# Amman Strategic Reserve Terminal for Petroleum Products

| OMJ DOCUMENT | | ILF COMMENT SHEET | |
|---|---|---|---|
| **No.** | OMJ-DAT-SRT-ST-0022 | **No.** | SRT-OMJ-DCS-0014- |
| **Rev.** | B | **Date** | 14.11.2014 |
| **Status** | ☐ | A: Approved | (APP) |
| | ☒ | B: Approved as noted | (AAN) |
| | ☐ | D: For Information | (INF) |

| Rev. | Date | Issue Purpose / Description | Prepared | Checked | Approved | Accepted |
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| 0 | 28/05/2015 | Approved for construction | CLOB | MAPM | PBB | IGC |
| B | 10/10/2014 | Issued for Review | CLOB | MAPM | PBB | IGC |

| | | | |
|---|---|---|---|
| Client<br>Ministry Of Energy & Mineral Resources | THE HASHEMITE KINGDOM OF JORDAN<br>MINISTRY OF ENERGY AND MINERAL RESOURCES | | |
| Owner's Engineer<br>ILF CONSULTING ENGINEERS | Document Title<br>**STORAGE TANKS-DIESEL TANKS SRT-T-25-011/012/013/014/015/016<br>PRELIMINARY DATA SHEET** | | |
| Contractor<br>OHL Industrial / MID CONTRACTING<br>OHLI - MID Joint Venture for ASTPP Project - Amman, Jordan | Contractor's Doc. No.<br>**P40341-EE-100-ME-HE-00G003** | Official Document Number<br>**OMJ-DAT-SRT-ST-0022** | Rev. Code<br>**0** |

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| Employer | EPCC Contractor: | Consultant: |
|---|---|---|
| Ministry Of Energy & Mineral Resources | OHL Industrial / MID Contracting — OHLI - MID Joint Venture for ASTPP Project - Amman, Jordan | ILF Consulting Engineers |

# API

## API Std 650 Storage Tank Data Sheet



* 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: OMJ-SPC-SRT-ST-0001 STORAGE TANKS-VERTICAL STORAGE TANKS-SPECIFICATION

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

1. Manufacturer* _____ Contract No.* OMJ-REQ-SRT-ST-0029 / 4B005

   Address* _____

   Mfg. Serial No.: To be completed by Mfg. Year Built* 2016 Edition & Addendum to *API 650* * **12th Edition, 2013**

2. Purchaser OHL-MID JV (OMJ) Contract No. OMJ-REQ-SRT-ST-0029 / 4B005

   Address 675 Amman 11821 Jordan // Mousa Abdulsalam Haneyah St. Bldg.#(28)

   Tank Designation **DIESEL STORAGE TANKS, Tag No. SRT-T-25-011/012/013/014/15/016**

3. Owner/Operator Ministry of Energy and Mineral Resources of Jordan Location **Amman Strategic Reserve Terminal for Petroleum Product**

4. Size Limitations* _____ Tank Diameter* **ID 46.0 m** Shell Height* **23,0**

   Capacity: Maximum* **34,000 m³** Net Working* 30,000 Criteria* **API 2350**

5. Products Stored: **Diesel**

   Liquid _____ Max. S.G.: **0,87** at **15** ° C

   Blanketing Gas **N/A** Vapor Pressure **10,15** PSIA at Max. Operating Temp.

   % Aromatic _____ Suppl. Spec. _____ $H_2S$ Service? Yes [ ] No [X] Suppl. Spec. _____

   Other Special Service Conditions? Yes [ ] No [X] Suppl. Spec. _____

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

6. Applicable API Standard 650 Appendices:* A [ ] B [ ] C [X] F [ ] G [ ] H [ ] I [ ] J [ ] L [ ] M [ ] O [ ] P [X] S [ ] U [ ] V [ ] W [ ]

7. Max. Design. Temp. **60** ° C Design Metal Temp.* **(MIN) -10** ° C Design Liquid Level* **20,685m**

   Design Pressure **ATM** External Pressure **N/A** Maximum Fill Rate **284 m³/h** Maximum Emptying Rate **284 m³/h**

   Floatation Considerations? Yes [ ] No [X] Flot. Suppl. Spec:* _____ Applied Supplemental Load Spec. _____

