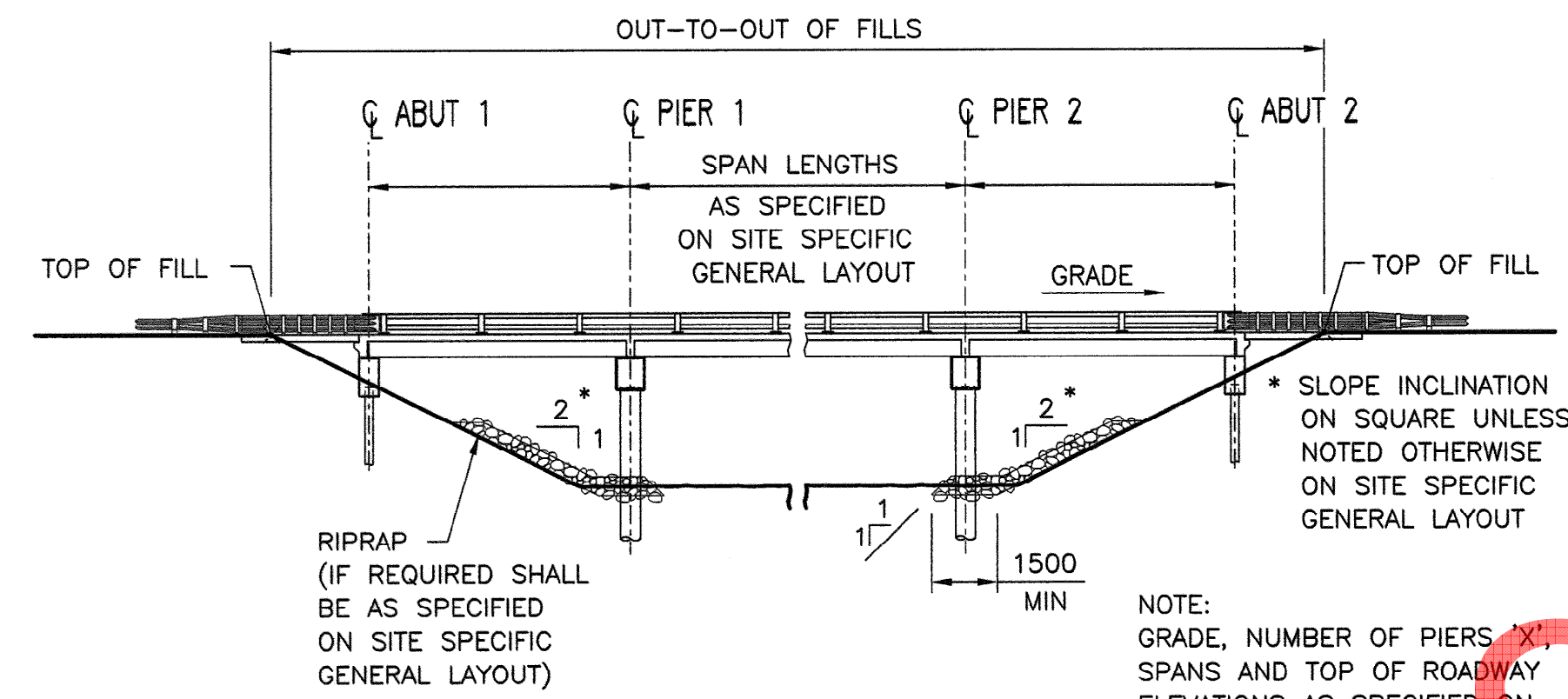
