

CONTRACT DRAWINGS AND QUANTITY SHEETS
CONTRACT NO. 2007-5197
BOOK 1 OF 1

DAVID O'TOOLE

ASSISTANT DEPUTY MINISTER
POLICY, PLANNING AND STANDARDS

BRUCE McCUAIG

ASSISTANT DEPUTY MINISTER
PROVINCIAL HIGHWAYS MANAGEMENT

GERALD T.P. CHAPUT, P. ENG.

CHIEF ENGINEER
ENGINEERING STANDARDS BRANCH

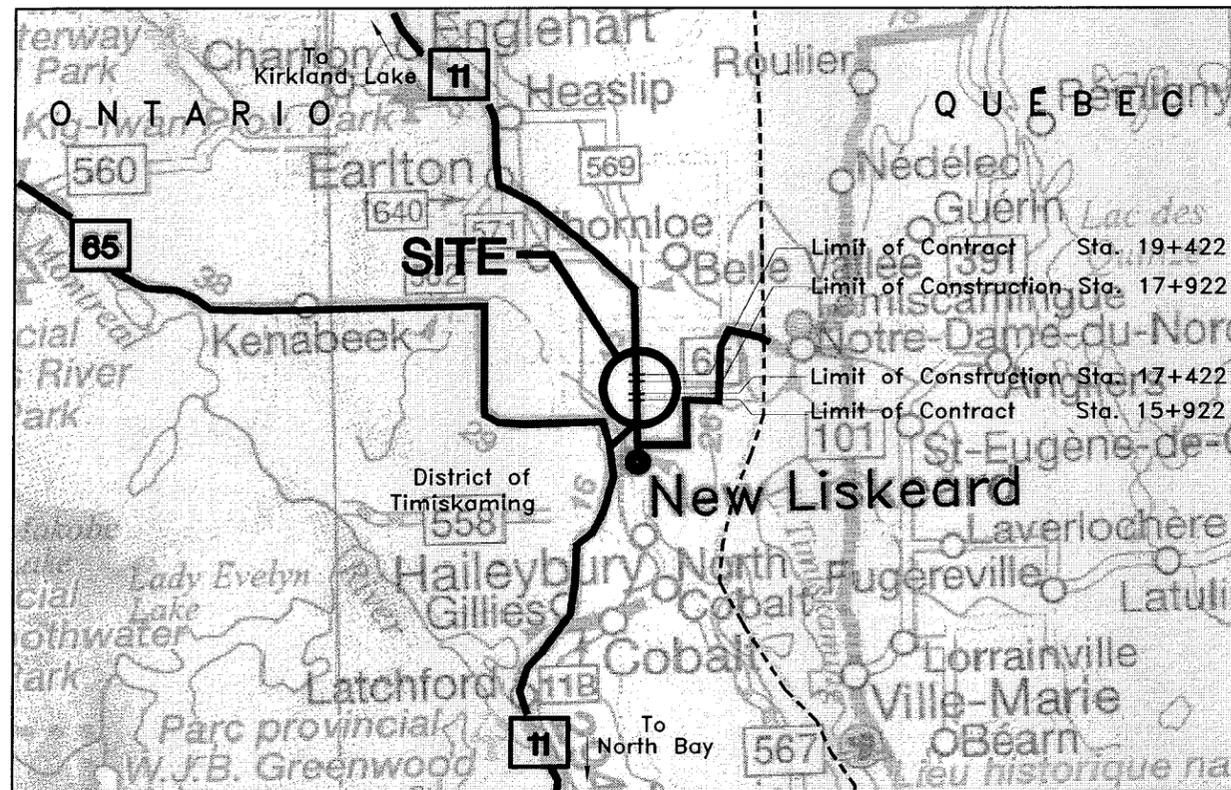
OSMO RAMAKKO, P.ENG.

REGIONAL DIRECTOR
NORTHEASTERN REGION



Ministry
of
Transportation

Ontario



KEY PLAN

N.T.S.

GWP No. 5134-05-00 Contract No. 2007-5197

Work of CULVERT REHABILITATION, SITE 47-273

Hwy No. 11 Area NEW LISKEARD

Location CALAMITY GULCH CULVERT

HIGHWAY 11, 2.85km NORTH OF HIGHWAY 65 N. JUNCTION

Length of contract 3.5 km.

Length of construction 0.5 km.

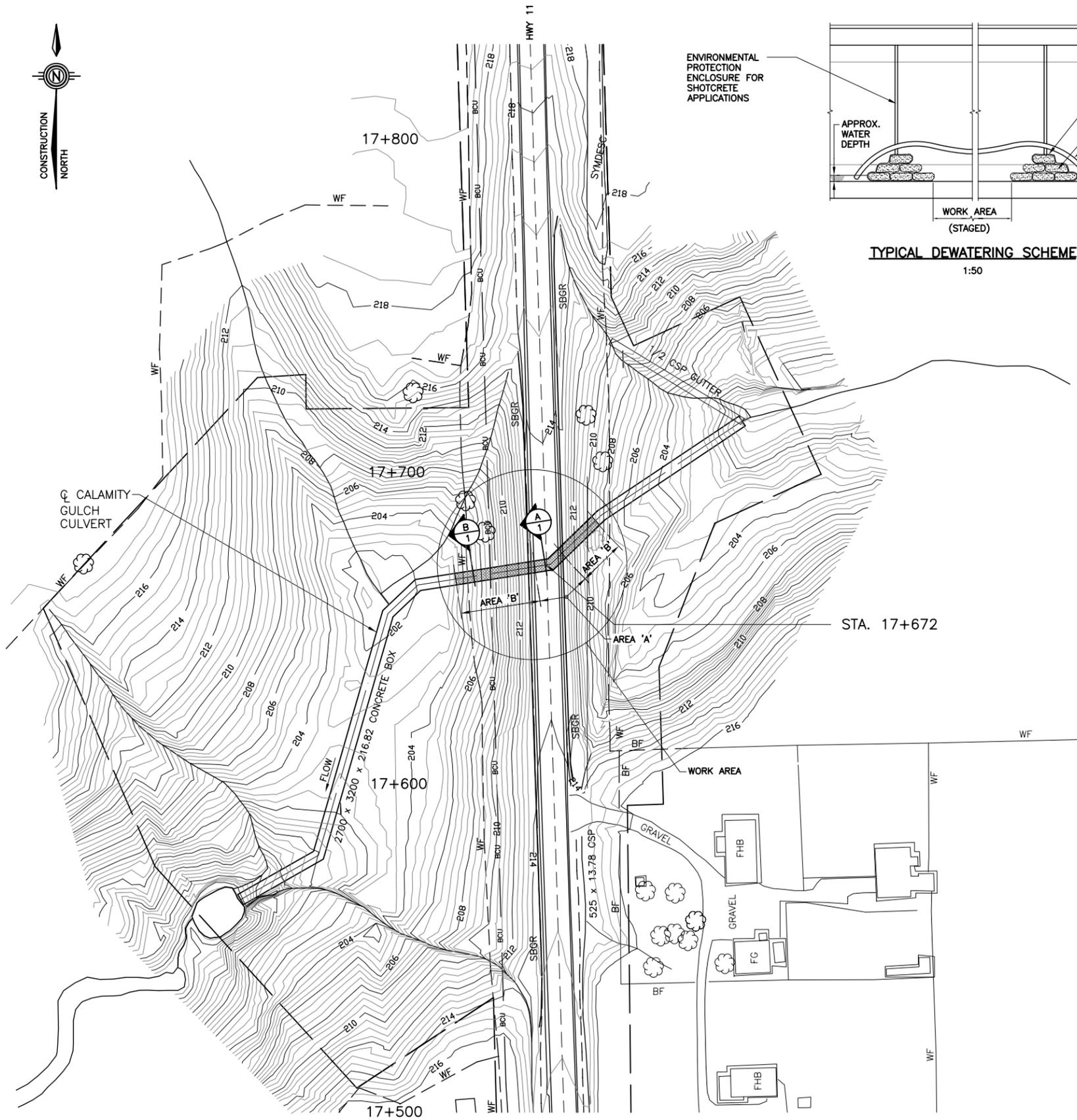
Reference Plans _____

30 Mar 07
Date

[Signature]
Manager, Engineering, P. Eng.

