GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUÅHAN
P.O.BOX 2977 • HAGÅTÑA, GUAM U.S.A. 96932-2977

To All Interested Parties:

Most pandemic-related mandates were lifted effective May 3, 2022. To ensure the continued safety and well-being of GPA personnel, prospective bidders, and guests, please be advised of the following:

1. Virtual meetings and/or conferences are preferred and will be coordinated through the GPA Procurement Division.
2. For In-Person meetings and/or conferences:
   a. Limit of one (1) representative per prospective bidder when submitting any procurement proposal, and to attend public bid openings.
   b. Face masks and social distancing may be employed at the option of the individual.
   c. Persons displaying cold or flu-like symptoms will be asked to leave.

COMPANY NAME: REPRESENTATIVE NAME:

_____ _____
Print / Sign Date

BID NO.: Multi-Step Re-Bid GPA-015-22

RFP NO.: _____

JOSEPH T. DUENAS
Chairman

JOHN M. BENAVENTE, P.E.
General Manager

Telephone Nos. (671) 648-3054/55 or Facsimile (671) 648-3165

Accountability · Impartiality · Competence · **Openness** · Value

INVITATION FOR BID (IFB) NO.: Multi-Step Re-Bid GPA-015-22
DESCRIPTION: Performance Management Contract for the Guam Power Authority Fuel Bulk Storage Facility

SPECIAL REMINDERS TO PROSPECTIVE BIDDERS

Bidders are reminded to read the Sealed Bid Solicitation and Instructions, and General Terms and Conditions attached to the IFB to ascertain that all of the following requirements checked below are submitted in the bid envelope. Bidders are required to submit one (1) original and six (6) bound copies of their Technical Proposal including one (1) original and six (6) printed copies of the Qualitative Scoring Workbook. One (1) electronic copy in CD, DVD, and/or USB Flash Drive of the Qualitative Scoring Workbook. The BIDDER's Price Proposal shall be submitted in a "SEPARATE SEALED" envelope and consist of one printed copy and one electronic (CD) copy of the MS Excel Workbook including all addenda, if any, at the closing date and time.

(XX) BID GUARANTEE – One Hundred Fifty Thousand US Dollars ($150,000.00) May be in the form of; Reference #11 on the General Terms and Conditions

a. Cashier's Check or Certified Check (NOTE: Cashier's Check or Certified Check Refunds will be ONLY be made out to the name of the Bidder.)
b. Wire Transfer to Guam Power Authority. Account information shall be sent to bidders upon request.
c. Letter of Credit or
d. Surety Bond – Valid only if accompanied by:
   1. Current Certificate of Authority issued by the Insurance Commissioner; or
   2. Power of Attorney issued by the Surety to the Resident General Agent or the following:
      a. Current Sworn Annual Report (Limited Liability Company (LLC) and/or Corporation) or;
      b. Current Renewal of Annual Limited Liability Partnership (LLP); or
   3. Power of Attorney issued by two (2) major officers of the Surety to whomever is signing on their behalf.

(XX) STATEMENT OF QUALIFICATION;
( ) SAMPLES;
( ) BROCHURES/DESCRIPTIVE LITERATURE; (Shall provide detailed literature on items offered)
(XX) AFFIDAVIT OF DISCLOSURE OF OWNERSHIP; *Pursuant to Public Law 36-13*
(XX) NON-COLLUSION AFFIDAVIT; *Pursuant to Public Law 36-13*
(XX) NO GRATUITIES OR KICKBACKS AFFIDAVIT;
(XX) ETHICAL STANDARDS AFFIDAVIT;
(XX) WAGE DETERMINATION AFFIDAVIT;
(XX) RESTRICTIONS AGAINST SEX OFFENDERS AFFIDAVIT;

Note: The above Affidavits must comply with the following requirements:

a. The affidavit must be signed within 60 days of the date the bid is due;
b. Date of signature of the person authorized to sign the bid and the notary date must be the same.
c. First time affidavit must be an original – If copy, indicate Bid Number/Agency where original can be obtained.

(XX) OTHER REQUIREMENTS:
A Guam Business License and/or Contractor's License with proof of Employer Identification Number (EIN) is not required in order to provide a proposal for this engagement, but is a pre-condition for entering into a contract with the Authority. Bidders MUST comply with PL 26-111 dated June 18, 2002, PL 28-165 dated January 04, 2007 and Wage Determination under the Service Contract Act (www.wdol.gov). Additionally, upon award the successful bidder must provide to GPA the most recently issued Wage Determination by the US Dept. of Labor.

The reminder must be signed and returned in the bid envelope together with the bid. Failure to comply with the above requirements will mean a disqualification and rejection of the bid.

On this _____ day of _____2022, I,_____, authorized representative of _____ acknowledge receipt of this special reminder to prospective bidders with the above referenced IFB.

_____
Bidder Representative's Signature

INVITATION FOR BID

ISSUING OFFICE:
Guam Power Authority
1st. Floor, Room 101
Procurement Management Materials Supply
Gloria B. Nelson Public Service Building
688 Route 15, Mangilao, Guam 96913

6/2/2022
for JOHN M. BENAVENTE, P.E. DATE
General Manager

DATE ISSUED: 06/02/2022 / 06/09/2022 — BID INVITATION NO.: Multi-Step Re-Bid GPA-015-22

BID FOR: Performance Management Contract for the Guam Power Authority Fuel Bulk Storage Facility

SPECIFICATION: See Attached

DESTINATION: See Attached

REQUIRED DELIVERY DATE: See Attached

INSTRUCTIONS TO BIDDERS:
INDICATE WHETHER: _____ INDIVIDUAL _____ PARTNERSHIP _____ CORPORATION

INCORPORATED IN: _____

This bid shall be submitted in the form of, one (1) original, six (6) bound copies of the Technical Proposal including (1) original and six (6) printed copies of the Qualitative Scoring Workbook. One (1) electronic copy in CD, DVD, and/or USB Flash Drive of the Qualitative Scoring Workbook. The BIDDER's Price Proposal shall be submitted in a "SEPARATE SEALED" envelope and consist of one printed copy and one electronic (CD) copy of the MS Excel Workbook including all addenda, and sealed to the issuing office above no later than (Time) 4:00 P.M. (Guam CHamoru Standard Time; ChST), Date: 07/01/2022. Bid submitted after the time and date specified above shall be rejected. See attached General Terms and Conditions and Sealed Bid Solicitation for details.

The undersigned offers and agrees to furnish within the time specified, the articles and services at the price stated opposite the respective items listed on the schedule provided, unless otherwise specified by the bidder. In consideration to the expense of the Government in opening, tabulating, and evaluating this and other bids, and other considerations, the undersigned agrees that this bid remain firm and irrevocable ***not less than six (6) months after the Price Proposal Opening Date***.

NAME AND ADDRESS OF BIDDER:

SIGNATURE AND TITLE OF PERSON AUTHORIZED TO SIGN THIS BID:

AWARD: CONTRACT NO.: _____ AMOUNT: _____ DATE: _____

ITEM NO(S). AWARDED: _____

CONTRACTING OFFICER:

JOHN M. BENAVENTE, P.E. DATE
General Manager

NAME AND ADDRESS OF CONTRACTOR:

SIGNATURE AND TITLE OF PERSON

Invitation For Multi-Step Re-Bid

IFB No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR

GUAM POWER AUTHORITY
FUEL BULK STORAGE FACILITY

JENNIFER G. SABLAN, P.E.
SPORD Manager

JOHN J. CRUZ, JR., P.E.
Assistant General Manager
Engineering & Technical Services

JOHN M. BENAVENTE, P.E.
General Manager

Invitation For Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY
FUEL BULK STORAGE FACILITY

Volume I

Commercial Terms and Conditions

1. Introduction

The Guam Power Authority (GPA), hereinafter referred to as GPA, is inviting Technical Service Firms, hereinafter referred to as CONTRACTOR, to participate in a Multi-Step Bid for a Performance Management Contractor, hereinafter referred to as PMC or "CONTRACTOR", to manage, operate, and maintain the Guam Power Authority's Fuel Bulk Storage Facility.

The CONTRACTOR shall be responsible for the following items:

- Overall operation and maintenance of the Fuel Bulk Storage Facility to provide fuel oil product transfer and management of the GPA facilities and locations as needed;
- Accomplishment of Capital Improvement Projects or major upgrades;
- Accomplishment of major maintenance and repairs for the Fuel Bulk Storage Facility;
- Engineering assessment and recommendations for overall facility improvements;
- Review, development and update of the following:
    - Plant Standard Operating Procedures and Manuals;
    - Annual update of the Facility Spill Response Plan and Spill Prevention, Control and Countermeasure Plan (SPCC Plan);
    - Timely update of plans upon the introduction and adoption of any new federal and local laws and regulations;
- Meet specified performance standards;
- Fuel Inventory and Loss Control Management; and
- Submission of Daily, weekly, monthly and annual reports as required by GPA (Generation, Engineering, P&R, SPORD and Accounting Divisions);
- Compliance with Tank System Operation and Maintenance Workplan (Jan. 19, 2007);
- Compliance with all requirements of the Oil Pollution Act of 1990 (OPA 90 Act);
    - Inclusion of all costs associated with OPA 90 Act within the firm price proposal;

- Compliance with oil spill and recovery provisions of OPA 90 Act;

- Purchase, maintain and operate/deploy materials and equipment as identified in the Facility Spill Response Plan and SPCC Plan.

- Record keeping and submittal of all pertinent documents to GPA.

- Other Responsibilities and Duties as cited in the Invitation for Bid Documents.

The CONTRACTOR should be a bona fide and active member of a qualified and certified oil spill response company on Guam. Otherwise, the CONTRACTOR must secure an oil response service contract with a qualified oil spill response company within thirty (30) days after contract award. A copy of subject contract must be provided to GPA within 30 days of award.

The Technical and Price Proposals shall be submitted on or before the Cut-off Date of Receipt of Proposals as specified on Table 1: Bid Milestones.

The bid evaluation shall be a two-step process.
Step One will involve evaluation of the Technical or Qualitative Proposals (Un-priced Technical Offers), and the establishment of a Qualified Bidders List based (QBL) based on acceptable submitted Technical Proposals. Step Two will involve the evaluation of Price Proposals (Priced Offers) from the bidders identified on the QBL. Price Proposals for unqualified bidders shall be returned, unopened, after the Technical Proposal Evaluation. GPA will perform a comprehensive evaluation of each proposal and select the BIDDER with the best proposal based on the submitted Price Proposal Evaluation Workbook Sheet. If the selected vendor cannot proceed with the contract, GPA may elect to go to the next best BIDDER or cancel the bid.

commenceTable 1: Bid Milestones indicate the projected start and end dates for the milestones in the Bid Process. **GPA reserves the right to change the Bid Milestones at its sole discretion.** Bidders are encouraged to confirm with GPA any of the scheduled milestones via an official letter to GPA.

Table 1: Bid Process Milestones	**From Date**	**To Date**
Bid Announcement	06/02/2022	06/30/2022
Pre-Bid Conference	06/08/22 9:00 AM	
Site Visit	06/09/22 9:00 AM	
Submit Questions	06/02/2022	06/17/2022
Cut Off Date for Receipt of Questions	**06/17/2022**	
GPA Review and Answer Questions	06/03/2022	06/24/2022

Vendor Prepare Bids		06/02/2022	07/01/2022
Cut Off Date for Receipt of Proposals (Technical and Price Proposals)		**07/01/2022 4:00 PM**	
EVALUATION Step One:	Technical Proposal (Bid) Evaluation	07/05/222	07/12/2022
	Determine & Notify Qualified Bidders	07/13/2022	07/20/2022
EVALUATION Step Two:	Opening of Price Proposals (Public Opening)	**08/05/2022 2:00 PM**	
	Evaluation of Price Proposal	08/08/2022	08/12/2022
	Determine & Notify Qualified Bidders	TBD	TBD
Contract Finalization		TBD	TBD
Contract Approval & Award		TBD	TBD
Contract Signing		TBD	
Contract Mobilization		TBD	TBD
CONTRACTOR Operational Commencement		**TBD**	

Invitation for Bid (IFB) Document Organization

Invitation for Bid (IFB) documents are organized into six separate volumes, as follows:

Volume I	—	Commercial Terms and Conditions
Volume II	—	Technical and Functional Requirements
Volume III	—	Facility Technical Description
Volume IV	—	Contract
Volume V	—	Appendices
Volume VI	—	Schedules

In addition, the IFB documents include two (2) sets of electronic spreadsheets (MS Excel Workbooks):

- Qualitative Proposal Scoring.xls
- Price Proposal Evaluation.xls.

1.1. Project Overview and Scope

The Guam Power Authority is soliciting proposals for technical services from qualified firms for the on-site management of the operations and maintenance of the Guam Power Authority Fuel Bulk Storage Facility. The required services include compliance with all applicable local and federal laws, membership with a qualified and certified oil spill response organization (OSROCO, etc.), technical capability to periodically review and update applicable response plans, qualified personnel to manage and operate the facility in a safe

and efficient manner, operation of all equipment as defined in response plans, and reporting as defined in the day-to-day operations.

1.1.1. GPA Overview

GPA is a public utility corporation that provides electric power service throughout the entire island of Guam. GPA is comprised of several departments or divisions, which include Executive/Administrative, Finance, Computer Services, Engineering, Planning & Regulatory (Environmental), Safety, Human Resources, Customer Service, Facilities, Strategic Planning and Operations Research, Generation, Transmission & Distribution (T&D), and Transportation. Majority of the departments are located in a central office building, however T&D, Generation, and Transportation Offices and buildings are located throughout the island.

1.1.2. Fuel Bulk Storage Facility Overview

The Fuel Bulk Storage Facility is wholly owned by the Guam Power Authority and operated by the current contractor, **IP&E Holdings, LLC**. GPA completed construction and commissioned the Fuel Facility in 1976. The facility holds approximately 520,000 barrels of total storage capacity for petroleum products. A full description is provided in Volume III Facility Technical Description.

1.1.3. Contract Term

The Contract Term for the base period shall be for THREE (3) years with options to extend for TWO (2) additional One (1) year term, upon mutual agreement of both parties.

1.1.4. Contract Price

The contract price structure is described in detail in Volume IV (Contract) – Section 6 of the solicitation package.

2. Instructions to Bidders

2.1. Introduction

This is a multi-step bid procurement. The **Technical and Price Proposals should both be submitted on or before the Cut-off Date of Receipt of Proposals**.

In Step One, only the submitted Technical Proposals will be evaluated and determined whether Acceptable or Unacceptable. BIDDERs whose Technical Proposals are determined to be Acceptable shall qualify for Step Two. BIDDERs whose Technical Proposals are Unacceptable shall be notified, and the unopened Price Proposal packages shall be returned.

In Step Two, the Price Proposals of the Bidders whose Technical Proposals that are determined to be Acceptable, either initially or as a result of discussions, will be considered for award.

2.2. Language and Correspondence

The official language of Guam is English. The bid and all accompanying documents shall be in English. Any prospective BIDDER desiring an explanation or interpretation of the solicitation, commercial terms, Technical Specification, etc., must make a request in writing to GPA at the address listed below, referencing the Invitation for Bid No.

ATTENTION: JOHN M. BENAVENTE
GENERAL MANAGER

GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

FAX: 1 (671) 646-3054 / 55
Attention: Supply Management Administrator

The written request may also be sent via-email by sending an electronic copy of the written request to the Procurement Officer handling the IFB.

Any information given to a prospective BIDDER concerning a solicitation will be furnished promptly to all parties recorded by Procurement as having received the Invitation for Bid as an amendment to the solicitation if that information is necessary in submitting bids or if the lack of it would be prejudicial to other prospective BIDDERs. Oral explanations or instructions given will not be binding.

2.3. Technical and Functional Requirements Examination

Before submitting their proposal, BIDDERs must familiarize themselves with the nature and extent of the work, duly noting any local conditions that may affect the work to be done and the labor, materials, and equipment required. BIDDERs are also required to carefully examine all tender documents inclusive of all technical and functional requirements and to inform themselves of all conditions and requirements for the execution of the proposed work in accordance with the laws and regulations of the Territory of Guam. Ignorance on the part of BIDDERs of any part of the tender documents and Technical and Functional Requirements will in no way relieve them of the obligations and responsibilities assumed under the contract.

2.4. Facility Tours

All prospective BIDDERs shall, at their own expense, visit Guam and GPA's Fuel Bulk Storage Facility to study local conditions, facilities available, craft wages, roads, communications, and transport facilities available. BIDDERs should also acquaint themselves with the relevant laws, rules, and regulations of Guam. For the purpose of familiarizing BIDDERs with the Fuel Bulk Storage Facility, BIDDERs may request GPA for a scheduled Facility Tour. All requests must be submitted as specified in Section 2.2. Upon approval and subject to the availability of the facility, GPA shall coordinate with the BIDDER regarding the tour details.

2.5. Solicitation Amendment

Any amendment, modification or addendum issued by the Guam Power Authority, prior to the opening of the proposals, for the purpose of changing the intent of the Technical and Functional Requirements, clarifying the meaning or changing any of the provisions of this Invitation for Bid, shall be binding to the same extent as if written in the tender documents. Any addendum issued will be made available to all BIDDERs via mail, fax, e-mail or posting to the ftp site. Announcements regarding any Amendment shall also be posted at the GPA Website at **http://www.guampowerauthority.com/gpa_authority/procurement/gpa_current_rfps.php**. The BIDDERS shall acknowledge receipt of the amendment by a signature on one copy, which is to be returned to the GPA Supply Management Administrator. Acknowledgement may also be made by fax or e-mail.

2.6. Familiarity With Laws

The BIDDER shall be familiar with all Federal (U.S.) and local laws, ordinances, rules and regulations of Guam that in any manner affect the work. Ignorance of law on the part of the BIDDER will not relieve the BIDDER from responsibility.

2.7. Cost of Bidding

BIDDERs shall bear all costs associated with the preparation and submission of its proposal. GPA will not be responsible or liable for those costs, regardless of the outcome of the IFB process.

2.8. Price/Cost Data

BIDDERs shall provide prices/costs in U.S. Dollars. BIDDERs are required to furnish a fixed management fee, an O&M Spending Budget, and Performance Guarantees for each year of the contract as specified in the IFB documents. Price Proposals shall be submitted in the form as found in the MS EXCEL Workbook, **Price Proposal Evaluation.xls** on or before the Cut-Off Data for receipt of Proposals. Technical and Price Proposals shall be submitted on or before the Cut-off Date for Receipt of Proposals, with the Price Proposal on a separate sealed envelope marked "PRICE PROPOSAL" and indicating the date and time of bid package remittance. Any equipment and material prices shall be provided on the basis of CIF to the Guam job site unloaded and shall provide a breakdown of the price/cost data.

2.9. Documents Executed Outside of Guam

The Power of Attorney, performance bond guarantee, and documents defining the constitution of the joint venture, consortium, company or firm, if executed outside Guam, whether required to be submitted with the proposals or after the award of the contract, must be authenticated by a Notary Public or other official authorized to witness sworn statements.

2.10. Proposal Submittal

This section outlines the requirements for proposal submittals, including the proposal package format and content required by GPA. The BIDDERs are advised to keep a copy of all documents submitted, including the Workbooks, and test electronic copies on disk prior to submission to GPA.

2.10.1. Technical Proposal Requirements

Each BIDDER' Technical Proposal Package shall include, but is not limited to, the following:

- Complete printed copies of the Technical Proposal;
- Complete printed responses and supporting information to the questions raised in the Qualitative Proposal Scoring Workbook;
- Complete printed and electronic copies of the Qualitative Proposal Scoring Workbook in a separate sealed envelope marked "TECHNICAL (UNPRICED) PROPOSAL";
- Checklist forms defined in Appendix A;
- All other required forms defined in Volume V Appendices; and
- Supplementary information as described below.

The Technical Proposal Package shall be submitted in the format and quantities described below.

2.10.1.1 Technical Proposal

Each BIDDER's Technical Proposal shall include the following:

- Business Structure and Business Approach
- Experience, Qualification and Expertise
- Proposed Organizational Structure
- Financial Information
- Client References
- Supporting Documents

A description for each requirement is included in **Volume II (Technical and Functional Requirements).** These as well as all supplementary information and forms as required must be submitted in sufficient detail

and clarity to permit a complete evaluation of the proposal with respect to the Bid Requirements. Supplementary information includes documents, references, drawings, diagrams, catalogs, illustrations, and such other information as necessary to clearly support responses to the Qualitative requirements.

2.10.1.2. Qualitative Proposal Scoring Workbook

The bidder shall submit copies of the Qualitative Proposal Scoring Workbook, prepared as instructed in the **Proposal Instructions** tab. Quantities shall follow the requirements specified in Section 2.1.10.5 of this Volume. For each checklist item, the bidder shall provide references on the responses and supporting documents.

2.10.1.13. Required Forms

Submittal of required forms as specified in Section 3 of this volume, as well as in Volume V Appendices, is mandatory. GPA shall automatically disqualify any proposal submitted without the supplementary information and required forms.

2.10.1.4. Marking and Packaging of Technical Proposal

The TECHNICAL PROPOSAL shall be submitted in a separate sealed package with the following information clearly marked on the outside of each side:

1) "TECHNICAL PROPOSAL";
2) "PERFORMACE MANAGEMENT CONTRACT FOR THE GUAM POWER AUTHORITY'S BULK FUEL STORAGE FACILITY";
3) The BIDDER's Name;
4) Invitation for Bid Number;
5) Closing Date and Time (Guam Standard Time);
6) Addressed to, as follows:

ATTENTION: JOHN M. BENAVENTE, P.E.
GENERAL MANAGER

GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

If the BIDDER's proposal cannot fit within one box or chooses to submit more than one box, each box must be labeled with the following:

1) Box number within the Set of Submitted Boxes
2) The Total Number of Boxes Submitted

2.10.1.5. Technical Proposal Submittal Quantity

BIDDERs are required to submit one (1) original and six (6) bound copies of their technical proposal including one (1) original and six (6) printed copies of the Qualitative Scoring Workbook. One (1) electronic copy of the Qualitative Scoring Workbook should also be submitted.

2.10.2. Price Proposal Requirements

The BIDDER's Price Proposal shall consist of one printed copy and one electronic (CD) copy of the MS Excel Workbook, **Price Proposal Evaluation.xls**. A printed copy is requested to ensure evaluation of the Proposal Worksheets in cases where there are errors with the electronic file.

The PRICE PROPOSAL shall be submitted in a separate sealed package with the following information clearly marked on the outside of each side:

(1) "PRICE PROPOSAL";

(2) "PERFORMANCE MANAGEMENT CONTRACT FOR THE GUAM POWER AUTHORITY'S FUEL BULK STORAGE FACILITY";

(3) The BIDDER's Name;

(4) Invitation for Bid Number;

(5) Closing Date and Time (Guam Standard Time);

(6) Addressed to, as follows:

ATTENTION: JOHN M. BENAVENTE, P.E.
GENERAL MANAGER

GUAM POWER AUTHORITY
POST OFFICE BOX 2977
HAGATNA, GUAM 96932-2977

If the BIDDER's proposal cannot fit within one box or chooses to submit more than one box, each box must be labeled with the following:

1) Box number within the Set of Submitted Boxes
2) The Total Number of Boxes Submitted

2.10.3. Non-Repudiation Issues

GPA has structured both its Manual and Electronic IFB submittal procedures to ensure non-repudiation of the submitted proposals. In this IFB, non-repudiation is strong and substantial evidence of the identity of the sender and owner of the proposal and of proposal's integrity in so far as it being unaltered from its original sent state, sufficient to prevent a party from successfully denying the origin, submission or delivery of the proposal and the integrity of its contents. Non-repudiation applies to both parties to this IFB transaction. It binds the sender as well as precludes the recipient from denying the exchange of information and material upon the receipt of secure acknowledgement from the recipient.

GPA and the BIDDER shall manage the Manual IFB Submittal Process to address non-repudiation, security and confidentiality inclusive but not limited to the following:

- Manually executed signatures and printed media documents;
- Chain of custody receipts;
- Manual time-stamps for receipt of IFB materials;
- Machine generated Fax confirmation reports;
- Secure notification e-mail;
- Physical delivery of printed material proposals;
- Physically secured area storage of IFB materials.

2.10.4. Signature of Bidder

A duly authorized person must sign the BIDDER's proposals. All names shall be typed or printed below the signature. A proposal submitted by a corporation must bear the seal of the corporation, be attested to by its Secretary, and be accompanied by necessary Power-of-Attorney documentation.

Associated companies or joint ventures shall jointly designate one Power-of-Attorney person authorized to obligate all the companies of the association or joint venture. A proposal submitted by a joint venture must be accompanied by the document of formation of the joint venture, duly registered and authenticated by a Notary Public, in which is defined precisely the conditions under which it will function, its period of duration, the persons authorized to represent and obligate it, the participation of the several firms forming the joint venture,

the principal member of the joint venture, and address for correspondence for the joint venture. BIDDERs are advised that the joint venture agreement must include a clause stating that the members of the joint venture are severally and jointly bound.

Wherever a legal signature is required, receipt of an electronic signature will suffice to meet the submittal deadline for those electing to use the Electronic Proposal Submittal process. The original signed documents must be reproduced electronically and be placed in the submitted compressed archive file. However, the original documents must be sent to GPA via post or courier and post-marked no later than the bid-opening date. In addition, GPA will accept an electronic scanned copy of Notarized documents with the compressed archive submitted will suffice to meet the proposal deadline. However, the original documents must be sent to GPA via post or courier and post-marked no later than the bid-opening date.

2.10.5. Cut-Off Date for Receipt of Proposals

The Technical and Price Proposals have to be submitted on or before the GPA Cut-off Date for Receipt of Proposals, as specified in Table 1 (Bid Milestones).

Price Proposals shall be returned, unopened, to the BIDDERs whose Technical Proposals are deemed Not Acceptable.

2.10.6. Receipt and Handling of Proposals

Upon receipt, each Proposal submittal package will be time-stamped. The only acceptable evidence to establish the time of receipt at the GPA is the date/time stamp of the Guam Power Authority's procurement office on the wrapper or other documentary evidence of receipt maintained by GPA. Proposals will be stored in a secure place until the date and time set for proposal opening.

GPA procurement personnel and the BIDDERs must ensure that the outside of the sealed package is stamped received using the GPA Procurement Stamp. In addition, GPA procurement personnel must officially log the time and date that the BIDDER’s sealed proposal package has been received. GPA makes no warranties on these submittal processes, manual or electronic.

2.10.7. Proposal Changes During Bid Process

Changes may be made by the BIDDERs to the Technical Proposal and Price Proposal prior to the Cut-off Date, and the proposals including corrections or changes made must be re-submitted on or before the Cut-off Date.

2.11. Step One Procedures

2.11.1. Evaluation of Technical Proposals

After the Close of the Proposal submission date, the GPA Evaluation Committee shall evaluate the Technical Proposals. Each of the responses and supporting information shall be evaluated and scored, in accordance with the scoring methodology described in the Qualitative Proposal Scoring Worksheet.

2.11.2 Scoring of Technical Proposals

GPA will use the score from the Qualitative Scoring Workbook to evaluate the contents of Proposals and categorize the Proposals as:

a. **Acceptable**;

b. **Potentially Acceptable**, that is reasonable susceptible of being made acceptable; or

c. **Unacceptable or Not Acceptable**. GPA shall record in writing the basis for finding an offer unacceptable and make it part of the procurement file.

GPA shall evaluate and score each BIDDER using the methodology as described in Section Four of this volume. At the conclusion of the evaluation, GPA shall establish a Qualified Bidders List (QBL), and the Procurement Officer or his designee may initiate Step Two if there are sufficient acceptable Technical (Unpriced) Proposals to assure effective price competition in the second phase without technical discussions. If the Procurement Officer or his designee finds that such is not the case, the Procurement Officer shall issue an amendment to this Invitation for Bid or engage in technical discussions with BIDDERs as set forth below.

2.11.3. Discussions of Proposals

The Procurement Officer or his designee may conduct discussions with any bidder who submits an acceptable or potentially acceptable Technical Offer. During the course of such discussions, the Procurement Officer or his designee shall not disclose any information derived from one Unpriced Technical Proposal to any other BIDDER.

GPA may conduct discussions with any BIDDER to determine such BIDDER's qualifications for further consideration and explore with the BIDDER the scope and nature of the required services, method of performance and the relative utility of alternative methods of approach. During the course of such discussions, the Procurement Officer shall not disclose any information derived from a technical offer to any other BIDDER.

Each BIDDER is requested not to contact GPA on any matter relating to its proposal, from the time of submission of the Proposals to the time the contract is awarded, except to respond to inquiries by GPA.

2.11.4. Notice of Unacceptable Proposal

A notice of unacceptability will be forwarded to the BIDDER upon completion of the Technical Proposal evaluation and final determination of unacceptability. When the Procurement Officer or his designee determines a BIDDER's Technical Proposal to be unacceptable, such BIDDER shall not be afforded an additional opportunity to supplement its technical offer.

2.12. Step Two Procedures

Upon completion of evaluation of Technical Proposals, qualified bidders will be notified and GPA will proceed with Step Two of the multi-step bid. GPA shall return the Price Proposal Packages submitted by BIDDERs whose Technical Proposals did not qualify for Step Two.

2.12.1. Opening of Price Proposals

Each selected BIDDER from the Qualified Bidders list will be notified of the Price Proposal Opening date. BIDDERs may be present during the Bid Opening.

2.12.2. Proposal Changes During Bid Process

No changes may be made between Notification of Acceptable Proposal and Price Proposal Opening date.

2.12.3. Proposal Validity

All price/cost data submitted with the BIDDERs' proposals shall remain firm and open for acceptance for a period of not less than six (6) months after the Price Proposal Opening Date and thereafter shall be subject to renewal by mutual agreement between the BIDDER and GPA. BIDDER shall state the actual date of expiration in their proposal.

2.12.4. Preliminary Examination of Price Proposal

GPA will examine the Price Proposal on the opening date to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Priced Offers are generally in order.

Arithmetical errors will be rectified on the following basis:

- If there is discrepancy between the unit price and the total price, including any discounts, that is obtained by multiplying the unit priced and quantity, the unit price shall prevail and the total price shall be corrected.
- If the Bidder does not accept the correction of the error, its bid will be rejected. If there is a discrepancy between words and figures, the amount in words will prevail.

2.12.5. Evaluation Criteria and Comparison of Priced Offers

GPA will evaluate and compare the Priced Offers for Bidder's Technical Proposals that were determined during Step One to be responsive to the tender document requirements. GPA's evaluation of price offers shall compare Fixed Management Fees and O&M Spending Budget. The Scoring Mechanism is further explained in Section Four.

2.13. Award of Contract

The contract will be awarded to the BIDDER evaluated as being qualified and with the best-priced proposal. The successful BIDDER will be notified by GPA through official written correspondence of the intent to award the contract (Notice of Intent to Award). The written correspondence may be sent by GPA via official letter, e-mail and fax.

The BIDDER will be required to send to Guam, within fourteen (14) days of the date of receipt of such notice, a representative or representatives with proper Power-of-Attorney for the purpose of executing a contract with such alterations or additions thereto as may be required to adopt such contract to the circumstances of the proposal. The successful BIDDER shall provide the required Performance Bond within fourteen (14) working days of receipt of the GPA Notice of Intent to Award.

Failure on the part of the successful BIDDER to provide a Performance Bond and/or to enter into a contract with GPA shall be sufficient grounds for the annulment of the award. GPA may determine the bidder to be non-responsive to the bid, and may proceed with sending a Notice of Intent to Award to the next most qualified BIDDER.

2.14. Bid Bond and Performance Bond Requirements

2.14.1. Performance Bond Form, Amount and Duration

The required performance bond shall be in the form as prescribed in Appendix B. At the beginning of the CONTRACT and at the beginning of each GPA Fiscal Year during which the CONTRACT is in effect, the

CONTRACTOR shall provide and maintain a performance bond in the amount equal to the **Annual Contract Fee** for that full or partial fiscal year within the term of the contract. If the CONTRACTOR is declared by GPA to be in default under the CONTRACT, GPA may exercise any or all rights and remedies it possesses under the provisions of the performance bond. The GPA Fiscal Year begins on October 1 and ends on September 30 of the following calendar year.

2.14.2. Performance Bond Execution by a Guam Licensed Surety Company

The CONTRACTOR shall provide a Performance Bond executed by a surety company licensed to do business on Guam.

2.14.3. Bid Bond Form and Amount

A bid bond for an amount of $150,000.00 (USD) is required and may be in the following form:

a. Cash, Bank Draft or Certified Check made payable to the Guam Power Authority;

b. By wire transfer to Guam Power Authority. Account information shall be sent to the bidders upon request.

c. Letter of Credit;

d. Surety Bond – valid if accompanied by:

(1) Current Certificate of Authority to do business on Guam issued by the Department of Revenue and Taxation;

(2) Power of Attorney issued by the Surety to the Resident General Agent

(3) Power of Attorney issued by two (2) major officers of the Surety to whoever is signing on their behalf.

Bonds submitted as Bid Guarantee without signatures and supporting documents are invalid and bids will be rejected. If a BIDDER desires to submit a bid bond with an acceptable bonding company, the BIDDER must submit original copies of Appendix B.

2.15. General Proposal Guidelines and Requirements

2.15.1. Amendments to the Bid Documents

GPA may elect to change the IFB documents in whole or part. GPA shall send all Amendments to the IFB documents via fax and/or e-mail. In addition, GPA will make all Amendments available on the Internet at http://www.guampowerauthority.com/procurement/index.html .

2.15.2. Proprietary Data

For the purposes of this solicitation and submitted proposals, the laws, rules and regulations of Territory of Guam governing confidentiality shall govern. BIDDERs may designate those portions of the Proposal that contain trade secrets or other proprietary data that are to remain confidential.

The Procurement Officer or his designee shall examine the proposals to determine the validity of any request for nondisclosure of trade secrets and other proprietary data identified in writing. If the BIDDER and GPA do not agree as to the disclosure of data, the Procurement Officer or his designee shall inform the BIDDER in writing and in e-mail within five working days of the closing date for Proposal submittal what portions of the Proposal will be disclosed and that, unless the BIDDER protests under the Conditions of Contract Disputes clause the information will be so disclosed. The proposal shall be opened to public inspection subject to any continuing prohibition of the disclosure of confidential data.

2.15.3. Acceptance of Proposals

GPA reserves the right to reject any or all proposals and to waive minor informalities if it appears in GPA's best interest to do so. Any effort by a BIDDER to influence GPA in the proposal evaluation, proposal comparison or contract award decisions may result in the rejection of the proposal. Once GPA has arrived at a decision regarding the award of the contract, it will notify promptly the successful BIDDER through official written correspondence, and shall include information advising the proponents of the timing of the bid milestones such as Contract Finalization, Awarding and Mobilization. Potential Bid Awardees shall await this notification from GPA prior to commencement of any Contract Terms Finalization.

2.15.4. Solicitation Cancellation or Delay

The Guam Power Authority reserves the right to delay award or to cancel the Invitation for Bid, or to reject all proposals or any individual proposal in whole or in part, at any time prior to the final award. When a bid is canceled or rejected prior to final award, notice of cancellation or rejection shall be sent to all BIDDERs and all proposal materials will be promptly returned. The reasons for cancellation or rejection shall be made a part of the procurement file that is available for public inspection.

After opening, but prior to award, all proposals may be rejected in whole or in part when the Procurement Officer or his designee determines that such action is in the Territory's best interest for reasons including but not limited to:

a) The supplies and services being provided are no longer required;

b) The solicitation did not provide consideration of other factors of significance to the Territory;

c) All otherwise acceptable proposals received have clearly unreasonable price/cost data;

d) There is reason to believe that the proposals may not have been independently arrived at in open competition, may have been collusive and may have been submitted in bad faith;

Any individual proposal may be rejected in whole or in part when in the best interest of the Territory.

2.15.5. Disqualification of BIDDER

When, for any reason, collusion or other anticompetitive practices are suspected among BIDDERs, a notice of the relevant facts shall be transmitted to the Guam Attorney General. BIDDERs suspected of collusion or other anticompetitive practices may be suspended or debarred from participating in future procurement opportunities for a specified period.

2.15.6. False Statements In Proposal

BIDDERs must provide full, accurate, and complete information as required by this solicitation and its attachments. The penalty for making false statements in any proposal or bid is prescribed in 18 U.S.C. 1001 and Title 9, Guam Code Annotated. Note, by use of a digital signature to sign the proposal, the BIDDER agrees that this act legally binds the BIDDER to his proposal.

2.15.7. Prohibition Against Gratuities, Kickbacks, and Favors to the Territory

Pursuant to GCA 5 Section 5630 (c), this clause is conspicuously set forth to alert all parties in this procurement that *Guam Public Law Title 5 § 5630. Gratuities and Kickbacks* prohibits against gratuities, kickbacks and favors to the Territory.

2.15.8. Restriction against Contractors Employing Convicted Sex Offenders from Working at Government of Guam Venues

GCA 5 §5253(b) restricts the PROPONENT against employing convicted sex offenders from working at Government of Guam venues. It states:

(b) All contracts for services to agencies listed herein shall include

the following provisions: (1) warranties that no person providing services on behalf of the contractor has been convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined in Article 2 of Chapter 28, Title 9 GCA, or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry; and (2) that if any person providing services on behalf of the contractor is convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined in Article 2 of Chapter 28, Title 9 GCA or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry, that such person will be immediately removed from working at said agency and that the administrator of said agency be informed of such within twenty-four (24) hours of such conviction.

3. Required Forms and Supplemental Information

GPA shall automatically disqualify any proposal submitted without the supplementary information and required forms listed below:

- A copy of the BIDDER's Articles of Incorporation or other applicable forms concerning business organization (i.e. partnership, sole proprietorship, etc.) and By-Laws;
- Audited financial information on BIDDER's firm and all subcontractors that will be used in the performance management of GPA's Fuel Bulk Storage Facility. BIDDERs must include their Dunn and Bradstreet Number or Other Major Credit Rating Agency rating.
- Certificate of Good Standing to conduct business in jurisdiction of residence;
- Information regarding outstanding claims against the BIDDER, if any;
- Required affidavits (Major Shareholders Disclosure; Non-Collusion; Declaration Regarding Compliance with DOL Wage Determination; No Gratuities or Kickbacks; Ethical Standards Affidavit)
- Proposal Checklist
- Bid Bond
- A current Guam Business License. Although it is not required in order to provide a Bid for this engagement, obtaining a Guam Business License is a pre-condition for entering into a contract with the Authority.

The following forms and workbooks will be available on the GPA Website's Procurement Page, in *Volume V Appendices*. All Appendices and the MS EXCEL Workbooks Qualitative Proposal Worksheet.xls and Price Proposal.xls must be completed:

- Appendix A: Proposal Checklists
- Appendix B: Bid Bond
- Appendix C: Affidavit of Disclosure of Ownership
- Appendix D: Non-collusion Affidavit
- Appendix E: Local Procurement Preference
- Appendix F: Performance Bond
- Appendix G: No Gratuities or Kickbacks
- Appendix H: Ethical Standards Affidavit
- Appendix I: Declaration Re Compliance with U.S. DOL Wage Determination
- Appendix J: Restriction against Sex Offenders Employed by Service Providers to Government of Guam from Working on Government of Guam Property
- Appendix K: Bidder's Price Proposal Cover Page

- Qualitative Proposal Worksheet.xls
- Price Proposal.xls

GPA also provides the following supplemental information in *Volume VI – Schedules*:

- Schedule A Fuel Supply Specifications
- Schedule B Fuel Farm Lay Out
- Schedule C Refueling Schematic Diagram
- Schedule D Pump Specifications
- Schedule E Office Floor Plan
- Schedule F Facility Response Plan (FRP)
- Schedule G Spill Prevention, Control, and Countermeasure Plan (SPCC)
- Schedule H NPDES Permit
- Schedule I Security Contractor Requirements
- Schedule J Tank System Operation and maintenance WorkPlan
- Schedule K GPA Bulk Fuel Storage Facility Asset List
- Schedule L Proposed ULSD and LNG Piepeline (Piti to Ukudu)
- Schedule M Oil Spill History
- Schedule N Historical Power Consumption

3.1. Technical Proposal Forms

The following referenced forms shall be completed and submitted with the Proposal.

3.1.1. Proposal Checklists

The BIDDER shall complete Form A-1 by acknowledging the receipt of the Invitation For Bid Documents received from Guam Power Authority, including the latest IFB Amendments received. Acknowledgement of receipt shall be given by signing or putting an initial beside each line item received. This Form is an acknowledgement of receipt, review and understanding of the IFB documents.

During the submission of the Proposals, the BIDDER shall complete Form A-2. This Form provides an inventory of documents submitted by the BIDDER in response to the Proposal requirements.

3.1.2. Bid Bond Form

As stated in section 2.14.3, if a BIDDER desires to submit a bid bond with an acceptable bonding company, the BIDDER must submit original copies of Appendix B.

