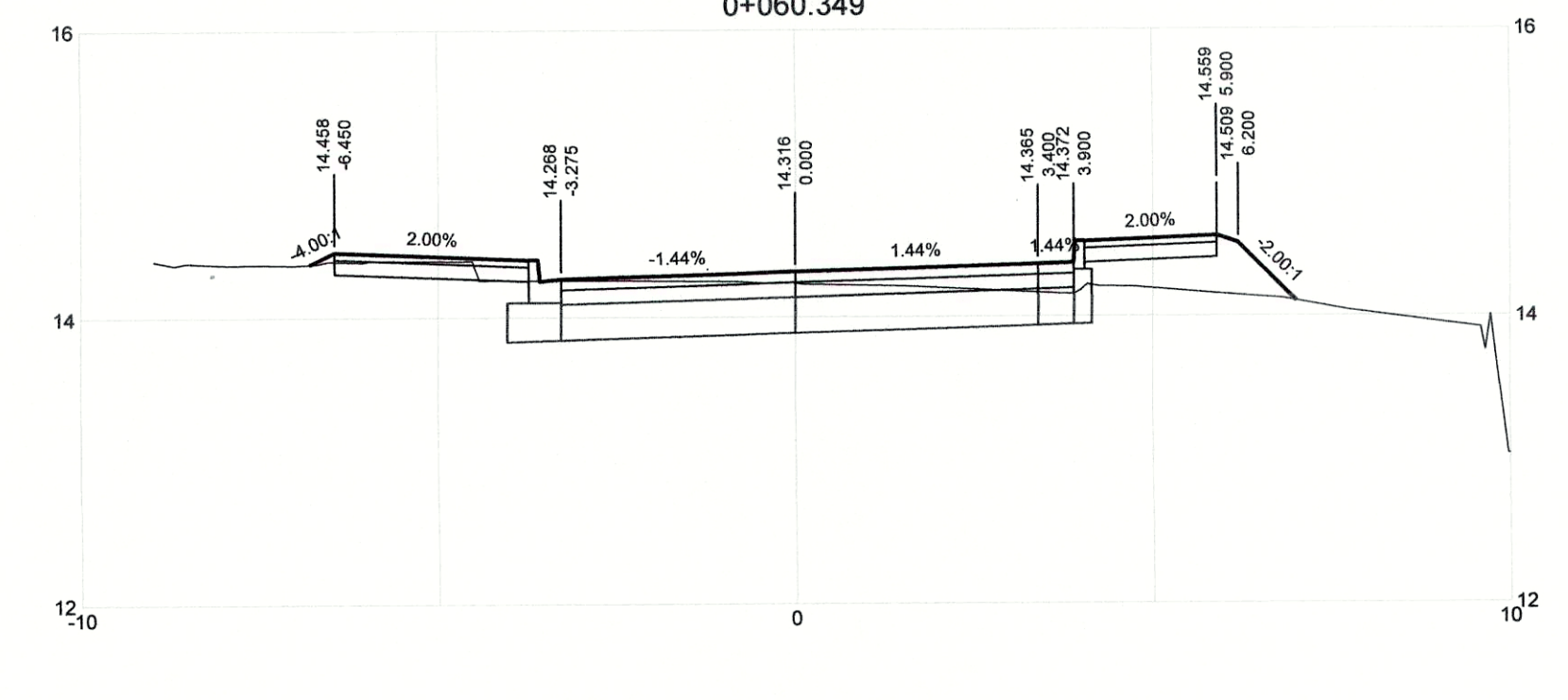
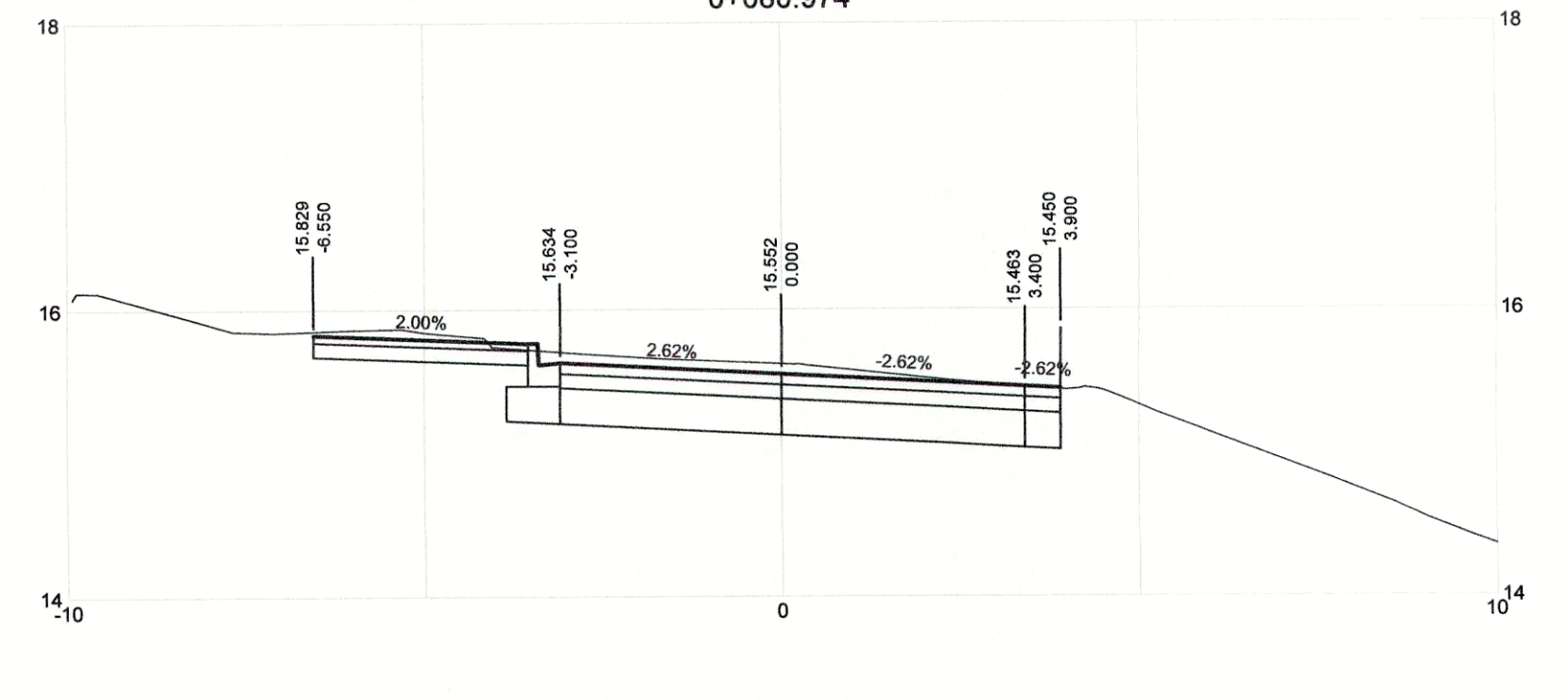
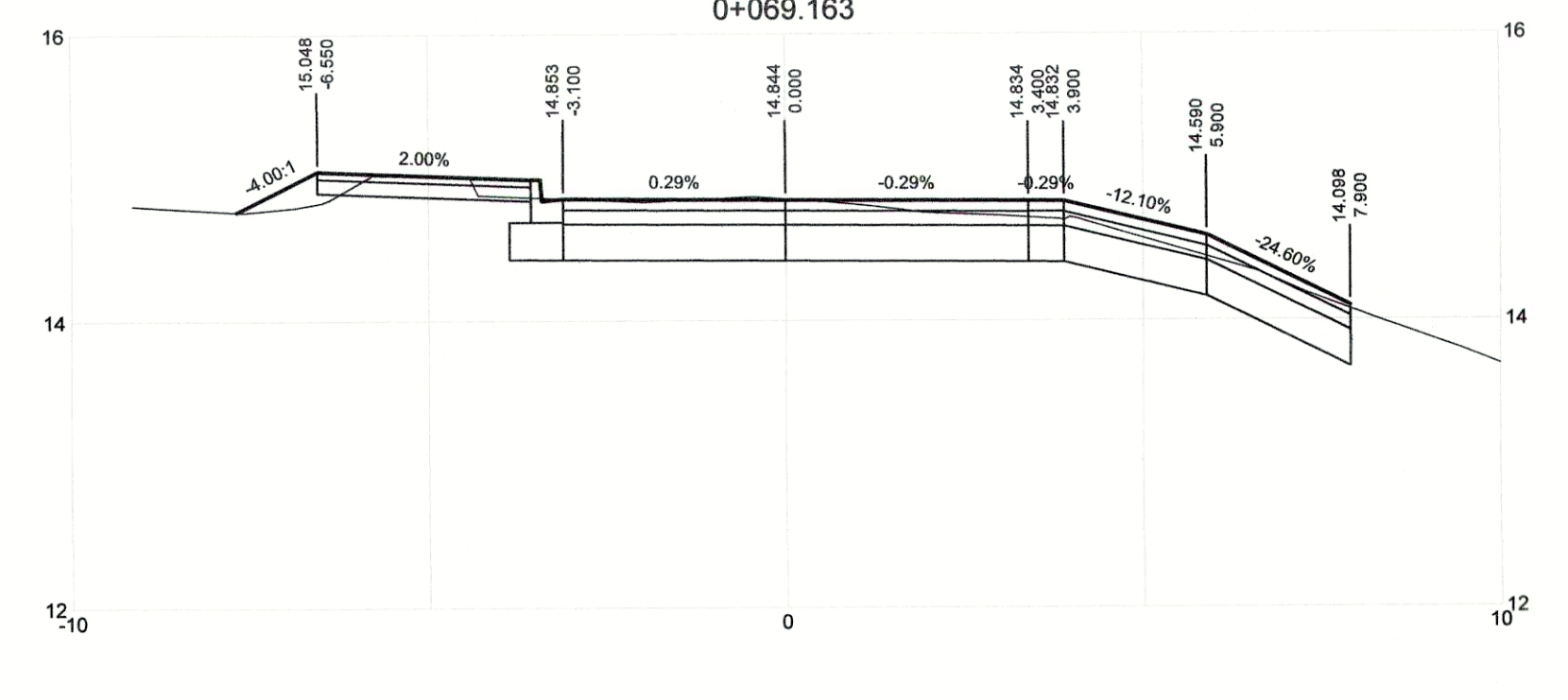
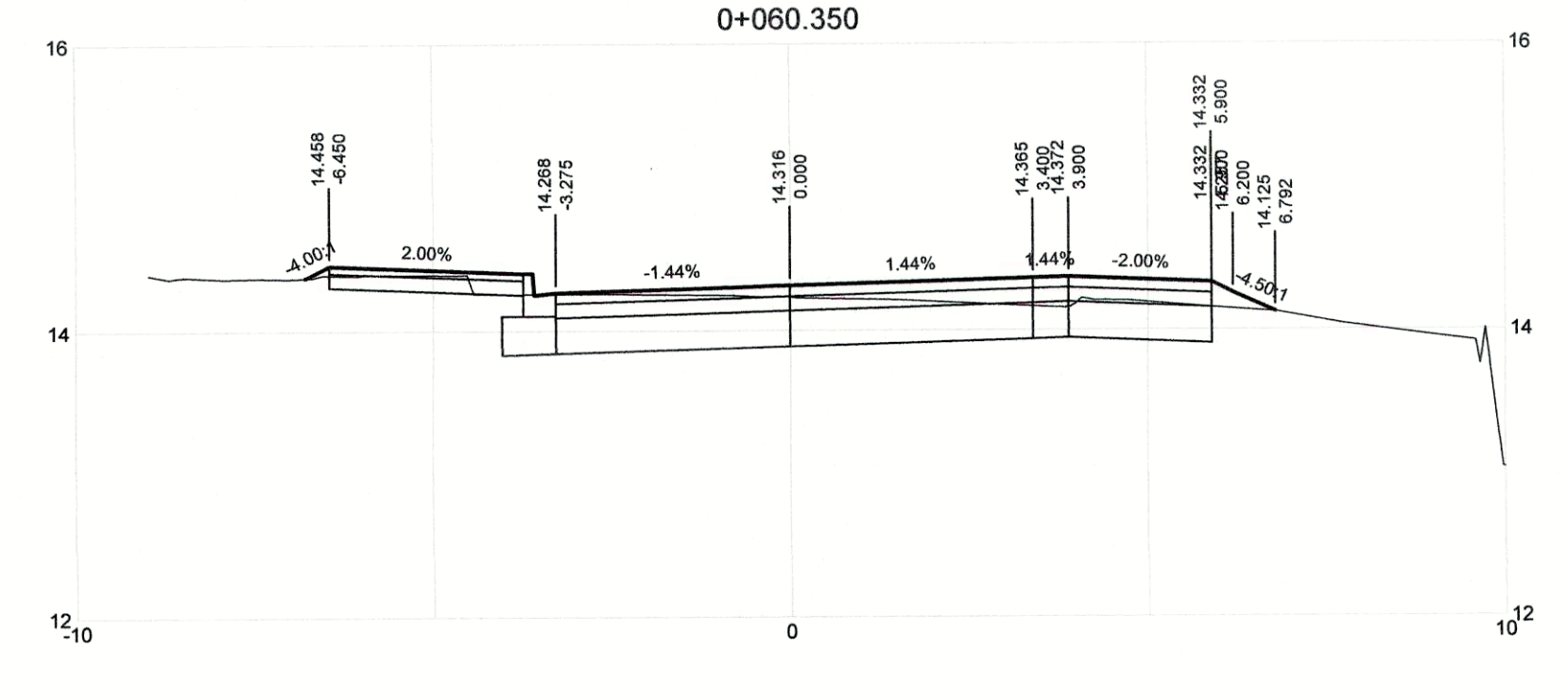
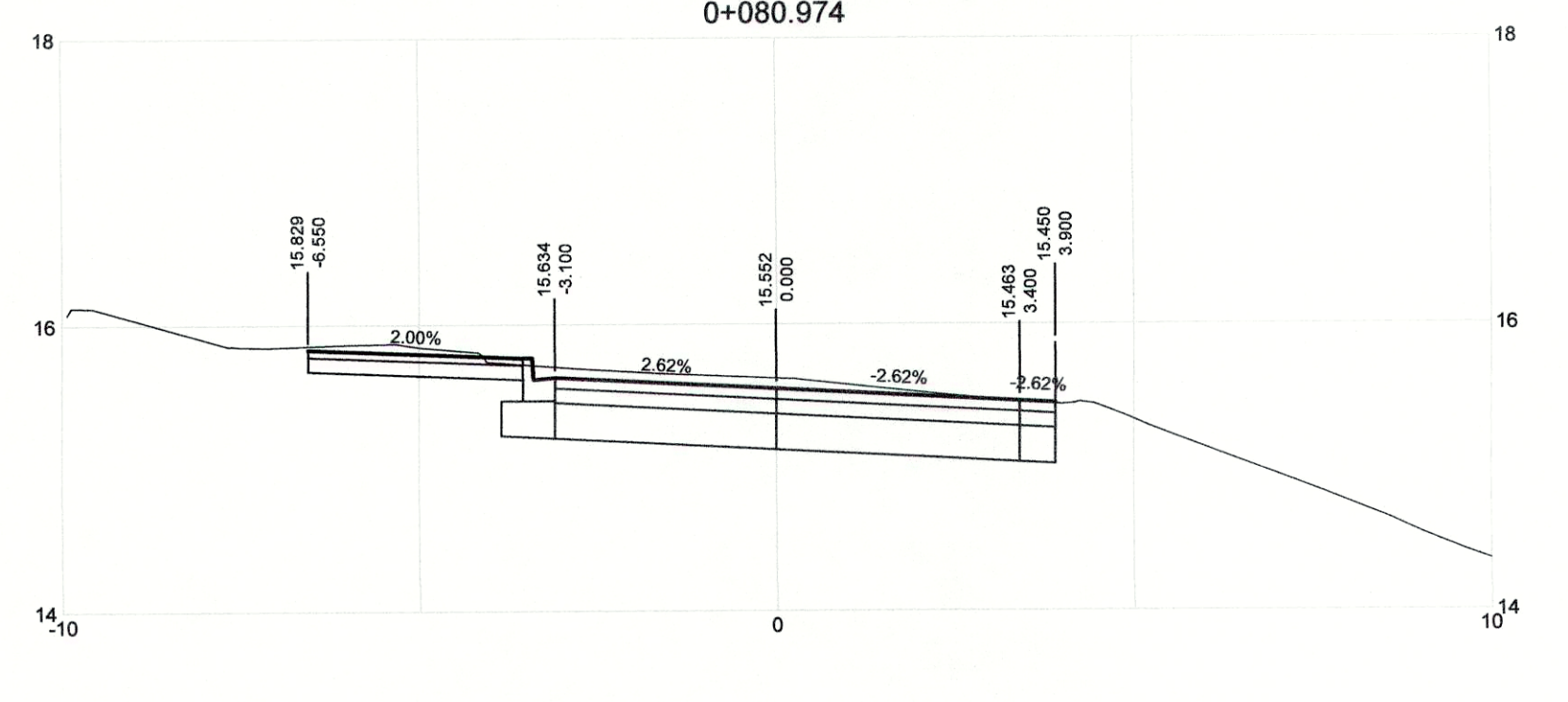
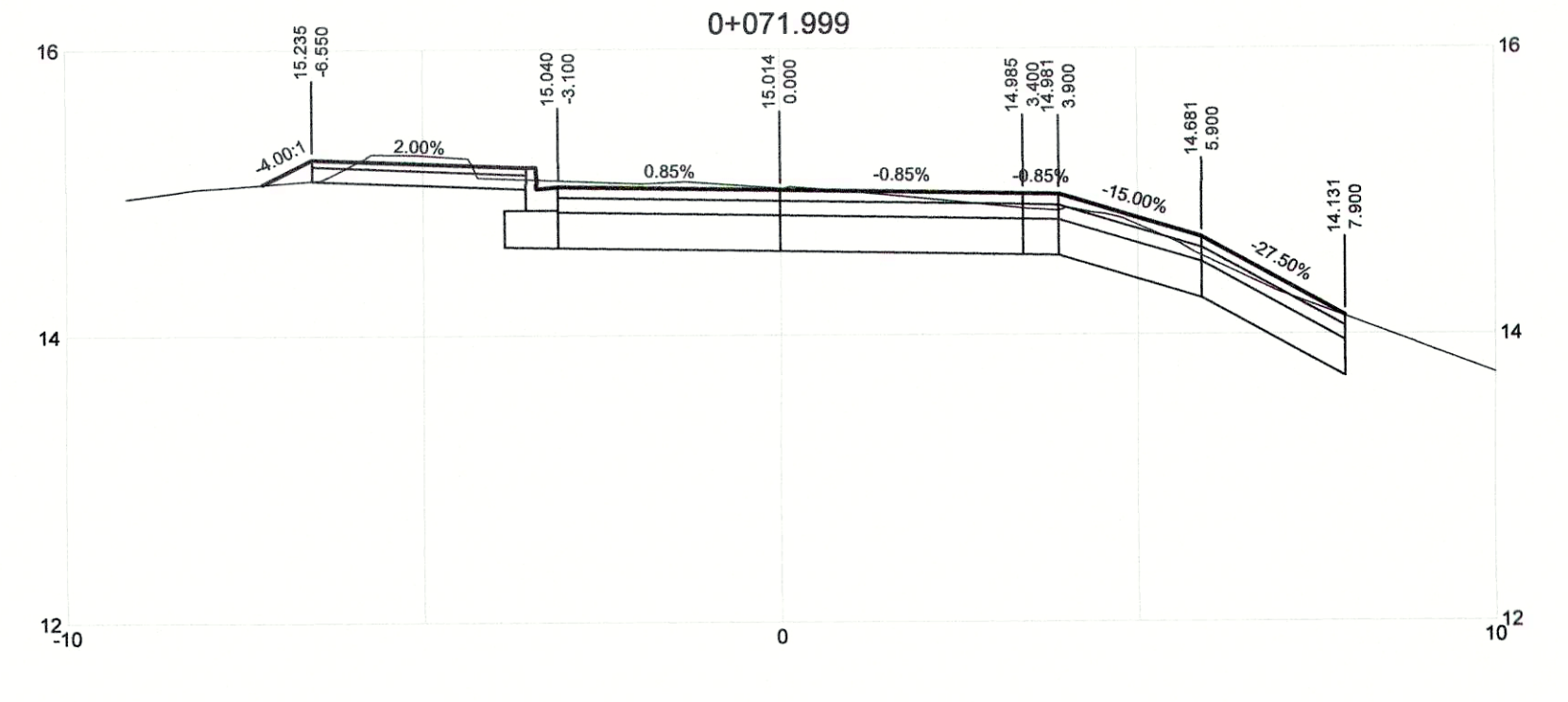
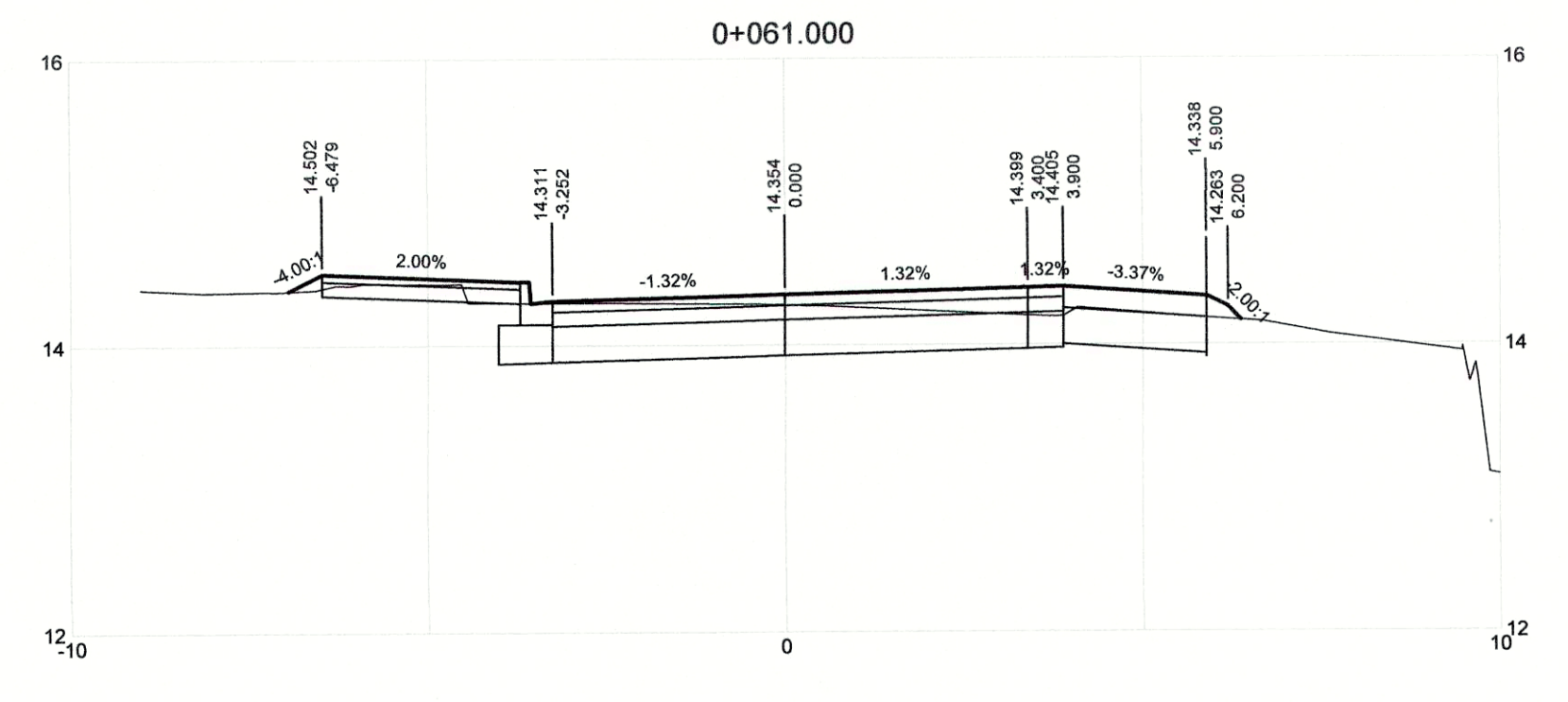
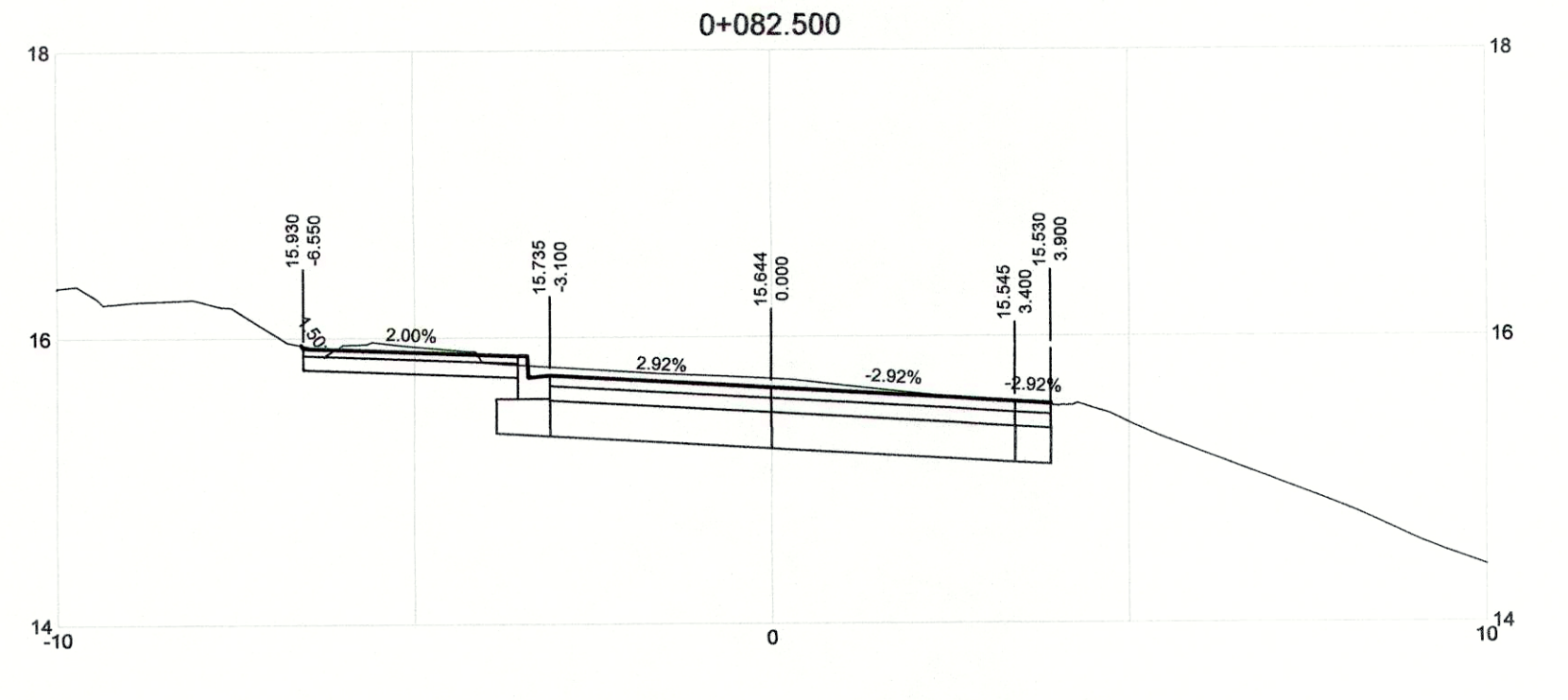
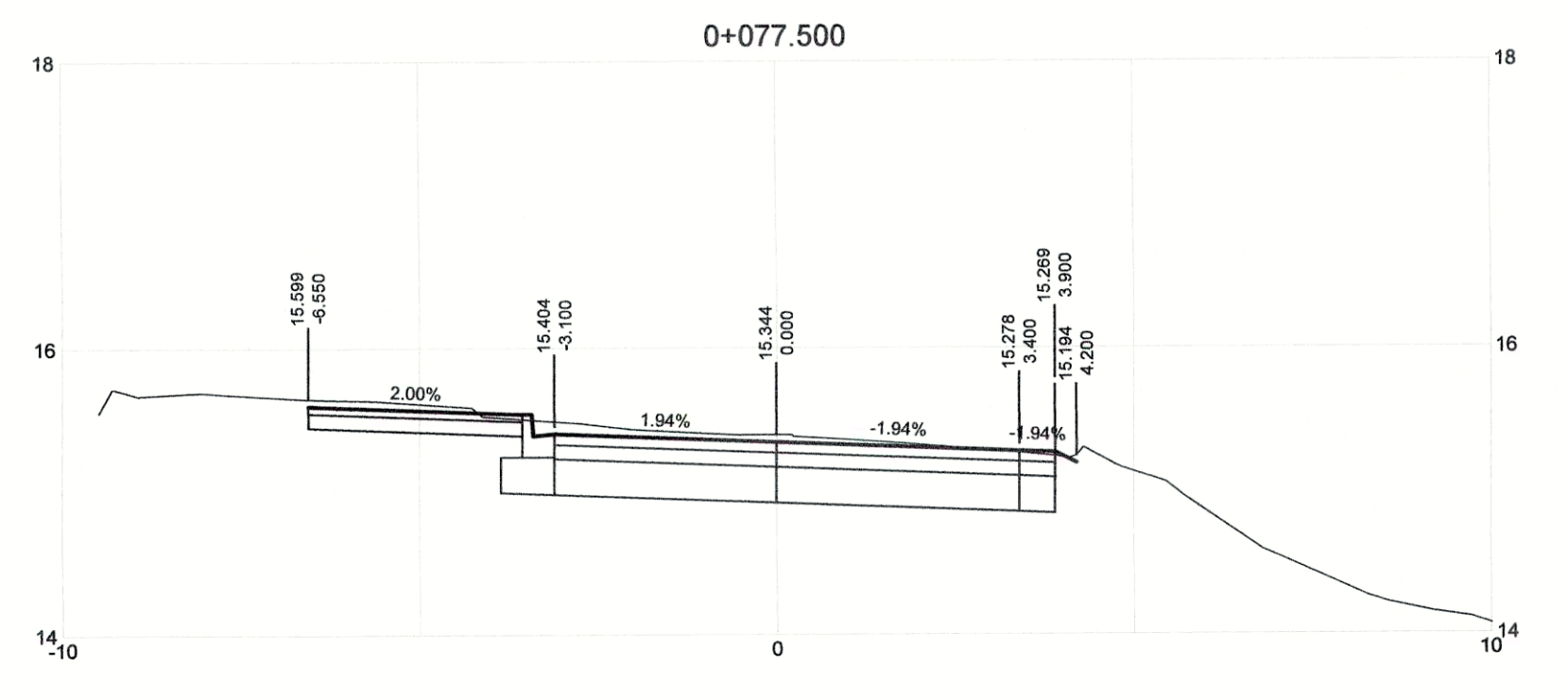
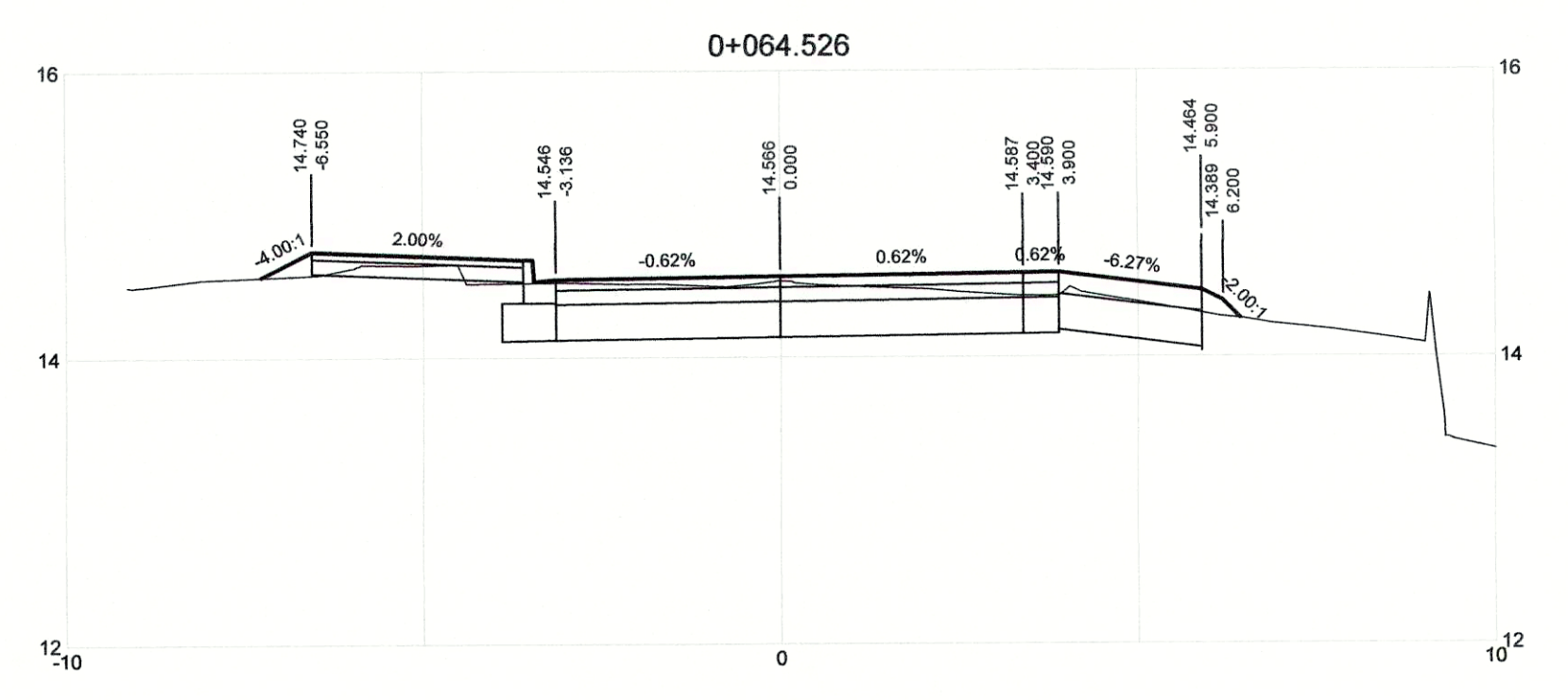


DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DRN	CHK	APP
			0	APRIL 2019	KP	SL	JG
	REFERENCE DRAWINGS						



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	<p>CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+038.788 TO STA. 0+059.434</p>	
DESIGNED	KP		
CHECKED	SL		
APPROVED	JG		
DRAWING NUMBER	GNINT-201	SHEET	001
PROJECT NO.	707564	SCALE	H 1:100 V 1:50
DATE	JAN 07, 2018	REV	0





DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG



PROFESSIONAL  
ENGINEER  
S X G L  
#20760  
Muan  
Apr 22, 2019

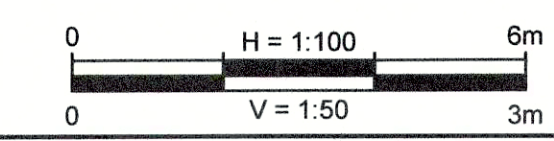
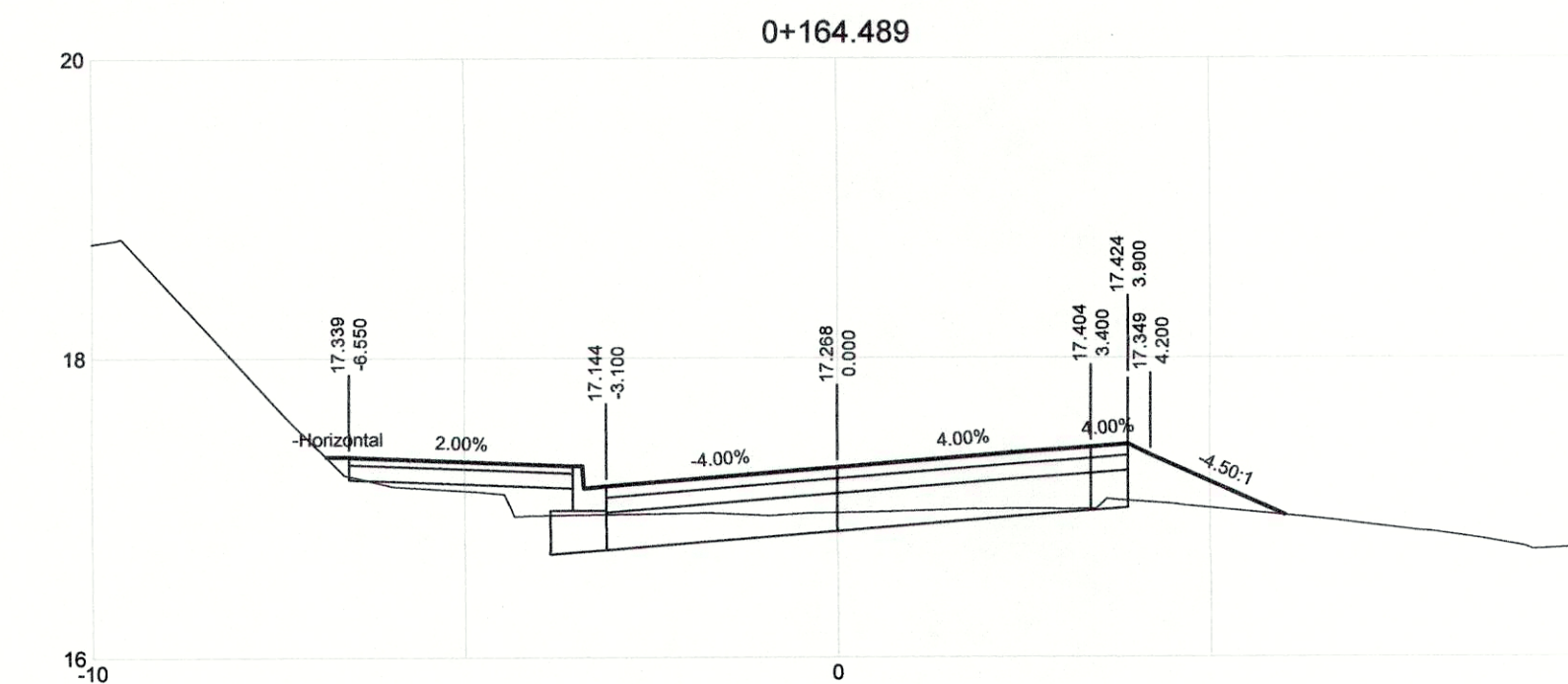
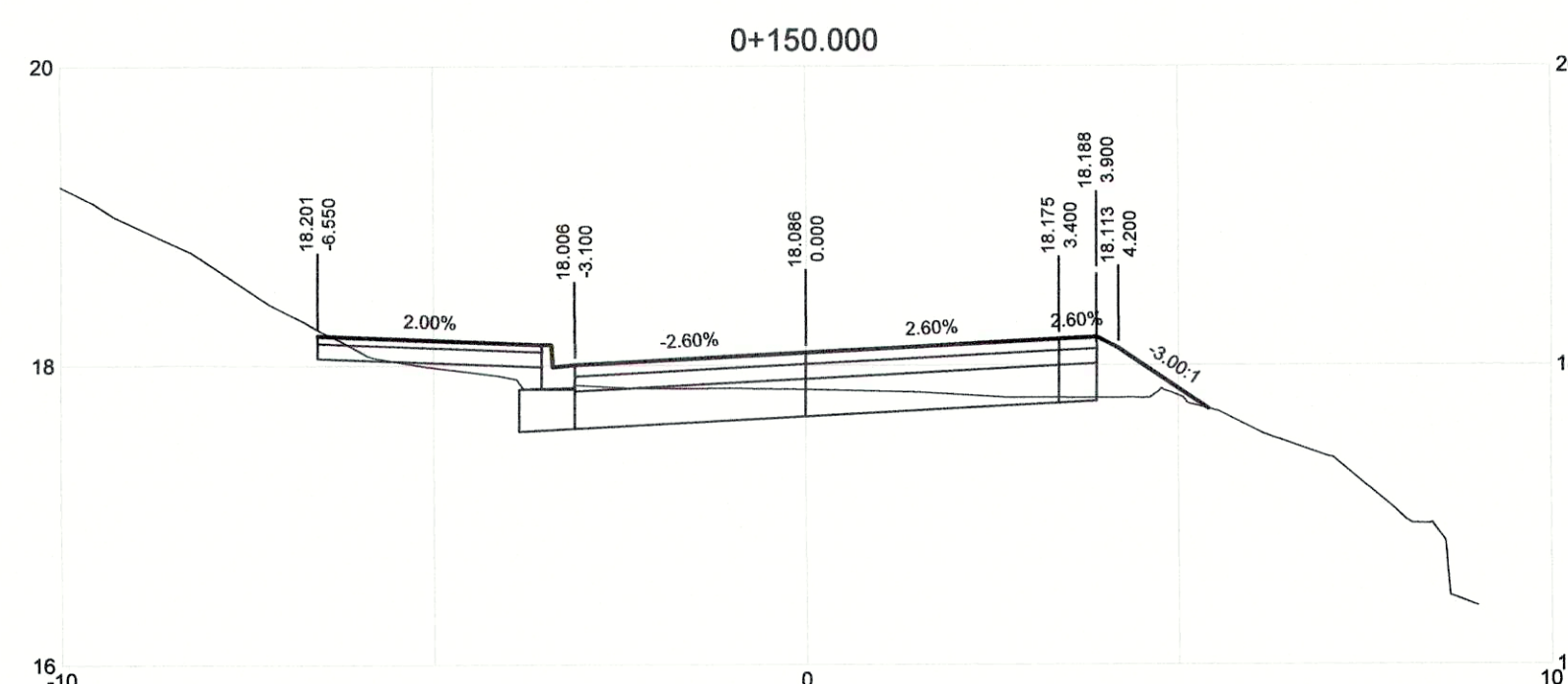
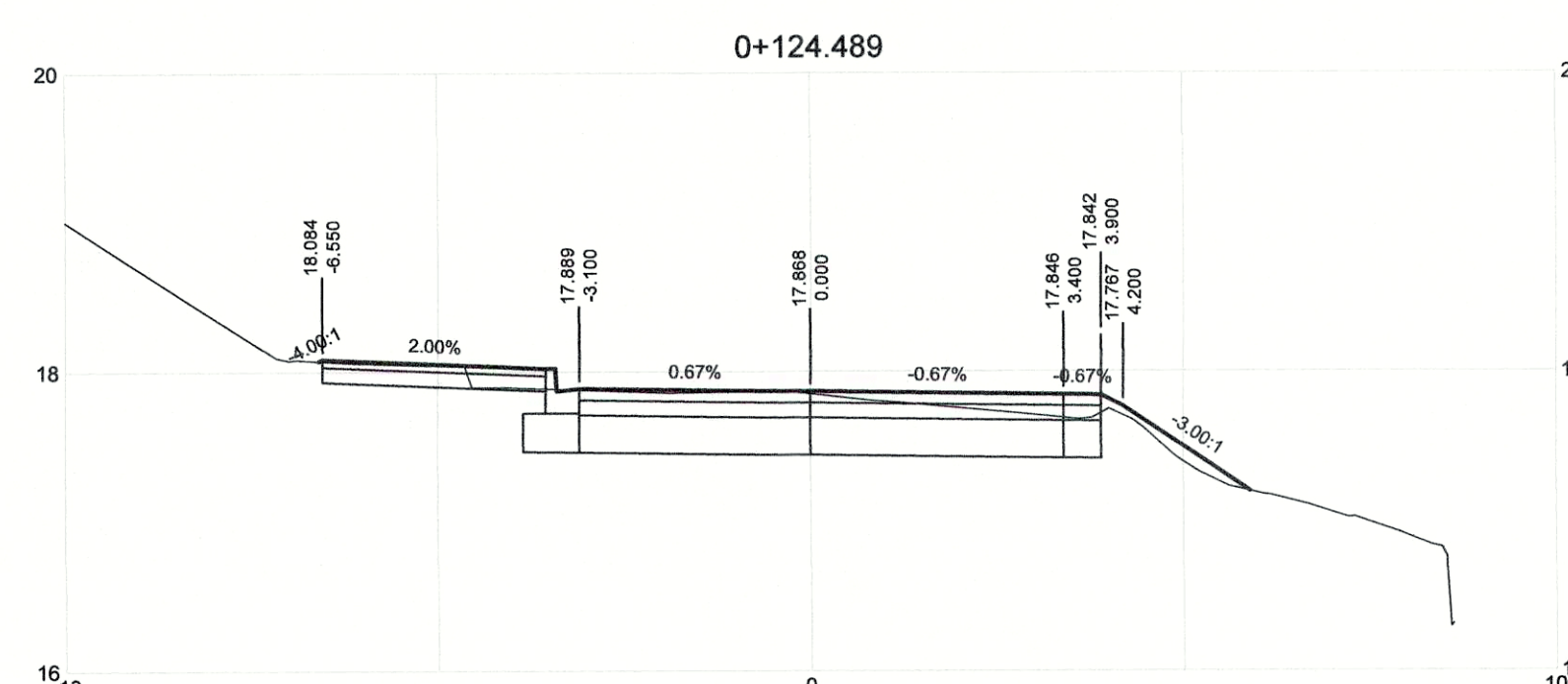
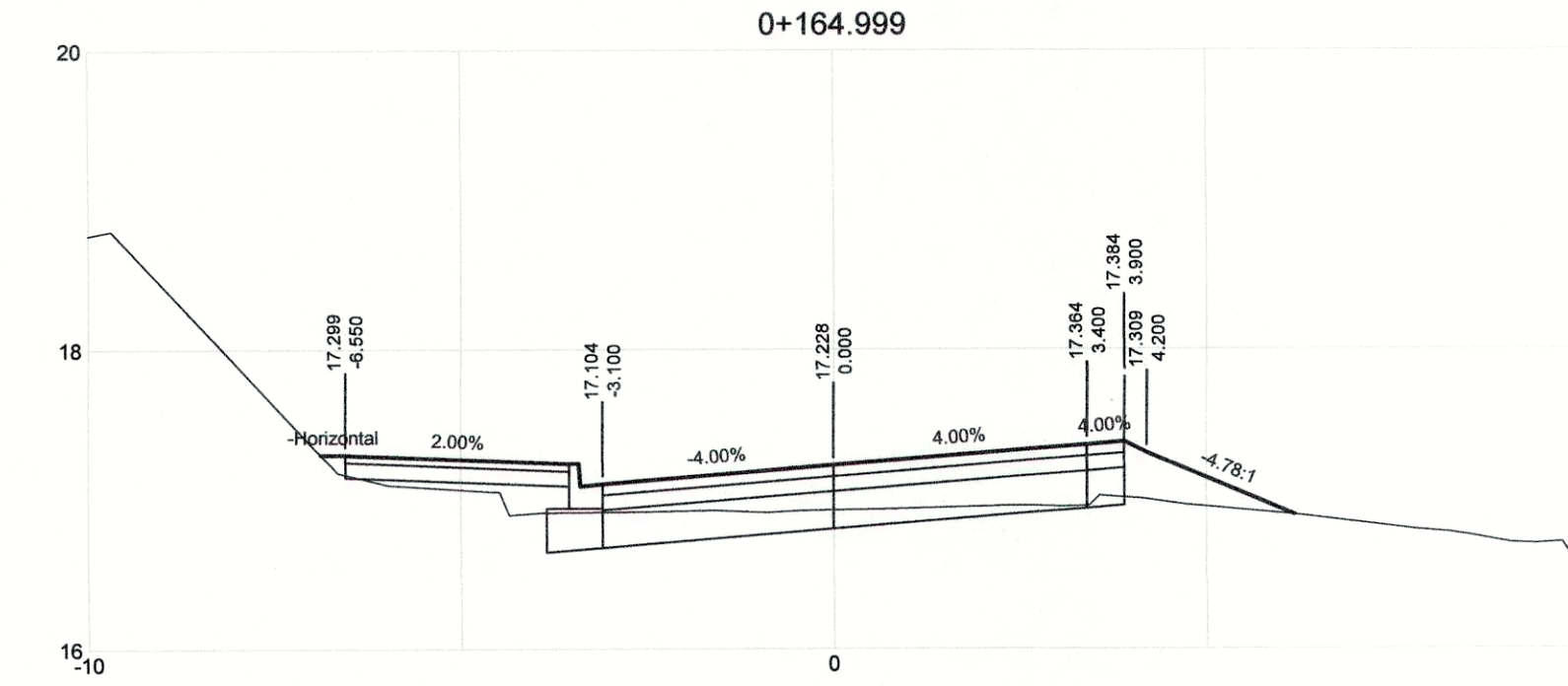
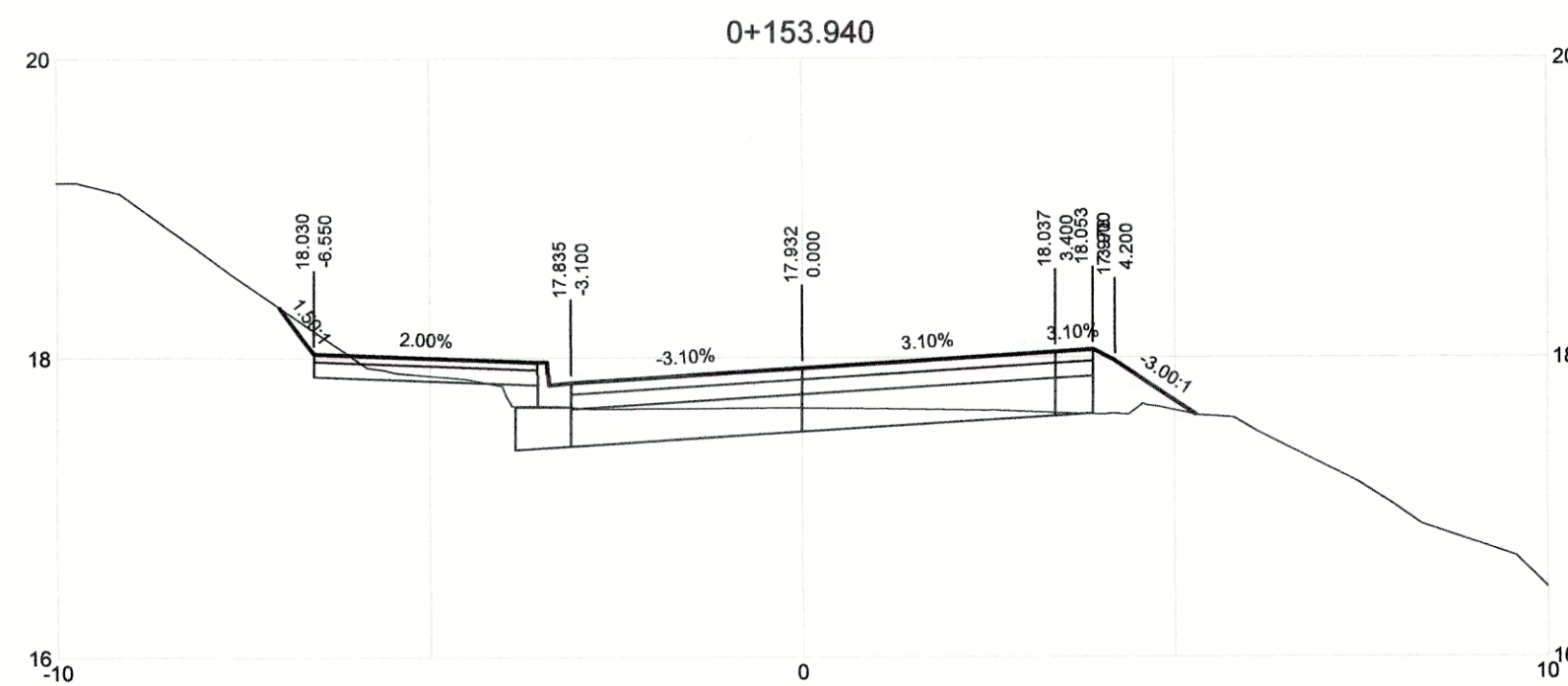
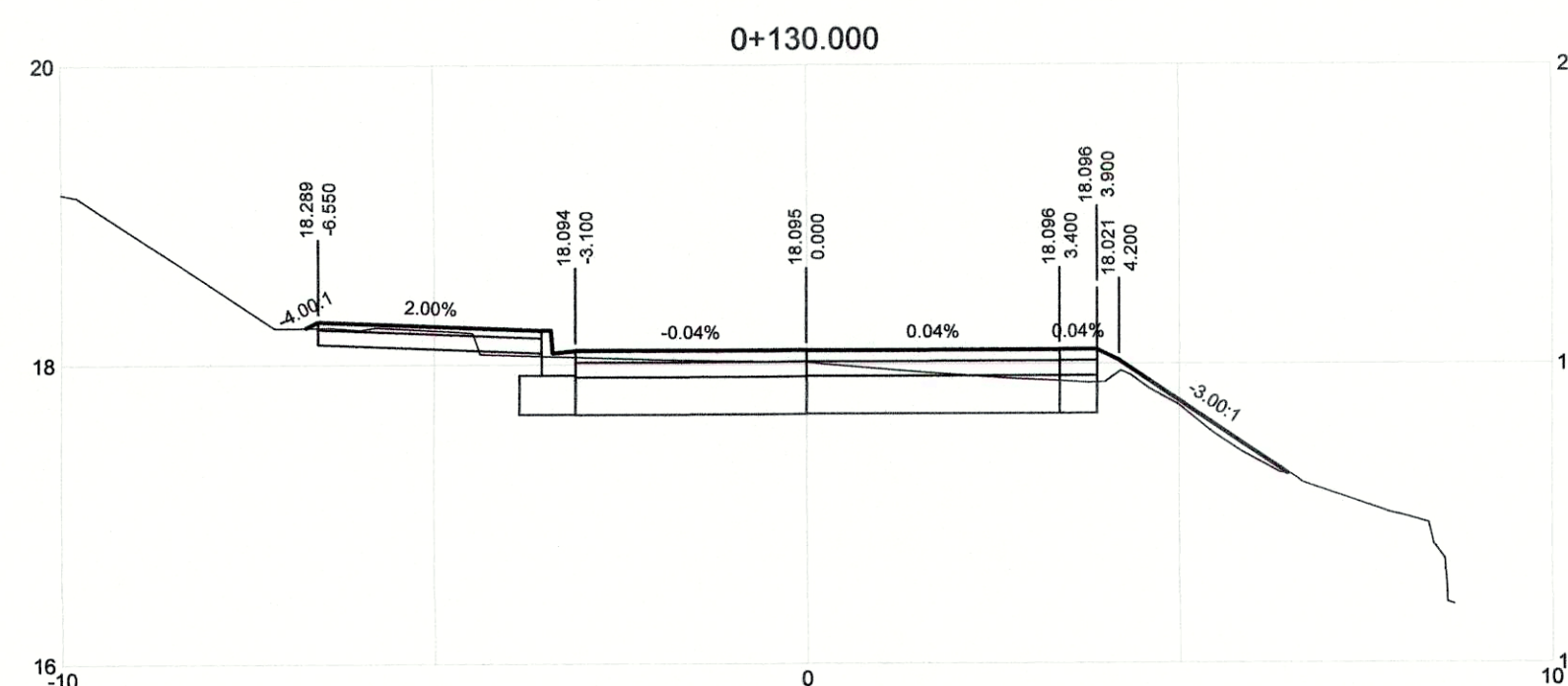
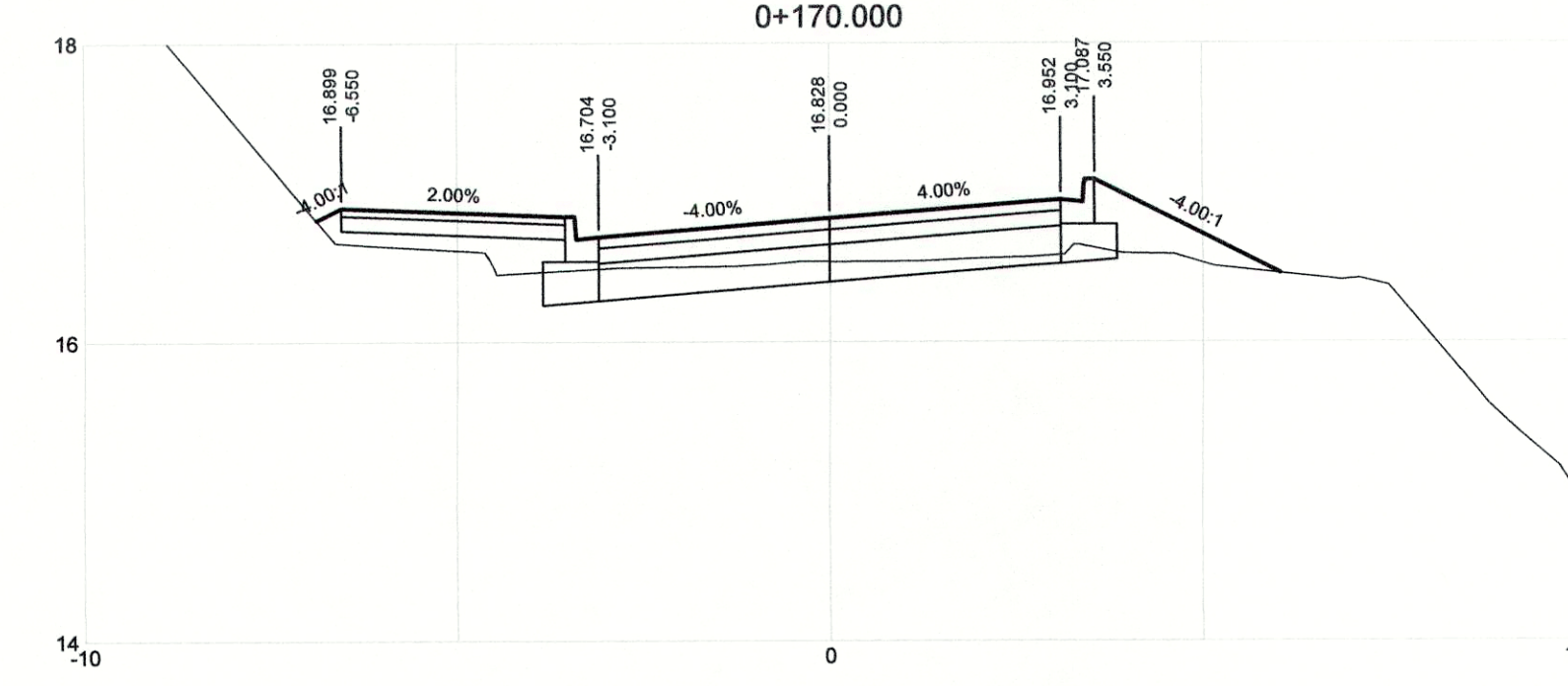
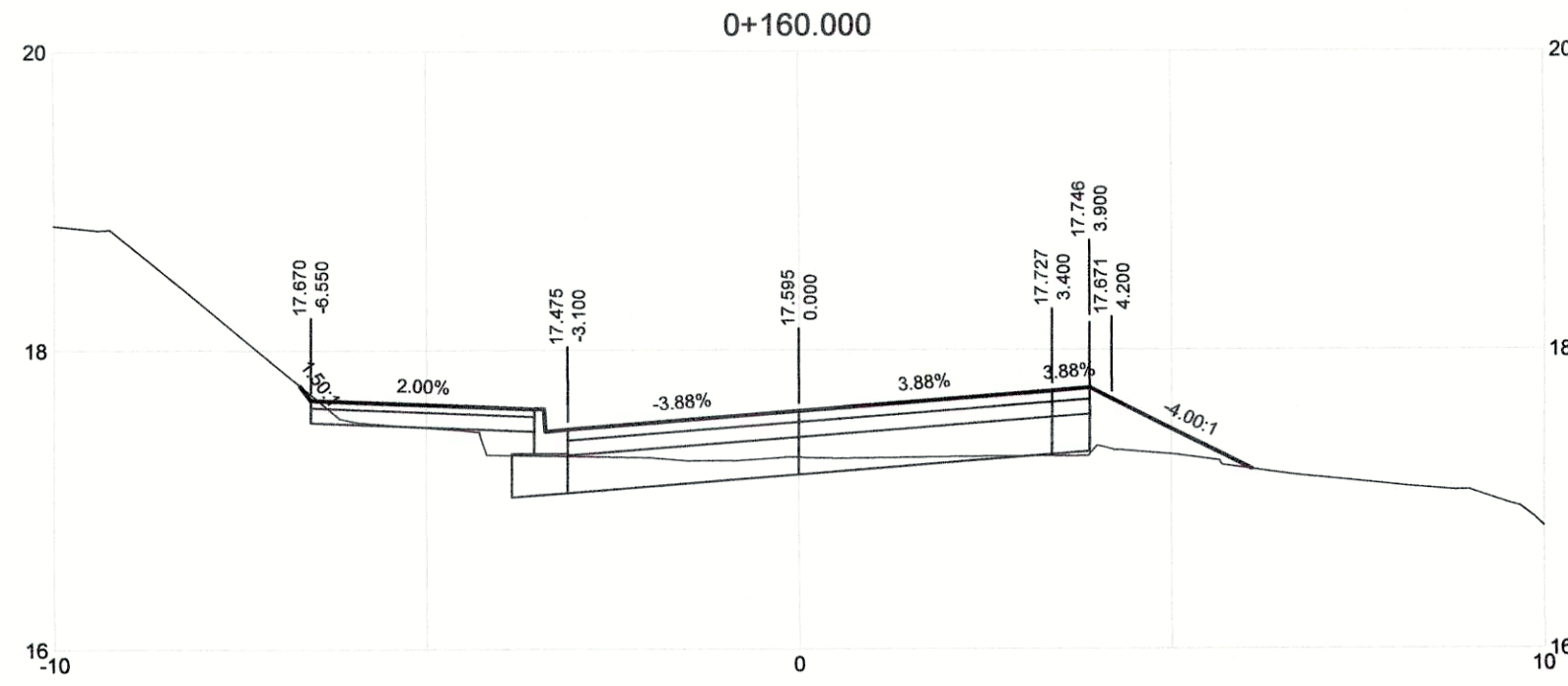
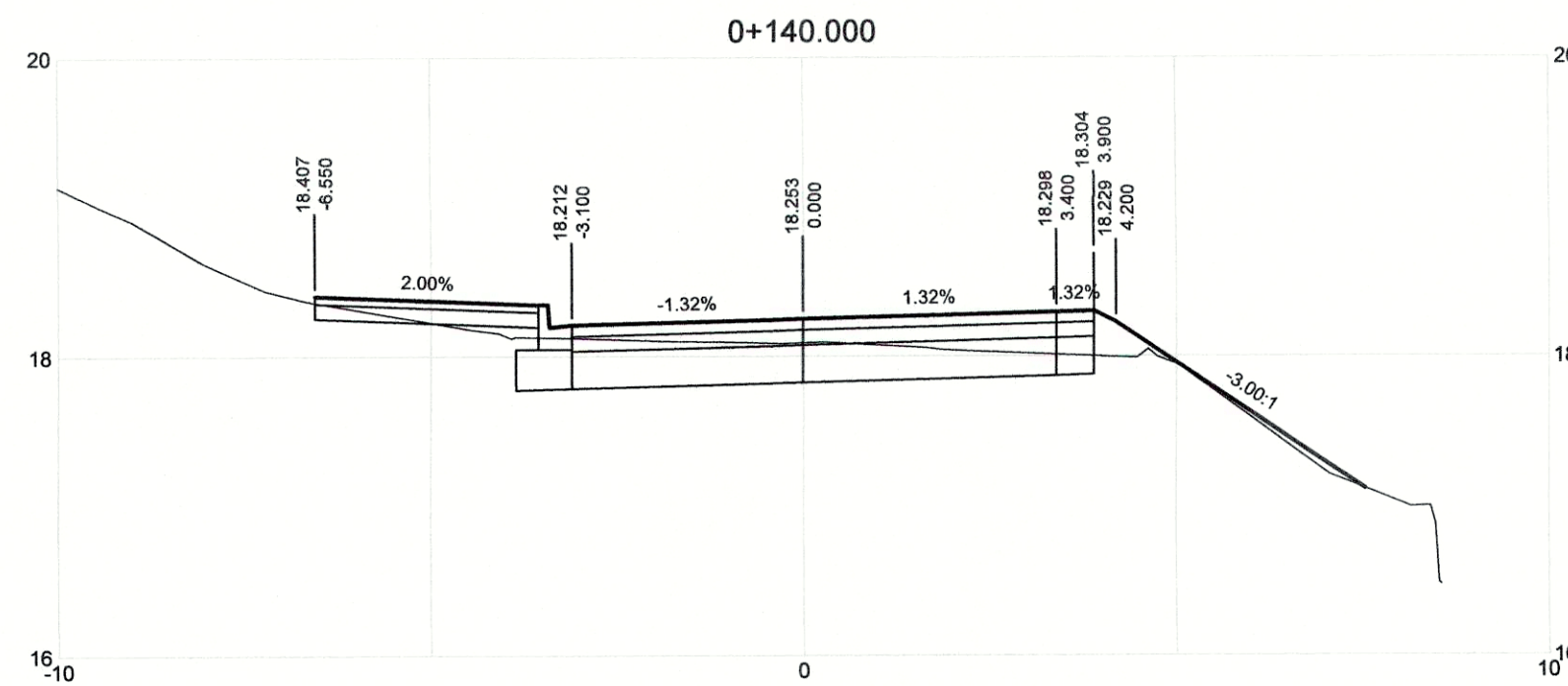
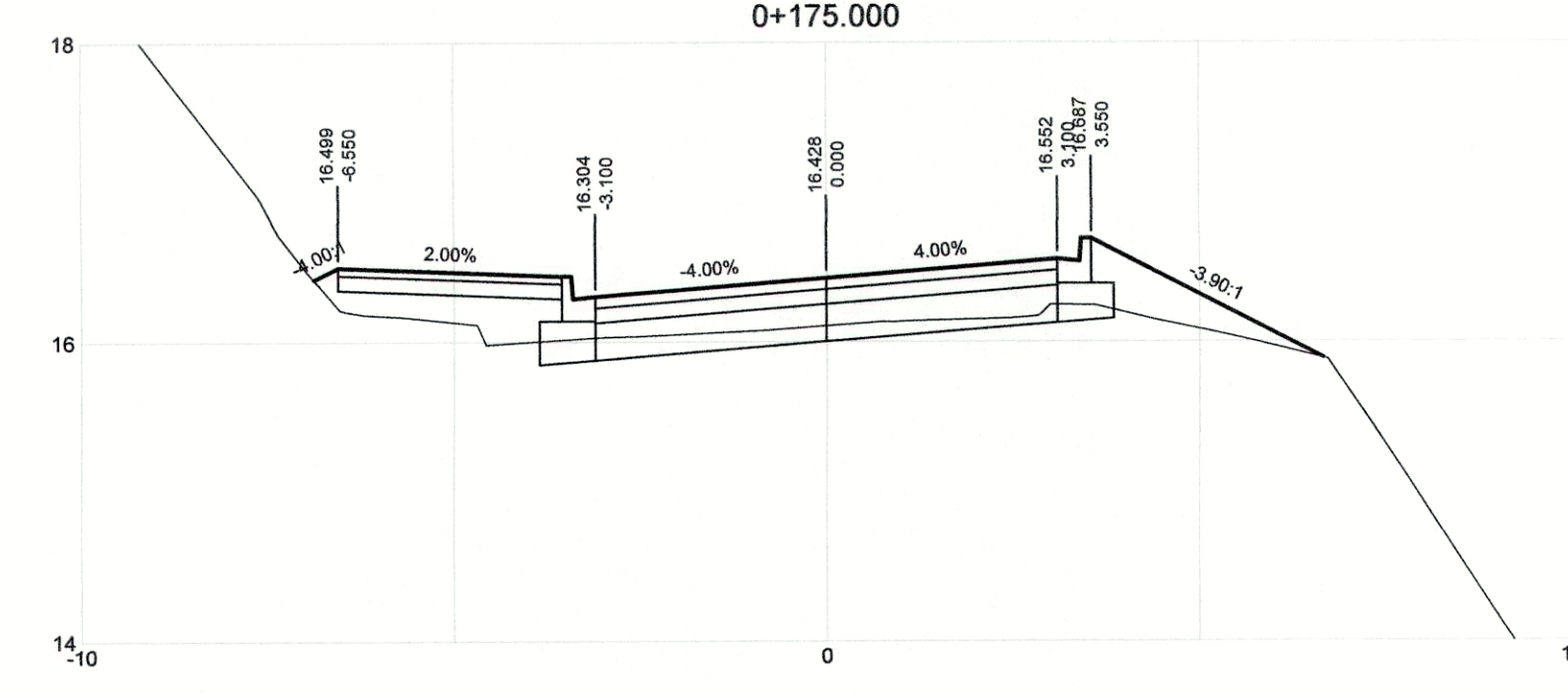
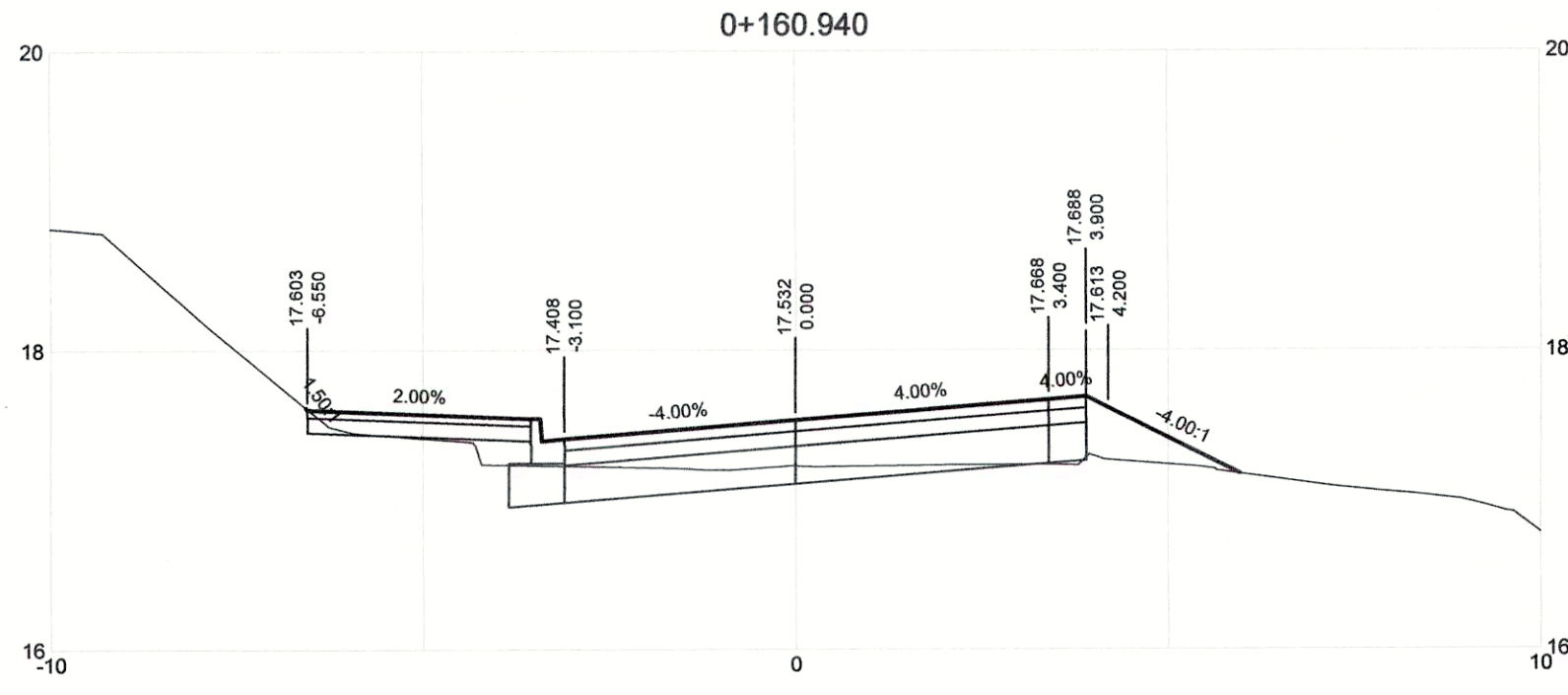
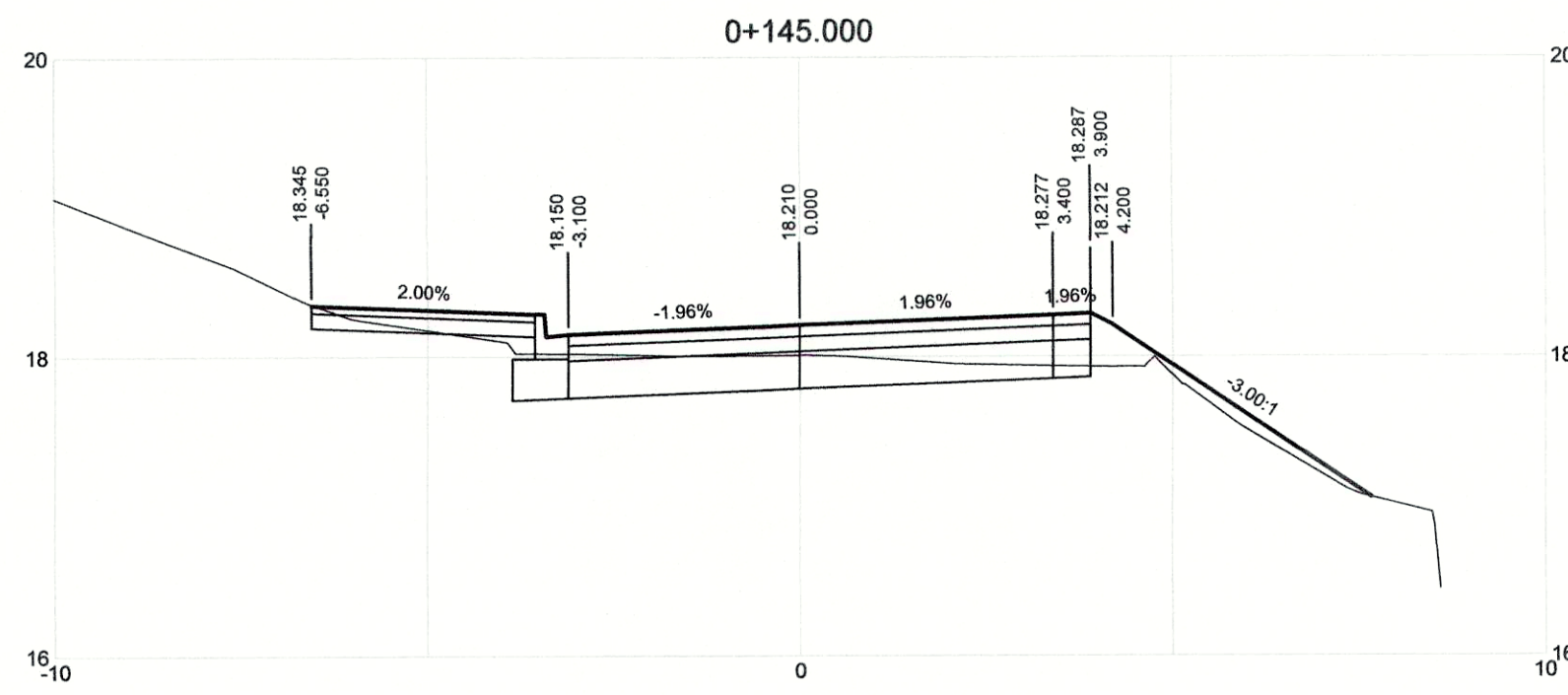
PROJECT NAME	CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		
DRAWN	KP	DESIGNED	KP
CHECKED	SL	APPROVED	JG
DRAWING NUMBER	GNINT-202	SHEET	001
PROJECT NO.	707564	SCALE	H 1:100 V 1:50
DATE	JAN 07, 2018	REV	0



