

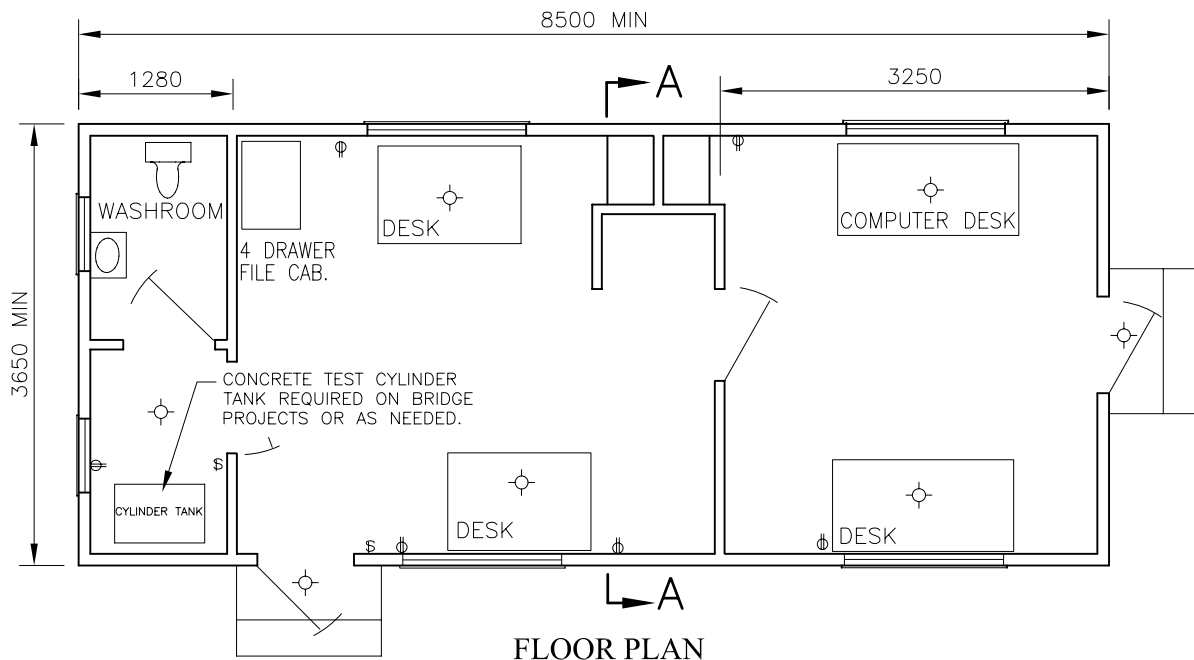
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**STANDARD DRAWINGS**  
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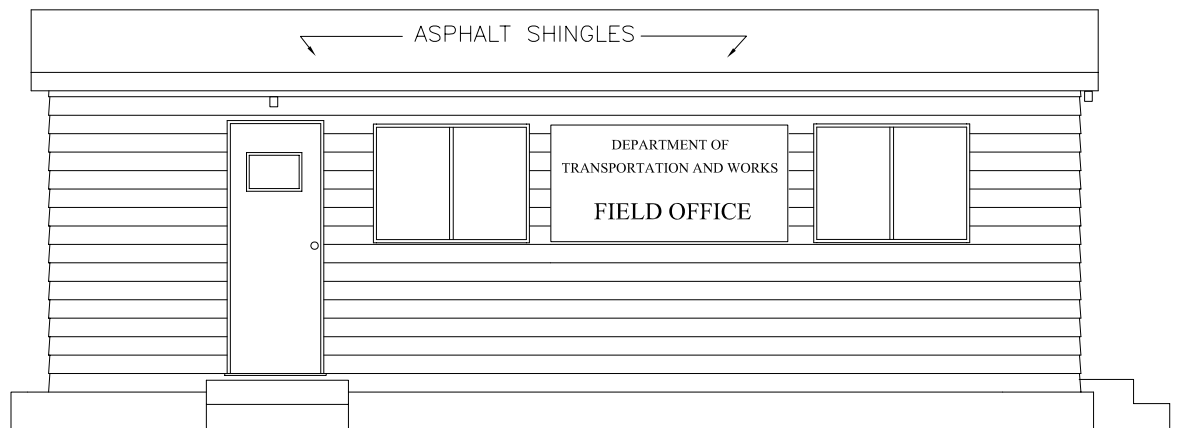
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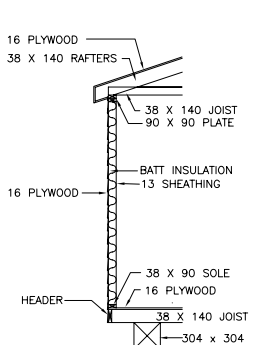
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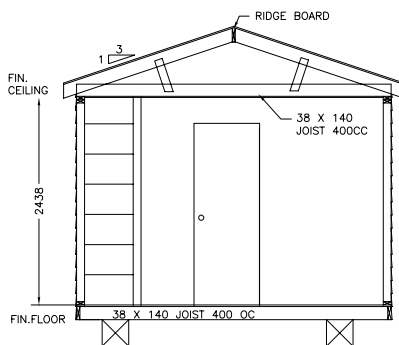
FLOOR PLAN



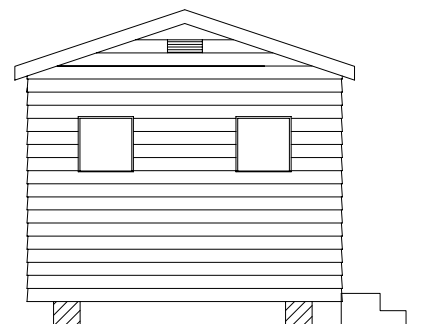
FRONT ELEVATION



TYPICAL WALL SECTION



SECTION A-A



LEFT ELEVATION

ALL ELEMENTS OF THIS STRUCTURE MUST ADHERE TO THE NATIONAL BUILDING CODE OF CANADA.



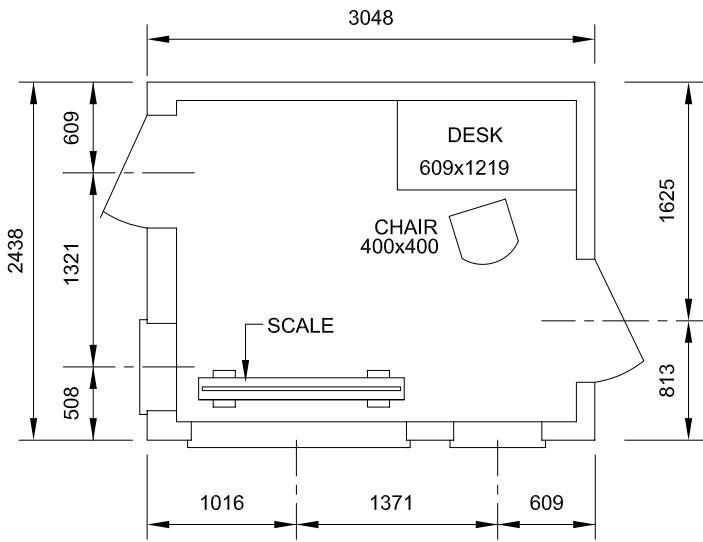
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

FIELD OFFICE

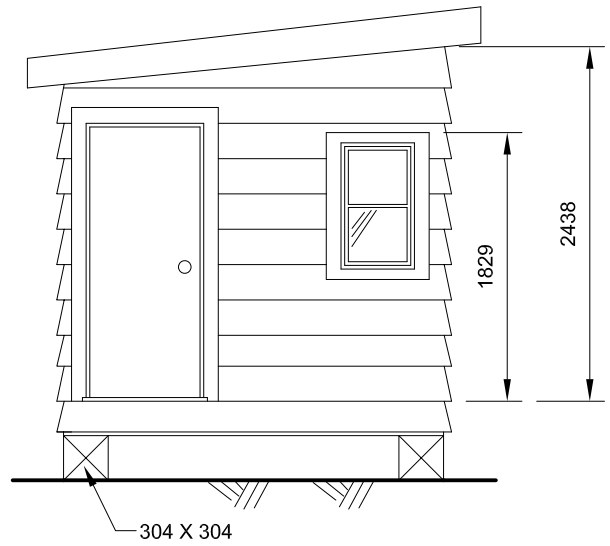
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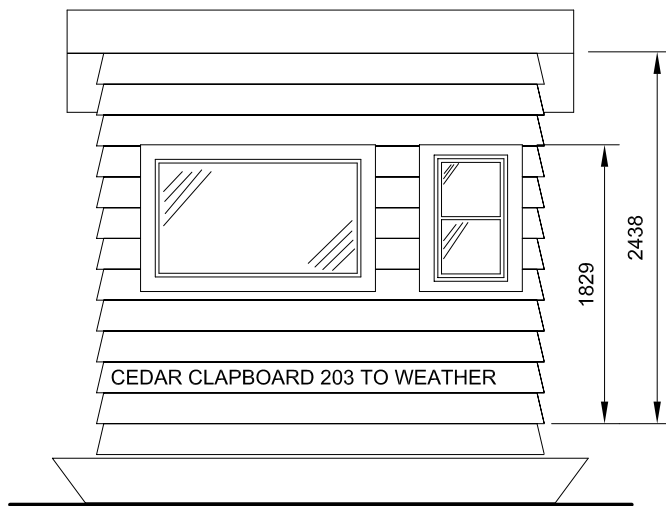
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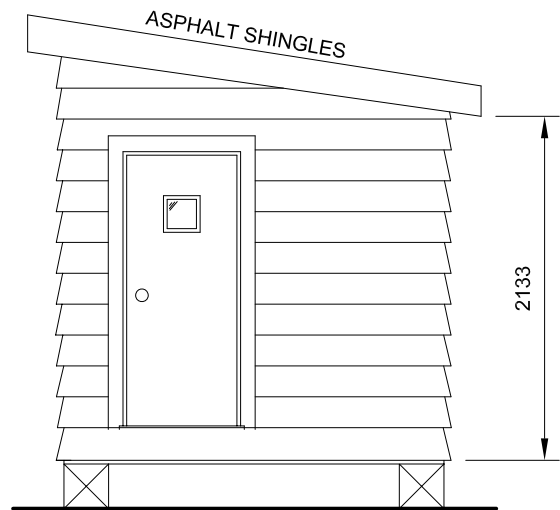
FLOOR PLAN



LEFT SIDE ELEVATION



FRONT ELEVATION



RIGHT SIDE ELEVATION

NOTES:  
PROVISION FOR HEATING & LIGHTING SHALL BE MADE BY CONTRACTOR.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

PORTABLE SCALE HOUSE  
FOR BEAM TYPE SCALES

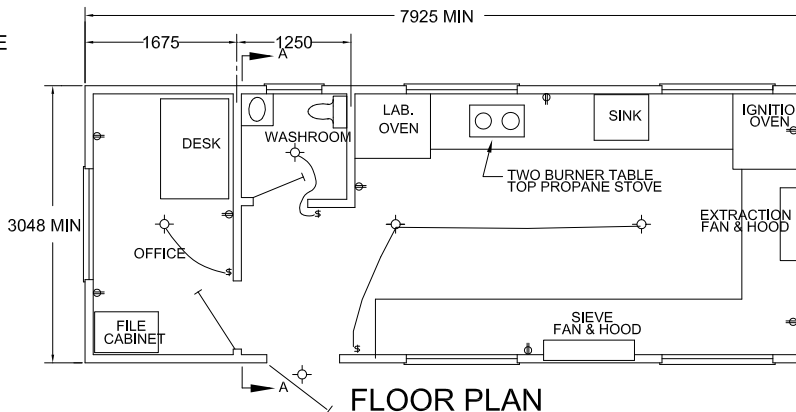
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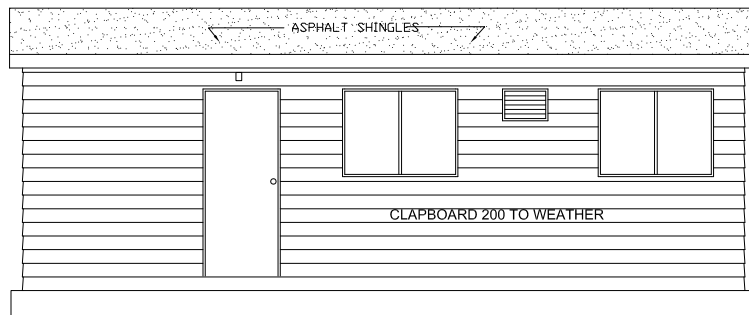
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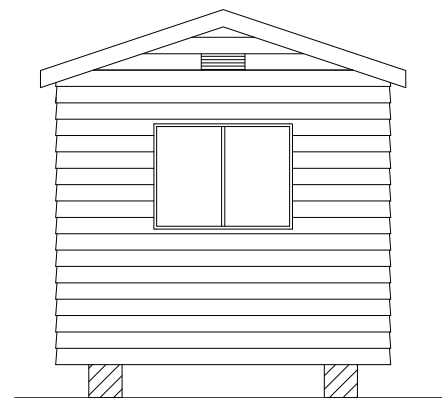
1. WORK BENCHES AROUND THREE WALLS 610mm WIDE 1066mm HIGH. THE TOTAL FRONT PERIMETER BENCH LENGTH TO BE A MINIMUM OF 9700mm. FREE BENCH SPACE SHALL BE A MINIMUM OF 6000mm IN FRONT PERIMETER LENGTH. APPROX. 50% OF BENCH TOP AREA TO BE STAINLESS STEEL AND REMAINDER EPOXY RESIN BLACK.
2. SHELVES REQUIRED UNDER ALL BENCHES 460mm OFF THE FLOOR.
3. WATER TAP TO BE AT LEAST 460mm ABOVE BOTTOM OF SINK. SINK TO BE MINIMUM OF 410mm x 450mm AND STAINLESS STEEL.
4. INCANDESCENT LIGHTING.
5. ELECTRIC OUTLETS SEPARATE LINES.
6. ELECTRIC LABORATORY OVEN M&L 30145 OR EQUIVALENT VENTED OUTSIDE AND CAPABLE OF HEATING TO AMBIENT TEMPERATURE 177°C WITH FORCED AIR CIRCULATION AND ADJUSTABLE SHELVING.
7. TWO BURNER PROPANE TABLE TOP STOVE PROPANE BOTTLE INSTALLED AND STORED OUTSIDE LAB.
8. FIRE EXTINGUISHERS - TWO 4.5kg CARBON DIOXIDE TYPE INSTALLED AS PER REGULATION.
9. ELECTRIC HEAT - 100w FOR LAB, 500w FOR OFFICE, 500w FOR WASHROOM.
10. EXTRACTION FAN - DUNDAS (OR EQUIVALENT) 1/4 hp 1725 RPM FOUNDRY MODEL E-10 INCH. TO MEET AT LEAST 3000 CFM.
11. SIEVE FAN DUNDAS FOUNDRY MODEL E-12 (OR EQUIVALENT) 1/4 hp 1725 RPM TO MEET AT LEAST 1700 CFM.
12. FAN HOODS - EACH FAN EQUIPPED WITH HOOD 700mm ABOVE COUNTERTOP, VENTED OUTSIDE WITH SHIELD TO PREVENT AIR REVERSAL.
13. ALL FURNITURE SHOWN TO BE SUPPLIED BY CONTRACTOR.
14. ASPHALT IGNITION OVEN - TROXLER NTO 4730 OR EQUIVALENT TO BE APPROVED BY THE MATERIALS ENGINEERING DIVISION.
15. SITE SELECTION AND INSTALLATION OF THE ASPHALT IGNITION OVEN AND EXHAUST SYSTEM WILL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE OVEN MUST BE SITUATED SO AS TO PERMIT ACCESS TO THE PLENUM BOX FOR CLEANING. DO NOT LOCATE EXHAUST POINT NEAR AIR INTAKES OR DOORWAYS.
16. CARBON MONOXIDE DETECTOR/ALARM MEETING THE REQUIREMENTS OF UL STANDARD 2034 TO BE INSTALLED.
17. FIELD LABORATORIES MUST BE BLOCKED AND PROPERLY SUPPORTED.



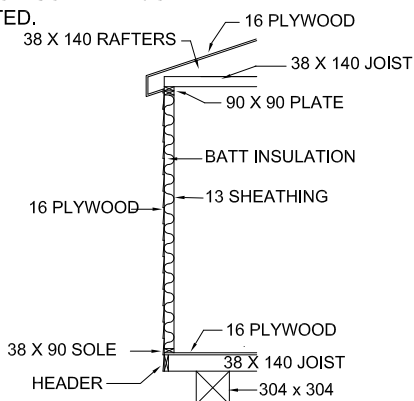
FLOOR PLAN



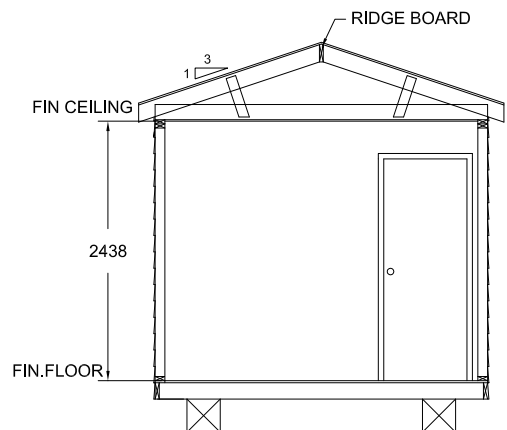
FRONT ELEVATION



LEFT ELEVATION



TYPICAL WALL SECTION



SECTION A-A



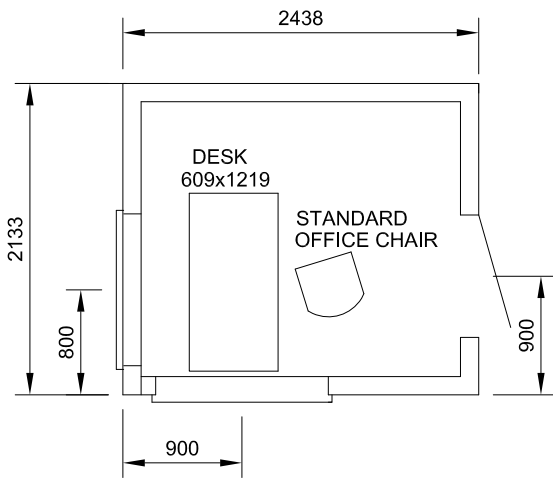
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

FIELD LABORATORY

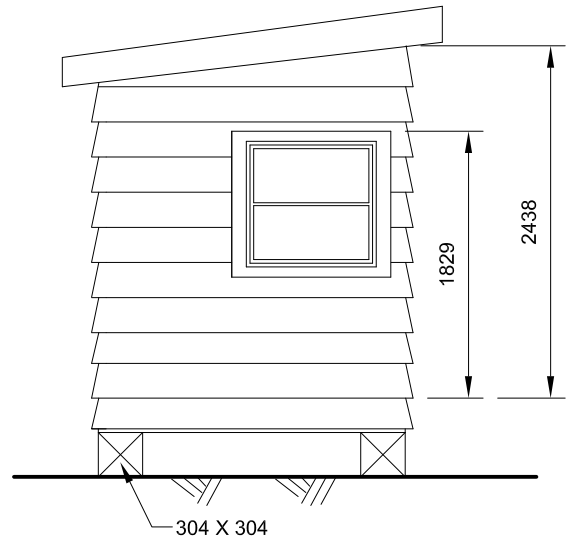
DRAWN BY: J. ROBERTS

DATE: REV 02-01-10

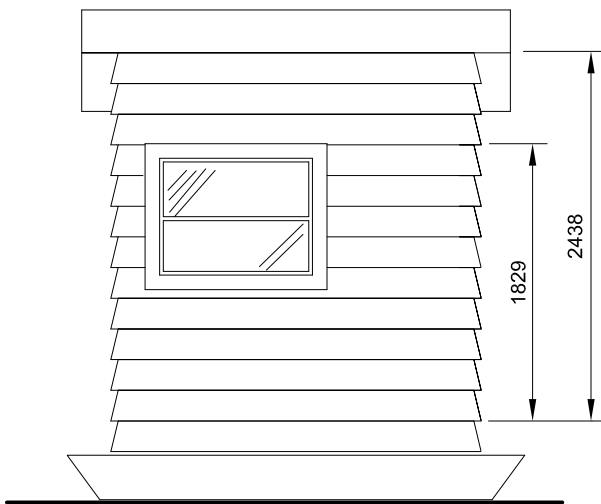
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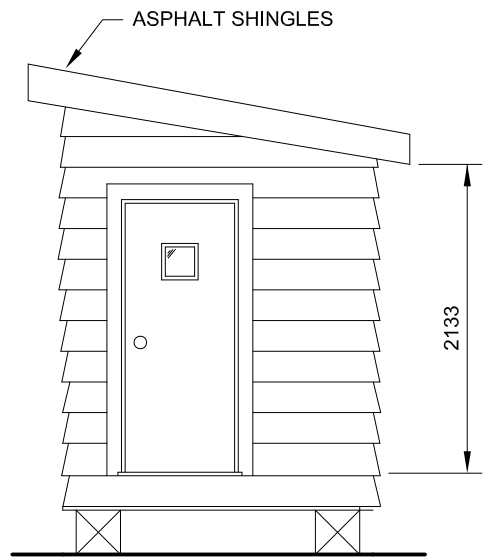
FLOOR PLAN



LEFT SIDE ELEVATION

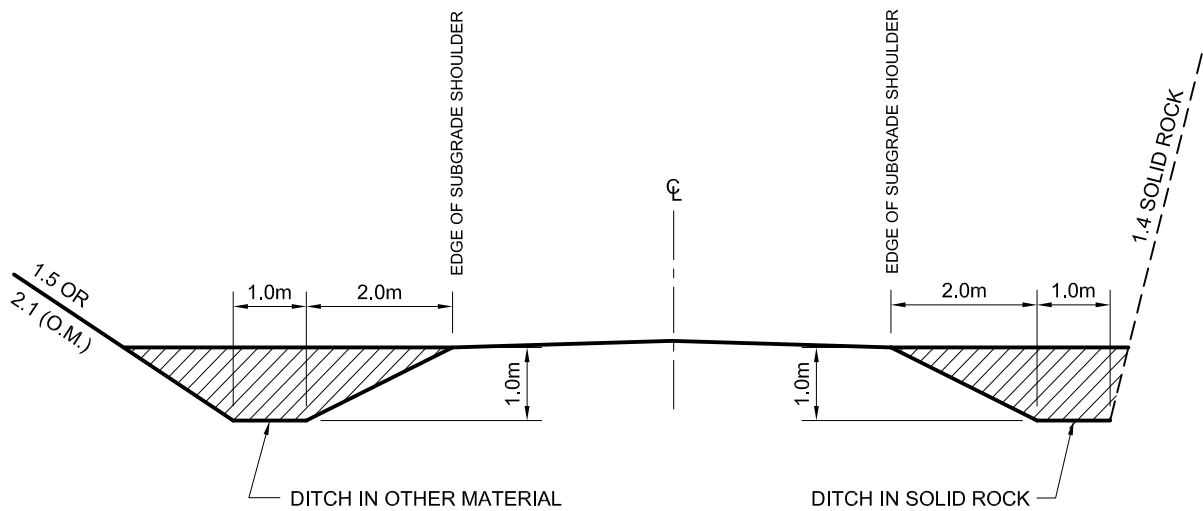


FRONT ELEVATION



RIGHT SIDE ELEVATION





PAY LIMITS FOR DITCHING



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

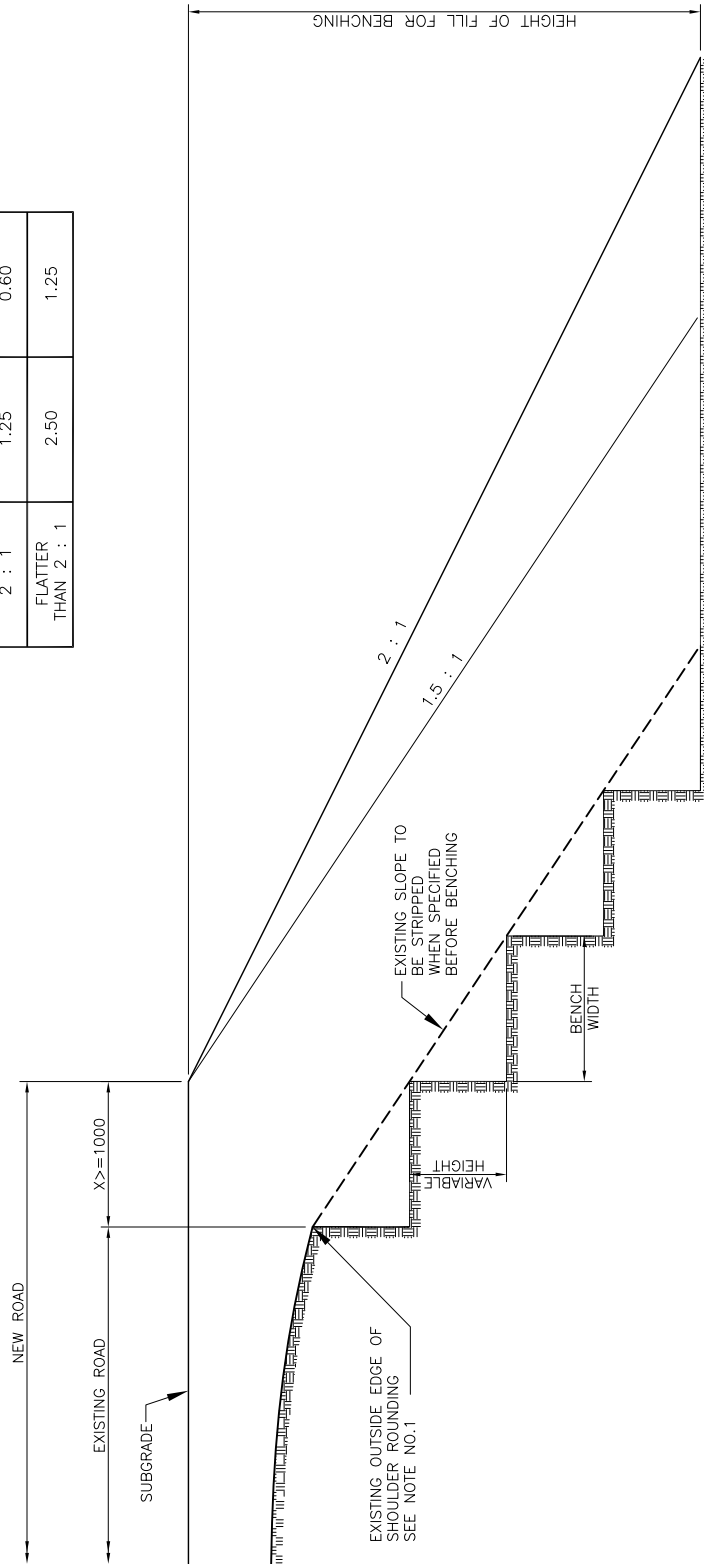
# GUIDE LINES FOR DITCHING

DRAWN BY: BMF

DATE: REV 02-01-10

NOT TO SCALE

WIDTH OF BENCHES (m)		
EXISTING SLOPES	FILLS OF 3.5m OR GREATER	FILLS LESS THAN 3.5m
1.5 : 1	1.00	0.50
2 : 1	1.25	0.60
FLATTER THAN 2 : 1	2.50	1.25



- NOTES:
1. WHEN THE SUBGRADE IS BELOW THE EXISTING OUTSIDE EDGE OF SHOULDER ROUNDING, BENCHING SHALL BE CARRIED OUT BELOW THE POINT WHERE THE SUBGRADE INTERSECTS THE EXISTING SLOPE.
  2. THIS STANDARD APPLIES TO WIDENING OF FILLS WHERE THE DISTANCE "X" IS 1.0M OR MORE AT NEW TOP OF SUBGRADE LEVEL.
  3. BENCHING IS NOT REQUIRED ON EXISTING SLOPES FLATTER THAN 3:1 OR WHERE SPECIFIED.
  4. BENCHES ARE TO BE EXCAVATED ONE LEVEL AT A TIME AND THE COMPACTED FILL BROUGHT UP BEFORE THE NEXT BENCHING LEVEL IS EXCAVATED.
  5. ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SHOWN.



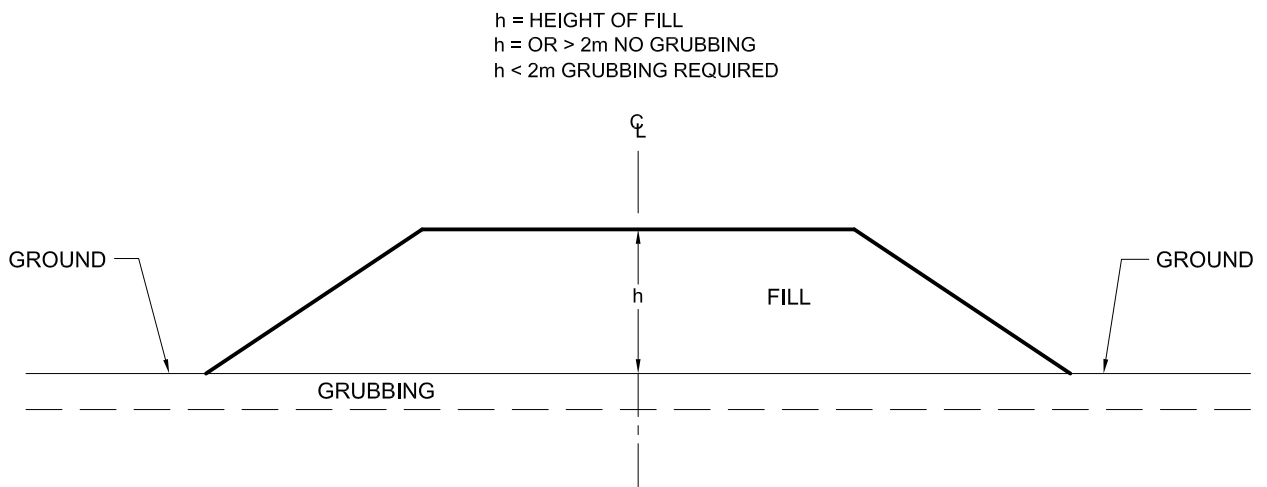
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

GUIDE LINES FOR  
BENCHING OF EARTH SLOPES

DRAWN BY: BMF

DATE: 2007-12-12

NOT TO SCALE



**NOTES:**

- 1.) IF FILL IS HIGHER THAN, OR EQUAL TO 2m, THEN DO NOT GRUB.
- 2.) IF FILL IS LOWER THAN 2m, THEN GRUB.



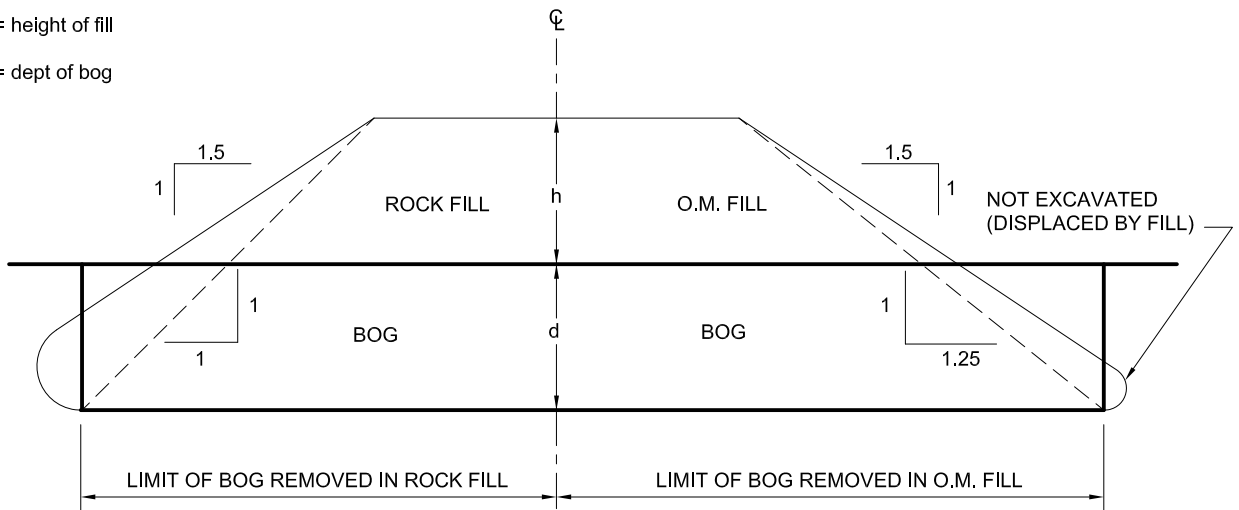
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HIGHWAY DESIGN DIVISION

## GUIDE LINES FOR GRUBBING

DRAWN BY: H. JONES	DATE:	REV 02-01-10	NOT TO SCALE
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h = height of fill

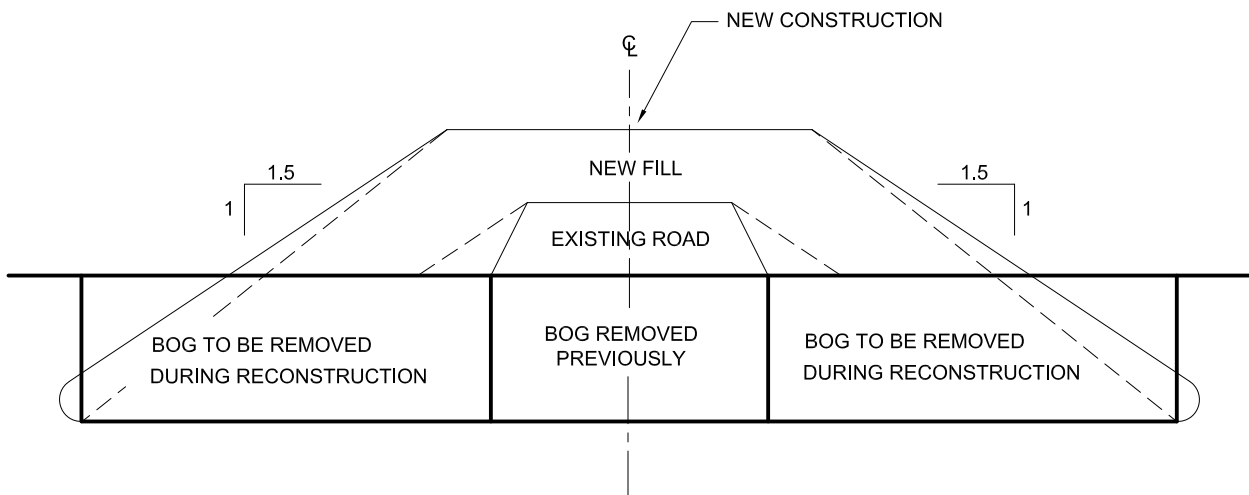
d = dept of bog



### NEW CONSTRUCTION

#### NOTES FOR BOG REMOVAL

1. IF FILL IS LOWER THAN 2m, THEN REMOVE BOG.
2. IF FILL IS HIGHER THAN OR EQUAL TO 2m, AND IF FILL IS LOWER THAN OR EQUAL TO TWICE THE DEPTH OF BOG, THEN REMOVE BOG.
3. IF FILL IS HIGHER THAN OR EQUAL TO 6m, DO NOT REMOVE BOG.



### RECONSTRUCTION



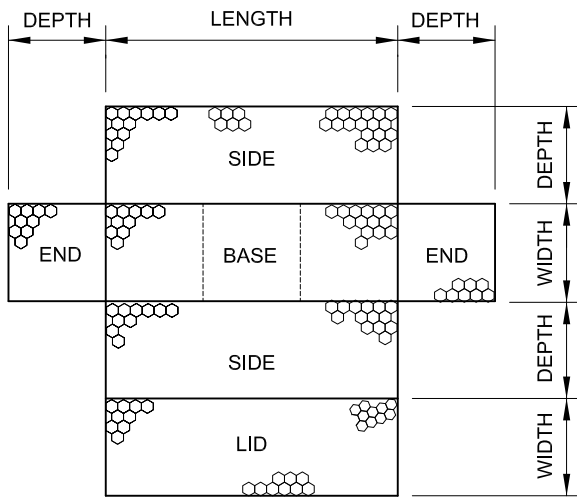
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## GUIDE LINES FOR BOG REMOVAL

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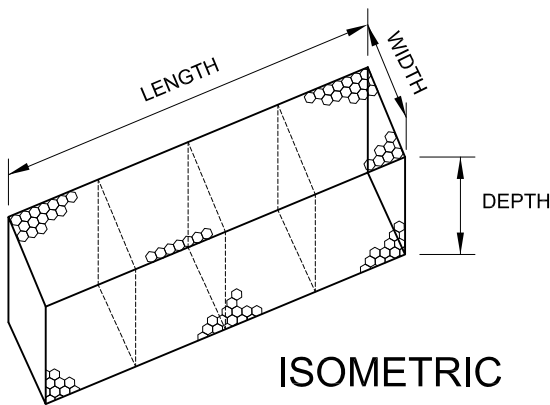
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SCALE: N.T.S.



**GABION PLAN**

1. GABIONS SHALL BE MADE OF ZINC COATED STEEL WIRE, TRIPLE TWISTED, FORMING A UNIFORM HEXOGONAL MESH PATTERN OF 80 x 100 OPENING.
2. GALVANIZED WIRE SHALL BE 2.9Ø FOR GALVANIZED GABIONS AND 2.7Ø P.V.C. COATED GABIONS.
3. GABIONS SHALL BE SUPPLIED FOLDED FLAT TO FACILITATE HANDLING & TRANSPORTATION. THEY SHALL FORM RECTANGULAR BASKETS OF SPECIFIED SIZE WHEN CONSTRUCTED.
4. GABIONS SHALL BE SUPPLIED WITH SECURELY TIED DIAPHRAGMS CONNECTED TO THE BASE WITH MATERIAL OF THE SAME COMPOSITION AS THE GABION, TO FORM INDIVIDUAL CELLS OF 1.0 IN WIDTH.
5. THE EDGES OF THE GABION WITH SECURELY TIED DIAPHRAGM BE MANUFACTURED INTO SECURELY CONNECTED SELVAGES TO PREVENT RAVELING.
6. THE SALVAGE OR PERIMETER WIRE SHALL BE MADE OF 3.8Ø GALVANIZED WIRE FOR GALVANIZED GABIONS & 3.4Ø P.V.C. COATED FOR P.V.C. COATED GABIONS.
7. P.V.C. COATED & GALVANIZED TYING AND CONNECTING SHALL BE SUPPLIED IN THE AMOUNT WIRE 2.2Ø OF NOT LESS THAN 8% OF THE WEIGHT OF THE BASKET.
8. ZINC COATING 0.26 kg/m<sup>2</sup>.
9. P.V.C. COATING FOR P.V.C. COATED GABIONS SHALL BE 0.4 THICK.



**ISOMETRIC**

GABION TYPE	LENGTH m	WIDTH m	DEPTH m	NO. OF DIAPHS.	CAPACITY m <sup>3</sup>
A	2	1	1	1	2
B	3	1	1	2	3
C	4	1	1	3	4
D	2	1	0.5	1	1
E	3	1	0.5	2	1.5
F	4	1	0.5	3	2
G	2	1	0.3	1	0.6
H	3	1	0.3	2	0.9
I	4	1	0.3	3	1.2



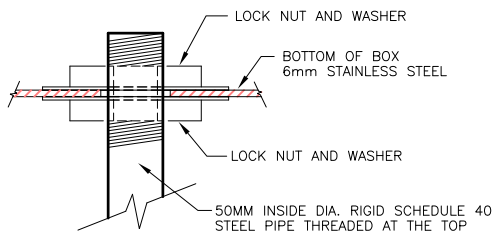
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**GABIONS**

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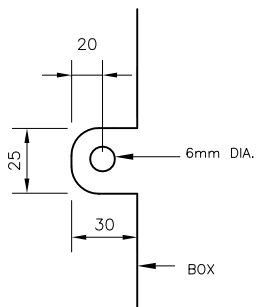
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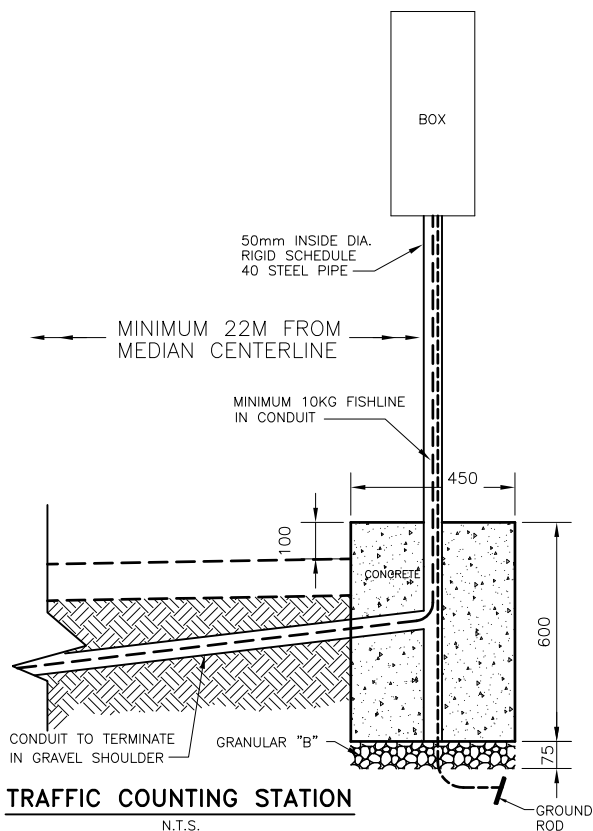
**BOLT DETAIL**

N.T.S.



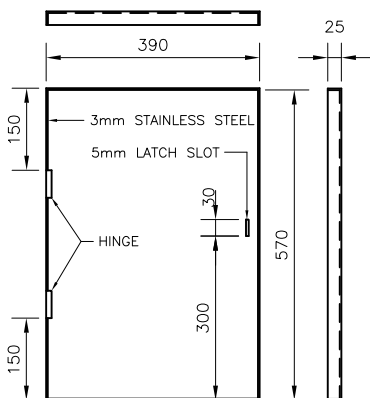
**LATCH DETAIL**

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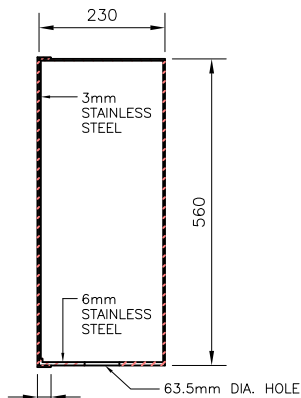
**TRAFFIC COUNTING STATION**

N.T.S.



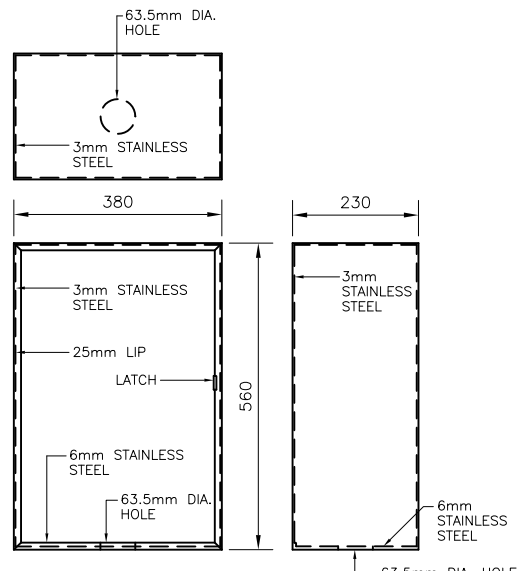
**BOX COVER**

N.T.S.



**SECTION OF BOX & COVER**

N.T.S.



**TRAFFIC COUNTER BOX**

N.T.S.



