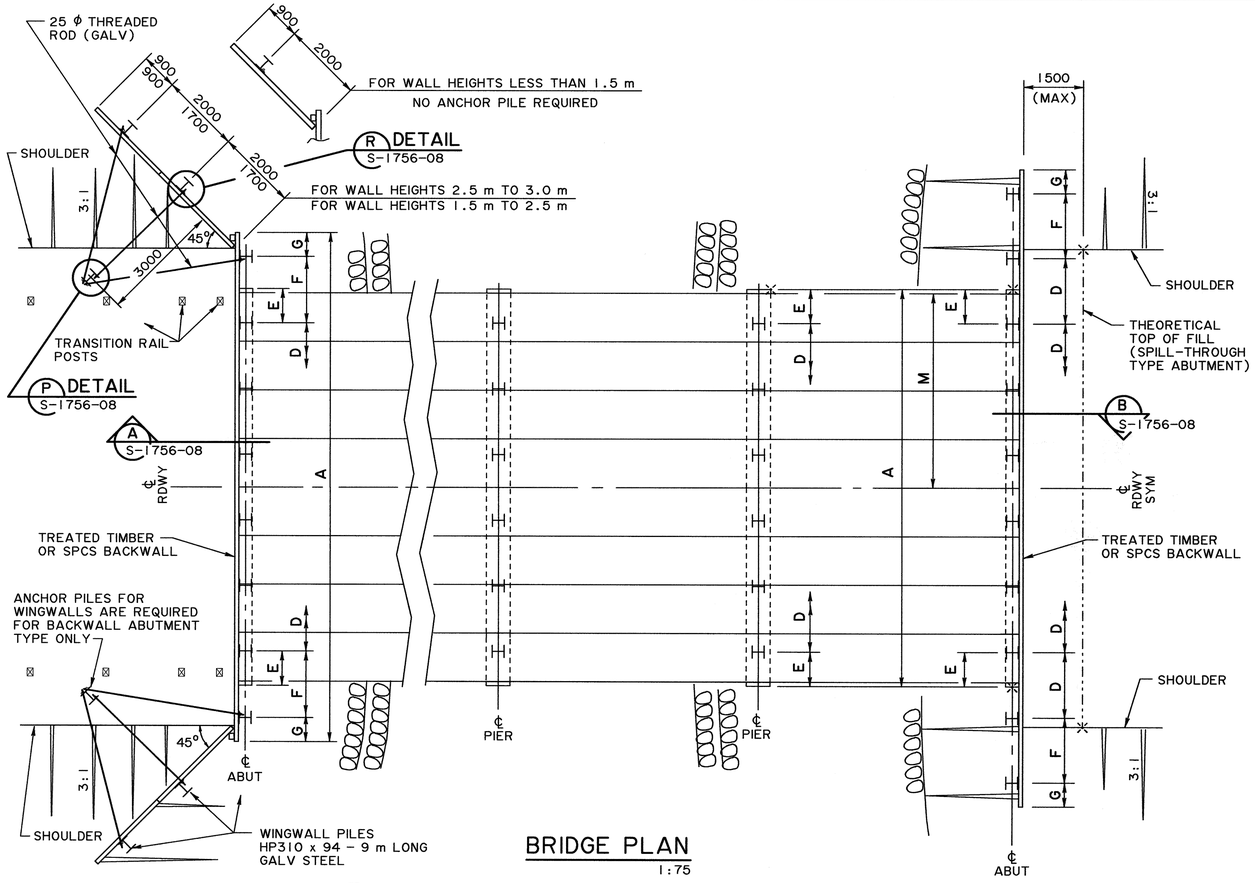
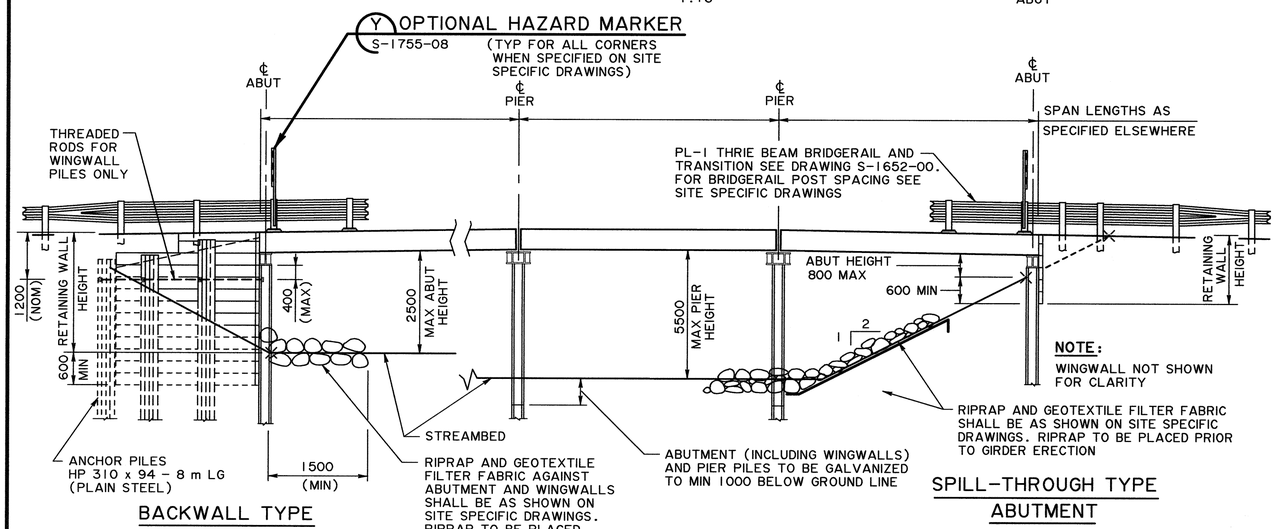


