

GYSBI PMO

SCOPE OF WORK

CLIENT: GYSBI

BUSINESS UNIT: OPERATIONS

SITE / ASSET: GSB / FUEL LINES

PROJECT TITLE: FUEL LINE & APPURTENANCES MAINTENANCE

PROJECT NO: GY01-0030

DOCUMENT NO: GY01-0030-PM-SOW-001-01
REVISION: A1

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REVISION / ISSUE TABLE:

REV	ISSUE DATE	DESCRIPTION	INITIATED	REVIEWED	APPROVED
A1	2026/09/09		GP	NN	SJL

REVISION HISTORY:

REVISION	SUMMARY OF CHANGES MADE	SECTIONS AFFECTED
	-	

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TABLE OF ACRONYMS & TERMS:

ACRONYM	DEFINITION
RFQ	Request for Quotation
SOW	Scope of Work
GYSBI	Guyana Shore Base Inc.
ITP	Inspection and Test Plan
DFT	Dry Film Thickness
OEM	Original Equipment Manufacturer
P&ID	Piping and Instrumentation Diagram
DP	Differential Pressure
NPSH	Net Positive Suction Head
BOQ	Bill of Quantities
WBS	Work Breakdown Structure
PTW	Permit to Work
JSA	Job Safety Analysis
IOM	Installation, Operation and Maintenance
PDS	Product Data Sheet
DWG	AutoCAD Drawing File Format

1 PURPOSE

This Scope of Work (SOW) defines the technical, commercial, execution, quality and documentation requirements for maintenance of the GYSBI diesel fuel-line systems. The base scope covers the GYSBI-to-Wharf line and the fuel lines serving Berths 1 through 4. The SOL-to-GYSBI fuel line is a separately priced and separately awardable optional work package.

The work is intended to restore durable external corrosion protection, correct identified localized support and mechanical deficiencies, inspect and exercise manually operated isolation valves, establish repeatable maintenance records, and develop complete field-verified P&ID / As-Built documentation with permanent field identification matching the drawings.

In addition to Optional Work Package 1 for the SOL-to-GYSBI fuel line, two further optional work packages are included: (2) a diesel dispensing system diagnostic assessment and (3) berth flow verification testing at Berths 1 through 4. No optional work shall proceed unless specifically awarded in writing by GYSBI.

2 PROJECT OVERVIEW

FIELD	INFORMATION
Project Title	Fuel Lines & Appurtenances Maintenance
Project Code	GY01-0030
Client / End User	GYSBI
GYSBI Project Manager	Mahendra Mentore
Contractor	(to be completed upon award)
Contract / PO Number	(to be assigned)
Location / Site	GSB / Fuel Bunker and Jetty
Project Type	Maintenance
SOW Revision	A1

Recent API 570 inspection work identified isolated coating deterioration, support deficiencies and localized mechanical conditions on the fuel-line systems. This SOW consolidates the required maintenance, repair, coating, valve and documentation work into a controlled tender package while maintaining separation between the base scope and separately awardable optional packages.

3 DETAILED SCOPE OF WORK

3.1 Project Description

The Contractor shall provide all labor, supervision, equipment, materials, consumables, tools, access systems, transportation, quality control, technical research, qualified engineering and/or manufacturer technical support, procedure development and documentation necessary to execute the awarded work. The Contractor shall verify actual installed conditions, quantities, valve types, dimensions and access requirements before execution.

The base scope applies to the GYSBI-to-Wharf and Berths 1-4 fuel-line systems. Work on the SOL-to-GYSBI line is excluded from the base scope and shall be undertaken only when Optional Work Package 1 is awarded in writing.

3.2 Technical Requirements

3.2.1 General

- Verify all work locations, pipeline routing, dimensions, quantities, access requirements, installed equipment, component identification, existing coating condition and operating constraints during the site visit, pre-bid survey and subsequent existing-facility research. All field measurements and drawing dimensions shall be recorded in both metric and U.S. customary (inch-pound) units.
- Coordinate the research, procedure-development, repair, coating and valve-maintenance sequence with GYSBI so that fuel-transfer operations, tank availability and berth operations are not adversely affected.
- Treat Appendix A as GYSBI's general minimum safety, inspection, documentation and operating basis for valve maintenance. For each valve type/family actually installed, obtain current manufacturer IOM/maintenance requirements and develop valve-specific maintenance procedure(s) for GYSBI approval before execution.
- Treat Appendix F as GYSBI's general minimum performance, quality and acceptance basis for coating work. Select the proposed coating system, obtain current manufacturer PDS/application guidance and develop a project-specific Coating Repair Procedure for GYSBI approval before coating work begins.

- Under-berth activities are tide dependent. The Contractor shall provide its own safe access to all work locations unless otherwise expressly agreed in writing.

3.2.2 Coating Procedure Development and Protective Coating

- Before physical coating work, develop and submit a project-specific Coating Repair Procedure covering proposed products/system, existing-surface condition, cleaning, surface preparation, soluble-salt control, environmental limits, application method, stripe coating, DFT, cure/recoat requirements, repairs, inspection and acceptance. The procedure shall be based on the selected manufacturer requirements and Appendix F.
- The Coating Repair Procedure shall address both exposure conditions where applicable: Exposure Class A applies to marine-atmospheric/non-splash areas; Exposure Class B applies from the east berth access point throughout the full length of the berth and to other areas designated by GYSBI as subject to seawater splash or vessel-wake wash.
- After GYSBI approval, clean, surface prepare and protectively recoat the designated carbon-steel fuel pipework and associated support steelwork. Manufacturer-specific compatibility and application limits shall not be violated.

3.2.3 Components Included in Coating Work

Where carbon steel and designated for work, the coating scope includes:

- Pipeline sections, elbows, tees, reducers, welds and fittings.
- Pipe supports, support beams and brackets.
- U-bolts, pipe shoes, clamps and carbon-steel fasteners where coating is appropriate.
- Valve bodies, valve supports and external flange surfaces where coating is appropriate.
- Steel bracing, anchor plates and other associated carbon-steel attachments.

3.2.4 Base-Scope Pipeline Support Maintenance and Recoating

3.2.4.1 GYSBI to Wharf

Maintain supports PS1, PS2, PS3, PS31-PS43 and PS44-PS49. Work shall include:

- Installation of I-Rod or equivalent pipe-to-support isolation systems at PS1, PS2 and PS3.
- Complete surface preparation and recoating of carbon-steel support components in accordance with Appendix F.

- Surface preparation and recoating of affected carbon-steel pipeline in accordance with Appendix F.

3.2.4.2 Berths 3 and 4

Maintain supports PS20, PS24-PS34 and PS39. Work shall include:

- Replacement or installation of non-metallic shims.
- Tightening or replacement of U-bolts and associated fasteners.
- Complete surface preparation and recoating of carbon-steel support components in accordance with Appendix F.
- Elimination of metal-to-metal contact between piping and supports.

3.2.4.3 Berths 1 and 2

Maintain support PS74. Work shall include:

- Repair or replacement of deteriorated support steel.
- Installation of a suitable non-metallic shim.
- Removal of heavy corrosion scale.
- Complete surface preparation and recoating of exposed carbon-steel support components in accordance with Appendix F.

3.2.5 Fastener Replacement

Supply and replace corroded, damaged, seized or missing fasteners as required, including anchor bolts, nuts, washers, U-bolts, flange bolts and support fasteners. Replacement fasteners shall be of equivalent or higher mechanical strength, compatible with existing materials and suitable for the marine environment. Galvanized or stainless-steel fasteners shall only be used where approved by GYSBI and where galvanic compatibility has been addressed.

3.2.6 Timber Support Repairs

- Install steel bracing where approved.
- Prepare and recoat existing or replacement carbon-steel bracing, brackets and fasteners in accordance with Appendix F where coating is applicable.

3.2.7 Base-Scope Mechanical Repairs

3.2.7.1 GYSBI to Wharf

- Replace the damaged flange gasket at ISO Point 12.

3.2.7.2 Berths 3 and 4

- Replace the flexible metal-braided spool showing evidence of seepage or leakage inside the Berth 3 utilidor.
- Replacement of the metal-braided spool will require complete removal of the pipeline from the Berth 2/3 interface to the Berth 3 manifold, including removal of the utilidor covers.
- Install approved flange isolation kits at the Berths 1 and 2 manifolds where stainless-steel components are connected to carbon-steel flanges or blinds.
- Repair and recoat affected carbon-steel components after galvanic-corrosion removal.

3.2.7.3 Berths 1 and 2

- Remove heavy corrosion scale from the elbow at Inspection Point 295 beneath the Berth 2 manifold.
- Prepare the cleaned area for follow-up ultrasonic thickness inspection by GYSBI or its inspection contractor.
- Do not apply final coating to the inspection area until thickness measurements and acceptance have been completed.

3.2.8 Corrosion and Coating Repairs

Remove corrosion products, assess exposed steel and restore the approved coating system in accordance with the approved Coating Repair Procedure and Appendix F on affected pipe elbows, welds, straight pipe sections, supports, flanges, valve bodies, support steel, bracing and anchor plates. Any perforation, severe section loss or unexpected structural damage shall be reported immediately to GYSBI and shall not be concealed.

3.2.9 Research of Existing Facilities, P&ID / As-Built Development and Valve

Register Verification

- Research and field-verify the existing facilities within the awarded work scope, including identified valves, piping components, mechanical repair locations, supports, coating condition and relevant inspection-report findings.
- For each valve, verify tag, location, service, size, pressure class, valve type, operator type, manufacturer, figure/model, identifying information where available, approved normal position and criticality.
- Obtain current manufacturer IOM, maintenance instructions, technical data and approved lubricant/sealant requirements applicable to each identified valve type/family.
- Identify missing or illegible tags, inaccessible items, unclear normal positions, unavailable manufacturer information, discrepancies with existing drawings/registers/inspection reports and conditions requiring technical disposition.
- Develop a complete field-verified P&ID and As-Built drawing set for the awarded pipeline systems. Trace and verify actual installed configuration, including piping routes, pipe sizes, tie-ins, branches, valves, fittings, equipment, instruments, drains, vents, isolation points, manifolds and relevant interfaces.
- Assign or confirm a unique identifier for every item shown on the P&ID. Physically identify each item using a stainless-steel tag secured with stainless-steel cable. Field tags shall match the P&ID, As-Built drawings and applicable asset/valve registers.
- Submit draft P&ID / As-Built drawings for GYSBI review and incorporate comments before final issue. Final drawings shall be delivered in editable CAD and AutoCAD-compatible DWG format.
- Submit an Existing Facilities Research Report, verified valve/asset register, manufacturer/OEM document register, identified information gaps, draft P&ID / As-Built package and proposed technical basis for procedure development before maintenance execution.

3.2.10 Valve Maintenance Procedure Development and Execution

Using the Existing Facilities Research Report and exact manufacturer/OEM requirements obtained for the installed valves, develop one or more controlled Valve Maintenance Procedure(s) covering every identified valve type/family within the awarded work scope.

Appendix A establishes GYSBI general minimum safety, inspection and documentation requirements.

- Included valve types: rising-stem gate valves; non-rising-stem gate valves; quarter-turn ball valves with lever, handwheel or manual gear operators; and handwheel-operated plug valves, including manual bleed or double-block-and-bleed features.
- Review the approved P&ID and field lineup, confirm consequences of full closure and full opening, and obtain Operations authorization before exercising any valve.
- Unless the approved manufacturer-based procedure establishes a different method, perform a minimum of two complete exercise cycles when full stroking is operationally safe.
- Perform a third complete cycle when the valve has been idle for an extended period, is initially stiff, shows improving travel between cycles, or has inconsistent turn count or effort, unless the approved valve-specific procedure directs otherwise.
- Count handwheel turns or record lever/gear travel on every cycle and compare cycles for repeatability.
- Return each valve to its approved normal position and have the final position independently verified.
- Include routine manufacturer-prescribed external cleaning and lubrication in the applicable per-valve execution rate.
- Do not operate actuated/ESD/control/check/relief/fire-protection valves; open body bleeds or pressure-containing connections; adjust packing; disassemble valves; overhaul gearboxes; inject sealant; use cheater bars or powered assistance; or perform seat-leakage/pressure-hold/positive-isolation testing without separate written authorization.

3.2.11 Inspection Assistance

Provide safe access, cleaning and reasonable assistance for inspections by GYSBI, the API inspector, the coating inspector and other authorized representatives before, during and after the work.

3.2.12 OPTIONAL WORK PACKAGE 1 - SOL to GYSBI Fuel Line

This work package is optional and shall proceed only if separately awarded in writing by GYSBI. All SOL-to-GYSBI work is excluded from the base price. If awarded, the general

research, documentation, coating, valve, quality, safety and execution requirements of this SOW apply to the SOL-to-GYSBI line in addition to the specific work below.

Pipeline support maintenance and recoating shall include supports PS7, PS9, PS19, PS38, PS39, PS55, PS56, PS57, PS58, PS59 and PS60. Work shall include:

- Steel repairs as required.
- Corrosion removal.
- Fastener tightening or replacement.
- Beam repair or replacement where directed.
- Complete surface preparation and recoating of exposed carbon-steel support components in accordance with Appendix F.

Mechanical repairs shall include:

- Re-tighten fasteners at PS55 and PS56 and replace hardware where proper engagement cannot be achieved.
- Repair or replace the seized or damaged U-bolt at PS59.
- Monitor the bent L-profile beam at PS57 and repair or replace only if directed by GYSBI following assessment.
- Field-verify the SOL-to-GYSBI pipeline, valves, supports and interfaces; incorporate the optional line into the P&ID / As-Built drawing and field-tagging package if awarded.
- Inspect, maintain and exercise manually operated isolation valves on the SOL-to-GYSBI line under the approved valve procedures and applicable per-valve optional rates.
- Include all access, quality records, photographs and closeout documentation necessary for the optional SOL work package.

