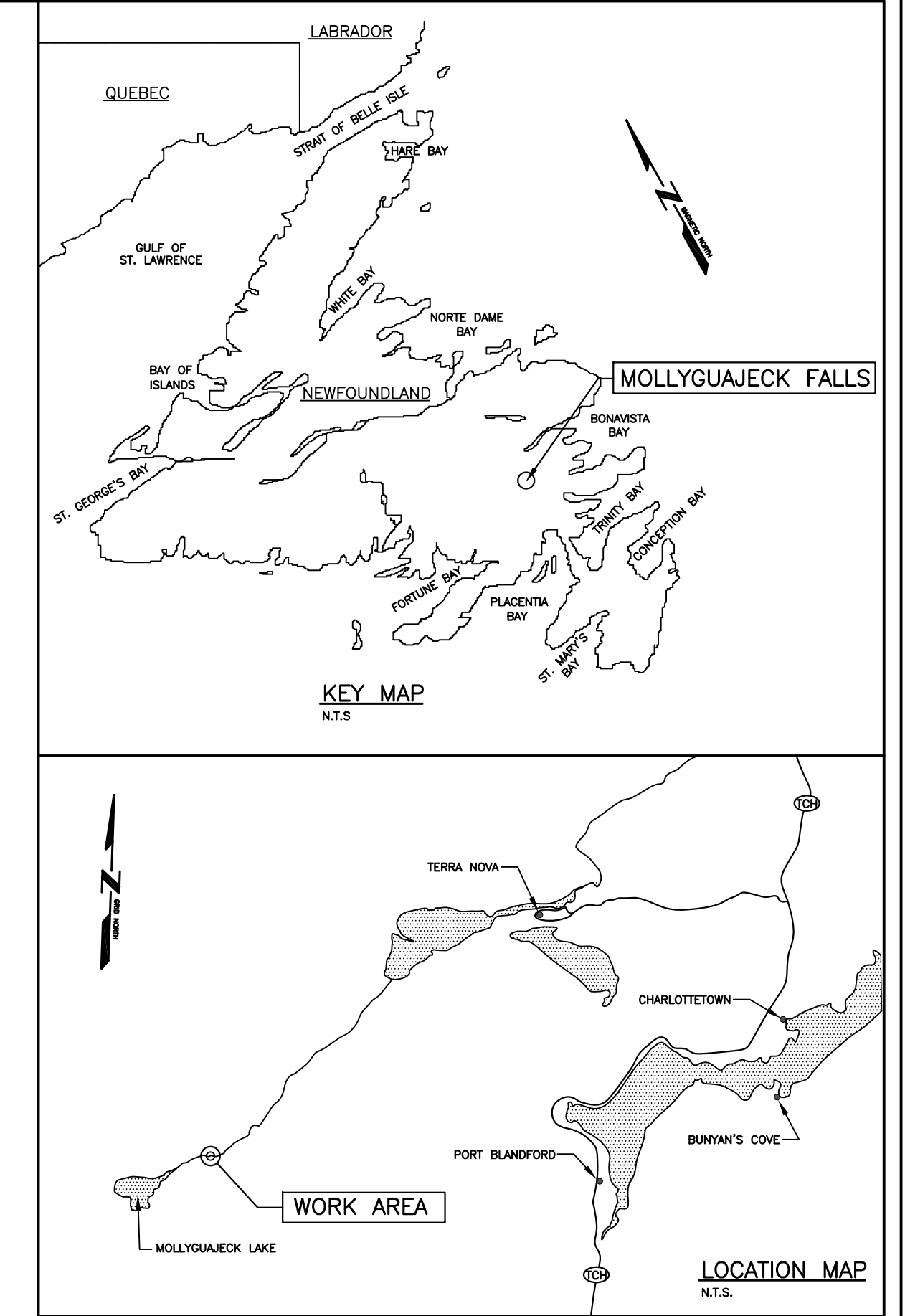


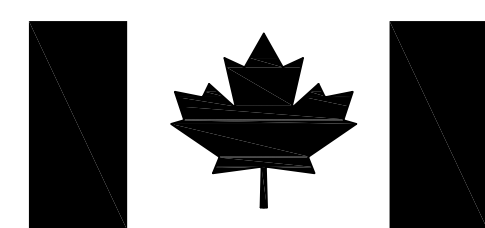
MOLLYGUAJECK FISHWAY IMPROVEMENTS MOLLYGUAJECK FALLS, NEWFOUNDLAND PROJECT No. F6879-179007 ISSUED FOR TENDER



LIST OF DRAWINGS:

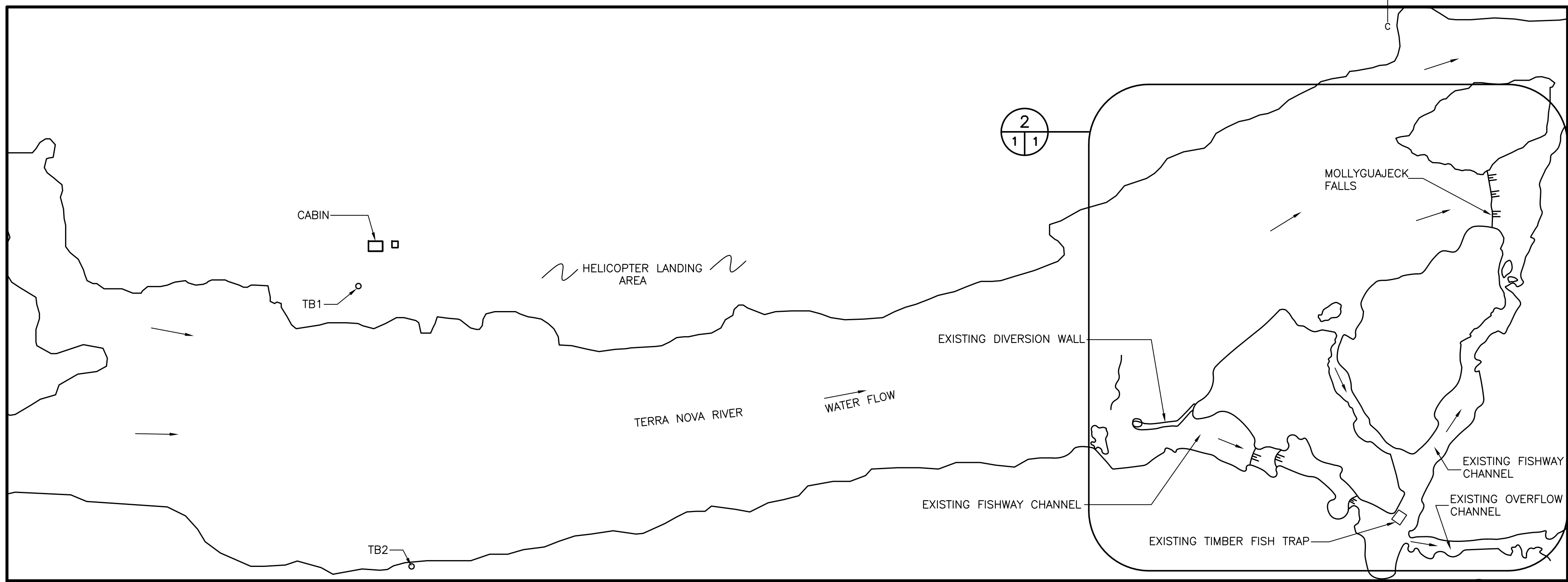
- C1 OF 3 EXISTING SITE/DEMOLITION PLAN
- C2 OF 3 NEW SITE PLAN
- C3 OF 3 NEW SECTIONS AND DETAILS

PREPARED FOR



DEPARTMENT OF FISHERIES AND OCEANS

PROVINCE OF NEWFOUNDLAND AND LABRADOR
PERMIT HOLDER
 This Permit Allows
Meridian Engineering Inc.
 Member No. 04378
 To practice Professional Engineering
 in Newfoundland and Labrador.
 Permit No. issued by PEG: 301153
 which is valid for the year 2011.

