

1 **D GRAHAM BOTHA, ESQ.**
2 **General Counsel**
3 **Guam Power Authority**
4 **688 Route 16, Suite 302**
5 **Mangilao, Guam 96913**
6 **Ph: (671) 648-3203/3002**
7 **Fax: (671) 648-3290**



8 **BEFORE THE GUAM PUBLIC UTILITIES COMMISSION**

9 IN THE MATTER OF:)
10 The Application of the Guam Power Authority) **DOCKET NO. 22-11**
11 Requesting Approval of the Contract) **PETITION FOR CONTRACT REVIEW**
12 Amendment for Bulk Storage Fuel Tanks)
13 Inspection and Refurbishment.)

14 **COMES NOW**, the GUAM POWER AUTHORITY (GPA), by and through its counsel
15 of record, D. GRAHAM BOTHA, ESQ., and hereby files GPA's Petition for the Public Utilities
16 Commission of Guam to review and approve GPA's request for approval of the contract
17 amendment for Bulk Storage Fuel Tanks Inspection and Refurbishment, as follows:

18 **BACKGROUND**

19 The Guam Power Authority operates and maintains the bulk storage fuel tanks located at
20 Piti, Guam, which are managed by the Performance Management Contractor, Isla Petroleum and
21 Energy Holdings, LLC (IP&E) and are used to supply RFO fuel to GPA's base load units. The
22 tanks were last inspected and refurbished in 2007, and USEPA requires that the tanks be
23 assessed, recalibrated and refurbished to comply with USEPA regulatory requirements. The
24 CCU in Resolution 2018-20 approved GPA's request for approval of the procurement for Bulk
25 Storage Fuel Tanks Inspection and Refurbishment. The CCU in Resolution 2019-11 approved
26 GPA's request for the approval of the contract with Tristar Agility at a cost of \$8,969,510.00.
27 The CCU in Resolution FY2022-16 approved GPA's request for the approval of the contract
28 amendment with Tristar Agility at a cost of \$14,511,307.70. The construction change order is for

1 the recommended additional repair works not covered in the original Scope of Work for Tank
2 1935 bottom plates, shell plates, roof and appurtenances.

3 **DISCUSSION**

4 GPA hereby petitions the PUC, pursuant to the Contract Review Protocol for the Guam
5 Power Authority, approved by the PUC, to review and approve the contract amendment for Bulk
6 Storage Fuel Tanks Inspection and Refurbishment. In support of this Petition, GPA hereby
7 provides the PUC with Consolidated Commission on Utilities (CCU) Resolution No. FY2022-
8 16, which authorizes the General Manager to proceed with the contract amendment for Bulk
9 Storage Fuel Tanks Inspection and Refurbishment with Tristar Agility in the total amount of
10 \$14,511,307.70. Said resolution and its exhibits are attached herein as Exhibit A, and
11 incorporated by reference herein as if fully set forth.

12 **CONCLUSION**

13 The PUC should approve GPA's request to proceed with the contract amendment for
14 Bulk Storage Fuel Tanks Inspection and Refurbishment with Tristar Agility in the amount of
15 \$14,511,307.70. The inspection and refurbishment of the Bulk Storage Fuel Tanks is reasonable,
16 prudent, and necessary.

17 **RESPECTFULLY SUBMITTED** this 3rd day of March, 2022

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19
20 N. GRAHAM BOTHA, ESQ.
21 GPA General Counsel
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CONSOLIDATED COMMISSION ON UTILITIES

Guam Power Authority | Guam Waterworks Authority

P.O. Box 2977 Hagoña, Guam 96932 | (671) 648-3002 | guamccu.org

GPA RESOLUTION NO. FY2022 - 16

**RELATIVE TO AUTHORIZING EXPENDITURE FOR THE ADDITIONAL CHANGE ORDER WORK FOR
OUT OF SERVICE INSPECTION AND REFURBISHMENT OF GPA BULK STORAGE FUEL TANKS**

WHEREAS, the Guam Power Authority (GPA) operates and maintains the bulk storage fuel tanks located at Piti, Guam, which are managed by the current Contractor, Isla Petroleum and Energy Holdings, LLC (IP&E) and are used to supply fuel to GPA's base load units; and

WHEREAS, the bulk storage fuel tanks last underwent internal inspection and refurbishment in 2007; and

WHEREAS, the tanks appurtenances including auxiliary equipment are required to be assessed, recalibrated and refurbished to comply with regulatory requirements; and