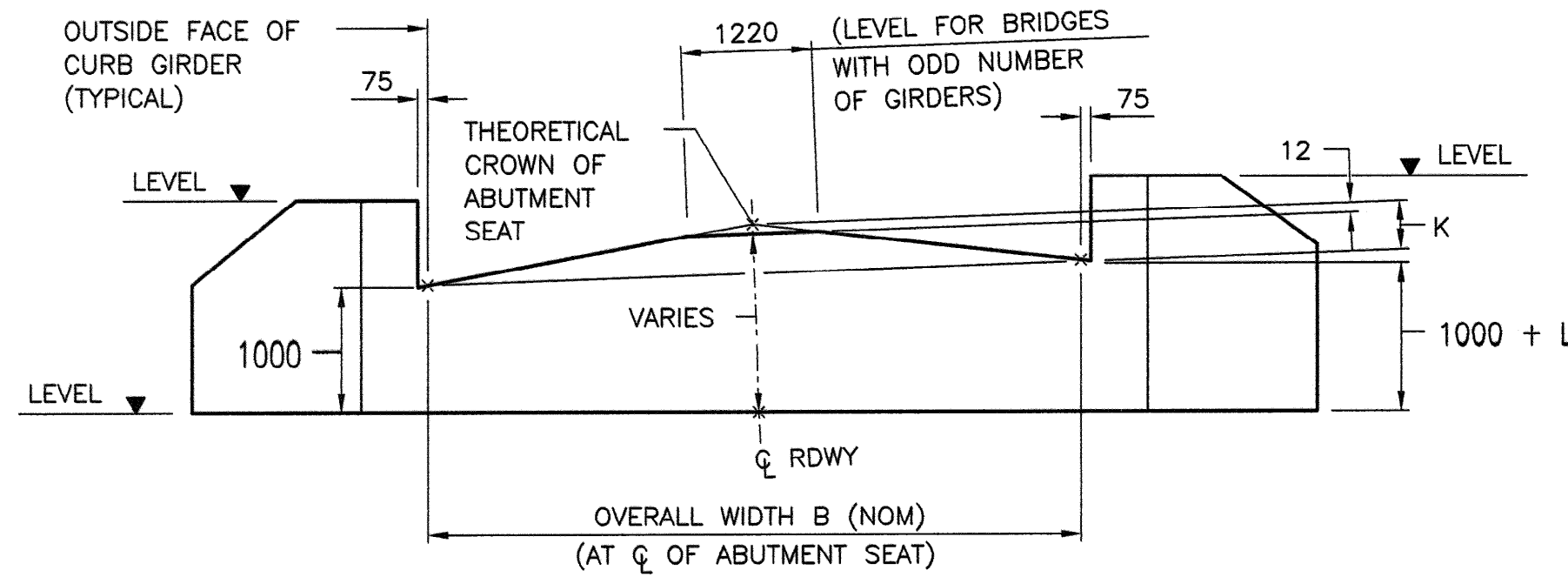