3.1.3. Affidavit of Disclosure of Ownership

The BIDDER shall fill out the Disclosure of Ownership form in Appendix C and submit it with its Proposal.

3.1.4. Non-collusion Affidavit

The BIDDER shall fill out the Non-collusion Affidavit form in Appendix D and submit it with its Proposal.

3.1.5. Local Procurement Preference Application

The BIDDER shall fill out and sign the Local Procurement Preference Application in Appendix E and submit it with the Technical Proposal.

3.1.6. No Gratuities or Kickbacks Affidavit

The BIDDER shall fill out the No Gratuities or Kickbacks Affidavit Form in Appendix G and submit it with its Proposal.

3.1.7. Ethical Standards Affidavit

The BIDDER shall fill out the Ethical Standards Affidavit Form in Appendix H and submit it with its Proposal.

3.1.8. Compliance with US DOL Wage Determination

The BIDDER shall fill out and sign the Declaration of Compliance with US DOL Wage Determination in Appendix I and submit it with the Technical Proposal.

3.1.9. Restriction Against Sex Offenders

The BIDDER shall complete the form, ***Restriction against Sex Offenders Employed by Service Providers to Government of Guam from Working on Government of Guam Property*** (Appendix J) and submit it as part of the Technical Proposal.

3.2. Qualitative Proposal Workbook

The BIDDER shall complete the Qualitative Proposal Workbook in accordance with the instructions given in the workbook's Instructions tab. The workbook shall be submitted as part of the Technical Proposal.

3.3. Price Proposal Form (Price Proposal.xls)

The qualified BIDDERs shall propose Annual Fees for each CONTRACT ITEM for each contract year in the worksheet named “BIDDER DATA ENTRY”. Costs for optional contract years shall also be provided; doing so allows GPA to calculate the cost of the contract should it be extended for one or two additional contract years. GPA may decide to award all, any or none of the Price Proposal Items to the successful bidder.

4. Proposal Scoring Mechanism

4.1. Overview

GPA will use the Proposal Scoring Mechanism described in this Section of the Invitation for Bid (IFB) to qualify BIDDERs for the participation in the final bid stage. The Proposal Scoring Mechanism provides the BIDDERs the opportunity to highlight their qualifications to bid in terms of their resources, skills, operating philosophy and commitments to perform specific tasks and originality. The IFB proposal evaluation shall be based on such specifications and based on the relative ranking of each BIDDER's qualifications, financial information, fixed management fees, staffing proposal, O&M spending budget and performance guarantees.

4.2. Qualitative Proposal Evaluation

The qualitative proposal scoring is designed to assess the quality of the BIDDER's resources, skills, comprehensiveness and responses to specific questions or requirements. GPA may elect to have up to five (5) evaluators for this IFB. Each evaluator shall assess and review the Bidder's Technical Proposal documents. Each GPA evaluator shall score each BIDDER separately under a point system to determine the acceptability of each Proposal. The majority of the determinations of GPA evaluators shall prevail in the decision to Qualify or not Qualify a BIDDER for Step 2 — Price Proposal.

The instructions for filling out the Qualitative Proposal Scoring Workbook are listed in the **Proposal Instructions** tab in the Workbook. The BIDDER must complete all entries in the **Part 1- Qual Support References** tab of the Workbook. The tab, **CONTRACTOR Qualifications Checklist** is automatically populated once BIDDER completes all entries in **Part 1- Qual Support References**. Each GPA evaluator will be provided a copy of Part 1 – Qual Support References as well as the BIDDER's technical proposal materials. Evaluators shall review and evaluate BIDDER responses in **Part 1- Qual Support References** worksheet tab, and fill out the **Part 2 – Qual Eval Scoresheet** tab using the following steps:

1) Each evaluator shall review BIDDER's response to each question on the CONTRACTOR Checklist Items. The Evaluator shall be guided by information provided by the bidder regarding location of responses to each question in Part 1 – Qual Support References tab.
2) In **Part 2 – Qual Eval Scoresheet tab**, Evaluator shall assign a Raw Rating Score for each BIDDER's response to each question. The Evaluator shall be guided by the Checklist Weight and Proposal Scoring Information provided in the **Proposal Scoring Information** tab.
3) Each evaluator shall determine BIDDER's weighted average raw score using pre-specified weights for each question. Part 2 – Qual Eval Scoresheet tab has been formatted to automatically populate the Evaluated CONTRACTOR Qualifications Score.

The evaluators will use the supporting information on Price Proposal Worksheet. The Total Qualitative Points for a 100% Score is specified in the **Proposal Scoring Information** tab and **CONTRACTOR Qualifications Checklist** tab. Each GPA evaluator will analyze the contents of the Proposals and categorize the Proposals as:

- Acceptable: Score $\geq 80\%$
- Potentially Acceptable, that is reasonably susceptible of being made Acceptable: $80\% >$ Score $\geq 75\%$
- Unacceptable: Score $< 75\%$.

A percent score of less than 75% indicates that a GPA evaluator has determined that the BIDDER has not supplied sufficient evidence of qualifications and should not be allowed to participate in Step 2 – Price Proposal.

After each GPA evaluator has completed the evaluation and scoring of BIDDERS, GPA shall complete the Table below. The Procurement Officer will enter for each GPA evaluator and BIDDER one and only one of the following in the appropriate table cell below:

- Acceptable
- Potentially Acceptable
- Unacceptable.

The Procurement Officer or his designee may initiate Step Two if there are sufficient acceptable Unpriced Technical Proposals to assure effective price competition in the second phase without technical discussions. If the majority of the GPA evaluators rate the BIDDER as Acceptable, that BIDDER is determined to be Qualified and will be allowed to participate in Step 2– Price Proposal.

If the Procurement Officer or his designee finds that such is not the case, the Procurement Officer or his designee shall issue an amendment to this Invitation for Bid or engage in technical discussions with BIDDERs who are rated by a majority of the GPA evaluators as Acceptable or Potentially Acceptable. During the course of such discussions, the Procurement Officer or his designee shall not disclose any information derived from one Technical Proposal to any other BIDDER.

Once discussions are begun, any BIDDER who has been notified that its Offer has been finally found acceptable may submit supplemental information amending its Technical Proposal at any time. Such submission may be made at the request of the Procurement Officer or upon the BIDDER's own initiative.

BIDDERs who are rated by the majority of the GPA evaluators as Unacceptable is determined to be Not Qualified and will not be allowed to participate in Step 2– Price Proposal. The Procurement Officer shall record in writing the basis for finding a Bidder Not Qualified and make it part of the procurement file.

Table 1. Final Evaluation of Bidder Qualification

GPA Evaluator	BIDDER 1	BIDDER 2	BIDDER 3	BIDDER 4	BIDDER 5
1					
2					
3					
4					
5					

4.3. Price Proposal Evaluation

The BIDDER shall propose Annual Fees for each CONTRACT ITEM for each contract year shall input its proposed Price Proposal for each Price Proposal Item for each Contract Year including Optional Contract Years in the Price Proposal.xls worksheet

GPA shall score each Qualified BIDDER's Price Proposal for each item by evaluating the Net Present Value (NPV) to GPA. GPA will award the Contract to the BIDDER whose proposal yields the lowest overall CONTRACT price.

5. Conditions of Contract

5.1. Definitions

Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

Approved

The word "Approved," when applied by ENGINEER to CONTRACTOR's drawings or documents, shall mean that the drawings or documents are satisfactory from the standpoint of interfacing with GPA-furnished components, and/or that ENGINEER has not observed any statement or feature that appears to deviate from the Specification requirements.

Approved As Revised

The words "Approved As Revised," when applied by ENGINEER to CONTRACTOR's drawings or documents shall mean that the drawings or documents are approved as defined above, except that the corrections shown are required for the proper interfacing with GPA-furnished components or are necessary to be in conformance with the Specification's requirements.

Change Order

A written instrument to CONTRACTOR signed by GPA authorizing an addition, deletion, or revision in the goods or special services, or an adjustment in the purchase order price or the delivery time, issued after the effective date of the Contract Agreement (Agreement).

CONTRACTOR

The CONTRACTOR with whom GPA has entered into the Contract Agreement.

Day

A calendar day of twenty-four (24) hours measured from midnight to the next midnight

Delivery Time

The total number of days or the dates stated in the Agreement for furnishing the Goods and/or Special Services

Defective

An adjective which when modifying the words Goods or Special Services refers to Goods or Special Services which are unsatisfactory, faulty, deficient, do not conform to the Contract Documents, or do not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents.

Drawings

Drawings are all official drawings approved by the ENGINEER and showing the character and scope of the Goods to be furnished.

Effective Date of the Contract Agreement

The date indicated in the Purchase Agreement on which it becomes effective, or if no such date is indicated, the date by which the Purchase Contract is signed by both parties.

ENGINEER

Wherever the words "ENGINEER" or "ENGINEERS" appear in the CONTRACT Documents, it shall mean GPA's engineer duly appointed as “ENGINEER”. GPA shall assign several ENGINEERS as required to cover specialized areas of expertise.

ENGINEER's Instructions

Written instructions issued by ENGINEER which clarify or interpret the CONTRACT Documents or order minor changes or alterations in the Goods or Special Services to be furnished but which do not involve a change in the Purchase Price or the Delivery Time.

General Manager

The General Manager is the Chief Executive Officer of the Guam Power Authority. The office and title of General Manager shall apply to any person acting in a regular or in an acting capacity as the Chief Executive Officer of the Guam Power Authority.

Goods

All property required to be furnished by CONTRACTOR under the procurement documents.

Modification

A written amendment of the Purchase Agreement signed by both parties, or Change Order, or ENGINEER's Instructions.

OWNER

The Guam Power Authority (An autonomous instrumentality of the Government of Guam).

Point of Delivery

The place at which property in the goods shall pass to GPA shall be CIF landed at job-site, Guam, unloaded.

Project

The plant, facilities, or works the Goods and Services are to be used for or incorporated into.

PURCHASER

The Guam Power Authority with whom CONTRACTOR has entered into the Contract Agreement.

Contract Agreement (Agreement)

The written agreement between GPA and CONTRACTOR covering the furnishing of the Goods, Special Services, and other services in connection therewith evidencing what is contemplated and agreed to between the parties including any other Contract Documents either attached to the Agreement or made a part thereof by reference therein.

Contract Documents

The Contract Agreement, Bonds (where required), these General Conditions, any Supplementary Conditions, the Specifications, the Drawings and any other documents specifically identified in the Contract Agreement, together with all Modifications issued after execution of the Contract Agreement.

Procurement Officer

The General Manager of the Guam Power Authority or the General Manager's designee.

Seller

The CONTRACTOR

SITE or Site

The SITE is the area where the Project is to be constructed or executed. In this case, the SITE is the GPA Fuel Bulk Storage Facility as delineated in Volume II Technical and Functional Requirements and Volume III GPA Fuel Bulk Storage Facility Technical Description.

Special Services

Services to be furnished by CONTRACTOR at the GPA Fuel Facility as required by the Contract Agreement.

Territory

The Territory of Guam.

5.2. Scope of the Agreement

This CONTRACT supersedes any and all other agreements related to the Performance Management Contract for the GPA Bulk Fuel Storage Facility, either oral or in writing between parties hereto with respect to the retainment of the CONTRACTOR by the Authority and contains all of the covenants and agreements between the parties. Each party to this Contract acknowledges that no representation, promises or agreement, orally or otherwise, has been made by any party or anyone acting on behalf of any party and that no other agreement not contained in this Contract shall be valid or binding. Any modification of this Contract will be effective only if in writing, and mutually agreed to and signed by both parties.

5.3. Indemnity

CONTRACTOR shall indemnify and hold GPA and ENGINEER harmless from any claim, liability or product liability, loss, damage, demand, cause of action or suit, expense, or fee of legal counsel arising out of or in connection with the Goods or Special Services provided by the CONTRACTOR.

5.4. Accounting

For accounting purposes and for use in establishing property records, GPA may require CONTRACTOR to provide a reasonable price breakdown of the total price into separate prices applying to the individual items supplied under the Agreement.

Where the Agreement covers the reimbursement of the traveling or living expenses of the CONTRACTOR's employees or agents, the CONTRACTOR agrees to furnish complete itemization and breakdowns of such expenses when requested by GPA.

In the event of any changes to or termination of the Agreement, or the furnishing of goods or services on a labor hour or a cost reimbursable basis, CONTRACTOR shall supply information in such detail as may be reasonably required by GPA to support all applicable charges. GPA, or an independent auditor designated by GPA, shall have the right to audit, during normal working hours, CONTRACTOR's accounts and records relating to such charges. The expense of such audit will be borne by GPA.

5.5. Waiver of Claims

The making and acceptance of final payment will constitute:

- A waiver of all claims by GPA against CONTRACTOR, except claims arising from unsettled liens, claims relative to defective Goods or special services appearing after final payment, or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein;

nor will final payment constitute a waiver by GPA of any rights in respect of CONTRACTOR's continuing obligations 'under the Procurement Documents; and

- A waiver of all claims by CONTRACTOR against GPA other than those previously made in writing and still unsettled.

5.6. Supervision and Coordination by CONTRACTOR

CONTRACTOR shall competently and efficiently manage, supervise, and direct production of the Goods and furnishing of Special Services and coordinate all operations required to deliver the Goods and furnish any required Special Services.

CONTRACTOR shall designate, in writing to GPA, a person with authority to act on behalf of CONTRACTOR with respect to CONTRACTOR's obligations under the CONTRACT Documents, and all communications given to or received from that person will be binding on CONTRACTOR.

CONTRACTOR shall perform all such activities as an independent contractor and not as an agent of GPA. When others furnish materials and equipment for assembly by the CONTRACTOR, CONTRACTOR shall receive, unload, store, and handle it and become responsible therefore as though CONTRACTOR was furnishing such materials and/or equipment under the Agreement.

5.7. Substitutions

If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof certifying that the proposed substitute will perform adequately the function as called for by the general design, be similar and of equal substance to that specified, and be suited to the same use and capable of performing the same function as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice the CONTRACTOR's warranty or timely delivery of the Goods, whether or not acceptance of the substitute will require a change in any of the Contract Documents to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the production of the Goods is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair, and replacement service will be indicated. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR's expense such additional data about the proposed substitute as is required by ENGINEER. GPA may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

5.8. Documentation and Drawings

GPA shall have the right to reproduce any and all drawing, prints, or other data or documents received from CONTRACTOR.

The Agreement will not be deemed satisfactorily completed until all requirements have been complied with including, but not limited to, proper material documentation, final drawings and reproductions, and other requirements stated in the Contract Documents. GPA may withhold final payment hereunder, pending completion of all such requirements by the CONTRACTOR.

At the time of each submission, CONTRACTOR shall in writing call ENGINEER's attention to any deviations that the drawings or documents may have from the requirements of the Specification or Contract Documents. CONTRACTOR shall also direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals. CONTRACTOR's submission of any drawing or document bearing CONTRACTOR's approval shall constitute a representation to GPA and ENGINEER that CONTRACTOR assumes full responsibility for having determined and verified the design criteria, quantities, dimensions, installation requirements, materials, catalog numbers, and similar data and that CONTRACTOR has reviewed or coordinated each drawing or document with the requirements of the Contract Documents.

ENGINEER's review and approval of CONTRACTOR's drawings or documents will be only for conformance with the design concept of the Goods and for compliance with the information given in the Contract Documents. Such review and approval will not extend to design data reflected in drawings or documents that is peculiarly within the special expertise of CONTRACTOR or any party dealing directly with CONTRACTOR. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER when drawings or documents are marked "Approved As Revised" and shall return the required number of corrected copies.

GPA and/or ENGINEER shall have the right to reproduce any and all drawing, prints, or other data or documents received from CONTRACTOR that are considered necessary for engineering, construction, or other purposes, despite any notice to the contrary appearing on the item. When a drawing or document approval is required by the Specifications, CONTRACTOR shall not commence production of any part of the Goods affected thereby until such drawing or document has been reviewed and approved by ENGINEER.

ENGINEER's review and approval of CONTRACTOR's drawings or documents will not relieve CONTRACTOR from responsibility for any deviations from the Contract Documents unless CONTRACTOR has in writing called ENGINEER's attention to such deviation at the time of submission and ENGINEER has given written concurrence and approval to the specific deviation, nor will any concurrence or approval by

ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the drawings or documents submitted.

5.9. Continuing Performance

CONTRACTOR shall continue its performance under the Agreement during all claims, disputes, or disagreements with GPA. Production of Goods will not be delayed or the timely delivery of Goods or furnishing of Special Services be prejudiced, delayed, or postponed pending resolution of any claims, disputes, or disagreements, except as CONTRACTOR and GPA may otherwise agree in writing.

5.10. Access to Facility

CONTRACTOR shall provide representatives of GPA, testing agencies, and governmental agencies with jurisdictional interests proper and safe access to the Fuel Bulk Storage Facility as is necessary for the performance of their functions and in connection with the Contract Documents.

5.11. Expediting

CONTRACTOR shall expedite delivery of the Goods and any related work of subcontractors. When requested or required by the Contract Documents, CONTRACTOR shall also provide GPA with an itemized schedule for engineering, outsourcing, fabrication, and shipping, which shall be followed by expediting reports including status of deliveries of materials and/or equipment purchased from subcontractors, if any, each month during its performance under the Agreement. If CONTRACTOR encounters delay in obtaining materials, or foresees any delay in its own manufacturing works, CONTRACTOR shall immediately inform GPA of such situation.

GPA and/or its designee shall be allowed reasonable access to CONTRACTOR's and its subcontractor's works for the purpose of expediting project progress.

Any expediting done by GPA shall not relieve CONTRACTOR from its obligations as to the Delivery Time specified in the Agreement.

5.12. Compliance with Law

CONTRACTOR shall comply, and secure compliance by its subcontractors, with all applicable laws or regulations in connection with the Goods and services furnished hereunder. This includes the securing of any business or other licensing, certifications, or permits required. If CONTRACTOR discovers any variance between the provisions of applicable laws and regulations and the drawings, Specifications, and other

technical data furnished by the GPA, CONTRACTOR shall promptly notify GPA in writing thereof and obtain necessary changes from GPA before proceeding with the work affected thereby.

5.13. Price Adjustment

Price Adjustment Methods

Any adjustment in contract price within the parameters of this contract shall be made in one or more of the following ways:

a) By agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;
b) By unit prices specified in the contract or subsequently agreed upon;
c) By the costs attributable to the event or situation covered by the clause, plus appropriate profit or fee, all as specified in the contract or subsequently agreed upon;
d) In such other manner as the parties may mutually agree; or
e) In the absence of agreement between the parties, by a unilateral determination by the Procurement Officer of the costs attributable to the event or situation covered by the clause, plus appropriate profit or fee, all as computed by the Procurement

Submission of Cost or Pricing Data

The CONTRACTOR shall provide cost or pricing data for any price adjustments subject to the provisions of Section 3-403 (Cost or Pricing Data) of the Guam Procurement Regulations.

5.14. Changes

5.14.1. Change Order

By a written order, at any time, and without notice to surety, the Procurement Officer may, subject to all appropriate adjustments, make changes within the general scope of this contract in any one or more of the following:

a) Drawings, designs, or Specifications, if the supplies to be furnished are to be specially manufactured for the Territory in accordance therewith;
b) Method of shipment or packing; or
c) Place of delivery.

5.14.2. Time Period for Claim

Within 30 days after receipt of a written change order under **Paragraph 4.15.1 Change Order**, unless the Procurement Officer extends such period in writing or e-mail, The CONTRACTOR shall file notice of intent

to assert a claim for an adjustment. Later notification shall not bar the CONTRACTOR's claim unless the Territory is prejudiced by the delay in notification.

5.14.3. Claims Barred After Final Payment

No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if notice is not given prior to final payment under this contract.

5.14.4. Other Claims Not Barred

In the absence of such a change order, nothing in this clause shall be deemed to restrict the CONTRACTOR's right to pursue a claim arising under the contract if pursued in accordance with the clause entitled, "Claims Based on the General Officer's Actions or Omissions, - Notice of Claim", or for breach of contract.

5.15. Contract Price

The Contract Price constitutes the total consideration to be paid by GPA to THE CONTRACTOR for performing other services in connection therewith in accordance with the Contract Documents as amended by the parties pursuant to the Agreement. Unless expressly provided otherwise in the Contract Documents, the Contract Price is not subject to escalation in respect of materials and/or labor cost or any other factor or variation in rates of exchange, and all duties, responsibilities, and obligations assigned to or undertaken by THE CONTRACTOR shall be at its expense without change in the Contract Price. Charges, fees, CONTRACTOR's profit, and all other expense shall be deemed to be included in the Contract Price. Furthermore, the Contract Price includes management fees and incentive/penalty payments. Therefore, the Contract Price is dynamic but bounded.

Only a formal Change Order, accepted by GPA, may change the Contract Price. THE CONTRACTOR shall make any claim for an increase in the Contract Price in advance of performance of any such changes. However, GPA reserves the right to challenge or refute such claims.

5.16. Payment Milestones and Schedule

Payment milestones have been selected to clearly identify the actual status of the portion of the Work completed rather than anticipated project progress schedules. Payments will be based on actual completion of each milestone event, where applicable, and not on the scheduled completion date. When a change in the Agreement is approved, the total contract price will be altered to the new total, and the remaining milestone payments will be adjusted.

Milestones shall not be scheduled more frequently than once every month. GPA will not approve a milestone payment until all preceding milestones have been approved. GPA will make payments within thirty (30) days from receipt and approval of the invoice for the completed milestone.

The payment milestones for monies due to the CONTRACTOR from GPA are as follows:

- Monthly Fees for each CONTRACT ITEM;
- Reimbursement Payments for routine Operations and Maintenance related expenditures;
- Reimbursement Payments for any additional Operations and Maintenance related expenditures not included in the list of the routine O&M schedules, as agreed to and scheduled between GPA and the CONTRACTOR. For any additional O&M expenditures over $10,000.00 in one time cost, CONTRACTOR administrative charges shall not exceed FIVE PERCENT (5%).
- Reimbursement Payments for Capital Improvement Projects (CIP) related expenditures as agreed to and scheduled between GPA and the CONTRACTOR. CONTRACTOR administrative charges for CIPs shall not exceed FIVE PERCENT (5%).

The payment milestones for monies due to GPA from the CONTRACTOR are as follows:

- Penalty Compensation Payments due to CONTRACTOR’s failure to meet Contractual Obligations;
- Payments due to Contractor’s failure to meet Facility Security responsibilities;
- Expenses resulting from minor repairs or penalties due to Oil Spills, Non-Compliance with Environmental, Local and Federal Regulations, due to the negligence on the part of the contract

5.17. **Force Majeure**

Force Majeure referred to herein shall mean an occurrence beyond the control and without the fault or negligence of the party affected including, but not limited to, acts of God or the public enemy, expropriation or confiscation; changes in law procedures, war, rebellion, or riots; floods, unusually severe weather that could not reasonably have been anticipated; fires, explosions, epidemics, catastrophes, or other similar occurrences which are not within the control of the party affected. However, the following shall not be considered as *Force Majeure*:

a) Delay caused by lack or inability to obtain raw materials, congestion at CONTRACTOR's or its subcontractor's facilities, or elsewhere; market shortages, or similar occurrences, or
b) Delay, either on the part of THE CONTRACTOR or its subcontractors, caused by shortages of supervisors or labor, inefficiency, or similar occurrences, or
c) Sabotage, strikes, or any other concerted acts of workmen, which occur only in the facilities of THE CONTRACTOR or its subcontractors.

Should the circumstances of *Force Majeure* continue over a period of ninety (90) days, GPA has the right, if no other understanding is reached, to terminate the whole Agreement or any part thereof in accordance with Paragraph 4.28. Any delay or failure in performing the obligations under the Contract Documents of the parties hereto shall not constitute default under the Purchase Contract or give rise to any claim for damages or loss or anticipated profits if, and to the extent, such delay or failure is caused by Force Majeure, and if a claim is made therefore.

5.17.1. Invocation of Force Majeure

The party invoking Force Majeure shall perform the following:

a) Notify the other party as soon as reasonably possible by facsimile, e-mail, telex, cable or Messenger/courier of the nature of Force Majeure, anticipated exposure time under Force Majeure, and the extent to which the Force Majeure suspends the affected party's obligations under the CONTRACT;
b) Consult with the other party and take all reasonable, prudent steps to minimize the losses of either party resulting from the Force Majeure;
c) Resume the performance of its obligations as soon as possible after the Force Majeure condition ceases.

5.17.2. Delivery Time and Force Majeure

Only a Change Order may change contractual Delivery Times. THE CONTRACTOR as provided in **Paragraph 5.14** and its sub-paragraphs shall file all claims for an extension in the Delivery Time.

The Delivery Time will be extended in an amount equal to time lost due to delays caused by Force Majeure if a claim is made therefore as provided in this Paragraph. No amendment to the Contract Price, however, shall be allowable because of Force Majeure occurrences.

Notwithstanding the foregoing, all time limits stated in the Purchase Order documents are of the essence in the agreement. The provisions of this Paragraph shall not exclude recovery for damages (including compensation for additional professional services) for delays not caused by Force Majeure.

5.18. Warranty

THE CONTRACTOR'S obligation to furnish the Goods and Special Services and to perform other services in connection therewith in accordance with the Agreement is absolute, and THE CONTRACTOR warrants and guarantees to GPA that all Goods will be in accordance with the Contract Documents and will be new, fit

for the purpose for which they are intended, and free from any defects, including faulty design, materials, or workmanship.

THE CONTRACTOR shall provide GPA with all warranties and guarantees in writing. GPA and the BIDDER shall negotiate the manner in which claims against these warranties are addressed including any remedies for non-responsiveness. This may include retention of contract amounts, performance bonds, etc.

THE CONTRACTOR shall be responsible for remedying all defects, without limitation, in design, materials, workmanship, operating characteristics, or performance of the Goods developing within twelve (12) months from the date on which GPA has placed the Goods in continuous service, or within twenty-four (24) months from the date of final payment, whichever date shall first occur, or within such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee or by any specific provisions of the Contract Documents.

Any part(s) supplied in replacement of the defective part(s) of the Goods or any Goods repaired pursuant to the provisions of this Paragraph shall be supplied or repaired on the same terms and conditions as provided for herein for the supply of the Goods and in particular a new warranty period shall apply. Such new warranty period shall expire on the date twelve (12) months from the date of such replacement or repair or on the expiration date of the warranty for the original Goods that were replaced or repaired, whichever is later.

In the event the CONTRACTOR furnishes special services for installation and startup, such services shall be rendered in a competent and diligent manner and in accordance with the Contract Documents, accepted industry practice and any applicable professional standards.

5.19. Tests and Inspections

GPA or its designee shall have the right to inspect or observe the production, inspection, or testing of the Goods at any time and place including the CONTRACTOR's facilities and those of its subcontractors where the Goods are being produced.

THE CONTRACTOR shall conduct, at its responsibility and expense, all tests and inspections called for by the Contract Documents. In the event that witness inspection by GPA is required under the Contract Documents, the costs and expense arising therefrom shall be borne by the CONTRACTOR, including inspector's fees, transportation, hotel, and general flying expenses. In the event that CONTRACTOR's inspection is required at the site, CONTRACTOR's transportation, hotel, and general living expenses shall be borne by THE CONTRACTOR.

Any inspection made by the inspector of GPA and/or its designee will be final. Such inspections or the witnessing of CONTRACTOR's test and inspection by GPA and/or its designee shall not relieve THE CONTRACTOR of any of its responsibilities or liabilities under the Contract Documents, nor be interpreted in any way as implying acceptance of the Goods.

THE CONTRACTOR shall repair and replace, without cost or delay, anything found defective by tests and inspections, and also to bear all costs of re-inspection.

The CONTRACTOR must carry out at its authority and expense any inspection required by statutory Authority, governmental regulation, or other similar Authority on the codes or standards.

5.20. Remedying Defective Parts

If at any time GPA determines that the replacement parts are defective, THE CONTRACTOR shall, upon written notice from GPA, do all things necessary, at its expense, to make good the defects as soon as possible after being notified to do so by GPA. THE CONTRACTOR warrants that THE CONTRACTOR, unless otherwise agreed, shall remedy any defects. It is understood, that if so instructed by GPA, THE CONTRACTOR shall make shipment by the fastest available method.

In the event that THE CONTRACTOR does not take prompt action to fulfill its obligations hereunder as required by GPA and to the satisfaction of GPA, GPA may, after ten (10) days written notice to THE CONTRACTOR, and without prejudice to any of its rights under the Agreement, accept the defective Goods and carry out the remedial work itself instead of requiring correction or removal and replacement, and charge THE CONTRACTOR for the costs of the work. In an emergency where delay would cause serious risk of loss or damage, GPA may take such action without prior notice to or waiting for action by THE CONTRACTOR.

5.20.1. Remedying Defective Special Services

If at any time GPA notifies THE CONTRACTOR in writing that any of the Special Services are defective, THE CONTRACTOR shall promptly provide acceptable services. If THE CONTRACTOR fails to do so, GPA may obtain the Special Services elsewhere.

5.20.2. Cost of Remedying Defects

All direct, indirect, and other costs of correcting, removing, and replacing defective Parts or of obtaining Special Services elsewhere and of exercising GPA’s rights and remedies under **Paragraph 5.20** and other sections as they apply, will be charged against THE CONTRACTOR and, if incurred prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents and a

reduction in the Purchase Price, or if incurred after final payment, an appropriate amount will be paid by THE CONTRACTOR to GPA. Such direct, indirect, and other costs will include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of property of GPA or others destroyed or damaged by correction, removal, or replacement of defective Goods. THE CONTRACTOR shall not be allowed an extension of the Delivery Time because of any delay in performance attributable to the exercise by GPA of GPA's rights and remedies under this paragraph.

5.21. Stop Work Order

5.21.1. Order to Stop Work

The Procurement Officer may, by written order to the CONTRACTOR, at any time, and without notice to any surety, require the CONTRACTOR to stop all or any part of the work called for by this contract. This order shall be for a specified period not exceeding ninety-days (90-days) after the order is delivered to the CONTRACTOR, unless the parties agree to any further period. Any such order shall be identified specifically as a stop work order issued pursuant to this clause. Upon receipt of such an order, the CONTRACTOR shall forthwith comply with its terms and take all reasonable steps to minimize the occurrence of costs allocable to the work covered by the order during the period of work stoppage. Before the stop work order expires, or within any further period to which the parties shall have agreed, the Procurement Officer shall either:

a) Cancel the stop work order; or
b) Terminate the work covered by such order, as provided in the 'Termination for Default Clause' or the 'Termination for Convenience Clause of this contract.

5.21.2. Cancellation or Expiration of the Order

If a stop work order issued under this clause is canceled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONTRACTOR shall have the right to resume work. An appropriate adjustment shall be made in the delivery schedule or contract price shall be modified in writing accordingly, if:

a) The stop work order results in an increase in the time required for, or in the CONTRACTOR's cost properly allocable to, the performance of any part of this contract; and
b) The CONTRACTOR asserts a claim for such an adjustment within thirty (30) days after the end of the period of work stoppage; provided that, if the Procurement Officer decides that the facts justify such action, any such claim asserted may be received and acted upon at any time prior to final payment under this contract.

5.21.3. Termination of Stopped Work

If a stop work order is not canceled and the work covered by such order is terminated for default or Convenience, the reasonable costs resulting from the stop work order shall be allowed by adjustment or otherwise.

5.22. Termination for Convenience

5.22.1. Termination

The Procurement Officer may, when the interest of GPA or the Territory so require, terminate this contract in whole or in part, for the Convenience of' the Territory. The Procurement Officer shall give written notice of the termination to the CONTRACTOR specifying the part of the contract terminated and when termination becomes effective. **[GSA Procurement Regulations 6-101.10.]**

5.23.2. CONTRACTOR's Obligations

The CONTRACTOR shall incur no further obligations in connection with the terminated work and on the date set in-the notice of termination the CONTRACTOR will stop work to the extent specified. The CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work. The Procurement Officer may direct the CONTRACTOR to assign the CONTRACTOR’s right, title, and interest under terminated orders or subcontracts to the GPA. The CONTRACTOR must still complete the work not terminated by the notice of termination and may incur obligations as are necessary to do so.

5.22.2. Right to Supplies

The Procurement Officer may require the CONTRACTOR to transfer title and deliver to GPA in the manner and to the extent directed by the Procurement Officer:

a) Training material;
b) Any completed supplies; and,
c) Such partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information and contract rights (hereinafter called "manufacturing material") as the CONTRACTOR has specifically produced or specially acquired for the performance of the terminated part of this contract.

The CONTRACTOR shall, upon direction of the Procurement Officer, protect and preserve property in the possession of the CONTRACTOR in which the Territory has an interest. If the Procurement Officer does not exercise this right, the CONTRACTOR shall use best efforts to sell such supplies and manufacturing materials

in accordance with the standards of **Uniform Commercial Code of Guam (UCCG), Section 2706.** Utilization of this Section in no way implies that the Territory has breached the contract by exercise of the Termination for Convenience Clause.

5.22.3. Compensation Under Termination for Convenience

The CONTRACTOR shall perform the following for compensation under termination for convenience.

a) The CONTRACTOR shall submit a termination claim specifying the amounts due because of the termination for Convenience together with cost or pricing data to the extent required by **Section 3-403 (Cost or Pricing Data) of the Guam Procurement Regulations** bearing on such claim. If the CONTRACTOR fails to file a termination claim within one year from the effective date of termination, the Procurement Officer may pay the CONTRACTOR, if at all, an amount set in accordance with subparagraph (c) of this Paragraph.

b) The Procurement Officer and the CONTRACTOR may agree to a settlement provided the CONTRACTOR has filed a termination claim supported by cost or pricing data to the extent required by **Section 3-403 (Cost or Pricing Data) of the Guam Procurement Regulations** and that the settlement does not exceed the total contract price plus settlement costs reduced by payments previously made by GPA, the proceeds of any sales of supplies and manufacturing materials, and the contract price of the work not terminated.

c) Absent complete agreement under Subparagraph (b) of this Paragraph, the Procurement Officer shall pay the CONTRACTOR the following amounts, provided payments agreed to under Subparagraph (b) shall not duplicate payments under this subparagraph:

   i. Contract prices for supplies or services accepted under the contract;

   ii. Costs incurred in preparing to perform and performing the terminated portion of the work plus a fair and reasonable profit on such portion of the work (such profit shall not include anticipatory profit or consequential damages) less amounts paid or to be paid for accepted supplies or services; provided, however, that if it appears that the CONTRACTOR would have sustained a loss if the entire contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss;

   iii. Costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to **Paragraph 4.23.2** of this clause. These costs must not include costs paid in accordance with other subparagraphs of this Paragraph;

   iv. The reasonable settlement costs of the CONTRACTOR including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract for the termination and settlement of subcontracts there under, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property

allocable to the terminated portion of this contract. The total sum to be paid to the CONTRACTOR under this Subparagraph shall not exceed the total contract price plus the reasonable settlement costs of the CONTRACTOR reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under subparagraph (b) of this Paragraph, and the contract price of work not terminated.

d) Cost claimed, agreed to, or established under subparagraph (b) and (c) of this Paragraph shall be in accordance with **Chapter 7 (Cost Principles) of the Guam Procurement Regulations. 13 GCA 2796 (UCCG)** states:

2706. SELLER's Resale Including contract for Resale

(1) Under the conditions stated in **Section 2703** on CONTRACTOR's remedies, the CONTRACTOR may resell the goods concerned or the undelivered balance thereof. Where the resale is made in good faith and in a commercially reasonable manner the CONTRACTOR may recover the difference between the resale price and the contract price together with incidental damages allowed under the provisions of this division (Section 2710), but less expenses saved in consequence of the buyer's breach.

(2) Except as otherwise provided in Subsection (3) or unless otherwise agreed resale may be at public or private sale including sale by way of one or more contracts to sell or of identification to an existing contract of the CONTRACTOR. Sale may be as a unit or in parcels and at any time and place and on any terms, but every aspect of the sale including the method, manner, time, place and terms must be commercially reasonable. The resale must be reasonably identified as referring to the broken contract, but it is not necessary that the goods be in existence or that any or all of them have been identified to the contract before the breach.

(3) Where the resale is at private sale the CONTRACTOR must give the buyer [i.e., GPA] reasonable notification of his intention to resell.

(4) Where the resale is at public sale:

(01) Only identified goods can be sold except where there is a recognized market for a public sale of futures in goods of the kind; and

(02) It must be made at a usual place or market for public sale if one is reasonably available and except in the case of goods which are perishable or threaten to decline in value speedily the CONTRACTOR must give the buyer [i.e., GPA] reasonable notice of the time and place of the resale; and,

(03) If the goods are not to be within the view of those attending the sale, the notification of sale must state the place where the goods are located and provide for their reasonable inspection by prospective BIDDER s; and

(04) The CONTRACTOR may buy.

(5) A purchaser who buys in good faith at a resale takes the goods free of any rights of the original buyer [i.e., GPA] even though the CONTRACTOR fails to comply with one or more of this section's requirements.

(6) The CONTRACTOR is not accountable to the buyer [i.e., GPA] for any profit made on any resale. A person in the position of a CONTRACTOR **(Section 2707)** or a buyer who has rightfully rejected or justifiably revoked acceptance must account for any excess over the amount of his security interest, as hereinafter defined (Subsection 3) of Section 2711."

5.23. Termination for Defaults

5.23.1. Default

If the CONTRACTOR refuses or fails to perform any of the provisions of this contract with such diligence as will ensure its completion within the time specified in this contract, or any extension thereof, otherwise fails to timely satisfy the contract provisions, or commits any other substantial breach of this contract, the Procurement Officer may notify the CONTRACTOR in writing of the delay or non-performance and if not corrected in ten days or any longer time specified in writing by the Procurement Officer, such officer may terminate the CONTRACTOR's right to proceed with the contract or such part of the contract as to which there has been delay or a failure to properly perform.

In the event of termination in whole or in part the Procurement Officer may procure similar supplies or services in a manner and upon terms deemed appropriate by the Procurement Officer. The CONTRACTOR shall continue performance of the contract to the extent it is not terminated and shall be liable for excess cost incurred on procuring similar goods or services.

5.23.2. CONTRACTOR’s Duties

Notwithstanding termination of the contract and subject to any directions from the Procurement Officer, the CONTRACTOR shall take timely, reasonable, and necessary action to protect and preserve property in the possession of the CONTRACTOR in which GPA has an interest.

5.23.3. Compensation

Payment for completed supplies delivered and accepted by the GPA shall be at the contract price. Payment for the protection and preservation of property shall be in an amount agreed upon by the CONTRACTOR and the Procurement Officer; if the parties fail to agree, the Procurement Officer shall set an amount subject to the CONTRACTOR's rights under Chapter 9 (Legal and Contractual Remedies) of the Guam Procurement Regulations. GPA may withhold from amounts due the CONTRACTOR such sums as the Procurement

Officer deems to be necessary to protect the GPA against loss because of outstanding liens or claims of former lien holders and to reimburse the PURCHASER for the excess costs incurred in procuring similar goods and services.

5.23.4. Excuse for Nonperformance or Delayed Performance

Except with respect to defaults of subcontractors, the CONTRACTOR shall not be in default by reason of any failure in performance of this contract in accordance with its terms (including any failure by the CONTRACTOR to make progress in the prosecution of the work hereunder which endangers such performance) if the CONTRACTOR has notified the Procurement Officer within fifteen (15) days after the cause of the delay and the failure arises out of causes such as: acts of God; acts of the public enemy; act of the Territory and any other governmental entity in its sovereign restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress, and if such failure arises out of causes similar to those set forth above, the CONTRACTOR shall not be deemed to be in default, unless the supplies or services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit the CONTRACTOR to meet the contract requirements. Upon request of the CONTRACTOR, the Procurement Officer shall ascertain the facts and extent of such failure, and, if such officer determines that any failure to perform was occasioned by any one or more of the excusable causes, and that, but for the excusable cause, the CONTRACTOR's progress and performance would have met the terms of the contract, the delivery schedule shall be revised accordingly, subject to the rights of the GPA under the clause entitled "Termination For Convenience", Paragraph **Error! Reference source not found.**. (As used in the Paragraph of this clause the term "subcontractor" means subcontractor at any tier.)

5.23.5. Erroneous Termination for Default

If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of Section 53.4.Excuse for Nonperformance or Delayed Performance, the rights and obligations of the parties shall, if the contract contains a clause providing for termination for Convenience of GPA, be the same as if the notice of termination had been issued pursuant to such clause. If, in the foregoing circumstances, this contract does not contain a clause providing for termination for Convenience of GPA, the contract shall be adjusted to compensate for such termination and the contract modified accordingly subject to the CONTRACTOR's rights under Chapter 9 (Legal and Contractual Remedies) of the Guam Procurement Regulations.

5.23.6. Additional Rights and Remedies

The rights and remedies provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

5.24. Disputes

All controversies between GPA and the CONTRACTOR, which arise under, or are by virtue of, this contract and which are not resolved by mutual agreement, shall be resolved under Guam Procurement Law and the Government Claims Act.

