No Warnings!!

Project Design Data and Summary

Back

Project Data

Job : 2025-07-22-06-17
Date of Calcs. : 06-Aug-2025
Mfg. or Insp. Date :
Designer : Melior
Project :
Tag ID : Q9294 API
Plant :
Plant Location :
Site :
Design Basis : API-650 13th Edition Errata 1, 2021
Annexes Used : E, J, M, S

Design Parameters and Operating Conditions

Design Parameters

Design Internal Pressure = 0 psi or 0 inh2o
Design External Pressure = -0 psi or -0 inh2o

D of Tank = 13.2217 ft
OD of Tank = 13.2842 ft
ID of Tank = 13.2217 ft
CL of Tank = 13.2529 ft
Shell Height = 60.4167 ft
S.G of Contents = 1
S.G of Hydrotest = 1
Hydrotest Liquid Level = 60.4167 ft
Max Design Liq. Level = 60.4167 ft
Max Operating Liq. Level = 60.4167 ft
Min Liq. Level = 1 ft
Design Temperature = 122 °F
MDMT (Minimum Design Metal Temperature) = -20 °F
Tank Joint Efficiency = 0.7
Ground Snow Load = 0 psf
Roof Live Load = 20 psf
Additional Roof Dead Load = 0 psf

Wind Load Basis: ASCE 7-16
3 Second Gust Wind Speed (entered), Vg = 105 mph
Design Wind Speed, V = Vg = 105 mph

Seismic Method: API-650 - ASCE7 Mapped(Ss & S1)
Seismic Use Group = II
Site Class = C

T_L (sec) = 12
Ss (g) = 0.27
S1 (g) = 0.094
Av (g) = 0.1008
Q = 0.6667
Importance Factor = 1.25

Design Remarks

Summary Results

Shell

Shell #	Width (in)	Material	CA (in)	JE	Min Yield Strength (psi)	Tensile Strength (psi)	Reduction Factor	Sd (psi)	St (psi)
1	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
2	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
3	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
4	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
5	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
6	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
7	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
8	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
9	60	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
10	48	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
11	48	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
12	48	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000
13	39.5	A240-304	0	0.7000	28,900	75,000	1	22,500	27,000

(continued)

Shell #	Weight (lbf)	Weight CA (lbf)	t-min Erection (in)	t-Des (in)	t-Test (in)	t-min Seismic (in)	t-min Ext-Pe (in)	t-min (in)	t-Actual (in)
1	3,244	3,244	0.1875	0.1297	0.1081	0.1188	NA	0.1875	0.375
2	1,624	1,624	0.1875	0.1188	0.099	0.1089	NA	0.1875	0.1875

3	1,624	1,624	0.1875	0.1079	0.0899	0.0991	NA	0.1875	0.1875
4	1,624	1,624	0.1875	0.0969	0.0808	0.0893	NA	0.1875	0.1875
5	1,624	1,624	0.1875	0.086	0.0717	0.0795	NA	0.1875	0.1875
6	1,624	1,624	0.1875	0.0751	0.0626	0.0697	NA	0.1875	0.1875
7	1,624	1,624	0.1875	0.0642	0.0535	0.0599	NA	0.1875	0.1875
8	1,624	1,624	0.1875	0.0533	0.0444	0.0501	NA	0.1875	0.1875
9	1,624	1,624	0.1875	0.0424	0.0353	0.0403	NA	0.1875	0.1875
10	1,299	1,299	0.1875	0.0315	0.0262	0.0306	NA	0.1875	0.1875
11	1,299	1,299	0.1875	0.0227	0.0189	0.0228	NA	0.1875	0.1875
12	1,299	1,299	0.1875	0.014	0.0117	0.015	NA	0.1875	0.1875
13	1,069	1,069	0.1875	0.0053	0.0044	0.0071	NA	0.1875	0.1875

(continued)

Shell #	Status
1	OK
2	OK
3	OK
4	OK
5	OK
6	OK
7	OK
8	OK
9	OK
10	OK
11	OK
12	OK
13	OK