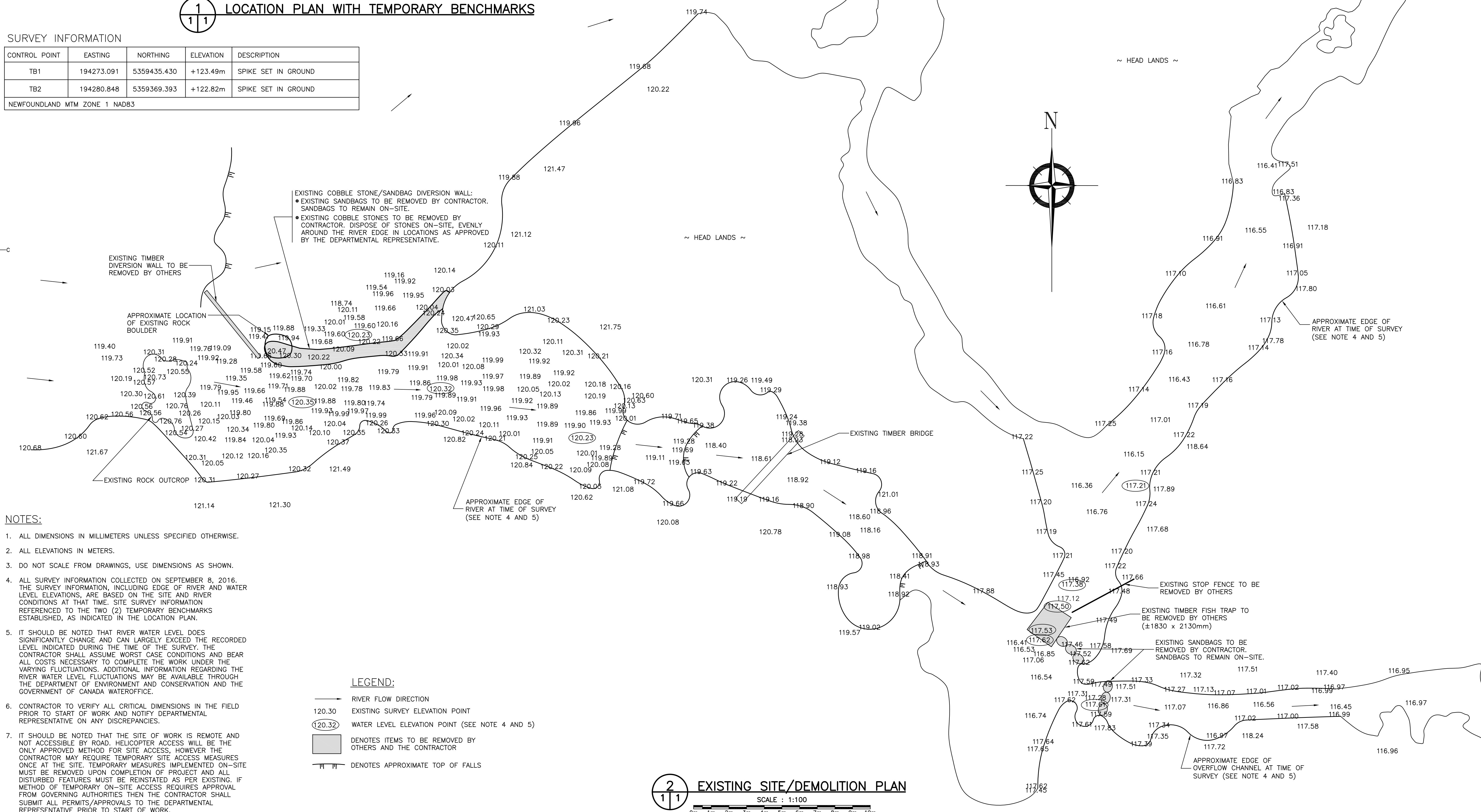


1 LOCATION PLAN WITH TEMPORARY BENCHMARKS

SURVEY INFORMATION

| CONTROL POINT | EASTING | NORTHING | ELEVATION | DESCRIPTION |
|---------------|------------|-------------|-----------|---------------------|
| TB1 | 194273.091 | 5359435.430 | +123.49m | SPIKE SET IN GROUND |
| TB2 | 194280.848 | 5359369.393 | +122.82m | SPIKE SET IN GROUND |

NEWFOUNDLAND MTM ZONE 1 NAD83



- NOTES:**
- ALL DIMENSIONS IN MILLIMETERS UNLESS SPECIFIED OTHERWISE.
 - ALL ELEVATIONS IN METERS.
 - DO NOT SCALE FROM DRAWINGS, USE DIMENSIONS AS SHOWN.
 - ALL SURVEY INFORMATION COLLECTED ON SEPTEMBER 8, 2016. THE SURVEY INFORMATION, INCLUDING EDGE OF RIVER AND WATER LEVEL ELEVATIONS, ARE BASED ON THE SITE AND RIVER CONDITIONS AT THAT TIME. SITE SURVEY INFORMATION REFERENCED TO THE TWO (2) TEMPORARY BENCHMARKS ESTABLISHED, AS INDICATED IN THE LOCATION PLAN.
 - IT SHOULD BE NOTED THAT RIVER WATER LEVEL DOES SIGNIFICANTLY CHANGE AND CAN LARGELY EXCEED THE RECORDED LEVEL INDICATED DURING THE TIME OF THE SURVEY. THE CONTRACTOR SHALL ASSUME WORST CASE CONDITIONS AND BEAR ALL COSTS NECESSARY TO COMPLETE THE WORK UNDER THE VARYING FLUCTUATIONS. ADDITIONAL INFORMATION REGARDING THE RIVER WATER LEVEL FLUCTUATIONS MAY BE AVAILABLE THROUGH THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION AND THE GOVERNMENT OF CANADA WATEROFFICE.
 - CONTRACTOR TO VERIFY ALL CRITICAL DIMENSIONS IN THE FIELD PRIOR TO START OF WORK AND NOTIFY DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES.
 - IT SHOULD BE NOTED THAT THE SITE OF WORK IS REMOTE AND NOT ACCESSIBLE BY ROAD. HELICOPTER ACCESS WILL BE THE ONLY APPROVED METHOD FOR SITE ACCESS, HOWEVER THE CONTRACTOR MAY REQUIRE TEMPORARY SITE ACCESS MEASURES ONCE AT THE SITE. TEMPORARY MEASURES IMPLEMENTED ON-SITE MUST BE REMOVED UPON COMPLETION OF PROJECT AND ALL DISTURBED FEATURES MUST BE REINSTATED AS PER EXISTING. IF METHOD OF TEMPORARY ON-SITE ACCESS REQUIRES APPROVAL FROM GOVERNING AUTHORITIES THEN THE CONTRACTOR SHALL SUBMIT ALL PERMITS/APPROVALS TO THE DEPARTMENTAL REPRESENTATIVE PRIOR TO START OF WORK.
 - ALL WORK TO BE CARRIED OUT IN THE DRY.

- LEGEND:**
- RIVER FLOW DIRECTION
 - EXISTING SURVEY ELEVATION POINT
 - WATER LEVEL ELEVATION POINT (SEE NOTE 4 AND 5)
 - DENOTES ITEMS TO BE REMOVED BY OTHERS AND THE CONTRACTOR
 - DENOTES APPROXIMATE TOP OF FALLS

2 EXISTING SITE/DEMOLITION PLAN
 SCALE : 1:100
 0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

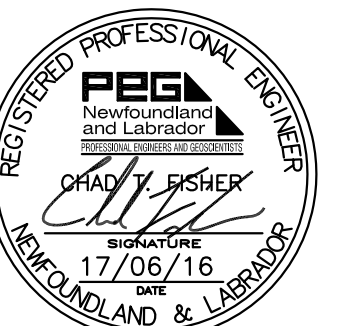
| | | |
|-----------|-----------------------|----------|
| C | ISSUED FOR TENDER | 17/06/16 |
| B | ISSUED FOR 99% REVIEW | 16/12/02 |
| A | ISSUED FOR REVIEW | 16/09/20 |
| revisions | | date |
| project | | project |

MOLLYGUAJECK FISHWAY IMPROVEMENTS

EXISTING SITE/DEMOLITION PLAN

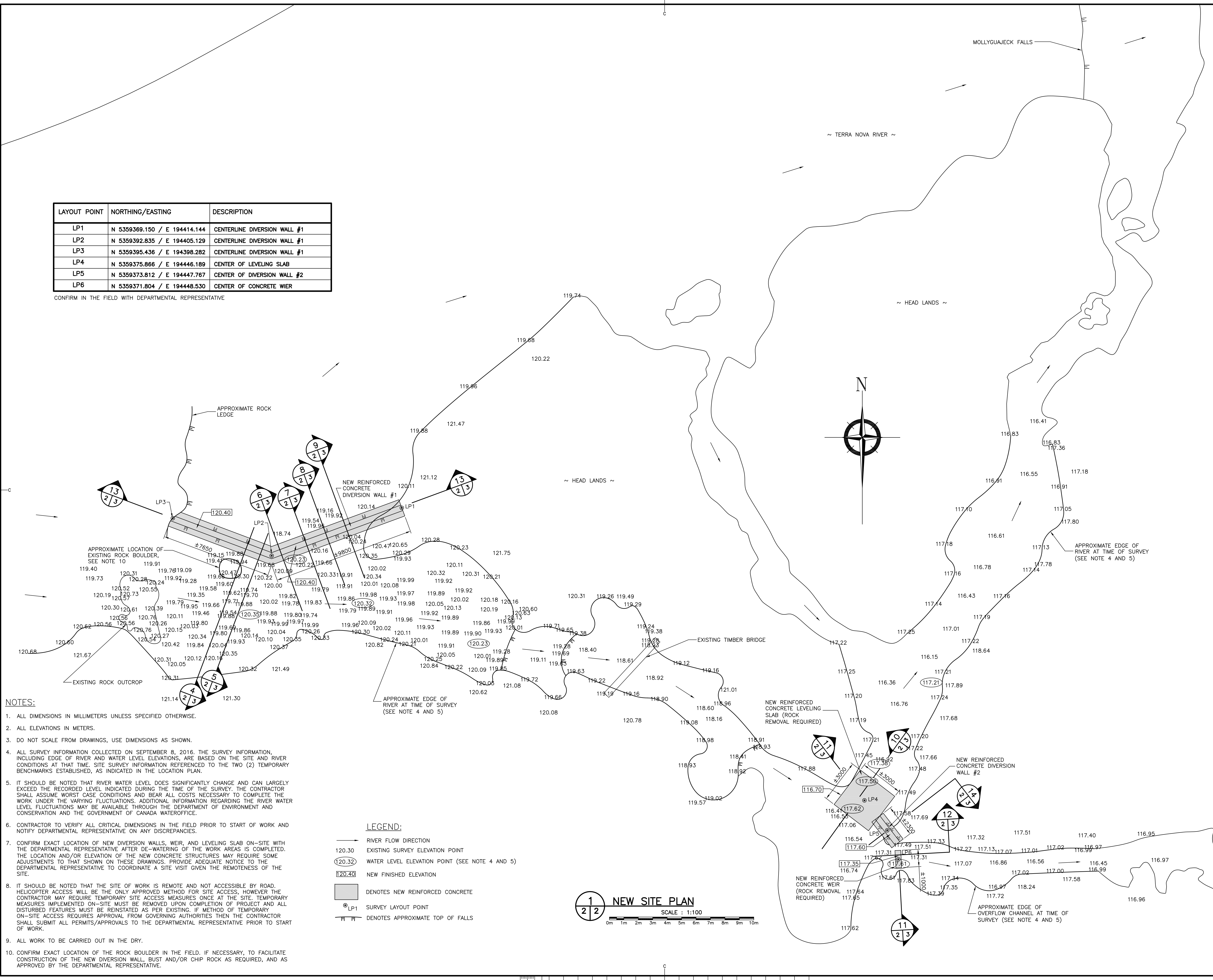
| | |
|----------------------|-------------------------------|
| designed C. FISHER | conçu |
| date SEPTEMBER, 2016 | date |
| drawn R. SNOW | dessiné |
| date SEPTEMBER, 2016 | date |
| approved | approuvé |
| date | date |
| Tender | Soumission |
| DFO Project Manager | Administrateur de projets MPO |
| project number | no. du projet |
| F6879-179007 | |
| drawing no. | no. du dessin |
| C1 OF 3 | |

