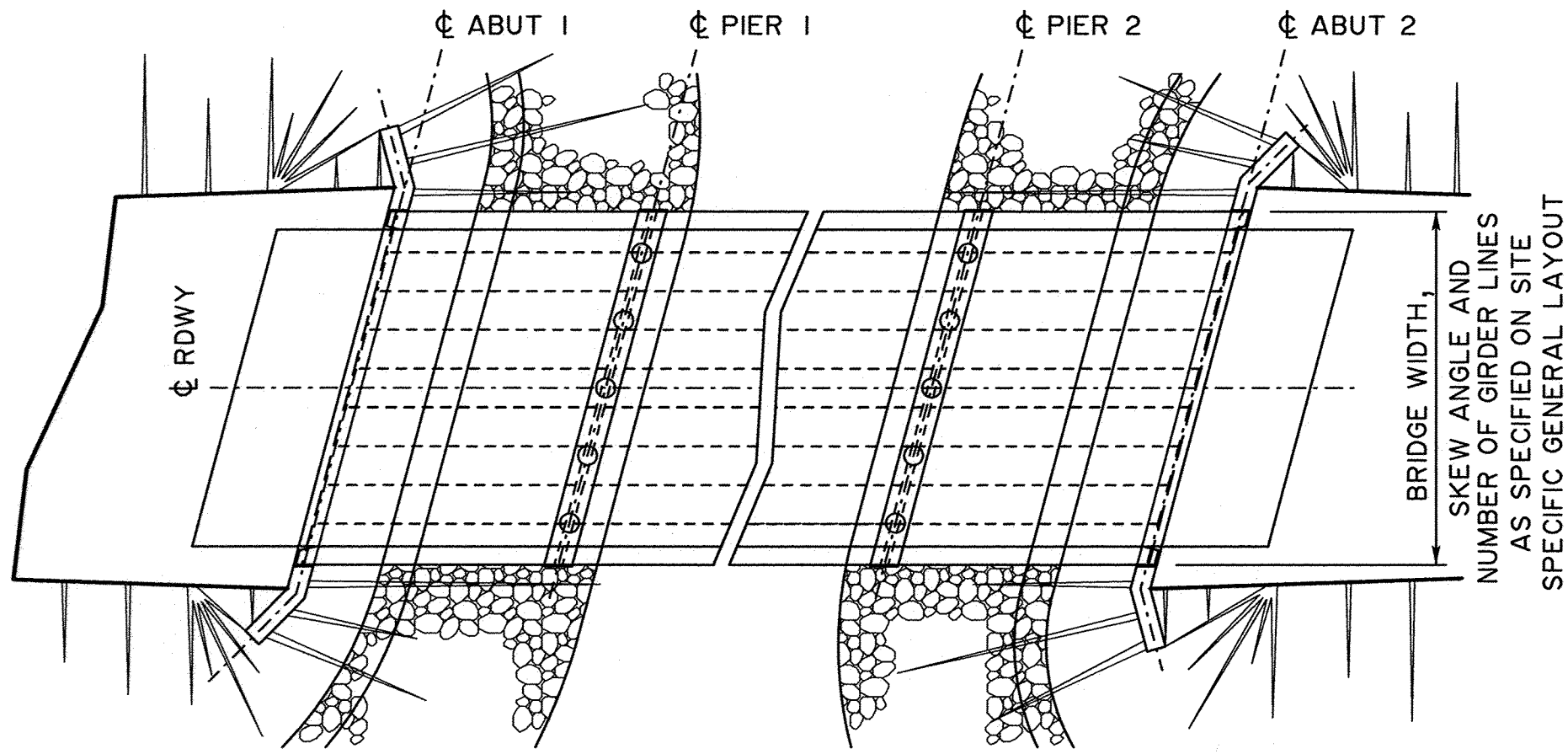
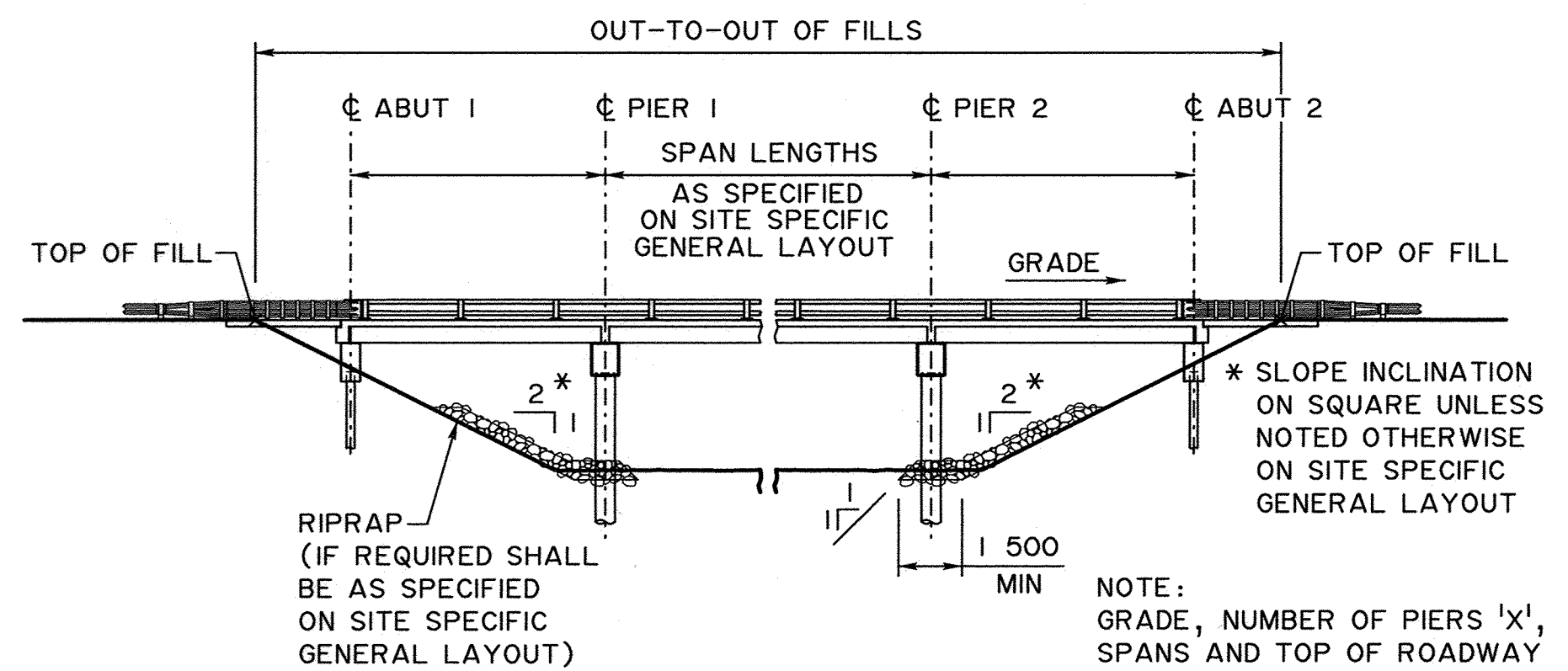