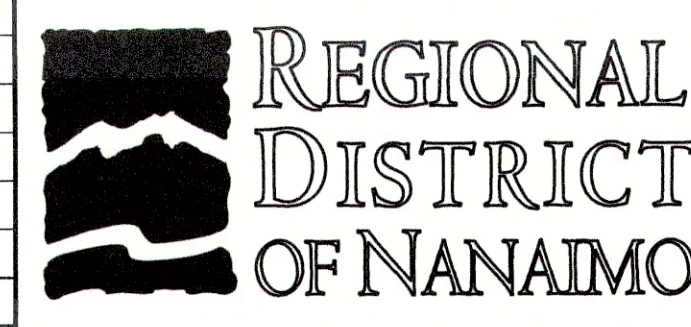








0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
REV	DATE	DESCRIPTION	DRN	CHK	APP
REVISIONS					

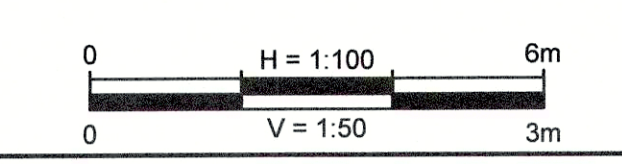
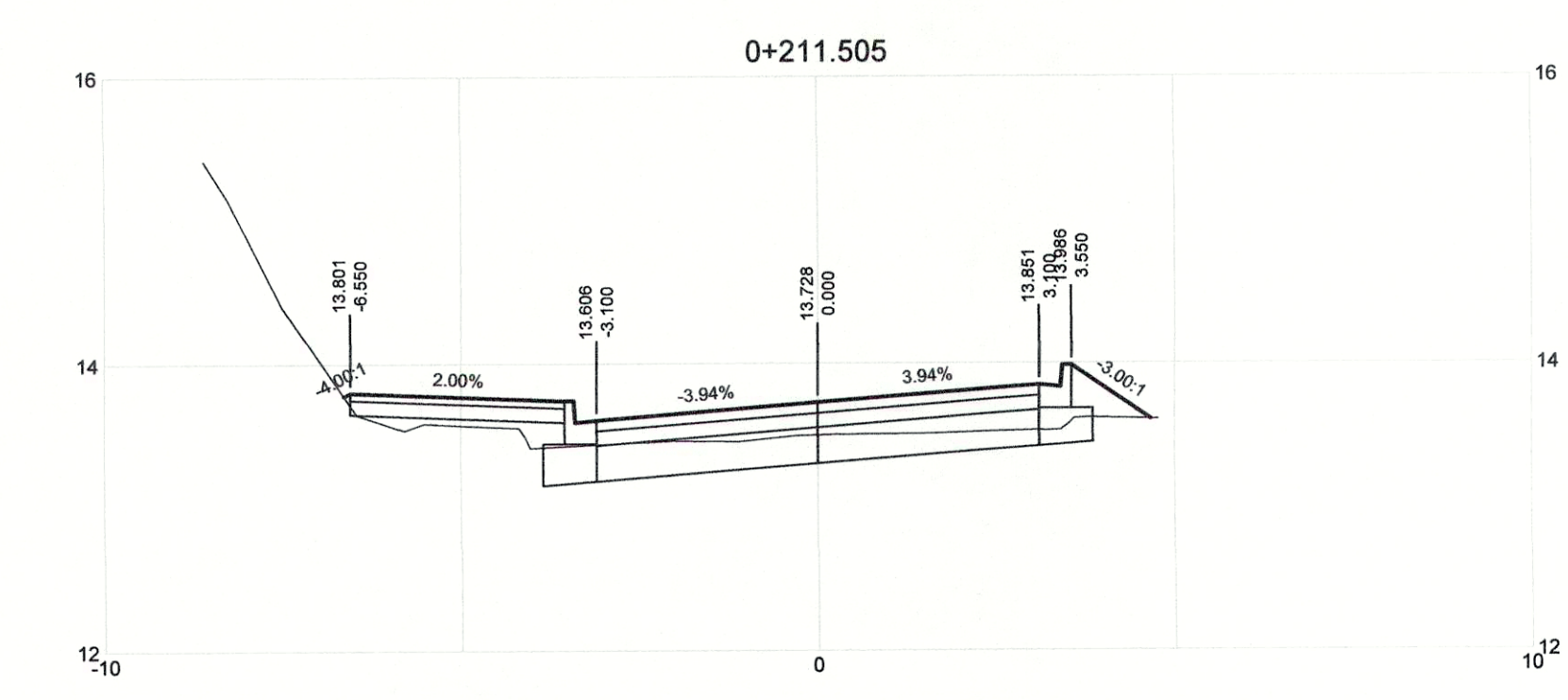
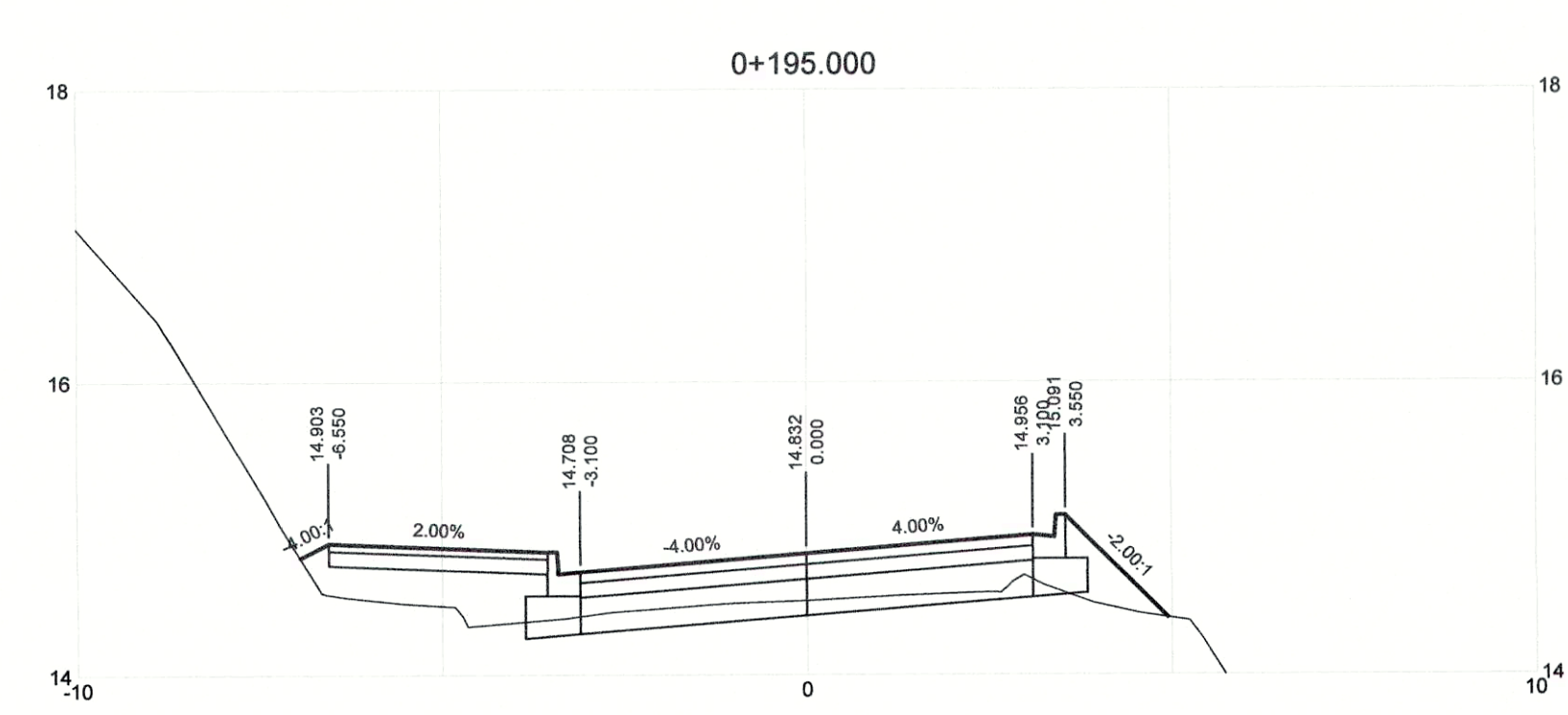
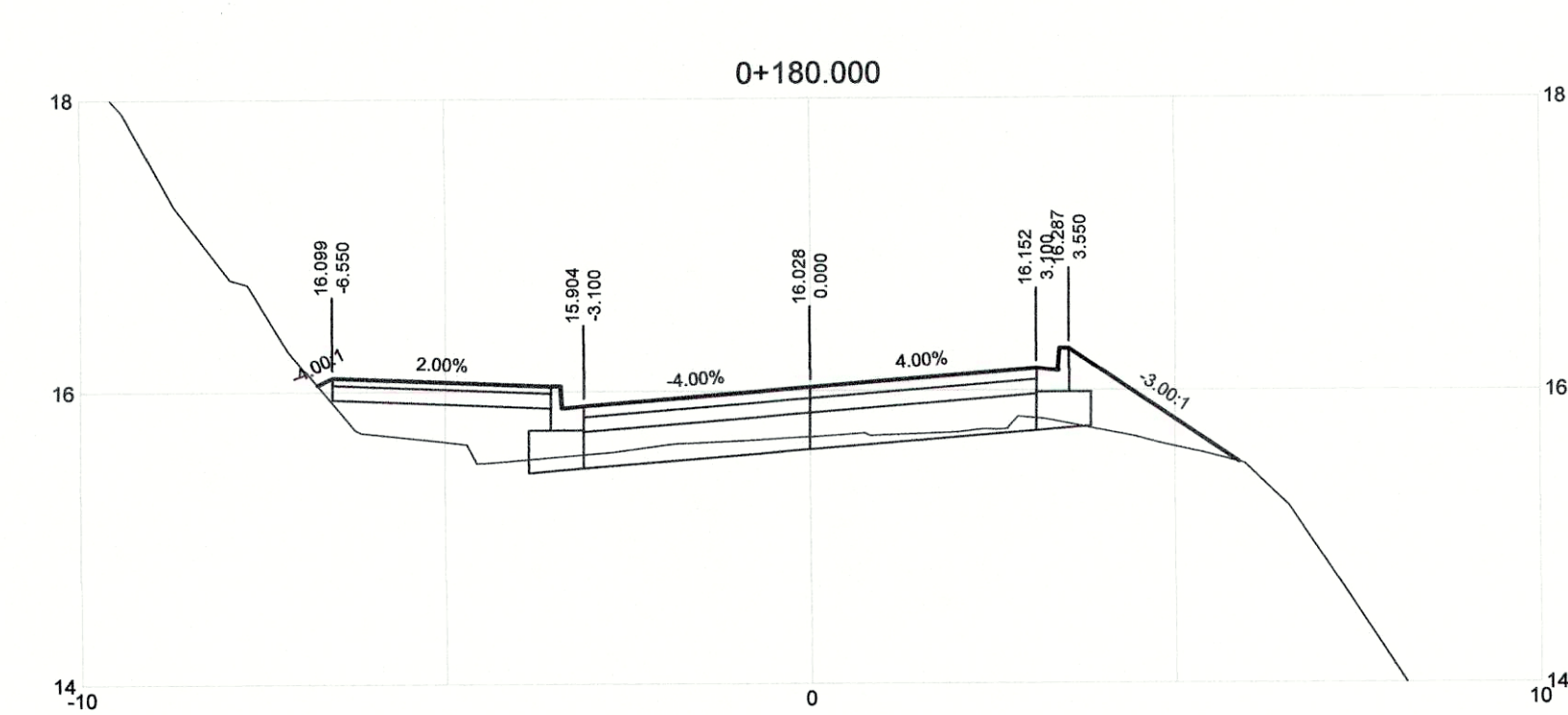
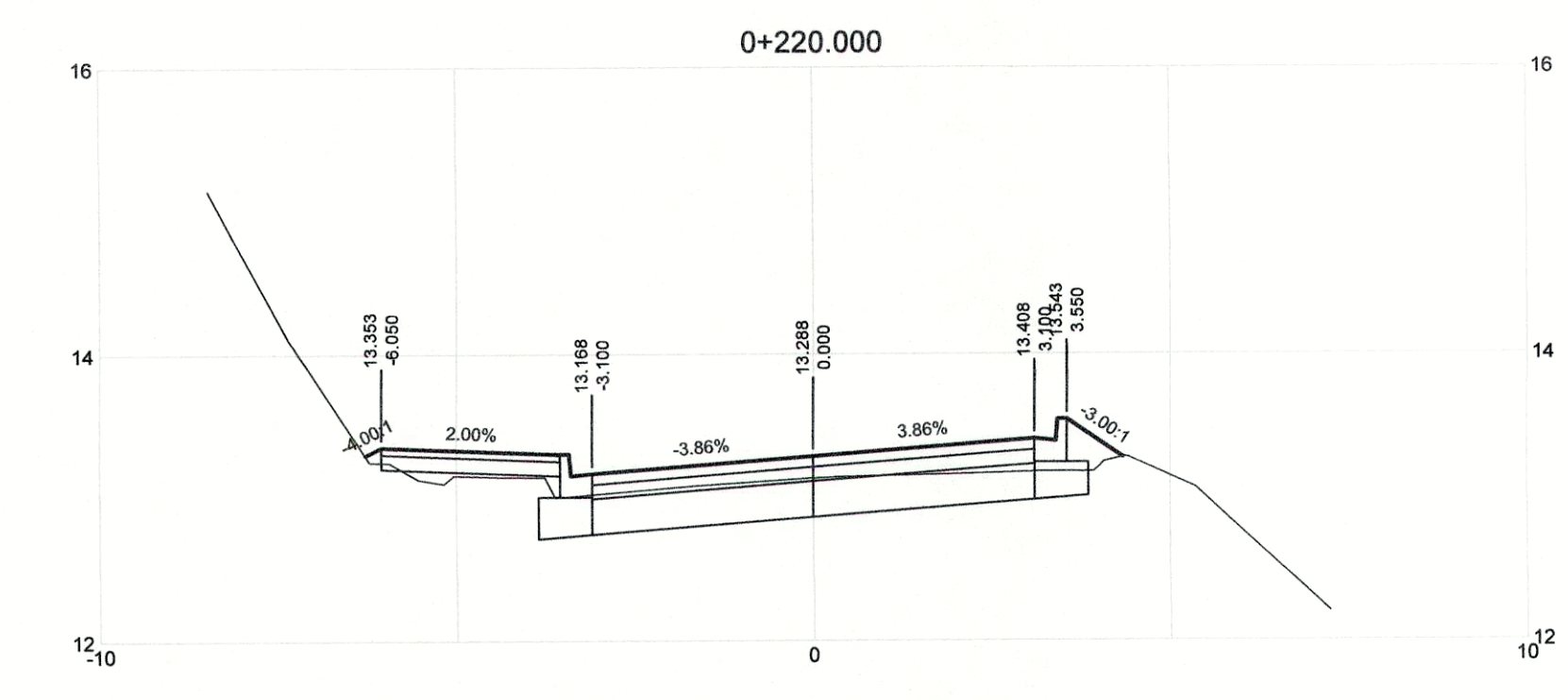
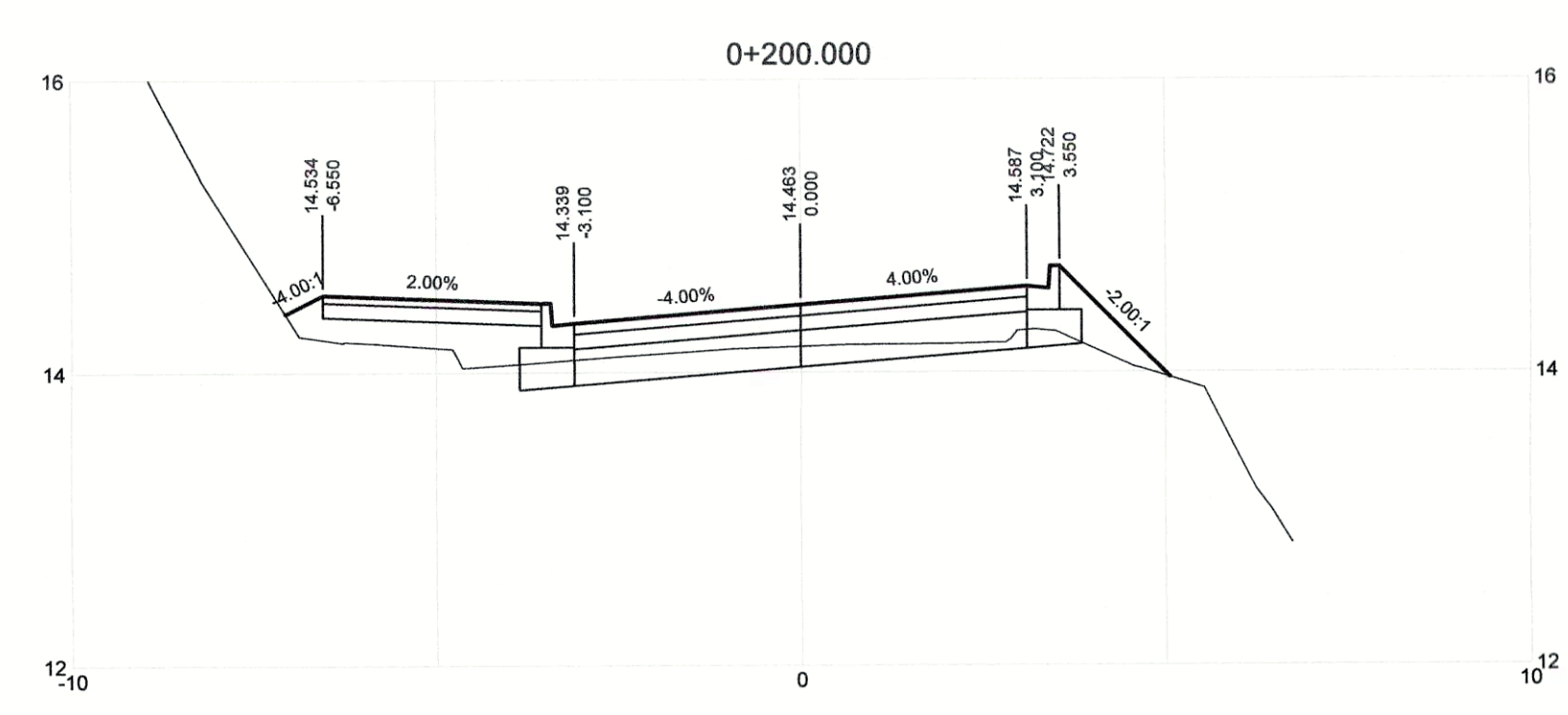
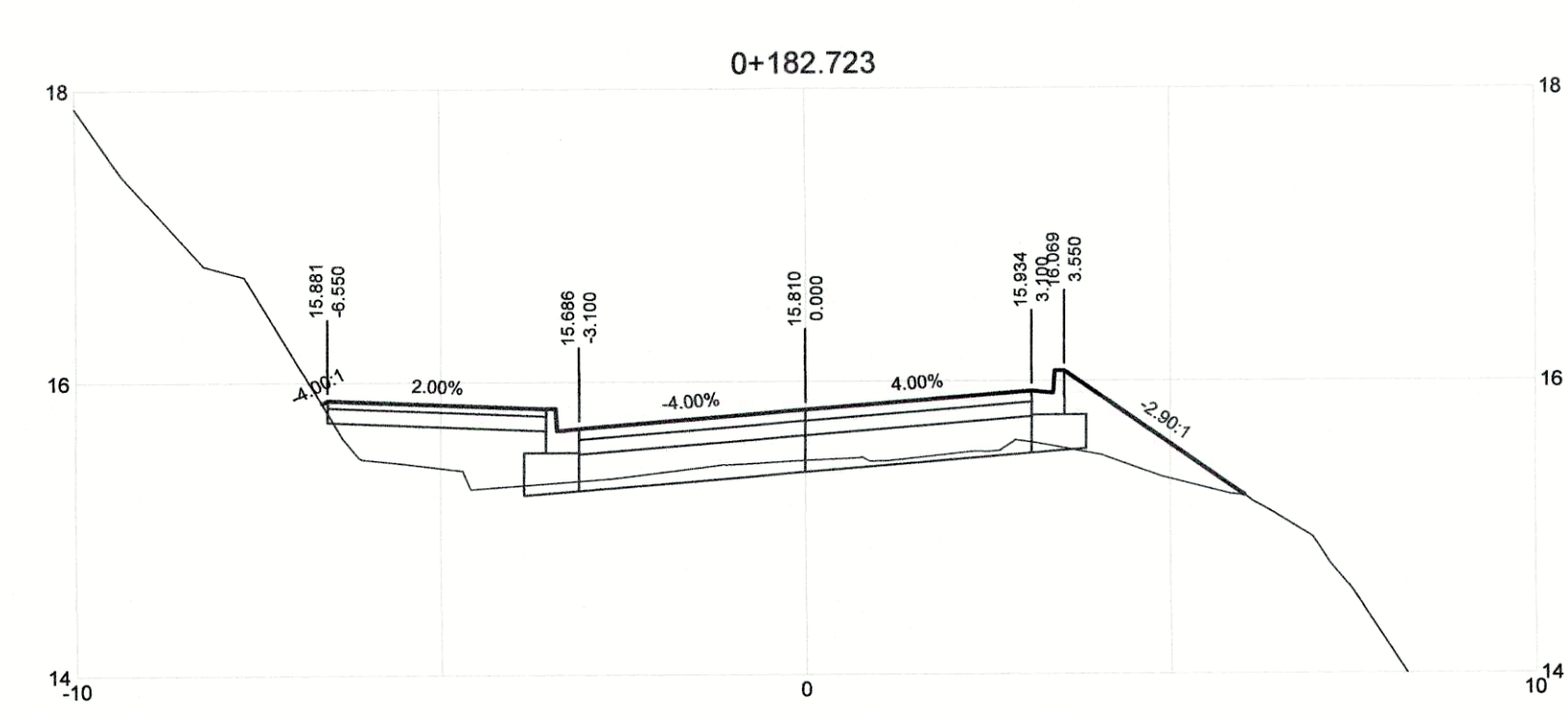
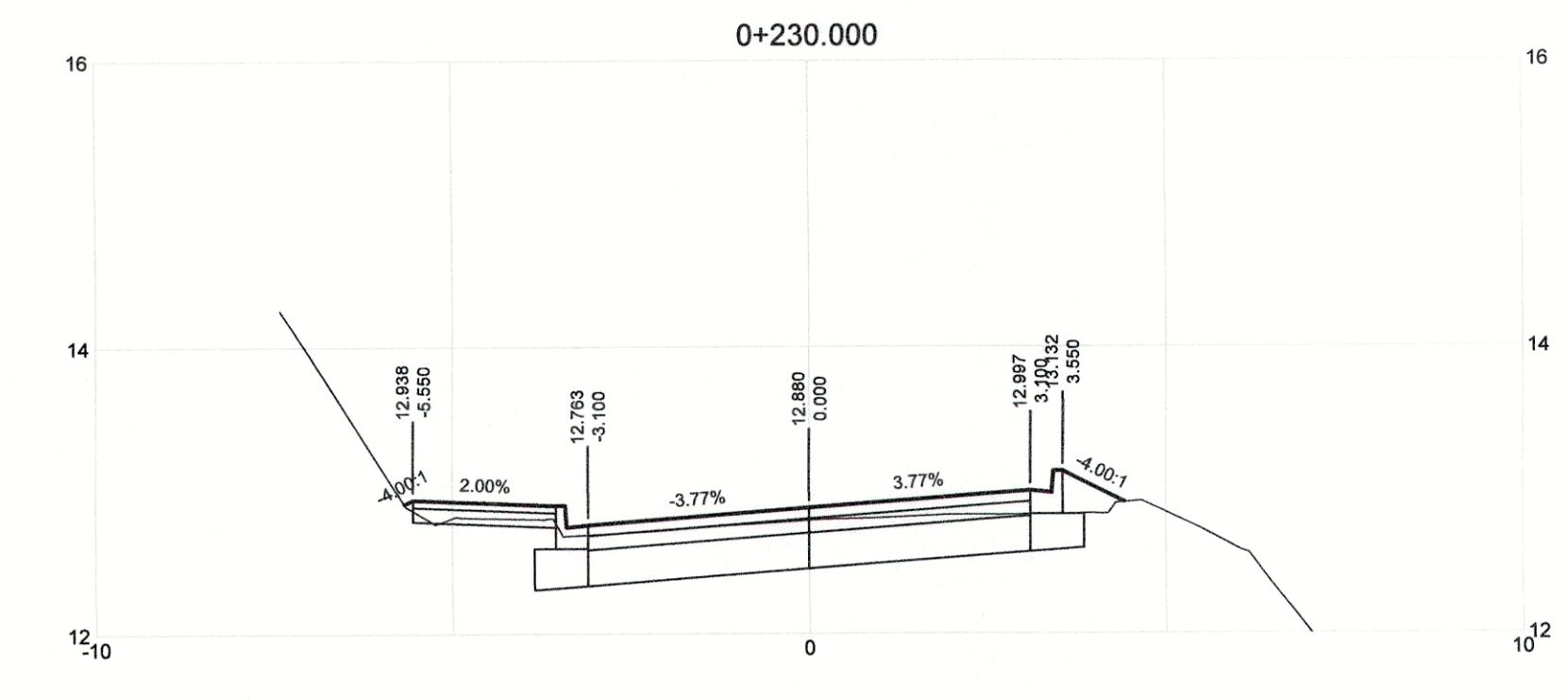
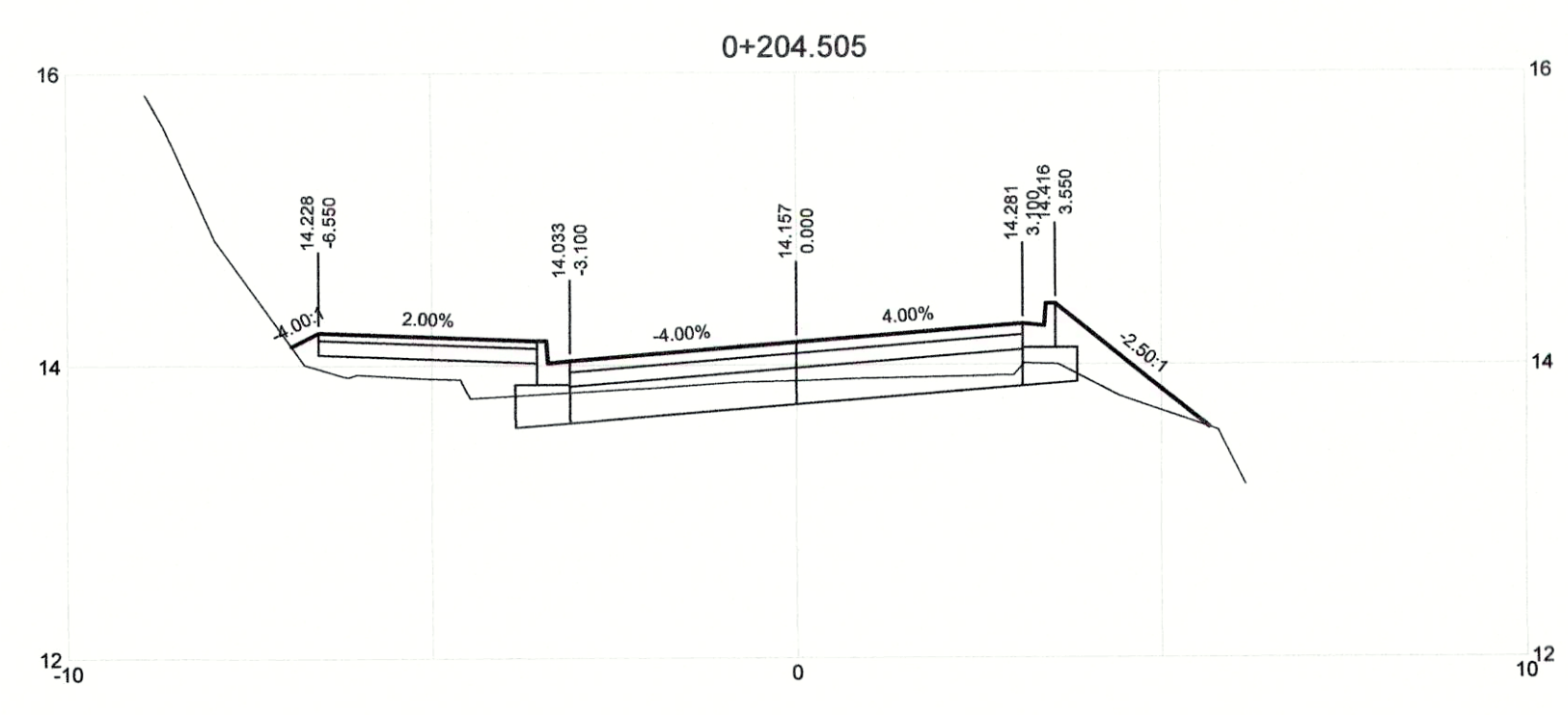
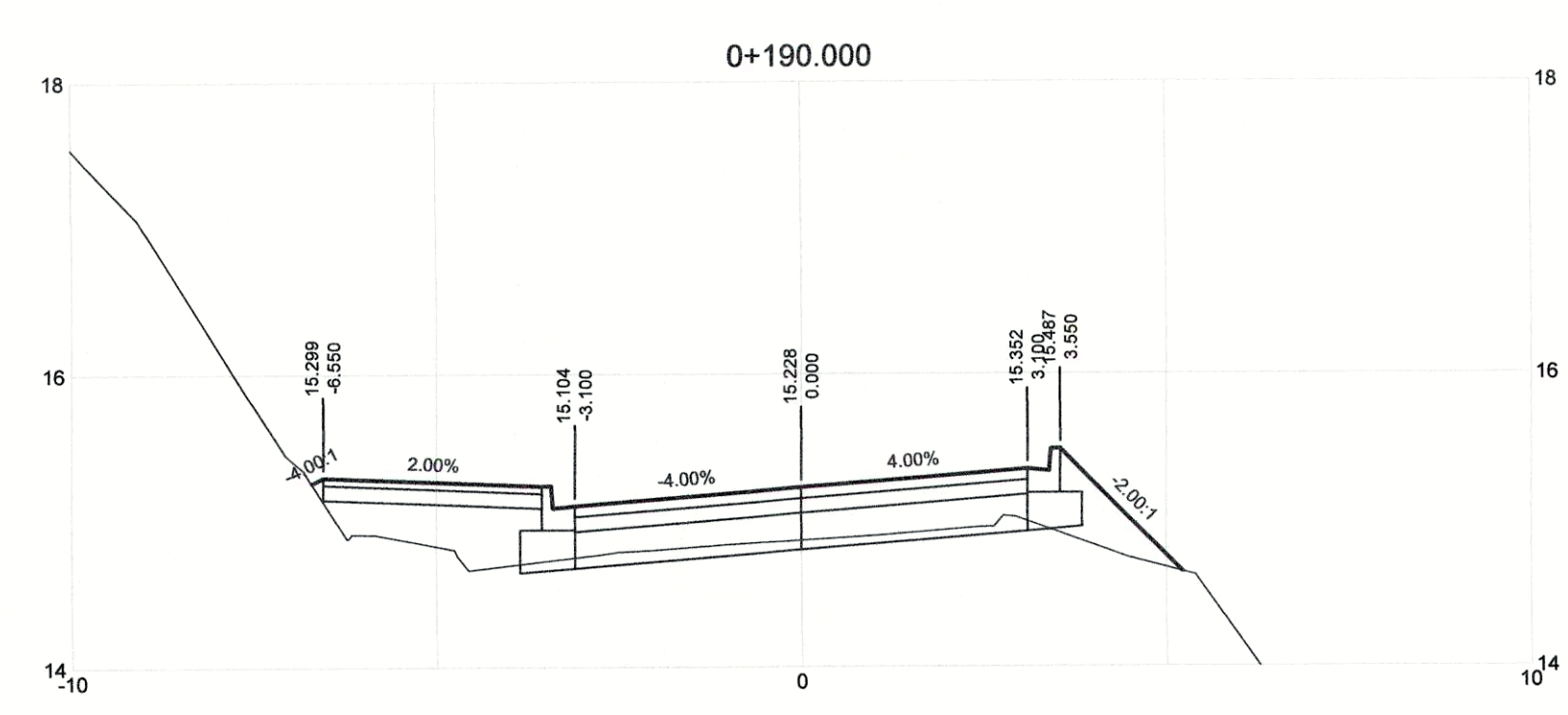
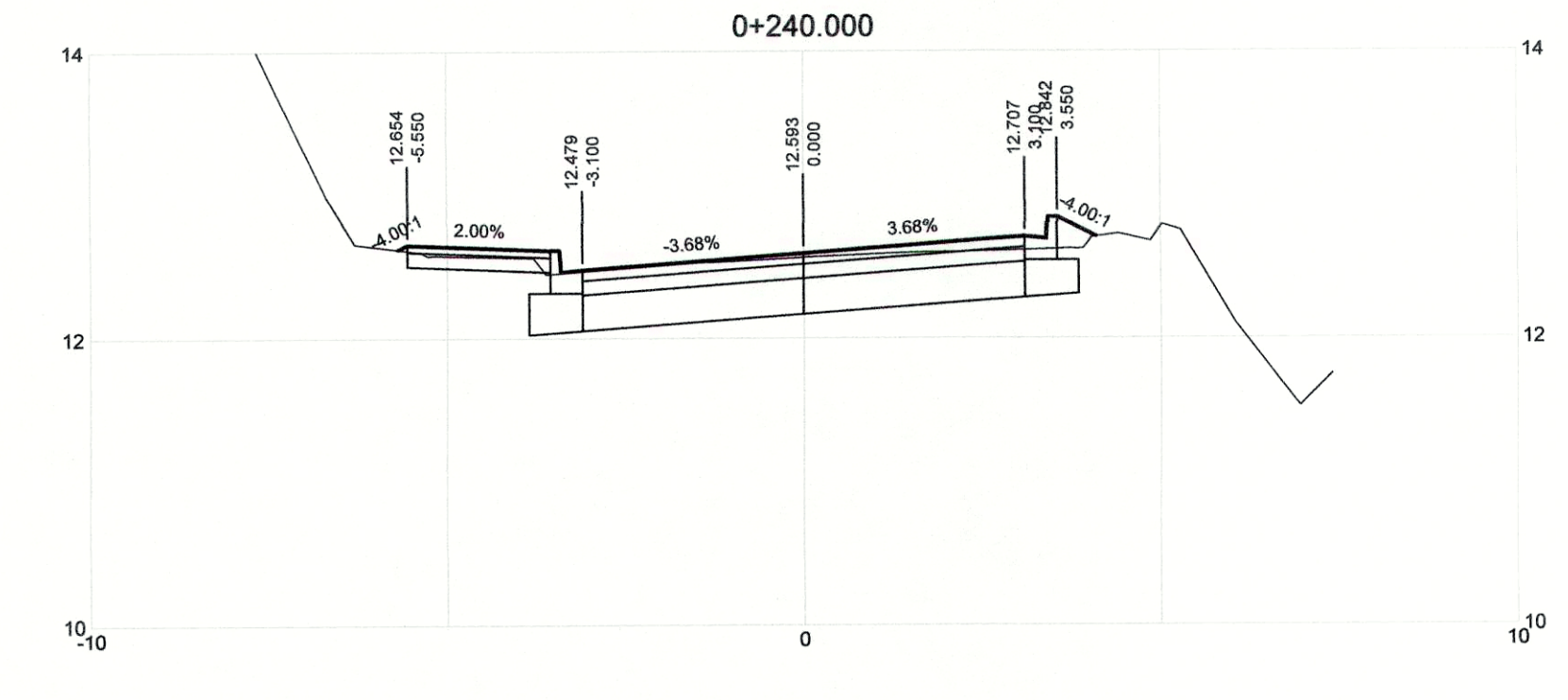
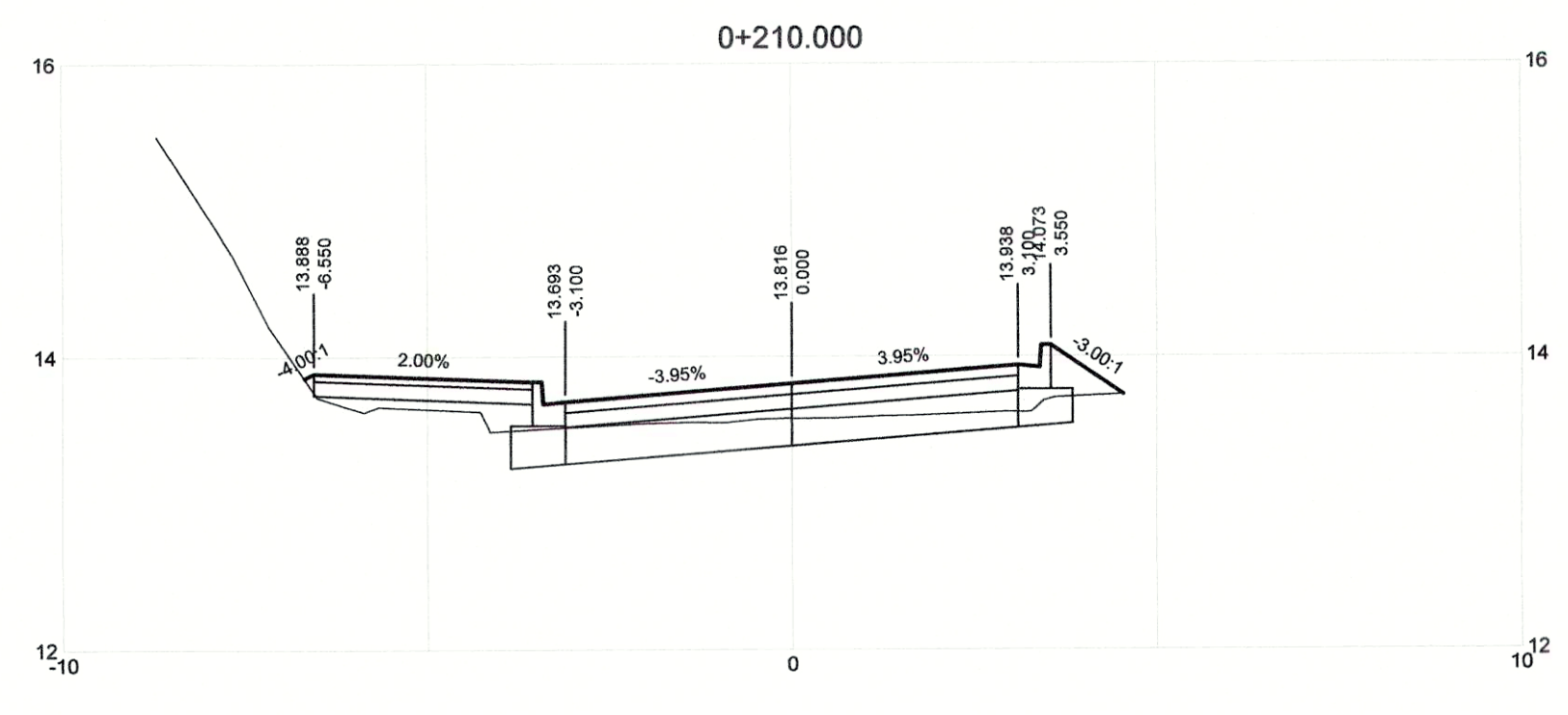
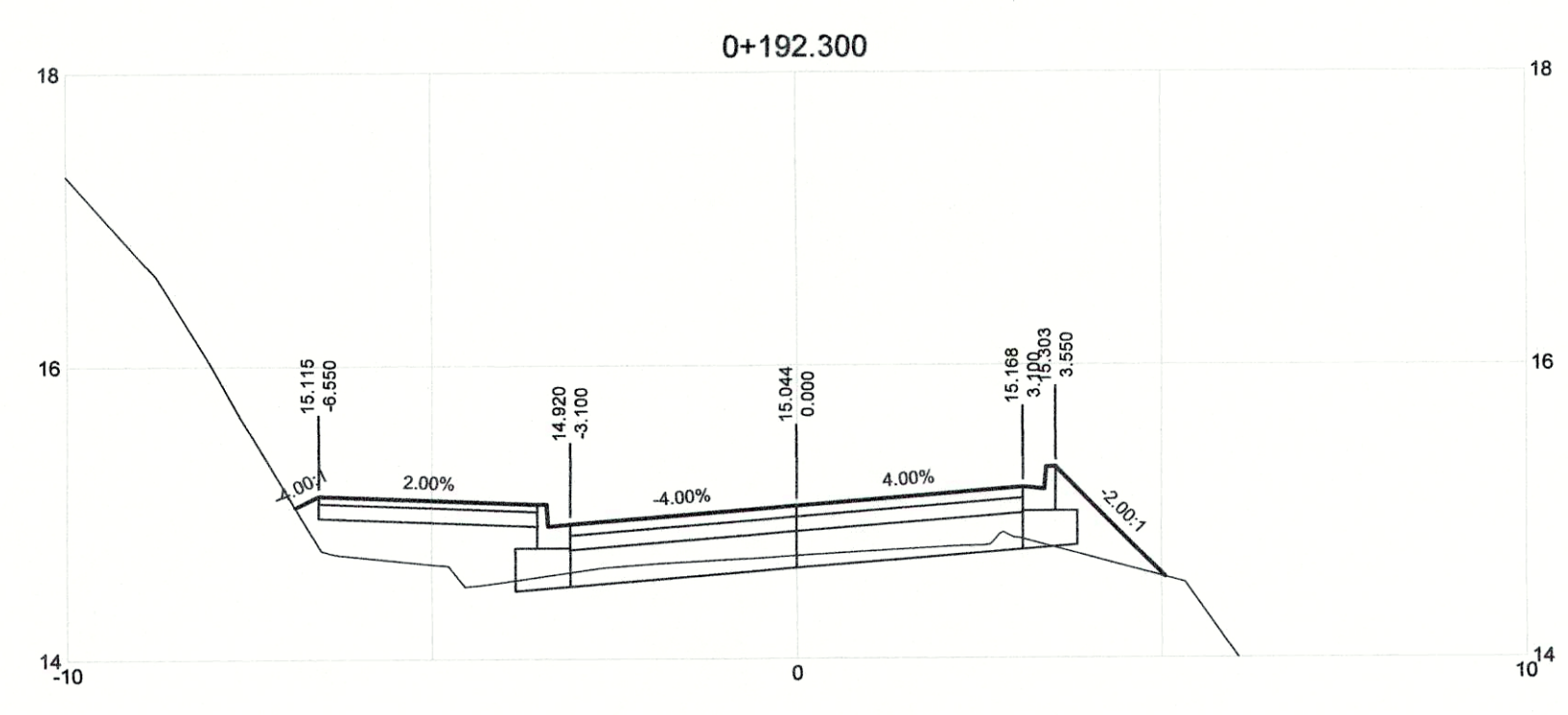


Apr 22, 2019

PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+124.489 TO STA. 0+175	
DESIGNED	KP		
CHECKED	SL		
APPROVED	JG	DRAWING NUMBER	GNINT-204
		SHEET	001
PROJECT NO.		707564	SCALE
DATE		JAN 07, 2018	H 1:100 V 1:50
REV			0







DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG



PROFESSIONAL ENGINEER  
S.X.G.U.  
APR 22, 2019

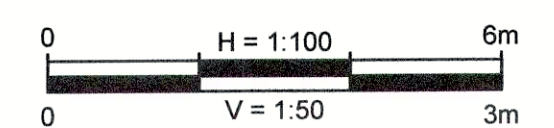
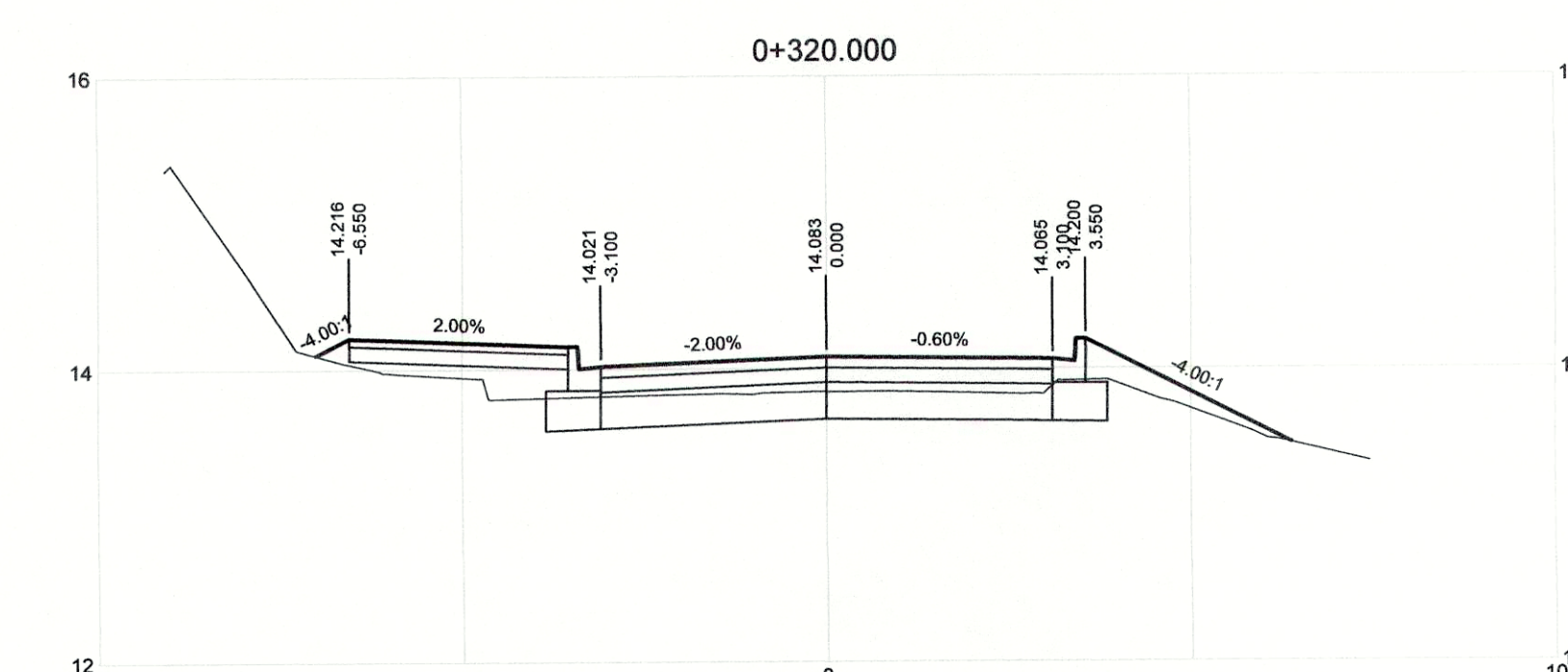
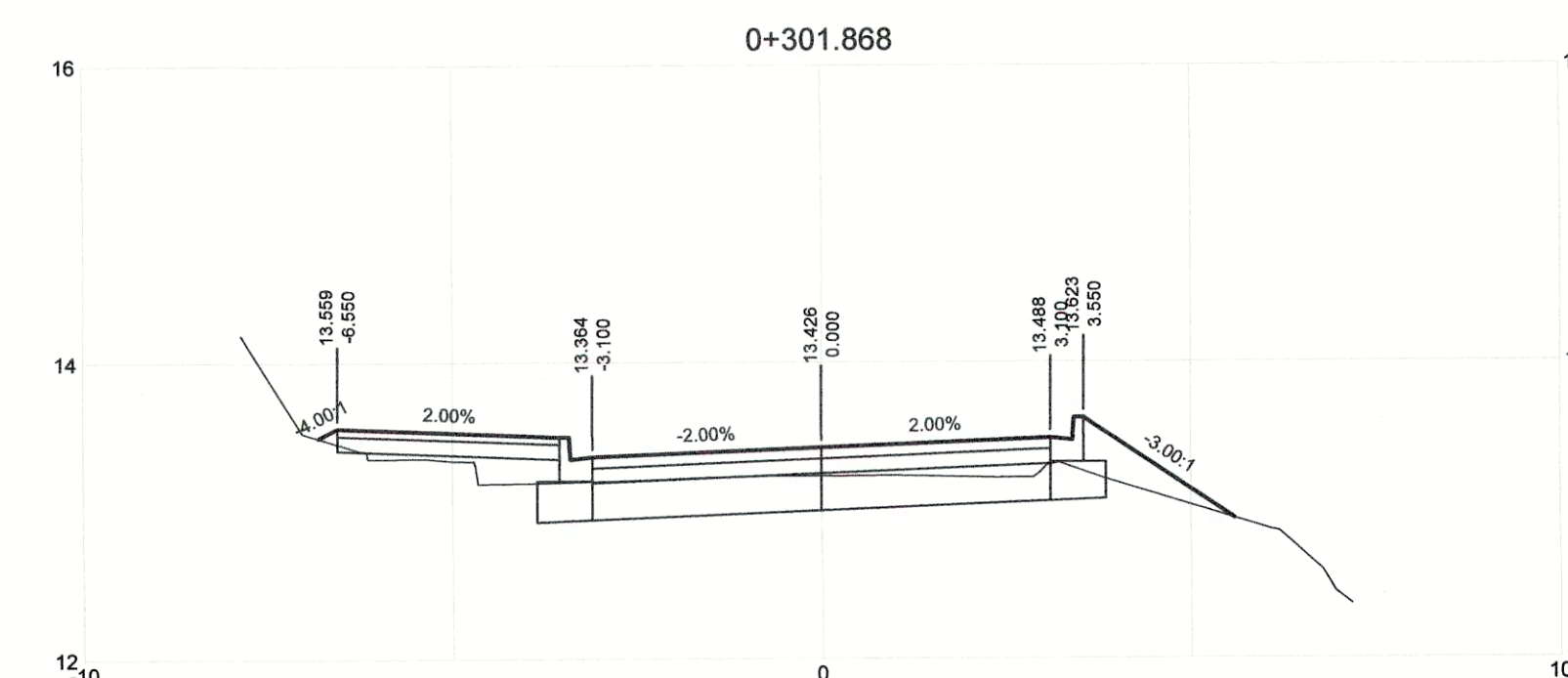
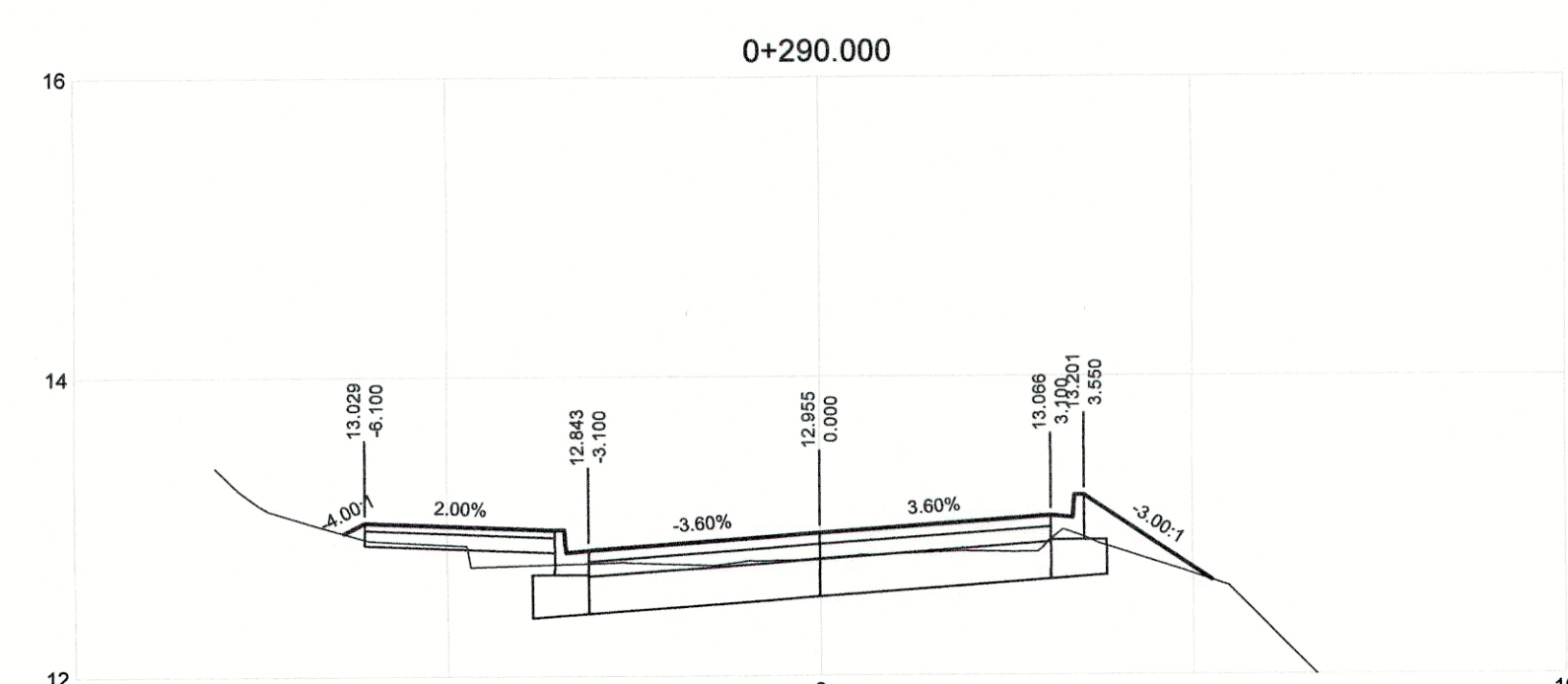
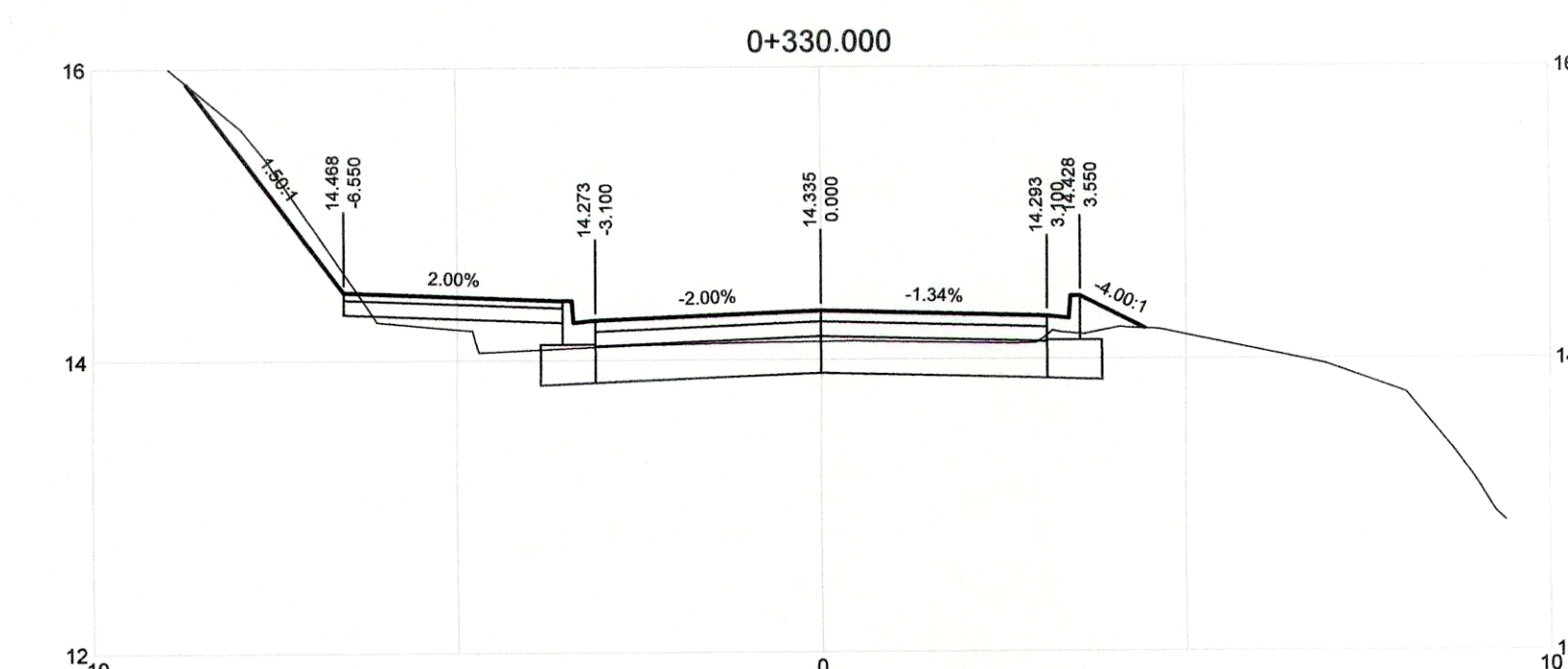
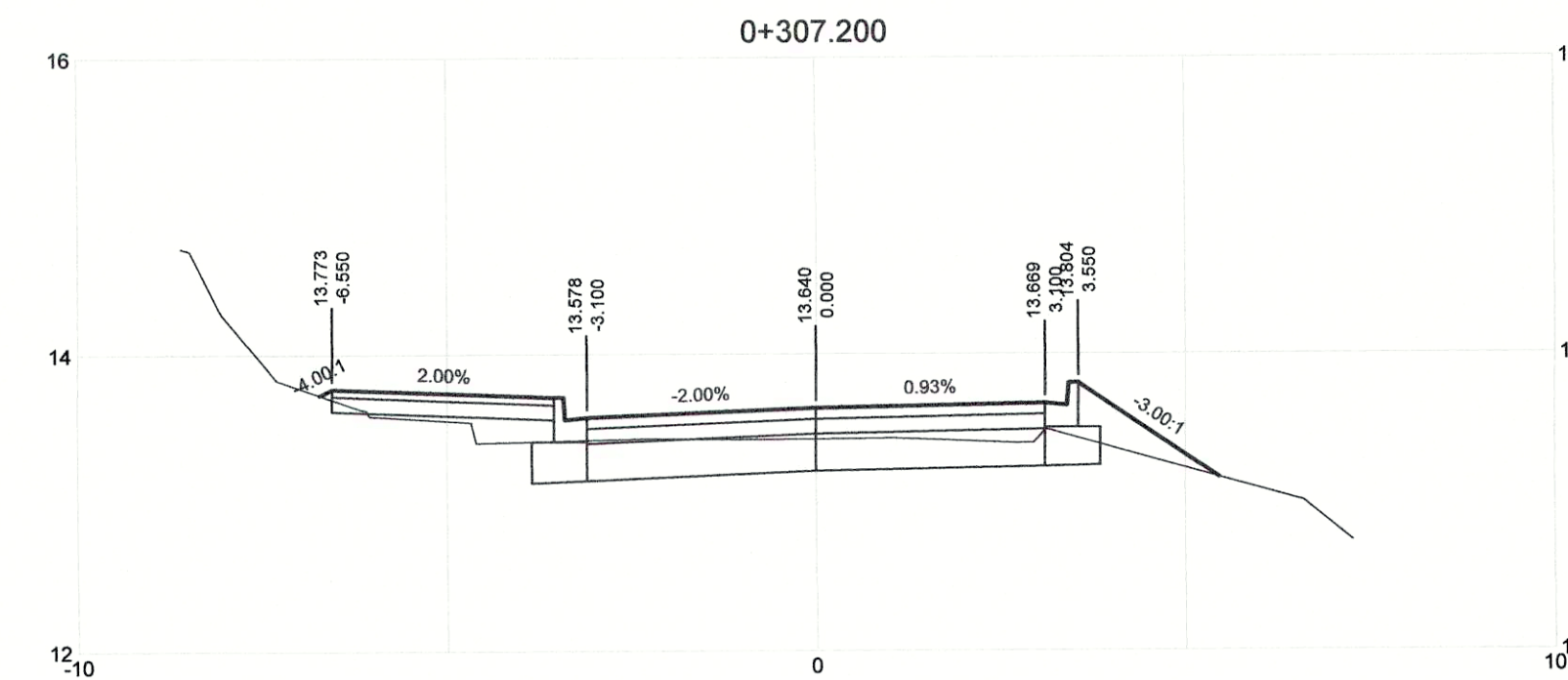
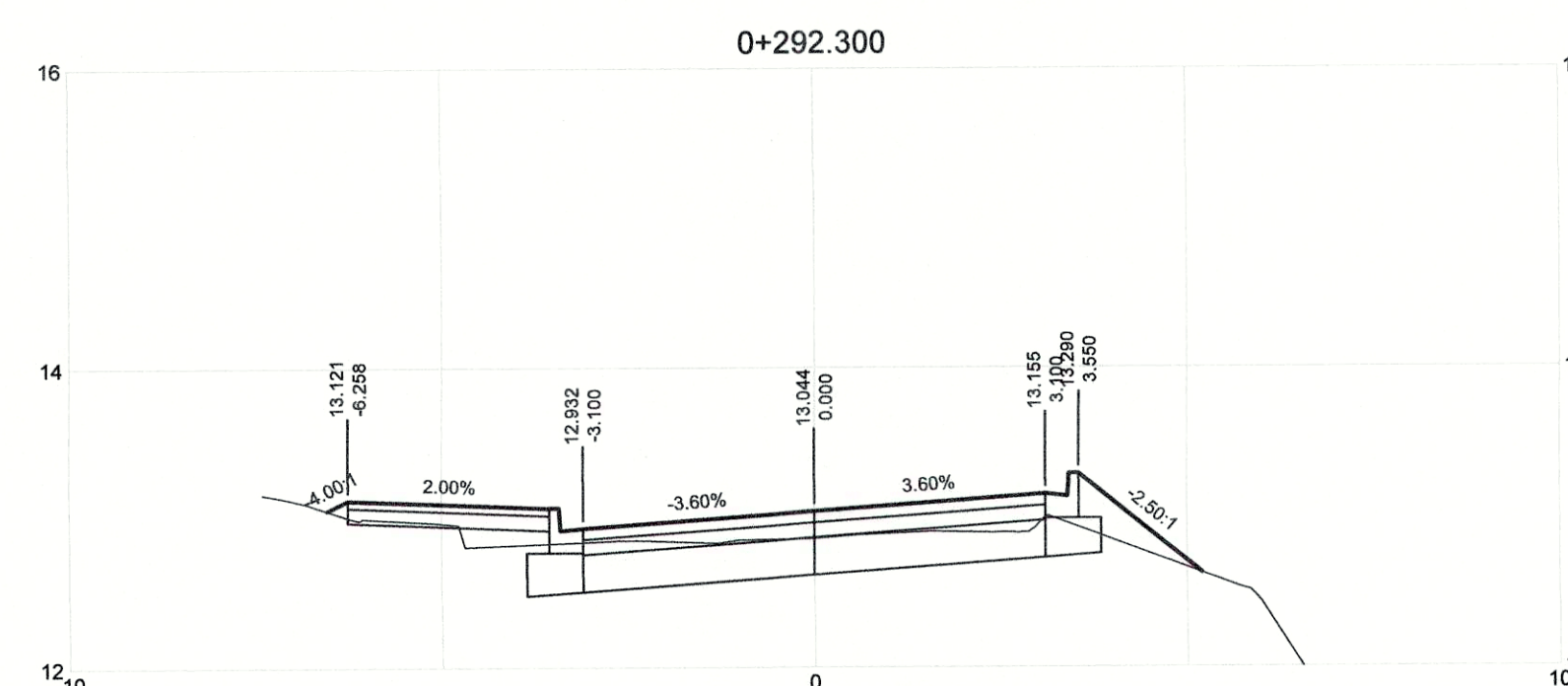
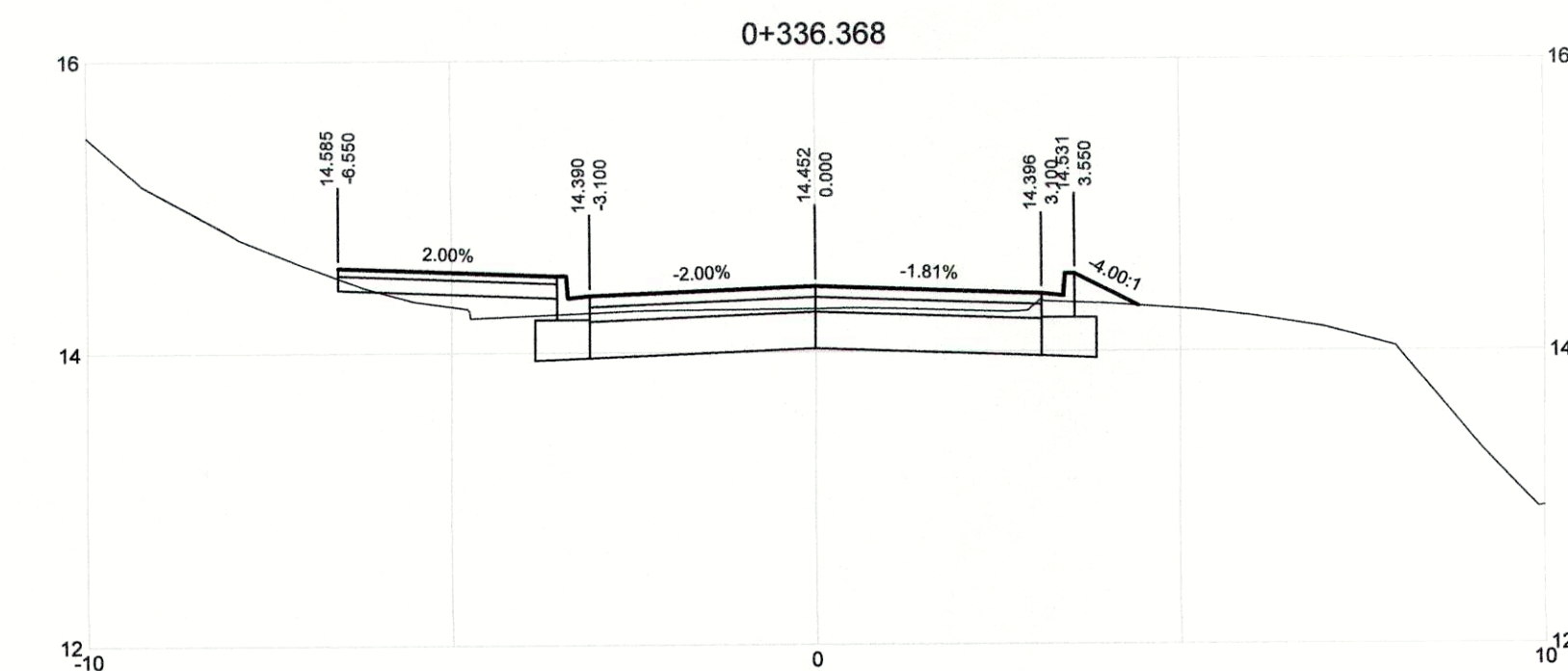
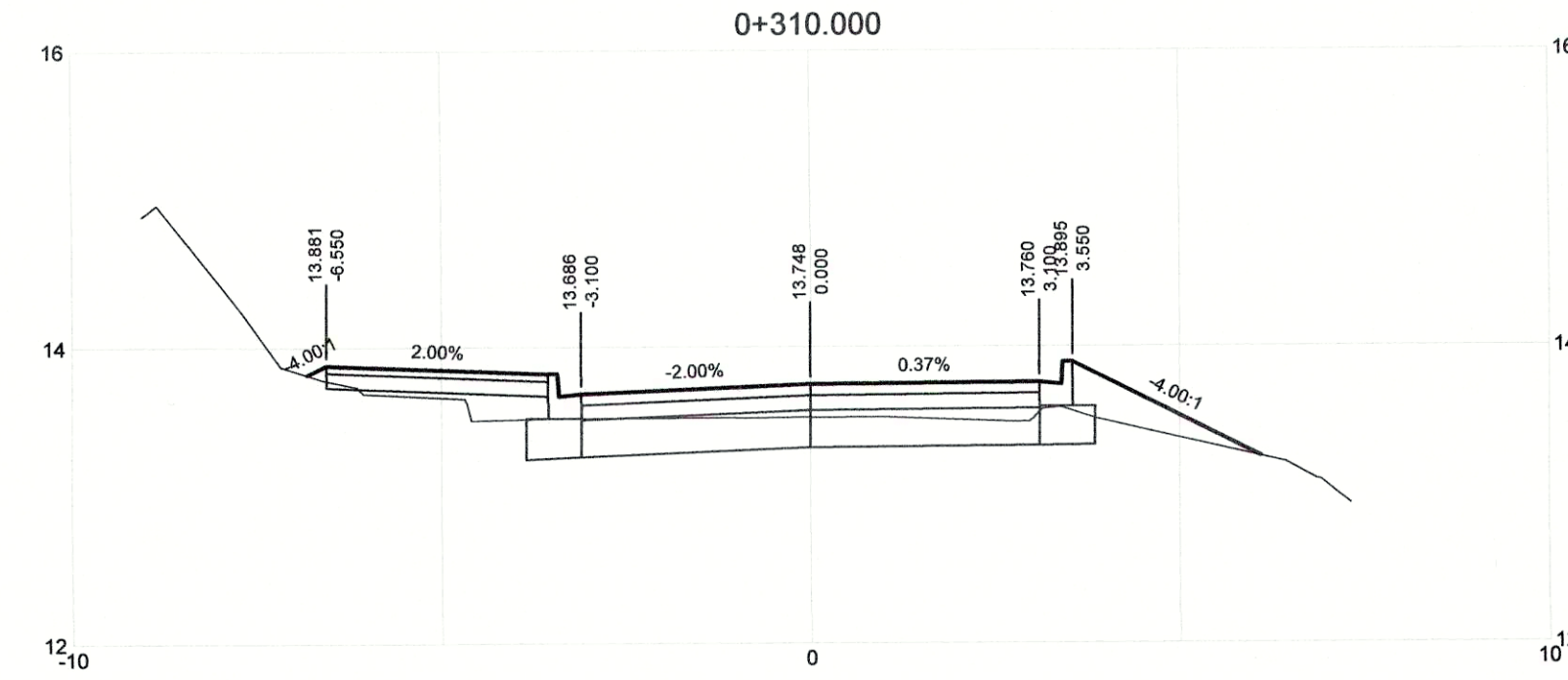
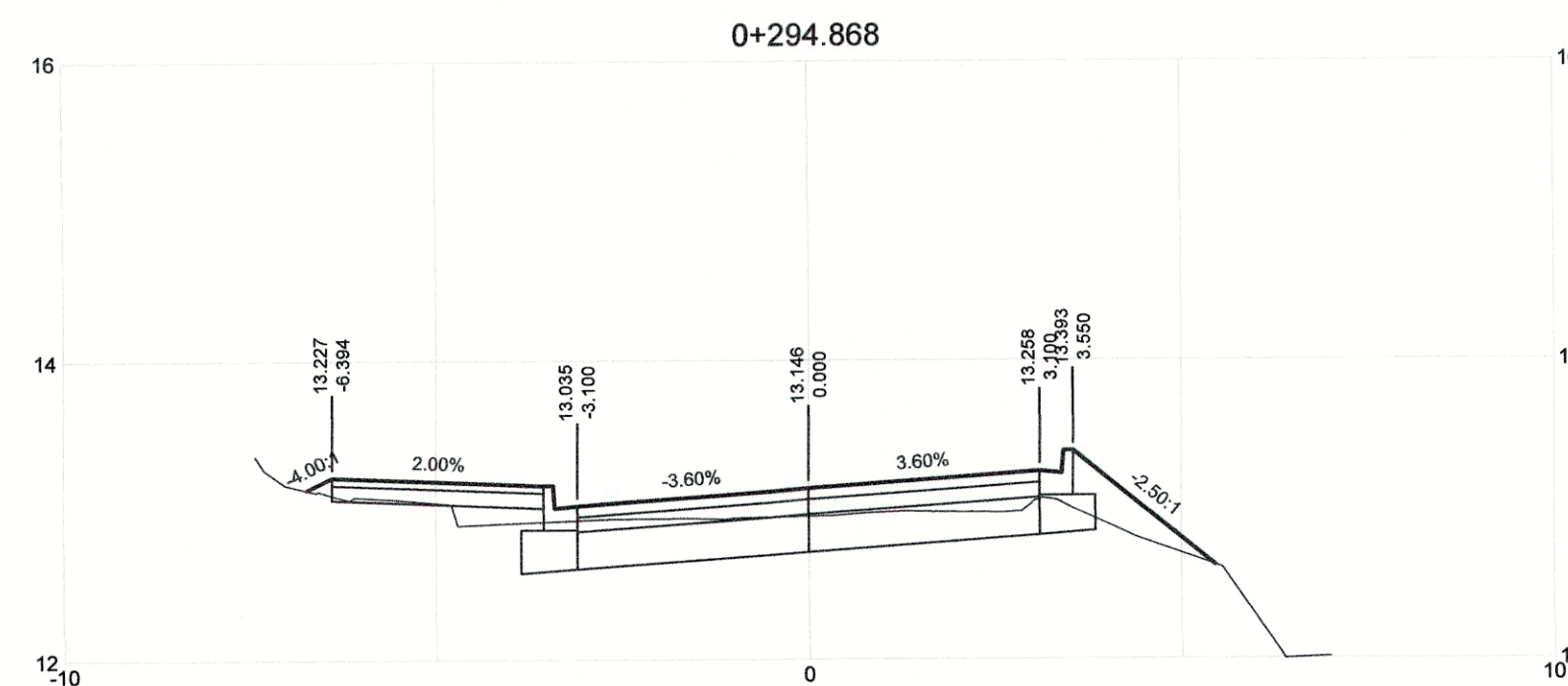
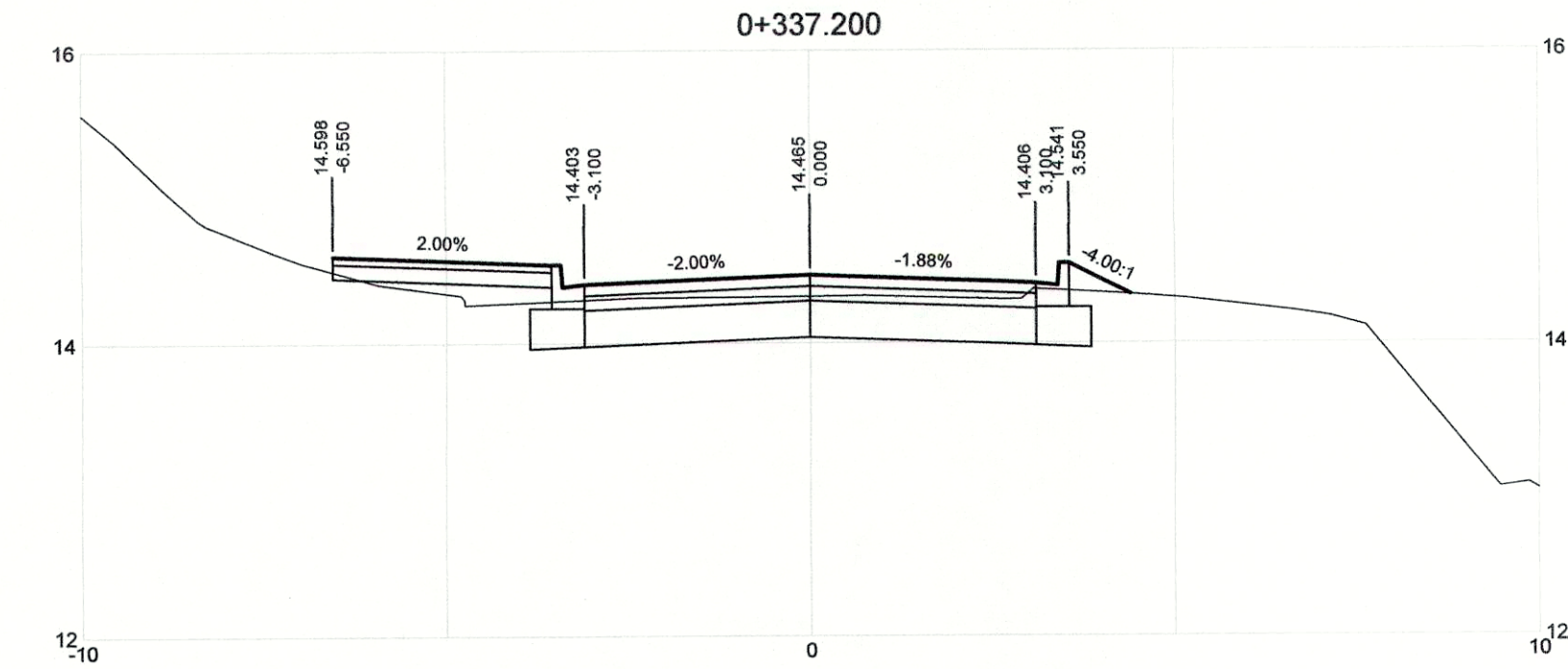
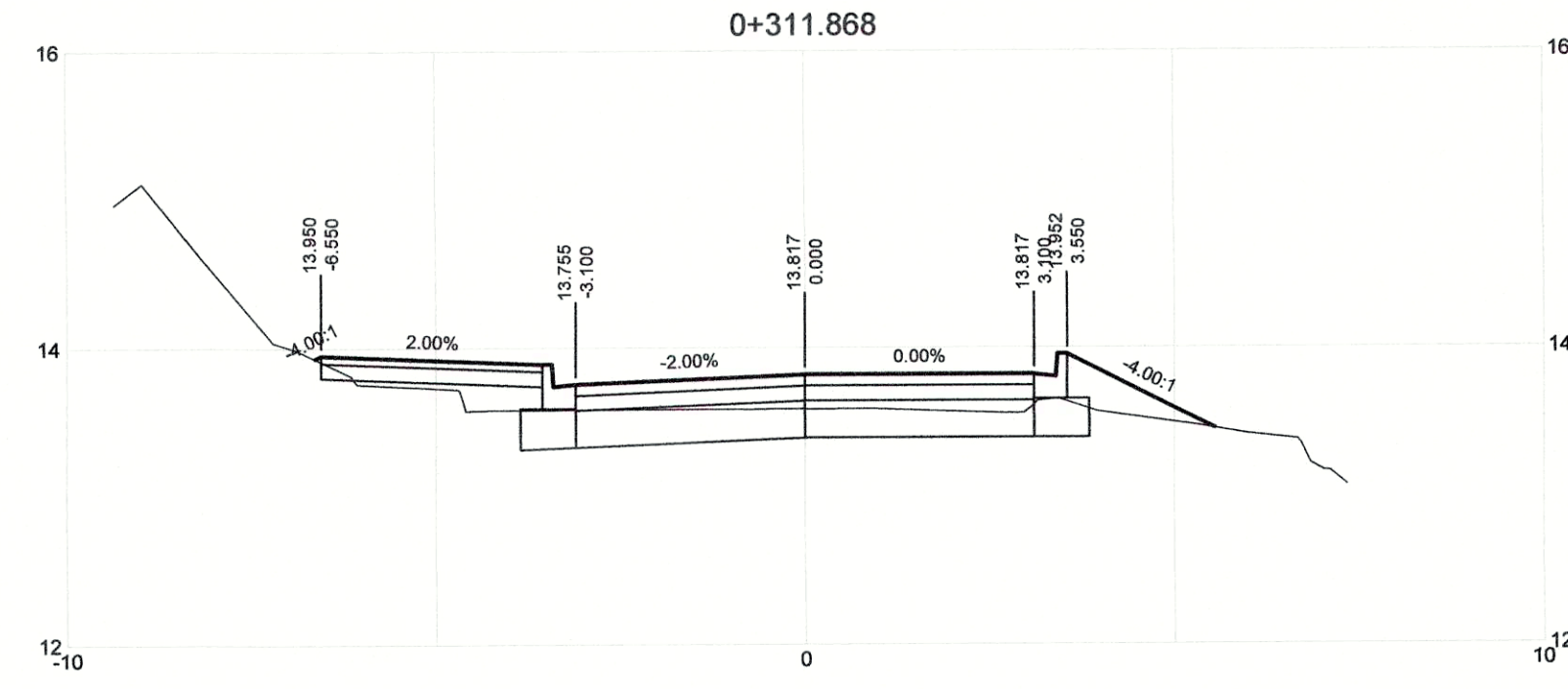
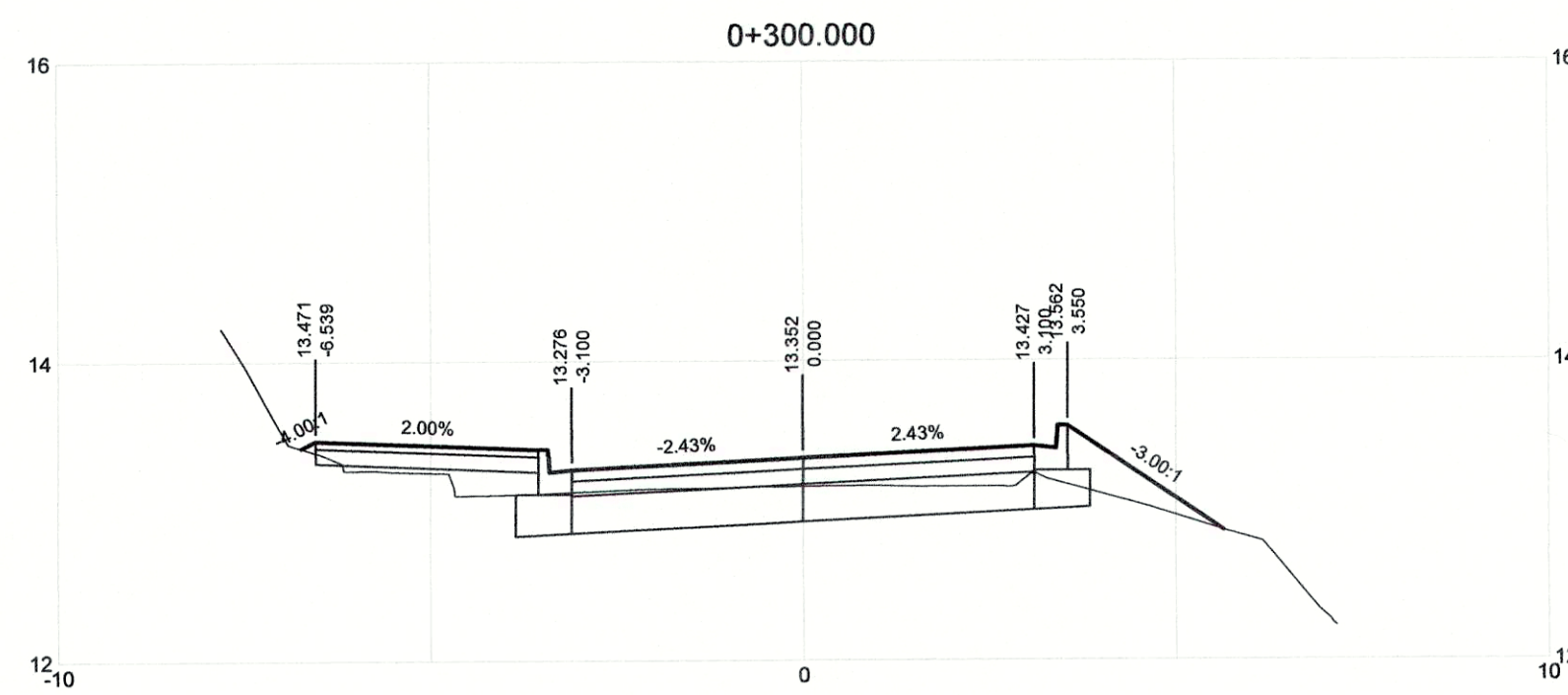
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	<b>CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+180 TO STA. 0+240</b>	
DESIGNED	KP		
CHECKED	SL		
APPROVED	JG		
DRAWING NUMBER	GNINT-205	SHEET	001
PROJECT NO.		707564	SCALE
DATE		JAN 07, 2018	H 1:100 V 1:50
REV			0



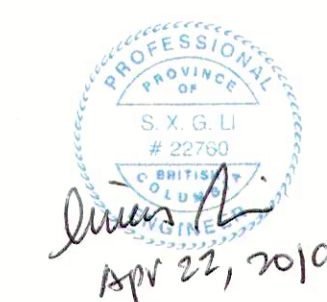
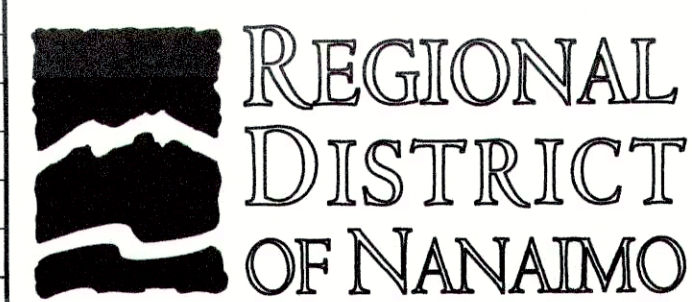








DRAWING NO.	TITLE	REV	DATE	ISSUED FOR TENDER	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
					DRN	CHK	APP



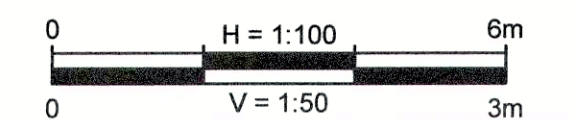
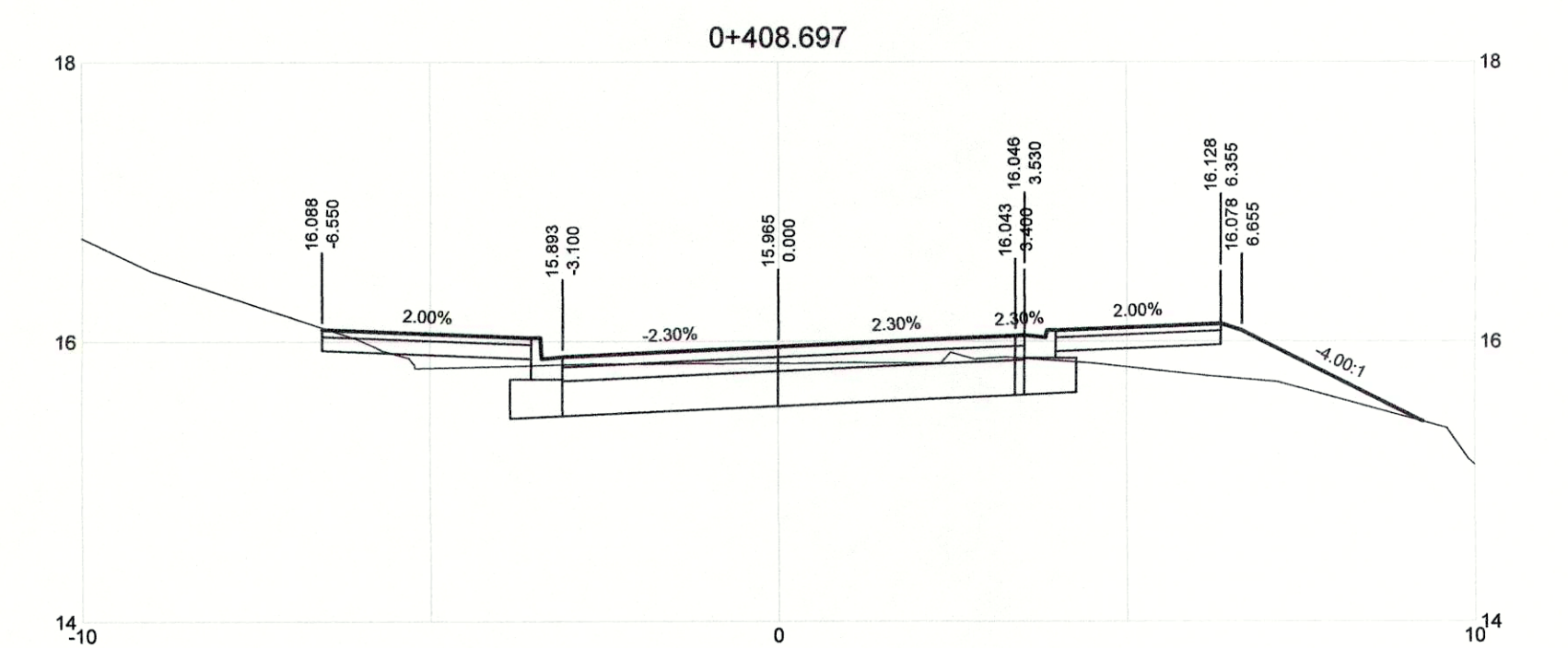
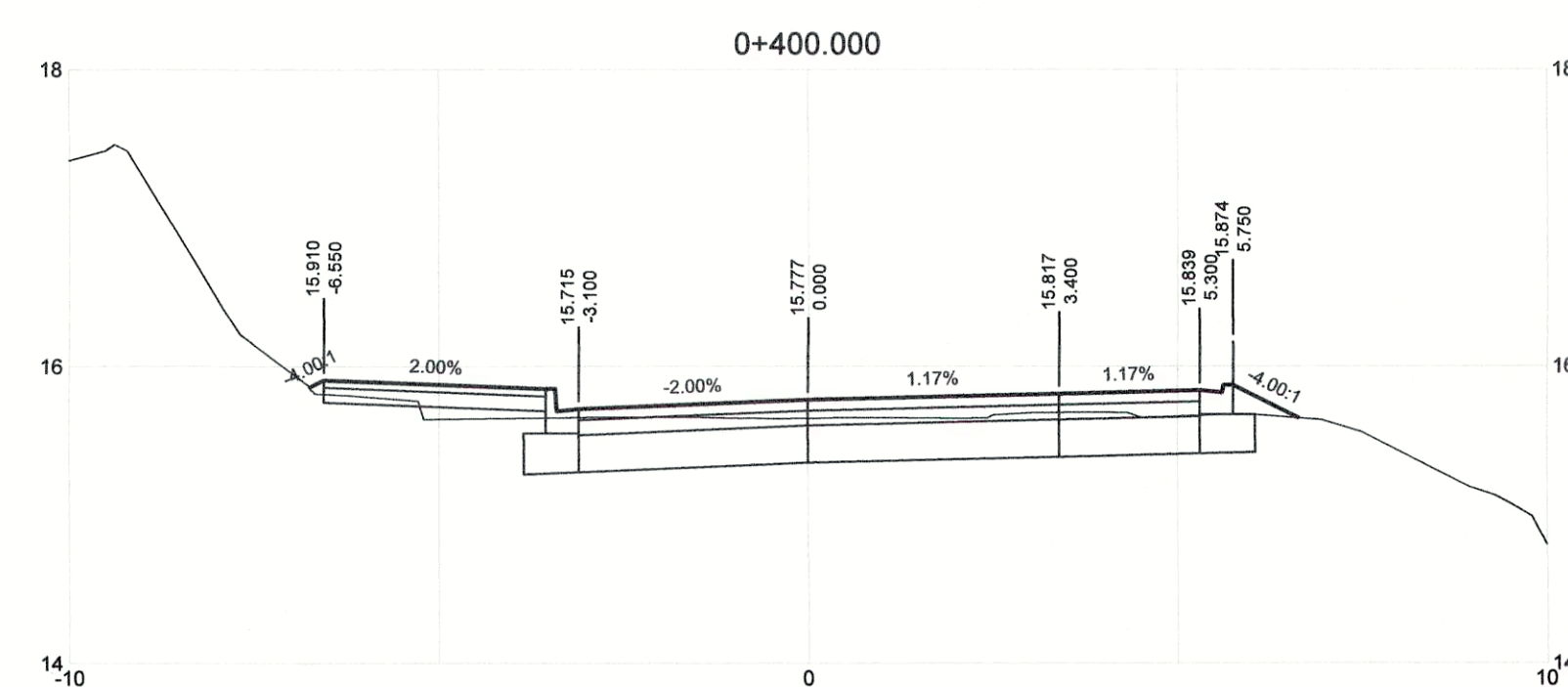
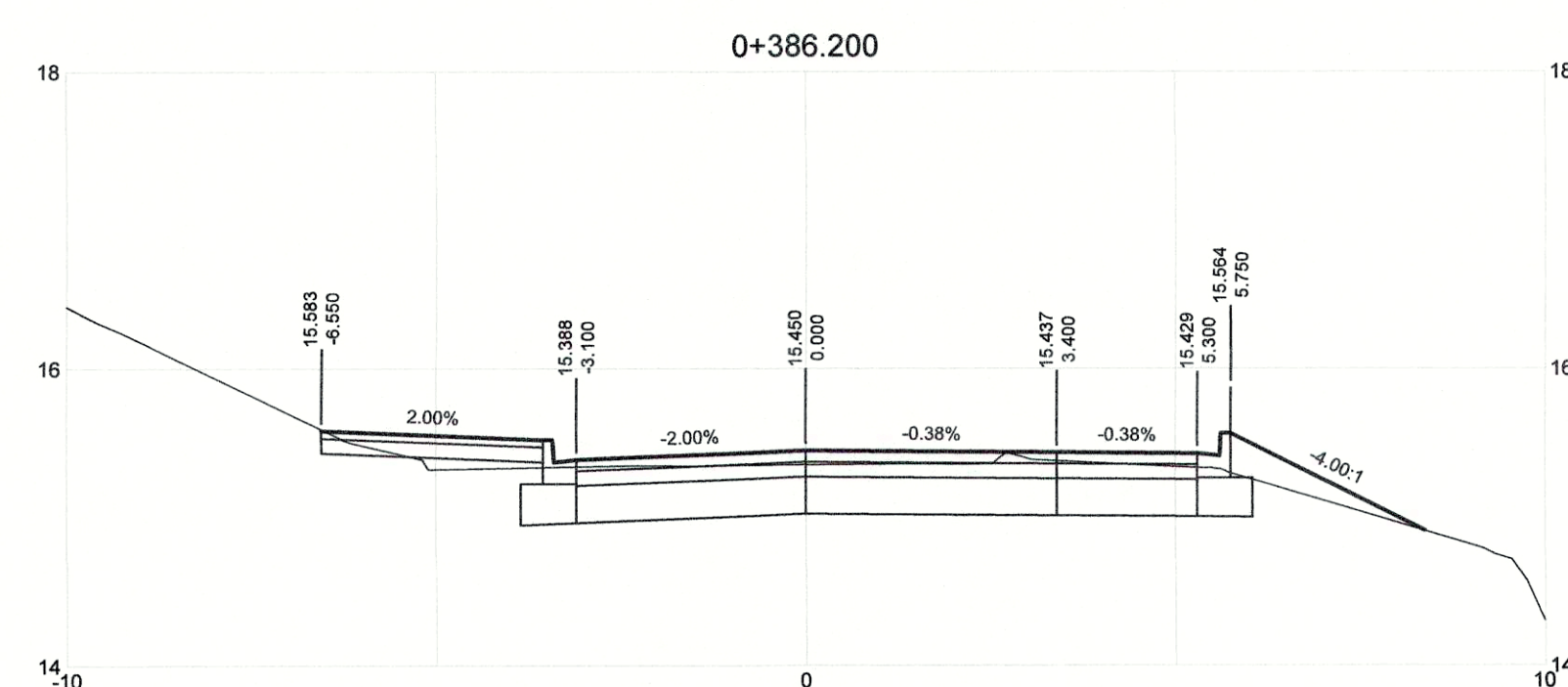
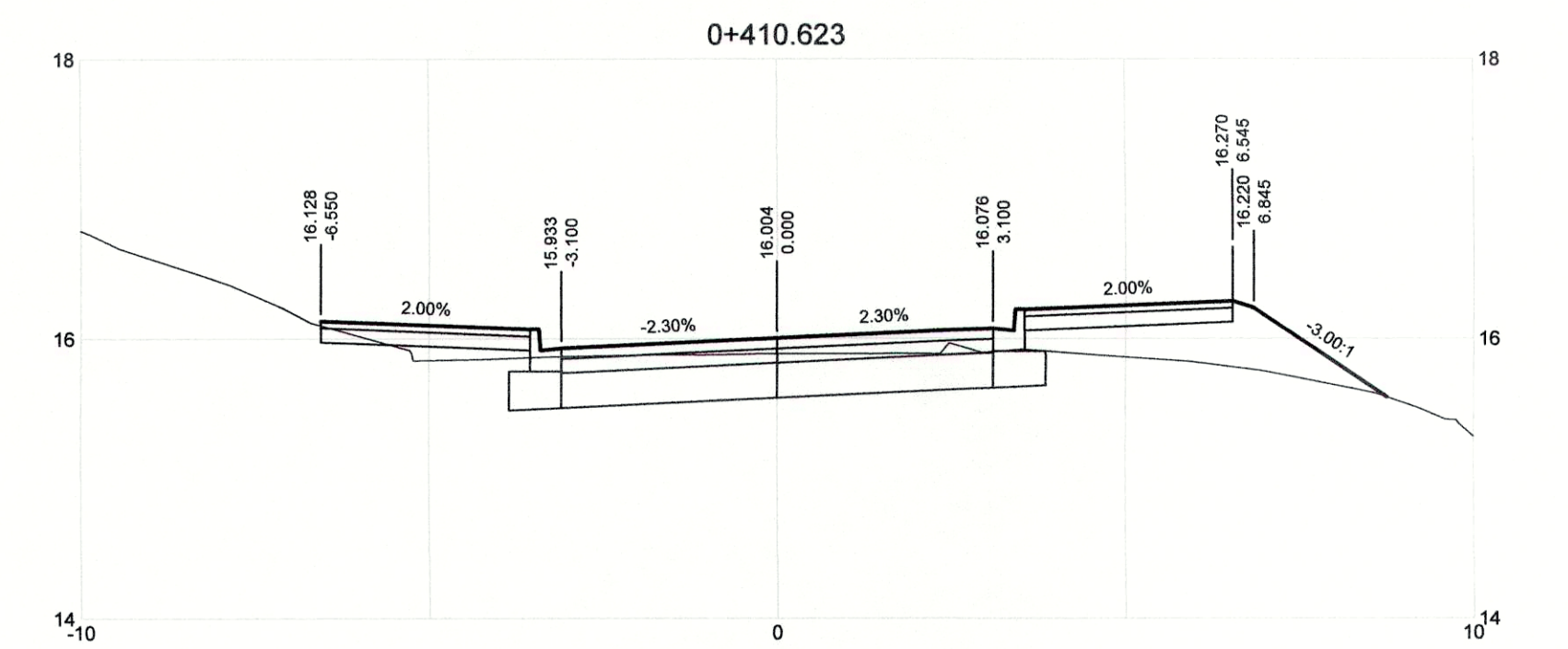
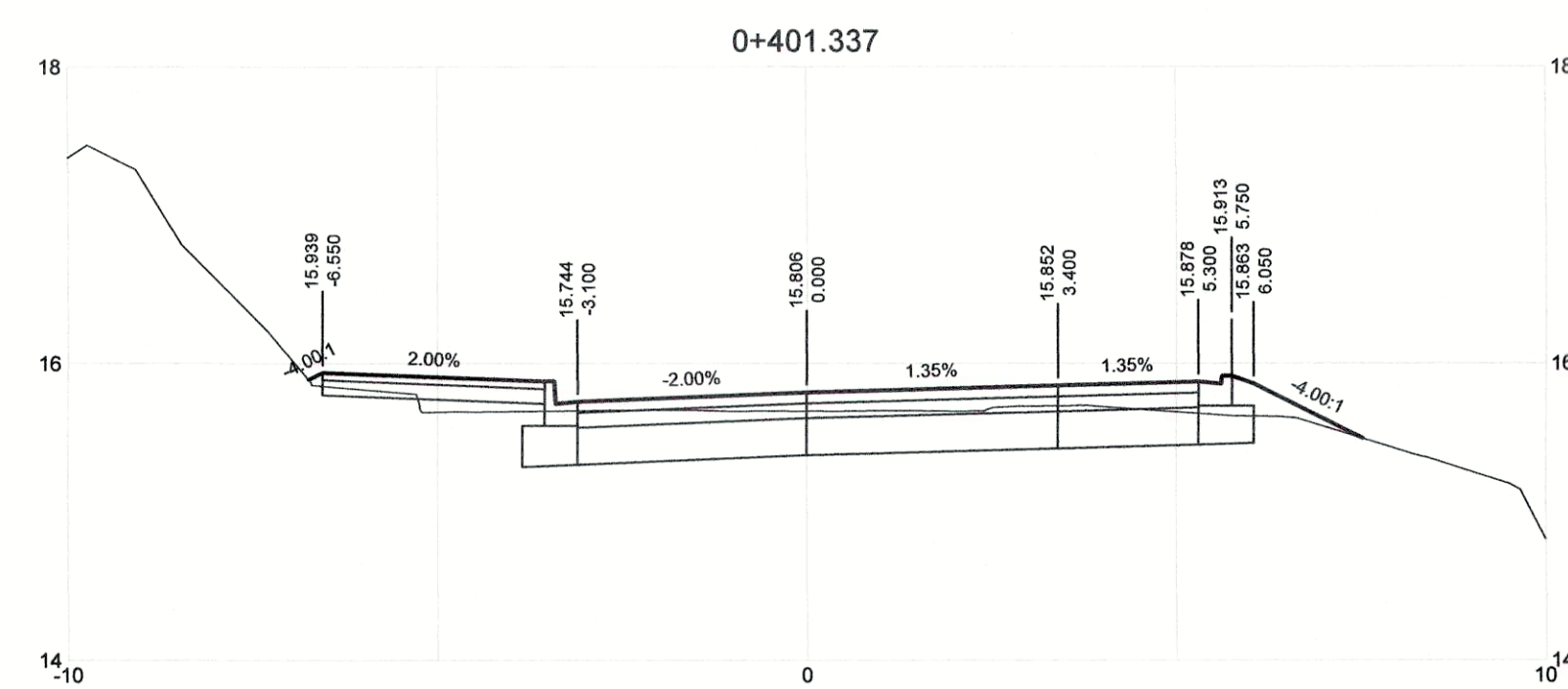
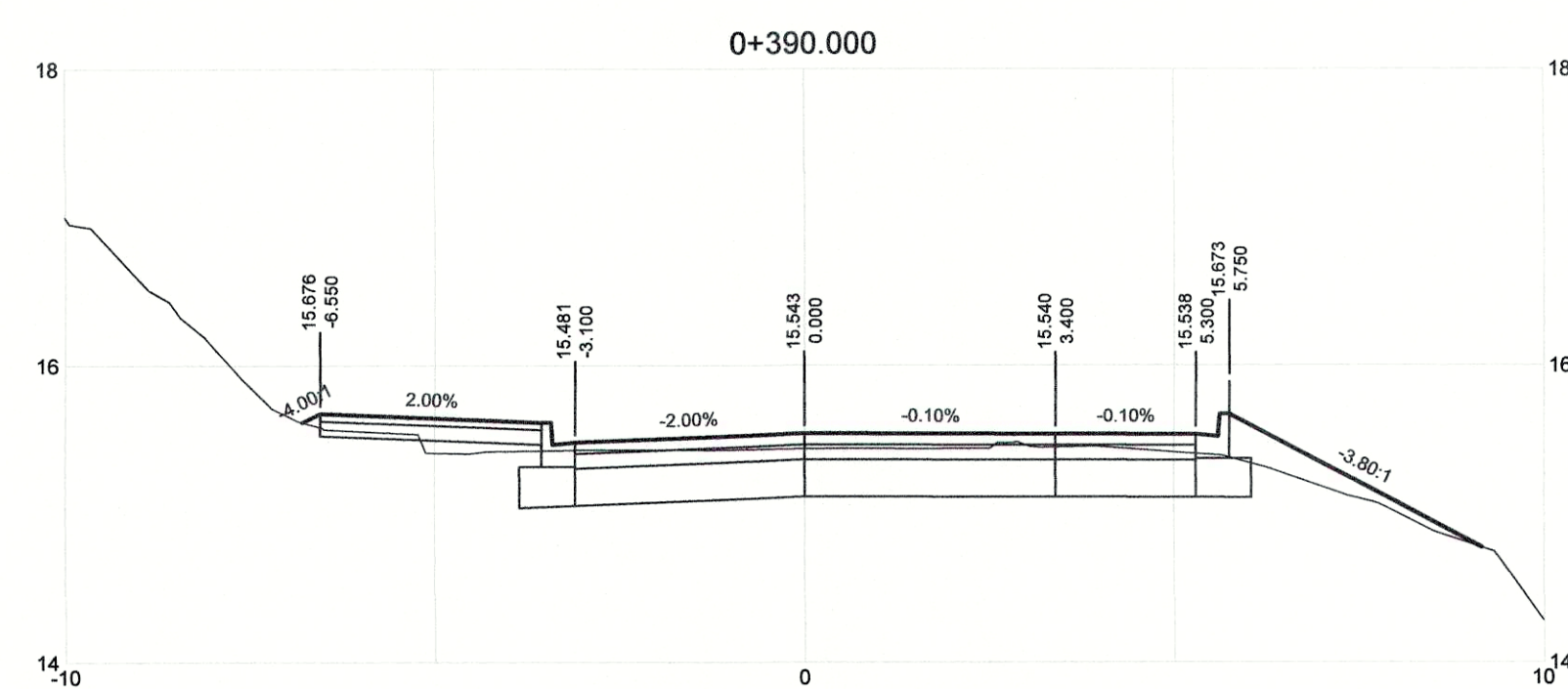
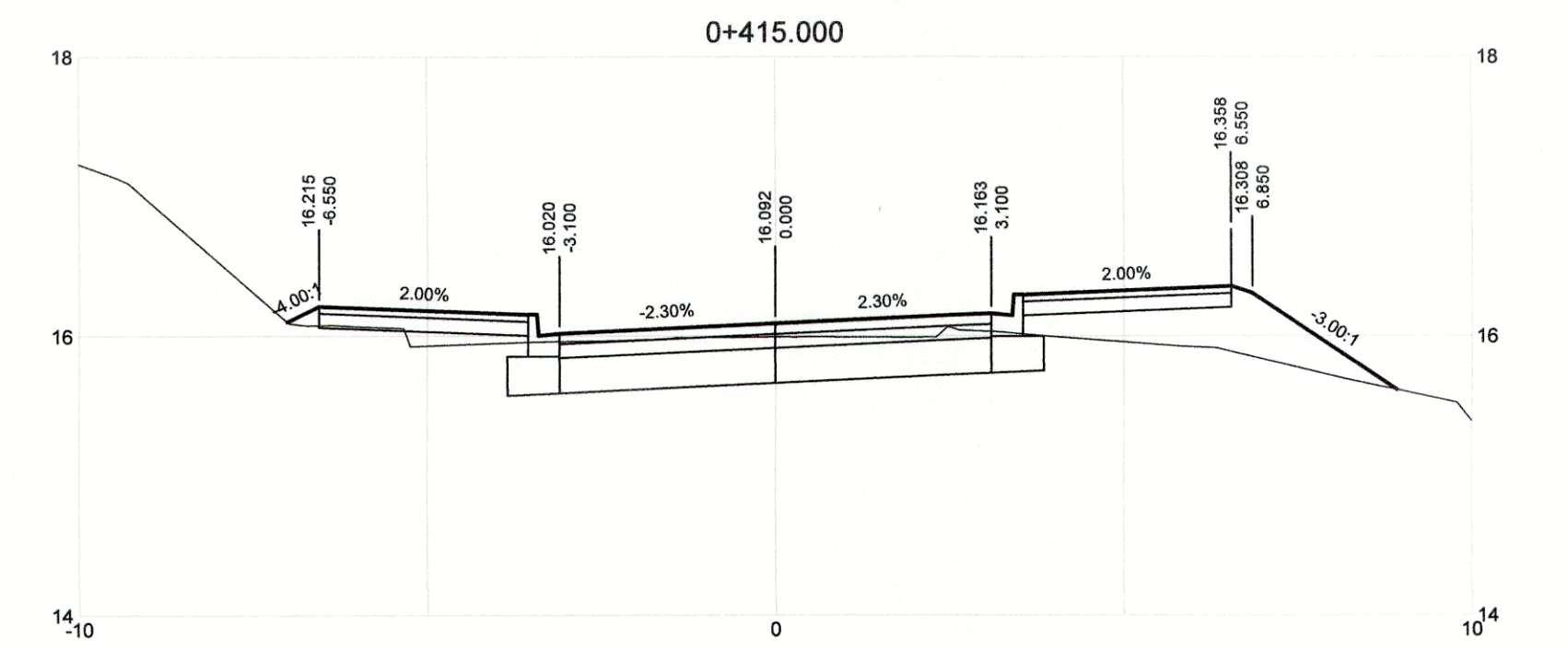
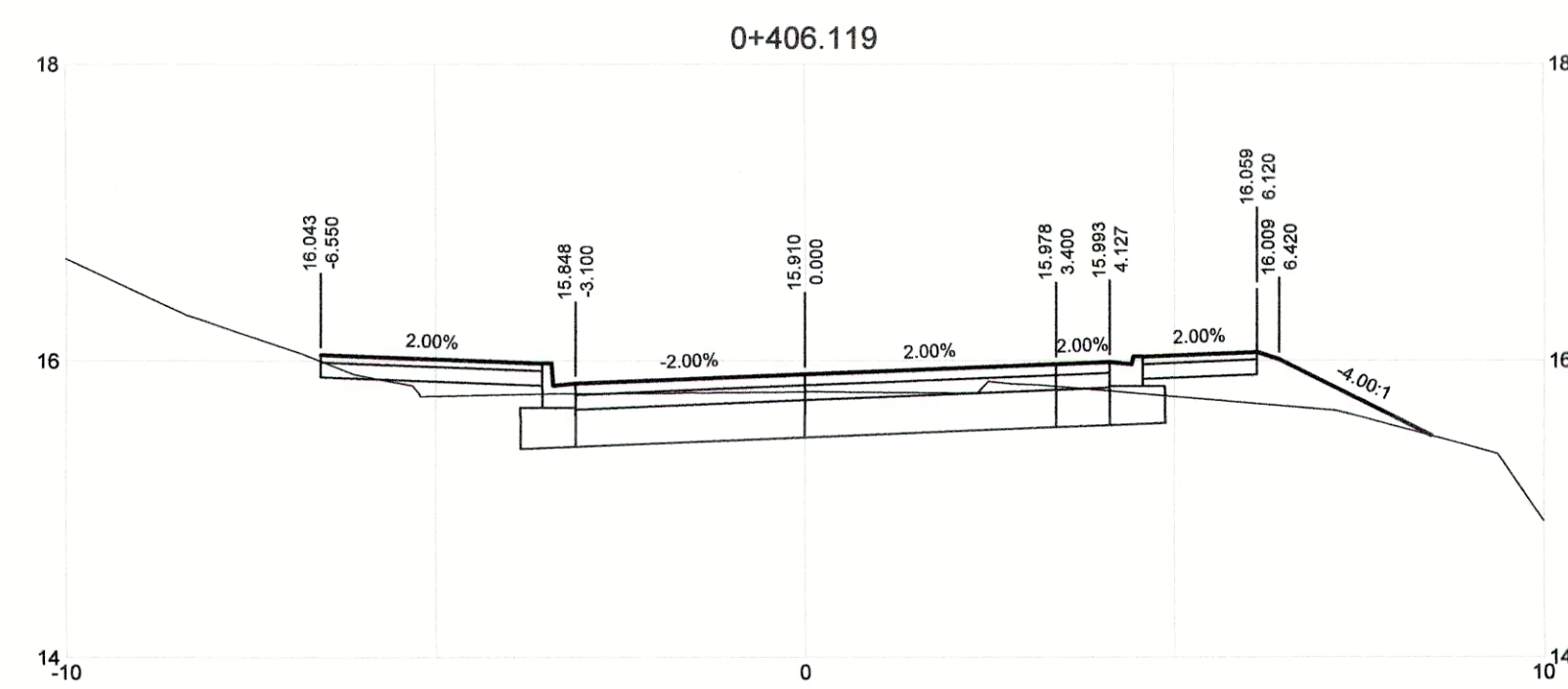
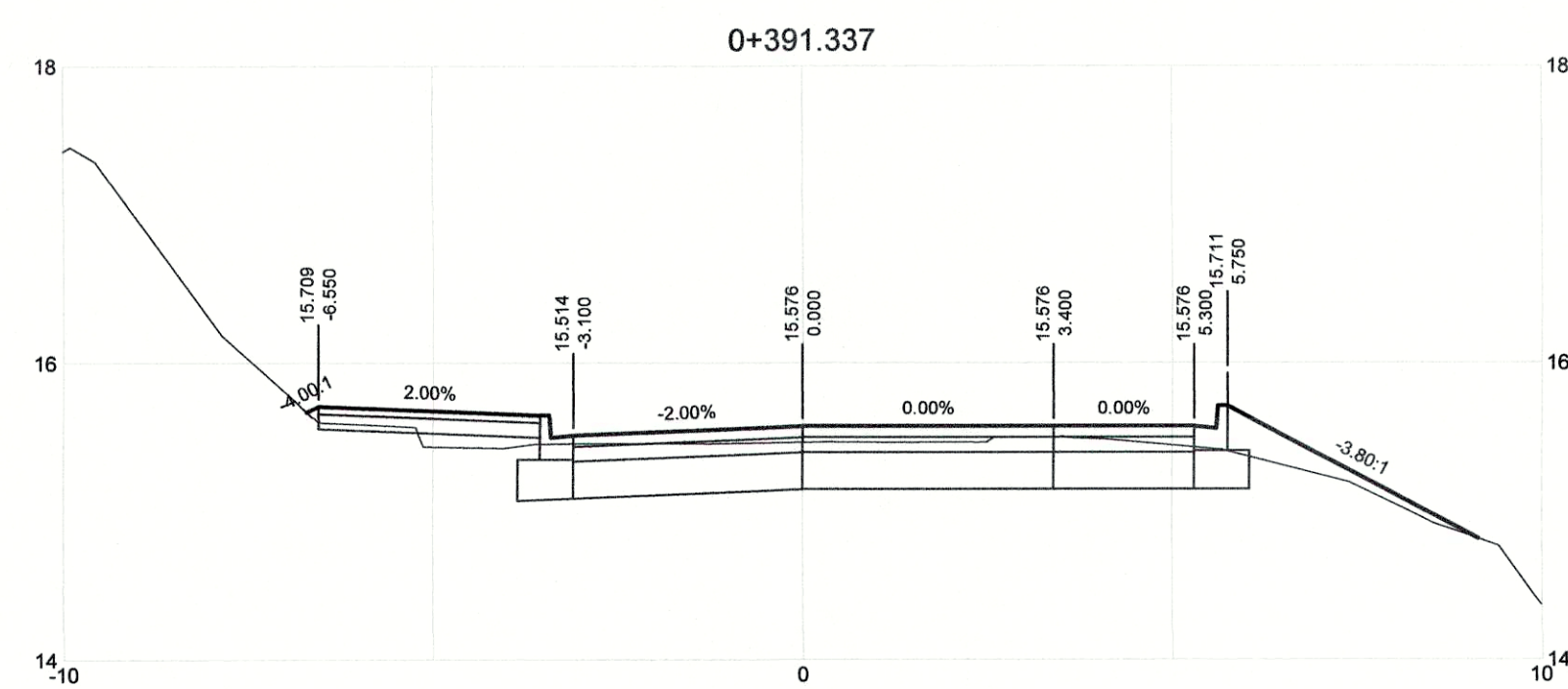
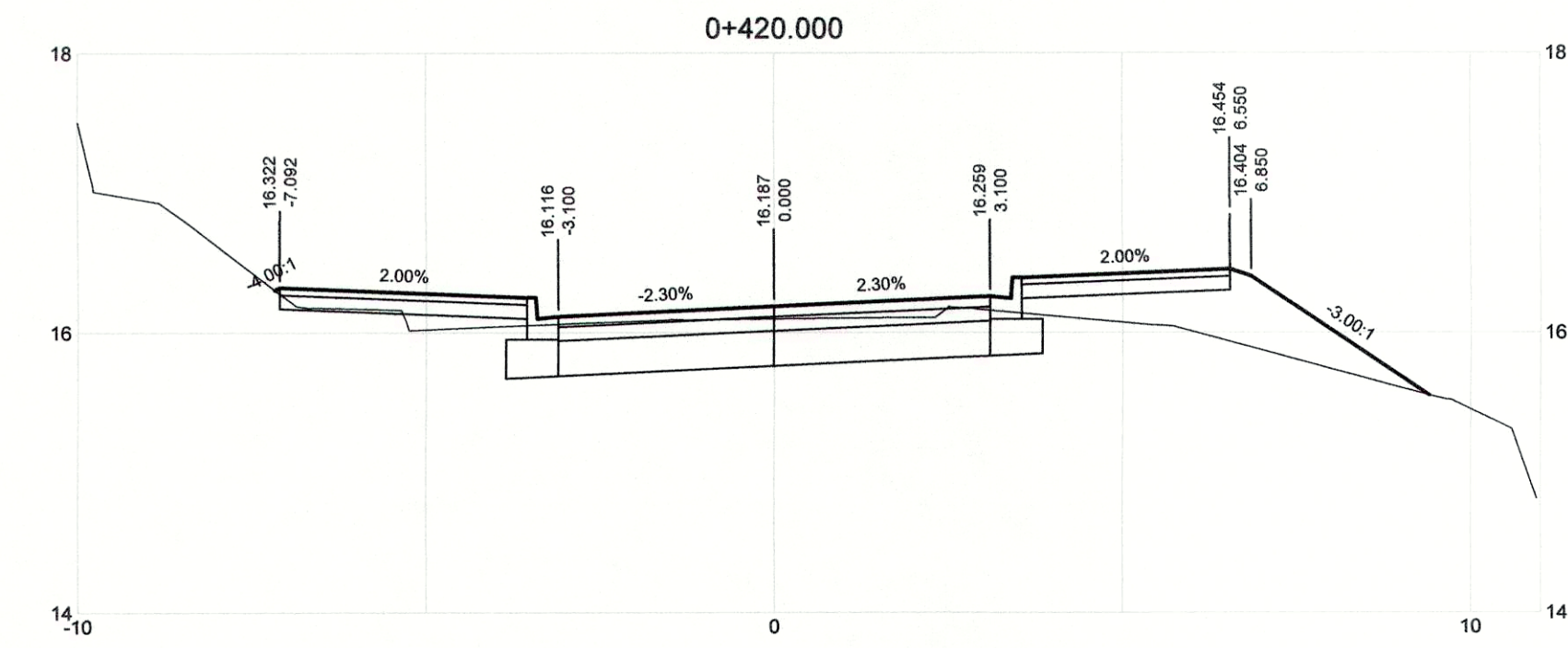
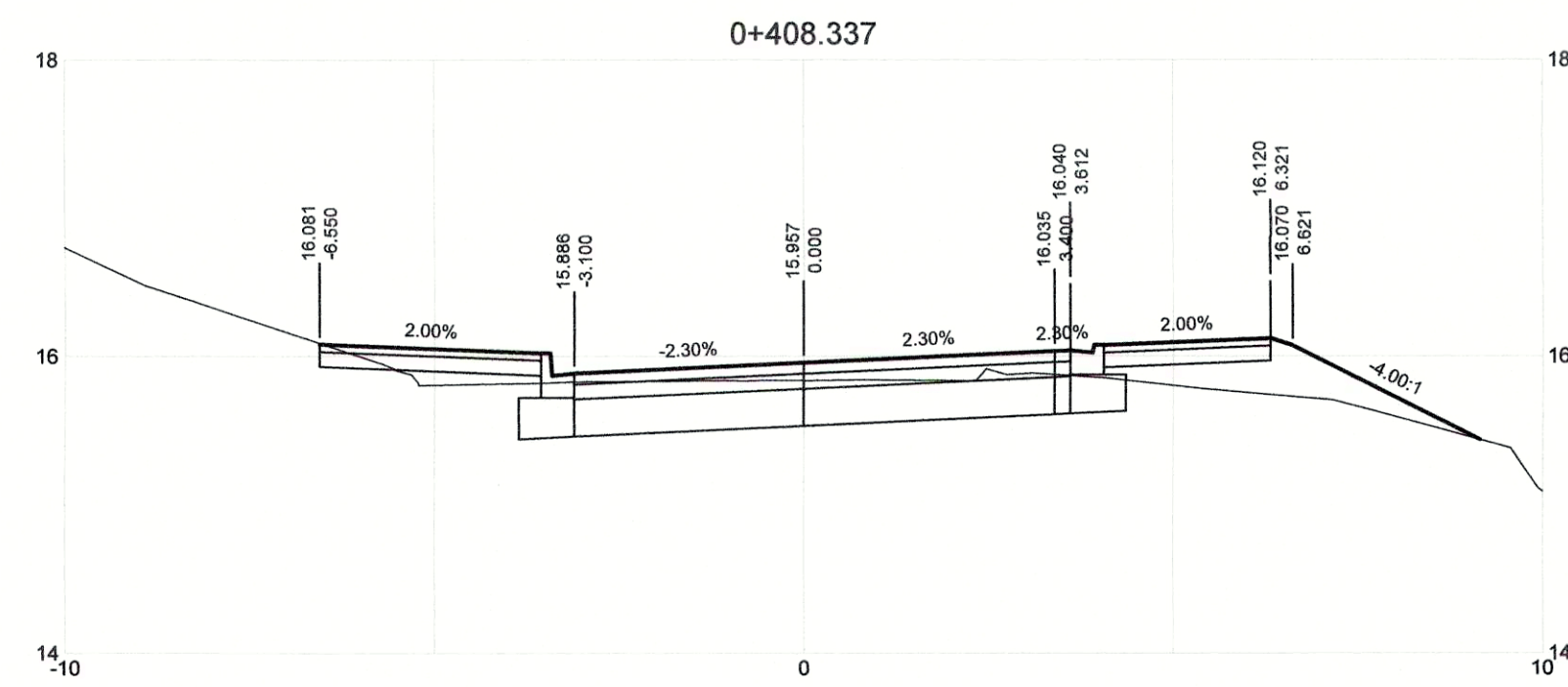
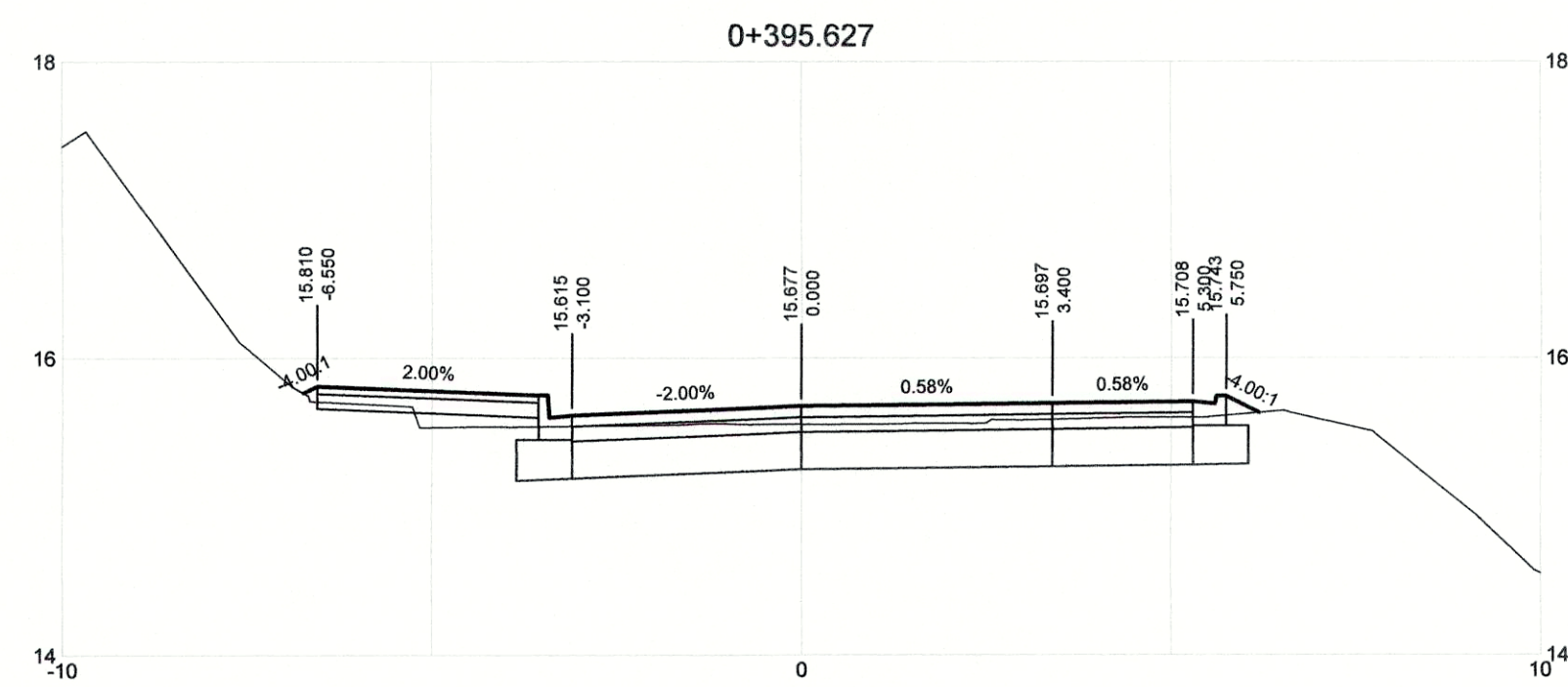
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+290 TO STA. 0+337.200	
DESIGNED	KP	PROJECT NO. 707564 SCALE H 1:100 V 1:50	
CHECKED	SL		
APPROVED	JG	DRAWING NUMBER	GNINT-207
		SHEET	001
		DATE	JAN 07, 2018
		REV	0