8. Seismic Design? Yes [X] No [ ] Appendix E [X] Alternate Seismic Criteria **OMJ-SPC-SRT-ST-0002 STORAGE TANKS-VERTICAL STORAGE TANKS-DESIGN BASIS** Seismic Use Group **III**

   MBE Site Class C Vertical Seismic Design? Yes [X] No [ ] Vertical Ground Motion Accelerator $A_V$: **0,32 (g)**

   Basis of Lateral Acceleration (Select one): [ ] Mapped Seismic Parameters? $S_s$ 0,375 $S_1$ 0,175 $S_0$ _____ ; [ ] Site-Specific Procedures: MCE

   Design Required? Yes [X] 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)* **160 km/h**

   Top Wind Girder Style* **Detail "e" Fig 5.24** Dimensions* **Min 1,000 x 7 mm** Use Top Wind Girder as Walkway? Yes [X] No [ ]

   Intermediate Wind Girders?* Yes [ ] No [X] Intermediate Wind Girder Style* _____ Dimensions* _____

   Check Buckling in Corroded Cond.? Yes [X] No [ ]

10. Shell Design: 1-Ft Mthd?* Yes [ ] No [X] ; Variable-Des-Pt Mthd?* Yes [X] No [ ] Alternate [ ] ; Elastic Anal. Mthd?* Yes [ ] No [X] Alternate [ ]

    Plate Stacking Criteria* Centerline-Stacked? Yes [ ] No [ ] Flush-Stacked? Yes [X] No [ ] Inside [X] Outside [ ]

    Plate Widths (Shell course heights) and Thicknesses * Numbers below Indicate Course Numb

| | | | | |
|---|---|---|---|---|
| 1. **2400 x 23 mm** | 2. **2400 x 19.8 mm** | 3. **2400 x 17.3 mm** | 4. **2400 x 14.7 mm** | 5. **2400 x 12.3 mm** |
| 6. **2400 x 12 mm** | 7. **2400 x 12 mm** | 8. **2400 x 11 mm** | 9. **2000 x 11 mm** | 10. **1800 x 11 mm** |
| 11. | 12. | 13. | 14. | 15. |

Joint Efficiency* _____ % Shell-to-Bottom Weld Type* _____ Shell-to-Bottom Weld Insp. Mthd* Diesel oil and chalk

| Approvals: | Revisions: | Title: Storage Tanks-Diesel-Preliminary Data Sheet |
|---|---|---|
| | | By: Ck'd: Date: Rev 0 |
| | | Drawing No.: OMJ-DAT-SRT-ST-0022 Sheet 2 of 10 |

| Employer | EPCC Contractor: | Consultant: |
|---|---|---|
| Ministry Of Energy & Mineral Resources | OHL Industrial / MID CONTRACTING — OHLI - MID Joint Venture for ASTPP Project - Amman, Jordan | CONSULTING ENGINEERS |

# API

## API Std 650 Storage Tank Data Sheet



* If box is blank, Manufacturer shall determine and submit as per Appendix L.

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

Fixed Roof Type* _____ Roof Support Columns*: Pipe [X] Or Structural Shape [ ] _____

Cone Slope* _____ Dome or Umbrella Radius* _____ Weld Joints* _____ (Lap, Butt, Other)

Seal Weld Underside of: Lap Joints? Yes [ ] No [ ] ; Seal Weld Underside of Wind Girder Joints? Yes [X] No [ ]

Gas-tight? Yes [ ] No [ ] Joint Efficiency* _____ %

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

Normal Venting Devices* YES 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 [X] No [ ]

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

12. Bottom: Thickness* INNER 6; OUT 8 Style* Cone up Slope* 1:100 Weld Joint Type* _____

Provide Drip Ring? Yes [ ] No [X] Alternate Spec. _____

Annular Ring? Yes [X] No [ ] Annular Ring: Minimum Radial Width* 1300 mm Thickness* 11.5 mm

13. Foundation: Furnished by* Contractor Type* Concrete Ringnall

Soil Allow: Bearing Pressure _____ Per Spec.* _____ Anchors: Size* N/A Qty.* _____

Foundation Design Loads: Base Shear Force: Wind 54 Tn Seismic* 3000 Tn Overturning Moment: Wind* 625 m Tn Seismic* 23400 m Tn

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 20,685 Settlement Measurements Required? Yes [X] No [ ] Extended Duration of Hydro-Test: _____

[ ] Predicted Settlement Profile is Attached

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

Test Water Source & Disposal Tie-In Location Contractor Hydro-Test Appendix J Tank? Yes [ ] No [X]