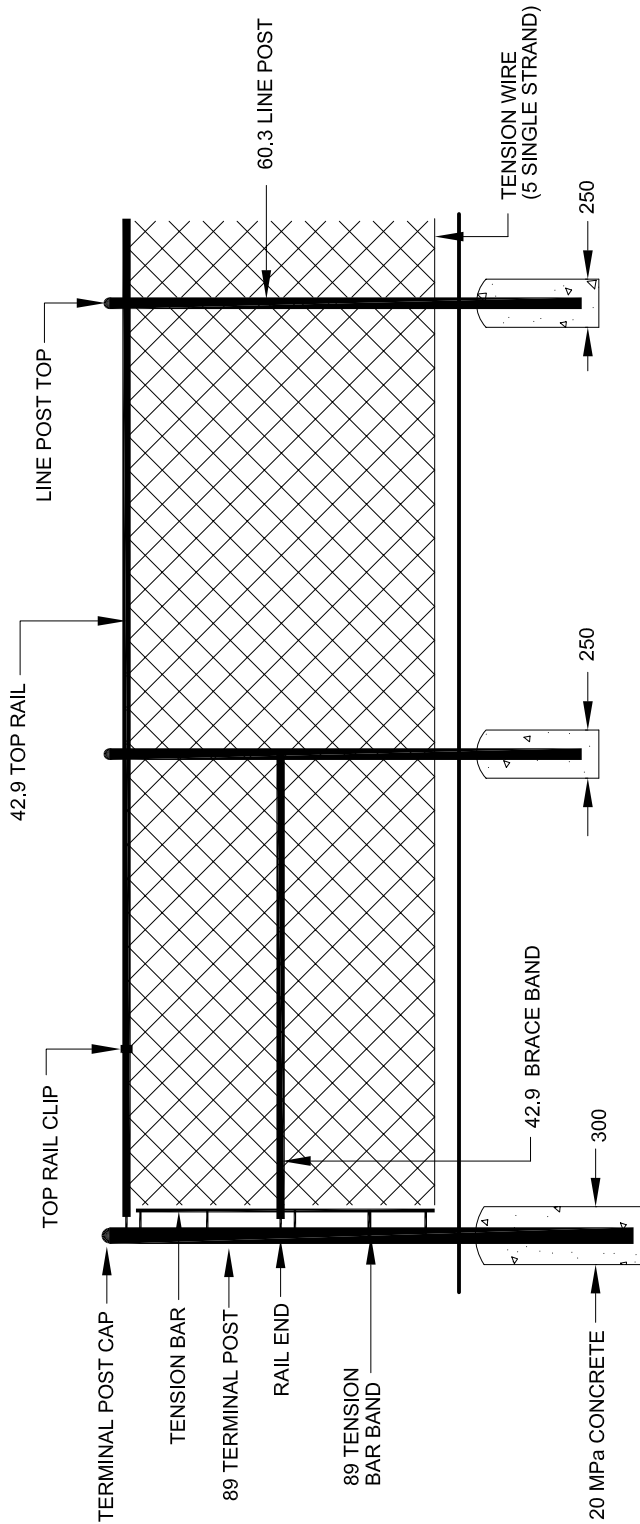
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**TRAFFIC COUNTER BOX**

DRAWN BY: J. Roberts

DATE: 98-01-13

NOT TO SCALE



1. ALL POSTS, RAIL AND BRACES TO BE SCHEDULE 40 CONTINUOUS WELD PIPE.
2. ALL TIE WIRE TO BE GALVANIZED STEEL.
3. CHAIN LINK FABRIC TO BE INDUSTRIAL GRADE GALVANIZED STEEL.
4. CONCRETE FOOTINGS TO BE 15MPa.
5. END POSTS TO BE PLACED AT THE ENDS OF A STRETCH OF FENCE AND AT GATES.
6. CORNER POSTS TO BE PLACED AT CORNERS AND CHANGES IN DIRECTION GREATER THAN 10°.
7. STRAINING POSTS TO BE PLACED AT CHANGES IN GRADE GREATER THAN 30°.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

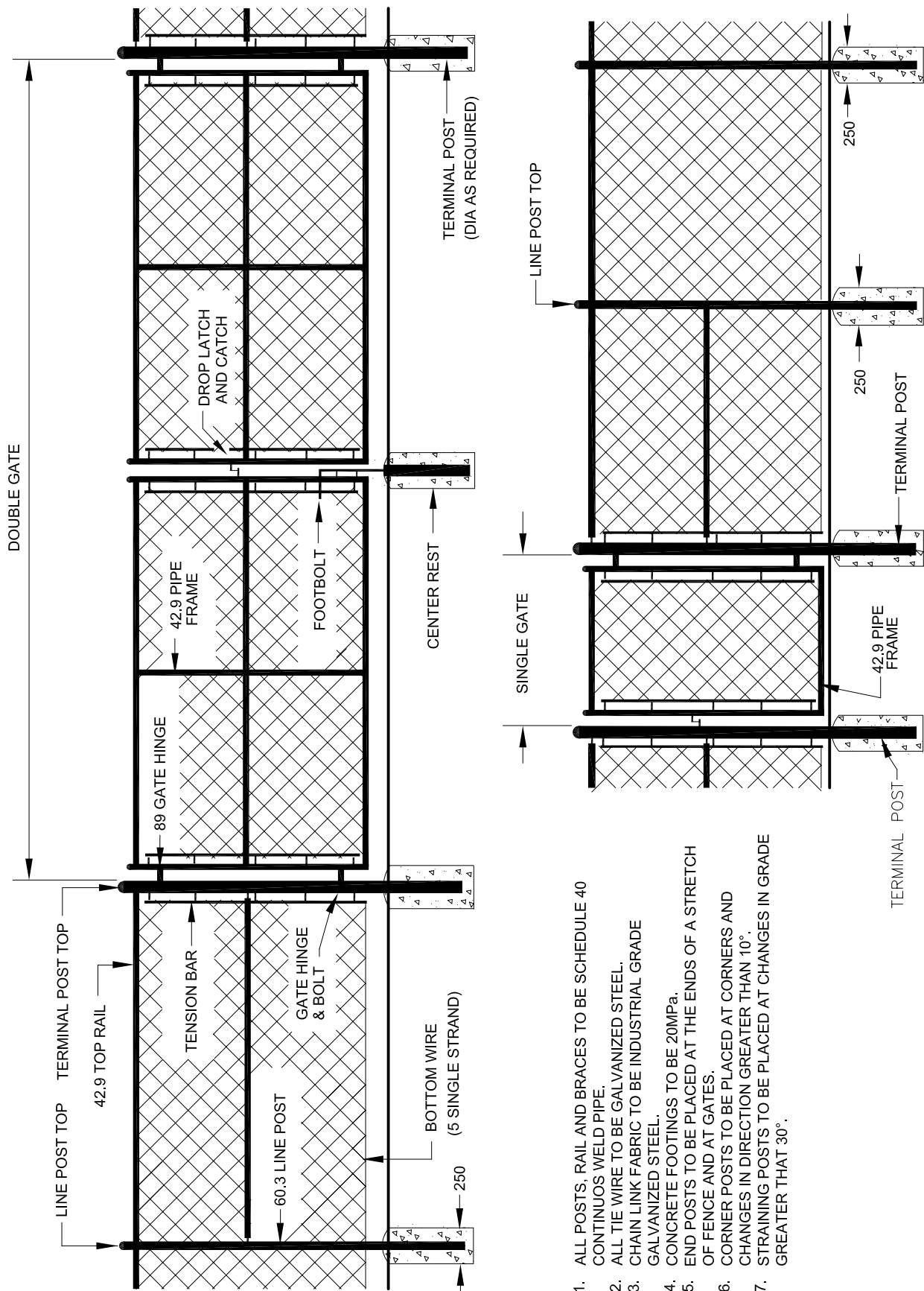
## TYPICAL CHAIN LINK FENCE END FEATURES

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DATE:

REV March 31,2012

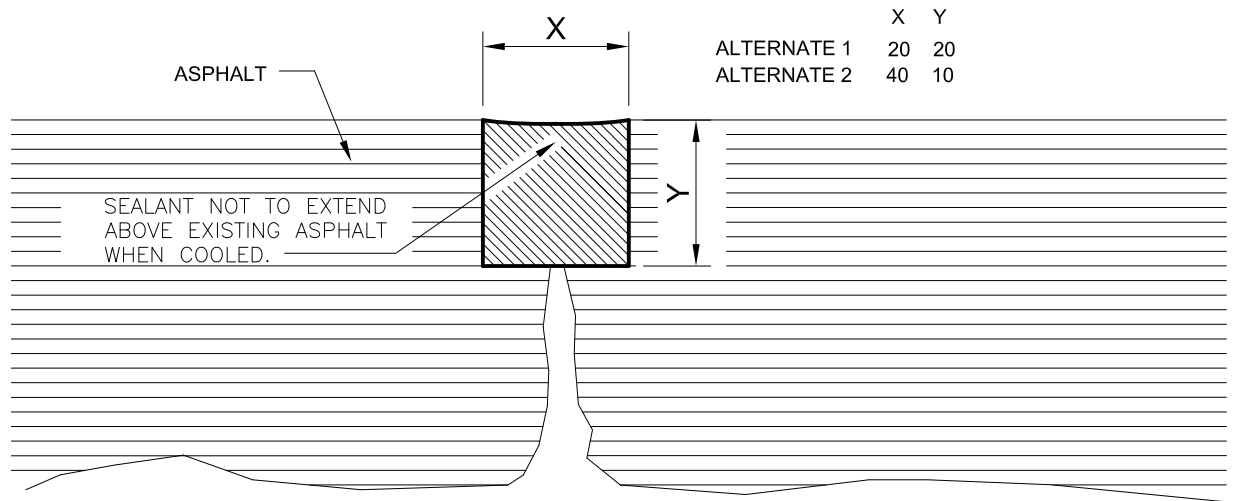
NOT TO SCALE



1. ALL POSTS, RAIL AND BRACES TO BE SCHEDULE 40 CONTINUOUS WELD PIPE.
2. ALL TIE WIRE TO BE GALVANIZED STEEL.
3. CHAIN LINK FABRIC TO BE INDUSTRIAL GRADE GALVANIZED STEEL.
4. CONCRETE FOOTINGS TO BE 20MPa.
5. END POSTS TO BE PLACED AT THE ENDS OF A STRETCH OF FENCE AND AT GATES.
6. CORNER POSTS TO BE PLACED AT CORNERS AND CHANGES IN DIRECTION GREATER THAN 10°.
7. STRAINING POSTS TO BE PLACED AT CHANGES IN GRADE GREATER THAN 30°.

## TYPICAL CHAIN LINK FENCE WITH GATES





TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## TYPICAL CRACK SEALING DETAIL

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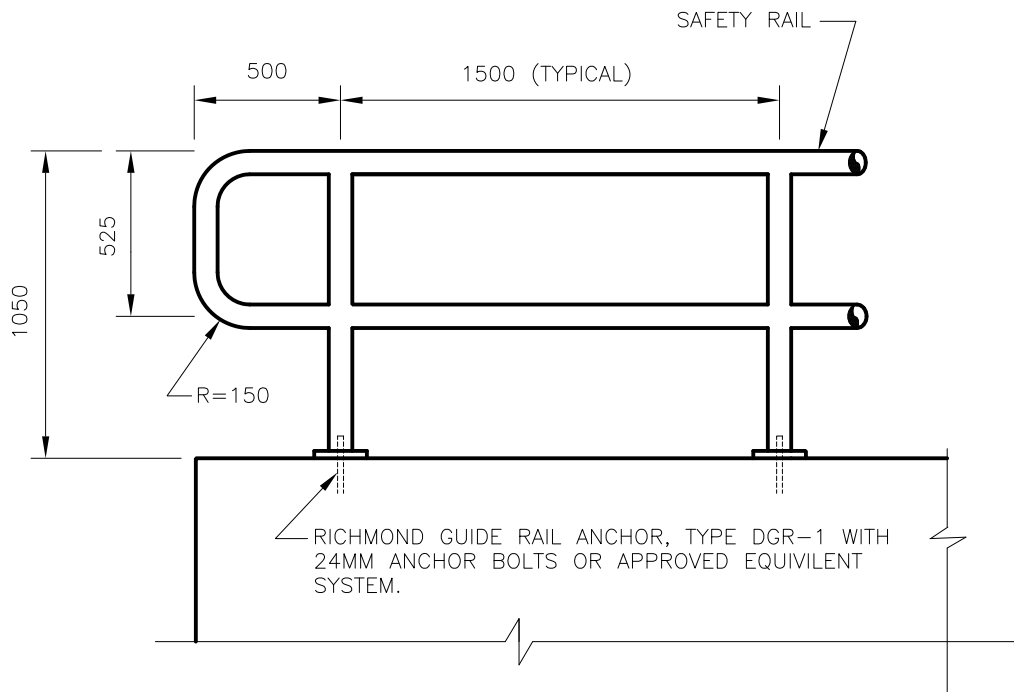
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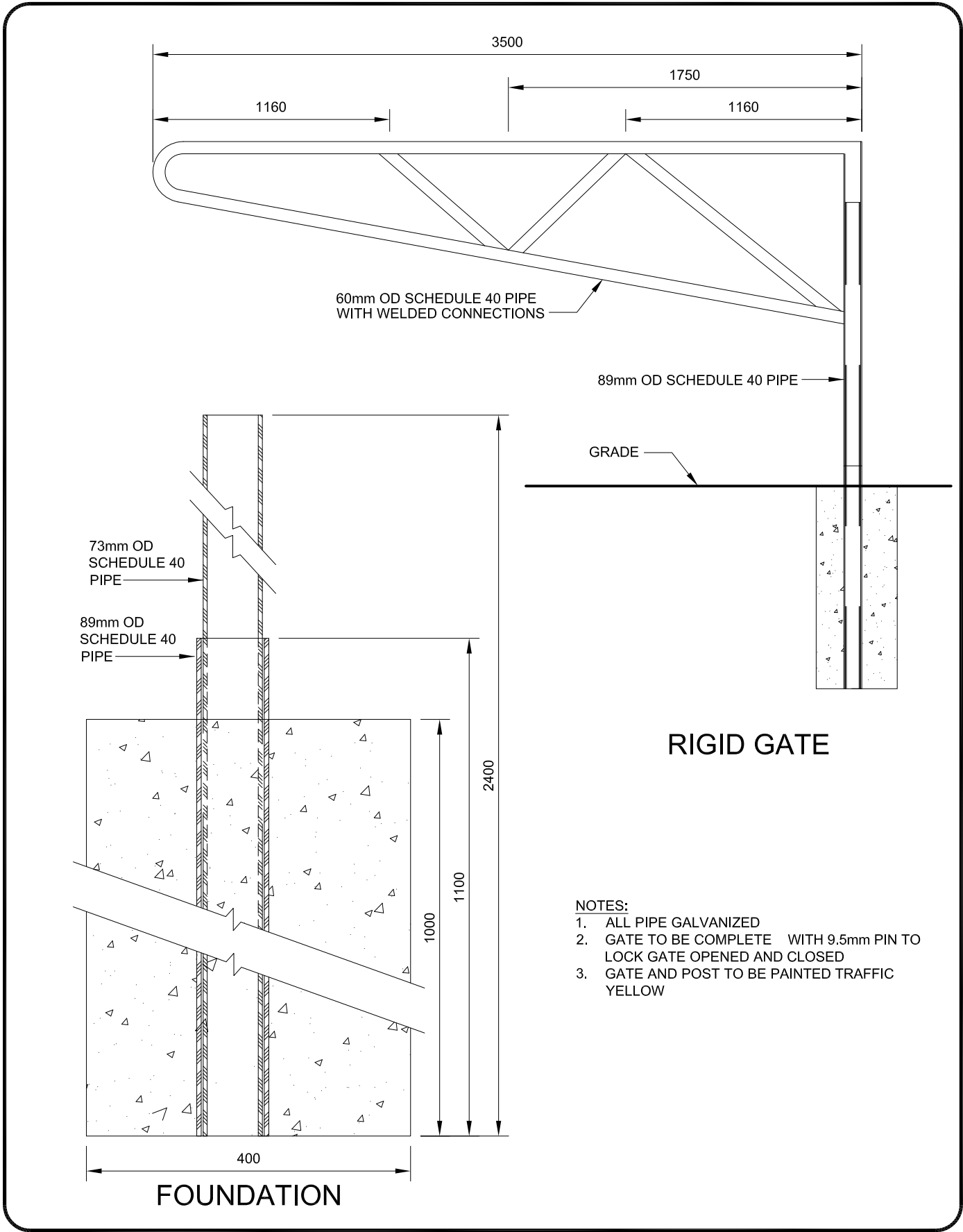
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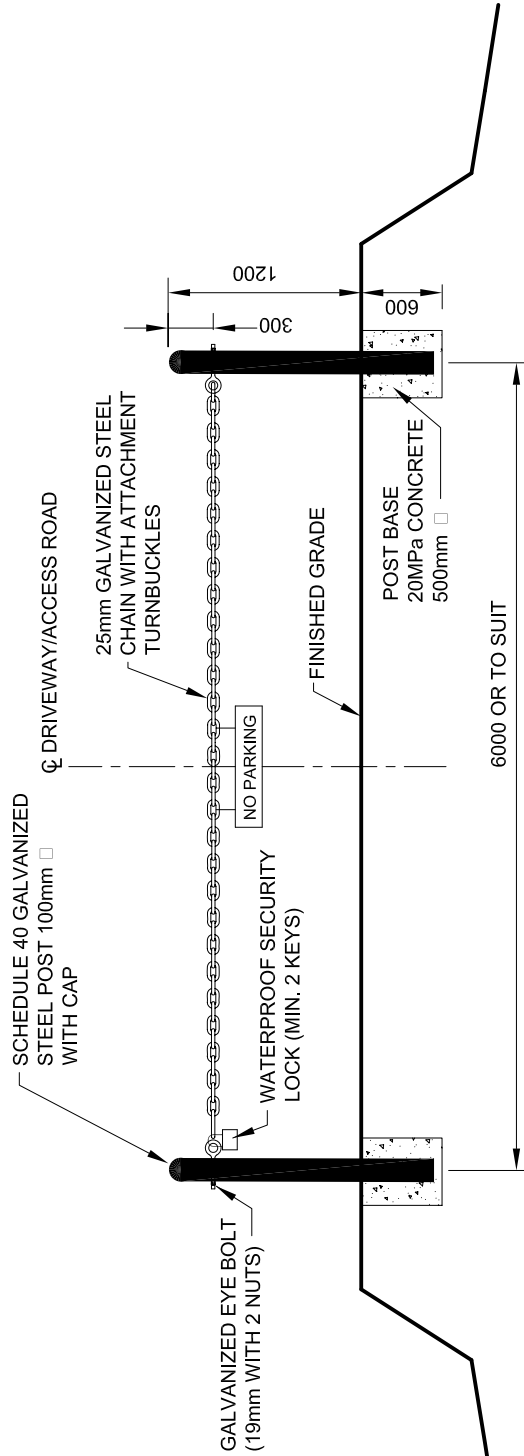
NOT TO SCALE

**NOTES:**

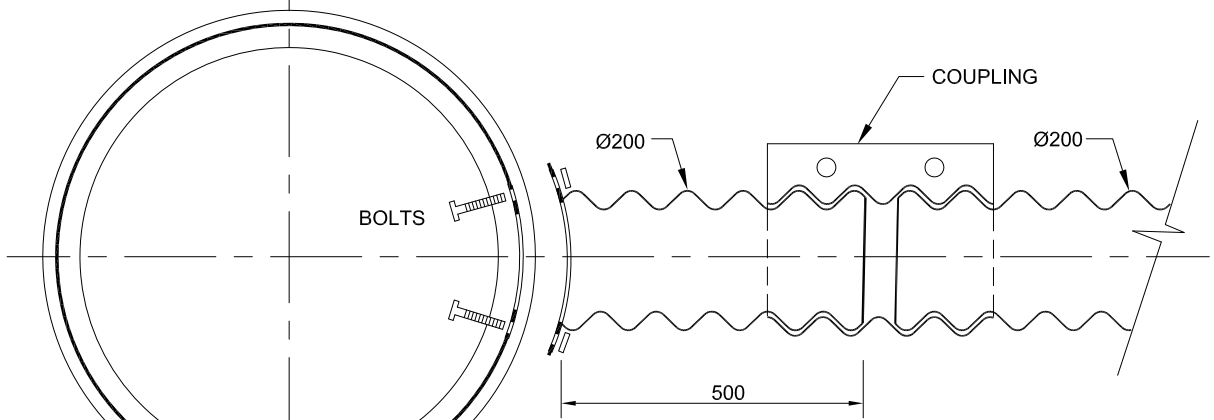
1. RAIL SHALL BE CONTINUOUS ALONG EACH RETAINING WALL AND SHALL TERMINATE AT THE ENDS OF THE WALL.
2. RAILS ON ADJACENT WALLS SHALL HAVE A GAP OF 75mm OR LESS.
3. RAIL SHALL BE 73mm Ø HOT DIP GALVANIZED STEEL PIPE WITH WALL THICKNESS 4.78mm.
4. POST SPACING SHALL BE AS DIRECTED BY THE ENGINEER TO PROVIDE A UNIFORM SYMMETRICAL APPEARANCE.
5. SHOP DRAWINGS ARE TO BE SUBMITTED FOR APPROVAL TWO WEEKS PRIOR TO FABRICATION OF RAIL.



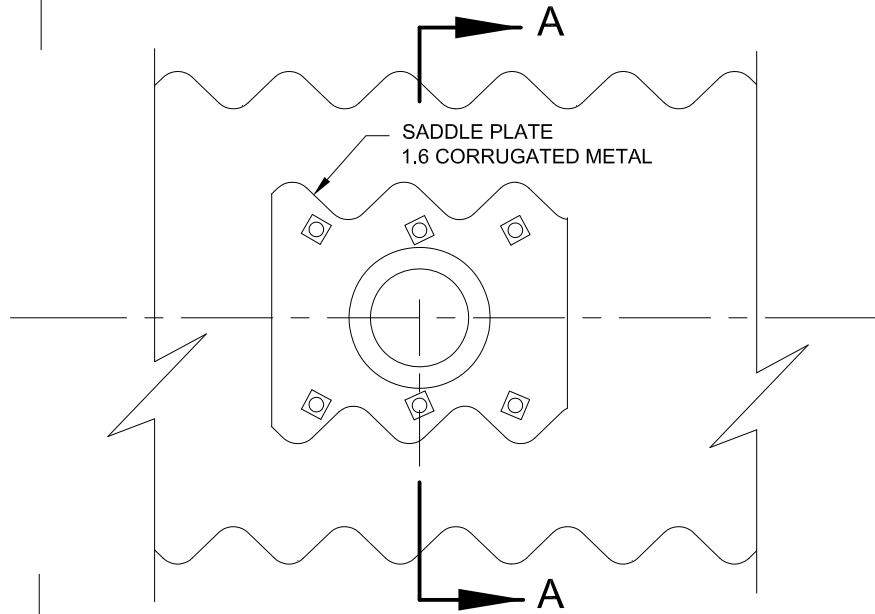




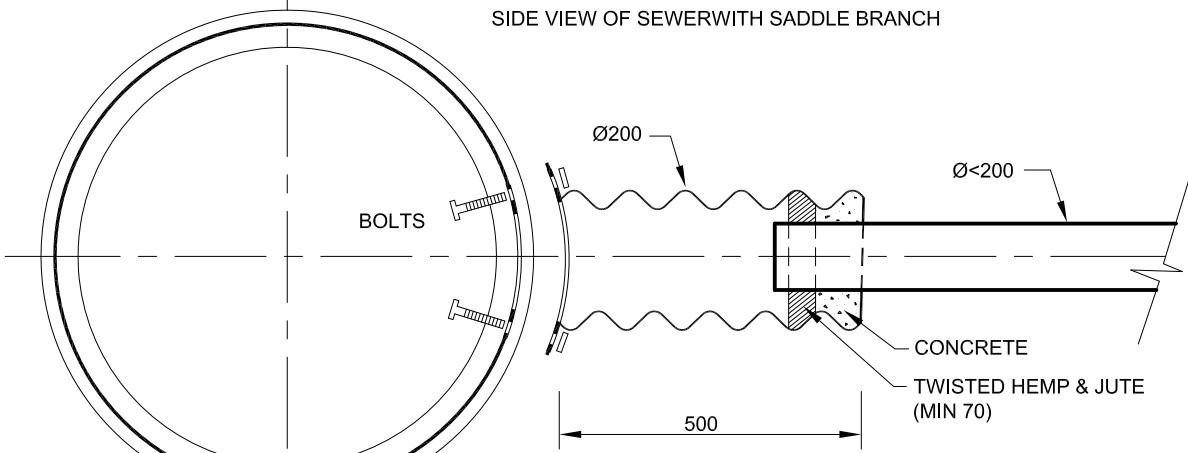
## TYPICAL POST AND CHAIN GATE DETAIL



SECTION A-A



SIDE VIEW OF SEWER WITH SADDLE BRANCH



SECTION A-A



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

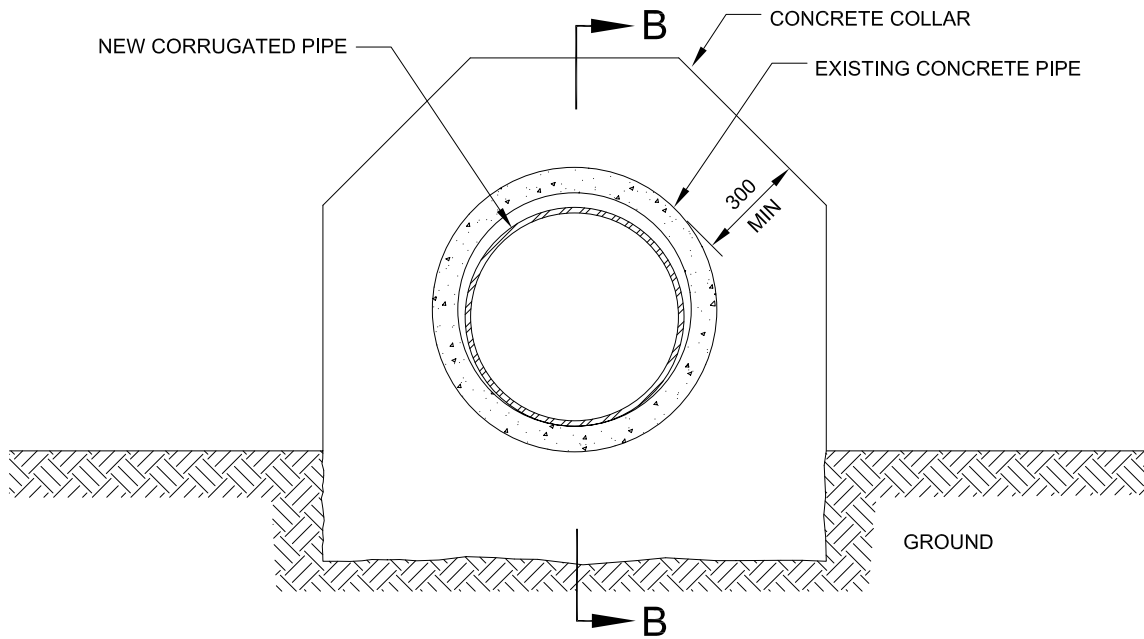
TYPICAL SADDLE BRANCH

DRAWN BY:

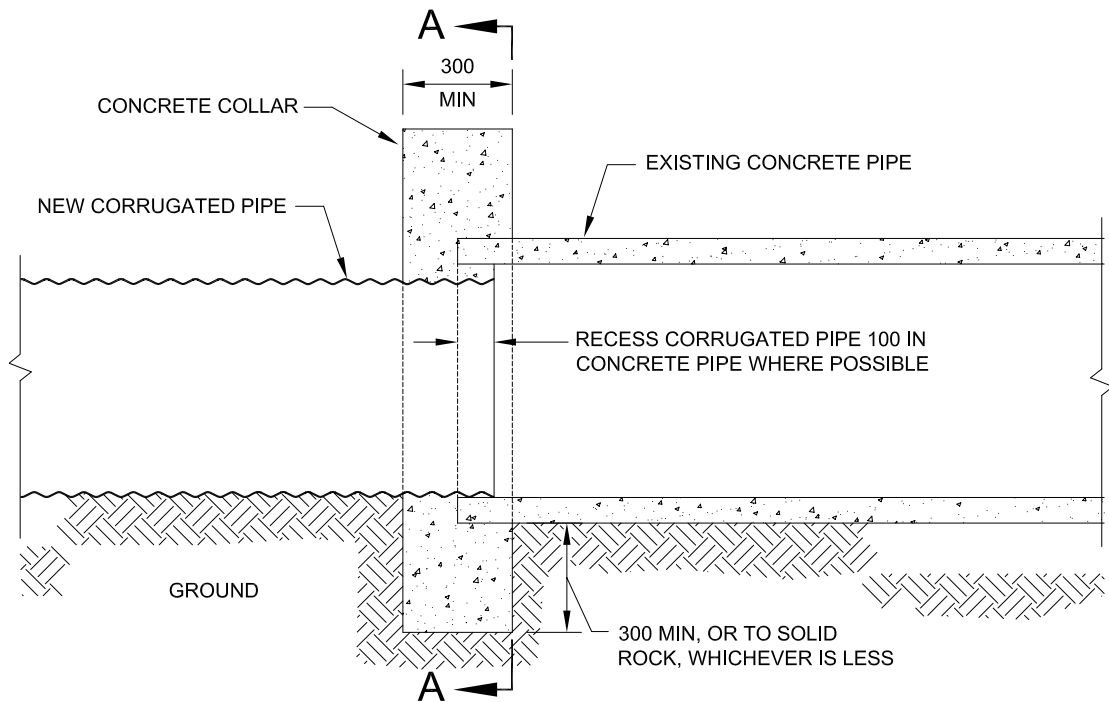
DATE:

REV 02-01-10

NOT TO SCALE



SECTIONAL END ELEVATION ON A : A



SECTIONAL SIDE ELEVATION ALONG CENTER LINE VIEW ON B : B

**NOTES:**

- ALL CONCRETE TO BE 35 MPa @ 28 DAYS, SLUMP 60, MAXIMUM PARTICLE SIZE 20.
- EXISTING CULVERT SIZES AND TYPES MAY VARY.
- ALL BACKFILLING AND BEDDING TO BE COMPACTED TO 95% PROCTOR DENSITY.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

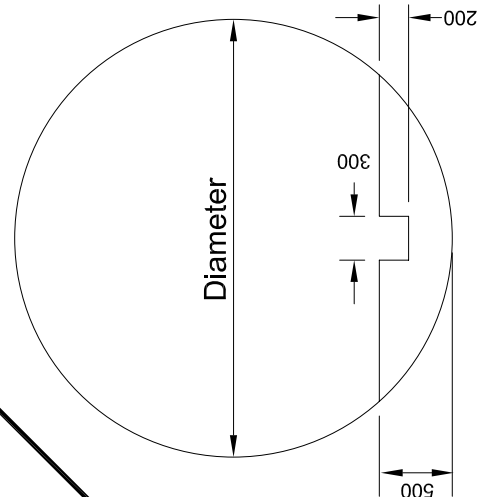
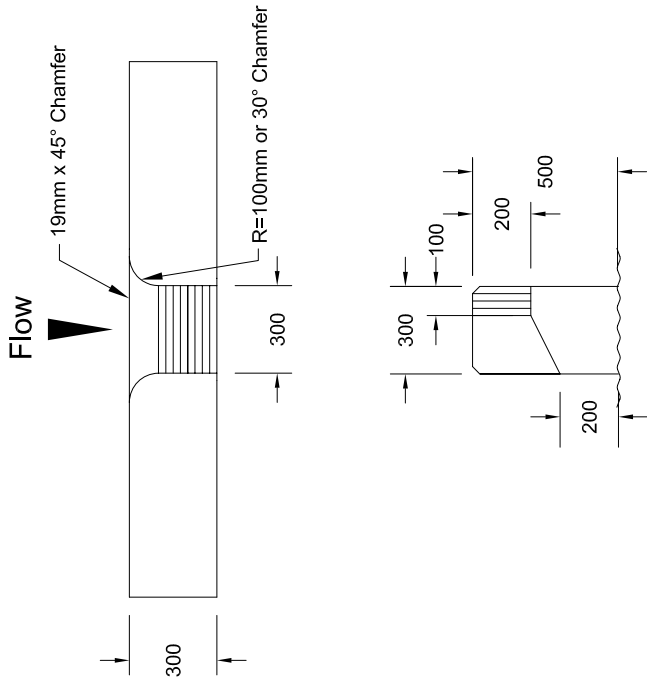
**TYPICAL CONCRETE COLLAR  
AT CONCRETE CULVERT CONNECTION**

DRAWN BY: J. ROBERTS

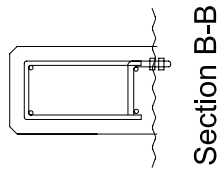
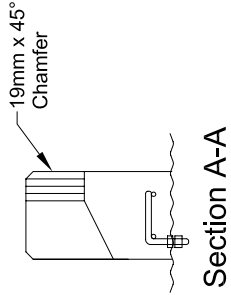
DATE: REV March 31, 2012

NOT TO SCALE

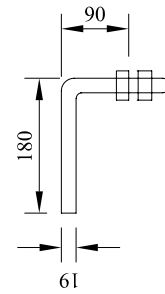




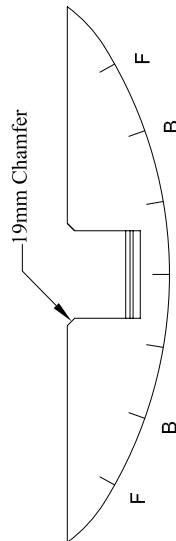
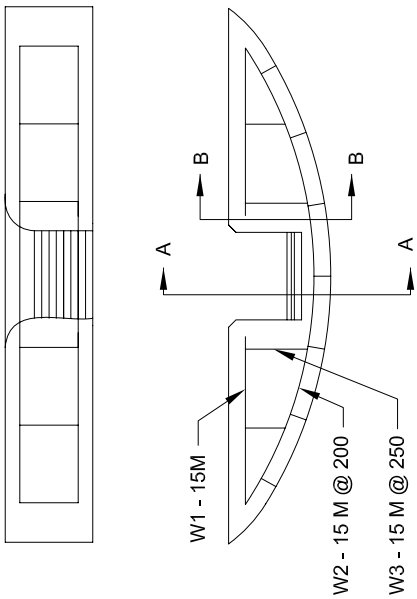
Typical Section  
Scale 1:50



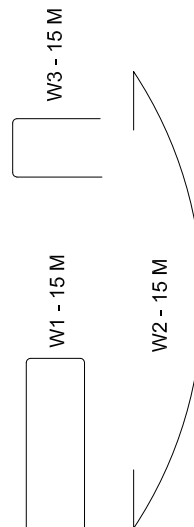
NOTES:  
CONCRETE QUALITY 35MPa @  
28 DAYS.  
AIR ENTRAINMENT 6 ± 1%



Bolt Hook Detail  
Scale 1:10

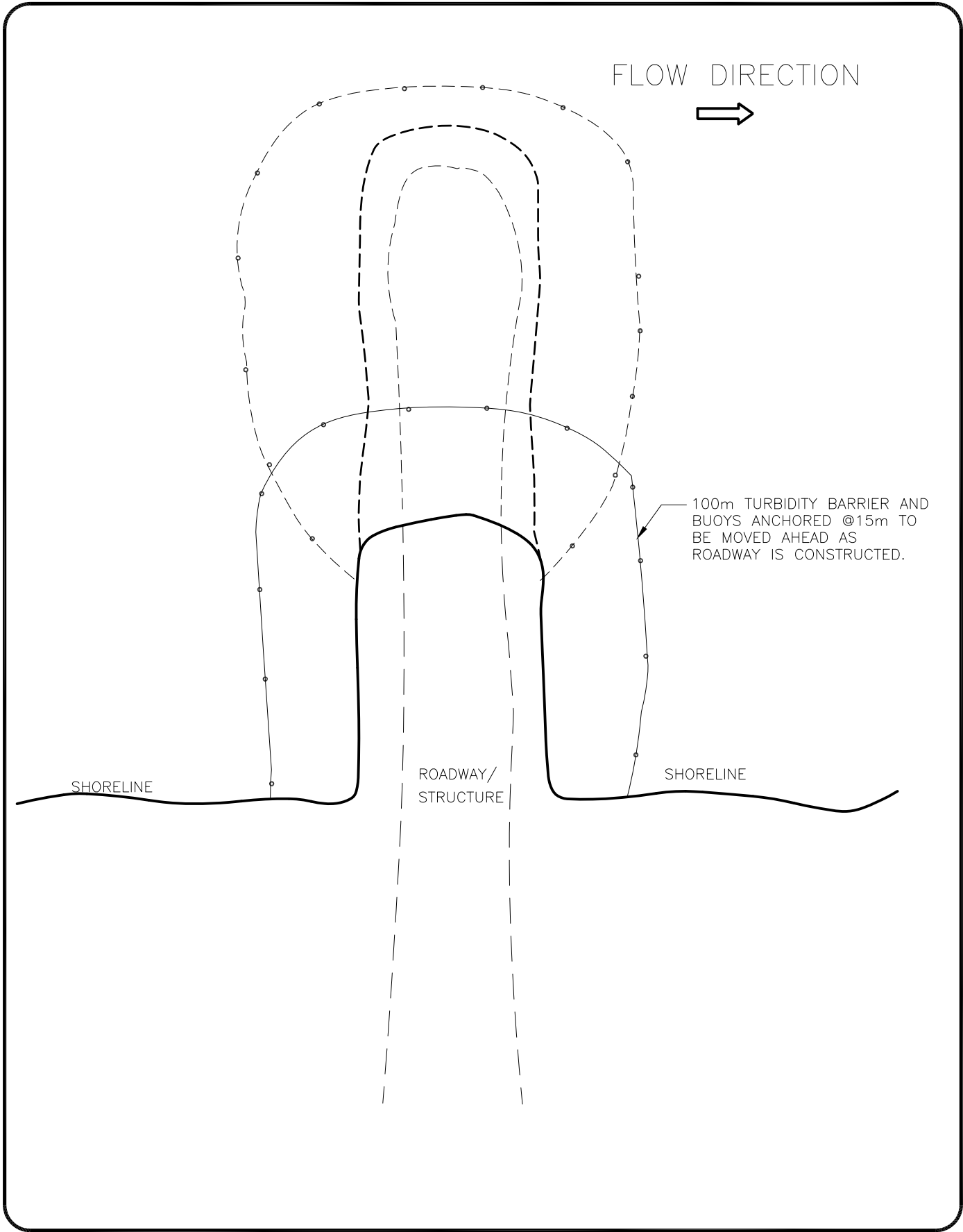


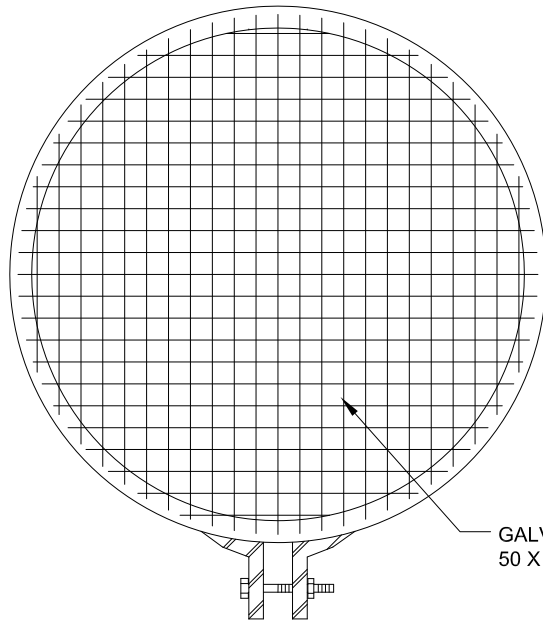
Galvanized 19mm Ø Bolt Hooks Alternate @ 250mm c-c



Slotted Weir Baffle Details  
Scale 1:25



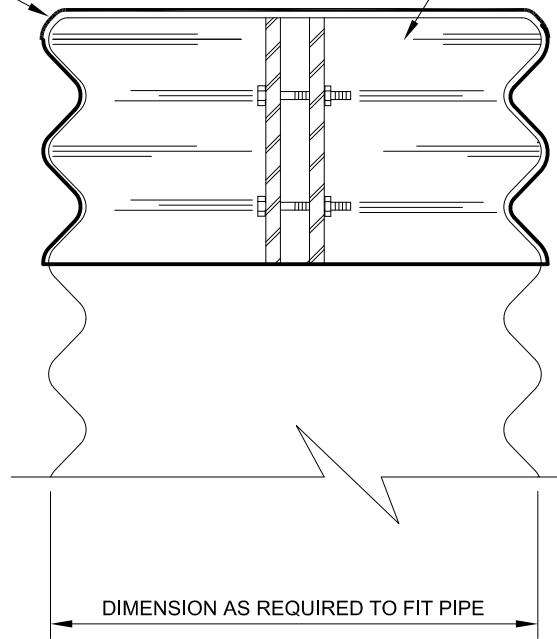




GALVANIZED STEEL MESH  
50 X 50 MAXIMUM

WIRE MESH TO BE BENT, WELDED TO THE  
COUPLING AT ALL PLACES AND RUST  
PROOFED WITH COLD GALVANIZED  
COMPOUND.

STANDARD COUPLING BAND



DIMENSION AS REQUIRED TO FIT PIPE



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

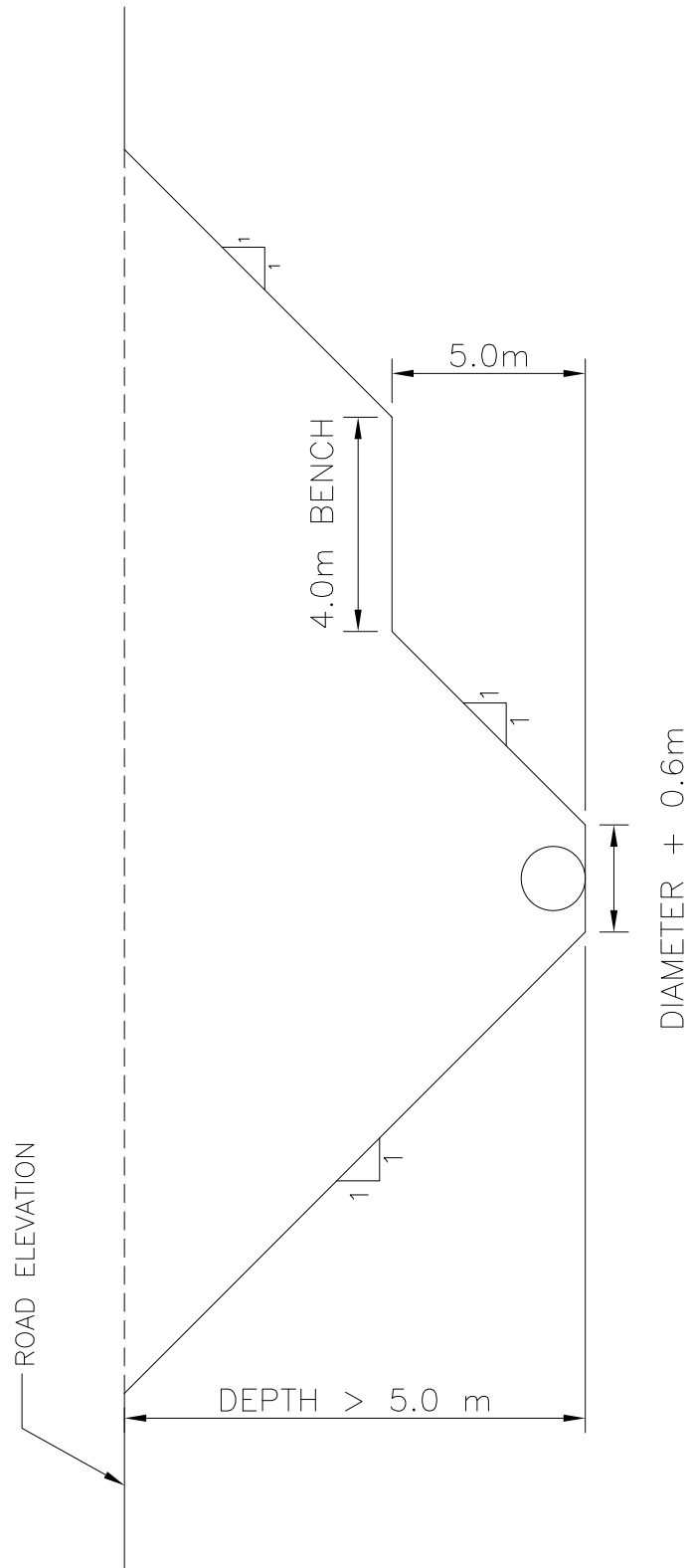
## END TREATMENT SCREEN FOR CORRUGATED STEEL PIPE

DRAWN BY:

DATE:

REV 02-01-10

NOT TO SCALE



**TYPICAL CULVERT EXCAVATION PAY  
LIMIT FOR FILLS DEEPER THAN 5.0m**

PIPE DIA mm	PIPE AREA m <sup>2</sup>	TRENCH WIDTH	MAXIMUM HEIGHT OF FILL	
			210kPa	320kPa
150	0.02	1.00	N/A	9
200	0.03	1.00	N/A	9
250	0.05	1.05	9	9
300	0.07	1.10	9	9
375	0.13	1.20	9	9
450	0.16	1.25	9	9
525	0.22	1.30	9	9
600	0.28	1.40	9	9
750	0.44	1.55	9	9
900	0.64	1.77	9	9

LEGEND:

N/A – NOT AVAILABLE

NOTES:

A MINIMUM HEIGHT OF FILL OVER TOP OF PIPE SHALL BE 800mm OR ONE PIPE DIAMETER, WHICHEVER IS GREATER.