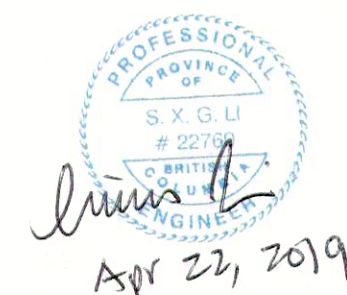
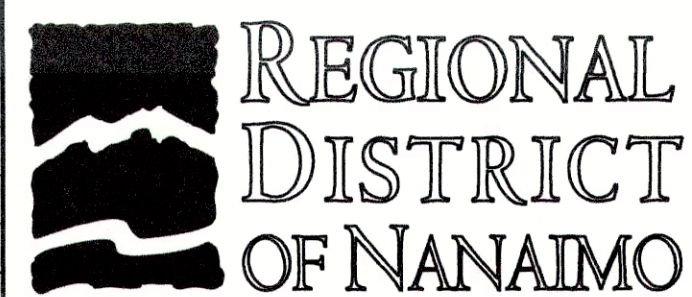








DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
				REVISIONS			



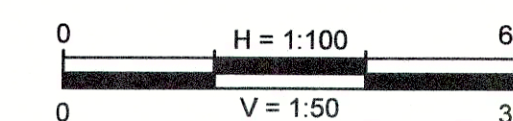
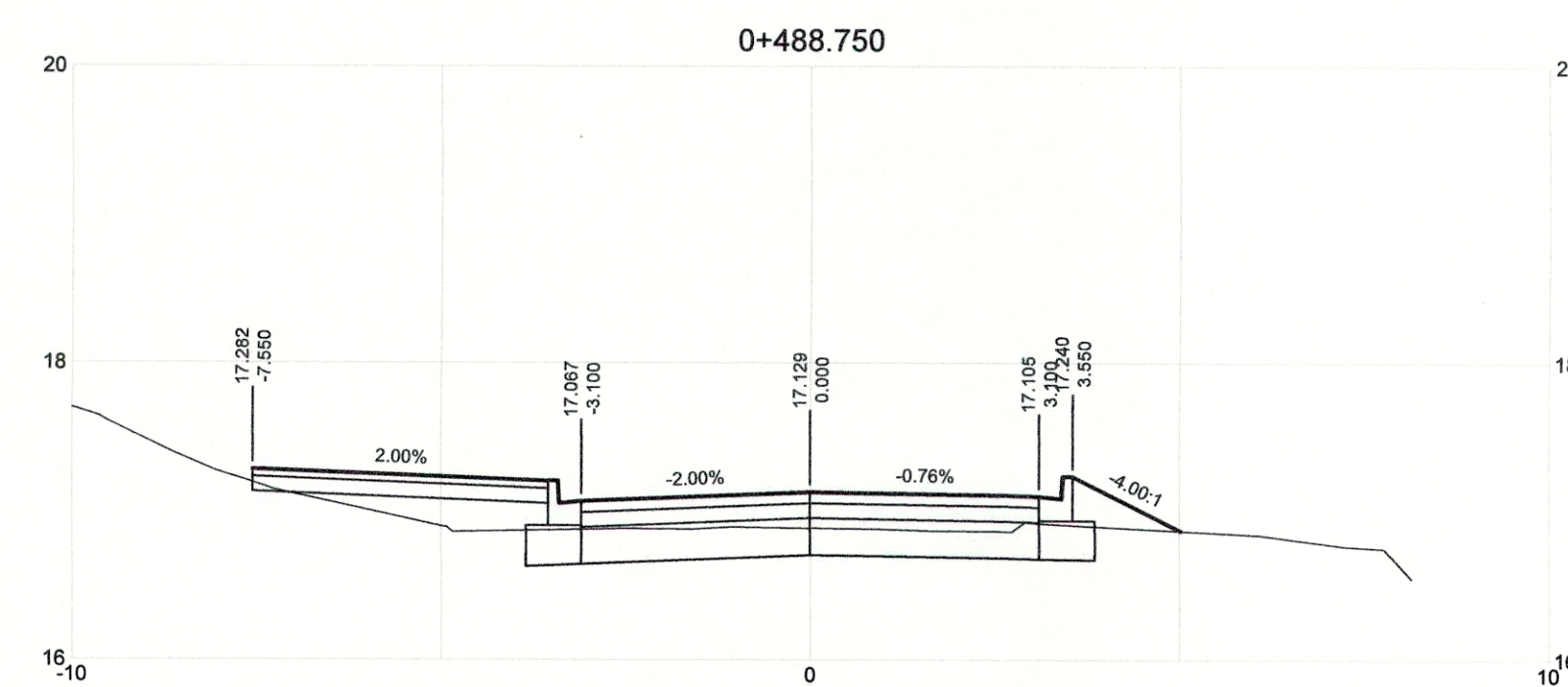
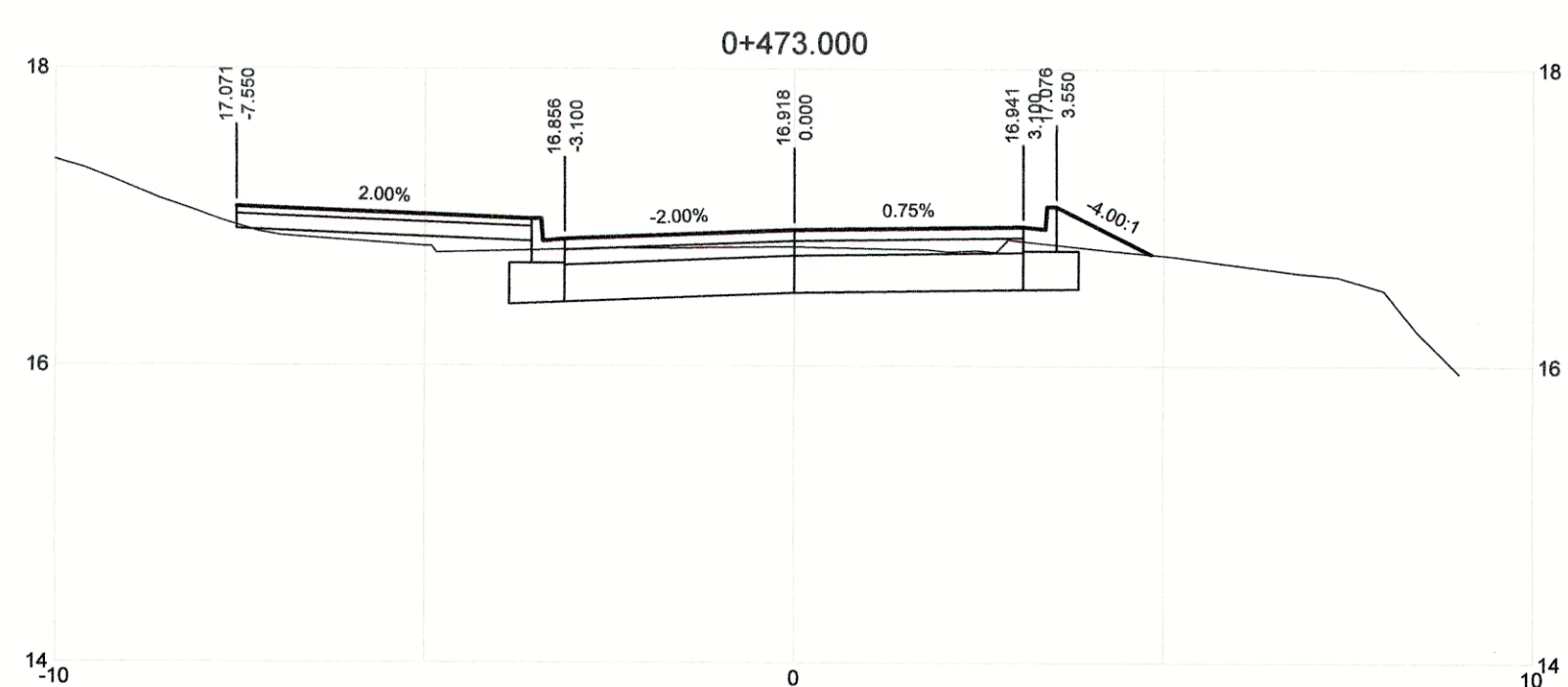
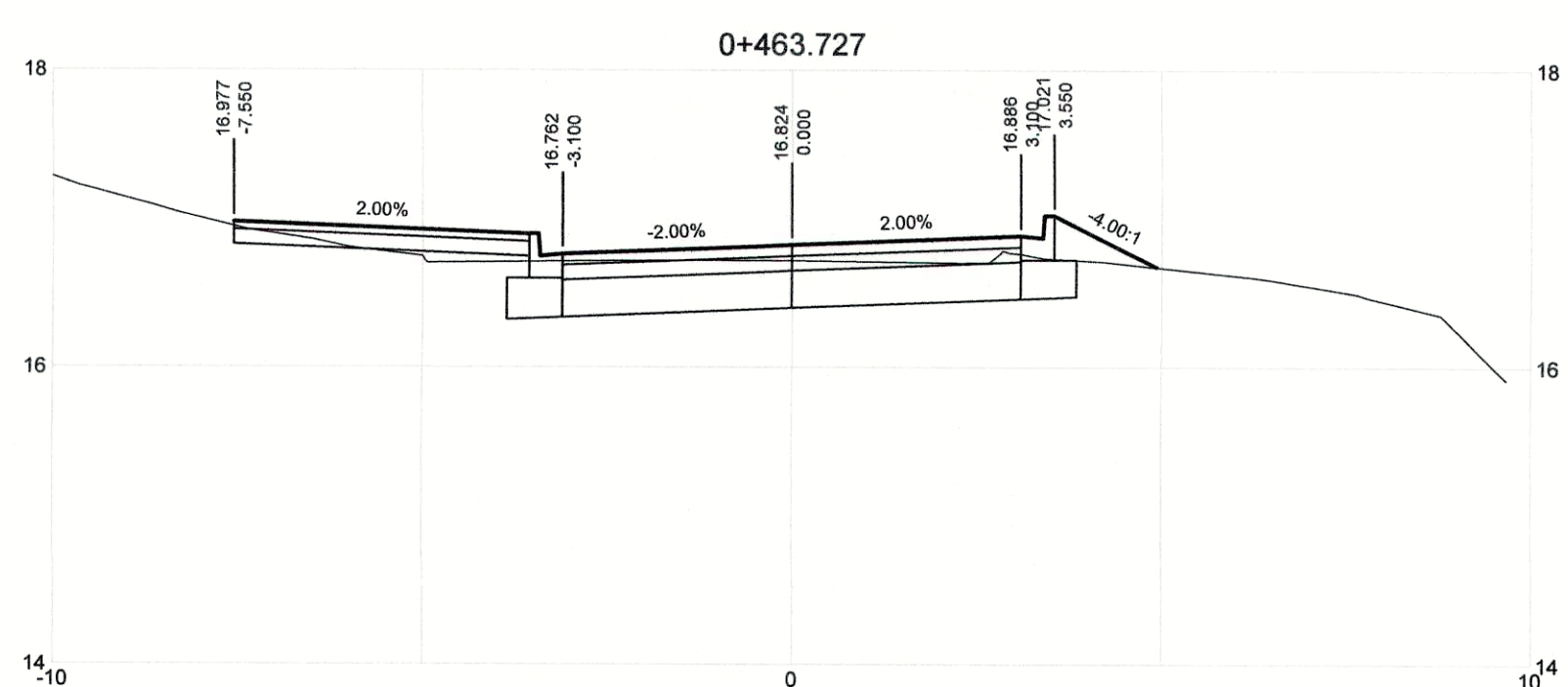
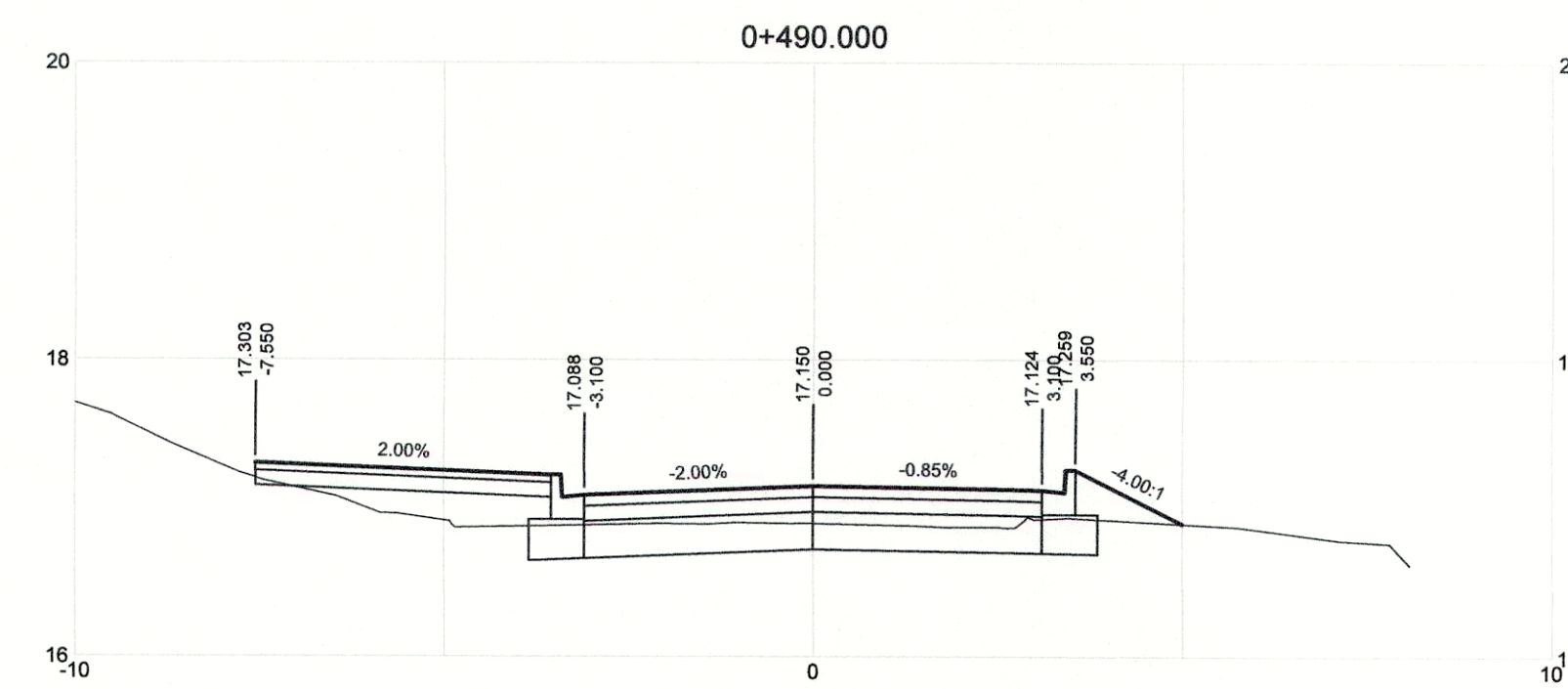
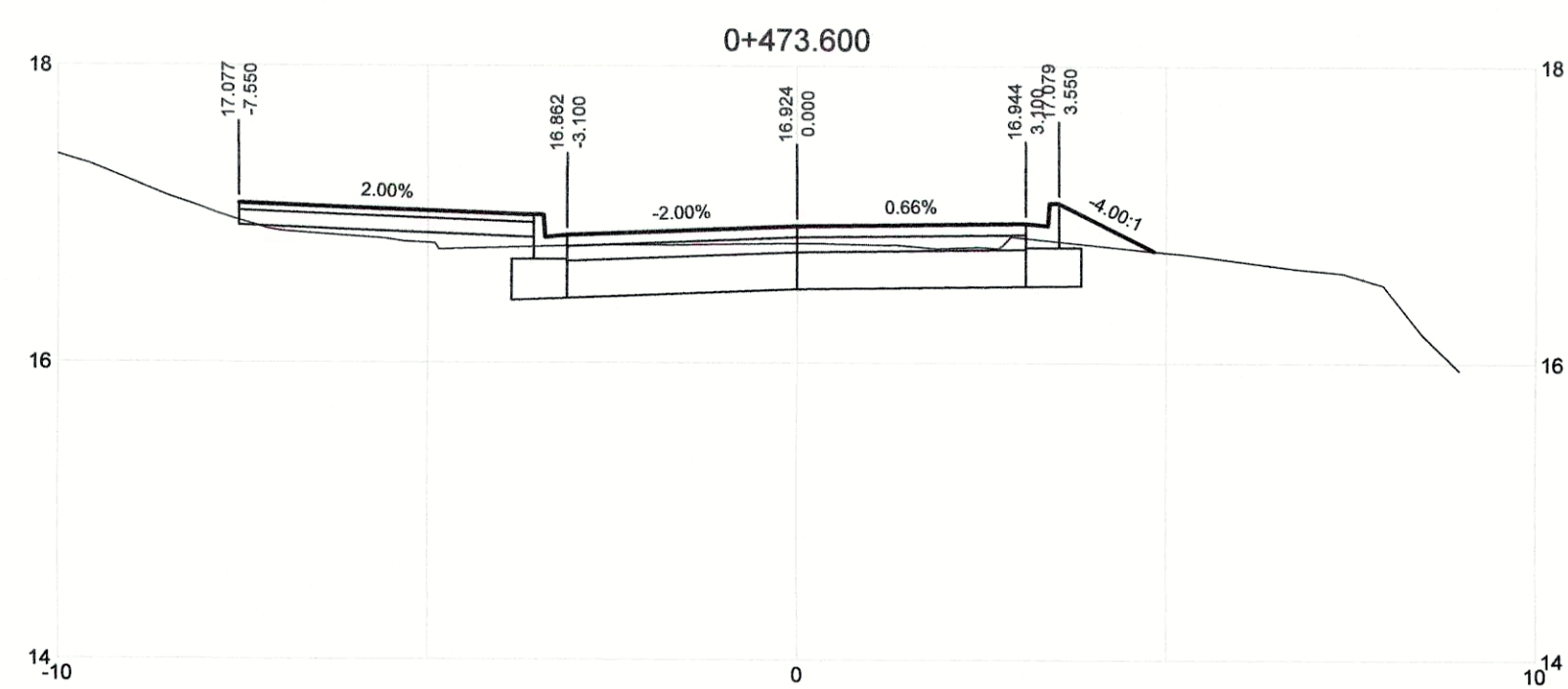
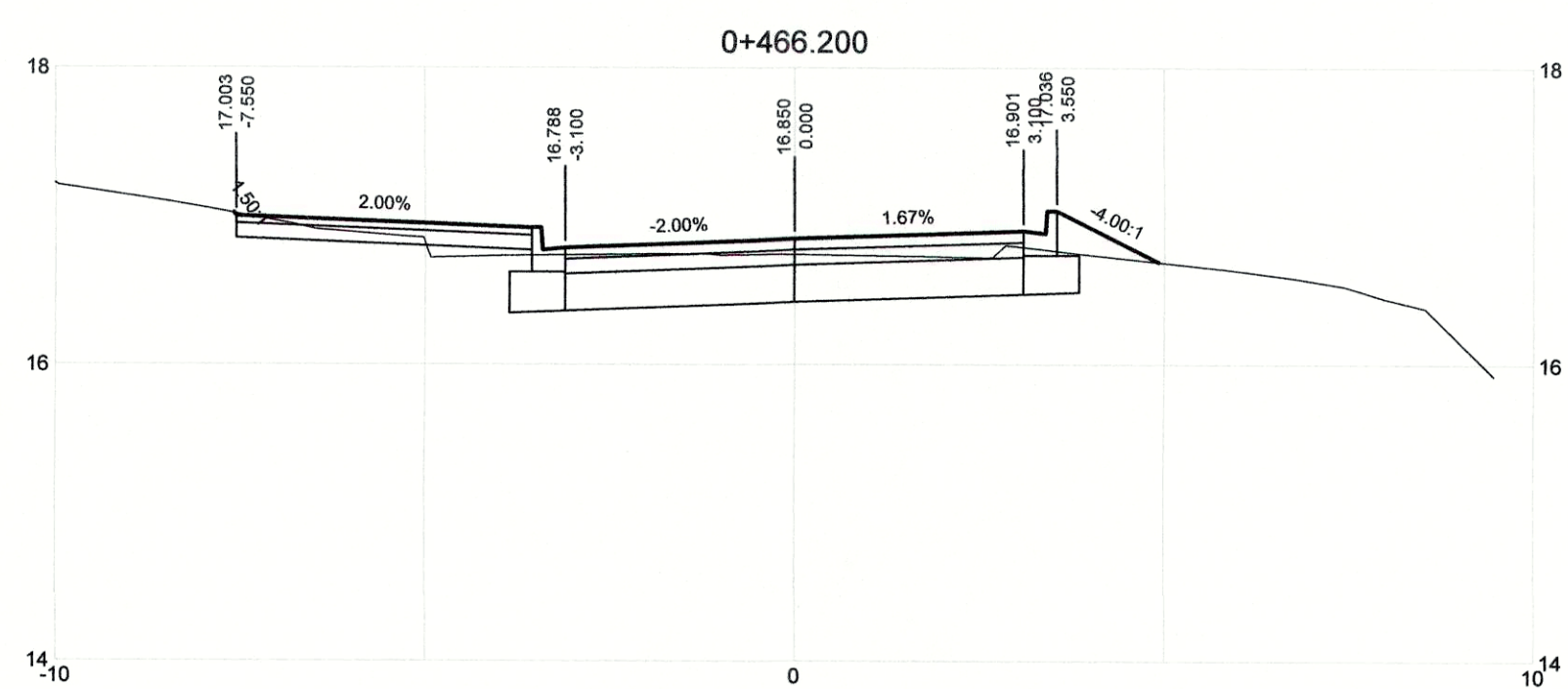
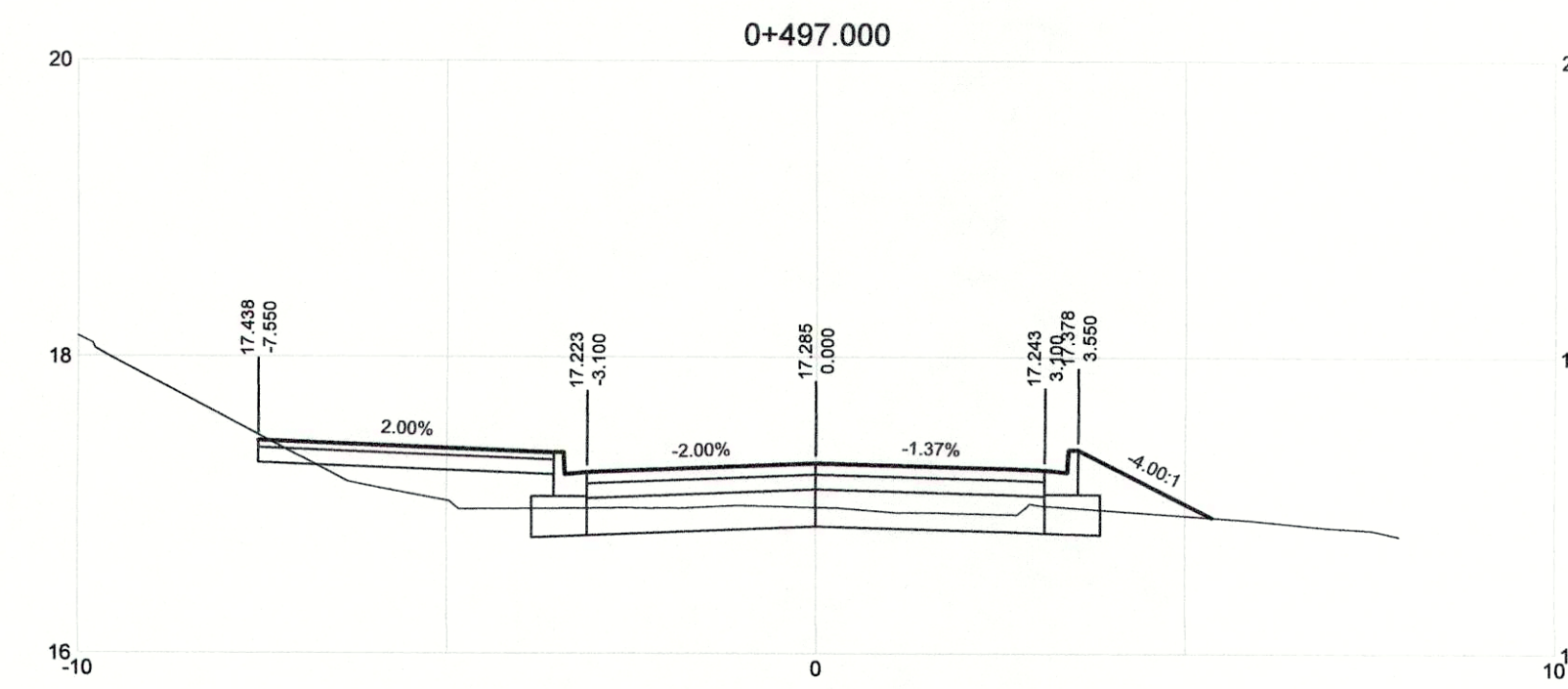
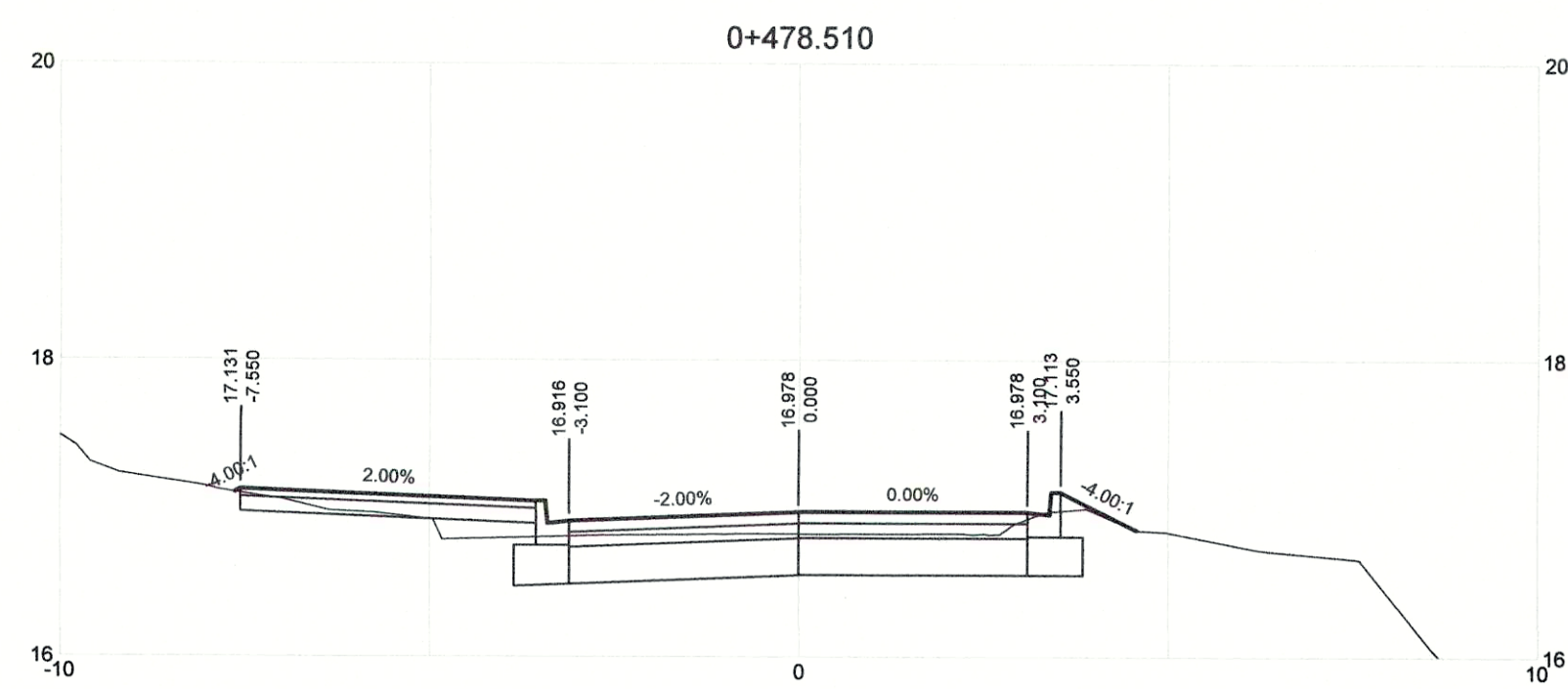
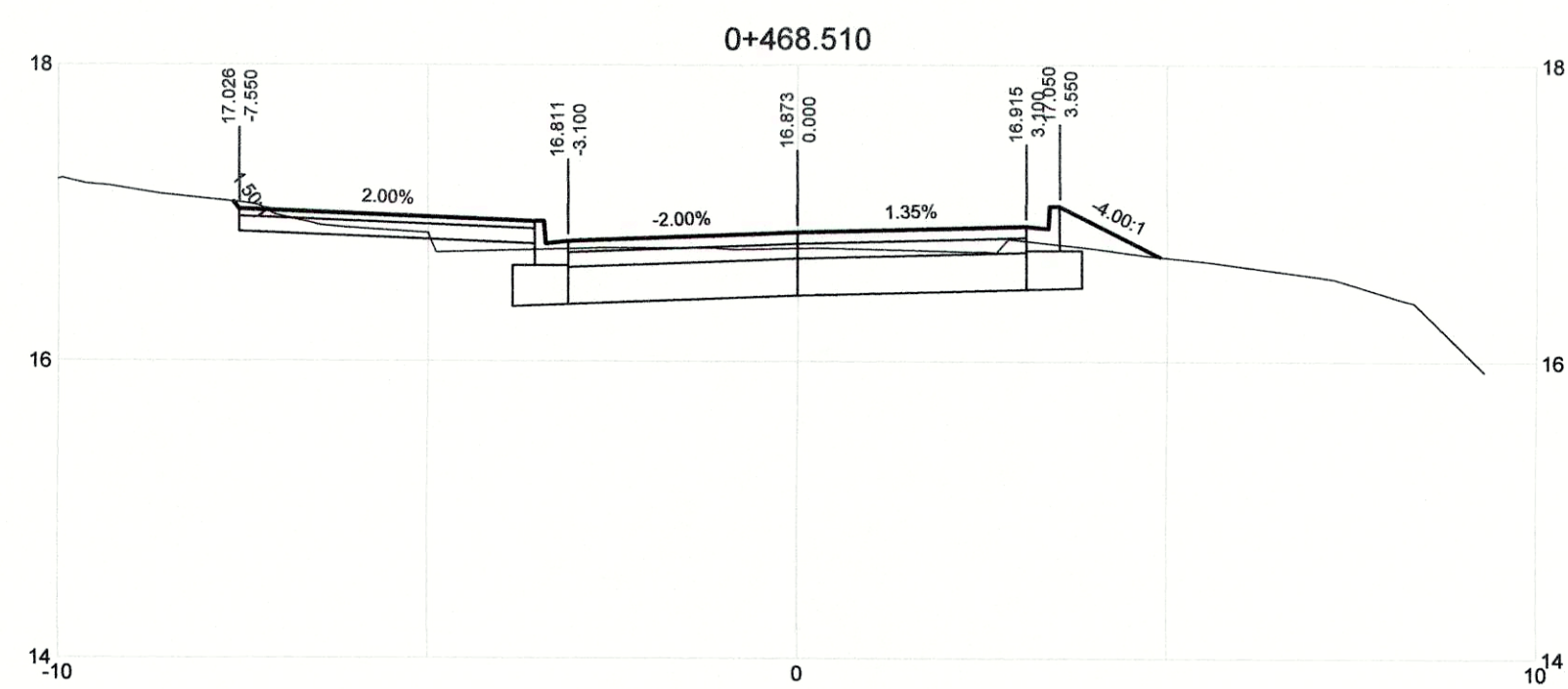
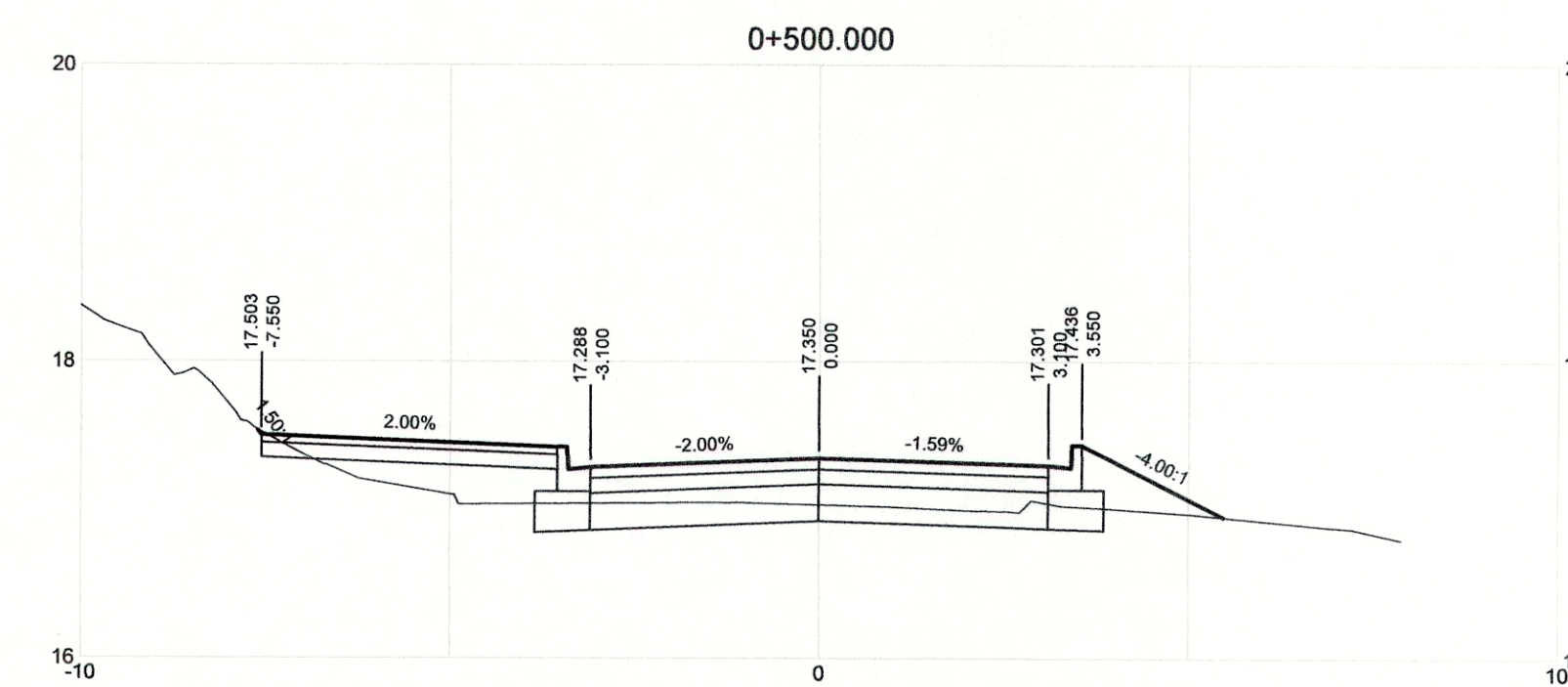
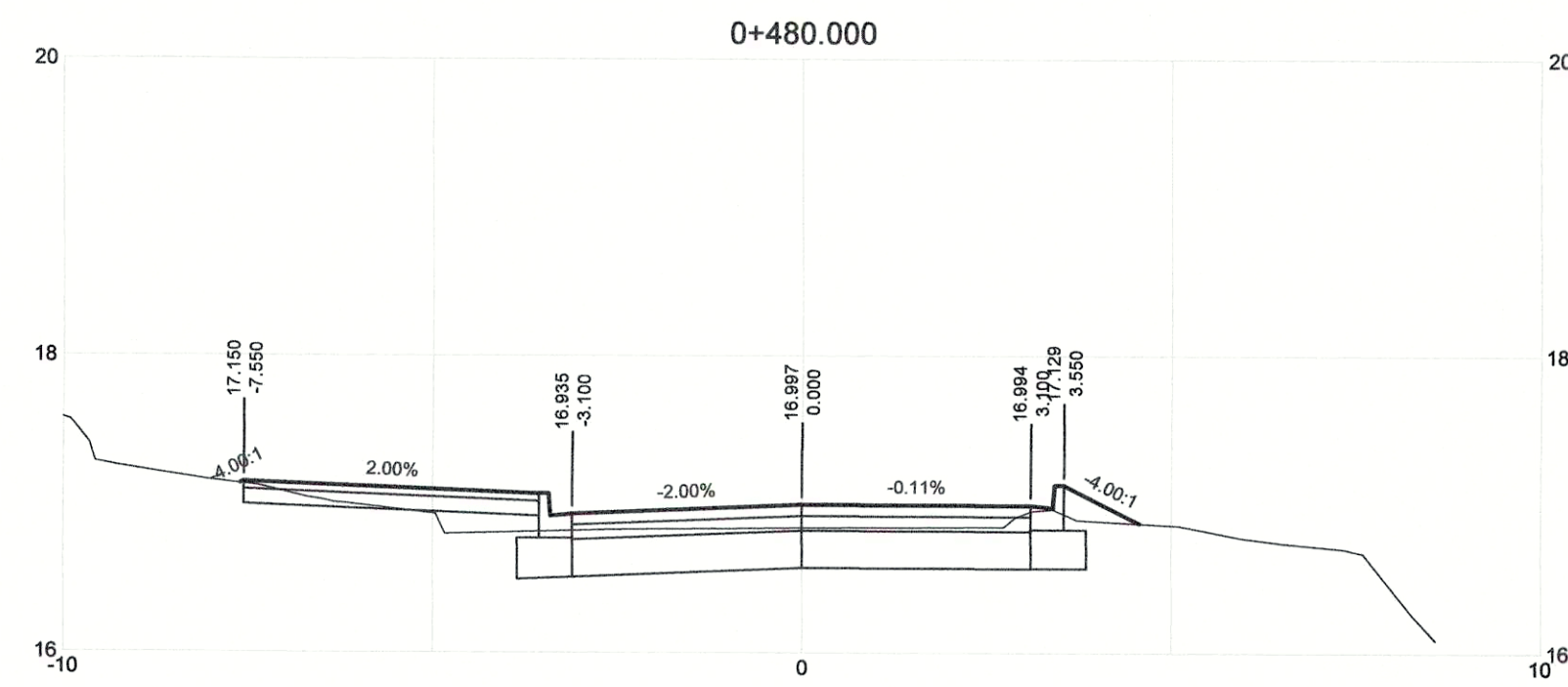
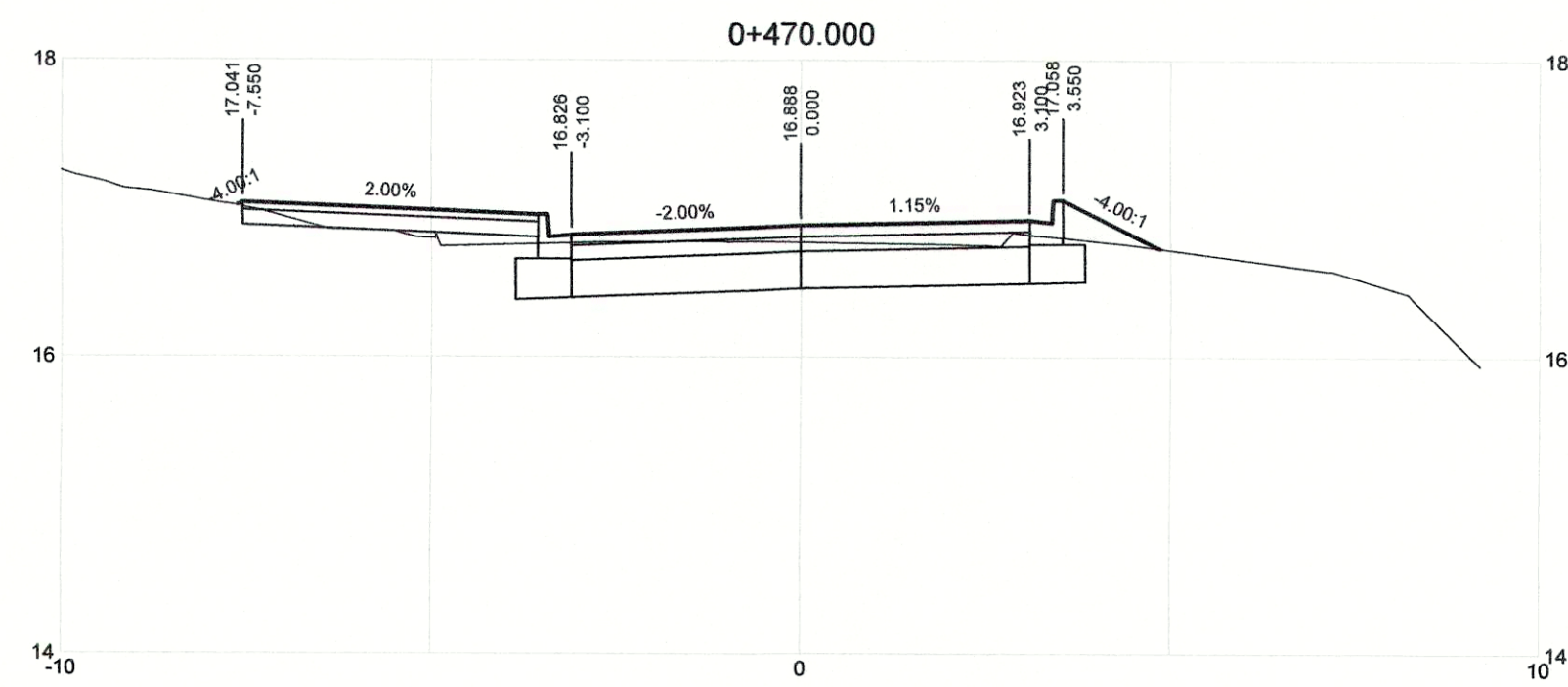
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+386.200 TO STA. 0+420	
DESIGNED	KP	PROJECT NO.	SCALE
CHECKED	SL	707564	H 1:100 V 1:50
APPROVED	JG	DATE	REV
		JAN 07, 2018	0
DRAWING NUMBER		SHEET	
GNINT-209		001	