BRIDGE PLAN

1:75



BACKWALL TYPE ABUTMENT

SPILL-THROUGH TYPE ABUTMENT

NOTE:
BACKWALL TYPE ABUTMENTS ARE TO BE USED **ONLY** AT SINGLE SPAN, 0° SKEW BRIDGE SITES

BRIDGE ELEVATION

(TREATED TIMBER SHOWN SPCS SIMILAR) 1:75

GENERAL NOTES

- ALL DRAWING REFERENCES REFER TO CURRENT DRAWINGS.
- ALL DIMENSIONS ARE GIVEN IN mm UNLESS NOTED OTHERWISE.
- ROADWAY ELEVATIONS SPECIFIED ELSEWHERE ARE GIVEN TO TOP OF THEORETICAL CROWN ON CENTRELINE ROADWAY.

GEOTECHNICAL CONSIDERATIONS

- IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE DRAWINGS TO OBTAIN GEOTECHNICAL INFORMATION APPLICABLE TO THE SPECIFIC SITE AT WHICH THE SUBSTRUCTURE WILL BE CONSTRUCTED. A SITE SPECIFIC GEOTECHNICAL INVESTIGATION COMPLETED BY A QUALIFIED PROFESSIONAL ENGINEER SHOULD BE UNDERTAKEN PRIOR TO THE DESIGN PHASE IN ORDER TO ESTABLISH THE SUITABILITY OF THE DESIGN ASSUMPTIONS LISTED ON THESE PLANS, AND TO PROVIDE SUPPLEMENTARY INFORMATION WHERE REQUIRED.
- ADDITIONALLY, A GEOTECHNICAL INVESTIGATION IS DEEMED NECESSARY IN ORDER TO ESTABLISH THE SOIL CHARACTERISTICS AT THE SITE - THE PRESENCE AND THE EXTENT OF BOULDERS, HARD OR SOFT FORMATIONS, WATER TABLES, ARTESIAN CONDITIONS AND OTHER VARIABLES - AS THESE COULD SIGNIFICANTLY IMPACT THE CONSTRUCTION OF THE SUBSTRUCTURE AND ITS REQUIRED PERFORMANCE AND STRENGTH IF NOT IDENTIFIED AND ADDRESSED IN A TIMELY MANNER.

