 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001			
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks			
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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:

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

1. Manufacturer* TBD Contract No.* TBD
 Address* TBD
 Mfg. Serial No.* TBD Year Built* Edition & Addendum to API 650* 12th Ed., March 2013

2. Purchaser XTR Midstream Contract No.
 Address
 Tank Designation Two (2) Stabilized Oil Storage Tanks, Tag No. TK-21751, TK-21752

3. Owner/Operator XTR Midstream Location Weld County, Colorado

4. Size Limitations* Tank Diameter* 93'-0" Shell Height* 40'-0"
 Capacity: Maximum* Net Working* 38,700 bbls Criteria* ANSI/API STD 2350-2012

5. Products Stored:
 Liquid Crude Oil Max. S.G.: 0.7 at 100 ° F
 Blanketing Gas NA Vapor Pressure 9.2 (TVP) PSIA at Max. Operating Temp.
 % Aromatic 5.5 Suppl. Spec. H₂S Service? Yes No Suppl. Spec.
 Other Special Service Conditions? Yes No Suppl. Spec.

DESIGN AND TESTING

Purchaser to Review Design Prior to Ordering Material? Yes No


6. Applicable API Standard 650 Appendices:* A B C E F H I J L M O P T U V W

7. Max. Design. Temp. 150 ° F Design Metal Temp.* -20 ° F Design Liquid Level*
 Design Pressure ATM External Pressure NA Maximum Fill Rate 2500 bph Maximum Emptying Rate 2500 bph
 Floatation Considerations? Yes No Flot. Suppl. Spec.* Applied Supplemental Load Spec.

8. Seismic Design? Yes No Appendix E Alternate Seismic Criteria IBC 2012 (NOTE 3) API Seismic Use Group II
 MBE Site Class D Vertical Seismic Design? Yes No Vertical Ground Motion Accelerator A_v:
 Basis of Lateral Acceleration (Select one): Mapped Seismic Parameters? S_s 0.174g S₁ 0.057g S₀ ; 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)* 120 mph/ Exposure C, (NOTE 3)
 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* Shell-to-Bottom Weld Insp. Mthd*

 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001			
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks			
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

11. Open-Top and Fixed Roofs: (See Sheet 6 for Floating Roofs) Open Top?* Yes No

Fixed Roof Type* Cone w/ Int. Floating Roof Roof Support Columns*: Pipe Or Structural Shape

Cone Slope* By Vendor Dome or Umbrella Radius* _____ 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* _____ %

Thickness* _____ In. Snow Load* 30 psf App. Suppl. Load Spec.* _____ Column Lateral Load _____

Normal Venting Devices* _____ Emergency Venting Devices* Yes, by Vendor _____

For Non-Fragible Roofs: Seal Weld Roof Plates to Top Angle on the Inside? Yes No ; Weld Rafters to Roof Plates? Yes No

Roof-to-Shell Detail* _____ Radial Projection of Horizontal Component of Top Angle* Inward Outward

12. Bottom: Thickness* _____ per API Style* Cone up to center Slope* 1:120 Weld Joint Type* _____ Lap _____

Provide Drip Ring? Yes No Alternate Spec. _____

Annular Ring? Yes No Annular Ring: Minimum Radial Width* by Vendor Thickness* by Vendor

13. Foundation: Furnished by* _____ Tank Supplier _____ Type* _____ Concrete Ringwall _____

Soil Allow: Bearing Pressure* _____ 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* _____ 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* _____ Settlement Measurements Required? Yes No Extended Duration of Hydro-Test: _____

Predicted Settlement Profile is Attached

Responsibility for Setting Water Quality: Purchaser Manufacturer Supplemental Test Water Quality Spec. _____

Test Water Source & Disposal Tie-In Locations _____ 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 inspection required _____ in Field

Supplemental NDE Responsibility _____ Supplemental NDE Spec. _____
(Purch., Mfg., Other)

Positive Material Identification? Yes No PMI Requirements: _____ MTR's are acceptable

Max. Plate Thickness for Shearing _____

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* _____ by Vendor _____ Shell* _____ by Vendor _____ Shell Noz./Manhole Reinf. Plt* _____

Bottom* _____ by Vendor _____ Floating Roof Components* _____

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.




Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

16. Coatings:
- Internal Coatings by: Tank Mfg. Per Spec.* Tank bottom and lower 48" of sidewall only. See Note 8
(Not Req'd., Others, Tank Mfg.)
- External Coating by: Tank Mfg. Per Spec.* See Note 8
(Not Req'd., Others, Tank Mfg.)
- Under-Bottom Coating by: NA Per Spec.* Not Req'd
(Not Req'd., Others, Tank Mfg.)
17. Cathodic Protection System? Yes No Per Spec.* By others
18. Leak Detection System? Yes No Per Spec.* Tank Mfg.
19. Release Prevention Barrier? Yes No Per Spec.* Tank Mfg.
20. Tank Measurement System: Required? Yes No Remote Capability Required? Yes No
By:* Others Per Spec.* _____
21. Weight of Tank: Full of Water* _____ Empty* _____ Shipping* _____ Brace/Lift Spec.* _____
22. References:* API Std 650, Appendix L
23. Remarks:*

 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010		Document Number: CDY-BRM-023-21001		
	Project Name: Cody CGF		Location: Broomfield, CO		Tag Number: TK-21751, TK-21752		
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
		A	11/16/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* For boxes marked with *, if blank, Mfr. Shall determine and submit as per Appendix L. For all lines, refer to Appendix L for the instructions.

