

# API

## API Std 650 Storage Tank Data Sheet

Data Sheet Status: FOR BID

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\* For boxes marked with \*, if blank, Mfr. shall determine and submit as per Appendix L. For all lines, see Appendix L for line-by-line instructions.

**GENERAL** Special Documentation Package Requirements: NA

Measurement Units to be used in API Std 650: SI  US Customary

1. Manufacturer\* \_\_\_\_\_ Contract No.\* \_\_\_\_\_  
Address\* \_\_\_\_\_  
Mfg. Serial No.\* \_\_\_\_\_ Year Built\* \_\_\_\_\_ Edition & Addendum to API 650\* 11<sup>th</sup>, ADDENDUM 2
2. Purchaser CONNECTICUT RESOURCES RECOVERY AUTH. Contract No. \_\_\_\_\_  
Address 100 CONSTITUTION PLAZA, 6<sup>th</sup> FLOOR, HARTFORD, CT 06103  
Tank Designation NA
3. Owner/Operator CONNECTICUT RESOURCES RECOVERY AUTH. Location S. MEADOWS STA. - RESERVE RD, HARTFORD
4. Size Limitations\* 60 FT. DIA. OUTER CONTAINMENT Tank Diameter\* 50' Ø MAIN Shell Height\* 45' OUTER CONT.  
Capacity: Maximum\* 630,702 gal. Net Working\* 550,000 GAL Criteria:\* PURCHASER REQUIREMENTS
5. Products Stored:  
Liquid KEROSENE Max. S.G.: 0.85 at 60 °F  
Blanketing Gas NA Vapor Pressure 0.075 PSIA at Max. Operating Temp.  
% Aromatic 3 Suppl. Spec. NA H<sub>2</sub>S Service? Yes  No  Suppl. Spec. NA  
Other Special Service Conditions? Yes  No  Suppl. Specs. NA

**DESIGN AND TESTING** Purchaser to Review Design Prior to Ordering Material? Yes  No

6. Applicable API Standard 650 Appendices:\*  A  B  C  F  G  H  I  J  L  M  O  P  S  U  V  W  X
7. Max. Design Temp. 200 °F Design Metal Temp.\* 5 °F Design Liquid Level\* 43.2 FT.  
Design Pressure ATM. External Pressure NA Maximum Fill Rate 200 gpm Maximum Emptying Rate 270 gpm  
Flotation Considerations? Yes  No  Flot. Suppl. Spec.\* NA Applied Supplemental Load Spec. NA
8. Seismic Design? Yes  No  Appendix E  Alternate Seismic Criteria \_\_\_\_\_ Seismic Use Group 3  
MBE Site Class E Vertical Seismic Design? Yes  No  Vertical Ground Motion Accelerator A<sub>v</sub>: \_\_\_\_\_  
Basis of Lateral Acceleration (Select one):  Mapped Seismic Parameters? S<sub>s</sub> 0.239, S<sub>1</sub> 0.064, S<sub>0</sub> 0.096;  Site-Specific Procedures?: MCE  
Design Required? Yes  No ;  Other (Non-ASCE) Methods \_\_\_\_\_  
 Freeboard Required for SUG I Design Roof Tie Rods @ Outer Ring?\* Yes  No
9. Wind Velocity for non-U.S. sites, 50-yr wind speed (3-sec Gust)\* 95 MPH  
Top Wind Girder Style\* \_\_\_\_\_ Dimensions\* \_\_\_\_\_ Use Top Wind Girder as Walkway? Yes  No   
Intermediate Wind Girders?\* Yes  No  Intermediate Wind Girder Style\* \_\_\_\_\_ Dimensions\* \_\_\_\_\_  
Check Buckling in Corroded Cond.? Yes  No
10. Shell Design: 1-Ft Mthd?\* Yes  No ; Variable-Des-Pt Mthd?\* Yes  No  Alternate ; Elastic Anal. Mthd?\* Yes  No  Alternate   
Plate Stacking Criteria\* Centerline-Stacked? Yes  No  Flush-Stacked? Yes  No  Inside  Outside   
Plate Widths (Shell course heights) and Thicknesses \* Numbers below Indicate Course Number.  
1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_  
6. \_\_\_\_\_ 7. \_\_\_\_\_ 8. \_\_\_\_\_ 9. \_\_\_\_\_ 10. \_\_\_\_\_  
11. \_\_\_\_\_ 12. \_\_\_\_\_ 13. \_\_\_\_\_ 14. \_\_\_\_\_ 15. \_\_\_\_\_  
Joint Efficiency\* \_\_\_\_\_ % Shell-to-Bottom Weld Type\* FIG. 5-3A Shell-to-Bottom Weld Insp Mthd\* 7.2.4.1.e