Post-Pressure-Test Activities Required of the Manufacturer: Broom Clean [ ] Potable Water Rinse [ ] Dry Interior [X]

Other [X] INTERIOR COATING AS REQUIRED

15. Inspection by Third Party; Requirements acc. to specification in Shop; Third Party acc. To Specification in Field

Supplemental NDE Responsibility _____ Supplemental NDE Spec. OMJ-SPC-SRT-0001 Storage Tanks-Vertical StorageTanks-Specification (Purch., Mfg., Other)

Positive Material Identification? Yes [ ] No [X] PMI Requirements: _____

Max. Plate Thickness for Shearing _____

Must Welds not exceeding 6 mm ($^1/_4$ in.) Be Multi-Pass? Yes [X] No [ ] Must Welds greater than 6 mm ($^1/_4$ in.) Be Multi-P Title: Yes [X] No [ ]

Leak Test Mthd: Roof _____ Shell* By Hydro Test Shell Noz./Manhole Reinf. Plt By Air Pressure At 15 P.S.I.G

Bottom* By Partial Vacuum At 3-5 P.S.I Floating Roof Components* As Per API650 Cause No. C.4

Modify or Waive API Dimensional Tolerances (see 7.5)? No [ ] Yes [X] Specify: OMJ-SPC-SRT-0001 STORAGE TANKS-VERTICAL STORAGE TANKS SPEC

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: | Sheet |
|---|---|---|
| | | By: Ck'd: Date: Rev 0 |
| | | Drawing No.: OMJ-DAT-SRT-ST-0023 Sheet 3 of 10 |

16. Coatings:

Internal Coatings by: **Manufacturer** Per Spec.* OMJ-SPC-SRT-0001 Storage Tank-Vertical Storage Tank Specification (Not Req'd., Others, Tank Mfg.)

External Coating by: **Manufacturer** Per Spec.* OMJ-SPC-SRT-0001 Storage Tank-Vertical Storage Tank Specification (Not Req'd., Others, Tank Mfg.)

Under-Bottom Coating by: **Manufacturer** Per Spec.* OMJ-SPC-SRT-0001 Storage Tank-Vertical Storage Tank Specification (Not Req'd., Others, Tank Mfg.)

17. Cathodic Protection System? Yes [X] No [ ] Per Spec.* OMJ-SPC-SRT-EL-0202 General - Cathodic Protection for Tanks - Specificatic

18. L OMJ-DAT-SRT-ST-0022 Yes [X] No [ ] Per Spec.* OMJ-SPC-SRT-IN-0021 Instrumentation-Tank Bottom Leakage Detection System-Specification

19. Release Prevention Barrier? Yes [ ] No [ ] Per Spec.*

20. Tank Measurement System: Required? Yes [X] No [ ] Remote Capability Required? Yes [ ] No [ ]

By:* **Manufacturer** Per Spec.*

21. Weight of Tank: Full of Water* 36200 Tn Empty* 850 Tn Shipping* Brace/Lift Spec.*

22. References:* *API Std 650, Appendix L*

Other references: OMJ-SPC-SRT-EL-0002 STORAGE TANKS VERTICAL STORAGE TANKS-DESIGN BASIS

28/05

23. Remarks:*

1) ALL TANKS SHALL BE PROVIDED WITH DOUBLE DECK EXTERNAL FLOATING ROOF. DOUBLE DECK FLOATING ROOF PLATES AND RIM SHALL E 6 mm THK MINIMUM. ROOF MATERIAL SHALL BE ASTM A 283 GR C GROUP 1.

2) ALL TANKS SHALL HAVE DOUBLE BOTTOM WITH ACTIVE LEAK DETECTION SYSTEM. DOUBLE BOTTOM SHALL BE MATERIAL ASTM A 283 Gr C AND FILLED WITH WIRE MESH AS PER OMJ-DWG-SRT-ST-0001 TO 0006

INNER BOTTOM SHALL BE 6m THK. OUTER BOTTOM SHALL BE 8mm THK.

OUTER BOTTOM SHALL HAVE AN ANNULAR RING MATERIAL ASTM A 573 Gr 70 GROUP V , 1300mm WIDTH x 11.5mm THK.

3) ALL TANKS SHALL HAVE AN AUTOMATIC BOTTOM WATER DRAIN SYSTEM WITH 4 NOZZLES.