WHEREAS, upon completion of the out of service/internal inspection and refurbishment of the bulk storage fuel tanks, they will be utilized to store ULSD fuel to supply Piti Power Plant 7 and upon ULSD conversion for Piti Power Plants 8 and 9 and the proposed 180 MW power plant; and

WHEREAS, the original Contract was awarded to Tristar Terminals Guam, Inc. on December 02, 2019; and

WHEREAS, the project is currently on-going and Tristar Terminals Guam, Inc. submitted a request for a Construction Change Order (Attached Exhibit A) for Tank 1935 additional repairs works based on the latest full Out-of-Service Inspection Report and Recommendation dated February 14, 2022 performed by Island Certs; and

WHEREAS, the Construction Change Order is for the recommended additional repair works not covered in the original Scope of Work for Tank 1935 bottom plate, shell plates, roof and appurtenances to comply with industry standards including federal and local regulations; and

WHEREAS, completing these additional repair works is necessary to meet the USEPA requirements and comply with the API 653 standards; and

WHEREAS, the additional repair works cost is \$3,140,489.35; and

WHEREAS, GPA would like to include a 20% contingency for other unforeseen work and circumstances, which may be affected, such as cathodic protection and leak detection systems, and additional plate replacements; and

1 **WHEREAS**, GPA has determined that the additional works were not part of the original
2 contract and the associated costs are fair and reasonable; and

3 **WHEREAS**, GPA is requesting the approval of the CCU and subsequently the PUC for the
4 proposed Construction Change Order of Tristar Terminals Guam, Inc. for the Out of Service
5 Inspection and Refurbishment of GPA Bulk Storage Fuel Tanks Project, which will re-certify the
6 tank for the next 10 years.

7 **NOW, THEREFORE, BE IT RESOLVED**, by the Consolidated Commission on Utilities as
8 follows:

- 9 1. After careful review of the attached documents, the Consolidated Commission on
10 Utilities finds the additional expenditure for the Out of Service Inspection and
11 Refurbishment of GPA Bulk Storage Fuel Tank Construction Change Order to be
12 reasonable, prudent and necessary for the use of Revenue Funds.
- 13 2. GPA is authorized to petition the Public Utilities Commission for approval of the additional
14 change order work and associated costs for the Bulk Storage Fuel Tanks Out of
15 Service/Internal Inspection and Refurbishment.
- 16 3. After PUC approval, the General Manager is hereby authorized increased obligating
17 authority from \$10,742,720.56 to \$14,511,307.70 for the Out of Service Inspection
18 and Refurbishment Services for the GPA Bulk Storage Fuel Tanks Construction Change
19 Order.

20 **RESOLVED**, that the Chairman certifies and the Board Secretary attests the adoption of
21 this Resolution.

22 **DULY AND REGULARLY ADOPTED AND APPROVED THIS 26th DAY OF APRIL, 2022.**

23
24 Certified by:

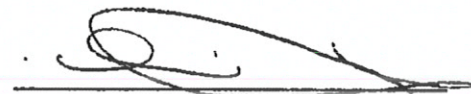
Attested by:

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28 JOSEPH T. DUENAS

29 Chairperson

30 Consolidated Commission on Utilities

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32 MICHAEL T. LIMTIACO

33 Secretary

34 Consolidated Commission on Utilities

1 I, **Michael T. Limtiaco**, Secretary for the Consolidated Commission on Utilities (CCU), as
2 evidenced by my signature above do certify as follows:

3 The foregoing is a full, true, and accurate copy of the resolution duly adopted at a regular
4 meeting of the members of Guam Consolidated Commission on Utilities, duly and legally held at
5 a place properly noticed and advertised at which meeting a quorum was present and the
6 members who were present voted as follows:

7 Ayes: 5

8 Nays: 0

9 Absent: 0

10 Abstain: 0





TTGI/PRJT/OUT/MAR/2022/001A

April 20, 2022

Mr. Joven Acosta, PE
Manager of Engineering
Guam Power Authority (GPA)
P.O. Box 2977
Agana, Guam 9693-2977

CC: Mr. Manuel Minas – GPA Engineering Supervisor

SUBJECT: TTGIVC006 -Tank 1935 T1935 Mechanical Works – Change Order / Variation Form
Contract# C-028-19
Invitation#GPA-028-19
PO# 27002 OP

Project Name: Out of Service Inspection and Refurbishment of GPA Bulk Storage Fuel Tanks

Dear Mr. Acosta,

Part of the discussion during the Progress Meetings No. 17-19 held between Tristar Terminals Guam Inc. ("TTGI") and GPA Project Engineering team managing our project, TTGI had engaged a API inspection company wherein a certified API 653 inspector had performed a full Out-Of-Service Inspection of GPA Tank 1935 which consists of various non-destructive examination, dimensional surveys and full bottom plate scanning to determine the current condition of the tank in compliance to API 653 standard.