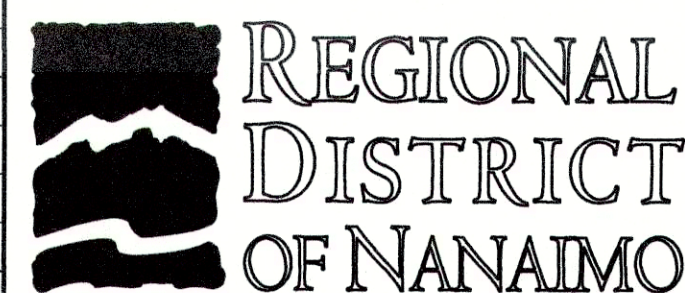








DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
				REVISIONS			

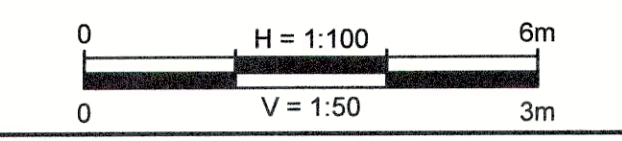
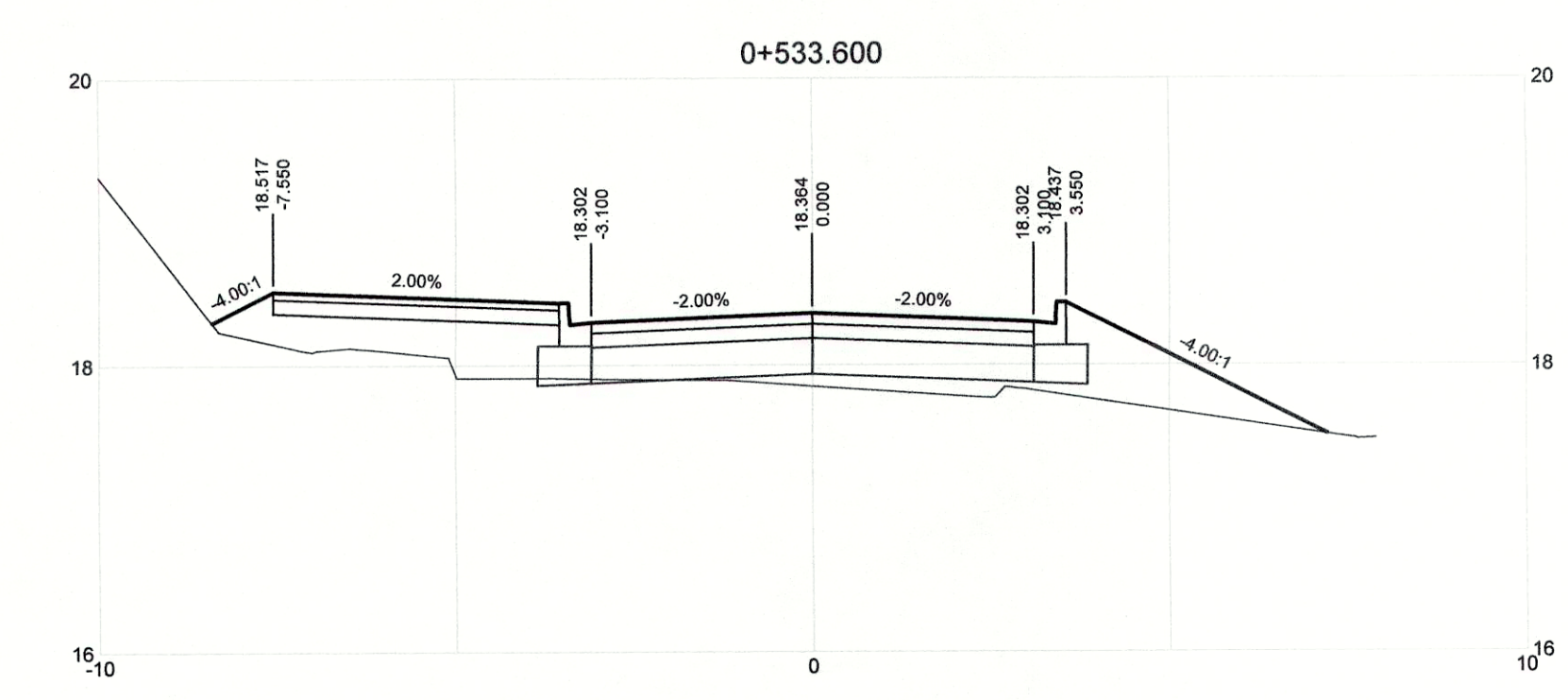
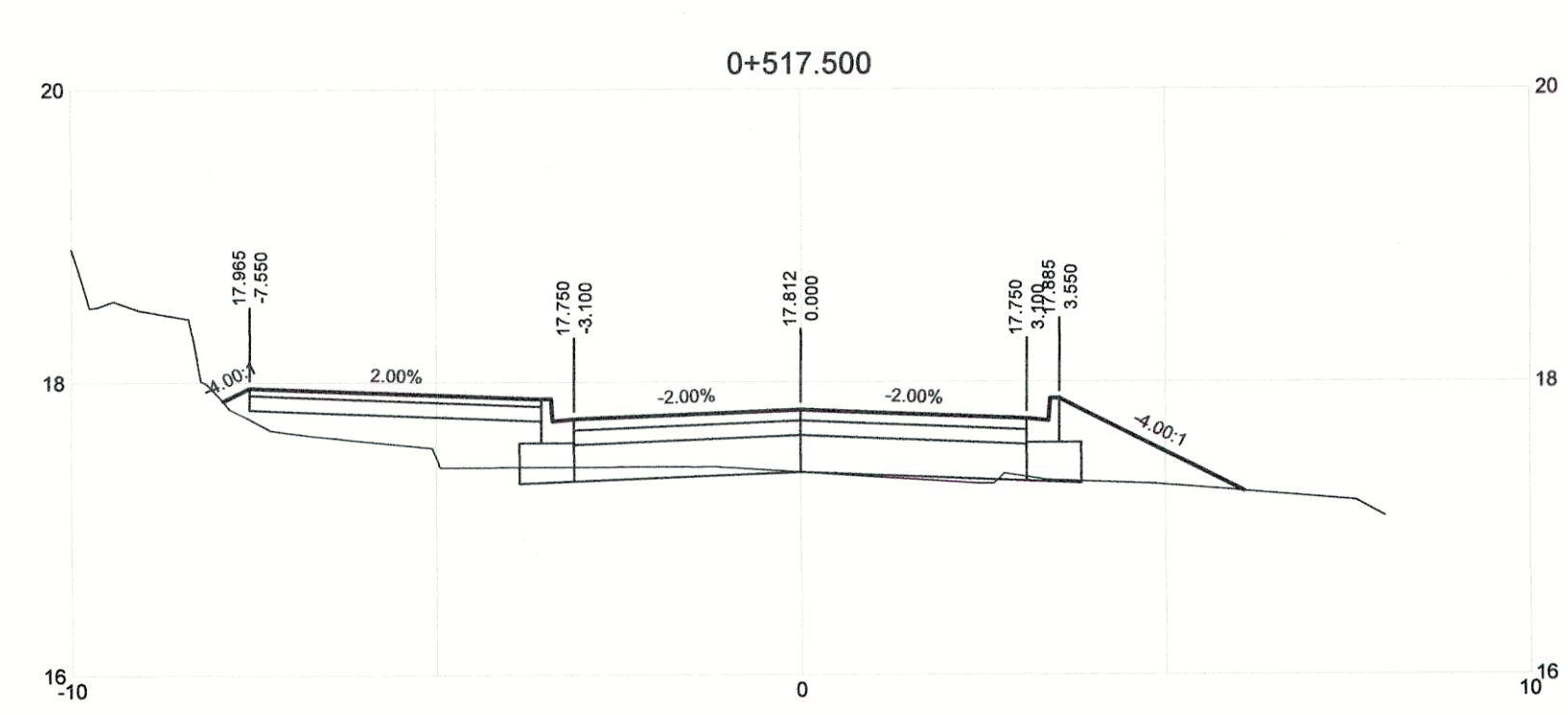
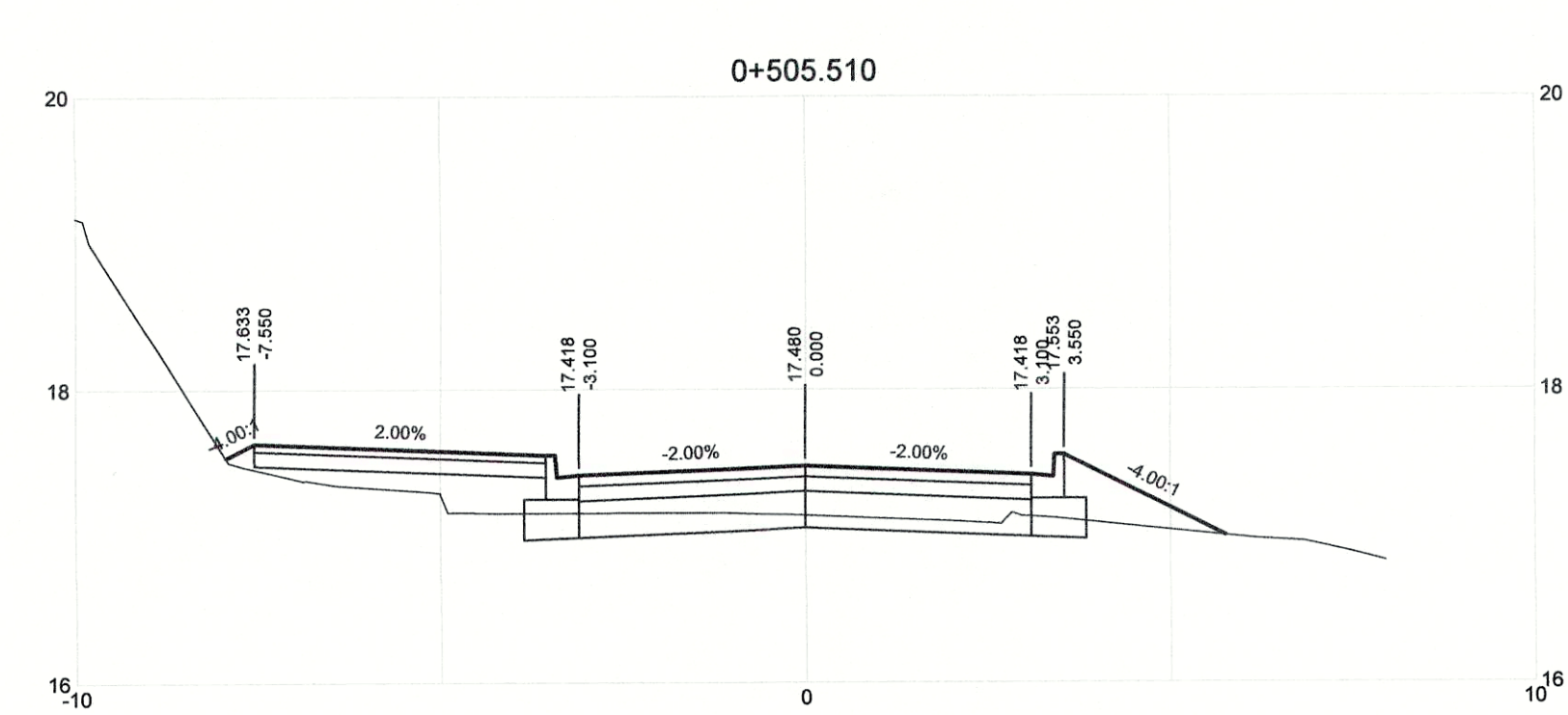
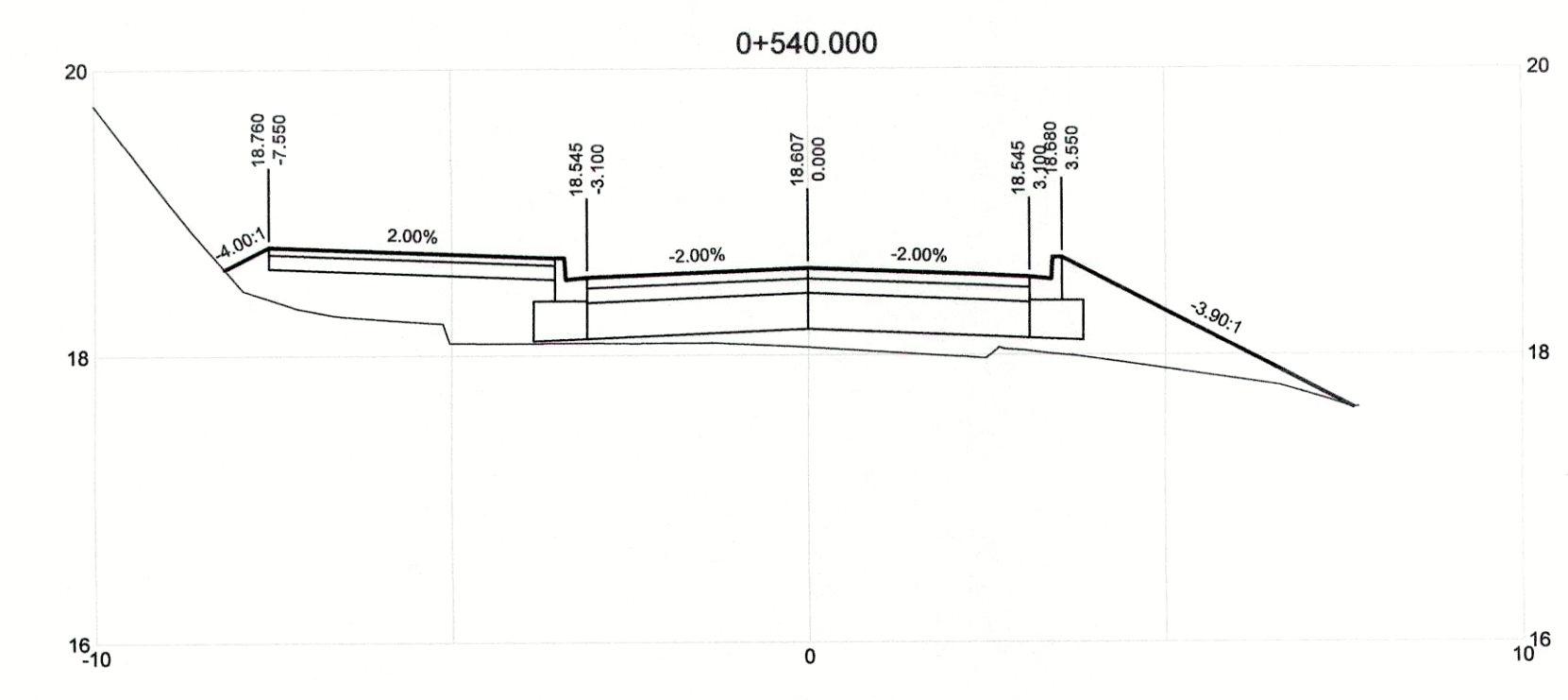
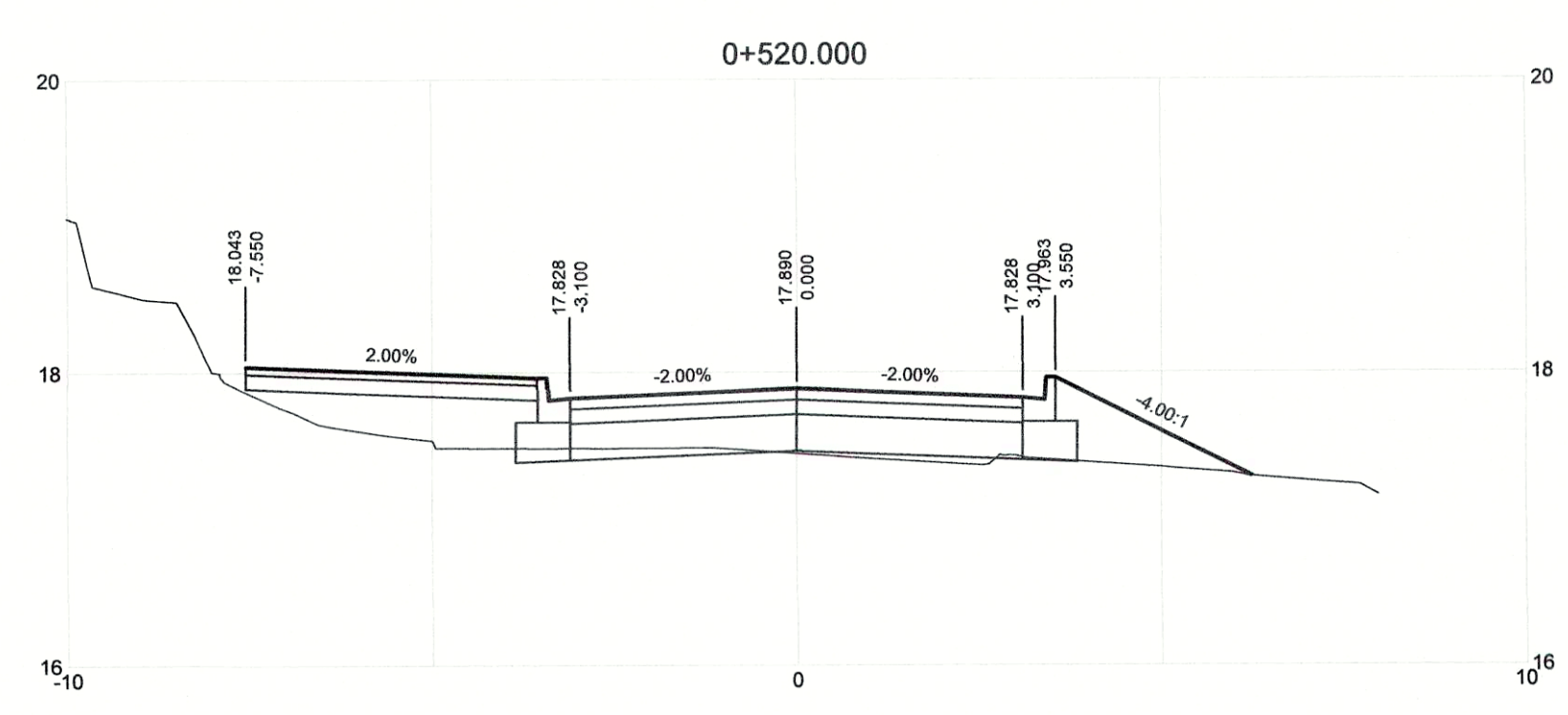
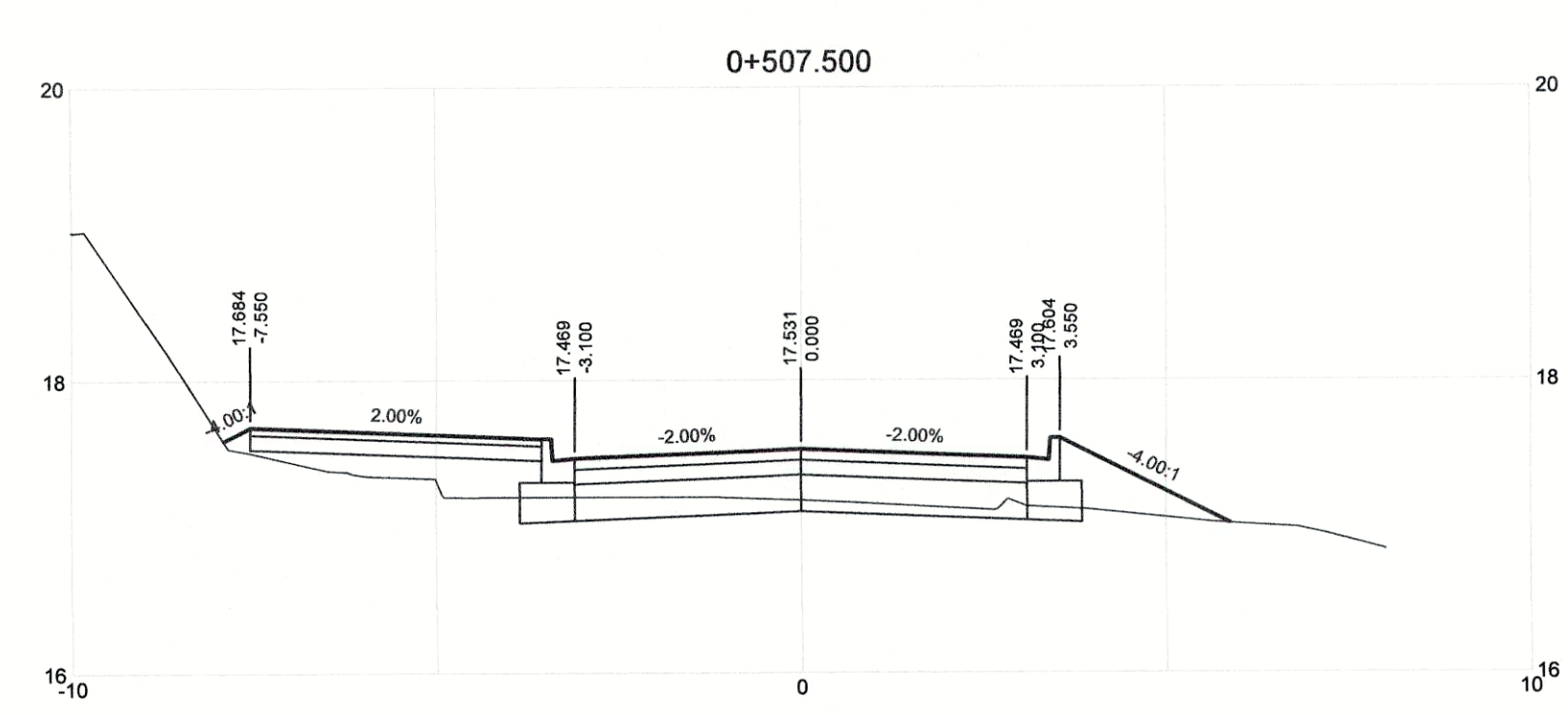
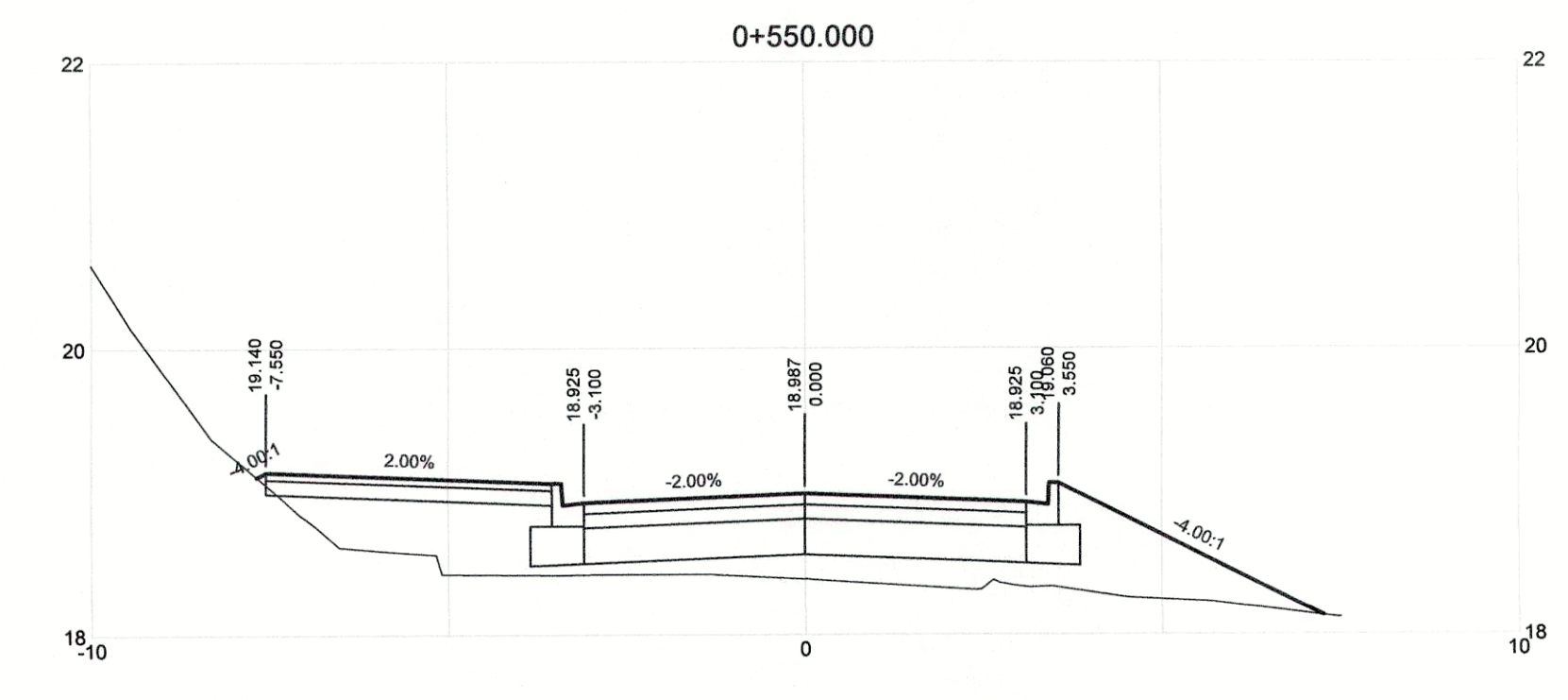
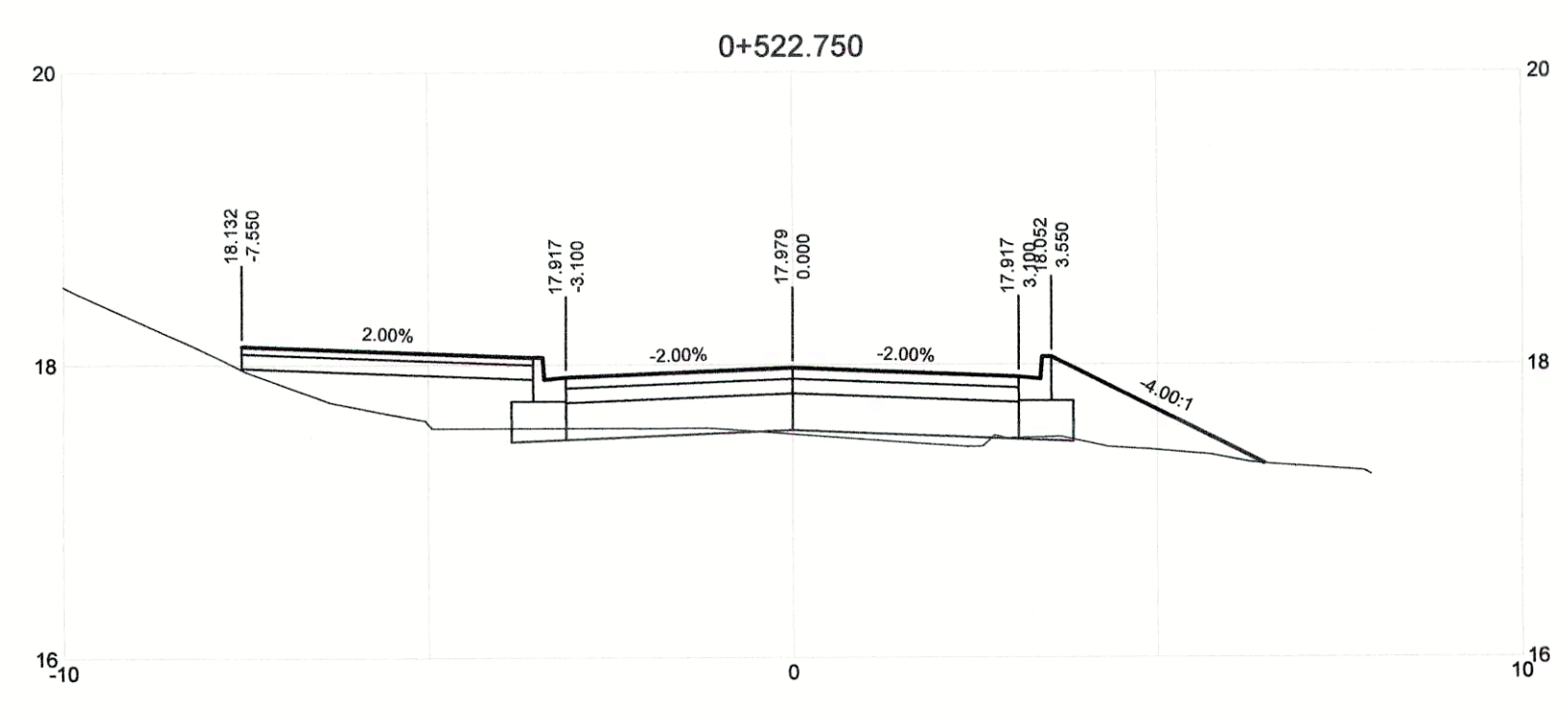
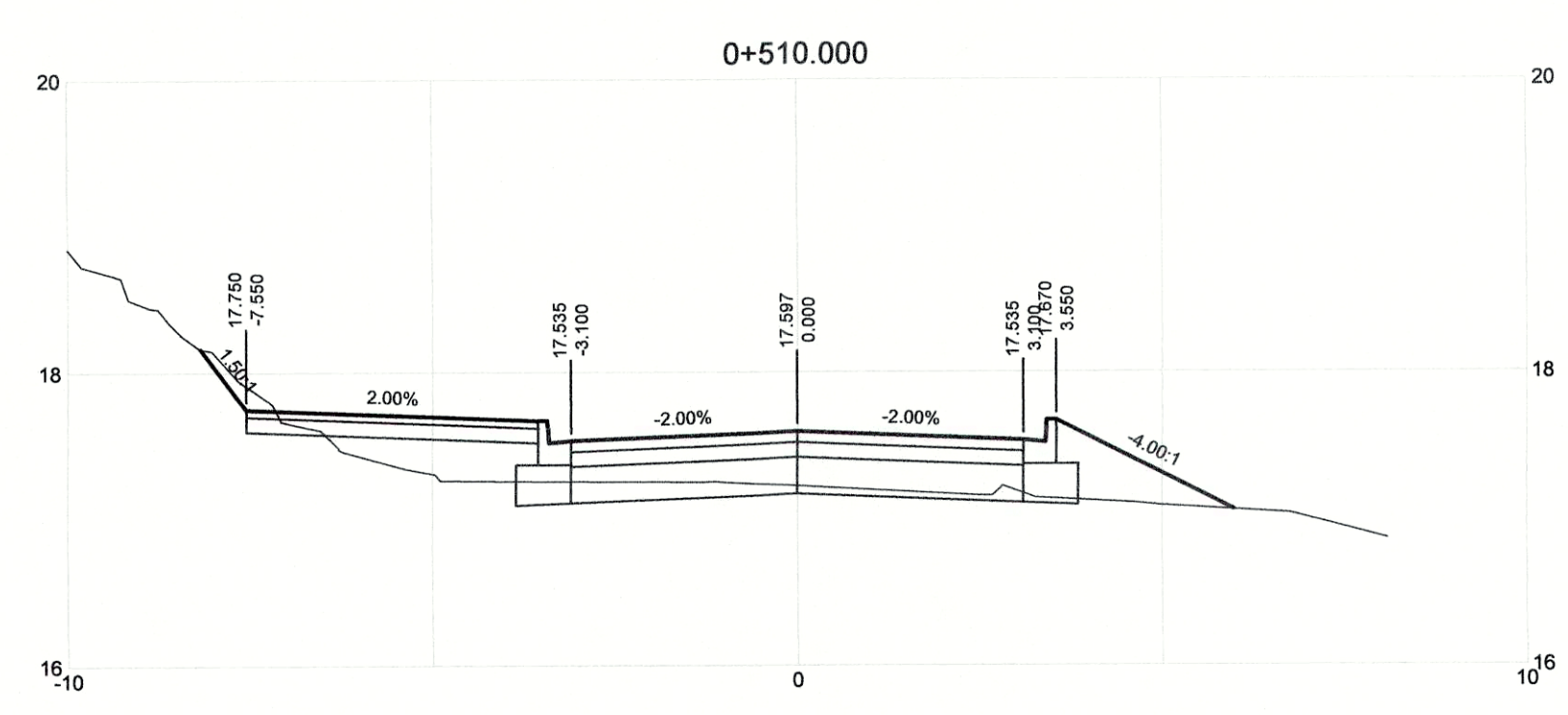
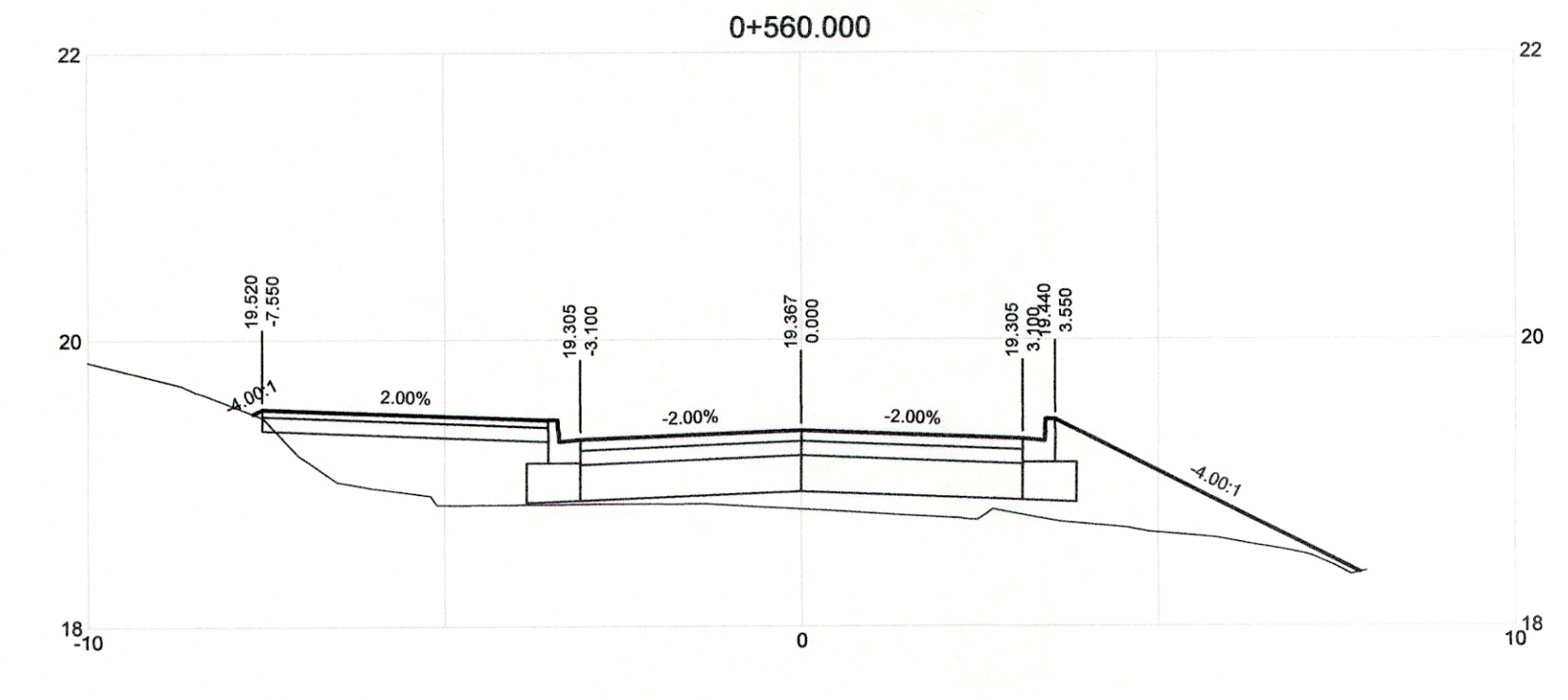
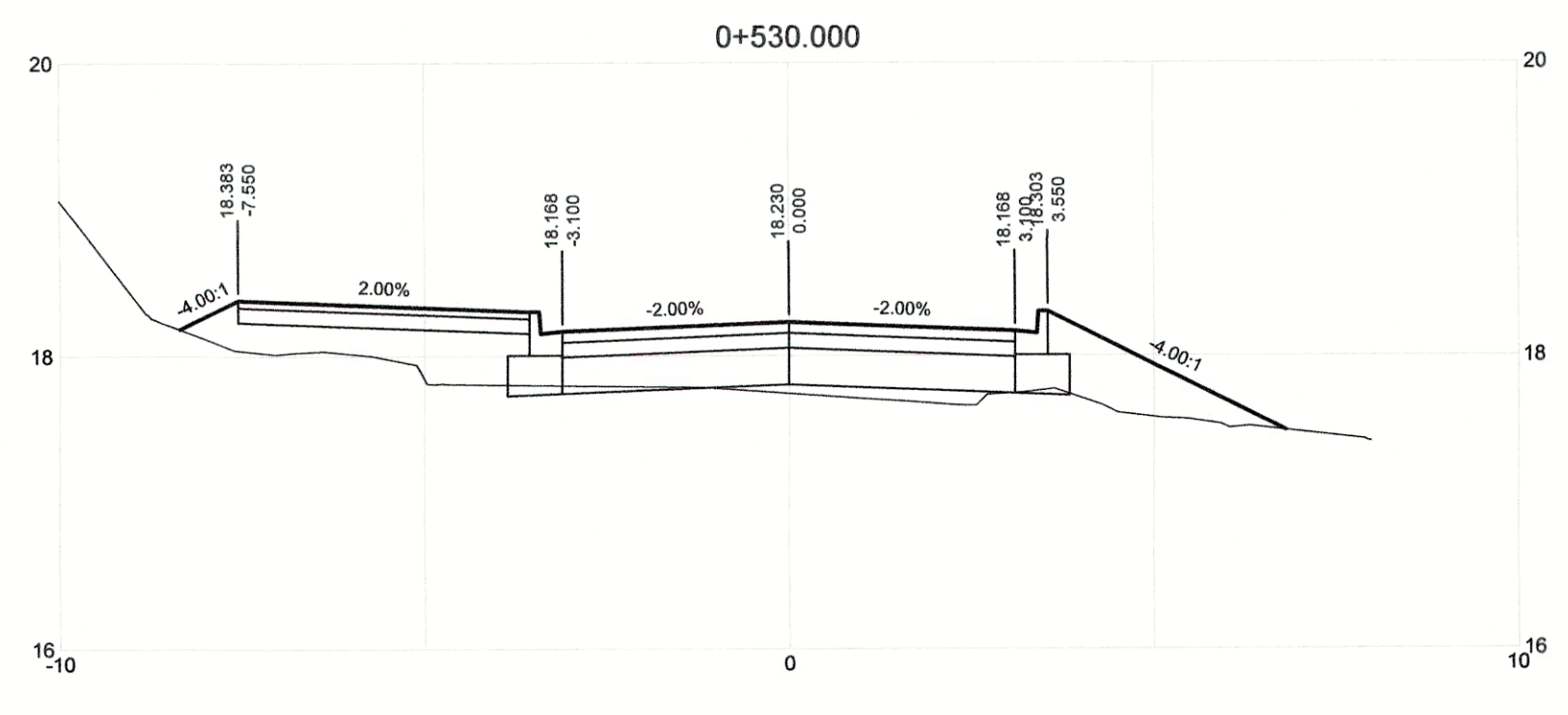
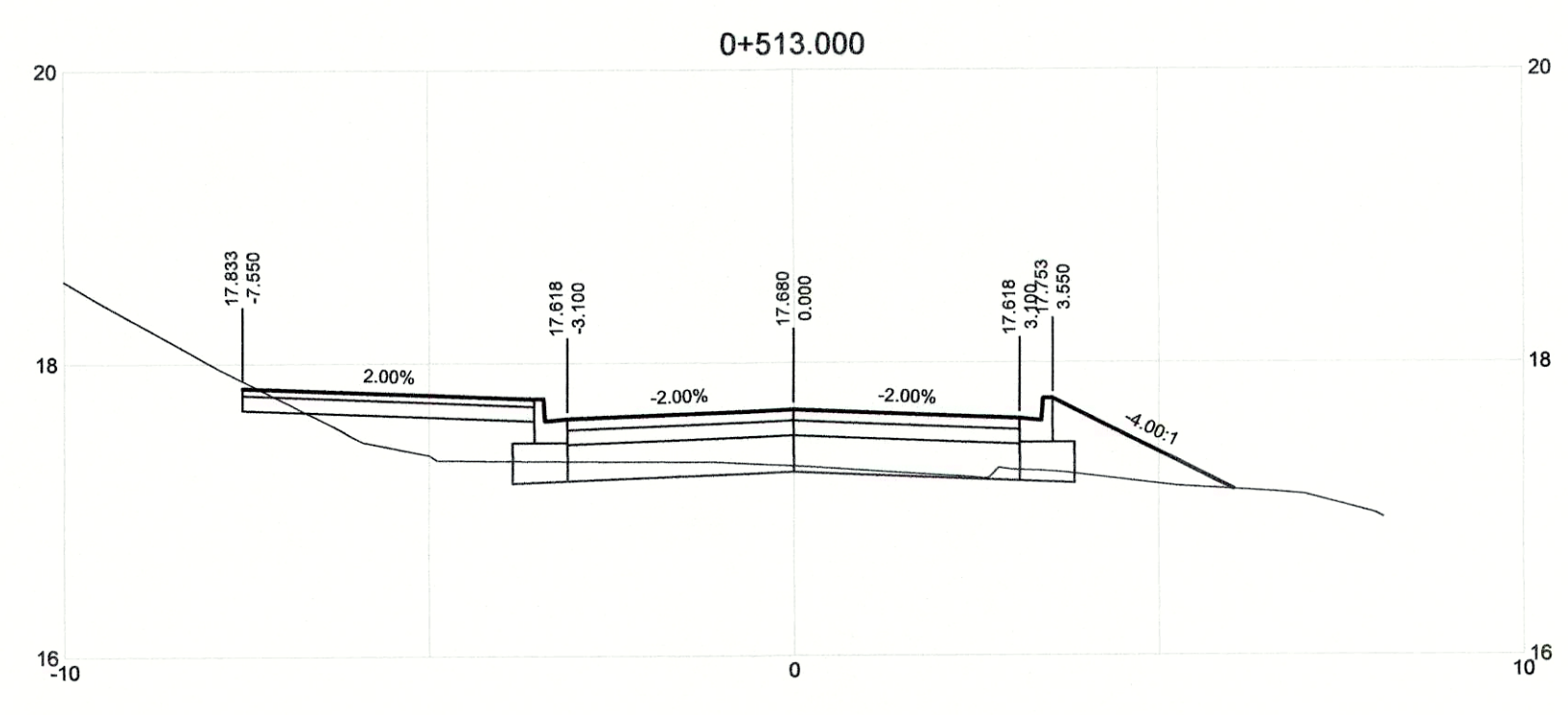


PROFESSIONAL  
S. X. C. L.  
# 22  
April 22, 2019

PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION	
DESIGNED	KP	DETAILED ROAD CROSS SECTIONS	
CHECKED	SL	STA. 0+463.727 TO STA. 0+500	
APPROVED	JG	DRAWING NUMBER	GNINT-211
		SHEET	001
		PROJECT NO.	707564
		SCALE	H 1:100 V 1:50
		DATE	JAN 07, 2018
		REV	0







DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	KP	SL	JG
					DRN	CHK	APP

**REGIONAL DISTRICT OF NANAIMO**

PROJECT NAME: CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES

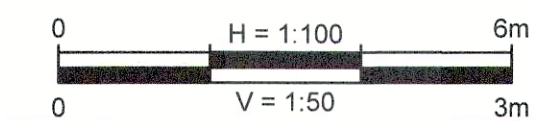
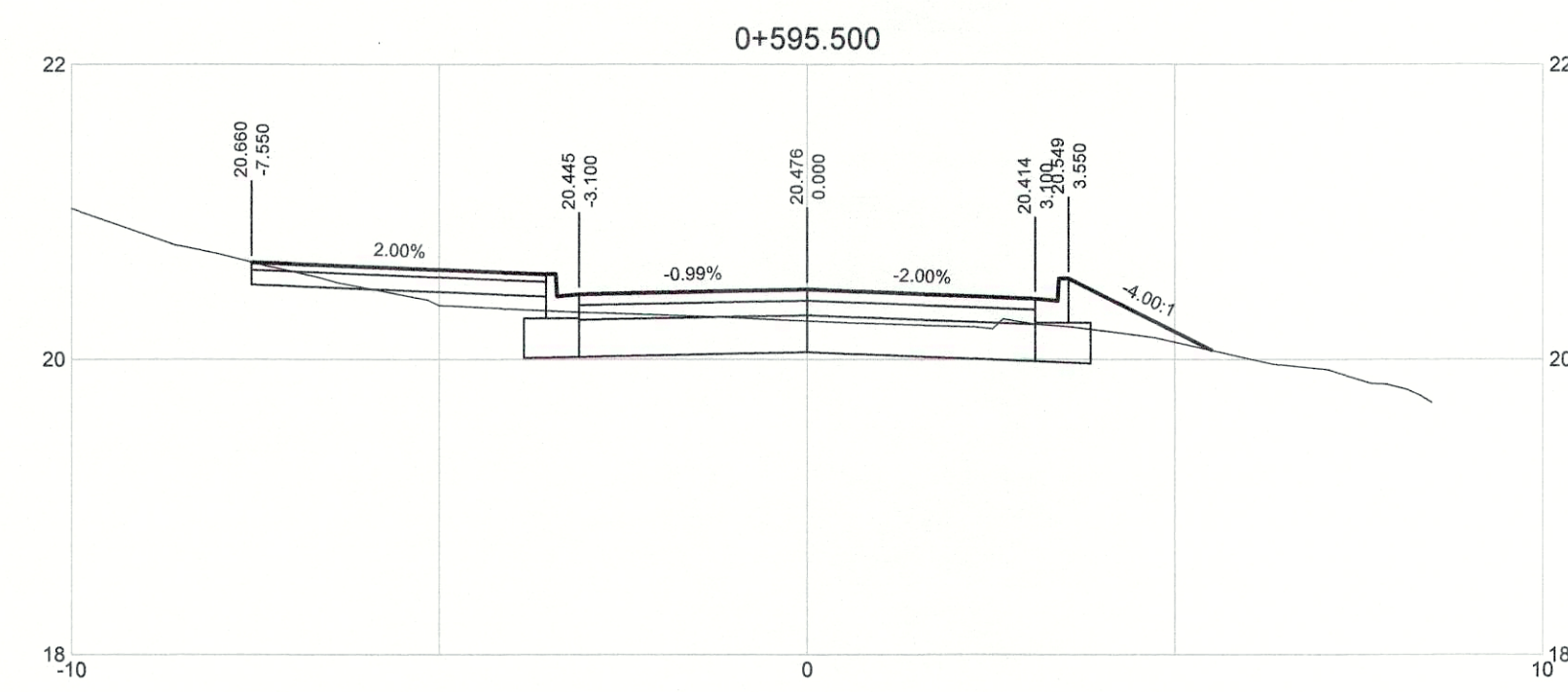
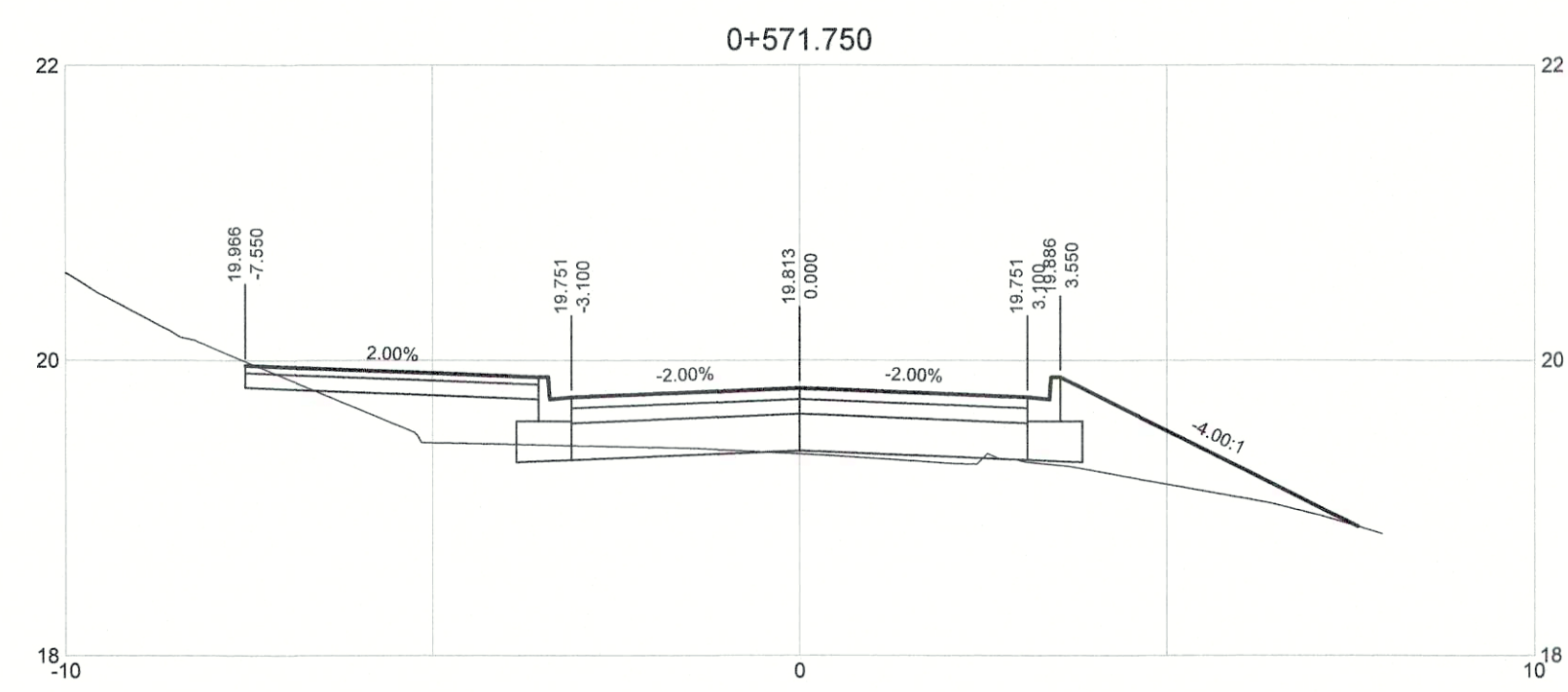
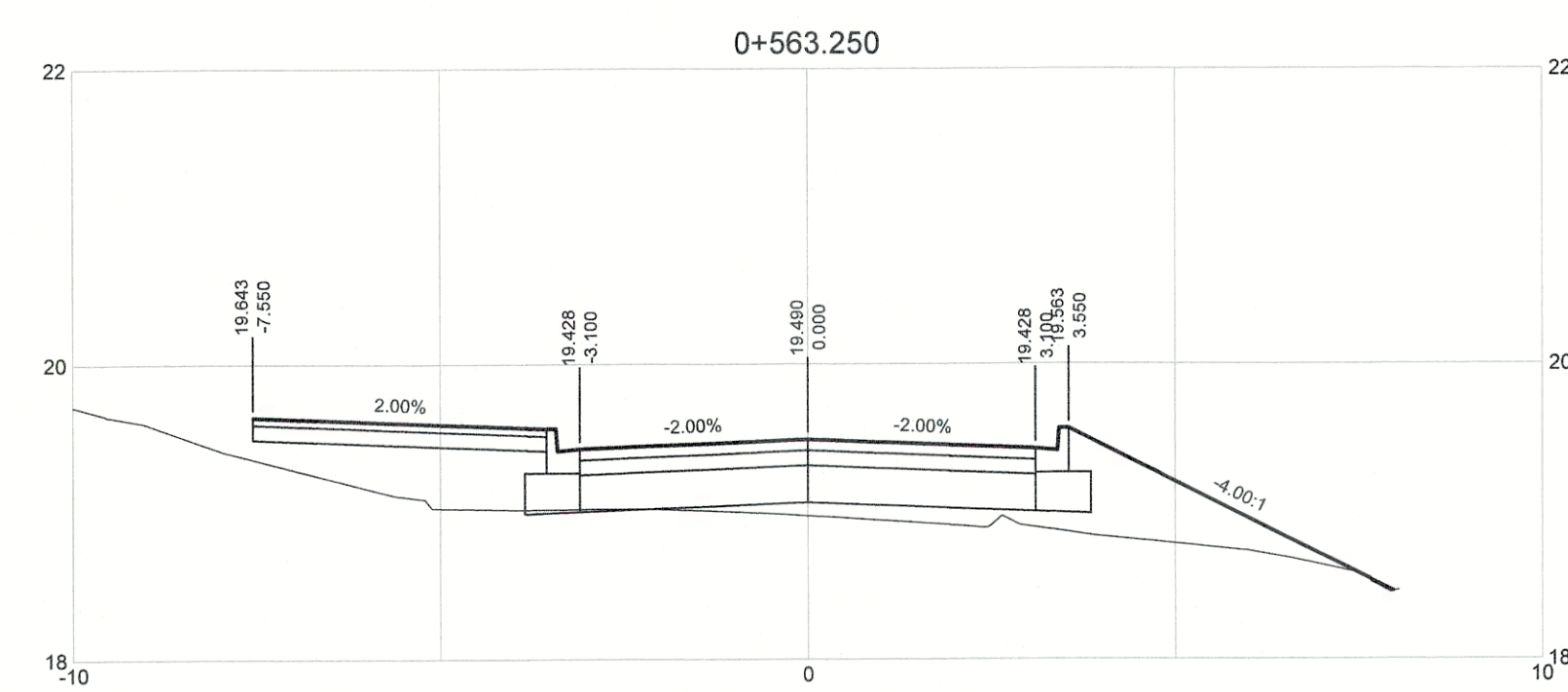
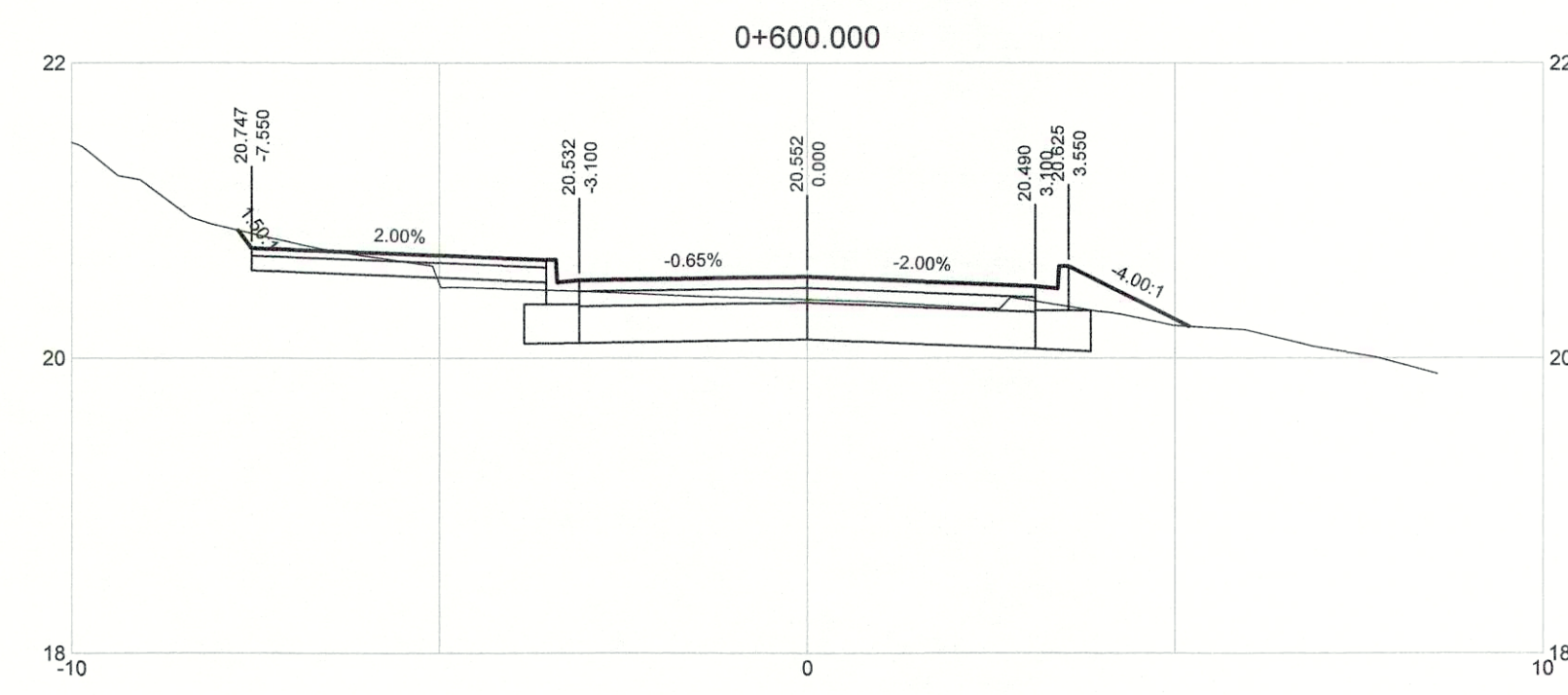
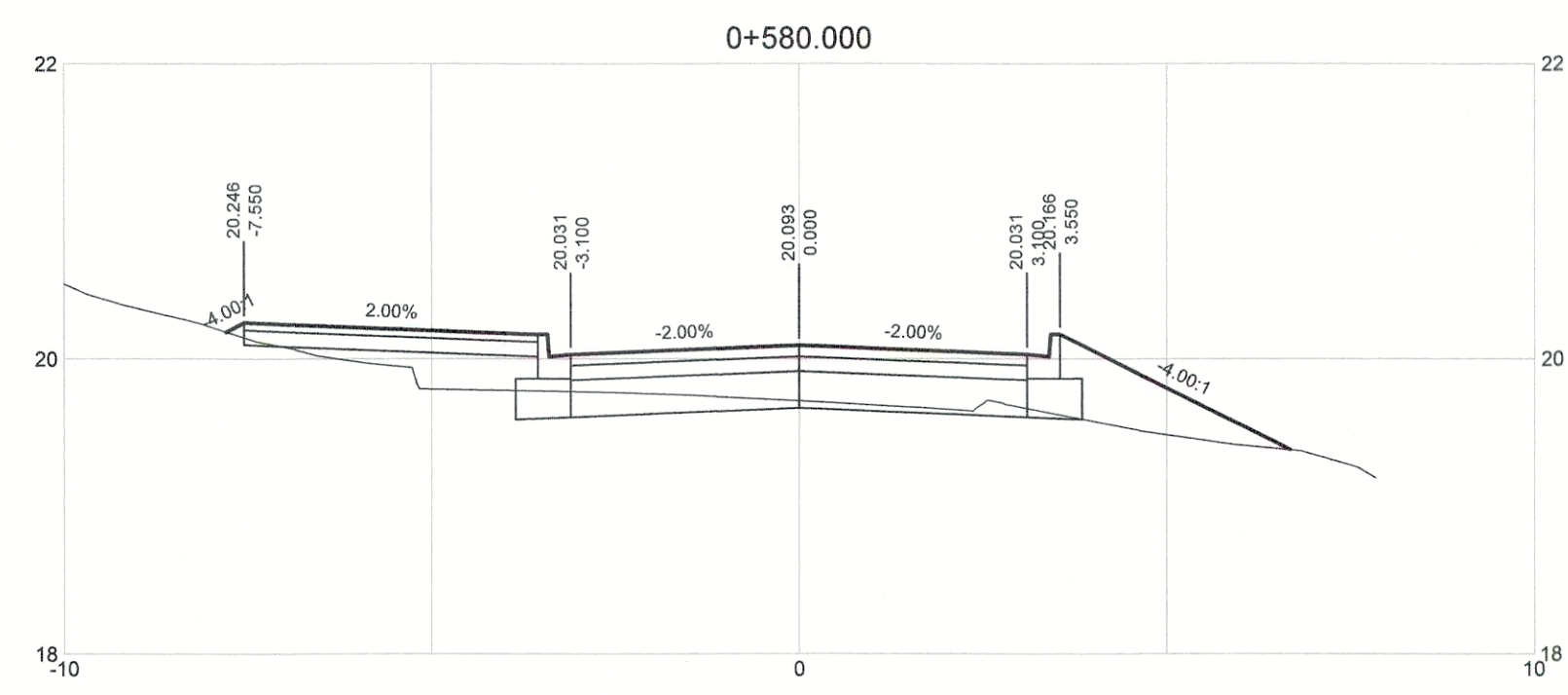
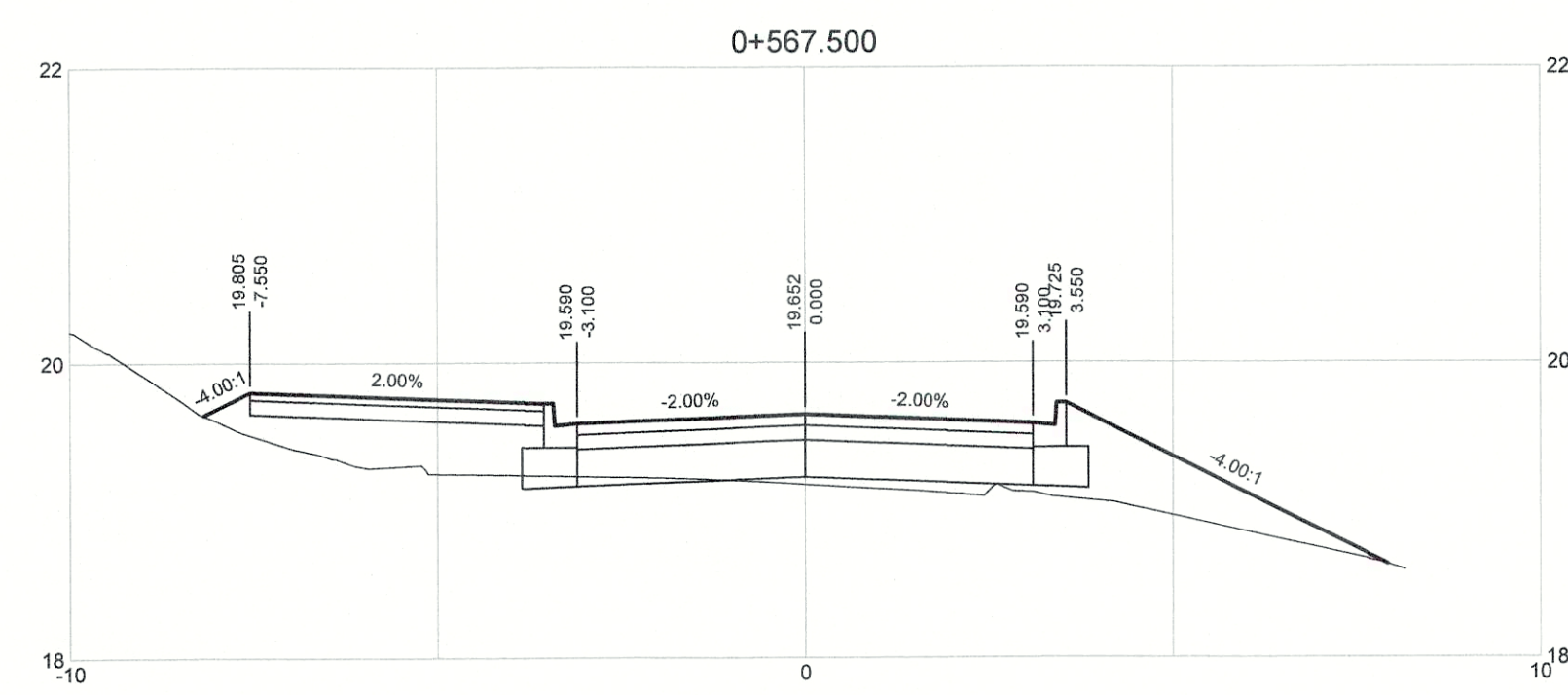
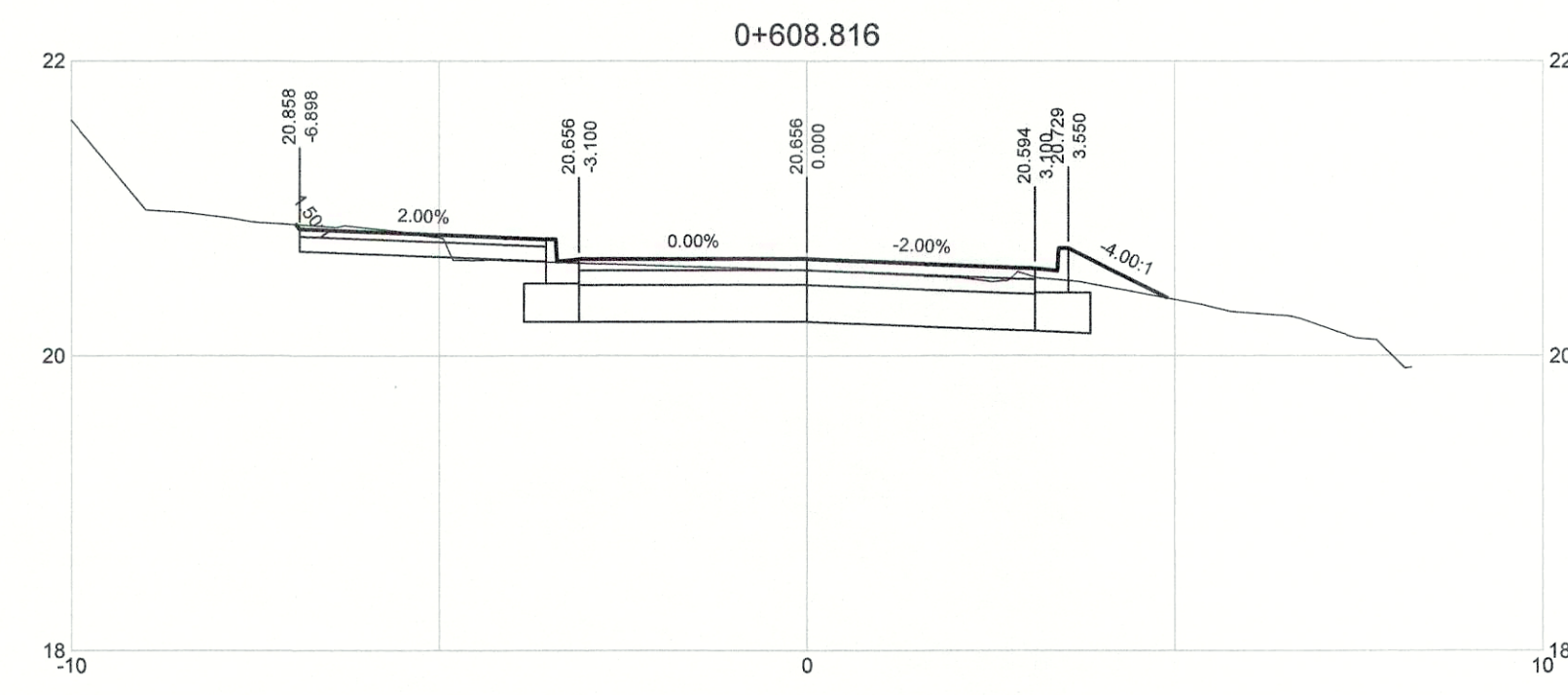
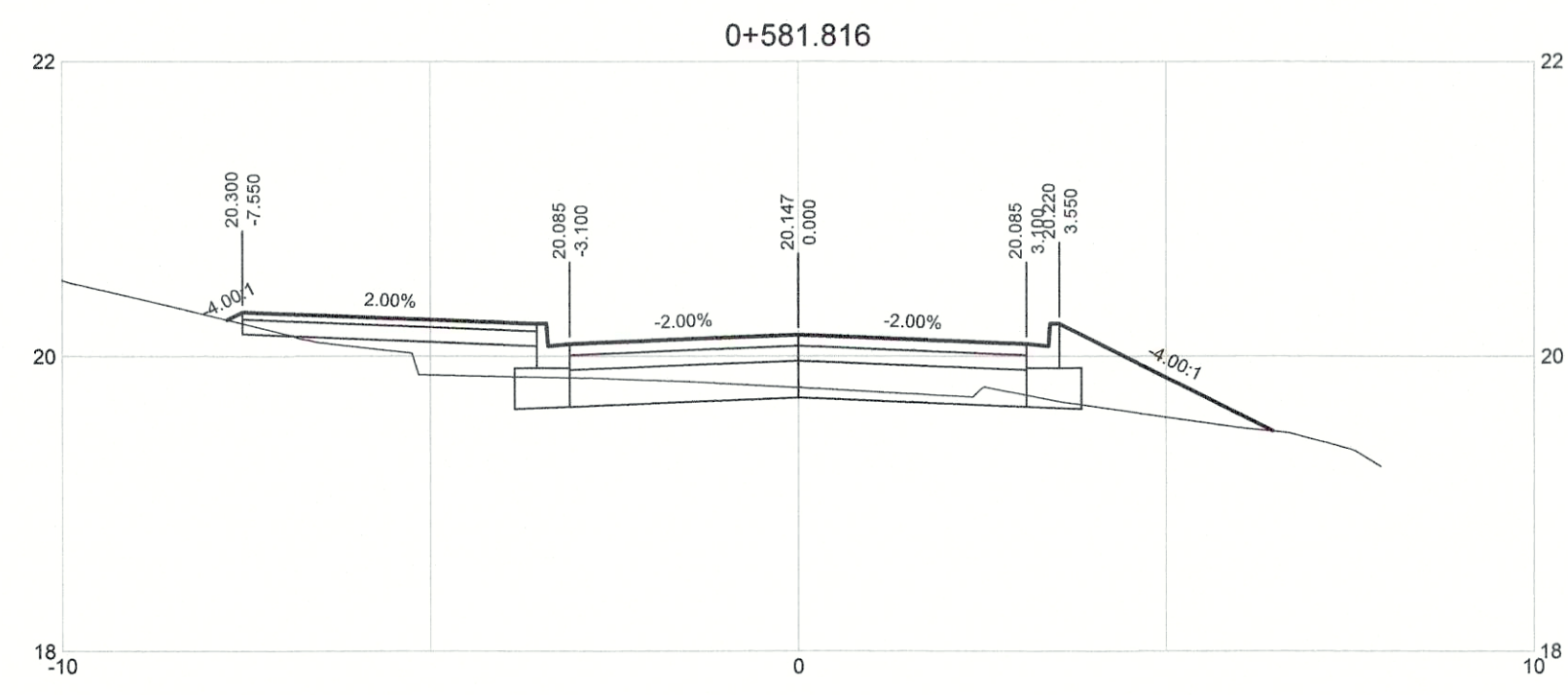
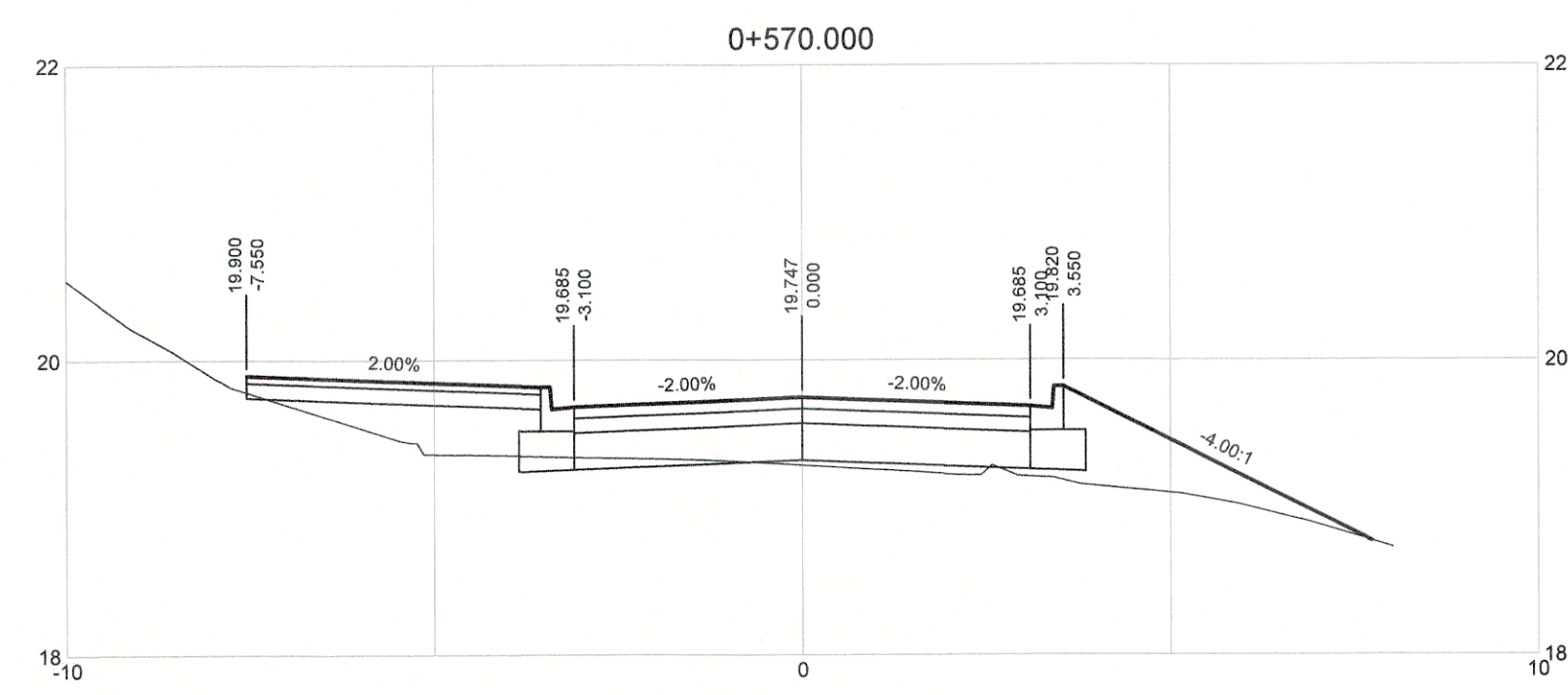
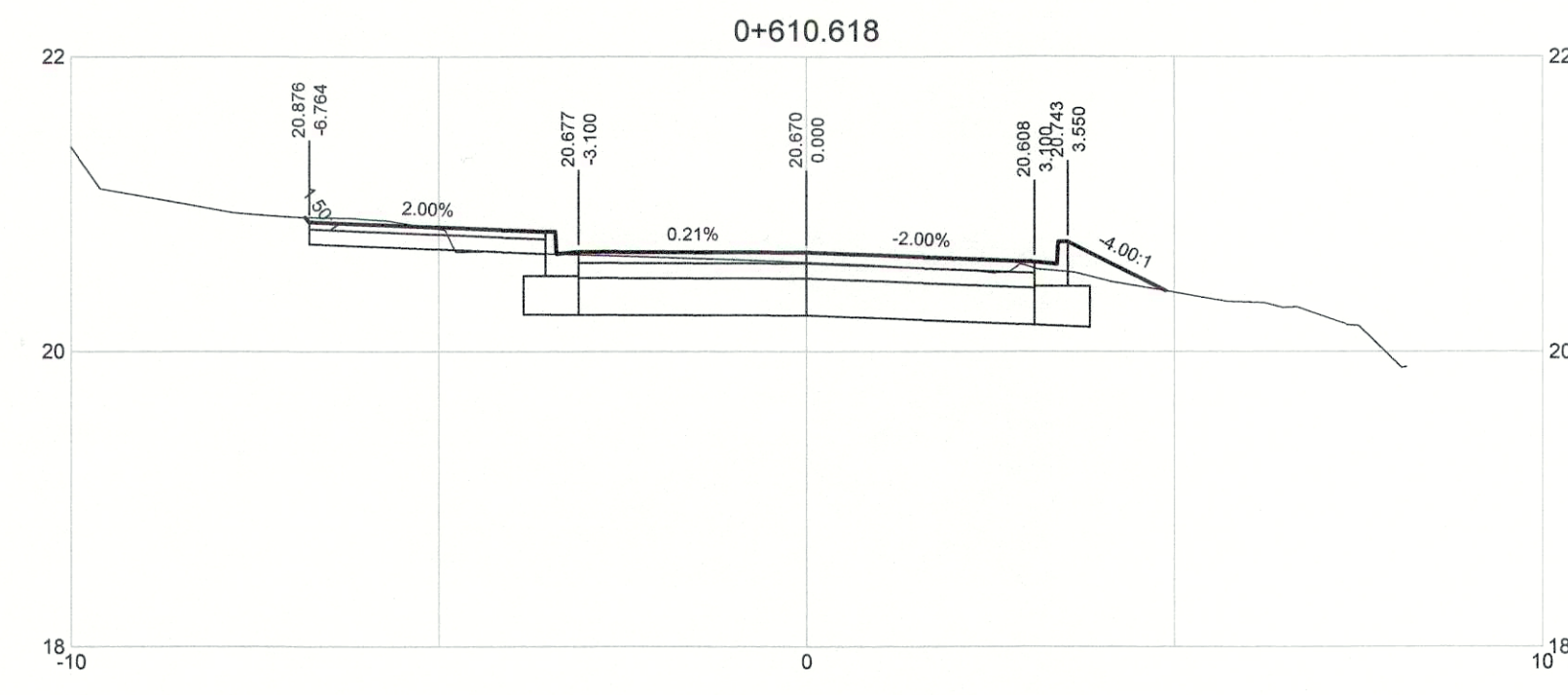
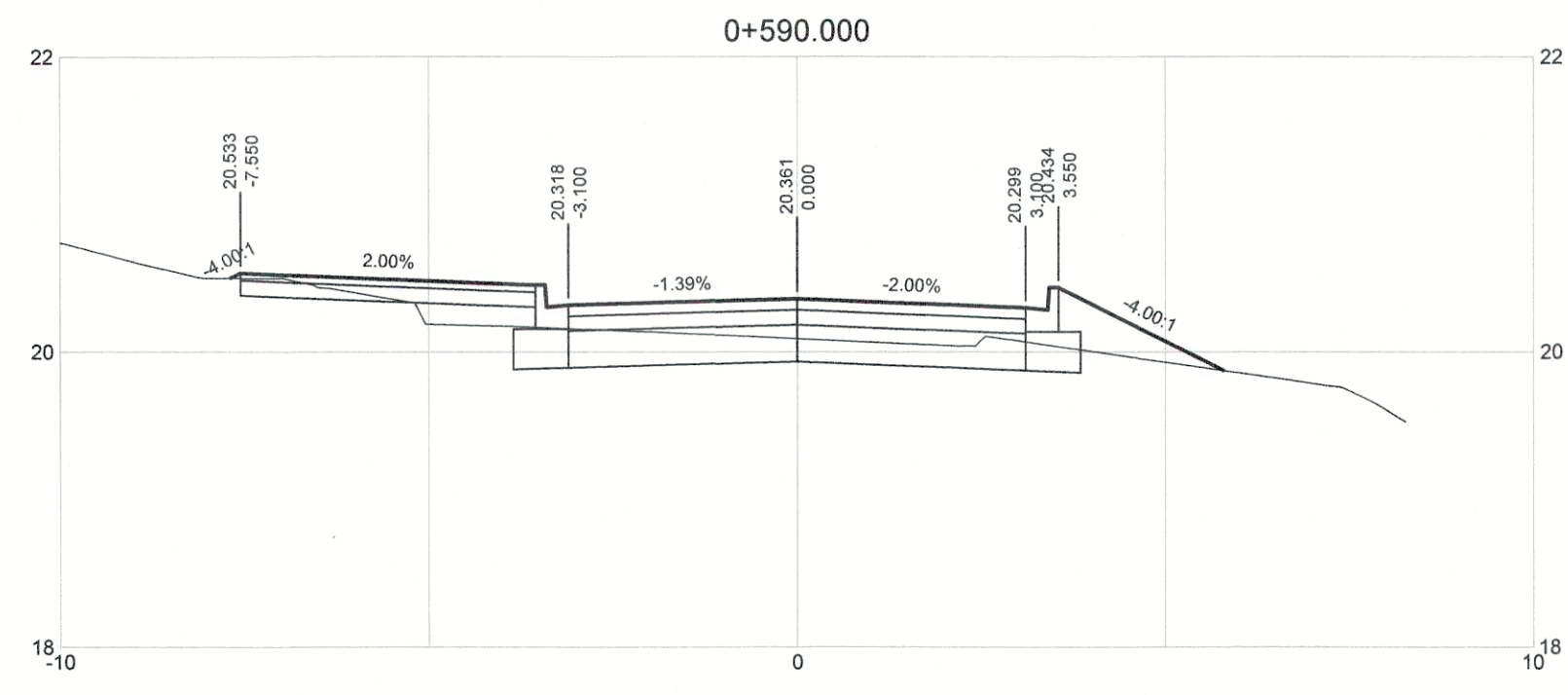
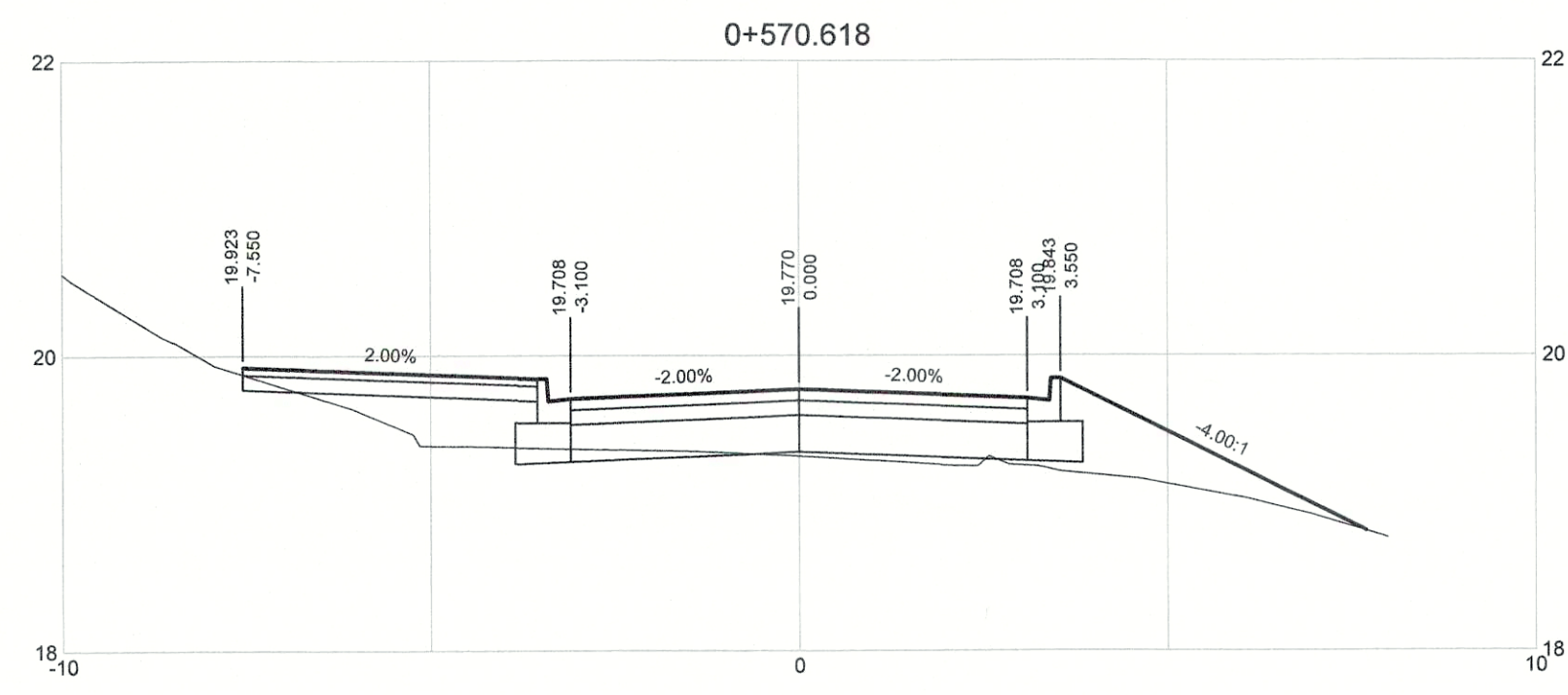
DRAWN: KP  
DESIGNED: KP  
CHECKED: SL  
APPROVED: JG