Approvals:

Revisions:

Title: CARRA RFB 11-EN-002

By: \_\_\_\_\_ Ck'd: \_\_\_\_\_ Date: 8/19/10

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11. Open-Top and Fixed Roofs: (See Sheet 6 for Floating Roofs) Open Top? \* Yes  No    
 Fixed Roof Type\* SELF SUPPORTIN DOME Roof Support Columns\*: Pipe  Or Structural Shape    
 Cone Slope\* \_\_\_\_\_ Dome or Umbrella Radius\* 60FT. Weld Joints\* LAP (Lap, Butt, Other) \_\_\_\_\_   
 Seal Weld Underside of: Lap-Joints? Yes  No ; Seal Weld Underside of Wind Girder Joints? Yes  No    
 Gas-tight? Yes  No  Joint Efficiency\* NA %   
 Minimum Roof Live Load 20 psf Balanced Snow Load 30 psf Unbalanced Snow Load \_\_\_\_\_ psf   
 App. Suppl. Load Spec.\* \_\_\_\_\_ Column Lateral Load \_\_\_\_\_   
 Normal Venting Devices\* FREE VENT FLAME ARR. Emergency Venting Devices\* NA   
 For Non-Frangible Roofs: Seal Weld Roof Plates to Top Angle on the Inside? Yes  No ; Weld rafters to Roof Plates Yes  No    
 Roof-to-Shell Detail\* CONTINUOUS FILLET Radial Projection of Horizontal Component of Top Angle\* Inward  Outward    
 12. Bottom: Thickness\* \_\_\_\_\_ Style\* CONE UP TO CTR. Slope\* 29% Weld Joint Type\* FULL FILLET LAP   
 Provide Drip Ring? Yes  No  Alternate Spec. NA   
 Annular Ring? Yes  No  Annular Ring: Minimum Radial Width\* 24 IN. Thickness\* \_\_\_\_\_   
 13. Foundation: Furnished by\* \_\_\_\_\_ Type\* \_\_\_\_\_   
 Soil Allow. Bearing Pressure\* 2,500 psf. Per Spec.\* \_\_\_\_\_ Anchors: Size\* \_\_\_\_\_ Qty\* \_\_\_\_\_   
 Foundation Design Loads: Base Shear Force: Wind\* \_\_\_\_\_ Seismic\* \_\_\_\_\_ Overturning Moment: Wind\* \_\_\_\_\_ Seismic\* \_\_\_\_\_   
 Ring Forces: Weight of Shell + Roof New\* \_\_\_\_\_ Corroded\* \_\_\_\_\_ Roof Live Load\* 20 psi Internal Pressure\* \_\_\_\_\_   
 Partial Vacuum\* \_\_\_\_\_ Wind\* \_\_\_\_\_ Seismic\* \_\_\_\_\_   
 Bottom Forces: Floor Wt. New\* \_\_\_\_\_ Corroded\* \_\_\_\_\_ Product Wt.\* \_\_\_\_\_ Water Wt.\* \_\_\_\_\_ Internal Pressure\* \_\_\_\_\_   
 Partial Vacuum\* \_\_\_\_\_ Other Foundation Loads\* \_\_\_\_\_ Min. Projection of Fdn. Above Grade: \_\_\_\_\_   
 14. Responsibility for Heating Water, if Required: Purchaser  Manufacturer    
 Hydro-Test Fill Height\* 37 FT. Settlement Measurements Required? Yes  No  Extended Duration of Hydro-Test: YES   
 Predicted Settlement Profile is Attached   
 Responsibility for Setting Water Quality: Purchaser  Manufacturer  Supplemental Test Water Quality Spec. NA   
 Test Water Source & Disposal Tie-In Locations FIRE HYDRANT / SAN. SEWER Hydro-Test Appendix J Tank? Yes  No    
 Post-Pressure-Test Activities Required of the Manufacturer: Broom Clean  Potable Water Rinse  Dry Interior    
 Other  \_\_\_\_\_   
 15. Inspection by \_\_\_\_\_ in Shop; \_\_\_\_\_ in Field   
 Supplemental NDE Responsibility \_\_\_\_\_ Supplemental NDE Spec. MANUFACTURER (Purch., Mfg., Other) \_\_\_\_\_   
 Positive Material Identification? Yes  No  PMI Requirements: SPEC SEC. 13100   
 Max. Plate Thickness for Shearing .375 IN.   
 Must Welds not exceeding 6 mm (1/4 in.) Be Multi-Pass? Yes  No  Must Welds greater than 6 mm (1/4 in.) Be Multi-Pass? Yes  No    
 Leak Test Mthd: Roof\* VACUUM BOX Shell\* HYDROSTATIC Shell Noz./Manhole Reinf. Plt.\* 7.3.4   
 Bottom\* VACUUM BOX Floating Roof Components\* NA   
 Modify or Waive API Dimensional Tolerances (see 7.5)? No  Yes  Specify: \_\_\_\_\_   
 Specify Additional Tolerances, if any, and Circumferential and Vertical Measurement Locations:   
 - Allowable Plumbness: \_\_\_\_\_ Measure and Record at a Minimum of \_\_\_\_\_ Locations or Every \_\_\_\_\_ m (ft) around the Tank, at the Following Shell Heights: (select one box):  1/3 H, 2/3 H and H  Top of Each Shell Course  Other: \_\_\_\_\_   
 - Allowable Roundness: \*\* \_\_\_\_\_ Measure Radius and Record at a Minimum of \_\_\_\_\_ Locations or Every \_\_\_\_\_ m (ft) around the Tank, at the Following Shell Heights (select one box):   
 Top of Tank, H  1/3 H, 2/3 H and H  Top of Each Shell Course  Other: \_\_\_\_\_   
 \*\*See Data Sheet Instructions for the Maximum Allowable Additional Radial Tolerance.