The final report of the API 653 inspection, together with the engineering analysis was forwarded to GPA Engineering team last March 1, 2022 with email subject: GPA Tank 1935 - Final API 653 OOSI report; the same was confirmed receipt by GPA Project Engineer Mr. Honorio Estira the day after. Referring to the final report under Certificate of Tank Structural Integrity (page 95 of 95), it was noted that at the present time and condition of Tank 1935, it was deemed not suitable for service. The certified API 653 inspector had outlined a detailed the repair recommendations; which can be found on page 24 of the report; to be able to comply to industry standards including federal and local regulations. As a summary, TTGI had outline the scope of work to match the repair recommendation of the API report which can be found in Appendix A of this letter.

In line with this, we humbly submit our Change Order Variation Form Notice No. TTGI VC006 to carry out the all the scopes outlined in Appendix A in order to resume the original project schedule.

For your reference and consideration, the following points justify TTGI's claim that the advised activity falls outside the Scope of Work.

Change Order/Variation Clam Justification:

1. With reference to the RFP scope of work and RFI amendments of our contract GPA 028-019; under the Section 0101 item 1.c7, "Tank Defects Repair – The over-all repair of the tank defects depends on the technical written report of the certified API 653 Inspector. Based on the technical recommendations of the API Inspector, tanks defects repair shall be performed by the Contractor accordingly. For purpose of bid uniformity, the tank defect repair will be based on the following assumptions:



- a. Interior bottom plate and shell defects – 100 SF
- b. Exterior shell wall defects – 100 SF
- c. Roof Exterior Surface – 100 SF
- d. Bottom projection plate defects – 100 SF
- e. Tank Stairway and handrail – 100 SF
- f. Tank external piping – 50 LF
- g. Install new tank railing – 1 LS

Actual work may vary and payment of items shall be based on the actual work performed. The figures shall be adjusted proportionately.

In reference to the API Inspector's technical recommendations, the amount and severity of actual work that needs to be carried out to comply with API is in excess of the planning factors as stated in our contract.

2. It was highlighted in the API 653 inspection report, specifically on the inspection findings on the tank bottom plate, a major refurbishment is imminent in order for the tank to be suitable for service.
 - a. Out of 198 bottom plates scanned and inspected, a total of **13 bottom plates are in dire need of replacement** with an approximate area of **2,417 sq.ft ~ 347,981 sq.in**
 - b. A final count of 397 patch plates of various sizes (*ranging from 1x1 ft to 7x15ft*) are necessary in order to meet the 10 year inspection interval requirement by API653. An approximated area of **1,813 sq. ft. ~ 261,041 sq.in.** for all the patch plates with various sizes (refer to T1935 bottom plate repairs 10 years document – page 3).
 - c. In addition to the full plate replacement and patch repair plates, various repair recommendations of additional weld build-ups (blue circles), flush grinding of existing imperfect welds then puddle welds (blue circles with "X" mark) are recommended to put back the tank in service for 10 years.
 - d. Based on the final bottom plate assessment and repairs, it was observed that a total of **14 through-and-through holes** was observed. Repair recommendation for these holes were included either in the full plate replacement and/or patch repairs.
3. There were also significant findings on the tank's roof, shell and foundation that entails major refurbishment works which includes but not limited to the following:
 - a. Replacement of all roof manholes and covers.
 - b. Replacement of severely corroded painter's coupler for scaffolds erection.
 - c. Sectional replacement of corroded roof plates and damaged frangible joint.
 - d. Repairs on the shell plates on various locations including patch repair of identified 4 through-and-through hole locations.
 - e. Replacement of severely corroded stair landing.
 - f. Sectional replacement of overflow pipes.
4. TTGI is requesting for a change order only for the incremental cost to carry-out these critical repair recommendations which exceeds the original planning factor.