Component	Material*/Thickness*	C.A.	Component	C.A.
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Reinforcing Pads	N/A
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Necks	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Flanges	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Flange Covers	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Anchor Attachments	N/A
Roof	Group III or IIIA (NOTE 7)/Vendor	1/8"	Submerged Piping	1/8"
Bottom	Group III or IIIA (NOTE 7)/Vendor	1/8"	Wetted Structural	1/8"
Annular Ring	Group III or IIIA (NOTE 7)/Vendor		Non-wetted Structural	N/A

1/16" Corrosion Allowance

+ 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		A193 Gr B7	A194 Gr 2H	Per API 650	N/A ++
Structural Bolting		A307	A307	Per API 650	N/A ++
Anchor Bolts		A36 Galvanized	A36 Galvanized	Per API 650	N/A ++

++ 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
Shell Nozzles											
1	Oil In	10		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
2	Oil Out	10		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
3	Oil In Spare	10		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
4	Oil Out Spare	10		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
5	Mixer	24"		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
6A	Water Draw	4		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
6B	Water Draw	4		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
7A	Temp	1		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
7B	Temp	1		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
8	High Level	4		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
9	Truck Load	4		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
10	Fire Foam	4		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
Roof Nozzles											
11	LIT	8	flanged			RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
12	Level Switch	4	flanged			RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
13	Gooseneck Vent	12	Note 9								
14	Varec Level Gauge	1 1/2"									
15A	Floating Roof Level	4"		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
15B		4"		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
15C		4"		per API		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

OTHER TANK APPURTENANCES

24. Platform, Stairway, and Railing: Galvanizing Req'd?* Yes No Stairway Style* Helical Walk Surf. Type* Bar & Rod
(Straight or Helical)
Stair and Walkway Clear Width* 3' National Safety Standards* OSHA
Architectural/Structural Specification* _____
Gauger's Platform Req'd? Yes No Qty. Req'd* 1 Per Spec.* _____

25. Jacket Required?* Yes No Other Heaters/Coolers Required?* Yes No
Supplemental Jacket, Heater, or Cooler Specifications* _____

26. Mixer/Agitator: Quantity 1 Size* _____ Per Spec.* _____

27. Insulation: Required? Yes No Thickness* _____ Material* _____
Per Specs* _____ 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
16	1	Fill line diffuser	10"				
17	1	Outlet line diffuser	10"				
18	1	Shell Cleanout	36" x 48"				
19A	1	Roof Manway	24"				
19B	1	Roof Manway	24"				
20	1	Guide Pole	8"				with Slots
21	1	Gauge Well	6"				with Slots
22	1	Gauge Well	6"				with Slots



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

FLOATING ROOF DATA

30. Floating Roof Selection

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 See Note 7 Supplemental Spec.: _____

31. Seals

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:

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 Two (See Table 4) 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* 2 Minimum High-Roof Clearance Above Bottom: 6'

Removable Leg Storage Racks? Yes No ; Leg Sleeves or Fixed Low Legs

33. Additional Data for External Floating Roofs:

Weather Shield? Yes No Supplemental Spec.: _____


Rolling Ladder Required? 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. Based on the _____ Storm

Distortion and Stability Determinations Required? Yes No Supplemental Specification _____

Landed Live Load* _____

 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001			
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks			
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
A			11/28/17	Internal Review	BMS		
B			12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

34. Additional Data for Internal Floating Roofs:

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 a 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 Tank Mfg. _____

Table 5 FLOATING ROOF MATERIALS

Component	Material*/Thickness*	C.A./Coating*	Component	Material*/Thickness*	C.A./Coating*
Deck Plate	Group III or IIIA (NOTE 7)	1/8"	Datum Plate		
Inner Rim Plate	Group III or IIIA (NOTE 7)	1/8"	Tubular Pontoon		
Outer Rim Plate	Group III or IIIA (NOTE 7)	1/8"	Pontoon Bulkhead		
Foam Dam	Stainless Steel		Submerged Pipe	A106 Gr B	1/8"
Sandwich Panel Face Plate			Guide Pole	Carbon Steel	1/8"
Sandwich Panel Core			Secondary Seal	Buna-N	
Gauge Well	Carbon Steel	1/8"	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	Stainless Steel	
Landing Legs	Carbon Steel	1/8"	Primary Seal Shoe	Stainless Steel	
Landing Leg Bottom Pads	Carbon Steel	1/8"	Removable Covers		
Manhole Necks	A106 Gr B	1/8"	Rolling Ladder		
Vents	Carbon Steel	1/8"	Inlet Diffusers	Carbon Steel	1/8"


 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-21001				
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-21751, TK-21752	Service: Crude Oil Storage Tanks				
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
			A	11/28/17	Internal Review	BMS		
B			12/12/17	Client Review	BMS	MAB	GAD	
		C	01/31/18	Bid	BMS	MAB	GAD	

* 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.

Tank Plan and Sketches:

Nozzle locations later.

Notes:

1. Cathodic protection system by others. 
2. Contractor to provide hydrotest water.
3. See Project Site Design Data Sheet CDY-BRM-003-00001
4. Two (2) 36" x 36" manways required on floating roof.
5. Two (2) 48" diameter x 24" deep floor sump.
6. Number and size of Roof Vents and Emergency Vents TBD by Tank Mfg.
7. Base price to include metallic double-deck internal floating roof (API 650 para. H.2.2d). Bidders are encouraged to offer optional pricing (deduct or adder) for any/all of the following internal floating roof types:
 - H.2.2b Metallic Open-Top Bulk-Headed (Segmented Pan) IFR
 - H.2.2c Metallic Pontoon IFR
 - H.2.2f Metallic Sandwich-panel/composite IFR.
8. Exterior Tank Surface Prep: Per "External Coatings PIP CTSE1000 Overlay. Minimum exterior surface prep to be SSPC-SP6/NACE 3.
 - Paint Exterior Tank: PIP CTSE1000-D106 Coating System No. 6, Carlsbad Canyon Tan (2.5Y 6/2) per "Application of External Coatings" PIP CTSE1000
 - Roof: Anti-slip paint additive shall be added to coating system for the entire exterior surface of tank roof.
 - Interior Tank Surface Prep: Per "Application of Internal Coatings" PIP - CTSL1000. Minimum internal surface prep to be SSPC-SP10
 - Coat Tank interior tank bottom and lower 48" of sidewall: Sherwin Williams Nova-Plate UHS Epoxy or equal, per "Application of Internal Linings" PIP CTSL1000
9. VENDOR TO SIZE ATMOSPHERIC VENT TO PROVIDE OVERPRESSURE/VACUUM PROTECTION PER PROVIDED INLET/OUTLET FLOW RATES.
10. Vendor to include design and supply for a Fire Foam System (piping / foam chambers).



