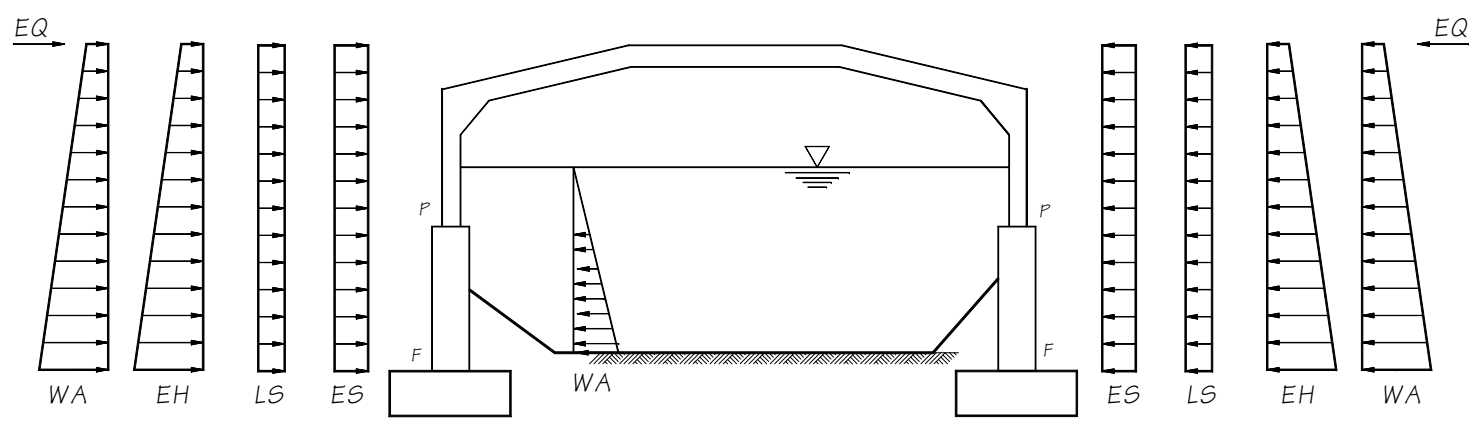
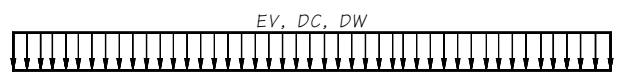
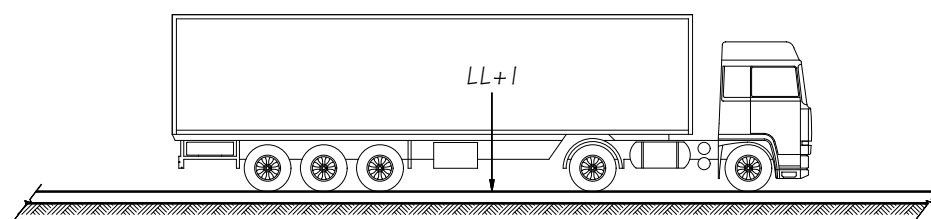