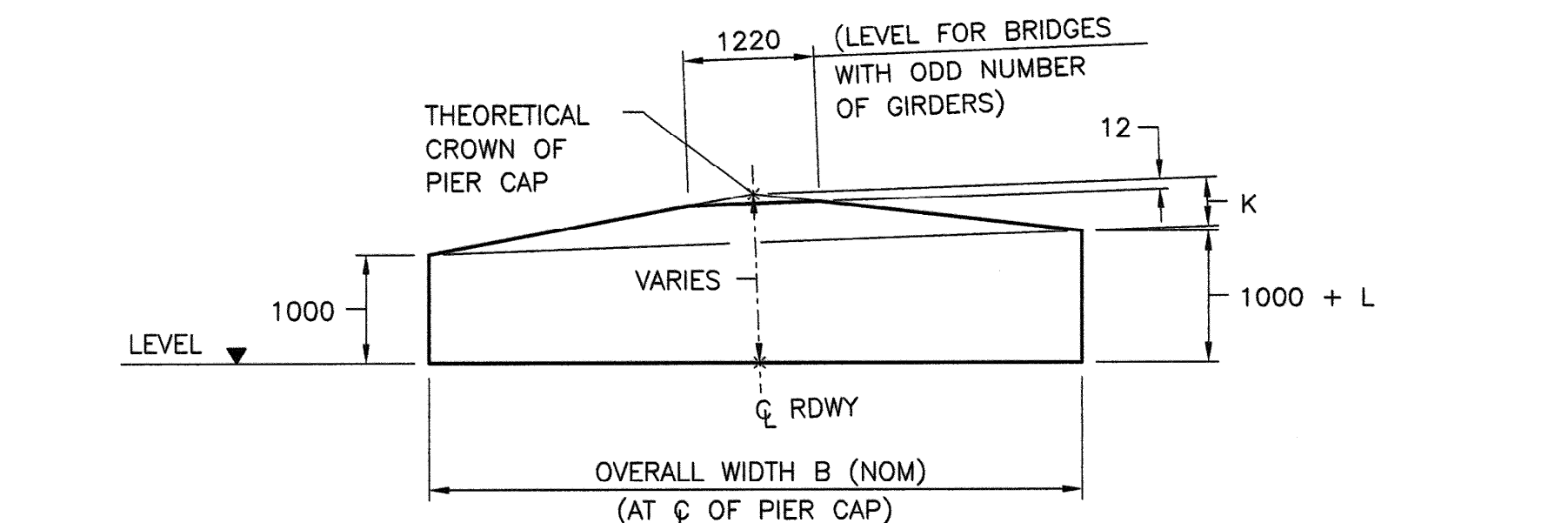
BRIDGE PLAN
NTS



BRIDGE ELEVATION
NTS



ABUTMENT VERTICAL DIMENSIONING DETAIL
(ON SQUARE) NTS



PIER VERTICAL DIMENSIONING DETAIL
(ON SQUARE) NTS

GENERAL NOTES

- SCALES WHERE INDICATED ARE APPLICABLE FOR FULL SIZE A1 DRAWING LAYOUT.
- ALL DRAWING REFERENCES REFER TO CURRENT DRAWINGS.
- ROADWAY ELEVATIONS SPECIFIED ELSEWHERE ARE GIVEN TO TOP OF THEORETICAL CROWN ON CENTERLINE ROADWAY.

GEOTECHNICAL CONSIDERATIONS

- IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE DRAWINGS TO OBTAIN THE NECESSARY SITE SPECIFIC GEOTECHNICAL INFORMATION. A GEOTECHNICAL INVESTIGATION COMPLETED BY A QUALIFIED PROFESSIONAL ENGINEER SHALL BE UNDERTAKEN PRIOR TO THE DESIGN PHASE IN ORDER TO ESTABLISH THE SUITABILITY OF THE DESIGN AND CONSTRUCTION ASSUMPTIONS ON THESE DRAWINGS AND TO PROVIDE SUPPLEMENTARY INFORMATION WHERE REQUIRED.
- THE PILE TERMINATION CRITERIA AND DESIGN TIP ELEVATIONS SHALL BE DETERMINED BY A QUALIFIED PROFESSIONAL ENGINEER TO RESIST THE PILE LOADS PRESENTED IN TABLES 1 AND 2.

TABLE 1: BEARING CAPACITY 700x1206 (SLS)

SPAN (m) ARRANGEMENT	PIER PILE (kN)	ABUT PILE (kN)
14-18-14	1116	470
14-20-14	1166	470
16-18-16	1166	519
16-20-16	1213	519
18	-	-
18-18-18	1217	567
18-20-18	1261	567
20	-	-
20-20-20	1311	612

TABLE 2: BEARING CAPACITY 700x1206 (ULS)

SPAN (m) ARRANGEMENT	PIER PILE (kN)	ABUT PILE (kN)
14-18-14	1596	672
14-20-14	1666	672
16-18-16	1666	725
16-20-16	1730	725
18	-	-
18-18-18	1738	808
18-20-18	1796	808
20	-	-
20-20-20	1865	848

HYDROTECHNICAL CONSIDERATIONS

- IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE DRAWINGS TO COMPLETE A SITE SPECIFIC HYDROTECHNICAL ASSESSMENT IN ORDER TO ESTABLISH THE REQUIRED BRIDGE OPENING, TO CONFIRM THE SUITABILITY OF THE DESIGN ASSUMPTIONS LISTED ON THESE DRAWINGS AND TO SUPPLEMENT THESE ASSUMPTIONS WHERE REQUIRED. CONSULTATION WITH A QUALIFIED PROFESSIONAL ENGINEER WITH HYDROTECHNICAL EXPERIENCE PRIOR TO THE DESIGN PHASE IS RECOMMENDED.

