STRUCTURAL GENERAL NOTES

GOVERNING DESIGN CODES

1. ASCE 7-02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
2. API 650, 11th EDITION WITH ADDENDUMS 1 & 2
3. ACI 318-02 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
4. AISC 360-05 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS

GENERAL

1. SEE LANDSCAPE AND SITE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION, DIMENSIONS, AND DETAILS REQUIRED AS STRUCTURAL WORK BUT NOT SHOWN ON STRUCTURAL DRAWINGS.
2. UTILITIES ARE NOT PERMITTED UNDER THE RESERVOIR OR ITS FOUNDATIONS. ALL EXISTING UTILITIES SHALL BE RELOCATED AS REQUIRED. COORDINATE WITH SITE AND UTILITIES PLANS.
3. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH PREVAILING INDUSTRY STANDARDS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, AND PROCEDURES FOR WORK UNDER HIS CONTRACT.
4. ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

FOUNDATION DESIGNS SHOWN ARE BASED ON PRELIMINARY STEEL TANK LOADS AND REACTIONS, CALCULATED USING THE ASSUMED PARAMETERS BELOW. FOUNDATION DESIGNS SHOWN ARE FOR BIDDING PURPOSES ONLY, AND MAY BE SUBJECT TO REVISION BASED ON ACTUAL LOADS AND REACTIONS FOR THE STEEL TANK ACTUALLY PURCHASED. A LICENSED, INDEPENDENT STEEL TANK DESIGNER RETAINED BY THE OWNER SHALL SUBMIT TO THE FOUNDATION DESIGNER-OF-RECORD ALL FINAL LOADS AND REACTIONS TRANSFERRED TO THE FOUNDATION FOR COMPARISON AND EVALUATION AGAINST THE DESIGNS DEPICTED ON THESE SHEETS.

DESIGN ASSUMPTIONS

THE FOLLOWING DATA ARE PRELIMINARY ASSUMPTIONS ONLY, AND SHALL BE REVISED AS REQUIRED BY OWNER REQUIREMENTS, AND VERIFIED BY AN INDEPENDENT STEEL TANK DESIGNER RETAINED BY THE OWNER.

STEEL TANK PROPERTIES

OVERALL HEIGHT = 50 ft
TANK DIAMETER (D) = 50 ft
FLUID LEVELS
MAX. OPERATIONAL = 40 ft
OVERFLOW SURPLUS = 5 ft
MAX. DESIGN LEVEL (H) = 45 ft
STORED FLUID: JET FUEL (av); SPECIFIC GRAVITY = 0.85
TEST FLUID: WATER; SPECIFIC GRAVITY = 1.0
WELDED STEEL SHELL w/ SELF-SUPPORTED, DOMED (DOUBLY CURVED) ROOF
ROOF & WALL SHELL THICKNESS = 0.375 in
BOTTOM PLATE THICKNESS = 0.25 in
UNHEATED, PRESSURE-REGULATED TO A.P.I. MINIMUM DESIGN PRESSURES

STEEL CONTAINMENT SHELL PROPERTIES

OVERALL HEIGHT = 45 ft
DIAMETER = 60 ft
STEEL WALL THICKNESS = 0.3125 in
EQUIVALENT FLUID LEVELS (BASED ON MAIN TANK LEVELS)
MAX. OPERATIONAL = 27.75 ft
OVERFLOW SURPLUS = 3.5 ft
MAX. DESIGN LEVEL (H) = 31.25 ft

EXTERNAL FLOOD / HYDROSTATIC LOADS NEGLIGIBLE FOR THIS SITE
ALL ROOF GEOMETRIES ARE SUCH THAT PONDING INSTABILITY IS NEGLIGIBLE

DESIGN LOADS AND PARAMETERS
(SOURCES OF VALUES LISTED FOR REFERENCE)

I.B.C.-03 STRUCTURE CLASSIFICATION: IV (HIGH HAZARD)

FLOOR LIVE LOADS: NOT APPLICABLE

ROOF LIVE LOADS: 20 psf MINIMUM (A.P.I. 650)

ROOF SNOW LOADS: (I.B.C.-03 & CT SUPPLEMENT)

GROUND SNOW LOAD, Pg: 30 psf
FLAT-ROOF SNOW LOAD, Pf: 25 psf
MINIMUM SNOW LOAD: 30 psf (CT SUPPLEMENT)
SNOW EXPOSURE FACTOR, Ce: 0.9
SNOW LOAD IMPORTANCE FACTOR, Is: 1.2
THERMAL FACTOR, Ct: 1.1