5.25. Consequential Damages

Unless expressly provided for otherwise in this Agreement, neither party, including their agents and employees, shall be liable to the other party for consequential damages, including, but not limited to, loss of use, loss of profit and interest due to breach of contract, breach of warranty, negligence, or any other cause whatsoever, provided nothing herein shall relieve CONTRACTOR from its liability for injury to persons or property, including property of GPA, whether such liability arises in contract, including breach of warranty, or tort, including negligence.

5.26. Notices

Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

5.27. Computation of Time

When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the time computation.

5.28. Language and Trade Terms

All communications, documents, and execution of services hereunder, unless otherwise designated, shall be in the English language. INCOTERMS (International Rules for the Interpretation of Trade Terms) published by the International Chamber of Commerce in 1980 and any subsequent revisions thereto shall govern interpretation of trade terms in the Contract Documents

5.29. **Governing Law**

The laws of Guam shall govern the validity and interpretation of these conditions, the Agreement and legal relations of the parties. CONTRACTOR shall not transfer or assign to any third parties any obligations or rights under the Agreement, nor any claims against GPA arising directly or indirectly out of the Agreement.

CONTRACTOR shall not sublet the Agreement in whole or in part without the prior written consent of GPA. Written consent of GPA for subletting shall not relieve CONTRACTOR of any of his obligations under the Agreement.

5.30. **Non-waiver**

GPA shall not consider any provisions of this Agreement waived unless GPA gives notice of such waiver in writing. Even if such notice has been given, such waiver shall not be construed as being a waiver of any other past or future right of GPA under the provisions of this Agreement, unless otherwise expressly stipulated therein. Failure of GPA to insist upon strict performance of any of the terms and conditions hereof, or failure or delay of GPA to insist upon strict performance of any of the terms and conditions hereof, or failure or delay of GPA to exercise any acts, rights, or remedies provided herein or by law shall not relieve CONTRACTOR of liability under any guarantees or of obligations under the Agreement and shall not be deemed a waiver of any right of GPA to insist upon strict fulfillment of the Agreement or of any of GPA's rights or remedies as to the Goods or special services furnished.

5.31. **Severability**

If any work, phrase, clause, article, or other provision of this Agreement is or is deemed or adjudicated or otherwise found to be against public policy, void, or otherwise unenforceable, then said work, phrase, clause, article, or other provision shall be deleted or modified, in keeping with the express intent of the parties hereto as necessary to render all the remainder of this Agreement valid and enforceable. All such deletions or modifications shall be the minimum necessary to effect the foregoing.

5.32. **Rights and Remedies**

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, will be in addition to, and shall not be construed in any way as a limitation of any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this paragraph shall be as effective as if repeated specifically in the Contract Documents in

connection with each particular duty, obligation, right, and remedy to which they apply. All representations, warranties, and guarantees made in the Contract Documents will survive final payment and termination or completion of this Agreement.

5.33. New material

Unless this contract specifies otherwise, the CONTRACTOR represents that the Goods and components are new. If the CONTRACTOR believes that furnishing used or reconditioned Goods or components will be in GPA's interest, the CONTRACTOR shall so notify GPA in writing. The CONTRACTOR's notice shall include the reasons for the request along with a proposal for any consideration to GPA if GPA authorizes the use of used or reconditioned Goods or components.

5.34. Claims based on the General Manager's Action or Omissions

If any action or omission on the part of the General Manager, or his/her designee, requiring performance changes within the scope of the contract constitutes the basis for a claim by the CONTRACTOR for additional compensation, damages, or an extension of time for completion, the CONTRACTOR shall continue with performance of the contract in compliance with the directions or orders of such officials, but by so doing, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, damages, or an extension of time for completion; provided:

(1) The CONTRACTOR shall have given written notice to the General Manager, or his/her designee:

i. Prior to the commencement of the work involved, if at that time the CONTRACTOR knows of the occurrence of such action or omission;

ii. Within thirty (30) days after the CONTRACTOR knows of the occurrence of such action or omission, if the CONTRACTOR did not have such knowledge prior to the commencement of the work; or

iii. Within such further time as may be allowed by the Procurement Officer in writing. This notice shall state that the CONTRACTOR regards the act or omission as a reason that may entitle the CONTRACTOR to additional compensation, damages, or an extension of time. The Procurement Officer or designee of such officer, upon receipt of such notice, may rescind such action, remedy such omission, or take such other steps as may be deemed advisable in the discretion of the Procurement Officer or designee of such officer.

(2) The notice required by subparagraph (1) of this Paragraph describes as clearly as practicable at the time the reasons why the CONTRACTOR believes that additional compensation,

damages, or an extension of time may be remedies to which the CONTRACTOR is entitled; and

(3) The CONTRACTOR maintains and, upon request, makes available to the Procurement Officer within a reasonable time, detailed records to the extent practicable, of the claimed additional costs or basis for an extension of time in connection with such changes.

5.35.1 Limitations of Clause

Nothing herein contained shall excuse the CONTRACTOR from compliance with any rules of law precluding GPA and its officers and any CONTRACTORS from acting in collusion or bad faith in issuing or performing change orders that are clearly not within the scope of the contract.

5.35.2 Standards of Design and Workmanship

The finished Work shall be complete in all respects. The intent of the Specifications is to acquire or purchase management services, training, operations and maintenance materials and services, and supply and inventory management and control. All hardware shall be manufactured, fabricated, assembled, finished, and documented with quality workmanship throughout, and all of its components shall be new and suitable for the purposes specified, All firmware/software shall be designed, implemented, tested, and documented in accordance with the best and recognized correct practices and shall be suitable for the purpose specified. All work shall conform to industry best practices.

5.35. Standard Work Schedule

Work scheduled and performed by the CONTRACTOR on GPA's premises shall conform to published GPA working hours and shall account for GPA's observed holidays.

5.36. Interference with Operation

Interference with normal operation of GPA's facilities or equipment, or that of any CONTRACTORs or subcontractors on GPA's premises, shall be avoided. The GPA's representative will determine in advance whether such interference is unavoidable and will establish the necessary procedures under which the interferences will be allowed.

5.37. Release of Information

The CONTRACTOR shall not release any information including the contract price concerning this project or any part thereof in any form, including advertising, news releases, or professional articles, without written permission of GPA.

5.38. **Liens**

In the event that a lien of any nature shall at any time be filed against the hardware, firmware, or software or the CONTRACTOR's facility by any person, firm, or corporation which has supplied material or services at the request of the CONTRACTOR, and for the cost of which the CONTRACTOR is liable under the terms of the Agreement, the CONTRACTOR agrees, promptly on demand of GPA and at the CONTRACTOR's expense, to take any and all action necessary to cause any such lien to be released or discharged therefrom. The CONTRACTOR agrees to hold GPA harmless from all liens, claims, or demands in connection with the Work.

5.39. **Title**

Title to any of the hardware, firmware, and software, management practices, training and other documents and/or processes required by GPA to continue the improved management, operations and maintenance of the GPA Fuel Bulk Storage Facility will pass to GPA upon placement of the equipment within GPA's premises prior to commencement of its installation, subject to GPA's inspection thereof. The CONTRACTOR shall retain title and be responsible for movement of the equipment from the delivery carrier onto the premises and the subsequent unpacking of the equipment. If, for any reason, the Work is terminated prior to its completion, the title to all the Work performed to that time including all hardware, firmware, software, management practices, training and other documents and/or processes required by GPA to continue the improved management, operations and maintenance of the GPA Fuel Bulk Storage Facility, whether in the CONTRACTOR's facility, in transit, or on GPA's premises, shall immediately pass to GPA.

5.40. **Insurance**

Contractor shall not commence work under this contract until he has obtained all insurance required under this section and GPA has approved such insurance, nor shall the Contractor allow any Subcontractor to commence work on this subcontract until all similar insurance required of the Subcontractor has been so obtained and approved. Contractor and Subcontractor shall maintain all insurance required during the course of the work.

5.41. **Contractors and Subcontractors Insurance**

A. Mandatory Insurance Requirements**.**

Prior to commencing the work, PMC shall obtain and thereafter maintain during the course of the work Insurance with companies acceptable to GPA. The PMC shall not allow any sub-contractor to commence work on his subcontract until all similar insurance required of the sub-contractor has been so obtained and approved. The minimum limits of insurance shall be as follows unless a higher limit is required by statute:

A. **General Liability Insurance** including products, completed operations and contractual liability coverage in the amount of $2,000,000 per occurrence and $2,000,000 aggregate.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA.
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.
    1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

B. Commercial Auto Liability insurance covering third party bodily injury and property damage in the amount of $1,000,000 combined single limit per occurrence.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.
    1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

C. Excess Liability insurance over the General Liability and the Commercial Auto Liability with limits of $10,000,000 or higher per occurrence/ $10,000,000 aggregate.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.
1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

D. Worker's Compensation and Employer's Liability Insurance – Statutory Limits.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

E. Professional Liability Insurance including in the amount of $1,000,000 each claim.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as a NAMED INSURED
iii. GPA shall be named as Loss Payee
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

F. PMCs All Risk or Builders Risk Insurance

i. Minimum Limits, deductibles, sub-limits, coverage, and property descriptions per contract or project description.
ii. Policy must be primary and non-contributory with endorsements attached.
iii. GPA shall be named as a NAMED INSURED.
iv. GPA shall be named as a Loss Payee
v. Waiver of subrogation shall be in favor of GPA
vi. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

If applicable, fuel /hazardous materials transport:

G. General Liability and the Commercial Auto Liability with limits of $5,000,000 or higher per occurrence.

i. Policy must be primary with primary wording endorsement attached.
ii. GPA shall be named an additional insured
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 60 days' prior written notice to GPA
v. Policy must have MCS 90 Endorsement

All policies must contain the following endorsement and on the Certificate of Insurance:

H. Cancellation Clause of minimum 90 days' prior written notice to GPA.

GPA must be given minimum 90 days' prior written notice before any material changes in the policy or cancellation of the policy can take effect. Written notice must be addressed to:

Guam Power Authority

Chief Financial Officer
PO BOX 2977
Hagatna, GU
96932-2977

Certificate of insurance must contain this wording to be acceptable.

5.41.1. Indemnification

The Contractor shall indemnify, defend and hold harmless owner against all loss, damage, or expense (including reasonable attorney's fees incurred by owner) arising out of the performance of the work, including injury or death to any person or persons resulting from the acts or omission of the Contractor or the Contractor's employees, servants, agents or subcontractors and from mechanics and materialism liens.

5.41.2. Certificate of Insurance

Contractor shall furnish certificates of insurance and waiver of subrogation endorsement to GPA prior to commencement of work showing evidence of such coverage, including the statement to the effect that cancellation or termination of the insurance shall not be effective until at least (10) days after receipt of written notice to GPA. At all times Contractor's insurance shall be primary to any other insurance that may be carried by GPA. The statement of limits of insurance coverage shall not be construed as in any way limiting the Contractor's liability under this agreement. GPA shall be an additional insured on all liability coverage and certificates of insurance shall clearly indicate such.

5.41.3. Insurance Company and Agent

All insurance policies herein required of the Contractor shall be written by a company duly authorized and licensed to do business in the State or Territory where work under this contract is being performed and be executed by some agent thereof duly licensed as an agent in said State or Territory.

5.42. GPA Insurance

GPA agrees that it will keep the property and machinery and equipment insured, at a minimum, against loss or damage by fire with extended coverage endorsement for full replacement value as determined by GPA from time to time. Such insurance shall be issued by financially responsible insurers duly authorized to do business in the state or territory where the property is located and shall contain the standard form of waiver of subrogation. The insurance company shall be required to give GPA not less than thirty days (30) notice in the event of cancellation or material alteration of such coverage. Nothing contained herein shall be construed as creating any liability or responsibility on the part of the CONTRACTOR for the adequacy of insurance coverage on the property. As to any insurable risks of loss or damage to the property and machinery and equipment not required to be insured hereunder, GPA shall bear the cost of the same. GPA shall be deemed to be self-insured as to the deductible or co-insurance amount applicable to such insurance coverage and shall pay any deductible or co-insurance amount applicable in the event of such loss or damage.

5.43. **Waiver of Subrogation**

The parties hereby release each other and their respective officers, employees, and agents from all loss or damage to the Premise property, machinery and equipment and to the fixtures, personal property, equipment and improvements of either GPA or CONTRACTOR in or on the Property, notwithstanding that any such loss or damage may be due to or result from the negligence of either of the parties or their respective officers, employees or agents. This waiver does not apply to maintenance and repair assumed under this contract by the CONTRACTOR.

Invitation for Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY
BULK FUEL STORAGE FACILITY

Volume II

Technical and Functional Requirements

1. OVERVIEW

The Guam Power Authority is soliciting proposals for a Performance Management ("PMC") to provide technical services from qualified firms for the on-site management, operation and maintenance of the Guam Power Authority Bulk Fuel Storage Facility. The required services include compliance with all applicable local and federal laws; membership within (contract with) a qualified and certified Spill Response Company on Guam that is recognized by federal or regulatory bodies such as the US Coast Guard; technical capability to periodically review and update applicable response plans; qualified personnel to manage, operate and maintain the facility in a safe and efficient manner; qualified personnel to ensure reliable, uninterrupted supply of fuel to GPA plants utilizing fuel storage in the Bulk Storage Facility; operation of all equipment as defined in response plans; and reporting as defined in the day-to-day operations.

2. PROPOSAL REQUIREMENTS

2.1. Fuel Bulk Storage Facility Management Experience

The PMC must have progressive successful experience and expertise in the business of petroleum and petroleum facility management, such as petroleum handling, storage, ship-to-shore (and vice versa) transfer of bulk petroleum products, pipeline product(s) transfer management, fuel farm facilities management and operations, or other related activities. The more extensive experience and expertise in the business of Petroleum and Bulk Fuel Storage Facility Management will be an advantage.

2.2. Qualifications / Qualitative Proposal

The PMC shall demonstrate sufficient qualifications for this solicitation by providing the following as part of the Qualitative or Technical Proposal:

2.2.1. Business Structure and Business Approach

The PMC shall provide company information such as name, local address, corporate headquarters (if any) and affiliate company in support for the performance of the required services. The business structure and nature of services provided shall be provided together with the company information. A copy of the Articles of Incorporation and By-Laws or other applicable forms concerning the business organization is also requested.

The PMC shall outline business concepts to be used in order to perform, meet, and achieve the objectives of this solicitation. This includes a description of the operational model that the PMC intends to utilize in order to support the operations and maintenance activities of GPA's fuel bulk storage facility.

2.2.2. Experience, Qualification, and Expertise

The PMC shall demonstrate its experience and expertise in the management and operation of the fuel bulk storage facility by providing the following:

(a) Supporting information showing a minimum of five (5) years progressive experience, knowledge and expertise in Petroleum Management, Petroleum Handling, or Petroleum Storage;

(b) Knowledge, experience and expertise with Fuel Supply Storage and Inventory Management

(c) Knowledge, experience and expertise with Fuel Handling, Ship-to-Shore (and vice versa) transfer of bulk petroleum products, and Pipeline Product Transfer;

(d) Knowledge, experience and expertise with Fuel Bulk Storage Facility Operations and Maintenance;

(e) Knowledge, experience and expertise with Operations and Maintenance of Storage Tank System, Pipeline System, Leak Detection System, Cathodic Protection System, Transfer Pumps, Instrumentations, and other equipment/systems ensuring reliability and security of fuel bulk storage facility

(f) Knowledge, experience and expertise in determining root cause analysis and trouble-shooting of fuel bulk storage facility issues

(g) Knowledge, eexperience and expertise in handling tank and pipeline leaks, and major incidents in fuel bulk storage facilities, and implementation/completion of remedies

(h) Inventory management

(i) Mobilization capability for resources required in emergency oil spills or incidents

(j) Successful implementation of capital improvement projects

(k) Familiarity with US Coast Guard regulations.

(l) Experience and expertise in complying with OPA 90, SPCC Plan, FRP, and other applicable Environmental Regulations and Reporting Requirements (BMP, SPCC, NPDES, etc.)

(m) Other activities related to Fuel Bulk Storage Facility Management

2.2.3. Proposed Organization Structure

The PMC shall illustrate its approach in providing sufficient qualified personnel to operate and maintain the facility. The PMC shall provide a proposed organizational structure which shall include position titles with a description of functions and duties. A brief outline of the qualifications of each personnel by specific who will actively engage in the performance of the requirements of this contract shall also be provided, including the qualifications/curriculum vitae of each person to be assigned to the contract.\

2.2.4. Financial Information

The PMC shall provide documentation to illustrate its financial position and capability. Three year historical records of the following shall be submitted in the bid:

- Balance Sheet
- Income Statement
- Financial Ratios

The documents must have been reviewed or audited by a certified reviewing or auditing firm.

The PMC shall also provide a copy of the Insurance Policy demonstrating compliance with the Insurance Requirements specified in Volume I Commercial Terms and Conditions.

2.2.5. Letters of Recommendation from Client References

The PMC shall also provide at least three letters from Client References containing project description summaries for work performed under a scope similar to this solicitation, and details on the proponent's qualifications for and performance of the tasks assigned by client.

2.2.6. Supporting Documents

The PMC shall also provide the following documents to supplement their Qualitative Proposal:

(a) Certificate of Good Standing to conduct business in jurisdiction of residence

(b) Certifications related to Petroleum Handling Work

(c) Any other information, brochures, company profile publications that may help the Authority in the evaluation and selection process

2.3. Price Proposal

The Price Proposal is broken down into specific Contract Items, each of which the bidder should provide Price Proposals for. Each Item should be priced separately, and there shall be no double-charging. For example, if Technical Services are going to be included in the Management and Administration Fees, then these should not be included under O&M. Items 1 through 6 are required Contract Items for which BIDDER shall provide price proposal for. The BIDDER's Price Proposal Package shall contain Price Proposals for each of the Contract Items. GPA shall evaluate the Price Proposal, and will decide to award either all, none, or some of the Contract Items to the bidder.

Contract Item No. 1 shall include all costs associated with the general management, operation and maintenance of the fuel bulk storage facility, including all equipment, systems, installations and appurtenances. This shall also include staffing, utility fees, and all other expenses necessary in the management, operation and maintenance of the facility, unless already specified in items 2,3.4,5 or 6. Contract Item 1 will be reimbursed by GPA on a monthly basis, based on the Price Proposal (proposed Price for Contract Item 1 divided by 12 will be the monthly payment).

Contract Item Nos. 2 through 6 shall include costs associated with the description for each Contract Item. Contract Item 6 shall be illustrated or expanded further by the bidder in the "O&M Budget (Required)" worksheet, by illustrating how the total cost is divided among the O&M items required by GPA. Costs under Item 6 will Include expected operation and maintenance expenses for items specified under "O&M Budget (Required)" for the BIDDER to complete routine operation and maintenance activities, including scheduled maintenance activities, preventive and corrective maintenance activities, and all tasks required to ensure compliance with environmental, local and federal regulations (such as those imposed by, but not limited to USEPA, Guam EPA, US Coast Guard, OPA and others). For Contract Items 2 through 6, costs shall be paid based on actual expenses accrued, not to exceed the amount indicated on the Price Proposal. PMC will be required to present documents such as receipts along with the invoice to get reimbursed for the Security PMC, Spill Response Company Membership Fees, Insurance Fees, Inventory Items and the O&M budget. Any expense exceeding the Price Proposal for Items 2 through 6 will/ be the responsibility of the PMC.

If there are O&M items that the BIDDER would like to propose a budget for, but is not included in the "O&M Budget (Required list, the BIDDER will specify the total costs for these items under Item 7 of (he BIDDER Data Entry form, and illustrate the breakdown of Item 7 under "O&M Budget (Optional)",

Contract Item 7 will not be included in the evaluation of the lowest Price Proposal. Reimbursement for Contract Item 7 will fallow the process for Contract Items 2 through 6, but should be pre-approved by GPA prior to commencement of contract or prior to the costs being incurred, Capital Improvement Projects and Major Operation and Maintenance Activities will be budgeted separately as discussed in Volume II Section 3 of this Multi-Step Bid, and should not be included in the budget for each Contract Item specified.

3. SCOPE OF WORK

This contract shall be executed as the turnkey management of the facility with the PMC responsibility for all necessary routine repairs and replacements to the equipment and other appurtenances belonging thereto, as necessary to maintain as such in good working condition in order to have a continuous and uninterrupted delivery of fuel during the course of the contract.

3.1. Responsibility within the Physical Boundaries of the Fuel Bulk Storage Facility

Schedule B of Volume VI identifies the physical boundaries of the Fuel Bulk Storage Facility. The PMC's area of responsibility shall include the entire Fuel Bulk Storage Facility within the perimeter fence and the pipeline(s) tie-ins up to the flanges before the isolation valves at the Tristar manifold and the Plants storage tanks. The PMC shall ensure availability and security of the equipment and facilities within the physical boundary identified, and shall be first responders for any incident involving equipment and facility within the boundaries.

3.2. Management and Operation

The PMC shall manage, operate and maintain the Fuel Bulk Storage Facility and all equipment and structures within the physical boundary of the Fuel Farm at Cabras, which includes, but is not limited to, the transfer pumps, pipelines, cathodic protection system, leak detection system, oil-water separators, and other accessories, in good, safe and operating condition. The General Responsibilities of the PMC shall be as follows:

(a) Operation and Maintenance of the facility shall be on a twenty-four (24) hour, seven (7) day basis. Typically, GPA will restrict fuel transfer operations to the power plants between the hours of Six (6) A.M. and Six (6) P.M. daily. Request for additional refilling hours after Six (6) P.M. shall be upon the approval of the Manager of Generation.

(b) The PMC shall determine the quantity of fuel oil on a daily basis. This shall include, but is not limited to, the Beginning (or Opening) and Ending Inventories, and the Issuance and Receipts for each individual tanks. Inventory measurements shall follow applicable API procedures or other acceptable standards. All quantity determinations shall be corrected to standard 60°F in accordance with ASTM-IP Petroleum Measurement Tables, Table 6B.

(c) The PMC shall be responsible for Daily Physical Survey of the facilities. Daily physical surveys of the Bulk Fuel Storage Tank immediately after completion of fuel transfer shall also be done by the PMC.

(d) The PMC shall conduct daily determination of fuel oil quantity for all transfers, receipts, deliveries and for inventory.

(e) Delivery and pipelines shall be closely monitored and shall be the responsibility of the PMC.

(f) The PMC shall provide GPA with the daily, weekly, comprehensive monthly and annual summary of the fuel inventory and fuel transfer reports. Reports shall include calculation and analysis of the variances including actions done to meet variance targets to be set by GPA, in coordination with the PMC.

End-of-Month physical gauging and sampling of the facility storage tanks shall be performed by an independent third-party inspector acceptable to GPA and at the PMC's expense. Such determination shall be the basis for the monthly inventory reporting. PMC shall be responsible for obtaining all the necessary reference materials and program softwares at no additional cost to GPA.

3.3. Off-shore Bulk Petroleum Product Transfers

The PMC shall coordinate the transfer of fuel from Cargo Ship to the GPA Fuel Bulk Storage Tanks and vice versa together with GPA (through the GPA Representative), GPA's Fuel Supplier, and other GPA Contractors for Fuel Handling, such as, but not limited to, Petroleum Inspection, Petroleum Testing, and facility contractors or (such as for the F-1 Dock, Pipeline, etc.). The PMC shall also be responsible for the submittal and clearing the cargo documents as required by the Guam Customs and Quarantine prior to the vessel arrival.

The PMC shall also establish a standard operating procedure or update and improve existing procedures for preventing product contamination and minimizing inventory losses.

3.4. On-shore Fuel Oil Transfer

The PMC will be responsible for the on-shore fuel transfer operations, and should ensure that all activities are done safely, efficiently and effectively. Should there be fuel delivery disruptions it will be the responsibility of the PMC to inform and seek approval from GPA.

The PMC shall coordinate the delivery of all fuel oil as required by GPA during the term of the contract. The estimated daily total fuel delivery requirements is about Eight Thousand Barrels (8,000 Bbls) to two major power plants (Cabras 1&2 and Piti 8&9). The PMC will be responsible for all the fuel transfer to and from the GPA Bulk Storage Facility, and shall coordinate the delivery of fuel oil the various GPA Power Plants. The PMC shall coordinate with the Cabras 1 & 2 Shift Supervisor to schedule fuel deliveries at the convenience of the power plants.

The PMC shall also coordinate the transfer of fuel from off-site GPA-leased tanks to the Fuel Farm Facility. The PMC will coordinate with the dispatcher of the off-site bulk storage facility to schedule and oversee deliveries of fuel and/or fuel transfer.

3.5. Fuel Oil Specifications

Fuel Specifications are shown in Schedule A. GPA has endeavored to ensure that each successive shipment of fuel to be supplied is compatible with a representative sample of the previous shipment. Compatibility shall be confirmed by GPA's Fuel Testing PMC, using an accepted test method reflected in the associated testing at loading and upon delivery.

The PMC shall ensure that the products in GPA's storage tanks meet the Fuel Specifications required by GPA. The PMC shall not cause to contaminate the product stored in the bulk storage tanks, and shall be liable for any product contamination resulting from the negligent act of its employees or agents. Such negligent act shall be subject to claims by GPA against the PMC.

3.6. Maintenance

GPA requires that the PMC incorporate a comprehensive maintenance program that is documented to ensure that all maintenance and upkeep practices are adhered to for full life-expectancy of equipment. A maintenance plan shall be submitted to GPA within three months after the commencement of the

contract, and completion of maintenance activities shall be included by the PMC in the monthly reports submitted to GPA.

3.6.1. Routine Maintenance

The routine repair, maintenance, and upkeep of the facility and equipment shall be carried out by the PMC. Routine Maintenance and minor repairs include, but is not limited to:

- Monthly Tank System Inspections
- Pump Station Integrity Check
- Instrument Calibration
- Pipeline Inspection
- Operation and Maintenance of Tank System, Pumps and Auxiliary (Diesel-driven) Pump System, Valves, Pipeline within the facility up to Navy Tie-In, and all Instrumentation and Electrical Systems
- Cathodic Protection System Maintenance
- Leak Detection System Maintenance
- Oil Water Separator Maintenance
- Maintenance of Building, Fencing, Grounds and others
- Environmental Compliance and other Technical or Professional Services required to as part of proper operation and maintenance of the Fuel Bulk Storage Facility
- All tasks required to ensure compliance with environmental, local and federal regulations (such as those imposed by, but not limited to USEPA, Guam EPA, US Coast Guard, OPA and others).

The costs for these routine and minor repairs shall be included in the Operation and Maintenance Budget proposed by the BIDDER.

If such routine maintenance work involves oil spill response and clean-up, expenses incurred for the oil spill response and clean-up shall be treated separate from the costs associated with the routine O&M work and billed on a separate invoice.

All resources required to undertake the routine maintenance shall be handled by the PMC. PMC shall not assign any work to GPA, nor assume that GPA will take on any work related to the major repair or replacement for which the PMC has offered to undertake. In critical circumstances, such as if the activity is required to ensure compliance with local and federal regulations, PMC may

consult with GPA to jointly determine the most efficient way of undertaking routine operation and maintenance activities.

The PMC shall be solely responsible for the repair or replacement of equipment if determined that subject equipment was damaged through negligence, misuse or lack of maintenance, regardless of the cost. The PMC shall also be responsible for the cost of oil spill recovery efforts for any product released resulting from such negligence.

3.6.2. Capital Improvement Projects, Major or Non-Routine Operation and Maintenance Activities (including Services, Repairs and/or Replacements)

The PMC shall advise GPA, verbal and in writing, of any required capital improvement project, and major or non-routine operation and maintenance activities including service, repair and/or replacement. The PMC shall be guided by GPA's Standard Operating Procedures for the definition of Capital Improvement Projects. The PMC is responsible for identifying and recommending to GPA all future Capital Improvement Projects (CIPs) they deem necessary to contribute to the operational efficiency of the Fuel Bulk Storage Facility. The proposed CIPs will become the basis for further refinement of the Fuel Bulk Storage Facility budget, and the Capital Budget. PMC charges for Major or Non-Routine Operation and Maintenance activities over a one-time cost $10,000.00 and all CIPs shall not exceed FIVE PERCENT (5%).

Once the list from the PMC is received, GPA shall conduct the necessary inspections and evaluations. Should the need for the activity / service / repair / replacement be due to damages that are determined to be unpreventable, justified, and outside the control of the PMC, then GPA and the PMC shall jointly identify the best solution to remedy the problem. In all other cases, the PMC shall be responsible to bear the costs of replacement.

PMC shall be responsible in putting together the scope of work and resources necessary to complete the CIP or Major or Non-Routine O&M activities. Various GPA divisions such as, but not limited to Strategic Planning and Operations Research, Engineering and Planning & Regulatory divisions may be involved in planning these projects.

3.6.3. Right to Inspection

GPA shall have the right to conduct inspections of any repair and/or replacement projects. In the event of a dispute, an independent inspector shall be appointed, mutually acceptable to both parties, whose decision as to the quality and/or necessity of the work shall be final and binding on both parties. The independent inspector(s)' fees and charges shall be shared equally by both parties. Payments of any and all invoices of any major repairs or replacements shall be made based on mutually acceptable terms pre-approved by the PMC and GPA.

3.7. Oil Spill Inventory / Equipment

The PMC is responsible for the purchase, operation, maintenance and deployment of all necessary oil spill equipment as required in the SPCC Plan. Furthermore, the PMC shall maintain an in-house or on-site stock inventory of the materials, as required, for the sole purpose of supporting this contract. The PMC shall propose a minimum inventory level for oil spill equipment that shall be reimbursed at-cost by GPA. The PMC shall maintain this inventory level throughout the contract period, and shall request reimbursement from GPA to ensure inventory levels are maintained. In the event of a major incident not caused by negligence on the part of the PMC wherein additional supplies and equipment are purchased and utilized by the PMC, GPA will reimburse the cost for the additional supplies and equipment purchased. At all times, PMC shall present actual receipts and supporting documentation whenever invoicing such expenses.

3.8. Oil Pollution Act of 1990

The PMC is responsible for compliance with the requirements, as well as the oil spill and recovery provisions, of the federal law Oil Pollution Act of 1990 (OPA 90) as necessary for the operations of the Fuel Bulk Storage Facility, and shall include the cost of compliance with this requirement on the Price Proposal under Contract Item 1.

3.9. Membership with a Qualified and Certified Spill Response Company

The PMC is required to be a bona fide member of a qualified and certified Spill Response Company on Guam that is recognized by federal and regulatory bodies such as the US Coast Guard. If not yet a member, the PMC should qualify to become an active member or must secure an oil spill response service contract within thirty (30) days after award of the contract. Proof of membership or of an oil response agreement must be provided to GPA within thirty (30) days of the date of contract award.

Full and active membership with a qualified and certified Spill Response Company on Guam that is recognized by federal and regulatory bodies such as the US Coast Guard, would be considered a strong positive indicator in the assessment of qualifications. The PMC is responsible for providing GPA proof of membership and the qualifications and certifications of the Spill Response Company during the bid, as part of the Qualitative Proposal.

3.10. Permits and Responsibilities

The PMC shall, without additional expense to GPA, be responsible for obtaining all necessary licenses and permits, and for complying with any applicable Federal and Territorial Laws, Codes and Regulations necessary for the performance of this contract.

The PMC shall also have an NPDES permit, an SPCC Plan and Facility Response Plan. The SPCC Plan and FRP should comply with USEPA 40 CFR Standards.

Resources and costs related to compliance with applicable Federal and Territorial Laws, Codes and Regulations and maintaining validity of all permits and plans shall be the responsibility of the PMC.

GPA shall provide the existing Facility Response Plan (FRP) and Spill Prevention Control and Countermeasure Plan (SPCC).

The PMC shall review, edit, enhance and obtain regulatory approvals for any changes from the Federal Environmental Protection Agency, Region IX, San Francisco, for such plan as a mandatory requirement under the OPA Act 90, with the PMC as the operator and GPA as the facility owner. GPA shall be furnished with copies of these plans, to be submitted to:

- Manager of Generation (Generation Division)
- Planning and Regulatory Division

The PMC shall, on their own, purchase, maintain and operate or deploy all necessary oil spill equipment as required in the SPCC plan, as an in-house stock inventory.

3.11. Federal and Local Regulatory Compliance

The PMC shall be responsible for complying with all Environmental, Homeland Security, and other Federal and Local compliance requirements to include, but not limited to the following areas:

(a) Mandatory membership with a qualified and/or any other certified Oil Spill Response Companies on Guam, as required by law, and to comply with the Oil Pollution Act of 1990 (OPA 1990).

(b) Conduct all activities such as but not limited to monitoring, report submission and payments of fees, required to comply with all existing and applicable environmental regulations, requirements permits and plans. These include, but are not limited to:

- OPA '90 / OPA '90 Facility Plan
- SPCC Plan
- Facility Response Plan
- Facility Security Plan
- NPDES permit

(c) Establishment and maintenance of equipment required by the SPCC Plan and OPA '90 Facility plan in good operating condition at all times, and all others necessary to meet immediate response in case of oil spill or other form of incident that may cause danger to the environment.

(d) Remediation of all oil spill incidents to the satisfaction of local and federal regulatory bodies.

(e) Submit results of all audits, investigations and other local/federal activities to GPA.

Environmental Compliance. The PMC shall operate in compliance with all environmental requirements and is responsible for all required activities including but not limited to:

(a) Monitoring of all tests and results and ensuring compliance with applicable rules and regulations;

(b) Completion of all necessary corrective actions;

(c) Conduction of tests on all water supply to comply with NPDES Permit;

(d) Creation, development and updating of Standard Operating Procedures as required;

(e) Monitoring all low volume waste streams to be within compliance with all local, federal and international regulations;

(f) Completion of all activities to ensure compliance with all existing environmental permits and plans that include, but are not limited to the NPDES Permit, BMP, FRP, SPCC and OPA '90;

(g) Compliance with GPA and Federal Spill Prevention Control and Countermeasures (SPCC) programs and policies to include implementation, monitoring and reporting;

(h) Submission of all required reports including compliance schedules;

(i) Record-keeping and equipment maintenance;

(j) Payment of all applicable fees as stated in the various environmental permits and plans;

(k) Payment of all penalties from non-compliance with any and all environmental requirements from local and federal bodies.

GPA's Planning and Regulatory Division shall support the PMC in meeting all environmental compliance requirements. P&R shall audit the PMC on a regular basis as a means of monitoring and ensuring that all requirements are satisfied. The PMC shall coordinate all activities on Environmental Compliance, including records and reports, to GPA's Planning and Regulatory Division (P&R). The PMC shall provide full cooperation during P&R's audits and monitoring activities. All corrective measures shall be completed no later than the specified date as required by P&R.

The PMC shall also comply with all other requirements pertaining to Environmental, Homeland Security and other Federal and Local Compliance Requirements as specified in Volume II of the Invitation for Bid.

If at any time during the term of the Contract the Government of the United States or the Territory of Guam, or other instrumentality or agency enacts laws or issues regulations which would require compliance by GPA, PMC shall comply with such governmental laws and regulations at the same price set out herein, or if unreasonable, at a price to be renegotiated by the parties (except taxes, penalties,

fees or other charges that may be imposed on PMC because of PMC's failure to make proper tax filings including requests for credits, exemptions, drawbacks or rebates). If the laws or regulation causes an increase or decrease in PMC's cost of performance of the Contract, an equitable adjustment shall be made and the Contract modified in writing accordingly. Any claim of PMC for adjustment under this section must be asserted in writing within thirty (3) days from date of receipt by PMC of the notification of compliance with Government laws, rules and regulations. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this Contract entitled "Disputes". However, nothing in this clause shall excuse the PMC from proceeding with the Contract in order to comply with Government laws, rules and regulations.

3.12. Uniformed Security

The PMC shall provide uniformed, un-armed security forces, from a sub-contractor or agency that is accredited as per Government of Guam regulations, to patrol and safeguard the fuel facility premises on a twenty-four (24) hours, seven (7) days a week basis. The PMC shall ensure that the security services contracted for the Fuel Bulk Storage Facilities comply with Federal and Local Regulations pertaining to security for the facility, as well as with the Security Contractor Requirements set forth by GPA for its facilities and locations (see Schedule I).

The PMC shall limit access to the facility and its surrounding areas to its employees and authorized agents, duly designated GPA employees and GPA agents, and other Government of Guam officers who by law or regulations are permitted on the premises in connection with the performance of their official governmental duties.

3.13. Grounds Maintenance

The PMC is responsible for the ground maintenance of the entire Fuel Farm Facility. Areas of particular interest such as tank dikes, impounding basin areas, pump station, operating and maintenance areas, and all other areas within the fenced-in area of the Fuel Bulk Storage Facility shall be inspected regularly due to strict environmental, security and safety requirements. The PMC shall remove or cut and trim grass or vegetation within its areas of responsibility and within the Fuel Bulk Storage Facility, and shall not cause any growth to come in contact with equipment, pumps, pipelines and fences at any time. The PMC shall also regularly cut branches and bushes along the perimeter fence.

3.14. Other Charges

The PMC shall be responsible for all charges from gas, electricity, facility lighting, water supply, communication services and other services used, rendered, or supplied upon or in connection with the continuous operations and maintenance of the Fuel Bulk Storage Facility.

3.15. Plans and Documents

3.15.1. Required Documents

The PMC shall review, update and implement the existing Facility Response Plan and Spill Prevention, Control and Countermeasure Plan (SPCC Plan). The PMC shall review, improve, and implement any changes deemed necessary for the FRP and SPCC Plan and submit such plans to the Federal Environmental Protection Agency, Region IX, San Francisco. The PMC shall also secure approval for such plan as a mandatory requirement under OPA 90 with the PMC as operator and GPA as Facility Owner. The PMC shall furnish GPA copies of these approved plans.

3.15.2. Standard Operating Procedure

The PMC shall continuously review and update the Standard Operating Procedures (SOPs) throughout the term of the contract, as required. The PMC shall conduct annual review of the SOPs to validate their applicability and effectiveness as new technologies are introduced into the facility as part of modernization and upgrade.

All SOPs generated by the PMC will become property of GPA. The PMC will grant GPA access rights to all procedures and provide GPA with updated copies of all SOP's, plans, regulatory submittals, and operating manuals during the term of the contract for review, usage, and possible replication at other operating units.

3.15.3. Other Records, Plans and Documents

The PMC shall also implement the recommendations for best practices specified in the Tank System Operation and Maintenance Workplan, prepared in 2007 by a GPA consultant, including any future recommendations.

All records and plans generated by the PMC will become property of GPA. The PMC will grant GPA access rights to all records and plans during the term of the contract for review, usage, and possible replication at other operating units.

3.16. Training

The initial and follow-up training for operations, maintenance, safety, and for all applicable certifications for the PMC's Personnel are the sole responsibility of the PMC.

3.17. Report Submittals

3.17.1. Incident/Emergency Reporting

Any emergencies shall be reported by the PMC to GPA immediately within twenty-four (24) hours following the occurrence of any incident.

3.17.2. Required Reports

Fuel Transfer Report

The PMC shall submit a mandatory daily, weekly, monthly and annual summary of fuel transfer reports. The reports shall include proper accountability of the opening inventory, quantity received from cargo ships or other sources, quantity transferred to the power plants or other locations, and closing inventory. Fuel Transfer Report shall be submitted to the GPA Generation Manager, SPORD Manager and Finance Division no later than 10:0 AM the following work day for the daily, weekly, and monthly cut-off dates.

Facility Management Report

The PMC shall also submit a Monthly Facility Management Report covering all the areas of the facility and its condition. This shall include, but is not limited to:

- Daily Tank Activity Report
- Daily Fuel Inventory Report
- Daily Storage Gain/Loss Report
- Month-End Fuel Gauging and Inventory Report
- Pump Station Report (Equipment Readings, Testing) and Auxiliary Transfer Pump Report

- Instrumentation Report (readings and calibration)
- Oil-Water Separator Transfer Report
- Operation and Maintenance Activities completed
- Regulatory Reports or Submittals such as for EPA, USCG and other regulatory agencies
- Incident Report
- Safety Inspection Report
- Spare Parts and SPCC Inventory List

The report shall be submitted with the necessary attachments in a format approved by GPA, and should be received no later than five (5) days after the end of each report month.

Monthly Expense and Budget Report

The PMC shall submit a Monthly Expense and Budget Report that can be submitted along with the monthly invoice for the proper reimbursement of Contract Items 2 through 6. This report should show, at a minimum, the following:

- Operation and Maintenance Budget Spending, with the necessary supporting documentation, broken down according to" O&M Budget (Required)" worksheet
- Supporting documentation for actual spending on Contract Items 2, 3, and 4.
- Inventory Report for SPCC showing proof of compliance with minimum required spill response inventory.
- Actual Budget Spent vs. Budget Proposed in the Price Proposal

Annual Report

An annual report with the summary and analysis of the year-in-review shall be submitted within ten (10) days after the end of each Fiscal Year.

GPA may require additional reports from the PMC, to comply with Regulatory Requirements or as may be needed for various management, operation or reporting functions.