Taking into account the points above, TTGI respectfully requests for GPA to approve a project CO/VC basis our discussion during our Zoom teleconference last March 8, 2022 (Progress Meeting No 19). We estimate the net value of this change order to be **\$3,140,489.35**. This change order takes into consideration the cost of materials, tools & equipment, and labor to carry out the API Inspector's recommended repairs for T1935. To comply to industry, federal, and local regulations, and to be suitable for service for the next 10 years.



Contract Details	Value
Original Contract Amount	\$ 8,969,510.00
<i>Previously Authorized Changes</i>	
Change Order#TTGIVC002 GPA PO# 27002OP Amendment I	\$ 29,387.56
Change Order#TTGIVC003 GPA PO# 27002OP Amendment II	\$ 543,813.00
Change Order#TTGIVC004 GPA PO# 29281OP	\$ 1,200,010.00
Previously Approved Contract Amount	\$ 10,742,720.56
<i>This Change Order Amount</i>	
Change Order#TTGIVC006	\$ 3,140,489.35
Revised Contract Amount	\$ 13,883,209.91
Net Change to Contract Value	\$ 3,140,489.35
% Change from Contract Value	29.23%

Terms, Conditions and Assumptions for this change order i.e. TTGIVC006

1. Commencement of the additional works is with the assumption that the site condition including the tank bottom is gas free and does not contain any contaminated soil.
2. Prior to commencement documentation shall be provided confirming that the site conditions is safe to perform hot works specifically on the tank bottom.
3. TTGI's change order does not include any costs towards disposal of contaminants. This shall be conducted by GPA at its own cost.
4. TTGI reserves the right to claim standby fees for any work stoppages due to a change in site condition.
5. The expected project duration to complete this change order is estimated to be between 6 to 8 Months (Excluding Material Delivery). Upon issuance of NTP, TTGI will provide a revised project schedule to reflect the additional man-days required to carry out the additional scope of work.

Please note that prior to conducting the aforementioned activity, TTGI requires approval from GPA that reimbursement of the additional expenses shall be issued. Once TTGI is in receipt of GPA's approval for this CO/VC, TTGI shall commence with the procurement of materials and services in order to carry out this additional work. In consideration to the long lead material items, TTGI reserves the right to provide the most updated project schedule upon issuance of NTP.

Should you require clarification regarding this letter, please feel free to contact me at (671) 565-2333 or via email at vikraman@tristar-guam.com

Sincerely,

for KK Vikraman
General Manager

Enclosed:

- Change Order Variation Claim Form
- Detailed Cost Build Up
- Appendix A – Summarized scope of work in compliance to API 653 repair recommendations.



Change Order/Variation Claim Form

Project RFP No.: GPA-028-19 Date: 04-20-2022
P.O. No: 27002 OP CO/VC No.: TTGI-VC-006
Contractor: Tristar Terminals Guam, Inc.
Project Title: GPA Bulk Tank Refurbishment Project

Tank 1935 Tank Defect Repairs

This work was not included in the tender documents because:

- | | | |
|---|--|--|
| <input type="checkbox"/> 1. Cash Allowance | <input type="checkbox"/> 5. Cost Saving | <input type="checkbox"/> 9. CM Error |
| <input type="checkbox"/> 2. Design Discrepancy | <input type="checkbox"/> 6. Design Improvement | <input type="checkbox"/> 10. Contract Reconciliation |
| <input type="checkbox"/> 3. Regulatory Change | <input type="checkbox"/> 7. Owner Change/Advice | <input checked="" type="checkbox"/> 11. Not Originally Identified in RFP |
| <input checked="" type="checkbox"/> 4. Site Condition | <input type="checkbox"/> 8. Furniture/Equipment Change | |

Drawings/Sketches attached: (refer to enclosed)

1. Not Applicable

Contract/Invoice Documents attached: (refer to enclosed)

1. Out of Service Inspection & Refurbishment of GPA Bulk Storage Fuel Tanks Contract (No. C-028-19)
2. Change Order Letter Dated 20-Apr-2022

All terms and conditions of the original contract apply however the contract amount is hereby increased by the sum of this Change Order.