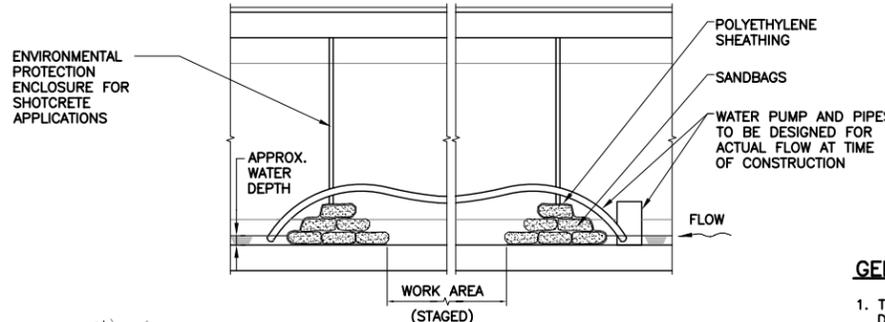
30-MAR-07
Date

[Signature]
Regional Director



PLAN
1:750

CONSTRUCTION LIMITS STA. 17+422 TO STA. 17+922
 CONTRACT LIMITS STA. 15+922 TO STA. 19+422



TYPICAL DEWATERING SCHEME
1:50

METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

CONT No 2007-5197
 WP No 5134-05-00

CALAMITY GULCH CULVERT
 GENERAL ARRANGEMENT

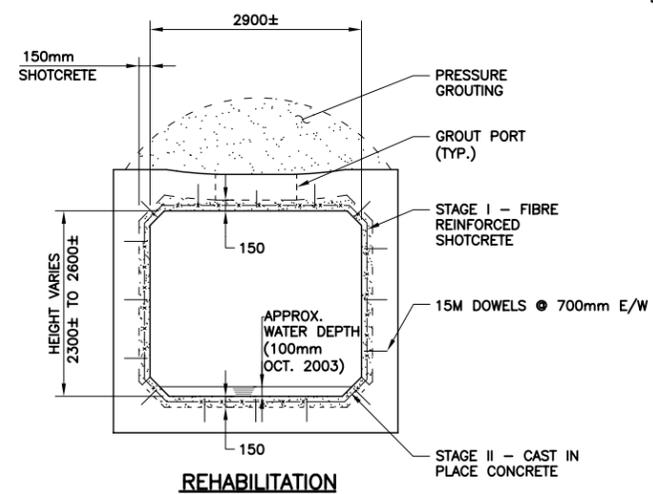
SHEET
1

GENERAL NOTES:

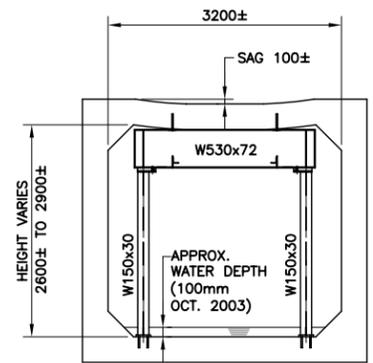
1. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ENVIRONMENTAL PROTECTION, DEWATERING AND STAGING.
2. WATER LEVEL INDICATED ON CONTRACT DRAWINGS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL MAKE HIS OWN ESTIMATE OF ANTICIPATED WATER LEVELS DURING CONSTRUCTION PERIOD.
3. CLASS OF CAST IN PLACE CONCRETE - 30 MPa
4. CLASS OF FIBRE REINFORCED SHOTCRETE - 40 MPa USING HIGH EARLY CEMENT.
5. GROUT USED FOR PRESSURE GROUTING SHALL BE MS WATER CUT-OFF GROUT BY KING OR APPROVED EQUAL.
6. REINFORCING STEEL TO BE GRADE 400.
7. CLEAR COVER TO REINFORCING STEEL TO BE 70±20mm.
8. UNLESS SHOWN OTHERWISE, LAP SPLICES TO BE CLASS B. BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS. ALL HOOKS SHALL BE IN ACCORDANCE WITH CHBDC 2000.
9. ALL STRUCTURAL STEEL SHALL BE GRADE 350W AS PER CSA G40.21-M92.
10. ALL CONCRETE TO BE PLACED IN THE DRY.

SCOPE OF WORK:

1. INSTALLATION OF ENVIRONMENTAL PROTECTION AND DEWATERING.
2. CLEANING OF EXISTING FAILURE ZONE
3. SURFACE PREPARATION AND PLACEMENT OF CONCRETE IN FAILURE ZONE
4. DRILLING GROUT PORTS
5. PRESSURE GROUTING
6. INSTALLATION OF NEW TEMPORARY INDIVIDUAL SHORES
7. REMOVAL OF PREVIOUSLY INSTALLED STEEL SUPPORTS
8. INSTALLATION OF DOWELS INTO EXISTING CONCRETE
9. ABRASIVE BLAST CLEANING OF EXISTING CONCRETE
10. PLACEMENT OF REINFORCEMENT
11. SHOTCRETING OF WALLS AND CEILING
12. REMOVAL OF CONCRETE AT UPSTREAM END
13. REMOVAL OF INDIVIDUAL SHORES AND LOCAL REPAIRS
14. PLACEMENT OF CONCRETE IN FLOOR SLAB.
15. REMOVAL OF ENVIRONMENTAL PROTECTION AND DEWATERING SCHEME.

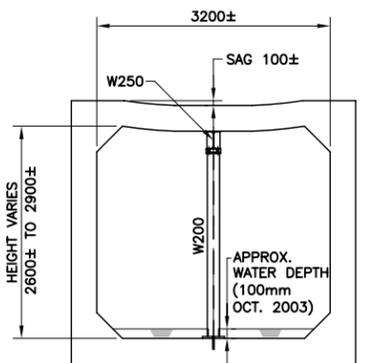


REHABILITATION



SECTION A
1:50

EXISTING STEEL SUPPORTS - AREA 'A'



SECTION B
1:50

EXISTING STEEL SUPPORTS - AREA 'B'

REVISIONS	DATE	BY	DESCRIPTION

DESIGN J.P. CHK J.E.M. CODE CHBDC-2000 | LOAD CLASS A | DATE MAR. 2007
 DRAWN M.P. CHK J.P. SITE 47-273 | STRUCT | SCHEME | DWG. 1