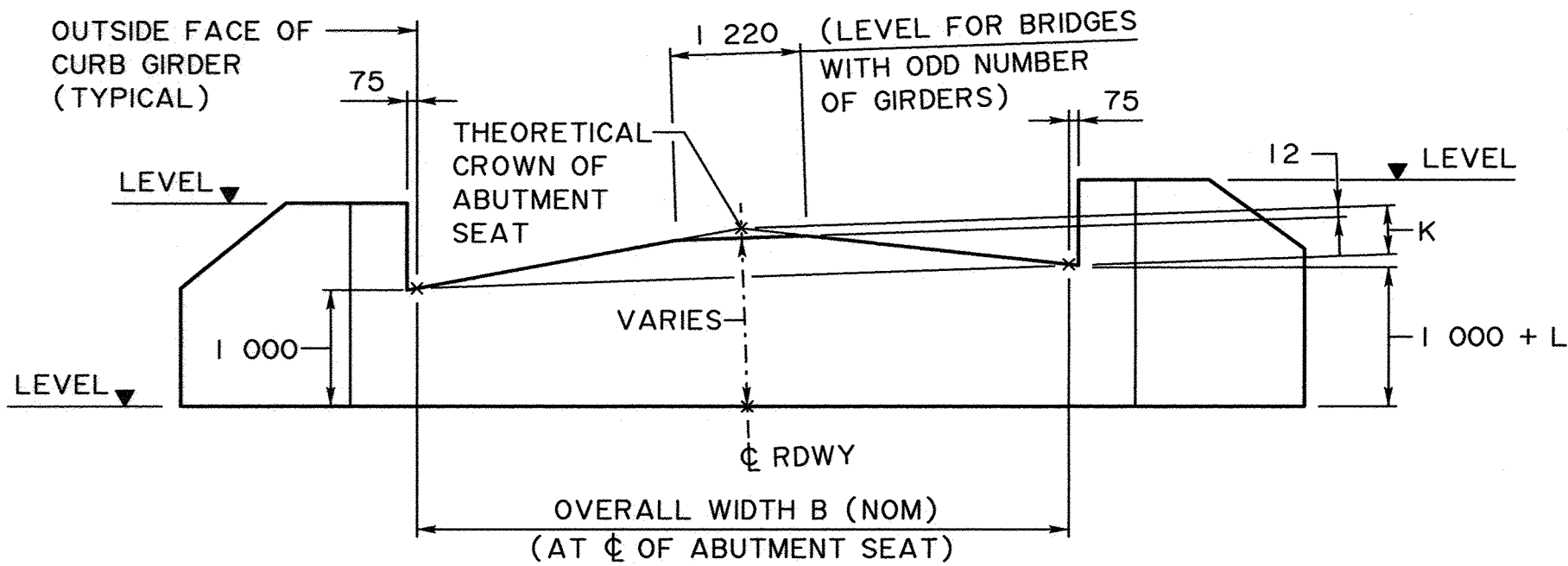
BRIDGE PLAN

NTS



BRIDGE ELEVATION

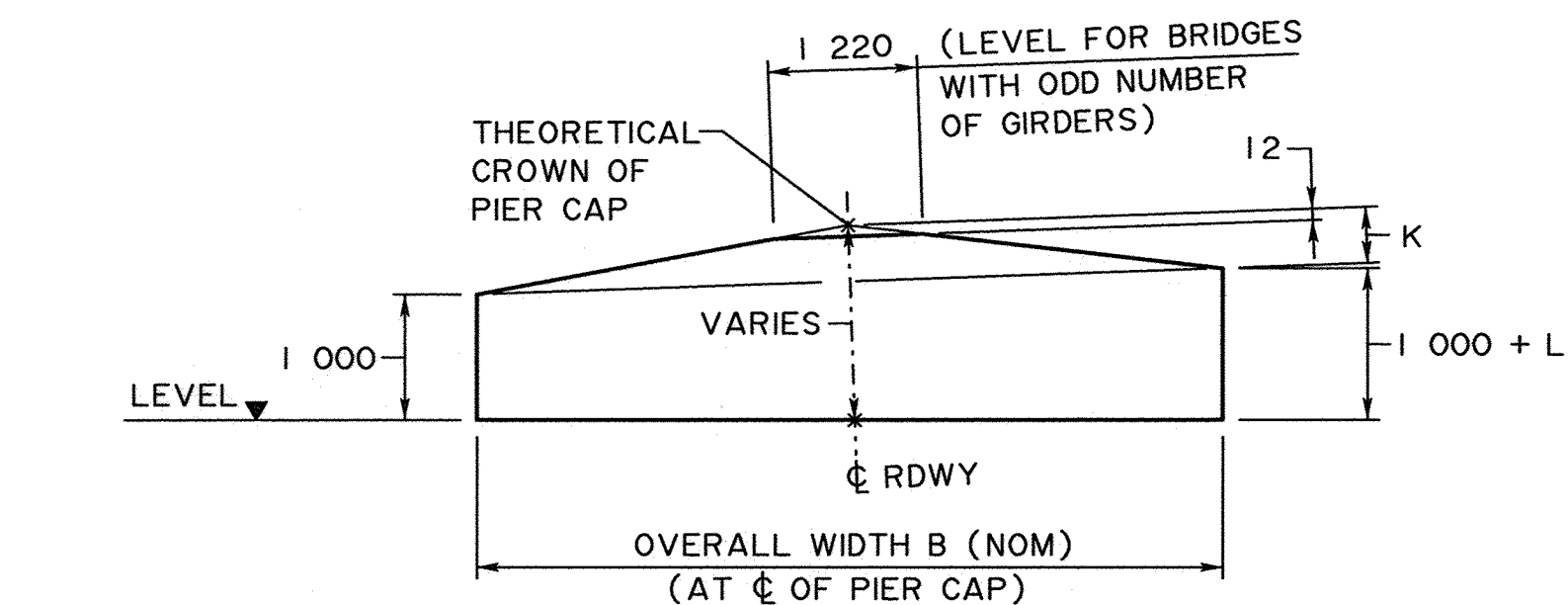
NTS



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

- A GEOTECHNICAL INVESTIGATION SHALL BE COMPLETED BY A GEOTECHNICAL ENGINEER. THE GEOTECHNICAL INVESTIGATION SHALL VERIFY THE DESIGN AND CONSTRUCTION ASSUMPTIONS ON THESE DRAWINGS AND PROVIDE ADDITIONAL INFORMATION WHERE REQUIRED. THE GEOTECHNICAL INVESTIGATION WILL BE CONSIDERED A PROFESSIONAL WORK PRODUCT AND SHALL BE AUTHENTICATED BY A PROFESSIONAL GEOTECHNICAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA AND VALIDATED BY A RESPONSIBLE MEMBER, IN ACCORDANCE WITH APEGA REQUIREMENTS
- THE PILE SET CRITERIA AND TIP ELEVATIONS SHALL BE DETERMINED BY THE GEOTECHNICAL ENGINEER. PILE LOADS SHALL BE IN ACCORDANCE WITH TABLES 1 AND 2

TABLE 1: BEARING CAPACITY 700 x 1 206 (SLS)			TABLE 2: BEARING CAPACITY 700 x 1 206 (ULS)		
SPAN (m) ARRANGEMENT	PIER PILE (kN)	ABUT PILE (kN)	SPAN (m) ARRANGEMENT	PIER PILE (kN)	ABUT PILE (kN)
14-18-14	1085	510	14-18-14	1515	735
14-20-14	1135		14-20-14	1580	
16-18-16	1135	565	16-18-16	1580	810
16-20-16	1180		16-20-16	1640	
18	-	615	18	-	880
18-18-18	1185		18-18-18	1645	
18-20-18	1230		18-20-18	1700	
20	-	665	20	-	950
20-20-20	1285		20-20-20	1775	

