

**STRUCTURAL NOTES**

**GENERAL NOTES**

These general notes are to be used as a supplement to the specifications and apply to all structural components of the tank and foundation. Any discrepancies found among the drawings, the specifications, these general notes and the site conditions shall be reported to the Registered Design Professional, who shall correct such discrepancy in writing. Any work done by the Contractor after discovery of such discrepancy, but prior to correction of such discrepancy, shall be done at the Contractor's risk. The Contractor is responsible for conforming to all OSHA and WSHA safety standards. The Contractor is responsible for all bracing and shoring during construction.

**CODES**

All methods, materials, and workmanship shall conform to AWWA D100-05.

All reference to other Codes and Standards (ACI, ASTM, etc.) shall be for the latest or most current edition available, except as designated by the governing code.

**SECTIONS AND DETAILS**

Sections and details showing reinforcing, bolts, and connections are intended to illustrate specific details. No attempt has been made to show all elements passing through a specific section or detail. Construction details not specifically shown on the drawings shall follow similar details of this project, as approved by the Registered Design Professional.

**EXISTING CONDITIONS**

While performing work adjacent to existing structures, safeguard all existing structures, services, and utilities that may be affected by the work of this contract.

**DESIGN CRITERIA**

Structural design has been performed per AWWA D100-05.

Insulation: 3psf max. assumed on shell and roof.

Water: Overflow height = 19'-9"  
Max. operating level = 18'-3"

Snow: Pf = 30 PSF

Wind: V = 85 MPH, Iw = 1.15, Exposure C;

Seismic: IE=1.5, Ss = 0.31, S1 = 0.10, Site Class D, SDS = 0.32, SD1 = 0.16

**SOIL CLASSIFICATION & BEARING**

Recommendations made in the Geotechnical Engineering Evaluation by STRATA dated May 2, 2008 were used for the design of the structure.

Allowable soil pressure: 2000 psf.

(Allow 33 1/3% increase for loads from wind or seismic origin)

**SHOP DRAWINGS**

Dimensions and quantities are the responsibility of the Contractor, despite review by the Registered Design Professional. Submit shop drawings to the Design Professional for the following, prior to any fabrication or construction:

- Reinforcing Steel.
- Concrete Mix Design.
- Structural & misc. steel including welds.

**STRUCTURAL CONCRETE**

**GENERAL**

All concrete shall meet the requirements of ACI-301, "Specifications For Structural Concrete For Buildings." Proportioning of ingredients for each concrete mix shall be by Method 2 or the alternate procedure given in ACI-301. Place concrete per ACI-304 and conform to ACI-604 (306) for cold weather placement and ACI-605 (305) for hot weather placement. Use interior mechanical vibrators with 7,000 RPM minimum frequency. Do not over-vibrate. Concrete shall be placed monolithically between construction or control joints. Protect all concrete from premature drying, excessive hot or cold temperature for seven days after placing.

**MATERIALS**

Cement: ASTM C150, Type I.

Coarse and fine aggregate: ASTM C33, 1" max. sized aggregate.

Water shall be clean and potable.

**ADMIXTURES**

Water reducing admixture: ASTM C494. Admixtures shall be used in exact accordance with manufacturer's instructions.

Synergized performance systems: admixtures to produce flowable concrete may be used subject to Registered Design Professional's approval.

Air entrainment: ASTM C260, Entrain 5% ± 1% by volume in all exposed concrete.

No other admixture is permitted unless approved by the Registered Design Professional.

**STRENGTH**

Twenty-eight day compressive strength shall be:

4000 psi

Slump: 4" ± 1 inch.

Max. water/cement ratio: 0.47

**REINFORCING STEEL**

Reinforcing steel shall conform to ASTM A615 Grade 60 (except No.3 stirrups may be grade 40), new billet stock, and securely tied with #16 double annealed wire. Reinforcement shall be detailed in accordance with ACI 315. Reinforcement shall be placed in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars".

**CONCRETE COVER**

The following concrete cover shall be provided for reinforcement:

- Concrete cast against and permanently exposed to earth: 3"
- Concrete exposed to earth or weather: 2"

**FORMWORK AND SHORING**

Follow recommended practice for concrete formwork (ACI-347).

All shoring shall be the responsibility of the Contractor. Formwork supports and shoring shall be designed to provide finished concrete surfaces at all faces level, plumb, and true to the dimensions and elevations shown. Tolerances and variations shall be as specified.

**CONSTRUCTION INSPECTION ~ EARTHWORK & FOUNDATIONS**

Construction inspection of the earthwork and foundation shall be in accordance with the following provisions of the 2006 IBC:

- Section 104.4 Inspections
- Section 109 Inspections
- Chapter 17 Structural Tests & Special Inspections

The owner will provide all special inspection, or the hiring of same, on the project. Special Inspection shall include:

Structural Reinforced Concrete:

- Use of the design concrete mix, curing methods, and in-situ strength shall be inspected periodically. Collection of samples and concrete placement techniques shall be inspected continuously.

- Reinforcing steel and placement shall be inspected periodically.

- Welding of reinforcing steel shall be inspected periodically.