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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:

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

1. Manufacturer* TBD Contract No.* TBD
Address* TBD
Mfg. Serial No.* TBD Year Built* Edition & Addendum to API 650* 12th Ed., March 2013

2. Purchaser XTR Midstream Contract No.
Address
Tank Designation Two (2) Off-Spec Oil Storage Tank, Tag No. TK-28751/28752

3. Owner/Operator XTR Midstream Location

4. Size Limitations* Tank Diameter* 35'-0" Shell Height* 32'-0"
Capacity: Maximum* Net Working* 5,000 bbls Criteria* ANSI/API STD 2350-2012

5. Products Stored:
Liquid Crude Oil Max. S.G.: 0.7 at 110 ° F
Blanketing Gas NA Vapor Pressure 9.2 (TVP) PSIA at Max. Operating Temp.
% Aromatic 5.5 Suppl. Spec. H₂S Service? Yes No Suppl. Spec.
Other Special Service Conditions? Yes No Suppl. Spec.

DESIGN AND TESTING

Purchaser to Review Design Prior to Ordering Material? Yes No


6. Applicable API Standard 650 Appendices:* A B C E F H I J L M O P S T V W

7. Max. Design. Temp. 150 ° F Design Metal Temp.* -20 ° F Design Liquid Level*
Design Pressure 2.5 PSIG External Pressure 1 PSIG VAC Maximum Fill Rate 850 bph Maximum Emptying Rate 215 bph
Floatation Considerations? Yes No Flot. Suppl. Spec.* Applied Supplemental Load Spec.

8. Seismic Design? Yes No Appendix E Alternate Seismic Criteria IBC 2012 (Note 3) Seismic Use Group III
MBE Site Class D Vertical Seismic Design? Yes No Vertical Ground Motion Accelerator A_v:
Basis of Lateral Acceleration (Select one): Mapped Seismic Parameters? S_s 0.174g S₁ 0.057g S₀ ; 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)* 120 mph/ Exposure C (Note 3)
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* Shell-to-Bottom Weld Insp. Mthd*

 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001			
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks			
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
A			11/28/17	Internal Review	BMS		
B			12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

11. Open-Top and Fixed Roofs: (See Sheet 6 for Floating Roofs) Open Top?* Yes No

Fixed Roof Type* Cone Roof Support Columns*: Pipe Or Structural Shape

Cone Slope* By Vendor Dome or Umbrella Radius* _____ 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* _____ %

Thickness* _____ In. Snow Load* 30 psf App. Suppl. Load Spec.* _____ Column Lateral Load _____

Normal Venting Devices* _____ Emergency Venting Devices* By Others

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* _____ Radial Projection of Horizontal Component of Top Angle* Inward Outward

12. Bottom: Thickness* _____ per API Style* Cone up to center Slope* 1:120 Weld Joint Type* _____ Lap _____

Provide Drip Ring? Yes No Alternate Spec. _____

Annular Ring? Yes No Annular Ring: Minimum Radial Width* by Vendor Thickness* by Vendor

13. Foundation: Furnished by* _____ Tank Supplier _____ Type* _____ Concrete Ringwall _____

Soil Allow: Bearing Pressure* _____ 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* _____ 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* _____ Settlement Measurements Required? Yes No Extended Duration of Hydro-Test: _____

Predicted Settlement Profile is Attached

Responsibility for Setting Water Quality: Purchaser Manufacturer Supplemental Test Water Quality Spec. _____

Test Water Source & Disposal Tie-In Locations _____ 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 inspection required _____ in Field

Supplemental NDE Responsibility _____ Supplemental NDE Spec. _____ (Purch., Mfg., Other)

Positive Material Identification? Yes No PMI Requirements: _____ MTR's are acceptable

Max. Plate Thickness for Shearing _____

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* _____ by Vendor _____ Shell* _____ by Vendor _____ Shell Noz./Manhole Reinf. Plt* _____

Bottom* _____ by Vendor _____ Floating Roof Components* _____

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.



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

All interior surfaces.

16. Coatings:
- Internal Coatings by: Tank Mfg. Per Spec.* ~~Tank bottom and lower 48" of sidewall only. See Note 5.~~
 (Not Req'd., Others, Tank Mfg.)
- External Coating by: Tank Mfg. Per Spec.* See Note 5
 (Not Req'd., Others, Tank Mfg.)
- Under-Bottom Coating by: NA Per Spec.* Not Req'd
 (Not Req'd., Others, Tank Mfg.)
17. Cathodic Protection System? Yes No Per Spec.* By others
18. Leak Detection System? Yes No Per Spec.* Tank Mfg.
19. Release Prevention Barrier? Yes No Per Spec.* Tank Mfg.
20. Tank Measurement System: Required? Yes No Remote Capability Required? Yes No
 By: * Others _____ Per Spec.* _____
21. Weight of Tank: Full of Water* _____ Empty* _____ Shipping* _____ Brace/Lift Spec.* _____
22. References: * *API Std 650, Appendix L*
23. Remarks:*



Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

Component	Material*/Thickness*	C.A.	Component	Material*	C.A.
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Reinforcing Pads	Carbon Steel	N/A
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Necks	A106 Gr B	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Flanges	A105	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Flange Covers	A105	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Anchor Attachments	Carbon Steel	N/A
Roof	Group III or IIIA (NOTE 7)/Vendor	1/8"	Submerged Piping	A106 Gr B	1/8"
Bottom	Group III or IIIA (NOTE 7)/Vendor	1/8"	Wetted Structural	Carbon Steel	1/8"
Annular Ring	Group III or IIIA (NOTE 7)/Vendor	1/8"	Non-wetted Structural	Carbon Steel	N/A

+ 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		A193 Gr B7	A194 Gr 2H	Per API 650	N/A ++
Structural Bolting		A307	A307	Per API 650	N/A ++
Anchor Bolts		A36 Galvanized	A36 Galvanized	Per API 650	N/A ++

++ 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
Shell Nozzles											
1	OIL IN	6		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
2	OIL OUT	6		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
3	WATER DRAIN	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
4	TRUCK LOADOUT LEVEL SWITCH	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
5a	LEVEL SWITCH	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
5b	LEVEL SWITCH	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
6	SPARE	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
7	SPARE	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
Roof Nozzles											
8	VENT	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
9	PVRV	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
10	HATCH	8		per API 650			API				
11	HATCH	8		per API 650			API				
12	VAPOR OUT	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
13	LIT	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
14a	Anode	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
14b	Anode	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
15	Butterfly	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/12/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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.

FLOATING ROOF DATA

30. Floating Roof Selection

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

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:

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:

Weather Shield? Yes No Supplemental Spec.: _____


Rolling Ladder Required? 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. Based on the _____ Storm

Distortion and Stability Determinations Required? Yes No Supplemental Specification _____

Landed Live Load* _____


 Redi Engineering Services, LLC	Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-28001			
	Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-28751/28752	Service: Off-Spec Oil Storage Tanks			
	API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked
A			11/28/17	Internal Review	BMS		
B			12/12/17	Client Review	BMS	MAB	GAD
C			01/31/18	Bid	BMS	MAB	GAD

* 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.

Tank Plan and Sketches:

Nozzle locations later.

Notes:

1. Cathodic protection system by others. 
 2. XTR to provide hydrotest water.
 3. See Project Site Design Data Sheet CDY-BRM-003-00001
 4. Number and size of Roof Vents and Emergency Vents TBD by Tank Mfg.
 5. Exterior Tank Surface Prep: Per "External Coatings PIP CTSE1000 Overlay". Minimum exterior surface prep to be SSPC-SP6/NACE 3.
 Paint Exterior Tank: PIP CTSE1000-D106 Coating System No. 6, Carlsbad Canyon Tan (2.5Y 6/2) per "Application of External Coatings" PIP CTSE1000
 Roof: Anti-slip paint additive shall be added to coating system for the entire exterior surface of tank roof
 6. Interior Tank Surface Prep: Per "Application of Internal Coatings" PIP - CTSL1000. Minimum internal surface prep to be SSPC-SP10
 Coat Tank interior tank bottom and lower 48" of sidewall: Sherwin Williams Nova-Plate UHS Epoxy or equal, per "Application of Internal Linings" PIP CTSL1000
6. One (1) 48" diameter x 24" deep floor sump per API 650 with internal dip pipe and blind flange for nozzle.



PROJECT NO.: 835-40-010
 DATA SHEET NO.: CDY-BRM-023-29001
 REVISION NO.: D
 REVISION DATE: 2/16/2018

INQUIRY NO.: CDY-BRM-420-22013
 DATE: 1/3/2018
 PO NO.: -
 DATE: -

3rd PARTY OIL TANK - DATA SHEET

API 650 Tank, Appendix J (Note 9)

Rev	Applicable To:	Client Review	Applicable Standard:	API 650 Tank (Note 9)	Rev
1	Customer:	XTR Midstream	Service:	3rd Party Oil Tank	
2	Plant Location:	Cody CGF	Tag No.:	TK-29851, TK-29852	
3	Manufacturer:	-	Model:	-	
4			No. of Units:	2	

PROCESS DATA				NOZZLE SCHEDULE (Note 5 & 8, Orientation Drawing pg. 2)					
	ITEM	QUANTITY	SIZE	FITTING	DESCRIPTION				
8	Operating Temp.:	125 °F	Fluid:	Hydrocarbon	N1	1	4"	150# RF	Inlet w/ Downcomer
9	Operating Press.:	Ambient psig			N2	1	4"	150# RF	Outlet
10	Design Temp. Max.:	150 °F	Min.:	-20 °F	N3	1	4"	150# RF	Drain
D 11	Design Press.:	2.5 (Note 9) PSIG	Vacuum:	-16 oz/in ²	N4	1	4"	150# RF	Truck Loadout
12					N5	1	4"	150# RF	Equalizing Line
13	Inlet Flow Rate:	290 gal/min			N6	1	4"	150# RF	Equalizing Line
14	Outlet Flow Rate:	30 gal/min			N7	1	2"	150# RF	LSHH
15	Specific Gravity:	0.6-0.8			N8	1	2"	150# RF	LSSL
16	Vapor Pressure:	12.3 psia			N9	1	6"	150# RF	Tank Vapor (Roof)
17	Chloride Concentration:	30,000 ppm			N10	1	4"	150# RF	Level Transmitter (Roof)
18	H ₂ S Concentration	N/A ppm			N11	1	4"	150# RF	Gauging Port (Roof)
19					N12	1	4"	150# RF	Level Transmitter (Roof)
20					N13	2	8"	API	Thief Hatch w/ Blind (Note 2) (Roof)
21					N14	1	12"	150# RF	Butterfly (Roof)
22					N15	1	2"	150# RF	PIT (Roof)
23					M1	1	24" x 36"	API	Flush-Type Clean Out
24					M2	1	24"	API	Manway-round, API 650 w/ Blind & Davit