Approvals:	Revisions:	Title: <u>RFB II-EN-002</u>
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\* If box is blank, Manufacturer shall determine and submit as per Appendix L.

Component	Material*/Thickness*	C.A.	Component	Material*	C.A.
Shell, Course 0' to 2'	ASTM A36/	0.125 IN.	Reinforcing Pads		
Shell, Course 2' to 45'	ASTM A36/	0	Manhole/Nozzle Necks	ASTM A53	0
Shell, Course ___ to ___			Manhole/Nozzle Flanges	ASTM A53	0
Shell, Course ___ to ___			Flange Covers	ASTM A36	0
Shell, Course ___ to ___			Anchor Attachments	ASTM A36	0.125 IN
Roof	ASTM A36/	0.063 IN.	Submerged Piping	ASTM A53	0
Bottom	ASTM A36/	0.125 IN	Wetted Structural	ASTM A36	0.063 IN <sup>+</sup>
Annular Ring	ASTM A36/	0.125 IN	Non-wetted Structural	ASTM A36	0.063 IN <sup>+</sup>

+ Check here if C.A. is to apply to each exposed surface .

Component	Head Type*	Bolt or Anchor Material*	Nut Material*	Thread Series*	C.A.
Flange Bolting	HEX	ASTM A307, A	ASTM A563, A	STD.	GALV. ++
Structural Bolting	HEX	ASTM A307, A	ASTM A563, A	STD.	GALV. ++
Anchor Bolts	HEX	ASTM A307, A	ASTM A563, A	STD.	GALV. ++

++ Total C.A., on the nominal diameter.

Mark	Service	Size, NPS, or Dia. (In.)	Neck Sch or Wall Thick.	Reinf. Plate Dimensions	Full Pen. On Open. (Y/N)	Flange Type	Flange Class or Thick.	Gasket Bearing Surf. Dimen. and Finish	Gasket Thick. and Dimen.	Gasket Mat'l. and Descript.	Proj. to FF or CL or from Datum Lines
250°	ROOF MANHOLE	24" Ø			Y	BOLTED				BUNA-N	12" FF
250°	LEVEL TRANS.	6" Ø			Y	BOLTED					12" FF
250°	LEVEL TRANS	6" Ø			Y	BOLTED				BUNA-N	12" FF
265°	GAUGE BOARD	1 1/2" Ø			Y	BOLTED					12" FF
180°	TANK DRAIN	6" Ø			Y	BOLTED				BUNA-N	6" FF
170°	FILL PIPE	8" Ø			Y	BOLTED				BUNA-N	8" FF
270°	OUTER MANWAY	30" Ø			Y	BOLTED				BUNA-N	12" FF
90°	OUTER MANWAY	30" Ø			Y	BOLTED				BUNA-N	12" FF
270°	INNER MANWAY	30" Ø			Y	BOLTED				BUNA-N	12" FF
20°	OUTER DRAIN	4" Ø			Y	BOLTED				BUNA-N	6" FF
110°	DRAIN	4" Ø			Y	BOLTED				BUNA-N	6" FF
200°	OUTER DRAIN	4" Ø			Y	BOLTED				BUNA-N	6" FF
290°	OUTER DRAIN	4" Ø			Y	BOLTED				BUNA-N	6" FF