B THE TABLE IS BASED ON BACKFILL DENSITY OF 1922kg/m<sup>3</sup>.

C HEIGHT OF FILL GREATER THAN 9.0m SHALL BE CALCULATED FROM FIRST PRINCIPLES.

D THE TABLE PRESUMES GROUNDWATER IS AT OR BELOW THE SPRINGLINE OF THE PIPE.

E ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**HEIGHT OF FILL TABLE**  
DUAL WALL CORRUGATED POLYETHYLENE  
GRAVITY SEWER PIPE - 210 AND 320kPa

DRAWN BY: HP

DATE: REV 02-01-10

NOT TO SCALE

PIPE DIA mm	PIPE AREA m <sup>2</sup>	TRENCH WIDTH	MAXIMUM HEIGHT OF FILL			
			RSC 160		RSC 250	
			≤TRENCH WIDTH	>TRENCH WIDTH	≤TRENCH WIDTH	>TRENCH WIDTH
840	0.55	1.50	10.4	10.4	13.0	13.0
900	0.64	1.59	8.7	8.7	11.0	11.0
1020	0.82	1.74	7.9	7.9	9.7	9.7
1070	0.90	1.81	7.9	7.9	9.1	9.1
1220	1.17	2.01	7.9	7.9	9.1	9.1
1370	1.47	2.22	7.9	7.9	9.1	9.1
1520	1.81	2.44	7.9	7.9	8.8	8.8
1680	2.22	2.65	7.3	7.3	8.8	8.8
1830	2.63	2.86	7.3	7.3	8.8	8.8
1980	3.08	3.05	7.3	7.3	8.2	8.2
2130	3.56	3.26	7.0	7.0	8.2	8.2
2290	4.12	3.50	6.5	6.5	7.7	7.7
2440	4.68	3.71	6.3	6.3	7.7	7.7

**NOTES:**

- A THE TABLE APPLIES TO CLOSED PROFILE WALL POLYETHYLENE PIPE MANUFACTURED AND TESTED ACCORDING TO CSA B182.8 AND ASSHTO M294-11.
- B THE TABLE PRESUMES GROUNDWATER IS BELOW THE PIPE.
- C INSTALLATION IS ACCORDING TO REQUIREMENTS OF SECTION 421 OF SPECIFICATIONS.
- D HEIGHT OF FILL AND PIPE SIZES GREATER THAN SHOWN OR OTHER DESIGN CONDITIONS SHALL BE CALCULATED FROM FIRST PRINCIPLES.
- E MINIMUM HEIGHT OF FILL OVER THE PIPE SHALL BE 800mm OR ONE PIPE DIAMETER, WHICHEVER IS GREATER.
- F TRENCH WIDTH IS BASED ON THE HIGHER PIPE STIFFNESS AND IS ACCORDING TO ASTM D2321.
- G ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

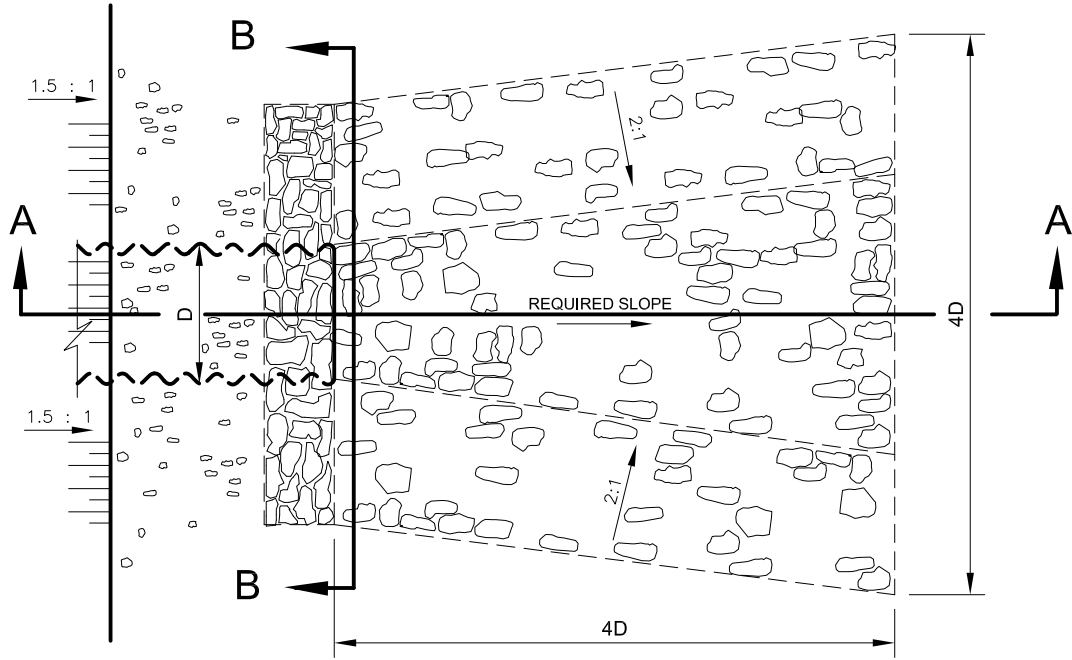
**HEIGHT OF FILL TABLE**  
CLOSED PROFILE WALL POLYETHYLENE PIPE  
RSC 160 AND RSC 250

DRAWN BY:

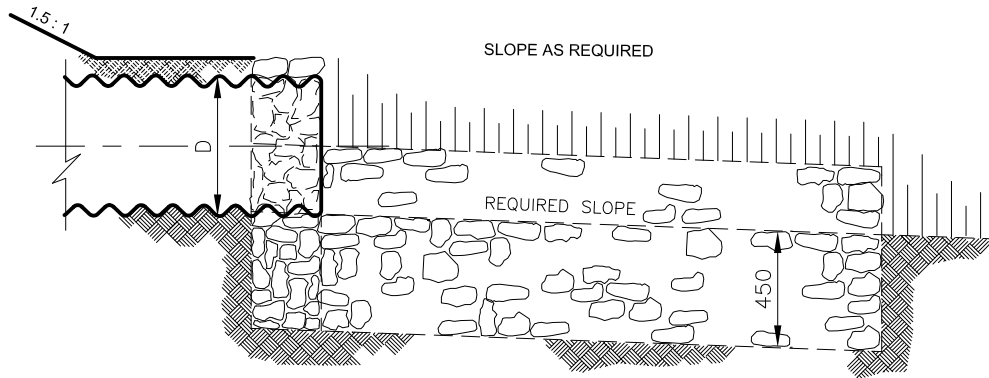
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REV 02-01-10

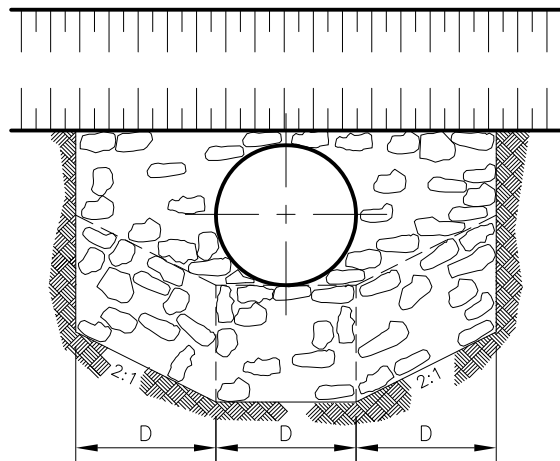
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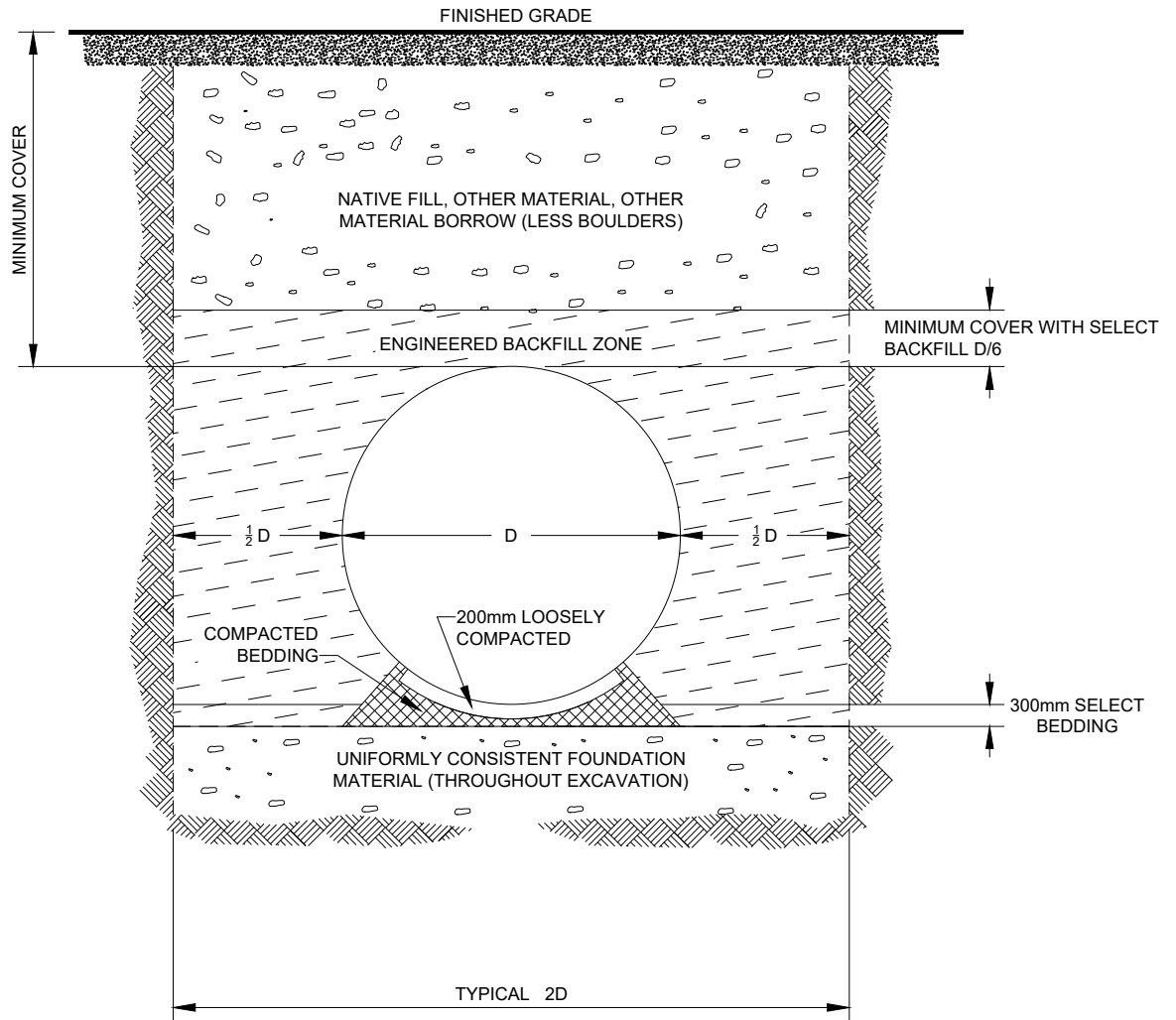
PLAN



SECTION A-A

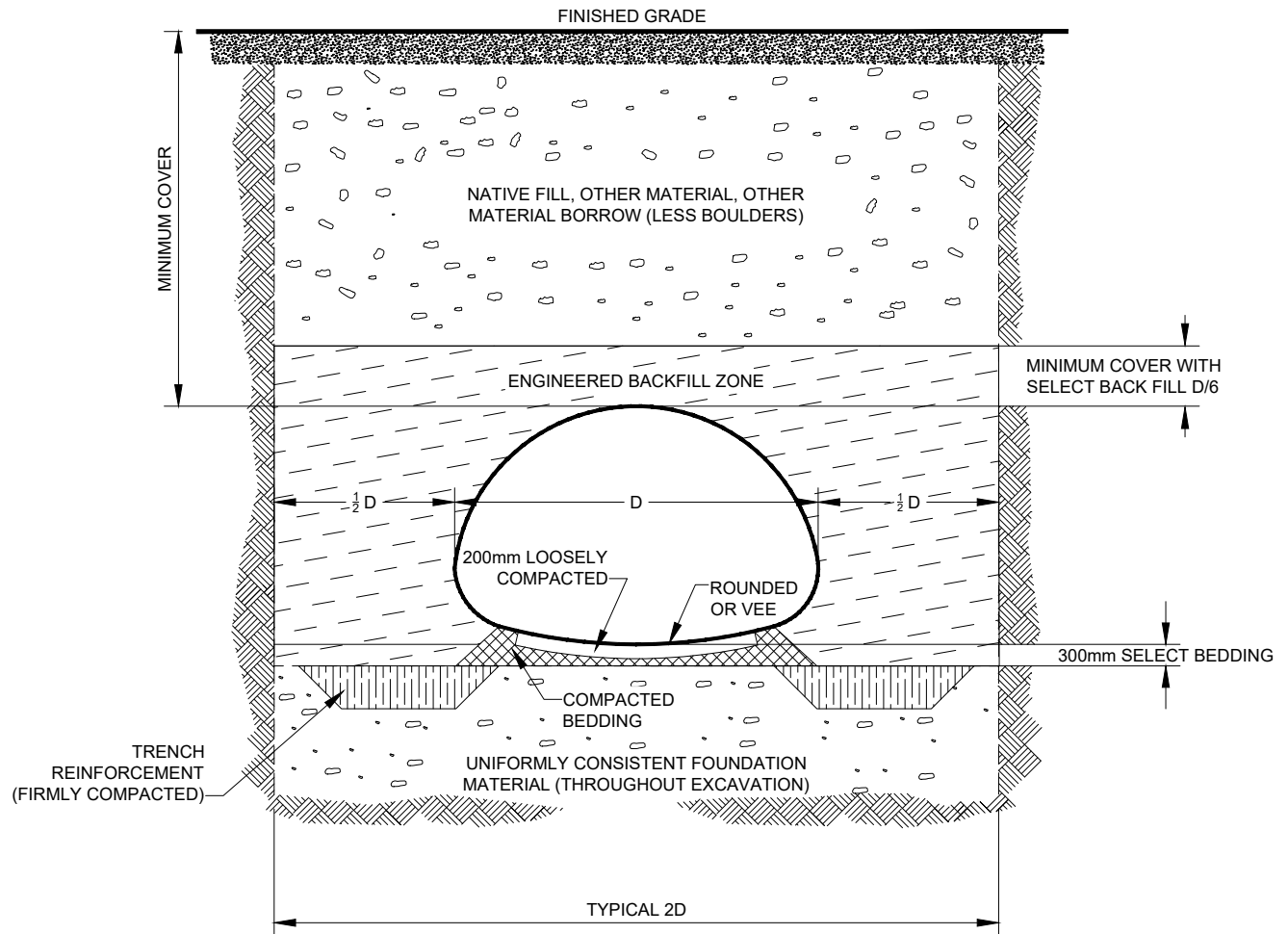


SECTION B-B



**NOTES:**

1. BACKFILL MATERIAL IN THE ENGINEERED BACKFILL ZONE SHALL MEET ALL REQUIREMENTS STIPULATED IN SECTION 423.08 AND 423.10 OF THE SPECIFICATIONS BOOK.
2. WHEN THE AIR TEMPERATURE IS BELOW 0°C, NO BACKFILLING IS ALLOWED. FROZEN GRANULAR BACKFILL MATERIALS WILL NOT BE PERMITTED. NO BACKFILL MATERIALS WILL BE PERMITTED TO BE PLACED DIRECTLY ON FROZEN SUBSTRATE.



NOTES:

1. BACKFILL MATERIALS IN THE ENGINEERED BACKFILL ZONE SHALL MEET ALL REQUIREMENTS STIPULATED IN SECTION 423.08 AND 423.10 OF THE SPECIFICATIONS BOOK
2. WHEN THE AIR TEMPERATURE IS BELOW  $0^{\circ}\text{C}$ , NO BACKFILLING IS ALLOWED. FROZEN GRANULAR BACKFILL MATERIALS WILL NOT BE PERMITTED. NO BACKFILL MATERIAL WILL BE PERMITTED TO BE PLACED DIRECTLY ON FROZEN SUBSTRATE.

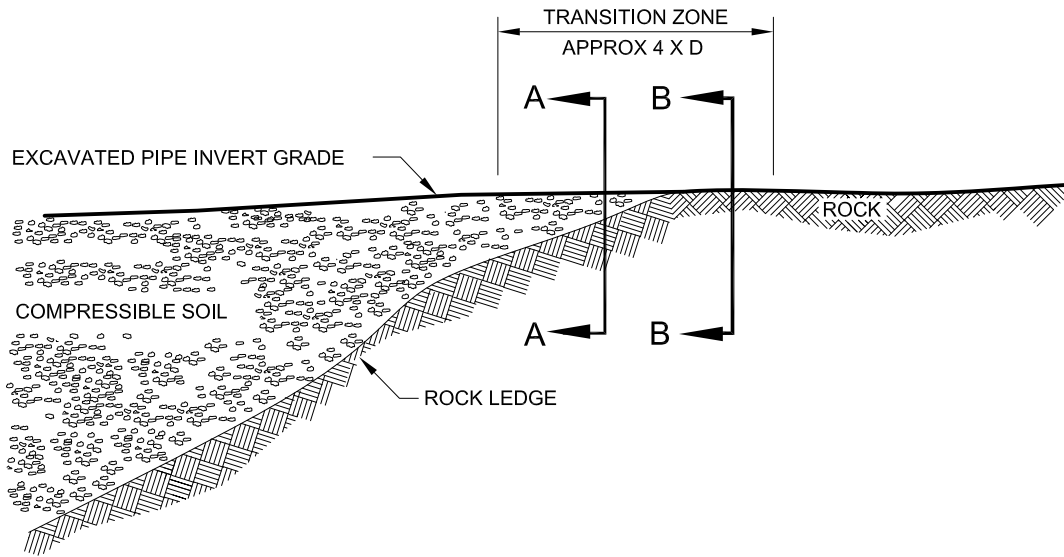


TRANSPORTATION AND INFRASTRUCTURE  
HIGHWAY DESIGN DIVISION

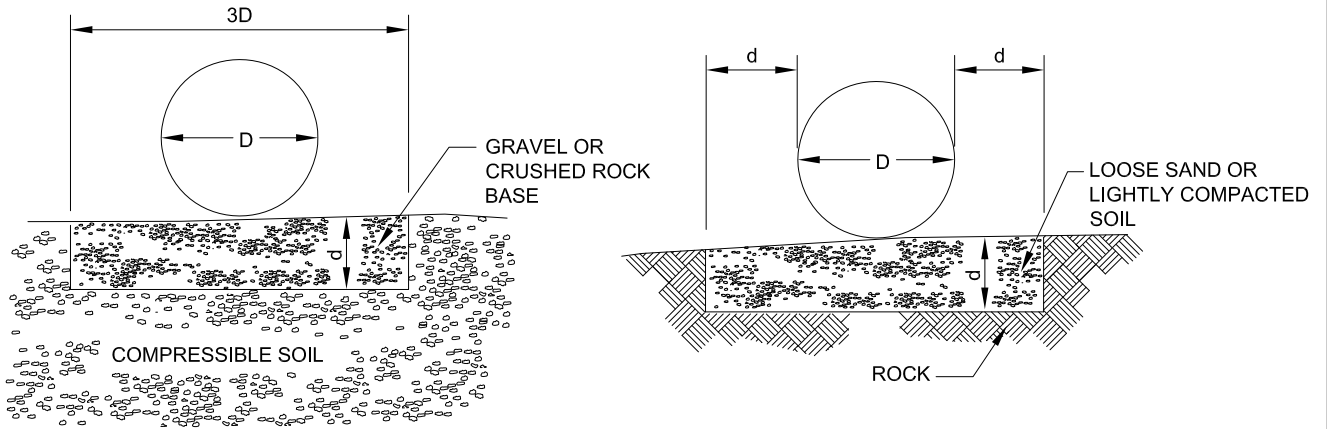
TYPICAL STRUCTURAL PLATE PIPE  
ARCH BEDDING AND BACKFILL DETAILS

DRAWN BY: KYLE BENNETT      DATE: JAN 31, 2024      NOT TO SCALE





TRANSITIONS OF PIPE FOUNDATIONS FROM COMPRESSIBLE SOILS TO ROCK.  
EXCAVATE ROCK AND COMPRESSIBLE SOIL IN TRANSITION SECTION TO PROVIDE REASONABLY  
UNIFORM LONGITUDINAL PIPE SUPPORT AND MINIMUM DIFFERENTIAL SETTLEMENT.



$d = 4\%$  OF FILL OVER PIPE WITH A 200 MINIMUM

SECTION A-A

SECTION B-B

SECTION B-B IS APPLICABLE TO ALL  
CONTINUOUS ROCK FOUNDATIONS.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

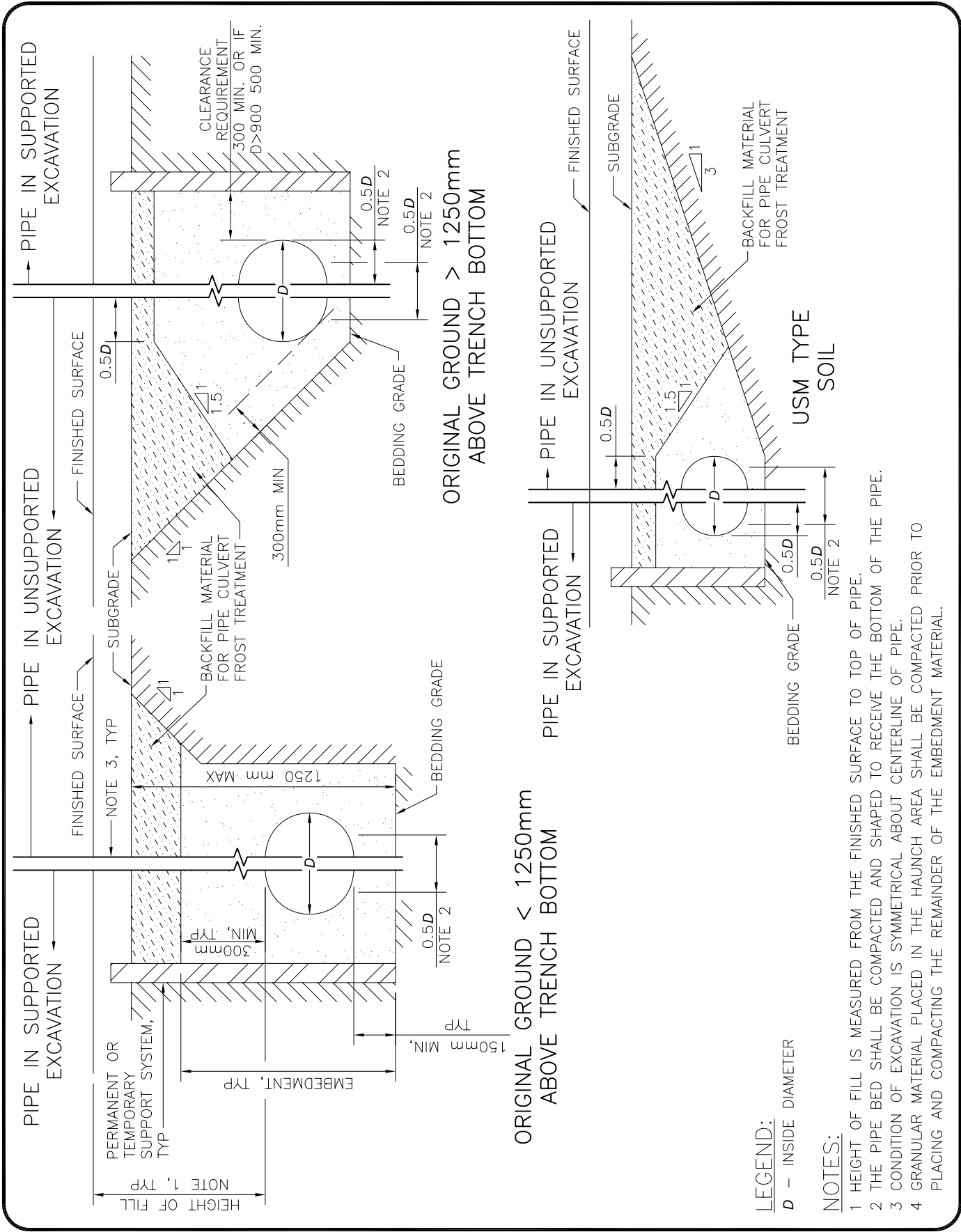
TYPICAL TREATMENT FOR ROCK,  
CULVERT, PIPE OR SEWER FOUNDATIONS

DRAWN BY:

DATE:

REV 02-01-10

NOT TO SCALE

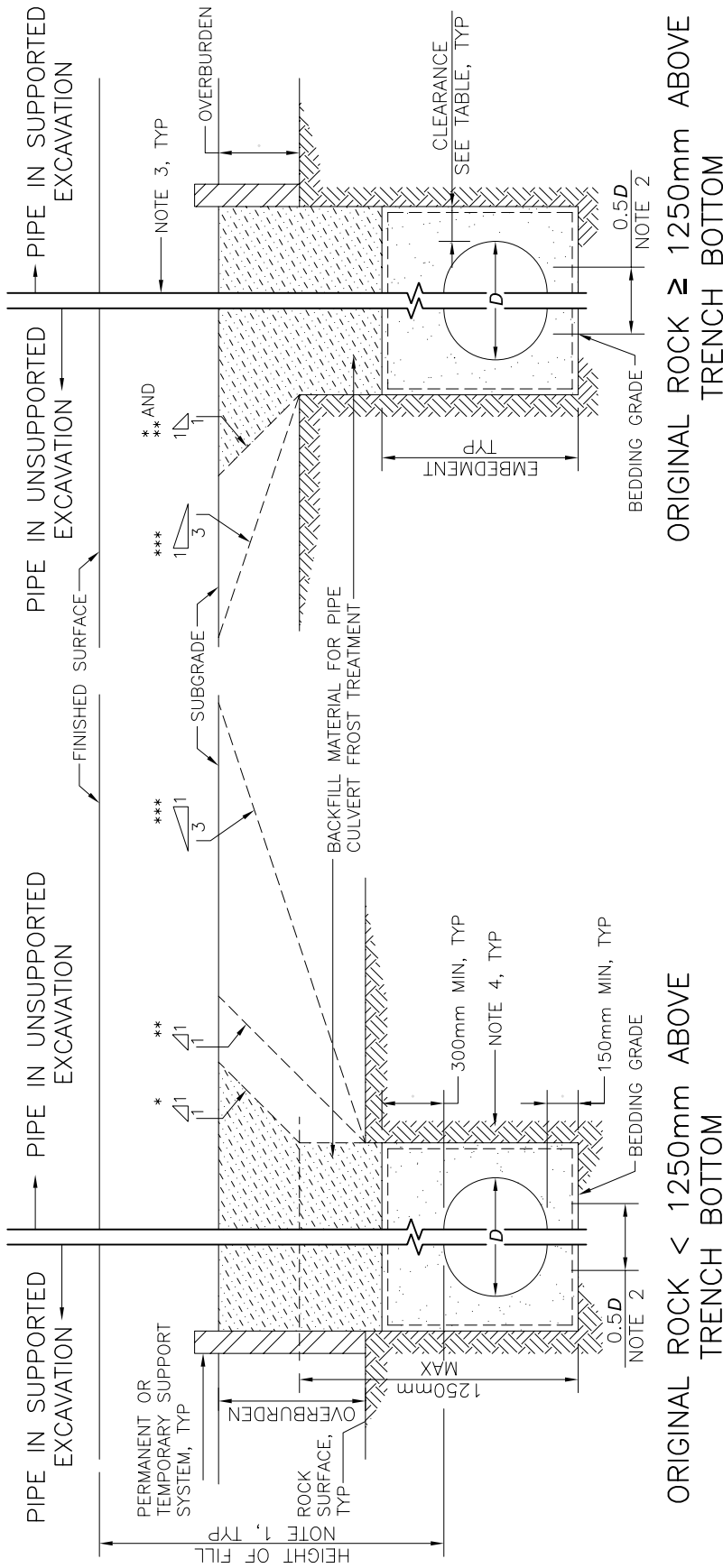


**LEGEND:**  
D - INSIDE DIAMETER

**NOTES:**

- 1 HEIGHT OF FILL IS MEASURED FROM THE FINISHED SURFACE TO TOP OF PIPE.
- 2 THE PIPE BED SHALL BE COMPACTED AND SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
- 3 CONDITION OF EXCAVATION IS SYMMETRICAL ABOUT CENTERLINE OF PIPE.
- 4 GRANULAR MATERIAL PLACED IN THE HAUNCH AREA SHALL BE COMPACTED PRIOR TO PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT MATERIAL.

 TRANSPORTATION AND WORKS HIGHWAY DESIGN DIVISION	<h3 style="margin: 0;">HDPE FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION</h3>
DRAWN BY: HP	DATE: REV 02-01-10
NOT TO SCALE	



ORIGINAL ROCK  $\geq$  1250mm ABOVE TRENCH BOTTOM

ORIGINAL ROCK < 1250mm ABOVE TRENCH BOTTOM

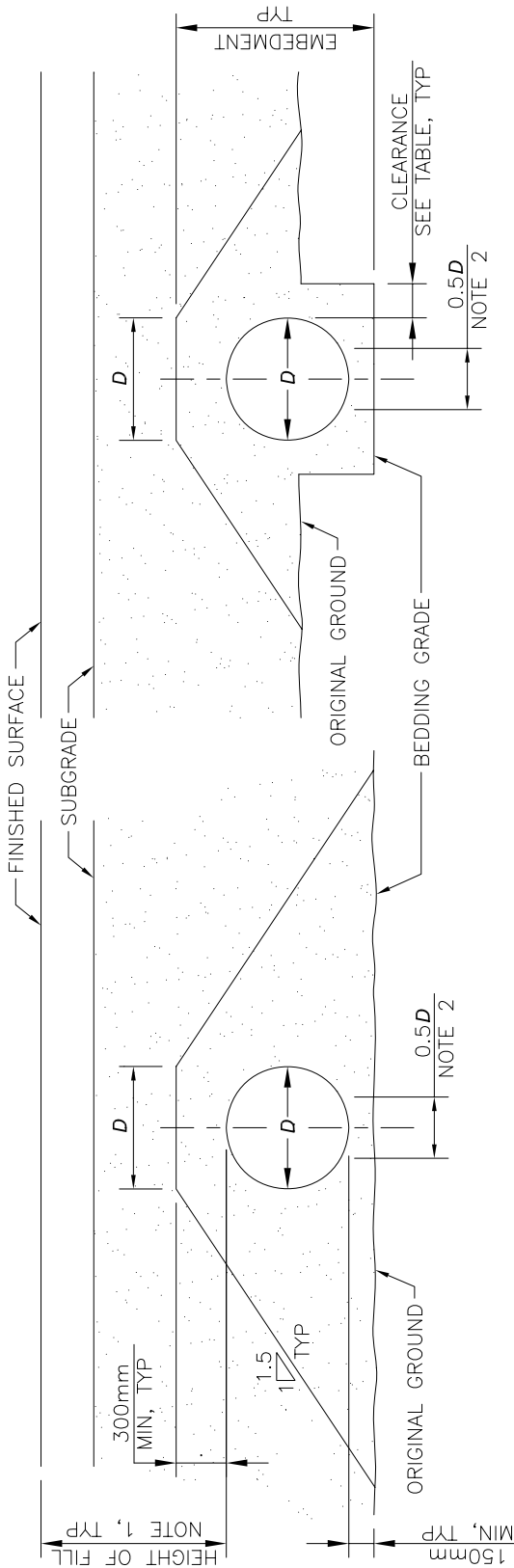
CLEARANCE TABLE	
PIPE INSIDE DIAMETER mm	CLEARANCE mm
900 OR LESS	300
OVER 900	500

**LEGEND:**

- D - INSIDE DIAMETER
- \* - FRACTURED ROCK OR HARDPAN WITH NO WATER PRESENT
- \*\* - OM TYPE SOIL
- \*\*\* - USM TYPE SOIL

**NOTES:**

- 1 HEIGHT OF FILL IS MEASURED FROM THE FINISHED SURFACE TO TOP OF PIPE.
- 2 THE PIPE BED SHALL BE COMPACTED AND SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
- 3 CONDITION OF EXCAVATION IS SYMMETRICAL ABOUT CENTERLINE OF PIPE.
- 4 EMBEDMENT MATERIAL SHALL BE WRAPPED IN NON-WOVEN GEOTEXTILE WHEN SPECIFIED.
- 5 GRANULAR MATERIAL PLACED IN THE HAUNCH AREA SHALL BE COMPACTED PRIOR TO PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT MATERIAL.
- 6 FRACTURED ROCK TO BE TREATED AS TYPE 1 SOIL.



PIPE INVERT AT OR BELOW ORIGINAL GROUND

PIPE INVERT ABOVE ORIGINAL GROUND

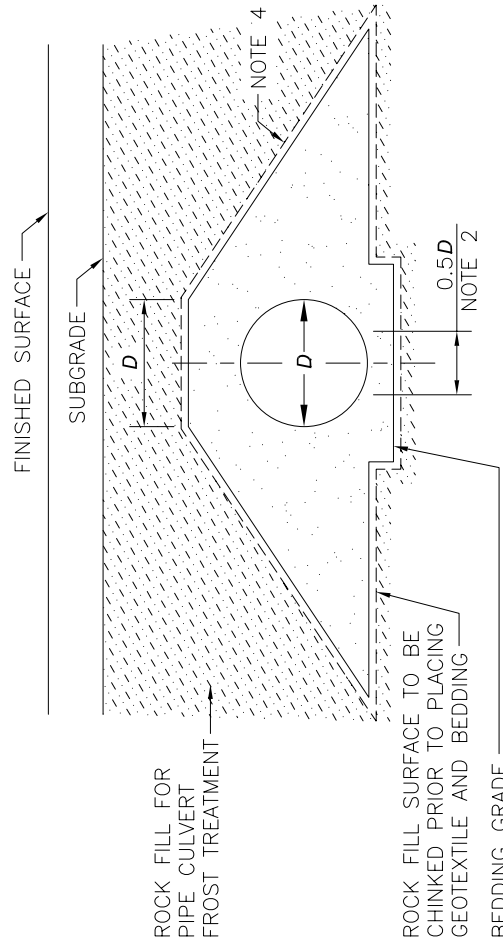
CLEARANCE TABLE	
PIPE INSIDE DIAMETER mm	CLEARANCE mm
900 OR LESS	300
OVER 900	500

**LEGEND:**

D - INSIDE DIAMETER

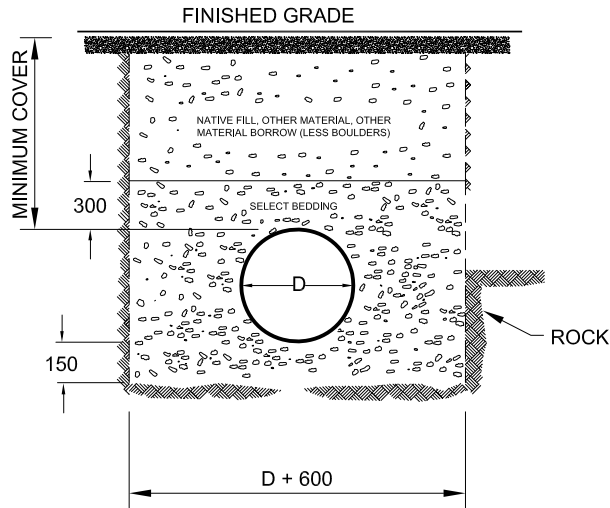
**NOTES:**

- 1 HEIGHT OF FILL IS MEASURED FROM THE FINISHED SURFACE TO TOP OF PIPE.
- 2 THE PIPE BED SHALL BE COMPACTED AND SHAPED TO RECEIVE THE BOTTOM OF THE PIPE.
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- 4 GRANULAR MATERIAL PLACED IN THE HAUNCH AREA SHALL BE COMPACTED PRIOR TO PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT MATERIAL.
- 5 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

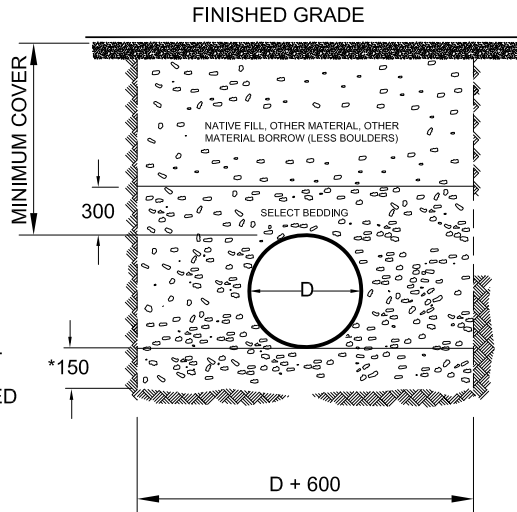


PIPE EMBEDMENT WITH ROCK FILL UNDER AND OVER THE PIPE

## ROCK EXCAVATION

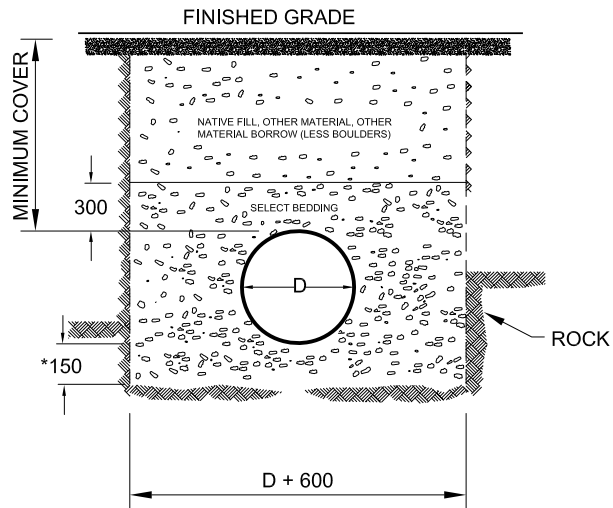


## OTHER MATERIAL EXCAVATION

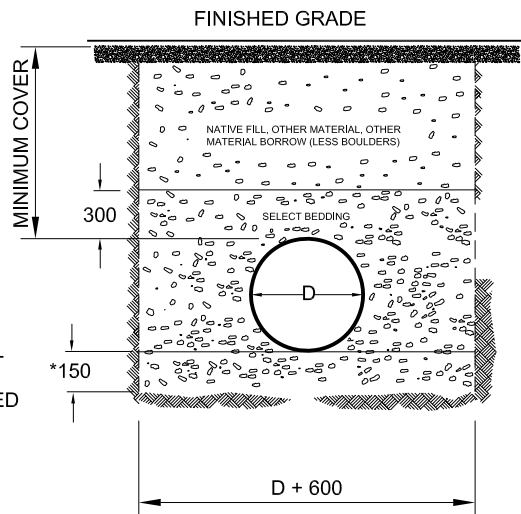


\* SELECT BEDDING IS ESSENTIAL UNDER PVC PIPE, BUT NOT REQUIRED UNDER CORRUGATED METAL PIPE.

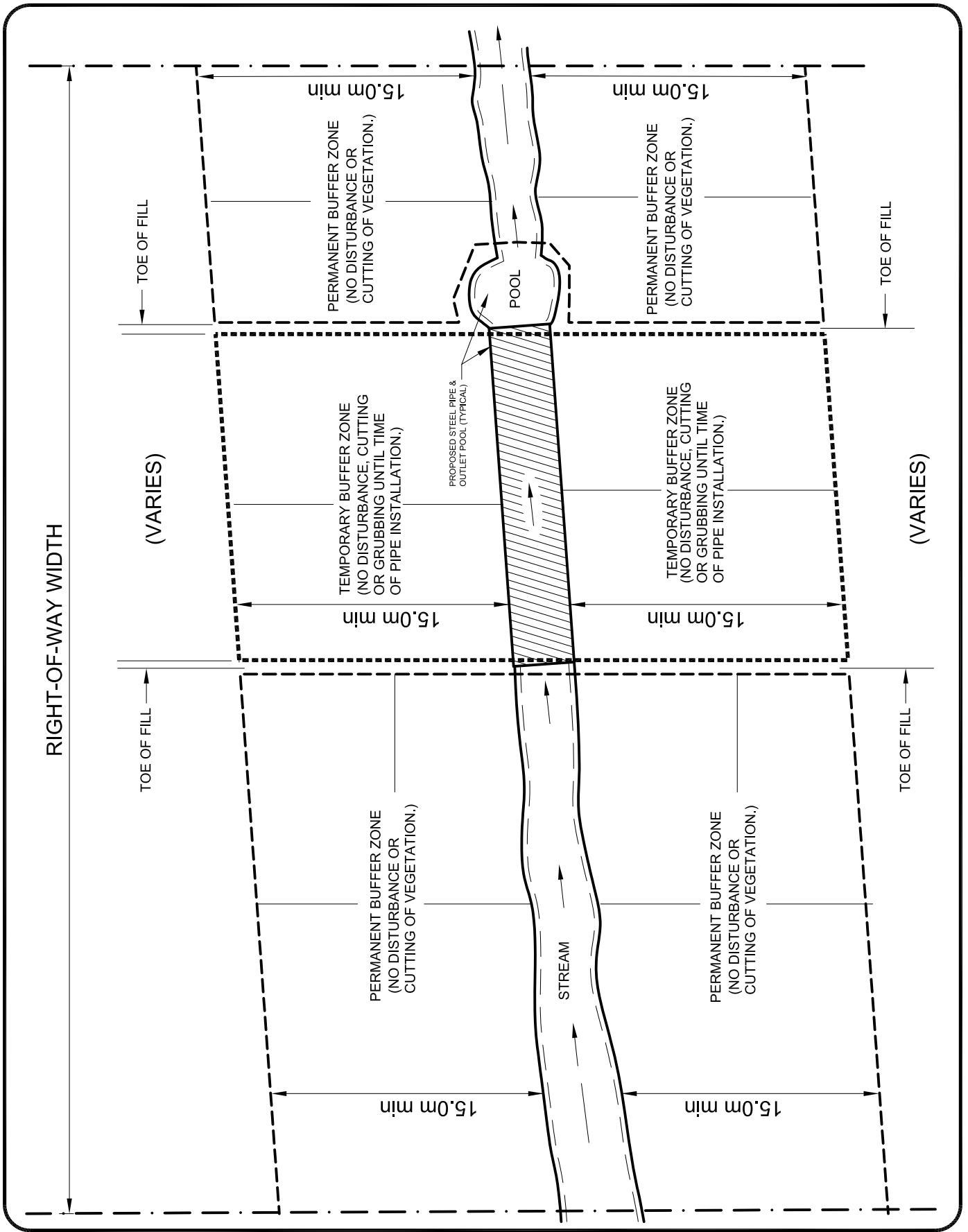
## ROCK EXCAVATION

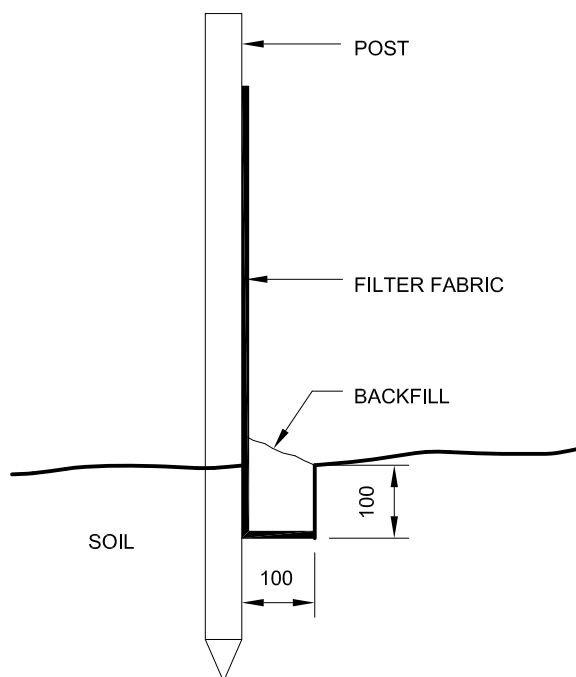


## OTHER MATERIAL EXCAVATION



\* SELECT BEDDING IS ESSENTIAL UNDER PVC PIPE, BUT NOT REQUIRED UNDER CORRUGATED METAL PIPE.