HYDROTECHNICAL CONSIDERATIONS

- IT IS THE RESPONSIBILITY OF OTHERS USING THESE SUBSTRUCTURE DRAWINGS TO COMPLETE A SITE SPECIFIC HYDROTECHNICAL ASSESSMENT IN ORDER TO ESTABLISH THE NEED FOR RIPRAP, TO DETERMINE THE SUITABILITY OF THE DESIGN ASSUMPTIONS LISTED ON THESE PLANS, AND TO SUPPLEMENT THEM WHERE REQUIRED. CONSULTATION WITH A QUALIFIED PROFESSIONAL ENGINEER WITH HYDROTECHNICAL EXPERTISE PRIOR TO THE DESIGN PHASE IS RECOMMENDED.

DESIGN

- **DESIGN SPECIFICATION:** CAN/CSA-S6-06
- **DESIGN VEHICLE:** CL-800, HIGHWAY CLASS A FOR FATIQUE
- **DEAD LOAD:** ABUTMENT & PIER CAP SELF WEIGHT
  GIRDER SELF WEIGHT & WEARING SURFACE ALLOWANCE AS PER STANDARD SL-510 GIRDER DRAWING S-1749
- **WATER LOADS:** NOT CONSIDERED FOR PIER DESIGN, ICE LOADS USED
- **ICE LOADS:** THE FOLLOWING LIMITING ASSUMPTIONS WERE USED FOR PIER DESIGN. THESE PLANS SHOULD NOT BE USED WHEN THESE CONDITIONS ARE EXCEEDED:
  - EFFECTIVE CRUSHING STRENGTH p = 400 kPa
  - MAXIMUM ICE THICKNESS = 600 mm
  - SMALL STREAM REDUCTION FACTOR = 0.7
  - FLOW ANGLE BETWEEN AXIS OF PIER AND STREAM = 0° DEGREES
  - HEIGHT OF DECK SURFACE ABOVE STREAM BED = 6.0 m
  - HEIGHT OF ICE FORCE ABOVE STREAM BED = MAXIMUM 2.5 m
  - DEPTH BELOW STREAM BED TO EFFECTIVE PILE FIXITY = 2.0 m
- **EARTH PRESSURE:** THE FOLLOWING LIMITING ASSUMPTIONS WERE USED FOR SUBSTRUCTURE DESIGN. THESE PLANS SHOULD NOT BE USED WHEN ACTUAL SITE CONDITIONS RESULT IN MORE SEVERE LOAD EFFECTS OR LESS EFFECTIVE RESISTANCE:
  - UNIT WEIGHT OF SOIL γ = 22 kN/m3
  - COEFFICENT OF ACTIVE PRESSURE, ka = 0.50 (NON-FACTORED)
  - COEFFICENT OF PASSIVE PRESSURE, kp = 2.10 (NON-FACTORED)
  - MAXIMUM ABUTMENT HEIGHT:
    - BACKWALL TYPE: 2.5 m
    - SPILL THROUGH TYPE: 0.8 m
  - MAXIMUM ABUTMENT SKEW:
    - BACKWALL TYPE: 0°
    - SPILL THROUGH TYPE: 45°
  - DEPTH BELOW ABUTMENT PILE FILL LINE TO EFFECTIVE PILE FIXITY = 2.0 m
- **SEISMIC:** Za = 1, a = 0.05 Zv = 1, v = 0.05
- **THERMAL:** MAXIMUM MEAN DAILY TEMPERATURE = 35°C
  MINIMUM MEAN DAILY TEMPERATURE = -45°C
- **WIND:** HOURLY MEAN WIND PRESSURE (50 YR) = 1.02 kPa
- **BRAKING FORCE:** CONSIDERED
- **COLLISION:** NOT CONSIDERED