3.18. PMC Financing Responsibilities

3.18.1. Capital and Expense Funding

Guam Power Authority (GPA) may solicit PMC participation in short-term debt financing for necessary capital or expense expenditures. This participation may include direct loans and/or indirect involvement through guarantees or some other form of participation. Such participation is not mandatory. GPA may request such participation only if the PMC agrees.

However, while not mandatory GPA reserves the right to include this option in the qualitative portion of the Proposal review.

3.18.2. Working Capital

The PMC shall have sufficient working capital to support its cash flow requirements including any cash flow requirements associated with its operations and maintenance (O&M) procurement responsibilities as defined elsewhere.

The minimum working capital acceptable during each contract period shall be no less than 50% of the agreed combined O&M and CIP budgets for the respective period.

The PMC is responsible to fund all operation & maintenance expenses as well as capital improvement and performance improvement expenses, and shall be reimbursed by the Authority upon successful documentation of such expenditures, and following the guidelines for compensation as discussed in the other sections.

3.18.3. Document the Management of Operations and Maintenance

The PMC shall optimally manage the O&M spending not to exceed the authorized budget amount for each contract year. The PMC shall provide appropriate justifications and auditable records of all O&M procurement activities

3.18.4. Performance Management PMC Expenses

All PMC direct and indirect expenses and taxes, including all PMC employees related expenses and taxes are the sole responsibility of the PMC.

3.19. Guam Power Authority Financing Responsibilities

3.19.1. Guam Power Authority Capital and Expense Funding Intent

GPA intends to totally fund all capital and O&M expenditures, but reserves the option to seek funding assistance from the PMC. Should the PMC provide funding assistance, the PMC and GPA shall negotiate a mutually acceptable compensation structure.

3.19.2. Reimbursement of PMC for Procurement of O&M Materials and Contracts

GPA will make timely reimbursements to the PMC for the expenses incurred by the PMC in

conjunction with the PMC's O&M procurement responsibilities. The PMC shall include certifications, receipts, and proof of payment and delivery on site of materials and services to be entitled for reimbursable compensation.

The PMC shall invoice GPA for these expenses no more than once monthly. Cost-plus reimbursement shall not be allowed. There shall be no additional costs or fees for reimbursement of O&M expenses.

3.19.3. Reimbursement of PMC for Performance Improvement Projects (PIP) and Capital Improvement Projects (CIP)

Payments for PIP and CIP will be made on a reimbursable basis. The PMC shall invoice GPA for progress payments for work completed upon such PIP or CIP no more than once monthly. The PMC shall include certifications, receipts, and proof of payment and delivery on site of materials and services to be entitled for reimbursement of PIP and CIP expenses.

GPA will make timely reimbursements to the PMC for the actual cost and a charge for administration, finance fees and interest not to exceed five percent (5%) of the actual project cost. Payments shall not exceed the amounts agreed to and approved by GPA and the PMC or as otherwise agreed to by the parties through a change order.

3.20. Others

The PMC is also responsible for the operation and maintenance of all appurtenances, to include but is not limited to :

- Cathodic Protection System
- Leak Detection System
- Oil-Water Separators
- Diesel-Driven Auxiliary Pump Station

4. STAFFING

4.1. Staffing Level

The PMC shall incorporate in his price proposal, all costs associated with the staffing necessary to execute this contract.

The PMC shall have appropriate staffing levels to provide the following functions and services in the following areas:

- Overall GPA Fuel Bulk Storage Facility Management, Operations and Maintenance
- Appropriate number and level of qualified and trained personnel for fuel inventory, receipt, and to deliver all fuel oil required to all of GPA's power plants at any time the power plants require fuel oil
- All required personnel to safely, efficiently and legally receive all vessel shipments and conduct delivery of fuel oil required to provide the needs of the Authority, and maintain minimum inventory requirements necessary for the assurance of fuel oil supply in all cases.
- Appropriate number and level of qualified and experienced personnel in ensuring compliance with all federal and local laws and regulations, including such requirements from USEPA, Guam EPA and the US Coast Guard
- Appropriate number and level of qualified and experienced personnel for completing all administrative asks related to the functions and services required in this contract.

The PMC shall provide an organizational chart and detailed position descriptions in the proposal.

4.2. Security

The PMC shall provide uniformed, un-armed security forces, from a sub-Contractor or agency that is accredited as per Government of Guam regulations, to patrol and safeguard the fuel facility premises on a twenty-four (24) hours, seven (7) days a week basis.

5. CONTRACT TERMS

5.1. Contract Period

GPA intends for this contract to be a minimum of three (3) years with an option for two (2) additional one-year contract extensions. Bidders may propose additional contract years; however this will require review and approval by GPA.

5.2. Contract Extensions

GPA shall give appropriate notice of its intentions regarding its option to exercise the two (2) additional one-year contract extensions. At the beginning of the 3rd contract year GPA and the PMC shall negotiate the contract extension terms based on the requirements. Final confirmation by mutual agreement between GPA and the PMC for contract extension shall be given after completion of negotiation no less than six months prior to the end of the contract term.

However, GPA may elect to reverse its decision without penalty at any time within six months of the end of the contract period based on poor performance during this period.

5.3. Timely Payments

GPA shall provide prompt payments to the PMC for costs and services rendered in accordance with the Contract. Said payment shall be made within thirty (30) days of being invoiced. Should part of the invoice be challenged, GPA will at a minimum pay the unchallenged portions of the invoice under the same terms. Should GPA fail to make any payments due to the PMC under the Contract, GPA shall pay interest to the PMC in accordance with the provisions of the Prompt Payment Act, 5 GCA Sections 22502-22507.

5.4. Exception Petition Procedure

The PMC or GPA may at times wish to petition for special exceptions to the standard implementation of the agreed upon compensation structure. Such petitions would generally be made where there is a belief that extraordinary circumstances beyond the control of either party have led to extreme positive or negative variations in actual measured performance. A procedure will need to be developed to provide for the resolution of such petitions. At a minimum, the process should require the petitioner to perform a root cause analysis, of the alleged extraordinary event, prior to and in support of its petition. If the petition procedure fails to achieve a resolution that is satisfactory to both parties, then the petitioning party may choose to enter into a dispute resolution in accordance with the Dispute Resolution Procedure discussed elsewhere. All face-to-face negotiations shall be conducted on Guam and in accordance with Guam Law.

Invitation For Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY
BULK FUEL STORAGE FACILITY

Volume III

Facility Technical Description

1. FACILITY GENERAL DESCRIPTION

1.1. Purpose

This Technical Description provides basic technical information about the Fuel Farm Bulk Storage Facility to prospective proponents of the Performance Management Contract. This work is in conjunction with the other documents provided as part of this IFB, and is intended to be a factual description of the facility and refrains from offering conjecture or opinion, except where clearly identified. It is assumed that prospective proponents of this contract will conduct their own verifying due diligence effort.

1.2. Assumptions and Scope

The description, history and condition of the facility and its major equipment and systems was accomplished by performing physical inspections, reviewing documentation and conducting interviews with key plant and support personnel. The review included but was not limited to an assessment of the facility's design and layout, capacity and system redundancy. There is currently no historical documentation of equipment and systems reviews.

1.3. Facility General Description

The Fuel Bulk Storage Facility is wholly owned by the Guam Power Authority (GPA). GPA owns two bulk fuel storage tanks, 1934 and 1935, located at the GPA Fuel Farm Bulk Storage Facility in the Municipality of Piti between the Atlantis Submarine pier and the former Navy Power Unit on the Piti Channel. These tanks are used to supply fuel to the Cabras Units 1&2 Power Plants, Piti Units 8&9, and will be used in the future for supply of fuel to Piti 7, the KEPCO/GUP plant located adjacent to the Piti tank farm, and the Ukudu Power Plant located north of Tumon. The Ukudu power plant will be supplied by an 6-inch ULSD fuel line and 10-inch LNG fuel line. Each line is approximately 18 miles in length and is currently undergoing construction with a projected completion date of 2023 .

GPA 's Fuel Bulk Storage Facility is operated and managed by its current contractor, IP&E Holdings, LLC. The operations at the site include the storage of fuel oil, transfer of fuel oil into and out of the facility, and the processing of oily water. The facility receives up to approximately 3,000,000 barrels of fuel oil annually on tankers berthing at the PAG petroleum dock managed and operated by Tristar Terminals Guam.

The current type of fuel stored in these two tanks is Fuel Oil #6, or Bunker Fuel C. Fuel Oil #6 is a mixture of petroleum distillate hydrocarbons and has a boiling point greater than 400 degrees Fahrenheit. This fuel is commonly broken into two categories depending on the relative levels of sulfur contained in the fuel. High sulfur

fuel, also known as sour fuel, is more corrosive and often has increased sulfur levels in stack emissions. The second type of fuel is low sulfur fuel also known as sweet fuel. Both of these fuels are used at the Power Plants.

The facility will later transition to Ultra-Low Sulfur Diesel Fuel Oil No.2 or "ULSD" storage in compliance with the USEPA consent decree. During the transition process, the remaining Fuel Oil #6 inventory will be consumed into the Cabras 1& 2 plants. The GPA bulk storage tanks shall undergo cleaning and inspection one after the other for conversion to ULSD storage.

Piti 8&9 plant conversion to ULSD is anticipated to be completed between April thru July 2022 together with a newly constructed ULSD pipeline inter-connection that will supply ULSD temporarily from the leased tanks at the Tristar storage facility.

The oil-water separator (OWS) consists of a partially buried cast-in-place concrete tank with three interior sections. The OWS system is connected to each bulk storage tank with a 3" or 4" discharge line. There was also a collection sump on the berm by the entry road for truck discharge of waste oil to the OWS.

1.4. History

The Fuel Farm Bulk Storage Facility was designed and built for bulk fuel storage and centralize the distribution of fuel to support the baseload plants operation for power generation in order to meet the electric power utility needs of the island. The tanks and associated infrastructure were completed in 1976 by the United States Military and resides on compacted coral limestone fill with no previous history of hydrocarbon contamination. The tanks have been in service continually since construction was completed except for a period of time while the facility was transferred from military to civilian control. GPA completed the construction and commissioned the Fuel Bulk Storage Facility in 1976.

GPA has spent a considerable amount of money in recent years to maintain conformance with the USEPA and US Coast Guard requirements. The facility was upgraded in 2007 and currently meets Federal and Local regulatory standards. Both Tank 1934 and Tank 1935 have undergone needed condition assessment of the tank sections. Portions of the floor plates and other internal structures were replaced to improve tank system integrity. New pipelines were installed to improve flexibility in fuel transfer operations.

The modernization of the Fuel Farm Facility will be one of the challenges to the CONTRACTOR. The CONTRACTOR will be required to improve the operation and maintenance activities to allow the equipment to evolve toward an operation fully supportive of GPA requirements. Improvements in the operations and maintenance organizations serve to achieve the new operating model.

2. SITE DESCRIPTION AND CHARACTERISTICS

2.1. General Location

The Fuel Farm Bulk Storage Facility is located on the island of Guam. Guam is the largest and southernmost island of the Marianas archipelago. The westernmost possession of the United States since 1898, the island is at 13.48° north latitude and 144.45° east longitude. Guam is approximately 1,500 nm southeast of Tokyo; 2,100 nm southeast of Hong Kong; 1,500 nm east of Manila; and 3,100 nm northwest of Sydney; 6,000 nautical miles (nm) west of San Francisco; 3,700 nm west-southwest of Honolulu. The island is composed of both volcanic material and limestone base seabed material from coral deposits.

Guam's climate is tropical marine; generally warm and humid, moderated by northeast trade winds. Guam's temperature ranges between 73 and 90 degrees Fahrenheit (23 and 32 degrees Celsius). It has a mean annual temperature of 81 degrees (27 degrees C). May and June are the hottest months of the year. However, there is little seasonal temperature variation. The coolest and least humid months, December through February, are marked by prevailing westerly trade winds. The average humidity varies from an early morning high of 86% to an afternoon low of 72%. The high moisture content of the atmosphere during the rainy season, combined with the warm temperatures, contributes to the rapid deterioration of manufactured materials through rust, rot and mildew.

The average yearly rainfall ranges between 90 and 110 inches (229 and 279 cm). There are two seasons, the dry and the rainy. The dry season (fanumnangan) lasts from December through June. The rainy season (fanuchanan) prevails within the remaining months. Guam's subterranean water lens supplies fresh water far in excess of the island's present needs.

2.2. Site Location and Description

The Fuel Farm Bulk Storage Facility is located on the west central side of the island of Guam in Piti, Guam on a landfill over what was Cabras Lagoon and Cabras Island. The facility is accessible from highway 1 and is located on the secondary road to and from the island's only commercial shipping seaport.

The facility serves as the main storage for receipt of bulk fuel shipments. The facility also serves as the central distribution center for delivery of fuel to the GPA Steam Turbine Plant, Cabras 1 & 2, and Piti 8&9 Slow Speed Diesel Plant. The facility is undergoing upgrades to extend fuel deliveries to other plants (Piti 7, new KEPCO/GUP plant adjacent to Piti tank farm and new Ukudu Power plant north of Tumon) with the installation of additional pipeline network.

2.3. Site Infrastructure / Utilities

The facility's utilities include potable water, electric power, communications and sewage discharge lines. Domestic potable water is provided to the facility by the US Navy reservoir located near by. This source of water is inter-connected to the power plant for the water treatment and all other potable needs. The same water supply charges the fire hydrants on the plant property and no plant booster pumps are required. The power system for the Fuel Farm Facility comes from GPA's substations and then distributed from there to the customers. The facility has perimeter lighting.

Facility personnel can be contacted on several primary and secondary communication devices during fuel shipments, transfer operations, emergency response operations, and remote operations. The communication devices currently used by the current contractor (IP&E) includes the following:

- VHF radio
- Landline (477-6333)
- Cellular Telephones (797-0474/797-0464/747-2141)
- e-mail

Facility personnel are equipped with VHF radios which are convenient for contacting other personnel, including the security guard, local O.S.R.O. (Osroco), Guam EPA and other local agencies. Landlines and mobile phones are often used to contact personnel outside the facility. The VHF radios are typically used when coordinating vessel cargo receiving activities with other parties involved in fuel movement operations, or for contacting other facility personnel. The VHF radios provided by the facility meet Class 1, Division 1, Group D requirements defined in 46CFR110.80 for intrinsically safe radios.

2.4. Incident Mitigation Capabilities

The facility has a series of Standard Operating Procedures (SOP) which are employed GPA wide. The following SOP's pertain to these issues:

- SP-049 Tropical Cyclone Emergency System Restoration (ESR);
- SP-050 Oil Spill Containment, Clean-up and Reporting;
- SP-057 Supplements I through VII to the Hazard Communication Program;
- SP-063 Hazard Communication Program;
- SP-067 Employees Hazard Reporting;
- SP-088 Emergency Condition (Support Services Section).

2.5. On-site Safety Equipment

The current contractor has the following safety equipment:

- 10, 20 and 32-pound fire extinguishers located in the pump stations, office and storage room;
- Personal Protective Equipment (PPE's), first aid kits, absorbent pads, kitty litter, and spill kits located in the office, storage look, and from the local OSRO (Guam Response Services Ltd.) which is located 3 minutes from the facility.

3. FUEL BULK STORAGE FACILITY AND PIPELINES TECHNICAL DESCRIPTION

3.1. Storage Tanks and Related Systems

The two bulk storage tanks at the Piti Tank Farm are approximately 48 ft high with a diameter of 200 ft, having nominal capacity of approximately 260,000 barrels each. They are supplied by a 24" above-ground and underground pipelines that is interconnected to the Tristar pipeline manifold, to and from the GPA-lease tanks at the Tristar Terminal and the F-1 Pier Docking facility. The supply line terminates with a double gate valve at Tank 1935 and a single gate valve at Tank 1934. Discharge from the tanks is through a 12" pipeline with a gate valve at each of the tank discharge port. This piping is connected to a pump manifold that distributes fuel to the Power Plants. A schematic diagram of the fuel distribution system is illustrated in Volume VI Schedule B.

3.1.1. Bulk Storage

The Bulk Storage Tanks currently stores Residual Fuel Oil No.6 ("RFO")for delivery to the power plants. The tanks are currently undergoing refurbishment one after the other for future conversion to Diesel Fuel Oil No.2 (DFO) storage.

Bulk Fuel Oil is being imported via ocean freight cargo vessels from off-island supplier and is received via the Tristar F-1 Dock facilities and transported by pipeline transfer into the GPA Bulk Storage Tank 1934 and Tank 1935 and the GPA-Leased Tristar Storage Tanks at the Tristar Facility.

The GPA Bulk Storage Tanks have nominal capacities of approximately 260,000 Barrels each, and are approximately 200 feet in diameter and 48 feet high. Tank 1934 is currently assigned for LSFO (1.19%w sulfur max) storage and the Tristar Tanks are assigned for HSFO (2.00%w sulfur max) storage. Tank 1935 is currently undergoing refurbishment and will be assigned for Ultra-Low Sulfur Fuel Oil (0.2% sulfur max) or "ULSFO" upon recommissioning. The GPA-leased Tristar tanks are currently assigned for HSFO (2.00%w sulfur max)

storage. The tanks distribute fuel to all the baseload power plant daytanks. The GPA Bulk Storage Tanks were last refurbished and re-calibrated in 2007 by SGS Guam, Inc.

The current configuration for the storage tanks are as follows:

Table 1. ULSFO Storage (0.2% sulfur max)

Storage Tanks	Location	Safe Storage Capacity	Remarks
Tank 1935	GPA Fuel Farm	255,000 bbls	Currently undergoing refurbishment

Table 2. LSFO Storage (1.19% sulfur max)

Storage Tanks	Location	Safe Storage Capacity	Remarks
Tank 1934	GPA Fuel Farm	255,000 bbls	In-Service

Table 3. HSFO Storage (2.00% sulfur max)

Storage Tanks	Location	Safe Storage Capacity	Remarks
Tank 1903	Tristar Tank Farm (Leased)	270,000 bbls	In-Service
Tank1910		38,000 bbls	In-Service
Tank 1911		38,000 bbls	In-Service
Tank 1928		30,000 bbls	In-Service
Tank 1931		20,000 bbls	In-Service
Total HSFO Inventory Capacity		**396,000 bbls**	

Each facility is also equipped with transfer pumps and pipeline network to allow fuel movement to and from each facility as follows:

1. From GPA-Leased (Tristar) Tanks into the GPA Bulk Storage Facility and bunkering to ships via pipeline transfers utilizing Tristar transfer pump.
2. From the GPA Bulk Storage Tank 1934 or Tank 1935 into the respective power plant daytanks and bunkering to ships via pipeline transfers utilizing the GPA Fuel Farm Transfer Pump Station.
3. From the GPA- Leased (Tristar) Tanks into the respective power plant daytanks via pipeline transfers utilizing the Tristar transfer Pump station in combination with the GPA Fuel Farm Transfer Pump Station.

This is usually performed in close coordination between the 2 facilities when either of the GPA Bulk Storage Tank 1934 or Tank 1935 is isolated for prolonged period for maintenance purposes.

The facility is currently undergoing system upgrade and will gradually transition to Diesel Fuel Oil No.2 storage in compliance with the USEPA consent decree. The Residual Fuel Oil will eventually be phased out.

3.1.2. Diesel Oil Storagefor the Auxiliary Transfer Pump

The facility has one (1) outdoor C.R.T. type, 5,000-gallon capacity tank. The tank services fuel to the diesel-driven auxiliary transfer pump which serves as back-up to the main transfer pumps.

3.1.3. Fuel Oil Transfer Pumps

The existing four (4) pumps are currently assigned for Residual Fuel Oil transfer to the southern plants (Cabras 1&2 and Piti 8&9). Up to two (2) pumps may operate at the same time depending on the demand for fuel transfer. Two (2) pumps are always available as stand-by. The pumps are arranged in parallel and have a capacity of 700 bbls/hr each operating at a maximum pressure of 250 psig. (500SSU at 120 degree F). Complete pump specifications is described in Schedule C. Two of the pumps were installed in 1976, and two were installed in 2007 during Facility Upgrade.

The existing three (3) pumps are currently assigned for fuel transfer to the Northern Plants. The pumps are arranged in parallel and have a capacity of 171 bbls/hr each operating at a maximum pressure of 750 psig. (500SSU at 120 degree F). Two of the pumps were installed in 1976, and two were installed in 2007 during Facility Upgrade. The pumps are currently idle with the decommissioning of the Northern plant.

3.2. Pipeline System

3.2.1. Fuel Supply Pipeline System

Information for the existing pipelines in the Fuel Bulk Storage Facility are shown in Tables 3.

Table 3. Fuel Oil Supply Pipeline

	Start	End	Pipe Diamater	Approx. Length
1	Tristar Tie-In	Tanks 1934 and 1935	24 inches	2,100 feet
2	Tank 1934	Main Transfer Pump Station	12 inches	
3	Tank 1935	Main Transfer Pump Station	12 inches	

4	Main Transfer Pump Station	Cabras 1&2 Plant	6	inches	2,800	feet
5	Main Transfer Pump Station	Piti 8&9 Plant	6	inches	4,697	feet

There is an on-going project for the installation of a new ULSD pipeline that will run parallel to the existing RFO pipelines.

The pipeline that will supply ULSD to the Piti 7, Piti 8&9 and KEPCO plants is anticipated to be completed in March 2022. ULSD will be delivered temporarily from the leased tanks at the Tristar storage facility.

There is also an on-going project for the installation of two (2) separate delivery pipelines of approximately 18-mile each for Ultra-Low Sulfur Diesel ("ULSD") and Liquefied Natural Gas ("LNG") respectively, linking the Fuel Farm to GPA's 180 MW Combined Cycle Plant located at Ukudu. The ULSD pipeline is anticipated to be commissioned in 2023. The commissioning of the LNG pipeline is still undetermined at this time.

3.3. Oil Quality Sampling and Testing

Oil quality is sampled, tested and reported back to GPA by a certified independent third party inspection and testing contractor. Fuel quality specifications are listed in Schedule B.

3.4. Historical Upgrades and Repairs

3.4.1. Tank Inspections and Repairs

In February2001 the United States Environmental Protection Agency (USEPA) Region IX issued a Unilateral Administrative Order for Piti Tank Farm to GPA to "perform abatement activities necessary to address conditions that may present an imminent and substantial endangerment". These abatement activities "require integrity inspections, maintenance, installation of leak detection and repair of cathodic protection."

Due to continued operations at GPA's Cabras and Tanguisson Power Plants, one tank remained in service at all times. In 2005, Winzler & Kelly Consulting Engineers had been retained to prepare the contract documents for tank cleaning and repairs, perform the tank inspection and repair reports. PSC Industrial Services Group (Long Beach, California) was the Contractor retained by GPA to drain and clean both tanks. International Bridge Corporation (IBC) was awarded the contract to repair Tank 1935, the Oil-Water Separator (OWS) and install the Leak Detection and Cathodic Protection System for both tanks. J&B Modern Tech was the contractor that had been retained by GPA to repair Tank 1934.

A report was prepared for Tanks 1934 & 1935, in accordance with Paragraph 49 of the Unilateral Administrative Order for Piti Tank Farm and Phase IV of the Scope of Work in Appendix A of the Administrative Order.

The tank repair project began in February 2002 with the NTP for design of cleanout and repairs. Sampling of sludge in both tanks and the oil-water separator occurred in March 2002. The cleanout work for both tanks was advertised in November 2002 with work for Tank 1935 occurring first, over the period November 2003 to February 2004. The integrity inspection for Tank 1935 occurred next and the Inspection Report was submitted in April 2004, and the Cleanout Report submitted in May 2004. In June 2004 the threat of a typhoon heading towards Guam required the tank to be closed-up and as a safety precaution it was filled with approximately eight feet of fuel in the event the storm struck Guam. After the all-clear additional clean-up was required before tank repairs could commence. In February 2005 the O&M Work Plan was submitted and in December 2005 the Tank Repair Report was completed.

In August 2006, both the Cleanout Report and the Inspection Report for Tank 1934 were completed and submitted. In January 2007, the Tank 1934 O&M Work Plan and Repair Reports were completed and submitted.
Tanks 1934 and 1935 were drained of fuel and cleaned in accordance with the "Tank Cleanout Work Plan" dated September 2003 and developed for the sludge removing and cleaning of both Tank 1934 and Tank 1935 by PSC Industrial Group. The contractor remained on site to assist in the inspection by providing compressed air, scaffolding in the interior of the tank and general support tasks. Note that in general, exterior cleaning work on Tank 1935 used sand blasting, but due to comments from nearby businesses, this method changed to water blasting for Tank 1934.

The tank inspection was conducted in accordance with the "Work Plan For Life Extension and Refurbishment of the GPA Bulk Storage Tanks 1934 & 1935 for the Piti Fuel Tank Farm, Guam" dated April 2003. Winzler & Kelly personnel conducted the structural evaluations, tank bottom leak evaluations (vacuum box testing) and tank inspections in accordance with American Petroleum Institute (API) reference standard 653.

CONCECO/MATCOR personnel conducted the ultrasonic thickness measurements, coating thickness, pit depth readings, cathodic protection evaluation and leak detection evaluation for Tank 1935. Island Certs personnel conducted structural evaluations, tank bottom leak evaluations, tank inspections, ultrasonic thickness measurements and coating thickness for Tank 1934. Prudencio R. Balagtas & Associates performed the tank level survey for both tanks.

The tank inspections and evaluations and repairs were conducted in accordance with API Standard 653 "Tank Inspection, Repair, Alteration, and Reconstruction", and API Standard 650 "Welded Steel Tanks for Oil Storage". International Bridge Corporation of Guam performed Tank 1934 repairs, and J&B Modern Tech performed Tank 1935 repairs. Winzler & Kelly personnel and their subcontractors conducted the construction and repair inspections.

Tank Bottom Repairs

The tank bottom repairs consist of the following:

- Bottom Plate lap joint fillet welds, defective welds detected with a vacuum box and repaired by air-arc gouging and re-welding the fillet weld.
- Shell-to-Bottom fillet welds, defective welds detected with a vacuum box and repaired by air-arc gouging and re-welding the fillet weld.
- Bottom Plate pitting, the build-up of scale on the tank bottom was removed by power grinding, ultrasonic thickness measurements were obtained for the plates, and pit depths were measured with a mechanical gauge. Repairs were made to isolated areas of deep pitting by filling with plug weld material made flush with the top of surrounding plates. Areas of excessive deep pitting larger than nine (9) square feet were repaired using doubler plates fillet welded to the tank bottom.
- In Tank 1935 a doubler plate was used to repair the dent in the tank bottom, resulting from a fallen rafter. The plate was placed over the damaged area and sealed by fillet welding.
- After the completion of the tank bottom repairs, the floor was sand blasted and coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.

Tank Shell Repairs

The tank shell repairs consist of the following items:

- Tank Shell Interior was sand blasted, removing the existing scale and previous coating. The entire interior shell was coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.
- During repairs to Tank 1935, a small hole was discovered approximately 44 feet above the tank bottom near a wind girder. The portion of the tank shell with excessive corrosion around the hole was removed and replaced with a plate of the same thickness and rounded corners.
- Tank Shell Exterior was water blasted and minor areas of corrosion repaired. The entire Tank 1934 shell exterior was painted. Tank 1935 had approximately 200 sq ft of touch-ups for areas of minor corrosion that were cleaned and recoated.
- Tank Shell Appurtenances
    - Manholes with areas of minor corrosion were sand blasted for Tank 1935 and water blasted for Tank 1934, and re-coated.
    - Access Opening, a 67 SF plate opening with 160 – ¾” bolts.
    - On Tank 1934 this opening was removed and after cleaning and repairs was sealed with a new gasket put in place.
    - On Tank 1935 this opening exhibited some seepage of product, but was not removed. The bolts were retightened, sealed and vacuum tested to ensure proper repair.
- Overflow Vents;

- The overflow vent inside Tank 1934 that became dislodged during water blasting activities was repaired utilizing a 48 inch x 12 inch x ¼ support bracket with a 12 inch schedule 80 elbow. The exterior portion of the overflow vent that exhibited major corrosion at the bottom was repaired by cutting the corroded portion and welding on a new elbow extension.
- One overflow vent for Tank 1935 exhibited sign of seepage along the vent-to-piping connection that was repaired.

- Pipe Nozzles with areas of minor corrosion were sand blasted for Tank 1935 and water blasted for Tank 1934, and re-coated.
- Stairway areas of minor corrosion were sand blasted and re-coated for Tank 1934. On Tank 1935 several welds that connected the metal grate treads to the tank shell and the metal handrail to the steps had failed. These welds were repaired, and the areas of minor corrosion were sand blasted and re-coated.
- A new Liquid Level Sensor was installed to replace the original sensor that exhibited corrosion and had corroded brackets on Tank 1934 and had a broken roof attachment on Tank 1935.
- Wind Girders;
- On Tank 1934 there were ten (10) areas on the wind girder that were repaired by using lap-welded repair plates that were water blasted and coated with an epoxy primer and topcoat.
- On Tank 1935 there were two (2) areas of minor corrosion on the wind girders that were sand blasted and re-coated.
- Ground Strap that electrically connects the tank shell to the earth below was reconnected for Tank 1935. No repair was necessary for Tank 1934.
- Gate Valves; Peterra Inc. replaced four (4) of the gate valves and one 12-inch gasket that exhibited leaking. No repair necessary for Tank 1934.

Tank Roof Repairs

The tank roof interior repairs consist of the following:

- Tank 1934; The 43 loose rafter spacers were replaced and re-welded. Also, 59 roof rafter spacers were reinstalled.
- Tank 1935; The roof rafter that fell was bent at one end, it was straightened and re-welded to the supporting beams. The interior roof rafters, plating, and the top ten (10) feet of the support columns were sand blasted and coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.

The tank roof exterior repairs consist of the following:

- The roof of Tank 1934 required 210 areas of weld repair (approximately 35 LF). The roof was water blasted and areas of corrosion cleaned by power brush. The entire roof was re-coated.

- There was only minor corrosion present on the roof exterior of Tank 1935. These areas were sand blasted and re-coated.

Other repairs:

- Roof Top Appurtenances
  - Goose Neck Vents were water blasted for Tank 1934 and sand blasted for Tank 1935, and re-coated and the corroded bolts replaced.
- Access Openings:
  - Tank 1934: all four (4) access opening covers sand blasted and re-coated.
  - Tank 1935, all four (4) access opening covers replaced due to the advanced stage of corrosion.
- Sampling Port: No repair necessary for Tank 1934. For Tank 1935 a new sampling port cover was installed to replace the missing original cover.
- Painter's Hitch at the center of roof on Tank 1934 was replaced. No repair was necessary for Tank 1935.
- Handrail: GPA did not exercise the upgrade to add a railing around the circumference of the tank roof.

3.4.2. Cathodic Protection System

A new cathodic protection system was installed for both Tank 1934 and 1935 by the Tank 1935 Contractor. This system consists of eighteen (18) Mixed Metal Oxide (MMO) anodes installed vertically around the circumference, 20 ft from the tank shell. These are connected to an air cooled rectifier at the facility electrical control center. The rectifier is also connected to eight (8) MMO anodes protecting the facility pump station.

3.4.3. Leak Detection System

In the 2nd Quarter of 2016, GPA and its partners upgraded the Leak Detection System at the GPA Fuel Bulk Storage Facility. On May 17, 2016, FCI Environmental, Inc. certified the installation of (8) eight brand new PetroSense™ DHP-485 Digital Hydrocarbon replacement probes distributed below (2) two ASTs with volumes of approximately 250,000 barrels of fuel each. This system consists of eight (8) DHP-485 Hydrocarbon Sensors placed in 2-inch diameter slotted PVC pipe under each tank, connected via local junction boxes to a data logger in the facility operator's building. Four sensors are located under each Tank (1934 and 1935). The probes terminate to a PetroSense™ CMS-100 data logger (located at the facility office building) which retrieves data from the probes on a regular interval and the purpose of which is to give early warning of a fuel release. The probes identified as DHP485-1, 2, 3, 4, 5, 6, 7, and 8 with probes DHP485-1, 2, 3, and 4 installed beneath Tank 1934 and probes DHP485-5, 6, 7, and 8 installed beneath tank 1935. The probes and CMS data logger comprise the PetroSense Continuous Monitoring System. The system also includes a locally installed visual alarm.

The area where the tanks are located was previously impacted by hydrocarbon releases up to until the 1970s. The tanks have since been repaired. However, residual hydrocarbon contamination persists in soil beneath the tanks. The presence of these hydrocarbons causes as elevated baseline from which to measure any future releases.

Additionally, the tanks are located at sea level, and during high tide, the depth to water below the tanks will rise above the installed probes. This will cause drifts in baseline which must be corrected by making periodic adjustments to each probe's baseline offset.

Leak determination is conducted by analyzing compiled data received from probes over time. Changes in probe readings that elevate rapidly over relatively short periods of time can be evidence of a release. In data, a release will be characterized by a significant and rapid positive drift. To determine whether or not positive drift is statistically significant, and therefore an indication of a release, *alarm limits* are determined by evaluating the mean and standard deviation of data for a (3) three month period and creating alarm limits that are (3) three standard deviations above and below each probe's respective baseline. If a probe's readings are elevated above its respective alarm limit, the locally installed visual alarm will trigger and an email message will be sent to each designated member of the logger's alarm distribution list. Remote monitoring can be accessed via internet with proper authorization.

3.4.4. Hydrostatic Testing

Hydrostatic tests using sea-water was performed on Tank 1935 (11/04/05), and on Tank 1934 (12/20/06), by Island Certs. The tests were certified by a Certified API 653 Inspector to be in conformance with API 653, Section 12 – "Examination and Testing Requirements."

3.4.5. Oil-Water Separator

Repairs for the oil water separator were completed by the Tank 1934 & 1935 Contractor. This tank had a new steel cover, interior wall, and ceramic tile covering the interior. New piping and pumps with motors provide connections from the pump pits, bulk storage fuel tanks (#1934 & #1935), and to the 12" discharge line, 24" intake line and to the on-site evaporation pond.

3.4.6. Pipeline

Repairs to the RFO pipeline were completed in September 2019 by AYM International Inc. and certified by Island Certs Corporation in conformance with API 570 assessment guidelines.

3.5. Ongoing Upgrades and Repairs

The facility is currently undergoing system upgrades and repairs in preparation for the gradual transition to ULSD storage.

Tank 1935 is currently out of service for API 653 internal inspection and refurbishment, and is anticipated to be completed after December 2021. The tank will temporarily return to RFO for Ultra-Low Sulfur Fuel Oil ("ULSFO", 0.20% sulfur max) storage.
Tank 1934 will follow the same process and completion is anticipated in December 2022. Tank 1934 will be recommissioned for ULSD storage.
Tank 1935 will then be re-decommissioned for re-cleaning and final conversion to ULSD storage.

A new ULSD pipeline and pump system will be installed separately, parallel to the existing RFO system with similar configuration. The pipeline will inter-connect into:

a. Storage Tank1934 and Tk1935 and the main transfer pump station;
b. Tristar's 16-inch pipeline tie-in
    a. for bulk ULSD transfers during shipment from the F-1 Dock; and
    b. for bulk ULSD transfers from the Tristar tanks
c. Piti 7, Piti 8&9, Kepco, and Ukudu power plants storage tanks

4. OPERATIONS AND MEAINTENANCE

The facility is manned twenty-four hours a day, seven days a week, with normal operations spanning from 0600H to 2000H. Normal Operations include storage of fuel oil, transfer of fuel oil into and out of the facility, processing of oily water, delivery of fuel oil to power plants and maintenance and upkeep by facility operators. Contracted security monitors the facility twenty-four hours a day.

4.1. Product Movement

During product movement (vessel discharges, transfer of product from facility to power plants), operations can last for more than twelve hours. Vessel discharge operations require complete product discharge from vessel and may require twenty-four hour operations until product discharge is complete. Emergency Product Movement from the facility to the power plants can last for more than twelve (12) up to twenty-three (23) hours per day.

4.2. Organization

Presently, operations of the GPA Bulk Storage Facility is handled through a contractor using contractor employees. The contractor has employed a minimum of two personnel on duty for the transfer operation. One person is in charge of the transfer and the second person will be for the facility maintenance. A separate contracted security guard is employed by the Contractor and is in charge of monitoring access points and restricted areas.

4.3. Projects

The following tables summarize the completed and proposed projects for the Fuel Farm.

Table 4. Tanks 1934 and 1935 Projects

Project:	**Tank Assessment – Tank Nos. 1934 and 1935**
Description:	Tank 1934 and 1934 are welded field-constructed steel tanks. The installation and construction of these tanks were completed in 1976. These tanks have never been internally tested for integrity, nor there is a corrosion data from other tanks that could provide similar service information. In February 2001, the United States Environmental Protection Agency (USEPA) issued a Unilateral Administrative Order to Guam Power Authority (GPA) to assess and inspect these tanks as per industry standards to determine its integrity.
Project:	**Cleaning and Sludge Disposal – Tank Nos. 1934 and 1935**
Description:	To implement the first phase of the USEPA Administrative Order issued to the authority in February 2001 to clean Tanks 1934 and 1935 and properly recover and dispose its contents in preparation for the recommended repairs indicated in the Tank System Integrity Report.
Completion Date:	Tank 1934 (July 2006); Tank 1935 (February 29, 2004)
Project:	**Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**
Description:	The work under this contract shall include all labor, supervision, administration and management; supplying all equipment and materials necessary to repair and/or refurbish Tank 1935 bottom, shell and roof plates; interior and exterior rust protection coat; upgrade of existing oil water separator (OWS); cathodic protection for both tanks 1934 and 1935, leak detection system and horizontal directional drilling (HDD) for LD system for both tanks 1934 and 1935.
Completion Date:	November 30, 2006
Project:	**Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1934**
Description:	The work under this contract shall include all labor, supervision, administration and management; supplying all equipment and materials necessary to repair and/or refurbish Tank 1935 bottom, shell and roof plates; interior and exterior rust protection coat; upgrade of existing oil water separator (OWS).
Completion Date:	May 21, 2007

Table 5. Fuel Farm Facility Projects

Project:	**Fuel Oil Storage Piping and Pump Upgrade**
Description:	Design, construction of a new 6-inch and 12-inch fuel oil piping and installation of three(3) new transfer pumps. Included relocation of existing chain-link fencing, expansion of existing MCC room and extension of existing concrete pads. The new pumps and fuel lines will give GPA flexibility to refill Tanguisson Power Plant with high sulfur when low sulfur fuel is being issued to Cabras and Enron.
Completion Date:	October 15, 2005

Project:	**Repair of Bunker Fuel Transfer Pump**
Description:	Design, construction of a new pump house and containment structure, and installation of new 12-inch fuel transfer pump and diesel motor, including discharge and intake piping connecting to existing piping and bulb.
Completion Date:	March 30, 2004

Project:	**Construction of Tank Farm/Maintenance Building & Cabras SPCC Storage Building**
Description:	Construction of a new Design, construction of a new pump house and containment structure, and installation of new 12-inch fuel transfer pump and diesel motor, including discharge and intake piping connecting to existing piping and bulb.
Completion Date:	March 30, 2004

Table 7. On-going Projects

Item #	Item Description
1	Installation of ATG with Remote Monitoring
2	Installation of Roofed Structure at the Pump Station
3	Fire Fighting System Upgrade
4	Spare Delivery Pump for Cabras
5	Installation of Fuel Meters with Remote Monitoring
6	Installation of ULSD Pipelines
7	Tank 1934 & Tk1935 API 653 Out-of-Service Inspection
8	Conversion of Fuel Facility from RFO-storage to ULSD Storage

4.4. Historic Spending Patterns

The following tables illustrate the Fees paid for the Management of the Fuel Facility from 2018 onwards. This includes all expenses borne by GPA for the management, operation and maintenance of the facility.

Table 7. Historic Spending Patterns for the Fuel Bulk Storage Facility – GPA-014-17

GPA-047-12	2-Year Base Period		3 Year Extension Options			TOTAL
Contractor: IP&E	1st of 2 Years (10/01/17 To 09/30/18)	2nd of 2 Years (10/01/18 To 09/30/19)	1st Year Extn (10/01/19 To 09/30/20)	2nd Year Extn (10/01/20 To 09/30/21)	3rd Year Extn (10/01/21 To 09/30/22)	4 Years (10/01/17 To 09/30/21)
Fixed Management Fee* ($/yr)	$690,774.18	$706,040.96	$728,490.86	$749,129.79	On-going	**$3,383,652.03**
O&M Expenditures	$74,690.11	$80,959.30	$63,954.79	$47,732.31	On-going	**$ 465,789.58**
TOTAL	**$765,464.29**	**$787,000.26**	**$792,445.65**	**$796,862.10**	**On-going**	**$3,898,355.88**

***Fixed Management Fee Component**:
1. Management, Operation and Maintenance Fees (Expenses and fees for staffing, Utilities, and all other expenses not included in the Contract items)
2. Security CONTRACTOR
3. Equipment (Environmental/ Oil Spills)
4. Inventory (O & M)
5. Oil Spill Response Membership Fees
6. Insurance Fees

4.5. Fuel Bulk Storage Facility Oil Spill History

The RFO pipelines within the facility was last inspected and repaired in September 2019. No major oil spill or leak has occurred to date.