3.2.13 OPTIONAL WORK PACKAGE 2 - Diesel Dispensing System Diagnostic Assessment

This task is optional and shall proceed only if separately awarded in writing by GYSBI. If awarded, the Contractor shall investigate the reduced diesel dispensing capacity and shall research, develop, obtain approval for and execute a controlled diagnostic program in accordance with Appendix G. Appendix G establishes GYSBI general and minimum requirements and is not an executable test procedure.

- Review the installed dispensing system, available P&IDs / As-Builts, historical performance data, pump and motor information, filter and meter data, tank suction arrangement and relevant inspection/maintenance records.
- Develop and submit a detailed Diagnostic Test Plan and technical basis addressing hydraulic performance, pump operating condition, NPSH/suction limits, instrumentation, temporary test arrangement, valve lineup, data acquisition, stop criteria, emergency controls and restoration.
- Supply and install approved permanent diagnostic instrumentation, including differential-pressure indication across each pump-suction Y-strainer and absolute suction-pressure indication downstream of each Y-strainer near the associated pump inlet.
- Execute the approved diagnostic program, collect and analyze the required data, and submit a final Diagnostic Assessment Report identifying demonstrated restrictions/capacity limitations and evidence-based corrective actions.

3.2.14 OPTIONAL WORK PACKAGE 3 - Berth Flow Verification Testing at Berths 1-4

This task is optional and shall proceed only if separately awarded in writing by GYSBI. If awarded, the Contractor shall develop, obtain approval for and execute a controlled flow-verification test at each of the four berth dispensing locations in accordance with Appendix H.

- Field-verify berth dispensing points, valve lineups, hose/connection arrangements, pipeline configuration, dispensing-station meter identification/status, truck access/positioning and the fuel-return arrangement.
- Develop and submit a detailed Berth Flow Test Procedure for GYSBI approval.
- Provide a suitable 18,000 L fuel truck, qualified operator, documented pre-use inspection, compatible hose/couplings, bonding/earthing and spill-control equipment.
- Execute flow testing at Berths 1 through 4 using the existing dispensing-station fuel meter(s) as the primary flow/volume reference unless GYSBI approves a documented alternative.
- Return test fuel to the approved receiving station, reconcile transferred volumes and submit a final Berth Flow Verification Report.

3.3 Applicable Laws, Codes & Standards

- API 570 - Piping Inspection Code, as applicable to the inspection basis and referenced inspection reports.
- ASME B31.3 - Process Piping, as applicable to piping repairs, acceptance and the referenced inspection reports.
- API 574 - Inspection Practices for Piping System Components, as applicable to the inspection basis.
- The coating standards and surface-preparation requirements identified in Appendix F, including applicable ISO, AMPP/SSPC, NORSOK and ASTM references.
- Current manufacturer/OEM IOMs, PDS, application guides and written technical recommendations for installed valves, replacement components and coating products.
- GYSBI permit-to-work, QHSSE, environmental, access, lifting, work-at-height/work-over-water and operational-control procedures.

Where requirements conflict, the Contractor shall identify the conflict and obtain written technical resolution before work proceeds. GYSBI safety and operational controls remain mandatory; manufacturer equipment/product limitations shall not be violated.

3.4 Permits, Licences & Approvals

- GYSBI Permit to Work (PTW) and task-specific JSA / risk assessment.
- LOTO and line-isolation authorization where required.
- Line-breaking / fuel-handling authorization for any work that opens the fuel system.
- Hot-work permit where approved work creates an ignition source.
- Work-at-height, scaffolding/MEWP, rope-access and/or work-over-water approvals as applicable.
- Environmental and coating/blasting controls required by the approved coating procedure and site rules.
- Written GYSBI approval of required Contractor procedures, technical deviations, temporary arrangements and optional test plans before execution.

3.5 Construction & Execution Requirements

- Provide all labor, supervision, tools, consumables, temporary works, access systems, lifting/rigging, containment and housekeeping required for the awarded work.

- Coordinate all activities with GYSBI Operations and maintain approved process lineups. No valve shall be operated without Operations authorization.
- Prevent pump starvation, deadheading, unintended tank cross-connection, overfill, drain-down, air entry into suction piping and trapped liquid without thermal relief.
- Do not force valves against high differential pressure. Equalize pressure only through an approved bypass or procedure.
- Maintain reliable communication between the work party, GYSBI Operations and designated observers during valve operations and fuel-system testing.
- Provide spill containment wherever packing, bonnet, body, bleed, drain, flange or temporary connection leakage could occur.
- GYSBI may phase or suspend work to accommodate fuel-transfer, tank and berth operations. Under-berth work shall be planned around tide and safe access.
- Any condition materially worse than the inspection findings or approved technical basis shall be reported before repair, coating or concealment proceeds.

4 IN-SCOPE WORK

- Base scope: GYSBI-to-Wharf and Berths 1-4 fuel-line maintenance, coating, localized repairs, valve survey/maintenance/exercising, P&ID / As-Built development, permanent field tagging, inspection support, QA/QC records and closeout.
- Development and approval of the valve-maintenance, coating-repair and item-specific repair procedures required for the base work.
- Technical research, field verification, OEM/manufacture consultation and qualified engineering support expressly required to establish the execution basis.
- Optional Work Package 1 - SOL-to-GYSBI fuel-line work, only when separately awarded.
- Optional Work Package 2 - Diesel Dispensing System Diagnostic Assessment, only when separately awarded.
- Optional Work Package 3 - Berth Flow Verification Testing at Berths 1-4, only when separately awarded.

5 OUT-OF-SCOPE WORK

Unless specifically included by written amendment or by award of the applicable optional work package, the following are excluded:

- SOL-to-GYSBI fuel-line work when Optional Work Package 1 has not been awarded.
- Major pipeline replacement.
- Pressure testing of permanent pipelines or valves, except leak/pressure verification of approved temporary diagnostic test assemblies when Optional Work Package 2 is awarded.
- Internal pipeline inspection.
- Pipeline modifications or rerouting.
- Civil works.
- Formal engineering fitness-for-service assessments or major redesign, except technical support expressly required for work-basis development.
- Ultrasonic thickness inspection and API 570 inspection services, except reasonable access/assistance to GYSBI or its inspection contractor.
- Seat-leakage, pressure-hold, double-block-and-bleed or positive-isolation testing.
- Operation of actuated, emergency-shutdown, control, check, pressure-relief or fire-protection valves.
- Packing adjustment, valve disassembly, gearbox overhaul, body-cavity work, sealant injection, internal repairs or valve replacement unless separately authorized.
- Major pump, permanent pipeline or system upgrades recommended by optional diagnostic or berth flow testing unless separately authorized.

6 WORK BREAKDOWN STRUCTURE (WBS)

WBS CODE	DESCRIPTION	STATUS
1.0	Project Management, Mobilization and Site Coordination	BASE
2.0	Existing-Facilities Research, P&ID / As-Built Survey and Field Tagging - Base Assets	BASE
3.0	Procedure Development - Valve Maintenance, Coating Repair and Item-Specific Repairs	BASE
4.0	Base Pipeline / Support Coating and Support Repairs - GYSBI to Wharf and Berths 1-4	BASE
5.0	Base Mechanical Repairs and Fastener Replacement	BASE
6.0	Base Valve Inspection, Maintenance and Exercising	BASE
7.0	Inspection Support, QA/QC, Reporting and Handover	BASE
O1.0	Optional Work Package 1 - SOL to GYSBI Fuel Line	OPTION
O2.0	Optional Work Package 2 - Diesel Dispensing System Diagnostic Assessment	OPTION
O3.0	Optional Work Package 3 - Berth Flow Verification Testing at Berths 1-4	OPTION

Detailed pricing shall be submitted in accordance with Appendix I - Bill of Quantities. Optional work packages shall be priced separately and may be awarded independently.

7 DELIVERABLES

REF.	DELIVERABLE	TYPE	RESPONSIBLE	DUE STAGE
D-01	Existing Facilities Research Report and verified asset/valve register	ENG / Handover	Contractor	Before execution
D-02	Draft and final P&ID / As-Built drawing package in editable CAD/DWG format with dual-unit dimensions	ENG	Contractor	Draft before execution; final at handover
D-03	Permanent stainless-steel field tagging schedule and installed tag register	CONST / Handover	Contractor	During execution / handover
D-04	Manufacturer/OEM technical-document register and consultation records	ENG	Contractor	Before procedure approval
D-05	Approved Valve Maintenance Procedure(s)	ENG / QC	Contractor	Before valve operation
D-06	Approved Coating Repair Procedure	ENG / QC	Contractor	Before coating work
D-07	Item-specific repair procedures / technical dispositions	ENG / CONST	Contractor	Before applicable repair
D-08	ITP, JSA, method statements and required permits/authorizations	QC / CONST	Contractor / GYSBI	Before applicable work
D-09	Coating QC records, repair register, valve records, photographs and material certificates	QC	Contractor	During execution / handover
D-10	Optional package reports and test records, when awarded	ENG / QC	Contractor	Per approved optional plan
D-11	Final completion report, punch-list closeout and handover dossier	Handover	Contractor	Completion

8 SCOPE GOVERNANCE & CONTROL

8.1 Scope Baseline

The scope baseline consists of this SOW, the awarded BOQ items in Appendix I, the applicable appendices, referenced inspection reports, GYSBI-issued drawings/information and Contractor submittals approved for execution. Optional work does not form part of the awarded baseline unless specifically included in the Purchase Order or other written authorization.

8.2 Scope Monitoring

- Track completed work by WBS and BOQ item, including verified quantities and locations.
- Maintain repair, valve, coating and punch-list registers throughout execution.
- Identify differences between field conditions and the approved work basis before concealment or additional work.
- Report status of optional work separately from the base scope.

8.3 Scope Change Control

Additional repairs, changed quantities, substitutions, technical deviations and work outside the awarded BOQ shall not proceed without written GYSBI authorization. GYSBI review or approval of Contractor submittals does not relieve the Contractor of responsibility for technical adequacy, safety or compliance with manufacturer requirements.

9 ACCEPTANCE & VERIFICATION

- Required procedures, technical bases, permits and inspection/test plans approved before execution.
- Completed physical work conforms to the approved procedures, applicable codes, manufacturer requirements and this SOW.
- Coating preparation, environmental conditions, DFT and repair records demonstrate compliance with Appendix F and the approved coating procedure.
- Valve exercising records demonstrate repeatable travel and restoration to approved normal position; exercising does not by itself prove seat tightness.
- Mechanical repairs, support repairs and replacements are complete, inspected and documented.
- P&ID / As-Built drawings, valve/asset registers and physical field tags match the final installed condition.
- All required photographs, certificates, registers, test reports and closeout documents have been submitted and accepted.
- All punch-list items are closed or formally accepted for deferred completion.
- Optional work packages, when awarded, meet their appendix-specific acceptance requirements independently of the base scope.

10 INTERFACES & DEPENDENCIES

REF.	INTERFACE	PARTIES	REQUIRED INPUT	REQUIRED OUTPUT
I-01	Fuel-system operating lineup / tank availability	Contractor / GYSBI Operations	Approved work window and valve lineup	Safe execution without interrupting critical operations
I-02	Inspection hold points and follow-up UT	Contractor / GYSBI / Inspection Contractor	Prepared accessible surfaces	Acceptance or repair disposition before coating
I-03	Coating technical support	Contractor / Coating Manufacturer / GYSBI	Product data and field conditions	Approved coating procedure and technical guidance
I-04	Valve manufacturer / engineering support	Contractor / OEM / Engineer / GYSBI	Verified valve identification and condition	Approved valve-specific maintenance basis
I-05	Under-berth access and tide	Contractor / GYSBI Operations	Tide/access plan	Safe access to berth piping and supports
I-06	Optional testing	Contractor / GYSBI Operations / HSE	Approved test plan, receiving capacity and controls	Controlled test execution and restoration

11 ROLES & RESPONSIBILITIES

ROLE	MINIMUM RESPONSIBILITY
GYSBI Project / Contract Representative	Administer the awarded scope, coordinate reviews and approvals, manage commercial changes and acceptance.
GYSBI Operations	Approve operating windows and valve lineups, control process interfaces and authorize valve operation / fuel-system testing.
GYSBI HSE / QHSSE	Review PTW/JSA and applicable safety/environmental controls; participate in stop-work and incident response as required.
GYSBI Inspection / Engineering	Review technical submittals, witness designated hold points, coordinate follow-up inspection and accept technical records.
Contractor Project Manager	Deliver all awarded SOW obligations, coordinate subcontractors, schedule, resources, interfaces and reporting.
Contractor Technical / Engineering Lead	Research installed equipment, obtain OEM/manufacture input, develop technical procedures and resolve field discrepancies.
Contractor Supervisor / Work Party	Execute approved procedures, maintain safe access/containment and record as-found/as-left conditions.
Contractor QA/QC / Coating Inspector	Perform required inspections, maintain coating/repair/valve records and compile turnover documentation.

12 SCOPE-RELATED RISKS

REF.	RISK / ISSUE	IMPACT	MITIGATION / ACTION
R-01	SIMOPS with fuel transfer or berth operations	High	Coordinate work windows and approved lineups with Operations; stop work on conflicting operations.
R-02	Valve seizure, abnormal resistance or leakage during exercise	High	Use approved manufacturer-based procedures, full communication, spill controls and immediate stop criteria.
R-03	Hidden corrosion / wall loss exposed during cleaning	High	Stop before concealment; notify GYSBI; obtain inspection/engineering disposition.
R-04	Tide, work-over-water and difficult access	Med/High	Plan around tide; Contractor provides approved access system and rescue controls.
R-05	Incomplete / inaccurate legacy drawings or valve identification	Medium	Field-trace system, verify tags and develop final As-Built/P&ID before relying on lineups.
R-06	Coating failure due to contamination or environmental conditions	Medium	Follow Appendix F, approved manufacturer procedure, salt/environment checks and QC hold points.
R-07	Optional scope inadvertently included in base execution	Commercial	Separate WBS/BOQ items; no optional work without written award.