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

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WP No 5134-05-00

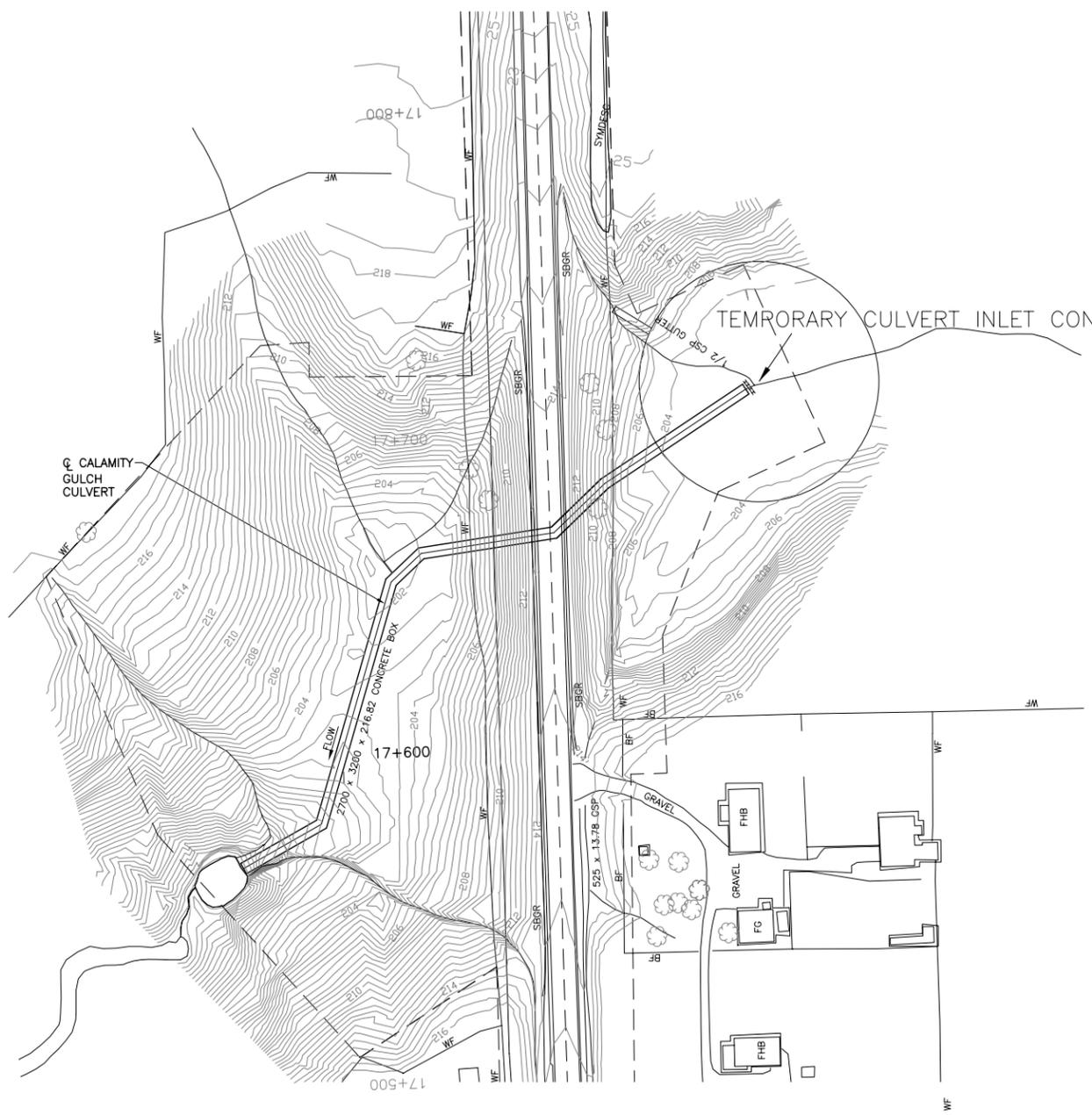


CALAMITY GULCH CULVERT

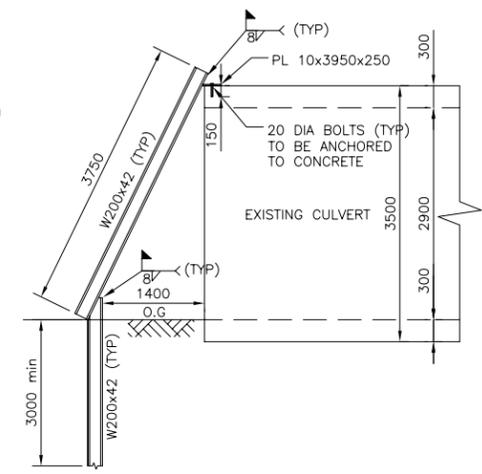
SHEET

REMOVAL OF TEMPORARY INLET CONTROL

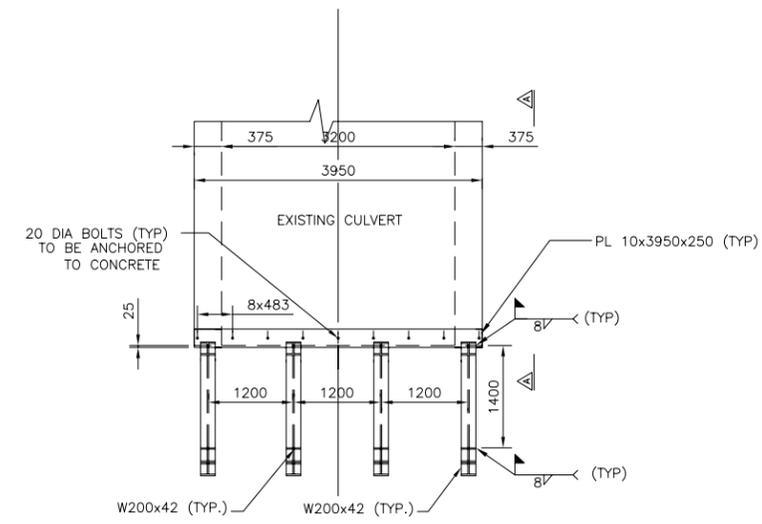
3



PLAN
1:1000



A-A SIDE ELEVATION (EXISTING)
1:50



PLAN - TEMPORARY CULVERT INLET CONTROL (EXISTING)
1:50

NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS SHOWN ON THE DRAWINGS AND OBTAIN PRECISE MEASUREMENTS PRIOR TO COMMENCEMENT OF WORK.
2. INLET CONTROL SHALL BE REMOVED PRIOR TO CULVER REHABILITATION.

REVISIONS		DATE	BY	DESCRIPTION

DESIGN	CHK	CODE	LOAD	DATE	MAR. 2007
DRAWN	CHK	SITE	47-273	STRUCT	SCHEME DWG. 3

METRIC
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WP No 5134-05-00

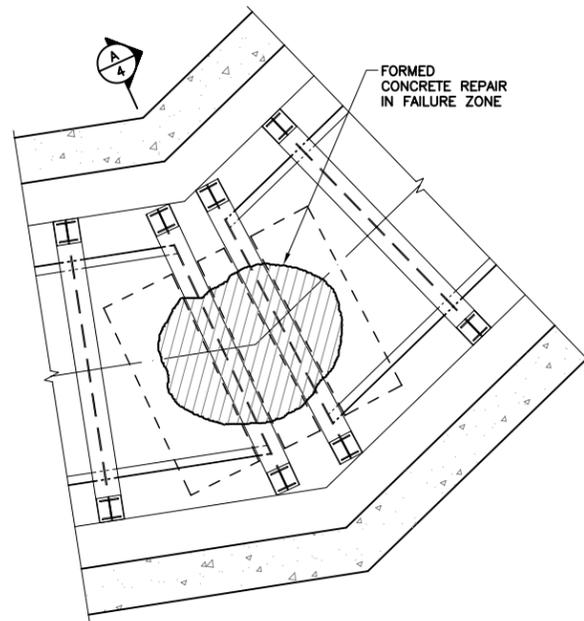
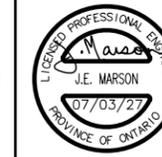
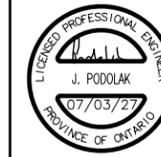