4) ALL THICKNESS MENTIONED ON THIS DATA SHEET ARE TO BE TAKEN AS MINIMUM THICNESSES AFTER FORMING. **NO UNDERTOLERANCES** SHALL BE ALLOWED.

5) TANK HEIGHT AND SHELL COURSES WIDTH AND THICKNESSES HAVE TO BE CONFIRMED BY MANUFACTURER.

**MATERIAL NOTES**

a) MAT ASTM A 573 Gr 70 GROUP V SHALL BE NORMALIZED, FULLY KILLED AND MADE TO FINE-GRAIN PRACTISE WITH CARBON CONTENT 0,23% MAX AND CE MAX 0.43% (see Storage Tanks Specification)

b) MAT ASTM A 573 Gr 70 GROUP IVA SHALL BE NORMALIZED, FULLY KILLED AND MADE TO FINE-GRAIN PRACTISE WITH CARBON CONTENT 0,2% MAX AND MAX Mn 1.6% (see API 650 para 4,2,7,4) IN ADDITION CE MAX SHALL BE 0.43% (see Storage Tanks Specification)

c) MAT ASTM A 36 GROUP II SHALL BE FULLY KILLED AND MADE TO FINE GRAIN PRACTISE WITH CARBON CONTENT 0,23% MAX AND Mn CONTEN OF 0,80% TO 1.2% BY HEAT ANALYSIS ( see API 650 Table 4.4a Note 5) IN ADDITION CE MAX SHALL BE 0.43% (see Storage Tanks Specification)

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MAX 0,43 (see Storage Tanks Specification)

Title: Storage Tanks-Diesel-Preliminary Data Sheet

* If box is blank, Manufacturer shall determine and submit as per Appendix L.

**Table 1 MATERIALS OF CONSTRUCTION**

| Component | Material*/Thickness* | C.A. | Component | Material* | C.A. |
|---|---|---|---|---|---|
| Shell, Course _1__ to _2__ | **A573 Gr. 70 Group V** | **1 mm** | Reinforcing Pads | Acc to Shell Material | |
| Shell, Course _3__ to _6__ | **A573 Gr. 70 Group IVA** | **1 mm** | Manhole/Nozzle Necks | Acc to shell / A 106 Gr B | **1 mm** |
| Shell, Course _7__ to _10__ | **A36 Group II killed** | **1 mm** | Manhole/Nozzle Flanges | Acc to shell / A 105 | **1 mm** |
| Shell, Course ___ to ___ | | | Flange Covers | A 105 | |
| Shell, Course ___ to ___ | | | Anchor Attachments | | |
| Roof | **A283 Gr. C Group I** | **1 mm** | Submerged Piping | A 106 Gr B | 1 mm |
| Bottom inner / outter | **A283 Gr. C Group I** | **0 mm / 2 mm** | Wetted Structurals | | + |
| Annular Ring | **A573 Gr. 70 Group V** | **2 mm** | Non-wetted Structurals | A 36 OR SIMILAR | + |

OMJ-DAT-SRT-ST-0022 + Check here if C.A. is to apply to each exposed surface ☐

**Table 2 BOLTS and ANCHORS**

| Component | Head Type* | Bolt or Anchor Material* | Nut Material* | Thread Series* | C.A. |
|---|---|---|---|---|---|
| Flange Bolting | | A 193 GR B7 | A 194 GR 2H | | ++ |
| Structural Bolting | | A36 | | | ++ |
| Anchor Bolts | | A36 | | | ++ |
| | | | | | |