CONSTRUCTION				
22	Diameter:	15' 6" ft	Length:	N/A ft
23	Height:	24' ft	Weight:	lb
24	Capacity:	750 bbl		
25	Basic Wind Speed:	Site Data mph	Exposure:	Site Data
26	Earthquake Zone:	Site Data		
28	Bottom Design:	<input checked="" type="checkbox"/> Flat <input type="checkbox"/> Type A (Unskirted) <input type="checkbox"/> Type B (Skirted)		
29	Roof Design:	<input type="checkbox"/> Frangible <input checked="" type="checkbox"/> Fixed (Note 6)		
30	Antichannel Allow.:	<input type="checkbox"/>		
31	Downcomer Pipe:	<input checked="" type="checkbox"/>		
32				
33	Material of Const.:	ASTM A36 (Note 7)	Corrosion Allow.:	1/16 in
34	Shell Thickness:	(*) in		
35	As Furnished Material Thickness:	(*) in	Shell Width:	(*) in
36				
37	Surface Prep.:	(Note 1)	External Coating:	(Note 1)
C 38	Insulation Support Type:	(Note 10)	Insulation Thickness:	1-1/2" in
39	Fireproofing:	<input type="checkbox"/>	Fireproofing Thickness:	N/A in
40	Support Type:	N/A		
41	No. Req'd:	N/A		
42				
43	Other Internals:			
44	Internal Coatings:	(Note 1)		

NOTES

- Paint and Coating:
 - Exterior Surfaces: Prep: Per "External Coatings PIP CTSE1000 Overlay".
 - Minimum exterior surface prep to be per PIP CTSE 1000-D106..
 - Uninsulated CS (roof): PIP CTSE1000-D106 Coating System No. 6, Carlsbad Canyon Tan (per "Application of External Coatings" PIP CTSE1000)
 - Roof: Anti-slip paint additive shall be added to coating system for the entire exterior surface of tank roof.
 - Insulated CS (shell): PIP CTSE1000-D106 Coating System No. 5
 - Interior Surfaces: Prep: Per "Application of Internal Linings" PIP CTS1000.
 - Minimum internal surface prep to be SSPC-SP10
 - Coat bottom 9 feet of tank interior (including bottom): Sherwin Williams, Nova Plate UHS Epoxy, or equal, per "Application of Internal Linings" PIP CTS1000.
- Thief hatch provided by Others.
- Vapor pressure based on operating conditions. Not standardized.
- All auxiliary structures shall be constructed per PIP. Refer to Platform Layout Sketch CDY-BRM-021-29001 for platform orientation. Tank stairs and walkway shall be common between TK-29851 and TK-29852.
- Preferred nozzle schedule. If existing tank can be utilized, please blind off unused connections and modify to fit defined nozzle locations.
- PVRV provided by Others.
- Materials of construction shall not be sourced from China or India.
- Nozzle schedule, elevations, location, and orientation to be confirmed with approval drawing submittal.
- Due to higher design pressure, tanks shall be designed to API 650, appendices E, F, J in conjunction with PIP VESTA002, "Atmospheric Storage Tank Specification".
- Side wall (shell) of tank to be insulated by Others. Roof to be uninsulated.

APPURTENANCES			
ACCESSORIES	REFERENCE DRAWINGS	REQUIRED	
48	Grounding Lugs		YES
49	Lift Lugs		YES
50	Thief Hatch	(Note 2)	YES
51	PVRV	(Note 6)	NO
52	Platforms	(Note 4) Grating	YES
53	Walkway Brackets	(Note 4)	YES
54	Handrails	(Note 4)	YES
55	Stairs	(Note 4)	YES
56	Frangible Roof		NO
57	Anodes		NO
58	Drain Line Sump (internal)		NO
59	Emergency Vent		YES
60	Tiedown Chairs		YES
61	Roof Tiedown Point		YES
62	Manway Davit for M2		YES
63			
64			
65			
66			
67			
68			

REVISION LOG					
REV.	DESCRIPTION	DATE	BY	CHK'D	APP'D
A	Issued for Internal Review	1/3/2018	DKD	EER	GAD
B	Issued for Client Review	1/16/2018	BMS	DKD	GAD
C	Issued for Bid	2/5/2018	BMS	DKD	GAD
D	Issued for Bid - Revised Design Pressure, Nozzles as noted	2/16/2018	BMS	EER	GAD