## INSTALLATION OF GEOTEXTILE SILT FENCE

1. EXCAVATE A 100 x 100 TRENCH IN A CRESENT SHAPE ACROSS THE FLOW PATH WITH ENDS POINTING UPSLOPE.
2. DRIVE STURDY STAKES, SPACED 3000 APART, INTO THE GROUND ALONG THE DOWNSLOPE SIDE OF THE TRENCH.
3. INSTALL THE FILTER FABRIC FROM A CONTINUOUS ROLL AND CUT TO REQUIRED LENGTH. THE FILTER FABRIC SHOULD BE STAPLED TO THE UPSTREAM SIDE OF THE STAKES, EXTENDING THE BOTTOM 200 INTO THE TRENCH.
4. BACKFILL AND COMPACT THE SOIL IN THE TRENCH OVER THE FILTER FABRIC.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## TYPICAL SILT FENCE

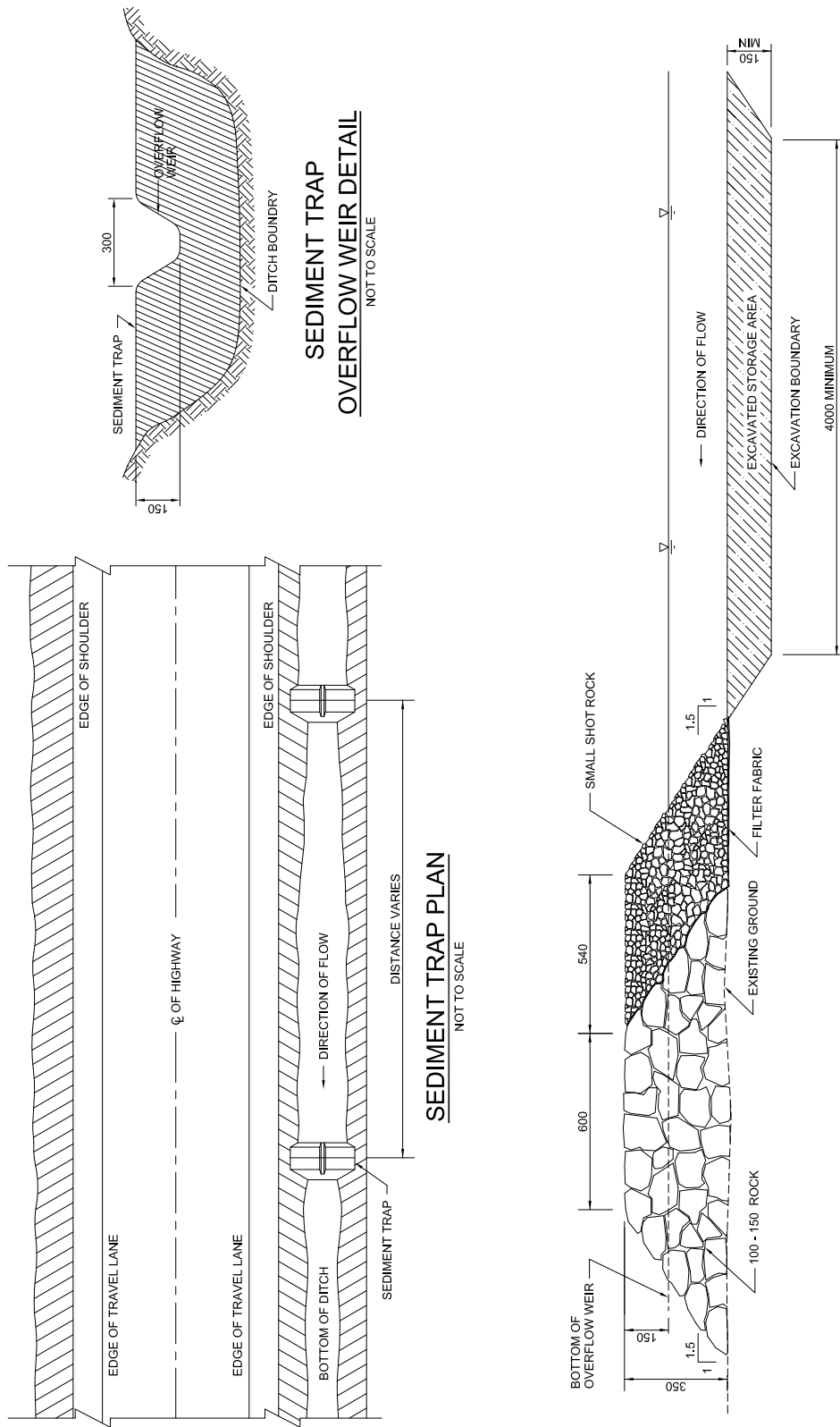
DRAWN BY: J. ROBERTS

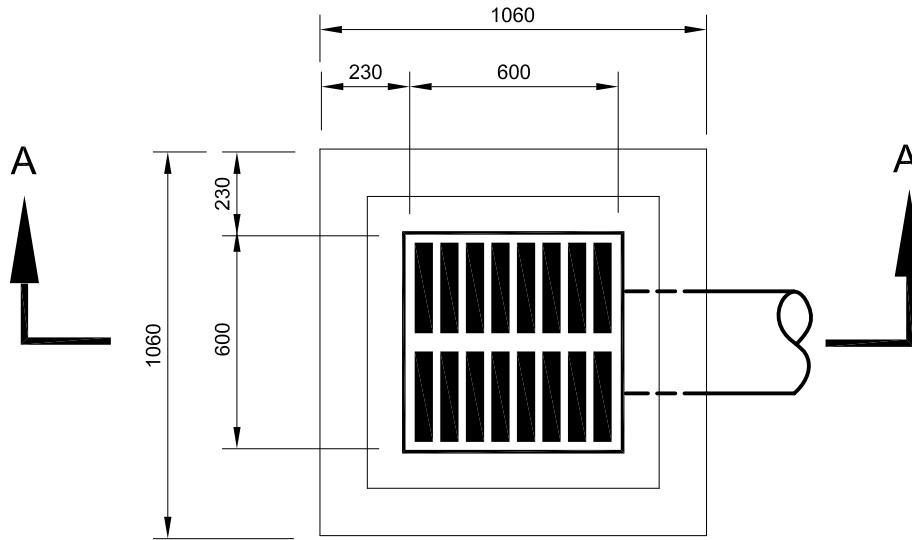
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REV 02-01-10

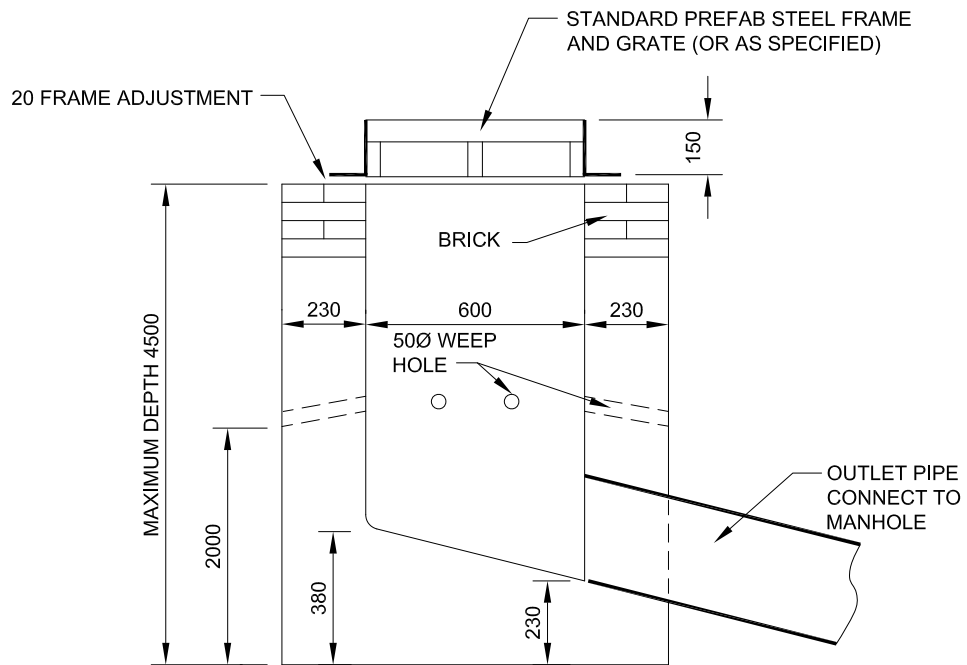
NOT TO SCALE







TOP VIEW



SECTION A-A

1. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL BY THE ENGINEER.
2. PORUS BACKFILL TO BE PLACED MINIMUM 300 ON ALL SIDES.
3. CONCRETE STRENGTH 35MPa AT 28 DAYS.
4. WEEP HOLES SHALL BE PLACED SO THAT THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

CATCH BASIN PUP

DRAWN BY:

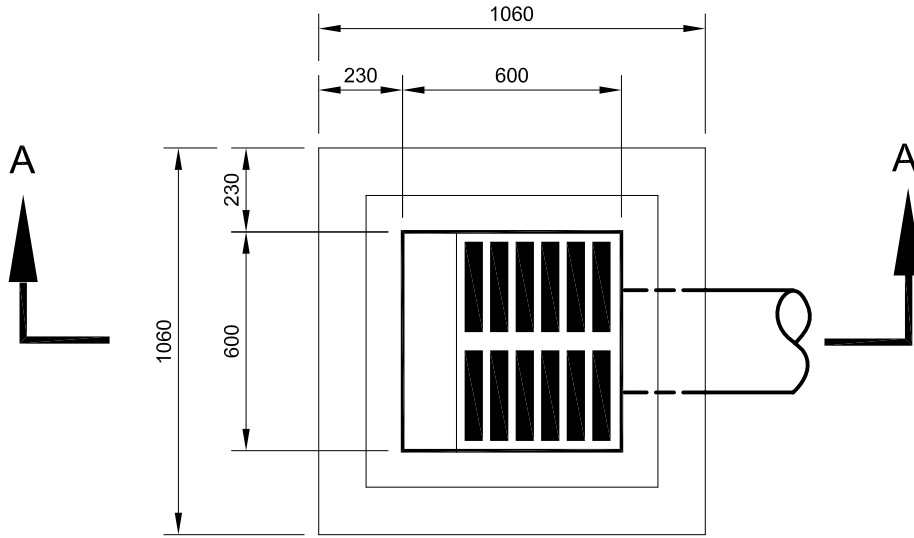
DATE:

REV March 31, 2012

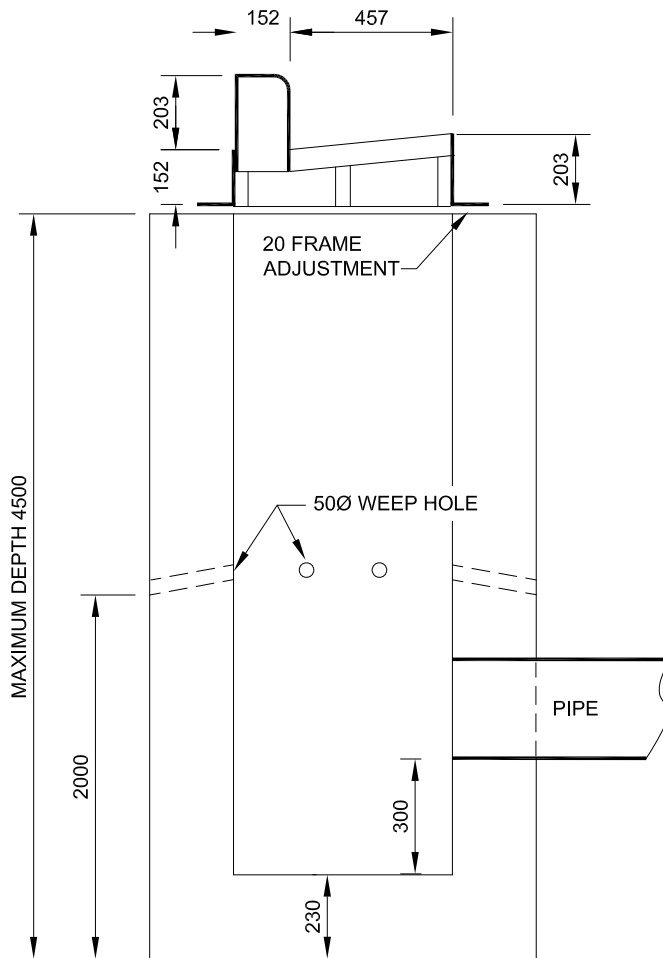
NOT TO SCALE

MARCH 2012

1240 -1

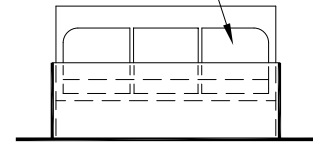


TOP VIEW

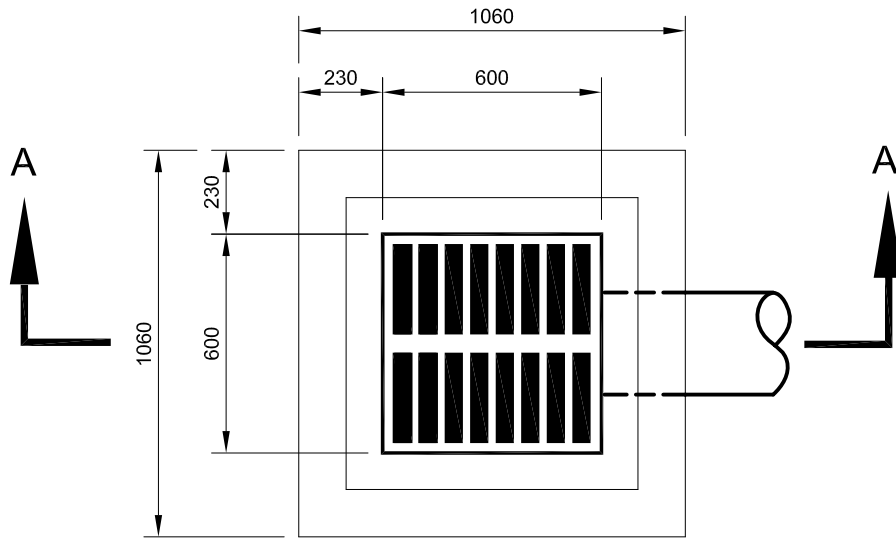


SECTION A-A

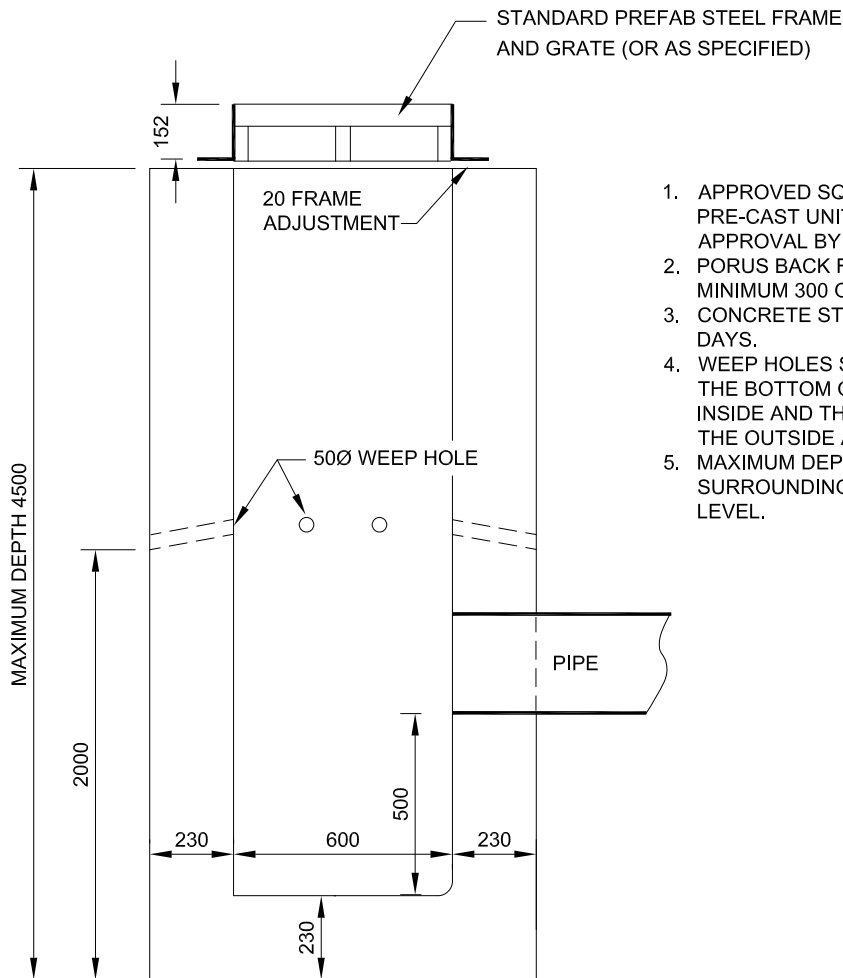
STANDARD PREFAB STEEL FRAME AND GRATE (OR AS SPECIFIED)



1. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL BY THE ENGINEER.
2. PORUS BACK FILL TO BE PLACED MINIMUM 300 ON ALL SIDES.
3. CONCRETE STRENGTH 35MPa AT 28 DAYS.
4. WEEP HOLES SHALL BE PLACED SO THAT THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
5. MAXIMUM DEPTH TO BE REDUCED IF SURROUNDING TOPOGRAPHY IS NOT LEVEL.

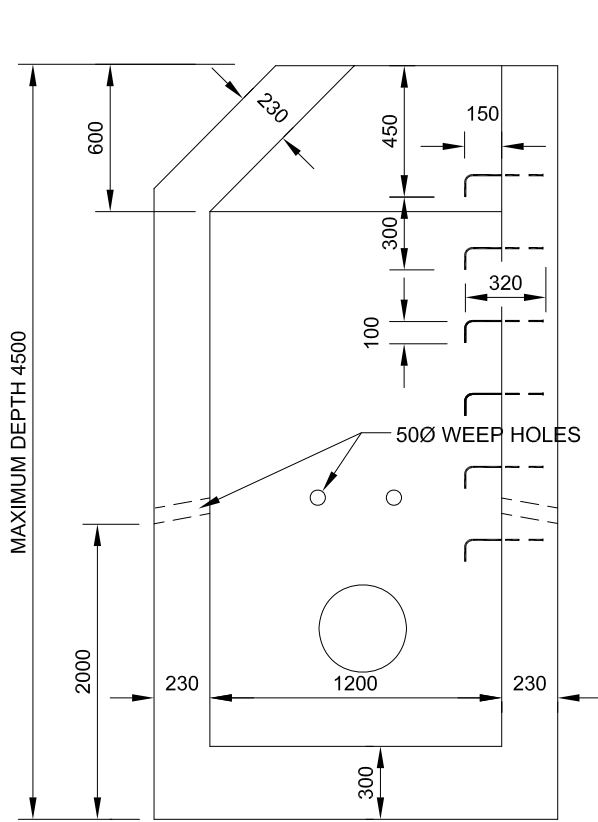
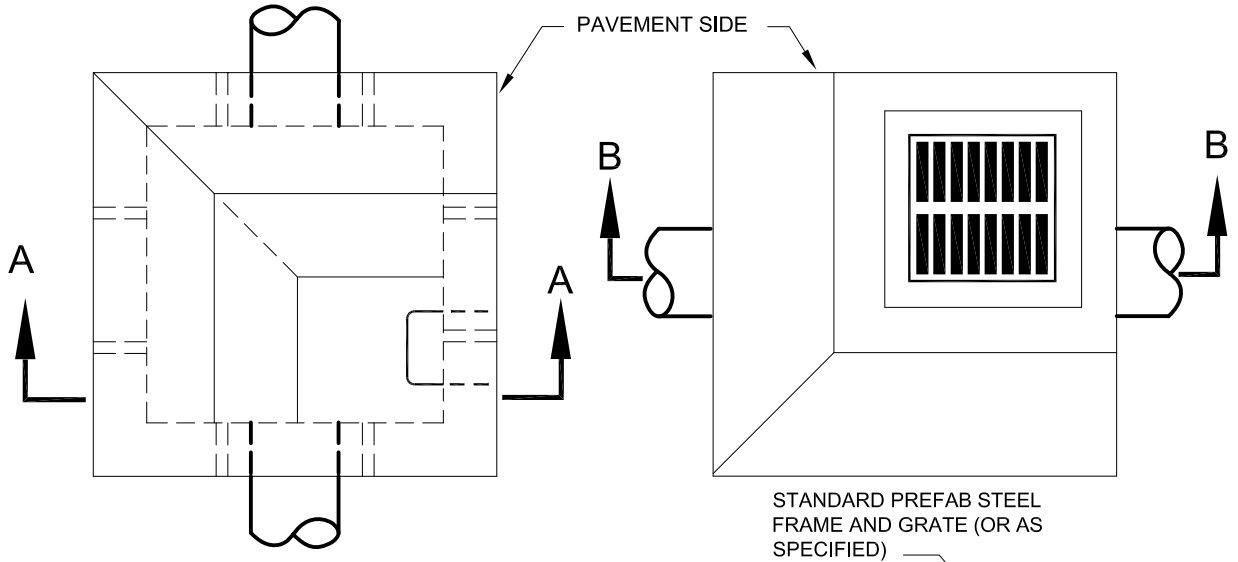


TOP VIEW

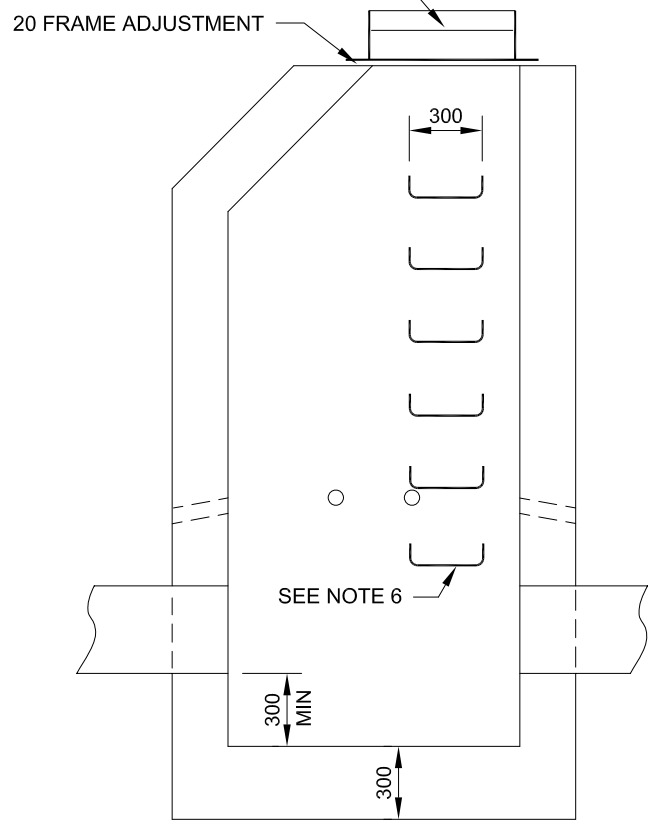


SECTION A-A

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5. MAXIMUM DEPTH TO BE REDUCED IF SURROUNDING TOPOGRAPHY IS NOT LEVEL.

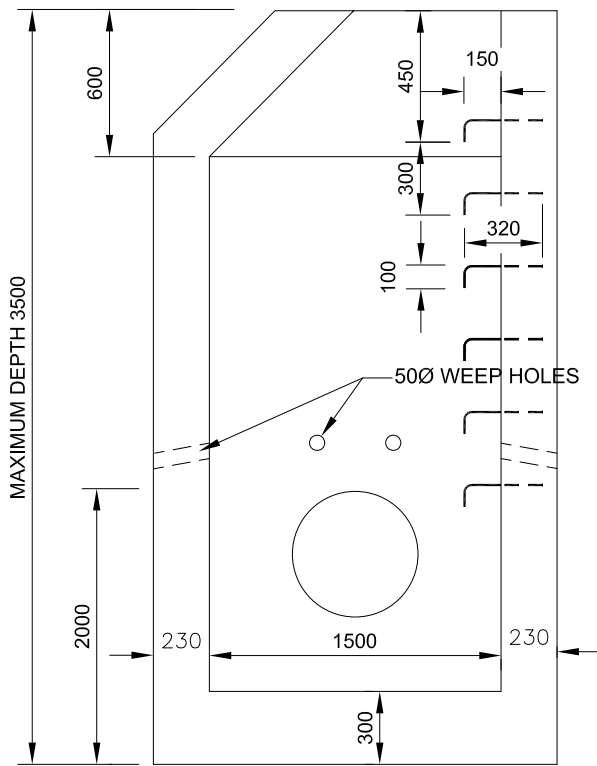
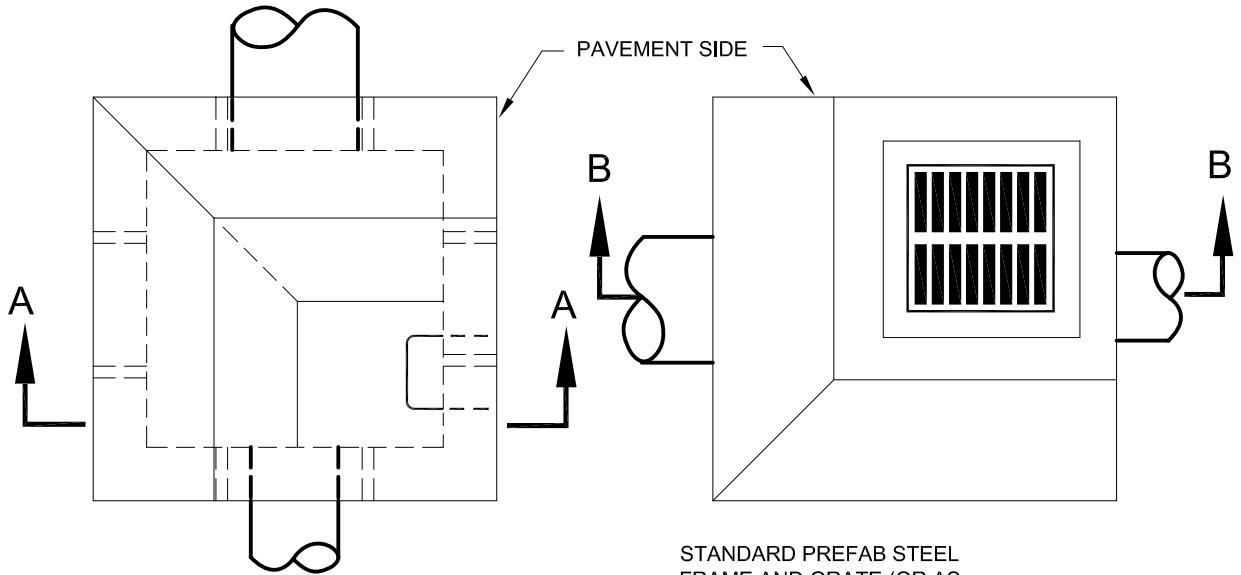


SECTION A-A

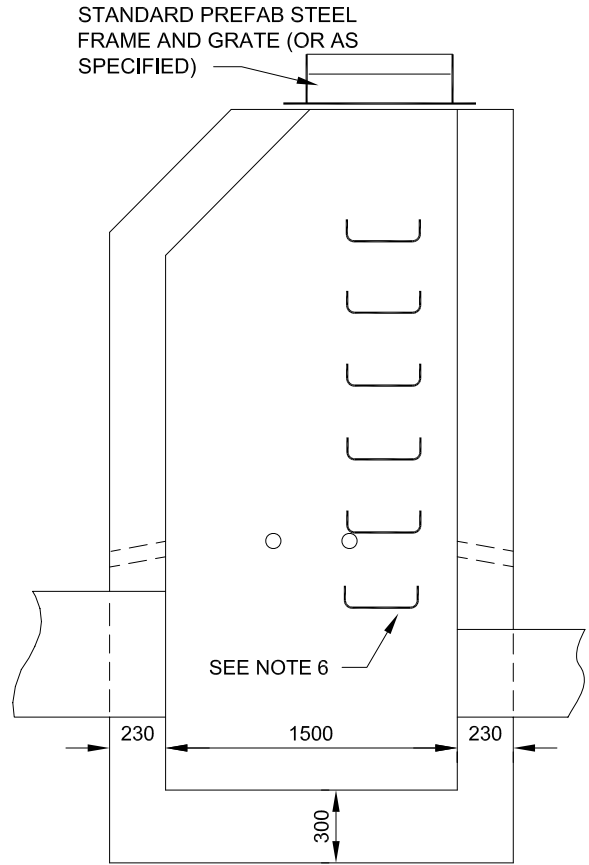


SECTION B-B

1. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL BY THE ENGINEER.
2. POROUS BACK FILL TO BE PLACED MINIMUM 300 ON ALL SIDES.
3. CONCRETE STRENGTH 35MPa AT 28 DAYS.
4. WEEPER HOLES SHALL BE PLACED SO THAT THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
5. MAXIMUM DEPTH TO BE REDUCED IF SURROUNDING TOPOGRAPHY IS NOT LEVEL.
6. LADDER RUNGS TO BE 20M HI-BOND BARS GALVANIZED OR EQUAL.



SECTION A-A



SECTION B-B

1. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL BY THE ENGINEER.
2. POROUS BACK FILL TO BE PLACED MINIMUM 300 ON ALL SIDES.
3. CONCRETE STRENGTH 35MPa AT 28 DAYS.
4. WEEP HOLES SHALL BE PLACED SO THAT THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
5. MAXIMUM DEPTH TO BE REDUCED IF SURROUNDING TOPOGRAPHY IS NOT LEVEL.
6. LADDER RUNGS TO BE 20M HI-BOND BARS GALVANIZED OR EQUAL.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

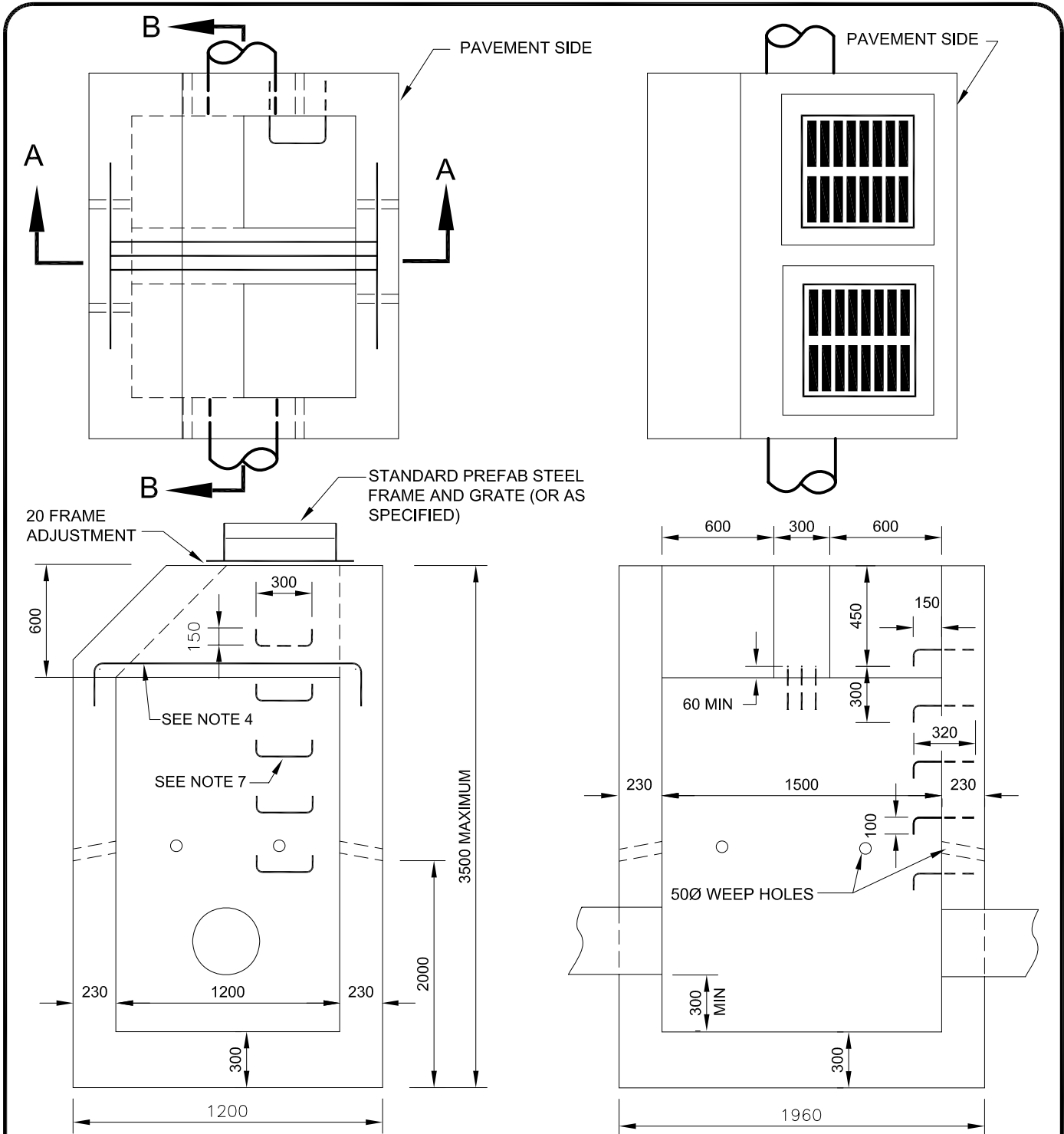
## SINGLE INLET LARGE INSPECTION CATCHBASIN

DRAWN BY:

DATE:

REV March 31, 2012

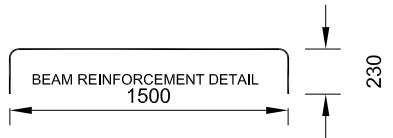
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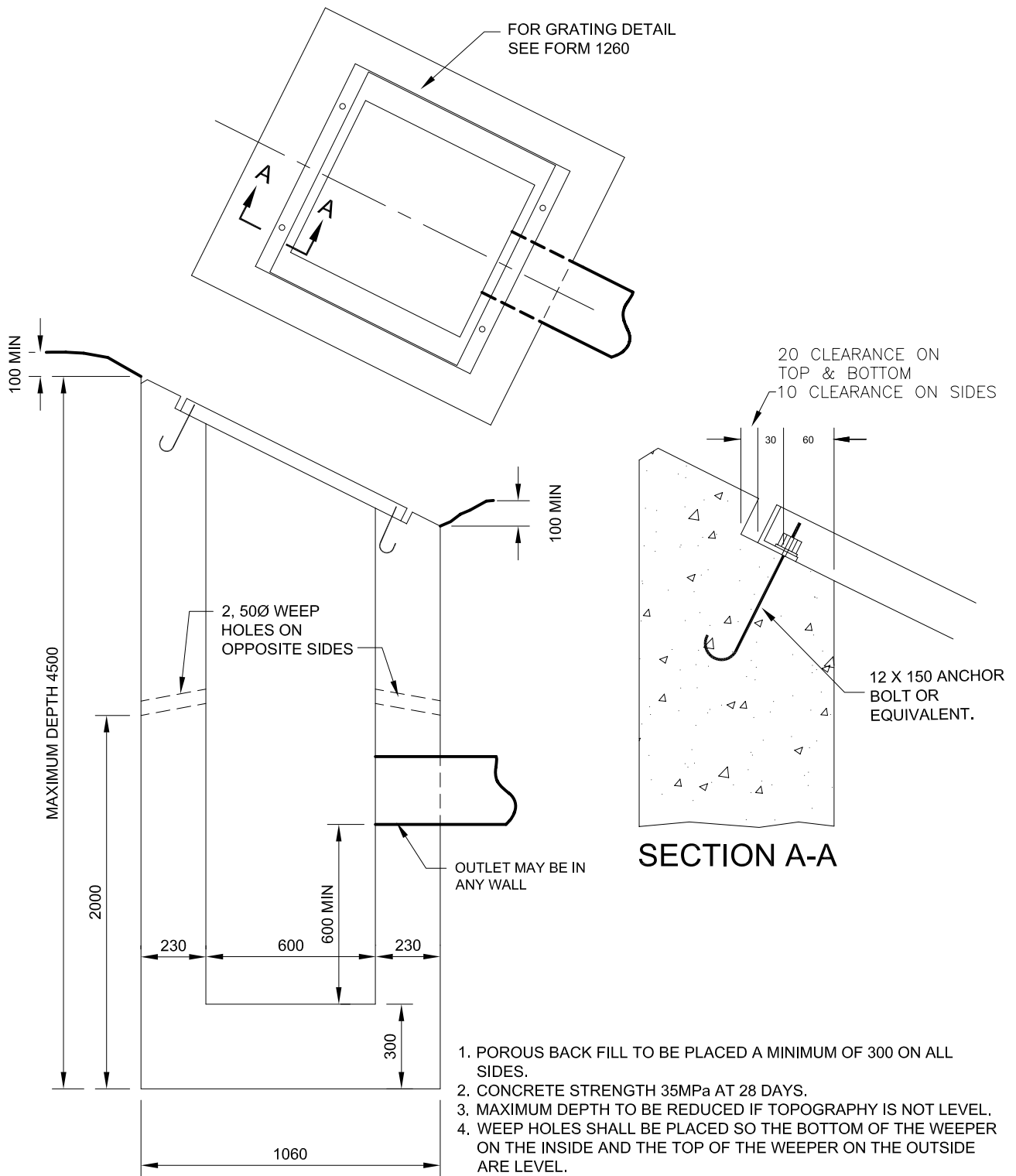


SECTION A-A

SECTION B-B

1. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL BY THE ENGINEER.
2. POROUS BACK FILL TO BE PLACED MINIMUM 300 ON ALL SIDES.
3. CONCRETE STRENGTH 35MPa AT 28 DAYS.
4. 3-15M HI-BOND BARS BENT AS PER DETAIL, TIES TO BE 15M HI-BOND BARS, 1000 LONG.
5. MAXIMUM DEPTH TO BE REDUCED IF TOPOGRAPHY IS NOT LEVEL.
6. WEEP HOLES SHALL BE PLACE SO THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
7. LADDER RUNGS TO BE 20M HI-BOND BARS, GALVANIZED OR EQUAL.