Original Contract Amount	Previously Authorized Changes	Previously Approved Contract Amount	This Change Order Amount	Revised Contract Amount
\$8,969,510.00	\$1,773,210.56	\$10,742,720.56	\$3,140,489.35	\$13,883,209.91
Percent Change to Contract Amount:		29.23%		

Terms, Conditions and Assumptions for this change order i.e. TTGIVC006

1. Commencement of the additional works is with the assumption that the site condition including the tank bottom is gas free and does not contain any contaminated soil
2. Prior to commencement of documentation shall be provided confirming that the site conditions is safe to perform hot works specifically on the tank bottom.
3. TTGI's change order does not include any costs towards disposal of contaminants. This shall be conducted by GPA at its own cost
4. TTGI reserves the right to claim standby fees for any work stoppages due to a change in site condition.
5. The expected project duration to complete this change order is estimated to be between 6 to 8 Months (Excluding Material Delivery). Upon issuance of NTP, TTGI will provide a revised project schedule to reflect the additional man-days required to carry out the additional scope of work.

Requested by:

Cristofer Allan E. Balbido
Tristar Terminals Guam, Inc. Representative & Project Manager

April 20, 2022
Date (mm-dd-yyyy)

Approvals:

Authorized Guam Power Authority Representative

Date (mm-dd-yyyy)



Detailed Cost Build – up:

Prime Contractor Direct Costs	
Additive Costs	
A Labor	\$ 1,100,190.24
B Material	\$ 1,028,931.69
C Equipment	\$ 500,816.63
D Subtotal of Additive Cost	\$ 2,629,938.56
Deductive Costs (Use parenthesis to denote negative figures)	
E Labor	\$ (71,480.00)
F Material	\$ (50,020.00)
G Equipment	\$ (21,440.00)
H Subtotal of Deductive Cost	\$ (142,940.00)
I Total Direct Cost (D+H)	\$ 2,486,998.56
J Contractor Margin @ 15% - (Dx15%)	\$ 394,490.78
K Other Recoverable Costs	\$ 259,000.00
L Day/s required to complete	240
M Total Cost(I+J+K)	\$ 3,140,489.35
To the best of my knowledge and belief, I certify that all costs listed above are correct.	
Contractor Signature	Date 21 April 2022

Schedule Item No	Description	Actual				Per RFP	Variance	%	Gross Change Order Costs				Deductive Costs (Original Price)	Net Change Order Cost
		Qty	Unit	Qty	Unit				Labor	Matl	Eqpt	Total		
1c7	Tank Defects Repairs													
a	Interior Bottom Plate & Shell	6702	SF	100	SF	6602	6602%		\$ 671,992	\$ 568,366	\$ 285,255	\$ 1,525,614	\$ (24,630)	\$ 1,500,984
b	Exterior Shell Wall	1	LS	100	SF	See Note			\$ 90,322	\$ 89,260	\$ 68,511	\$ 248,093	\$ (20,520)	\$ 227,573
c	Roof Exterior Surface	1	LS	100	SF	See Note			\$ 174,499	\$ 278,667	\$ 87,346	\$ 540,512	\$ (24,630)	\$ 515,882
d	Bottom Projection Plate	1	LS	100	SF	See Note			\$ 99,977	\$ 36,598	\$ 38,490	\$ 175,066	\$ (22,580)	\$ 152,486
e	Tank Stairway & Handrail	1	LS	100	SF	See Note			\$ 63,400	\$ 56,041	\$ 21,215	\$ 140,655	\$ (50,580)	\$ 90,075
f	Tank External Piping	50	LF	50	LF	0	0%		\$ -	\$ -	\$ -	\$ -		
Total Direct Costs									\$ 1,100,190	\$ 1,028,932	\$ 500,817	\$ 2,629,939		
Contractor Margin @ 15%												\$ 394,491		
Other Recoverable Costs Charged at Cost												\$ 259,000		
Total Change Order Cost												\$ 3,283,429	\$ (142,940)	\$ 3,140,489

Note:
Basis the scope of the API repair recommendation for the roof and shell plates varies from area to length, below is our best estimation of the quantities

SHELL PLATE REPAIR		Qty	UOM
External Shell Patch plates		14	sq. ft
Re-pads (overflow supports)		16	sq. ft
Weld repair - 1V1~1V4, 1V6~1V8		110	linear ft
Entire shell-to-bottom weld		628	linear ft
Repair of Stairs		110	linear ft
Replacement of Overflow pipe		75	linear ft
ROOF PLATE REPAIR		Qty	UOM
Weld Defect Repairs		223	linear ft
Varec Nozzle and supports		302	linear ft
Replace Free vent nozzle and scaffold supports		67	linear ft
Replace missing roof girders (56 of 237pcs)		1,890	linear ft
Replacement of Manhole and Covers & repads		171	sq. ft

APPENDIX A – T1935'S WORK SCOPE AS PER API INSPECTOR'S REPAIR RECOMMENDATION

Scope of Work 1 – Tank Roof Refurbishment

This section includes, but is not necessarily limited to, standards to conduct tank roof refurbishment as recommended in the recent API 653 OOSI Report.