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

**Table 3 NOZZLE and MANHOLE SCHEDULE* (for Fixed Roof, Shell, and Bottom)**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **M01** | **Shell manway** | **24"** | API 650 | | | API 650 | | | | | |
| **M02** | **Shell manway** | **24"** | API 650 | | | API 650 | | | | | |
| **M03** | **Clean-out Door** | **36"x48"** | API 650 | | | API 650 | | | | | |
| **M04** | **Deck Manway** | **48"** | API 650 | | | API 650 | | | | | |
| **M05** | **Compartment manway** | **20"** | API 650 | | | API 650 | | | | | |
| **N01** | **Product inlet** | **10"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N02** | **Produc outlet** | **12"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N03** | **Produc draw-off** | **6"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N04 A-D** | **Water draw-off A/B/C/D** | **4 X 4"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N05A** | **Roof drain with sump** | **8"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N05B** | **Roof drain on shell** | **8"** | SCH 80 | | | SO | 150 # RF | | | | |
| **C** | **LSHH A/B/C** | **3 X 2"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N07** | **LSLL** | **2"** | SCH 80 | | | WN | 150 # RF | | | | |
| **A/D/G/J** | **A/D/G/J** | **4 X 1"** | SCH 80 | | | WN | 150 # RF | | | | |
| **B/E/H/K** | **B/E/H/K** | **4 X 1"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N08 C/F/I/L** | **Leak detection-test C/F/I/L** | **4 X 1"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N09 A-E** | **Sealing vent** | **5 X 6"** | MFR | | | SO | 150 # RF | | | | |
| **N10 A/B** | **Automatic Bleader Vent** | **2 X 10"** | MFR | | | SO | 150 # RF | | | | |
| **N11** | pipe) | **8"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N12** | **Gauge hatch** (wtih still pipe) | **8"** | MFR | | | SO | 150 # RF | | | | |
| **N13 A-F** | **Foam maker** | **1/2"** | (hole) | | | | | | | | |
| **A/B/C** | **Tank Mixers** | **3 X 24"** | MFR | | | API 650 | 150 # RF | | | | |
| **N15** | **OMJ-DAT-SRT-ST-0022** | **2"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N16** | **Relief from TRV** | **2"** | SCH 40 | | | SO | 150 # RF | | | | |
| **A/B/C** | **Emergency drain** | **3 X 4"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N18 A** | **Roof drain with sump** | **8"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N18 B** | **Roof drain on shell** | **8"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N19** | **Temperature multispot sensor with thermowell** | **3"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N20** | **Pressure transmitter** | **2"** | SCH 80 | | | WN | 150 # RF | | | | |
| **N21 A-D** | **drain** | **4 x 4"** | SCH 40 | | | SO | 150 # RF | | | | |
| **N22** | **indicator** | | | | | | | | | | |
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* If box is blank, Manufacturer shall determine and submit as per Appendix L.

**OTHER TANK APPURTENANCES**

24. Platform, Stairway, and Railing: Galvanizing Req'd?* Yes [X] No [ ] Stairway Style* **Helical** (Straight or Helical) Walk Surf. Type* _____

Stair and Walkway Clear Width* **Min. 1000 mm** National Safety Standards* _____

Architectural/Structural Specification* _____

Gauger's Platform Req'd? Yes [X] No [ ] Qty. Req'd* **ONE** Per Spec.* _____

25. Jacket Required?* Yes [ ] No [X] Other Heaters/Coolers Required?* Yes [ ] No [X]

Supplemental Jacket, Heater, or Cooler Specifications* _____

26. Mixer/Agitator: Quantity **3** Size* 24" Per Spec.* _____

27. Insulation: Required? Yes [ ] No [X] Thickness* _____ Material* _____

Per Specs* _____ Responsibility for Insulation and Installation _____ (Purchaser, Manufacturer, Others)

28. Structural Attachments: Lift Lugs?* Yes [ ] No [ ] Desc.* _____

Shell Anchorage?* Yes [ ] No [X] Type* _____ Scaffold Cable Support? Yes [ ] No [ ]

29. Various Other Items: Welded Flush-Type: Shell Connection [ ] Cleanout Fitting [X] Waive Application of Appendix P? Yes [ ] No [X]

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 |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
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* If box is blank, Manufacturer shall determine and submit as per Appendix L.

**FLOATING ROOF DATA**

30. **Floating Roof Selection**

Design Basis: Appendix C [X] Or Appendix H [ ]

Type of Roof: (External or Internal): Single Deck Pontoon* [ ] Double Deck* [X]

(Internal Only): Tubular Pontoon* [ ] Metallic Sandwich Panel* [ ]

Other [ ] _____ Supplemental Spec.: _____

31. **Seals**

Primary Seal: Shoe [X] Envelope [ ] Wiper/Compression Plate [ ] Other [ ] _____ Supplemental Spec.: **SHOE MAT SS 316**

Shoe Mechanism: Mfg. Std. [ ] Other [X] Scissor type

Electrically Isolate Mechanism from Shoes? Yes [ ] No [ ] Wax Scrapers Required? Yes [ ] No [X]

Minimum Shoe Thickness* **1,2 mm** Carbon Steel Shoes to be Galvanized? Yes [ ] No [ ]