Invitation For Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY
BULK FUEL STORAGE FACILITY

Volume IV

CONTRACT

CONTRACT

(PMC)

GUAM POWER AUTHORITY

IFB No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY BULK FUEL STORAGE FACILITY

FORMAL CONTRACT

This Agreement and Formal Contract ("Contract"), is made and entered into on the _____ day of _____, 2022 by and between:

_____(PMC)_____ , hereinafter referred to as "**PMC"**, duly organized, licensed, registered and qualified to do business in Guam with its principal address at _____;

- and –

Guam Power Authority, hereinafter referred to as the **"Authority"** or **"GPA"**, a Public Corporation with its office located at the Gloria Nelson Public Service Building, 688 Route 15, Fadian Mangilao Guam;

R E C I T A L S

WHEREAS, GPA desires to maintain uninterrupted fuel supply to its Power Plants;

WHEREAS, GPA seeks to improve the management and operations of its Bulk Fuel Storage Facility;

WHEREAS, the current contract for the management of the Bulk Fuel Storage Facility will expire on _____; and

WHEREAS, the Consolidated Commission on Utilities has determined that the hiring of **PMC** is a preferred option for GPA to improve the management and operation of the Bulk Fuel Storage Facility;

WHEREAS, the Guam Public Utilities Commission has, through stipulation, ordered that GPA obtain a PMC for Bulk Fuel Storage Facility;

WHEREAS, GPA seeks to engage the professional services and assistance of **PMC** to provide operations, maintenance, and management services, budgeting, procurement, training and such other services as are specified herein;

WHEREAS, GPA has provided adequate public announcement of the need for such services through an Invitation for Bid (IFB) describing the type of services required and specifying the type of information and data required of each offeror;

WHEREAS, GPA has issued a Multi-Step Invitation For Bid for the Performance Management Contract for the GPA Bulk Fuel Storage Facility, GPA-015-22; and

WHEREAS, **PMC** submitted a bid for the Performance Management Contract for the GPA Bulk Fuel Storage Facility;

WHEREAS, GPA, upon evaluation of the submitted bid proposals, determined that **PMC**. is the most responsive bidder to provide the services set forth in the IFB;

WHEREAS, **PMC** is fully willing to provide, and is capable of providing, the management, operations, maintenance and repair services set forth in the IFB and Agreement in accordance with the terms and conditions thereof;

NOW, THEREFORE, in consideration of the above premises and the mutual promises set forth herein and the terms and conditions hereinafter set forth and for other good and valuable consideration, receipt of which is hereby acknowledged; **PMC** and GPA hereby agree as follows:

SECTION 1. DEFINITIONS

**"$"** The term "$" refers to currency in U.S. dollars.

"ASTM" The term "ASTM" shall mean the American Society for Testing and Materials.

"API" The term "API" shall mean the American Petroleum Institute.

"Approved" The word "Approved," when applied by ENGINEER to PMC's drawings or documents, shall mean that the drawings or documents are satisfactory from the standpoint of interfacing with GPA-furnished components, and/or that ENGINEER has not observed any statement or feature that appears to deviate from the Specification requirements.

"Approved As Revised" The words "Approved As Revised," when applied by ENGINEER to PMC's drawings or documents shall mean that the drawings or documents are approved as defined above,

except that the corrections shown are required for the proper interfacing with GPA-furnished components or are necessary to be in conformance with the Specification's requirements.

"Barrel" The term "Barrel" means a volume equivalent to 42 U.S. gallons.

"Change Order" A written instrument to PMC signed by GPA authorizing an addition, deletion, or revision in the goods or special services, or an adjustment in the purchase order price or the delivery time, issued after the effective date of the Contract Agreement (Agreement).

"Contract" The term "Contract" means the Performance Management Contract for the GPA Bulk Fuel Storage Facility executed as a result of this IFB.

"Contract Agreement (Agreement)" The written agreement between GPA and PMC covering the furnishing of the Goods, Special Services, and other services in connection therewith evidencing what is contemplated and agreed to between the parties including any other Contract Documents either attached to the Agreement or made a part thereof by reference therein.

"Contract Documents" The Contract Agreement, Bonds (where required), these General Conditions, any Supplementary Conditions, the Specifications, the Drawings and any other documents specifically identified in the Contract Agreement, together with all Modifications issued after execution of the Contract Agreement.

"Contracting Officer" The term "Contracting Officer" as used herein means the General Manager of the Guam Power Authority and shall include his authorized representatives.

"PMC" The term "PMC" as used herein means the Performance Management Contractor, the party or parties who or which shall have duly entered into a contract with the Guam Power Authority to perform the work herein contemplated or his or their authorized assignee.

"**Day"** A calendar day of twenty-four (24) hours measured from midnight to the next midnight.

"Delivery Time" The total number of days or the dates stated in the Agreement for furnishing the Goods and/or Special Services.

"Defective" An adjective which when modifying the words Goods or Special Services refers to Goods or Special Services which are unsatisfactory, faulty, deficient, do not conform to the Contract Documents, or do not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents.

"Drawings" Drawings are all official drawings approved by the ENGINEER and showing the character and scope of the Goods to be furnished.

"Effective Date of the Contract Agreement" The date indicated in the Purchase Agreement on which it becomes effective, or if no such date is indicated, the date by which the Purchase Contract is signed by both parties.

"ENGINEER" Wherever the words "ENGINEER" or "ENGINEERS" appear in the CONTRACT Documents, it shall mean the Guam Power Authority's Manager of Generation or Manager of Engineering and shall include his authorized representatives duly appointed as "ENGINEER". GPA shall assign several ENGINEERS as required to cover specialized areas of expertise.

"ENGINEER's Instructions" Written instructions issued by ENGINEER which clarify or interpret the CONTRACT Documents or order minor changes or alterations in the Goods or Special Services to be furnished but which do not involve a change in the Purchase Price or the Delivery Time.

"Forms Enclosed" The copies of the Formal Contract and Bid Bond, enclosed herewith are incorporated in these General Conditions by reference and are made a part hereof to the same extent as though fully set forth herein.

"General Manager" The General Manager is the Chief Executive Officer of the Guam Power Authority. The office and title of General Manager shall apply to any person acting in a regular or in an acting capacity as the Chief Executive Officer of the Guam Power Authority.

"Goods" All property required to be furnished by PMC under the procurement documents.

"Modification" A written amendment of the Purchase Agreement signed by both parties, or Change Order, or ENGINEER's Instructions.

"Notice" The term "Notice" as used herein shall mean and include all written notice demands, instructions, claims, approvals and disapprovals required to obtain compliance with contract requirements. Any written notice by either party to the contract shall be sufficiently given if delivered to or at the last known business address of the person, firm, or corporation constituting the other party to the contract, or to his, their, or its duly authorized agent, representative, or officers, or when enclosed in a postage prepaid envelope addressed to such last known business address and deposited in a United States mail box.

The PMC must provide and maintain a post office address within Guam and file the same with the Contracting Officer.

"OWNER" The term "Owner", "GPA" or "Authority" as used herein means the Guam Power Authority, and shall include the Governor of Guam, and/or his authorized representatives.

"Point of Delivery" The place at which property in the goods shall pass to GPA shall be CIF landed at job-site, Guam, unloaded.

"Project" The plant, facilities, or works the Goods and Services are to be used for or incorporated into.

"Procurement Officer" The General Manager of the Guam Power Authority or the General Manager's designee.

"PURCHASER" The Guam Power Authority with whom PMC has entered into the Contract Agreement.

"Seller" The PMC.

"SITE or Site" The SITE is the area where the Project is to be constructed or executed. In this case, the SITE is the GPA Bulk Fuel Storage Facility as delineated in Volume II Technical and Functional Requirements and Volume III GPA Bulk Fuel Storage Facility Technical Description.

"Special Services" Services to be furnished by PMC at the GPA Bulk Fuel Storage Facility as required by the Contract Agreement.

"Territory" The Territory of Guam.

SECTION 2. PURPOSE AND SCOPE OF SERVICES

2.1 Purpose.

The PMC agrees to provide all the services as required under Volumes I Commercial Terms and Conditions, Volume II Technical and Functional Requirements, and Volume III Facility Technical Description of the Solicitation herein and Guam Power Authority (GPA) agrees to pay for all the services rendered in the amount as stipulated in Section 6. The services to manage, operate, and maintain the GPA Bulk Fuel Storage Facility will commence on or about _____. By awarding this contract, GPA's goal is to ensure uninterrupted fuel transfer from the Bulk Fuel Storage Facility to the GPA Power Plants, as well as to improve the management, operations and maintenance of GPA's Fuel Transfer and Inventory Operations and Bulk Fuel Storage Facility.

2.2 Scope of Services.

The GPA Bulk Fuel Storage Facility consists of two (2) bulk storage tanks of 269,000 barrels nominal capacity. An Operations Building adjacent to the pump station is available for the PMC to conduct business during the course of the contract. PMC shall be responsible for the following:

(a) Overall management, operation, and maintenance of the GPA Bulk Fuel Storage Facility to provide fuel oil product transfer and management to GPA facilities and locations as needed;

(b) Assist GPA in the completion of Major Repairs and Capital Improvement Projects through project management, project coordination or as otherwise instructed by GPA, in the capacity of Bulk Fuel Storage Facility Operator;

(c) Engineering assessment and recommendations for overall plant improvements;

(d) Review, development and update of:

(i) Plant Standard Operating Procedures, as required;

(ii) Annual update of the Facility Spill Response Plan and Spill Prevention, Control and Countermeasure Plan (SPCC);

(iii) Timely update of plans upon the introduction and adoption of any new federal and local laws and regulations;

(e) Meet specified performance standards and contract requirements;

(f) Fuel Inventory and Loss Control Management;

(g) Submission of Daily, Weekly, Monthly and Annual Reports as required by GPA (Generation, Engineering, P&R, SPORD and Accounting Divisions);

(h) Compliance with Tank System Operation and Maintenance Workplan (Jan. 19, 2007);

(i) Compliance with all requirements of the Oil Pollution Act of 1990 (OPA '90);

(i) Inclusion of all costs associated with OPA '90 within the firm price proposal;

(ii) Compliance with oil spill and recovery provisions of OPA'90;

(j) Purchase, maintain and operate/deploy materials and equipment as identified in the Facility Spill Response Plan and SPCC Plan; and

(k) Membership with a qualified and certified oil spill response company on Guam;

(l) All other duties and responsibilities delineated in Volumes I, II and III, and the Amendments to Invitation for Bid No. GPA-015-22.

2.3 Scope of the Agreement.

This Contract supersedes any and all other agreements related to the GPA Bulk Fuel Storage Facility, either oral or in writing between parties hereto with respect to the retainment of PMC by the Authority and contains all of the covenants and agreements between the parties. Each party to this Contract acknowledges that no representation, promises or agreement, orally or otherwise, has been made by any party, or anyone acting on behalf of any party and that no other agreement not contained in this

Contract shall be valid or binding. Any modification of this Contract will be effective only if in writing, and mutually agreed to and signed by both parties. For purposes of this Contract, only the signature of the General Manager will effectively bind GPA to this Contract.

SECTION 3. CONDITIONS PRECEDENT

3.1 PMC's Submittals.

PMC shall supply the following to GPA, each in form and substance satisfactory to GPA unless such condition precedent is waived by GPA:

a) copies of resolutions adopted by PMC's Board of Directors authorizing the execution, delivery and performance by PMC of this Agreement certified by the company secretary of PMC in a manner satisfactory to GPA;

b) a performance bond as specified in **Appendix F** of the Bid Documents.

c) a copy of the Articles of the Incorporation of PMC certified by the company secretary in a manner satisfactory to GPA;

d) a copy of PMC's license to do business in Guam.

3.2. GPA's submittals.

GPA shall supply the following, each in form and substance satisfactory to PMC unless such condition precedent is waived by PMC:

a) copies of resolutions adopted by the Consolidated Commission on Utilities authorizing the execution, delivery and performance by GPA of this Agreement, each certified by the corporate secretary of the CCU in a manner satisfactory to PMC;

3.3 Insurance.

PMC shall obtain all insurance specified in Section 35 of this Agreement.

SECTION 4. CONTRACT DOCUMENTS

4.1 Documents Included.

It is mutually agreed that the following lists of documents which are attached hereto, bound herewith or incorporated herein by reference shall constitute the contract documents, all of which are made a part hereof, and collectively evidence and constitute the contract between the parties hereto, and they are as fully a part of this Agreement as if they were set out verbatim and in full herein, and are designated as follows in their order of precedence:

a) This Contract

b) Amendments to IFB GPA-015-22

c) IFB No. GPA-015-22

d) PMC's Proposal for IFB No. GPA-015-22

e) The Performance Bond
f) Affidavit of Disclosure of Major Shareholders
g) Audited financial information on PMC's firm and all its sub-contractors that will be used in the Management, Operation and Maintenance of GPA's Bulk Fuel Storage Facility.
h) Certificate of Good Standing to conduct business in jurisdiction of residence
i) Non-collusion Affidavit

4.2 Discrepancies.

In the case of discrepancies or conflicts between the above-referenced contract documents, this Contract shall take precedence over GPA-015-22, and PMC's proposal submitted in response to the IFB. In case of discrepancies or conflicts between the Amendments to GPA-015-22, the Amendments shall take precedent. If PMC believes that there is any discrepancy or inconsistency between this CONTRACT and the other contract documents, PMC shall bring such discrepancy to the attention of the General Manager before proceeding with the work affected thereby.

4.3 Presumption of Familiarity.

It will be conclusively presumed that PMC has read, examined and agreed to each and every term, condition, provision, covenant or agreement contained within each and every Contract Document. PMC is assumed to be familiar with all federal (U.S.) And local laws, ordinances, rules and regulations of Guam that in any manner affect the work. Ignorance of law on the part of the PMC will not relieve PMC from responsibility.

SECTION 5. CONTRACT TERM

5.1 Term.

The term of this Performance Management Contract shall be for a three (3) year period commencing on or about _____ 2022 and shall continue until the midnight of _____ 2025. The contractual obligation of GPA and PMC is subject to the availability of funds. GPA shall have the right to extend the contract for two (2) additional one-year (1-year) terms with the mutual consent of both parties.

5.2 Extension.

Prior to the expiration of the three-year contract term, GPA may, at its election, extend the contract for up to two additional one-year terms. GPA and PMC may renew this agreement upon the mutual agreement of the parties. If the Agreement shall be renewed, then the parties shall meet and discuss the new terms and conditions of the Agreement six months before Termination Date.

5.3 Notice of Extension.

GPA shall notify PMC in writing its intent to extend the contract for any extension no later than six months before Termination Date. GPA shall give appropriate notice of its intentions regarding its option to exercise contract extension. The notification will include the number of years GPA intends to extend the contract, not to exceed two (2) years.

At the beginning of the 3rd contract year GPA and the PMC shall negotiate the contract extension terms based on the optimum requirements for the facility. These requirements shall be considered as starting negotiation points between GPA and the PMC, should GPA elect to exercise the optional contract extension. Final confirmation by mutual agreement between GPA and the PMC for contract extension shall be given after completion of negotiation no less than no later than six months before Termination Date. However, GPA may elect to reverse its decision without penalty at any time within six months of the end of the contract period based on the PMC's poor performance during this period.

SECTION 6. COMPENSATION FOR SERVICES

6.1 Payment.

GPA shall pay PMC for costs and services rendered hereunder in accordance with this Agreement. Compensation for services performed and provided by PMC shall be on a monthly basis at the rate stipulated in this section. PMC shall invoice GPA once a month, and payment shall be made within 30 days of after receipt of an acceptable invoice. In the event of any dispute with regard to any portion of the invoice, the undisputed portion shall be paid pending settlement of the dispute. Should GPA fail to make any payment due to PMC under this Agreement, GPA shall pay interest to PMC in accordance with the provisions of the Prompt Payment Act, 5 GCA Sections 22502-22507.

6.2 Contract Price.

The Contract Price constitutes the total consideration to be paid by GPA to PMC for the complete delivery of all Contract Items, and for performing other services in connection therewith in accordance with the Contract Documents as amended by the parties pursuant to the Agreement. The Price or Cost for each Contract Item under this Agreement shall remain fixed during the term of this Agreement. Unless expressly provided otherwise in the Contract Documents, the Contract Price is not subject to escalation in respect of materials and/or labor cost or any other factor or variation in rates of exchange, and all duties, responsibilities, and obligations assigned to or undertaken by PMC shall be at its expense without change in the Contract Price. Charges, fees, PMC's profit, and all other expense shall be deemed to be included in the Contract Price. Only a formal Change Order request, accepted by GPA, may change the Contract Price. PMC shall make any claim for an increase in the Contract Price in advance of performance of any such changes. However, GPA reserves the right to challenge or refute such claims.

Table 1 below shows the Price for each Contract Item for each Contract Year, including the optional contract years.

Table 1. CONTRACT PRICE

(Insert Here)

6.3 Payment Milestones and Schedule.

Payment milestones have been selected to clearly identify the actual status of the portion of the Work completed rather than anticipated project progress schedules. Payments will be based on actual completion of each milestone event, where applicable, and not on the scheduled completion date. When a change in the Agreement is approved, the total contract price will be altered to the new total, and the remaining milestone payments will be adjusted.

Milestones shall not be scheduled more frequently than once every month. GPA will not approve a milestone payment until all preceding milestones have been approved. GPA will make payments within thirty days from receipt and approval of the invoice for the completed milestone.

The milestones for payments due to PMC from GPA are as follows:

(a) Monthly Fees for each Contract Item;

(b) Reimbursement Payments for Capital Improvement Project (CIP) - related expenditures as agreed to and scheduled between GPA and PMC.

6.4 PMC shall submit for review by GPA monthly invoices accompanied by a progress report describing the work performed during the compensation period. All payments to PMC shall be free of any deductions, including but not limited to withholding taxes.

6.5 The amounts paid or reimbursed to PMC shall in no event exceed the dollar amount indicated above except upon prior written agreement by the parties. Prior to incurring any expense not contemplated in the total fee, PMC shall request prior approval of any such additional expense from GPA. No such expense shall be reimbursable unless approved in advance by GPA.

6.6 Final payment shall be made upon delivery and acceptance of all Services as herein specified and performed under this Agreement. Prior to final payment, and as a condition precedent thereto, PMC shall execute and deliver to the Authority a release of any claims arising under and by virtue of this Agreement against the Authority except any identified written claims in existence at the time of the final payment.

6.7 The prices and costs set forth in this Agreement are based on the assumption that the Services performed will be subject to the Guam Gross Receipts Tax. PMC is responsible for payment of any applicable taxes.

SECTION 7. AGREEMENT

The Agreement between GPA and PMC shall consist of the tender documents, as resolved by the PMC's final negotiated Proposal and by GPA amendments, and the PMC's proposal, as adjusted by a prioritized list of documents generated during the evaluation and negotiation processes and agreed to and acknowledged in writing by both parties. These documents may consist of, but are not limited to, written answers to questions, letters, and written clarifications to the proposal.

Any formal contract document shall reference GPA tender documents and the PMC's proposal. No oral understanding or statement shall modify the Agreement. Changes to the above documents can only be made in accordance with the procedure for modifications as defined in **Section 1 Changes.**

The resolved tender documents shall take priority over and shall govern in all cases of conflict with the adjusted proposal. The PMC's contractual obligation shall be to fulfill all requirements of the tender documents, as resolved, and to provide all features of the PMC's proposal, as adjusted.
The tender documents are intended to be complementary, what is called for by one shall be as binding as if called for by all. If not otherwise specified in the tender documents, these General Conditions shall apply. If, during performance of the Agreement PMC detects a discrepancy in the tender documents, PMC shall so report to ENGINEER in writing at once and shall obtain a written interpretation or clarification from ENGINEER before proceeding further; however, PMC shall not be liable to GPA for failure to report any conflict, error, or discrepancy in the Contract Documents unless PMC had actual knowledge thereof or should reasonably have known thereof.

All materials, equipment, and services that may reasonably be inferred from the tender documents, as being required to produce the intended result will be supplied whether or not specifically called for. When words that have a well-known technical or trade meaning are used to describe materials, equipment, or services, such words will be interpreted in accordance with such meaning. Reference to standard specifications, manuals, or codes of any technical society, organization or association, or to the code of any Governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, or code in effect on the effective date of the Agreement except as may be otherwise specifically stated in the Specification or Agreement. ENGINEER as provided in **Section 1 ENGINEER** shall issue clarifications and interpretations of the tender documents.

SECTION 8. OPERATION OF THIS CONTRACT

The Guam Power Authority's responsibility for the day to day monitoring and enforcement of this Contract resides with the GPA General Manager or his designee. The PMC shall identify to GPA the person(s) responsible for the implementation of the Contract and who shall act as the PMC's point of contact.

SECTION 9. PMC'S OBLIGATIONS

9.1 Responsibility within the Physical Boundaries of the Bulk Fuel Storage Facility.

The PMC's area of responsibility shall include the entire Bulk Fuel Storage Facility within the perimeter fence, including the pipeline(s) tie-ins up to the flanges before the first isolation valves at the Tristar manifold and the future pipeline before the perimeter fence of the Ukudu Power Plant. The pipeline infrastructure to the KEPCO/GUP plant and the Ukudu Power Plant is projected to be completed in 2024. The Invitation for Bid Documents, Volume VI Schedule B identifies the physical boundaries.

9.2 Management and Operation.

The PMC shall, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required in this contract, and as specified in the Invitation for Bid Documents. The PMC shall observe, comply with and be subject to all terms, conditions, requirements, and limitations of the contract and specifications and shall do carry on the Contract to the satisfaction of the OWNER.

The PMC shall manage, operate and maintain the Bulk Fuel Storage Facility and all equipment and structures within the physical boundary of the Fuel Farm, which includes, but is not limited to, the transfer pumps, pipelines, cathodic protection system, leak detection system, oil-water separators, and other accessories, in good, safe and operating condition.

The General Responsibilities of the PMC shall include, but is not limited to:

(a) Operation and Maintenance of the facility on a twenty-four hour (24-hour), seven-day (7-day) basis. Fuel transfers shall be restricted between Six A.M. (6 A.M.) to Six P.M. (6 P.M.); any fuel transfer beyond these are shall be subject the approval of the Manager of Generation.

(b) Determination of fuel oil quantity for all transfers, receipts, deliveries and for inventory;

(c) Determination of fuel oil quality in the bulk storage tanks as may be required by GPA;

(d) Determination of fuel oil quality in the pipeline for all transfers to the Ukudu Plant;

(e) Delivery monitoring; extended deliveries shall be closely monitored by walking the tanks and pipelines).

(f) Daily physical survey;

(g) Reporting; and

(h) All other duties and responsibilities as delineated in Volumes I, II and III of the Invitation for Bid.

9.3 Specific Responsibilities.

Specific responsibilities include, but is not limited to:

9.3.1. Fuel Transfer.

The PMC will be responsible for all the fuel transfer to and from the GPA Bulk Fuel Storage Facility and the off-site GPA leased tanks, and should ensure that all activities are done safely, efficiently and effectively. This shall include but is not limited to:

(a) **Fuel Transfer to Power Plants**. The PMC shall coordinate the delivery of fuel oil to the various GPA Power Plants from the Bulk Fuel Storage Facility and from the off-site GPA leased tanks.

(b) **Fuel Transfer to and from Off-site GPA-leased Tanks**. The PMC shall coordinate the transfer of fuel from off-site GPA-leased tanks to the Bulk Fuel Storage Facility and vice versa. The PMC will coordinate with the dispatcher of the off-site bulk storage facility to schedule and oversee deliveries of fuel and/or transfer of fuel to the Bulk Fuel Storage Facility and the power plants.

(c) **Fuel Transfer to and from Oil Tankers/ Vessels.** The PMC shall coordinate the transfer of fuel from Cargo Ship to the GPA Bulk Fuel Storage Tanks (and vice versa) together with GPA, GPA's Fuel Supplier, and other GPA's Fuel Handling contractors. The PMC shall also be responsible for the submittal and clearing the cargo documents as required by the Guam Customs and Quarantine prior to the vessel arrival.

The PMC shall establish a standard operating procedure or update and improve existing procedures for preventing product contamination and minimizing inventory losses. The PMC shall fulfill all other responsibilities related to Receiving of Bulk Product as described in Volumes I and II of the Invitation for Bid.

9.3.2 Fuel Quality.

The PMC shall ensure that the products in GPA's storage tanks meet the Fuel Specifications required by GPA. The PMC shall not cause to contaminate the product stored in the bulk storage tanks, and shall be liable for any product contamination resulting from the negligent acts of its employees or agents. Such negligent acts shall be subject to claims by GPA against the PMC. Quality specification is listed under Schedule A in Volume VI of the Invitation for Bid.

9.3.3 Maintenance Activities.

The PMC shall incorporate a comprehensive maintenance program that is documented to ensure that all maintenance and upkeep practices within the physical boundaries of the facility are adhered to for full life expectancy of the fuel bulk storage facility and pipelines. This contract shall be executed as the turnkey management of the facility with the PMC responsibility for all necessary routine repairs and replacements to the equipment and other appurtenances belonging thereto, as necessary to maintain as such in good working condition in order to have a continuous and uninterrupted delivery of fuel during the course of the contract.

(a) Routine Maintenance Activities.

The routine repairs, maintenance, and upkeep of the facility and equipment shall be carried out by the PMC. Routine Maintenance and minor repairs include, but is not limited to:

- Monthly Tank System Inspections
- Pump Station System Integrity Check
- Instrument Calibration
- Pipeline Inspection
- Operation and Maintenance of Tank System, Pumps and Auxiliary (Diesel-driven) Pump System, Valves, Pipelines, and all Instrumentation and Electrical Systems within the physical boundaries of the facility from the Tristar Tie-In connection up to all the Plants storage tanks,
- Cathodic Protection System Operation and Maintenance
- Leak Detection System Operation and Maintenance
- Oil Water Separator Operation and Maintenance
- Maintenance of Building, Fencing, Grounds and others
- Environmental Compliance and other Technical or Professional Services required to as part of proper operation and maintenance of the Bulk Fuel Storage Facility
- All tasks required to ensure compliance with environmental, local and federal regulations (such as those imposed by, but not limited to USEPA, Guam EPA, US Coast Guard, OPA and others).

If such routine maintenance work involves oil spill response and clean-up, expenses incurred for the oil spill response and clean-up shall be treated separate from the costs associated with the routine O&M work and billed on a separate invoice.

All resources required to undertake the routine maintenance shall be handled by the PMC. PMC shall not assign any work to GPA, nor assume that GPA will take on any work related to the major repair or replacement for which the PMC has offered to undertake. In critical circumstances, such as if the activity

is required to ensure compliance with local and federal regulations, PMC may consult with GPA to jointly determine the most efficient way of undertaking routine operation and maintenance activities.

The PMC shall be solely responsible for the repair or replacement of equipment if determined that subject equipment was damaged through negligence, misuse or lack of maintenance, regardless of the cost. The PMC shall also be responsible for the cost of oil spill recovery efforts for any product released resulting from such negligence.

The PMC shall fulfill all other responsibilities related to Routine Maintenance as describe in Volumes I and II of the Invitation for Bid.

(b) Major and Non-Routine Maintenance Activities, Services, Repairs and/or Replacements.

The PMC shall advise GPA, verbal and in writing, of any required major and non-routine maintenance activity, service, repair and/or replacement in excess of Ten Thousand Dollars ($10,000.00). GPA shall conduct the necessary inspections and evaluations, and work with the PMC in the implementation and completion of the activity / service / repair / replacement. Should the need for the activity / service / repair / replacement be due to damages that are determined to be unpreventable, justified, and outside the control of the PMC, then GPA and the PMC shall jointly identify the best solution to remedy the problem. In all other cases, the PMC shall be responsible to bear the costs of replacement. The PMC shall provide GPA with the cost proposal prior to execution of any work and the project shall be approved in advance. The PMC shall then invoice GPA for the reasonable costs and expenses. The PMC shall provide GPA with all statements and supporting documentation associated with the subject activity, service, repair and/or replacement projects. The PMC shall fulfill all other responsibilities related to Routine Maintenance as described in Volumes I and II and other pertinent documents of the Invitation for Bid. The PMC administrative charges for any major or non-routine maintenance with a one-time cost over $10,000.00 shall not exceed 5%.

9.3.5 Right to Inspection.

GPA shall have the right to conduct inspections of any repair and/or replacement projects. In the event of a dispute, an independent inspector shall be appointed, mutually acceptable to both parties, whose decision as to the quality and/or necessity of the work shall be final and binding on both parties. The independent inspector(s)' fees and charges shall be shared equally by both parties. Payments of any and all invoices of any major repairs or replacements shall be made based on mutually acceptable terms pre-approved by the PMC and GPA.

9.3.6 Equipment.

The PMC is responsible for the purchase, operation, maintenance and deployment of all necessary oil spill equipment as required in the SPCC Plan. Furthermore, the PMC shall maintain an in-house or on-site stock inventory of the materials, as required, for the sole purpose of supporting this contract.

9.3.6 Communications and Reporting.

The PMC is required to fulfill all responsibilities on Communications and Reporting as delineated in Volume II Section 3 of the Invitation for Bid.

9.3.7 Other Operations and Maintenance Activities.

The PMC shall perform their day-to-day management and operations of the Bulk Fuel Storage Facility to include but is not limited to:

(a) Conduct daily physical survey of the bulk fuel storage tanks immediately after completion of fuel transfer to the power plants.
(b) End-of-the-Month Physical Survey of the bulk fuel storage tanks at the GPA Bulk Fuel Storage Facility and GPA-leased tanks from other off-site bulk storage facilities, performed by an independent third party inspector acceptable to GPA.
(c) Monthly Tank System Inspection and Pump Station Integrity Check.
(d) Regular Meter and Instrumentation Calibration – at least annually, or as recommended by manufacturer.
(e) Operation and Maintenance of Cathodic Protection System and Leak Detection System
(f) Compliance with all regulations and requirements.
(g) Review, update and maintenance of all required Documents, including Standard Operating Procedures.
(h) PMC shall provide monthly reports to GPA regarding all activities stated. GPA may conduct unscheduled spot inspections of the Bulk Fuel Storage Facility including activities required from the PMC.
(i) All other responsibilities indicated in the Invitation for Bid documents.

9.3.8 Personnel.

The PMC shall provide adequate number of qualified and trained personnel to deliver all fuel oil required to all of GPA-owned and contracted power plants at any time the power plants require fuel oil. PMC shall provide all personnel required to safely, efficiently, and legally receive all vessel shipments and conduct delivery of fuel oil required to provide the needs described above and maintain minimum inventory requirements necessary for the assurance of fuel oil supply in all cases. The training (initial and follow-on) for operations, maintenance, and safety, as well as

all applicable certifications, are the sole responsibility of the PMC for their personnel. The PMC shall also comply with Staffing Requirements as specified in Volume II Section 4 of the Invitation for Bid Documents.

9.3.9 Coordination with GPA.

PMC shall coordinate with the GPA dispatcher and power plants personnel to schedule fuel deliveries at the convenience of the power plants providing the communication equipment necessary to maintain continuous communications with the GPA dispatch center. PMC shall coordinate with the dispatcher of the off-site bulk fuel storage facility to schedule and oversee deliveries of fuel from the GPA-leased tanks to the power plants.

9.3.10 Oil Spill Recovery Equipment and Inventory.

PMC shall establish and maintain equipment required by the SPCC and OPA '90 facility plan in good operating condition at all times and all others necessary to meet immediate response in case of oil spill or other form of incident that may cause danger to the environment.

PMC shall submit, on a semi- annual basis, an inventory list of essential spare parts to be approved by GPA. PMC shall maintain a minimum inventory of such parts at all times, and ensure that there is sufficient inventory of parts and materials required for the 24-hour operation of the Bulk Fuel Storage Facility. GPA and the PMC shall meet to establish minimum required inventory items and stock levels for regular plant operations and compliance with regulatory requirements. The PMC shall also ensure that all equipment as required in OPA '90, SPCC Plan and FRP are available and that they are able to operate and deploy all these equipment when needed. Inventory Status Reports shall be submitted to GPA regularly as part of the monthly submission.

The PMC shall also complete and be guided by the requirements under Volume II of the Invitation for Bid Documents.

9.3.11 Performance Guarantees.

The PMC shall meet and comply with all Performance Guarantees stated in the Invitation for Bid.

9.3.12 Capital Improvement Projects (CIPs).

The PMC is responsible for identifying and recommending to GPA all future Capital Improvement Projects (CIPs) they deem necessary to contribute to the operational efficiency of the Bulk Fuel Storage Facility. The PMC shall fulfill responsibilities on Capital Improvement Projects as delineated in Volume II Section 3.6.2 of the Invitation for Bid.

The PMC shall coordinate with GPA in planning and forecasting the needs for the upgrade and/ or major repair or replacement of facility equipment, capital improvement projects, and other

expenditures for such major maintenance, equipment acquisition, and/or upgrade of the system. In the event that major expenditures are undertaken by the PMC (for expediency), said expenditures will require prior approval by GPA via formal written request and/ or proposals. GPA will reimburse such expenditures upon presentation of satisfactory documentation of expenditures. The PMC administrative charges for any CIPs with a one-time cost over $10,000.00 shall not exceed 5%.

9.3.13 Uniformed Security.

PMC shall provide uniformed, un-armed security forces from an agency that is accredited as per Government of Guam Regulations, to patrol and safeguard the bulk fuel facility premises on a twenty-four (24) hours, seven (7) days a week basis. Expenses for security shall be under the PMC's Fixed Management Fee.

9.3.14 Grounds Maintenance.

PMC shall maintain and keep the GPA Bulk Fuel Storage Facility neat and clean at all times. PMC shall be responsible for ground maintenance of the tank dikes, impounding basin areas, pump station, operating and maintenance areas, and all others areas within the physical boundaries of the GPA Bulk Fuel Storage Facility. PMC shall trim grass and cut vegetation and shall not cause any growth to come in contact with equipment, pumps, pipelines, fences and other appurtenances at anytime. Vegetation should be cleared at all times and kept at a distance of no less than 10 feet outside the fence. Expenses for Grounds Maintenance shall be under the PMC's O&M Budget.

9.3.15 Utilities and Transportation.

PMC shall pay for all charges from gas, electricity, light, power, communication, transportation, and other services used, rendered, or supplied upon or in connection with the continuous operations and maintenance of the fuel farm facilities, as part of their O&M Budget.

9.3.16 PMC's Financing Responsibilities.

The PMC shall have the financial capability to support its cash flow requirement associated with and to sustain the maintenance and operation costs of the facility, and shall comply with the requirements as stated in Volume II, Section 3.18 (Financing) of the IFB Documents.

9.3.17 GPA's Financing Responsibilities.

GPA will assume total funding of all capital and O&M expenditures, but reserve the option to seek funding assistance from the PMC. In the event the PMC provides funding, PMC and GPA

shall mutually agree on acceptable compensation structure, as illustrated in Volume II, Section 3.18 Financing of the IFB Documents. GPA will reimburse the PMC in a timely manner for the expenses incurred by the PMC in conjunction with projects undertaken under the O&M Budget. The PMC shall present to GPA proof of expense which shall include invoices by vendors, receipts, certificates, proof of payments and delivery on site of materials, equipments, and other related goods and services, included in the invoice as claimed for reimbursement.

SECTION 10. QUANTITY AND QUALITY ASSURANCE

PMC shall be solely responsible for the cost resulting from any direct damages due to losses in fuel quantity and/or failure in quality thereof, caused by the negligence of the PMC.

SECTION 11. FEDERAL AND LOCAL REGULATORY COMPLIANCE

11.1 General Responsibilities.

The PMC shall be responsible for complying with all Environmental, Homeland Security, and other Federal and Local compliance requirements to include, but not limited to the following areas:

(a) Mandatory membership with a qualified and certified Oil Spill Response Companies on Guam (OSROCO, etc.), as required by law, and to comply with the Oil Pollution Act of 1990 (OPA 1990).

(b) Conduct all activities such as but not limited to monitoring, report submission and payments of fees, required to comply with all existing and applicable environmental regulations, requirements permits and plans. These include, but are not limited to:

- OPA ‘90 / OPA ‘90 Facility Plan
- SPCC Plan
- Facility Response Plan
- Facility Security Plan
- NPDES permit

(c) Establishment and maintenance of equipment required by the SPCC Plan and OPA ‘90 Facility plan in good operating condition at all times, and all others necessary to meet immediate response in case of oil spill or other form of incident that may cause danger to the environment.

(d) Remediation of all oil spill incidents to the satisfaction of local and federal regulatory bodies.

(e) Submit results of all audits, investigations and other local/federal activities to GPA.

11.2 Environmental Compliance.

The PMC shall operate in compliance with all environmental requirements and is responsible for all required activities including but not limited to:

(a) Monitoring of all tests and results and ensuring compliance with applicable rules and regulations;

(b) Completion of all necessary corrective actions;

(c) Conduction of tests on all water supply to comply with NPDES Permit;

(d) Creation, development and updating of Standard Operating Procedures as required;

(e) Monitoring all low volume waste streams to be within compliance with all local, federal and international regulations;

(f) Completion of all activities to ensure compliance with all existing environmental permits and plans that include, but are not limited to the NPDES Permit, BMP, FRP, SPCC and OPA '90;

(g) Compliance with GPA and Federal Spill Prevention Control and Countermeasures (SPCC) programs and policies to include implementation, monitoring and reporting;

(h) Submission of all required reports including compliance schedules;

(i) Record-keeping and equipment maintenance;

(j) Payment of all applicable fees as stated in the various environmental permits and plans;

(k) Payment of all penalties from non-compliance with any and all environmental requirements from local and federal bodies.

GPA's Planning and Regulatory Division shall support the PMC in meeting all environmental compliance requirements. P&R shall audit the PMC on a regular basis as a means of monitoring and ensuring that all requirements are satisfied. The PMC shall coordinate all activities on Environmental Compliance, including records and reports, to GPA's Planning and Regulatory Division (P&R). The PMC shall provide full cooperation during P&R's audits and monitoring activities. All corrective measures shall be completed no later than the specified date as required by P&R.

11.3 The PMC shall also comply with all other requirements pertaining to Environmental, Homeland Security and other Federal and Local Compliance Requirements as specified in Volume II of the Invitation for Bid.

11.4 If at any time during the term of the Contract the Government of the United States or the Territory of Guam, or other instrumentality or agency enacts laws or issues regulations which would require compliance by GPA, PMC shall comply with such governmental laws and regulations at the same price set out herein, or if unreasonable, at a price to be renegotiated by the parties (except taxes, penalties, fees or other charges that may be imposed on PMC because of PMC's failure to make proper tax filings including requests for credits, exemptions, drawbacks or rebates). If the laws or regulation causes an increase or decrease in PMC's cost of performance of the Contract, an equitable adjustment shall be made and the Contract modified in writing accordingly. Any claim of PMC for adjustment under this section must be asserted in writing within thirty (3) days from date of receipt by PMC of the notification of compliance with Government laws, rules and regulations. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this Contract entitled "Disputes". However, nothing in this clause shall excuse the PMC from proceeding with the Contract in order to comply with Government laws, rules and regulations.

SECTION 12. OIL POLLUTION ACT OF 1990 (OPA '90)

The PMC is responsible for compliance with the requirements and the oil spill and recovery provisions of the federal law Oil Pollution Act of 1990 (OPA '90 Act) as necessary for the operations of the Bulk Fuel Storage Facility.

SECTION 13. OPA'90 Requirement- Oil Spill Response Organization

The PMC shall present by be or shall become a bona fide member of a certified Oil Spill Response Company on Guam that is duly recognized and approved by federal and regulatory bodies such as the US Coast Guard to fulfill the requirements of the Oil Pollution Act of 1990 (OPA'90). Otherwise, the PMC shall qualify to become an active member or **must secure** an oil spill response service contract with a certified Oil Spill Response Company. Proof of such membership or an oil spill response agreement must be provided to GPA within thirty (30) days of the date of the contract award. Failure to furnish and deliver to the Authority the required membership in the time and manner specified shall constitute a default and grounds for cancellation of Contract.

SECTION 14. FACILITY RESPONSE PLAN AND SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

GPA shall provide the existing Facility Response Plan (FRP) and Spill Prevention Control and Countermeasure Plan (SPCC).

The PMC shall review, edit, enhance and obtain regulatory approvals for any changes from the Federal Environmental Protection Agency, Region IX, San Francisco, for such plan as a mandatory requirement under the OPA Act 90, with the PMC as the operator and GPA as the facility owner. GPA shall be furnished with copies of these plans, to be submitted to:

- Manager of Generation (Generation Division)
- Planning and Regulatory Division

The PMC shall, on their own, purchase, maintain and operate or deploy all necessary oil spill equipment as required in the SPCC plan, as an in-house stock inventory.