13 REPORTING REQUIREMENTS

- Daily progress reports identifying work locations, WBS/BOQ items, manpower, access constraints, permits, completed quantities and photographs.
- Immediate notification of leaks, unexpected metal loss, severe corrosion, damaged supports, abnormal valve behavior, unsafe conditions or field discrepancies requiring technical disposition.
- Current repair, coating, valve, drawing/tagging and punch-list registers throughout execution.
- Weekly progress summary during active field work, including planned work, completed work, outstanding approvals, optional-work status and schedule constraints.
- Inspection and test records at the frequency required by approved ITPs and procedures.
- Final completion report and handover dossier containing the deliverables listed in Section 7 and the applicable appendices.

14 APPENDICES

APPENDIX	DESCRIPTION
Appendix A	Valve Maintenance General Requirements and Procedure Development Basis
Appendix B	Representative Valve Specifications Supplied by GYSBI
Appendix C	Pre-Job Valve Exercise Checklist
Appendix D	Individual Valve Exercise Record
Appendix E	Valve Exercise Master Log
Appendix F	General Coating Requirements and Procedure Development Basis
Appendix G	Optional Diesel Dispensing System Diagnostic Assessment
Appendix H	Optional Berth Flow Verification Testing at Berths 1-4
Appendix I	Bill of Quantities (BOQ) - Base Scope and Optional Work Packages

Appendix A - Valve Maintenance General Requirements and Procedure Development Basis

Contractual status

This appendix establishes GYSBI minimum safety, inspection, operating, documentation and acceptance requirements for manually operated isolation valves included in the tender. It is not a stand-alone manufacturer maintenance procedure. The Contractor shall identify each installed valve type/family, obtain the current manufacturer IOM/maintenance requirements and develop the specific Valve Maintenance Procedure(s) required for execution. Manufacturer/authorized representative and/or suitably qualified engineering consultation shall be obtained where necessary. The developed procedure(s) shall be submitted to GYSBI for approval before any valve is operated. GYSBI safety and process controls remain mandatory; manufacturer equipment-specific limitations shall not be violated. Any conflict shall be documented and resolved through the approved procedure before work proceeds.

A1. Purpose

This appendix establishes the general GYSBI basis that the Contractor shall incorporate into manufacturer-based Valve Maintenance Procedure(s) for manually operated isolation valves in the diesel storage, transfer and bunkering systems. The objectives are to confirm repeatable full travel, perform appropriate manufacturer-prescribed routine maintenance, detect developing mechanical or sealing problems, preserve reliable isolation capability and maintain auditable condition records.

- Confirm that normally static valves can reach both full-open and full-closed positions.
- Identify corrosion, binding, damaged stems or operators, abnormal turn counts, leakage and deteriorated locking or position-indication features.
- Return each valve to its approved normal position and document any maintenance action required.
- Separate mechanical exercising from seat-leakage testing; exercising alone does not prove tight shutoff.

A2. Scope and Limitations

The general requirements in this appendix apply to the following manually operated valve types. The Contractor shall develop the actual execution procedure for each identified valve family/model using the exact manufacturer documentation obtained during the Existing Facilities Research activity:

- Rising-stem gate valves, including outside-screw-and-yoke configurations.

- Non-rising-stem gate valves, with or without separate position indicators.
- Quarter-turn ball valves with lever, handwheel or manual gear operators.
- Handwheel-operated plug valves, including valves fitted with manual bleed or double-block-and-bleed features.

Neither this appendix nor a manufacturer manual, by itself, authorizes the following. These activities require the applicable GYSBI operating authorization and, where relevant, a separate approved technical procedure:

- Operation of actuated, emergency-shutdown, control, check, pressure-relief or fire-protection valves.
- Opening of body bleeds, drains, sealant fittings, packing glands, bonnets, covers or other pressure-containing connections.
- Use of cheater bars, impact tools, torque multipliers, powered operators or improvised mechanical assistance.
- Valve exercising during an active transfer unless specifically addressed by an approved operating plan.
- Seat-leakage, pressure-hold, double-block-and-bleed verification or positive-isolation certification unless separately planned and authorized.

A3. Reference Basis

Reference	Use / Relevance
Existing Facilities Research Report	Field-verified valve register, photographs, manufacturer/model identification, service, operating position, available history and technical-document register developed by the Contractor.
Manufacturer / OEM documentation	Current installation, operation and maintenance manual, maintenance schedule, technical bulletins, approved lubricant/sealant information and product-specific cautions for the exact installed valve family/model. These documents form the primary equipment-specific maintenance basis.
Manufacturer / engineering consultation	Written technical guidance from the manufacturer, authorized manufacturer representative and/or suitably qualified engineer used to resolve missing information, conflicting instructions, abnormal conditions or maintenance requirements not clearly addressed by the available OEM documentation.

Reference	Use / Relevance
Bray International	Representative / background reference only. Trunnion Mounted Ball Valve Installation, Operation and Maintenance Manual, EN_IOM_Trunnion_20260128; emphasizes qualified personnel, removal of trapped pressure before service and full cycling where required.
Flow-Tek / Bray	Representative / background reference only. Series 85 Full Port, 2-Piece Ball Valve Installation and Maintenance Manual; identifies 90-degree manual operation and fully open/fully closed service.
SLB General Valve	Representative / background reference only. Twin Seal plug valve product information; describes mechanically retracting slips, bidirectional sealing, manual/body-cavity verification features and thermal-pressure considerations.
Applicable design standards	Representative / background reference only. API 600, API 603, API 608, API 6D, API 607 and ASME B16.34, as identified by the valve specification or nameplate. These are design/testing references and do not replace the manufacturer IOM.

A4. Definitions

Term	Definition
Complete exercise cycle	Full travel from the valve's normal position to the opposite mechanical end position and return to the approved normal position.
Normally static valve	A valve that is normally left fully open or fully closed and is not routinely operated as part of normal transfers.
Critical valve	A valve whose failure to operate could prevent pump/tank isolation, cause cross-contamination, prevent emergency response or materially affect safe fuel transfer.
Full stroke	Movement through the complete designed travel between the full-open and full-closed positions.
Partial-stroke check	Limited movement used only when full closure/opening is not operationally possible. It does not count as a completed exercise cycle.
Rising-stem gate valve	A gate valve in which stem position changes visibly with gate travel.

Term	Definition
Non-rising-stem gate valve	A gate valve in which the stem does not provide direct visible travel; position must be verified by turn count, indicator or process response.
Seat-leakage test	A separate test used to assess isolation tightness. It is not established merely by reaching the closed stop.

A5. Responsibilities

Role	Minimum Responsibility
GYSBI Operations	Confirms the valve lineup, process consequences, tank capacity, pump status, normal final position and permission to operate the valve.
Contractor Maintenance Team	Researches the installed valves, obtains the applicable OEM documentation, supports development of the valve-family procedures, performs the approved inspection/maintenance/exercise, records turns/travel/condition, uses only approved lubricants/materials and reports corrective work required.
HSE	Confirms JSA/PTW requirements, PPE, spill controls, hazardous-area restrictions and stop-work conditions.
Contractor Engineer / Manufacturer Technical Representative	Provides technical interpretation or written disposition where OEM requirements are unavailable or unclear, abnormal performance is identified, repair or internal maintenance is proposed, or the procedure requires engineering judgment. Technical direction shall be incorporated into the Contractor submittal and is subject to GYSBI approval.
Valve Operator	Maintains control of the handwheel/lever, operates slowly, counts turns or records angle and stops immediately upon abnormal resistance or leakage.
Independent Observer / Recorder	Confirms valve tag and lineup, records observations, verifies the final position and photographs significant conditions.

A6. Recommended Future Maintenance Frequency

As part of the valve maintenance procedure development, the Contractor shall review the applicable manufacturer's recommendations, service conditions, valve criticality and observed condition and provide GYSBI with a recommended inspection, exercising and preventive-maintenance frequency for each valve type or valve family.

The recommended frequencies are for GYSBI's future maintenance planning only. The Contractor's scope under this project is limited to the one-time inspection, maintenance and exercising activities specifically included in the Contract and does not include recurring or long-term valve maintenance unless separately authorized by GYSBI.

A7. Mandatory Safety and Operating Controls

STOP-WORK AUTHORITY

Any person may stop the activity for an unexpected pressure or tank-level change, fuel movement into an unintended line or tank, leakage, abnormal resistance, damaged equipment, loss of communication, unsafe access or uncertainty about the valve lineup.

- Identify the valve by the field tag that corresponds to the approved P&ID / As-Built drawings and valve register, and confirm service, size, class, manufacturer/figure when visible and approved normal position.
- Review the current approved P&ID / As-Built drawing and field lineup. Confirm that the physical stainless-steel identification tag corresponds with the drawing/register designation. Do not rely on memory, paint color or a neighboring valve's position.
- Confirm what will occur when the valve is fully closed and fully opened.
- Prevent pump starvation, pump deadheading, unintended tank cross-connection, overfill, drain-down, air entry into suction piping and trapped liquid without thermal relief.
- Stop affected pumps and isolate equipment when full stroking could alter a live transfer or create unsafe differential pressure.
- Equalize pressure across the closure where an approved bypass or procedure exists. Do not force a valve against high differential pressure.
- Provide an operator at the valve and an independent observer/recorder. Maintain reliable communication with the control room or fuel-farm operator.
- Wear required PPE and provide spill containment where packing, bonnet, body, bleed or flange leakage could occur.
- Use hand force only unless the valve's approved manufacturer procedure specifies a dedicated operator or gearbox.
- Do not remove locks, chains, tags or seals without authorization. Reinstall them after the valve is returned to service.

A7.1 Immediate Stop Criteria

- Sudden or increasing operating resistance, grinding, jumping, binding or impact loading.
- Stem, handwheel, lever, yoke, gear operator or bonnet movement inconsistent with normal operation.
- Packing, body, bonnet, flange, stem, cavity bleed, drain or seal leakage.
- Failure to achieve the expected full travel or a materially different turn count from previous records.
- Unexpected pressure change, tank-level change, flow, vibration, noise or fuel movement.
- Need for a cheater bar, hammer, pipe wrench, powered tool or force beyond normal manual operation.
- Loss of communication, unclear valve lineup, unavailable receiving capacity or unsafe access.

A8. General Pre-Exercise Inspection and Planning

1. Confirm valve tag and photograph the valve, operator, stem/indicator and surrounding piping as found.
2. Record valve type, size, pressure class, service, normal position, as-found position and whether the valve is critical.
3. Check the body, bonnet, cover, packing gland, flange joints, operator, handwheel/lever, yoke, fasteners, locks, tags and supports.
4. Look for corrosion, impact damage, paint bridging moving parts, bent stems, missing fasteners, loose operators, damaged handles or previous leakage marks.
5. Confirm the operating path is clear and the operator can maintain stable footing and body position throughout travel.
6. Determine how full-open and full-closed positions will be verified: visible stem height, position indicator, lever orientation, known turn count, mechanical stop or approved process indication.
7. Record the expected turn count or 90-degree travel when known. The representative 3-inch General Truseal Model 211 specification supplied by GYSBI lists six turns; this value shall not be applied to other valves without verification.

8. Clean accessible dirt, rust scale and hardened grease from external moving parts before cycling. Do not allow debris to enter packing or operator housings.
9. Apply only the lubricant, sealant (if applicable), quantity and method identified in the approved valve-family procedure and exact manufacturer documentation, and only to the parts intended to receive it. Do not inject sealant or lubricant into process cavities unless the approved manufacturer-specific procedure expressly authorizes the activity and the required operating controls are in place.

A9. General Exercising Rules

- Unless the approved manufacturer-based valve procedure requires a different safe exercise methodology, a normally static valve shall receive a minimum of two complete exercise cycles.
- Unless the approved manufacturer-based valve procedure requires otherwise, perform a third complete cycle when the valve has been idle for an extended period, is initially stiff, shows improving travel between the first and second cycles, or has inconsistent turn count or effort.
- Do not continue repeated cycling when resistance increases, leakage develops or mechanical distress is evident.
- Operate slowly and steadily. Avoid rapid closure that could create hydraulic shock or sudden line movement.
- Gate, ball and plug valves covered by this procedure are isolation valves and shall be left fully open or fully closed, not in a throttling position, unless specifically designed and approved for throttling.
- Count handwheel turns or record lever/gear travel on every cycle. Compare cycles for repeatability.
- Use firm hand effort at the end position; do not over-torque against a stop or seat.
- An exercise cycle confirms mechanical movement only. It does not prove seat tightness, double isolation or zero leakage.

A10. Rising-Stem Gate Valve Procedure

The approved manufacturer-based procedure for the installed rising-stem gate valve shall govern the equipment-specific maintenance method. The steps below are GYSBI general controls to be incorporated unless the approved procedure requires a different method. Rising-stem gate valves provide direct visual indication of gate travel, and

exposed stem/operating threads require particular attention in an outdoor coastal environment.

A10.1 Pre-Cycle Inspection

10. Record the exposed stem height in the as-found position. A reference photograph or temporary measurement mark may be used.
11. Inspect the stem for corrosion, pitting, scratches, bent condition, damaged threads, galling, dry threads or paint/debris buildup.
12. Inspect the yoke, stem nut, handwheel, packing gland, gland fasteners, bonnet and body for damage or leakage.
13. Clean the exposed stem threads. Apply a thin, even coating of manufacturer-approved stem/thread lubricant where permitted. Keep lubricant away from walking surfaces and prevent contamination of the fuel system.