PROVINCE OF NEWFOUNDLAND AND LABRADOR
PERMIT HOLDER
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 To practice Professional Engineering
 in Newfoundland and Labrador.
 Permit No. issued to PEG: 301153
 which is valid for the year 2011.



| LAYOUT POINT | NORTHING/EASTING | DESCRIPTION |
|--------------|------------------------------|------------------------------|
| LP1 | N 5359369.150 / E 194414.144 | CENTERLINE DIVERSION WALL #1 |
| LP2 | N 5359392.835 / E 194405.129 | CENTERLINE DIVERSION WALL #1 |
| LP3 | N 5359395.436 / E 194398.282 | CENTERLINE DIVERSION WALL #1 |
| LP4 | N 5359375.866 / E 194446.189 | CENTER OF LEVELING SLAB |
| LP5 | N 5359373.812 / E 194447.767 | CENTER OF DIVERSION WALL #2 |
| LP6 | N 5359371.804 / E 194448.530 | CENTER OF CONCRETE WIER |

CONFIRM IN THE FIELD WITH DEPARTMENTAL REPRESENTATIVE



- NOTES:**
- ALL DIMENSIONS IN MILLIMETERS UNLESS SPECIFIED OTHERWISE.
 - ALL ELEVATIONS IN METERS.
 - DO NOT SCALE FROM DRAWINGS, USE DIMENSIONS AS SHOWN.
 - ALL SURVEY INFORMATION COLLECTED ON SEPTEMBER 8, 2016. THE SURVEY INFORMATION, INCLUDING EDGE OF RIVER AND WATER LEVEL ELEVATIONS, ARE BASED ON THE SITE AND RIVER CONDITIONS AT THAT TIME. SITE SURVEY INFORMATION REFERENCED TO THE TWO (2) TEMPORARY BENCHMARKS ESTABLISHED, AS INDICATED IN THE LOCATION PLAN.
 - IT SHOULD BE NOTED THAT RIVER WATER LEVEL DOES SIGNIFICANTLY CHANGE AND CAN LARGELY EXCEED THE RECORDED LEVEL INDICATED DURING THE TIME OF THE SURVEY. THE CONTRACTOR SHALL ASSUME WORST CASE CONDITIONS AND BEAR ALL COSTS NECESSARY TO COMPLETE THE WORK UNDER THE VARYING FLUCTUATIONS. ADDITIONAL INFORMATION REGARDING THE RIVER WATER LEVEL FLUCTUATIONS MAY BE AVAILABLE THROUGH THE DEPARTMENT OF ENVIRONMENT AND CONSERVATION AND THE GOVERNMENT OF CANADA WATEROFFICE.
 - CONTRACTOR TO VERIFY ALL CRITICAL DIMENSIONS IN THE FIELD PRIOR TO START OF WORK AND NOTIFY DEPARTMENTAL REPRESENTATIVE ON ANY DISCREPANCIES.
 - CONFIRM EXACT LOCATION OF NEW DIVERSION WALLS, WEIR, AND LEVELING SLAB ON-SITE WITH THE DEPARTMENTAL REPRESENTATIVE AFTER DE-WATERING OF THE WORK AREAS IS COMPLETED. THE LOCATION AND/OR ELEVATION OF THE NEW CONCRETE STRUCTURES MAY REQUIRE SOME ADJUSTMENTS TO THAT SHOWN ON THESE DRAWINGS. PROVIDE ADEQUATE NOTICE TO THE DEPARTMENTAL REPRESENTATIVE TO COORDINATE A SITE VISIT GIVEN THE REMOTENESS OF THE SITE.
 - IT SHOULD BE NOTED THAT THE SITE OF WORK IS REMOTE AND NOT ACCESSIBLE BY ROAD. HELICOPTER ACCESS WILL BE THE ONLY APPROVED METHOD FOR SITE ACCESS. HOWEVER THE CONTRACTOR MAY REQUIRE TEMPORARY SITE ACCESS MEASURES ONCE AT THE SITE. TEMPORARY MEASURES IMPLEMENTED ON-SITE MUST BE REMOVED UPON COMPLETION OF PROJECT AND ALL DISTURBED FEATURES MUST BE REINSTATED AS PER EXISTING. IF METHOD OF TEMPORARY ON-SITE ACCESS REQUIRES APPROVAL FROM GOVERNING AUTHORITIES THEN THE CONTRACTOR SHALL SUBMIT ALL PERMITS/APPROVALS TO THE DEPARTMENTAL REPRESENTATIVE PRIOR TO START OF WORK.
 - ALL WORK TO BE CARRIED OUT IN THE DRY.
 - CONFIRM EXACT LOCATION OF THE ROCK BOULDER IN THE FIELD. IF NECESSARY, TO FACILITATE CONSTRUCTION OF THE NEW DIVERSION WALL, BUST AND/OR CHIP ROCK AS REQUIRED, AND AS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.

LEGEND:

| | |
|----------|--|
| | RIVER FLOW DIRECTION |
| 120.30 | EXISTING SURVEY ELEVATION POINT |
| (120.32) | WATER LEVEL ELEVATION POINT (SEE NOTE 4 AND 5) |
| [120.40] | NEW FINISHED ELEVATION |
| | DENOTES NEW REINFORCED CONCRETE |
| ⊙ LP1 | SURVEY LAYOUT POINT |
| — — — | DENOTES APPROXIMATE TOP OF FALLS |

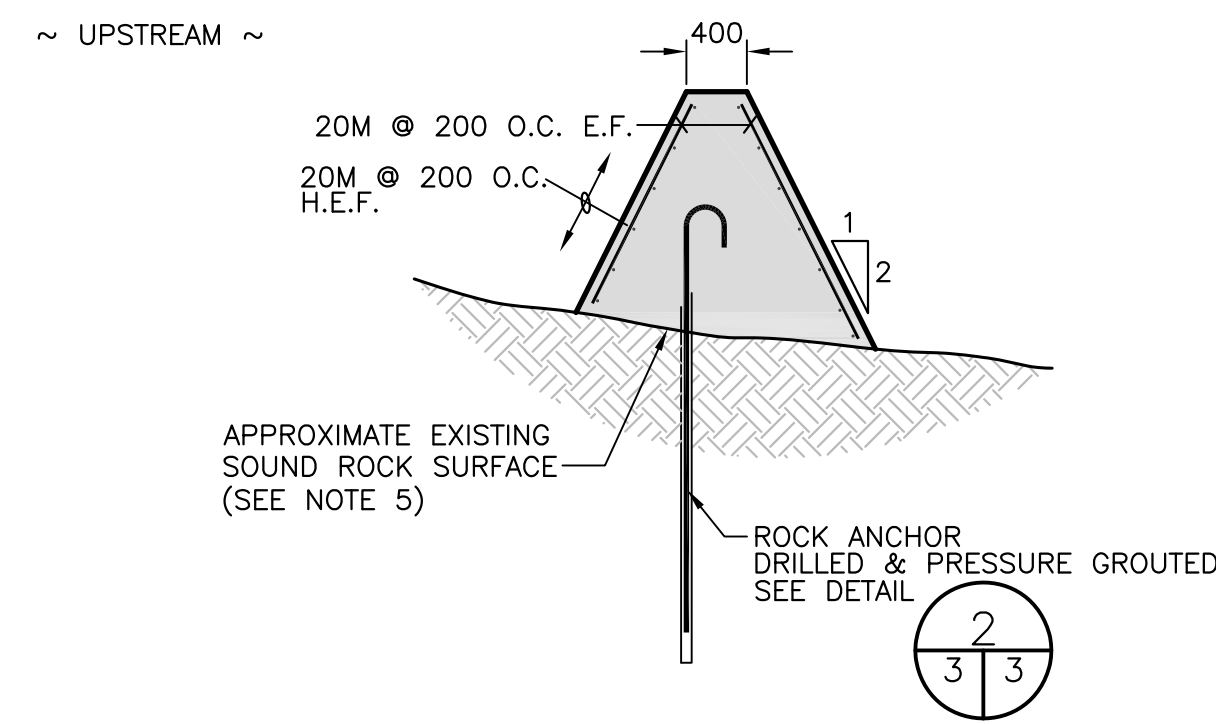
1 2 2 NEW SITE PLAN
 SCALE : 1:100
 0m 1m 2m 3m 4m 5m 6m 7m 8m 9m 10m

| | | |
|---|-----------------------|----------|
| C | ISSUED FOR TENDER | 17/06/16 |
| B | ISSUED FOR 99% REVIEW | 16/12/02 |
| A | ISSUED FOR REVIEW | 16/10/06 |