1. POROUS BACK FILL TO BE PLACED A MINIMUM OF 300 ON ALL SIDES.
2. CONCRETE STRENGTH 35MPa AT 28 DAYS.
3. MAXIMUM DEPTH TO BE REDUCED IF TOPOGRAPHY IS NOT LEVEL.
4. WEEP HOLES SHALL BE PLACED SO THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
5. WHERE INLET IS PLACED ACROSS DITCH AND IS ACCESSIBLE TO VEHICULAR TRAFFIC, GRATING IS TO BE 6:1 OR FLATTER.
6. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL OF THE ENGINEER.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## 600 x 600 DITCH INLET CATCHBASIN

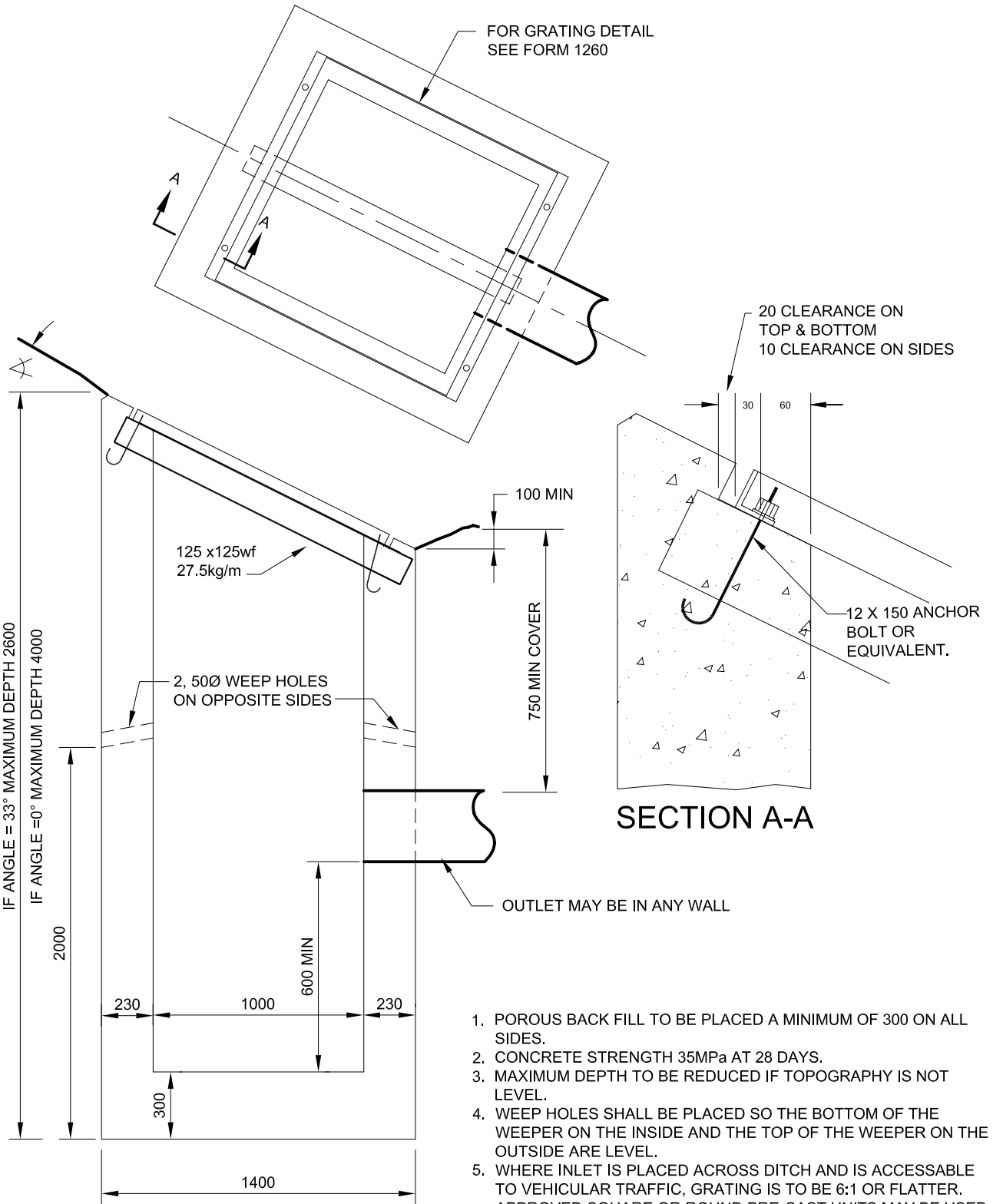
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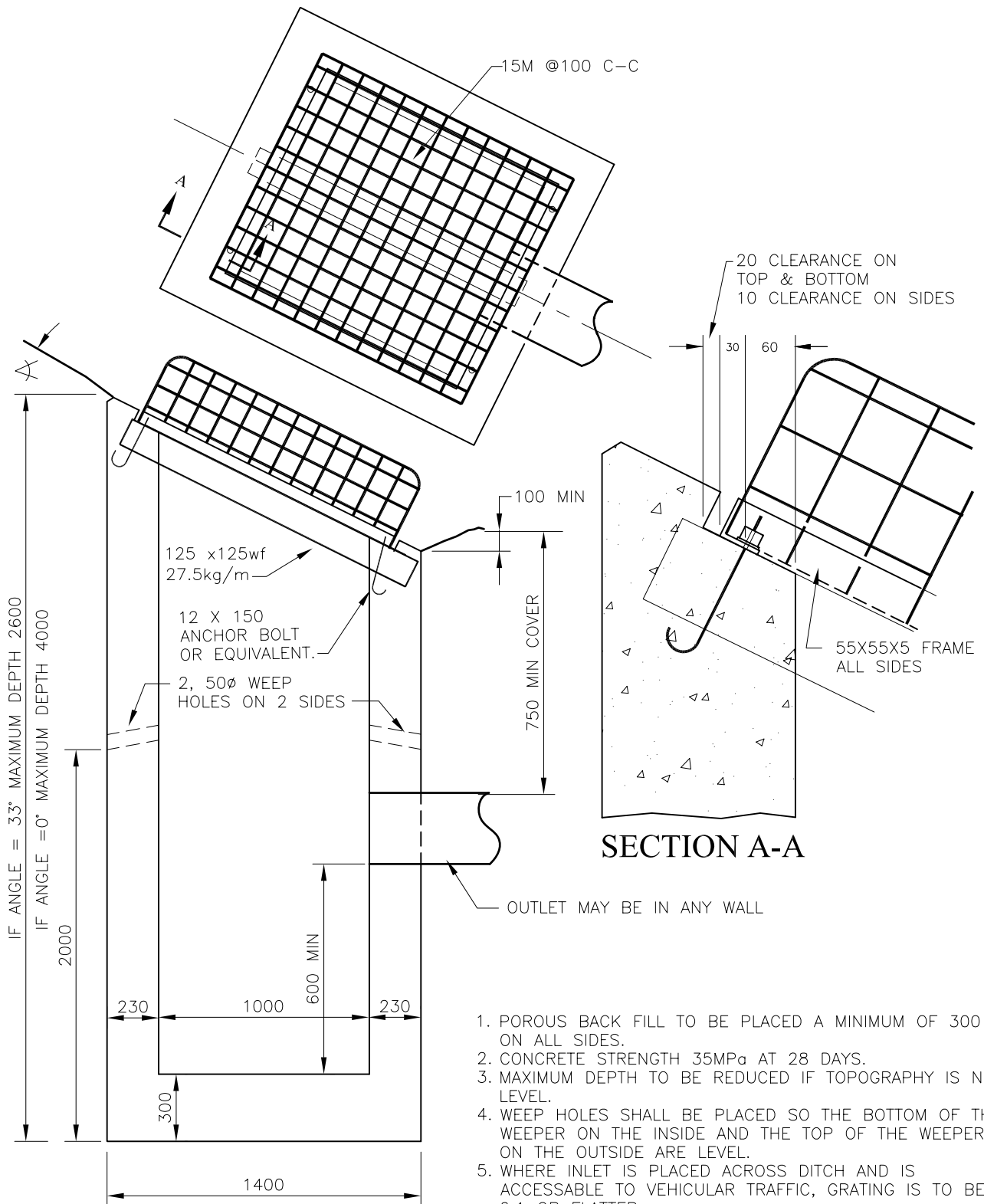
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REV March 31,2012

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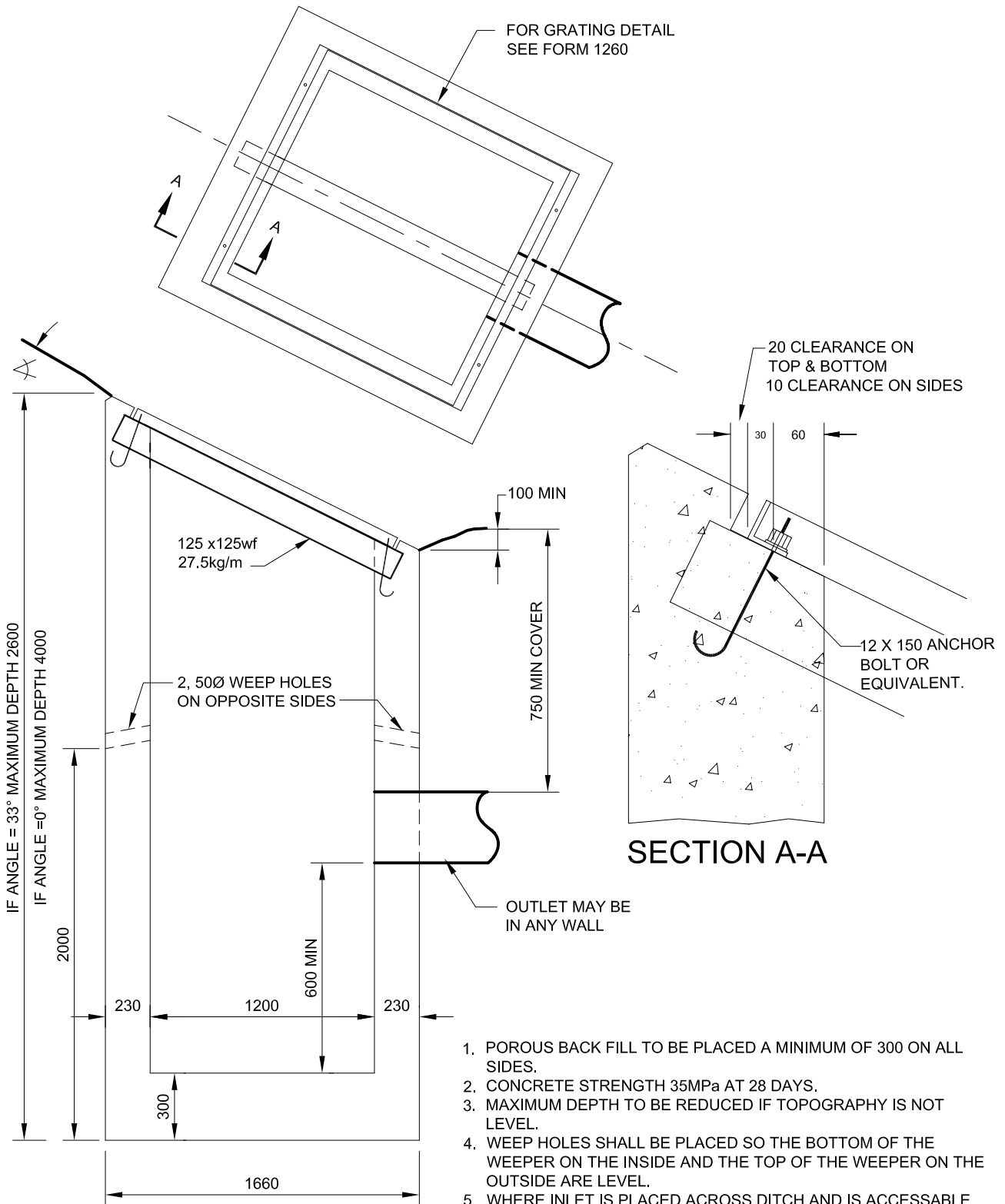
**SECTION A-A**

1. POROUS BACK FILL TO BE PLACED A MINIMUM OF 300 ON ALL SIDES.
2. CONCRETE STRENGTH 35MP<sub>a</sub> AT 28 DAYS.
3. MAXIMUM DEPTH TO BE REDUCED IF TOPOGRAPHY IS NOT LEVEL.
4. WEEPER HOLES SHALL BE PLACED SO THE BOTTOM OF THE WEEPER ON THE INSIDE AND THE TOP OF THE WEEPER ON THE OUTSIDE ARE LEVEL.
5. WHERE INLET IS PLACED ACROSS DITCH AND IS ACCESSABLE TO VEHICULAR TRAFFIC, GRATING IS TO BE 6:1 OR FLATTER.
6. APPROVED SQUARE OR ROUND PRE-CAST UNITS MAY BE USED ON APPROVAL OF THE ENGINEER.

  
**TRANSPORTATION AND WORKS**  
 HIGHWAY DESIGN DIVISION

MODIFIED 1000X 1000 DITCH INLET CATCHBASIN

DRAWN BY:	DATE: REV March 31, 2012	NOT TO SCALE
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TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

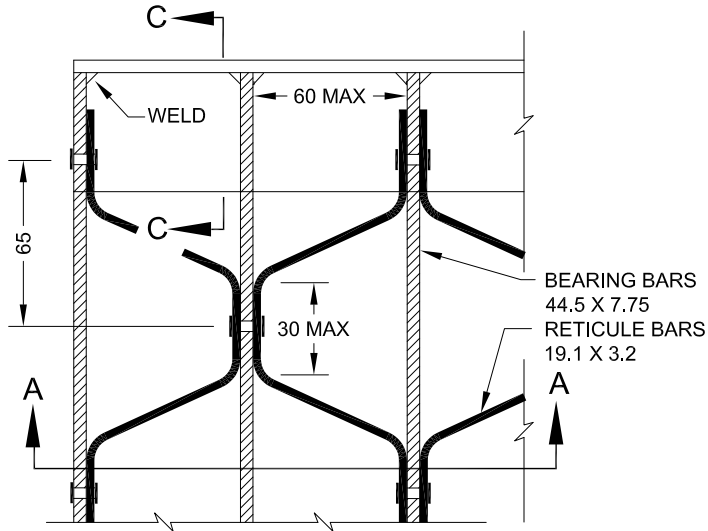
## 1200 x 1200 DITCH INLET CATCHBASIN

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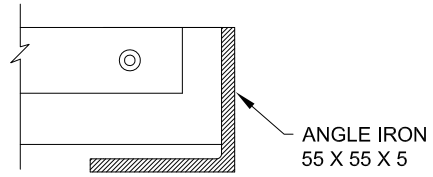
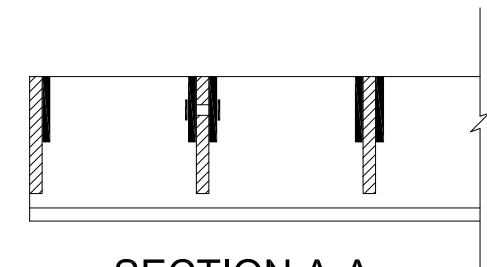
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REV March 31, 2012

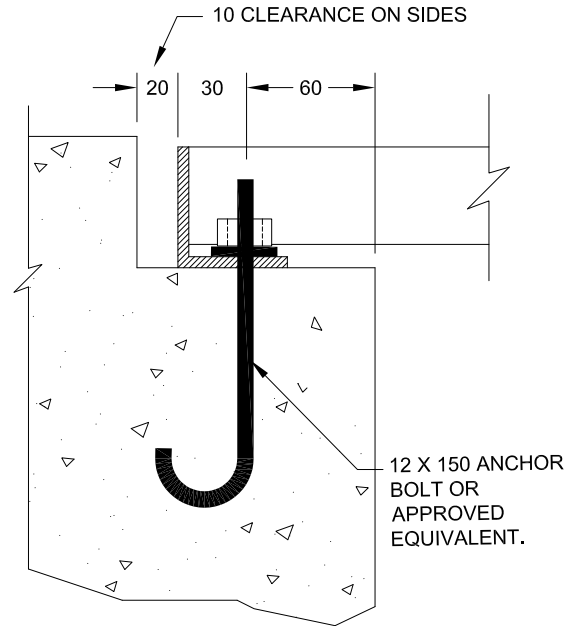
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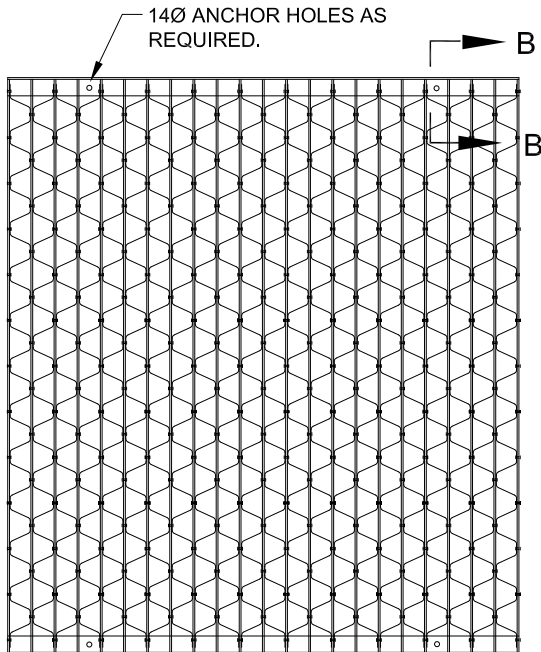
SECTION A-A



SECTION C-C



SECTION B-B



**MATERIALS**

BEARING BAR MINIMUM TENSILE STRENGTH SAE-1015  
 RETICULE BARS MINIMUM TENSILE STRENGTH SAE-1010  
 RIVETS FLAT HEAD.

**FINISH**

ALL SURFACES SHALL BE PAINTED WITH ONE SHOP COAT OF ASPHALT OR TAR BASE BLACK PAINT, HAVING A MINIMUM SOFTENING POINT OF 70°C

**WELDING**

END BEARING BARS TO BE WELDED TO ANGLE BAR ALONG BOTH LEGS WITH A 5MM FILE WELD. STANDARD METAL GRATING INSTITUTE MARKING RF-37-5.  
 RETICULE BARS MAY BE CRIMPED OR STRAIGHT, MAXIMUM LENGTH OF THE RETICULE BAR PARALLEL TO THE BEARING BAR IS 30 AT EACH RIVET.



TRANSPORTATION AND WORKS  
 HIGHWAY DESIGN DIVISION

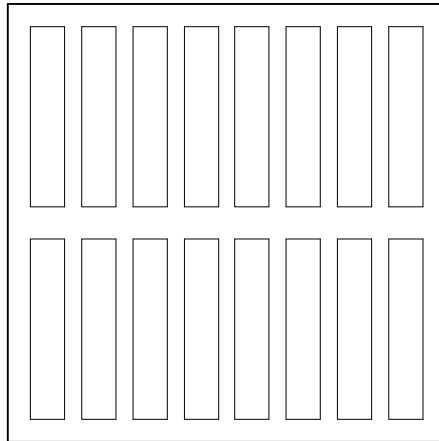
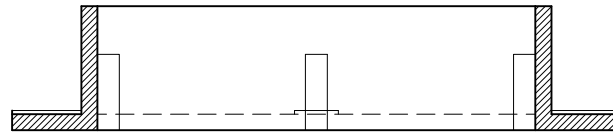
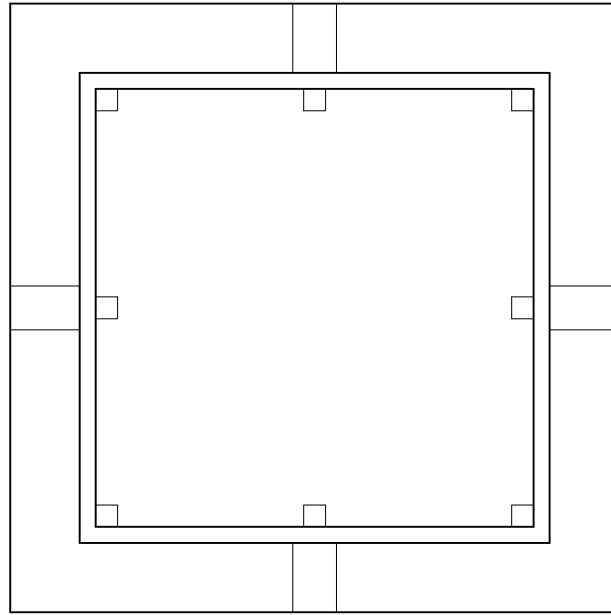
**TYPICAL DITCH INLET  
 GRATING DETAIL**

DRAWN BY:

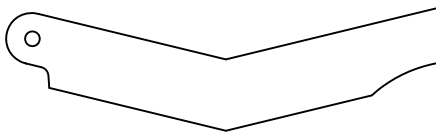
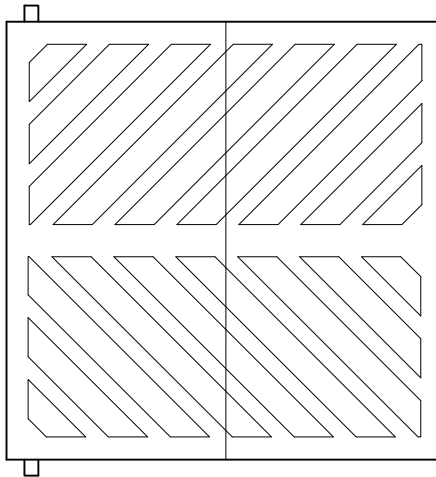
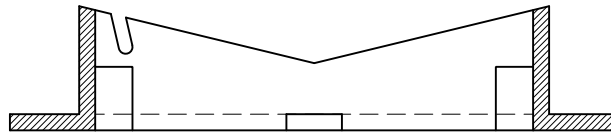
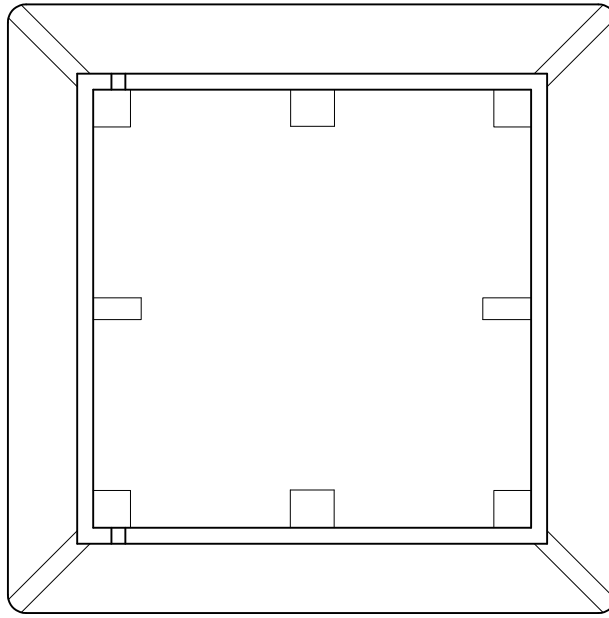
DATE:

REV 02-01-10

NOT TO SCALE



# STANDARD FRAME AND GRATE FOR CATCHBASIN



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

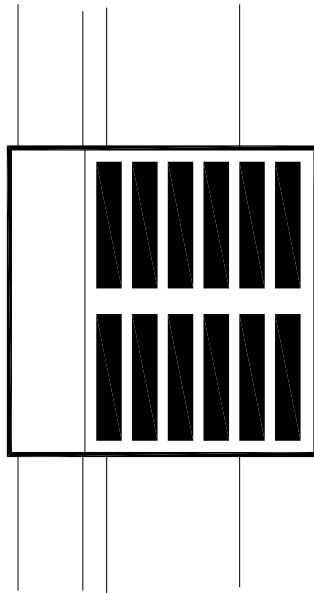
## STANDARD TYPE V FRAME AND GRATE FOR CATCHBASINS

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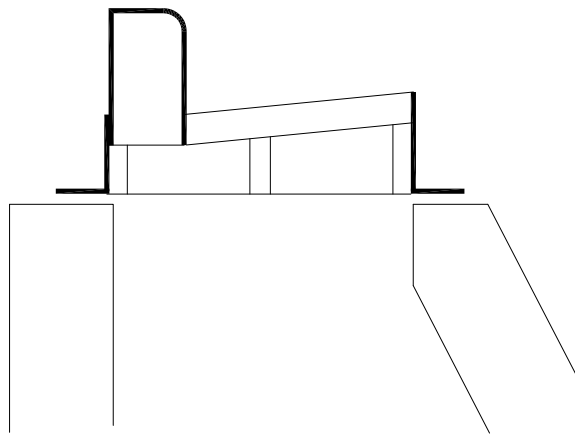
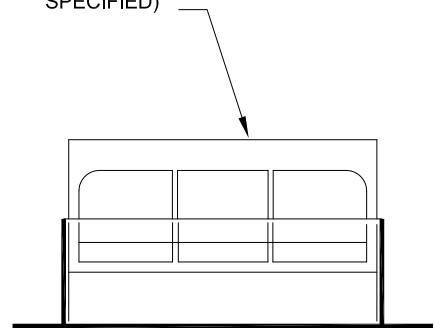
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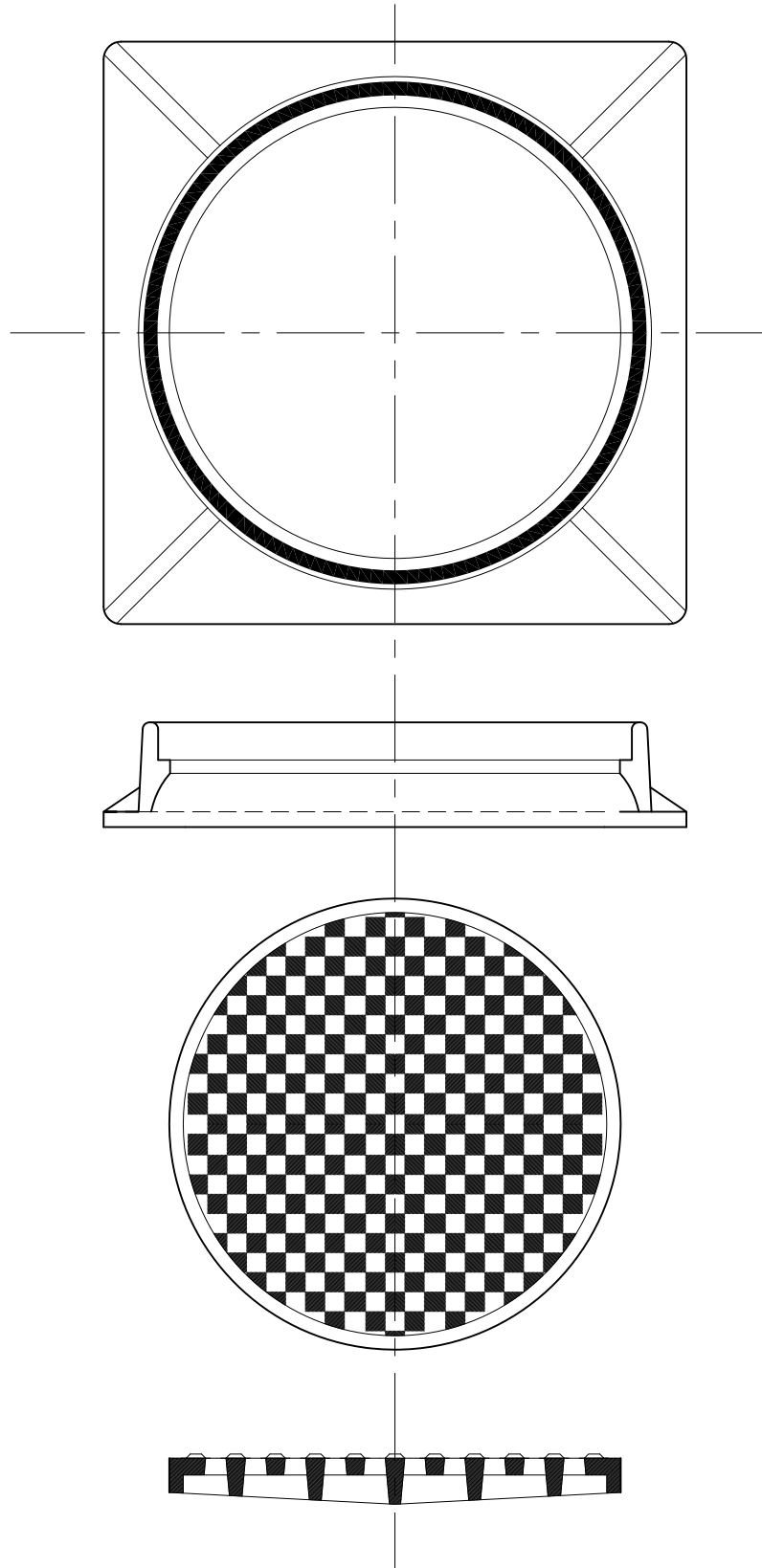
REV 02-01-10

NOT TO SCALE



STANDARD PREFAB STEEL  
FRAME AND GRATE (OR AS  
SPECIFIED)





TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

# STANDARD ROUND MANHOLE FRAME AND GRATE

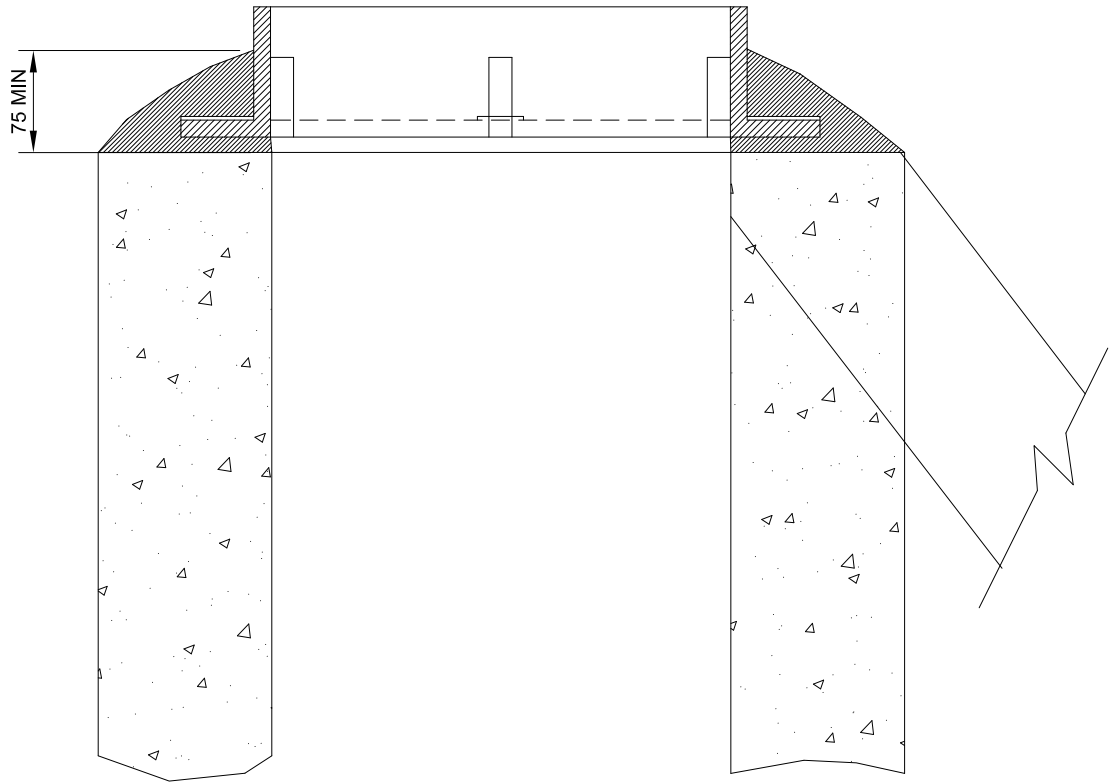
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REV 02-01-10

NOT TO SCALE





TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

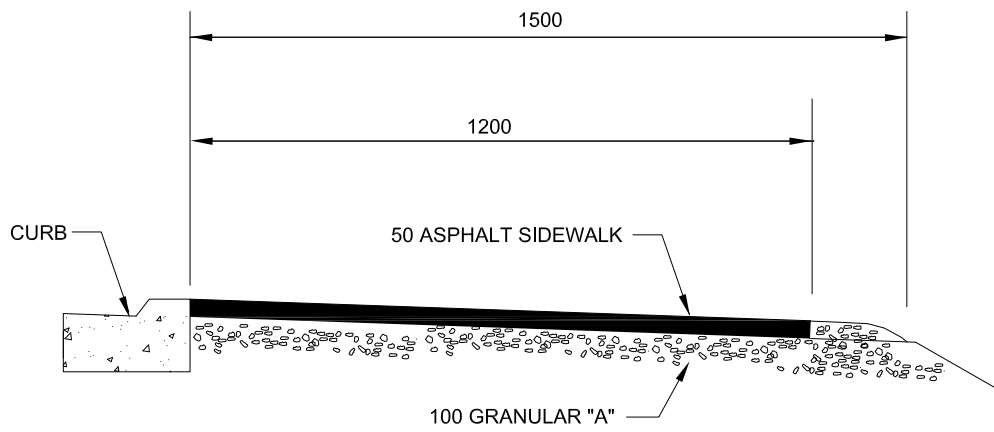
# STANDARD MANHOLE FRAME MORTAR DETAIL

DRAWN BY:

DATE:

REV 02-01-10

NOT TO SCALE



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

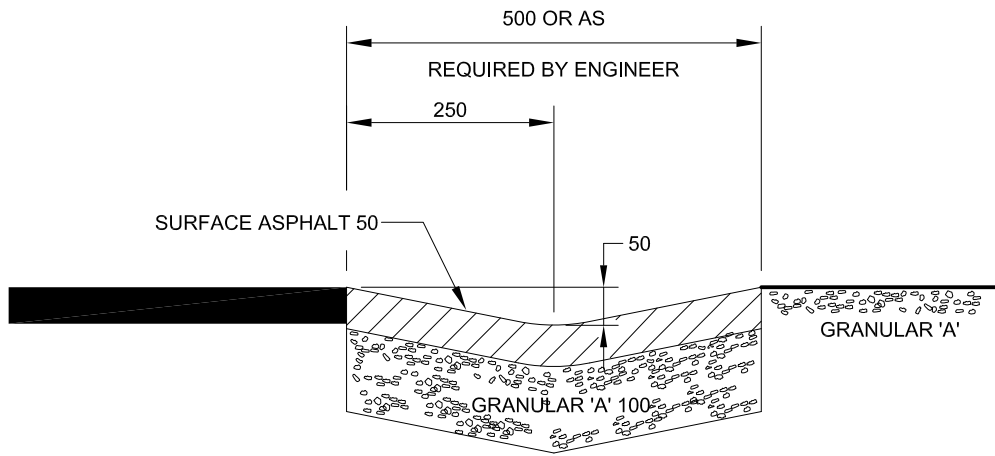
# ASPHALT SIDEWALK

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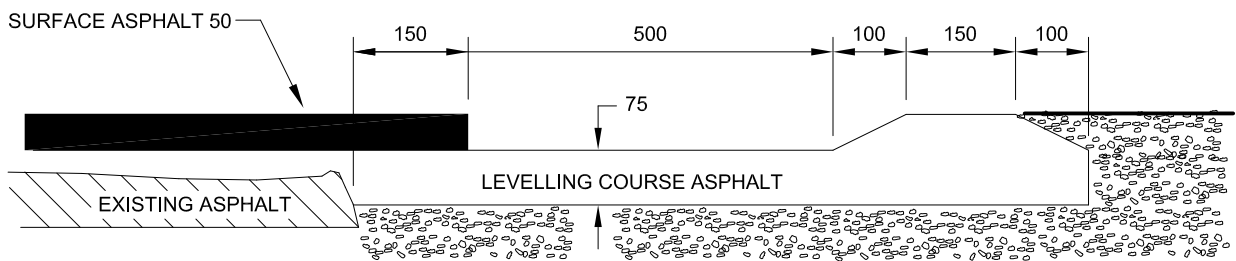
DATE:

REV 02-01-10

NOT TO SCALE



ASPHALT GUTTER WITH SURFACE COURSE ASPHALT



ASPHALT GUTTER WITH LEVELLING COURSE ASPHALT



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

ASPHALT GUTTER

DRAWN BY:

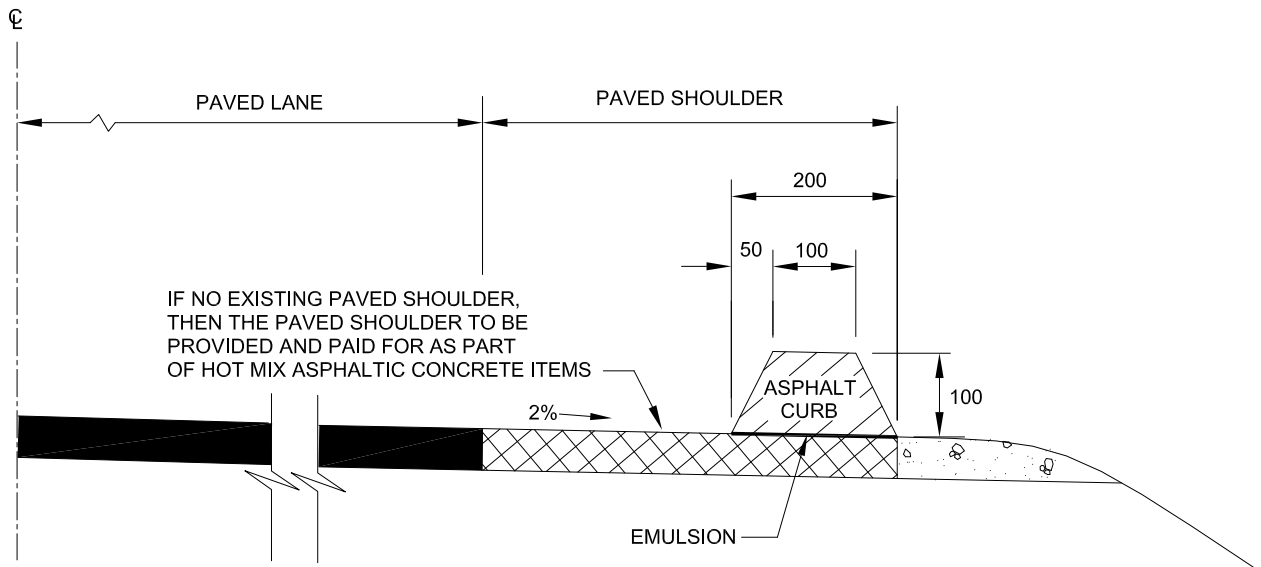
DATE:

REV 02-01-10

NOT TO SCALE

MARCH 2011

1273 -1



NOTES:  
 ASPHALT CURB SHALL COMPRISE MATERIAL CONFORMING TO THE REQUIREMENTS FOR ASPHALT SURFACE COURSE MATERIAL.



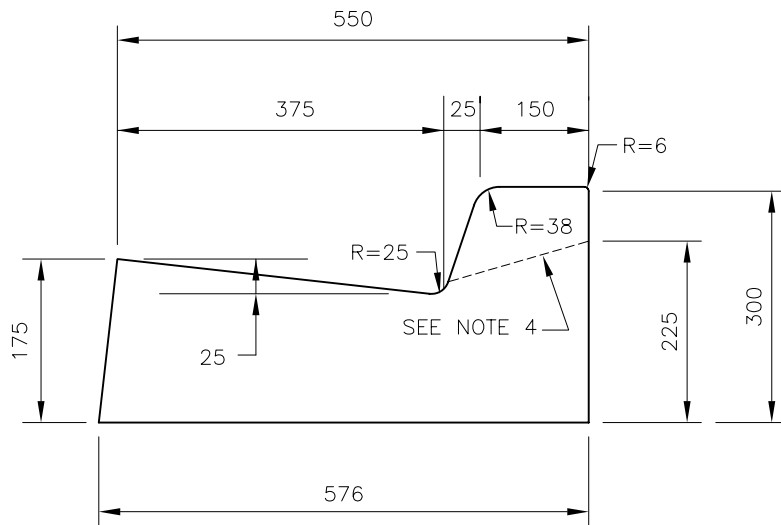
TRANSPORTATION AND WORKS  
 HIGHWAY DESIGN DIVISION

# ASPHALT CURB

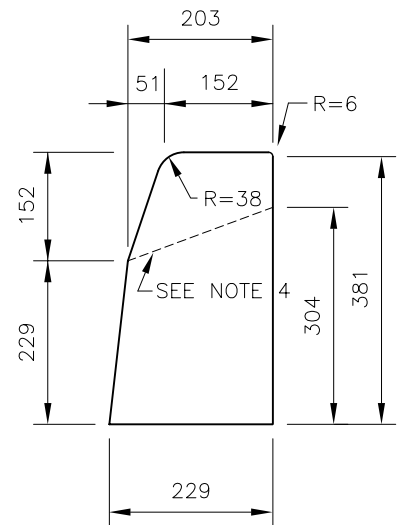
DRAWN BY: DEB KIRBY

DATE: REV 02-01-10

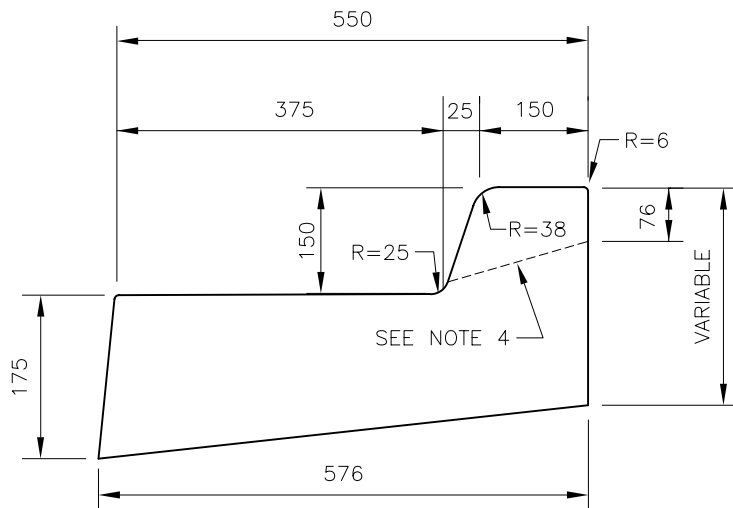
NOT TO SCALE



TYPE 'C' CURB



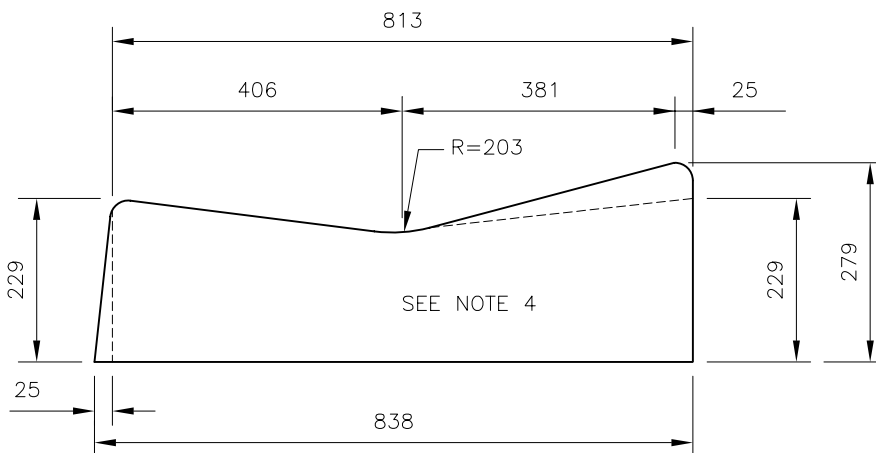
TYPE 'G' CURB



TYPE 'D' CURB

NOTES:

1. CONCRETE 35MP<sub>a</sub>
2. ISOLATION JOINTS @ 6.0m INTERVALS
3. ISOLATION JOINT MATERIAL TO BE ASPHALTIC, NON-PROTUDING MATERIAL.
4. DROP CURB AT ENTRANCES.
5. TAPERED END TREATMENT AT ENDS.