SECTION 15. PROTECTION OF WORK AND PROPERTY

The PMC shall at all times safely guard the OWNER's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and that of adjacent property (as provided by law and the contract documents) from damage. All passageways, guard fences, lights and other facilities required for protection by laws and regulations and local conditions must be provided and maintained.

SECTION 16. WARRANTY

The PMC's obligation to deliver and perform services in connection therewith in accordance with the Agreement is absolute, and the PMC warrants and guarantees to OWNER that all services will be in accordance with the Contract Documents. The PMC shall provide OWNER with all warranties and guarantees in writing.

Except as otherwise specified all work shall be guaranteed by the PMC against defects resulting from the use of inferior materials, equipment, or workmanship for one year from the date of final completion of any repairs or replacements.

If within any guarantee period, repairs or changes are required in connection with guaranteed work which, in the opinion of the OWNER, is rendered necessary as the result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract, the PMC shall promptly upon receipt of notice from OWNER and without expense to the OWNER:

(a) Place in satisfactory condition in every particular all of such guaranteed work and correct all defects therein; and

(b) Make good all damages to the building or site or equipment or contents thereof which, in the opinion of the OWNER, is the result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract.

In any case wherein fulfilling the requirements of the contract or of any guarantee embraced in or required thereby the PMC disturbs any work guaranteed under another contract, he shall restore such disturbed work to a condition satisfactory to the OWNER and guarantee such restored work to the same extent as it was guaranteed under such other contract.

If the PMC, after notice, fails to proceed promptly to comply with the terms of the guarantee, the OWNER may have the defects corrected and the PMC and his surety shall be liable for all expense incurred.

All special guarantees applicable to definite parts of the work shall be stipulated in the specifications or other papers forming a part of the contract and shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

In the event the PMC furnishes special services for installation and startup, such services shall be rendered in a competent and diligent manner and in accordance with the Contract Documents, accepted industry practice and any applicable professional standards.

SECTION 17. DEFECTIVE WORK

No work or material which may be defective in construction or quality or deficient in any of the requirements of the drawings and specifications will be considered accepted as a consequence of the failure of the OWNER to discover or to point out said defects or deficiencies during the construction; nor will the presence of

inspectors on the work relieve the PMC from the responsibility of securing the quality and progress of work as required by these specifications.

Any defective work that may be discovered before the completion of the work or within such time as required by the bond shall be replaced by work and materials that shall conform to the spirit and intent of the drawings, specifications and contract.

The fact that the OWNER may have overlooked defective work shall not constitute the acceptance of work. NO PAYMENT WHETHER PARTIAL OR FINAL SHALL BE CONSTRUED TO BE AN ACCEPTANCE OF DEFECTIVE WORK OR IMPROPER MATERIALS.

The OWNER may at any time by order given in writing stop any work not being done according to drawings and specifications and any order so given shall not in any way relieve the PMC from completing his contract and shall not in any way terminate, cancel or abrogate the contract or any part thereof, and the Government of Guam shall not in any way be responsible for the delay due to stopping the work as aforesaid.

SECTION 18. INSPECTION OF WORK

18.1 Access to the Work.

Authorized GPA representatives shall have access at all times to the work for inspection whatever it is in preparation or progress and the PMC shall provide proper facilities for such access and inspection.

18.2 Inspectors.

Inspectors may be placed by the OWNER to supervise each and every subdivision of the work or any parts or process thereof. The authorized inspectors shall have free access to all parts of the work at all times and shall be given every facility, information and means of thoroughly inspecting the work done and the materials used or to be used. The inspectors shall at all times be free to perform their duties and any intimidation of any inspector by the PMC or the employees thereof shall be sufficient reason, if the OWNER shall so decide, to annul the contract.

SECTION 19. DEFAULT

In the event either party of this Contract fails to perform any of the provisions of this Contract, the other party must notify the party in default in writing of the deficiency or non-performance. The party in default has thirty (30) calendar days in which to remedy such default. If such default is not cured within thirty (30) calendar days, the other party may terminate all or part of the Contract. Events of default include but are not limited to the following:

(a) Failure of PMC to provide evidence of an acceptable performance bond on specified time.

(b) Failure of the OWNER to pay invoices within 30-days of receipt.

(c) Failure of PMC to adhere to the terms of the Contract.

SECTION 20. LICENSES, PERMITS, TAXES, AND RESPONSIBILITIES

The PMC shall, without additional expense to the OWNER, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal and Territorial laws, codes, statutes, and regulations necessary for the performance of the Contract by the PMC.

SECTION 21. SUBCONTRACTS

Nothing contained in the contract documents shall be construed as creating any contractual relationship between any sub-PMC and the OWNER. The diffusion or sections of the specifications are not intended to control the PMC in dividing the work among its sub-contractors or to limit the work performed by any trade.
The PMC shall be as fully responsible to the OWNER for the acts and omissions of the PMC's sub-contractors and of persons employed by them, as he is for the acts and omissions of persons directly employed by him.
The PMC shall be responsible for the coordination of the sub-contractors engaged in his work.
The PMC shall, without additional expense to the OWNER, utilize the services of specialty sub-contractors on those parts of the work which are specified to be performed by specialty sub-contractors.
The OWNER will not undertake to settle any differences between the PMC and his sub-contractors or between sub-contractors.
The PMC shall cause appropriate provisions to be inserted in all subcontracts relative to the work including waiver of mechanics liens to bind its sub-contractors by the terms of the contract documents insofar as applicable to the work of sub-contractors and to give the OWNER any exercise over the PMC under any provisions of the contract documents.

SECTION 22. ASSIGNMENT OF AGREEMENT

The PMC shall not assign the whole or any part of this contract or any monies due or to become due hereunder without the written consent of the OWNER and of all the sureties executing any bonds on behalf of the PMC in connection with said contract. In case the PMC assigns the whole or any part of said contract or assigns all or any part of any monies due or to become due under said contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due the PMC or otherwise shall be subject to all of the terms and conditions of said contract or supplemental thereto, the rights and remedies of the OWNER thereunder or arising by operation of the law and to the liens of all persons, firms, and corporations for services rendered or materials supplied in connection with the performance of said contract.

SECTION 23. EQUAL OPPORTUNITY

23.1 The PMC will not discriminate against any employee or applicant for employment because of race, religion, sex, color, age, economic status, or national origin. The PMC will take affirmative action to insure that qualified applicants are employed and that employees are treated during employment without regard to their race, religion, sex, color, age, economic status, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoffs or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The PMC agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the OWNER setting forth the provisions of this nondiscrimination clause.

23.2 The PMC will, in all solicitations or advertisements for employees placed by or on behalf of the PMC, state that all qualified applicants will receive consideration for employment without regard to race, religion, sex, color, age, economic status, or national origin.

23.3 The PMC will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the OWNER, advising the said labor union or workers' representative of the PMC's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965 and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

SECTION 24. PROHIBITION AGAINST GRATUITIES, KICKBACKS, AND FAVORS TO THE TERRITORY

GCA 5 §5630(c) prohibits the CONSULTANT against gratuities, kickbacks, and favors to the Territory.

SECTION 25. RESTRICTION AGAINST PMC EMPLOYING CONVICTED SEXOFFENDERS FROM WORKING AT GOVERNMENT OF GUAM VENUES

GCA 5 §5253(b) restricts the CONSULTANT against employing convicted sex offenders from working at Government of Guam venues. It states:

(b) All contracts for services to agencies listed herein shall include the following provisions: (1) warranties that no person providing services on behalf of the PMC has been convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined in Article 2 of Chapter 28, Title 9 GCA, or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry; and (2) that if any person providing services on behalf of the PMC is convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined

in Article 2 of Chapter 28, Title 9 GCA or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry, that such person will be immediately removed from working at said agency and that the administrator of said agency be informed of such within twenty-four (24) hours of such conviction.

SECTION 26. CLAIMS AND DISPUTES

All controversies between the OWNER and the PMC which arise under, or are by virtue of, this Contract and which are not resolved by mutual agreement of the parties shall be decided as set forth in 5 G.C.A ξ5427 of the Guam Procurement Law.

SECTION 27. TERMINATION FOR CONVENIENCE

GPA may terminate the performance of the services under this Contract in accordance with this clause in whole, or in part, whenever GPA determines that such termination of Contract is in the best interest of the Guam Power Authority and its ratepayers.

Any such termination is effected by delivery to the PMC a written Notice of Termination specifying the extent to which services in the Contract is terminated in whole or in part. In the event the OWNER elected to terminate the Contract it shall be effective sixty (60) days after the receipt of such Notice of Termination.

SECTION 28. SURRENDER OF PREMISES

Upon voluntary or other termination of this Contract or any early termination of the term from whatever cause, PMC shall voluntarily surrender and deliver to GPA the premises, including all buildings, alterations, replacements, changes, additions, and improvements constructed, erected, added or placed on the premises, in as good condition and repair and as clean as the commencement of the term, and as any new buildings, structures, replacements, additions or improvements constructed, erected, added or placed on the premises by the PMC were when completed, with ordinary wear and tear excepted. In the event that the PMC is not able to repair or replace such defective, damaged or lost properties, the cost for such repair or replacement shall be deducted from the PMC's good Performance Bond.

SECTION 29. FAILURE TO COMPLY WITH LAWS

In the event the PMC or any person or entity identified as principals in the offer submitted in connection with the bid shall be found by any court or administrative agency having jurisdiction over the subject matter of the violation, to have violated any law, rule or regulation in connection with PMC's performance of the obligations under the Contract in any manner whatsoever directly or indirectly which violation shall constitute a breach of the peace, or an act involving moral turpitude or otherwise constitute endangerment of the health, safety and welfare of the citizens of the Guam, OWNER may in its sole discretion terminate this Contract upon 30 days written notice.

SECTION 30. AMENDMENT AND WAIVER

Neither the Contract nor any provision hereof may be changed, waived, altered, amended, discharged or terminated orally, but only by an instrument in writing signed by the party against whom enforcement of the change, waiver, alteration, amendment, discharge or termination is sought.

Failure by either party to object to any failure of performance by the other party of any provision of the Contract shall not constitute a waiver of, or estoppels against, the right of such party to require such performance by the other. Nor shall any such failure to object constitute a waiver or estoppels with respect to any succeeding failure of performance.

SECTION 31. GOVERNING LAW

This Contract is made under, and shall be governed and construed in accordance with, the laws, statutes and regulations of the Territory of Guam, to the exclusion of all other legal systems. Wherever a term defined by the Uniform Commercial Code is used in the Contract the definition contained in the Uniform Commercial Code of Guam will control, unless otherwise specified.

The parties expressly submit to the jurisdiction of the Superior Court of the Territory of Guam, for the resolution of any dispute or difference or claims between the parties in connection with the Contract, and to service of process by registered mail. Judgment upon any award rendered by the Superior Court of the Territory of Guam may be entered in any court of any country having jurisdiction, and such award shall be binding upon the parties. The PMC waives all rights against OWNER to claim consequential, special or punitive damages.

SECTION 32. RELATIONSHIP OF PARTIES

Nothing contained in the Contract as awarded to the successful offeror shall be deemed or construed by the parties or by any third person to create the relationship of principal and agent or of partnership or of joint venture or of any association between PMC and OWNER, and no provisions contained in the Contract nor any acts of the parties shall be deemed to create any relationship between OWNER and PMC, other than the relationship of supplier of services and beneficiary.

SECTION 33. NOTICE TO OTHER PARTY

Either party whose obligations may be affected by any of the forces or causes set out in the preceding section, supra, shall promptly notify the other party in writing, giving full particulars thereof as soon as possible after such occurrence of such force or cause. Such party shall exercise due diligence to remove such cause with all reasonable dispatch and shall exert every efforts to resume performance at the earliest practicable time.

SECTION 34. NOTICES

Any notice, demand or any document required or permitted to be delivered hereunder shall be in writing and may be delivered personally or shall be deemed to be delivered when deposited in the mail, postage prepaid, registered or certified mail, addressed to the parties at their respective address indicated below:

To: _____

(PMC)

FAX Number: _____

Address: _____

TO: GUAM POWER AUTHORITY
Attention: General Manager
FAX Number (671) 648-8163
P.O. Box 2977, Hagatna
Guam 96932-2977

SECTION 35. PMC'S AND ITS SUB-CONTRACTOR'S INSURANCE

35.1. Mandatory Insurance Requirements**.**

Prior to commencing the work, PMC shall obtain and thereafter maintain during the course of the work Insurance with companies acceptable to GPA. The PMC shall not allow any sub-contractor to commence work on his subcontract until all similar insurance required of the sub-contractor has been so obtained and approved. The minimum limits of insurance shall be as follows unless a higher limit is required by statute:

A. **General Liability Insurance** including products, completed operations and contractual liability coverage in the amount of $2,000,000 per occurrence and $2,000,000 aggregate.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA.
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

B. Commercial Auto Liability insurance covering third party bodily injury and property damage in the amount of $1,000,000 combined single limit per occurrence.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

C. Excess Liability insurance over the General Liability and the Commercial Auto Liability with limits of $10,000,000 or higher per occurrence/ $10,000,000 aggregate.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

D. Worker's Compensation and Employer's Liability Insurance – Statutory Limits.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as an Additional Insured.
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

E. Professional Liability Insurance including in the amount of $1,000,000 each claim.

i. Policy must be primary and non-contributory with endorsements attached.
ii. GPA shall be named as a NAMED INSURED
iii. GPA shall be named as Loss Payee
iv. Cancellation clause of minimum 90 days' prior written notice to GPA.

1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

F. PMCs All Risk or Builders Risk Insurance

i. Minimum Limits, deductibles, sub-limits, coverage, and property descriptions per contract or project description.

ii. Policy must be primary and non-contributory with endorsements attached.
iii. GPA shall be named as a NAMED INSURED.
iv. GPA shall be named as a Loss Payee
v. Waiver of subrogation shall be in favor of GPA
vi. Cancellation clause of minimum 90 days' prior written notice to GPA.
1. GPA must be given minimum 90 days' prior written notice for any material changes in the policy or cancellation of the policy.

If applicable, fuel /hazardous materials transport:
G. General Liability and the Commercial Auto Liability with limits of $5,000,000 or higher per occurrence.

i. Policy must be primary with primary wording endorsement attached.
ii. GPA shall be named an additional insured
iii. Waiver of subrogation shall be in favor of GPA
iv. Cancellation clause of minimum 60 days' prior written notice to GPA
v. Policy must have MCS 90 Endorsement

All policies must contain the following endorsement and on the Certificate of Insurance:
H. Cancellation Clause of minimum 90 days' prior written notice to GPA.

GPA must be given minimum 90 days' prior written notice before any material changes in the policy or cancellation of the policy can take effect. Written notice must be addressed to:

Guam Power Authority
Chief Financial Officer
PO BOX 2977
Hagatna, GU
96932-2977

Certificate of insurance must contain this wording to be acceptable.

35.3. Certificate of Insurance.

PMC shall furnish certificates of insurance and waiver of subrogation endorsement to GPA prior to commencement of work showing evidence of such coverage, including the statement to the effect that cancellation or termination of the insurance shall not be effective until at least (10) days after receipt of written notice to GPA. At all times PMC's insurance shall be primary to any other insurance that may be carried by GPA. The statement of limits of insurance coverage shall not be construed as in

any way limiting the PMC's liability under this agreement. GPA shall be an additional insured on all liability coverage and certificates of insurance shall clearly indicate such.

35.4. Insurance Company and Agent.

All insurance policies herein required of the PMC shall be written by a company duly authorized and licensed to do business in the State or Territory where work under this contract is being performed and be executed by some agent thereof duly licensed as an agent in said State or Territory.

SECTION 36. INDEMNITY

The PMC shall indemnify, defend and hold harmless owner against all loss, damage, or expense (including reasonable attorney's fees incurred by owner) arising out of the performance of the work, including injury or death to any person or persons resulting from the acts or omission of the PMC or the PMC's employees, servants, agents or sub-contractors and from mechanics and materialism liens.

SECTION 37. GPA INSURANCE

GPA agrees that it will keep the property and machinery and equipment insured, at a minimum, against loss or damage by fire with extended coverage endorsement for full replacement value as determined by GPA from time to time. Such insurance shall be issued by financially responsible insurers duly authorized to do business in the state or territory where the property is located and shall contain the standard form of waiver of subrogation. The insurance company shall be required to give GPA not less than thirty days (30) notice in the event of cancellation or material alteration of such coverage. Nothing contained herein shall be construed as creating any liability or responsibility on the part of the PMC for the adequacy of insurance coverage on the property. As to any insurable risks of loss or damage to the property and machinery and equipment not required to be insured hereunder, GPA shall bear the cost of the same. GPA shall be deemed to be self-insured as to the deductible or co-insurance amount applicable to such insurance coverage and shall pay any deductible or co-insurance amount applicable in the event of such loss or damage.

SECTION 38. WAIVER OF SUBROGATION

The parties hereby release each other and their respective officers, employees, and agents from all loss or damage to the Premise property, machinery and equipment and to the fixtures, personal property, equipment and improvements of either GPA or PMC in or on the Property, notwithstanding that any such loss or damage may be due to or result from the negligence of either of the parties or their respective officers, employees or agents. This waiver does not apply to maintenance and repair assumed under this contract by the PMC.

SECTION 39. ACCIDENT PREVENTION

Precaution shall be exercised at all times for the protection of persons (including employees) and property. Equipment and all hazards shall be guarded or eliminated in accordance with the safety provisions of the latest edition of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America to the extent that such provisions are not in contravention of applicable laws.

Should typhoon warnings be issued, the PMC shall take every practicable precaution to minimize damage and/or danger to persons, to the work, and to the adjacent property. These precautions shall include closing all openings, removing all loose materials, tools and/or equipment from exposed locations, and removing or securing scaffolding and all other temporary work.

SECTION 40. RESPONSIBILITY OF PMC TO ACT IN EMERGENCY.

In case of an emergency which threatens loss or injury of property and/or safety or life, the PMC shall act, without previous instructions from the OWNER, as the situation may warrant.

SECTION 41. FORCE MAJEURE.

No failure or omission to carry out or to observe any of the terms, provisions or conditions of the Contract shall give rise to any claim by one party against the other, or be deemed to be a breach of the Contract if the same shall be cause by or arise out of:

(a) War, etc. War, hostilities, acts of public enemy or belligerents, sabotage, blockade, revolution, insurrection, riot or disorder;

(b) Restraints. Arrest or restraint of princes, rulers or peoples;

(c) Confiscation. Expropriation, requisition, confiscation of nationalization;

(d) Rationing. Embargoes, export or import restrictions or rationing or allocation, whether imposed by law, decree or regulation or by voluntary cooperation of industry at the insistence or request of any governmental authority or person purporting to act therefore;

(e) Regulations. Interference by restriction or onerous regulations imposed by civil or military authorities, whether legal or de factor and whether purporting to act under some constitution, decree, law or otherwise;

(f) Acts of God. Acts of God, fire, frost or ice, earthquake, storm, lightning, tide, tidal wave, or peril of the sea, accident of navigation or breakdown or injury of vessels;

(g) Loss of Tankers. Loss of tanker tonnage due to sinking or capture by belligerents, to include acts of piracy or to governmental taking whether or not by formal requisition;

(h) Accidents. Accidents to or adjuncts of shipping navigation;

(i) Strikes and Quarantine. Epidemics, quarantine, strikes or combination of workmen, lockouts, or other labor disturbances;

(j) Explosions. Explosion, accidents by fire or otherwise to wells, pipes, storage facilities, refineries, installations, machinery;

(k) Taking by Government. Unavailability of fuel because of the election of the government of the country of its origin to confiscate, retain, ban export, or otherwise prevent shipment of fuel;

(l) Mechanical Breakdown. Unavailability of GPA's electric generating plant and any, or all, appurtenances thereto, including transmission and distribution facilities, due to any mechanical operate as designed, emergency outages of equipment or facilities for the purpose of making repairs to avoid breakdown thereof or damage thereto other than regularly scheduled repairs or regular maintenance; or

(m) Other Events. Any event, matter or thing wherever occurring and whether or not of the same class or kind as those set forth, which shall not be reasonably within the control and without the fault or negligence of the party affected thereby.

No failure or omissions to carry out or to observe any of the terms, provisions or conditions of the Contract shall give rise to any claim by one party against the other, or be deemed to be a breach of the Contract from the time of and to the extent occasioned by the Force Majeure, not from the date of notice of the Force Majeure is received.

SECTION 42. ATTORNEY'S FEES AND COSTS

PMC agrees that should a default by either party result in litigation, the successful party shall be entitled to recover its costs and reasonable attorney's fees from the defaulting party.

SECTION 43. CONTRACT BINDING EFFECT

All EXHIBITS attached hereto are incorporated herein by reference in its entirety.

This Contract is binding upon the **PMC** only if **PMC** has been awarded the Contract in response to the **MS IFB GPA-015-22**. This Contract is subject to the approval of **GPA** and the Public Utilities Commission and it shall not be binding on part of **GPA** until such approval is made as evidenced by the signatories below.

IN WITNESS WHEREOF the parties hereto have executed this contract as of the day and year first written.

PMC:	**OWNER**:
(COMPANY NAME AND SEAL)	**GUAM POWER AUTHORITY**
_____	_____
	JOHN M. BENAVENTE, P.E.

General Manager

Date: _____ Date: _____

CERTIFIED AS TO FUNDS AVAILABLE:

Date: _____ By: _____

PAMELA AGUIGUI

GPA'S Certifying Officer

Account No. _____

Amount: _____

APPROVED AS TO FORM:

Date: _____ By: _____

D. GRAHAM BOTHA, Esq.,

GPA Staff Attorney

PERFORMANCE AND PAYMENT BONDS

KNOW ALL MEN BY THESE PRESENTS that _____

_____

(Name of PMC)

herein after called the PMC and _____

_____

(Name of Surety)

a corporation duly organized under the laws of the State of _____ (hereafter referred to as: "Surety") authorized to transact business in Guam as Surety, are held and firmly bound unto the Guam Power Authority, as obligee, for use and benefit of claimants as herein below defined, in the amount of _____

_____Dollars ($_____) for the payment whereof the PMC and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the PMC has by written agreement dated _____, 20____, entered into a Performance Management Contract for the Guam Power Authority Bulk Fuel Storage Facility in accordance with Drawings and Specifications prepared by the Guam Power Authority, which Contract is by reference made a part hereof, and is hereafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the PMC shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this

obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

A. The Surety hereby waives notice of any alteration or extension of the time made by the Guam Power Authority provided the same is within the scope of the Contract.

B. Whenever PMC shall be and is declared to be in default under the Contract by the Guam Power Authority, and the Guam Power Authority has performed its Contract obligations, the Surety may promptly remedy the default or shall promptly:

1. Complete the Contract in accordance with its terms and conditions; or
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the Guam Power Authority and the Surety of the lowest responsive, responsible bidder, arrange for a Contract between such bidder and the Authority, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less than balance of the Contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price", as used in this paragraph shall mean the total amount payable by the Guam Power Authority to PMC under the Contract and any amendments thereto, less the amount properly paid by the Guam Power Authority to PMC. No right of action shall accrue on this bond to or for the use of any person or corporation other than the Guam Power Authority or successors of the Authority.

C. A claimant is defined as one having a direct contract with the PMC, or with a sub-contractor of the PMC for labor, material, or both, used or reasonably required for use in the performance of the Contract labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

D. The above-named PMC and Surety hereby jointly and severally agree with the Guam Power Authority that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) calendar days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Guam Power Authority shall not be liable for the payment of any costs or expenses of any such suit.

E. No suit or action shall be commenced hereunder by a claimant:

1. Unless claimant, other than one having a direct contract with the PMC, shall have given written notice to any two of the following:

   The PMC, the Guam Power Authority, or the Surety above named, within ninety (90) calendar days after such claimant did or performed that last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be personally served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the PMC at any place the principal maintains an office or conducts it business.

2. After the expiration of one (1) year following the date on which the last of the labor was performed or material was supplied by the party bringing suit.

3. Other than in a court of competent jurisdiction in and for Guam.

F. The amount of the payment bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens, which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

SIGNED AND SEALED THIS _____ day of _____ 20___ .

IN THE PRESENCE OF:

(Note: If the Principles are Partners, each must execute the Bond)

_____ _____

(WITNESS) (PMC) (SEAL)

_____ _____

(TITLE)

_____ _____

(MAJOR OFFICER OF SURETY) (MAJOR OFFICER OF SURETY)

_____ _____

(TITLE) (TITLE)

_____

Invitation For Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR

THE GUAM POWER AUTHORITY'S BULK FUEL STORAGE FACILITY

Volume V

APPENDICES

APPENDIX A

Proposal Checklists

DOCUMENT RECEIPT CHECKLIST

Document Title	Proponent Initial
Volume I Commercial Terms and Conditions	_____
Volume II Technical and Functional Requirements	_____
Volume III Facility Technical Description	_____
Volume IV CONTRACT	_____
Volume V Appendices	_____
Volume VI Schedules	_____
Qualitative Proposal Scoring.xls	_____
Price Proposal Evaluation	_____
Contiguous Amendment Notifications From Amendment No. 1 through	_____
Others:	_____
	_____
	_____
	_____
	_____
	_____

DOCUMENT SUBMISSION CHECKLIST

PROPOSAL SUBMITTAL CHECKLIST[1]

	ITEM	QUANTITY (ORIGINALS)	QUANTITY (COPIES)	GPA INITIAL
1	Technical Proposal			
2	Price Proposal			
3	Supplementary Information:			
	3.1. Articles of Incorporation and By-Laws			
	3.2. Certificate of Good Standing to Conduct Business in Jurisdiction of Residence			
	3.3. Information regarding outstanding claims against BIDDER			
	3.4. Affidavit of Disclosure of Ownership			
	3.5. Non-collusion Affidavit			
	3.6. No Gratuities or Kickbacks Affidavit			
	3.7. Ethical Standards Affidavit			
	3.8. Declaration of Compliance with US DOL's Wage Determination			
	3.9. Restriction Against Sex Offenders			
	3.10. Bid Bond Form			
	3.11. Local Procurement Preference Application			
	3.12. Business License			

[1] Quantities supplied for each item must comply with minimums established in Volume I of the Invitation for Bid documents.

APPENDIX B

BID BOND FORM AND INSTRUCTION

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUÅHAN
P.O.BOX 2977 • HAGÅTÑA, GUAM U.S.A. 96932-2977

Telephone Nos. (671) 648-3054/55 Fax: 648-3165

Lourdes A. Leon Guerrero
I Maga 'håga

Joshua F. Tenorio
I Sigundo Maga 'låhi

BID BOND

NO.: _____

KNOW ALL MEN BY THESE PRESENTS that _____, as

Principal Hereinafter called the Principal, and (Bonding Company), _____
A duly admitted insurer under the laws of the Territory of Guam, as Surety, hereinafter called the Surety are
Held firmly bound unto the Territory of Guam for the sum of _____Dollars
($_____), for Payment of which sum will and truly to be made, the said Principal and the said
Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for (identify project by number and brief description)

_____

_____

NOW, THEREFORE, if the Territory of Guam shall accept the bid of the Principal and the Principal shall enter into a Contract with the Territory of Guam in accordance with the terms of such bid, and give such bond or bonds as my be specified in bidding or Contract documents with good and sufficient surety for the faithful performance of such Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Territory of Guam the difference not to exceed the penalty hereof between the amounts specified in said bid and such larger amount for which the Territory of Guam may in good faith contract with another party to perform work covered by said bid or an appropriate liquidated amount as specified in the Invitation for Bids then this obligation shall be null and void, otherwise to remain full force and effect.

Signed and sealed this _____ day of _____ 2022.

_____
(PRINCIPAL) (SEAL)

_____
(WITNESS)

_____
(TITLE)

_____
(MAJOR OFFICER OF SURETY)

_____
(TITLE)

_____
(TITLE)

_____
(RESIDENT GENERAL AGENT)

SEE INSTRUCTIONS FOR SUPPORTING DOCUMENTS REQUIRED.

INSTRUCTION TO PROVIDERS:

NOTICE to all Insurance and Bonding Institutions:

The Bond requires the signatures of the Vendor, two (2) major Officers of the Surety and Resident General Agent, if the Surety is a foreign or alien surety.

When the form is submitted to the Guam Power Authority, it should be accompanied with copies of the following:

1. Current Certificate of Authority to do business on Guam issued by the Department of Revenue and Taxation.

2. Power of Attorney issued by the Surety to the Resident General Agent or the following:
   a. Current Sworn Annual Report (Limited Liability Company (LLC) and/or Corporation) or;
   b. Current Renewal of Annual Limited Liability Partnership (LLP)

   The following reference links below are for reference:

   https://www.govguamdocs.com/revtax/docs/SwornAnnualReport_LLC_0609.pdf
   https://www.govguamdocs.com/revtax/docs/SwornAnnualReport_Corporations.pdf
   https://www.govguamdocs.com/revtax/docs/Renewal_LLP_Registration_r1106.pdf

3. Power of Attorney issued by two (2) major officers of the Surety to whoever is signing on their behalf.

Bonds, submitted as Bid Guarantee, without signatures and supporting documents are invalid and Bids will be rejected.

APPENDIX C

Disclosure of Ownership Affidavit

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUÅHAN
P.O.BOX 2977 • HAGÅTÑA, GUAM U.S.A. 96932-2977

SPECIAL PROVISON
FOR
OWNERSHIP DISCLOSURE AFFIDAVIT

All Bidders/Offerors are required to submit a current affidavit as required below. Failure to do so will mean disqualification and rejection of the Bid/RFP.

5 GCA §5233 (Title 5, Section 5233) states:
Disclosure of Ownership, Financial, and Conflicts of Interest

(a) Purpose. The disclosure required by this Section are intended to reveal information bearing on the responsibility of a bidder, and can be obtained by an inquiry regarding responsibility prior to award.

(b) Definitions.
As used herein, the term "person" shall be interpreted liberally to include the definition found in 1 GCA § 715, and in § 5030(n) of this Chapter, and includes a natural person as well as every entity of whatever form or composition (an "artificial person") recognized under the laws of Guam other than a natural person, who is a prospective contractor under a bid, offer, proposal, or other response to a solicitation, or is a contractor under a contract with the government of Guam, and subject to the provisions of this Chapter.

(c) Public Disclosure of Ownership.
(1) The ownership interests to be disclosed under this Section include the interests of a natural or artificial person who owns all or any part of a prospective contractor, bidder, or offeror, whether as proprietor, a partner, limited or otherwise, a shareholder of any class, in which case the percentage ownership interest test shall be based on each class, a member of an association or company, limited or otherwise, and any person owning a beneficial legal interest in any trust, and any other person having the power to control the performance of the contract or the prospective contractor.
(2) Prior to award, every person who is a prospective contractor, bidder, or offeror of a contract to be acquired under any method of source selection authorized by this Chapter shall submit a Disclosure Statement, executed as an affidavit under oath, disclosing the name of each person who currently or has owned an ownership interest in the prospective contractor, bidder, or offeror greater than ten percent (10%) at any time during the twelve (12) month period immediately preceding the date of the solicitation (the "relevant disclosure period"). If a prospective contractor, bidder, or offeror is an artificial person, the Disclosure Statement shall disclose the name of each person who has owned an ownership interest in such artificial person (a "second tier owner") greater than twenty-five percent (25%) at any time during the relevant disclosure period. If any such second tier owner is also an artificial person, the Disclosure Statement shall disclose the name of each person who has owned an ownership interest in such second tier owner (a "third tier owner") of forty-nine percent (49%) or more during the relevant disclosure period. If the name of no natural person has been identified as an owner, or a second or third tier owner of the prospective contractor, bidder, or offeror, the Disclosure Statement shall identify the name, position, address, and contact information of the natural person having the authority and responsibility for the performance of the prospective contract, and the name of any natural person who has the authority and power to remove and replace the designated responsible person or otherwise control the performance of the prospective contract.

(d) Disclosure of Financial Interest. A prospective contractor shall execute an affidavit disclosing the name of any person who has received or is entitled to receive a commission, gratuity, contingent fee or other compensation to solicit, secure, or assist in obtaining business related to the solicitation by means of a Disclosure Statement, executed as an affidavit under oath, disclosing such interest and shall also contain the amounts of any such commission, gratuity, contingent fee or other compensation.

(e) Disclosure of Conflict of Interest. A prospective contractor shall disclose the name of any person who directly or indirectly participates in any solicitation if such person is also an employee of the government of Guam, or of the government of the United States if federal funds are used in payment of the contract.

(f) Every disclosure of an ownership or financial interest of any person required to be identified by this Section shall name the person required to be disclosed and the street address of their principal place of business. All information disclosed or meant to be disclosed under this Section is public procurement data and shall be kept as part of the public record of each procurement.

(g) Continuing Duty of Disclosure. Notwithstanding any other provision of this Chapter, the duty to disclose the information required under this Section shall be, upon award a continuing duty of a contractor of every contract subject to this Chapter, and all such information shall become part of the procurement record required by § 5249 of this Chapter. Throughout the term of a contract subject to the terms of this Chapter, the contractor shall promptly make any disclosures not made previously and update changes in the identities or other required information, interests, or conflicts of the persons required to be disclosed herein. Failure to comply with this Section shall constitute a material breach of contract."

Section 2. Severability. If any provision of this Act or its application to any person or circumstance is found to be invalid or contrary to law, such invalidity shall not affect other provisions or applications of this Act that can be given effect without the invalid provision or application, and to this end the provisions of this Act are severable.

1. If the affidavit is a copy, indicate the BID/RFP number and where it is filed.

2. Affidavits must be signed within 60 days of the date the bids or proposals are due.

OWNERSHIP & INTEREST DISCLOSURE AFFIDAVIT

TERRITORY OF GUAM)
)
HAGATNA, GUAM)

I, undersigned, _____, being first duly sworn, deposes and says:
(partner or officer of the company, etc.)

1. That the name of each person who owns or has owned an ownership interest in the prospective contractor, bidder, or offeror greater than ten (10%) at any time during the twelve (12) month period immediately preceding the date of this solicitation are as follows:

Name	Street Address (Principal Place of Business)	Percentage of Shares Held
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
	Total percentage of shares:	_____

2. That for any owners listed Section 1 who are artificial persons, the name of each person who owns or has owned an interest in such artificial person (a "second-tier owner") greater than twenty-five percent (25%) at any time during the relevant disclosure period are as follows:

Name	Street Address (Principal Place of Business)	Percentage of Shares Held
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
	Total percentage of shares:	_____

3. That for any owners listed Section 2 who are artificial persons, the name of each person who has owned an ownership interest in such second-tier owner (a "third-tier owner") of forty-nine percent (49%) or more during the relevant disclosure period are as follows:

Name	Street Address (Principal Place of Business)	Percentage of Shares Held
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
	Total percentage of shares:	_____

4. That if no natural person has been identified as an owner in Section 1-3 above, the natural person having the authority and responsibility for the performance of the prospective contract:

Name & Position	Street Address (Principal Place of Business)	Contact Information
_____	_____	_____
_____	_____	_____

The natural person having the authority and power to remove and replace the designated responsible person or otherwise control the performance of the prospective contract:

Name & Position	Street Address (Principal Place of Business)	Contact Information
_____	_____	_____

5. Persons who have received or are entitled a commission, gratuity or other compensation for procuring or assisting in obtaining business related to the Bid/RFP for which this Affidavit is submitted are as follows:

Name	Address	Amount of Commission, Gratuity, or other Compensation
_____	_____	_____
_____	_____	_____

6. Persons who directly or indirectly participated in this solicitation, if government of Guam employees (or government of the United States employees, if federal funds are used in payment of the contract):

Name & Position	Street Address (Principal Place of Business)	Contact Information
_____	_____	_____
_____	_____	_____

Further, affiant sayeth naught.

Date: _____ _____

Signature of individual if bidder/offeror is a sole Proprietorship; Partner, if the bidder/offeror is a Partnership Officer, if the bidder/offeror is a corporation.

Subscribe and sworn to before me this _____ day of _____,

20_____.

Notary Public _____

In and for the Territory of Guam

My Commission expires _____.

APPENDIX D

Non-collusion Affidavit

NON-COLLUSION AFFIDAVIT

Guam)
)ss:
Hagatna)

I, _____ first being duly sworn, depose and say:
(Name of Declarant)

1. That I am the _____ of _____.
(Title) (Name of Bidding/RFP Company)
2. That in making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or shame, that said bidder/offeror has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham or to refrain from bidding or submitting a proposal and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid of affiant or any other bidder, or to secure any overhead, project or cost element of said bid price, or of that of any bidder, or to secure any advantage against the GUAM POWER AUTHORITY or any person interested in the proposed contract; and
3. That all statements in said proposal or bid are true.
4. This affidavit is made in compliance with Guam Administrative Rules and Regulations §§3126(b).

_____
(Declarant)

SUBSCRIBED AND SWORN to me before this _____ day of _____, 2022.

)Seal(

_____
Notary Public

APPENDIX E

LOCAL PROCUREMENT PREFERENCE APPLICATION

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUÅHAN
P.O.BOX 2977 • HAGÅTÑA, GUAM U.S.A. 96932-2977

Lourdes A. Leon Guerrero
I Maga 'håga

Telephone Nos. (671) 648-3054/55 Fax: 648-3165

Joshua F. Tenorio
I Sigundo Maga 'låhi

LOCAL PROCUREMENT PREFERENCE APPLICATION

Based on the law stipulated below, please place a checkmark or an "X" on the block indicating the item that applies to your business:

5GCA, Chapter 5, Section 5008, "Policy in Favor of Local Procurement" of the Guam Procurement Law states:

> All procurement of supplies and services shall be made from among businesses licensed to do business on Guam and that maintains an office or other facility on Guam, whenever a business that is willing to be a contractor is:

( ) (a) A licensed bona fide manufacturing business that adds at least twenty-five percent (25%) of the value of an item, not to include administrative overhead, suing workers who are U.S. Citizens or lawfully admitted permanent residents or nationals of the United States, or persons who are lawfully admitted to the United States to work, based on their former citizenship in the Trust Territory for the Pacific Islands; or

( ) (b) A business that regularly carries an inventory for regular immediate sale of at least fifty percent (50%) of the items of supplies to be procured; or

( ) (c) A business that has a bona fide retail or wholesale business location that regularly carries an inventory on Guam of a value of at least one half of the value of the bid or One Hundred Fifty Thousand Dollars ($150,000.0) whichever is less, of supplies and items of a similar nature to those being sought; or

( ) *(d) A service actually in business, doing a substantial business on Guam, and hiring at least 95% U.S. Citizens, lawfully admitted permanent residents or national of the United States, or persons who lawfully admitted to the United States to work, based on their citizenship in any of the nations previously comprising the Trust Territory of the Pacific Islands.

- Bidders indicating qualification under (d) may be considered QUALIFIED for the Local Procurement Preference only if the Government's requirement is for service. Service is defined Pursuant to 5 GCA Government Operations Subparagraph 5030 entitled DEFINITIONS under Chapter 5 of the Guam Procurement Law.

1. I _____, representative for _____, have read the requirements of the law cited above and do hereby qualify and elect to be given the LOCAL PROCUREMENT PREFERENCE for Bid No.: GPA _____. By filling in this information and placing my signature below, I understand that the Guam Power Authority will review this application and provide me with a determination whether or not the 15% preference will be applied to this bid.

2. I _____, representative for _____, have read the requirements of the law cited above, and do not wish to apply for the Local Procurement Preference for Bid No.: GPA _____.

_____
Bidder Representative Signature

_____
Date

NOTE:
Prospective Bidders not completing this form will automatically be not considered for Local Procurement Preference. Non-completion of this form is not a basis for rejection of the bid or proposal.

APPENDIX F

Performance Bond

PERFORMANCE BOND NUMBER:_____

KNOW ALL MEN BY THESE PRESENTS that _____ , as Principal, hereinafter called **CONTRACTOR**, and _____ , a corporation hereinafter called **SURETY**, are held and firmly bound unto the **GUAM POWER AUTHORITY** as Obligee, in the amount of _____, an amount negotiated for the first partial **GUAM POWER AUTHORITY** fiscal year within the term of the **CONTRACT**, for the payment whereof **CONTRACTOR** and **SURETY** bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, **CONTRACTOR** has by written agreement dated _____, 20__, entered into a **PERFORMANCE MANAGEMENT CONTRACT (PMC) FOR THE GPA's BULK STORAGE FACILITY** with the **GUAM POWER AUTHORITY** through midnight of _____, 20___, with the AUTHORITY's option to extend the **CONTRACT** for an additional three-year term beginning _____, 20___, in accordance with forms and specifications prepared by the **GUAM POWER AUTHORITY** which **CONTRACT** is by reference made a part hereof, and is hereinafter referred to as the "**CONTRACT**".