CALAMITY GULCH CULVERT

SHEET

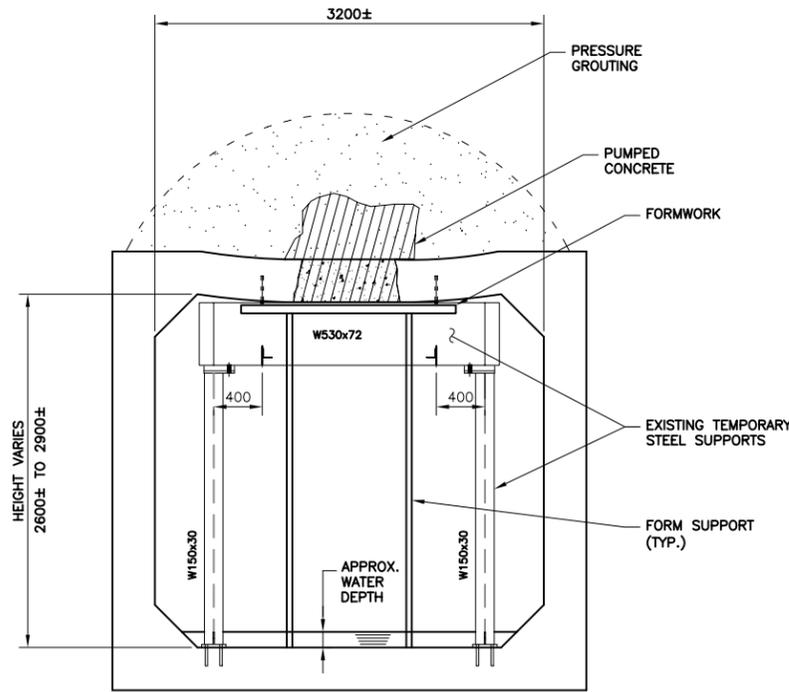
PRESSURE GROUTING

4



ROOF AREA REPAIRS

1:30

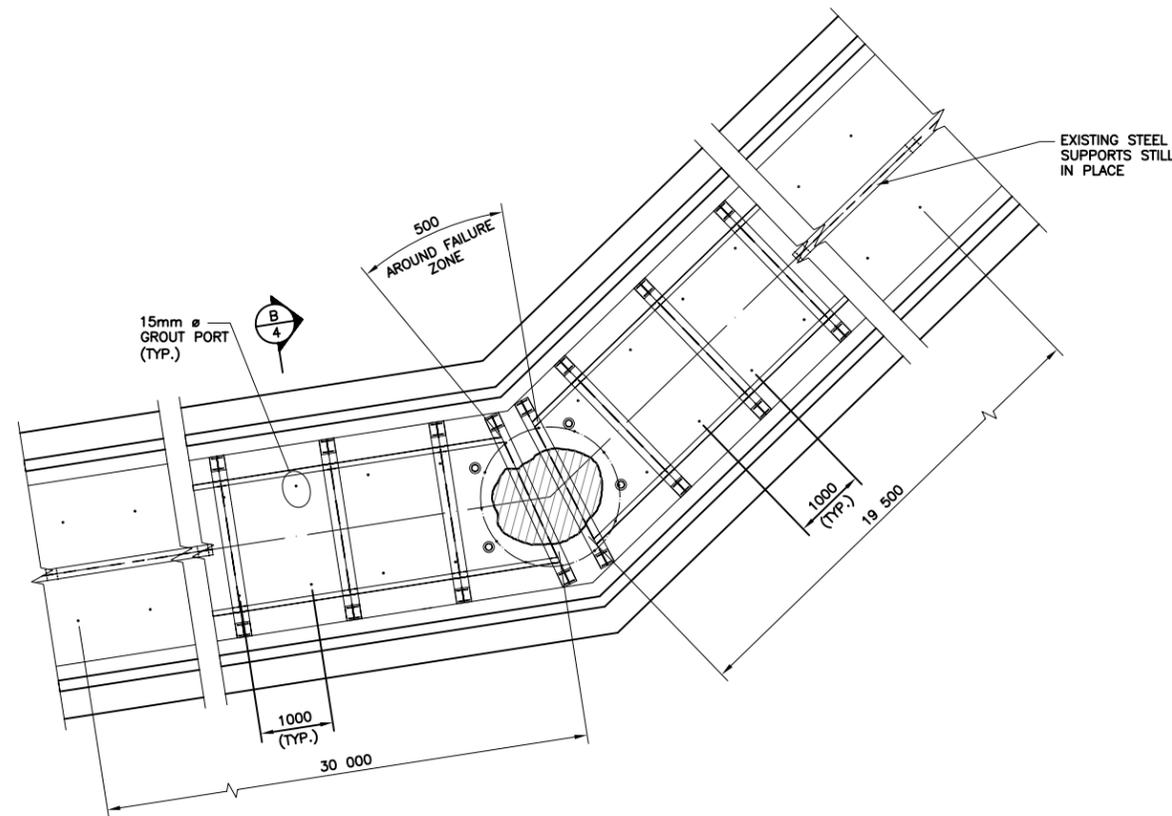


SECTION A (FORMWORK)

1:30

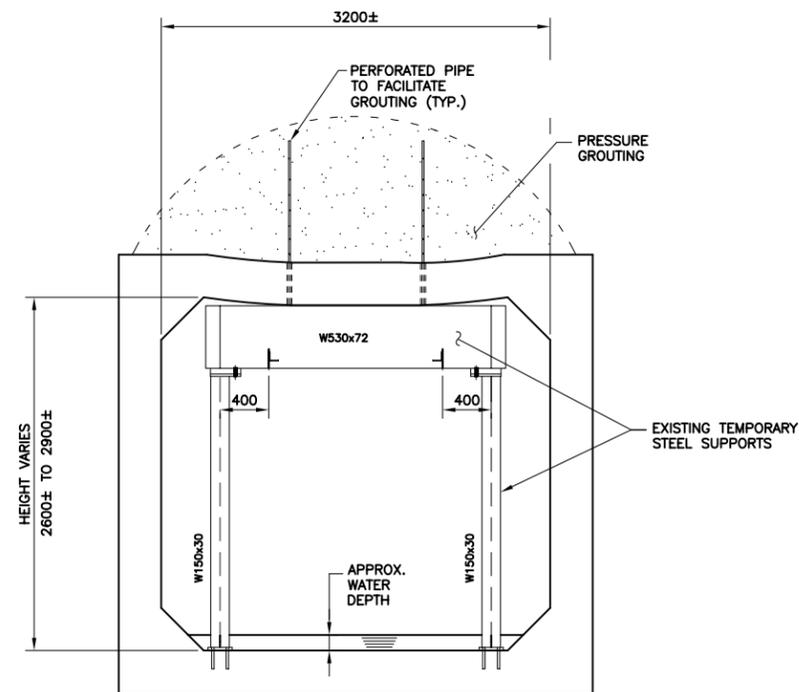
NOTES:

1. CONCRETE IN THE FAILURE ZONE SHALL BE PLACED BY PUMPING INTO FORMS DESIGNED BY THE CONTRACTOR.
2. CLASS OF PUMPED CONCRETE - 30 MPa
3. MATERIAL TO BE USED FOR PRESSURE GROUTING SHALL BE SUPERFINE PORTLAND CEMENT GROUT MS WATER CUT-OFF GROUT BY KING OR APPROVED EQUAL.
4. GROUTING SHALL BE PERFORMED FROM INSIDE THE CULVERT THROUGH 15mm DIA. PORTS SPACED AT 1m.
5. AT THE COMMENCEMENT OF THE GROUTING OPERATION, REFUSAL CRITERIA BASED ON MAXIMUM PRESSURE AND MINIMUM GROUT SHALL BE ESTABLISHED AS A PERFORMANCE SPECIFICATION FOR THE REMAINDER OF THE WORK.
6. THE GROUTING PROCEDURE SHALL ENSURE THAT ALL VOIDS ABOVE THE CULVERT CEILING ARE COMPLETELY FILLED.
7. ENVIRONMENTAL PROTECTION SCHEME TO BE IN PLACE PRIOR TO COMMENCEMENT OF CONCRETE PLACING OR PRESSURE GROUTING. NO DEBRIS OR EFFLUENT SHALL BE ALLOWED TO ENTER CREEK WATERWAY.