DESIGN LOADS AND ASSUMPTIONS

- **DESIGN SPECIFICATION:** CAN/CSA-S6-06
- **DESIGN VEHICLE:** CL-800
- **DEAD LOAD:** ABUTMENT AND PIER CAP SELF-WEIGHT, GIRDER SELF-WEIGHT AND WEARING SURFACE ALLOWANCE AS PER STANDARD SLC COMPOSITE BRIDGE GIRDER DRAWINGS S-1782, S-1783, S-1784, S-1785, S-1786, S-1787 AND S-1788.
- **ICE LOADS:** THE FOLLOWING LIMITING ASSUMPTIONS WERE USED FOR PIER DESIGN AND THESE DRAWINGS SHOULD NOT BE USED WHEN THESE DESIGN CONDITIONS ARE EXCEEDED:
 - EFFECTIVE CRUSHING STRENGTH $p = 700 \text{ kPa}$
 - MAXIMUM ICE THICKNESS = 600 mm
 - FLOW ANGLE BETWEEN AXIS OF PIER AND STREAM = 0 DEGREES
 - MAXIMUM HEIGHT OF DECK SURFACE ABOVE STREAMBED = 7.9 m.
 - HEIGHT OF ICE FORCE ABOVE STREAM BED:
 - = MINIMUM 1.0 m
 - = MAXIMUM 1.0 m BELOW UNDERSIDE OF BOX GIRDERS
- **EARTH PRESSURE:** THE FOLLOWING LIMITING ASSUMPTIONS WERE USED FOR SUBSTRUCTURE DESIGN. THESE DRAWINGS SHOULD NOT BE USED WHEN ACTUAL SITE CONDITIONS RESULT IN MORE SEVERE LOAD EFFECTS OR LESS EFFECTIVE RESISTANCE:
 - UNIT WEIGHT OF SOIL, $\gamma = 22 \text{ kN/m}^3$
 - COEFFICIENT OF ACTIVE PRESSURE, $k_a = 0.50$ (NON-FACTORED)
 - HORIZONTAL SUBGRADE REACTION, $k_s = 20 \text{ 000 kN/m}^2$ FOR 610 mm DIA PILE.
 - MAXIMUM HORIZONTAL DISTANCE FROM TOP OF FILL MEASURED PERPENDICULAR TO BURIED FACE OF ABUTMENT = 1.9 m
 - MAXIMUM HEAD SLOPE INCLINATION, 2H : 1V
- **ADDITIONAL DESIGN ASSUMPTIONS:**
 - THE SLC COMPOSITE DECK PROVIDES LATERAL STABILITY TO THE PIER PILE BENTS BY ACTING AS A DIAPHRAGM BETWEEN THE ABUTMENTS
 - MAXIMUM PIER HEIGHT LIMITED TO 6.0 m AS MEASURED FROM STREAMBED TO UNDERSIDE OF PIER PILE CAP
 - MAXIMUM LOCAL SCOUR DEPTH OF 1.0 m
 - BRIDGE SKEW ANGLES CONSIDERED: 0°, 15°, 30° AND 40°
- **BRIDGE LENGTH:** IT IS THE RESPONSIBILITY OF OTHERS USING THESE PLANS TO DETERMINE THE SUITABILITY OF THE DESIGN WHEN THE BRIDGE LENGTH EXCEEDS 60.0 m AND TO MAKE DESIGN ADJUSTMENTS IF AND WHERE REQUIRED.