Total Weight of Shell = 21,264.1013 lbf

Roof

Type = Self Supported Conical Roof
Plates Material = A240-304
t.required = 0.1875 in
t.actual = 0.1875 in
Roof corrosion allowance = 0 in
Roof Joint Efficiency = 0.7
Plates Overlap Weight = 0 lbf
Plates Weight = 1,111.2243 lbf

Bottom

Type : Flat Bottom Non Annular
Bottom Material = A240-304
t.required = 0.1875 in
t.actual = 0.1875 in

Bottom corrosion allowance = 0 in
Bottom Joint Efficiency = 0.7
Total Weight of Bottom = 1,112.6281 lbf

Top Member

Type = Detail B
Size = L2x2x1/4
Material = A240-304
Weight = 132.6171 lbf

Anchors

Quantity = 8
Size = 1.625 in
Material = A36
Bolt Hole Circle Radius = 6.8191 ft

Nameplate Information

Pressure Combination Factor	0.4
Design Standard	API-650 13th Edition Errata 1, 2021
Appendices Used	E, J, M, S
Roof	A240-304 : 0.1875 in
Shell (1)	A240-304 : 0.375 in
Shell (2)	A240-304 : 0.1875 in
Shell (3)	A240-304 : 0.1875 in
Shell (4)	A240-304 : 0.1875 in
Shell (5)	A240-304 : 0.1875 in
Shell (6)	A240-304 : 0.1875 in
Shell (7)	A240-304 : 0.1875 in
Shell (8)	A240-304 : 0.1875 in
Shell (9)	A240-304 : 0.1875 in
Shell (10)	A240-304 : 0.1875 in
Shell (11)	A240-304 : 0.1875 in
Shell (12)	A240-304 : 0.1875 in
Shell (13)	A240-304 : 0.1875 in
Bottom	A240-304 : 0.1875 in

Anchor Chair Design Back

Anchor Chair Design per AISI T-192 Part V

a = Top Plate Width Along Shell (in)
b = Top Plate Length (in)
bmin = Top Plate Minimum Length (in)
c = Top Plate Thickness (in)
CA = Chair Corrosion Allowance (in)
c_corr = Top Plate Corroded Thickness (in)
D = Tank Nominal Diameter (ft)
d = Anchor Bolt Diameter (in)
e = Anchor Bolt Eccentricity (in)
Earthquakes-Considered = Earthquakes Considered
emin = Minimum Calculated Eccentricity (in)
emin-btm = Minimum Eccentricity Based on Bolt Clearance From Bottom Plates per *API-650 5.12.4* (in)
emin-req = Minimum Required Eccentricity (in)
Et = Bottom Plates Thermal Expansion Coefficient per *API-650 Table P.1b* (in/in.fdeg)
f = Top Plate Outside To Hole Edge Distance (in)
f_min = Distance from Outside of Top Plate to Edge of Hole per *AISI T-192 Part V, Notation* (in)
g = Vertical Plates Distance (in)
g_min = Minimum Distance Between Vertical Plates per *AISI T-192, PartV, Notation* (in)
h = Chair Height (in)
h-eff = Effective Chair Height (in)
hmax = Chair Maximum Height (in)
j = Vertical Plate Thickness (in)
j_corr = Vertical Plate Corroded Thickness (in)
j_min = Vertical Plate Minimum Thickness per *AISI T-192 Part V, Vertical Side Plates* (in)
k = Vertical Plates Average Width (in)
m = Base or Bottom Plate Thickness (in)
Ma-chair = Chair Material
outside-projection = Bottom Outside Projection (in)
R = Nominal Shell Radius (in)
Ssw-chair = Chair Allowable Stress for Seismic or Wind Design per *API-650 5.12.9* (psi)
T = Difference between ambient and design temperature per *API 650 5.12.4* (°F)
t = Shell Thickness (in)
T_ambient = Ambient Temperature (°F)
T_design = Design Temperature (°F)
V = Wind Velocity (mph)
Y-bolt = Anchor Bolt Yield Load (lbf)

a = 8.0 in
b = 8.0 in
c = 0.750 in

CA = 0.0 in
d = 1.6250 in
D = 13.2217 ft
e = 2.1250 in
Earthquakes-Considered = ASCE7-MAPPED-SS-AND-S1
Et = 6.670e-6 in/in.fdeg
f = 4.81250 in
g = 4.250 in
h = 12.0 in
j = 0.6250 in
k = 4.55022 in
m = 0.18750 in
Ma-chair = A240-304
outside-projection = 1.0 in
R = 79.330 in
t = 0.3750 in
T_ambient = 70.0 °F
T_design = 122.0 °F
V = 81.90 mph
Y-bolt = 60.4761e3 lbf