PROJECT NO.: 835-40-010
DATA SHEET NO.: CDY-BRM-023-29001
REVISION NO.: D
REVISION DATE: 2/16/2018

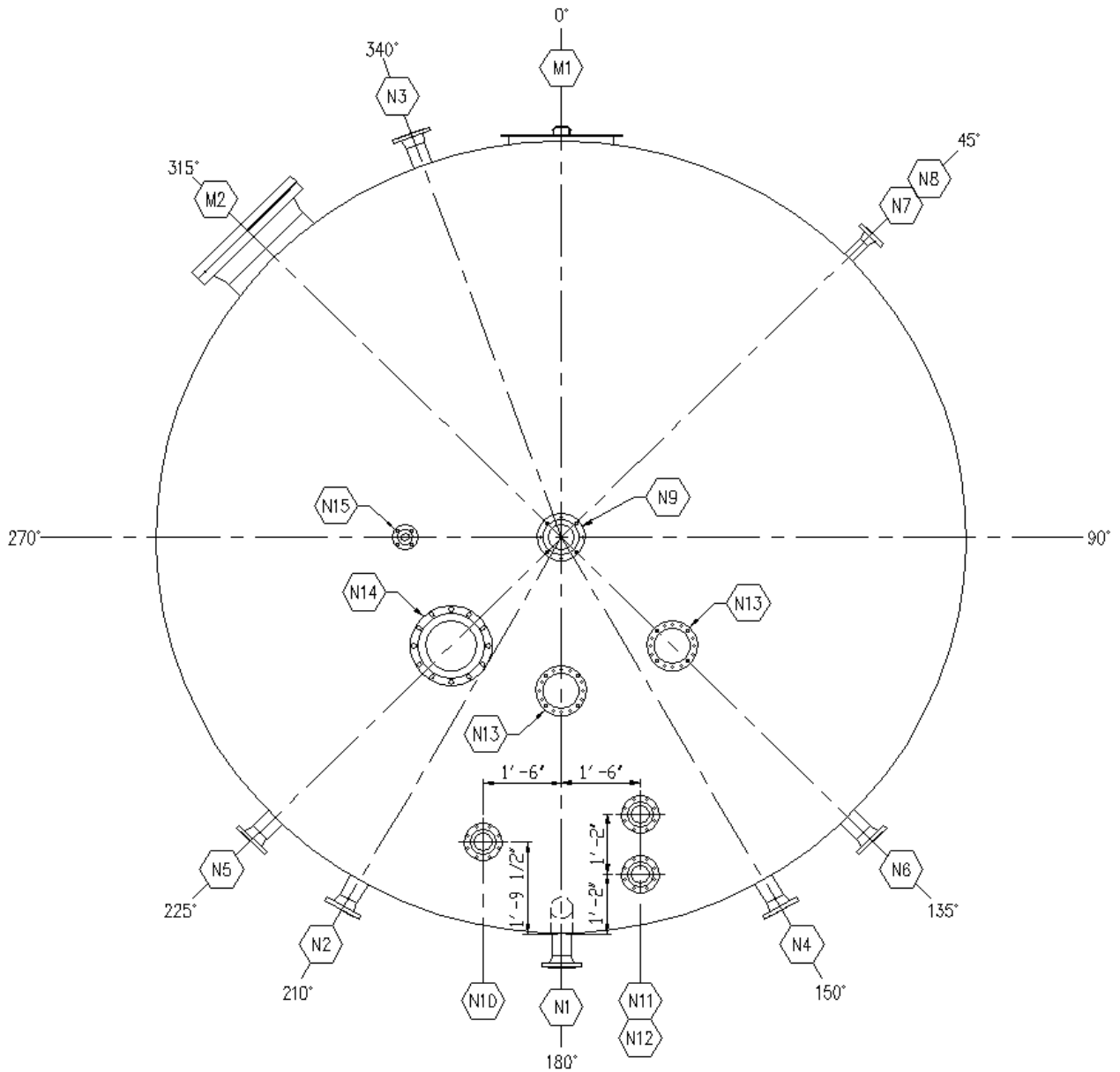
INQUIRY NO.: CDY-BRM-420-22013
DATE: 1/3/2018
PO NO.: -
DATE: -

3rd PARTY OIL TANK - DATA SHEET

API 12F Tank

Rev	Applicable To:	Client Review	Applicable Standard:	API 650 Tank (Note 9)	Rev
1			Service:	3rd Party Oil Tank	
2	Customer:	XTR Midstream	Tag No.:	TK-29851, TK-29852	
3	Plant Location:	Cody CGF	Model:	-	
4	Manufacturer:	-	No. of Units:	2	

ORIENTATION DRAWING



WALKWAY (FOR BRACKET MOUNTING REFERENCE)



PROJECT NO.: 835-40-010
DATA SHEET NO.: CDY-BRM-023-29001
REVISION NO.: D
REVISION DATE: 2/16/2018

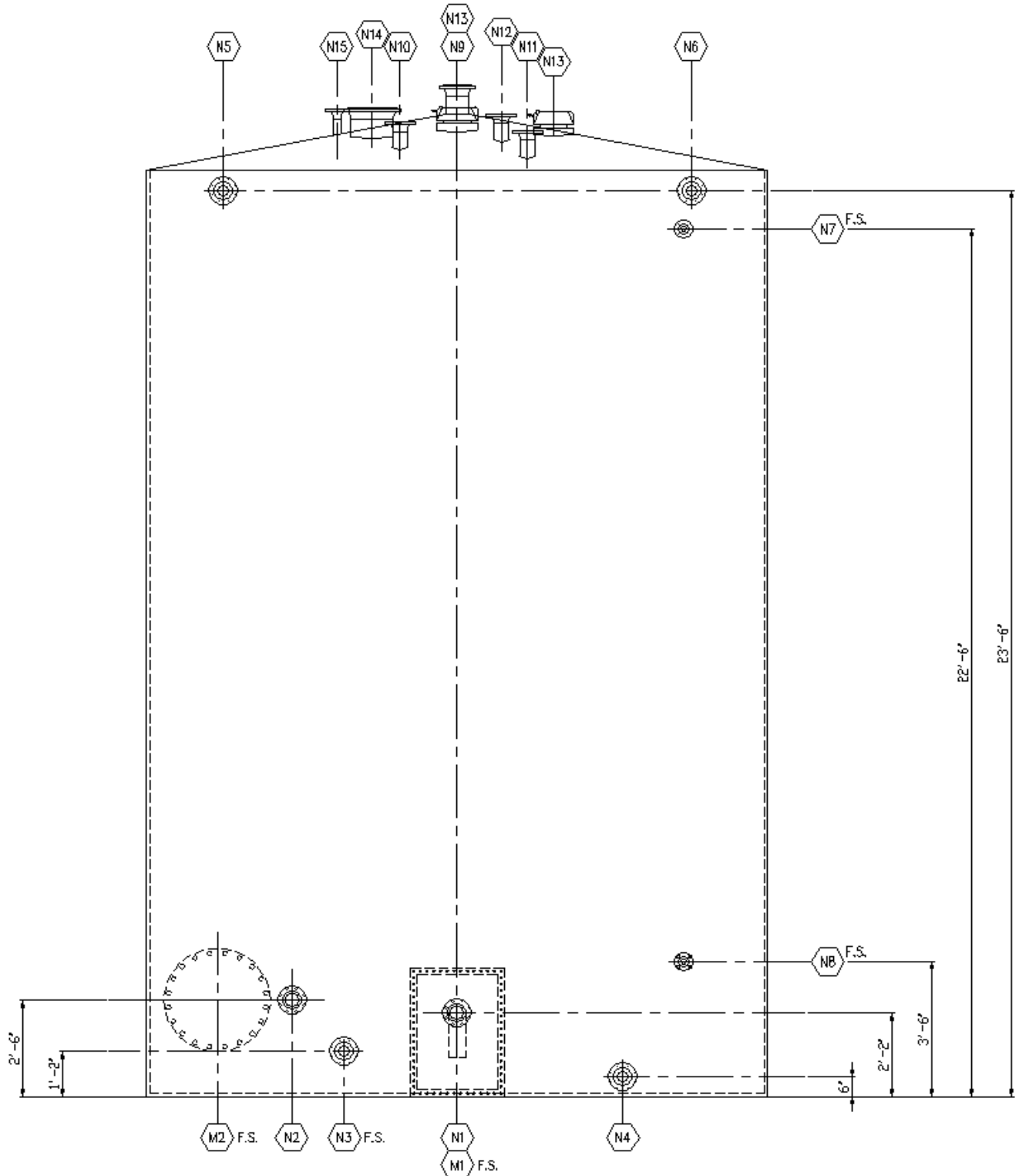
INQUIRY NO.: CDY-BRM-420-22013
DATE: 1/3/2018
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3rd PARTY OIL TANK - DATA SHEET