A10.2 Exercising Steps

14. Confirm the pump and process lineup are safe for full closure and reopening.
15. Operate from the normal position toward the opposite end position slowly and steadily.
16. Count handwheel turns and observe that stem movement is continuous and proportional to handwheel rotation.
17. At full closed, stop when firm seat contact is reached. Do not bounce the gate on the seat or apply excessive closing force.
18. Reverse direction and open fully. Where the manufacturer or approved site practice permits, back the handwheel off approximately one-quarter turn from the full-open mechanical stop to avoid binding at the stop. Do not back away from the closed seat unless the manufacturer specifically requires it.
19. Return to the normal position to complete the first exercise cycle.
20. Repeat the full cycle. Complete a third cycle when required by Section A9.
21. Record the turn count, smoothness, resistance, stem travel, packing condition and any change between cycles.

A10.3 Acceptable Indicators

- Repeatable turn count and stem height.
- Smooth travel without sudden torque increases.
- No stem, packing, bonnet, body or flange leakage.

- No visible yoke distortion, handwheel looseness or stem wobble.
- Approved normal position restored and independently verified.

A11. Non-Rising-Stem Gate Valve Procedure

The approved manufacturer-based procedure for the installed non-rising-stem gate valve shall govern the equipment-specific maintenance method. The steps below are GYSBI general controls to be incorporated unless the approved procedure requires a different method. A non-rising stem does not provide direct visual confirmation of gate position; verification therefore depends on a known turn count, a separate position indicator, operator travel limits and approved process confirmation.

A11.1 Pre-Cycle Inspection

22. Confirm that the valve is truly non-rising-stem; do not assume valve type solely from limited visible stem travel.
23. Identify any mechanical position indicator, pointer, gearbox indicator or open/closed marking.
24. Review previous records for expected turns from stop to stop. If no baseline exists, establish one cautiously during the controlled exercise.
25. Inspect the handwheel, operator housing, indicator, packing area, bonnet, body and fasteners. Check for corrosion, looseness, damage or leakage.
26. Lubricate only external operator points or fittings specifically identified by the manufacturer. Do not assume that an internal stem thread can be lubricated from outside.

A11.2 Exercising Steps

27. Confirm the process is safe for full travel.
28. Operate slowly toward the opposite end position while counting every handwheel turn.
29. Do not rely on handwheel orientation to determine position; multi-turn handwheels do not retain a meaningful open/closed orientation.
30. Stop at the mechanical end position using firm hand effort only. Investigate a premature hard stop or significantly abnormal turn count.
31. Reverse direction and travel fully to the other end position.

32. Where permitted by the manufacturer or site practice, back off approximately one-quarter turn from the full-open stop. Leave a normally closed valve firmly seated unless the manufacturer specifies otherwise.
33. Return to the approved normal position to complete the cycle.
34. Repeat the full cycle and perform a third when required.
35. Record turn count in both directions, indicator response, operating effort, leakage and any discrepancy from previous records.

Position verification

A non-rising-stem valve that feels tight is not necessarily fully closed or fully open. A reliable position determination should combine turn count, indicator position where fitted, known mechanical travel and process verification. A materially inconsistent turn count requires investigation.

A12. Ball Valve Procedure

The approved manufacturer-based procedure for each installed ball-valve family shall govern the equipment-specific maintenance method. The steps below are GYSBI general controls to be incorporated unless the approved procedure requires a different method. The supplied 3-inch and 4-inch Quadrant F2-SS specifications are representative references only and shall not be applied to other manufacturers or gear-operated ball valves without verification.

A12.1 Pre-Cycle Inspection

36. Confirm whether the valve is lever-operated or gear-operated and whether it is full port, reduced port, floating ball or trunnion mounted when identifiable.
37. Inspect the handle/gearbox, stem, stop plate, lock provision, body joint, flanges, packing area and supports.
38. Verify the open/closed indication. For a conventional lever-operated valve, a handle parallel to the pipeline normally indicates open and a handle perpendicular to the pipeline normally indicates closed; verify the actual port/indicator before relying on this convention.
39. Confirm that the body cavity or downstream piping cannot contain hazardous trapped pressure that would be released by the planned operation.
40. Do not loosen the stem nut, body bolts, cavity fittings, drains, bleeds or sealant fittings while pressurized.

A12.2 Exercising Steps

41. Confirm that movement through 90 degrees will not cause surge, pump deadhead/starvation, unintended transfer or overflow.
42. Release the lock or stop restraint under the approved lineup.
43. Rotate the lever or handwheel slowly and steadily through the complete travel to the opposite mechanical stop.
44. Do not leave the ball in an intermediate position. Ball valves covered by this procedure are to be fully open or fully closed unless specifically approved for throttling.
45. Observe operating effort, stem/handle movement, stop alignment and leakage.
46. Return through the complete 90-degree travel to the approved normal position to complete the first cycle.
47. Repeat the complete cycle and perform a third when required.
48. Verify the lock holes/position device align correctly in the final position and reinstall the lock or tag.

A12.3 Ball Valve Cautions

- A closed ball valve may trap pressurized liquid in the body cavity. Cycling is not a substitute for depressurization before maintenance.
- Do not strike the handle or install a pipe extension. Excessive torque can damage the stem, seats, stops or body.
- A valve that moves mechanically may still leak across the seats; perform a separate isolation test when tight shutoff is required.
- For gear-operated ball valves, record handwheel turns and verify the gearbox position indicator reaches both limits.

A13. Handwheel-Operated Plug Valve Procedure

The approved manufacturer-based procedure for each installed plug-valve family shall govern the equipment-specific maintenance method. The steps below are GYSBI general controls to be incorporated unless the approved procedure requires a different method. The supplied 3-inch Class 150 General Truseal Model 211 information is a representative reference only; field identification and the exact manufacturer IOM/technical guidance shall govern the equipment-specific requirements.

A13.1 Pre-Cycle Inspection

49. Identify the valve figure/model and verify whether it is an expanding plug, lubricated plug, sleeved plug or another design.
50. Inspect the handwheel/operator, stem, bonnet, lower plate, body, manual bleed valve, thermal-relief piping if fitted, and all visible seals and fasteners.
51. Confirm the expected number of turns and direction of operation from the nameplate, IOM or historical record. Do not apply the six-turn value from the representative Model 211 to other valves.
52. Confirm the manual bleed valve is closed, capped or routed as designed and not leaking.
53. Do not open a body bleed, drain or cavity connection during routine exercising. Any double-block-and-bleed verification requires a separate approved procedure, controlled collection and confirmation that opening the bleed is safe.
54. Do not inject lubricant or sealant unless the exact valve design includes a designated fitting and the manufacturer procedure, material compatibility, pressure and quantity are approved.

A13.2 Exercising Steps

55. Confirm that full travel will not interrupt a live transfer or create unsafe differential pressure.
56. Operate the handwheel slowly toward the opposite end position while counting turns.
57. Expect the operator effort to change as the internal sealing elements disengage, rotate and re-engage; however, stop for sharp, erratic or increasing resistance.
58. Travel fully to the mechanical end position. Do not use the plug valve as a throttling valve unless its manufacturer specifically permits throttling.
59. Reverse direction and return fully to the approved normal position to complete the first cycle.
60. Repeat the full cycle and perform a third when required.
61. Record turn count, operating effort, leakage, bleed-valve condition and whether end positions were repeatable.
62. Verify any position indicator and reinstall locks/tags.

Manual bleed / DBB feature

The bleed connection is not part of routine exercising. Opening it may release pressurized diesel or prove seat leakage. Use it only under a separate approved seat-verification procedure with isolation, pressure assessment, bonding, controlled containment, communications and defined acceptance criteria.

A14. Post-Exercise Inspection and Restoration

63. Return the valve to the approved normal position.
64. Verify final position using the best available combination of stem height, turn count, position indicator, lever orientation, mechanical stop and process response.
65. Check the body, bonnet, packing, stem, bleed/drain connections, operator, flanges and nearby piping for leakage or movement.
66. Confirm pumps, tank lineups, pressures, levels and alarms are normal.
67. Reinstall locks, chains, tags, covers, guards or tamper seals.
68. Remove excess external lubricant and housekeeping materials.
69. Close permits and notify Operations that the valve has been restored.
70. Initiate a defect report or work-order recommendation for every condition classified B, C or D.

A15. Condition Classification and Acceptance

Class	Typical Condition	Required Action
A - Acceptable	Full repeatable travel; normal effort; expected turn count/indicator response; no leakage or damage.	Return to service and record.
B - Monitor / Minor Maintenance	Dry or lightly corroded external parts; slightly elevated but stable effort; minor operator looseness; no loss of full travel or isolation function observed.	Lubricate/adjust only as approved; create maintenance note; monitor next cycle.
C - Repair Required	Abnormal turn count; incomplete or uncertain travel; excessive effort; packing seepage; damaged handle/indicator/lock; recurring binding; significant corrosion.	Do not rely on the valve for critical isolation until Engineering/Maintenance disposition and repair.
D - Unserviceable / Immediate Action	Cannot operate; major leakage; cracked or severely damaged pressure boundary/operator; stem/yoke failure; uncontrolled fuel movement; unsafe condition.	Stop work, isolate the hazard, notify Operations/HSE/Engineering and repair or replace before return to service.

A15.1 Conditions Requiring Technical Disposition

- A valve requires force beyond normal manual effort or any improvised operating aid.
- Turn count changes materially between cycles or from historical records.
- The valve reaches an apparent stop without expected stem/indicator/process response.
- Packing adjustment, disassembly, sealant injection, gearbox work or body-cavity work is proposed.
- The valve cannot be full-stroked during operations and no outage plan exists.
- Valve type, trim, manufacturer or intended normal position cannot be confirmed.
- The valve is required for critical isolation but tight shutoff has not been demonstrated.

A16. Records and Reporting

The completed record shall include, at minimum:

- Valve tag, location, service, size, class, type, manufacturer/figure, applicable OEM document reference, approved procedure/revision and criticality.
- Normal and as-found positions.
- Date, operator, observer, permit/JSA reference and associated transfer/outage.
- Number of complete cycles, turn count or angular travel for each cycle and final position.
- Qualitative operating effort and where resistance occurred.
- Stem, packing, operator, body, bonnet, flange, bleed/drain, lock and indicator condition.
- Leakage before, during or after exercising.
- Lubricant used, manufacturer approval/source and quantity where applicable.
- Photograph references.
- Condition classification, defect/work-order reference and required follow-up.

A17. Limitations of Valve Exercising

Valve exercising is preventive maintenance and condition screening. It does not establish:

- Bubble-tight or zero-leakage isolation.
- Pressure-boundary integrity beyond the visual observations made during the exercise.

- Internal seat, gate, ball, plug, slip or stem condition where those parts cannot be directly inspected.
- Suitability for a different fluid, pressure, temperature or hazardous-area duty.
- Compliance with a manufacturer warranty or regulatory inspection requirement.

Critical valves should have a separate risk-based inspection and seat-verification plan where reliable isolation is essential.

Appendix B - Representative Valve Specifications Supplied by GYSBI

The following information is transcribed from the supplied specification images and is representative only. Valve tags, nameplates, purchase records and manufacturer IOMs shall be verified in the field because not all installed valves are guaranteed to be the same manufacturer or figure.

Valve / Supplied Specification	Transcribed Details
Handwheel-operated plug valve	3 in; ASME Class 150; General Truseal Model 211; handwheel operated; reduced port; temperature limits -20/+350 degF; ASTM A216 WCC body; chrome-plated body; ASTM A536 DI plug with 1 mil electroless nickel plating; ASTM A216 WCC bonnet/lower plate/gland; ASTM A536 DI stem; ASTM A536 Gr 65-45-12 DI slips; Viton GF slip seals; Viton O-ring; graphite gasket and packing; ASTM A193-B7/A194-2H bolting; raised-face flanged ends, 125-250 AARH finish; API 6D; manual bleed system with carbon-steel bleed valve/pipe plugs; upstream orientation; testing to API 6D; 8 in end-to-end; 15 ft-lb torque; 2,000 lb thrust; 6 turns; 0.875 in OD stem; factory new.
Lever-operated ball valve - 3 in	3 in; ASME Class 150 (275 psi); Quadrant F2-SS Series; two-piece body; raised-face flanged; full port; lockable lever handle; CF8M body; 316 SS trim; R-TFM seats; graphite seals; ASME B16.34; API 608; API 607 fire-safe; NACE MR-01-75; material certificates required.
Lever-operated ball valve - 4 in	4 in; ASME Class 150 (275 psi); Quadrant F2-SS Series; two-piece body; raised-face flanged; full port; lockable lever handle; CF8M body; 316 SS trim; R-TFM seats; graphite seals; ASME B16.34; API 608; API 607 fire-safe; NACE MR-01-75; material certificates required.
Gate valve - 6 in	DSI gate valve; 6.00 in; ASME Class 150; raised face; bolted bonnet; CF8M body; API Trim 12; handwheel operated; graphite packing and gasket; API 603; Figure 37-16-16HFS.

B1. Field Verification Items

- ☐ Valve tag and service.
- ☐ Manufacturer, figure/model, size, pressure class and serial number where present.
- ☐ Rising-stem versus non-rising-stem construction.
- ☐ Lever, handwheel, gear or actuator type.
- ☐ Full-port versus reduced-port construction.
- ☐ Normal position and lock/tag requirement.
- ☐ Expected turn count or quarter-turn travel.
- ☐ Presence of manual bleed, body cavity drain, thermal relief, sealant/lubricant fittings or bypass.
- ☐ Manufacturer-approved lubricant and maintenance requirements.