Secondary Seal: Shoe [ ] Envelope [ ] Wiper [X] None [ ] Other [ ] _____ Supplemental Spec.: _____

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

Overflow Openings in Shell Acceptable? Yes [ ] No [X] Shell Extension? Yes [ ] No [ ]

Roof-Drain Check Valves Required? Yes [X] No [ ] Roof-Drain Isolation Valves Required? Yes [X] No [ ]

Freeze Protection for Roof Drains Required? No [X] Yes [ ] Supplemental Requirements: _____

Roof-Drain Piping to External Nozzles: Mfg. Std. [ ] Armored Flexible Pipe [ ] Swivels in Rigid Pipe [X] Other [ ] _____

Foam Dam? Yes [X] No [ ] Supplemental Spec.: _____

Minimum Deck Thickness* **6 mm**

Bulkhead Top Edges to be Liquid-Tight? Yes [ ] No [ ] Seal-Weld Underside of Roof? Yes [ ] No [X]

Electrical Bonding: Shunts: Yes [X] No [ ] Cables: Yes [ ] No [ ] Supplemental Spec.: _____

Qty. of Non-Guide-Pole Gauge Wells Required _____ Qty. of Sample Hatches Required **SEE NOZZLES LIST**

Guide Pole for Gauging? Yes [X] No [ ] Slots in Guide Pole? Yes [X] No [ ] Datum Plates? Yes [ ] No [ ] Striking Plates? Yes [ ] No [ ]

Guide Pole Emissions-Limiting Devices: Sliding Cover [ ] Pole Wiper [ ] Pole Sleeve [X] Float [ ] Float Wiper [ ] Pole Cap [ ]

Qty. of Roof Manholes* SEE NOZZLES LIST Minimum High-Roof Clearance Above Bottom: **Mfg**

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

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

Weather Shield? Yes [ ] No [ ] Supplemental Spec.: _____

Rolling Ladder Required? Yes [X] No [ ] Field Adjustable Legs? Yes [X] No [ ]

Design Rainfall Intensity **50mm/h** 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* _____

34. **Additional Data for Internal Floating Roofs: N/A**

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 ☐ _____

**Table 5 FLOATING ROOF MATERIALS**

| Component | Material*/Thickness* | C.A./Coating* | Component | Material*/Thickness* | C.A./Coating* |
|---|---|---|---|---|---|
| Deck Plate | **A 283 Gr C / 6 MIN** | | Datum Plate | | |
| Inner Rim Plate | | | Tubular Pontoon | **N/A** | |
| Outer Rim Plate | **A 283 Gr C / 6 MIN** | | Pontoon Bulkhead | | |
| Foam Dam | **A 283 Gr C** | | Submerged Pipe | | |
| Sandwich Panel Face Plate | | | Guide Pole / Anti-rotation device | **Carbon Steel** | |
| Sandwich Panel Core | | | Secondary Seal | | |
| Gauge Well | | | Secondary Seal Fabric | | |
| Drain Sumps | **A 283 Gr C** | | Wiper Tip | | |
| Opening Sleeves | | | Wax Scraper | **N/A** | |
| Floating Suction Lines | **N/A** | | Weather Seal | | |
| Primary Fabric Seal | | | Envelope Fabric | | |
| Foam Log Core | | | Shoe Mechanisms | | |
| Landing Legs | **Carbon Steel** | | Primary Seal Shoe | **SS 316** | |
| Landing Leg Bottom Pads | **A 283 Gr C** | | Removable Covers | | |
| Manhole Necks | **A 283 Gr C** | | Rolling Ladder | **Carbon Steel** | |
| Vents | **A 283 Gr C** | | Inlet Diffusers | | |

| Employer | EPCC Contractor: | Consultant: |
|---|---|---|
| Ministry Of Energy & Mineral Resources | OHL Industrial / MID CONTRACTING<br>OHLI - MID Joint Venture for ASTPP Project - Amman, Jordan | CONSULTING ENGINEERS |

| API | **API Std 650 Storage Tank**<br>**Data Sheet** | PAGE 10 OF 10 |
|---|---|---|