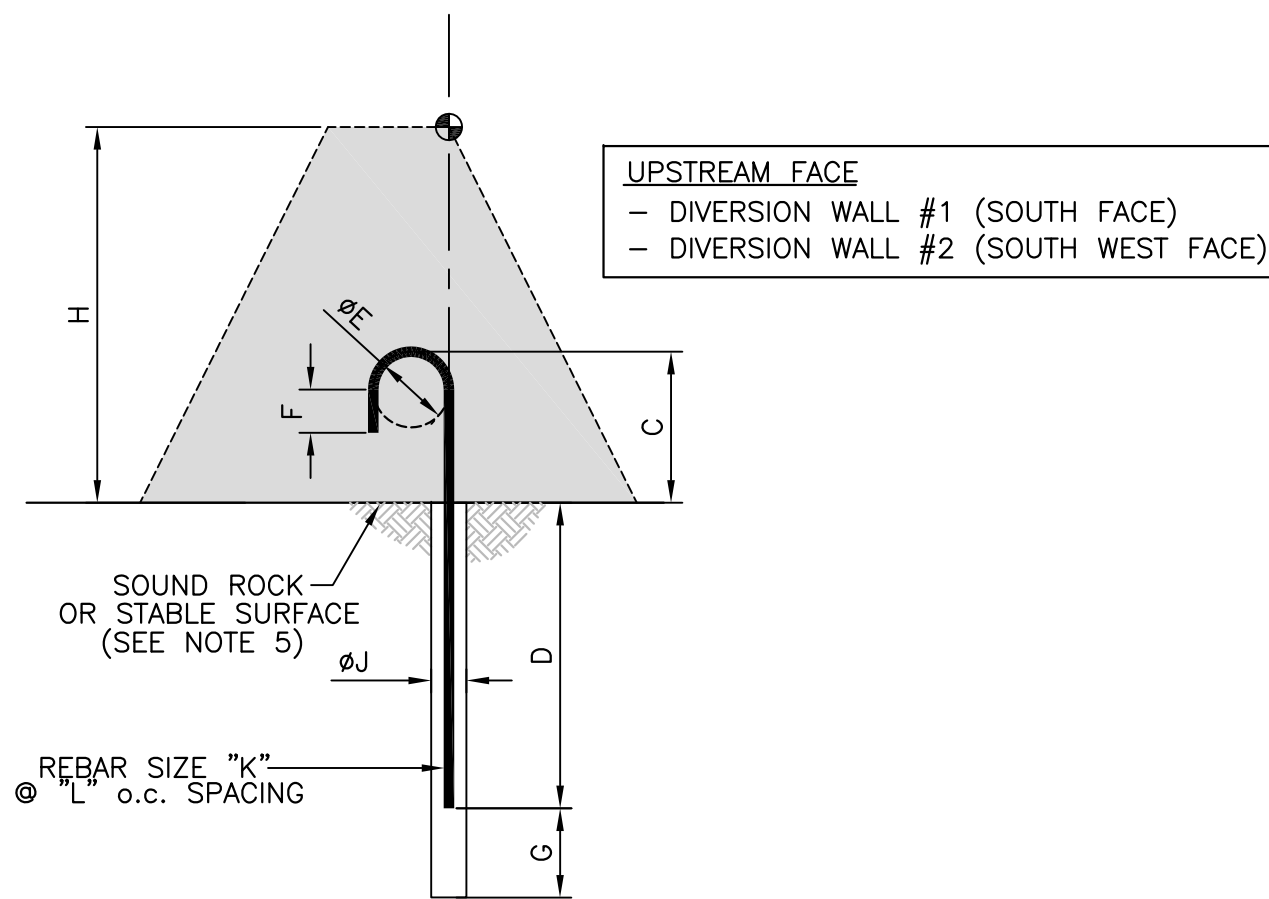
MOLLYGUAJECK FISHWAY IMPROVEMENTS

NEW SITE PLAN

| | | |
|---------------------|-------------------------------|------------|
| designed | C. FISHER | conçu |
| date | SEPTEMBER, 2016 | |
| drawn | R. SNOW | dessiné |
| date | SEPTEMBER, 2016 | |
| approved | | approuvé |
| date | | |
| Tender | | Soumission |
| DFO Project Manager | Administrateur de projets MPO | |
| project number | no. du projet | |
| F6879-179007 | | |
| drawing no. | no. du dessin | |
| C2 OF 3 | | |