Anchor Chair Material Properties
Material = A240-304
Minimum Tensile Strength (Sut-chair) = 75.0e3 psi
As per API-650 S.5.b, Minimum Yield Strength (Sy-chair) = 28.90e3 psi
As per API-650 S.2b, Allowable Design Stress (Sd-chair) = 22.50e3 psi
As per API-650 S.2b, Allowable Hydrostatic Test Stress (St-chair) = 27.0e3 psi

Ssw-chair = 1.33 * Sd-chair
Ssw-chair = 1.33 * 22.50e3
Ssw-chair = 29.9250e3 psi

Size Requirements
c_corr = c - (2 * CA)
c_corr = 0.750 - (2 * 0.0)
c_corr = 0.750 in

j_corr = j - (2 * CA)
j_corr = 0.6250 - (2 * 0.0)
j_corr = 0.6250 in

Chair Minimum Height (hmin) = 12.0 in

h >= hmin ==> PASS

Appurtenances Design Back

Plan View

LABEL	MARK	CUST. MARK	DESCRIPTION	OUTSIDE PROJ (in)	INSIDE PROJ (in)	ORIENT	RADIUS (in)	REMARKS	REF DWG
N1	RN02A		4" ROOF NOZZLE	6"	1"	0 '	5'-6"		
N2	RN01A		6" ROOF NOZZLE	6"	0"	0 '	0"		
N7	BD01		2" FLUSH DRAIN	3 1/2"	8"	270 '	0"	RADIAL	

Elevation View

LABEL	MARK	CUST. MARK	DESCRIPTION	OUTSIDE PROJ (in)	INSIDE PROJ (in)	ORIENT	ELEVATION (in)	REMARKS	REF DWG
Anchor-Chair-Bolts	AC01A		ANCHOR CHAIRS	--	--	SEE TABLE	--		
N3	SN02A		3" SHELL NOZZLE	7"	1"	0 '	49'-8"		
N4	SN01A		3" SHELL NOZZLE	7"	1"	0 '	9 1/2"		
N5	SM01A		20" SHELL MANWAY	10"	1"	90 '	2'-6"	W/ DAVIT	
N6	SN03A		4" SHELL NOZZLE	7"	0"	180 '	10 1/4"		
Name-Plate	NP01A		STD API	--	--	0 '	3'-4"		

Shell Nozzle: N4

Repad Design

NOZZLE Description : 3 in SCH 40S TYPE RFSO

Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Shell Course Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON SHELL 1 : Elevation = 0.7917 ft

COURSE PARAMETERS:
t-calc = 0.1297 in
t_cr = 0.1297 in (Course t-calc less C.A)
t_c = 0.375 in (Course t less C.A.)
t_Basis = 0.1297 in

(SHELL NOZZLE REF. API-650 S.3.3.1, AND FOOTNOTE A OF TABLE 5-7)

Required Area = t_Basis * D
Required Area = 0.1297 * 3.5
Required Area = 0.4539 in2

Available Shell Area = (t_c - t_Basis) * D
Available Shell Area = (0.375 - 0.1297) * 3.5
Available Shell Area = 0.8586 in2

Available Nozzle Neck Area = 2 * [(4 * (t_n - CA)) + t_c] * (t_n - CA) * MIN((Sd_n/Sd_s) 1)
Available Nozzle Neck Area = 2 * [(4 * (0.216 - 0)) + 0.375] * (0.216 - 0) * MIN((22,500/22,500) 1)
Available Nozzle Neck Area = 0.5352 in2

A-rpr = (Required Area - Available Shell Area - Available Nozzle Neck Area)
A-rpr = 0.4539 - 0.8586 - 0.5352
A-rpr = 0 in2

Since A-rpr <= 0, t_rpr = 0

No Reinforcement Pad required.