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if **CONTRACTOR** shall promptly and faithfully perform said **CONTRACT** then this obligation shall be null and void; otherwise it shall remain in full force and effect. The **SURETY** hereby waives notice of any alteration or extension provided the same is within the scope of the **CONTRACT**. Whenever **CONTRACTOR** shall be and is declared by the **GUAM POWER AUTHORITY** to be in default under the **CONTRACT**, **GUAM POWER AUTHORITY** having performed its obligation thereunder, the **SURETY** may promptly remedy the default or shall promptly:

(1) Complete the **CONTRACT** in accordance with its terms and conditions; or,

(2) Obtain a bid or bids for completing the **CONTRACT** in accordance with its terms and conditions and upon determination by the **GUAM POWER AUTHORITY** and the **SURETY** jointly of the lowest responsive, responsible **BIDDER**, arrange for a **CONTRACT** between such **BIDDER** and the **GUAM POWER AUTHORITY** and make available as work progresses (even though there should be a default or a succession of defaults under the **CONTRACT** or **CONTRACTs** of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the **CONTRACT** price; but not exceeding, including other costs and damages for which the **SURETY** may be liable hereunder, the amount set forth in the first paragraph hereof.

The term "balance of the **CONTRACT** price", as used in this paragraph shall mean the total amount payable by the **GUAM POWER AUTHORITY** to **CONTRACTOR** under the **CONTRACT** for the current fiscal year and any amendments thereto, less the amount properly paid by the **GUAM POWER AUTHORITY** to **CONTRACTOR** for that partial or full fiscal year.

The term fiscal year shall mean the time between October 1 in the calendar year to September 30 of the next calendar year.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the **GUAM POWER AUTHORITY** or successors of the **GUAM POWER AUTHORITY**.

Signed and sealed this _____ day of _____, 20_____.

_____

(Principal) (Seal)

_____

(Witness) (Bonding Company)

_____

(Title) (Title)

By: _____

(Witness) (Attorney-In-Fact)

APPENDIX G

No Gratuities or Kickbacks Affidavit

NO GRATUITIES OR KICKBACKS AFFIDAVIT

AFFIDAVIT
(Offeror)

TERRITORY OF GUAM)
)
HAGATNA, GUAM)

SS:

_____, being first duly sworn, deposes and says:

As the duly authorized representative of the Offeror, that neither I nor of the Offeror's officers, representatives, agents, subcontractors, or employees has or have offered, given or agreed to give any government of Guam employee or former employee, any payment, gift, kickback, gratuity or offer of employment in connection with Offeror's proposal.

_____

Signature of Individual if Proposer is a Sole Proprietorship;
Partner, if the Proposer is a Partnership;
Officer, if the Proposer is a Corporation

SUBCRIBED AND SWORN to before me this ____day of _____, 2022.

_____
Notary Public
In and for the Territory of Guam
My Commission Expires:

APPENDIX H

Ethical Standards Affidavit

ETHICAL STANDARDS AFFIDAVIT

AFFIDAVIT
(Proposer)

TERRITORY OF GUAM)
) SS:
HAGATNA, GUAM)

_____, being first duly sworn, deposes and says:

That I am (the Sole Proprietor, a Partner or Officer of the Offeror)

That Offeror making the foregoing Proposal, that neither he or nor of the Offeror's officers, representatives, agents, subcontractors, or employees of the Offeror have knowingly influenced any government of Guam employee to breach any of the ethical standards set forth in 5 GCA Chapter 5 Article 11, and promises that neither he nor any officer, representative, agent, subcontractor, or employee of Offeror will knowingly influence any government of Guam employee to breach any ethical standard set for in 5 GCA Chapter 5 Article 11.

_____

Signature of Individual if Proposer is a Sole Proprietorship;
Partner, if the Proposer is a Partnership;
Officer, if the Proposer is a Corporation

SUBCRIBED AND SWORN to before me this ____day of _____, 2022.

_____
Notary Public
In and for the Territory of Guam
My Commission Expires:

APPENDIX I

DECLARATION OF COMPLIANCE WITH U.S. DOL WAGE DETERMINATION

DECLARATION OF COMPLIANCE WITH U.S. DOL WAGE DETERMINATION

Procurement No.: _____

Name of Offeror Company: _____

_____ hereby certifies under penalty of perjury:

(1) That I am_____(the offeror, a partner of the offeror, an officer of the offeror) making the bid or proposal in the foregoing identified procurement;

(2) That I have read and understand the provisions of 5 GCA § 5801 and § 5802 which read:

§ 5801. Wage Determination Established.

In such cases where the government of Guam enters into contractual arrangements with a sole proprietorship, a partnership or a corporation ('contractor') for the provision of a service to the government of Guam, and in such cases where the contractor employs a person(s) whose purpose, in whole or in part, is the direct delivery of service contracted by the government of Guam, then the contractor shall pay such employee(s) in accordance with the Wage Determination for Guam and the Northern Mariana Islands issued and promulgated by the U.S. Department of Labor for such labor as is employed in the direct delivery of contract deliverables to the government of Guam.

The Wage Determination most recently issued by the U.S. Department of Labor at the time a contract is awarded to a contractor by the government of Guam shall be used to determine wages, which shall be paid to employees pursuant to this Article. Should any contract contain a renewal clause, then at the time of renewal adjustments, there shall be made stipulations contained in that contract for applying the Wage Determination, as required by this Article, so that the Wage Determination promulgated by the U.S. Department of Labor on a date most recent to the renewal date shall apply.

§ 5802. Benefits.

In addition to the Wage Determination detailed in this Article, any contract to which this Article applies shall also contain provisions mandating health and similar benefits for employees covered by this Article, such benefits having a minimum value as detailed in the Wage Determination issued and promulgated by the U.S. Department of Labor, and shall contain provisions guaranteeing a minimum of ten (10) paid holidays per annum per employee.

(3) That the offeror is in full compliance with 5 GCA § 5801 and § 5802, as may be applicable to the procurement referenced herein;

_____

Signature of Individual if Proposer is a Sole Proprietorship;

Partner, if the Proposer is a Partnership;

Officer, if the Proposer is a Corporation

SUBCRIBED AND SWORN to before me this____day of_____, 20___.

_____

Notary Public
In and for the Territory of Guam
My Commission Expires:

APPENDIX J

Restriction against Sex Offenders Employed by Service Providers to Government of Guam from Working on Government of Guam Property

GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUÅHAN
P.O.BOX 2977 • HAGÅTÑA, GUAM U.S.A. 96932-2977

SPECIAL PROVISIONS

Restriction against Sex Offenders Employed by Service Providers to Government of Guam from Working on Government of Guam Property

GCA 5 §5253(b) restricts the OFFEROR against employing convicted sex offenders from working at Government of Guam venues. It states:

(a) No person convicted of sex offense under the provisions of Chapter 25 of Title 9 Guam Code Annotated, or an offense as defined in Article 2 of Chapter 28, Title 9 GCA in Guam, or an offense in any jurisdiction which includes, at a minimum, all of the elements of said offenses, or who is listed on the Sex Offender Registry, and who is employed by a business contracted to perform services for an agency or instrumentality of the government of Guam, shall work for his employer on the property of the Government of Guam other than public highway.

(b) All contracts for services to agencies listed herein shall include the following provisions: (1) warranties that no person providing services on behalf of the contractor has been convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined in Article 2 of Chapter 28, Title 9 GCA, or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry; and (2) that if any person providing services on behalf of the contractor is convicted of a sex offense under the provisions of Chapter 25 of Title 9 GCA or an offense as defined in Article 2 of Chapter 28, Title 9 GCA or an offense in another jurisdiction with, at a minimum, the same elements as such offenses, or who is listed on the Sex Offender Registry, that such person will be immediately removed from working at said agency and that the administrator of said agency be informed of such within twenty-four (24) hours of such conviction.

(c) Duties of the General Services Agency or Procurement Administrators. All contracts, bids, or Requests for Proposals shall state all the conditions in § 5253(b).

(d) Any contractor found in violation of § 5253(b), after notice from the contracting authority of such violation, shall, within twenty-four (24) hours, take corrective action and shall report such action to the contracting authority. Failure to take corrective action within the stipulated period may result in the temporary suspension of the contract at the discretion of the contracting authority.

SOURCE: *Added by P.L. 28-024:2 (Apr. 21, 2005). Amended by P.L. 28-098:2 (Feb. 7, 2006).*

_____
Signature of Bidder Date

Proposer, if an individual;
Partner, if a partnership;
Officer, if a corporation.

Subscribed and sworn before me this_____day of_____, 20___

_____
Notary Public

APPENDIX K

BIDDER’s PROPOSAL COVER PAGE

[BIDDER NAME]

On this ____ day of _____, 20____, I, _____(Name of Representative)_____, authorized representative of _____(Name of Company)_____, a/an (Individual / Partnership / Corporation / Other: _____) incorporated in _____ hereby submit our Qualitative Proposal and Price Proposal for

Multi-Step Bid GPA- -21: PERFORMANCE MANAGEMENT CONTRACT FOR THE GPA BULK FUEL STORAGE FACILITY

Signature and Title of Person Authorized to Sign this Bid:

DATE:

_____ _____

Name and Address of BIDDER;

_____

_____

_____

_____

_____

Invitation For Multi-Step Re-Bid

No. GPA-015-22

PERFORMANCE MANAGEMENT CONTRACT

FOR THE

GUAM POWER AUTHORITY
BULK FUEL STORAGE FACILITY

Volume VI

SCHEDULES

Table of Contents

SCHEDULE A

1. Diesel Fuel Oil No.2 Specification

DESCRIPTION	ASTM TEST METHOD	UNIT OF MEASURE	LIMITS	
			Minimum	Maximum
Flash Point	D93	deg C	60	
Cloud Point	D2500	deg C		5
Bottom Sediment & Water	D2709	vol %		0.05
Distillation Temp, 10% recovered	D86	degC	180	230
Distillation Temp, 50% recovered	D86	degC	230	310
Distillation Temp, 90% recovered	D86	degC	282	360
Distillation Temp, 95% recovered	D86	degC	300	370
Kinematic Viscosity	D445	mm^2/s at 40 degC	1.9	4.1
Total Aromatic Hydrocarbons	D6591 or IP391	wt%		30
Dicyclic Aromatic Hydrocarbons	D6591 or IP391	wt%		5
Tricyclic and higher Aromatic Hydrocarbons	D6591 or IP391	wt%		1
Olefin Content	D1319	vol%		5
Ash	D482	wt%		0.01
Sulfur	D4294 or D5453 or D7039	ppmw		10
Sulfur Mercaptan	D3227	ppmw		3
Copper Strip Corrosion Rating (3hrs min at 50oC)	D130			No. 1
Cetane Index	D613 or D976-80 or D4737		46	
Carbon Residue on 10% distillation residue	D189 or D524 or D4530 or D6371	wt%		0.2
Lubricity, HFRR @ 60oC	D6079	micron		400
Conductivity	D2624 or D4308	pS/m	100	600
Density @ 15oC	D4052 or D1298	kg/m3	820	850
Gravity, API @ 60oF	D1295 or D4052		35	41
Color	D1500			2.0
Hydrogen Sulfide in Liquid	IP 570A	mg/kg		2.0
Strong Acid No.	D974	mg KOH/g		Nil
Total Acid No.	D974	mg KOH/g		0.2

Odour	Indirect			Merchantable
Stability (Oxidation), 16Hrs	D2274	mg/L		20
Appearance @ ambient temp	D4176			Clear, bright and free from particulates and water
Haze Rating	D4176			1[1]
Particulate Matter (Max. 10 micron)	D6217	mg/L		4
Water content	D6304	mg/kg		100
Filter Blocking Tendency (FBT)	D2068 or IP387			1.35
Fatty Acid Methyl Ester (FAME)	D7371-14 or EN14078	vol%		0.1
Guaranteed Heating Value (HHV)	D240	MMBTU/bbl	5.70	
Static Dissipation Additives (Stadis 450)	Declared			Report
Lubricity Additive	Declared			Report
Biodiesel Content	Declared			NIL
Virgin Vegetabkle & Animal Oils	Declared			NIL
Unhydrotreated Cracked Components	Declared			NIL
Na	D7111	ppmw		0.1
K	D7111	ppmw		0.1
Ca	D7111	ppmw		0.1
V	D7111	ppmw		0.1
Pb	D7111	ppmw		0.1
Ni	D7111	ppmw		0.1
Zn	D7111	ppmw		0.1
Cu	D7111	ppmw		0.1
Ba	D7111	ppmw		0.1

[1] Haze rating 1: No visible free water, particulates or sediment

2. Residual Fuel Oil No.6 Specification

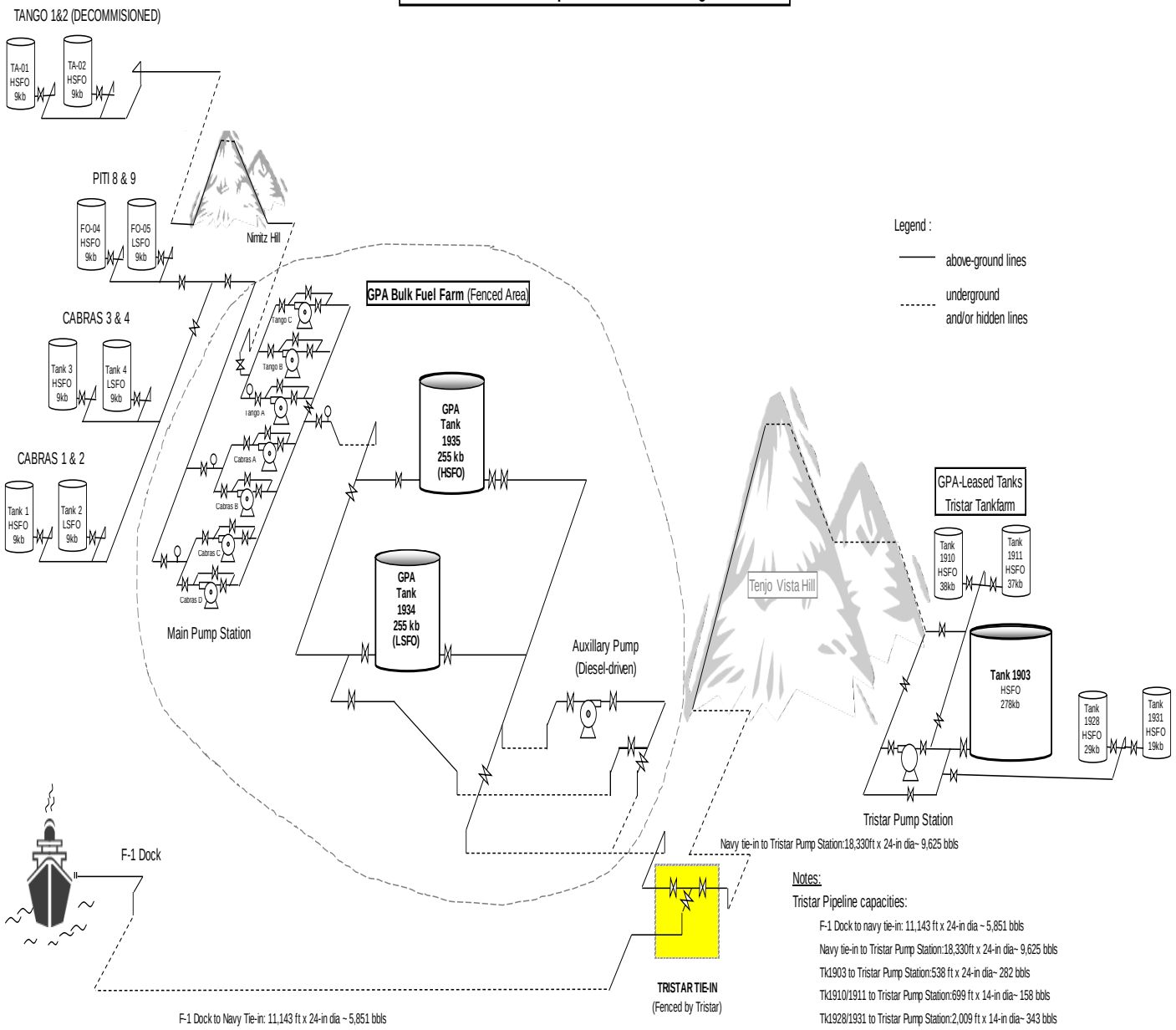
Item	Test Parameter	Unit of Measure	Approved Test Method	Acceptable Alternate Test Methods	Minimum Allowed Value	Maximum Allowed Value	Comments
1	**Sulphur Content**	% mass	ASTM D-4294	ASTM D-2622	N/A	HSFO = 2.00 LSFO = 1.19 ULSFO = 0.20	
2	**Sulphur Mercaptan**	Ppm (g/kg)	ASTM D-3227	UOP 163		100	
3	**Pour Point**	Deg C	ASTM D-97	N/A	N/A	21	
4	**Flash Point**	Deg C	ASTM D-93	N/A	66	N/A	
5	**Kinematic Viscosity**	cSt at 50 °C	ASTM D-445	ASTM D-2161		175	
6	**Sediment By Extraction**	% mass	ASTM D-473	N/A	N/A	0.10	
7	**Water By Distillation**	% by Volume	ASTM D-95	N/A	N/A	0.50	
8	**Vanadium Content**	Parts Per Million	ASTM D-5708	a)ASTM D-5184 b)ASTM D-5863 c) IP 501 d) IP 433 e) ISO 14597	N/A	90	
9a	**Silicon Content**	Parts Per Million	ASTM D-5184	a) IP 470 b) IP 377 c) ISO 10487 d) IP 501	N/A	Combined Al + Si Not to exceed 70 ppm. Al not to exceed 30 ppm.	Individual results to be reported separately
9b	**Aluminum Content**	Parts Per Million	ASTM D-5184	a) IP 470 b) IP 377 c) ISO 10487 d) IP 501	N/A		
10	**Guaranteed Gross Heating Value (HHV)**	Million BTU Per US Barrel	ASTM D-240	N/A	6.10	N/A	
11	**Micro- Carbon Residue**	% mass	ASTM D-4530	ASTM D-5245 ASTM D-189	N/A	13	
12	**Ash**	% mass	ASTM D-482	N/A	N/A	0.10	
13	**Asphaltenes**	% mass	ASTM D-6560	IP 143	N/A	5	
14	**Sodium**	Ppm	ASTM D-5863/B	ASTM D-5708/B IP288 IP 501	N/A	40	
15a	**Total Sediment (Existent)**	% mass	ISO 10307-2	ASTM D-4870 IP 377	N/A	0.10	
15b	**Total Sediment (Potential)**	% mass	ISO 10307-2	ASTM D-4870 IP 377	N/A	0.10	
15c	**Total Sediment (Accelerated)**	% mass	ISO 10307-2	ASTM D-4870 IP 377	N/A	0.10	
16	**Compatibility**	a) Cleanliness ratio b) Compatibility ratio	ASTM D-4740	N/A	N/A	a) 1 b) 1	a) to be reported from load port b) to be determined on arrival Guam unless otherwise notified in the specific instance. See Note.
17	**API Gravity**		ASTM D-287	ASTM D-1298 and conversion	11.8	23.0	
18	**Density @ 15 °C**	Kg/L	ASTM D-287	ASTM D-1298 ASTM D-4052		0.9870	
19	**Odor**				Report		See Note
20	**Hydrogen Sulfide content**	Mg/kg	IP-399	IP-570	N/A	2.0	See Note

	(in liquid phase)						
21	**Used lubricating Oil (ULO)**				The fuel shall be free of ULO		See note
	Zinc	Mg/kg	IP 501	IP 470		10	
	Phosphorus	Mg/kg	IP 501	IP 500		10	
	Calcium	Mg/kg	IP 501	IP 470		30	

SCHEDULE B

Fuel Farm Facility Lay Out Tanks and Pipeline Diagram

Current Tanks and Pipeline Schematic Diagram - RFO



Notes:

Tristar Pipeline capacities:

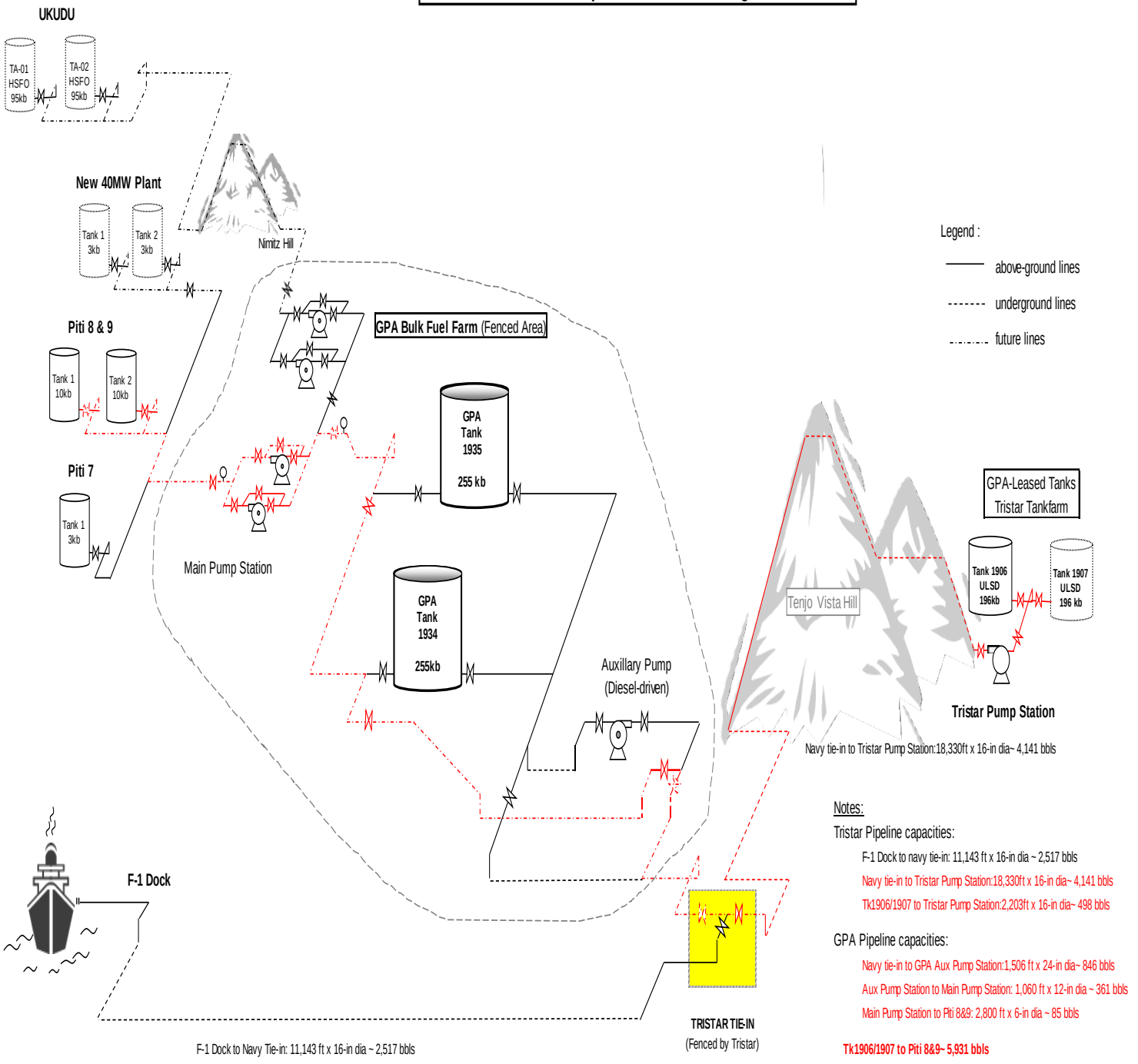
- F-1 Dock to navy tie-in: 11,143 ft x 24-in dia ~ 5,851 bbls
- Navy tie-in to Tristar Pump Station:18,330ft x 24-in dia~ 9,625 bbls
- Tk1903 to Tristar Pump Station:538 ft x 24-in dia~ 282 bbls
- Tk1910/1911 to Tristar Pump Station:699 ft x 14-in dia~ 158 bbls
- Tk1928/1931 to Tristar Pump Station:2,009 ft x 14-in dia~ 343 bbls

GPA Pipeline capacities:

- Navy tie-in to GPA Aux Pump Station:1,506 ft x 24-in dia~ 846 bbls
- Aux Pump Station to Main Pump Station: 1,060 ft x 12-in dia ~ 361 b
- Main Pump Station to Cabras 1&2: 2,800 ft x 6-in dia ~ 85 bbls

Tk1903 to Cabras 1&2~ 11,199 bbls

Future Tanks and Pipeline Schematic Diagram- ULSD



Notes:

Tristar Pipeline capacities:

- F-1 Dock to navy tie-in: 11,143 ft x 16-in dia ~ 2,517 bbls
- Navy tie-in to Tristar Pump Station:18,330ft x 16-in dia~ 4,141 bbls
- Tk1906/1907 to Tristar Pump Station:2,203ft x 16-in dia~ 498 bbls

GPA Pipeline capacities:

- Navy tie-in to GPA Aux Pump Station:1,506 ft x 24-in dia~ 846 bbls
- Aux Pump Station to Main Pump Station: 1,060 ft x 12-in dia ~ 361 bbls
- Main Pump Station to Piti 8&9: 2,800 ft x 6-in dia ~ 85 bbls

Tk1906/1907 to Piti 8&9~ 5,931 bbls

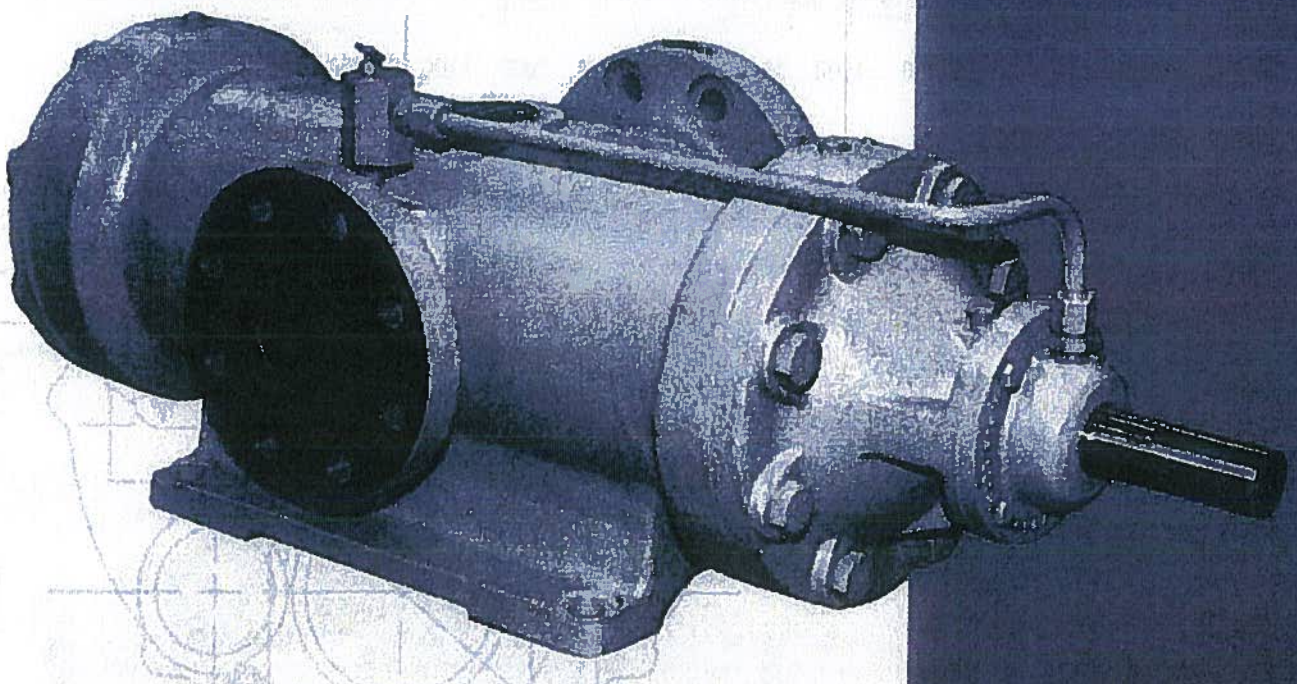
SCHEDULE D

Pump Specifications

Cabras Delivery Pump Specifications

Imo™ Pump

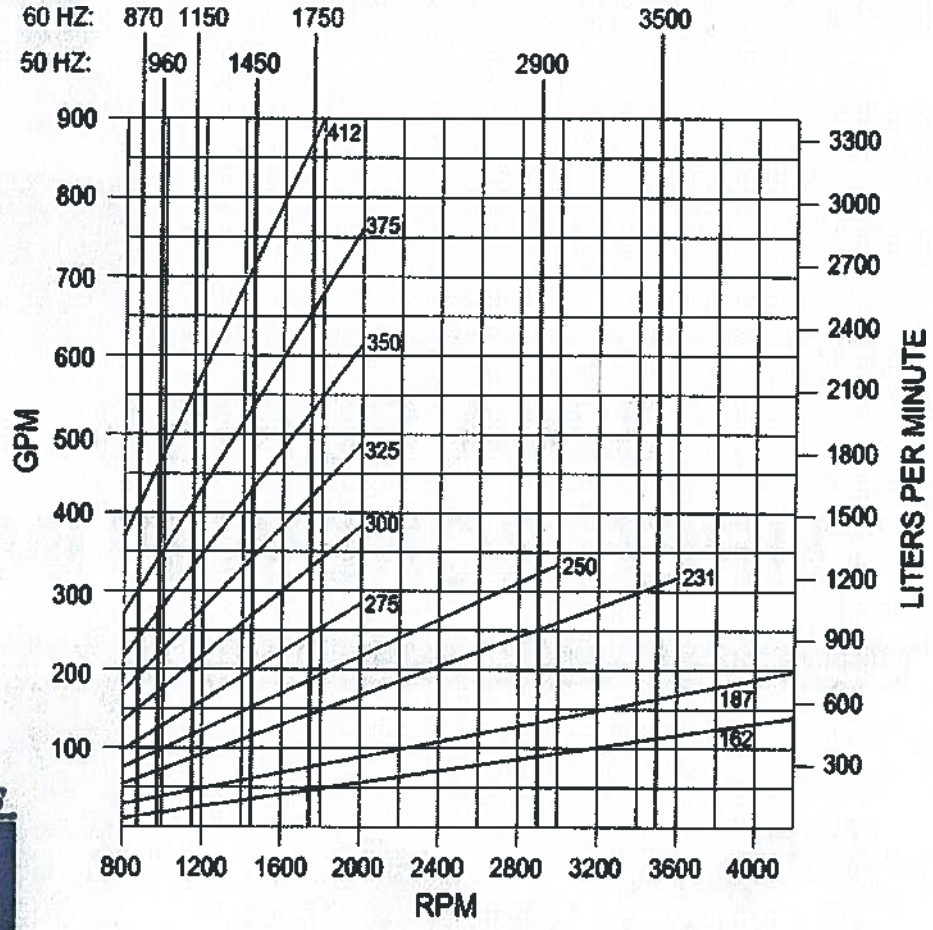
324A SERIES THREE SCREW PUMPS



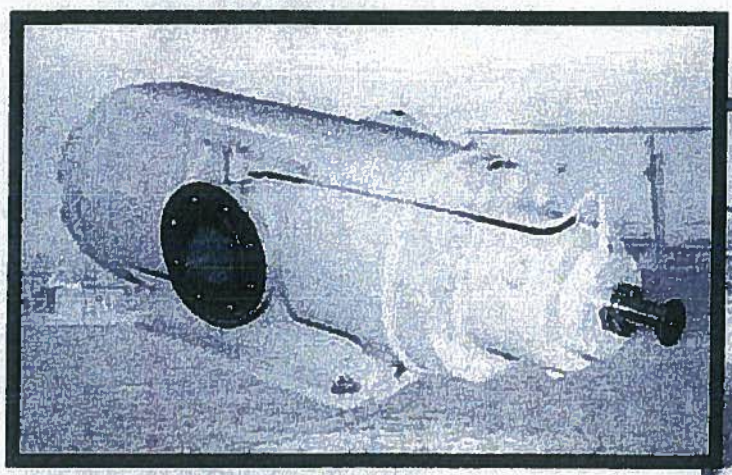
ROTARY SCREW PUMPS

The reliable pump people

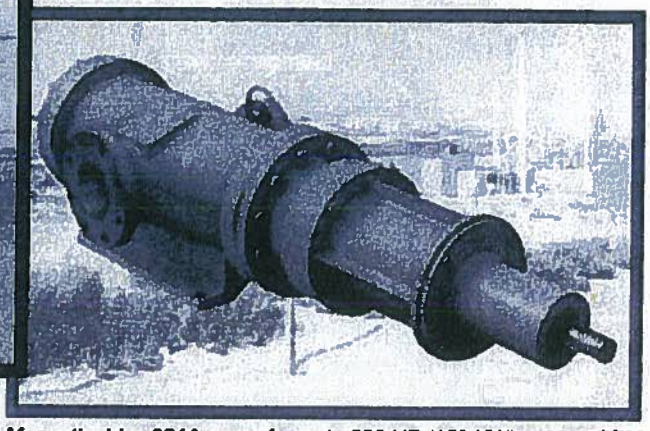
Performance Shown at 250 PSID (17 BAR), 200 SSU (43 CST)



On the cover...324A cast iron cased horizontal pump.

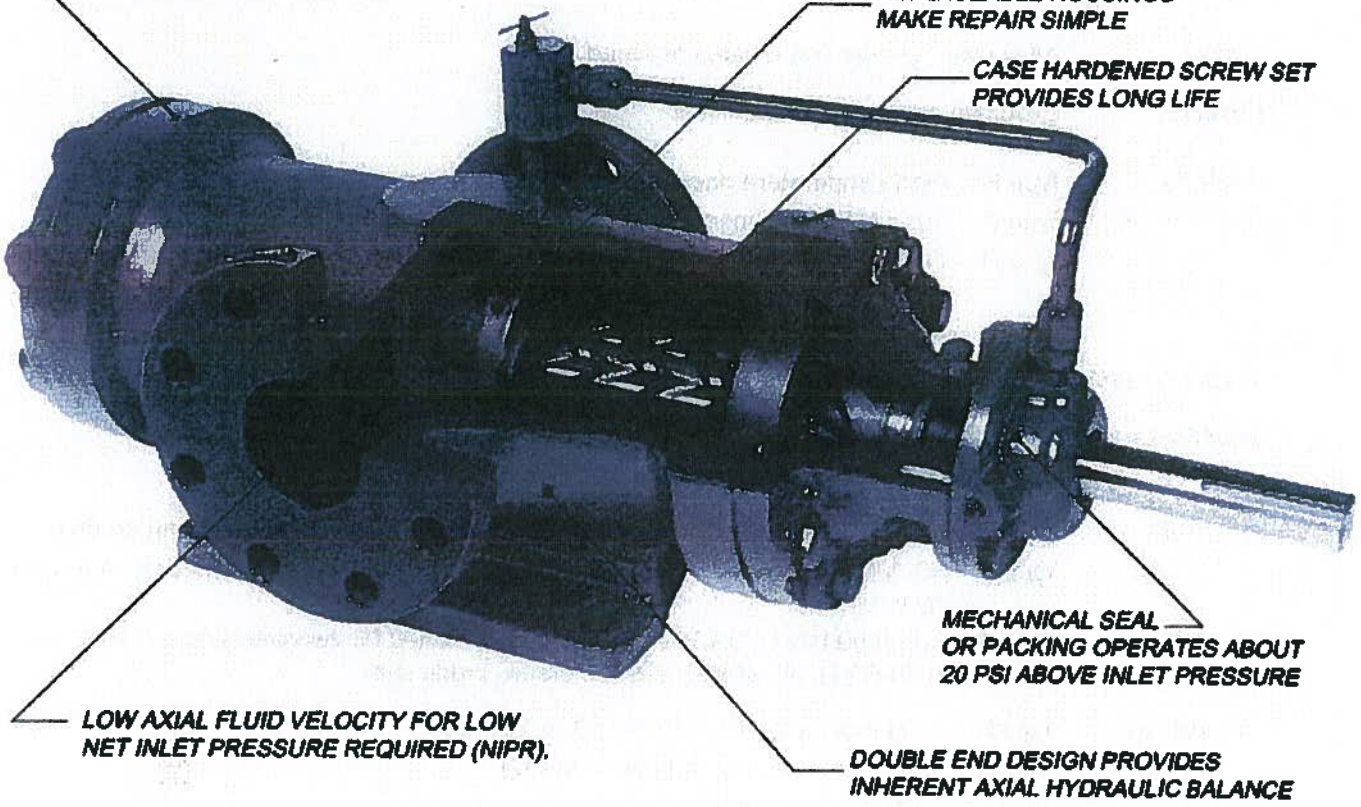


Steel cased 324A pump with fabricated steam jacket



Magnetic drive 324A pump for up to 200 HP (150 KW) at 3500 RPM

Imo Series C324A Pump



Model Code Example: **C324A B T F S -187 __**

Series — C324A

Shaft Seal and Bearing Type — B
- E = High Temperature Packing
- B = Buna Fitted Mechanical Seal
- H = Fluoroelastomer Fitted Mechanical Seal

Mechanical Seal Seat — T
- Blank = Standard Seat (Type B and H only)
- T = Carbide Seal Seat (Type B and H only)

Mounting — F
- F = Foot Mount
- V = Vertical Mount (Consult Imo)

Casing — S
- Blank = Cast Iron
- S = Steel
- J = Steam Jacketed Steel Case
- Y = Steam Jacket Steel Case and Packing Cover

Rotor Size — -187
- 162 through 412

Rotation — __
- Blank = Clockwise
- D = Counterclockwise

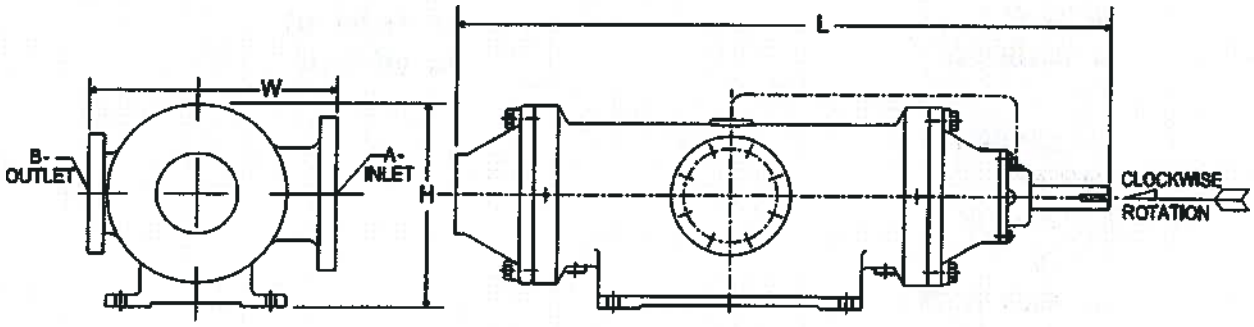
Specifications

Casing	High tensile, close-grained cast iron. Optional cast steel. Steam jacket available on steel cased pump, 150 PSIG (10 BAR) maximum jacket pressure.
Rotor Housings	Pearlitic gray iron.
Rotors	Alloy steel, ground and nitride hardened.
Gaskets	Cellulose and non-asbestos fiber.
Shaft Seal and Bearing	Type E: High temperature packing for steel cased pumps. Type B: Buna N bellows mechanical seal for lighter duties. Type H: Positive drive mechanical seal with fluroelastomer o-rings for higher viscosities or temperatures. All pumps use in internal cast iron bushing. Sealless magnetic drive pumps also available.
Outlet Pressure	500 PSIG (34.5 BAR) maximum.
Inlet Pressure	25 PSIG (1.7 BAR) maximum for single extended shaft. 50 PSIG (3.4 BAR) maximum for double extended shaft.
Viscosity	Type E 100 - 25,000 SSU (20-5400 CST) – recommended for residual and crude oils. Type B: 50-3000 SSU (8-650 CST) – recommended for light duty, non-abrasive lube and hydraulic oils. Type H: 50-20,000 SSU (8-4300 CST) – recommended for viscosities above 3000 SSU (650 CST), all residual oils and heavy crude oils.
Temperature	Type E: Cast iron case, 0 to 400°F (-18 to 204°C) Type E: Steel case,0 to 500°F (-18 to 260°C) Type B: 0 to180°F (-18 to 82°C) Type H: 0 to 400°F (-18 to 204°C) *Special mechanical seal versions available to 500°F (260°C)*
Speed	Maximum speeds indicated by curve termination.
Drive	Direct only. Double extended shaft versions available for through-drives. Sealless magnetic drives also available. Consult Imo.
Rotation	Clockwise facing pump shaft. Counterclockwise optional on sizes 187 thru 250.
Mounting	May be foot mounted in any attitude. Optional vertical mounting available for certain applications. Consult Imo.
Accessories	Completely mounted pump/driver assemblies with baseplates, etc. built to order are available.
Filtration	Inlet strainers are required to keep contaminants and abrasives out of the pump. They must be selected in consultation with the strainer vendor to prevent pump starvation. Normally, 60 mesh (0.01 inch- 238 micron) for light and 1/8-3/16 inch (3-5mm) openings for heavy oils are recommended.

