

DESIGN NOTES

DESIGN SPECIFICATIONS

IN ACCORDANCE WITH : "AASHTO LRFD BRIDGE DESIGN SPECIFICATION" 4th EDITION, WITH THE 2008 INTERIMS, AND AASHTO / AWS "BRIDGE WELDING CODE" D1.5.

DESIGN PROCEDURES

DECK DESIGNED USING EMPIRICAL METHOD. RAILING CONFORMS TO TL-x. DESIGN SPEED IS mph.
ABUTMENT/PIER DESIGNED TO RESIST THE VEHICULAR COLLISION FORCE.
THE FOLLOWING PROPRIETARY COMPUTER SOFTWARE PROGRAMS WERE USED TO FACILITATE THE STRUCTURAL ANALYSIS:

NAME	VERSION	RELEASE DATE	NAME	VERSION	RELEASE DATE

DESIGN LOADS

PERMANENT LOADS

DC	UNIT WEIGHT OF REINFORCED CONCRETE	0.150 kcf
	UNIT WEIGHT OF STRUCTURAL STEEL	0.490 kcf
	METAL DECK FORMS	0.017 ksf
DW	FUTURE WEARING SURFACE	0.028 ksf
	UTILITIES	xxx klf
	FUTURE UTILITIES	xxx klf
EV	UNIT WEIGHT OF SOIL	xxx kcf
EH	ACTIVE PRESSURE	xxx kcf
	AT REST PRESSURE	xxx kcf

TRANSIENT LOADS

LL	HL-93 INCLUDING PAIR OF DESIGN TANDEM	
	SINGLE LANE ADTT (year)	xxx
IM	DYNAMIC ALLOWANCE APPLIED TO TRUCK & TANDEM	
LS	LIVE LOAD SURCHARGE AT ABUTMENT	x.xx feet
	LIVE LOAD SURCHARGE AT WING WALL	x.xx feet
TU	UNIFORM TEMPERATURE RANGE	XX° F TO 120° F
	BASE SETTING TEMPERATURE	XX° F

EXTREME EVENT LOADS

EQ	SITE CLASS	x
	ACCELERATION COEFFICIENT SD ₁	0.xx g
	SEISMIC PERFORMANCE ZONE	X
CT	VEHICULAR COLLISION FORCE	400 k
IC	ICE CRUSHING STRENGTH	xxx ksf
	ICE THICKNESS	x.xx feet

FOOTING DESIGN LOADS

STRENGTH LIMIT STATE

NOMINAL BEARING RESISTANCE q_n = X ksf
EFFECTIVE FOOTING WIDTH B' = xx ft
EFFECTIVE FOOTING LENGTH L' = xx ft
RESISTANCE FACTOR ϕ = X
FACTORED BEARING RESISTANCE q_R = q_nϕ_R = xx ksf
FACTORED APPLIED LOAD γQ/(B'L') = xx ksf
SLIDING
NOMINAL SLIDING RESISTANCE R_n = X kips
RESISTANCE FACTOR ϕ = xx
FACTORED SLIDING RESISTANCE R_R = R_nϕ = xx kips
FACTORED APPLIED LOAD γV = xx kips

PILE DESIGN LOADS

STRENGTH LIMIT STATE

NOMINAL AXIAL RESISTANCE R_n = X kips
AXIAL RESISTANCE FACTOR ϕ = xx
FACTORED AXIAL RESISTANCE ϕR_n = xxx kips
MAX. APPLIED AXIAL LOAD Q = xx kips
MIN. APPLIED AXIAL LOAD Q = xx kips
NOMINAL LATERAL RESISTANCE R_n = X kips
BASED UPON 2" OF HORIZONTAL MOVEMENT
LATERAL RESISTANCE FACTOR ϕ = 1.0
FACTORED LATERAL RESISTANCE ϕR_n = xx kips
FACTORED LATERAL APPLIED LOAD γV = xx kips