API 12F Tank

Rev	Applicable To:	Client Review	Applicable Standard:	API 650 Tank (Note 9)	Rev
1			Service:	3rd Party Oil Tank	
2	Customer:	XTR Midstream	Tag No.:	TK-29851, TK-29852	
3	Plant Location:	Cody CGF	Model:	-	
4	Manufacturer:	-	No. of Units:	2	
5					

ELEVATION DRAWING





Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-40001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-40751/40752	Service: Inlet Water Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/08/17	Client Review	BMS	MAB	GAD
		C	01/31/18	Bid	BMS	MAB	GAD

* 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:

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

1. Manufacturer* TBD Contract No.* TBD
 Address* TBD
 Mfg. Serial No.* TBD Year Built* Edition & Addendum to API 650* 12th Ed., March 2013

2. Purchaser XTR Midstream Contract No.
 Address
 Tank Designation Two (2) Inlet Water Storage Tanks, Tag No. TK-40751/40752

3. Owner/Operator XTR Midstream Location

4. Size Limitations* Tank Diameter* 70'-0" Shell Height* 40'-0"
 Capacity: Maximum* Net Working* 24,000 bbls Criteria* ANSI/API STD 2350-2012

5. Products Stored:
 Liquid Produced Water Max. S.G.: 1.1 at 100 ° F
 Blanketing Gas NA Vapor Pressure 12 (TVP) PSIA at Max. Operating Temp.
 % Aromatic Trace Suppl. Spec. H₂S Service? Yes No Suppl. Spec.
 Other Special Service Conditions? Yes No Suppl. Spec.

DESIGN AND TESTING

Purchaser to Review Design Prior to Ordering Material? Yes No

6. Applicable API Standard 650 Appendices:* A B C E F H I J L M O P S T V W

7. Max. Design. Temp. 150 ° F Design Metal Temp.* -20 ° F Design Liquid Level*
 Design Pressure 2.5 PSIG External Pressure 1 PSIG VAC Maximum Fill Rate 1,050 bph Maximum Emptying Rate 1,050 bph
 Floatation Considerations? Yes No Flot. Suppl. Spec.* Applied Supplemental Load Spec.

8. Seismic Design? Yes No Appendix E Alternate Seismic Criteria IBC 2012 (See Note 3) Seismic Use Group II
 MBE Site Class D Vertical Seismic Design? Yes No Vertical Ground Motion Accelerator A_v:
 Basis of Lateral Acceleration (Select one): Mapped Seismic Parameters? S_s 0.174g S₁ 0.057g S₀ ; 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)* 120 mph/ Exposure C (See Note 3)
 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* Shell-to-Bottom Weld Insp. Mthd*



Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-40001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-40751/40752	Service: Inlet Water Storage Tanks				
API Std 650 Storage Tank		Rev	Date	Issued For	By	Checked	Approved
		A	11/28/17	Internal Review	BMS		
		B	12/08/17	Client Review	BMS	MAB	GAD
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11. Open-Top and Fixed Roofs: (See Sheet 6 for Floating Roofs) Open Top?* Yes No

Fixed Roof Type* Cone Roof Support Columns*: Pipe Or Structural Shape

Cone Slope* By Vendor Dome or Umbrella Radius* _____ 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* _____ %

Thickness* _____ In. Snow Load* 30 psf App. Suppl. Load Spec.* _____ Column Lateral Load _____

Normal Venting Devices* _____ Emergency Venting Devices* _____

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* _____ Radial Projection of Horizontal Component of Top Angle* Inward Outward

12. Bottom: Thickness* _____ per API Style* Flat Slope* N/A Weld Joint Type* _____ Lap _____

Provide Drip Ring? Yes No Alternate Spec. _____

Annular Ring? Yes No Annular Ring: Minimum Radial Width* by Vendor Thickness* by Vendor

13. Foundation: Furnished by* _____ Tank Supplier _____ Type* _____ Concrete Ringwall _____

Soil Allow: Bearing Pressure* _____ 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* _____ 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* _____ Settlement Measurements Required? Yes No Extended Duration of Hydro-Test: _____

Predicted Settlement Profile is Attached

Responsibility for Setting Water Quality: Purchaser Manufacturer Supplemental Test Water Quality Spec. _____

Test Water Source & Disposal Tie-In Locations _____ 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 inspection required _____ in Field

Supplemental NDE Responsibility _____ Supplemental NDE Spec. _____
(Purch., Mfg., Other)

Positive Material Identification? Yes No PMI Requirements: _____ MTR's are acceptable

Max. Plate Thickness for Shearing _____

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* _____ by Vendor _____ Shell* _____ by Vendor _____ Shell Noz./Manhole Reinf. Plt* _____

Bottom* _____ by Vendor _____ Floating Roof Components* _____

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.