CONSTRUCTION

- ALL CONSTRUCTION WORK SHALL CONFORM TO THE CURRENT SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- FIELD WELDING OF THE PIER PIPE PILE TO HORIZONTAL BRACE SHALL CONFORM TO SPECIFICATION SECTION 13.4.1 "FIELD WELDING OF STRUCTURAL MEMBERS".
- PILES SHALL BE DRIVEN TO THE TIP ELEVATIONS SHOWN ON THE SITE SPECIFIC DRAWINGS, OR LOWER, TO ACHIEVE AT LEAST THE SPECIFIED MINIMUM BEARING CAPACITIES TO RESIST THE SPECIFIED LOADS PRESENTED IN TABLE 1 OR 2. THE BEARING CAPACITIES SHALL BE ESTIMATED USING THE FORMULAS PRESENTED IN THE CURRENT SPECIFICATIONS FOR BRIDGE CONSTRUCTION (3.4.2).
- AFTER THE PILE DRIVING OPERATIONS HAVE STARTED, THE CONSULTANT MAY REVISE THE REQUIRED PILE TIP ELEVATION, PROVIDED THAT THE MINIMUM SPECIFIED BEARING CAPACITIES TO RESIST THE LOADS PRESENTED IN TABLES 1 AND 2, AND THE SPECIFIED MINIMUM PILE PENETRATION, HAVE BEEN ACHIEVED.
- PIER PILES SHALL PENETRATE AT LEAST 6 m BELOW STREAMBED.
- PILE TOLERANCES SHALL BE AS PER SPECIFICATIONS FOR BRIDGE CONSTRUCTION EXCEPT THAT BOTH PIER AND ABUTMENT PILES SHALL NOT BE OUT OF SPECIFIED POSITION BY MORE THAN 50 mm.
- ALL REINFORCEMENT SHALL HAVE A CLEAR CONCRETE COVER OF 75 mm UNLESS NOTED OTHERWISE.
- PILE CONCRETE SHALL BE CURED AT LEAST 12 HOURS BEFORE PLACING PIER CAP CONCRETE.
- ALL CORNERS SHALL HAVE A 20 mm CHAMFER OR FILLET UNLESS NOTED OTHERWISE.
- ALL EXPOSED CONCRETE SURFACES SHALL BE FINISHED AS PER THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.

BACKFILL

- THE CONTRACTOR MAY ELECT TO ERECT THE GIRDERS PRIOR TO BACKFILLING. IN THIS CASE, THE BACKFILLING MAY COMMENCE IMMEDIATELY AFTER GIRDERS ARE SECURED IN PLACE.
- IF IT IS NECESSARY TO PARTIALLY BACKFILL PRIOR TO GIRDER ERECTION, THE CONTRACTOR SHALL PROVIDE A RESTRAINT SYSTEM AND MONITOR WALL DEFLECTIONS WITH ADEQUATE INSTRUMENTATION DURING THE BACKFILL STAGE.

GIRDER INSTALLATION

- REFER TO STANDARD SLC COMPOSITE BRIDGE GIRDER DRAWINGS (LATEST REVISION).