SERVICE LIMIT STATE

PRESUMPTIVE BEARING CAPACITY q_p = X ksf
BASED UPON FOOTING SETTLEMENT = X inches OR LESS
EFFECTIVE FOOTING WIDTH B' = xx ft
EFFECTIVE FOOTING LENGTH L' = xx ft
RESISTANCE FACTOR ϕ = 1.0
FACTORED PRESUMPTIVE BEARING RESISTANCE ϕq_p = xx ksf
FACTORED APPLIED LOAD γQ/(B'L') = xx ksf

SERVICE LIMIT STATE

NOMINAL LATERAL RESISTANCE R_n = X kips
BASED UPON 1/4" OF HORIZONTAL MOVEMENT
LATERAL RESISTANCE FACTOR ϕ = 1.0
FACTORED LATERAL RESISTANCE ϕR_n = xx kips
FACTORED LATERAL APPLIED LOAD γV = xx kips

EXTREME LIMIT STATE

NOMINAL BEARING RESISTANCE q_n = X ksf
EFFECTIVE FOOTING WIDTH B' = xx ft
EFFECTIVE FOOTING LENGTH L' = xx ft
RESISTANCE FACTOR ϕ = 1.0
FACTORED BEARING RESISTANCE ϕq_n = xx ksf
FACTORED APPLIED LOAD γQ/(B'L') = xx ksf
SLIDING
NOMINAL SLIDING RESISTANCE R_n = X kips
RESISTANCE FACTOR ϕ = 1.0
FACTORED SLIDING RESISTANCE ϕR_n = xx kips
FACTORED APPLIED LOAD γV = xx kips

EXTREME LIMIT STATE

NOMINAL AXIAL RESISTANCE R_n = X kips
AXIAL RESISTANCE FACTOR ϕ = 1.0
FACTORED AXIAL RESISTANCE ϕR_n = xxx kips
MAX. APPLIED AXIAL LOAD Q = xx kips
MIN. APPLIED AXIAL LOAD Q = xx kips
LATERAL RESISTANCE FACTOR ϕ = 1.0
FACTORED LATERAL RESISTANCE ϕR_n = xx kips
FACTORED LATERAL APPLIED LOAD γV = xx kips

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

MATERIALS, CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE STATE OF IDAHO TRANSPORTATION DEPARTMENT, "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION", 2004 EDITION, THE PROJECT PLANS AND SPECIFICATIONS.
THE ENGLISH UNITS SYSTEM OF MEASUREMENT SHALL BE USED AS STANDARD.

MATERIAL

CONCRETE : DECK SLAB AND PARAPET - CLASS 40A ----- f'c = 4.00 ksi
ABUTMENTS AND WINGS - CLASS 40B ----- f'c = 4.00 ksi
METAL REINFORCEMENT : AASHTO M31, GRADE 60 ----- fy = 60.00 ksi
STRUCTURAL STEEL : AASHTO M270 GRADE 50W ----- fy = 50.00 ksi
BASE METAL & WELD METAL CHARPY V-NOTCH REQUIREMENT SHALL MEET ZONE (XX).
HIGH STRENGTH BOLTS : AASHTO M164 TYPE 3
CARBON STEEL BOLTS : ASTM A307

PLAN DIMENSIONS AND ELEVATIONS

ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 3/4" UNLESS NOTED OTHERWISE.
ALL DIMENSIONS TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS NOTED OTHERWISE.
CONCRETE COVER MEASURED FROM THE FACE OF THE CONCRETE TO THE FACE OF ANY REINFORCING BAR SHALL BE 2", UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