WIND DESIGN DATA: (A.P.I. 650 SECTION 5.2.1k)

BASIC WIND SPEED (3 sec GUST): 95 mph (ASCE 7 & CT SUPPLEMENT)
WIND EXPOSURE CATEGORY: C (ALL DIRECTIONS)
DESIGN WIND PRESSURE: 12 psf ON PROJECTED VERTICAL SURFACE
UPLIFT PRESSURE: 19 psf ON PROJECTED HORIZONTAL SURFACE

SEISMIC DESIGN DATA:

I.B.C. SEISMIC CLASSIFICATION: 3
A.P.I. SEISMIC USE GROUP: 3

SEISMIC IMPORTANCE FACTOR, Ie: 1.5
SITE CLASS: (GEOTECHNICAL REPORT) E
MAXIMUM SPECTRAL RESPONSE VALUES: (CT SUPPLEMENT)
SHORT-PERIOD ACCELERATION, Ss: 0.239
1-SECOND ACCELERATION, S1: 0.064
SITE COEFFICIENTS:
ACCELERATION-BASED, Fa: 2.5
VELOCITY-BASED, Fv: 3.5
DESIGN SPECTRAL RESPONSE VALUES:
SHORT-PERIOD ACCELERATION, S-DS: 0.398
1-SECOND ACCELERATION, S-D1: 0.149

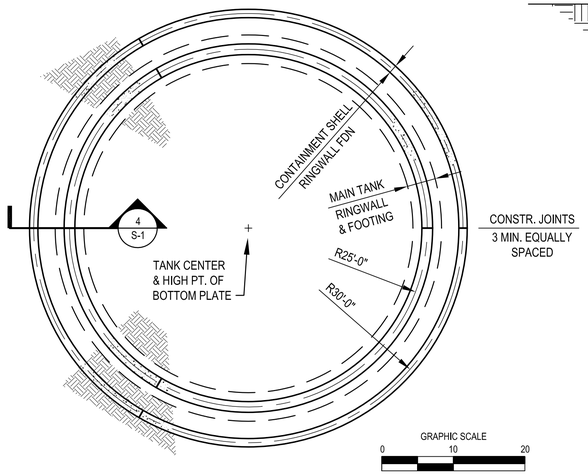
DESIGN BASE SHEAR, V: 641 k
ANALYSIS PROCEDURE USED: A.P.I. 650 - APPENDIX E

FOUNDATION

1. ALL FOOTINGS ARE DESIGNED FOR A PRESUMPTIVE BEARING VALUE OF 2500 psf AND SHALL BEAR ON NATIVE UNDISTURBED, INORGANIC SOIL OR PREPARED FOOTING BASE MATERIAL AS INDICATED ON THE DRAWINGS, AT AN ELEVATION NO HIGHER THAN BOTTOM OF FOOTING ELEVATIONS SHOWN.
2. FOOTINGS SHALL EXTEND A MINIMUM OF 2'-0" BELOW EXISTING GRADE ELEVATIONS AND A MINIMUM OF 3'-6" BELOW FINISHED GRADE ELEVATIONS. THE CONTRACTOR SHALL VERIFY ALL INDICATED FOOTING ELEVATIONS MEET THESE CRITERIA.
3. BOTTOM OF FOOTING ELEVATIONS SHOWN ON THE CONTRACT DOCUMENTS ARE MINIMUM DEPTHS AND ARE NOT BE CONSTRUED AS LIMITING IN ANY WAY THE AMOUNT OF EXCAVATION NECESSARY TO REACH A SUFFICIENT BEARING STRATUM.
4. IF UNSUITABLE MATERIAL IS ENCOUNTERED, REMOVE ALL UNSUITABLE MATERIAL FROM BELOW THE PROPOSED STRUCTURE FOUNDATION AND PLACE SPECIFIED COMPACTED MATERIAL TO THE BOTTOM OF FOOTING ELEVATIONS INDICATED ON THE PLAN. ALTERNATIVELY, LOWER THE BOTTOM OF FOOTINGS TO THE APPROPRIATE BEARING STRATA. SEE SPECIFICATIONS FOR MATERIAL AND COMPACTION REQUIREMENTS.
5. REMOVAL OF UNSUITABLE MATERIAL AND PLACING, COMPACTING AND TESTING OF COMPACTED STRUCTURAL FILL SHALL ONLY BE PERFORMED BY THE GENERAL CONTRACTOR UNDER THE OBSERVATION OF THE ENGINEER OR A PROFESSIONAL GEOTECHNICAL ENGINEER RETAINED BY THE OWNER. ALL SOIL BASE PREPARATION FOR ALL BOTTOM OF FOOTINGS SHALL BE APPROVED PRIOR TO PLACEMENT OF CONCRETE.