Appendix C - Pre-Job Valve Exercise Checklist

- ☐ Valve tag, service, type, size/class and normal position confirmed.
- ☐ Current P&ID and field lineup reviewed.
- ☐ Full closure/opening consequences understood.
- ☐ No pump will be starved or deadheaded.
- ☐ No unintended tank cross-connection or overfill can occur.
- ☐ No trapped liquid will be created without thermal relief.
- ☐ Active transfer stopped or approved operating plan in place.
- ☐ Permit/JSA/LOTO requirements completed.
- ☐ Operator and independent observer assigned.
- ☐ Communications checked.
- ☐ Spill containment and PPE ready.
- ☐ Valve and operator inspected and photographed.
- ☐ Expected turns/indicator travel identified where available.
- ☐ Manufacturer-approved lubricant identified where required.
- ☐ Stop criteria reviewed.

Valve tag		Date / time	
Operations authorization		Maintenance lead	
Normal position		Expected cycles	2 / 3
Permit / JSA reference		Observer / recorder	

Appendix D - Individual Valve Exercise Record

Valve tag		Location	
Service		Critical valve	Yes / No
Valve type	Rising-stem gate / NRS gate / Ball / Plug / Other	Size / Class	
Manufacturer / Figure		Serial no.	
Normal position	Open / Closed	As-found position	Open / Closed / Intermediate / Unknown
Permit / JSA		P&ID / Lineup ref.	
Operator		Observer	
Date / Time		Work order	

Cycle Record

Cycle	Start pos.	Opposite pos.	Return pos.	Turns / angle	Effort	Leakage	Observations
1							
2							
3 (if required)							

Condition Inspection

Stem / indicator	
Handwheel / lever / gearbox	
Packing / stem seal	
Body / bonnet / body joint	
Flanges / supports	
Bleed / drain / thermal relief	
Lock / tag / final position	
Lubricant used and approval source	
Photograph references	

Final Disposition

Final position	Open / Closed
Condition class	A / B / C / D
Accepted for service	Yes / No / Restricted
Defects / work required	
Work order / target date	
Operations acceptance	Name / Signature / Date

Appendix E - Valve Exercise Master Log

Use one row per completed exercise. Attach an Individual Valve Exercise Record for each valve and identify any Class B, C or D result in the defect/follow-up register.

Date	Valve tag	Type	Size/Class	Service	Normal	Cycles	Turns/Angle	Effort	Leakage	Final	Class	WO / Notes

GYSBI

Appendix F - General Coating Requirements and Procedure Development Basis

Cleaning and Protective Coating of Carbon Steel Pipework and Associated Steel Supports

Client	Guyana Shore Base Inc. (GYSBI)
Application	External carbon steel fuel-transfer and bunkering pipework, valves, fittings, pipe supports, support beams, brackets, bracing, anchor plates and associated steel attachments
Exposure	Two coating exposure classes: Class A - Marine Atmospheric / Non-Splash; Class B - Marine Splash / Vessel-Wake
Contractor	Specialist coating contractor engaged by GYSBI
Status	Issued for Quotation
Date	7 August 2026

GYSBI GENERAL / PERFORMANCE-BASED COATING REQUIREMENTS

These are GYSBI minimum performance and acceptance requirements. The Contractor shall research the existing conditions, select a compatible coating system, obtain current manufacturer requirements, and submit a project-specific Coating Repair Procedure for GYSBI approval before execution.

F.1 PURPOSE AND SCOPE

This appendix establishes GYSBI minimum performance, quality-control, inspection, documentation and acceptance requirements for cleaning and protective coating of external carbon-steel pipework and associated carbon-steel support steelwork within the GYSBI fuel-transfer and bunkering systems. It is not intended to replace the selected coating manufacturer's product-specific application requirements.

The work shall be researched, developed and performed by the Contractor. The Contractor shall obtain and coordinate the coating manufacturer's technical representative and/or a suitably qualified coatings engineer as required to develop and support the Coating Repair Procedure. GYSBI Operations and QA/QC, and other GYSBI representatives as designated, may review, witness, inspect and accept the work; such review does not transfer technical responsibility from the Contractor.

- Straight pipe, elbows, tees, reducers and welded fittings.
- External carbon steel surfaces of valves and flanges where coating is appropriate.
- Welds, pipe shoes, pipe supports, support beams, brackets, bracing, anchor plates and associated carbon-steel attachments.
- Localized coating repairs and areas designated for complete recoating.
- Associated carbon-steel items specifically identified in the work package or inspection reports.

This specification establishes two external coating exposure classes for pipework and associated steel supports. Exposure Class A applies to marine-atmospheric/non-splash locations. Exposure Class B applies to locations subject to direct seawater splash, vessel-wake wash, repeated wet/dry cycling or periodic short-duration inundation. Buried pipe, internal linings, insulated pipe and continuously submerged steel remain outside this specification unless specifically included by written amendment.

F.2 BASIS OF SPECIFICATION AND GOVERNING DOCUMENTS

The Contractor shall use the latest applicable editions of the following as the technical basis for procedure development. The selected coating manufacturer's current PDS, application guide and written technical recommendations govern product-specific compatibility, preparation, mixing, application, recoat and cure limitations. GYSBI safety, service-performance, inspection and acceptance requirements remain mandatory unless a documented technical deviation is approved in writing:

- ISO 12944 series - corrosion protection of steel structures by protective paint systems, including ISO 12944-9 where applicable to severe offshore/marine and immersion exposure.
- NORSOK M-501 - surface preparation and protective coating, where used as a qualification basis for severe marine or splash-zone service.
- ISO 8501-1 - visual assessment of surface cleanliness.
- ISO 8501-3 - preparation of welds, edges and other areas with surface imperfections.
- ISO 8502-6 and ISO 8502-9 - extraction and assessment of water-soluble salts.
- ISO 8503 series and/or ASTM D4417 - assessment of blast-cleaned surface profile.
- AMPP/SSPC-SP 1 - Solvent Cleaning.
- AMPP/SSPC-SP 10 / NACE No. 2 - Near-White Metal Blast Cleaning.
- AMPP/SSPC-SP 11 - Power Tool Cleaning to Bare Metal.
- SSPC-PA 2 - procedure for determining conformance to specified dry coating thickness.
- ASTM D4285 - indication of oil or water in compressed air.
- ASTM D7091 - nondestructive measurement of dry film thickness, where applicable.
- Approved coating manufacturer Product Data Sheets (PDS), Safety Data Sheets (SDS), application guides and written technical recommendations.
- GYSBI permit-to-work, QHSSE, environmental, access and operational-control procedures.

Order of precedence

If a manufacturer/OEM requirement conflicts with a GYSBI general technical requirement, the Contractor shall identify the conflict and obtain a documented technical resolution before work proceeds. GYSBI safety and operating controls remain mandatory. The selected coating manufacturer's product-specific compatibility, permitted surface preparation, environmental limitations, mixing, application, recoat and cure requirements shall not be violated. The approved Coating Repair Procedure shall document the resolved basis and any GYSBI-approved deviation.

F.3 RESPONSIBILITIES

Party	Minimum Responsibility
Contractor	Research existing coating/substrate conditions; select the proposed coating system; obtain current manufacturer PDS, application guides and technical recommendations; provide the manufacturer technical representative and/or suitably qualified coatings engineer as required; develop and revise the Coating Repair Procedure; and provide all labor, supervision, competent coating personnel, materials, access, containment, blasting/painting equipment, inspection instruments, consumables, PPE, environmental protection, quality-control records and closeout documentation required to execute the approved procedure.
Contractor QC	Review the approved Coating Repair Procedure and perform/document all required surface-preparation, environmental, soluble-salt, profile, coating-application and DFT inspections. Contractor QC shall be independent of the individual applicator performing the immediate work to the extent practicable.
GYSBI Representative / QA/QC	Review Contractor submittals, witness designated hold points, inspect representative work, review nonconformances and accept or reject completed work. GYSBI may seek additional technical review at its discretion; this does not relieve the Contractor of responsibility for technical adequacy or execution.
GYSBI Operations	Control process lineups, access, permits, isolation requirements, operational restrictions and authorization to work around active fuel systems.
GYSBI Maintenance	May provide asset history or support information when requested, but is not the executing coating workforce under this tendered scope.

F.4 PRE-WORK CONDITION VERIFICATION

The berth and fuel-line systems may already have been subject to formal engineering or API inspection. The inspection required by this section is not intended to duplicate a fitness-for-service assessment or API inspection. It is a coating-work condition verification performed immediately before and during surface preparation.

- Confirm the work location, component identification and extent of coating work.
- Photograph the as-found coating and corrosion condition.
- Identify active leakage, perforation, severe section loss, loose scale concealing possible wall loss, damaged welds, damaged or unstable support components, or other conditions that may affect safe coating work.
- Identify areas where corrosion extends beneath pipe shoes, supports, clamps or other inaccessible interfaces.
- Identify existing coating that will remain and verify that it is sound enough to be retained and compatible with the proposed repair system.
- Report any condition materially worse than the documented inspection condition before coating over or concealing the area.

No concealment of defects

The Contractor shall not coat over active leaks, perforations, severe or unexplained section loss, cracked welds or conditions requiring technical disposition. The Contractor shall stop, document the condition and obtain the appropriate manufacturer and/or qualified engineering technical disposition for its proposed work basis. GYSBI will determine whether additional inspection, UT, repair or separate fitness-for-service assessment is required before coating proceeds.

F.5 CONTRACTOR RESEARCH AND COATING PROCEDURE

SUBMITTALS

- Project-specific Coating Repair Procedure and work execution plan developed from the Existing Facilities Research findings, selected coating system, manufacturer PDS/application guidance and applicable technical consultation.
- Inspection and Test Plan (ITP) identifying hold points, witness points, test frequency and acceptance criteria.
- Complete proposed coating system for each applicable exposure class, including manufacturer, product names, number of coats, nominal DFT per coat, total nominal DFT, compatible thinners, application methods and the manufacturer's required surface-preparation basis. One system may be proposed for both classes only where the manufacturer documents suitability for both exposure conditions.
- Exposure-class schedule identifying all applicable carbon-steel pipework and associated steel supports as Class A or Class B, with the east berth access point shown as the start of Class B berth work.
- Current Product Data Sheets, Safety Data Sheets, application guides and written manufacturer technical recommendations for all proposed products, together with the manufacturer technical contact used for clarification where applicable.
- Documentary evidence that the complete system satisfies Section 6 performance requirements.
- Written manufacturer confirmation of compatibility where the system will be applied over retained existing coating or where different products are combined.
- Manufacturer-supported repair procedure for localized areas and locations where abrasive blasting cannot reasonably be performed, incorporated into the project-specific Coating Repair Procedure.
- Record of coating-manufacturer technical consultation and/or qualified coatings-engineer review used to support the selected system and procedure where the published manufacturer documentation does not fully address the field condition.
- Abrasive type and product data.
- Coating inspector qualifications and calibration certificates for test instruments.
- Environmental and waste-containment plan, including control of abrasive and paint overspray near waterways and operational areas.

- Color schedule for GYSBI approval.
- Proposed work sequence and access plan.

F.6 COATING SYSTEM PERFORMANCE REQUIREMENTS

The coating requirement is performance based. GYSBI does not mandate a particular coating chemistry, brand or proprietary system because local availability in Guyana may vary. The Contractor shall select a complete manufacturer-approved system demonstrably suitable for the applicable exposure class and shall incorporate the manufacturer's actual product-specific application requirements into the Coating Repair Procedure.

F.6.1 Exposure Classification and Boundary

Exposure Class	Physical Limits	Service Condition
Class A - Marine Atmospheric / Non-Splash	All carbon-steel pipework and associated steel supports outside the Class B boundary and not otherwise subject to direct seawater splash, vessel-wake wash or periodic seawater inundation.	Severe tropical coastal atmosphere: high humidity, rainfall, salt deposition, UV exposure and industrial/fuel-terminal service.
Class B - Marine Splash / Vessel-Wake	All carbon-steel pipework and associated steel supports beginning at the east berth access point and continuing throughout the full length of the berth, regardless of elevation or frequency of wetting.	Direct seawater splash and vessel-wake wash, repeated wet/dry cycling, salt loading, periodic short-duration inundation, UV exposure and marine abrasion/impact.

Boundary rule

Where there is uncertainty regarding which exposure class applies, Exposure Class B shall govern unless GYSBI approves Class A in writing. The Contractor shall identify the proposed exposure class for each work location before coating materials are approved or applied.

Steel-support rule

Associated carbon-steel supports and support components shall receive the same exposure-class coating requirement as the adjacent pipework unless GYSBI approves otherwise in writing.

F.6.2 Exposure Class A - Marine Atmospheric / Non-Splash

Requirement	Minimum Acceptance Basis
Corrosion performance	Complete system shall have documented suitability for ISO 12944 C5 with Very High (VH) durability, ISO 12944 CX where appropriate, or documented equivalent severe-marine atmospheric performance accepted by GYSBI.
Durability intent	Long-term corrosion protection intended to minimize major recoating. ISO 12944 durability classification is a design/maintenance-planning concept and shall not be represented as a warranty period.
Weathering	System shall resist high humidity, rain, salt-laden atmosphere, wet/dry cycling, tropical temperature/humidity and long-term UV exposure.
Fuel exposure	Where incidental diesel, oil or hydrocarbon splash can reasonably occur, the cured system shall be documented as resistant to such intermittent exposure.
Mechanical service	System shall be suitable for normal handling, maintenance contact and abrasion expected on exposed industrial pipework.
Finish	Final exposed coat shall be suitable for long-term exterior weathering. Epoxy-only exposed finishes may be accepted only where the manufacturer documents suitability for the intended UV/weathering service and GYSBI accepts the finish appearance.