LAYOUT OF GROUT PORTS

1:50



SECTION B

1:30

REVISIONS	DATE	BY	DESCRIPTION

DESIGN	J.P.	CHK	J.E.M.	CODE	CHBDC-2000	LOAD CLASS	A	DATE	MAR. 2007
DRAWN	M.P.	CHK	J.P.	SITE	47-273	STRUCT	SCHEME	DWG.	4

METRIC

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WP No 5134-05-00

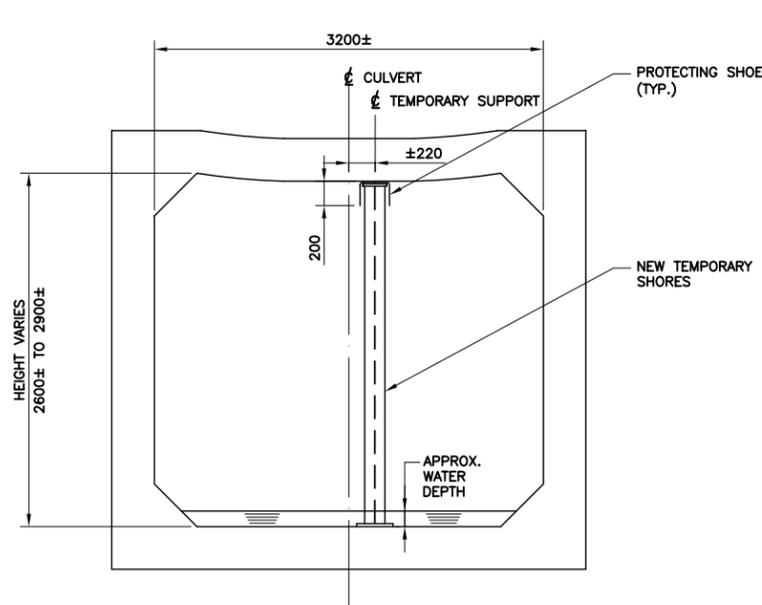
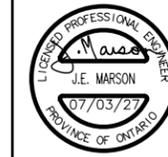
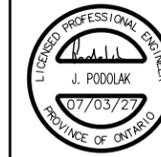


CALAMITY GULCH CULVERT

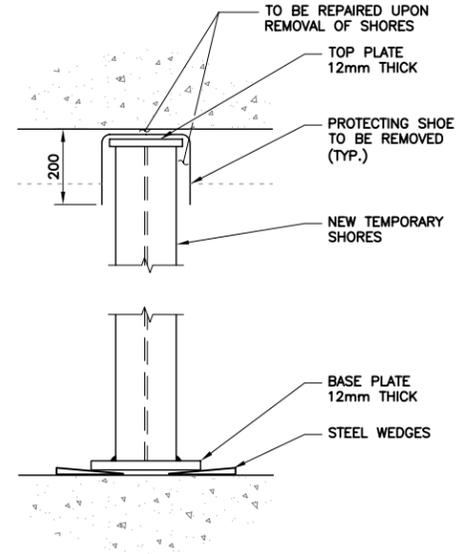
SHEET

NEW TEMPORARY SHORING

5



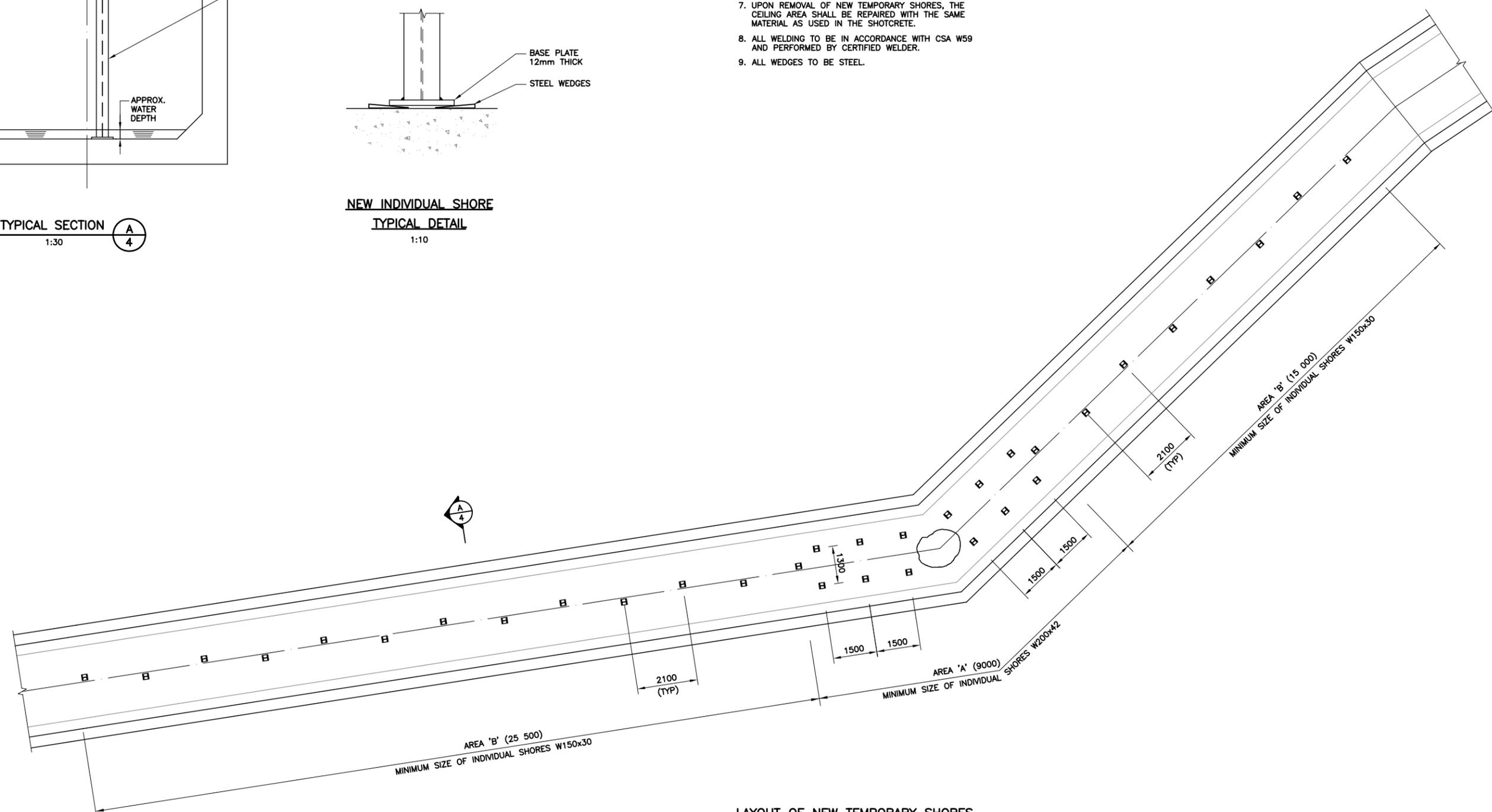
TYPICAL SECTION **A**
4
1:30



NEW INDIVIDUAL SHORE
TYPICAL DETAIL
1:10

NOTES:

- PRESSURE GROUTING TO BE COMPLETED PRIOR TO INSTALLATION OF NEW TEMPORARY STEEL SHORES.
- NEW STEEL SHORES SHALL BE FABRICATED BASED ON FIELD MEASUREMENTS AT EACH LOCATION.
- NEW STEEL SHORES CAN BE FABRICATED FROM SECTIONS USED FOR EXISTING SUPPORTS.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF NEW STEEL SHORES AND SPACING SEQUENCE TO CONTRACT ADMINISTRATOR FOR REVIEW.
- NEW TEMPORARY SUPPORTS SHALL BE INSTALLED SO AS NOT TO INTERFERE WITH EXISTING STEEL SUPPORTS. EXISTING STEEL SUPPORTS SHALL NOT BE REMOVED UNTIL NEW STEEL SHORES ARE IN PLACE IN THE SAME AREA WITHIN A MINIMUM OF 2100mm.
- NEW TEMPORARY SHORES CAN BE REMOVED WHEN THE SHOTCRETE REACHES STRENGTH OF 35 MPa
- UPON REMOVAL OF NEW TEMPORARY SHORES, THE CEILING AREA SHALL BE REPAIRED WITH THE SAME MATERIAL AS USED IN THE SHOTCRETE.
- ALL WELDING TO BE IN ACCORDANCE WITH CSA W59 AND PERFORMED BY CERTIFIED WELDER.
- ALL WEDGES TO BE STEEL.