CONCRETE

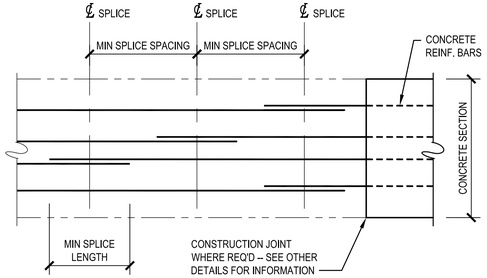
1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS," LATEST EDITION, UNLESS NOTED ON THE PLANS OR IN THE SPECIFICATIONS.
2. ALL REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT TIES, WHICH MAY BE GRADE 40.
3. ALL REINFORCING BARS SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315 AND THE CONCRETE REINFORCING STEEL INSTITUTE RECOMMENDATIONS.
4. ALL WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. PLACE WWF IN THE UPPER 1/3 OF SLABS-ON-GRADE UNLESS NOTED OTHERWISE.
5. CONCRETE CURING PROCEDURES SHALL BE IN ACCORDANCE WITH ACI 301 AND SHALL BE REVIEWED AND ACCEPTED BY THE ENGINEER BEFORE CONCRETE PLACEMENT.
6. ALL CONCRETE SHALL BE AIR-ENTRAINED, NORMAL WEIGHT CONCRETE UNLESS NOTED WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 psi.
7. MINIMUM CONCRETE PROTECTION FOR REINFORCING UNLESS OTHERWISE NOTED SHALL BE:
CONCRETE PLACED AGAINST EARTH 3"
CONCRETE PLACED IN FORMS BUT EXPOSED TO WEATHER:
BARS LARGER THAN #5 2"
BARS #5 AND SMALLER 1-1/2"



1 S-1 RINGWALL FOUNDATION PLAN
1" = 10'

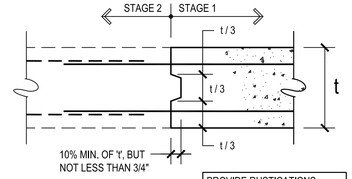
BAR #	MIN. LAP SPLICE	
3	22"	58 d_b
4	29"	
5	36"	
6	43"	
7	63"	72 d_b
8	72"	
9	81"	

ADJACENT REINFORCING BAR SPLICES SHALL BE STAGGERED HORIZONTALLY BY THE MIN. SPLICE SPACING (CENTER OF LAP TO CENTER OF LAP) BY NOT LESS THAN ONE LAP LENGTH NOR 3 FEET AND SHALL NOT COINCIDE IN VERTICAL ARRAYS MORE FREQUENTLY THAN EVERY THIRD BAR.



3 S-1 TYPICAL REINF. SPLICE DETAIL
NOT TO SCALE

NOTES:
1. JOINTS SHALL NOT OCCUR WITHIN 4'-0" OF COL. PIERS.
2. CONTACT SURFACES SHALL BE FREE OF LAITANCE.
3. PROVIDE APPROVED BONDING AGENT TO CONTACT SURFACE PRIOR TO STAGE 2 POUR - APPLY PER MANUFACTURER'S INSTRUCTIONS.
4. PROVIDE MIN. ACI LAP LENGTHS FOR ALL REINF. CROSSING CONSTRUCTION JOINT.