F.6.3 Exposure Class B - Marine Splash / Vessel-Wake

Requirement	Minimum Acceptance Basis
Service suitability	The complete system shall be specifically documented by the coating manufacturer as suitable for carbon steel exposed to direct seawater splash, vessel-wake wash, repeated wet/dry cycling and periodic short-duration seawater inundation.
Qualification basis	Acceptable evidence may include ISO 12944-9 qualification/testing for the applicable severe marine CX and/or Im4 conditions, NORSOK M-501 qualification for relevant splash-zone/coastal service, manufacturer documentation expressly identifying splash-zone/tidal-zone/intermittent immersion service, independent testing, or equivalent documented performance accepted by GYSBI.
Atmospheric-only systems	A coating system qualified solely for C5 atmospheric exposure shall not be accepted for Class B unless the coating manufacturer provides written confirmation that the proposed complete system is suitable for the Class B direct seawater splash and intermittent wetting conditions.
Abrasion and impact	The system shall have documented resistance appropriate to wake-driven water, marine debris, maintenance contact and other mechanical abuse reasonably expected along the berth.
Weathering	Where the coating is exposed to sunlight, the complete system shall also be suitable for long-term exterior UV/weathering. A compatible weatherable finish coat shall be included where required by the manufacturer.

Requirement	Minimum Acceptance Basis
DFT	Number of coats and nominal dry-film thickness shall be the coating manufacturer's recommended build for the proposed Class B service. The Contractor shall not reduce a qualified splash-zone system thickness to meet a generic project DFT.

F.6.4 Requirements Common to Both Exposure Classes

Requirement	Minimum Acceptance Basis
Substrate	Carbon steel, including pipework, welds, fittings, pipe supports, support beams, brackets, bracing, anchor plates and associated steel attachments.
Compatibility	Primer/intermediate/topcoat layers shall form one manufacturer-approved system. Mixing manufacturers is prohibited unless written compatibility and performance confirmation is submitted and approved.
DFT	Number of coats and nominal dry-film thickness shall be those required by the accepted manufacturer-qualified system for the applicable exposure class. GYSBI will not impose a generic DFT that could invalidate a proven system.
Single system for both classes	A single coating system may be used for Classes A and B only where the coating manufacturer documents suitability for both Class A exterior atmospheric/UV service and Class B splash/wake service.
Product availability	Local availability is not, by itself, evidence of technical acceptability. Substitutions shall satisfy the same performance and documentation requirements as the system on which the bid is based.

Evidence of performance

Marketing literature alone is not sufficient. The Contractor shall submit manufacturer Product Data Sheets, application guidance and qualification/performance documentation sufficient to demonstrate that the complete proposed system is suitable for the applicable exposure class.

F.6.5 Examples of Potentially Acceptable Product Families - Not Limiting

The following examples are provided only to illustrate the level and type of protective coating products that may be considered. They do not constitute sole-source requirements, and the named products are not automatically approved as a complete system. Exact products, system build, surface preparation, DFT, recoat limitations and service suitability shall be verified against current manufacturer documentation and accepted by GYSBI.

Exposure Class A - Marine Atmospheric / Non-Splash

Manufacturer / Family	Illustrative Products	Qualification Note
Sherwin-Williams Protective & Marine	SeaGuard 5000 HS with a compatible exterior weatherable finish such as Acrolon 218 HS, where manufacturer-approved.	Complete submitted system shall meet the Class A C5-VH/CX or equivalent severe-marine atmospheric performance requirement.
Jotun	Penguard Express or another suitable anticorrosive system with Hardtop XP or equivalent weatherable finish.	Contractor shall submit the exact manufacturer-approved Class A system and DFT.
Hempel	Hempadur / Hempaprime anticorrosive systems with a compatible Hempthane exterior finish.	Contractor shall submit the exact Class A system and qualification basis.
Carboline	Carboguard anticorrosive systems with compatible Carbothane exterior finishes.	Contractor shall submit the exact Class A system and performance evidence.
Other manufacturers	International, PPG, AkzoNobel, Teknos, Sika, Belzona or other reputable protective/marine coating systems.	Equal or better systems are acceptable when they satisfy all Class A performance, compatibility, application and documentation requirements.

Exposure Class B - Marine Splash / Vessel-Wake

Manufacturer / Family	Illustrative Products	Qualification Note
Jotun	Marathon 550 or another manufacturer-approved Jotun splash/tidal-zone system.	Illustrative of a heavy-duty system intended for very high corrosivity, splash/tidal zones and atmospheric/immersed service. Exact system and DFT shall be submitted.
Sherwin-Williams Protective & Marine	Dura-Plate 154 or another manufacturer-approved Dura-Plate splash-zone system.	Illustrative of high-build coating intended for severe abrasion/corrosion and splash-zone service. Exact system and application limits shall be submitted.
Hempel	Hempadur 35620 or another manufacturer-approved Hempadur splash-zone/seawater system.	Illustrative of high-build epoxy intended for offshore, splash-zone and seawater exposure. Exact system and DFT shall be submitted.
Carboline	Carboguard 1207 or another manufacturer-approved Carboguard splash-zone system.	Illustrative of heavy-duty marine/splash-zone protection with strong abrasion and seawater resistance. Exact system and application limits shall be submitted.
Other manufacturers	International, PPG, AkzoNobel or other reputable protective/marine manufacturers with documented splash-zone systems.	Equal or superior systems are acceptable when they satisfy all Class B performance, compatibility, application and documentation requirements.

The existing internal procedure identifies SeaGuard 5000 HS epoxy and Kem Kromik 150 alkyd topcoat. Those products shall not be treated as mandatory. Any use of those or similar materials under this tender shall be accepted only as part of a submitted system that meets the applicable exposure-class requirements of this specification.

F.7 INITIAL CLEANING AND DECONTAMINATION

- Remove loose deposits, mud, marine contamination and gross debris without driving contamination into the steel.
- Remove oil, diesel residue, grease and similar contaminants in accordance with SSPC-SP 1 or an equivalent manufacturer-approved method before abrasive blasting or power-tool preparation.
- Fresh-water wash areas exposed to salt contamination. Detergent may be used where required, followed by thorough fresh-water rinsing.
- Allow surfaces to dry before final surface preparation.
- Do not use hydrocarbon-contaminated compressed air, dirty rags or abrasive contaminated with oil, salts or moisture.

F.8 SURFACE PREPARATION

F.8.1 Abrasive Blast Cleaning - Preferred Method

The approved Coating Repair Procedure shall define surface preparation for each repair category using the selected coating manufacturer's current requirements. For accessible carbon-steel pipework and associated support steel designated for complete recoating, GYSBI's default minimum basis is SSPC-SP 10 / NACE No. 2, Near-White Metal Blast Cleaning, or ISO 8501-1 Sa 2½. A more stringent manufacturer requirement shall apply. A different manufacturer-supported preparation may be proposed only where technically justified and specifically approved by GYSBI in the Coating Repair Procedure.

- Blast cleaning shall remove rust, mill scale, old coating and foreign matter to the specified degree of cleanliness.
- Abrasive shall be clean, dry and capable of producing the required angular surface profile.
- Compressed air used for blasting shall be checked for oil and water contamination in accordance with ASTM D4285 at least at the start of each shift and after any suspected equipment problem.
- Prepared steel shall not be handled with bare hands or contaminated tools.

F.8.2 Surface Profile

The required surface profile shall be established in the approved Coating Repair Procedure based upon the selected coating manufacturer's current Product Data Sheet, application guide and written technical recommendations.

For tendering and preliminary planning purposes, GYSBI's default basis for conventional high-performance marine coating systems is an angular surface profile of approximately 50–75 micrometres (2–3 mils). The manufacturer's specified profile for the approved coating system shall govern where different.

The Contractor shall identify the required profile in the Coating Repair Procedure and shall measure and record the achieved profile using ASTM D4417, ISO 8503, or another approved equivalent method.

F.8.3 Power-Tool Preparation Where Blasting Is Not Feasible

Where abrasive blasting is impractical because of access, operating constraints or localized repair geometry, the Contractor shall use only a surface-preparation method permitted by the selected coating manufacturer and incorporated into the approved Coating Repair Procedure. GYSBI's default localized bare-metal basis is SSPC-SP 11 unless the manufacturer-supported procedure establishes a different preparation that GYSBI approves.

- SSPC-SP 3 alone shall not be accepted as the final preparation standard for complete recoating of bare carbon steel under this specification.
- Power tools shall be capable of producing or preserving the surface profile required by SSPC-SP 11 and by the coating manufacturer.
- Transition edges of sound retained coating shall be feathered to a smooth, firmly adherent edge.
- Areas prepared by power tool shall be separately identified in the coating records.

F.8.4 Chemical Rust Removers and Converters

Chemical rust removers, rust converters or phosphoric-acid treatments shall not be used as a substitute for the specified mechanical surface preparation. They may be used only where specifically included in the accepted coating manufacturer's written procedure and approved by GYSBI. Any residue shall be removed or neutralized as required by the manufacturer before coating.

F.8.5 Welds, Edges and Surface Imperfections

- Remove weld spatter, sharp projections, loose laminations and other features that prevent continuous coating coverage.
- Round or smooth sharp edges where practical and prepare welds/edges to a condition consistent with ISO 8501-3 P2 unless the coating manufacturer requires a higher preparation grade.
- Pits shall be thoroughly cleaned; filling of deep pits with coating, epoxy filler or repair compound shall not be used to conceal suspected wall loss.
- Unexpected defects exposed by blasting shall be reported before coating.

F.9 SURFACE CLEANLINESS BEFORE COATING

- The surface shall be dry and visibly free from dust, abrasive, oil, grease, salts, flash rust and other contamination before each coating application.
- Soluble salts shall be tested on representative prepared steel using ISO 8502-6/8502-9 or an approved equivalent method.
- Unless the accepted coating manufacturer specifies a lower limit, the maximum soluble-salt level shall be 50 mg/m² expressed as NaCl equivalent.
- Areas exceeding the accepted salt limit shall be fresh-water washed, dried, re-prepared as necessary and retested.
- Dust shall be removed by vacuuming or clean, dry compressed air and shall meet the coating manufacturer's acceptance criteria.

F.10 ENVIRONMENTAL CONDITIONS

Environmental limits stated in the accepted coating manufacturer PDS/application guide shall govern. As minimum controls unless the manufacturer permits otherwise:

- Steel temperature shall be at least 3°C above the calculated dew point.
- Relative humidity shall not exceed 85%.
- The surface shall be dry and free of condensation.
- Application shall stop when rain, heavy mist, condensation or overspray contamination is likely before the coating becomes resistant to moisture.
- Ambient temperature, steel temperature, relative humidity and dew point shall be measured before application, at least every four hours during coating, and whenever weather conditions materially change.

Because the work is in a tropical marine environment, the Contractor shall plan blast-and-prime areas so that prepared steel can be coated before flash rusting or recontamination occurs. Steel that deteriorates below the specified cleanliness standard before priming shall be re-prepared.

F.11 COATING APPLICATION

- All coating materials shall be within shelf life and stored in accordance with manufacturer requirements.
- Batch numbers shall be recorded. Expired, contaminated, gelled or otherwise unsuitable material shall not be used.
- Mixing ratio, induction time, pot life, thinner type/amount, recoat interval and cure requirements shall follow the approved PDS/application guide.
- Airless spray is preferred for major pipe surfaces where practical. Brush and roller may be used for stripe coating and approved localized areas.
- Each full coat shall be continuous, uniform and free of misses, pinholes, dry spray, runs, sags, mud cracking, wrinkling or other defects.
- Where practicable, successive coats should be of contrasting shade to assist inspection of coverage.
- No coating shall be applied beyond the manufacturer's maximum recoat interval without the specified surface conditioning or written manufacturer approval.

F.11.1 Stripe Coating

A separate stripe coat shall be applied by brush or suitable small roller to welds, weld toes, edges, pits, bolt heads, nuts, crevices, flange edges, attachments, brackets and other areas prone to low film build or premature corrosion. The stripe coat shall not replace the specified full coat.

F.11.2 Surfaces to Be Protected from Coating

- Valve stems, exposed operating threads and moving parts.
- Grease fittings, lubricant fittings and designated sealant fittings.
- Valve position indicators and identification plates/nameplates.
- Pressure gauge faces, sight glasses and instrument windows.
- Electrical bonding/earthing contact surfaces unless specifically approved.
- Flange gasket seating surfaces and machined sealing faces.
- Rubber, elastomeric and flexible-hose components unless the coating is expressly approved for them.
- Stainless steel and other non-carbon-steel components unless specifically included in the work scope and compatible surface preparation/coating is approved.

F.12 DRY FILM THICKNESS AND COATING THICKNESS CONTROL

The accepted manufacturer system shall define nominal dry film thickness (NDFT) for each coat and for the complete system. The Contractor shall not reduce the submitted NDFT or omit a coat without written approval.

- Wet-film thickness shall be monitored during application where useful to control final film build.
- Dry-film thickness shall be measured using calibrated instruments in accordance with SSPC-PA 2 and ASTM D7091 as applicable.
- DFT shall be recorded for the primer/intermediate system as necessary and for the completed system.
- Both insufficient and excessive DFT shall be evaluated against the coating manufacturer's permitted range. Excessive coating thickness is not automatically acceptable.
- Areas outside the accepted thickness range shall be repaired in accordance with the approved coating repair procedure.

F.13 INSPECTION AND TEST REQUIREMENTS

The Contractor shall perform continuous quality control and shall provide GYSBI reasonable access to witness the work. The minimum ITP shall include the following:

Point	Stage	Minimum Verification	Status
HP-1	Pre-work condition verification	Work location, as-found condition, active leaks or unexpected defects, photographic record.	Hold
WP-1	Initial cleaning	Oil/grease/salt/debris removal and dry condition.	Witness
HP-2	Completed surface preparation	SP10/Sa 2½ or approved SP11 area; surface profile; visible cleanliness; soluble-salt result; compressed-air check.	Hold
WP-2	Stripe coat	Complete stripe coverage of edges, welds and difficult areas.	Witness
WP-3	Each coating stage	Environmental conditions, batch, mixing, application, recoat interval, visual condition and required film build.	Witness
HP-3	Final coating	Final visual inspection and DFT acceptance.	Hold
HP-4	Repairs / closeout	Punch-list repairs accepted; records complete.	Hold

Inspection does not transfer responsibility

GYSBI witnessing or acceptance of a hold point does not relieve the Contractor of responsibility for surface preparation, coating compatibility, application quality or final performance.