1 TYPICAL CROSS SECTION - DIVERSION WALL DETAILS
SCALE: 1:50

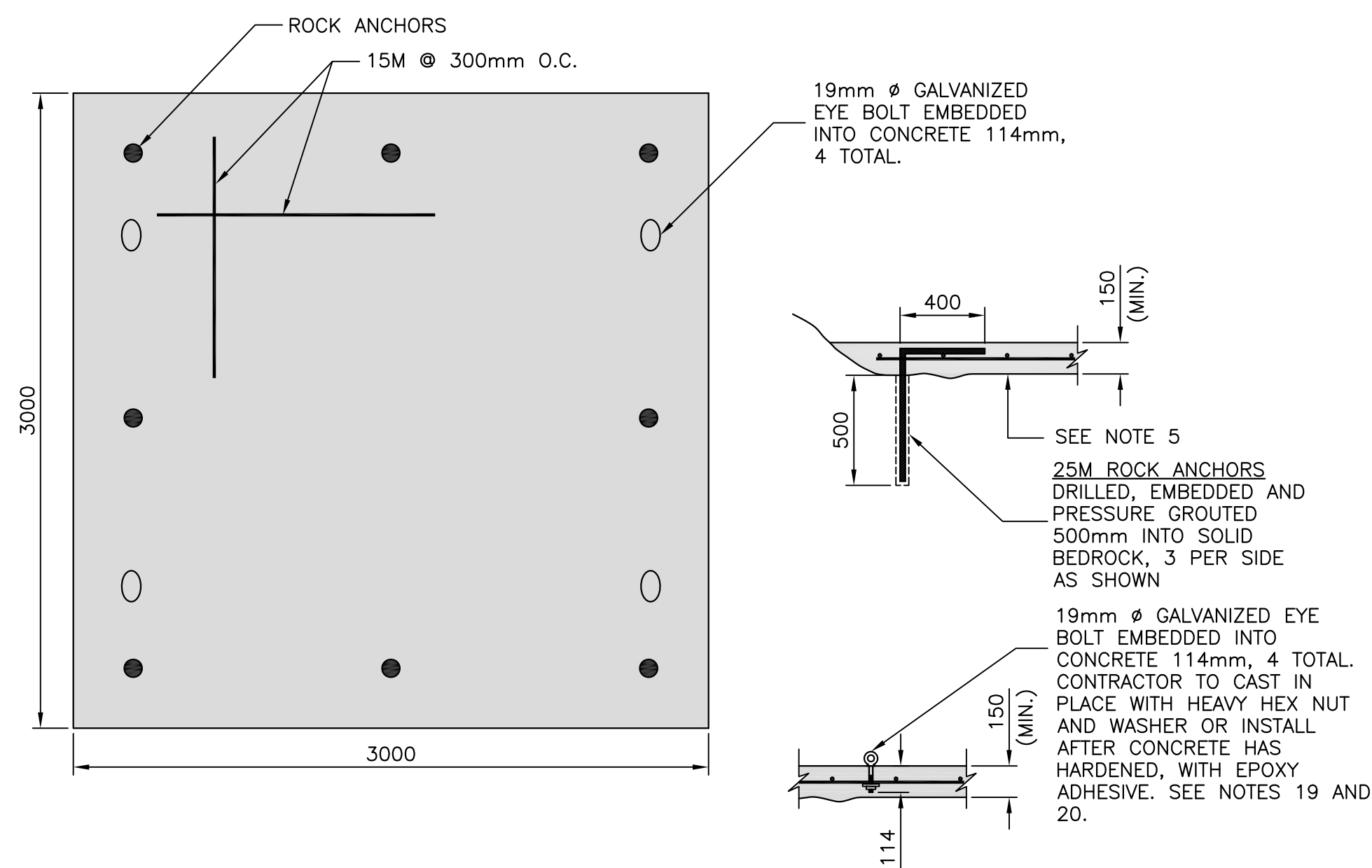


TYPE I ANCHOR

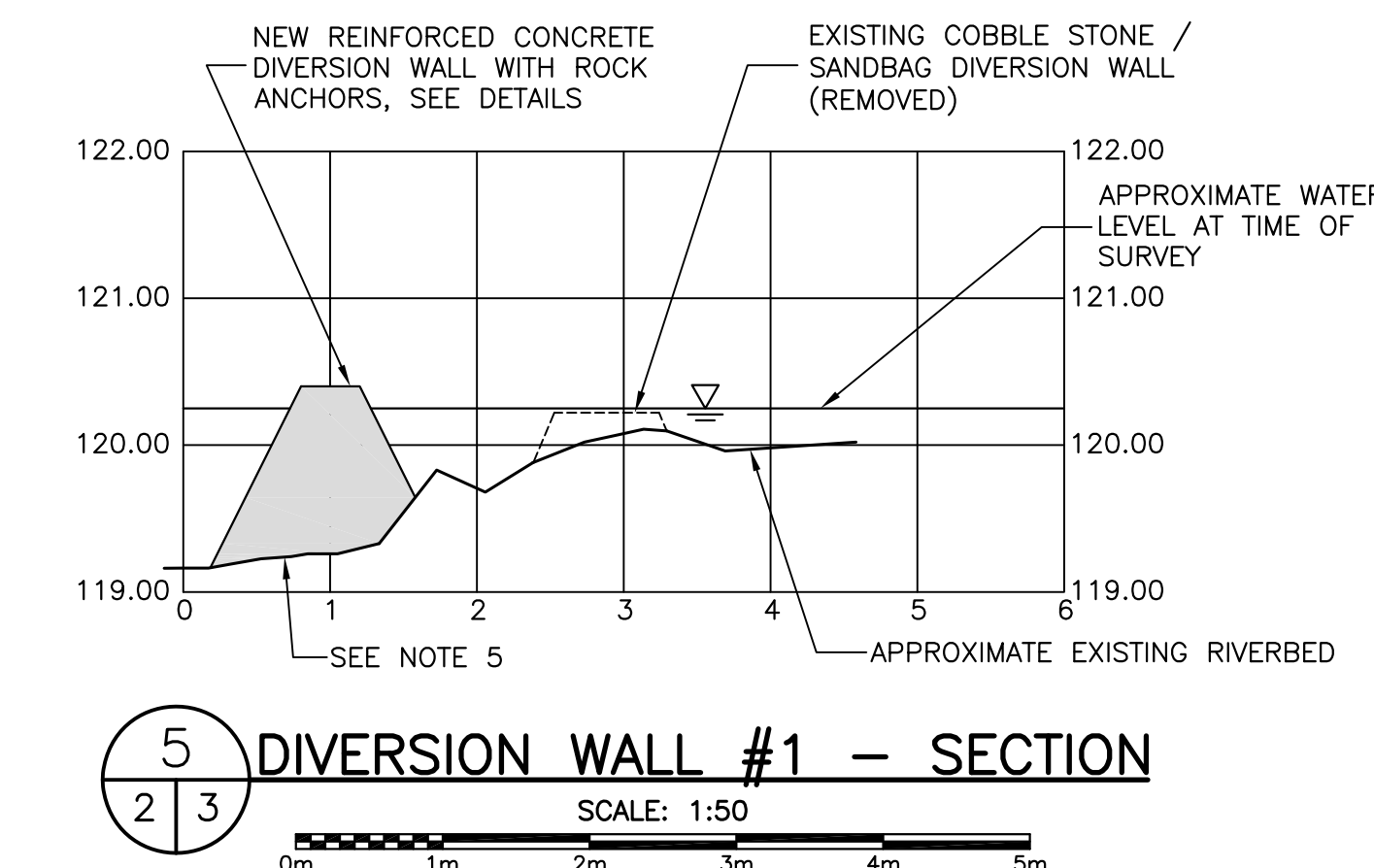
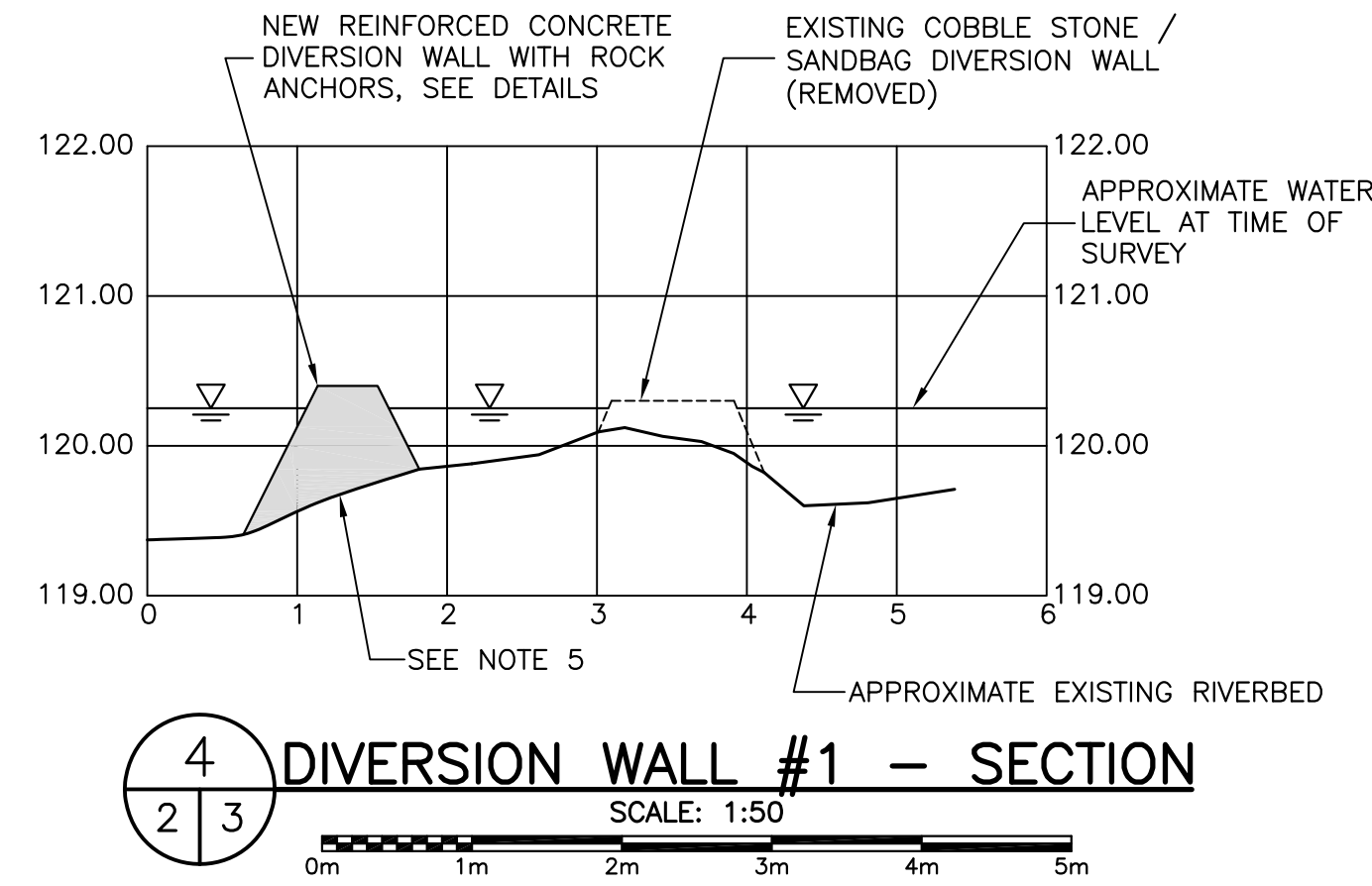
| TYPE | DIMENSIONS | | | | | | | | | | | REBAR |
|------|------------|---|-------|--------|-----|-------|-----|----------|----|-----|-----|-------|
| | A | B | C | D | E | F | G | H | J | K | L | |
| 1 | - | - | (413) | (2300) | 250 | (143) | 200 | H < 1750 | 64 | 35M | 800 | |

- (*) DENOTES MINIMUM DIMENSION
- THE CONTRACTOR SHALL CONFIRM LOCATIONS OF ROCK ANCHORS WITH DEPARTMENTAL REPRESENTATIVE PRIOR TO ANY DRILLING.
- IF WALL HEIGHT DECREASES LOW ENOUGH TO PREVENT INSTALLATION OF THE ABOVE ROCK ANCHORS, INSTALL 25M ROCK ANCHORS AS DETAILED FOR THE NEW LEVELING SLAB, AT THE SPACING INDICATED ABOVE, EXCEPT WITH AN EMBEDMENT OF 1000MM.

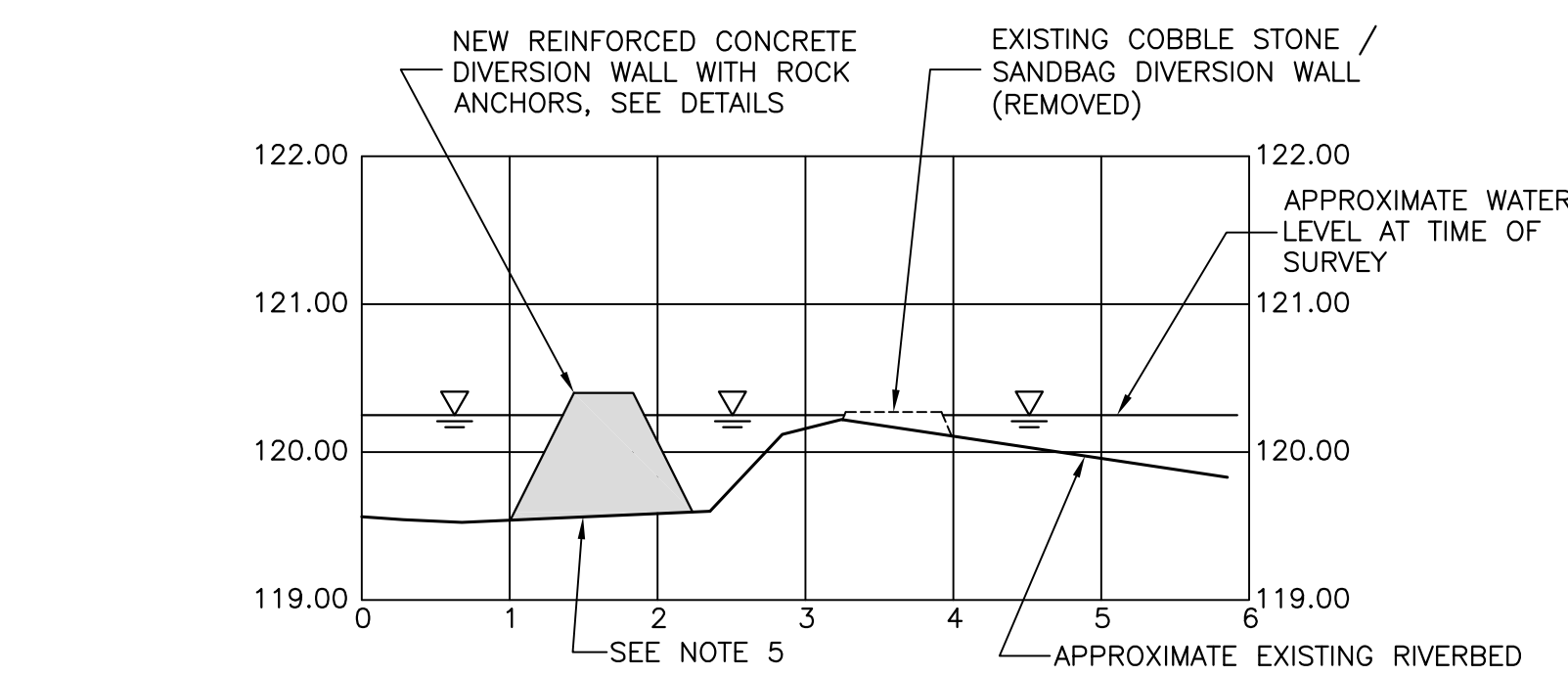
2 DIVERSION WALL ROCK ANCHOR DETAILS
SCALE: 1:50