CONSTRUCTION

ALL REINFORCING STEEL TO BE EPOXY COATED IS DESIGNATED BY AN "E" AFTER THE BAR MARK.
CONSTRUCTION JOINTS WILL BE PERMITTED ONLY AT THE LOCATIONS SHOWN ON THE PLANS OR AS APPROVED BY THE ENGINEER.
PERMANENT METAL DECK SLAB FORMS MAY BE USED AT CONTRACTOR'S OPTION.
THE END OF EACH GIRDER (EXCEPT TOP FLANGE), BEARING UNITS, AND END DIAPHRAGMS WITHIN A HORIZONTAL DISTANCE OF 1.5 X GIRDER DEPTH FROM DECK EXPANSION JOINTS SHALL BE PAINTED IN ACCORDANCE WITH ITD STANDARD SPECIFICATIONS FOR PAINT SYSTEM D, ZINC BASE.
PAINTING OF CONCRETE SUBSTRUCTURES, IF REQUIRED, SHALL BE WITH CLEAR PROTECTIVE COATING OR A PIGMENTED COATING IN ACCORDANCE WITH SUBSECTION 627.03 OF THE STANDARD SPECIFICATIONS.
ALL SURFACES OF THE SUBSTRUCTURE EXCEPT WINGWALLS WHICH WILL BE EXPOSED ON THE COMPLETED STRUCTURE SHALL BE PROTECTED TO PREVENT STAINING WITH PLASTIC SHEETS OR OTHER APPROVED METHODS UNTIL DECK PLACEMENT IS COMPLETED AND GIRDERS ARE BLAST CLEANED.
WELDED FABRICATION SHALL BE IN ACCORDANCE WITH ANSI/AASHTO/AWS D 1.5 AND ALL INTERIM REVISIONS PUBLISHED BY AASHTO.

INCIDENTAL ITEMS

ALL ITEMS SHOWN OR NOTED ON PLANS WHICH ARE NOT SPECIFICALLY BID ITEMS ARE CONSIDERED INCIDENTAL ITEMS. THE COST OF FURNISHING AND INSTALLING ALL INCIDENTAL ITEMS WILL NOT BE PAID FOR SEPERATELY BUT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR OTHER ITEMS, UNLESS NOTED OTHERWISE.

MSE WALLS

MSE WALLS SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DIVISION 1 DESIGN, SECTION 5, RETAINING WALLS, PARTS A AND B.
THE FOLLOWING TABLE SUMMARIZES THE SOIL INFORMATION TO BE USED IN THE WALL DESIGN. OTHER INFORMATION NEEDED FOR THE WALL DESIGN CAN BE FOUND IN THE ITD FOUNDATION INVESTIGATION REPORT AVAILABLE AT THE DISTRICT OR HQ MATERIALS OFFICE.

MSE WALL DESIGN PARAMETERS				
SOIL	WET UNIT WEIGHT (pcf)	COHESION (psf)	FRICTION ANGLE (DEGREE)	ALLOWABLE BEARING CAPACITY (ksf)
WALL BACKFILL	*	*	*	N/A
RETAINED SOIL				N/A
FOUNDATION SOIL DENSE SAND & GRAVEL				
FOUNDATION SOIL GRANULAR FILL				

* - TO BE DETERMINED BY THE CONTRACTOR

ELASTOMERIC BEARINGS

DESIGN PROCEDURE: METHOD _
GRADE 4 _ DUROMETER POLYISOPRENE
GRADE 3 _ DUROMETER POLYCHLOROPRENE
DESIGN LOADS: (SERVICE I)
ABUTMENT xxx kips
PIER xxx kips

REVISIONS				DESIGNED	SCALES SHOWN ARE FOR 34" X 22" PRINTS ONLY	ORIGINAL SIGNED BY:	IDAHO TRANSPORTATION DEPARTMENT		English	DESIGN AND GENERAL NOTES		BRIDGE PLANS	
NO.	DATE	BY	DESCRIPTION	DESIGN CHECKED	CADD FILE NO.					PROJECT NO.	WEATHERING STEEL GIRDER BRIDGE HIGHWAY BRIDGE	BRIDGE LRFD MANUAL, PAGE B17.2B	
△				DETAILED	\\prj00000\bridge\ b17_2b.dgn							COUNTY	KEY NO.
△				DWG. CHECKED								BRIDGE DRAWING NO.	SHEET
△				CORRECTIONS	DRAWING DATE: APR 2008								OF
△						DATE SIGNED: DATE							
△						ORIGINAL STORED AT: ITD BRIDGE SECTION							