F.13.1 Coating Inspector Competency

The Contractor shall provide a competent coating inspector experienced with industrial/marine protective coatings. AMPP CIP Level 1, ICorr Level 1 or equivalent is preferred for routine field inspection; senior oversight by AMPP CIP Level 2, ICorr Level 2 or equivalent shall be available for disputed or complex coating issues. Equivalent experience/qualification may be accepted by GYSBI.

F.13.2 Adhesion and Holiday Testing

Routine destructive adhesion testing is not required solely because coating work has been completed. GYSBI may require adhesion testing where poor preparation, incompatibility, delamination or another coating defect is suspected. Holiday testing is not routinely required for Exposure Class A. For Exposure Class B, holiday testing shall be

performed where required by the accepted coating manufacturer, qualification basis, ITP or specific work package.

F.14 FINAL ACCEPTANCE CRITERIA

- Specified surface-preparation standard achieved and documented.
- Surface profile within the accepted coating manufacturer range.
- Soluble salts within the specified limit.
- Environmental conditions within accepted limits during application.
- All coats applied in the approved sequence and within required recoat windows.
- Final DFT conforms to the accepted system requirements.
- Coating is continuous, fully covered and visually sound with no exposed steel, rust breakthrough, blistering, delamination, unacceptable runs/sags, cracking, wrinkling or dry spray.
- Edges, welds, flanges, attachments and difficult areas have complete stripe/full-coat coverage.
- Valve identification, movement, instruments, bonding points and mechanical interfaces have not been impaired by coating.
- Work area has been cleaned and blasting/painting waste removed.
- Punch-list items and documentation have been closed.

F.15 REPAIR OF DAMAGED OR NONCONFORMING COATING

1. Remove defective coating back to sound, firmly adherent material.
2. Feather retained coating edges smoothly.
3. Re-clean and re-prepare exposed steel to the repair preparation standard specified by the selected coating manufacturer and incorporated into the approved Coating Repair Procedure.
4. Reapply the approved coating system in accordance with the manufacturer repair procedure and approved Coating Repair Procedure, restoring required overlap and total DFT.
5. Reinspect repaired areas for visual condition and DFT.
6. Do not repair by simply painting over rust, loose coating, contamination or active defects.

F.16 REQUIRED RECORDS AND FINAL DOSSIER

- Approved Coating Repair Procedure, supporting manufacturer/OEM technical basis and ITP.
- Approved complete coating system and manufacturer PDS/SDS/application guides.
- Manufacturer compatibility or performance letters where required.
- Material batch and expiry records.
- Daily environmental condition records.
- Compressed-air cleanliness results.
- Surface-preparation inspection and photographic records.
- Surface-profile measurements.
- Soluble-salt test results.
- Coating application records, including coat identification and dates.
- DFT records in accordance with the accepted inspection plan.
- Nonconformance and repair records.
- Before, during and after photographs.
- Final punch-list closeout.
- Coating inspector name and qualification.
- Final completion report and coating register identifying location, products, batch numbers, dates and total system DFT.

F.17 DEVIATIONS AND SUBSTITUTIONS

Because availability in Guyana may change, equal or superior products and coating systems may be proposed at any time before application. A substitution shall not be accepted solely because the product is locally available. The Contractor shall submit sufficient technical information to demonstrate that the alternative system meets or exceeds the environmental, durability, compatibility, preparation and application requirements of this specification.

F.18 TENDER CLARIFICATION

Bidders shall identify the coating manufacturer/system basis on which their execution price is based and shall include the cost of research, manufacturer technical consultation and development of the final Coating Repair Procedure under the separate pricing item. A bid stating only "marine paint," "epoxy coating," "equivalent paint" or similar generic language without a credible technical-development basis shall not be considered technically complete.

Attachment F-1 - Bidder Coating System Submittal Sheet

The bidder shall submit a complete system for each exposure class included in its work. If one system is proposed for both classes, complete both sections or clearly cross-reference the same system and provide manufacturer documentation confirming suitability for both services.

Exposure Class A - Marine Atmospheric / Non-Splash

Bidder	
Coating manufacturer	
Proposed system designation	
Primer / first coat	
Intermediate coat(s)	
Finish coat	
Nominal DFT per coat	
Total nominal DFT	
ISO 12944 / NORSOK / equivalent qualification	
Approved surface preparation	
Manufacturer technical contact	
Deviations / clarifications	

Exposure Class B - Marine Splash / Vessel-Wake

Bidder	
Coating manufacturer	
Proposed system designation	
Primer / first coat	
Intermediate coat(s)	
Finish coat	
Nominal DFT per coat	
Total nominal DFT	
ISO 12944 / NORSOK / equivalent qualification	
Approved surface preparation	
Manufacturer technical contact	
Deviations / clarifications	

Required attachments:

- ☐ Product Data Sheets
- ☐ Safety Data Sheets
- ☐ System qualification/performance evidence for each applicable exposure class
- ☐ Application guide
- ☐ Surface preparation requirement
- ☐ Recoat/cure table
- ☐ Compatibility statement for retained existing coating, if applicable
- ☐ Written confirmation of diesel/oil splash resistance where applicable
- ☐ For Class B: written manufacturer confirmation of direct seawater splash / vessel-wake / intermittent wetting suitability unless already explicit in the submitted PDS or qualification documentation
- ☐ Exposure-class schedule identifying pipework and associated steel supports, with the east berth access point as the start of Class B berth work

Attachment F-2 - Minimum Daily Coating QC Record

Date		Location / component	
Exposure class	A / B	Approved system	
Coating product / batch		Coat number	
Ambient temperature		Steel temperature	
Relative humidity		Dew point	
Steel above dew point		Weather	
Surface prep standard		Profile	
Soluble salts		Test method	
Compressed-air test		Result	
Mix time / pot life		Thinner / amount	
WFT checks		DFT checks	
Defects / repairs		Photo refs	
Inspector		GYSBI witness	

Appendix G - Optional Diesel Dispensing System Diagnostic Assessment

General Requirements and Contractor-Developed Test Plan Basis

OPTIONAL TASK - NOT AUTHORIZED UNLESS SEPARATELY AWARDED BY GYSBI

This appendix establishes GYSBI general and minimum requirements for an optional diagnostic assessment of the diesel dispensing system. It intentionally does not prescribe the complete field test sequence. The Contractor shall research the installed system, obtain the technical support required to establish safe operating limits, develop a detailed Diagnostic Test Plan, obtain GYSBI approval, and then execute only the approved plan.

G.1 PURPOSE AND PRELIMINARY SYSTEM BASIS

The purpose of the optional task is to determine where dispensing-system capacity has been lost and whether maintenance, instrumentation correction or other targeted work can restore acceptable performance before major pump or pipeline upgrades are considered. GYSBI preliminary information identifies the following background conditions:

- Original dispensing design flow: approximately 90 m³/h (1,500 L/min).
- Reported commissioning maximum: approximately 102 m³/h (1,699 L/min).
- Current typical operating flow: approximately 65-73 m³/h.
- Primary pumps: two Gorman-Rupp RD3A31-BAR dispensing pumps arranged duty/standby. The baseline diagnostic premise is to test one pump at a time unless the Contractor provides a justified alternative that is specifically approved by GYSBI.

The GYSBI Diesel Fuel Dispensing System Diagnostic Test Procedure, Draft for Review Rev 2 dated 29 July 2026, is preliminary reference information only. It shall not be treated as an approved field work instruction. The Contractor may adopt, revise or replace its proposed sequence based on field verification and the documented technical basis submitted for approval.

G.2 CONTRACTOR RESEARCH AND DETAILED DIAGNOSTIC TEST PLAN

Before field testing, the Contractor shall inspect and verify the relevant system configuration and shall review the available operating history, field-verified P&ID / As-Built information, pump serial/model information and curves, manufacturer IOMs, strainers, filters, meter and control components, tank/suction configuration, electrical starters and overloads, alarms, instrumentation and available maintenance records.

The Contractor shall prepare a project-specific Diagnostic Test Plan addressing, as a minimum:

- Proposed diagnostic flow path and any temporary return-to-tank or recirculation arrangement, including connection points, pressure ratings, supports/restraints, bonding/earthing, hazardous-area suitability and restoration method.
- Field-verified valve lineup, source/receiving tank selection, available receiving capacity, maximum run time, required tank monitoring and isolation controls.
- Hydraulic basis, including the pump operating curve, NPSHr basis, required NPSH margin and the resulting minimum permitted pump-suction absolute pressure for each planned test condition.
- Electrical basis, including motor nameplate current, starter/overload settings, voltage/current monitoring and the limits that govern test escalation.
- Proposed test sequence, test points, stabilization criteria and the specific comparisons that will distinguish suction, strainer, pump, filter, meter/control, temporary-loop and downstream-system limitations.
- Instrumentation list, ranges, accuracy, calibration requirements, installation details and proposed data-acquisition method.
- HSE, PTW, LOTO, line-breaking, spill containment, hazardous-area, communications, emergency shutdown and stop-work requirements.
- Planned data sheets, photographic records, analysis method, system restoration and final reporting format.

The Contractor shall provide a suitably qualified hydraulic/pump engineer and/or the applicable OEM/manufacture technical representative where required to establish or

validate the hydraulic, NPSH, equipment or test-limit basis. GYSBI review of the plan does not transfer technical responsibility from the Contractor.

G.3 MINIMUM PERMANENT DIAGNOSTIC INSTRUMENTATION

Regardless of the final approved test sequence, the optional task shall include supply and installation of the following permanent diagnostic instrumentation unless GYSBI approves a documented equivalent arrangement:

- Y-strainer differential pressure: provide permanent differential-pressure indication across each pump-suction Y-strainer (YST401 and YST402 or the field-verified equivalent identifiers). A nominal 0-10 psid range is the preliminary basis; the Contractor may propose a different range where technically justified. The instrument shall be suitable for diesel service, the applicable vacuum/common-mode conditions and expected reverse/overpressure exposure, and shall include suitable root isolation/equalizing/manifold provisions.
- Pump suction absolute pressure: provide permanent absolute-pressure indication downstream of each Y-strainer near the associated pump inlet. A nominal 0-15 psia range is the preliminary basis; the Contractor may propose a different range where supported by the approved hydraulic/NPSH basis. Local indication shall be provided and a data output is preferred where practical.
- Existing suction/discharge gauges and small-bore connections: inspect the existing gauges, taps, root valves, snubbers and connections. Clean, repair or replace them where required to provide reliable test and operating data. Final ranges shall place expected operating values in a useful portion of the instrument span.
- Additional temporary test instrumentation: provide calibrated pressure, differential-pressure, flow, electrical or temperature instruments required by the approved Diagnostic Test Plan, including pressure measurements across any temporary return arrangement where needed to quantify its effect on the test.

All permanent instruments shall be labeled, calibrated, supported, protected from vibration/impact/weather, included in the final instrument register and incorporated into the project P&ID / As-Built drawings. Calibration certificates, model/serial numbers, ranges, accuracy and calibration due dates shall be included in the closeout dossier.

G.4 MINIMUM DIAGNOSTIC SCOPE

The Contractor shall determine the detailed sequence, but the approved plan shall address the following minimum diagnostic comparisons unless a technically superior alternative is proposed and approved by GYSBI:

- Capture safe as-found baseline data before cleaning each applicable pump-suction Y-strainer so the existing restriction is not erased before it is measured.
- Inspect and clean YST401 and YST402 one at a time, record the as-found condition/debris/damage, restore each strainer correctly, and obtain matched-condition post-maintenance data.
- Test Pump 1 and Pump 2 separately under comparable conditions so pump/skid-specific performance differences can be identified.
- Evaluate one versus multiple source-tank configurations where this comparison is technically useful and can be performed safely.
- Maintain required filtration, metering, alarms, emergency shutdowns and overfill protection in the test flow path unless a separate written technical disposition specifically authorizes otherwise.
- The Contractor shall propose the actual test flow increments and escalation sequence. The 90 m³/h design flow and approximately 102 m³/h reported commissioning value are reference points, not automatic mandatory test targets. No test shall exceed the approved pump-suction/NPSH limit, motor/electrical limit, equipment pressure limit, temporary-component rating, receiving-tank capacity or other approved safe operating constraint.

G.5 SAFETY, APPROVAL AND STOP-WORK CONTROLS

The detailed Diagnostic Test Plan shall be integrated with GYSBI Operations and site safety requirements. As applicable to the approved arrangement, the Contractor shall provide the required Management of Change / temporary-modification authorization, P&ID markup, valve lineup, JSA/PTW, line-breaking controls, LOTO, hazardous-area equipment, temporary hose/piping inspection, bonding/earthing, spill response, fire protection, communications, receiving-tank monitoring and emergency shutdown method.

Any person may stop the test for leakage/spill, unexpected fuel movement, unsafe valve lineup, loss of communication, receiving-capacity concern, unstable suction pressure, abnormal pump noise/vibration, motor overload, alarm/control failure, temporary-line movement or any condition outside the approved Diagnostic Test Plan.

No test escalation shall occur until the Contractor has established and GYSBI has accepted the applicable suction/NPSH, electrical, pressure, receiving-capacity and temporary-system limits.