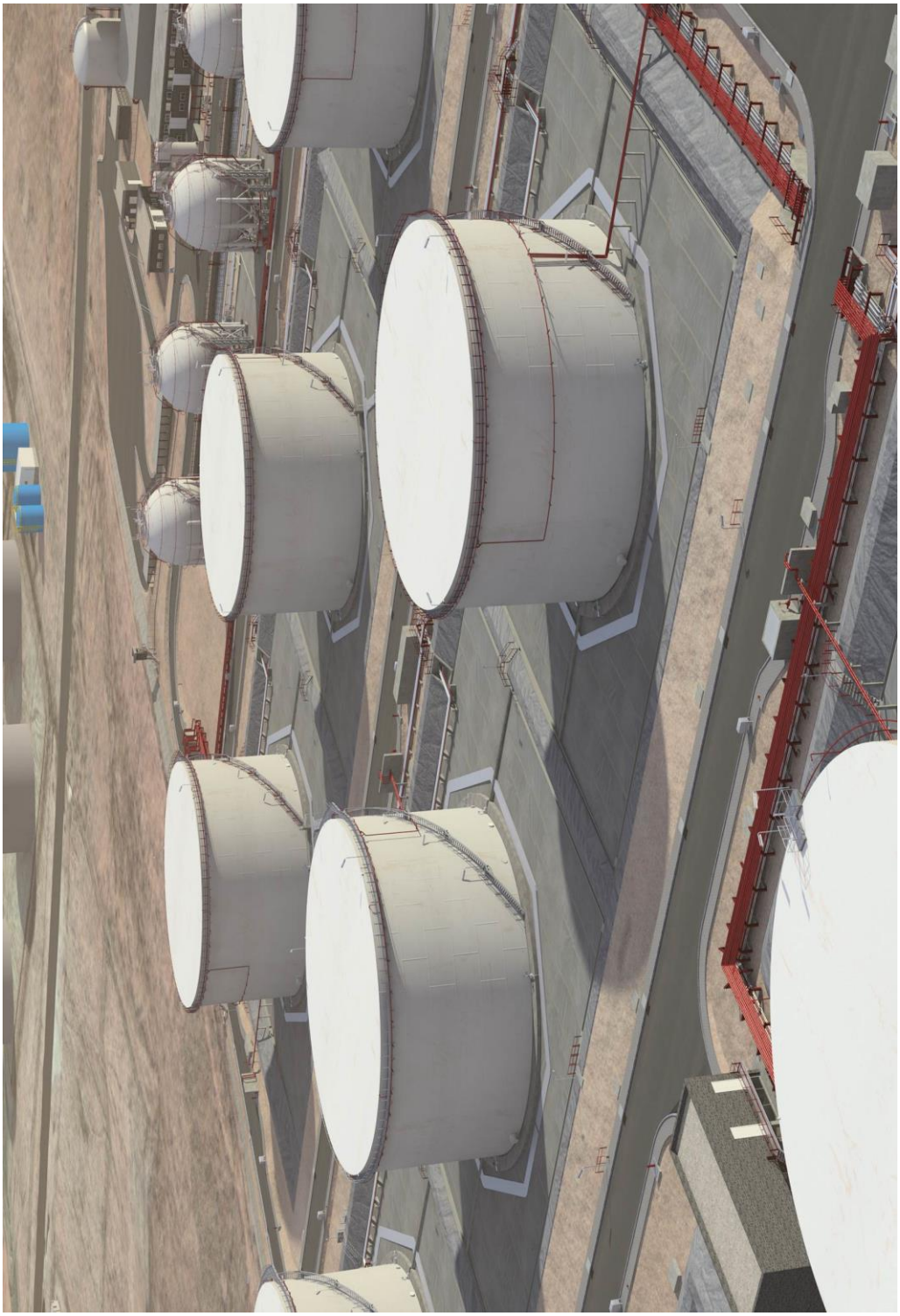
* If box is blank, Manufacturer shall determine and submit as per Appendix L.