TYPE 'H' CURB



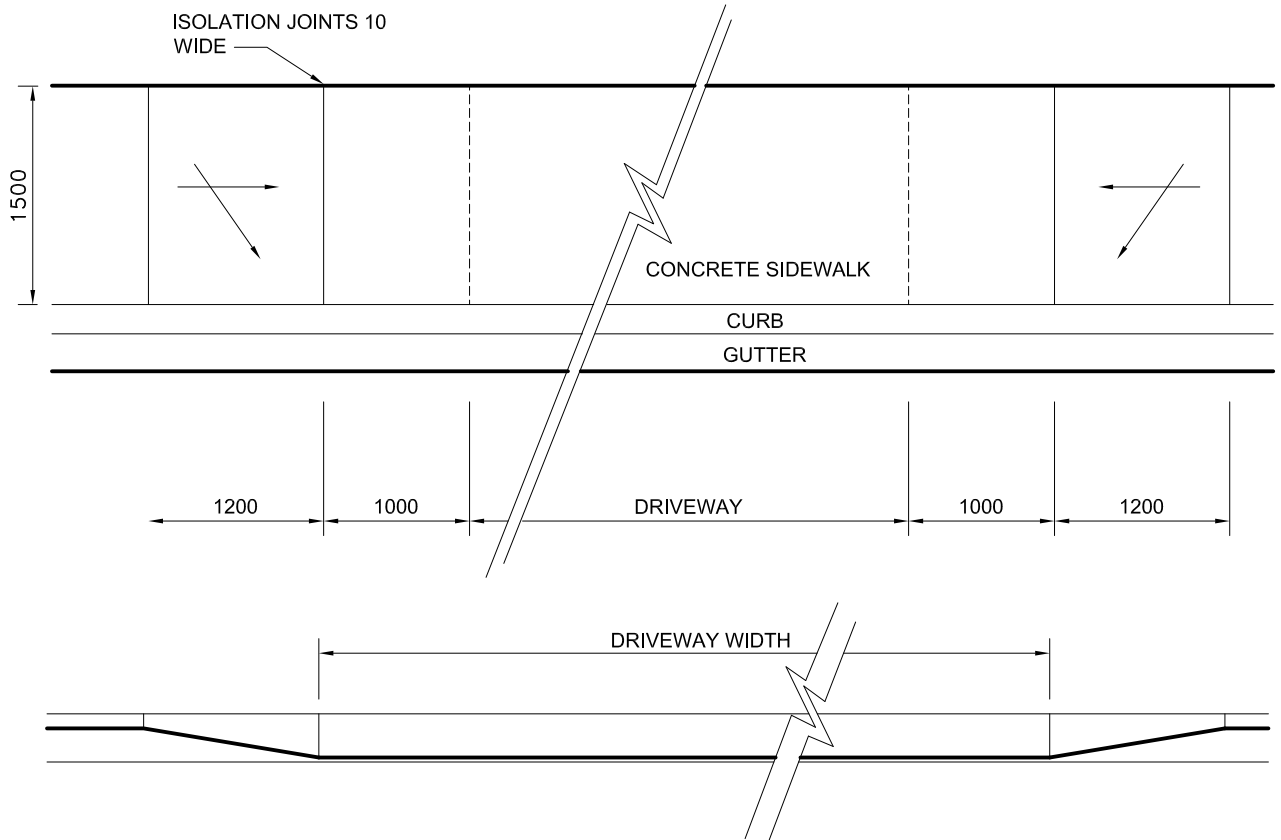
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

CONCRETE CURBS  
TYPES C,D,G & H

DRAWN BY: DEB KIRBY

DATE: 2011-03-31

NOT TO SCALE



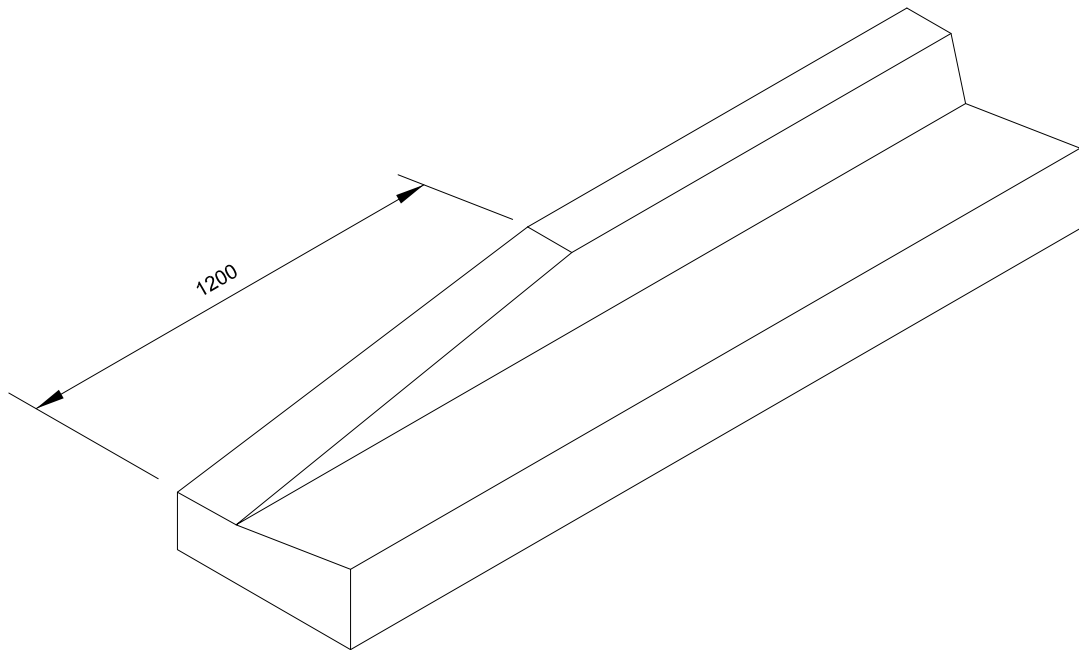
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

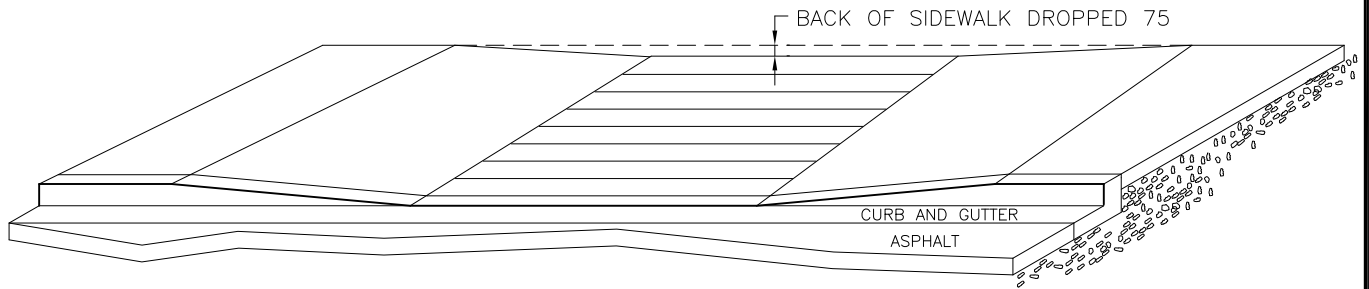
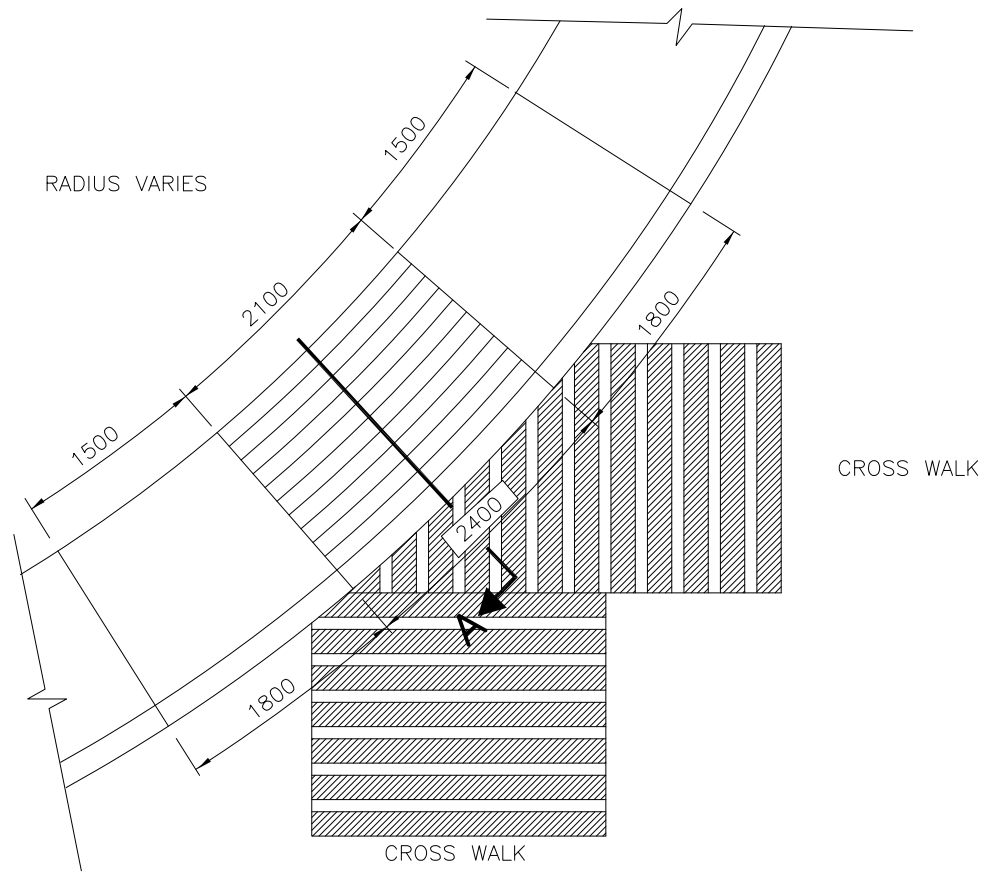
### TYPICAL DROP CURB WITH SIDEWALK

DRAWN BY: H. JONES

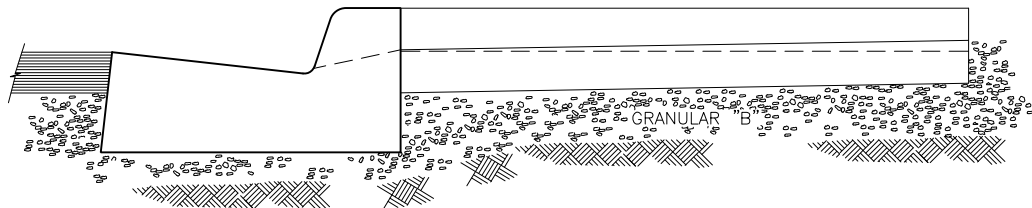
DATE: REV 02-01-10

NOT TO SCALE





CONCRETE 35MPa.  
 150C-C NON SKID RIBBED SURFACE SHALL BE EDGED ON PARAPLEGIC RAMP.



TRANSPORTATION AND WORKS  
 HIGHWAY DESIGN DIVISION

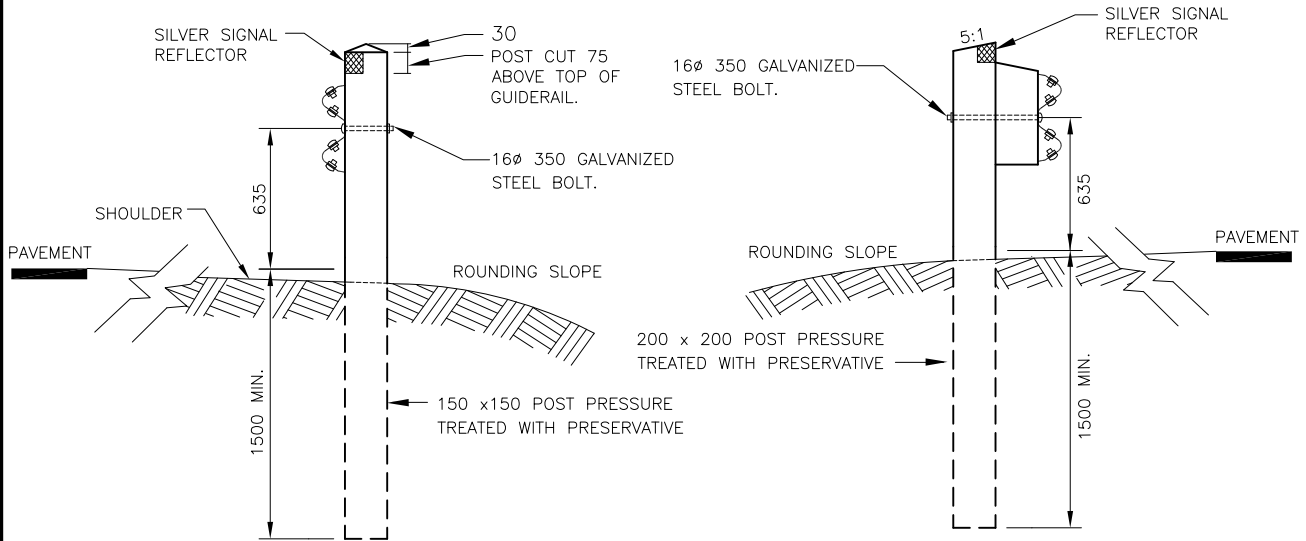
# TYPICAL PARAPLEGIC RAMP

DRAWN BY: H. JONES

DATE: REV 99-01-05

NOT TO SCALE



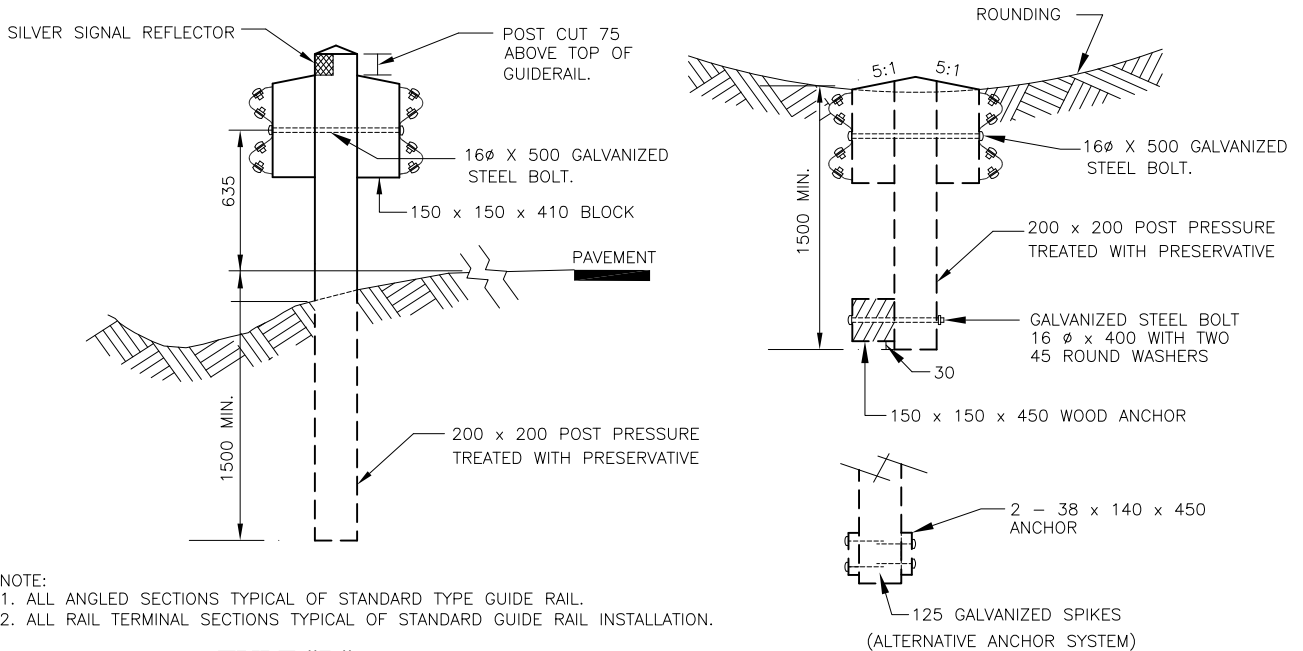


NOTE:

1. SLOPED AND BURIED GUIDE RAIL SECTION (2 LENGTHS OF RAILING)
2. ALL WOOD TO BE PRESSURE TREATED WITH PRESERVATIVE.

**STANDARD TYPE**

**TYPE "A"**



NOTE:

1. ALL ANGLED SECTIONS TYPICAL OF STANDARD TYPE GUIDE RAIL.
2. ALL RAIL TERMINAL SECTIONS TYPICAL OF STANDARD TYPE GUIDE RAIL INSTALLATION.

**TYPE "B"**

**TYPE "B" - BURIED END**



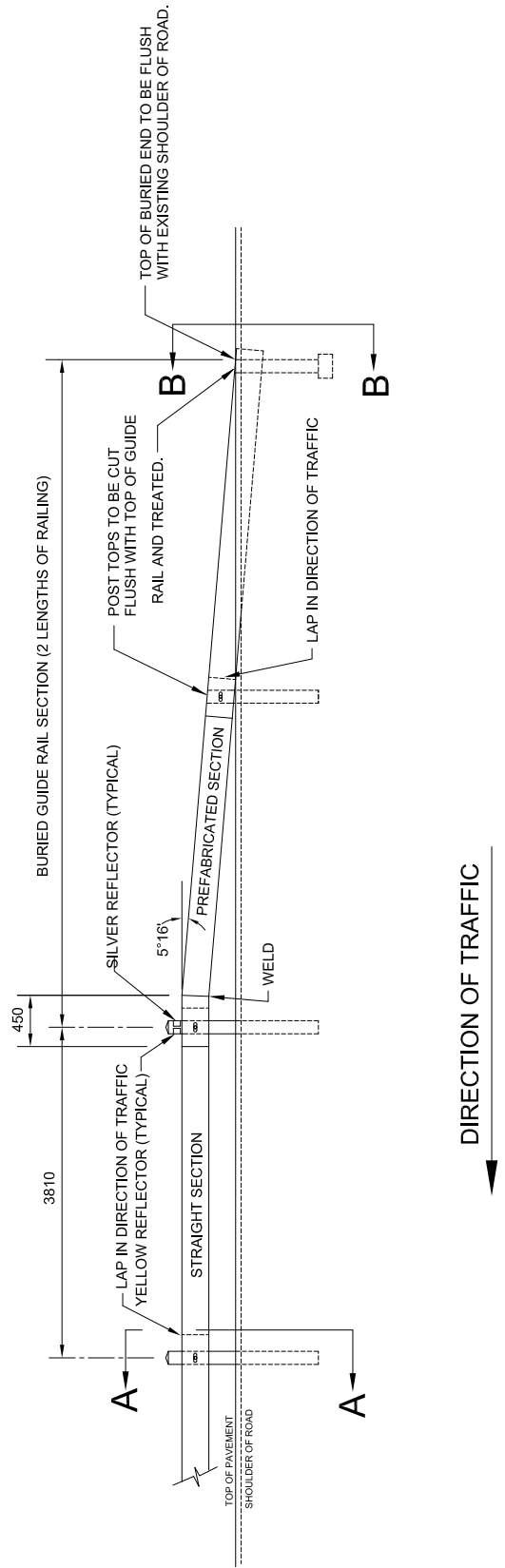
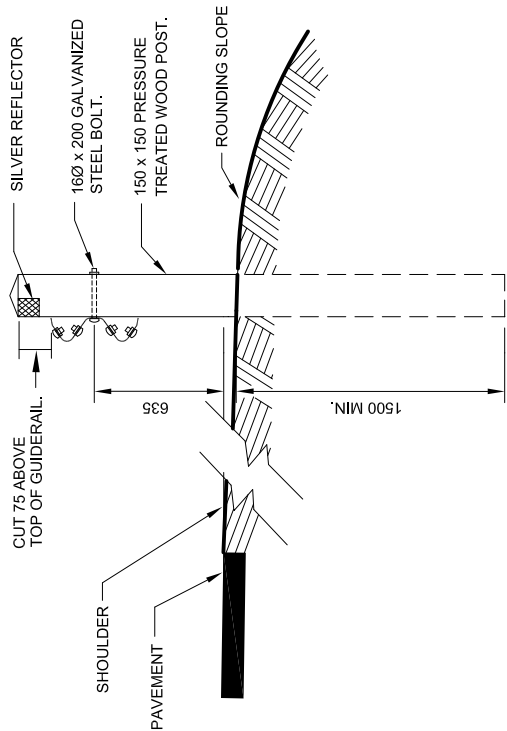
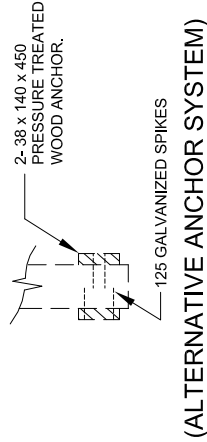
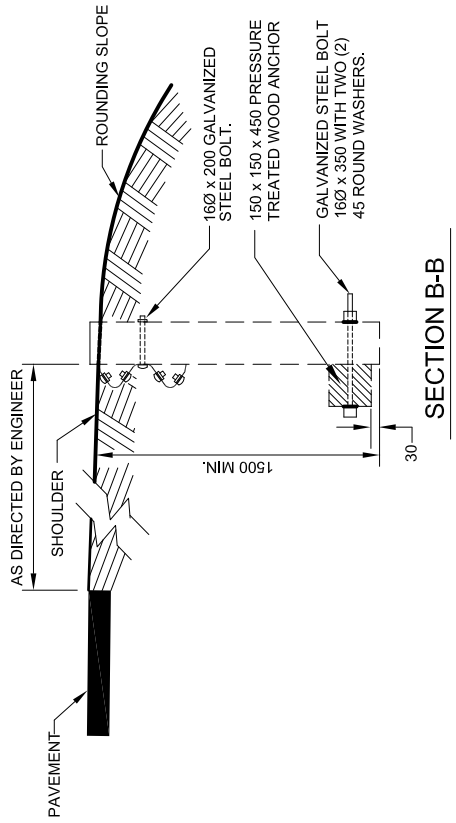
TRANSPORTATION AND INFRASTRUCTURE  
HIGHWAY DESIGN DIVISION

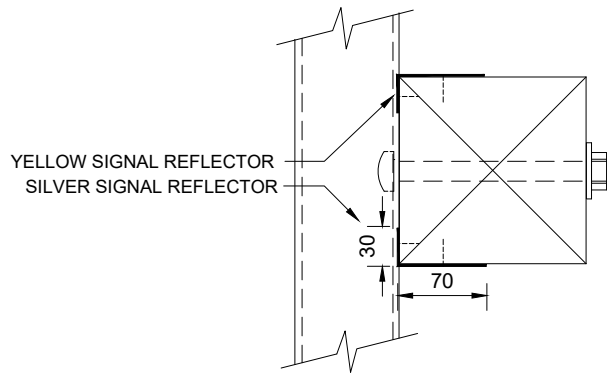
**TYPICAL GUIDE RAIL  
INSTALLATION TYPES**

DRAWN BY: DEB KIRBY

DATE: REV 2019-04-05

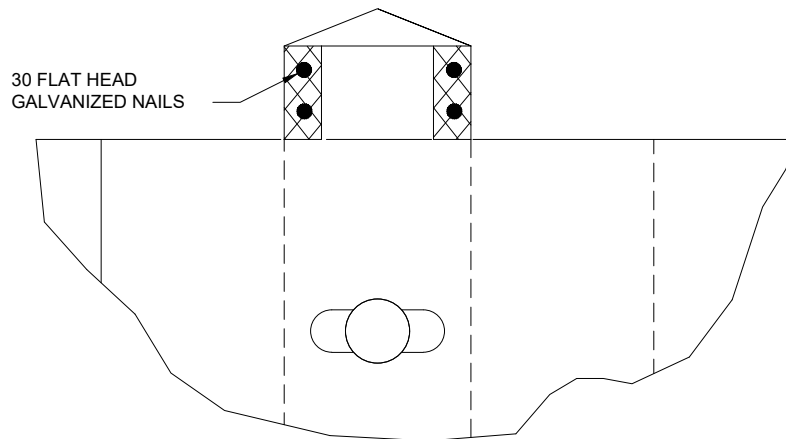
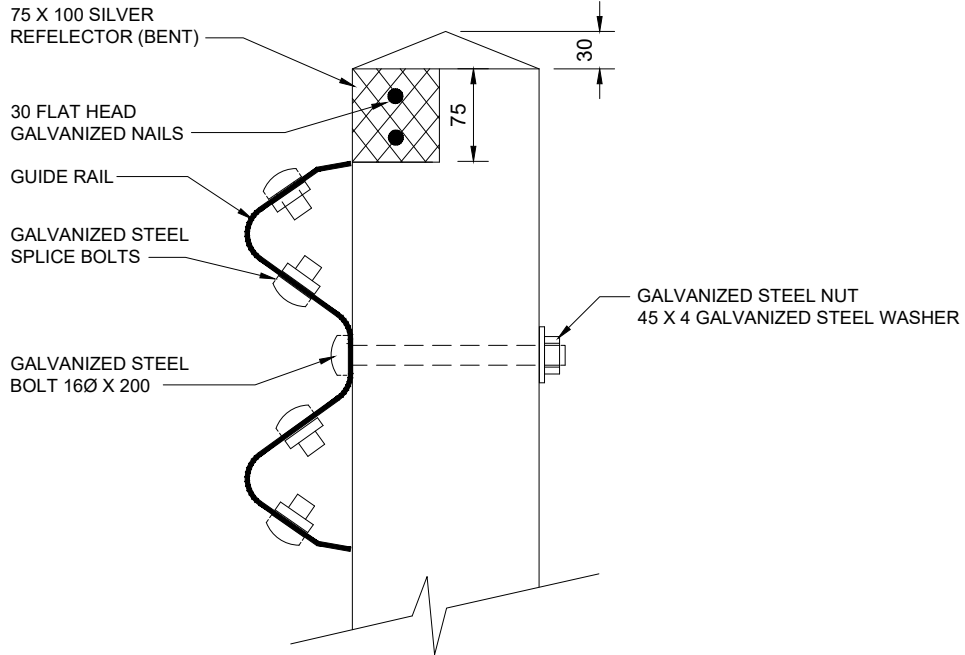
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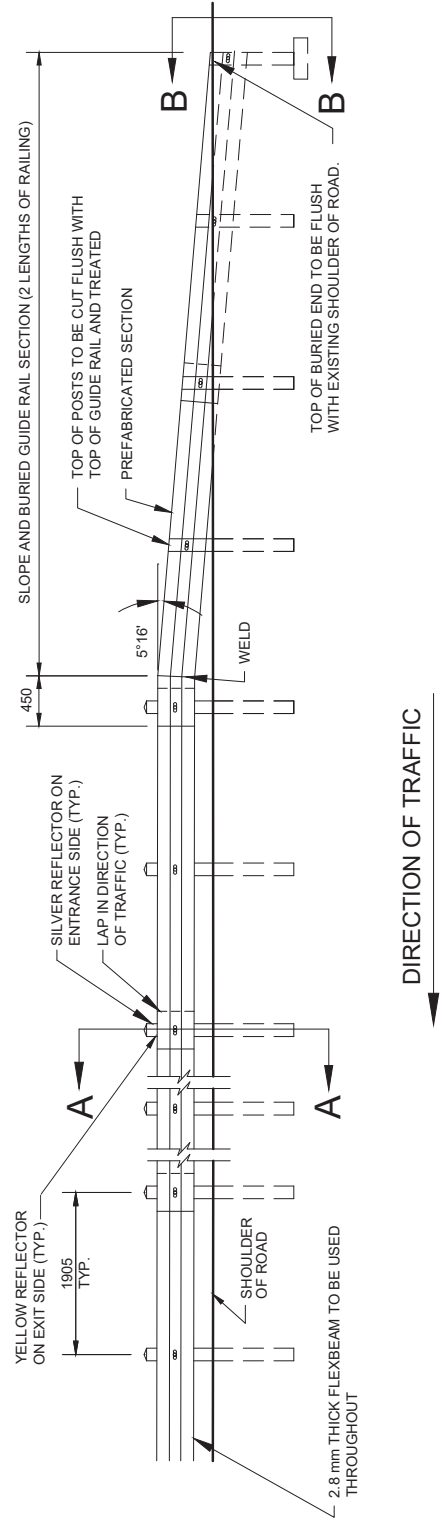
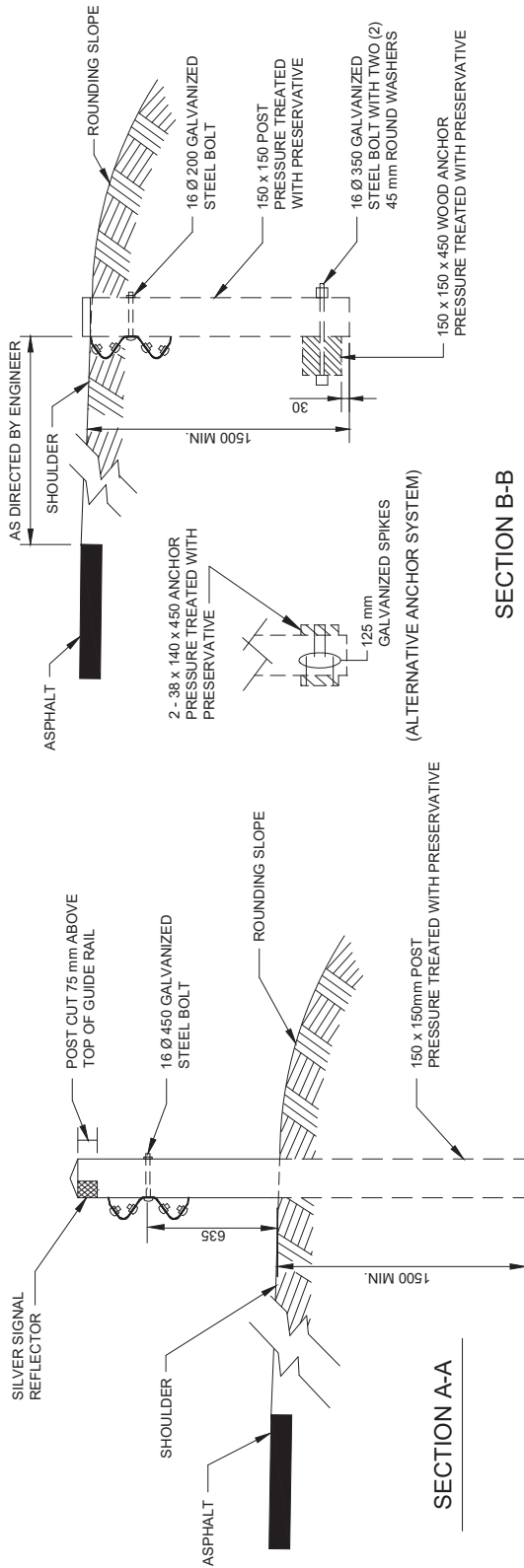




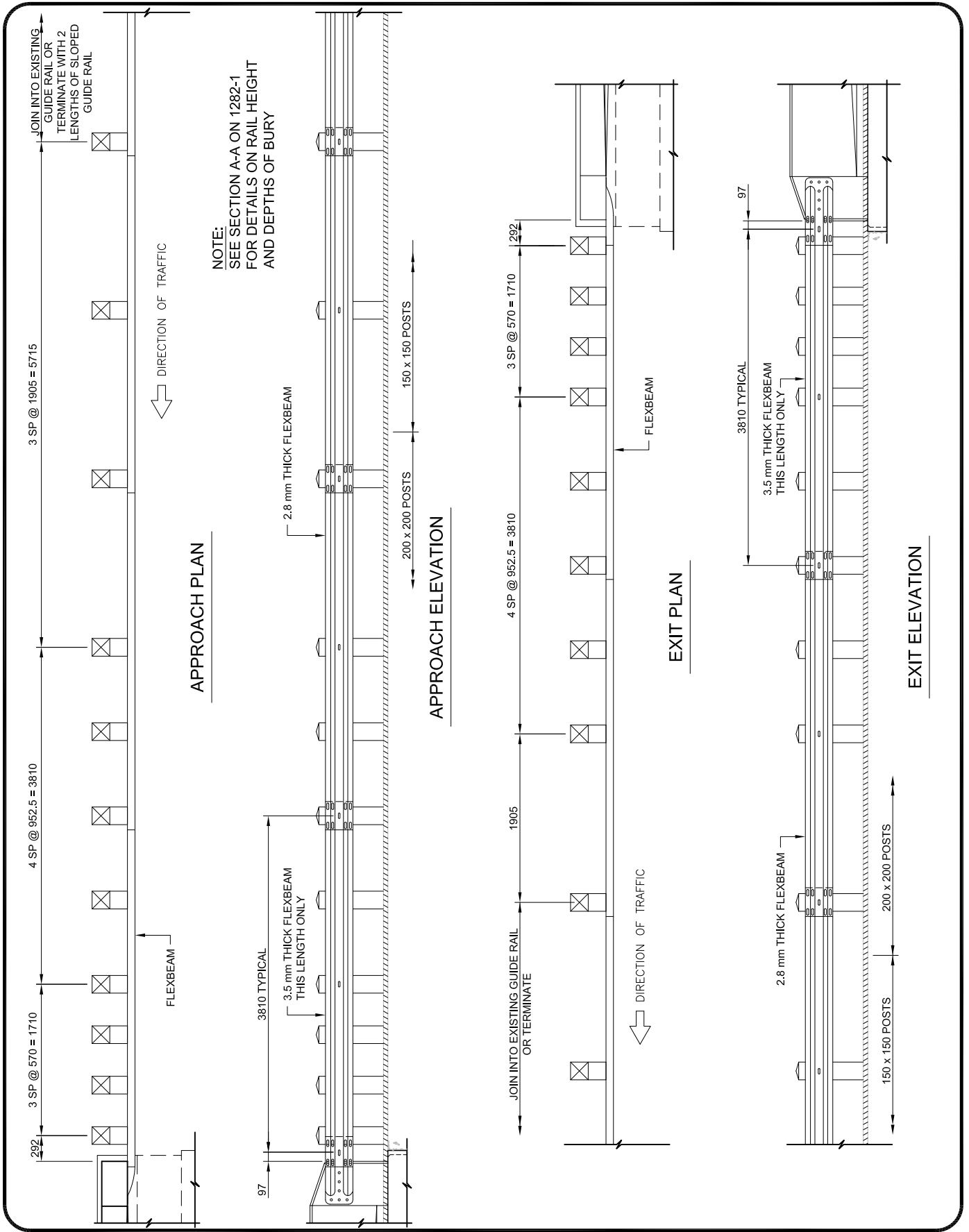
NOTES:

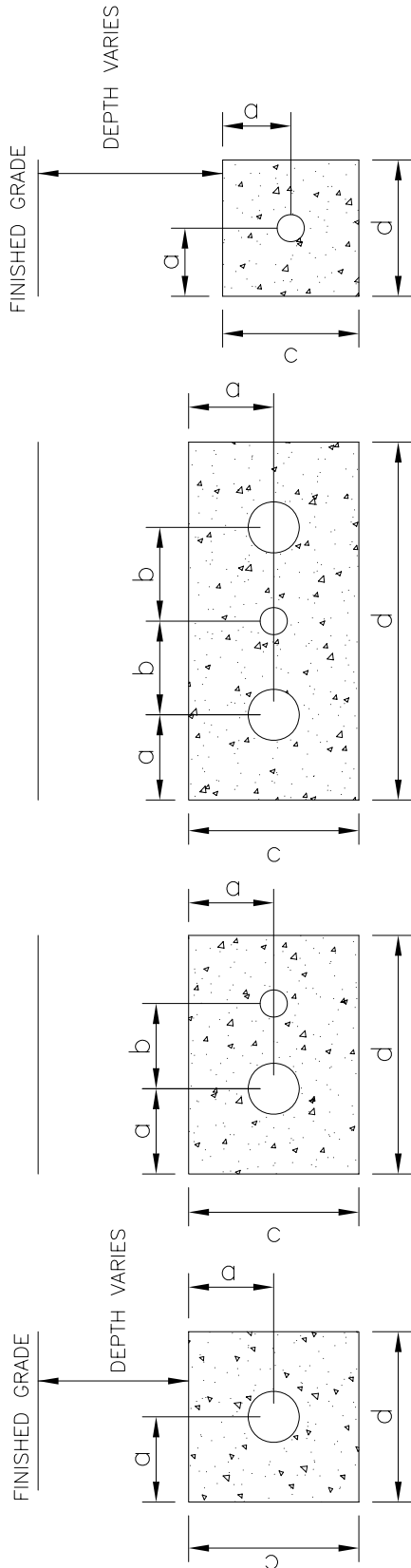
1. SIGNAL REFLECTORS SHALL BE ATTACHED TO POSTS AT TERMINAL SECTIONS, BURIED END POSTS, AND TO EVERY FORTH POST IN A LENGTH OF GUIDERAIL.
2. SILVER REFLECTORS SHALL BE PLACED FACING ONCOMING TRAFFIC AND YELLOW REFLECTORS SHALL BE PLACED ON THE OPPOSITE SIDE, EXCEPT ON DIVIDED HIGHWAYS.
3. ON DIVIDED HIGHWAYS, SILVER REFLECTORS SHALL BE PLACED FACING ONCOMING TRAFFIC ON THE OUTSIDE SHOULDER AND YELLOW REFLECTORS SHALL BE PLACED FACING TRAFFIC ON THE MEDIAN SHOULDER.





NOTES:  
 UNLESS OTHERWISE SPECIFIED, SLOPED AND BURIED GUIDE RAIL OR ADDITIONAL GUIDE RAIL SHALL BE AS PER STANDARD INSTALLATION. INTERMEDIATE POSTS TO BE INSTALLED AS INDICATED. SEE SPECIFICATIONS BOOK, SECTION 640, WHERE APPROPRIATE. SIGNAL REFLECTORS AS PER 1280.





ONE DUCT BANK  
Type D

THREE DUCT BANK  
Type C

TWO DUCT BANK  
Type B

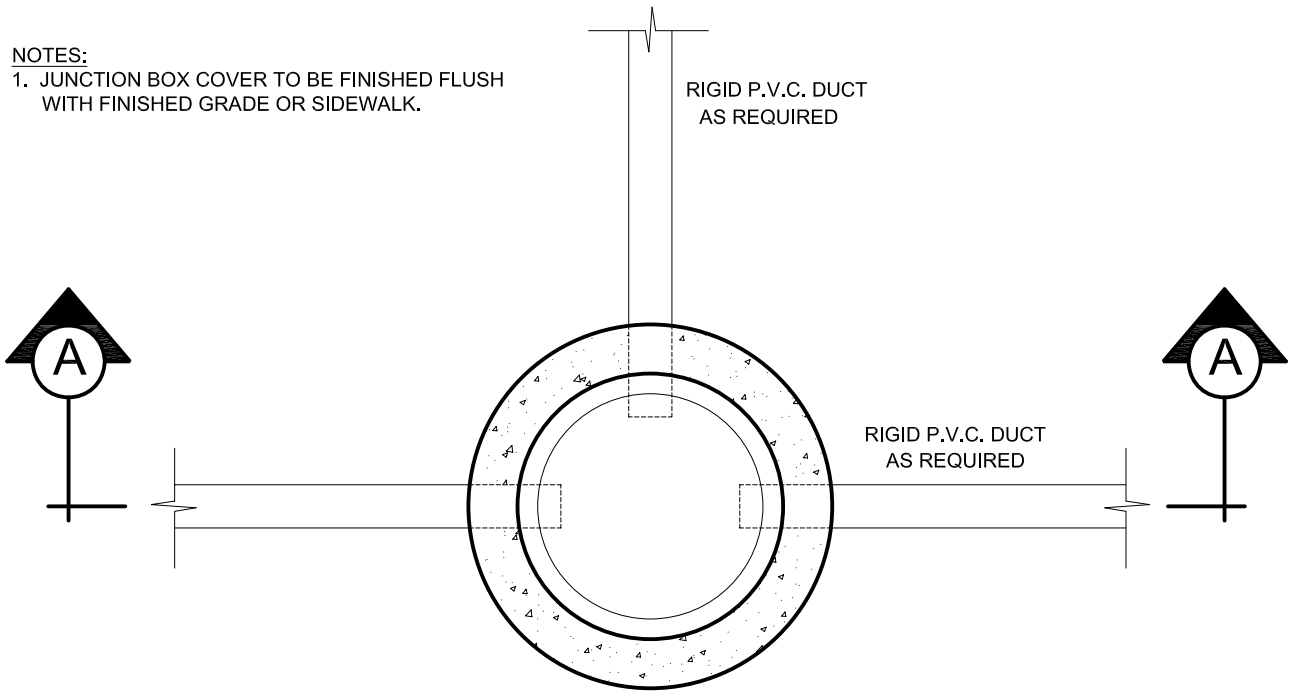
ONE DUCT BANK  
Type A

TYPE OF DUCT BANKS	TYPICAL DIMENSIONS FOR DUCT BANKS (mm)				NUMBER OF CONDUITS	
	a	b	c	d	40mm	75mm
A	125	—	250	250	—	1
B	125	125	250	350	1	1
C	125	137.5	250	525	1	2
D	100	—	200	200	1	—

1. ALL CONDUITS AND FITTINGS TO BE RIGID PVC.
2. THE TOP ELEVATION OF THE CONCRETE ENCASMENT SHALL BE A MINIMUM DEPTH OF 1000. IN ROCK THE TOP OF THE DUCT BANK MAY BE PLACED AT SUB GRADE OR AS OTHERWISE DIRECTED BY THE ENGINEER.
3. CONCRETE SHALL CONFORM TO THE DEPARTMENT OF TRANSPORTATION AND WORKS SPECIFICATION BOOK, DIVISION 904, "CONCRETE STRUCTURES" AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 40MPa.
4. THE USE OF TELEPHONE DUCT WILL NOT BE PERMITTED.

**NOTES:**

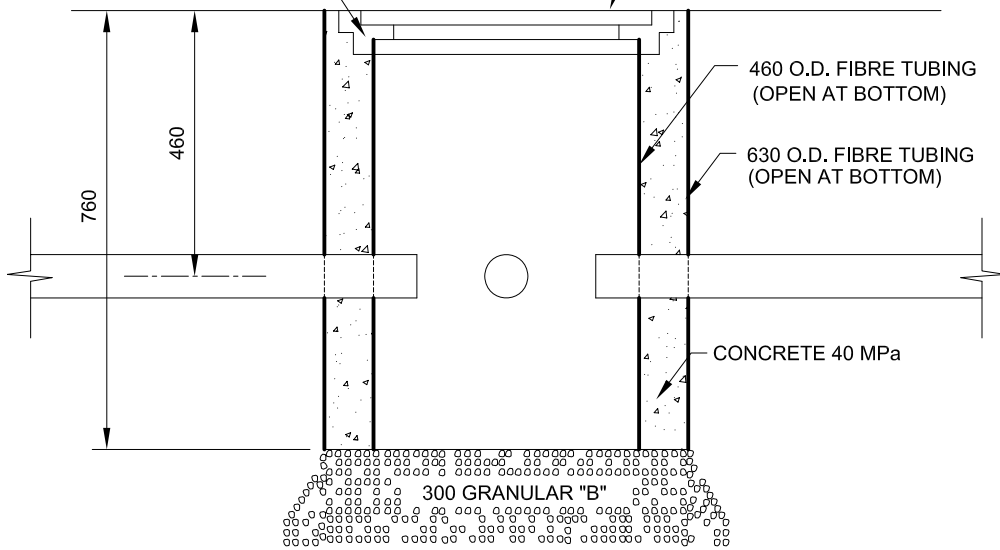
1. JUNCTION BOX COVER TO BE FINISHED FLUSH WITH FINISHED GRADE OR SIDEWALK.



CUT 3- 11 X 38 SLOTS IN FIBRE TUBE FOR VERTICAL FRAME ADJUSTMENT.  
 ANCHOR FRAME IN CONCRETE WITH 3- 10Ø X 38 LONG GALVANIZED BOLTS.  
 GROUND LUG FOR #6 AWG STRANDED COPPER WIRE TO BE ATTACHED TO ONE BOLT.

**PLAN**  
 SCALE N.T.S.

460 CAST IRON FRAME AND COVER ALMAT METAL LTD. CAT. No. DD-1428 OR EQUAL. COVER TO BE RETAINED BY A 13Ø STAINLESS STEEL CAP SCREW.



**SECTION A-A**  
 SCALE N.T.S.

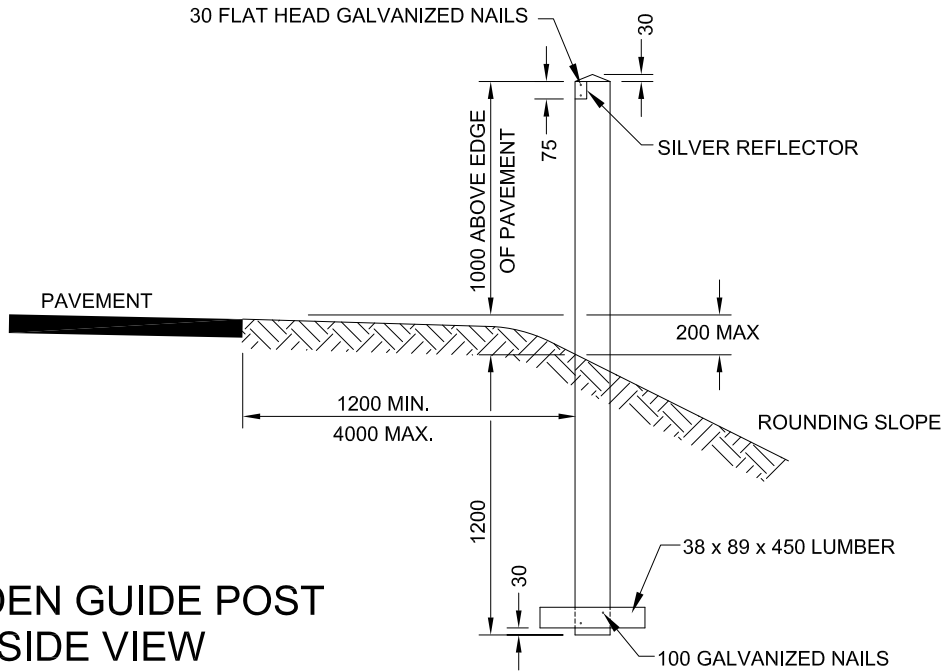


TRANSPORTATION AND WORKS  
 HIGHWAY DESIGN DIVISION

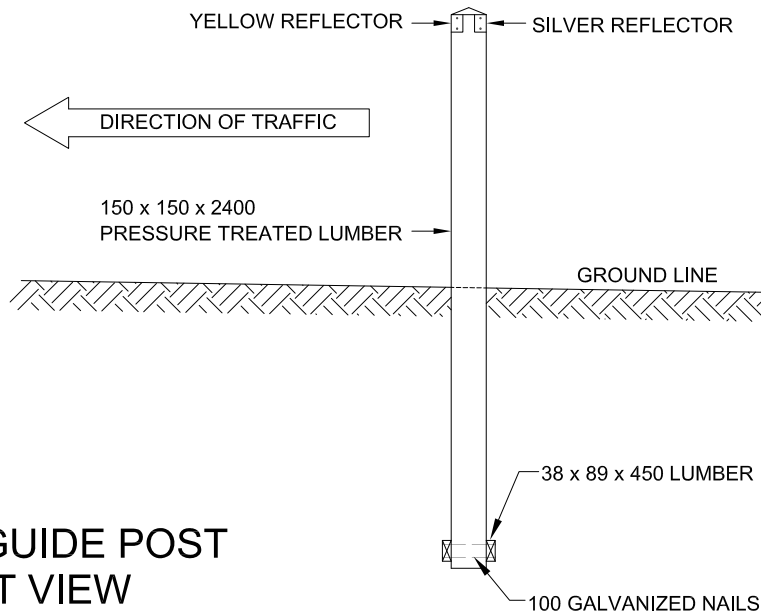
**ELECTRICAL JUNCTION BOX**

DRAWN BY: H. JONES      DATE: REV March 31, 2012      NOT TO SCALE

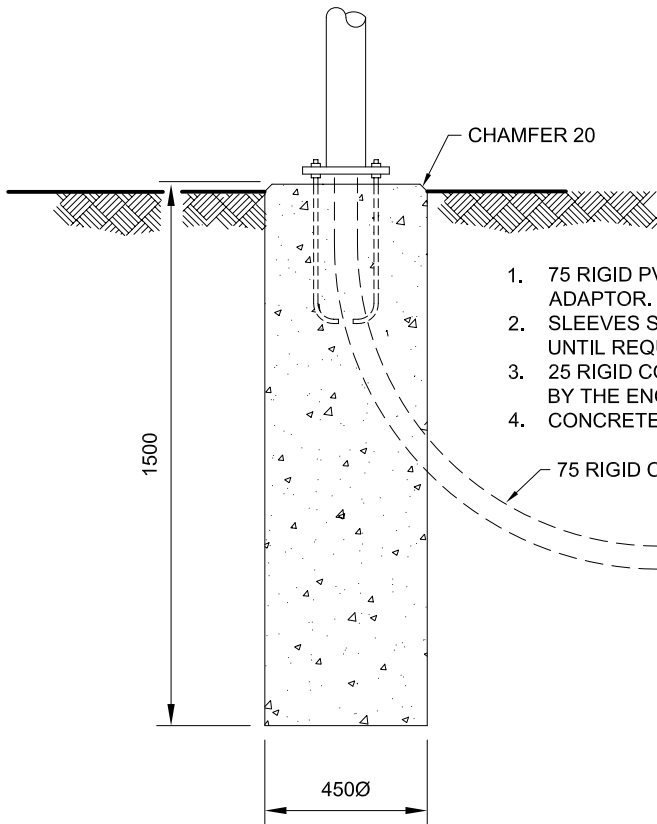
WOODEN GUIDE POST  
SIDE VIEW



WOODEN GUIDE POST  
FRONT VIEW



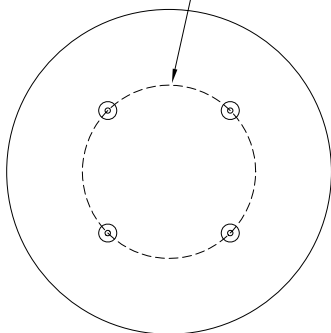




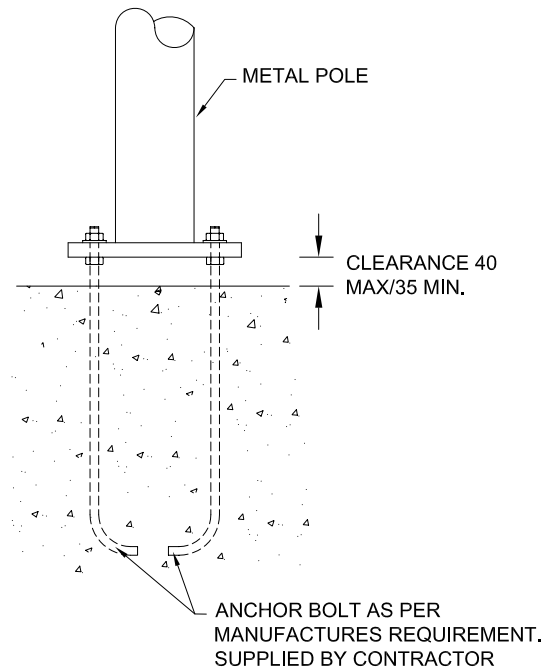
1. 75 RIGID PVC CONDUIT SHALL BE CONNECTED TO 75 DUCT WITH PVC ADAPTOR.
2. SLEEVES SHALL BE PLUGGED AT BOTH ENDS WITH PLASTIC PLUGS UNTIL REQUIRED FOR USE.
3. 25 RIGID CONDUIT IN POLE BASE AS PER DUCT PLAN OR AS DIRECTED BY THE ENGINEER.
4. CONCRETE SHALL BE 40MPa.