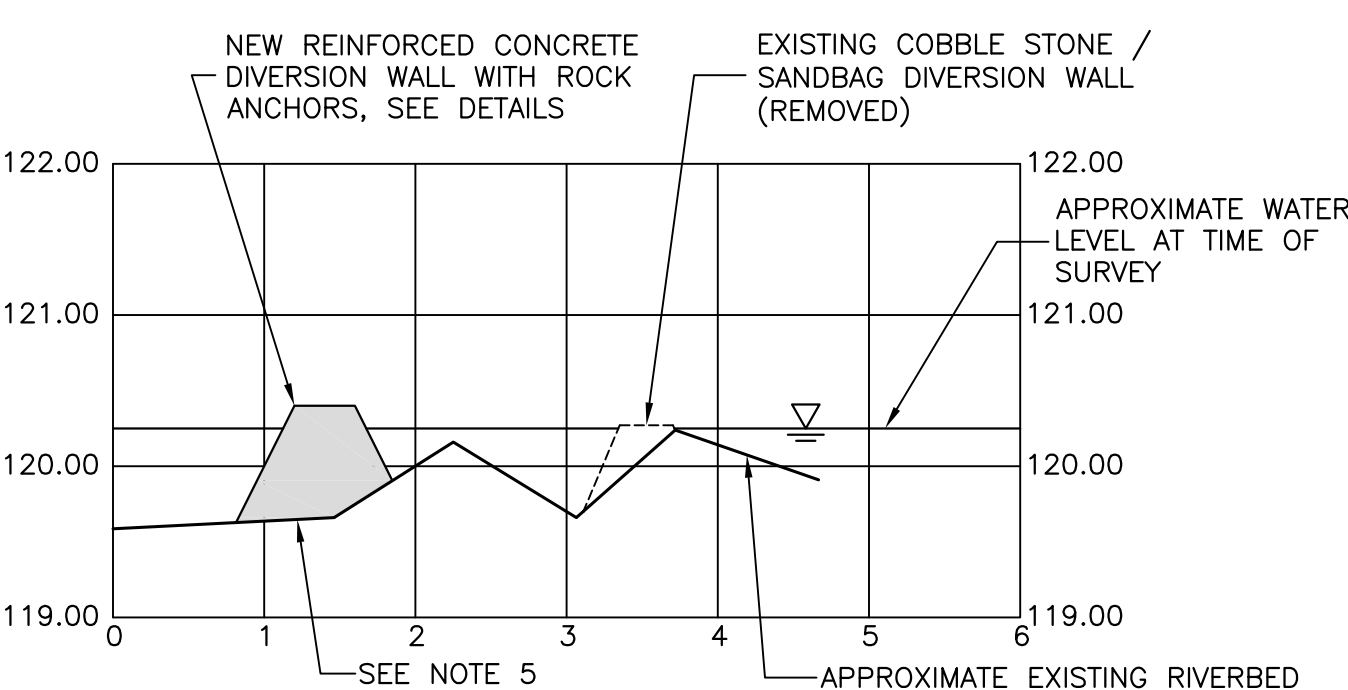
3 NEW LEVELING SLAB DETAILS
SCALE: 1:25



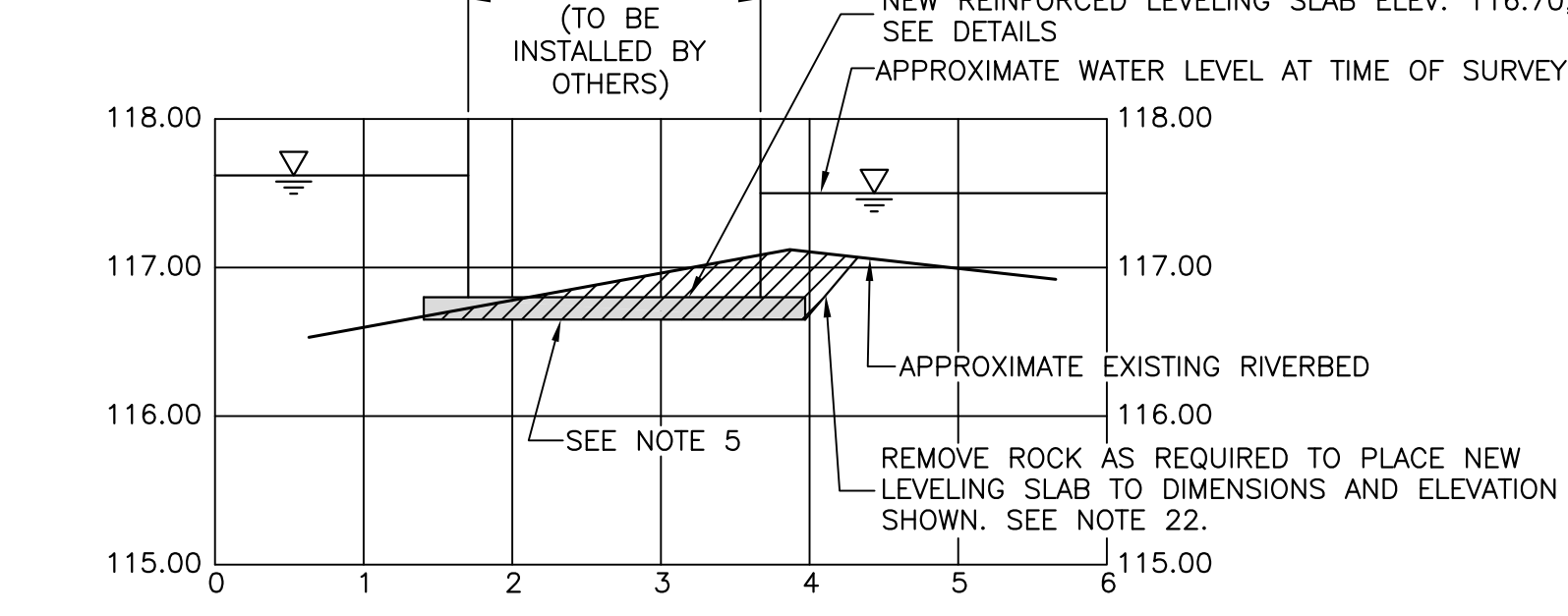
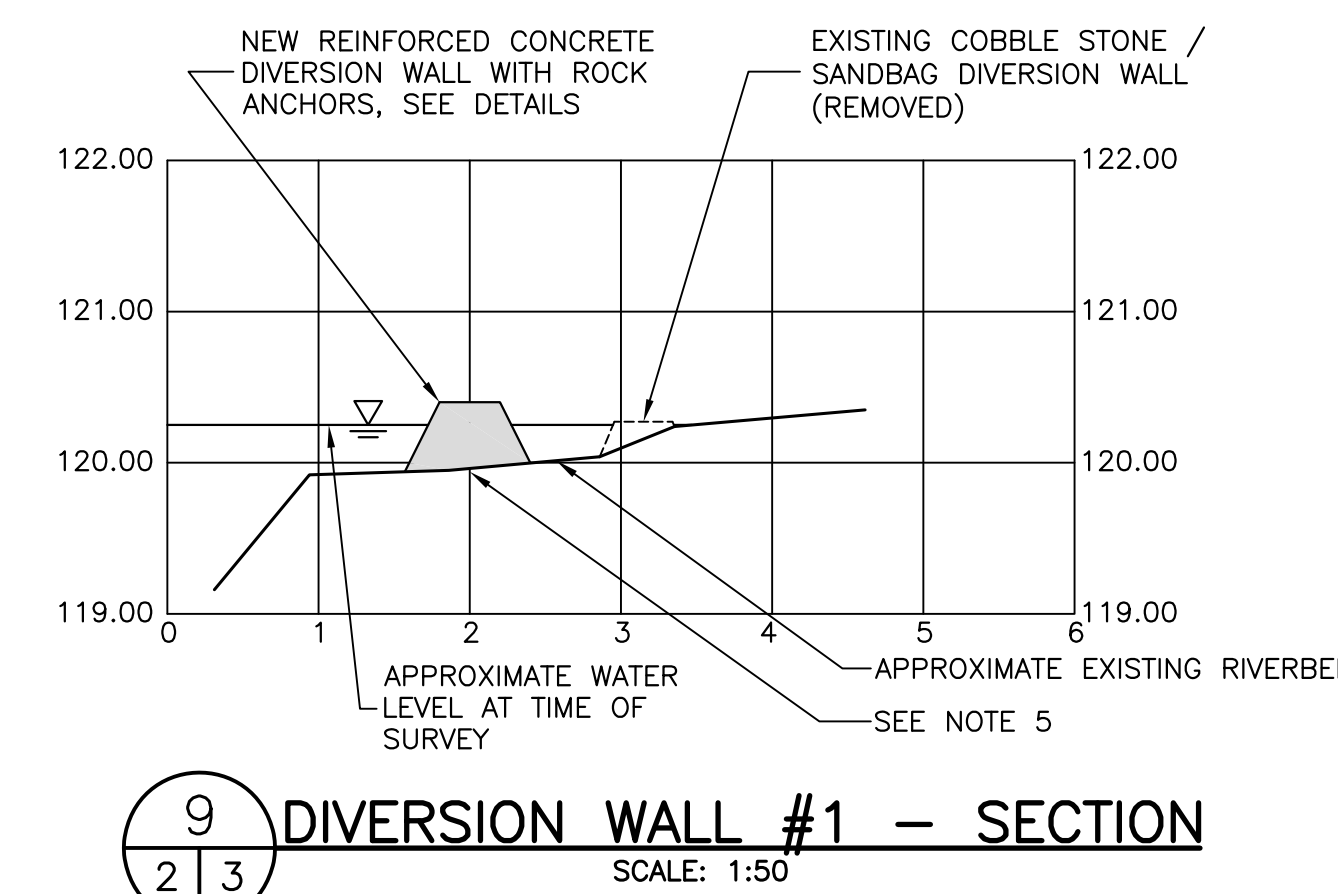
6 DIVERSION WALL #1 - SECTION
SCALE: 1:50