t_shell_PWHT = Thickness of the shell plate, insert plate, or thickened insert plate for PWHT (in)

Nozzle Neck Material Properties
Material = A312-TP304
As per API-650 S.2b, Allowable Design Stress (Sd-neck) = 22.50e3 psi

t_shell_PWHT = t-plate
t_shell_PWHT = 0.3750
t_shell_PWHT = 0.3750 in

Thermal Stress Relief (PWHT) Requirements
D = Nozzle Nominal Diameter (NPS) (in)
Group = Shell Material Group
t_shell = Shell Plate Thickness (in)

D = 3.0 in

Group = None
t_shell = 0.3750 in

Shell material group (None) is not a group specified by API 650, 13th Ed, Section 5.7.4. Requirement for Thermal Stress Relief (PWHT) is unknown.

Shell Nozzle: N3

Repad Design

NOZZLE Description : 3 in SCH 40S TYPE RFSO
Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Shell Course Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON SHELL 11 : Elevation = 49.6667 ft

COURSE PARAMETERS:
t-calc = 0.0228 in
t_cr = 0.0228 in (Course t-calc less C.A)
t_c = 0.1875 in (Course t less C.A.)
t_Basis = 0.0228 in

(SHELL NOZZLE REF. API-650 S.3.3.1, AND FOOTNOTE A OF TABLE 5-7)

Required Area = t_Basis * D
Required Area = 0.0228 * 3.5
Required Area = 0.0798 in2

Available Shell Area = (t_c - t_Basis) * D
Available Shell Area = (0.1875 - 0.0228) * 3.5
Available Shell Area = 0.5764 in2

Available Nozzle Neck Area = 2 * [(4 * (t_n - CA)) + t_c] * (t_n - CA) * MIN((Sd_n/Sd_s) 1)
Available Nozzle Neck Area = 2 * [(4 * (0.216 - 0)) + 0.1875] * (0.216 - 0) * MIN((22,500/22,500) 1)
Available Nozzle Neck Area = 0.4542 in2

A-rpr = (Required Area - Available Shell Area - Available Nozzle Neck Area)
A-rpr = 0.0798 - 0.5764 - 0.4542
A-rpr = 0 in2

Since A-rpr <= 0, t_rpr = 0

No Reinforcement Pad required.

t_shell_PWHT = Thickness of the shell plate, insert plate, or thickened insert plate for PWHT (in)

Nozzle Neck Material Properties
Material = A312-TP304
As per API-650 S.2b, Allowable Design Stress (Sd-neck) = 22.50e3 psi

t_shell_PWHT = t-plate
t_shell_PWHT = 0.18750
t_shell_PWHT = 0.18750 in

Thermal Stress Relief (PWHT) Requirements
D = Nozzle Nominal Diameter (NPS) (in)
Group = Shell Material Group
t_shell = Shell Plate Thickness (in)

D = 3.0 in
Group = None
t_shell = 0.18750 in

Shell material group (None) is not a group specified by API 650, 13th Ed, Section 5.7.4. Requirement for Thermal Stress Relief (PWHT) is unknown.

Shell Nozzle: N6

Repad Design

NOZZLE Description : 4 in SCH 40S TYPE RFSO
Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Shell Course Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON SHELL 1 : Elevation = 0.8542 ft

COURSE PARAMETERS:
t-calc = 0.1297 in
t_cr = 0.1297 in (Course t-calc less C.A)
t_c = 0.375 in (Course t less C.A.)
t_Basis = 0.1297 in

(SHELL NOZZLE REF. API-650 S.3.3.1, AND FOOTNOTE A OF TABLE 5-7)

Required Area = t_Basis * D
Required Area = 0.1297 * 4.5
Required Area = 0.5836 in2

Available Shell Area = (t_c - t_Basis) * D
Available Shell Area = (0.375 - 0.1297) * 4.5
Available Shell Area = 1.1039 in2

Available Nozzle Neck Area = 2 * [(4 * (t_n - CA)) + t_c] * (t_n - CA) * MIN((Sd_n/Sd_s) 1)
Available Nozzle Neck Area = 2 * [(4 * (0.237 - 0)) + 0.375] * (0.237 - 0) * MIN((22,500/22,500) 1)
Available Nozzle Neck Area = 0.6271 in2