HYDROTECHNICAL

- 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 REQUIRED

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

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

DESIGN LOADS AND ASSUMPTIONS

- **DESIGN SPECIFICATION:** CAN/CSA-S6-19
- **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, $k_s = 20\,000 \text{ kN/m}^2$ FOR 610 mm DIAMETER PILE
 - MAXIMUM HORIZONTAL DISTANCE FROM TOP OF FILL MEASURED PERPENDICULAR TO BURIED FACE OF ABUTMENT = 1.9 m
 - MAXIMUM HEAD SLOPE INCLINATION, 2H : 1V
- **SEISMIC:** THE FOLLOWING LIMITING ASSUMPTIONS WERE USED FOR SEISMIC ANALYSIS OF BRIDGE STRUCTURE. THESE DRAWINGS SHOULD NOT BE USED WHEN ACTUAL SITE CONDITIONS RESULT IN MORE SEVERE LOAD EFFECTS OR LESS EFFECTIVE RESISTANCE:
 - IMPORTANT CATEGORY = OTHER BRIDGES
 - SEISMIC PERFORMANCE CATEGORY = 2
- **THERMAL:**
 - MAXIMUM MEAN DAILY TEMPERATURE = 38 °C
 - MINIMUM MEAN DAILY TEMPERATURE = - 48 °C
- **WIND:**
 - HOURLY MEAN WIND PRESSURE (50 YR) = 1.02 kPa
- **BRAKING FORCE:** CONSIDERED
- **COLLISION:** NOT CONSIDERED
- **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 BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION
- FIELD WELDING OF THE PIER PIPE PILE TO HORIZONTAL BRACE SHALL CONFORM TO SECTION 13.4.1 "FIELD WELDING OF STRUCTURAL MEMBERS" OF THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION
- PILES SHALL BE DRIVEN TO THE TIP ELEVATIONS SHOWN ON THE SITE SPECIFIC DRAWINGS AND IN ACCORDANCE WITH SECTION 3 OF THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION TO ACHIEVE THE MINIMUM CAPACITIES SHOWN IN TABLES 1 AND 2 OF THIS DRAWING
- PIER PILES SHALL PENETRATE A MINIMUM OF 6 m BELOW STREAMBED OR AS SHOWN IN THE SITE SPECIFIC DRAWINGS
- PILE TOLERANCES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION
- ALL REINFORCEMENT SHALL HAVE A CLEAR CONCRETE COVER OF 75 mm UNLESS NOTED OTHERWISE
- PILE CONCRETE HAS ACHIEVE 15 MPa PRIOR TO PLACEMENT OF PIER CAP CONCRETE
- ALL CORNERS SHALL HAVE A 20 mm CHAMFER OR FILLET UNLESS NOTED OTHERWISE
- CONCRETE SURFACE FINISHES SHALL BE FINISHED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR BRIDGE CONSTRUCTION

BACKFILL

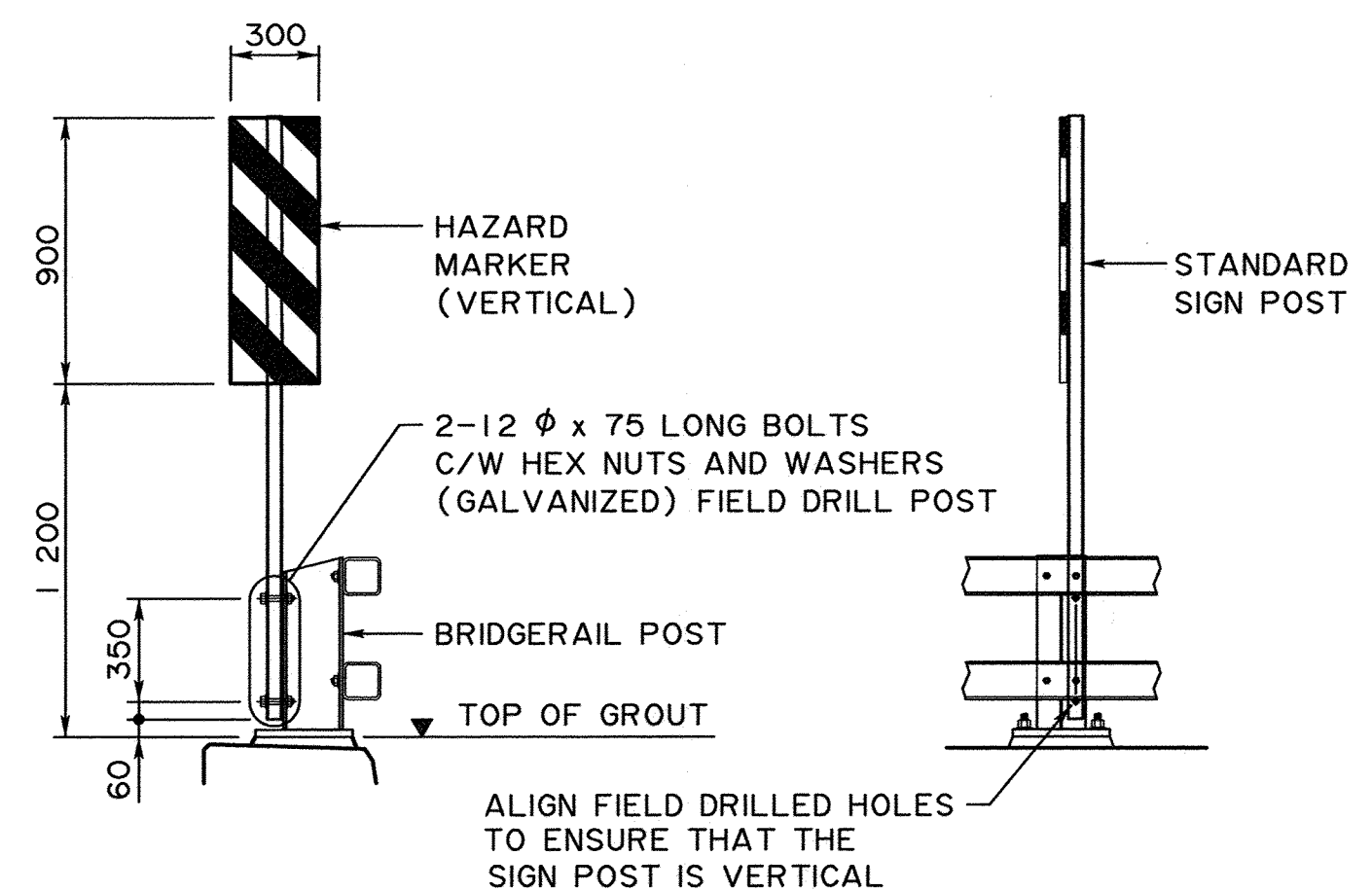
- THE CONTRACTOR MAY ELECT TO ERECT THE GIRDERS PRIOR TO BACKFILLING. IN THIS CASE, THE BACKFILLING MAY COMMENCE IMMEDIATELY AFTER GIRDERS ARE SECURED IN PLACE
- IF BACKFILLING COMMENCES PRIOR TO GIRDER ERECTION, THE CONTRACTOR SHALL PROVIDE A RESTRAINT SYSTEM WITH INSTRUMENTATION TO MONITOR SUBSTRUCTURE DEFLECTION. THE RESTRAINT AND MONITORING SYSTEMS SHALL BE ACCEPTABLE TO THE CONSULTANT DURING BACKFILLING