LAYOUT OF NEW TEMPORARY SHORES
1:75

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DESIGN	J.P.	CHK	J.E.M.	CODE	CHBDC-2000	LOAD	CLASS	A	DATE	MAR. 2007
DRAWN	M.P.	CHK	J.P.	SITE	47-273	STRUCT	SCHEME	DWG.	5	

METRIC
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CONT No 2007-5197
WP No 5134-05-00

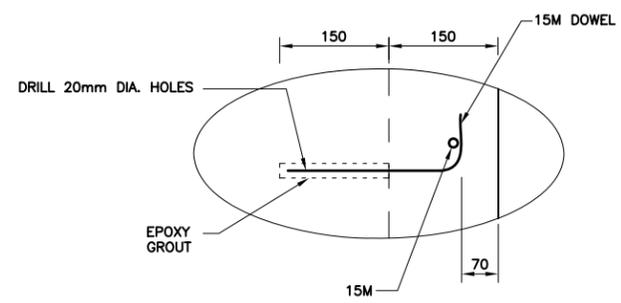
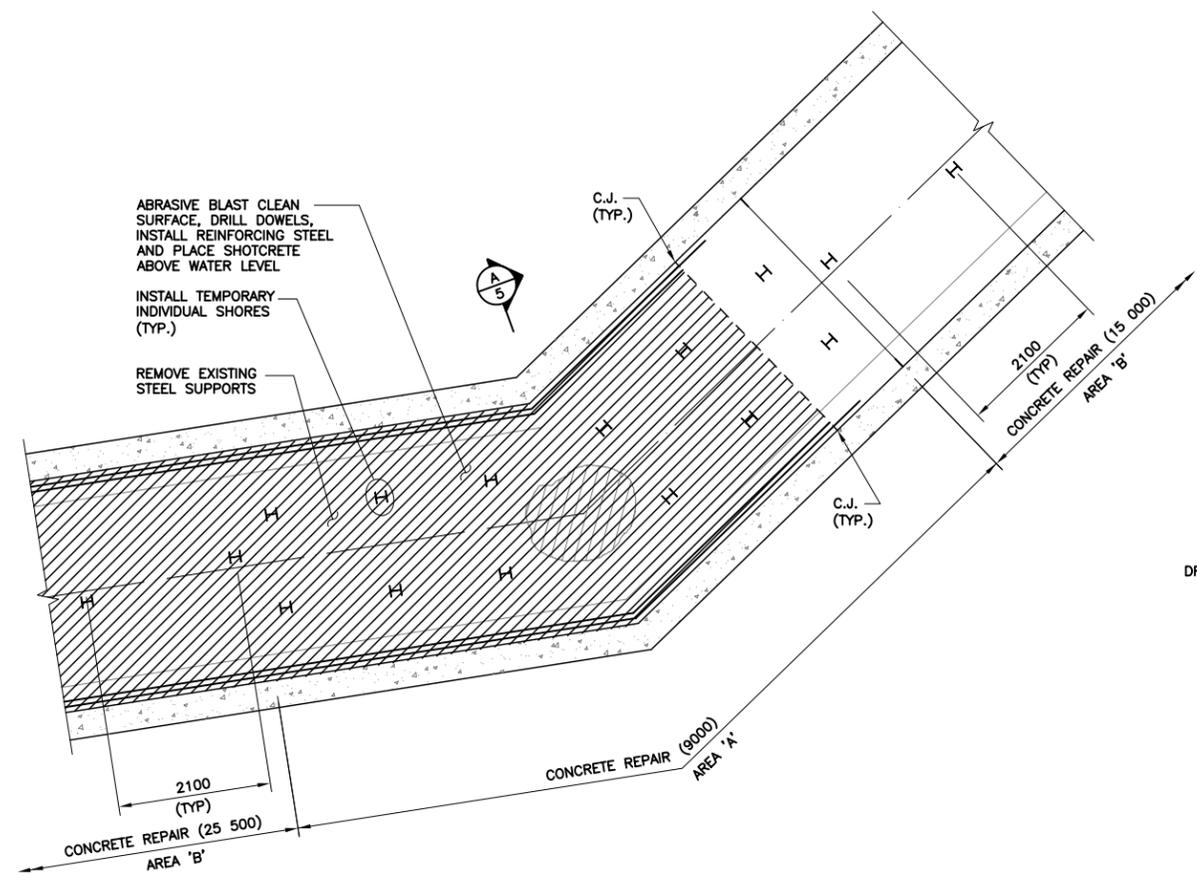


CALAMITY GULCH CULVERT

SHEET

REPAIRS - STAGE I

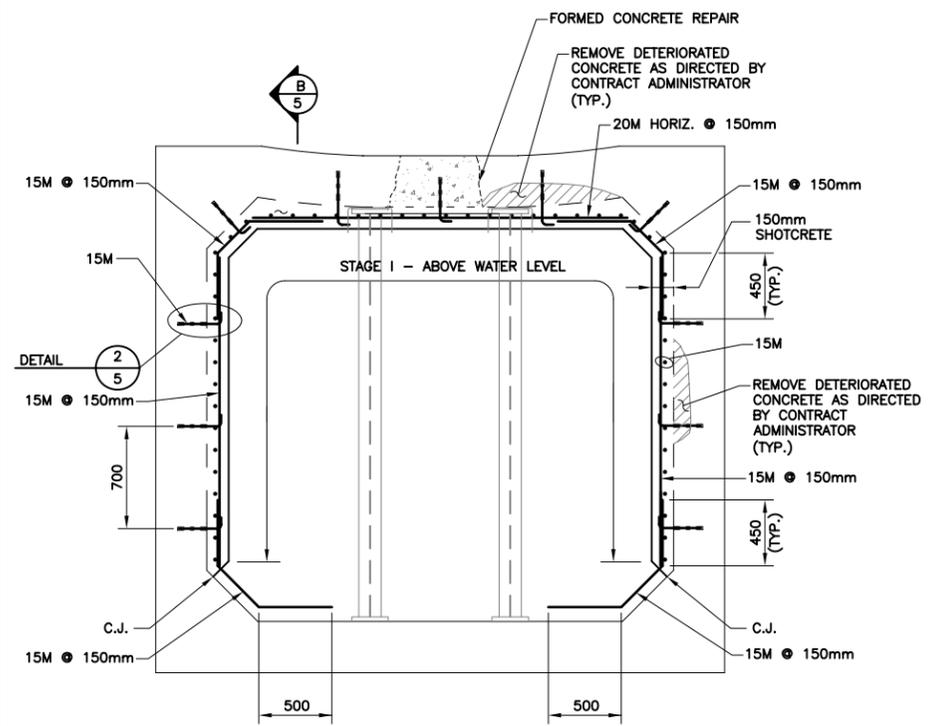
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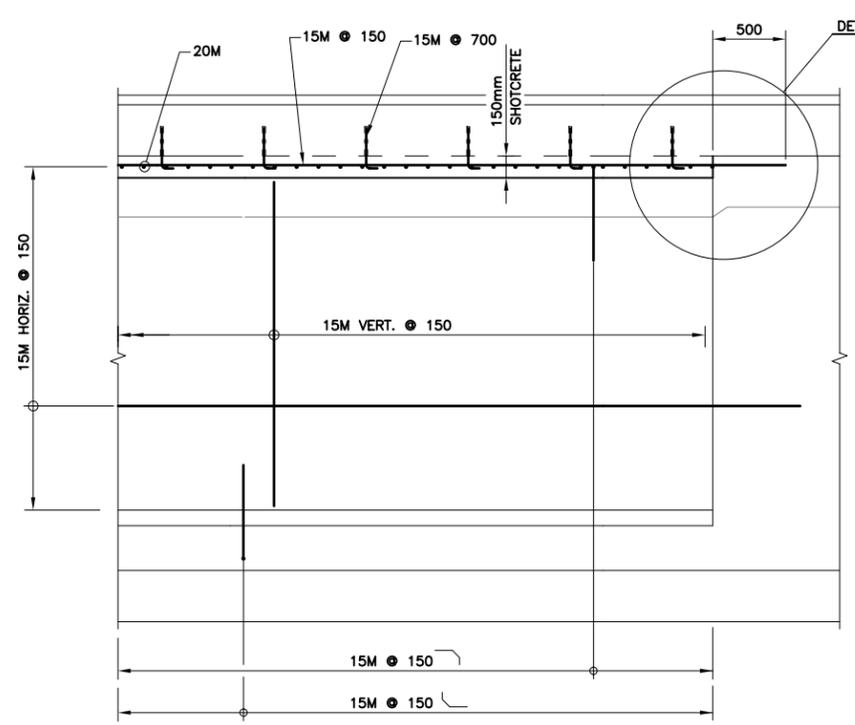
DETAIL 2/5