Earth Work and Foundations:

- Site preparation prior to fill placement, placement and compaction of fill material, and fill in-place density shall be inspected to ensure compliance with the approved Geotechnical Report.

**CONSTRUCTION INSPECTION ~ STEEL TANK**

Construction inspection of the steel reservoir structure shall be in accordance with AWWA D100-05. See Specifications.

Radiographs and inspection records shall be provided. A certified copy of a written report confirming that the work was inspected per the specifications shall be provided. The report shall include the following:

1. A copy of welder performance qualifications.
2. A summary of inspection of radiographs along with a map of radiograph locations.
3. Identification of unacceptable welds and a statement of the action taken to rectify unsatisfactory welds.
4. A record of welders employed on each shell joint
5. A record of welders showing date and results of tests and assigned identifying mark certified by the Manufacturer.

All welds shall be visually inspected. Inspection of all shell joints shall be made by radiographic testing, per AWWA D100-05. Inspection shall be performed as the work progresses and shall be made as soon as possible after all the joints accessible from one scaffold position have been welded.

**STRUCTURAL STEEL**

**GENERAL**

All steel shall be fabricated, erected and tested in accordance with AWWA D100-05. Obtain approval of the Registered Design Professional prior to site cutting, making adjustments or performing field welds not scheduled or shown on plans or details. Paint interior and exterior per specifications.

**MATERIALS**

- Misc. Shapes and Plates: ASTM A36, Fy = 36 ksi
- Steel Pipe: ASTM A53, Grade B, Fy = 35 ksi min.
- Square HSS: ASTM A500, Grade B, Fy = 46 ksi min.
- Framing Bolts: ASTM A307, UNO
- Stainless Steel Bolts: ASTM A193 Gr. B7
- Nuts: ASTM A194 Gr. B7 2H

**WELDING**

All welded connections shall conform strictly to American Welding Society standards and the AWWA D100-05. Welding electrodes shall be E70xx. All welders shall be WABO certified.

Galvanized components or components painted with zinc rich paint shall not be welded directly to stainless steel.

**DRAWING INDEX**

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**STANDARD ABBREVIATIONS**

A.B.	ANCHOR BOLT	MAX.	MAXIMUM
ALT.	ALTERNATE	MFR.	MANUFACTURER
A.F.F.	ABOVE FINISH FLOOR	MIN.	MINIMUM
A.C.P.	ASPHALT CONCRETE PAVING	MISC.	MISCELLANEOUS
C.I.P.	CAST-IN-PLACE	N.I.C.	NOT IN CONTRACT
C.M.U.	CONCRETE MASONRY UNITS	N.T.S.	NOT TO SCALE
CONC.	CONCRETE	NO.	NUMBER
C.R.S.I.	CONCRETE REINFORCING STEEL INSTITUTE	O.C.	ON CENTER
CONT.	CONTINUOUS	O.D.	OUTSIDE DIAMETER
DBL.	DOUBLE	PAV.	PAVING
DIA.	DIAMETER	PL.	PLATE
D.L.	DEAD LOAD	PLF	POUNDS PER LINEAL FOOT
EA.	EACH	PSF	POUNDS PER SQUARE FOOT
ELEV.	ELEVATION	PSI	POUNDS PER SQUARE INCH
E.W.	EACH WAY	PT	PRESSURE TREATED
F.O.C.	FACE OF CONCRETE	R.	RADIUS OR RISER
F.O.F.	FACE OF FASCIA	SIM.	SIMILAR
F.O.W.	FACE OF WALL	T.O.B.	TOP OF BEAM
FT.	FOOT OR FEET	T.O.C.	TOP OF CONCRETE OR TOP OF COLUMN
HORIZ.	HORIZONTAL	UNO	UNLESS NOTED OTHERWISE
I.D.	INSIDE DIAMETER	VERT.	VERTICAL
K.	KIPS	W.W.F.	WELDED WIRE FABRIC
L	ANGLE	w/	WITH
Lbs.	POUNDS		<b>STANDARD SYMBOLS</b>
LF	LINEAR FOOT (FEET)	⊙	AT
LL	LIVE LOAD	⊕	CENTERLINE
LP	LOW POINT	⊘	DIAMETER
LLH	LONG LEG HORIZONTAL	#	NUMBER
LLV	LONG LEG VERTICAL		

The Engineer's Seal was removed during the As-Built process. The information of record is as follows:

Engineer's Name	Eng.'s No.	Date on plan
ERIK CHRISTOPHER MARTIN	40851	5/19/09

Plotted: Feb 09, 2010 - 11:53 kirkk F:\TANKS\CityofPullman\AsBilt\A09114-PLANS-AsBilt.dwg Layout Name: Notes xrels: titlesht

No.	Date	By	Ckd.	Appr.	Revisions

Drawn _____	Date _____
Designed _____	_____
Checked By _____	_____
CRG	_____
Approved _____	Date _____

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VERTICAL DATUM:  
NAVD 83

CITY OF PULLMAN,  
WASHINGTON  
ENGINEERING DIVISION

SCALE  
HORZ. \_\_\_\_\_  
VERT. \_\_\_\_\_

PULLMAN/MOSCOW AIRPORT FIRE FLOW SYSTEM		WATER
STRUCTURAL NOTES		SHEET
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