CONSTRUCTION

- ALL CONSTRUCTION WORK SHALL CONFORM TO THE CURRENT SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- TREATED TIMBER SHALL BE PROPERLY HANDLED TO AVOID BRUISING, BREAKING OR PENETRATION OF OUTER FIBRES. LIFTING TOOLS SHALL BE APPLIED ONLY ON ENDS OF TREATED TIMBER PIECES. ALL CUTS AND BRUISES SHALL BE CAREFULLY TRIMMED. COMPATIBLE WOOD PRESERVING COMPOUND SHALL BE APPLIED TO ALL CUTS, BRUISES, FIELD CUTS AND BOLT HOLES IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
- STRUCTURAL PLATE CORRUGATED STEEL (SPCS) PLATES SHALL BE ARRANGED SO THAT NO VERTICAL SEAMS INTERFERE WITH PILE LOCATIONS.
- PILES SHALL BE DRIVEN TO THE TIP ELEVATIONS SHOWN ON THE DRAWINGS, OR LOWER, TO ACHIEVE AT LEAST THE SPECIFIED MINIMUM BEARING CAPACITY. BEARING CAPACITIES SHALL BE ESTIMATED USING THE BEARING FORMULA PRESENTED IN THE CURRENT SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- AFTER PILE DRIVING OPERATIONS HAVE STARTED, THE CONSULTANT MAY REVISE THE REQUIRED PILE TIP ELEVATIONS, PROVIDED THE MINIMUM SPECIFIED BEARING CAPACITY AND MINIMUM PENETRATION HAVE BEEN ACHIEVED.
- ALL PILES SHALL PENETRATE TO AT LEAST 5 m BELOW STREAMBED.

MINIMUM PILE BEARING CAPACITY

ABUT PILES (kN)	SPANS	PIER PILES (kN)				
		14m	12m	10m	8m	6m
300	6m	540	510	460	410	370
340	8m	580	540	490	440	
380	10m	610	580	530		
420	12m	650	620			
460	14m	690				

BACKFILL - GENERAL

- THE CONTRACTOR SHALL BACKFILL ABUTMENTS WITH CARE AND IN ACCORDANCE WITH SPECIFICATIONS.

BACKFILL - BACKWALL TYPE ABUTMENTS

- THE CONTRACTOR SHALL MAINTAIN OVERALL BACKWALL STABILITY, LIMIT DEFLECTIONS DURING BACKFILLING AND ENSURE PROPER GIRDER INSTALLATION.
- THE CONTRACTOR MAY ELECT TO ERECT THE GIRDERS PRIOR TO BACKFILLING, IN WHICH 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 BACKFILLING.

GIRDER INSTALLATION

- REFER TO TYPE SL-510 GIRDER DRAWINGS (LATEST REVISION) AS APPLICABLE:

6 m	S-1723 AND S-1724	12 m	S-1729 AND S-1730
8 m	S-1725 AND S-1726	14 m	S-1731 AND S-1732
10 m	S-1727 AND S-1728	ALL SPANS	S-1749

- FOR BACKWALL TYPE ABUTMENTS, GIRDER DOWEL SIZE AND LOCATION SHALL BE MODIFIED AS SHOWN ON DRAWING S-1686-04.
- GIRDERS SHALL BE CONNECTED TOGETHER WITH 20 mm ϕ A325 BOLT ASSEMBLIES, C/W DROP-IN WASHERS TO FILL THE GAP BETWEEN GIRDERS, TORQUED TO 400 Nm. GIRDERS SHALL NOT TOUCH EXCEPT THROUGH DROP-IN WASHERS. BOLTS AND WASHERS TO BE HOT-DIPPED GALVANIZED.
- CONNECTOR AND LIFTING HOOK POCKETS SHALL BE FILLED WITH A DEPARTMENT APPROVED CONCRETE PATCHING MATERIAL.