**CHASE RIVER HALIBURTON ST. ROAD RESTORATION  
DETAILED ROAD CROSS SECTIONS  
STA. 0+505.510 TO STA. 0+560**

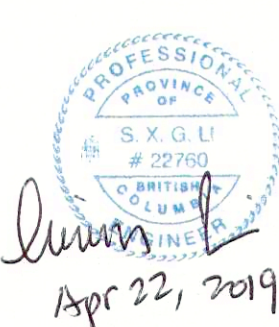
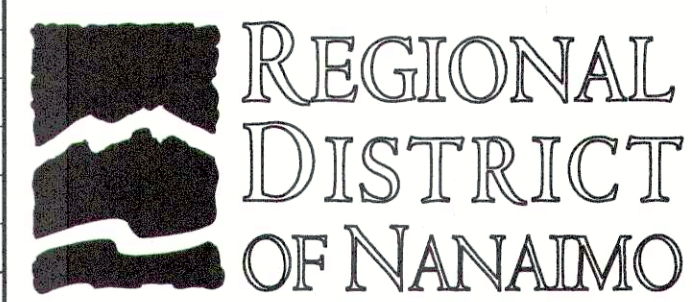
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SHEET: 001

**JACOBS**  
PROJECT NO. 707564  
DATE: JAN 07, 2018  
SCALE: H 1:100 V 1:50  
REV: 0





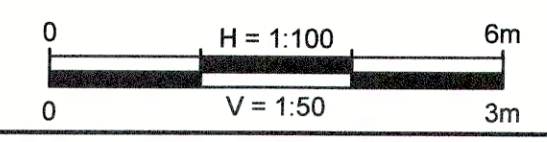
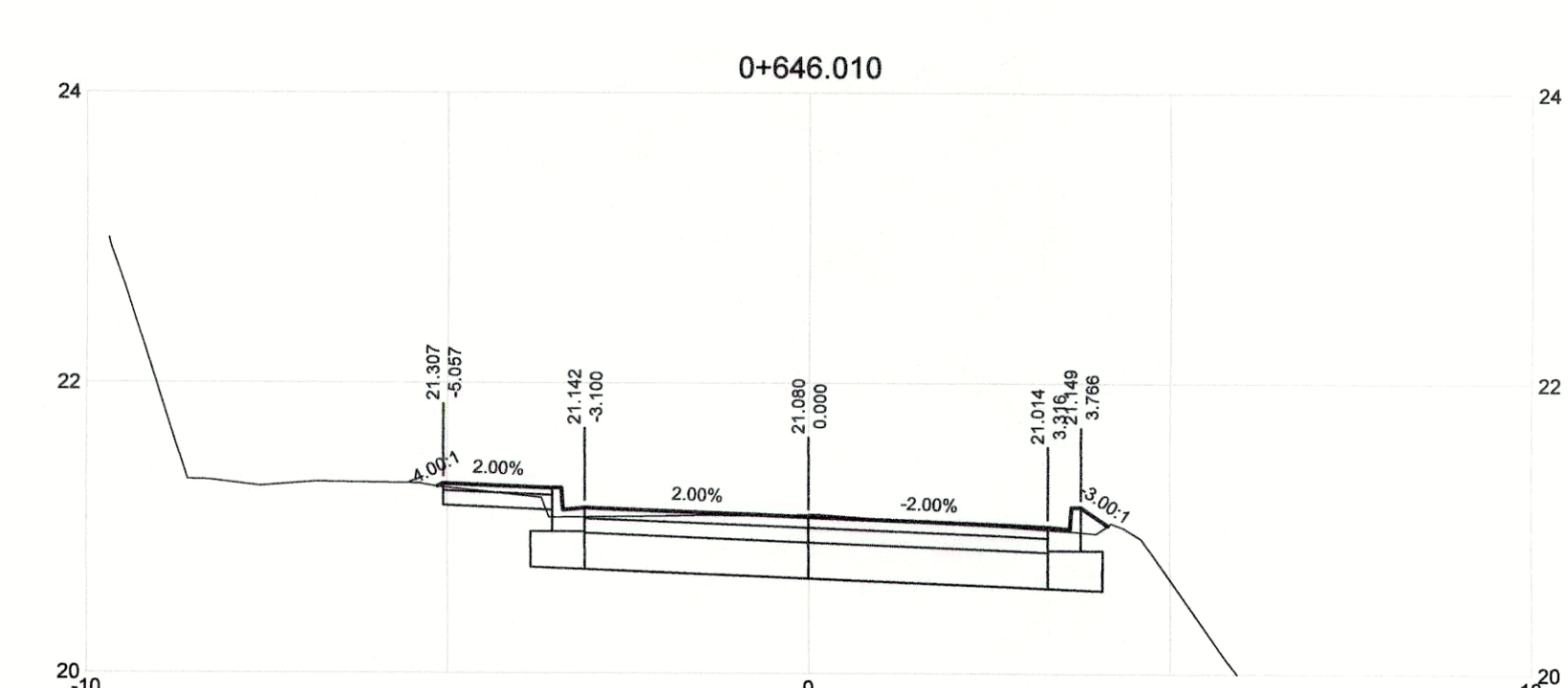
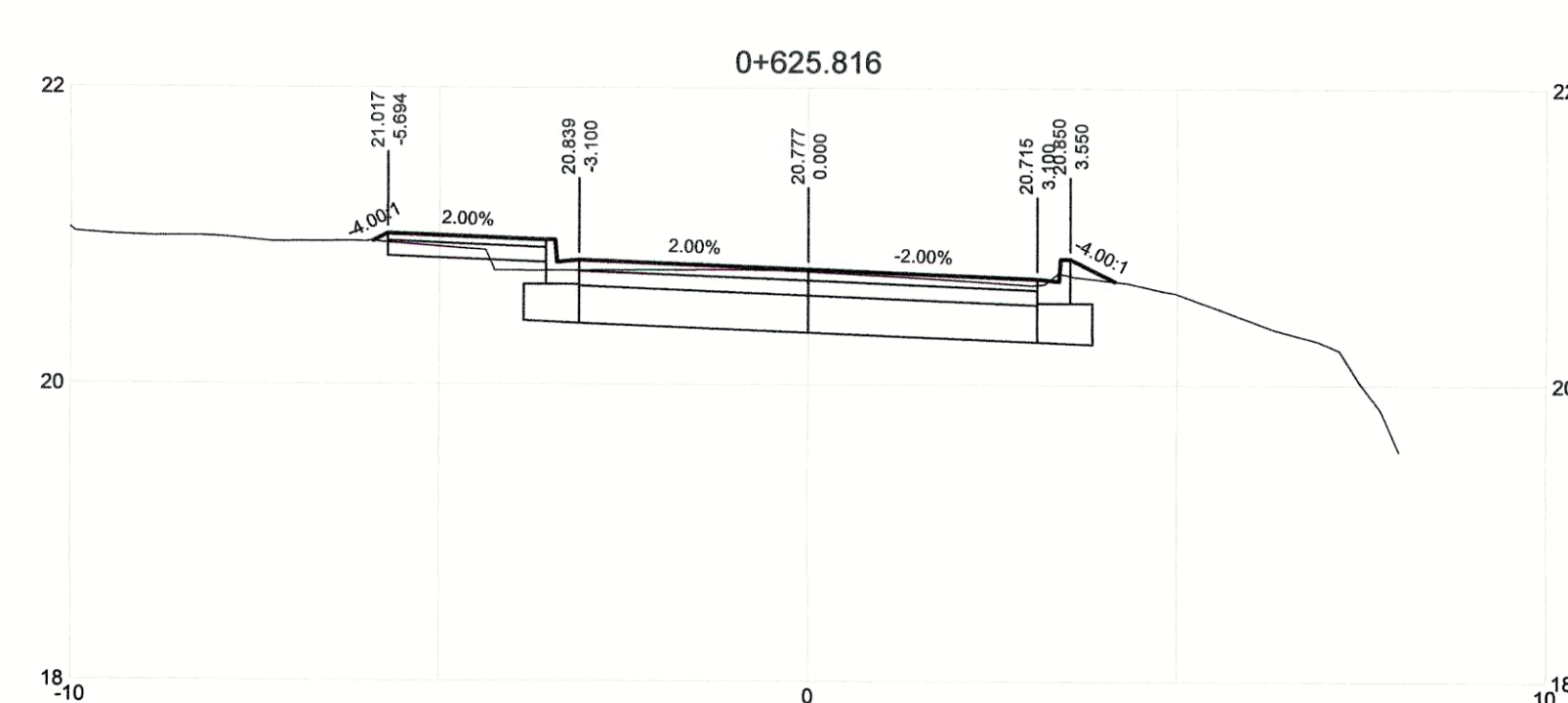
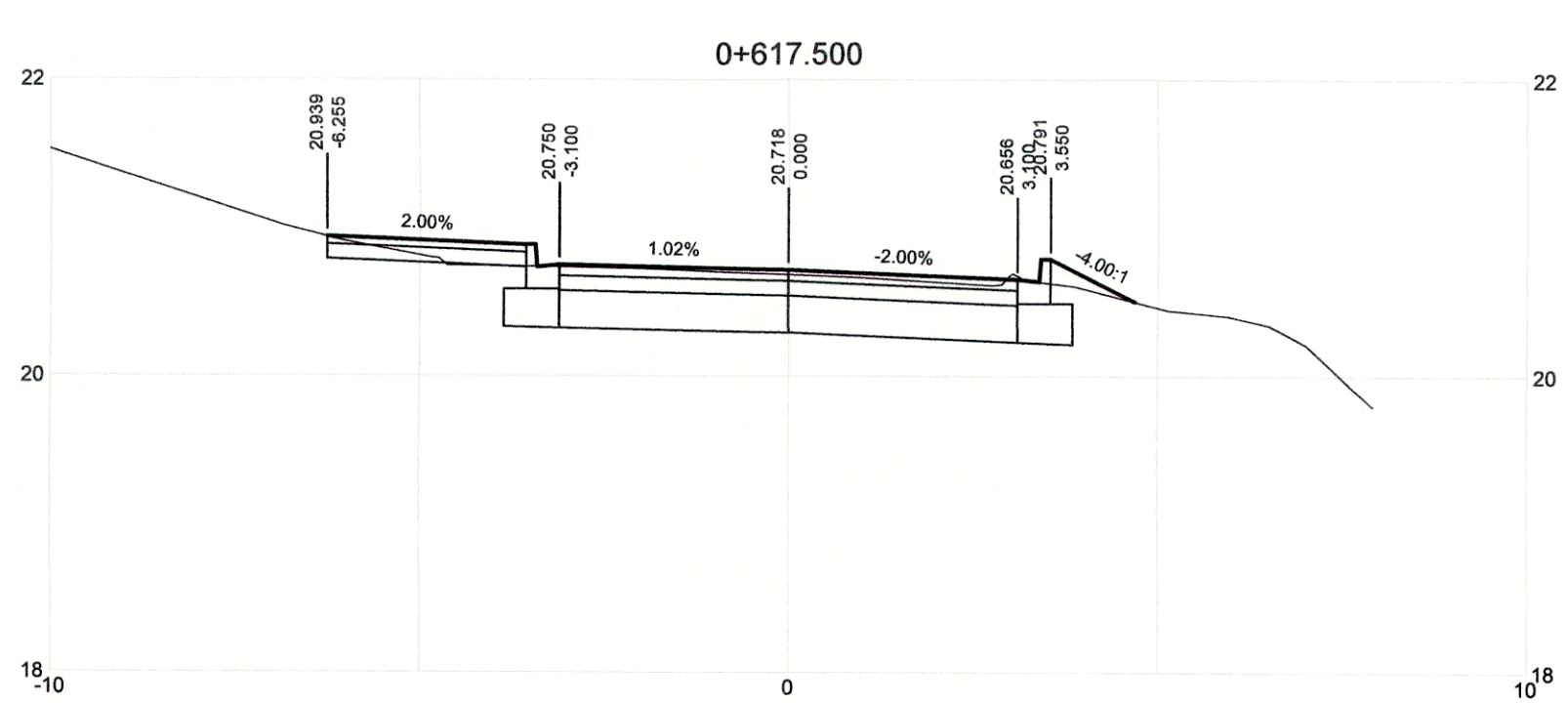
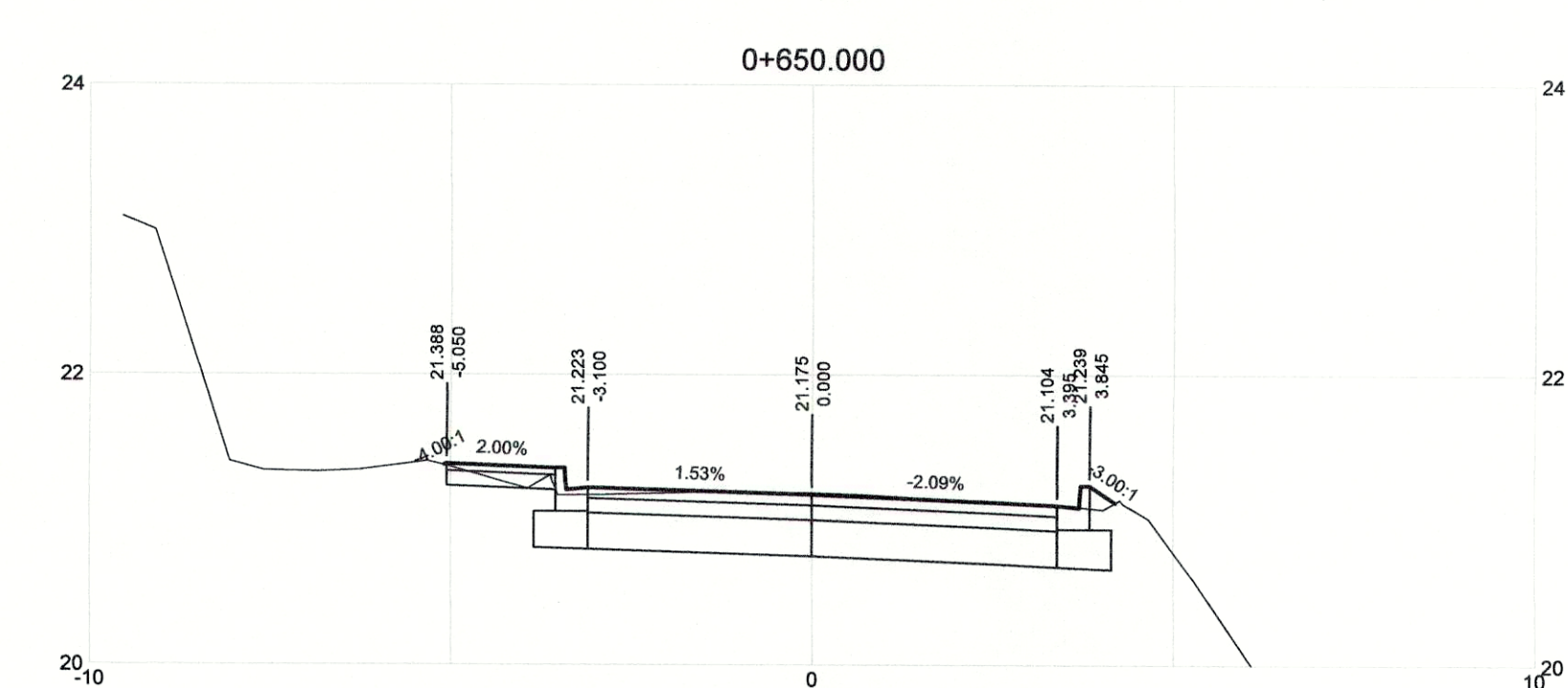
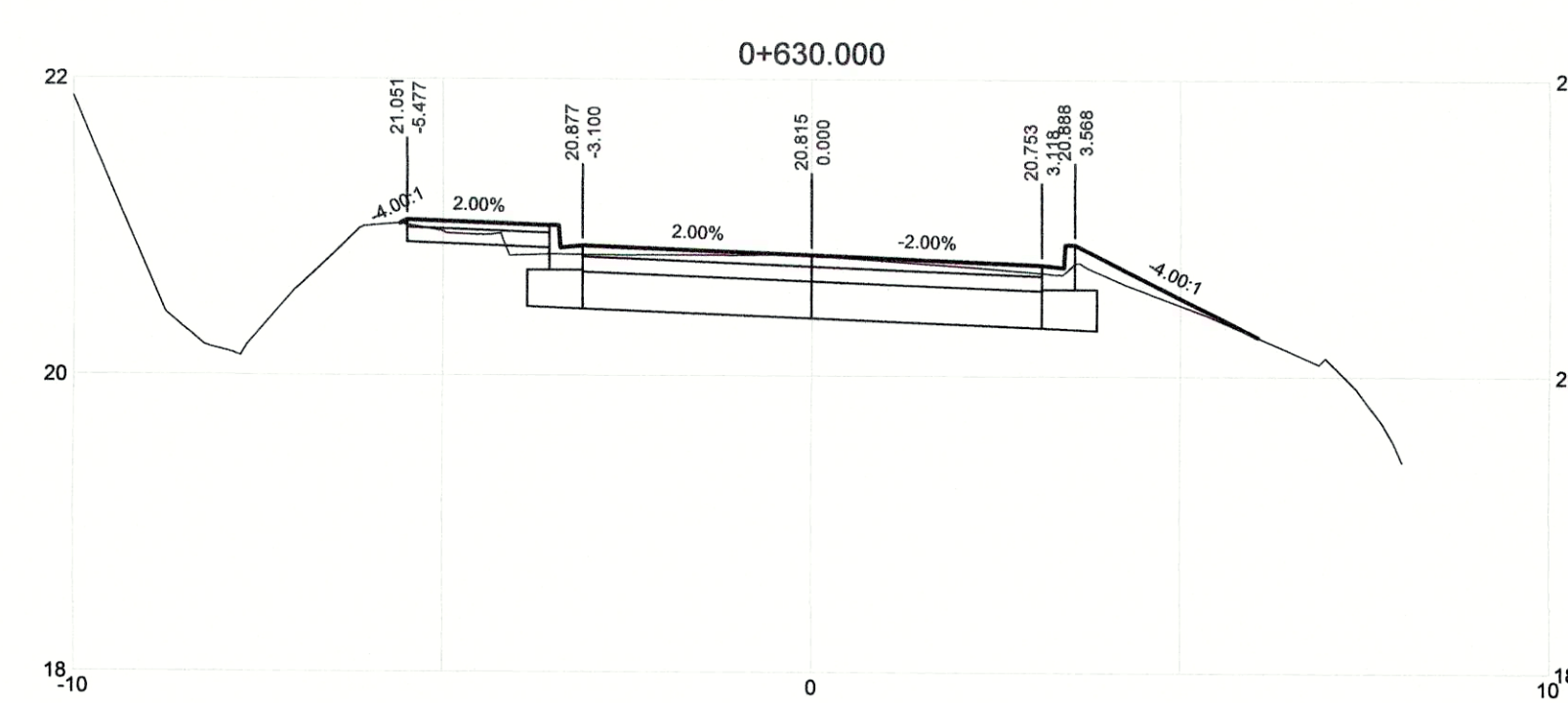
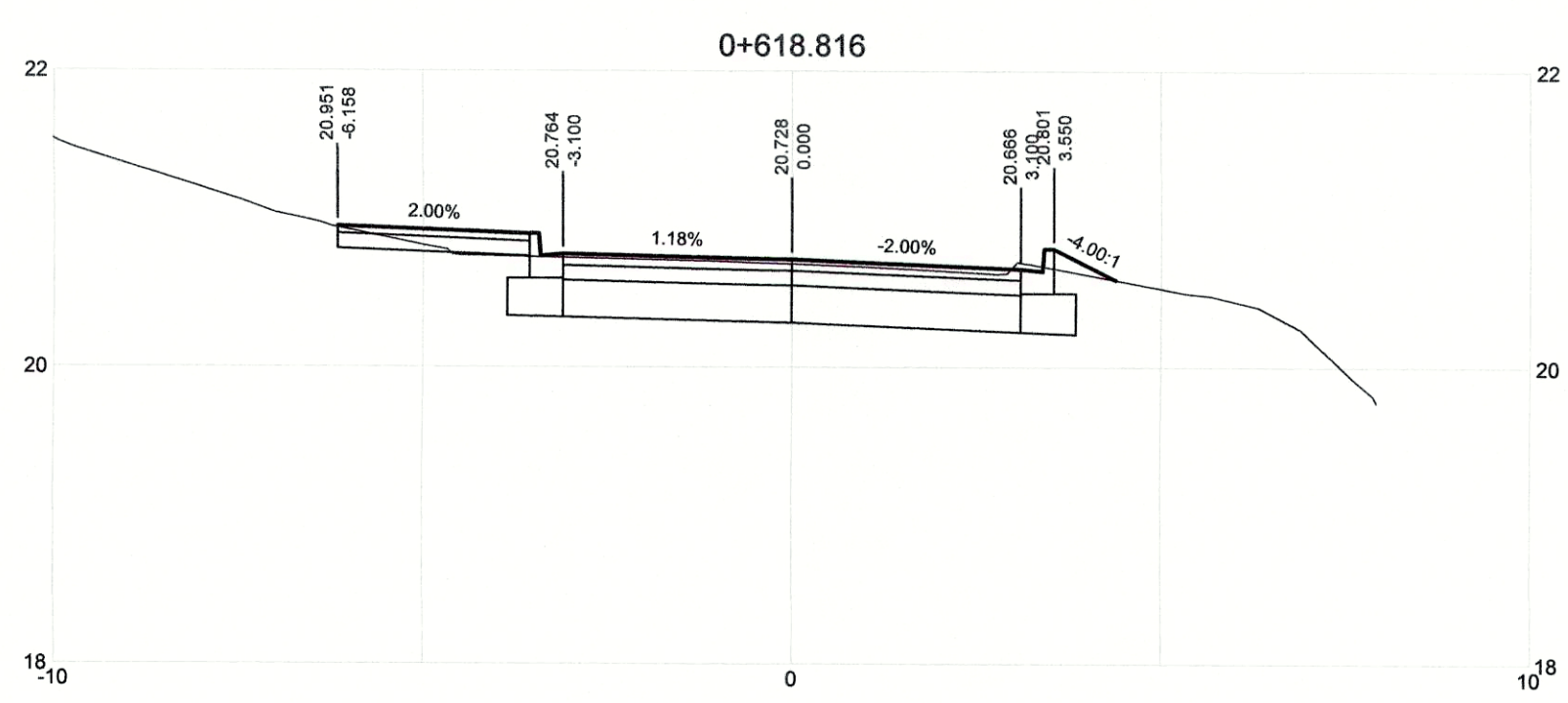
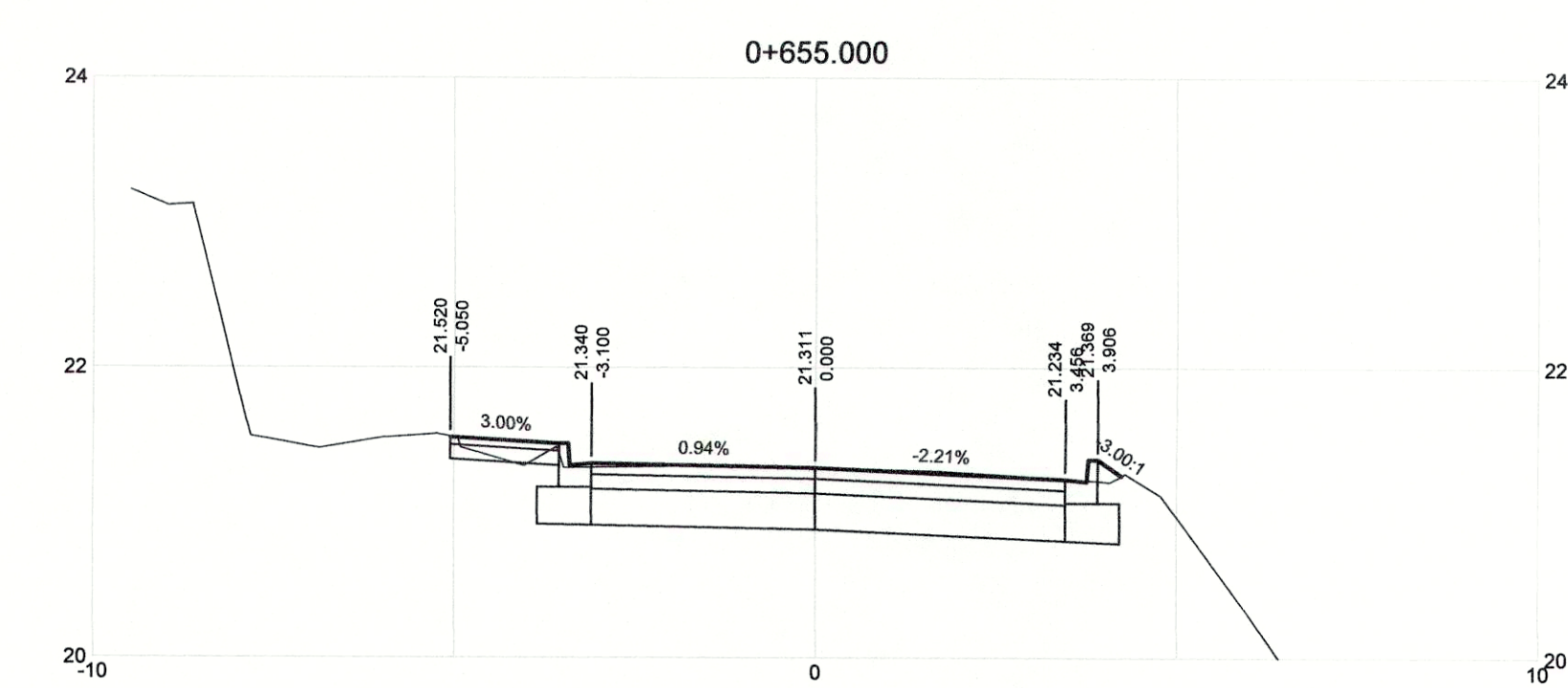
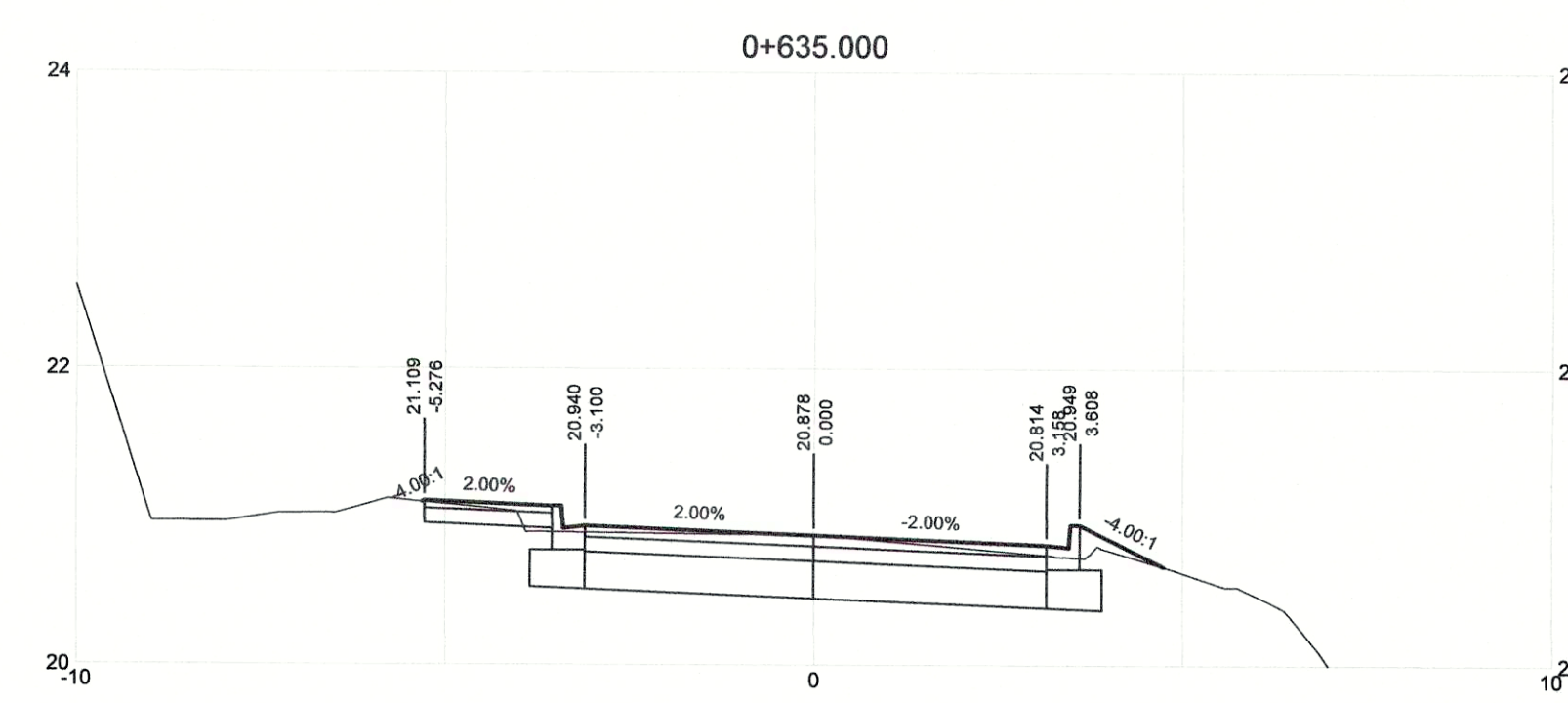
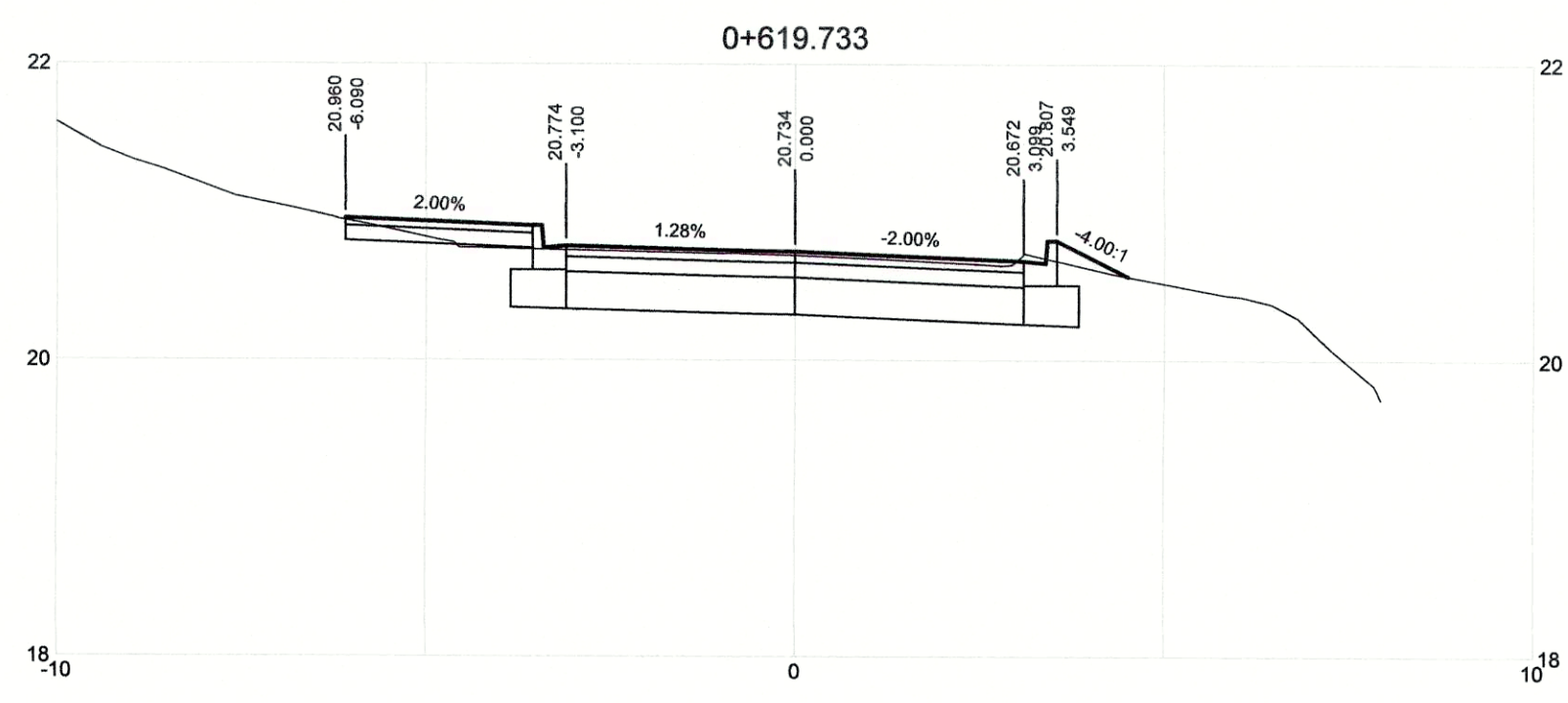
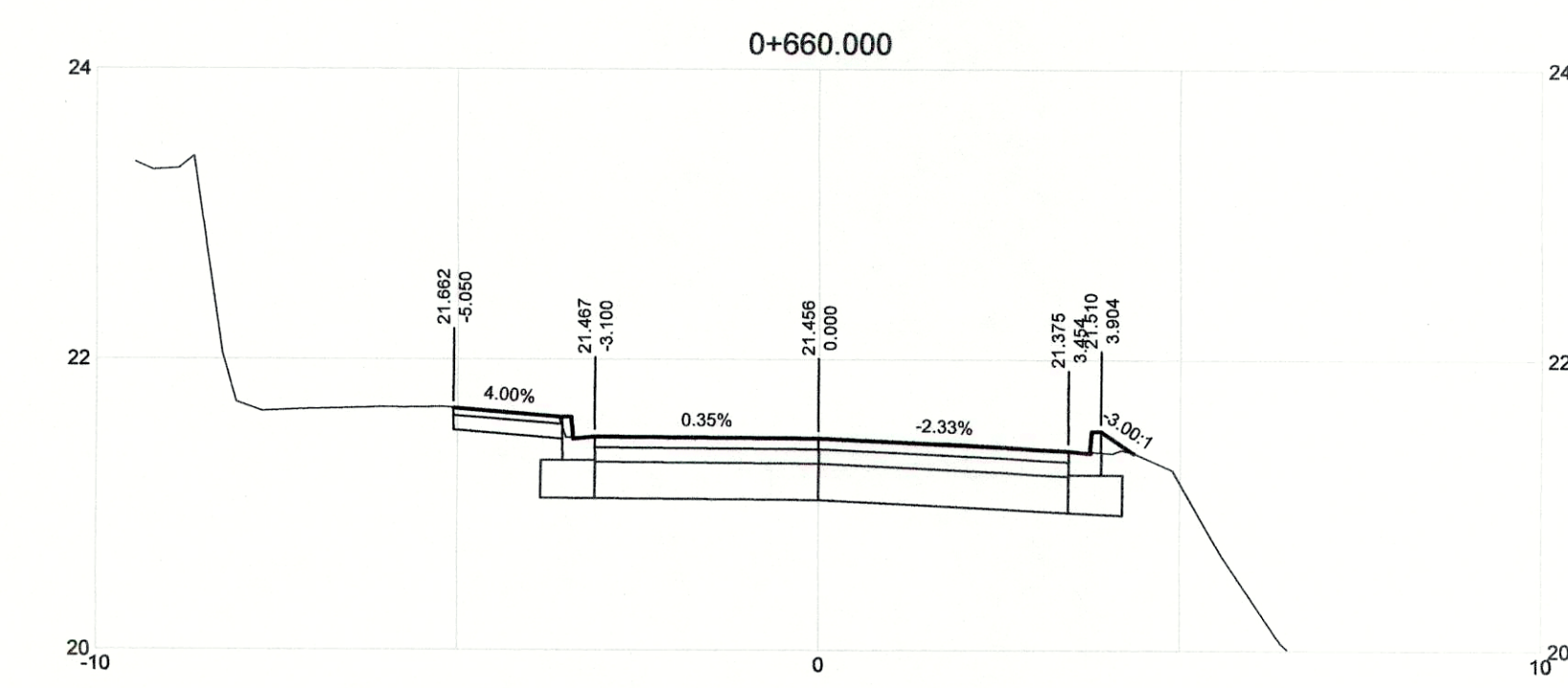
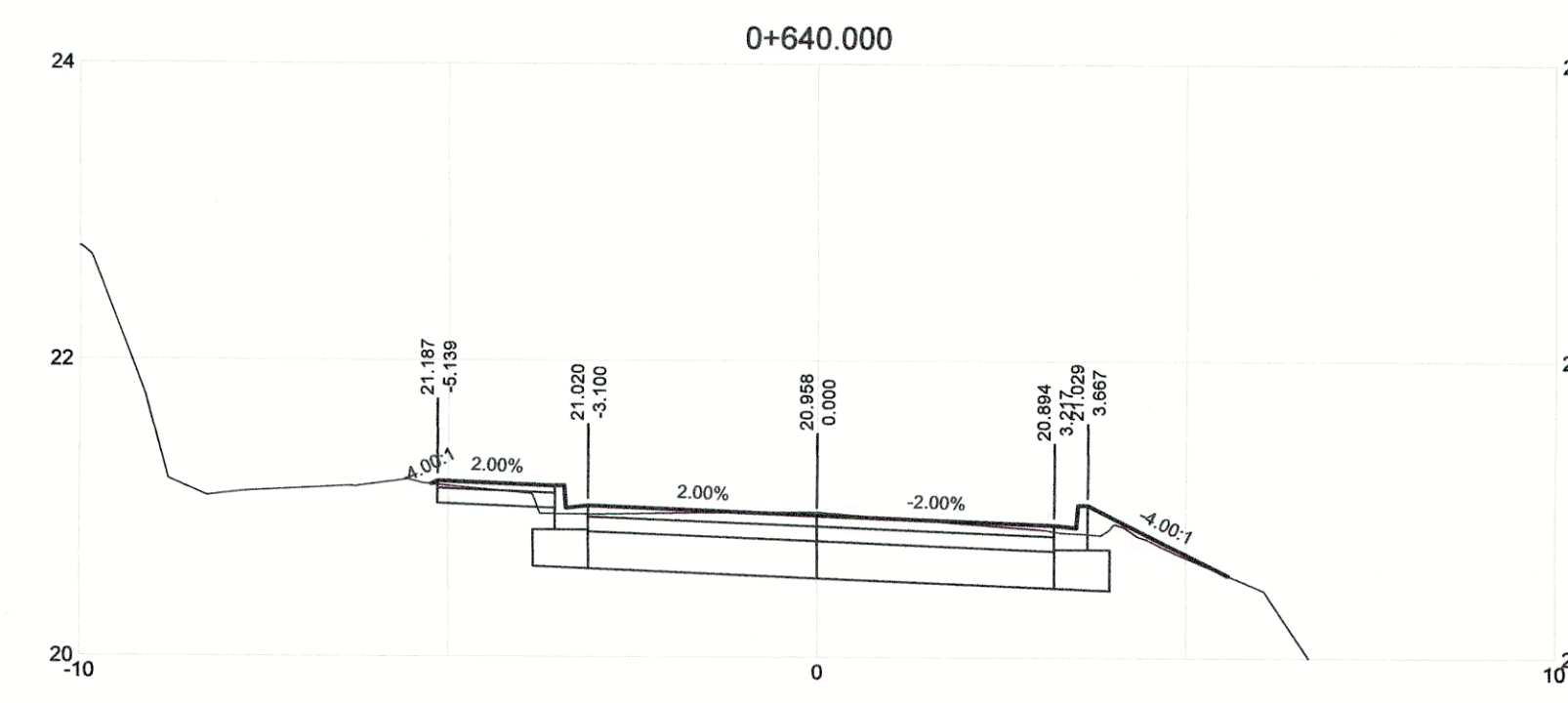
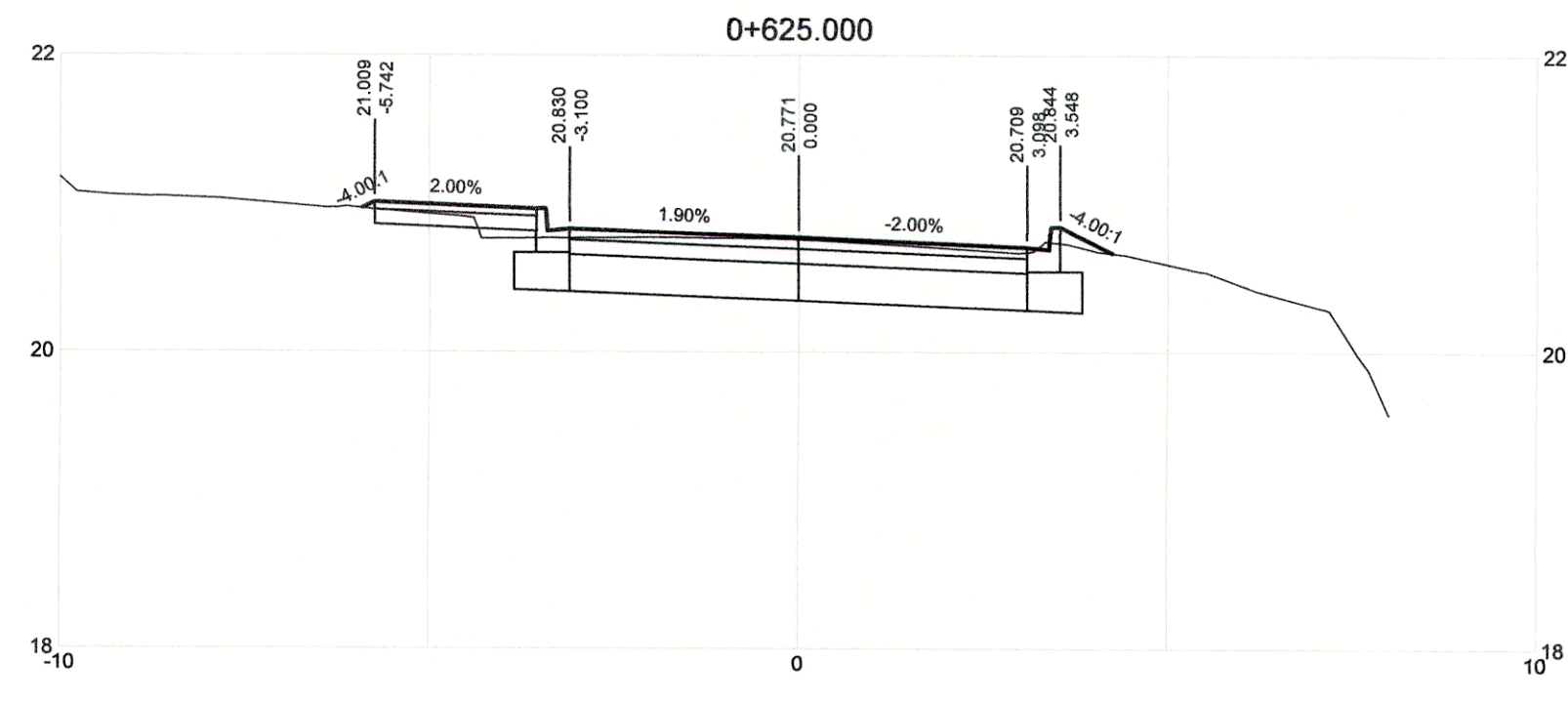
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	REFERENCE DRAWINGS	0	APRIL 2019	ISSUED FOR TENDER		KP	SL	JG



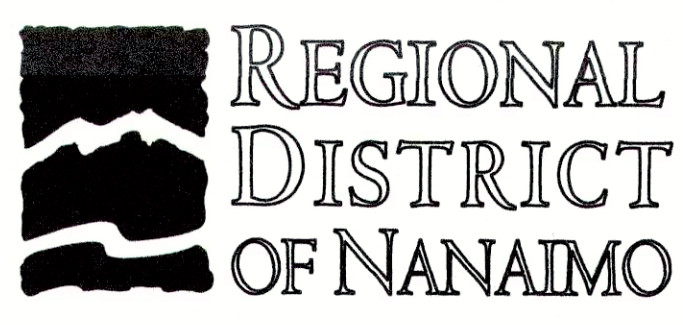
PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES			
DRAWN KP	<p style="text-align: center;">CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+563 TO STA. 0+610.618</p>		
DESIGNED KP			
CHECKED SL			
APPROVED JG			
DRAWING NUMBER GNINT-213	SHEET 001	PROJECT NO. 707564	SCALE H 1:100 V 1:50
		DATE JAN 07, 2018	REV 0







DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



PROFESSIONAL ENGINEER  
S. X. G. U.  
#22790  
APR 22, 2019

PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	KP	CHASE RIVER HALIBURTON ST. ROAD RESTORATION DETAILED ROAD CROSS SECTIONS STA. 0+617.500 TO STA. 0+660.000	
DESIGNED	KP	PROJECT NO.	707564
CHECKED	SL	SCALE	H 1:100 V 1:50
APPROVED	JG	DRAWING NUMBER	GNINT-214
		SHEET	001
		DATE	JAN 07, 2018
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# CHASE RIVER - PUMP STATION UPGRADES PROCESS, MECHANICAL, CIVIL AND STRUCTURAL

## PROCESS AND MECHANICAL

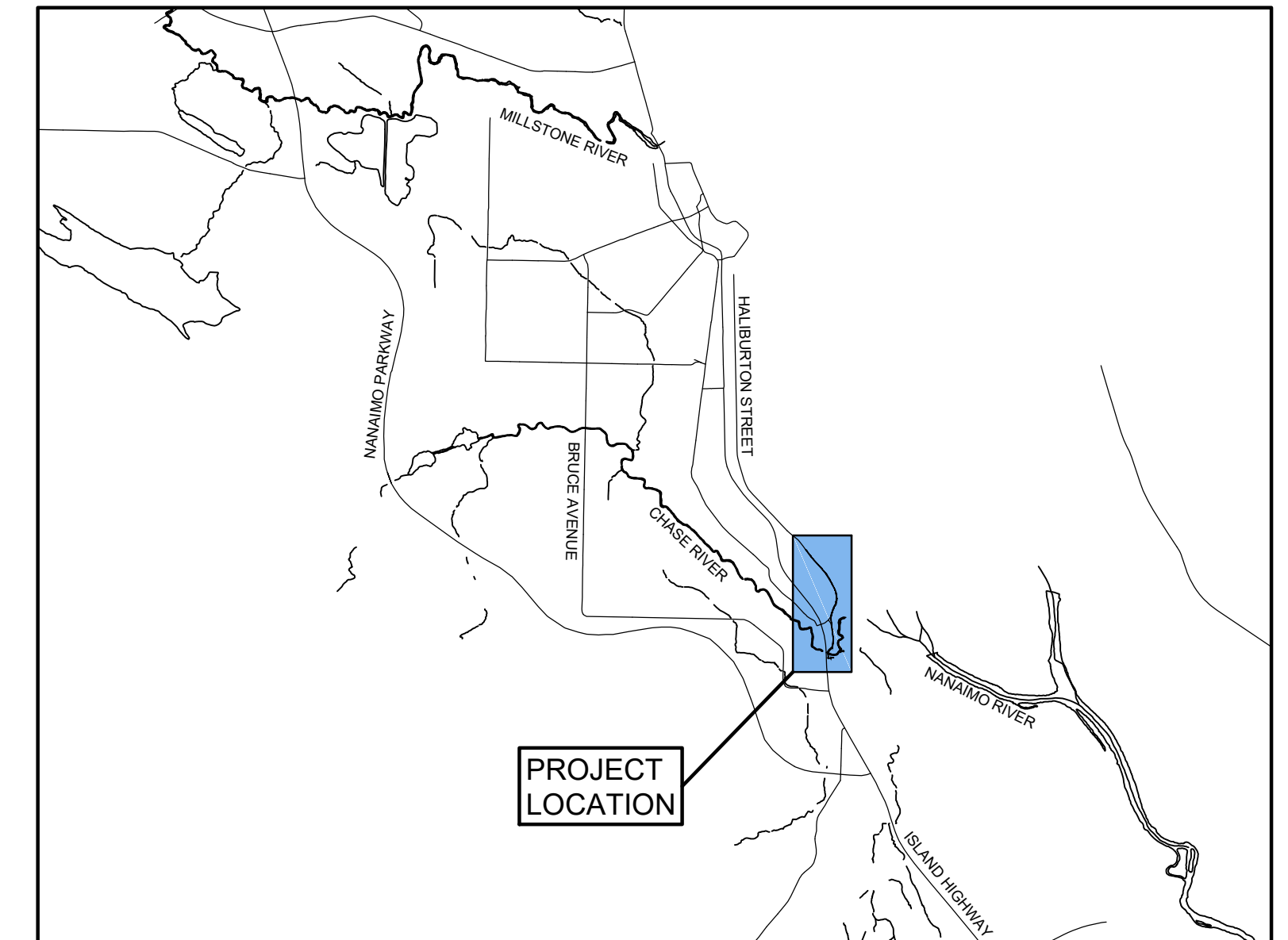
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001	CRPS-G-006	CHASE RIVER PUMP STATION UPGRADES	COVER SHEET, KEY PLAN AND DRAWING INDEX	0
001	GNINT-152	CHASE RIVER	NOTES AND SPECIFICATIONS	0
002	GNINT-152	CHASE RIVER	NOTES AND SPECIFICATIONS	0
001	CH3-002	CHASE RIVER PUMP STATION UPGRADES	GENERAL MECHANICAL/INSTRUMENTATION SYMBOLS AND LEGENDS	2C
001	CH3-402	CHASE RIVER PUMP STATION UPGRADES	PROCESS MECHANICAL P&I DIAGRAM SHEET 2 OF 2	3C
001	CH3-402-1	CHASE RIVER PUMP STATION UPGRADES	PROCESS MECHANICAL P&I DIAGRAM SHEET 2 OF 2	3C
001	CH3-402-DEMO	CHASE RIVER PUMP STATION UPGRADES	PROCESS MECHANICAL P&I DIAGRAM SHEET 2 OF 2	3C
001	CRPS-M-105	CHASE RIVER PUMP STATION UPGRADES	ABOVE GRADE VALVE AND METERING ENCLOSURE PLAN AND SECTION VIEWS	0
001	CRPS-M-106	CHASE RIVER PUMP STATION UPGRADES	ABOVE GRADE VALVE AND METERING ENCLOSURE ISOMETRIC AND SECTION VIEWS	0

## CIVIL AND STRUCTURAL

SHEET No.	DRAWING No.	PROJECT	TITLE	REVISION
001	CRPS-C-117	CHASE RIVER PUMP STATION UPGRADES	SITE PLAN	0
002	CRPS-C-117	CHASE RIVER PUMP STATION UPGRADES	VALVE AND METERING ENCLOSURE FOUNDATION PLAN, SECTION AND DETAILS	0
003	CRPS-C-117	CHASE RIVER PUMP STATION UPGRADES	VALVE AND METERING ENCLOSURE SECTIONS AND DETAILS	0
004	CRPS-C-117	CHASE RIVER PUMP STATION UPGRADES	TYPICAL FENCE DETAILS	0
001	CRPS-C-117-DEMO	CHASE RIVER PUMP STATION UPGRADES	DEMOLITION PLAN	0

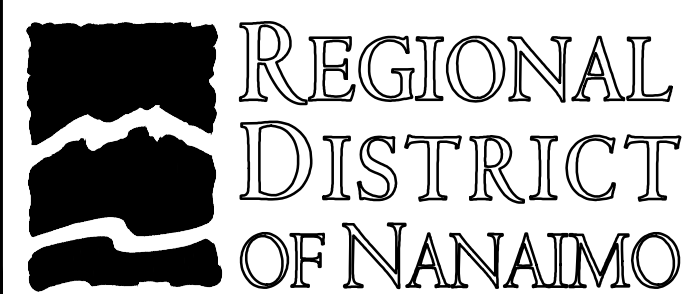
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SHEET No.	DRAWING No.	PROJECT	TITLE	REVISION
002	122.46.7.2	TWINING OF THE CHASE RIVER SANITARY FORCEMAIN STAGE III	VALVE CHAMBER PLAN AND SECTION	C



LOCATION PLAN  
1:50000

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



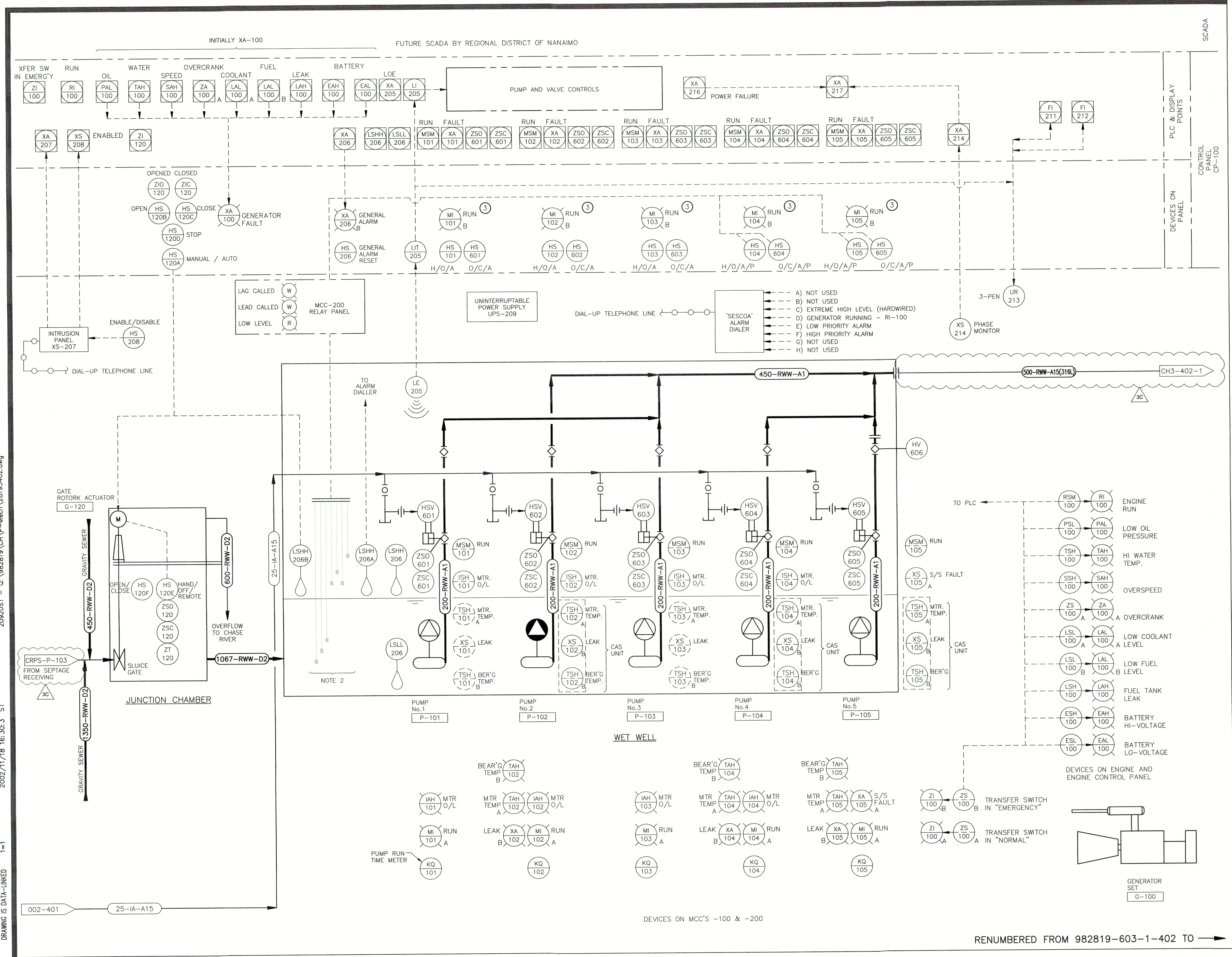
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER PUMP STATION UPGRADES COVER SHEET, KEY PLAN AND DRAWING INDEX	<b>JACOBS</b>
DESIGNED	MP		
CHECKED	CW	PROJECT NO.	707564
APPROVED	JG	SCALE	AS SPECIFIED
DRAWING NUMBER		CRPS-G-006	SHEET
		001	DATE
			JAN 07, 2019
			REV
			0







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 DRAWING IS DATA-LINKED



**VERIFY SCALES**  
 BAR IS BASED ON ORIGINAL DRAWING  
 0 20mm  
 IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

**NOTES:**

- UNINTERRUPTIBLE POWER SUPPLY (UPS) FOR CONTROLS.
- BACK-UP LEVEL PROBES HARD-WIRED FOR P-104 & P-105 ONLY.
- HARD-WIRED DEVICE.