GIRDER INSTALLATION

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

MATERIALS

- ALL CONCRETE SHALL BE CLASS C EXCEPT CLASS PILE CONCRETE SHALL BE USED FOR PIPE PILE INFILL. SULPHATE RESISTANT HYDRAULIC CEMENT (TYPE HS OR Hsb) SHALL BE USED
- GIRDER DOWELS SHALL BE FABRICATED FROM SMOOTH ROUND BAR CONFORMING TO CSA G40.21M - 300W
- ALL STEEL PLATE AND SHAPES SHALL CONFORM TO THE REQUIREMENTS OF CSA G40.21M GRADE 350W 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 ASTM A123/A123M AND ASTM F2329
- ALL WELDING SHALL CONFORM TO THE CURRENT AWS SPECIFICATION D1.5
- PLAIN ELASTOMERIC BEARING PADS (60 HARDNESS) SHALL BE IN ACCORDANCE WITH SECTION 8, BEARINGS OF THE STANDARD SPECIFICATION FOR BRIDGE CONSTRUCTION
- DOWEL HOLE GROUT SHALL BE Sika 212 OR AN APPROVED PRODUCT SELECTED FROM ALBERTA TRANSPORTATION PRODUCT LIST. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF DOWEL GROUT SHALL BE 40 MPa



HAZARD MARKER DETAILS

(SHOWN AS FOR TL-4 DOUBLE TUBE TYPE BRIDGERAIL) 1:25
2 REQUIRED - RIGHT HAND } REQUIRED IF SPECIFIED IN
2 REQUIRED - LEFT HAND } SITE SPECIFIC GENERAL LAYOUT

- 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.

RECOMMENDED DIRECTOR BRIDGE ENGINEERING	APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH		
DATE: Oct 06, 2022		DATE: 2020-11-17	DRAWING: S-1789-20
DESIGNER: [Signature]	RI	CHECKER: [Signature]	KA