- 1) Repair weld defects found on plates 204 & 207, and 251 by additional weld pass on identified areas and ad-weld deposition (build-up) on all identified pitting. Use E-6013 welding electrodes. Subsequently, flush grind the area after repair. Approximate length is 36in.
- 2) Provide and install new roof railings as per Figure 2 as reference drawing. These should be welded to top angle to satisfy the requirements of frangible design of the roof.
- 3) Remove existing 4 units dilapidated and severely corroded 36" manholes. Supply, Fabricate and Install new 4 units 36 in manhole with flange and covers including bolts and nuts.
- 4) Replace severely corroded 8 units of 12" roof neck nozzle. Supply and install corrosion resistant coarse-mesh bird screens with a maximum opening size of ¾ inch (19mm) on all 8 x 12" dia Varec free vents. Replace all corroded nuts and bolts.
- 5) Replace all severely corroded covers of the 4" dia scaffolds cable support and u-bolts noted on the top support.
- 6) Replace severely corroded Varec level gauge horizontal and vertical pipes which are severely corroded and install U-bolts for anchor supports. Verify onsite the actual pipe size.
- 7) Tighten loose nut and bolts connecting the girder and columns 5, 6, 10, 13, 14, 16, 17, 20, and 21.
- 8) Replace missing nut and bolt (1" dia) at the tank column and girder fastening connections of column 10.
- 9) Replace missing (56pcs out of 237) lateral bracing supports with 2" x 2" angle bar welded on both ends to the rafters. Re-attach all loosed lateral bracing on the rafter's mid-span. Provide a minimum of two sides weld on the new lateral brace to rafter connection and an additional 1 side weld on the existing.
- 10) Replace severely corroded outer rafter to shell gusset plate near Overflow pipe 6. Re-weld into the frangible joint of the top angle.

Scope of Work 2 – Tank Shell Refurbishment

This section includes, but is not necessarily limited to, standards to conduct tank shell refurbishment as recommended in the recent API 653 OOSI Report.

- 1) Repair severely corroded vertical weld defects found on the 5th course right side of Overflow pipe 1; and severe deep pitting corrossions found on 5th and 6th courses by welded-on-patch plate repairs (P5-P10). The welded-on patch plates shall have a **minimum thickness of 0.5 inch** and shall have rounded corners with a minimum radius of 2 inches. Approximate area of repair is to be 7 sq.ft. Refer to tabulation below;

Patch ID	Size, in (if done on the external shell)
P5	12x16
P6	12x16
P7	12x12
P8	12x16
P9	12x12
P10	12x12

- 2) Patch repair the identified 4 locations (P1-P4) with through-and through holes along the wind girder noted on the 5th and 6th course shell plates accordance with API Standard 653. The welded-on patch plates shall have a **minimum thickness of 0.5 inch** and shall have rounded corners with a minimum radius of 2 inches. Refer to tabulation below;

Patch ID	Size, in (if done on the external shell)
P1	12x16
P2	12x16
P3	28x16
P4	12x16

- 3) Contractor to demolish the severely corroded top 3 stair treads from the top including the top landing area. Replace with new stair treads and landing area with same dimensions and made of steel gratings.
- 4) Replace severely corroded top support on overflow #3. Consider installing a wear pad on all overflow supports.
- 5) Repair by weld overlay/puddle weld pitting corrosion noted on both sides of 1st-course vertical welds near the shell-to-bottom weld (1V1~1V4, 1V6~1V8). Weld repairs shall be ground flush with the surrounding plate material and be examined by a visual and magnetic particle (MT).
- 6) Repair corroded weld found on the entire shell-to-bottom weld.
- 7) Perform vacuum testing on shell-to-bottom welds per API650 8.6.
- 8) Door sheet installation and inspection shall be per API 653 Section 9.2.4.
- 9) Replace the existing 12" Overflow pipe 2 with scattered holes along the vertical pipe. Verify on site the actual pipe size.
- 10) Provide and install corrosion resistant name plate adjacent to the manhole to give information as describe in API 653, Section 13.1 Fig 13-1. Use 1/16 " thk x 4-1/2" wide x 8" long T-304 stainless steel plate.