NOTES:

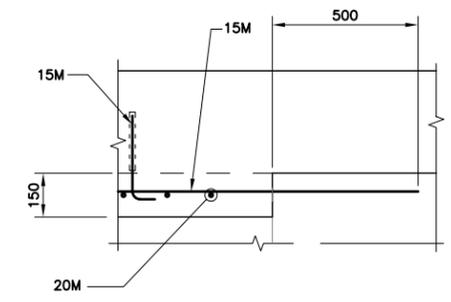
1. THE FIBER REINFORCED SHOTCRETE SHALL BE OF TYPE HIGH EARLY STRENGTH WITH STEEL FIBRES.
2. THE FIBER REINFORCED SHOTCRETE SHALL HAVE A NOMINAL MINIMUM 28 DAY STRENGTH OF 40 MPa.
3. THE SHOTCRETE MIX SHALL BE SUPPLIED PRE-BAGGED.
4. THE STEEL FIBRE SHALL HAVE MINIMUM LENGTH 25mm AND CONFIRM TO ASTM - A 820 GRADE 800 MPa.
5. ALL REINFORCEMENT SHALL BE DEFORMED BARS CONFORMING TO CSA-G30-18 GRADE 400
6. MINIMUM REINFORCEMENT COVER SHALL BE 70mm ± 20.
7. CONTRACTOR TO INSTALL COMPLETE ENVIRONMENTAL PROTECTION ENCLOSURE PRIOR TO SHOTCRETE APPLICATION IN EACH STAGING AREA. SHOP DRAWINGS TO BE SUBMITTED TO CONTRACT ADMINISTRATOR PRIOR TO ANY SHOTCRETE WORK. SHOP DRAWING TO DETAIL DEWATERING ENVIRONMENTAL PROTECTION AND STAGING DETAILS.



SECTION A/5 1:25



SECTION B/5 1:25



TYPICAL CONSTRUCTION JOINT

DETAIL 1/5 1:10

REVISIONS	DATE	BY	DESCRIPTION

DESIGN	J.P.	CHK	J.E.M.	CODE	CHBDC-2000	LOAD	CLASS A	DATE	MAR. 2007
DRAWN	M.P.	CHK	J.P.	SITE	47-273	STRUCT	SCHEME	DWG.	6

METRIC
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WP No 5134-05-00

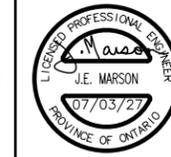
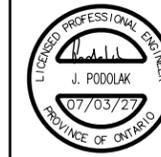


CALAMITY GULCH CULVERT

SHEET

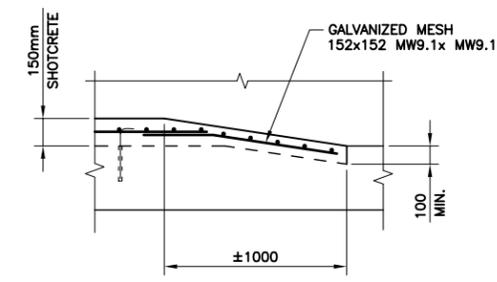
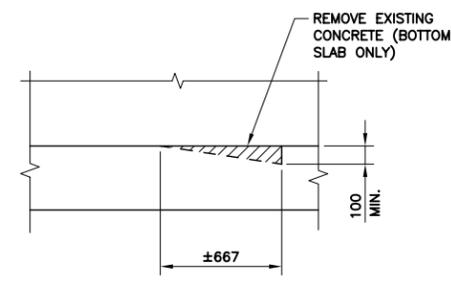
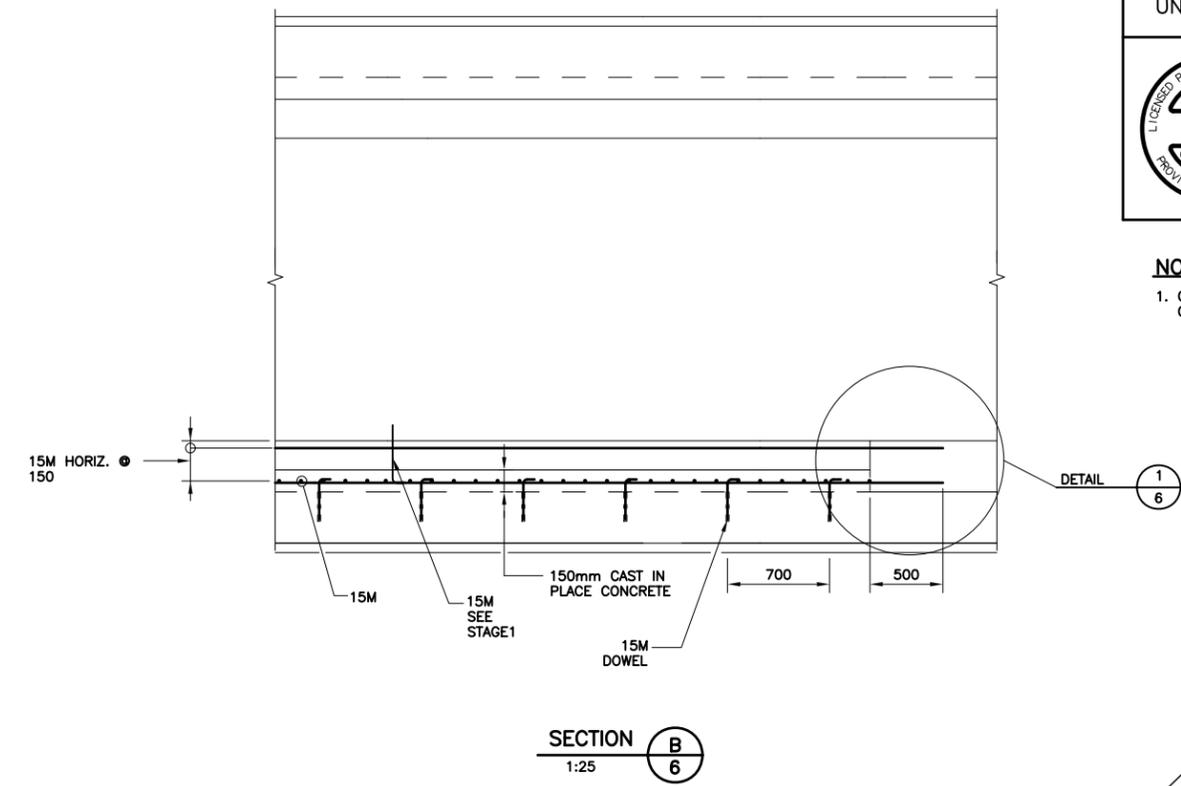
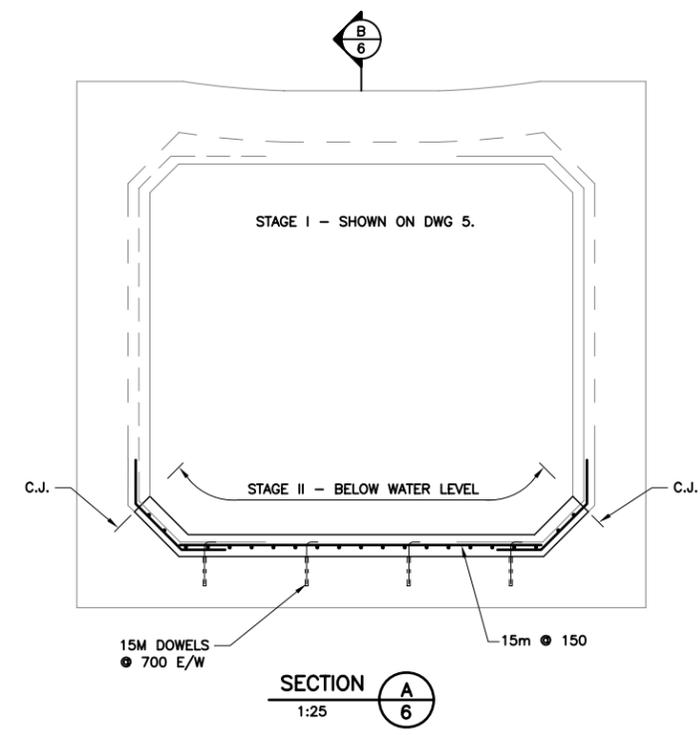
REPAIRS - STAGE II