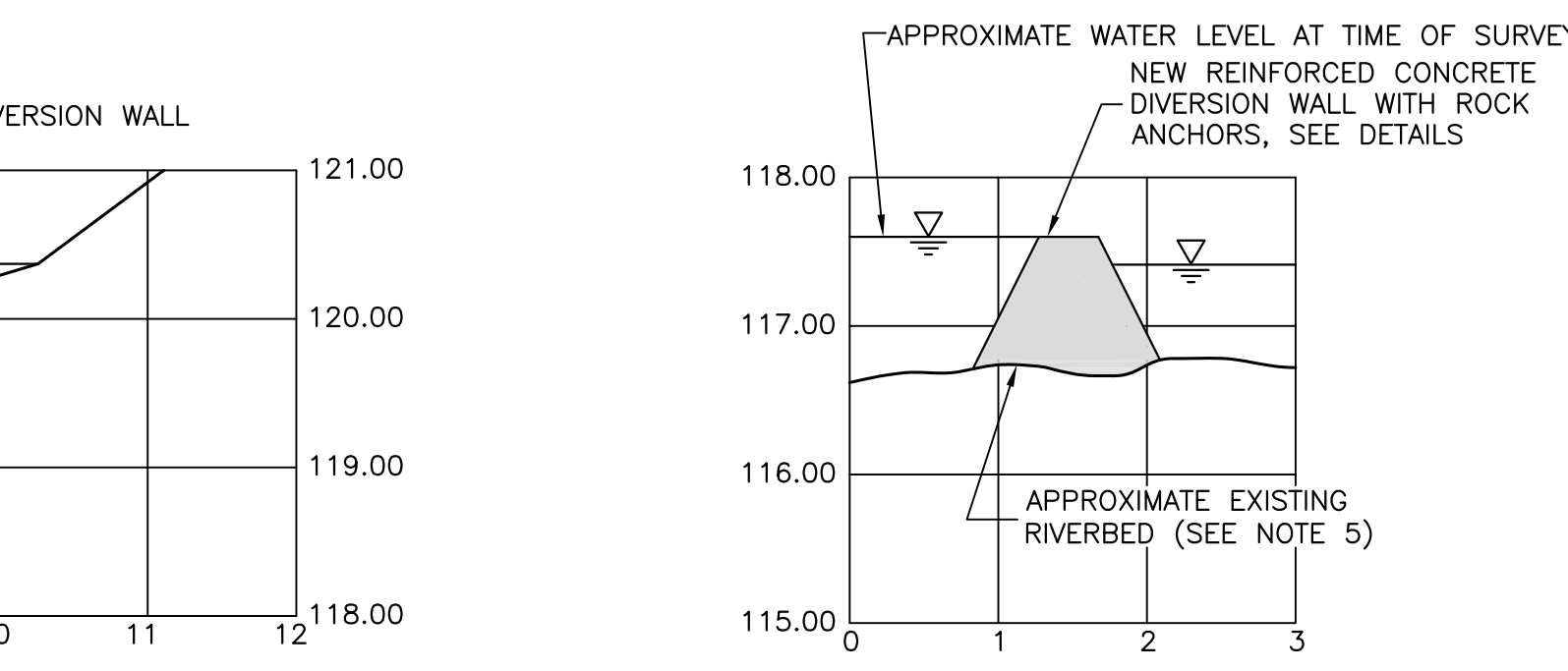
8 DIVERSION WALL #1 - SECTION
SCALE: 1:50



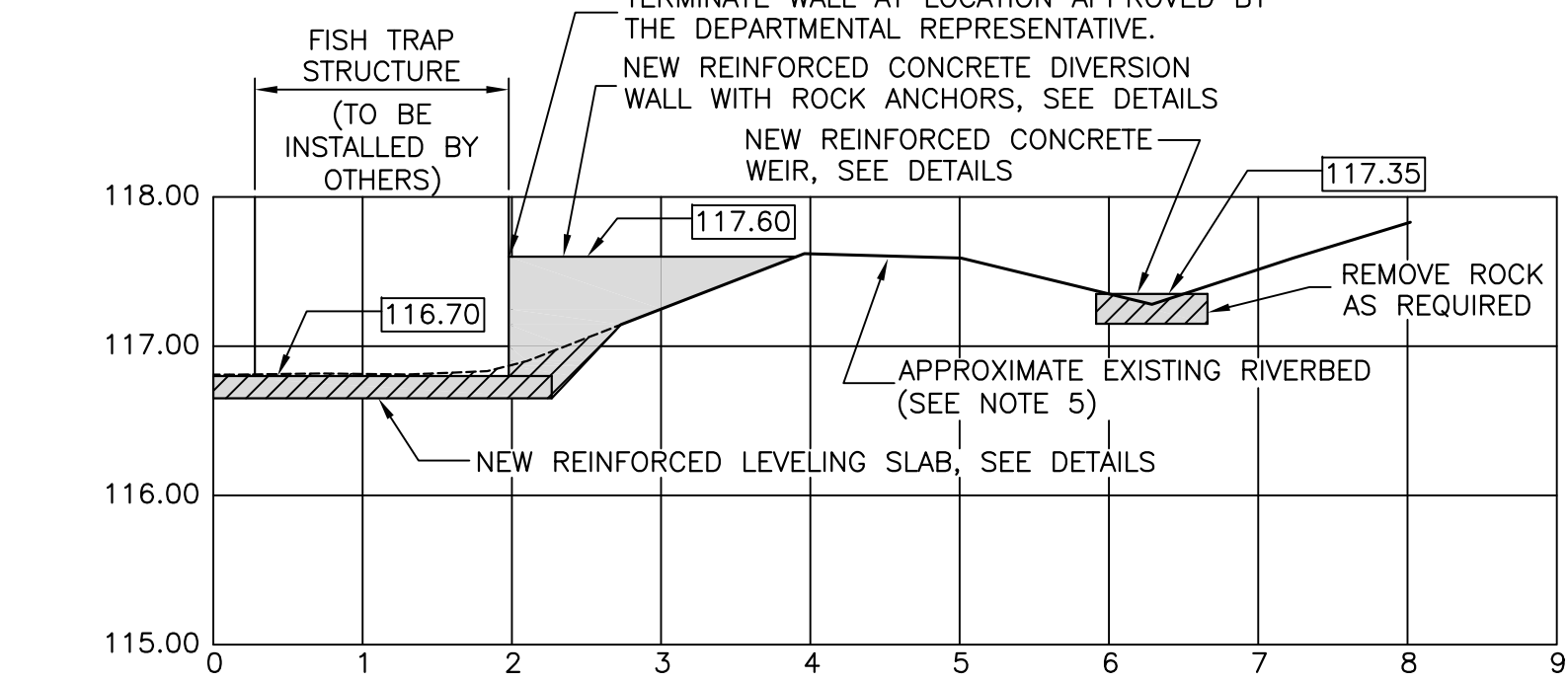
8 DIVERSION WALL #1 - SECTION
SCALE: 1:50