GEOMETRY

SEE BRIDGE STANDARD DRAWING 8.3.2-A2 FOR DIMENSIONS



LOADING DIAGRAMS

P = PINNED CONNECTION
F = FIXED CONNECTION

GENERAL NOTES

1. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION DATED 2016, AND AMENDMENTS.
2. THE CULVERT TO BE DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 7TH EDITION 2014 WITH INTERIM THROUGH 2015.
3. THE SEISMIC DESIGN OF THIS STRUCTURE TO BE DESIGNED IN ACCORDING TO PUBLICATION NO. FHWA-NHI-10-034 NOVEMBER 2008 EDITION "TECHNICAL MANUAL FOR DESIGN AND CONSTRUCTION OF ROAD TUNNELS - CIVIL ELEMENTS" WITH THE SEISMIC PEAK GROUND ACCELERATION OF ____g.
4. THE CULVERT SHALL BE DESIGNED FOR SCOUR PER HYDRAULIC REPORT.
5. THE PRECAST CULVERT SHALL BE DESIGNED AS A PIN CONNECTION AT BOTTOM OF PRECAST AND THE WALL. THE CONNECTION BETWEEN THE PRECAST CULVERT THE WALLS SHALL BE DESIGNED PER LOADING DEFINED BELOW.
6. THE PRECAST CONCRETE SHALL BE CLASS 5000, 6000, OR 7000 SELF CONSOLIDATING CONCRETE (SCC). OTHER CONCRETE SHALL BE CLASS 4000.
7. THE FABRICATOR SHALL DESIGN FOR LIFTING AND TRANSPORTING FOR SUBMITTAL PER STD. SPEC. SECTION 7-02.3(6)A2.
8. ALL STEEL PLATES AND SHAPES SHALL BE ASTM A36 OR ASTM A 992. ALL BOLTS, NUTS AND WASHERS (UNLESS NOTED OTHERWISE) SHALL BE ASTM A 307 AND COMPLY WITH STD. SPEC. SECT. 9-16.3(4), AND RESIN BONDED ANCHORS SHALL BE ASTM A 193 GRADE B7, OR ASTM A 449. ALL STEEL PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 111 AFTER FABRICATION. BOLTS AND HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M 232.
9. UNLESS OTHERWISE SHOWN IN THE PLANS, CONCRETE COVER MEASURED FROM THE FACE OF CONCRETE TO THE FACE OF ANY REINFORCING STEEL SHALL BE 2" AT THE TOP OF THE ROOF DECK, 1 1/2" AT THE BOTTOM OF THE ROOF DECK, 3" AT THE BOTTOM OF FOOTINGS, AND 2" AT ALL OTHER LOCATIONS.
10. THE BACKFILL ON BOTH SIDES OF THE CULVERT TO BE PLACED IN SEQUENCE AND COMPACTED IN ACCORDANCE TO THE STD. SPEC 2-09.3(1)E. THE MAXIMUM FIELD HEIGHT DIFFERENCE MEASURED FROM SIDE TO SIDE NO MORE 2'-0".

LOAD COMBINATIONS

THE BURIED STRUCTURES TO BE DESIGNED WITH THE LIMIT STATES SHOWN BELOW:

$\text{STRENGTH I} = \gamma_p DC + \gamma_p DW + 1.35/0.90 EH + 1.35/0.90 EV + 1.50/0.75 ES + 1.75 LS + 1.75 (L+I) + 1.00 WA + 1.00 B + 0.50/1.20 TU$
$\text{SERVICE} = 1.00 DC + 1.00 DW + 1.00 EH + 1.00 EV + 1.00 ES + 1.0 LS + 1.00 (L+I) + 1.00 WA + 1.00 B + 1.00/1.20 TU$
$\text{EXTREME I} = 1.00 DC + 1.00 DW + 1.00 EH + 1.00 EV + 1.00 ES + 1.00 LS + \gamma_{EQ} L + 1.00 WA + 1.00 B + 1.00 EQ$
$\text{EXTREME II} = 1.00 DC + 1.00 DW + 1.00 EH + 1.00 EV + 1.00 ES + 1.00 LS + \gamma_{EQ} L + 1.00 WA + 1.00 B + 1.00 IC$

DC = WEIGHT OF SUPERSTRUCTURE
EH = EARTH PRESSURE
ES = EARTH SURCHARGE
EQ = EARTHQUAKE
EV = VERTICAL EARTH PRESSURE
LL + I = LIVE LOAD PLUS IMPACT
LS = LIVE LOAD SURCHARGE
WA = HYDRO-STATIC PRESSURE
B = BUOYANCY
IC = ICE LOAD

γ_p FOR DC = 1.25 MAX./0.90 MIN.
 γ_p FOR DW = 1.50 MAX./0.65 MIN.
 $\gamma_{EQ} = 0.5$

$\phi = 1.00$ FOR FLEXURE
 $\phi = 0.90$ FOR SHEAR

NOTES:
EQ = LOADING FOR BOTH LATERAL AND VERTICAL COMBINED
EXTREME II CASE IS FOR SCOUR AND ICE DESIGN

LAST REVISED: 1/4/19

SR JOB NO. SHEET 8.3-A2

Bridge Design Engr.	M:\STANDARDS\Buried Structures\8.3-A2_3-SIDED CULVERT_GENERAL NOTES.MAN							REGION NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
Supervisor							10	WASH.				
Designed By							JOB NUMBER					
Checked By												
Detailed By												
Bridge Projects Engr.												
Prelim. Plan By												
Architect/Specialist	DATE	REVISION	BY	APPD								

BRIDGE AND STRUCTURES OFFICE		BRIDGE SHEET NO.
		SHEET OF SHEETS
3-SIDED PRECAST CULVERT GENERAL NOTES AND LOADING DIAGRAMS		