A-rpr = (Required Area - Available Shell Area - Available Nozzle Neck Area)
A-rpr = 0.5836 - 1.1039 - 0.6271
A-rpr = 0 in2

Since A-rpr <= 0, t_rpr = 0

No Reinforcement Pad required.

t_shell_PWHT = Thickness of the shell plate, insert plate, or thickened insert plate for PWHT (in)

Nozzle Neck Material Properties
Material = A312-TP304
As per API-650 S.2b, Allowable Design Stress (Sd-neck) = 22.50e3 psi

t_shell_PWHT = t-plate
t_shell_PWHT = 0.3750
t_shell_PWHT = 0.3750 in

Thermal Stress Relief (PWHT) Requirements
D = Nozzle Nominal Diameter (NPS) (in)
Group = Shell Material Group
t_shell = Shell Plate Thickness (in)

D = 4.0 in
Group = None
t_shell = 0.3750 in

Shell material group (None) is not a group specified by API 650, 13th Ed, Section 5.7.4. Requirement for Thermal Stress Relief (PWHT) is unknown.

Shell Manway: N5

Repad Design

MANWAY Description : 20 in Neck Thickness 0.25
Material: A240-304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Shell Course Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON SHELL 1 : Elevation = 2.5 ft

As per API-650 S.5.b, Minimum Yield Strength at Ambient Temperature (Sy-ambient-flange) = 30.0e3 psi
As per API-650 S.5.b, Minimum Yield Strength (Sy-flange) = 28.90e3 psi
Thickness for MDMT-permissible-flange (per API-650 Figure 4.3) = 0.250 in

M = MAX(SQRT((Sy-ambient-flange / Sy-flange)) , SQRT((30000 / Sy-flange)) , 1) = 1.01885

As per API-650 5.7.5.6, Bolting Flange Erection Thickness (tf-erec) = 0.250 in

tf-design = tc-design - 0.125
tf-design = 0.611756 - 0.125
tf-design = 0.486756 in

tf-req = MAX(tf-erec , tf-design)
tf-req = MAX(0.250 , 0.486756)
tf-req = 0.486756 in

t-flange >= tf-req ==> PASS

Roof Nozzle: N2

Repad Design

(Per API-650 and other references below)

NOZZLE Description : 6 in SCH 40S TYPE RFSO
Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Roof Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON ROOF: Elevation = 61.5605 ft

ROOF PARAMETERS:
t-calc = 0.1875 in
t_cr = 0.1875 in (Roof t-act less C.A)
t_c = 0.1875 in
t_Basis = 0.1875 in

(FOR ROOF NOZZLES, REF. API-650 FIG 5-19, TABLE 5-14 AND FOOTNOTE A OF TABLE 5-14, or API-650 FIG 5-20, TABLE 5-15 AND FOOTNOTE A OF TABLE 5-15)

Required Area = t_Basis * D
Required Area = 0.1875 * 6.625
Required Area = 1.2422 in2

Available Roof Area = (t_c - t_Basis) * D
Available Roof Area = (0.1875 - 0.1875) * 6.625
Available Roof Area = 0 in2

Available Nozzle Neck Area = 2 * [(4 * (t_n - CA)) + t_c] * (t_n - ca) * MIN((Sd_n/Sd_s) 1)
Available Nozzle Neck Area = 2 * [(4 * (0.28 - 0)) + 0.1875] * (0.28 - 0) * MIN((22,500/22,500) 1)
Available Nozzle Neck Area = 0.7322 in2

A_rpr = (Required Area - Available Roof Area - Available Nozzle Neck Area)
A_rpr = 1.2422 - 0 - 0.7322
A_rpr = 0.51 in2

As per API-650 J.3.6.3, reinforcement pad is not required since roof loads do not exceed 25 psf.

No Reinforcement Pad required.