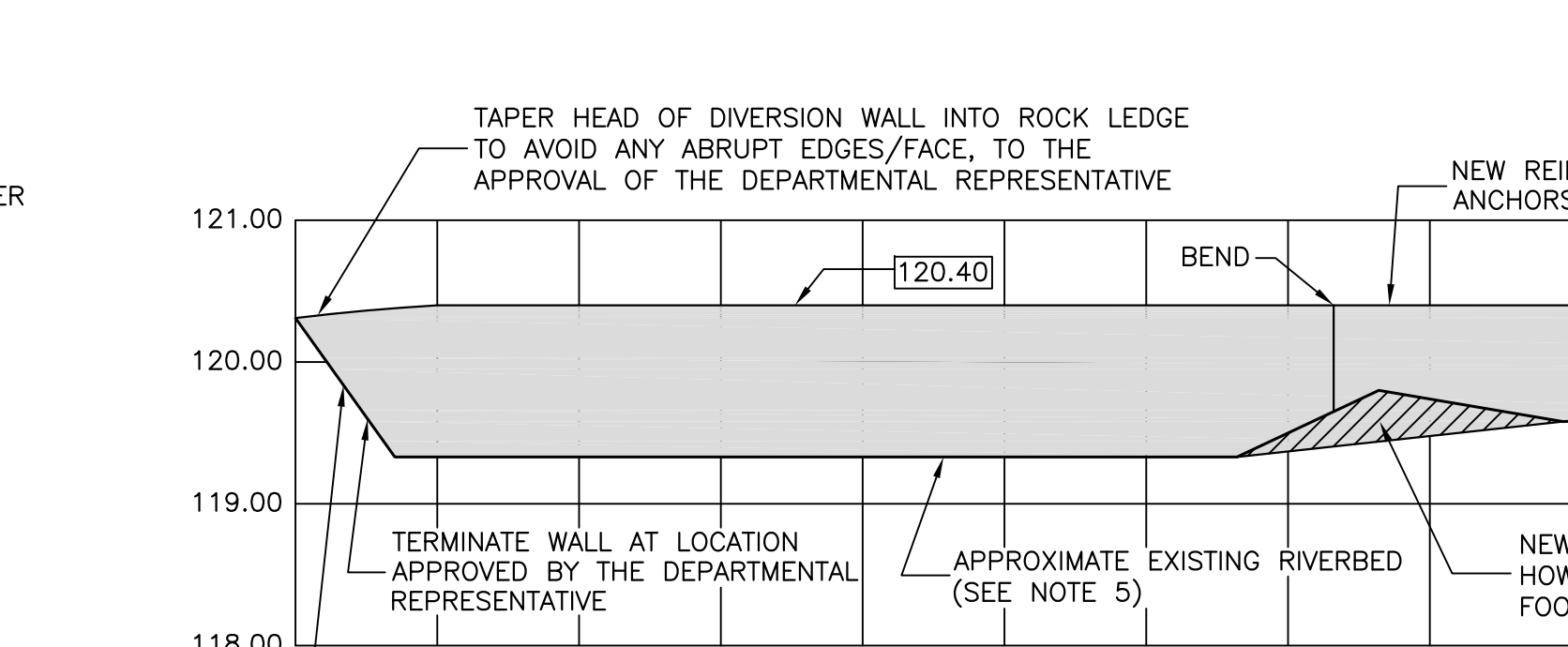
10 LEVELING SLAB - SECTION
SCALE: 1:50



14 DIVERSION WALL #2 - SECTION
SCALE: 1:50



11 DIVERSION WALL #2 AND CONCRETE WEIR - PROFILE
SCALE: 1:50



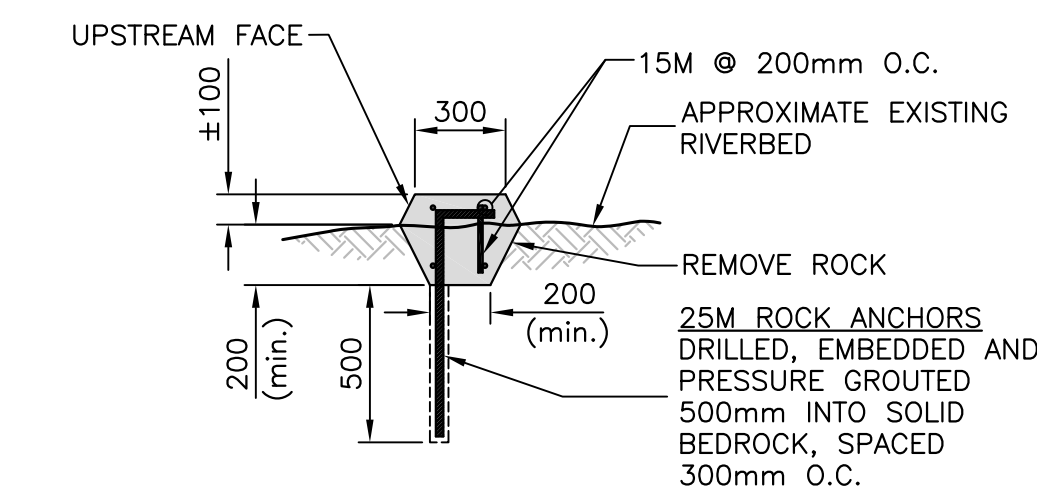
13 DIVERSION WALL #1 - PROFILE
SCALE: 1:50

NOTES:

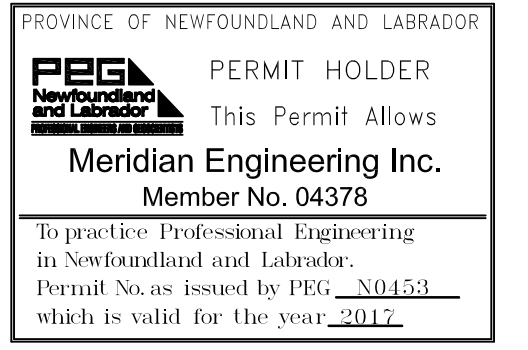
- ALL DIMENSIONS IN MILLIMETERS UNLESS SPECIFIED OTHERWISE.
- ALL ELEVATIONS IN METERS.
- DO NOT SCALE FROM DRAWINGS, USE DIMENSIONS AS SHOWN.
- ICE AND DEBRIS LOADING FOR DEFLECTION WALL AND CONTROL STRUCTURE DESIGN IS 50 kN/m (FACTORED) ACTING AT TOP OF WALL.
- REMOVE LOOSE AND FRAGMENTED ROCK TO EXPOSE A SOUND COMPETENT BEDROCK SURFACE TO ACCEPTANCE OF THE DEPARTMENTAL REPRESENTATIVE PRIOR TO THE PLACEMENT OF CONCRETE ON ROCK. APPLY BONDING AGENT "WELDCRETE" OR APPROVED EQUAL TO ALL CONCRETE/ROCK INTERFACES.
- ALL EDGES OF CONCRETE TO BE PROVIDED WITH A ROUNDED CHAMFER TO ELIMINATE ALL SHARP EDGES.
- PROVIDE REINFORCEMENT AT ALL CORNERS AND INTERSECTIONS TO BE SAME BAR SIZE AND SPACING AS MAIN REINFORCEMENT.
- MINIMUM SPLICE LENGTHS IN ACCORDANCE WITH CSA STANDARD A23.3-04.
- CONCRETE COVER TO BE 75mm ALL AREAS, ALL CONDITIONS.
- MINIMUM 28 DAY CONCRETE STRENGTH = 35 MPa.
- REINFORCING STEEL YIELD STRENGTH = 400 MPa.
- REINFORCEMENT IS OMITTED IN SOME DETAILS FOR CLARITY. REFER TO APPROPRIATE DETAILS ACCORDINGLY.
- ALL CONCRETE CONSTRUCTION JOINTS TO BE FORMED WITH A KEYSAW, THE BONDING SURFACES INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 5mm.
- BONDING AGENT TO BE "WELDCRETE" OR APPROVED EQUAL. BONDING AGENT TO BE APPLIED TO ALL CONCRETE/ROCK INTERFACES.
- MINIMUM STRENGTH OF GROUT TO BE 40 MPa.
- CONTRACTOR TO CONFIRM ALL DIMENSIONS PRIOR TO START OF CONSTRUCTION AND NOTIFY DEPARTMENTAL REPRESENTATIVE OF ANY DISCREPANCIES.
- DEPARTMENTAL REPRESENTATIVE TO INSPECT ALL ROCK ANCHOR LOCATIONS PRIOR TO DRILLING.
- CONFIRM EXACT LOCATION OF NEW DIVERSION WALLS, WEIR, AND LEVELING SLAB ON-SITE WITH THE DEPARTMENTAL REPRESENTATIVE AFTER DE-WATERING OF THE WORK AREAS IS COMPLETED. THE LOCATION AND/OR ELEVATION OF THE NEW CONCRETE STRUCTURES MAY REQUIRE SOME ADJUSTMENTS TO THAT SHOWN ON THESE DRAWINGS. PROVIDE ADEQUATE NOTICE TO THE DEPARTMENTAL REPRESENTATIVE TO COORDINATE A SITE VISIT GIVEN THE REMOTENESS OF THE SITE.
- NEW EYE BOLTS TO BE HOT DIPPED GALVANIZED, CROSBY G-277 SHOULDER NUT EYE BOLT, 19mm x 114mm, STOCK No. 1045210, OR APPROVED EQUAL. CONFIRM EXACT LOCATION OF EYE BOLTS IN THE FIELD WITH DEPARTMENTAL REPRESENTATIVE.
- EPOXY ADHESIVE, IF REQUIRED, TO BE HILTI HIT-RE 500, OR APPROVED EQUAL. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.
- ROCK REMOVED TO BE DISPOSED ON-SITE, EVENLY AROUND THE RIVER EDGE IN LOCATIONS AS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.
- DUE TO LIMITED SURVEY INFORMATION UNDER THE EXISTING FISH TRAP, THE NEW TOP OF THE SLAB ELEVATION TO BE CONFIRMED IN THE FIELD SUCH THAT THE EXISTING FISH TRAP WILL SEAT APPROXIMATELY 300mm BELOW THE EXISTING RIVER BED. SEE NOTE 18.

LEGEND:

- DENOTES NEW REINFORCED CONCRETE
- DENOTES ROCK REMOVAL



12 TYPICAL CROSS SECTION - CONCRETE WEIR DETAILS
SCALE: 1:25



| revisions | date |
|-----------|--------------------------------|
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| B | ISSUED FOR 99% REVIEW 16/12/02 |
| A | ISSUED FOR REVIEW 16/09/20 |

MOLLYGUAJECK FISHWAY IMPROVEMENTS

| drawing | design |
|---|---------------|
| designed C. FISHER | concu |
| date SEPTEMBER, 2016 | |
| drawn R. SNOW | dessine |
| date SEPTEMBER, 2016 | |
| approved | approuvé |
| date | |
| Tender | Soumission |
| DFO Project Manager Administrateur de projets MPO | |
| project number | no. du projet |
| F6879-179007 | |
| drawing no. | no. du dessin |
| C3 OF 3 | |