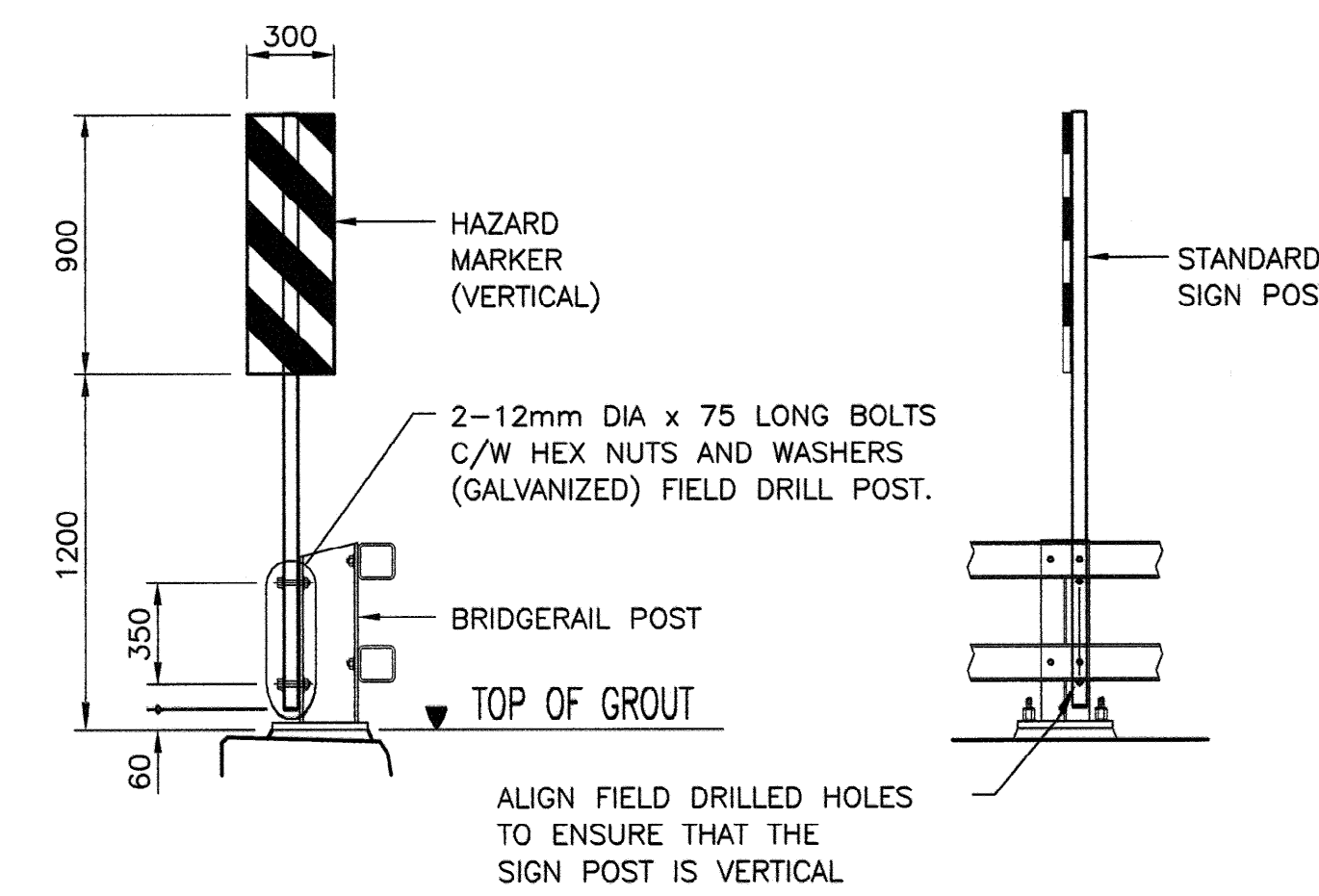
MATERIALS

- ALL CONCRETE SHALL BE CLASS C EXCEPT PILE CONCRETE SHALL BE USED FOR PIPE PILE INFILL. SULPHATE RESISTANT PORTLAND CEMENT (TYPE HS) SHALL BE USED IF DETERMINED TO BE NECESSARY FROM THE GEOTECHNICAL INVESTIGATION.
- GIRDER DOWELS SHALL BE FABRICATED FROM SMOOTH ROUND BAR STOCK CONFORMING TO CSA G40.21M - 300W
- ALL STEEL PLATE AND SHAPES SHALL CONFORM TO THE REQUIREMENTS OF CSA G40.21M GRADE 300W UNLESS NOTED OTHERWISE. PIER PILE STD PIPE BRACING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A53. PIER PIPE PILES SHALL CONFORM TO THE REQUIREMENTS OF ASTM 252 GRADE 2 ($F_y = 240 \text{ MPa}$).
- PIER PILES AND BRACES SHALL BE HOT-DIPPED GALVANIZED. GALVANIZING MAY BE OMITTED FROM PILE SURFACES LOCATED MORE THAN 1000 mm BELOW STREAMBED. ALL EXPOSED FIELD WELDS OF GALVANIZED MATERIAL SHALL BE THOROUGHLY CLEANED AND REPAIRED BY METALLIZING IN ACCORDANCE WITH ASTM - A780, METHOD A3 METALLIZING.
- GALVANIZING SHALL CONFORM TO THE CURRENT CSA STANDARD G164.
- ALL WELDING SHALL CONFORM TO THE CURRENT AWS SPECIFICATION D1.5.
- ELASTOMERIC PADS SHALL BE 60 HARDNESS AND SHALL CONFORM TO SECTION 18 "BEARING DEVICES" DIVISION II OF THE AASHTO DESIGN STANDARD.
- BEARING DOWEL HOLE GROUT TO BE SIKA 212 WITH A MINIMUM 28 DAY STRENGTH = 40MPa.