Tank Plan and Sketches:

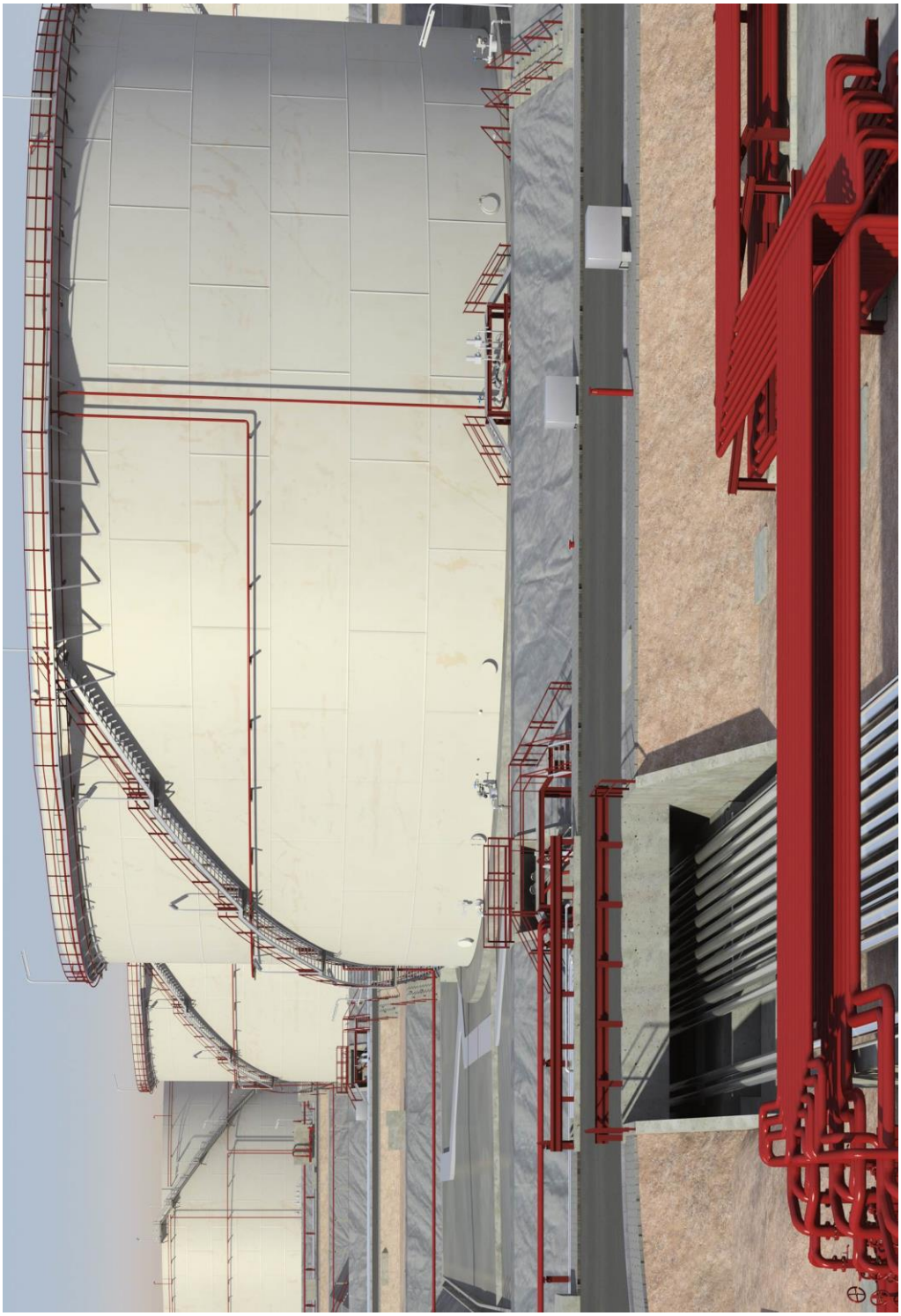
OMJ-DWG-SRT-ST-0001 Storage Tank -Diesel Tank SRT-T-25-011-Preliminary General Arrangement
OMJ-DWG-SRT-ST-0002 Storage Tank -Diesel Tank SRT-T-25-012-Preliminary General Arrangement
OMJ-DWG-SRT-ST-0003 Storage Tank -Diesel Tank SRT-T-25-013-Preliminary General Arrangement
OMJ-DWG-SRT-ST-0004 Storage Tank -Diesel Tank SRT-T-25-014-Preliminary General Arrangement
OMJ-DWG-SRT-ST-0005 Storage Tank -Diesel Tank SRT-T-25-015-Preliminary General Arrangement
OMJ-DWG-SRT-ST-0006 Storage Tank -Diesel Tank SRT-T-25-014-Preliminary General

Notes:

* If box is blank, Manufacturer shall determine and submit as per Appendix L.



* If box is blank, Manufacturer shall determine and submit as per Appendix L.



* If box is blank, Manufacturer shall determine and submit as per Appendix L.