Redi Engineering Services, LLC

Client: XTR Midstream		Project Number: CO835-040-010	Document Number: CDY-BRM-023-40001				
Project Name: Cody CGF	Location: Broomfield, CO	Tag Number: TK-40751/40752	Service: Inlet Water Storage Tanks				
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16. Coatings:
- Internal Coatings by: Tank Mfg. Per Spec.* See Note 5
(Not Req'd., Others, Tank Mfg.)
- External Coating by: Tank Mfg. Per Spec.* See Note 5
(Not Req'd., Others, Tank Mfg.)
- Under-Bottom Coating by: NA Per Spec.* Not Req'd
(Not Req'd., Others, Tank Mfg.)
17. Cathodic Protection System? Yes No Per Spec.* By others
18. Leak Detection System? Yes No Per Spec.* Tank Mfg.
19. Release Prevention Barrier? Yes No Per Spec.* Tank Mfg.
20. Tank Measurement System: Required? Yes No Remote Capability Required? Yes No
By:* Others Per Spec.* _____
21. Weight of Tank: Full of Water* _____ Empty* _____ Shipping* _____ Brace/Lift Spec.* _____
22. References:* API Std 650, Appendix L
23. Remarks:*

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Component	Material*/Thickness*	C.A.	Component	Material*	C.A.
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Reinforcing Pads	Carbon Steel	N/A
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Necks	A106 Gr B	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Manhole/Nozzle Flanges	A105	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Flange Covers	A105	1/8"
Shell, Course ___ to ___	Group III or IIIA (NOTE 7)/Vendor	1/8"	Anchor Attachments	Carbon Steel	N/A
Roof	Group III or IIIA (NOTE 7)/Vendor	1/8"	Submerged Piping	A106 Gr B	1/8"
Bottom	Group III or IIIA (NOTE 7)/Vendor	1/8"	Wetted Structural	Carbon Steel	1/8"
Annular Ring	Group III or IIIA (NOTE 7)/Vendor	1/8"	Non-wetted Structural	Carbon Steel	N/A

+ 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		A193 Gr B7	A194 Gr 2H	Per API 650	N/A ++
Structural Bolting		A307	A307	Per API 650	N/A ++
Anchor Bolts		A36 Galvanized	A36 Galvanized	Per API 650	N/A ++

++ 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
Shell Nozzles											
1	WATER IN	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
2	WATER OUT	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
3	TRUCK LOADOUT	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
4	SPARE	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
5	SPARE	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
6A	LEVEL SWITCH	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
6B	LEVEL SWITCH	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
7A	SKIM	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
7B	SKIM	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
8	SPARE	2		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
9	SUMP	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
Roof Nozzles											
10	VENT	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
13	VAPOR OUT	8		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
14A/B	ANODE	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
15	LIT	4		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	
16	Butterfly	16		per API 650		RFWN	CL150	125-250 RA	1/8"	SW 304 Flex	

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OTHER TANK APPURTENANCES

24. Platform, Stairway, and Railing: Galvanizing Req'd?* Yes No Stairway Style* Helical Walk Surf. Type* Bar & Rod
 (Straight or Helical)
 Stair and Walkway Clear Width* 3' National Safety Standards* OSHA
 Architectural/Structural Specification* _____
 Gauger's Platform Req'd? Yes No Qty. Req'd* 1 Per Spec.* _____

25. Jacket Required?* Yes No Other Heaters/Coolers Required?* Yes No
 Supplemental Jacket, Heater, or Cooler Specifications* _____

26. Mixer/Agitator: Quantity N/A Size* _____ Per Spec.* _____

27. Insulation: Required? Yes No Thickness* _____ Material* _____
 Per Specs* _____ 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
11	1	OIL SKIM WITH FLOATING BUCKET	4"				
12	1	PVRV	4"				
17A/B	2	HATCH	8" API				
18	1	MANWAY	24"				
MW1	1	CLEANOUT	24" X 36"				



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FLOATING ROOF DATA

30. Floating Roof Selection

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

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:

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:

Weather Shield? Yes No Supplemental Spec.: _____


Rolling Ladder Required? 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. Based on the _____ Storm

Distortion and Stability Determinations Required? Yes No Supplemental Specification _____

Landed Live Load* _____

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Tank Plan and Sketches:

Nozzle locations later.

Notes:

1. Cathodic protection system by others. ←
2. XTR to provide hydrotest water.
3. See Project Site Design Data Sheet CDY-BRM-003-00001
4. Number and size of Roof Vents and Emergency Vents TBD by Tank Mfg.
5. Exterior Tank Surface Prep: Per "External Coatings PIP CTSE1000 Overlay". Minimum exterior surface prep to be SSPC-SP6/NACE 3.
 Paint Exterior Tank: PIP CTSE1000-D106 Coating System No. 6, Carlsbad Canyon Tan (2.5Y 6/2) per "Application of External Coatings" PIP CTSE1000
 Roof: Anti-slip paint additive shall be added to coating system for the entire exterior surface of tank roof.
 Interior Tank Surface Prep: Per "Application of Internal Coatings" PIP - CTSL1000. Minimum internal surface prep to be SSPC-SP10
 Coat Tank interior: Sherwin Williams Nova-Plate UHS Epoxy or equal, per "Application of Internal Linings" PIP CTSL1000
6. One (1) 48" diameter x 24" deep API Water sump with internal dip pipe and blind flange for nozzle..