NO.	DATE	ENG.	BY	SUBJECT
3C	APRIL 2019	MP	AK	ISSUED FOR TENDER
3B	MARCH 2019	MP	AK	ISSUED FOR 90% DESIGN REVIEW
3A	04 FEB 2019	MP	AK	ISSUED FOR 60% DESIGN REVIEW
3	23 AUG 2002	M.L.	J.T.	RECORD DRAWING
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE ACTUATOR ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

**REVISIONS**

PROJECT NO.	982819-603
SCALE	NONE
DRAWN	S.L./H.S.
DESIGNED	K.M./M.L.
CHECKED	L.W.P.
APPROVED	
DATE	JULY 2001

DISTRICT PROJECT NUMBER  
**0810-20-CRPS-04**  
 DISTRICT DRAWING NUMBER

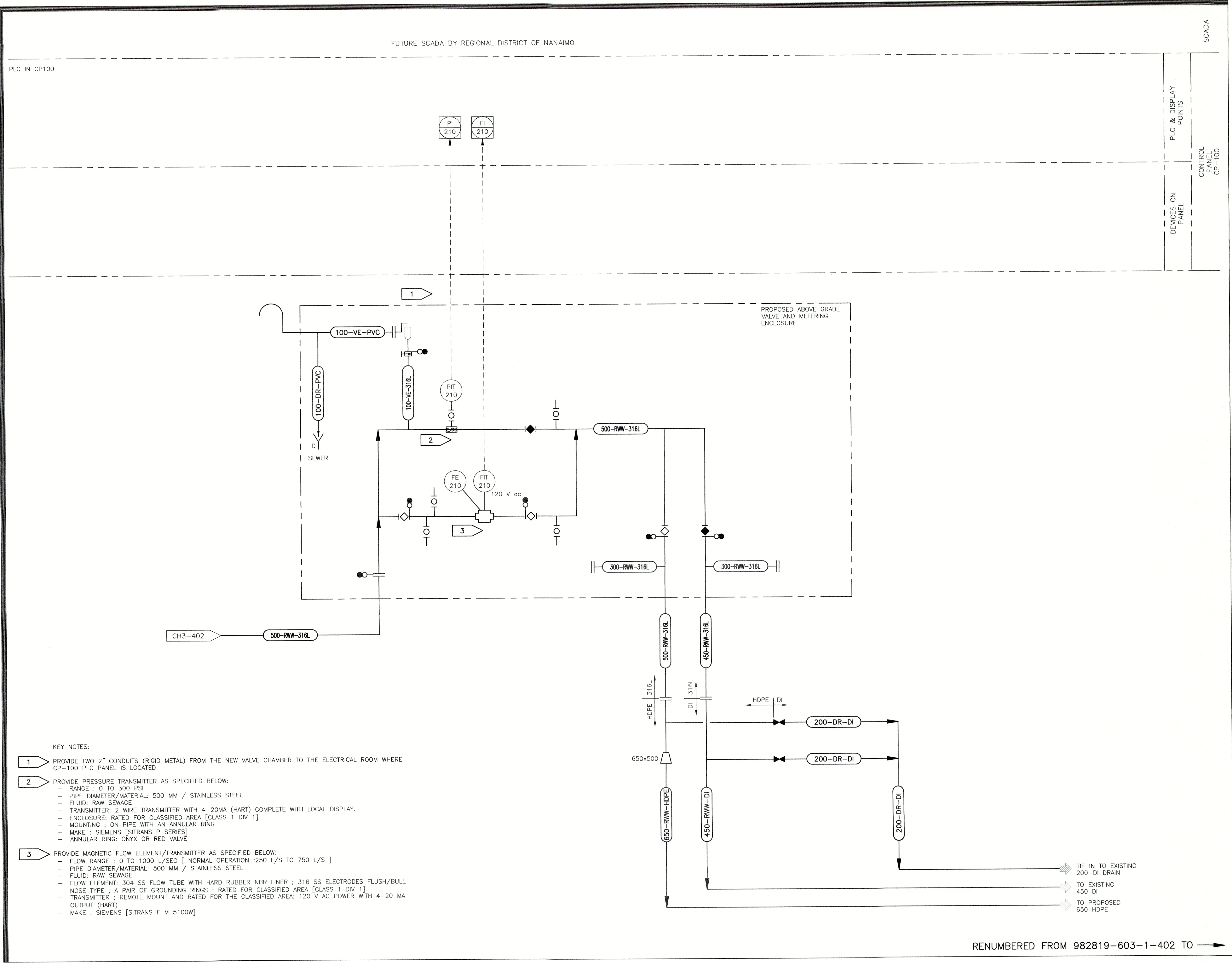
REGIONAL DISTRICT OF NANAIMO  
 CHASE RIVER PUMPING STATION UPGRADE  
 PROCESS MECHANICAL P & I DIAGRAM  
 SHEET 2 OF 2

DRAWING NUMBER	REV. NO.	SHEET
CH3-402	3C	

RENUMBERED FROM 982819-603-1-402 TO



209205T - c: 982819\_CH P - Mech\28193402.dwg  
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DRAWING IS DATA-LINKED 1=1



- KEY NOTES:**
- 1** PROVIDE TWO 2" CONDUITS (RIGID METAL) FROM THE NEW VALVE CHAMBER TO THE ELECTRICAL ROOM WHERE CP-100 PLC PANEL IS LOCATED
  - 2** PROVIDE PRESSURE TRANSMITTER AS SPECIFIED BELOW:
    - RANGE : 0 TO 300 PSI
    - PIPE DIAMETER/MATERIAL: 500 MM / STAINLESS STEEL
    - FLUID: RAW SEWAGE
    - TRANSMITTER: 2 WIRE TRANSMITTER WITH 4-20MA (HART) COMPLETE WITH LOCAL DISPLAY.
    - ENCLOSURE: RATED FOR CLASSIFIED AREA [CLASS 1 DIV 1]
    - MOUNTING : ON PIPE WITH AN ANNULAR RING
    - MAKE : SIEMENS [SITRANS P SERIES]
    - ANNULAR RING: ONYX OR RED VALVE
  - 3** PROVIDE MAGNETIC FLOW ELEMENT/TRANSMITTER AS SPECIFIED BELOW:
    - FLOW RANGE : 0 TO 1000 L/SEC [ NORMAL OPERATION :250 L/S TO 750 L/S ]
    - PIPE DIAMETER/MATERIAL: 500 MM / STAINLESS STEEL
    - FLUID: RAW SEWAGE
    - FLOW ELEMENT: 304 SS FLOW TUBE WITH HARD RUBBER NBR LINER ; 316 SS ELECTRODES FLUSH/BULL NOSE TYPE ; A PAIR OF GROUNDING RINGS ; RATED FOR CLASSIFIED AREA [CLASS 1 DIV 1]
    - TRANSMITTER ; REMOTE MOUNT AND RATED FOR THE CLASSIFIED AREA; 120 V AC POWER WITH 4-20 MA OUTPUT (HART)
    - MAKE : SIEMENS [SITRANS F M 5100W]

RENUMBERED FROM 982819-603-1-402 TO →

**VERIFY SCALES**  
 BAR IS BASED ON ORIGINAL DRAWING  
 0 20mm  
 IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

**NOTES:**  
 UNINTERRUPTABLE POWER SUPPLY (UPS) FOR CONTROLS.  
 BACK-UP LEVEL PROBES HARD-WIRED FOR P-104 & P-105 ONLY.  
 HARD-WIRED DEVICE.

NO.	DATE	ENG.	BY	SUBJECT
3C	APRIL 2019	MP	AK	ISSUED FOR TENDER
3B	MARCH 2019	MP	AK	ISSUED FOR 90% DESIGN REVIEW
3A	04 FEB 2019	MP	AK	ISSUED FOR 60% DESIGN REVIEW
3	23 AUG 2002	M.L.	J.T.	RECORD DRAWING
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE ACTUATOR ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

**REVISIONS**

PROJECT NO.	982819-603
SCALE	NONE
DRAWN	S.L./H.S.
DESIGNED	K.M./M.L.
CHECKED	L.W.P.
APPROVED	
DATE	JULY 2001



**JACOBS**

DISTRICT PROJECT NUMBER  
**0810-20-CRPS-04**  
 DISTRICT DRAWING NUMBER

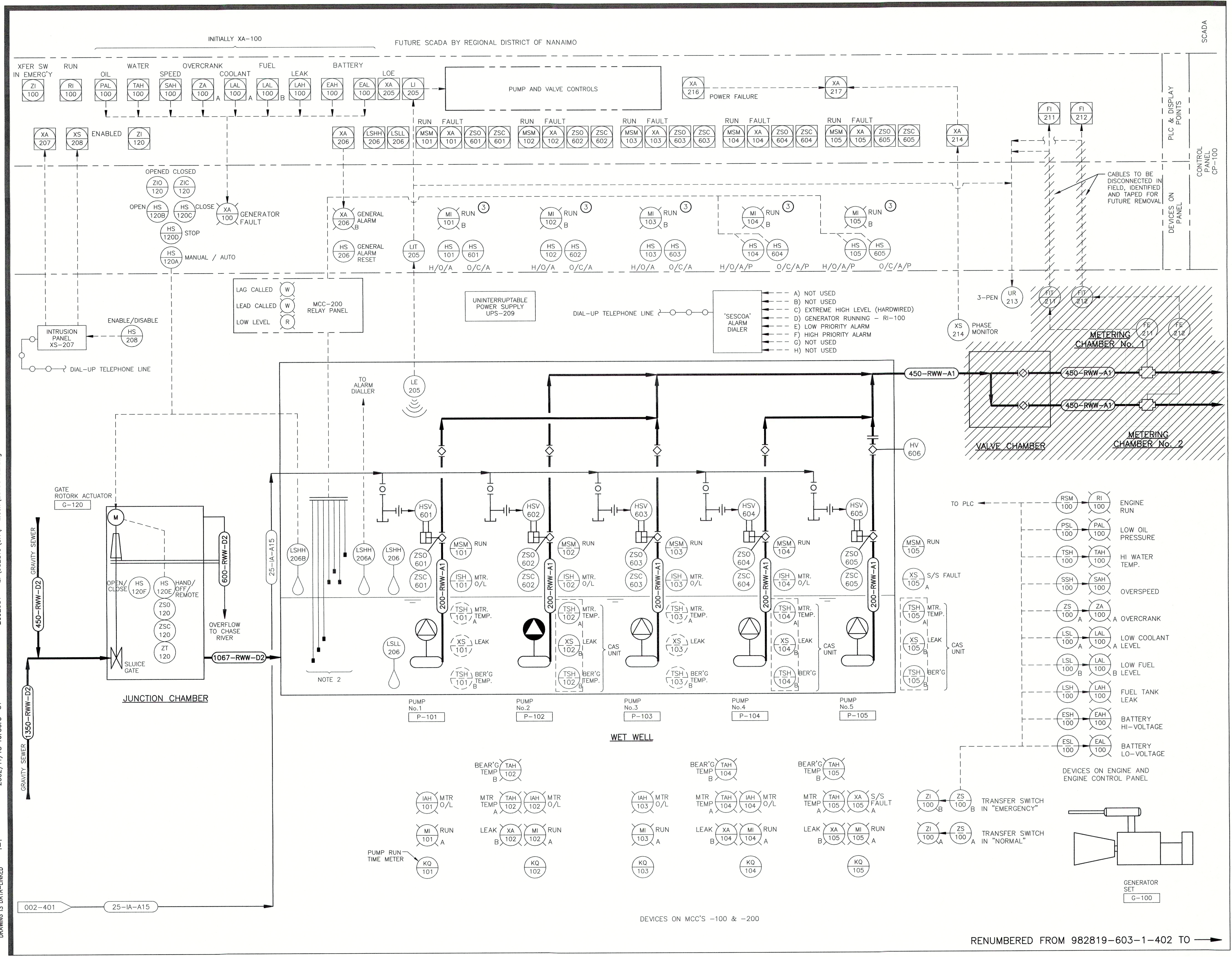
REGIONAL DISTRICT OF NANAIMO  
 CHASE RIVER PUMPING STATION UPGRADE

PROCESS MECHANICAL  
 P & I DIAGRAM  
 SHEET 2 OF 2

DRAWING NUMBER	REV. NO.	SHEET
CH3-402-1	3C	



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DRAWING IS DATA-LINKED



VERIFY SCALES  
BAR IS BASED ON ORIGINAL DRAWING  
0 20mm  
IF NOT 20mm ON THE SHEET, ADJUST SCALES ACCORDINGLY

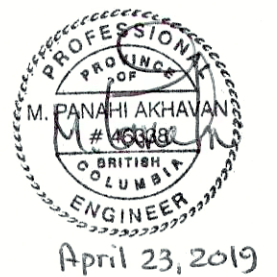
**NOTES:**

- UNINTERRUPTABLE POWER SUPPLY (UPS) FOR CONTROLS.
- BACK-UP LEVEL PROBES HARD-WIRED FOR P-104 & P-105 ONLY.
- HARD-WIRED DEVICE.

NO.	DATE	ENG.	BY	SUBJECT
3C	APRIL 2019	MP	AK	ISSUED FOR TENDER
3B	MARCH 2019	MP	AK	ISSUED FOR 90% DESIGN REVIEW
3A	04 FEB 2019	MP	AK	ISSUED FOR 60% DESIGN REVIEW
3	23 AUG 2002	M.L.	J.T.	RECORD DRAWING
2	03 JAN 2002	M.L.	J.T.	JUNCTION CHAMBER GATE ACTUATOR ADDED
1	24 SEP 2001	K.M.	S.T.	ISSUED FOR CONSTRUCTION
0	9 AUG 2001	K.M.	S.T.	ISSUED FOR TENDER

REVISIONS

PROJECT NO.	982819-603
SCALE	NONE
DRAWN	S.L./H.S.
DESIGNED	K.M./M.L.
CHECKED	L.W.P.
APPROVED	
DATE	JULY 2001



**JACOBS**

DISTRICT PROJECT NUMBER  
**0810-20-CRPS-04**

DISTRICT DRAWING NUMBER

REGIONAL DISTRICT OF NANAIMO

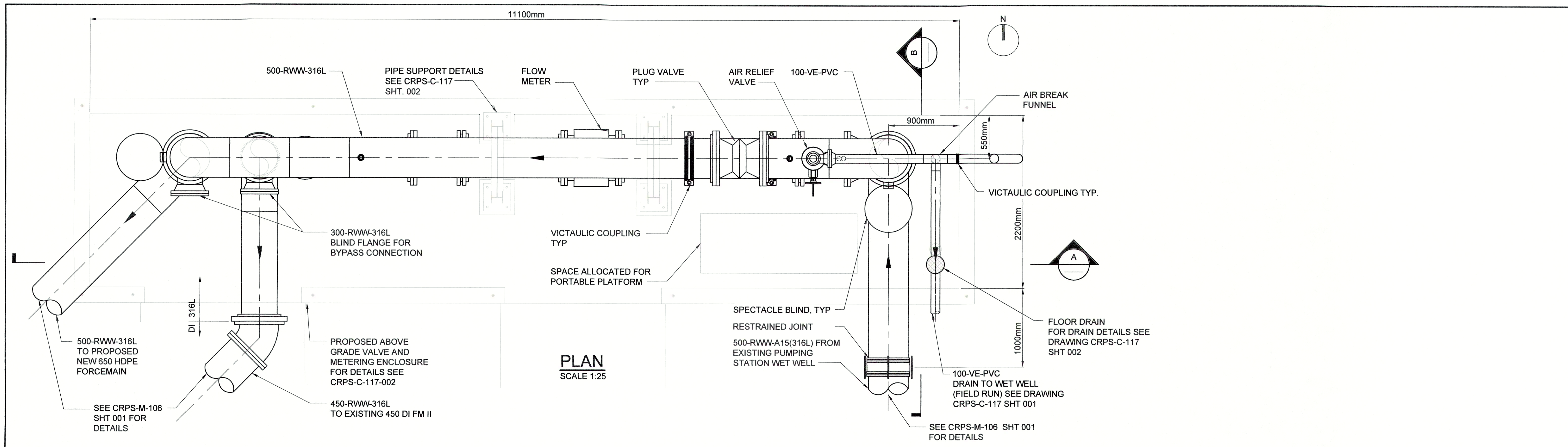
CHASE RIVER PUMPING STATION UPGRADE

PROCESS MECHANICAL  
P & I DIAGRAM  
SHEET 2 OF 2

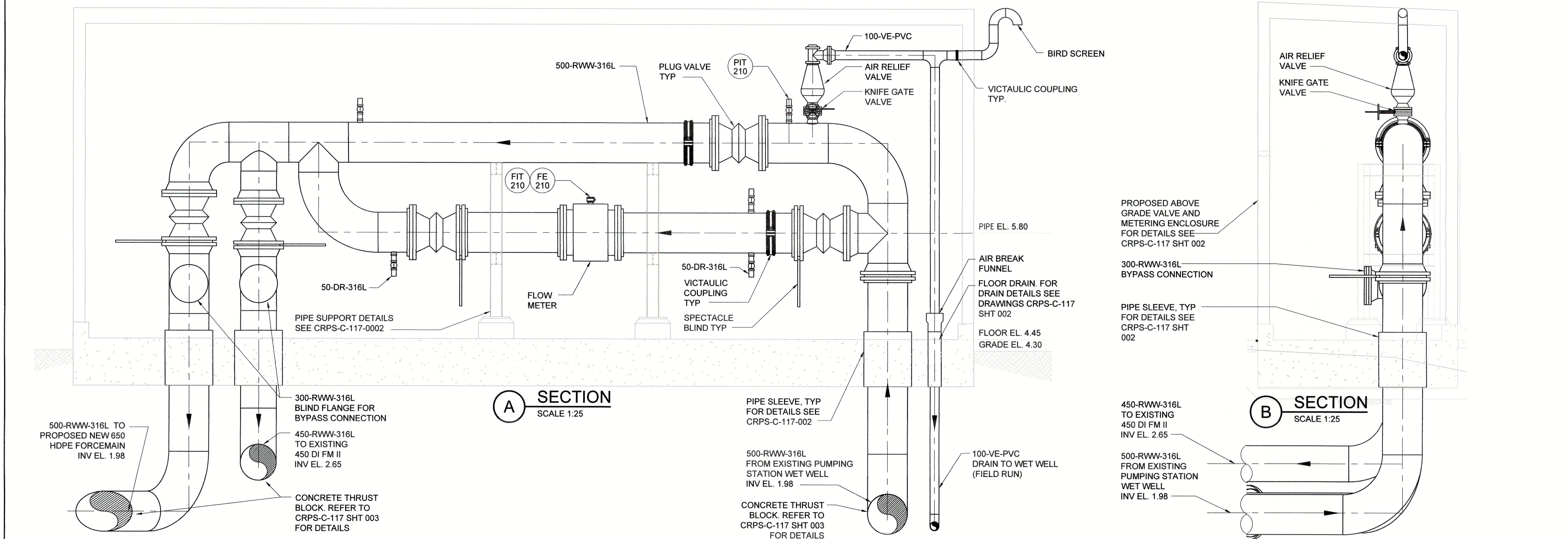
DRAWING NUMBER	REV. NO.	SHEET
CH3-402-DEMO	3C	

RENUMBERED FROM 982819-603-1-402 TO





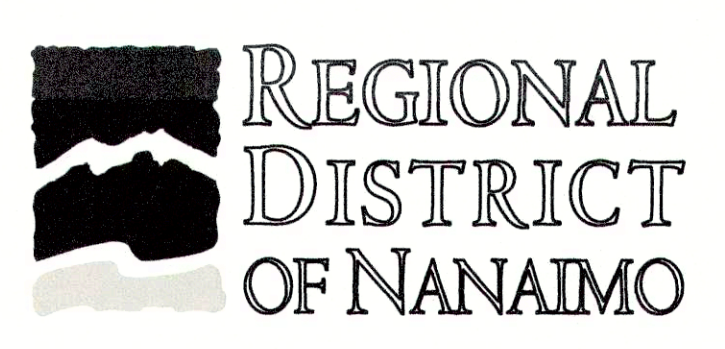
**PLAN**  
SCALE 1:25



**A SECTION**  
SCALE 1:25

**B SECTION**  
SCALE 1:25

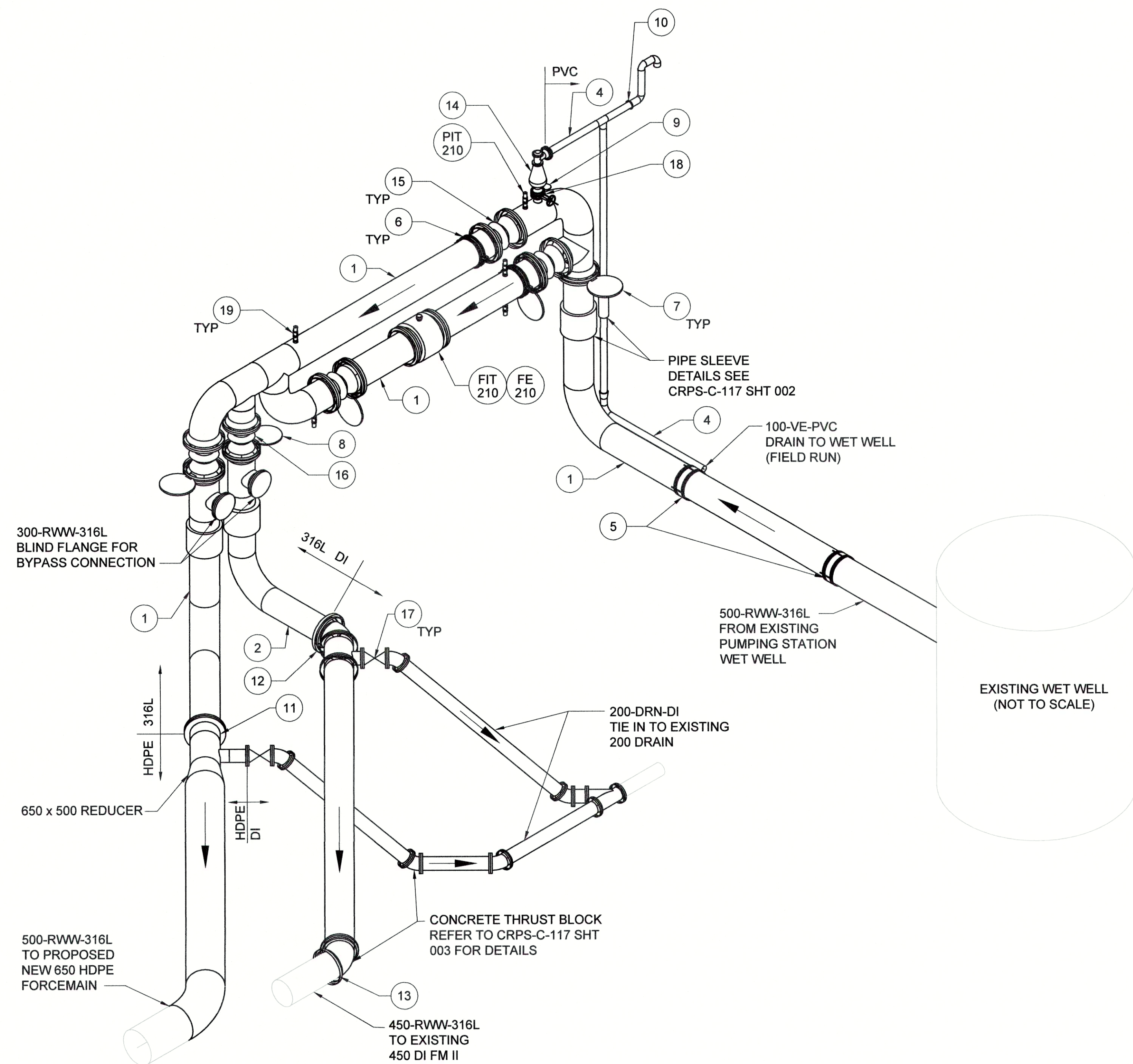
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS						
		0	APRIL 2019	ISSUED FOR TENDER	AK	CW	JG



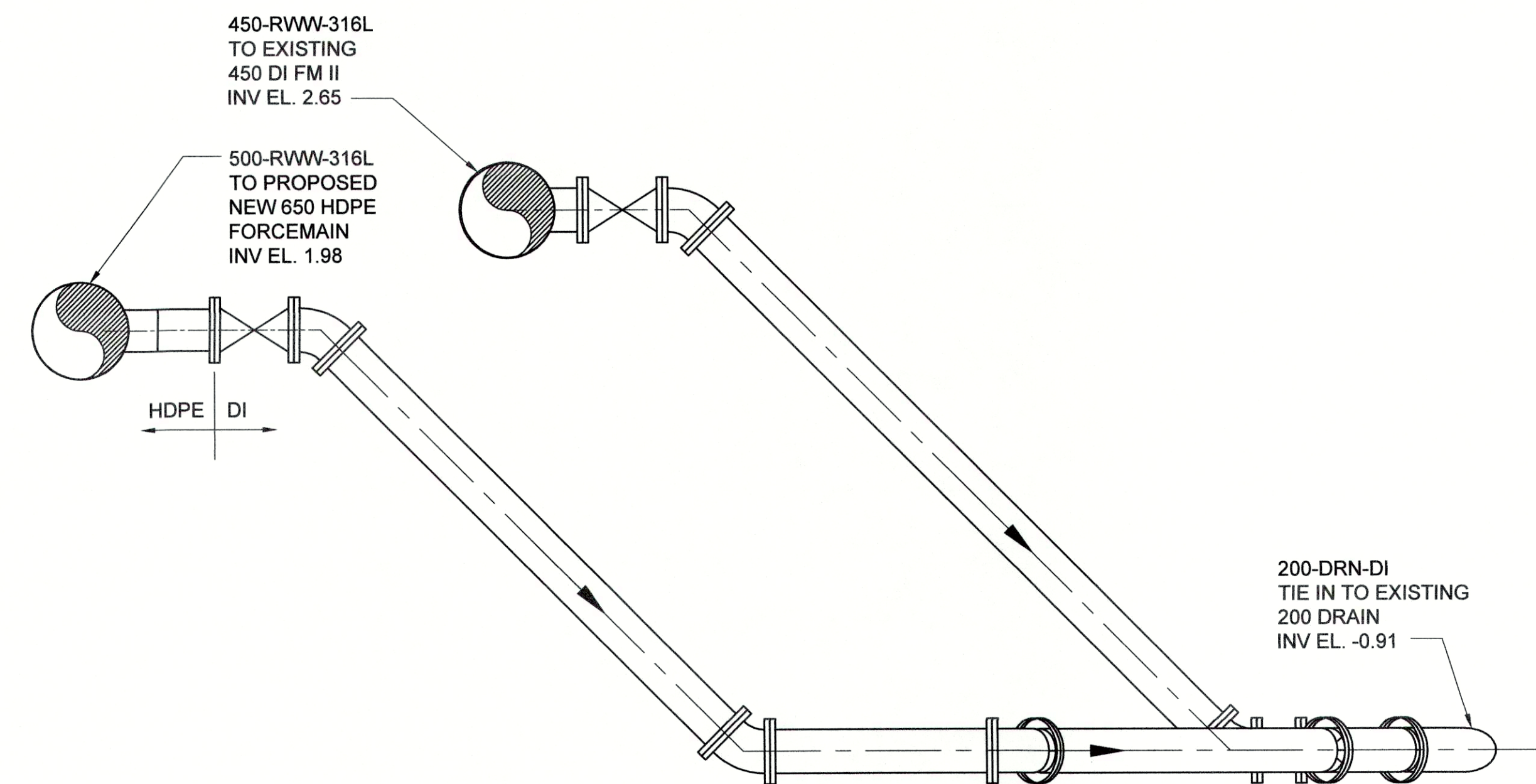
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	AK	CHASE RIVER PUMPING STATION UPGRADE ABOVE GRADE VALVE AND METERING ENCLOSURE PLAN & SECTION VIEWS	
DESIGNED	MP		
CHECKED	CW	PROJECT NO.	707564
APPROVED	JG	DRAWING NUMBER	CRPS-M-105
		SHEET	001
		DATE	MARCH 2019
		SCALE	1:25
		REV	0







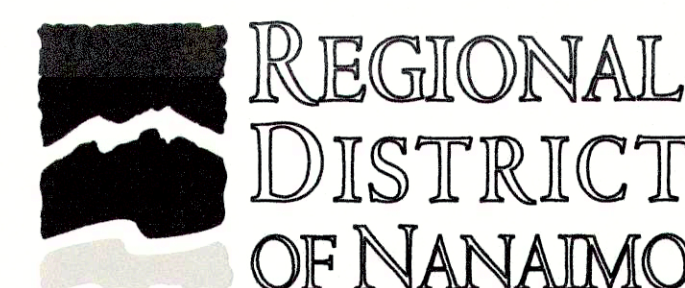
**ISOMETRIC**  
SCALE 1:50



**DRAIN CONNECTION ELEVATION**  
SCALE 1:25

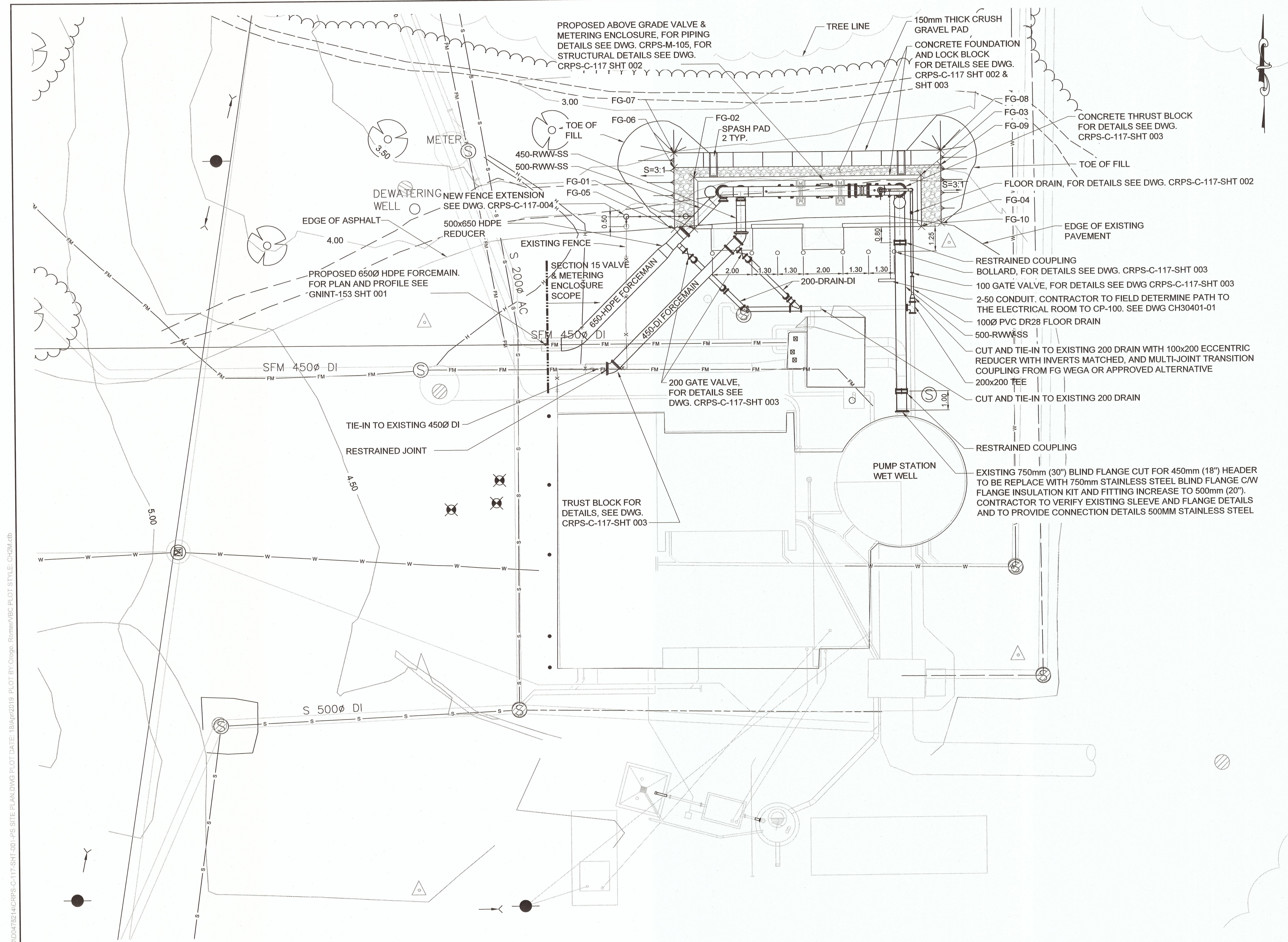
ITEM		PIPING
1	Ø500MM STAINLESS STEEL, SCH 10, GR. 316L; FOR BURIED SECTIONS USE POLYKEN, TEC-TAPE OR DENSO TAPE IN ACCORDANCE WITH AWWA C208	
2	Ø450MM STAINLESS STEEL, SCH 10, GR. 316L; FOR BURIED SECTIONS USE POLYKEN, TEC-TAPE OR DENSO TAPE IN ACCORDANCE WITH AWWA C210	
3	NOT USED	
4	Ø100MM PVC DR 28	
ITEM		FITTINGS
5	Ø500MM STAINLESS STEEL RESTRAINED JOINT	
6	Ø500MM VICTAULIC STYLE 44 COUPLING OR EQUIVALENT	
7	Ø500MM SPECTACLE BLIND, STAINLESS STEEL; ASTM A 240 GR. 316, DIMENSIONS ACCORDING ASME B16.48, CLASS 150 TO RAISED FACE (RF), HOLE DIAMETER EQUAL TO DIAMETER OF THE HOLE FLANGE	
8	Ø450MM SPECTACLE BLIND, STAINLESS STEEL; ASTM A 240 GR. 316, DIMENSIONS ACCORDING ASME B16.48, CLASS 150 TO RAISED FACE (RF), HOLE DIAMETER EQUAL TO DIAMETER OF THE HOLE FLANGE	
9	Ø100MM SPECTACLE BLIND, STAINLESS STEEL; ASTM A 240 GR. 316, DIMENSIONS ACCORDING ASME B16.48, CLASS 150 TO RAISED FACE (RF), HOLE DIAMETER EQUAL TO DIAMETER OF THE HOLE FLANGE	
10	Ø100MM VICTAULIC STYLE 77 COUPLING OR EQUIVALENT	
11	STAINLESS STEEL - HDPE STUB END FLANGE ASSEMBLY	
12	STAINLESS STEEL - DUCTILE IRON FLANGED JOINT WITH ISOLATION KITS	
13	MECHANICAL RESTRAINED JOINT FOR DUCTILE IRON C/W ALL ACCESSORIES AND BOLTING HARDWARE; FROM EBAA SERIES 2000PV OR APPROVED ALTERNATIVE	
ITEM		VALVES
14	Ø100MM AIR RELEASE AND VACUUM BREAK VALVE, VENTO-O-MAT RGXIF0 MODEL 100RGXII1631FO WITH FLANGED OUTLET OR APPROVED ALTERNATIVE	
15	Ø500MM ECCENTRIC PLUG VALVE, VAL-MATIC SERIES 5800 OR DEZURIK PEF SERIES	
16	Ø450MM ECCENTRIC PLUG VALVE, VAL-MATIC SERIES 5800 OR DEZURIK PEF SERIES	
17	Ø200MM RESILIENT SEATED GATE VALVE, BURIED INSTALLATION WITH BOX AND STEM EXTENSION, FOR DETAILS SEE CON STD TYP W-16, WITH PARSONS LONG NECK LID C/W "SEWER" STAMPED IN 20mm HIGH LETTERING, AVK SERIES 45 OR APPROVED EQUIVALENT.	
18	Ø100MM KNIFE GATE VALVE, PMP MONO SERIES OR APPROVED EQUIVALENT	
19	Ø50MM BALL VALVE, KITZ TYPE 600 OR APPROVED EQUIVALENT	

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
-	-	0	APRIL 2019	ISSUED FOR TENDER	AK	CW	JG
REFERENCE DRAWINGS		REVISIONS					



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	AK	CHASE RIVER PUMPING STATION UPGRADE ABOVE GRADE VALVE AND METERING ENCLOSURE ISOMETRIC & SECTION VIEWS	
DESIGNED	MP	<b>JACOBS</b>	
CHECKED	CW		
APPROVED	JG	DRAWING NUMBER	CRPS-M-106
PROJECT NO.		707564	SCALE
DATE		MARCH 2019	AS NOTED
SHEET		001	REV
			0



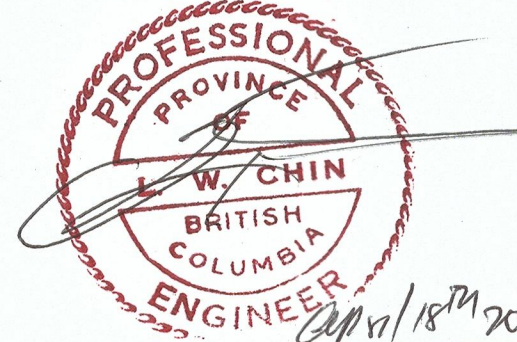
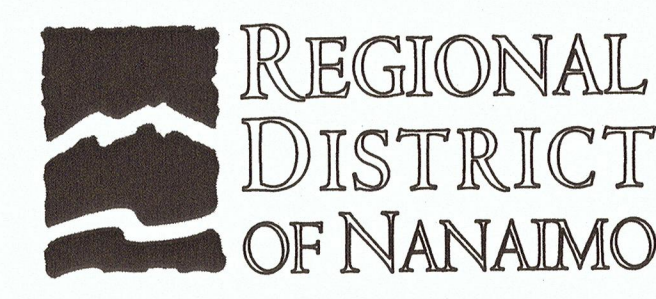


FINISHED GRADE POINT SCHEDULE				
FG NUMBER	GROUND COORDINATES (UTM-10)		ELEVATION (m)	REMARKS
	NORTHING	EASTING		
FG-01	5444585.540	432965.358	4.300	ENCLOSURE CORNER
FG-02	5444588.140	432965.358	4.300	ENCLOSURE CORNER
FG-03	5444588.140	432976.858	4.300	ENCLOSURE CORNER
FG-04	5444585.540	432976.858	4.300	ENCLOSURE CORNER
FG-05	5444585.540	432964.358	4.283	TOP OF GRADE
FG-06	5444588.640	432964.358	4.283	TOP OF GRADE
FG-07	5444589.390	432964.358	4.350	TOP OF BLOCK
FG-08	5444589.390	432977.858	4.350	TOP OF BLOCK
FG-09	5444588.640	432977.858	4.283	TOP OF GRADE
FG-10	5444585.718	432977.858	4.283	TOP OF GRADE

- NOTES:
- ALL DIMENSIONS SHOWN IN PLAN AND COORDINATES ARE METRIC MEASUREMENTS AND ARE IN METERS.
  - THE CONTRACTOR SHALL VERIFY ON SITE ALL THE EXISTING FIELD CONNECTIONS, DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCING WORK. ANY DISCREPANCY SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY. DO NOT SCALE DRAWINGS.
  - FOR CIVIL AND STRUCTURAL NOTES REFER TO NOTES AND SPECIFICATION SHEET, GNINT-152 SHEET 001.
- SURFACES TO BE RESTORED TO MATCH ADJACENT PAVEMENT.

PUMP STATION SITE PLAN  
1:100

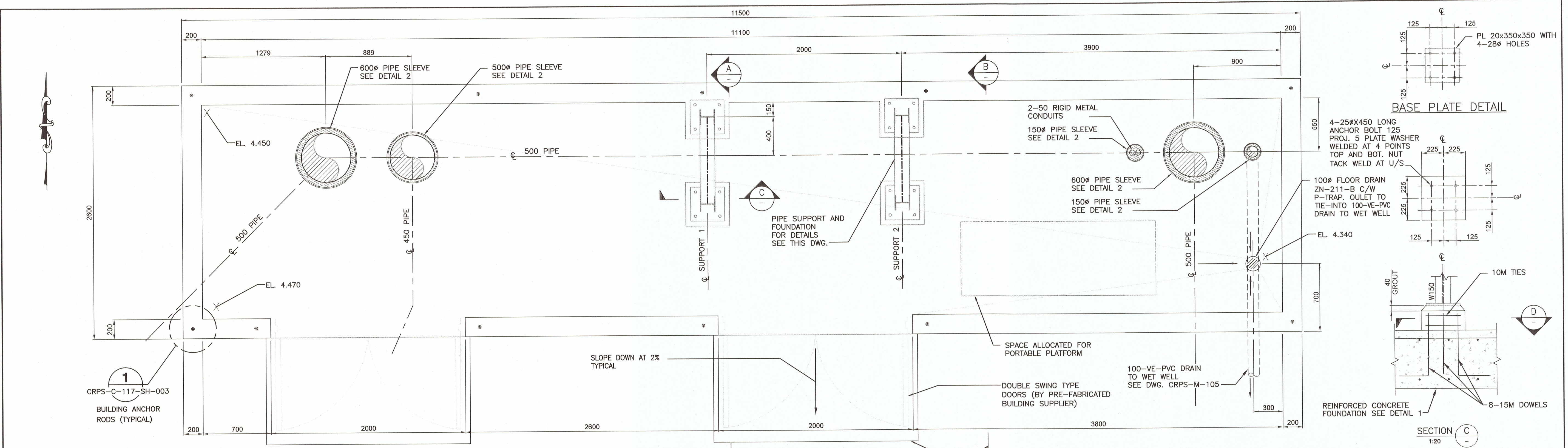
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
GNINT-153 SHT 001	FORCEMAIN NO.1 & WATER REPLACEMENT-PLAN AND PROFILE						
CRPS-C-117 SHT 002	VALVE AND METERING ENCLOSURE - FOUNDATION PLAN, SECTION AND DETAILS						
CRPS-C-117 SHT 003	VALVE AND METERING ENCLOSURE - SECTIONS AND DETAILS						
CRPS-C-117 SHT 004	TYPICAL FENCING DETAILS						
		0	APR 2019	ISSUED FOR TENDER	RO	LC	JG
				DESCRIPTION	DRN	CHK	APP
				REVISIONS			



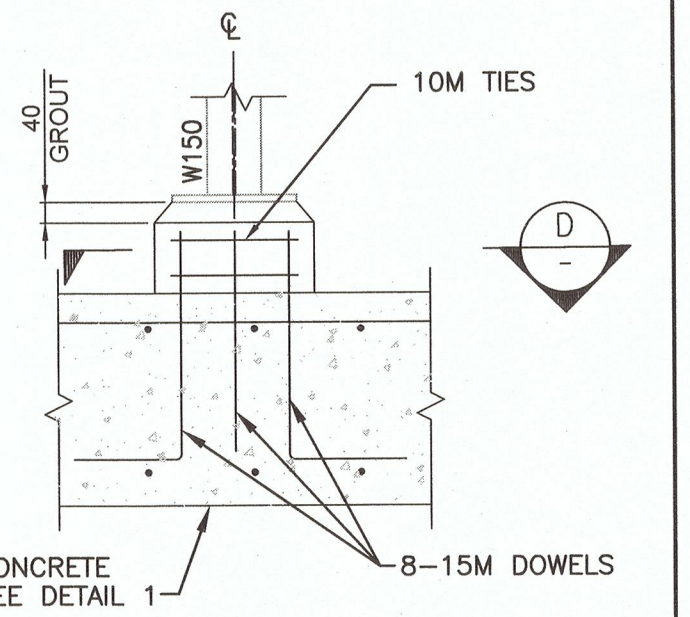
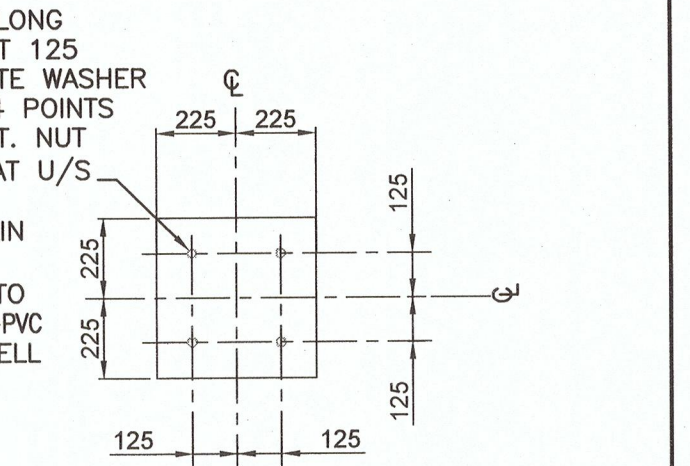
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	JH	CHASE RIVER PUMP STATION UPGRADES SITE PLAN	<b>JACOBS</b>
DESIGNED	MP		
CHECKED	CW	PROJECT NO.	707564
APPROVED	JG	SCALE	1:100
DRAWING NUMBER		CRPS-C-117	DATE
SHEET		001	FEB 04, 2019
REV		0	

FILE NAME: CRPS-C-117-001-PS SITE PLAN.DWG PLOT DATE: 18/04/2019 PLOT BY: C. CHIN

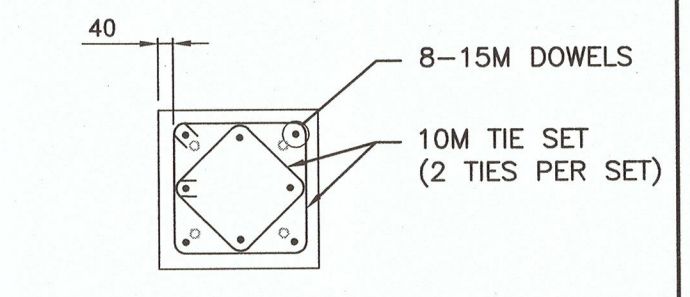




BASE PLATE DETAIL



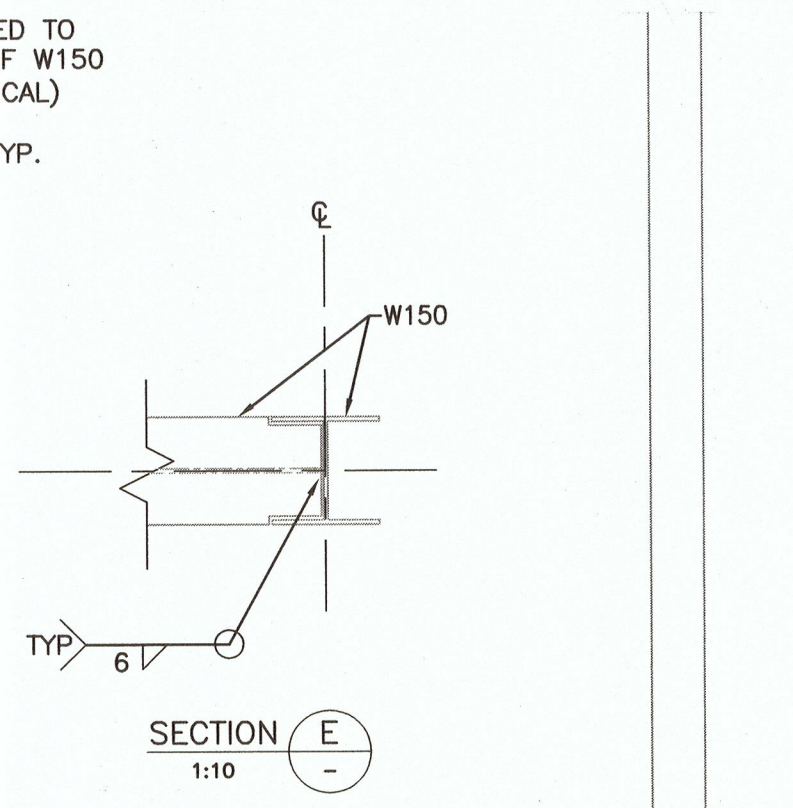
SECTION C  
1:20



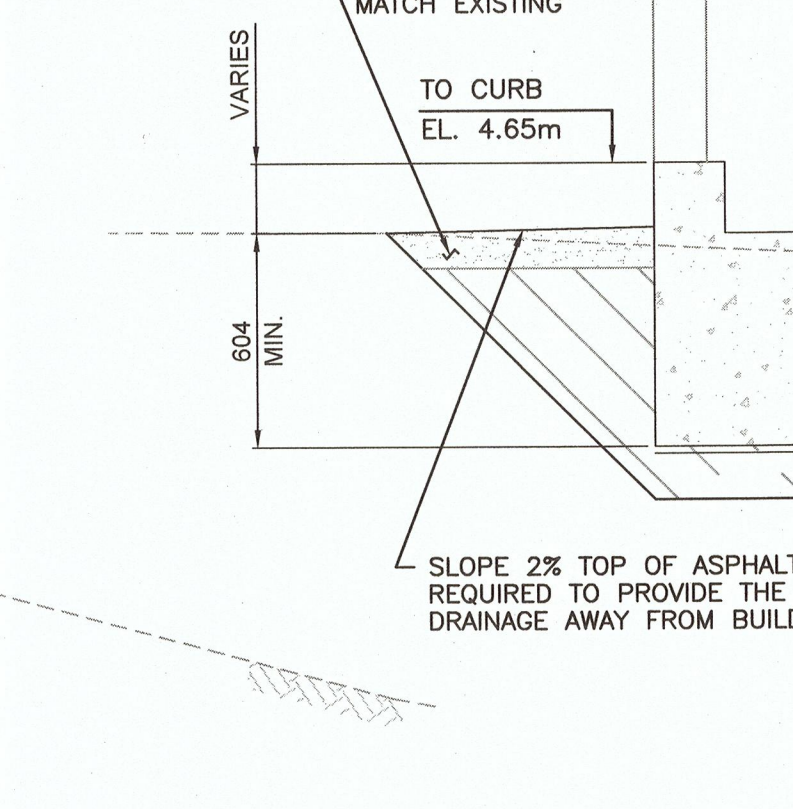
SECTION D  
1:20

VALVE AND METERING ENCLOSURE FOUNDATION PLAN

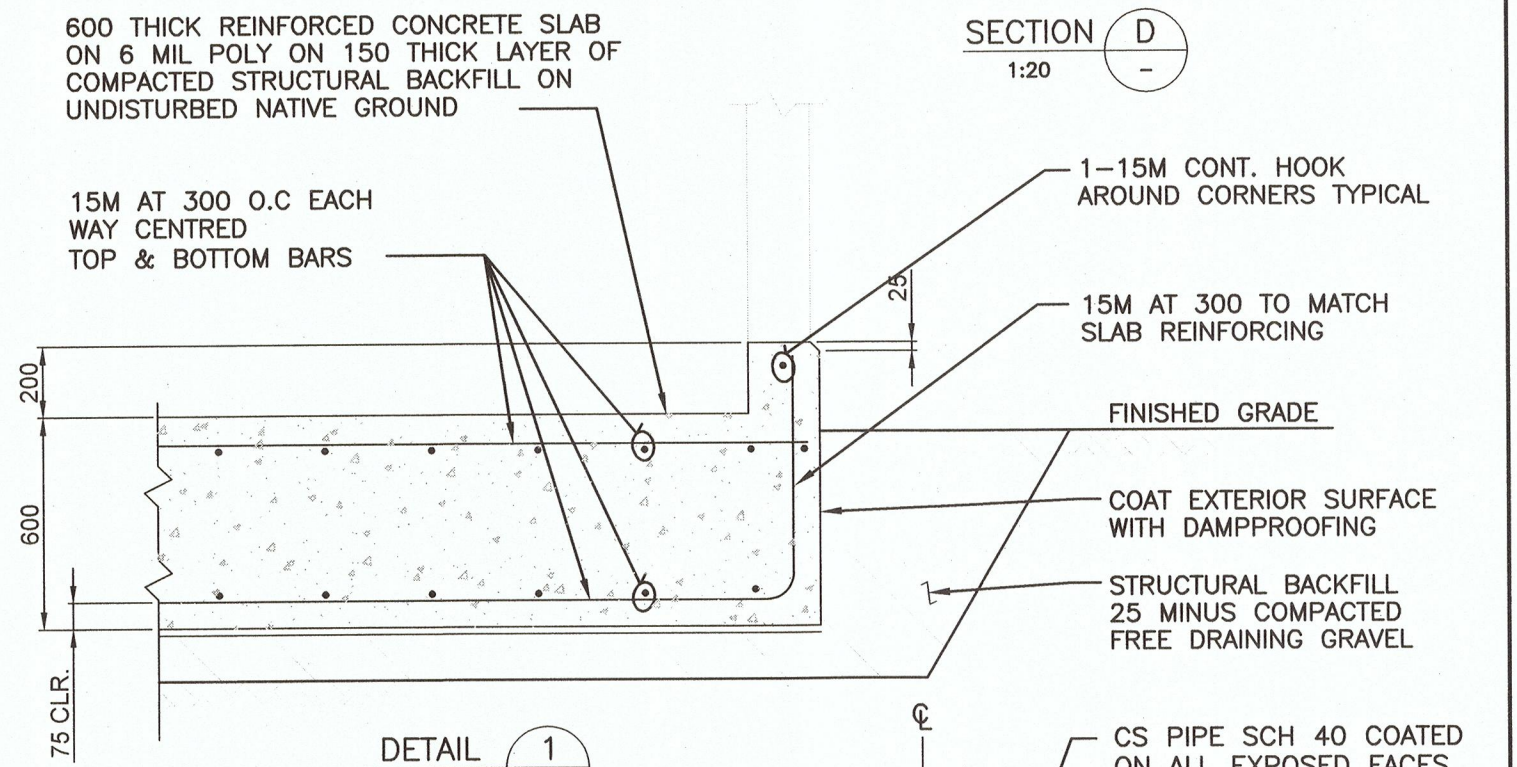
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FOR LOCATION SEE DWG. CRPS-C-117-SHT-001



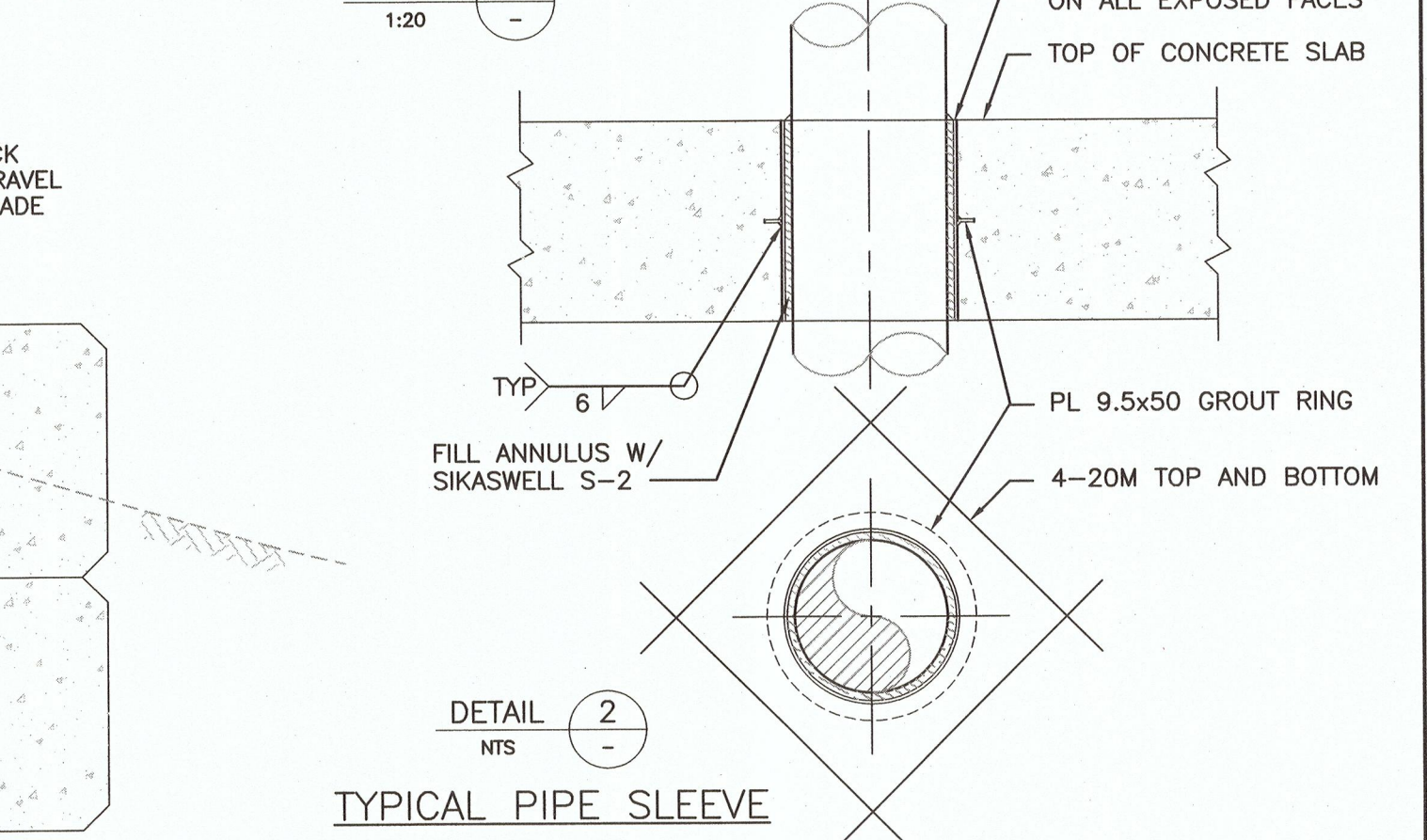
SECTION E  
1:10



SECTION B  
1:20

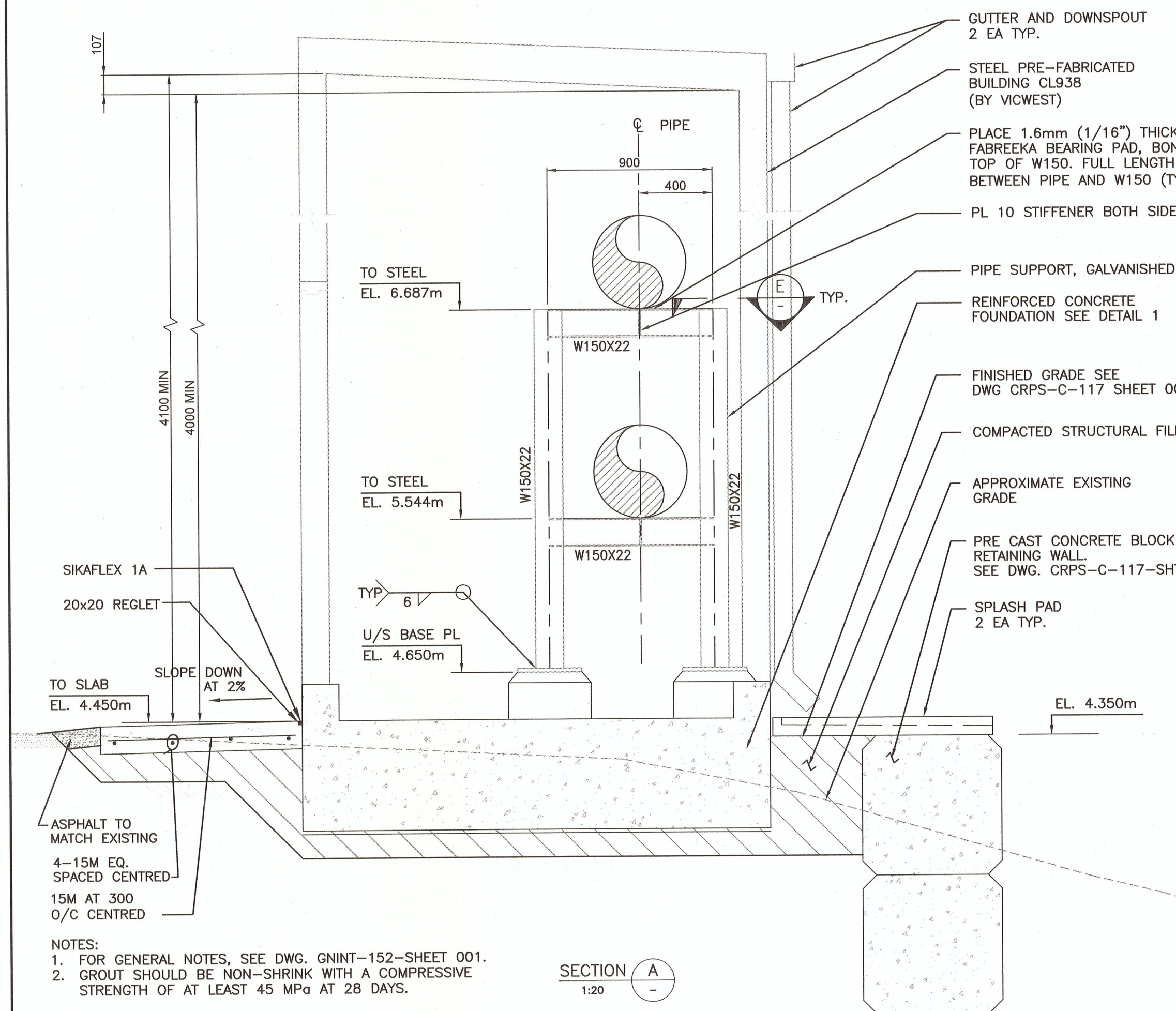


DETAIL 1  
1:20



DETAIL 2  
NTS

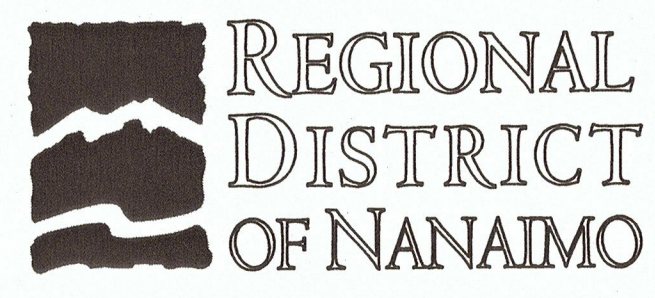
TYPICAL PIPE SLEEVE



SECTION A  
1:20

NOTES:  
1. FOR GENERAL NOTES, SEE DWG. GNINT-152-SHEET 001.  
2. GROUT SHOULD BE NON-SHRINK WITH A COMPRESSIVE STRENGTH OF AT LEAST 45 MPa AT 28 DAYS.