**ELEVATION**  
Scale NTS

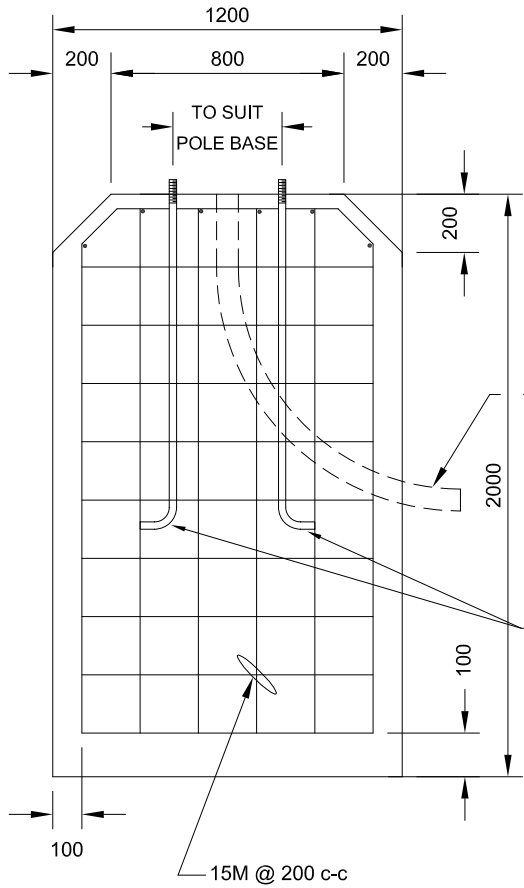
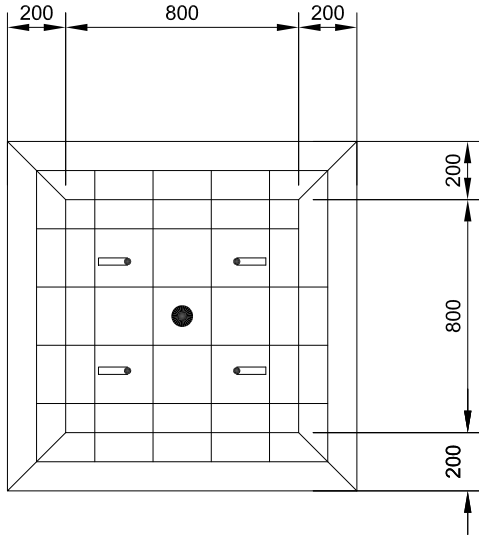
BOLT CIRCLE DIAMETER,  
MUST MATCH POLE BASE.



**ANCHOR BOLT TEMPLATE**  
Scale NTS



**FOUNDATION DETAIL**  
Scale NTS



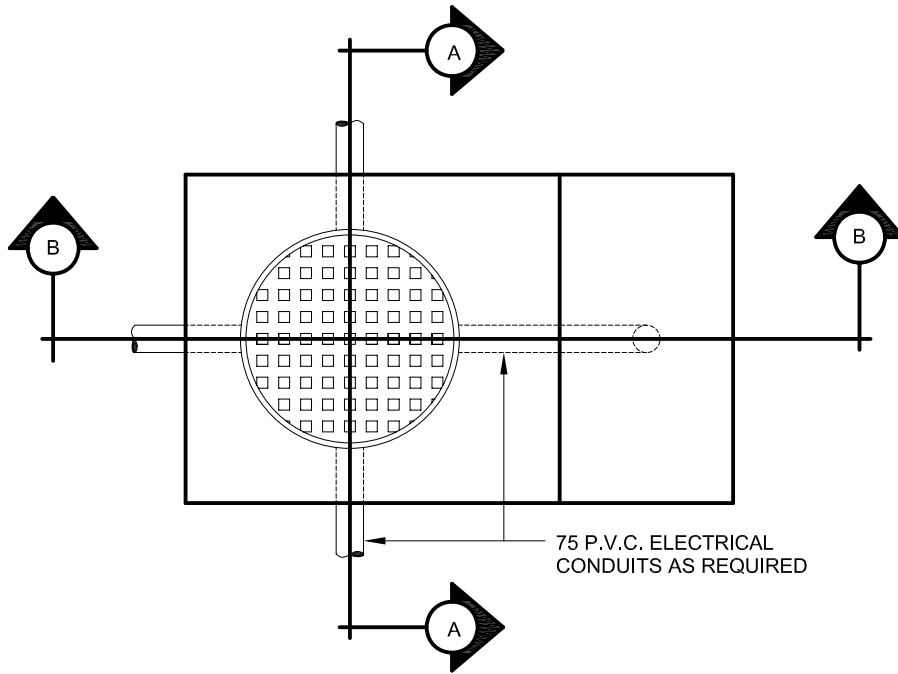
1. NOT SHOWN IN DIAGRAM IS 50 RIGID CONDUIT IN POLE BASE WHICH IS CONNECTED TO 75 DUCT BY PVC ADAPTER. NUMBER AND LOCATION AS DETERMINED IN THE FIELD.
2. FINISHED GRADE OF FOUNDATION TOP AS DIRECTED BY THE ENGINEER.
3. ANCHOR RODS ARE TO BE SUPPLIED BY THE CONTRACTOR PER MANUFACTURERS REQUIREMENTS.
4. 25 RIGID CONDUIT IN POLE BASE AS PER DUCT PLAN OR AS DIRECTED BY THE ENGINEER.
5. CONCRETE SHALL BE 40MPa.

75 PVC CONDUIT

ANCHOR BOLT AS PER MANUFACTURES REQUIREMENT. SUPPLIED BY CONTRACTOR

15M @ 200 c-c

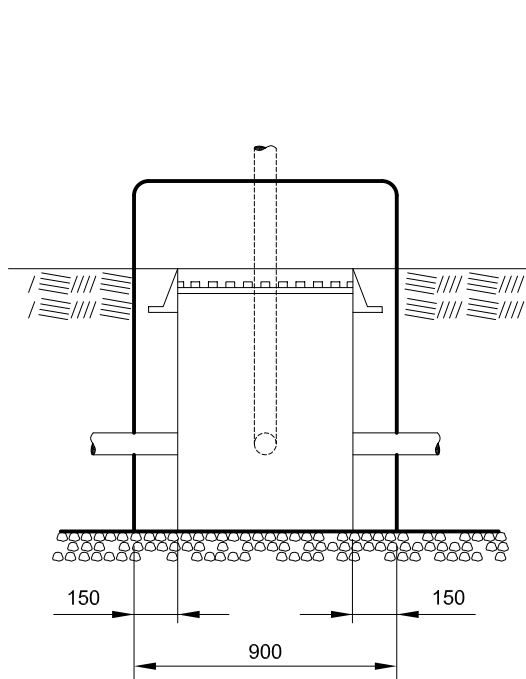
## FOUNDATION FOR CANTILEVERED TRAFFIC LIGHT



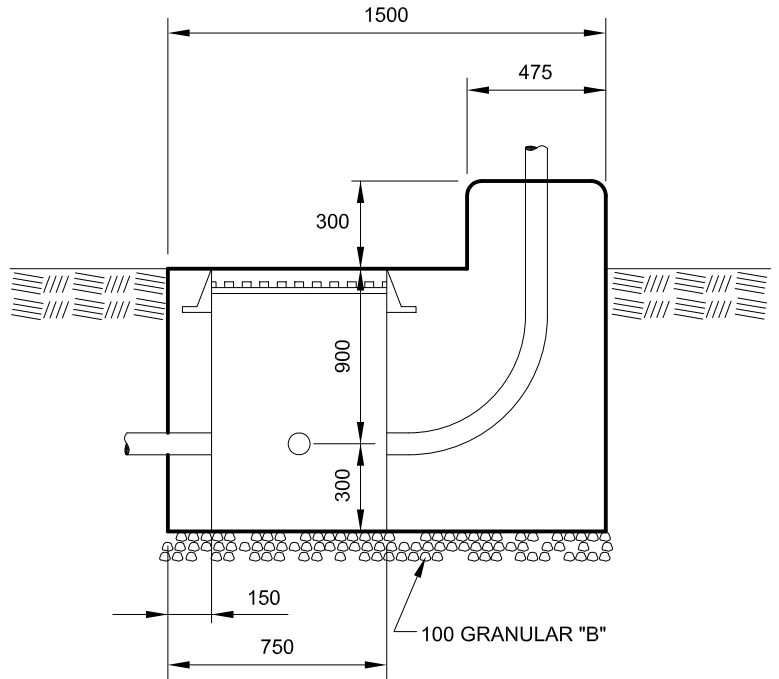
**PLAN VIEW**

**NOTES:**

1. CONCRETE 40 MPa
2. ALL EXPOSED EDGES TO BE CHAMFERED 25.



**SECTION A-A**



**SECTION B-B**



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**FOUNDATION FOR  
TRAFFIC CONTROLLER**

DRAWN BY: H. JONES

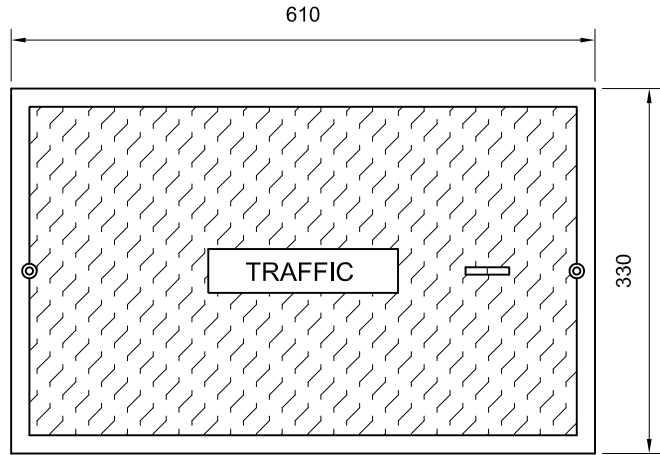
DATE: REV March 31, 2012

NOT TO SCALE

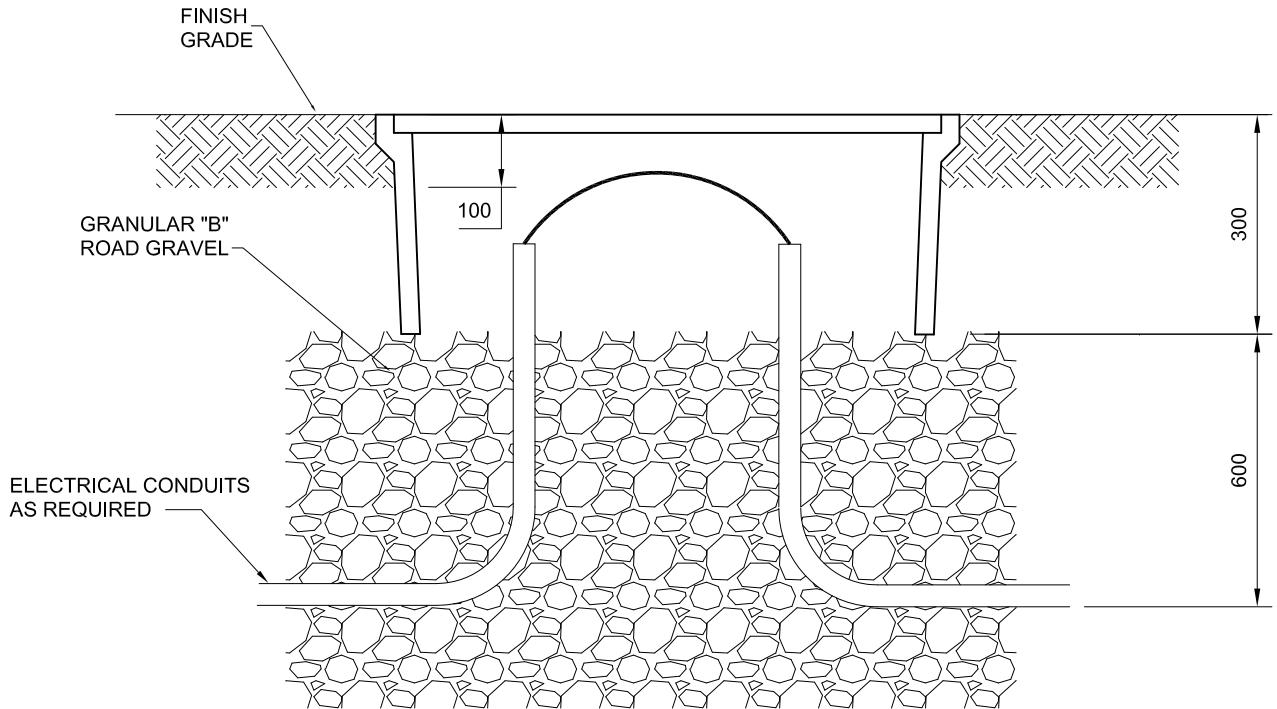
NOTES:

1. TOP OF BOX TO BE PLACED FLUSH WITH TOP OF SIDEWALK OR FINAL GRADE.
2. COVER TO HAVE TRAFFIC LOGO IMPRINTED ON TOP.
3. APPROVED MANUFACTURER  
QUAZITE COMPOSOLITE  
3621 INDUSTRIAL PARK DR.  
LENOIR CITY, TENNESSEE  
37771  
TEL. : 800/346-3062

COVER: PG1324HA00  
BOX: PG1324BA12



TOP VIEW



ELEVATION



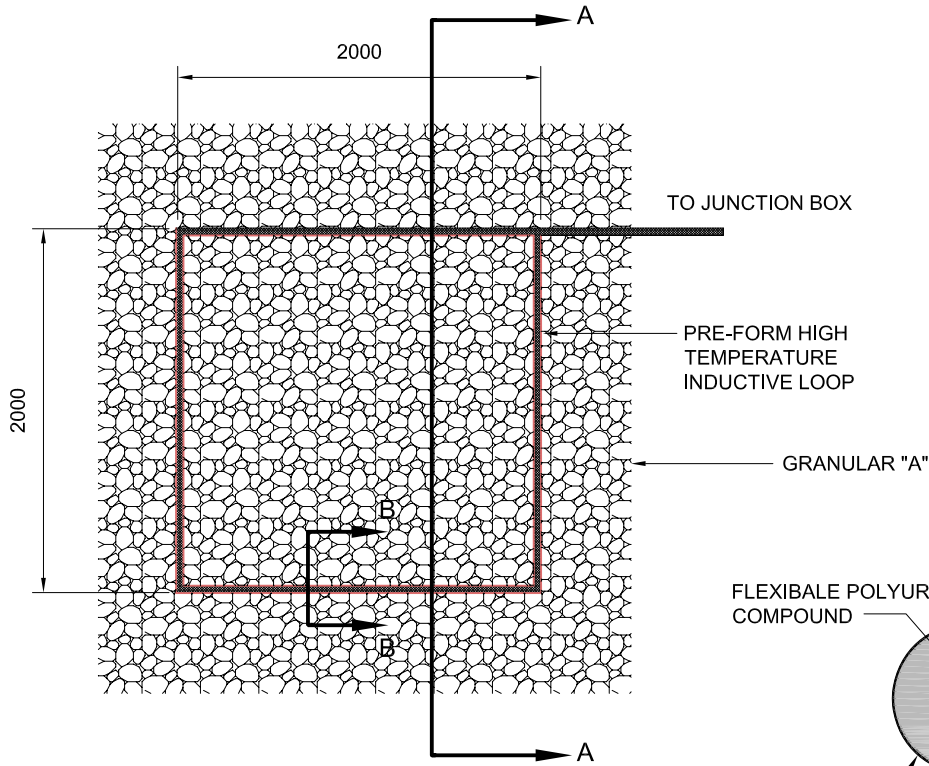
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**TRAFFIC CONTROL PREFAB JUNCTION  
BOX QUAZITE COMPOSOLITE**

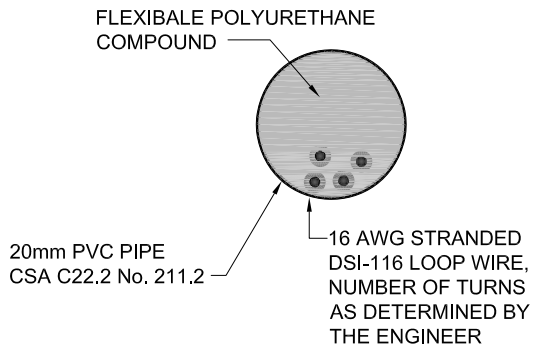
DRAWN BY:

DATE: February 16, 2010

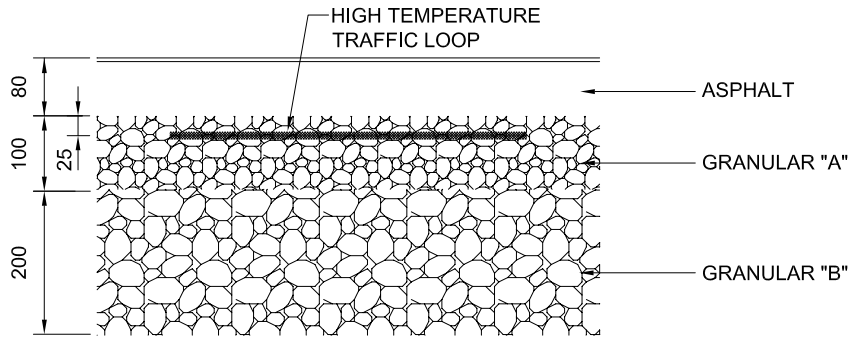
NOT TO SCALE



**PLAN VIEW**



**SECTION B-B**



**SECTION A-A**

**NOTE:**

1. WIRE PAIR FROM JUNCTION BOX TO LOOP TO BE TWISTED 17 TURNS/m.



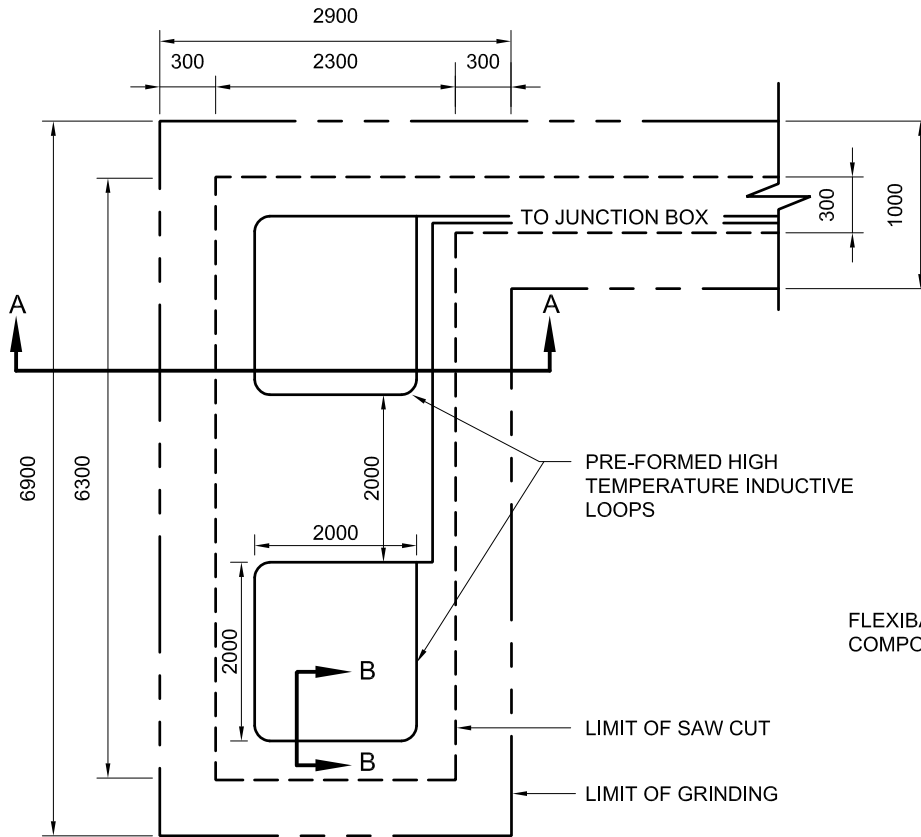
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**TYPE 1 INSTALLATION OF PRE-FORMED INDUCTIVE LOOP PLACEMENT IN NEW ROAD**

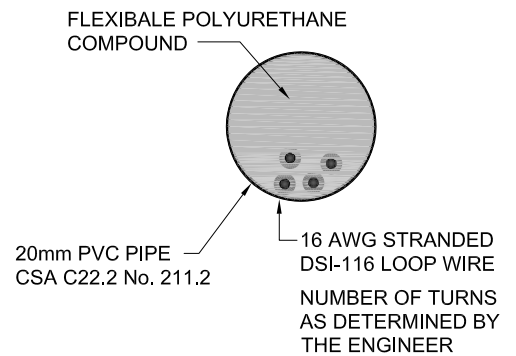
DRAWN BY:

DATE: February 16, 2010

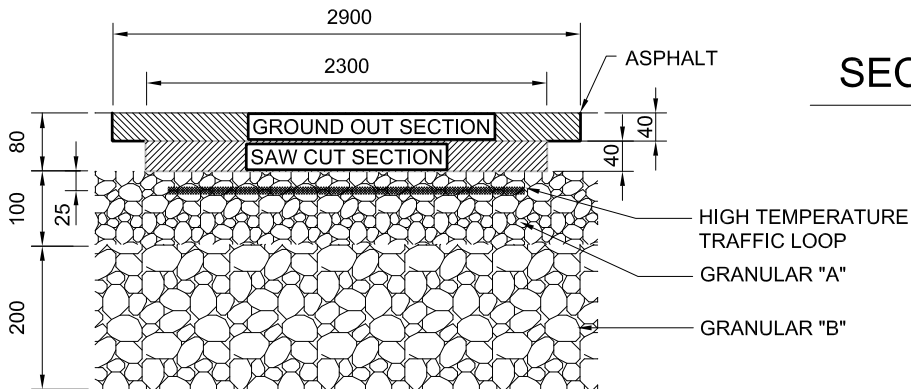
NOT TO SCALE



**PLAN VIEW**



**SECTION B-B**



**SECTION A-A**

**NOTE:**

1. WIRE PAIR FROM JUNCTION BOX TO LOOP TO BE TWISTED 17 TURNS/m.
2. TOP 40mm OF ASPHALT TO BE GROUND OUT AT A WIDTH OF 2900mm.
3. REMAINING 40mm OF ASPHALT TO BE SAW CUT OUT AT A WIDTH OF 2300mm.
3. ASPHALT SHALL BE REINSTATED AS PER SECTION 330 OF SPECIFICATIONS.



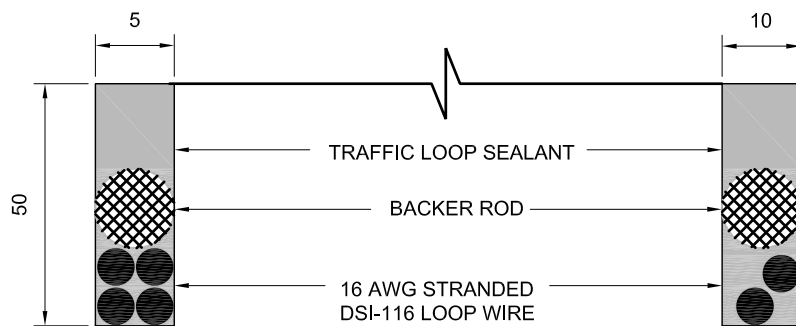
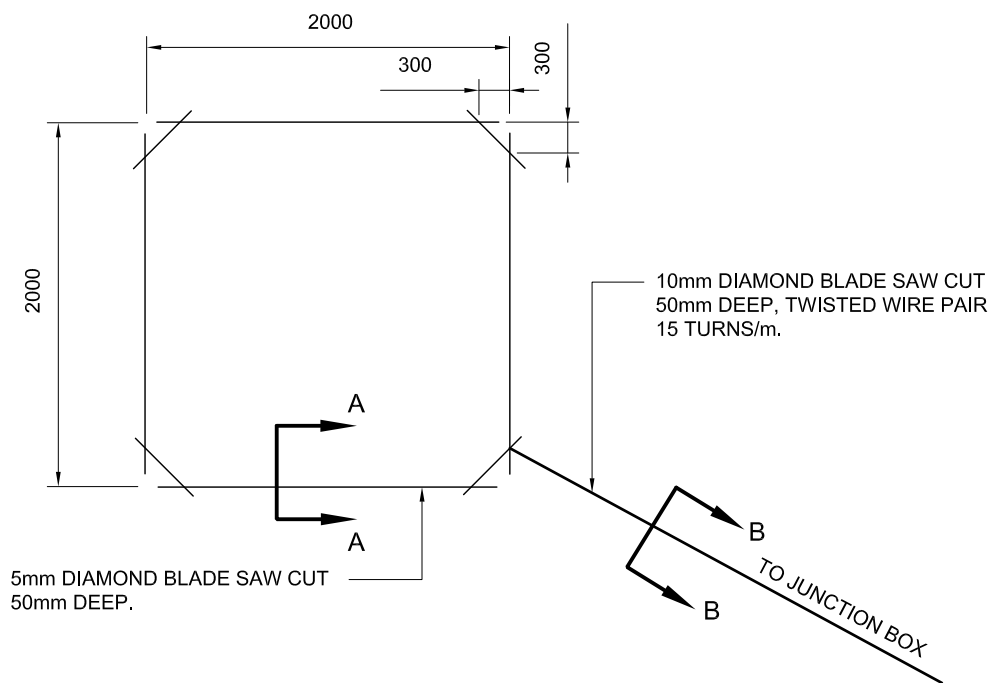
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**TYPE 2 INSTALLATION OF PRE-FORMED  
INDUCTIVE LOOP PLACEMENT IN EXISTING ROAD**

DRAWN BY:

DATE: February 16, 2010

NOT TO SCALE



SECTION A-A

SECTION B-B

**NOTE:**

1. SEALANT TO SET AROUND & OVER ENTIRE WIRE AND BACKER ROD.
2. PLACE 100mm PIECES OF BACKER ROD INTERMITTENTLY TO KEEP WIRE IN PLACE WHILE POURING TRAFFIC LOOP SEALANT.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

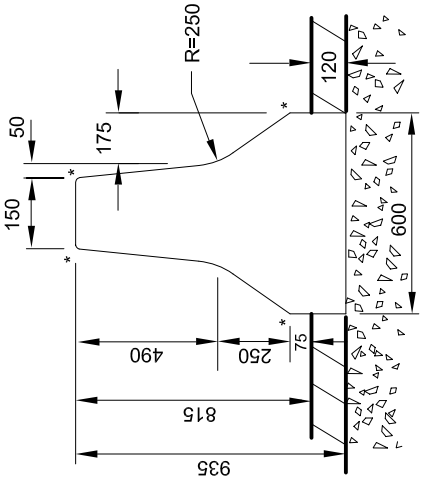
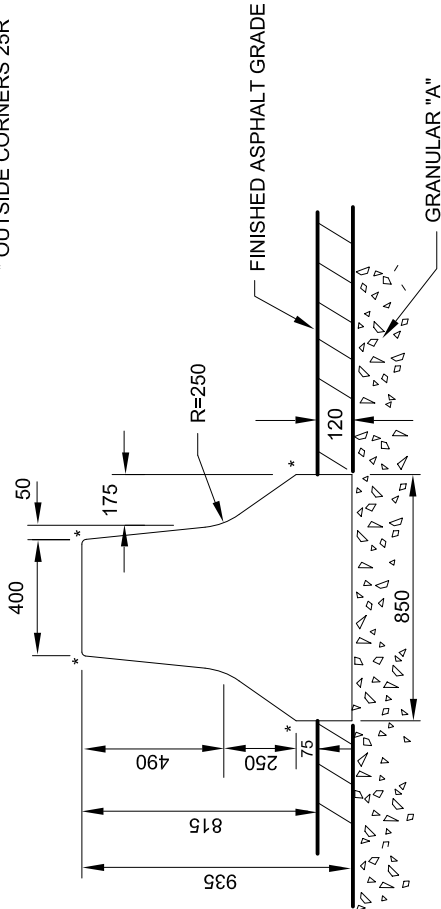
ASPHALT CUT INDUCTIVE LOOP

DRAWN BY:

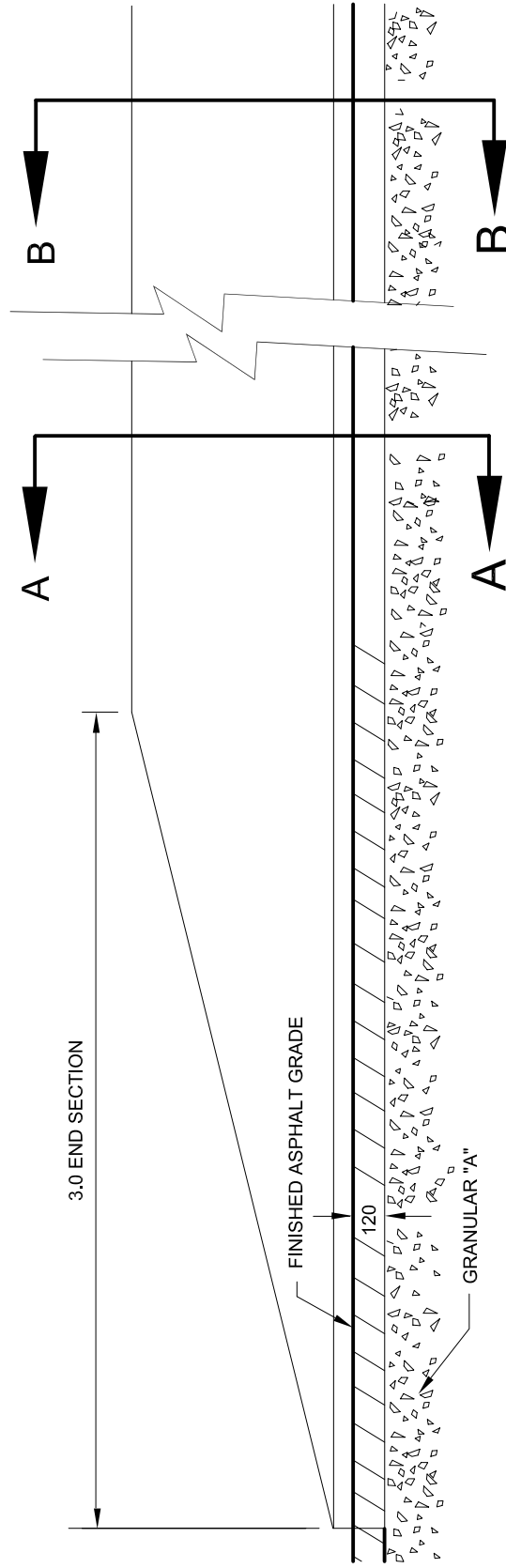
DATE: February 16, 2010

NOT TO SCALE

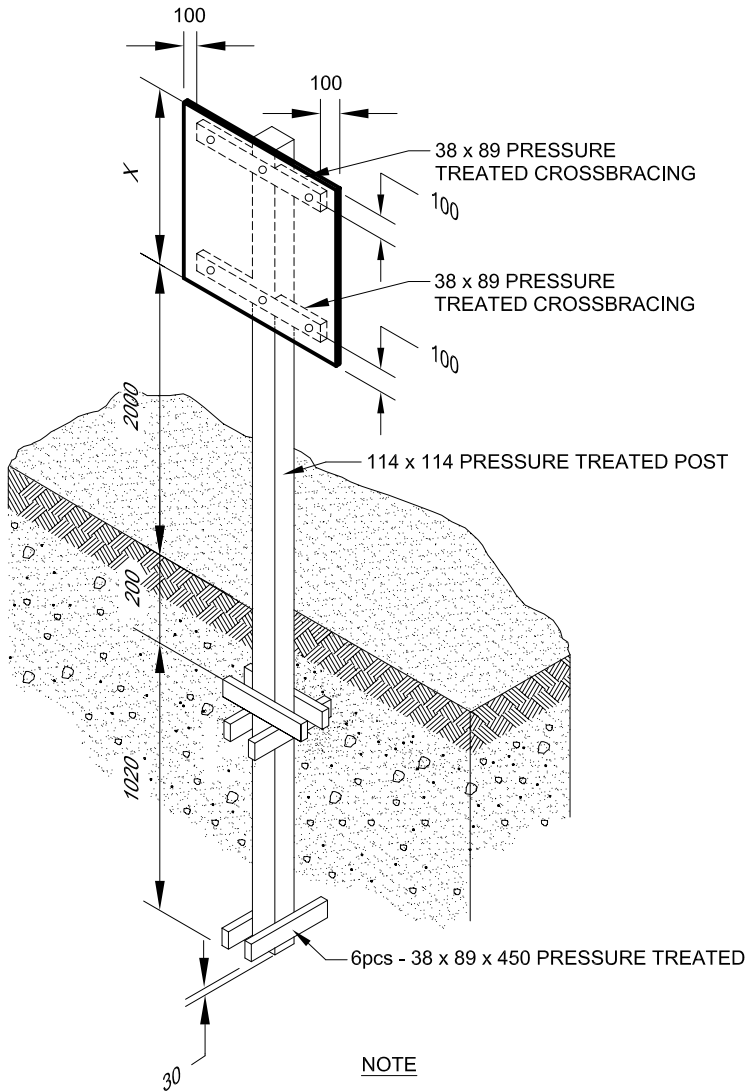
\* OUTSIDE CORNERS 25R



STANDARD MEDIAN







TYPE "A" SIGNPOST INSTALLATIONS ARE DESIGNATED IN THE FORM, TYPE A - X WHERE X IS THE HEIGHT IN MILLIMETRES, OF THE SIGN BOARD TO BE PLACED ON THE POST.

FOR EXAMPLE, TYPE A - 900, MEANS A TYPE "A" INSTALLATION IN WHICH THE SIGN TO BE INSTALLED ON THE POST IS 900mm IN HEIGHT. THE MINIMUM POST LENGTH REQUIRED FOR THIS SIGN WOULD THEN BE 900mm + 2000mm + 1250mm OR 4150mm.

**NOTE**

1. MAXIMUM SIGN AREA IS 1.1m<sup>2</sup>.
2. TOP OF SIGN BOARD TO BE FLUSH WITH TOP OF POST.
3. 38 x 89mm HORIZONTAL CROSS BRACING(S) SHALL BE INSTALLED BEHIND EACH SIGNBOARD AND NOTCHED TO A DEPTH OF 38mm INTO THE POST, SUCH THAT THE SIGNBOARD WILL BE FLUSH MOUNTED TO THE POST.
3. SIGN BOARDS ARE TO BE ATTACHED TO THE SIGN POST WITH TWO 80 X 10Ø GALVANIZED LAG BOLTS WITH GALVANIZED WASHERS.
4. SIGN BOARDS ARE TO BE ATTACHED TO CROSS BRACING WITH TWO 38 x 10Ø GALVANIZED LAG BOLTS WITH GALVANIZED WASHER.
5. FOR RECTANGULAR SIGN BOARDS, USE 2 PIECES OF 38 x 89mm PRESSURE TREATED CROSS BRACING INSTALLED HORIZONTALLY BETWEEN THE BACK OF THE SIGN BOARD AND THE POST, 100mm IN FROM EACH VERTICAL SIDE.
6. FOR DIAMOND SHAPE SIGN BOARDS, USE 1 PIECE OF 38 x 89mm PRESSURE TREATED CROSS BRACING INSTALLED HORIZONTALLY BETWEEN THE BACK OF THE SIGN BOARD AND THE POST, 100mm IN FROM THE HORIZONTAL DIAGONAL CORNERS.



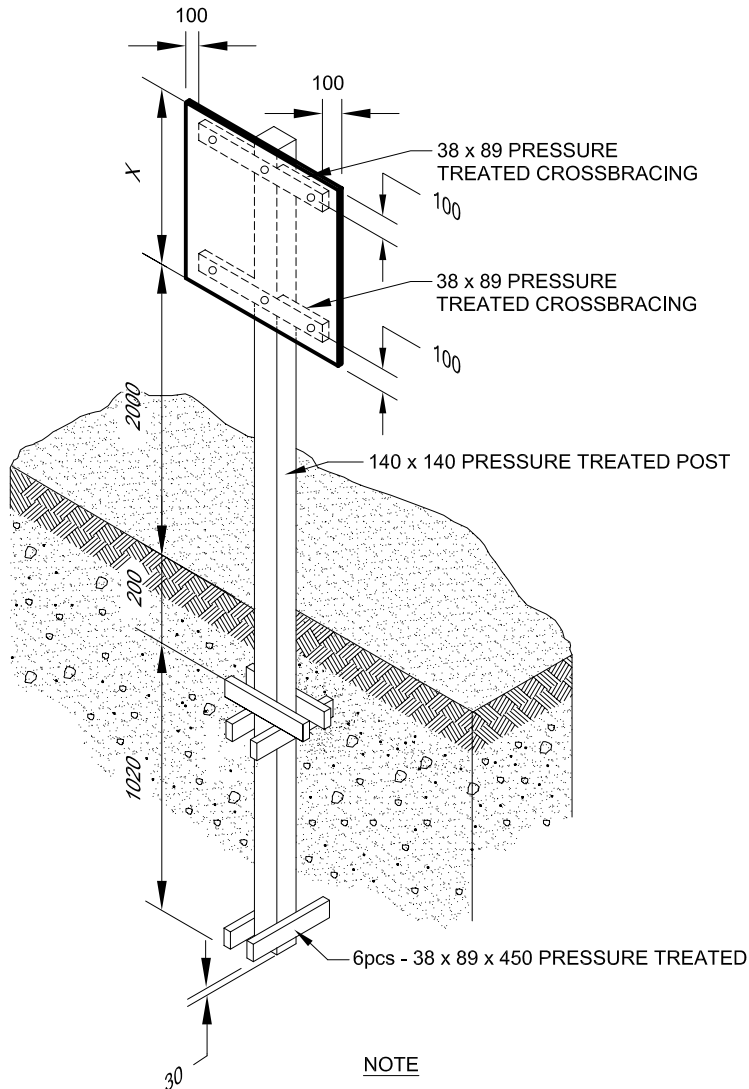
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**SIGN POST INSTALLATION DETAILS  
TYPE "A"**

DRAWN BY: DA

DATE: REV March 31, 2012

NOT TO SCALE



TYPE "B" SIGNPOST INSTALLATIONS ARE DESIGNATED IN THE FORM, TYPE B - X WHERE X IS THE HEIGHT IN MILLIMETRES, OF THE SIGN BOARD TO BE PLACED ON THE POST.

FOR EXAMPLE, TYPE B - 1200, MEANS A TYPE "B" INSTALLATION IN WHICH THE SIGN TO BE INSTALLED ON THE POST IS 1200mm IN HEIGHT. THE MINIMUM POST LENGTH REQUIRED FOR THIS SIGN WOULD THEN BE 1200mm + 2000mm + 1250mm OR 4450mm.