Roof Nozzle: N1

Repad Design

(Per API-650 and other references below)

NOZZLE Description : 4 in SCH 40S TYPE RFSO
Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Roof Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON ROOF: Elevation = 60.644 ft

ROOF PARAMETERS:
t-calc = 0.1875 in
t_cr = 0.1875 in (Roof t-act less C.A)
t_c = 0.1875 in
t_Basis = 0.1875 in

(FOR ROOF NOZZLES, REF. API-650 FIG 5-19, TABLE 5-14 AND FOOTNOTE A OF TABLE 5-14, or API-650 FIG 5-20, TABLE 5-15 AND FOOTNOTE A OF TABLE 5-15)

Required Area = t_Basis * D
Required Area = 0.1875 * 4.5
Required Area = 0.8438 in2

Available Roof Area = (t_c - t_Basis) * D
Available Roof Area = (0.1875 - 0.1875) * 4.5

Available Roof Area = 0 in2

Available Nozzle Neck Area = 2 * [(4 * (t_n - CA)) + t_c] * (t_n - ca) * MIN((Sd_n/Sd_s) 1)
Available Nozzle Neck Area = 2 * [(4 * (0.237 - 0)) + 0.1875] * (0.237 - 0) * MIN((22,500/22,500) 1)
Available Nozzle Neck Area = 0.5382 in2

A_rpr = (Required Area - Available Roof Area - Available Nozzle Neck Area)
A_rpr = 0.8438 - 0 - 0.5382
A_rpr = 0.3055 in2

As per API-650 J.3.6.3, reinforcement pad is not required since roof loads do not exceed 25 psf.

No Reinforcement Pad required.

Bottom Drain: N7

Repad Design

NOZZLE Description : 2 in SCH 80S TYPE RFWN
Material: A312-TP304

t_rpr = (Repad Required Thickness)
t_n = (Thickness of Neck)
Sd_n = (Stress of Neck Material)
Sd_s = (Stress of Shell Course Material)
CA = (Corrosion Allowance of Neck)

MOUNTED ON SHELL 1 : Elevation = 0 ft

COURSE PARAMETERS:
t-calc = 0.1297 in
t_cr = 0.1297 in (Course t-calc less C.A)
t_c = 0.375 in (Course t less C.A.)
t_Basis = 0.1297 in

(SHELL NOZZLE REF. API-650 S.3.3.1, AND FOOTNOTE A OF TABLE 5-7)

Required Area = t_Basis * D
Required Area = 0.1297 * 2.375
Required Area = 0.308 in2

Available Shell Area = (t_c - t_Basis) * D

Capacities and Weights Back

Capacity to Top of Shell (to Tank Height) : 62,051 gal
Capacity to Design Liquid Level : 62,051 gal
Capacity to Maximum Liquid Level : 62,051 gal
Working Capacity (to Normal Working Level) : 0 gal
Net working Capacity (Working Capacity - Min Capacity) : 0 gal
Minimum Capacity (to Min Liq Level) : 1,027 gal

Component	New Condition (lbf)	Corroded (lbf)
SHELL	21,265	21,265
ROOF	1,102	1,102
RAFTERS	0	0
GIRDERS	0	0
FRAMING	0	0
COLUMNS	0	0
TRUSS	0	0
STRUCTURE COMPONENTS	0	0
BOTTOM	1,088	1,088
STAIRWAYS	0	0
ACCESS	0	0
STIFFENERS	133	133
WIND GIRDERS	0	0
ANCHOR CHAIRS	253	253
SHELL APPURTENANCES	362	362
ROOF APPURTENANCES	45	45
BOTTOM APPURTENANCES	0	0
INSULATION	0	0
FLOATING ROOF	0	0
TOTAL	24,249.4654	24,249.4654

Weight of Tank, Empty : 24,249.4654 lbf
Weight of Tank, Full of Product (Design SG = 1) : 542,092.4654 lbf
Weight of Tank, Full of Water : 542,092.0668 lbf
Net Working Weight, Full of Product (Design SG = 1) : 533,520.8789 lbf
Net Working Weight Full of Water : 533,520.8789 lbf

Foundation Area Req'd : 142.098 ft2
Foundation Loading, Empty : 170.6529 lbf/ft2
Foundation Loading, Full of Product Design : 3,814.9171 lbf/ft2
Foundation Loading, Full of Water : 3,814.9143 lbf/ft2

SURFACE AREAS
Roof : 141.9188 ft2
Shell : 2,509.5325 ft2
Bottom : 142.098 ft2