G.6 REQUIRED DATA AND FINAL DIAGNOSTIC ASSESSMENT

The Contractor shall collect synchronized data sufficient to diagnose the system rather than merely demonstrate a flow rate. The final approved data set shall include, as applicable: metered flow; pump-suction absolute pressure; Y-strainer DP; pump discharge pressure; particulate/coalescer filter DP; pressure across the temporary test path; source and receiving tank levels; fuel temperature; motor voltage/current; valve/test configuration; run time; pump noise/vibration/leakage; alarms; and photographic references.

The final Diagnostic Assessment Report shall compare the tested configurations, identify demonstrated restrictions or abnormal equipment behavior, distinguish measured evidence from assumptions, and rank recommended corrective actions by technical benefit, operational risk and expected effect on dispensing performance. Recommendations may include maintenance correction, instrumentation correction, suction-system work, downstream-system work, pump repair/modification or further engineering study.

Major permanent modifications, pump upgrades or pipeline upgrades are not included in this optional diagnostic task unless separately authorized by GYSBI after review of the findings.

G.7 OPTIONAL TASK DELIVERABLES

- Contractor field-verification / technical-basis memorandum and list of reviewed OEM/manufacture documentation.
- Detailed Diagnostic Test Plan and supporting hydraulic/NPSH/electrical calculations or technical basis, including temporary test arrangement and valve-lineup drawings/markups.
- Permanent diagnostic-instrument datasheets, installation details, calibration certificates and updated instrument register/P&ID / As-Built documentation.
- Approved HSE/permit documentation and completed pre-test readiness records required by the final plan.
- Completed test data sheets, instrument readings, photographs and relevant maintenance/inspection records, including Y-strainer as-found/post-clean information.
- Final Diagnostic Assessment Report with plots/trends where useful, comparison of pump/source configurations, identified bottlenecks, technical conclusions and recommended next actions.

Appendix H - Optional Berth Flow Verification Testing at Berths 1-4

OPTIONAL TASK - NOT AUTHORIZED UNLESS SEPARATELY AWARDED BY GYSBI

This appendix establishes GYSBI general and minimum requirements for an optional field flow-verification test at each of the four berth dispensing locations. It intentionally does not prescribe the complete field sequence. The Contractor shall field-verify the system, develop the detailed Berth Flow Test Procedure, submit the procedure to GYSBI for approval, and execute only the approved procedure.

H.1 PURPOSE AND TEST BASIS

The purpose of this optional task is to obtain comparable field flow data at Berths 1, 2, 3 and 4 using the existing fuel-transfer system under controlled conditions. The existing dispensing-station fuel meter(s) shall be used as the primary reference for indicated flow and transferred volume. The Contractor shall verify the meter identification, operating status and available calibration/service information before testing and shall document the meter used for each test.

The Contractor shall develop the detailed methodology necessary to make the four berth tests comparable and safe. GYSBI review and approval of the procedure does not transfer responsibility for the adequacy of the Contractor's test method, truck, equipment or execution.

H.2 CONTRACTOR-DEVELOPED BERTH FLOW TEST PROCEDURE

Before field testing, the Contractor shall inspect and verify the berth dispensing points, pipeline/manifold configuration, field tags, normal operating arrangement, berth hose/connection requirements, applicable valve lineups, meter/control components, truck access and positioning, and the receiving station to which the test fuel will be returned.

The Contractor shall prepare a project-specific Berth Flow Test Procedure addressing, as a minimum:

- Test sequence for Berths 1 through 4 and the operating conditions required to make the results reasonably comparable.

- Field-verified valve lineup and identification of the dispensing-station meter(s) used for each test.
- Truck positioning, traffic/access controls, connection/hose arrangement, bonding/earthing, spill containment and emergency access.
- Maximum safe truck receiving volume, required ullage, expected test duration, warning/stop levels and continuous truck-level monitoring.
- Flow stabilization criteria, start/stop method, meter-reading interval, starting/ending totalizer readings, elapsed-time recording and any additional pressure/operating observations proposed by the Contractor.
- Communications, staffing, HSE/PTW requirements, stop-work criteria, emergency shutdown and response to unexpected truck level, leakage, meter abnormality or fuel movement.
- Method for returning the test fuel to the receiving station adjacent to the fuel dispensing system, including receiving-capacity verification, unloading connection, bonding/earthing, spill controls, volume reconciliation and restoration.
- Final data comparison and reporting method for the four berth locations.

H.3 18,000 L FUEL TRUCK AND MANDATORY PRE-USE

INSPECTION

The Contractor shall supply an 18,000 L fuel truck suitable for diesel service and the approved site/test conditions. The nominal truck capacity does not authorize filling to the full geometric capacity; the approved procedure shall establish the maximum safe receiving volume and required ullage.

HOLD POINT - No test fuel shall be loaded into the truck until the Contractor has completed and documented a thorough pre-use inspection and GYSBI has accepted the truck for the test. The inspection shall be repeated to the extent necessary before each subsequent berth loading to confirm the truck remains safe and suitable.

The minimum truck inspection shall verify and document, as applicable:

- Vehicle identification, nominal tank capacity, compartment arrangement, current inspection/roadworthiness status and suitability for site access.
- Previous cargo and diesel compatibility; tank/compartment cleanliness; absence of free water, visible contamination, incompatible residue or foreign material that could

contaminate the fuel. Where cleanliness or previous cargo cannot be satisfactorily verified, the truck shall not be used.

- Tank shell, compartments, manways/covers, seals, vents, valves, drains, level/overflow provisions and accessible piping for leakage, damage, corrosion or other defects.
- Hoses, couplings, adapters, gaskets, caps, valves and restraints for condition, diesel compatibility, pressure/service suitability and secure connection.
- Bonding/earthing connection points and continuity provisions, spill-control materials, fire extinguishers and emergency equipment required by the approved procedure.
- Available receiving capacity and starting tank/compartment condition before each test.

The Contractor shall retain the completed inspection checklist and photographs as part of the test record.

H.4 FLOW TEST EXECUTION AT BERTHS 1-4

Testing shall be conducted one berth at a time in accordance with the approved procedure and GYSBI Operations authorization. The Contractor shall use the existing dispensing-station fuel meter(s) as the primary flow and transferred-volume monitoring reference. No separate temporary flow meter is required unless proposed by the Contractor and approved by GYSBI.

For each berth test, the Contractor shall record, as a minimum: berth identification; date/time; meter identification; meter service/calibration status available at the time of test; starting totalizer; ending totalizer; transferred volume; indicated and stabilized flow rate; elapsed time; pump/source configuration; applicable valve lineup; truck starting and ending condition/level; and relevant leakage, pressure, noise, vibration, control or operational observations.

The Contractor shall stop or suspend the test for truck receiving-capacity concern, overflow risk, leakage/spill, unsafe hose or coupling condition, loss of bonding/earthing, abnormal meter behavior, unexpected fuel movement, loss of communication, pump/system alarm or any condition outside the approved Berth Flow Test Procedure.

H.5 RETURN OF TEST FUEL TO RECEIVING STATION

After each berth test, or at another sequence specifically approved by GYSBI, the Contractor shall transport the test fuel to the existing receiving station adjacent to the fuel dispensing system and return the fuel through the approved receiving connection.

Before unloading, verify receiving capacity and approved lineup. The Contractor shall maintain contamination control, bonding/earthing, spill containment, communications and emergency controls throughout unloading. The truck shall be drained/restored to the condition required for the next test without unauthorized disposal or mixing of the fuel.

The Contractor shall reconcile the fuel dispensed into the truck with the quantity returned to the receiving system, accounting for known line/truck inventory and meter resolution. Any material unexplained discrepancy shall be reported to GYSBI and investigated before the next test proceeds.

H.6 FINAL BERTH FLOW VERIFICATION REPORT

The final report shall present the results for Berths 1 through 4 in a common format, compare stabilized flow and transferred-volume data, identify material differences between berth locations, document abnormal conditions, and identify any berth-specific restriction or follow-up investigation indicated by the measured results. The report shall distinguish measured observations from assumptions and shall include the truck inspection and fuel-reconciliation records.

H.7 OPTIONAL TASK DELIVERABLES

- Approved Berth Flow Test Procedure, including field-verified berth/meter identification, valve lineups, truck receiving-capacity basis, test sequence, HSE controls and fuel-return plan.
- 18,000 L fuel-truck technical/identification information, completed pre-use inspection checklist(s), cleanliness/compatibility verification and supporting photographs.
- Completed berth flow-test data sheets for Berths 1, 2, 3 and 4, including dispensing-station meter readings/totalizers, flow, elapsed time, transferred volume and operating observations.
- Fuel-return and volume-reconciliation records for each test cycle.

- Final Berth Flow Verification Report comparing all four berth locations and recommending any warranted follow-up investigation.

Appendix I - Bill of Quantities (BOQ)

The Contractor shall provide separate pricing for the base scope and each optional work package. Optional work shall not be included in the base-scope amount and shall not proceed unless separately awarded in writing by GYSBI. Quantities marked TBC shall be field verified; the corresponding unit rates shall remain valid for final measured quantities.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
BASE SCOPE - GYSBI TO WHARF AND BERTHS 1-4					
1	Mobilization and demobilization	Lump Sum	1		
2	Research of Existing Facilities - base-scope assets only	Lump Sum	1		
3	Development of complete P&ID, As-Built drawings and permanent field tagging - base-scope assets only	Lump Sum	1		
4	Development of Valve Maintenance Procedure(s) for identified valve types/families	Lump Sum	1		
5	Development of Coating Repair Procedure	Lump Sum	1		
6	Surface preparation and protective coating - Exposure Class A (Marine Atmospheric / Non-Splash) - base scope	Lump Sum	1		
7	Surface preparation and protective coating - Exposure Class B (Marine Splash / Vessel-Wake) - base scope	Lump Sum	1		
8	Localized steel support repairs and replacements - base scope (coating priced separately)	Lump Sum	1		
9	Mechanical repairs and fastener replacement - base scope, excluding separately listed items	Lump Sum	1		
10	Repairs at PS44-PS49 of coating of associated carbon-steel components	Lump Sum	1		
11	Flange gasket replacement at ISO Point 12	Each	1		
12	Flexible 60-inch metal-braided spool replacement at Berth 3	Each	1		
13	Flange isolation kits and associated galvanic-corrosion repairs at Berths 1 and 2	Lump Sum	1		
14	Valve survey and final register verification - base-scope assets	Lump Sum	1		
15	Rising-stem gate valve maintenance, inspection and exercising - base-scope assets	Each	TBC		
16	Non-rising-stem gate valve maintenance, inspection and exercising - base-scope assets	Each	TBC		
17	Ball valve maintenance, inspection and exercising - base-scope assets	Each	TBC		
18	Handwheel-operated plug valve maintenance, inspection and exercising - base-scope assets	Each	TBC		

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
19	Access systems for base scope, including scaffolding, MEWP, rope access and/or boats	Lump Sum	1		
20	Inspection support and closeout documentation - base scope	Lump Sum	1		
21	Daywork rates and unit rates for additional repairs discovered during execution	Schedule of Rates	N/A		
OPTIONAL WORK PACKAGE 1 - SOL TO GYSBI FUEL LINE					
22	Optional - Existing-facilities research, field verification, P&ID / As-Built integration and permanent field tagging for SOL-to-GYSBI line	Lump Sum	1		
23	Optional - Support maintenance and recoating at PS7, PS9, PS19, PS38, PS39 and PS55-PS60	Lump Sum	1		
24	Optional - Re-tighten/replace fasteners at PS55 and PS56 and repair/replace seized or damaged U-bolt at PS59	Lump Sum	1		
25	Optional / Provisional - Repair or replace bent L-profile beam at PS57 when directed by GYSBI	Each	1		
26	Optional - Surface preparation and protective coating of designated SOL-to-GYSBI pipeline and associated carbon-steel components	Lump Sum	1		
27	Optional - Valve survey and final register verification - SOL-to-GYSBI line	Lump Sum	1		
28	Optional - Rising-stem gate valve maintenance, inspection and exercising - SOL-to-GYSBI line	Each	TBC		
29	Optional - Non-rising-stem gate valve maintenance, inspection and exercising - SOL-to-GYSBI line	Each	TBC		
30	Optional - Ball valve maintenance, inspection and exercising - SOL-to-GYSBI line	Each	TBC		
31	Optional - Handwheel-operated plug valve maintenance, inspection and exercising - SOL-to-GYSBI line	Each	TBC		
32	Optional - Access, inspection support, photographs and closeout documentation for SOL-to-GYSBI work package	Lump Sum	1		
OPTIONAL WORK PACKAGE 2 - DIESEL DISPENSING SYSTEM DIAGNOSTIC ASSESSMENT					
33	Optional - Development of Detailed Diesel Dispensing Diagnostic Test Plan and Technical Basis	Lump Sum	1		
34	Optional - Supply and installation of permanent diagnostic instrumentation	Lump Sum	1		
35	Optional - Execution of approved diagnostic test program and Final Diagnostic Assessment Report	Lump Sum	1		
OPTIONAL WORK PACKAGE 3 - BERTH FLOW VERIFICATION TESTING AT BERTHS 1-4					

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE	AMOUNT
36	Optional - Development of Detailed Berth Flow Test Procedure and Technical / Safety Basis	Lump Sum	1		
37	Optional - Berth flow test at Berths 1-4, including 18,000 L fuel truck, truck inspection, fuel return and test report	Each Berth	4		

BOQ Notes

- The base-scope price shall exclude all SOL-to-GYSBI field work. Optional Work Package 1 shall be stated separately and may be awarded or omitted without changing the base-scope obligation.
- Common procedure-development work included in the base scope shall not be duplicated in Optional Work Package 1 unless additional SOL-specific development is demonstrably required; any such allowance shall be identified in the quotation.
- Valve quantities are subject to the final field-verified valve register. Per-valve unit rates shall remain valid for increases or decreases in final quantities.
- GYSBI reserves the right to award the work in whole or in part and to award any optional work package independently.
- TBC = To Be Counted (price per each)