#### NOTE

1. MAXIMUM SIGN AREA IS  $> 1.1\text{m}^2$ .
2. TOP OF SIGN BOARD TO BE FLUSH WITH TOP OF POST.
3. 38 x 89mm HORIZONTAL CROSS BRACING(S) SHALL BE INSTALLED BEHIND EACH SIGNBOARD AND NOTCHED TO A DEPTH OF 38mm INTO THE POST, SUCH THAT THE SIGNBOARD WILL BE FLUSH MOUNTED TO THE POST.
3. SIGN BOARDS ARE TO BE ATTACHED TO THE SIGN POST WITH TWO 80 X 10Ø GALVANIZED LAG BOLTS WITH GALVANIZED WASHERS.
4. SIGN BOARDS ARE TO BE ATTACHED TO CROSS BRACING WITH TWO 38 x 10Ø GALVANIZED LAG BOLTS WITH GALVANIZED WASHER.
5. FOR RECTANGULAR SIGN BOARDS, USE 2 PIECES OF 38 x 89mm PRESSURE TREATED CROSS BRACING INSTALLED HORIZONTALLY BETWEEN THE BACK OF THE SIGN BOARD AND THE POST, 100mm IN FROM EACH VERTICAL SIDE.
6. FOR DIAMOND SHAPE SIGN BOARDS, USE 1 PIECE OF 38 x 89mm PRESSURE TREATED CROSS BRACING INSTALLED HORIZONTALLY BETWEEN THE BACK OF THE SIGN BOARD AND THE POST, 100mm IN FROM THE HORIZONTAL DIAGONAL CORNERS.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## SIGN POST INSTALLATION DETAILS TYPE "B"

DRAWN BY: DA

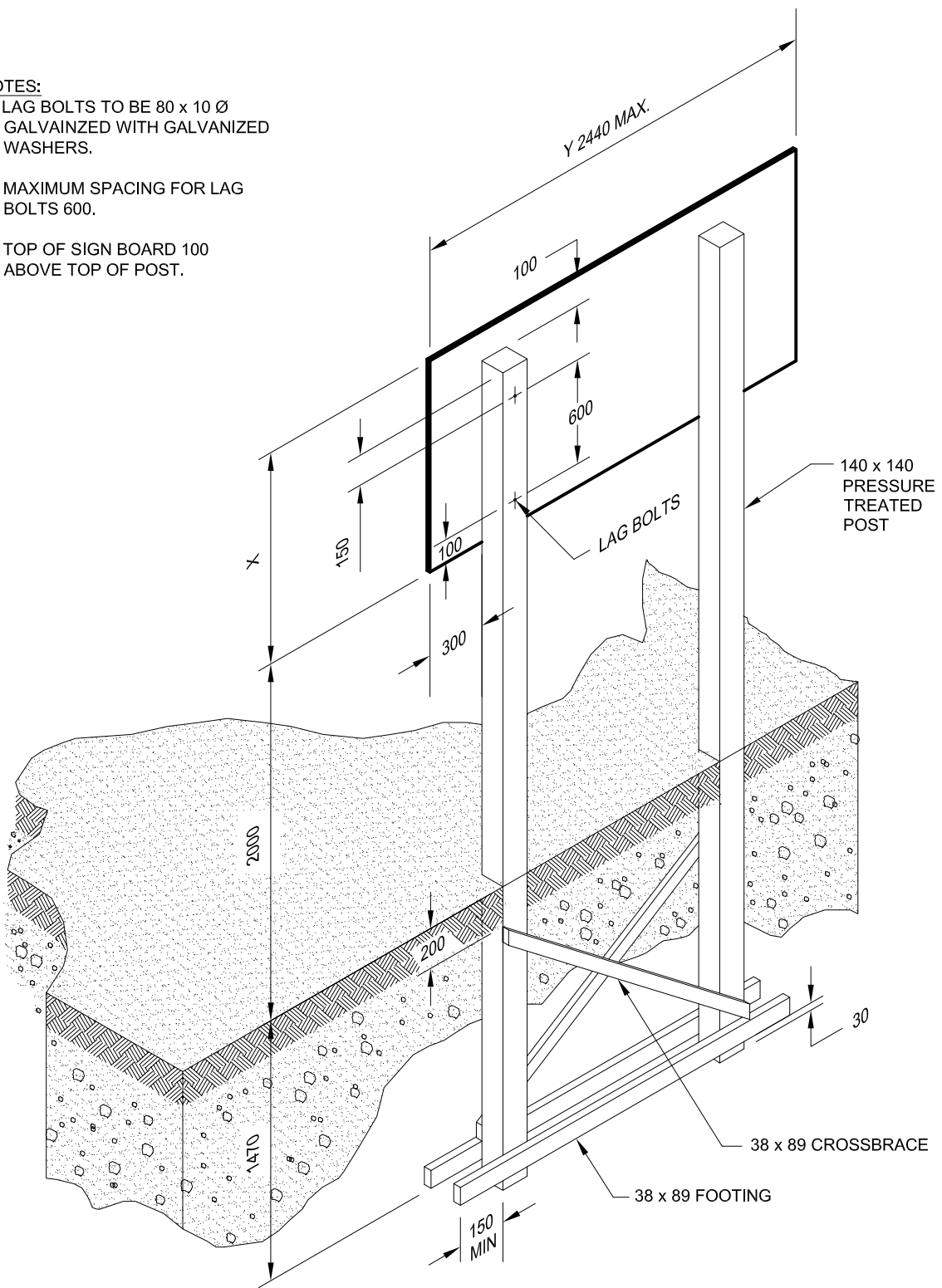
DATE:

REV March 31, 2012

NOT TO SCALE

NOTES:

1. LAG BOLTS TO BE 80 x 10 Ø GALVANIZED WITH GALVANIZED WASHERS.
2. MAXIMUM SPACING FOR LAG BOLTS 600.
3. TOP OF SIGN BOARD 100 ABOVE TOP OF POST.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## SIGN POST INSTALLATION DETAILS TYPE "C"

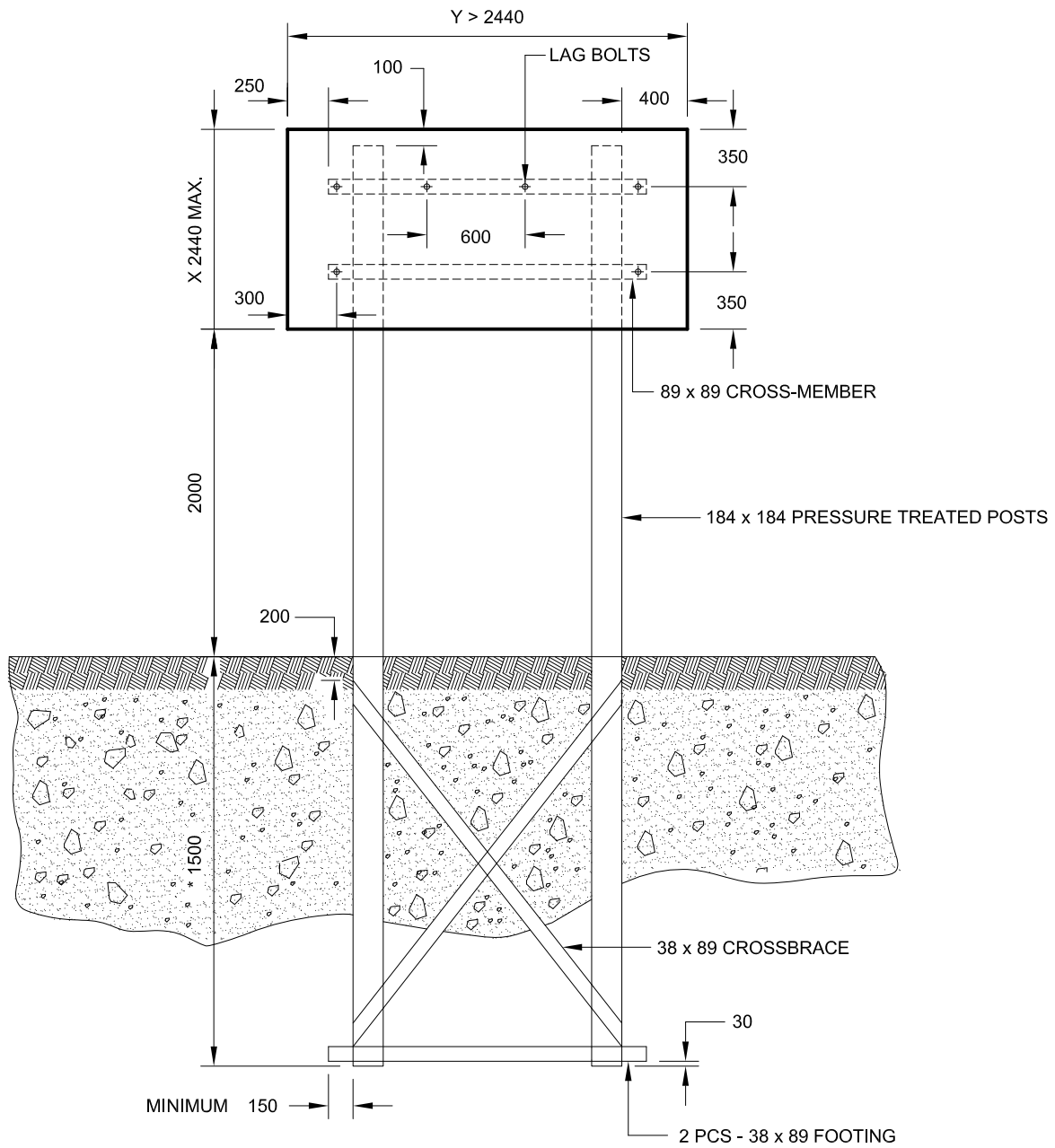
DRAWN BY:

DEB KIRBY

DATE:

REV 02-01-10

NOT TO SCALE



**NOTES:**

1. TOP OF SIGN BOARD 100 ABOVE TOP OF POST.
2. LAG BOLTS TO BE 80 x 10Ø GALVANIZED WITH GALVANIZED WASHERS.
3. MAXIMUM SPACING FOR LAG BOLTS IS 600.
4. CROSS MEMBERS TO BE ATTACHED TO POSTS USING 300 x 20 GALVANIZED NUTS AND WASHERS.
5. ALL LUMBER TO BE PRESSURE TREATED.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## SIGN POST INSTALLATION DETAILS TYPE "D"

DRAWN BY:

DEB KIRBY

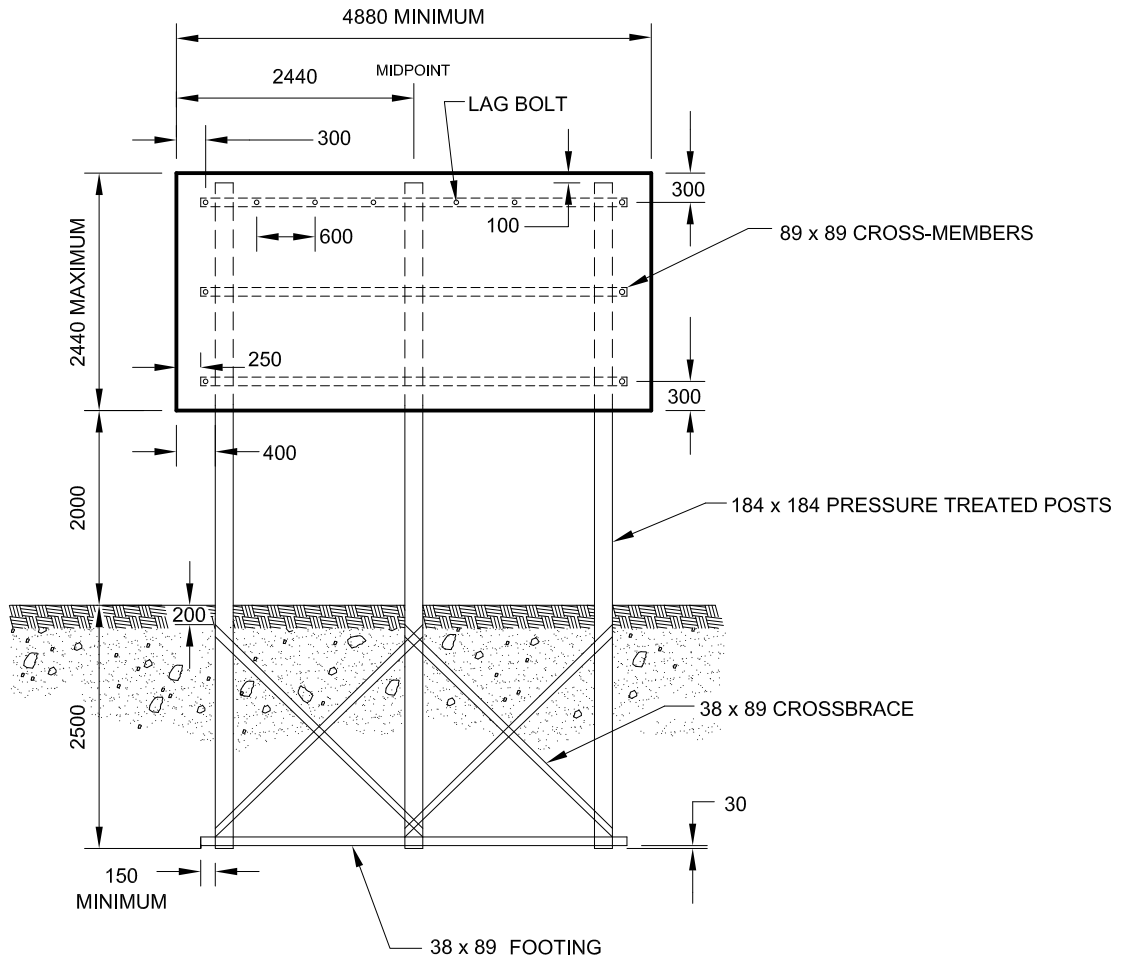
DATE:

REV 02-01-10

NOT TO SCALE

MARCH 2011

1293 -1



NOTES:

1. TOP OF SIGN BOARD 100 ABOVE TOP OF POST.
2. LAG BOLTS TO BE 80 x 10Ø GALVANIZED WITH GALVANIZED WASHERS.
3. MAXIMUM SPACING FOR LAG BOLTS IS 600.
4. CROSS MEMBERS TO BE ATTACHED TO POSTS USING 300 x 20Ø GALVANIZED BOLTS, WITH NUTS AND WASHERS.



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

## SIGN POST INSTALLATION DETAILS TYPE "E"

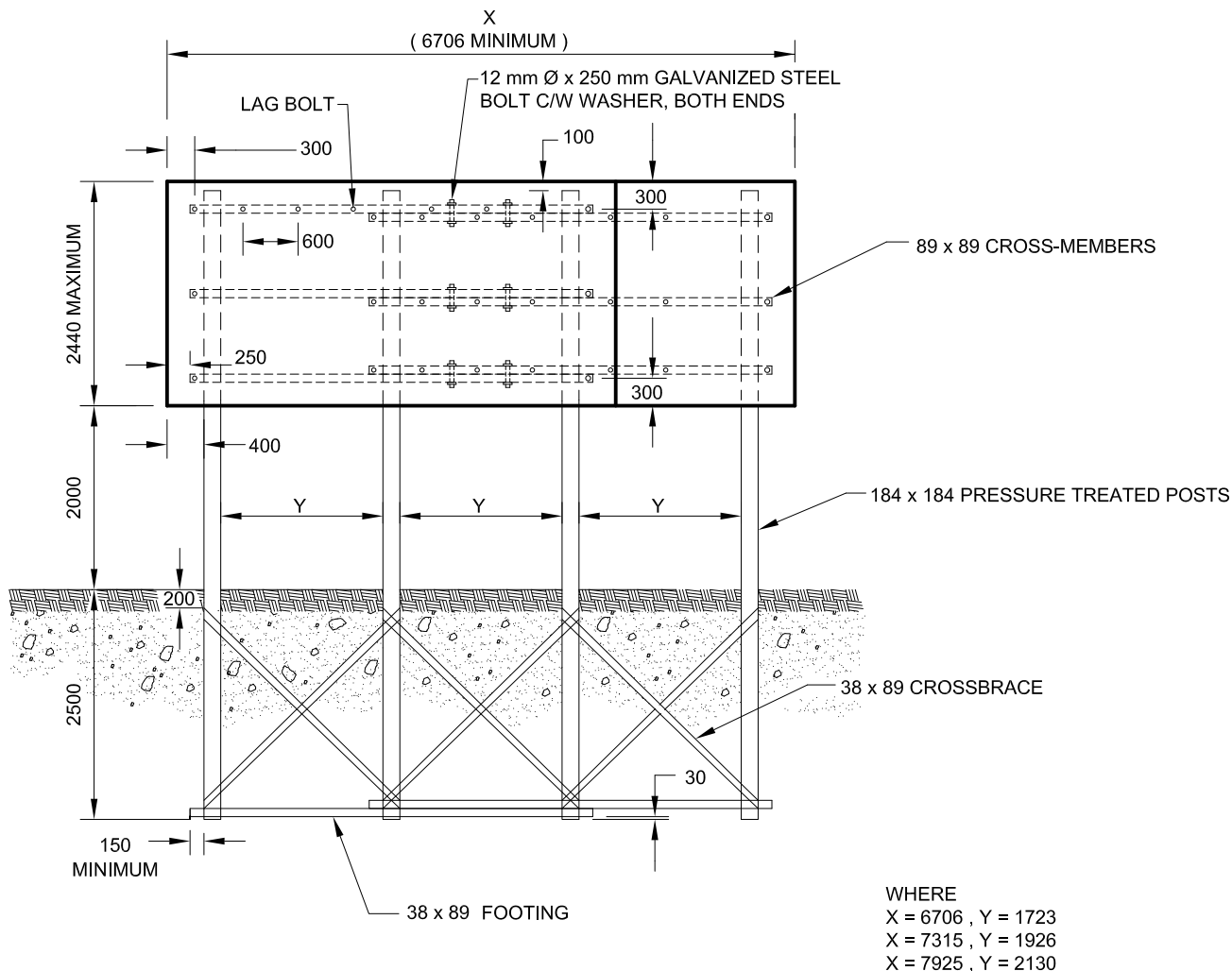
DRAWN BY:

DEB KIRBY

DATE:

REV 02-01-10

NOT TO SCALE



**NOTES**

1. TOP OF SIGN BOARD 100 ABOVE TOP OF POST.
2. LAG BOLTS TO BE 80 x 10Ø GALVANIZED WITH GALVANIZED WASHERS.
3. MAXIMUM SPACING FOR LAG BOLTS IS 600.
4. CROSS MEMBERS TO BE ATTACHED TO POSTS USING 300 x 20Ø GALVANIZED BOLTS, WITH NUTS AND WASHERS.
5. HORIZONTAL CROSS-MEMBERS TO SPAN 3 POSTS.



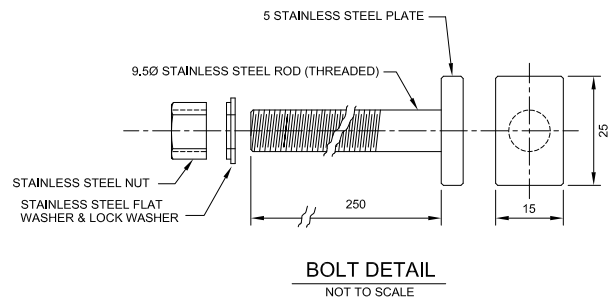
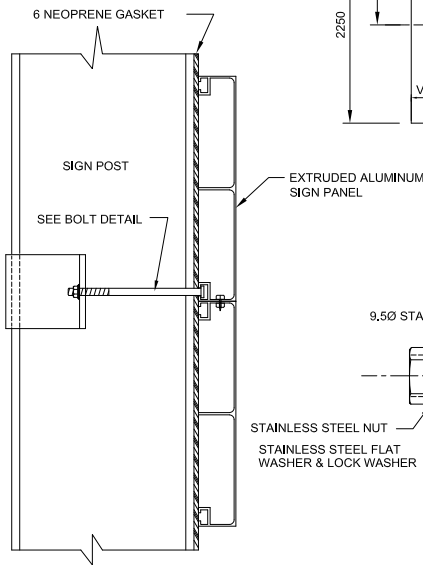
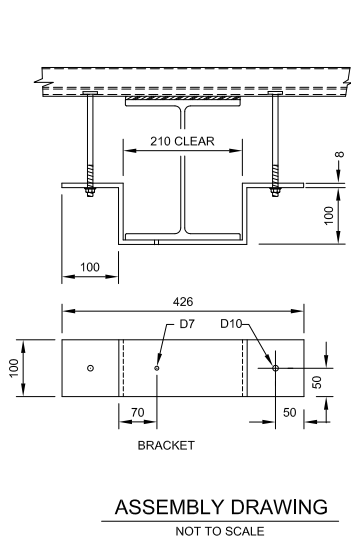
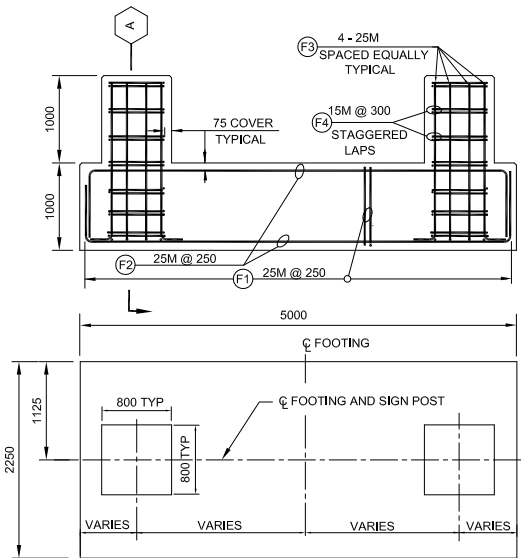
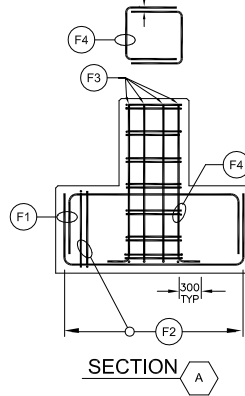
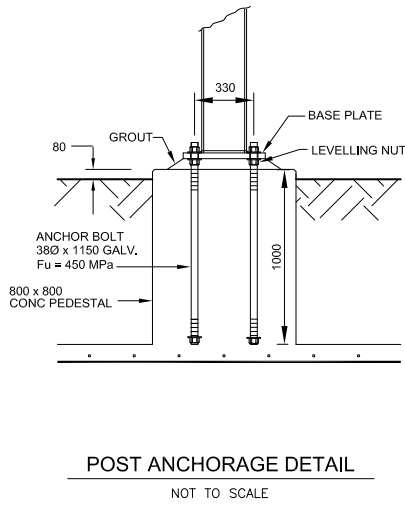
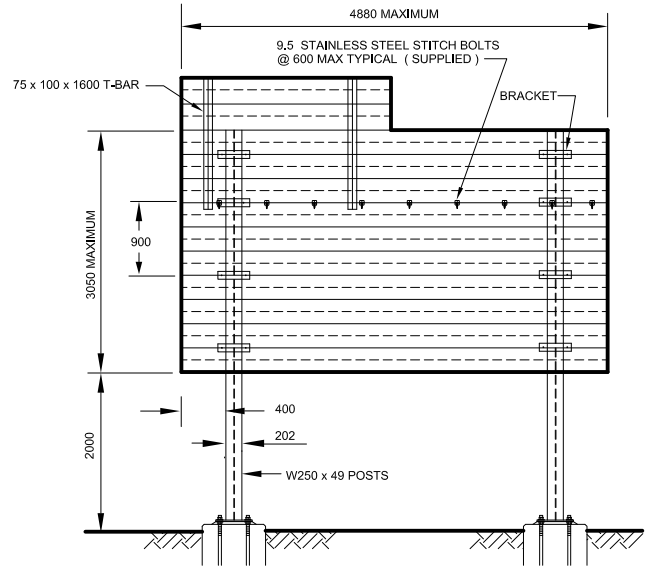
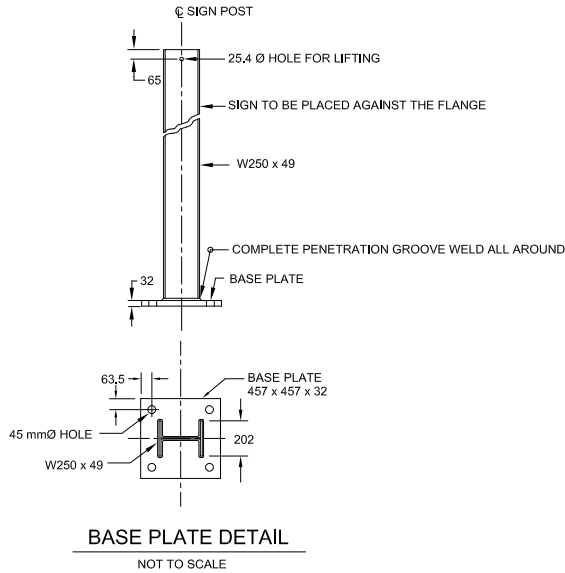
TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

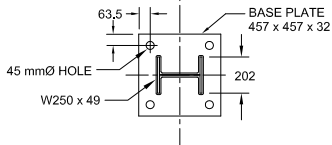
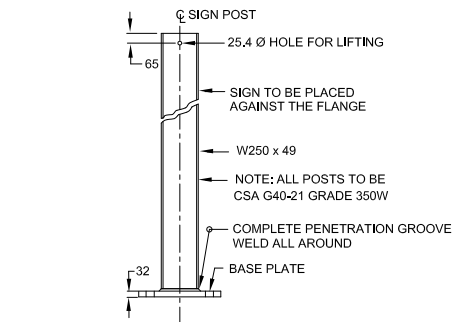
**SIGN POST INSTALLATION DETAILS  
TYPE "H"**

DRAWN BY:

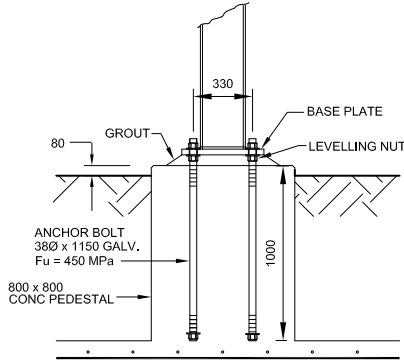
DATE:

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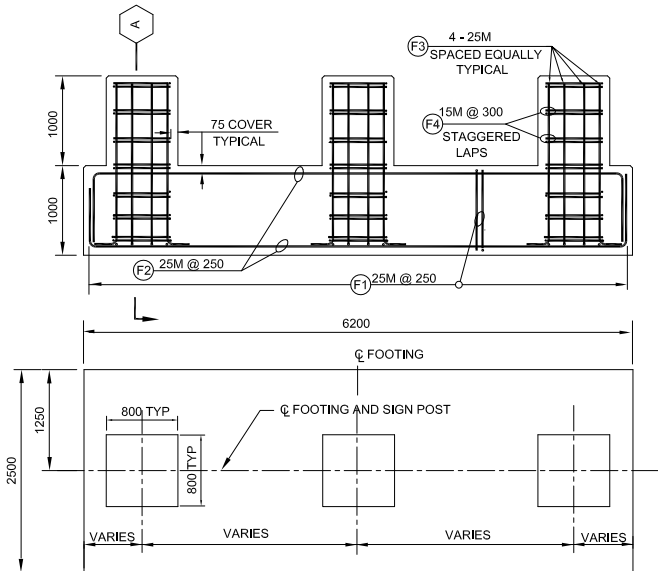
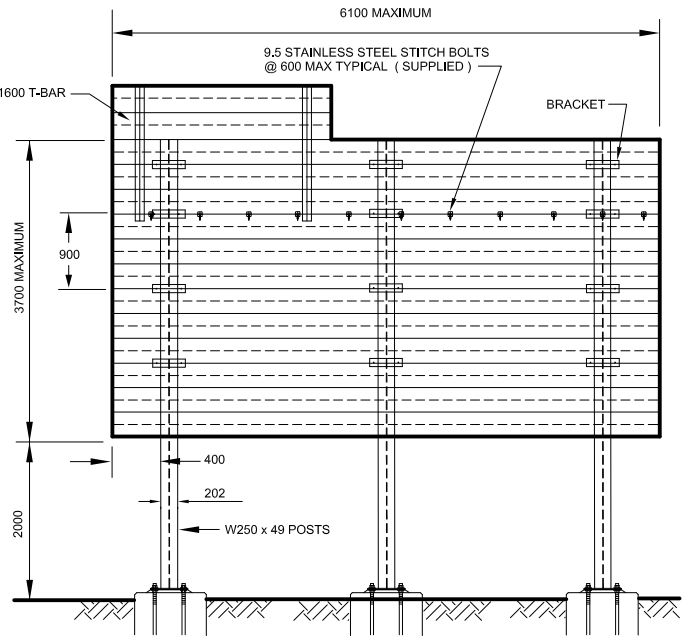
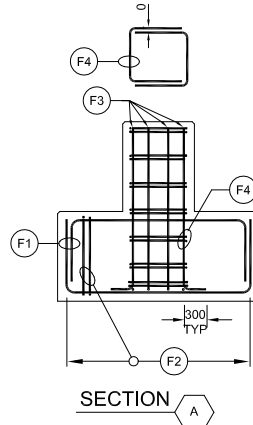




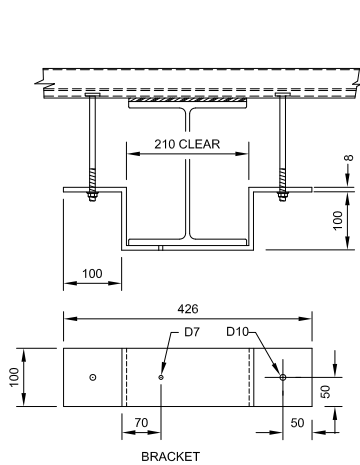
**BASE PLATE DETAIL**  
NOT TO SCALE



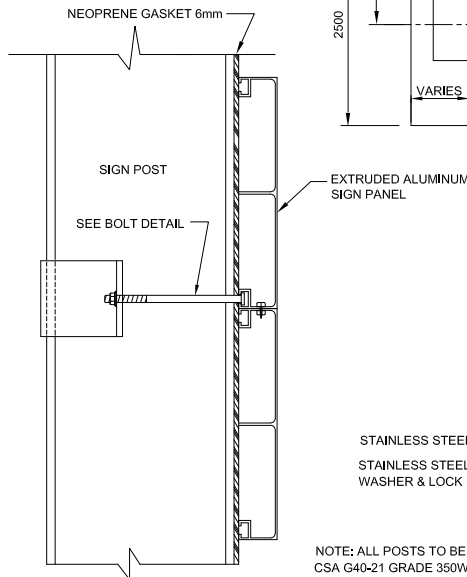
**POST ANCHORAGE DETAIL**  
NOT TO SCALE



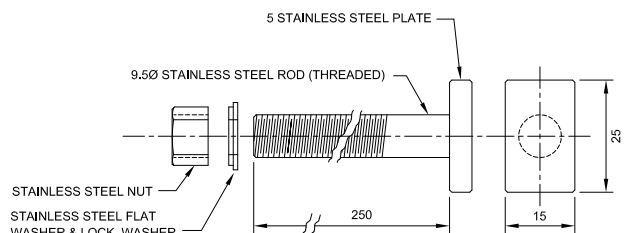
**FOUNDATION PLAN**  
NOT TO SCALE



**ASSEMBLY DRAWING**  
NOT TO SCALE

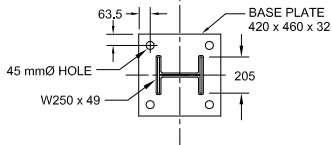
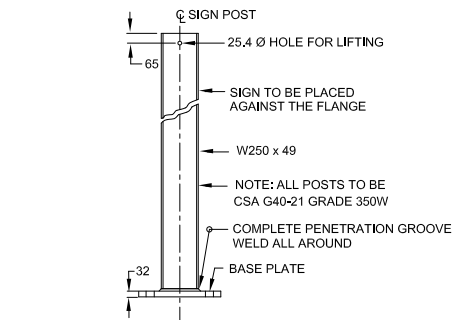


NOTE: ALL POSTS TO BE CSA G40-21 GRADE 350W



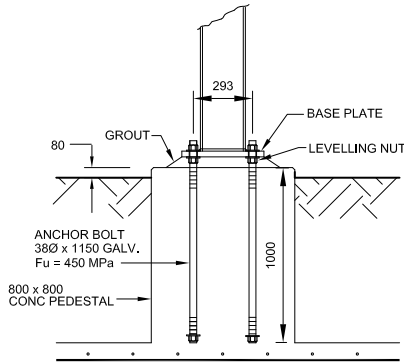
**BOLT DETAIL**  
NOT TO SCALE





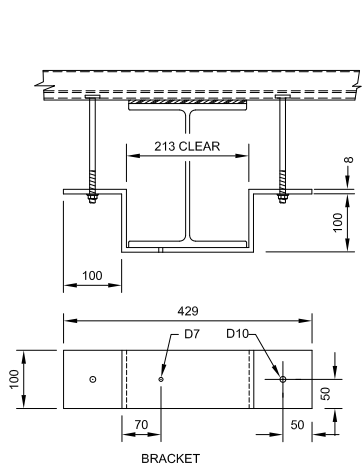
BASE PLATE DETAIL

NOT TO SCALE



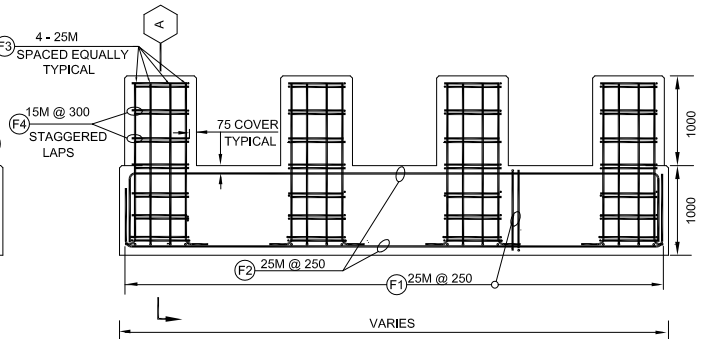
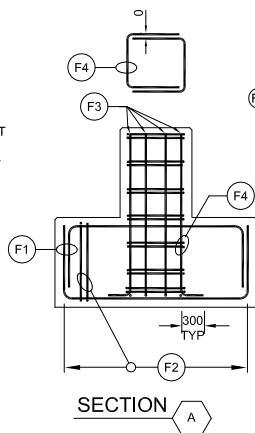
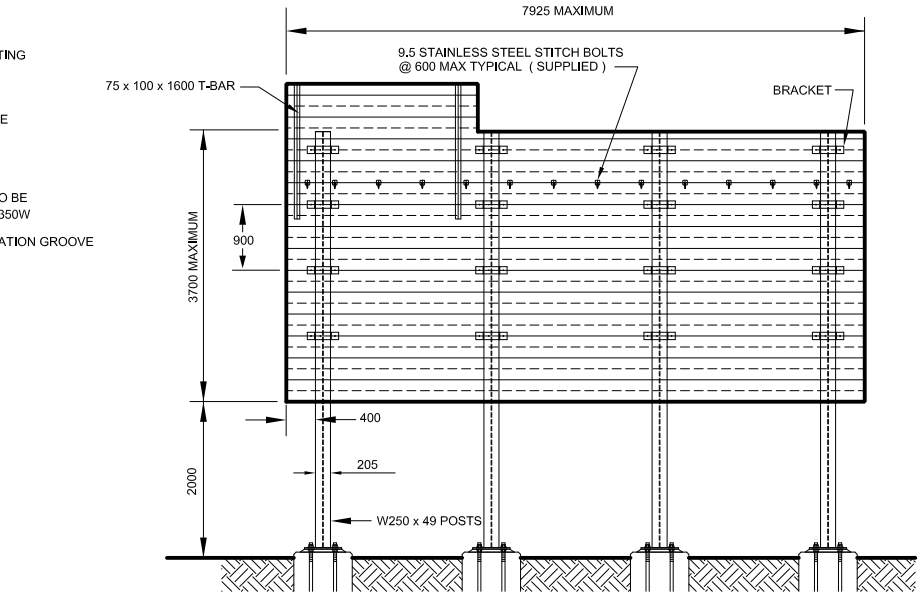
POST ANCHORAGE DETAIL

NOT TO SCALE



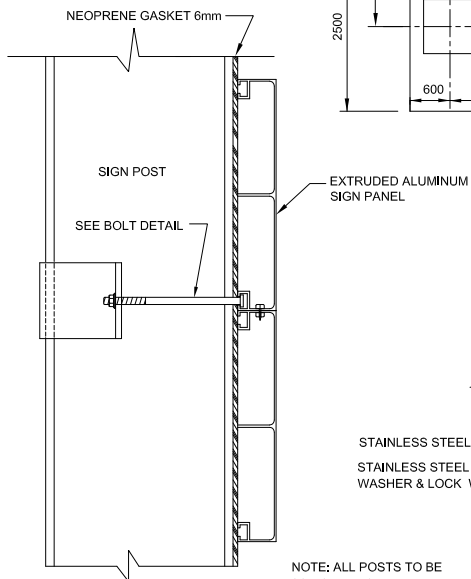
ASSEMBLY DRAWING

NOT TO SCALE

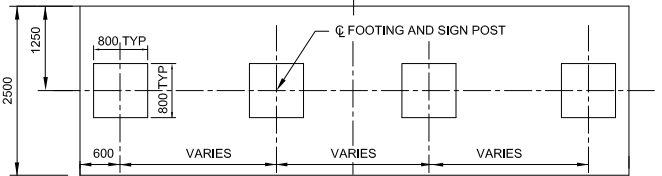


FOUNDATION PLAN

NOT TO SCALE

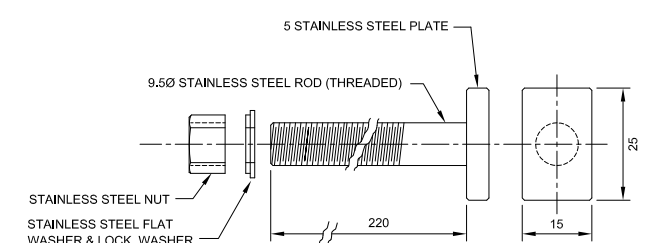


NOTE: ALL POSTS TO BE CSA G40-21 GRADE 350W



FOUNDATION PLAN

NOT TO SCALE



BOLT DETAIL

NOT TO SCALE



TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

# SIGN POST INSTALLATION DETAILS TYPE "I"

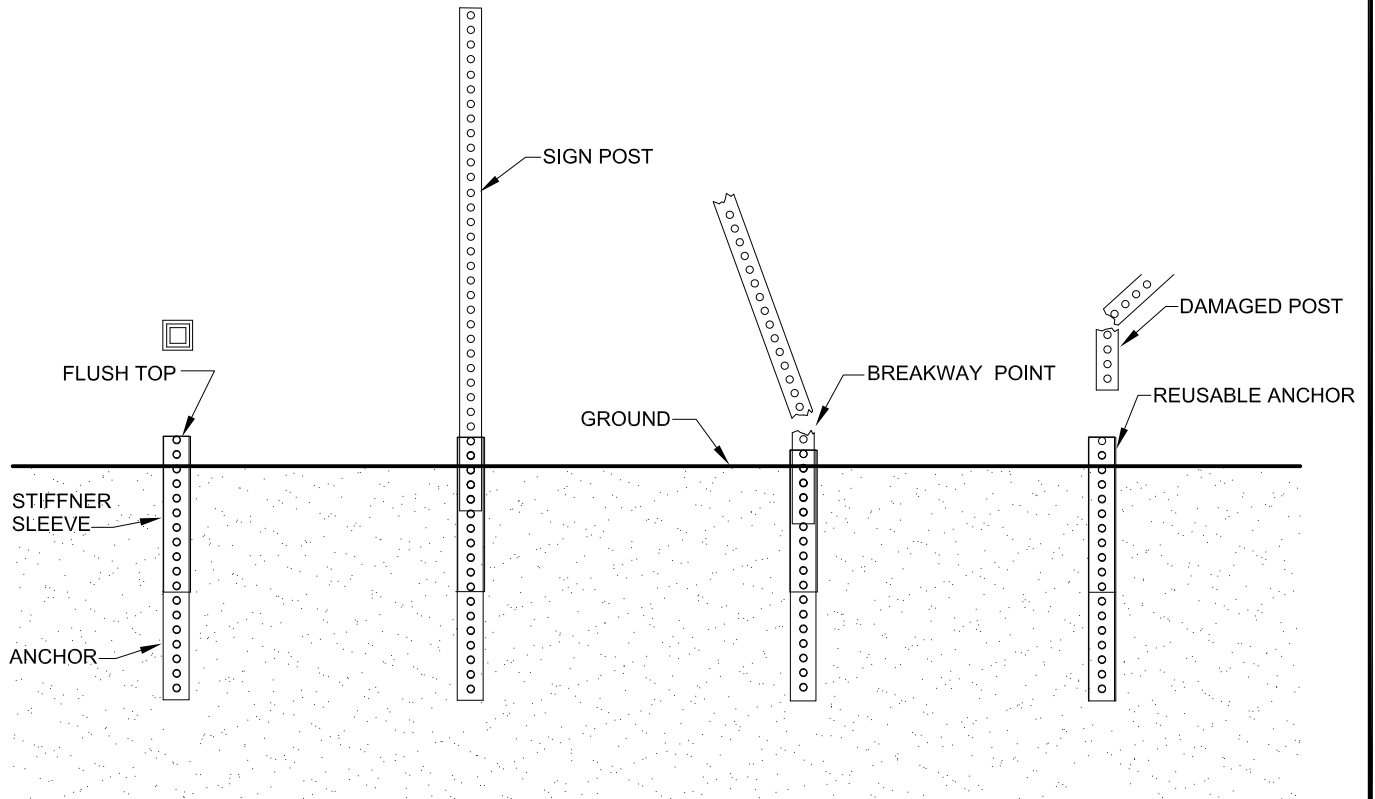
DRAWN BY:

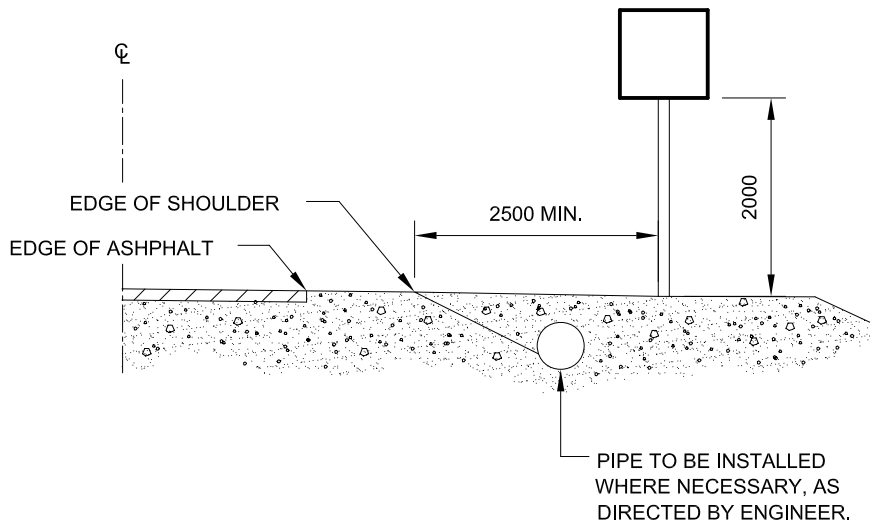
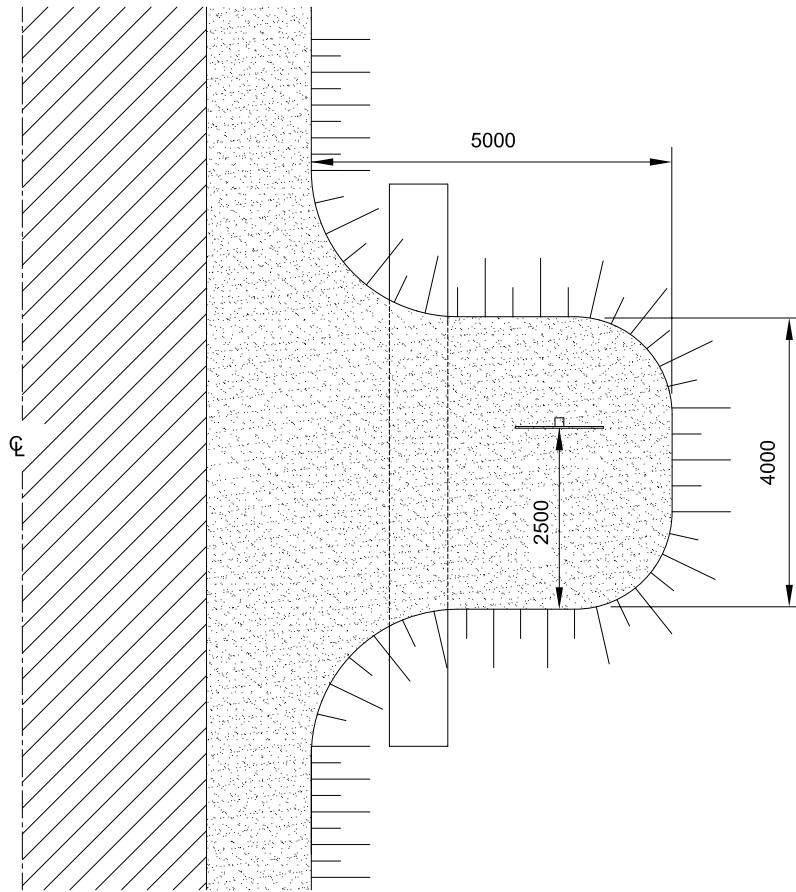
DATE:

REV 09-01-31

NOT TO SCALE

NOTES:  
 ANCHOR IS 914.4mm LONG.  
 STIFFNER SLEEVE IS 457.2mm LONG.  
 SIGNPOST IS 3048mm LONG.





TRANSPORTATION AND WORKS  
HIGHWAY DESIGN DIVISION

**SUB-GRADE WIDENING FOR TYPE "A" AND "B"  
SIGN POST INSTALLATIONS**

DRAWN BY: DEB KIRBY

DATE: REV 02-01-10

NOT TO SCALE