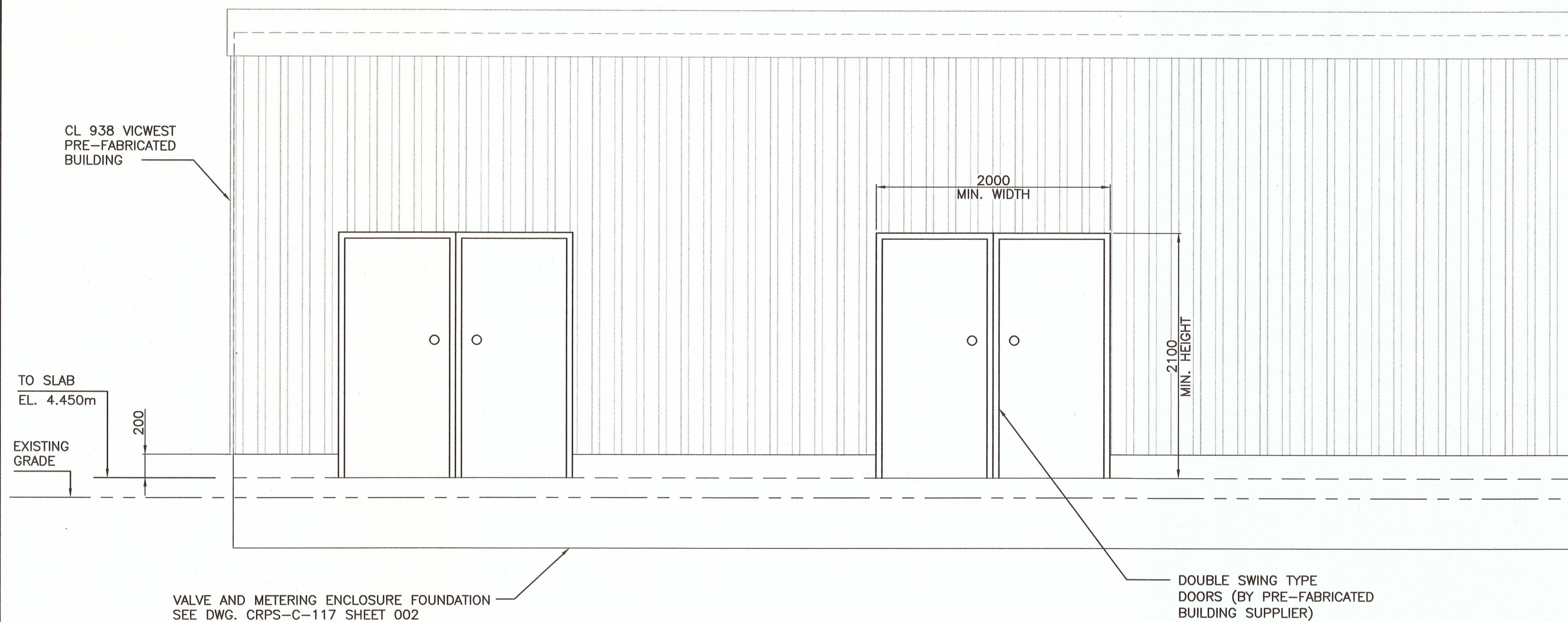
CRPS-C-117-SHT-001	CHASE RIVER PUMP STATION UPGRADES - SITE PLAN	0	APR 2019	ISSUED FOR TENDER	RO	LC	JG
DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS			REVISIONS			



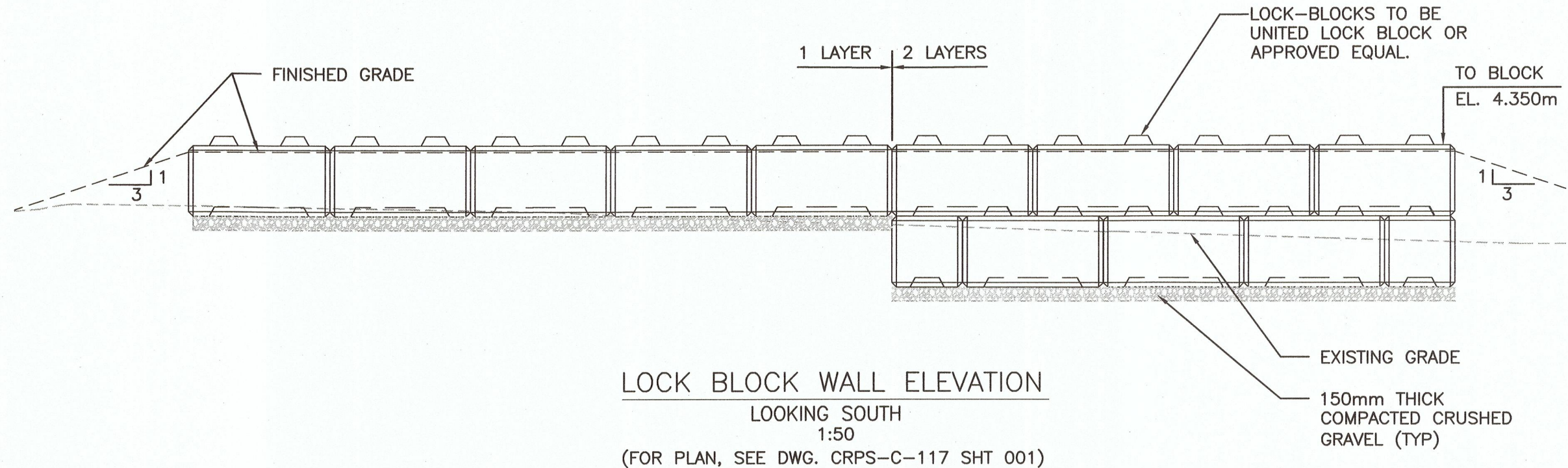
PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	RC	CHASE RIVER PUMP STATION UPGRADES VALVE AND METERING ENCLOSURE FOUNDATION PLAN, SECTION AND DETAILS	
DESIGNED	LC		
CHECKED	MBC		
APPROVED	JG		
DRAWING NUMBER		CRPS-C-117	SHEET 002
PROJECT NO.		707564	SCALE AS SPECIFIED
DATE		FEB 04, 2019	REV 0



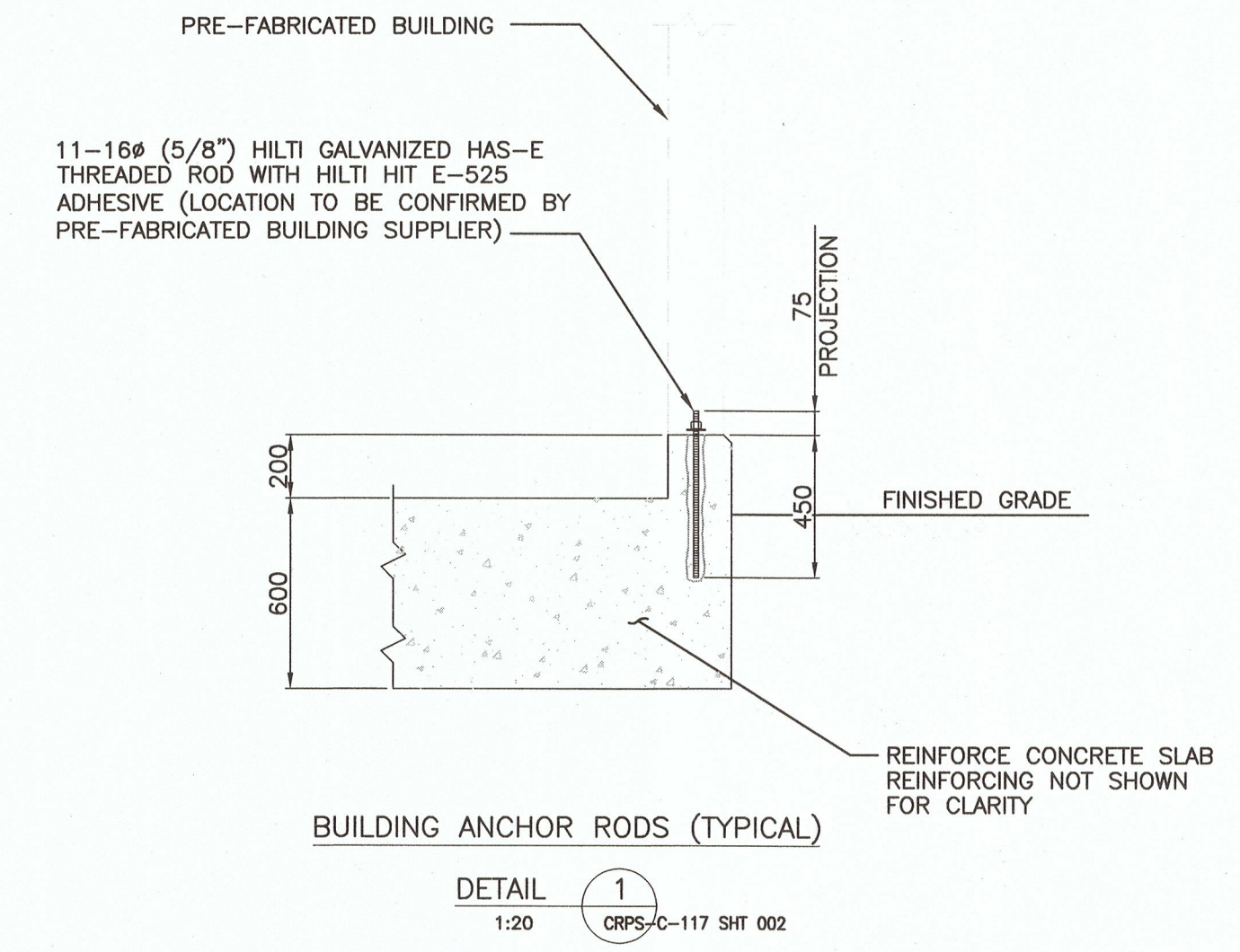




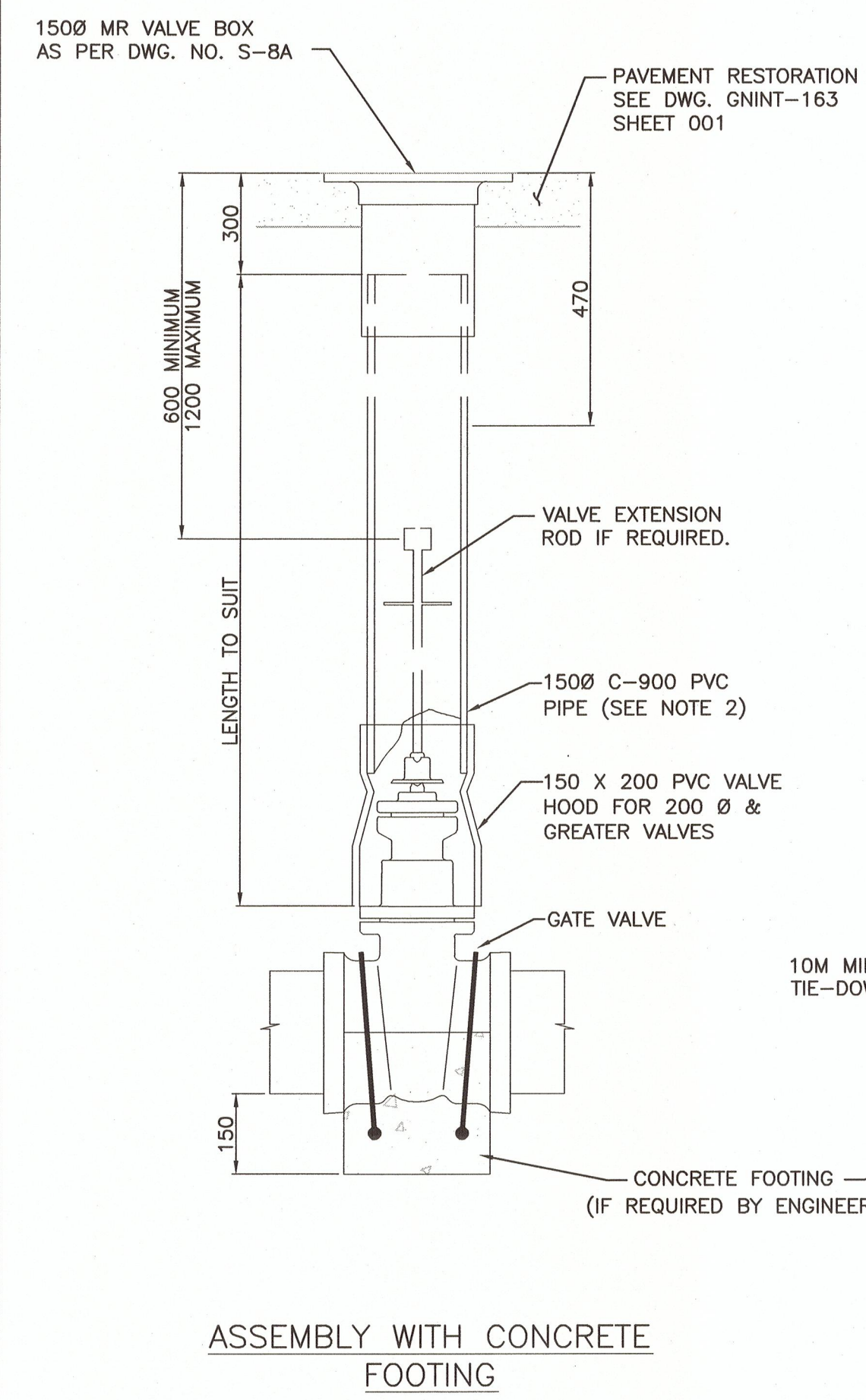
VALVE AND METERING ENCLOSURE  
SOUTH ELEVATION  
LOOKING NORTH  
1:30



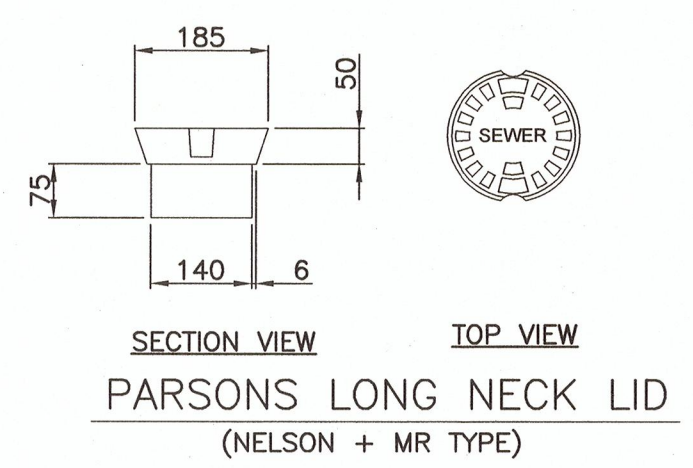
LOCK BLOCK WALL ELEVATION  
LOOKING SOUTH  
1:50  
(FOR PLAN, SEE DWG. CRPS-C-117 SHT 001)



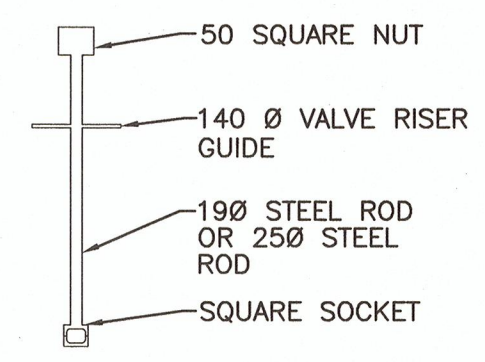
BUILDING ANCHOR RODS (TYPICAL)  
DETAIL 1  
1:20  
CRPS-C-117 SHT 002



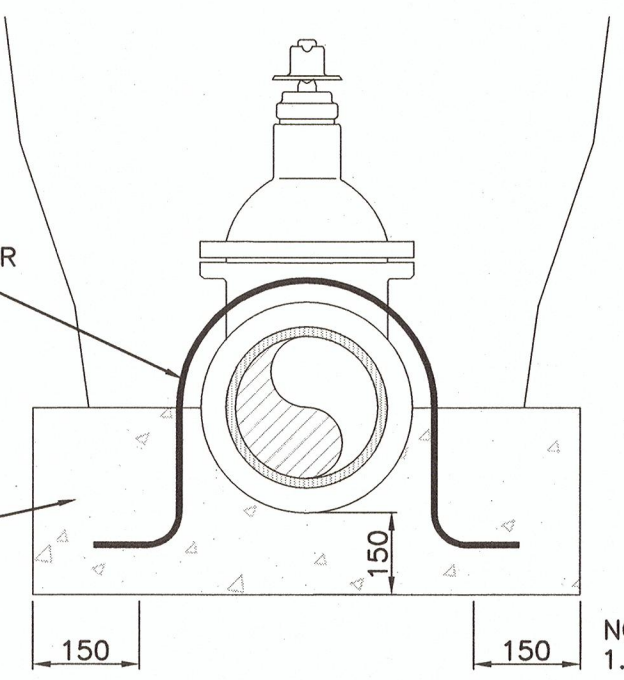
ASSEMBLY WITH CONCRETE FOOTING



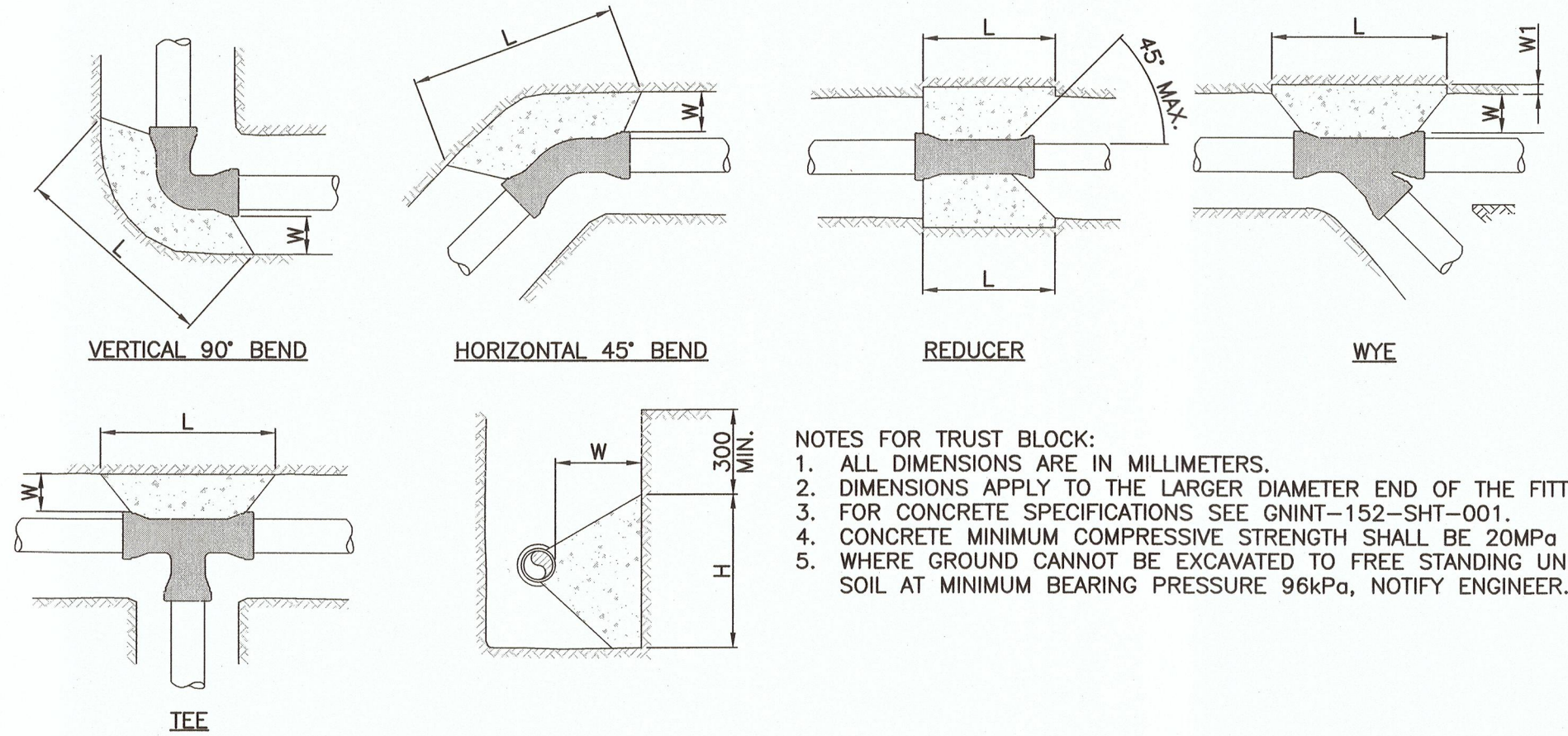
PARSONS LONG NECK LID  
(NELSON + MR TYPE)



VALVE EXTENSION ROD  
EXTENSION RODS REQUIRED WHEN BURY DEPTH EXCEEDS 1.2m FROM TOP OF VALVE TO GROUND LEVEL. TOP OF EXTENSION ROD NUT SHALL BE 600mm MINIMUM AND 1200mm MAXIMUM TO GROUND LEVEL.



SECTION OF CONCRETE FOOTING

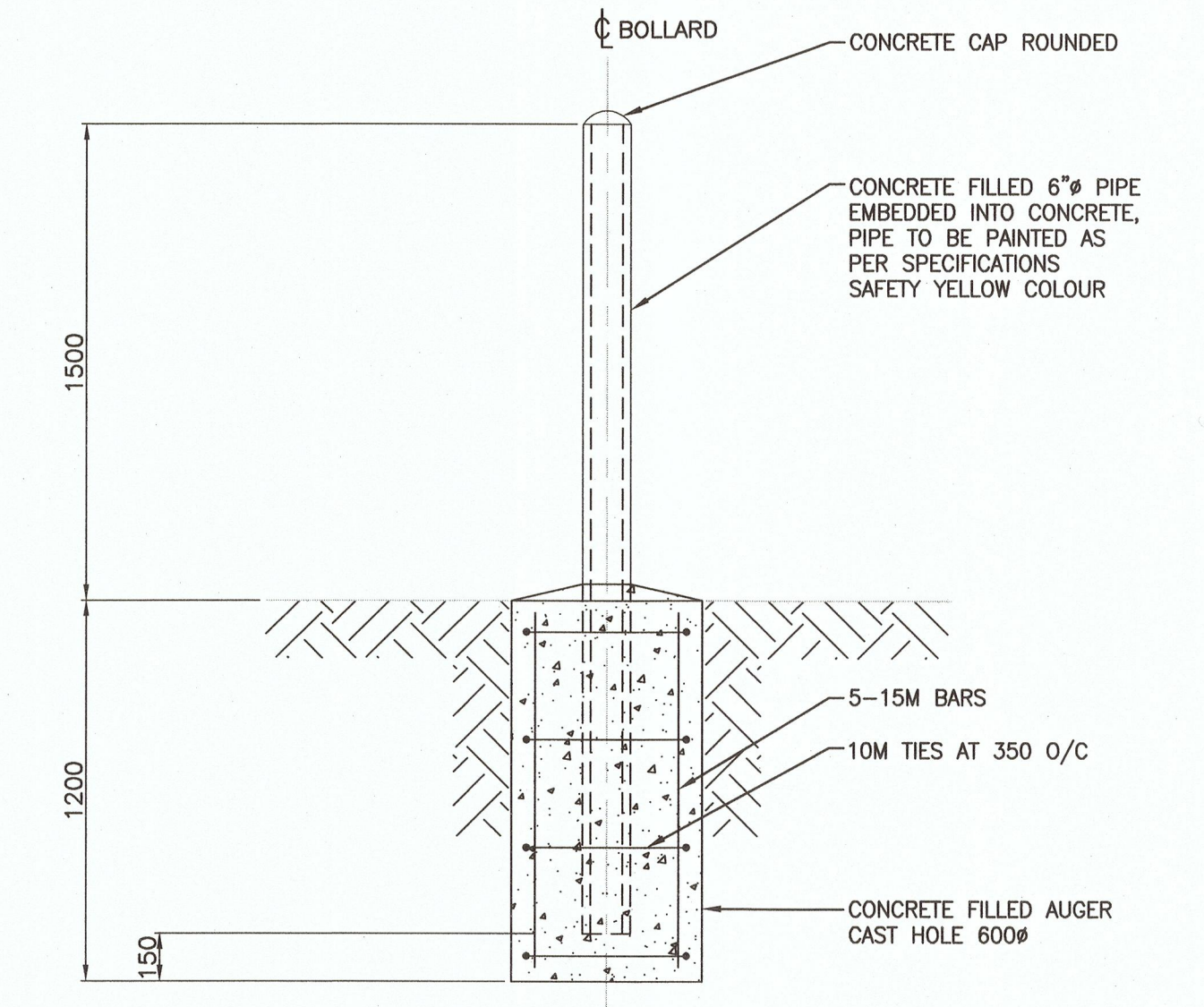


NOTES FOR TRUST BLOCK:  
1. ALL DIMENSIONS ARE IN MILLIMETERS.  
2. DIMENSIONS APPLY TO THE LARGER DIAMETER END OF THE FITTING.  
3. FOR CONCRETE SPECIFICATIONS SEE GNINT-152-SHT-001.  
4. CONCRETE MINIMUM COMPRESSIVE STRENGTH SHALL BE 20MPa @ 28DAYS.  
5. WHERE GROUND CANNOT BE EXCAVATED TO FREE STANDING UNDISTURBED SOIL AT MINIMUM BEARING PRESSURE 96kPa, NOTIFY ENGINEER.

MINIMUM THRUST AREAS FOR FITTINGS AT 1034 kPa PRESSURE AND FOR SOILS WITH MIN. BEARING OF 96 kPa (NOT TO BE USED FOR SOFT CLAY, MUCK, PEAT, etc.)

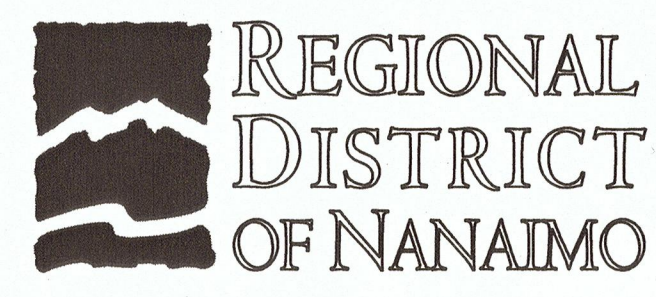
TYPE OF FITTING	FITTING SIZE		LENGTH	HEIGHT	TYPE OF FITTING	FITTING SIZE		RECESS IN TRENCH	LENGTH	HEIGHT	KEY
	D	W				D	W				
90° BEND	100	300	900	450	45° WYE	200	350	400	600	600	200
	200	350	1050	600	REDUCER	200	350	200	600	600	200
	450	550	2800	1500							
	500	650	3000	1500							
45° BEND	100	300	450	450							
	200	350	600	600							
	450	550	2800	1500							
TEE	200	350	600	500							

NOTES FOR VALVE BOX:  
1. VALVE RISER PIPE IN TRAVELED AREAS SHALL BE 150Ø DR-18 PVC AND IN UNTRAVELED AREAS SHALL BE 150Ø DR-35 PVC AT THE DISCRETION OF THE ENGINEER.  
2. VALVE BOX SHALL BE MR TYPE AS PER STD. DWG. NO. S-8A. NELSON-TYPE VALVE BOX SHALL BE USED IN NON-PAVED AREAS AT THE DISCRETION OF THE ENGINEER.  
3. ALL MR AND NELSON BOX LIDS SHALL BE PARSONS LONG NECK.  
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.  
5. NO TIE-DOWNS REQUIRED IF VALVE FLANGED TO RESTRAINED TEE.



TYPICAL BOLLARD DETAIL  
1:20  
(FOR LOCATION, SEE DWG. CRPS-C-117 SHT 001)

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
CRPS-C-117-SHT 001	CHASE RIVER PUMP STATION UPGRADES - SITE PLAN	0	APRIL 2019	ISSUED FOR TENDER	RO	LC	JG
	REFERENCE DRAWINGS			REVISIONS			



PROJECT NAME CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES		PROJECT NO. 707564		SCALE AS SPECIFIED	
DRAWN RO	DESIGNED LC	PROJECT TITLE CHASE RIVER PUMP STATION UPGRADES VALVE AND METERING ENCLOSURE SECTIONS AND DETAILS		REV 0	
CHECKED MBC	APPROVED JG	DRAWING NUMBER CRPS-C-117	SHEET 003	DATE FEB 04, 2019	





**FENCE EXTENSION NOTES**

1. STANDARD TOLERANCES APPLY, INSTALLATION SHALL BE BY EXPERIENCED FENCE ERECTORS, ON LINES AND GRADES FURNISHED BY OWNER AND SHALL BE IN ACCORDANCE WITH ASTM F587, UNLESS OTHERWISE NOTED.

2. CHAIN LINK FENCING

2.1 SCOPE

THIS PART GOVERNS ALL CHAIN LINK FENCING TO BE INSTALLED WHERE INDICATED ON THE DRAWINGS.

2.2 MATERIALS

- 2.2.1 POST AND BRACES SHALL BE PIPE AND SHALL CONFORM TO ASTM F1043 GROUP 1A. ALL PIPE SHALL BE HOT-DIPPED GALVANIZED PER ASTM A-123.
- 2.2.2 FABRIC SHALL BE MINIMUM No. 9 GAUGE GBW GALVANIZED STEEL WIRE WITH A CLASS II COATING, WOVEN IN A 50mm PATTERN. THE TOP OF THE FABRIC SHALL BE KNUCKLED, THE BOTTOM BARBED AND SHALL CONFORM TO ASTM A-392.
- 2.2.3 BARBED WIRE SHALL BE 3-STRAND, 4-POINT BARBED WIRE. MAIN STRANDS SHALL NOT BE SMALLER THAN No. 12-1/2 GAUGE STEEL WIRE AND BARBS NOT LESS THAN No. 14-GAUGE STEEL WIRE. THE BARBS SHALL BE ROUND AND NOT OVER 102mm APART. THE WIRE SHALL BE HOT-DIP GALVANIZED W/ A CLASS III COATING AND SHALL CONFORM TO ASTM A-121.
- 2.2.4 TENSION WIRE SHALL CONFORM TO ASTM A-824, TYPE II, CLASS 4, AND SHALL BE 5.00mm GALVANIZED STEEL AND SHALL BE AFFIXED TO CHAIN LINK FABRIC BY HOG RINGS.
- 2.2.5 FITTINGS SHALL BE MADE OF STEEL OR CAST IRON CONFORMING TO ASTM F-626.
- 2.2.6 POSTS
  - 2.2.6.1 LINE POSTS SHALL BE HOT DIPPED GALVANIZED STEEL PIPE, 60.3mm O.D., SCHEDULE 40.
  - 2.2.6.2 TERMINAL, END, CORNER, PULL AND BRACE POSTS SHALL BE HOT DIPPED GALVANIZED STEEL PIPE, 88.9mm O.D., SCHEDULE 40.

2.2.7 TOP RAILS

- 2.2.7.1 TOP RAILS SHALL BE HOT DIPPED GALVANIZED STEEL PIPE, 41mm O.D., SCHEDULE 40.
- 2.2.7.2 THE TOP RAIL SHALL PASS THROUGH THE BASE OF THE LINE POST TOPS AND FORM A CONTINUOUS BRACE FROM END TO END OF EACH RUN OF FENCE. COUPLINGS SHALL BE OUTSIDE SLEEVED TYPE AND AT LEAST 175mm LONG. ONE COUPLING IN EVERY FIVE SHALL CONTAIN A HEAVY SPRING TO TAKE UP EXPANSION AND CONTRACTION OF THE TOP RAIL.

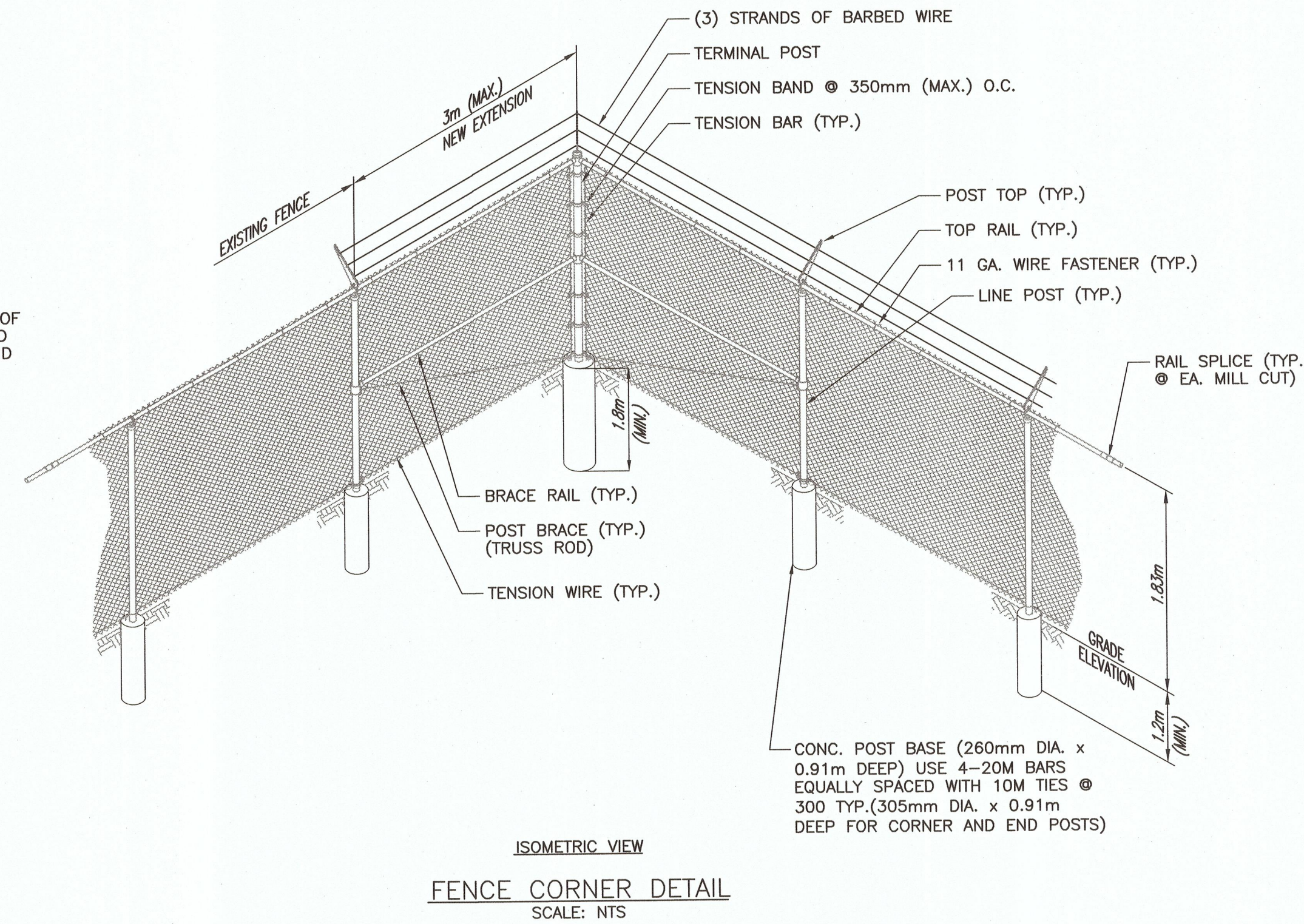
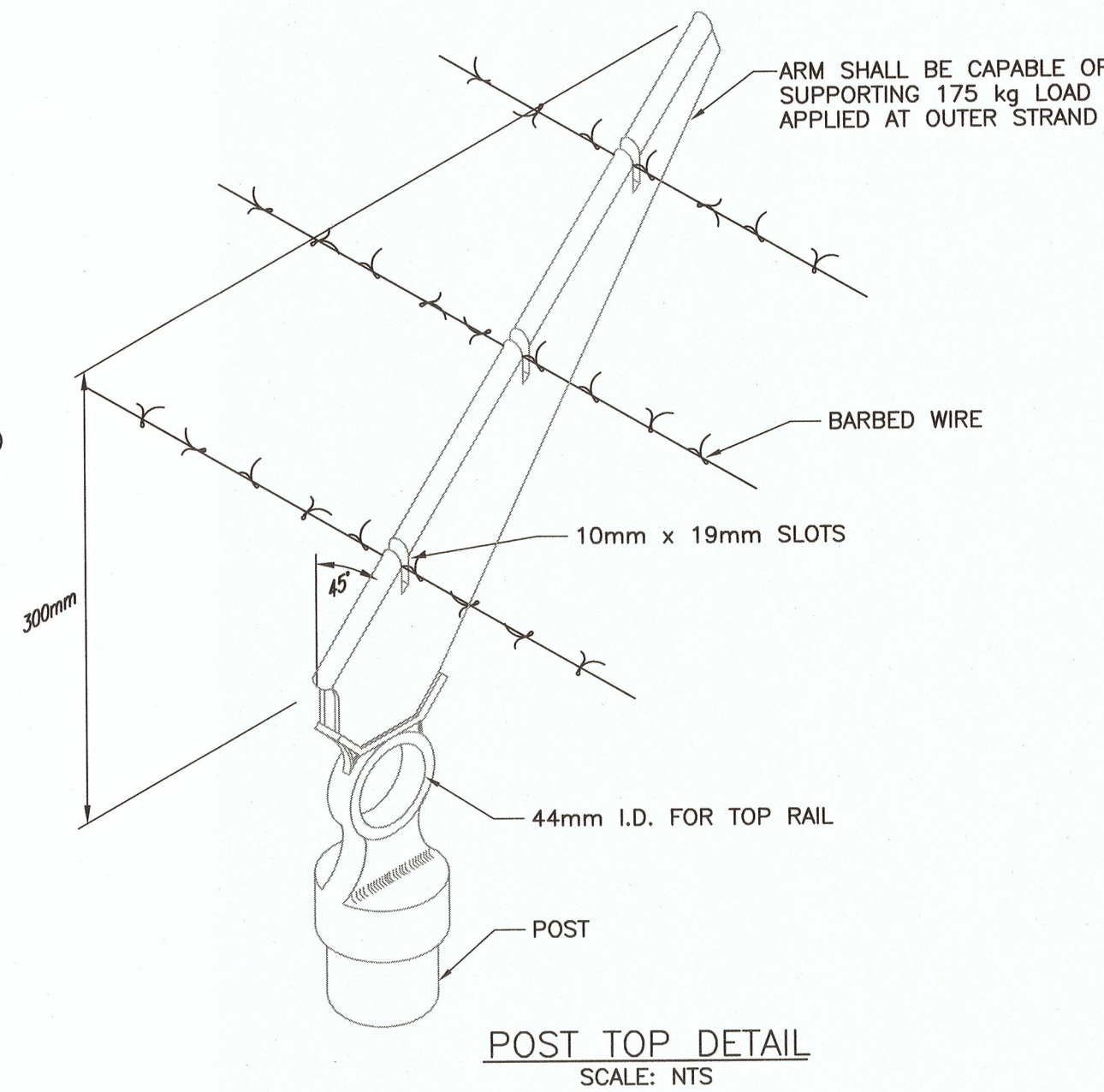
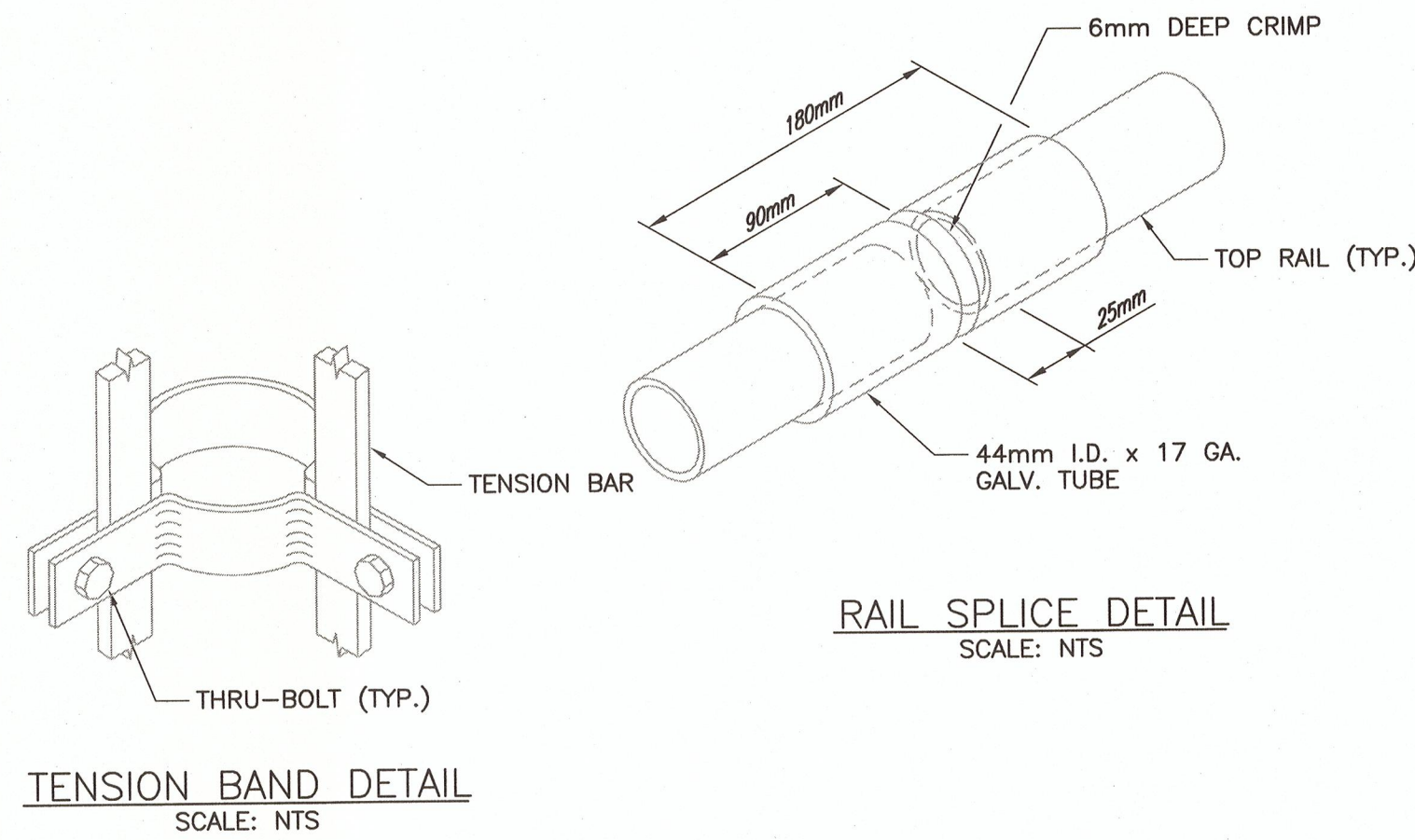
2.2.8 BRACES SHALL BE SAME SPECIFICATIONS AS TOP RAIL.

2.2.9 TIE WIRE SHALL BE MINIMUM 2.8mm GALVANIZED WIRE AND SHALL BE PLACED AT MAXIMUM 300mm SPACING FOR CHAIN LINK FABRIC TO LINE POSTS AND 450mm TO TOP RAIL.

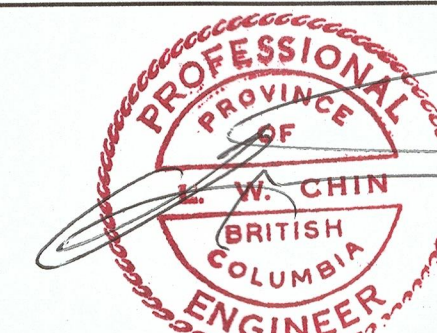
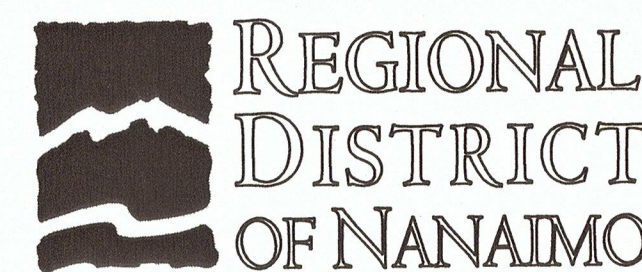
2.2.10 CONCRETE FOR FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 21 MPa AT 28 DAYS.

2.3 CONSTRUCTION

THE FENCE LINE SHALL BE CLEARED 1m ON EACH SIDE OF THE CENTER LINE SO THAT THE FENCE CAN CONFORM TO THE GROUND CONTOUR. THE FENCE SHALL BE ERECTED TO THE HEIGHT SHOWN ON THE DRAWINGS SO THAT THE FINISHED FENCE IS PLUMB, TAUT, TRUE TO LINE AND GRADE, AND COMPLETE IN ALL DETAILS. THE BOTTOM OF THE FENCE SHALL BE PLACED A MAXIMUM OF 50mm ABOVE THE GROUND LINE. POSTS SHALL BE SPACED NOT OVER 3m ON CENTERS AND SET IN A CONCRETE FOOTING 300mm IN DIAMETER AND 1.2m DEEP. THE FENCE SHALL BE STAKED DOWN WHERE REQUIRED. BARBED WIRE SHALL BE INSTALLED AT THE TOP OF FENCES. BARB ARMS SHALL BE INSTALLED TO EXTEND TO THE OUTSIDE OF THE FENCE. ALL FENCES SHALL BE ERECTED WITH STANDARD CHAIN LINK STRETCHING EQUIPMENT. AFTER THE FENCE IS ERECTED, ALL HOLES FROM STUMPS, OLD POSTS AND ROCKS SHALL BE FILLED AND PROPERLY TAMPED.

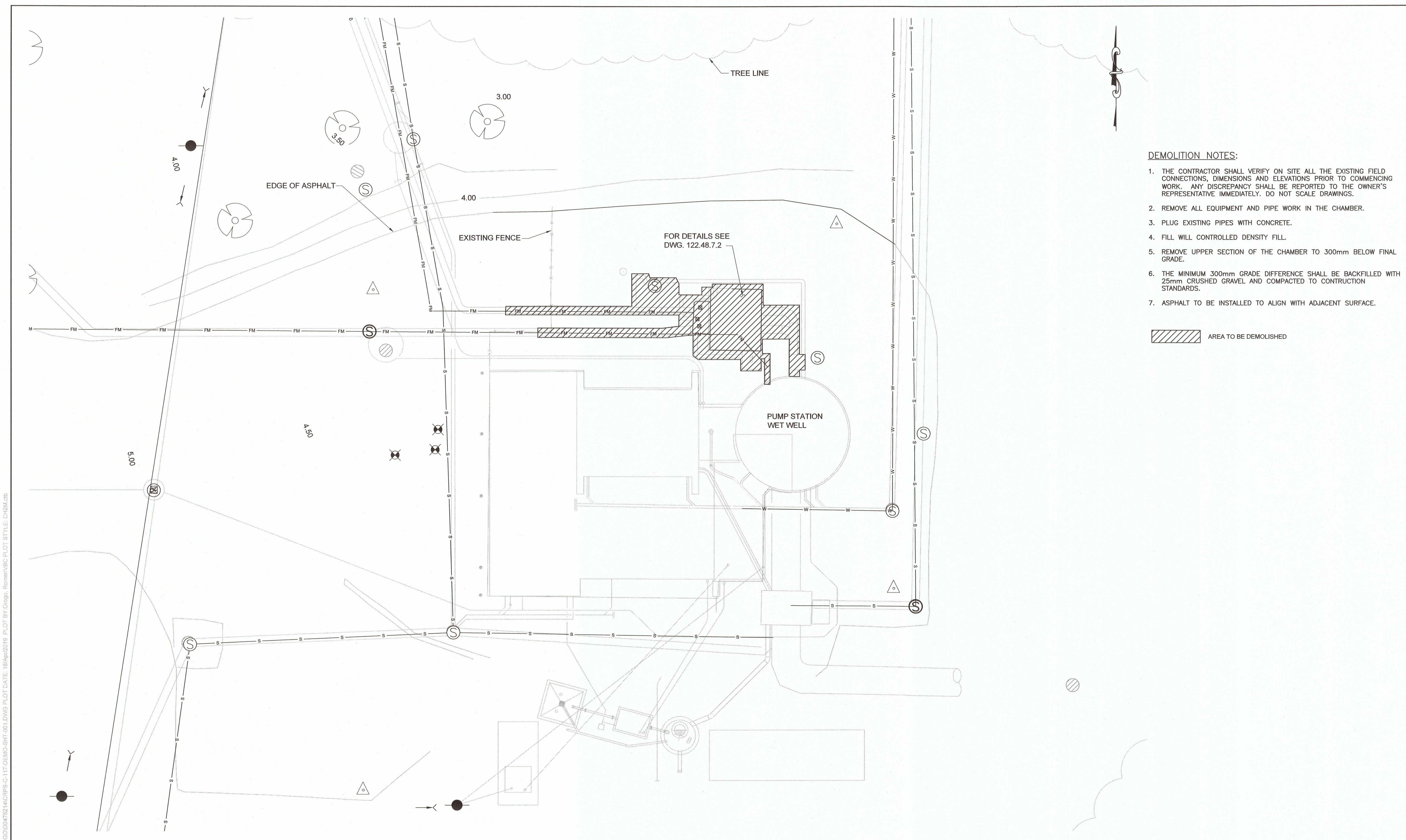


DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
CRPS-C-117 SHT 001	CHASE RIVER PUMP STATION UPGRADES - SITE PLAN	0	APR 2019	ISSUED FOR TENDER	RO	LC	JG
REFERENCE DRAWINGS				REVISIONS			



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	RO	CHASE RIVER PUMP STATION UPGRADES TYPICAL FENCE DETAILS	
DESIGNED	LC	<b>JACOBS</b>	
CHECKED	MBC		
APPROVED	JG	PROJECT NO.	707564
		SCALE	AS SPECIFIED
		DATE	FEB 04, 2019
		REV	0
DRAWING NUMBER	CRPS-C-117	SHEET	004





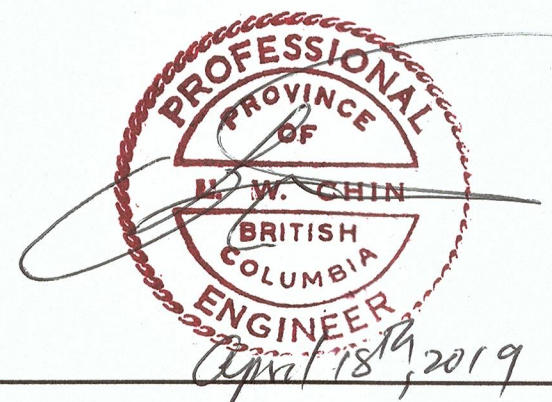
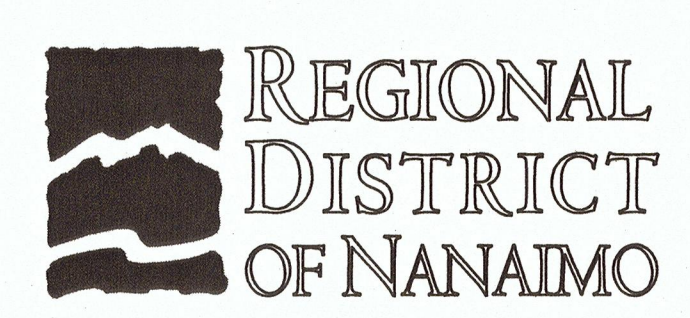
- DEMOLITION NOTES:**
1. THE CONTRACTOR SHALL VERIFY ON SITE ALL THE EXISTING FIELD CONNECTIONS, DIMENSIONS AND ELEVATIONS PRIOR TO COMMENCING WORK. ANY DISCREPANCY SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE IMMEDIATELY. DO NOT SCALE DRAWINGS.
  2. REMOVE ALL EQUIPMENT AND PIPE WORK IN THE CHAMBER.
  3. PLUG EXISTING PIPES WITH CONCRETE.
  4. FILL WILL CONTROLLED DENSITY FILL.
  5. REMOVE UPPER SECTION OF THE CHAMBER TO 300mm BELOW FINAL GRADE.
  6. THE MINIMUM 300mm GRADE DIFFERENCE SHALL BE BACKFILLED WITH 25mm CRUSHED GRAVEL AND COMPACTED TO CONSTRUCTION STANDARDS.
  7. ASPHALT TO BE INSTALLED TO ALIGN WITH ADJACENT SURFACE.

 AREA TO BE DEMOLISHED

**PUMP STATION SITE DEMOLITION PLAN**  
1:100

FILE NAME: C:\PIV\WORK\DR\IDEN\03\CH2\HILL\_ROROG\0478214\CRPS-C-117-DEMO-SHT-001.DWG PLOT DATE: 18/Apr/2019 PLOT BY: Ortopi\_Romney\VC PLOT STYLE: CH2M.dwg

DRAWING NO.	TITLE	REV	DATE	DESCRIPTION	DRN	CHK	APP
	REFERENCE DRAWINGS	0	APR 2019	ISSUED FOR TENDER	RO	LC	JG
				REVISIONS			



PROJECT NAME		CHASE RIVER FORCEMAIN NO. 1 REPLACEMENT AND PUMP STATION UPGRADES	
DRAWN	RO	CHASE RIVER PUMP STATION UPGRADES DEMOLITION PLAN	<b>JACOBS</b>
DESIGNED	MP		
CHECKED	CW		
APPROVED	JG	DRAWING NUMBER	CRPS-C-117-DEMO
		SHEET	001
		DATE	MARCH, 2019
		SCALE	1:100
		REV	0