7



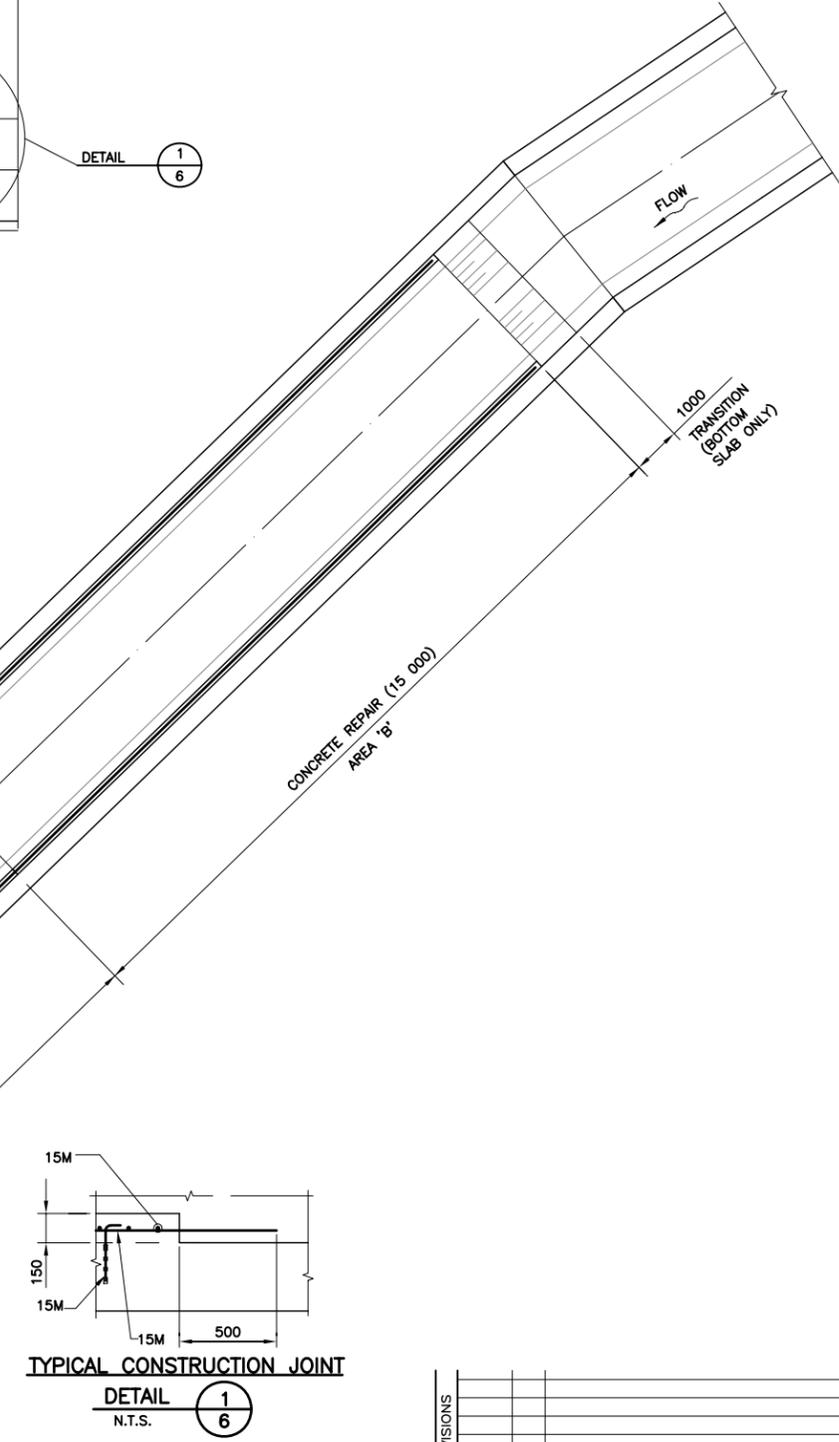
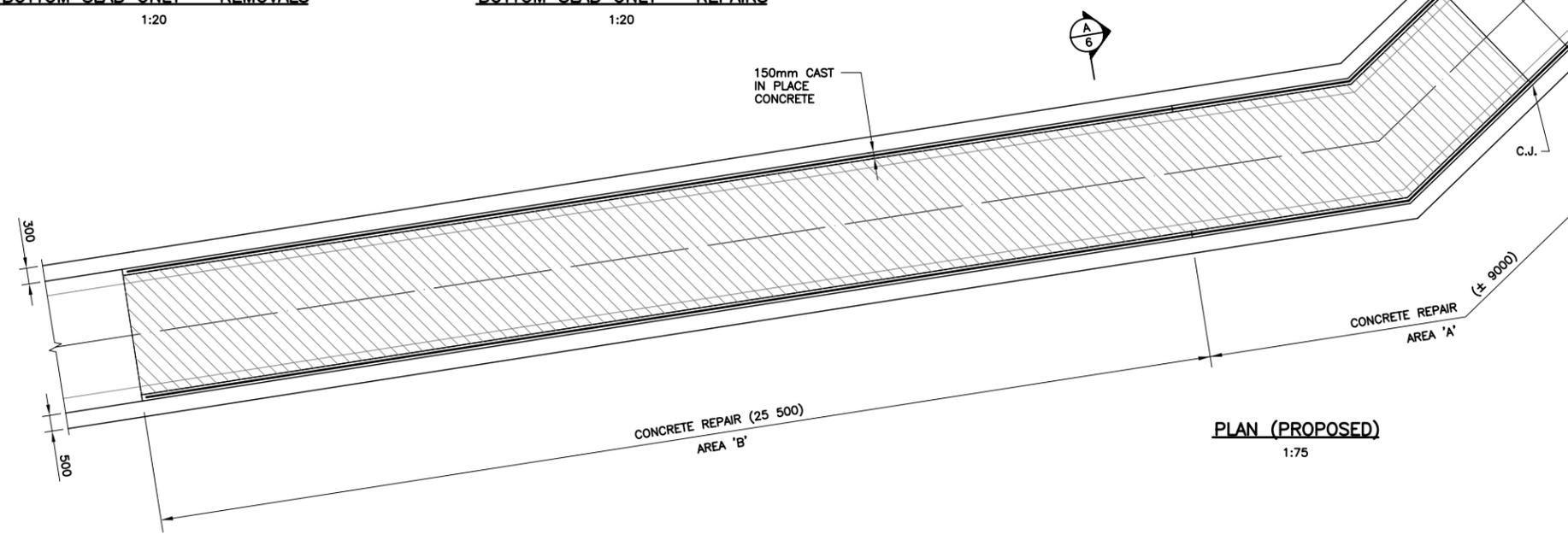
NOTES:

1. CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 30MPa.



UPSTREAM END TREATMENT
BOTTOM SLAB ONLY - REMOVALS
1:20

UPSTREAM END TREATMENT
BOTTOM SLAB ONLY - REPAIRS
1:20



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DRAWN	M.P.	CHK	J.P.	SITE	47-273	STRUCT	SCHEME	DWG.	7	