API STANDARD 650			
ANNEX	<input type="checkbox"/>	YEAR COMPLETED	<input type="checkbox"/>
EDITION	<input type="checkbox"/>	ADDENDUM NO.	<input type="checkbox"/>
NOMINAL DIAMETER	<input type="checkbox"/>	NOMINAL HEIGHT	<input type="checkbox"/>
MAXIMUM CAPACITY	<input type="checkbox"/>	DESIGN LIQUID LEVEL	<input type="checkbox"/>
DESIGN SPECIFIC GRAVITY	<input type="checkbox"/>	DESIGN METAL TEMP.	<input type="checkbox"/>
DESIGN PRESSURE	<input type="checkbox"/>	MAXIMUM DESIGN TEMP.	<input type="checkbox"/>
MANUFACTURER'S SERIAL NO.	<input type="checkbox"/>	STRESS RELIEF	<input type="checkbox"/>
INT. PRESS. COEF. FACTOR	<input type="checkbox"/>	PURCHASER'S TANK NO.	<input type="checkbox"/>
EXT. PRESS. COEF. FACTOR	<input type="checkbox"/>		
FABRICATED BY	<input type="text"/>		
ERECTED BY	<input type="text"/>		
SHELL COURSE	MATERIAL		

RECONSTRUCTED TO API 653 EDITION			
Reconstructed by: <input type="text"/>			
Original Standard		<input type="text"/>	
Tank No.		<input type="text"/>	
Date Completed	<input type="text"/>	Tank Diam.	<input type="text"/>
Serial No.	<input type="text"/>	Height	<input type="text"/>
Specific Gravity	<input type="text"/>		
Design Pressure	<input type="text"/>		
Orig. Const. Date	<input type="text"/>		
Year Reconstructed	<input type="text"/>		
Liquid Level Max.	<input type="text"/>		
Capacity	<input type="text"/>		
Max. Operating Temp.	<input type="text"/>		

Figure 13.1—Nameplate

Scope of Work 3 – Tank Bottom Plate Refurbishment

This section includes, but is not necessarily limited to, standards to conduct tank bottom plate refurbishment as recommended in the recent API 653 OOSI Report.

The following list entails the work required by the awarded contractor. Recommendations made by the contractor outside of the following requirements will be reviewed and considered.

- 1) Cut and replace plate a total of 13 bottom plates (Plate No 45, 55, 56, 102, 103, 108, 110, 111, 122, 124, 126, 172 & 173) with an approximate size of 8ft x 30ft plates for each plate using 5/16" (8mm), ASTM A-36 carbon steel plates. Refer to Appendix I T1935 Bottom Plate Repairs – highlighted in red for the plate numbers and size. Figure 4 reflects T1935's bottom plate layout plan for reference.
- 2) Install 397 patch repairs various sizes (ranging from 1x1 ft to 7ft x 15ft) found in various locations in order to meet the recommended 10-year inspection interval requirement by API653. An approximated area of 1,813 sq. ft ~ 261,041 sq. in for all patch plates with various sizes. The welded-on patch plates shall have a minimum thickness of using 5/16" (8mm), ASTM A-36 carbon steel plates and shall have rounded corners with a minimum radius of 2 inches. Refer to tabulation of patch plate summary found on Appendix I.
- 3) Repair 245 weld defects identified on various bottom plate locations with repair recommendations of additional weld build-ups (blue circles), flush grinding of existing imperfect welds then puddle welds (blue circles with "X" mark) are recommended to put back the tank in service for 10 years. Use E-6013 welding electrodes. Subsequently, flush grind the area after repair. Refer to Figure 4 reflects T1935's bottom plate layout plan for reference.
- 4) Conduct external shell settlement survey before and after the hydrostatic test to verify readings from the API 653 report dated Feb 2022.



Scope of Work 4 – Tank Foundation Construction

This section includes, but is not necessarily limited to, standards to conduct tank foundation refurbishment as recommended in the recent API 653 OOSI Report.

- 1) Contractor to Provide and install plinth seal around the tank periphery to prevent water ingress under the tank bottom plates. Use moisture curing elastic joint sealant, Polyurethane based for outdoor application.