SUPPLEMENT

FIELD WELDING OF THE PIER PIPE PILE TO HORIZONTAL BRACE SHALL CONFORM TO SPECIFICATION SECTION 13.4.1 "FIELD WELDING OF STRUCTURAL MEMBERS".

PILES SHALL BE DRIVEN TO THE TIP ELEVATIONS SHOWN ON THE SITE SPECIFIC DRAWINGS, OR LOWER, TO ACHIEVE AT LEAST THE SPECIFIED MINIMUM BEARING CAPACITIES TO RESIST THE SPECIFIED LOADS PRESENTED IN TABLE 1 OR 2. THE BEARING CAPACITIES SHALL BE ESTIMATED USING THE FORMULAS PRESENTED IN THE CURRENT SPECIFICATIONS FOR BRIDGE CONSTRUCTION (3.4.2).



HAZARD MARKER DETAILS
1:25

(SHOWN AS FOR PL-2 DOUBLE TUBE TYPE BRIDGERAIL)
2 REQUIRED - RIGHT HAND } REQUIRED IF SPECIFIED IN SITE SPECIFIC GENERAL LAYOUT
2 REQUIRED - LEFT HAND }

WORK THESE DRAWINGS TOGETHER WITH SITE SPECIFIC GENERAL LAYOUT AND STANDARD SLC COMPOSITE BRIDGE GIRDER DRAWINGS S-1782, S-1783, S-1784, S-1785, S-1786, S-1787 AND S-1788.

SPAN TABLE

SPAN	14 m	16 m	18 m	20 m
14-18-14 m	16-18-16 m	18 m	20 m	
14-20-14 m	16-20-16 m	18-18-18 m	20-20-20 m	
		18-20-18 m		

NUMBER OF GIRDER LINES	CLEAR ROADWAY WIDTH 'C' (NOM)	OVERALL WIDTH 'B' (NOM)
8	8 720	9 870
9	9 940	11 090
10	11 160	12 310
11	12 380	13 530
12	13 600	14 750
13	14 820	15 970

NH AUG 18, 2008 S-1789-08.DWG -DRAWN-BY-RWK

	<p>PERMIT TO PRACTICE ISL Engineering and Land Services Ltd. Signature: <i>[Signature]</i> Date: <i>Aug 15, 2008</i> PERMIT NUMBER: P 4741 The Association of Professional Engineers, Geologists and Geophysicists of Alberta</p>	<p>DESIGNER</p>	<p>CHECKER</p>	<p>RECOMMENDED DIRECTOR BRIDGE ENGINEERING</p> <p><i>Tom Leo</i></p>	<p>Alberta Transportation</p> <p>STANDARD SLC COMPOSITE BRIDGES SLC700 GIRDERS WITH CAST-IN-PLACE CONCRETE SUBSTRUCTURES - SHEET 1</p>
		<p>DATE: <i>Aug 15, 2008</i></p>	<p>DATE: <i>Aug 15, 2008</i></p>	<p>APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH</p> <p><i>Allen Kavan</i></p> <p>DATE: <i>August 22, 2008</i></p>	