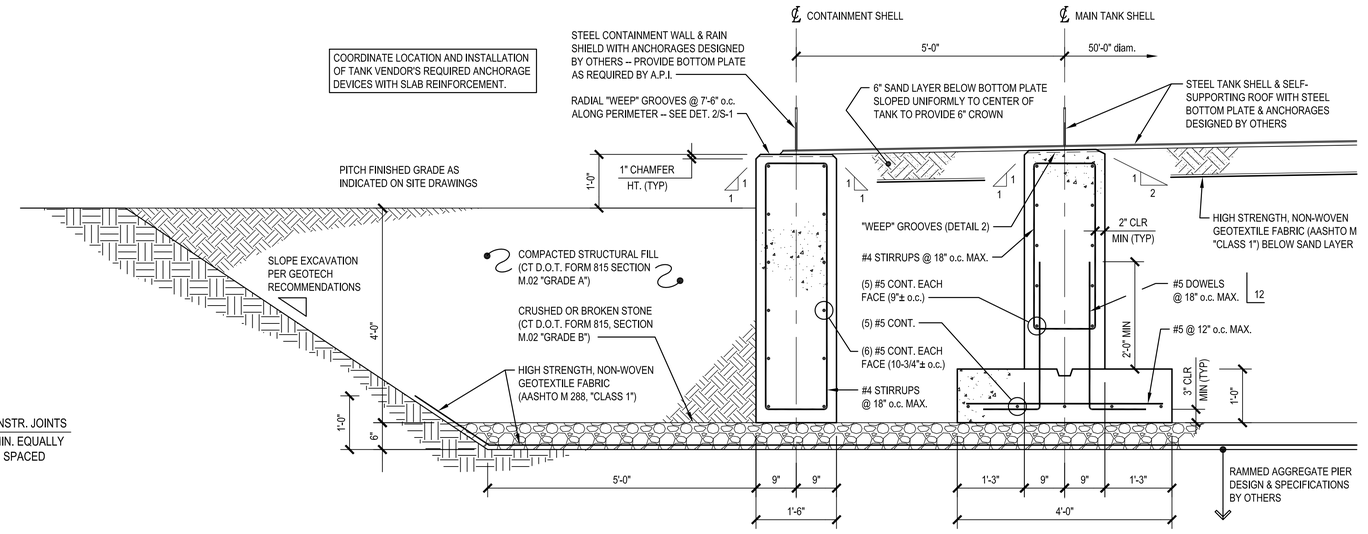


SUBMIT PROPOSED LOCATIONS TO ENGINEER FOR APPROVAL

PROVIDE RUSTICATIONS, GROOVES, ETC. AT JOINTS AS DIRECTED BY ARCHITECT

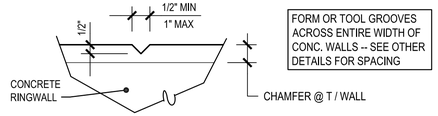
6 S-1 TYPICAL RINGWALL FOUNDATION CONSTRUCTION JOINT
NOT TO SCALE

COORDINATE LOCATION AND INSTALLATION OF TANK VENDOR'S REQUIRED ANCHORAGE DEVICES WITH SLAB REINFORCEMENT.



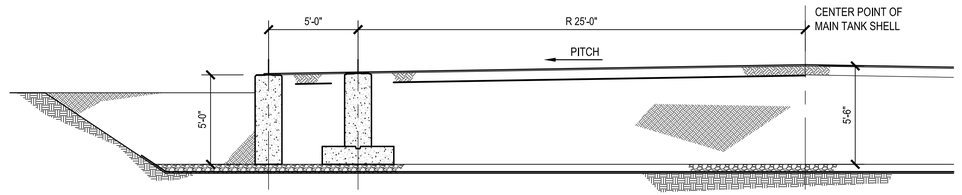
4 S-1 CAST-IN-PLACE CONCRETE RINGWALL FOUNDATION OVER RAMMED AGGREGATE PIER SYSTEM
3/4" = 1'-0"

GRAPHIC SCALE
0 1 2 4



FORM OR TOOL GROOVES ACROSS ENTIRE WIDTH OF CONC. WALLS -- SEE OTHER DETAILS FOR SPACING

2 S-1 RINGWALL WEEP GROOVE
NOT TO SCALE



5 S-1 PARTIAL SECTION THRU FOUNDATION AND LIMITS OF EXCAVATION
1/4" = 1'-0"

GRAPHIC SCALE
0 1 2 4 8

REV.	DATE	DESCRIPTION	SHEET. NO
		REVISIONS	

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CHECKED BY: W.E.J.
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PROJECT TITLE:
CRRA SOUTH MEADOWS GENERATING STATION
JET FUEL STORAGE TANK No. 6 REPLACEMENT

CADD FILE: S-01.DWG
PLOTTED DATE: 15 JUL 10

CITY:
HARTFORD

DRAWING TITLE:
GENERAL NOTES & RINGWALL FOUNDATION

PROJECT NO.: 51812
DRAWING NO.: S-1
SHEET NO.: ---

FILENAME Q:\Projects\DD Projects\51812 CRRA Tank 6\Drawings\S-01.dwg