MATERIALS

- GIRDER DOWELS SHALL CONFORM TO THE REQUIREMENTS OF CSA G40.21M GRADE 300W AND HOT-DIPPED GALVANIZED AFTER FABRICATION.
- ALL STEEL PLATE AND SHAPES SHALL CONFORM TO THE REQUIREMENTS OF CSA G40.21M GRADE 350W EXCEPT PIPE MATERIAL WHICH SHALL CONFORM TO THE REQUIREMENTS OF ASTM 252 GRADE 2 (Fy = 240MPa).
- THREADED RODS SHALL BE EITHER WILLIAMS SUPER - HIGH TENSILE 'V' THREADED ROD OR ACROW RICHMOND HIGH TENSILE CONTINUOUS THREADED ROD. THREADED RODS SHALL HAVE ROLLED THREADS AND A MINIMUM YIELD STRENGTH OF 620 MPa. RODS SHALL BE HOT-DIPPED GALVANIZED.
- PILE BRACES AND PILE CAPS SHALL BE HOT-DIPPED GALVANIZED. GALVANIZING MAY BE OMITTED FROM PILE SURFACES LOCATED MORE THAN 1000 mm BELOW GROUNDLINE. ALL FIELD WELDS OF GALVANIZED MATERIAL SHALL BE METALIZED.
- GALVANIZING SHALL CONFORM TO THE CURRENT CSA STANDARD G164.
- ALL WELDING SHALL CONFORM TO THE CURRENT AWS SPECIFICATION D1.5.
- WELDING IN LOW TEMPERATURES SHALL BE DONE IN ACCORDANCE WITH SECTION 13.4.1 OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION .
- GALVANIZED SURFACES DAMAGED BY FIELD WELDING SHALL BE THOROUGHLY CLEANED AND METALLIZED.
- TREATED TIMBER (TT) SHALL CONFORM TO SECTION 23 OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- STRUCTURAL PLATE CORRUGATED STEEL (SPCS) MATERIAL SHALL CONFORM TO SECTION 18 OF THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- GRANULAR BACKFILL SHALL BE PLACED TO A MINIMUM OF 95% PROCTOR DENSITY AND OTHERWISE CONFORM TO THE SPECIFICATIONS FOR BRIDGE CONSTRUCTION.
- BEARING PADS SHALL CONSIST OF NEOPRENE 60 HARDNESS AND SHALL CONFORM TO SECTION 18 "BEARING DEVICES" DIVISION II OF AASHTO DESIGN STANDARD.
- ASPHALT IMPREGNATED FIBREBOARD (AIFB) SHALL CONFORM TO THE CURRENT ASTM SPECIFICATION D1751 FOR PREFORMED EXPANSION JOINT FILLER.

ADDITIONAL NOTES

- FOR "SL PRECAST GIRDER BRIDGES WITH HIGH BACKWALL STEEL ABUTMENTS", REFER TO DRAWINGS S-1793-08, S-1794-08, S-1795-08 AND S-1796-08, EXCEPT FOR SINGLE SPAN ARRANGEMENTS WITH 0° SKEW.
- WORK DRAWINGS S-1753-08, S-1754-08, S-1755-08 AND S-1756-08 TOGETHER WITH SITE SPECIFIC GENERAL LAYOUT

MOST Engineering (2001) Ltd.

PERMIT TO PRACTICE
MOST ENGINEERING (2001) LTD.
Signature
Date Aug 15, 2008
PERMIT NUMBER: P 8859
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

DESIGNER — PROFESSIONAL ENGINEER ALBERTA W. POLANICA — DATE Aug 15, 2008

CHECKER — PROFESSIONAL ENGINEER ALBERTA ATIF F. SHAKER — DATE 08/15/2008

REV	DATE	REVISIONS	BY
6			
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RECOMMENDED DIRECTOR BRIDGE ENGINEERING — Tom Loo

APPROVED EXECUTIVE DIRECTOR TECHNICAL STANDARDS BRANCH — DATE Sept 8/08

Alberta Transportation

SL PRECAST GIRDER BRIDGES WITH STEEL SUBSTRUCTURES SHEET 1

AT BAR CODE	DATE	SHEET	DRAWING
	2008-08-18	1 OF 4	S-1753-08