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**OTHER TANK APPURTENANCES**

24. Platform, Stairway, and Railing: Galvanizing Req'd?\* Yes  No  Stairway Style\* HELICAL Walk Surf. Type\* METAL GRATING  
(Straight or Helical)
- Stair and Walkway Clear Width\* 36 IN. National Safety Standards\* OSHA 1910  
Architectural/Structural Specification\* SEC. 13100
- Gauger's Platform Req'd? Yes  No  Qty Req'd.\* 1 Per Spec.\* 13100
25. Jacket Required?\* Yes  No  Other Heaters/Coolers Required?\* Yes  No   
Supplemental Jacket, Heater, or Cooler Specifications\* NA
26. Mixer/Agitator: Quantity NA Size\* NA Per Spec.\* NA
27. Insulation: Required? Yes  No  Thickness\* NA Material\* NA  
Per Specs\* NA Responsibility for Insulation and Installation \_\_\_\_\_  
(Purchaser, Manufacturer, Others)
28. Structural Attachments: Lift Lugs?\* Yes  No  Desc.\* \_\_\_\_\_  
Shell Anchorage?\* Yes  No  Type\* \_\_\_\_\_ Scaffold Cable Support? Yes  No
29. Various Other Items: Welded Flush-Type: Shell Connection  Cleanout Fitting  Waive Application of Appendix P? Yes  No
- Miscellany #1 \_\_\_\_\_ Miscellany #2 \_\_\_\_\_  
Miscellany #3 \_\_\_\_\_ Miscellany #4 \_\_\_\_\_  
Miscellany #5 \_\_\_\_\_ Miscellany #6 \_\_\_\_\_

Table 4 OTHER TANK APPURTENANCES\*

Mark	Quantity	Service or Description	Size	Orientation	Height from Datum	Material	Remarks
110°	1	OVERFLOW NOZZLE	12" Ø	HORIZONTAL	43.2 FT.	FLAP VALVE	SEE SPEC.
ROOF CENTER	1	FREE VENT FLAME ARR.	12" Ø	VERTICAL	53 FT.		SEE SPEC.
	4	GROUND PADS			6 IN.	STAINLESS	SEE SPEC.
	4	GROUND RODS	1" Ø	VERTICAL	BURIED	COPPER	SEE SPEC.
265°	1	MANUAL GUAGE BOARD		VERTICAL	FULL HEIGHT		SEE SPEC.
ROOF	4	CONTAINMENT VENTS	8" Ø	VERTICAL	ROOF	FREE VENTS	

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**FLOATING ROOF DATA**

**30. Floating Roof Selection** *NA*

Design Basis: Appendix C  Or Appendix H   
 Type of Roof: (External or Internal): Single Deck Pontoon\*  Double Deck\*   
 (Internal Only): Tubular Pontoon\*  Metallic Sandwich Panel\*   
 Other  \_\_\_\_\_ Supplemental Spec: \_\_\_\_\_

**31. Seals** *NA*

Primary Seal: Shoe  Envelope  Wiper/Compression Plate  Other  \_\_\_\_\_ Supplemental Spec: \_\_\_\_\_  
 Shoe Mechanism: Mfg. Std.  Other  \_\_\_\_\_  
 Electrically Isolate Mechanism from Shoes? Yes  No  Wax Scrapers Required? Yes  No   
 Minimum Shoe Thickness\* \_\_\_\_\_ Carbon Steel Shoes to be Galvanized? Yes  No   
 Secondary Seal: Shoe  Envelope  Wiper  None  Other  \_\_\_\_\_ Supplemental Spec: \_\_\_\_\_

**32. Data for All Floating Roofs:** *NA*

Overflow Openings in Shell Acceptable? Yes  No  Shell Extension? Yes  No   
 Roof-Drain Check Valves Required? Yes  No  Roof-Drain Isolation Valves Required? Yes  No   
 Freeze Protection for Roof Drains Required? No  Yes  Supplemental Requirements: \_\_\_\_\_  
 Roof-Drain Piping to External Nozzles: Mfg. Std.  Armored Flexible Pipe  Swivels in Rigid Pipe  Other  \_\_\_\_\_  
 Foam Dam? Yes  No  Supplemental Spec: \_\_\_\_\_  
 Minimum Deck Thickness\* \_\_\_\_\_  
 Bulkhead Top Edges to be Liquid-Tight? Yes  No  Seal-weld Underside of Roof? Yes  No   
 Electrical Bonding: Shunts: Yes  No  Cables: Yes  No  Supplemental Spec: \_\_\_\_\_  
 Qty of Non-Guide-Pole Gauge Wells Required \_\_\_\_\_ Qty of Sample Hatches Required \_\_\_\_\_  
 Guide Pole for Gauging? Yes  No  Slots in Guide Pole? Yes  No  Datum Plates? Yes  No  Striking Plates? Yes  No   
 Guide Pole Emissions-Limiting Devices: Sliding Cover  Pole Wiper  Pole Sleeve  Float  Float Wiper  Pole Cap   
 Qty. of Roof Manholes\* \_\_\_\_\_ Minimum High-Roof Clearance Above Bottom: \_\_\_\_\_  
 Removable Leg Storage Racks? Yes  No  ; Leg Sleeves  or Fixed Low Legs

**33. Additional Data for External Floating Roofs:** *NA*

Weather Shield? Yes  No  Suppl. Spec: \_\_\_\_\_  
 Rolling Ladder Req'd? Yes  No  Field Adjustable Legs? Yes  No   
 Design Rainfall Intensity \_\_\_\_\_ In./Hr. (mm/hr) Based on a \_\_\_\_\_ Minute Duration Associated with the \_\_\_\_\_ Storm  
 Design Accumulated 24-Hour Rainfall \_\_\_\_\_ In. (mm) Based on the \_\_\_\_\_ Storm  
 Distortion and Stability Determinations Required? Yes  No  Supplemental Specification \_\_\_\_\_  
 Landed Live Load\* \_\_\_\_\_

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34. Additional Data for Internal Floating Roofs:

*NA*

Two-Position Legs? Yes  No  Cable-Supported Roof? Yes  No  Fixed-Roof Inspection Hatches Required?: Yes  No

Internal Roof Drain Required? Yes  No  Omit Distribution Pads Supporting Uniform Live Loads? Yes  No

Corrosion Gauge Required? Yes  No  Fixed Ladder Required?: Yes  No  ; Type of Roof Vent: \* \_\_\_\_\_

Modified Minimum Point Load? Yes  No  Supplemental Specification \_\_\_\_\_

Mfr. to Leak Test \* \_\_\_ % of Compartments  in Assembly Yard  in Erected Position  Unknown; see separate contract terms

Roof Erector's Flotation Test: w/ tank hydro  at completion of roof  at later date  \_\_\_\_\_ Not required

Flotation Test Media: Water  Product  (see H.6.6.1) Water Quality: Potable  Other  See Supplemental Spec \_\_\_\_\_

Flotation Test: Duration \_\_\_\_\_ Fill Height: \_\_\_\_\_

Flotation Test Items provided by Purchaser (see H.6.7): None  List Attached

Responsible Party for Inspecting Roof during Initial Fill: Purchaser  Other  \_\_\_\_\_

Table 5 FLOATING ROOF MATERIALS

*NA*

Component	Material*/Thickness*	C.A./Coating*	Component	Material*/Thickness*	C.A./Coating*
Deck Plate			Datum Plate		
Inner Rim Plate			Tubular Pontoon		
Outer Rim Plate			Pontoon Bulkhead		
Foam Dam			Submerged Pipe		
Sandwich Panel Face Plate			Guide Pole		
Sandwich Panel Core			Secondary Seal		
Gauge Well			Secondary Seal Fabric		
Drain Sumps			Wiper Tip		
Opening Sleeves			Wax Scraper		
Floating Suction Lines			Weather Seal		
Primary Fabric Seal			Envelope Fabric		
Foam Log Core			Shoe Mechanisms		
Landing Legs			Primary Seal Shoe		
Landing Leg Bottom Pads			Removable Covers		
Manhole Necks			Rolling Ladder		
Vents			Inlet Diffusers		

Approvals:

Revisions:

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Tank Plan and Sketches:

REFER TO CONTRACT DRAWING SET ACCOMPANYING  
CRRA RFB No. 11-EN-002, INCLUDING ADDENDA

Notes:

Approvals:

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