50-900 GPM (1909-3400 L/M) Pressure to 500 PSIG (34 BAR)

Series C324A pumps are of the double suction design. They are inherently in axial hydraulic balance due to the symmetry of the flows. Because this pump series is essentially two pumps operating in parallel, the pumps are very compact for their flow range. 324A pumps are especially suitable for higher temperature operation (asphalts, vacuum tower bottoms, etc.) as there are no antifriction bearings requiring separate cooling. In addition, this series is capable of relatively high speeds making it ideal for steam turbine drive where high speeds improves the efficiency of both the driver and the pump.

Several pump sizes are available in corrosion resistant construction for polymer processing at very high viscosities. Other units are available in through-drive configurations allowing a second pump or other device to be driven from the end opposite the drive end. Series 324A is also available in sealless magnetic drive designs. Consult imo to select the pump best suited for your application.



IRON CASED PUMPS HAVE 250# ANSI FLAT FACED FLANGES
STEEL CASED PUMPS HAVE 300# ANSI FLAT FLANGES

Size	A		B		H		L		W		WEIGHT	
	INCH	*MM*	INCH	*MM*	INCH	*MM*	INCH	*MM*	INCH	*MM*	LBS.	*KG*
162/187	3	*76*	2 1/2	*64*	9 3/4	*248*	31 1/4	*794*	11 3/4	*299*	305	*139*
231/250	4	*102*	3	*76*	12 1/8	*308*	37 1/8	*943*	15	*381*	480	*218*
275/300	5	*127*	4	*102*	12 13/16	*326*	50 11/16	*1288*	18	*458*	850	*386*
325/350	5	*127*	4	*102*	17	*432*	54 7/8	*1394*	20-1/2	*521*	1100	*500*
375/412	6	*152*	5	*127*	17 1/2	*445*	61 1/8	*1553*	21	*534*	1450	*659*

Imo Pump Sales Offices

Houston
Imo Pump
11811 N. Freeway
Suite 190
Houston, TX 77060

tel 281.448.1337
fax 281.445.2316

New Orleans
Imo Pump
2637 Edenborn Avenue
Suite 304
Metairie, LA 70002

tel 504.888.3333
fax 504.888.3337

Philadelphia
Imo Pump
515 Stump Road
Suite 222
North Wales, PA 19454

tel 215.393.7400
fax 215.393.7622

Calgary
Imo Pump
5918 5th Street, S.E.
Unit 14
Calgary Alberta
Canada T2H 1L4
tel 403.253.7491
fax 403.252.9833

Toronto
Imo Pump
6750 Davand Drive
Units 9/209
Mississauga, Ontario
Canada L5T 1L8
tel 905.564.3344
fax 905.564.3577

CERTIFIED ISO 9001

Quality Management System

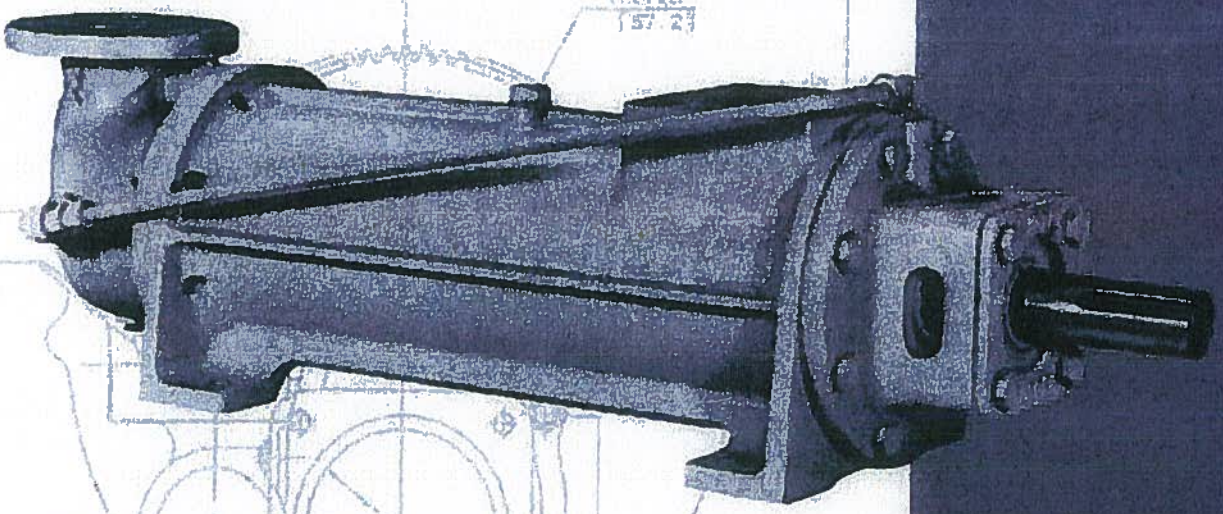
Imo Pump
1710 Airport Road
PO Box 5020
Monroe, NC USA
28111.5020

tel 704.289.6511
fax 704.289.9273
email IMOPUMP@VNET.NET
web WWW.IMO-PUMP.COM

Tanguisson Delivery Pump Specifications

Imo™ Pump

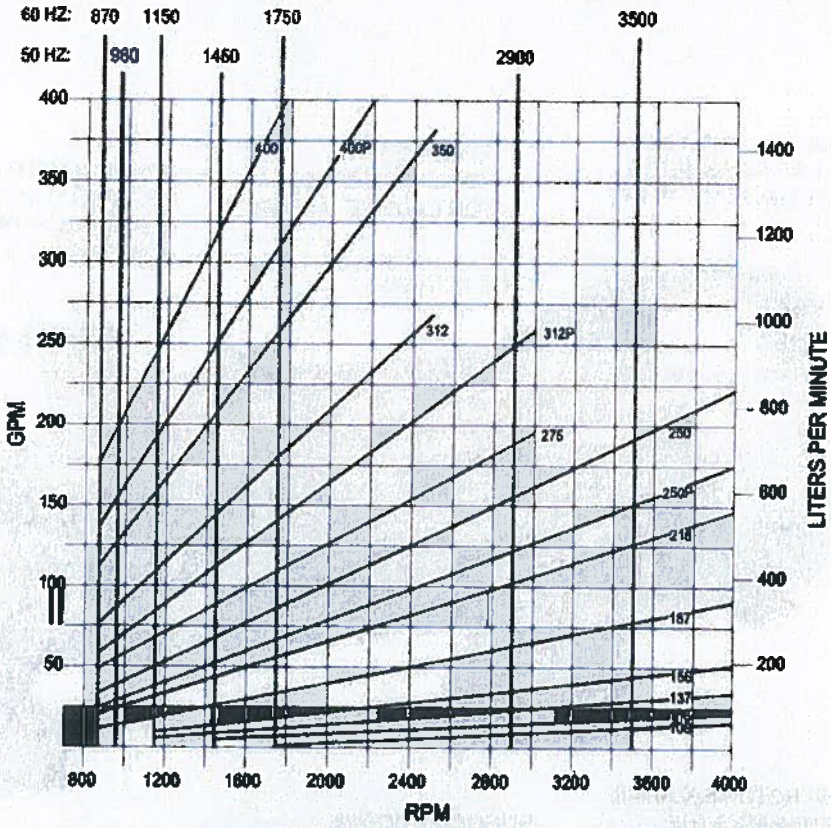
6D SERIES
THREE SCREW PUMPS



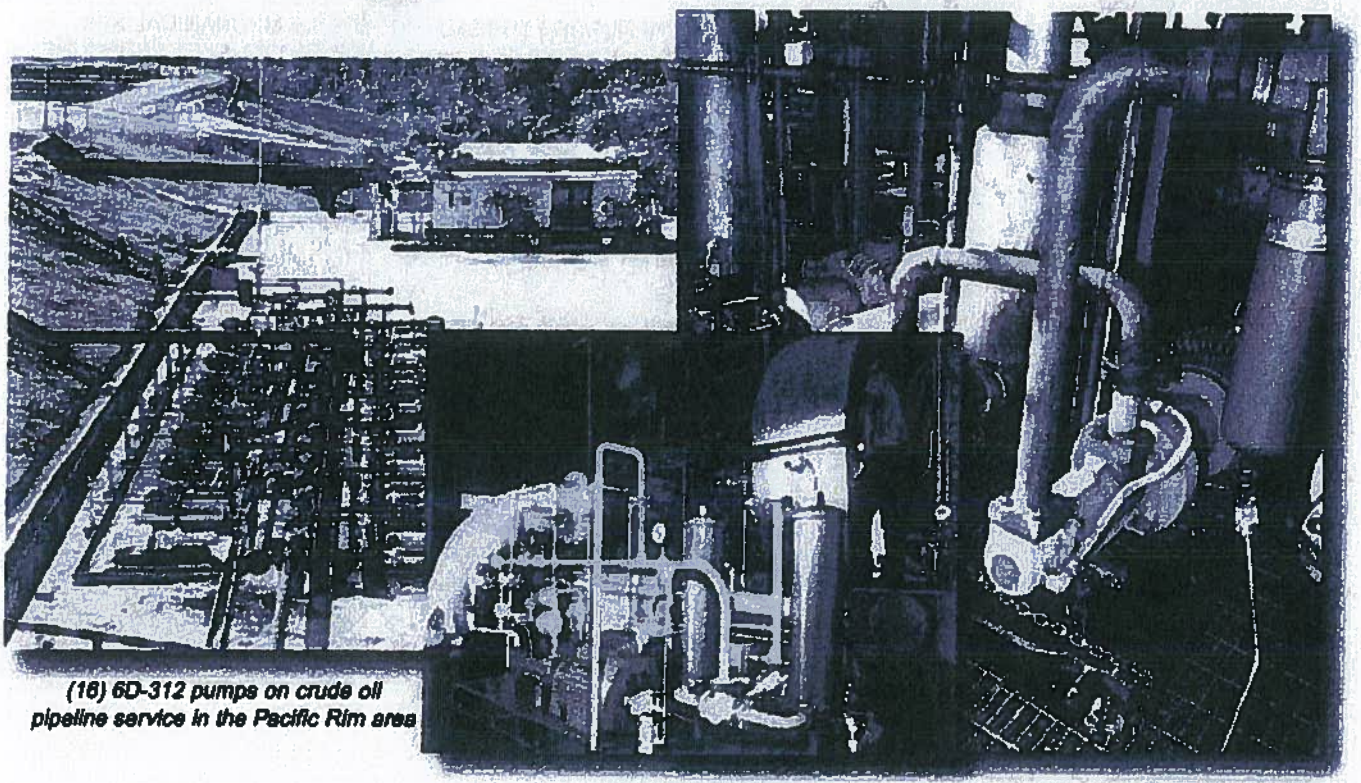
The reliable pump people

ROTARY SCREW PUMPS

Performance Shown at 1000 PSID (70 BAR), 200 SSU (43 CST)



On the cover...6D-250 pump typical for sizes 218-400 shown with standard (top) inlet position. Outlet socket weld adapter is included with pump.

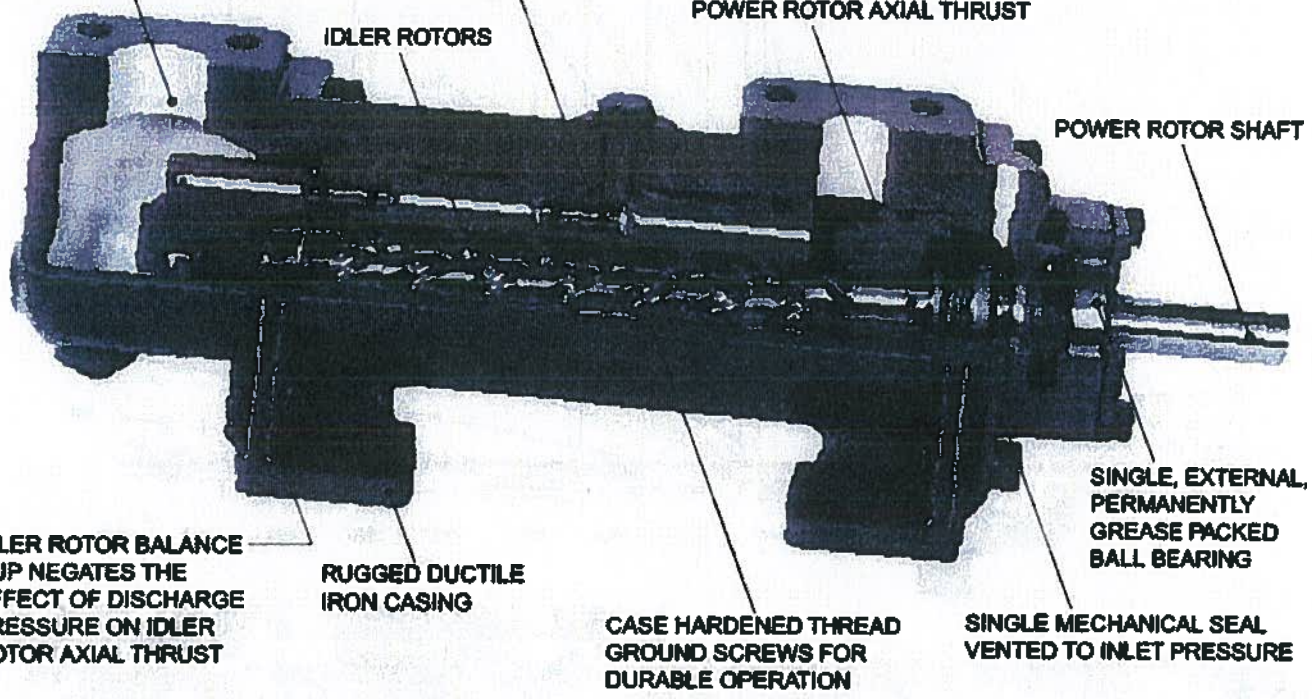


(16) 6D-312 pumps on crude oil pipeline service in the Pacific Rim area

6D-118 pump on pipeline turbo compressor gas sealing service

Sealless Mag drive 6D-156 pump on turbo expander gas sealing service

Imo Series 6D Pump



Model Code Example: A 6D B - 218

Design Prefix

Series

Rotor Size

Shaft Seal & Bearing

Shown above: 6D-118 typical of sizes 106 through 187

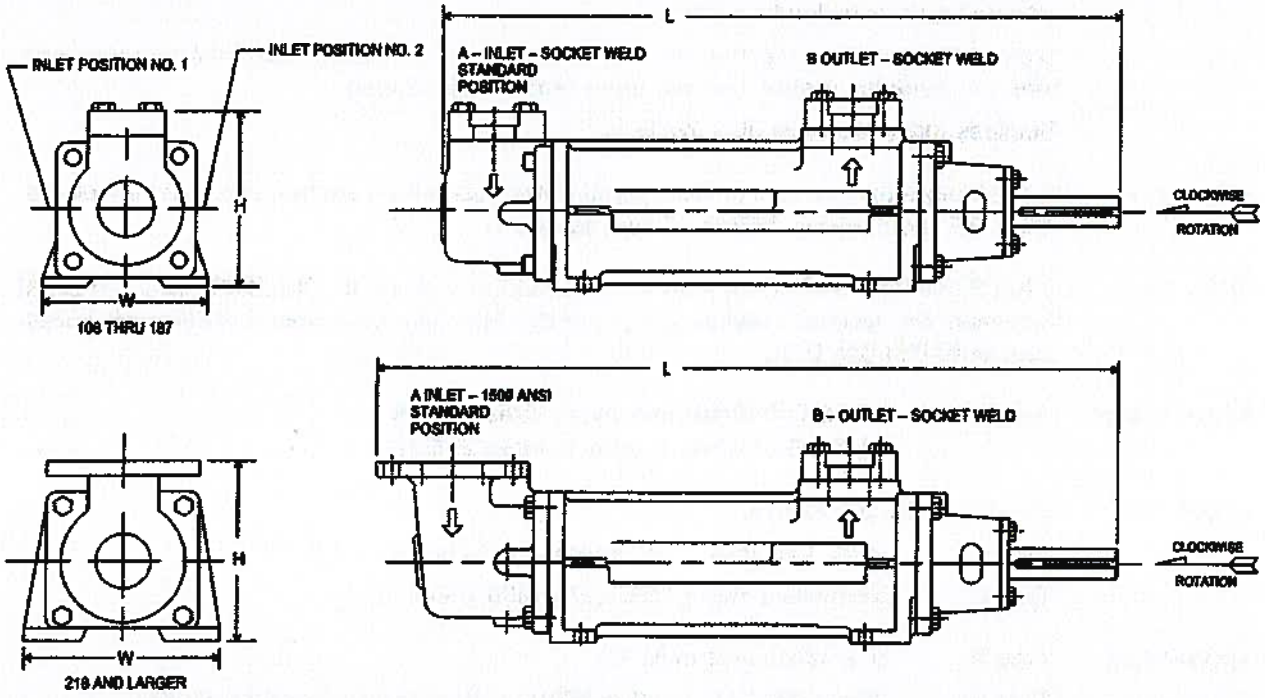
Specifications

Casing	High shock capacity ductile (nodular) iron. Consult Imo for steel case availability.
Rotor Housing	Pearlitic gray iron for rotor sizes 106 through 187; bronze sizes 218 and larger.
Power Rotor	Alloy steel, nitride hardened and thread ground.
Idler Rotors	Pearlitic gray iron, induction hardened and thread ground for sizes 106 through 187; alloy steel, nitride hardened and thread ground sizes 218 and larger.
Gaskets	Cellulose and non-asbestos fiber.
Seal & Bearing	Type B: Buna N bellows mechanical seal, Buna N O-rings and standard external, permanently grease packed, deep groove ball bearing – recommended for distillate fuels and lubricating oil or hydraulic fluids. Type H: Positive drive mechanical seal, fluorocarbon O-rings and external high temperature, permanently grease packed, deep groove ball bearing. Sealless magnetic drive also available.
Accessories	Completely mounted, built to order pump/driver assemblies are available with baseplates, ANSI RF spool pieces, NEMA 'C' face adapters.
Outlet Pressure	1500 PSIG (103 BAR) maximum for lube, seal and hydraulic oils. 1000 PSIG (70 BAR) maximum for distillate, residual and crude oils. Minimum recommended differential pressure is 40 PSI (2.8 BAR).
Inlet Pressure	Type B & H: 75 PSIG (5 BAR) maximum, sizes 106-187 50 PSIG (3 BAR) maximum, sizes 218-400
Viscosity	33 SSU (2.0 CST) minimum Type B: 3000 SSU (650 CST) maximum (consider cold start) Type H: Viscosities above 3000 SSU (650 CST)
Temperature	Type B: 0 to 180°F (-18 to 82°C) Type H: Sizes 106-187: 0 to 250°F (-18 to 121°C) for <1800 RPM 0 to 225°F (-18 to 107°C) for > 1800 RPM Sizes 218 and up: 0 to 200°F (-18 to 93°C)
Speed	See curve termination for maximum speed. Do not exceed 1800 RPM when pumping residual fuels or crude oil due to the presence of abrasives and contaminants.
Drive	Direct only. Magnetic drive also available to 200 HP at 3500 RPM.
Rotation	Clockwise facing pump shaft.
Mounting	May be foot mounted in any orientation. Flange mounting optional for certain applications.
Filtration	Inlet strainers are required to keep contaminants and abrasives out of the pump. They must be selected in consultation with the strainer vendor to prevent pump starvation. Normally, 60 mesh (0.01 inch- 238 micron) for light and 1/8-3/16 inch (3-5mm) openings for heavy oils are recommended.

4-400 GPM (16-1514 L/M) Pressure to 1500 PSIG (103 BAR)

Series 6D Imo pumps are intended for relatively high pressure service on petroleum or similar viscosity liquids. Typical applications include crude oil pipeline service, fuel atomization for burning in a steam boiler, fuel injection for combustion gas turbines, fluid power service on hydraulically operated machinery, gas sealing in centrifugal compressors and hydrostatic bearing support.

These pumps are hydraulically balanced in both the axial and radial directions which eliminates bearing loads due to discharge pressure. The single bearing is external to the liquid pumped and does not rely on the lubricating qualities of the pumped liquid. The single mechanical seal is exposed only to inlet pressure. Very low airborne noise levels are normal for Imo three screw positive displacement pumps as are high operating efficiencies and non-pulsating delivery of flow.



SIZE	A		B		H		L		W		WEIGHT	
	INCH	*MM*	INCH	*MM*	INCH	*MM*	INCH	*MM*	INCH	*MM*	LBS.	*KG*
106	1	*25.4*	1	*25.4*	6.8	*172*	18.4	*468*	6	*153*	49	*22.2*
118	1-1/2	*38.1*	1	*25.4*	7	*189*	19.6	*498*	6.3	*161*	57	*25.9*
137	1-1/2	*38.1*	1	*25.4*	7.3	*185*	21.7	*552*	6.5	*166*	71	*32.2*
156	2	*50.8*	1-1/2	*38.1*	7.8	*197*	24.2	*615*	7	*178*	83	*37.7*
187	2	*50.8*	1-1/2	*38.1*	8.3	*210*	26.5	*674*	7.5	*191*	117	*53*
218	2-1/2	*63.5*	2	*50.8*	9	*244*	36.5	*928*	9	*228*	204	*93*
250	3	*76.2*	2-1/2	*63.5*	10.75	*280*	39.9	*1014*	10	*254*	309	*140*
275	3	*76.2*	3	*76.2*	11.12	*313*	42	*1067*	11	*280*	350	*159*
312	4	*101.6*	3	*76.2*	11.75	*331*	46	*1169*	12	*305*	392	*177*
350	5	*127*	4	*101.6*	13.25	*412*	50.4	*1281*	13	*331*	510	*231*
400	6	*152.4*	4	*101.6*	16	*432*	55	*1397*	14	*356*	845	*383*

The Reliable Pump People

A Member of the
COLFAX PUMP GROUP

Imo Pump
1710 Airport Road
PO Box 5020
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28111.5020
USA
tel +1 (704) 289 6511
fax +1 (704) 289 9273
E-mail
Imo.Pump@ColfaxCorp.com
Internet
http://www.imo-pump.com

ALLWEILER

HOUTTUIN

IMO PUMP

WARREN

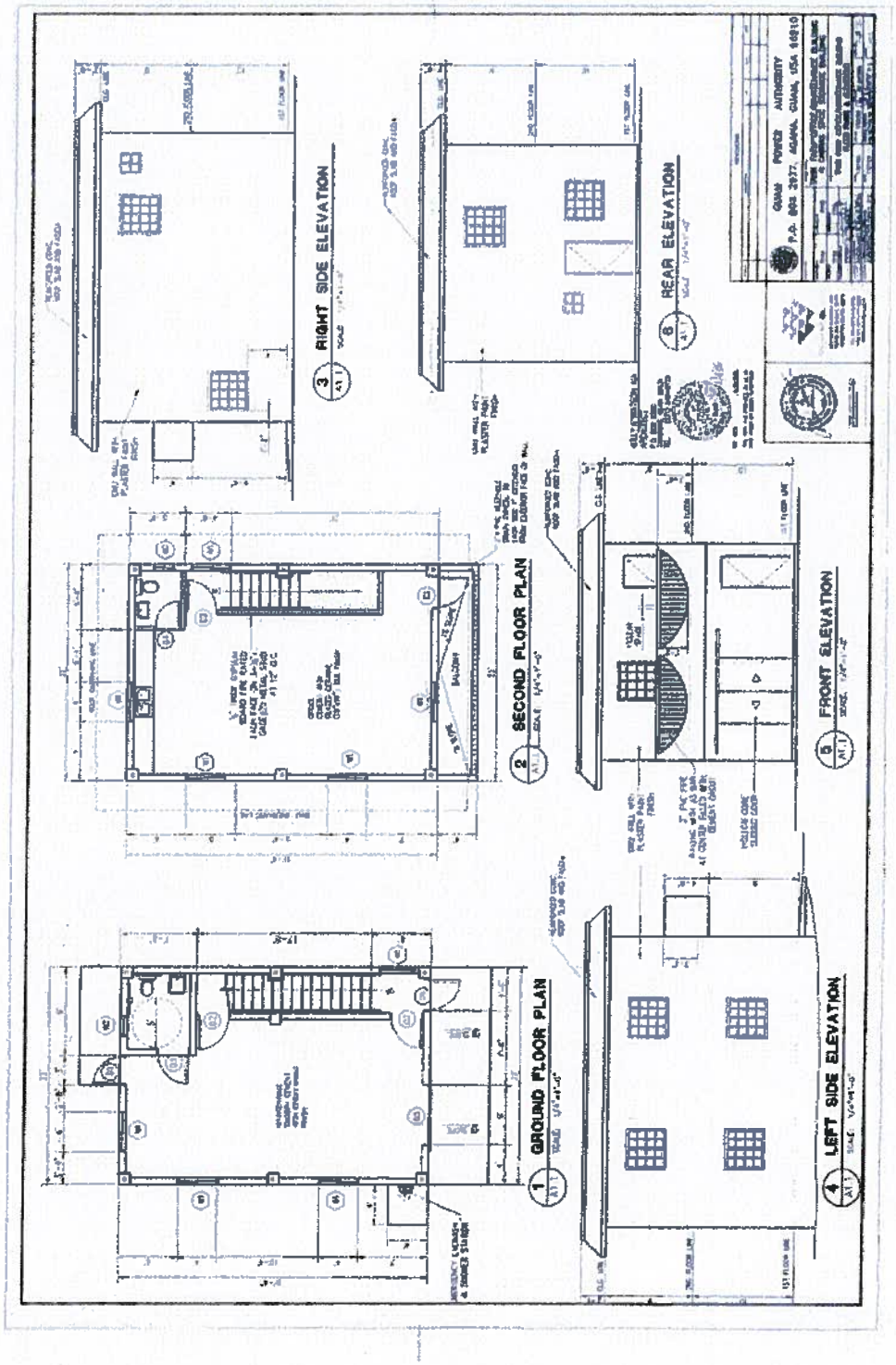
COLFAX PUMP GROUP

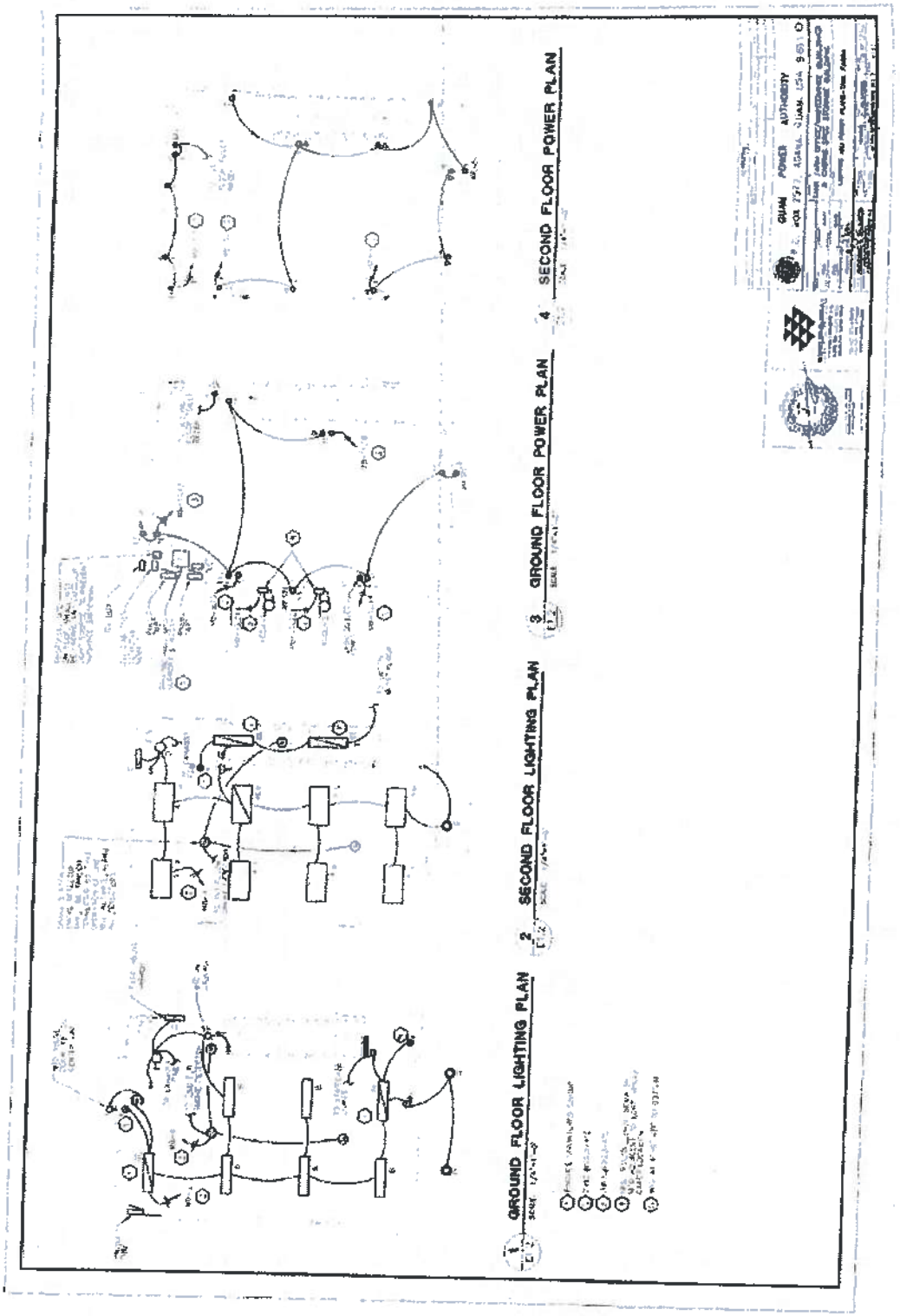
CERTIFIED
ISO 9001

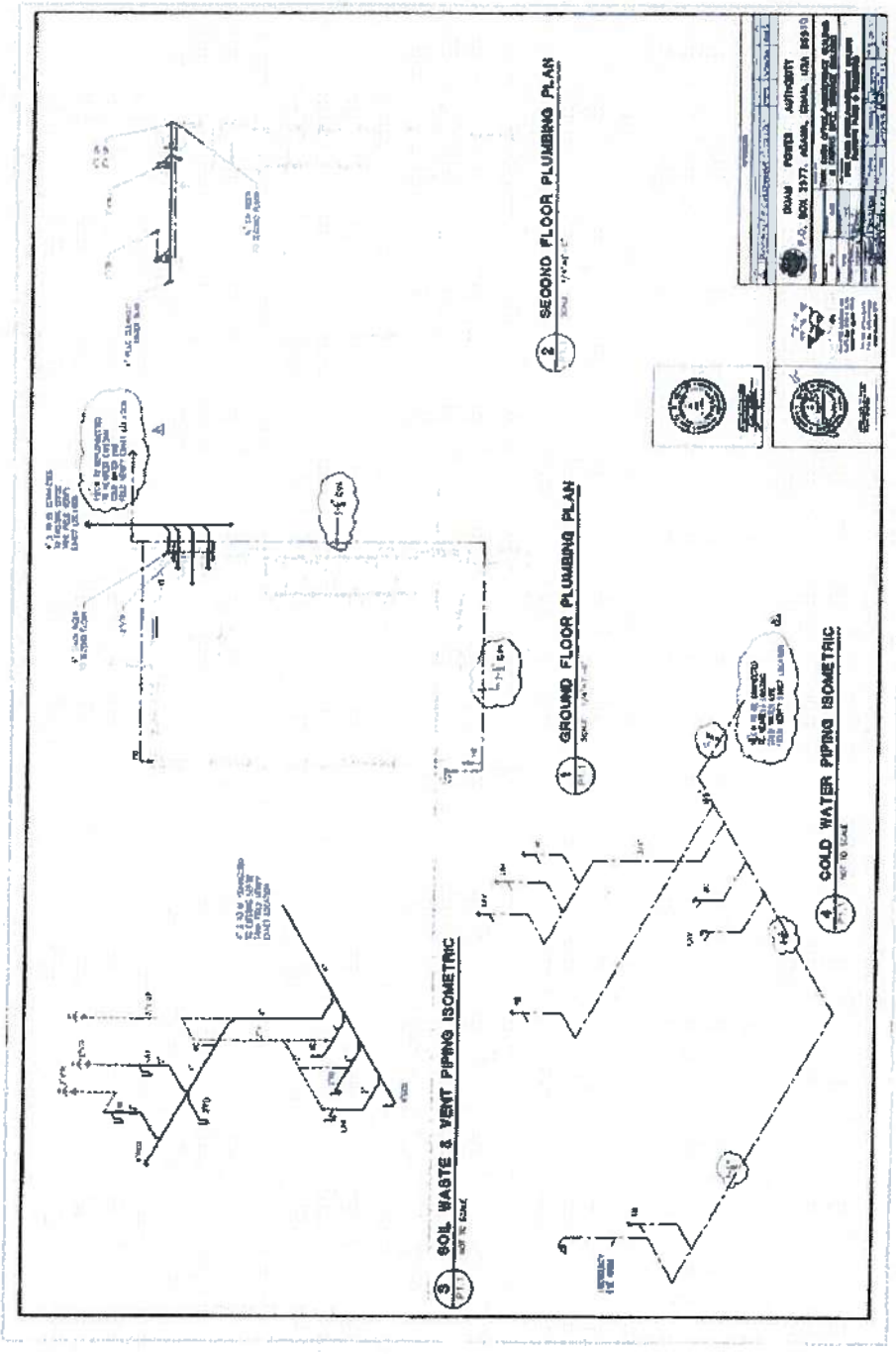
Quality Management System

SCHEDULE E

Office Floor Plan


RIGHT SIDE ELEVATION
REAR ELEVATION
SECOND FLOOR PLAN
FRONT ELEVATION
GROUND FLOOR PLAN
LEFT SIDE ELEVATION


1 GROUND FLOOR LIGHTING PLAN
2 SECOND FLOOR LIGHTING PLAN
3 GROUND FLOOR POWER PLAN
4 SECOND FLOOR POWER PLAN
GUAM POWER AUTHORITY


SECOND FLOOR PLUMBING PLAN
GROUND FLOOR PLUMBING PLAN
SOIL WASTE & VENT PIPING ISOMETRIC
COLD WATER PIPING ISOMETRIC

SCHEDULE F

Facility Response Plan (FRP)

U.S. Department of Homeland Security

United States Coast Guard

Commander
U. S. Coast Guard
Sector Guam
Prevention Department

PSC 455, Box 176
FPO, AP 96540-1056
Staff Symbol: (sp)
Phone: (671) 355-4835
Email: FacilitiesGuam@uscg.mil

16474
October 1, 2017

IP & E Holdings, LLC
Attn: Mr. Brian Bamba, Managing Director
643 Chalan San Antonio, Suite 100
Tamuning, GU 96911

Dear Sir:

The amendments to your Facility Response Plan (FRP), submitted to this office on September 22, 2017, have been found to meet the requirements of Title 33, Code of Federal Regulations (CFR), Part 154, after a full review of the entire plan.

Commencing from the date of this letter, IP&E must operate in compliance with the approved FRP and these amendments. You are reminded that your facility is subject to inspections at any time by U.S. Coast Guard personnel to verify compliance with your FRP. At a minimum, U.S. Coast Guard personnel will audit your adherence with the requirements of this amendment on an annual basis.

This approval will remain valid until October 1, 2022, or until rescinded in writing by this office. I commend your efforts in keeping your FRP current and reflective of your operations and organizational structure in order to safeguard the environment and the Port of Guam.

Implementation of the strategies and procedures contained in your plan serve to reduce the risk and mitigate the results of a pollution incident that could potentially threaten the safety of personnel, the facility, and the public. Please ensure that all parties with responsibilities under these plans are familiar with the procedures and requirements contained therein. If you have any questions regarding your FRP, please contact the Facilities Division at (671) 355-4835.

Sincerely,

C. S. CASEY, LCDR
U. S. Coast Guard Sector Guam
Chief, Prevention Department
By direction

September 2017

MARINE CONTINGENCY PLAN / FACILITY RESPONSE PLAN

(GPA Fuel Bulk Storage Facility & F3 Dock)

(Uncontrolled when Printed)

Document Holder	Document Custodian	Document Owner	Version No. & Date Last Updated
John A. Robertson *Guam Operations Manager*	**Maria Luisa G. Bisnar** *HSSE Manager*	**Joleen M. Mesa** *Director of Supply & Distribution*	**Version 08** **September 2017**

LIST OF AUTHORIZED COPY HOLDERS			
Copy	**Copy Holder**	**Job Title**	**Work Location**
1	Joleen M. Mesa	Director of Supply and Distribution	Guam
2	Lyndon C. Entera	Field Operations Manager	Guam
3	John A. Robertson	Guam Operations Manager	Guam
4	Maria Luisa G. Bisnar	HSSE Manager	Guam
5	Michael D. Francisco	Terminal Operations Superviser	Guam
6	Oliver De Vera	HSSE Coordinator	Guam
7	Guam Power Authority	SPORD / Planning & Regulatory	Guam
8	USCG	Sector Guam	Guam

CONTINGENCY PLAN REVISION LOG

Revision Number	Sections Amended	Date of Revision	Date Entered	Name (print) and Signature
01	Figure:16 b.3.iii Organizational Structure	May 15, 2013	May 15, 2013	Loubert Leyble
02	Section B, Emergency Response Action Plan Notify the Response Supervisor	May 15, 2013	May 15, 2013	Loubert Leyble
03	Appendix II Emergency Contact	May 15, 2013	May 15, 2013	Loubert Leyble
04	e.III.f) Equipment List for OSROCO	May 15, 2013	May 15, 2013	Loubert Leyble
05	Appendix II Emergency	Sep. 30,2015	Sep. 30,2015	Lyndon Entera
06	Section A.1 Designation of QI and Alternate QI	Sep. 30,2015	Sep. 30,2015	Lyndon Entera
07	Section V Change of OSRO from GRSL to OSROCO	Sep. 30,2015	Sep. 30,2015	Lyndon Entera
08	Section A : • Include GPA Fuel Bulk Storage Facility in the Facility Description • Change AQI • Transfer Figure to Appendix E1 • Update contact persons and numbers • Tranfer Revision Log to Page 3&4 Section B : • Update Facility Manager & Response Supervisor • Update Emergency Organizational Structure • Upadte Discharge Notification Form • Update Dishcarge Volume • Add Arial Surveillance Capabilities • Update Areas of Economic Importance and Environmental Sensitivity • Update ESI Maps Appendix: • Update Facility Location & Layout and inlcude GPA Fuel Bulk Storage Faciity • Update Contact List • Update Equipment List Attachements: • Update WCD Volume Calculations • Add Sensitivty Index and ESI Maps • Include LSFO & HSFO SDS • New OSRO Agreement	September 14, 2017		Oliver De Vera

REVISION RECEIPT CONFIRMATION

Revision Number: .....

Revision Date: .....

I ..... confirm that the above revision has been received by me, and that the revision has been entered into the plan of which I am the holder.

I further confirm that the pages superseded by this revision have been destroyed.

Name: USCG .....

Signed: .....

Date: .....

Table of Contents

A. INTRODUCTION AND PLAN CONTENT

This plan is developed to meet the requirements for a fixed facility and mobile facility classified as a significant and substantial harmful facility that is capable of transferring oil to or from a vessel with a capacity of 250 barrels or more of oil.

Fixed Facility

The facility along with its associated pipelines and storage is designed, maintained, and operated to minimize the potential for spills. IP&E Holdings LLC. (IP&E) however, recognizes that the potential for spills can never be completely eliminated. The Response Plans is designed to provide guidance for the emergency response to spills associated with the operation of the facility.

Mobile Facility

These facilities consist essentially of a road tanker equipped with hoses and/or hose reels and a PTO pump. Various tankers are utilized as Mobile Facilities for the transfer of product under this operating manual:

Size	Designation	Cargo / Products
4,500 gallons	Rigid Tankers: PTB 033, 034, 035	Gasoline, Jet A1, Diesel
Portable Pump	1.5” Portable Pump	Lube Oils
Lube Meter Cart	1 Meter Cart with 3”hose reel 1 Meter Cart with 2-2”hose reel 1 Lube Meter Cart with 2” hose reel	Diesel, Lube Oils
Lube Bunker Trucks	Box Truck: PTA 074 Flat Bed Truck: PTA 075	Lube Oils

This Facility Response Plan includes response procedures for mobile facility. The areas which mobile facility operations are conducted are within commercial port wharf F2 to F6.

A.1. Facility Description

A.1.1. Marine Transfer Facility

Facility Name: Fox-Trot 3 Wharf (F3 Dock)
Location: Cabras Island
Apra Harbor, Guam
Coordinates: 13°27'N, 144°40'E

A.1.2. Fixed Facility

Facility Name: Guam Power Authority (GPA) Fuel Bulk Storage Facility
Location: Eastern Piti Channel, Apra Harbor
Piti, Guam
Coordinates: 13°27'N, 144°41'E

A.1.3. Operation Facility

Control Point
(24H manning): Guam Power Authority (GPA) Fuel Bulk Storage Facility
Location: Adjacent to the Harbor of Refuge
Piti, Guam

Coordinates: 13°27'N, 144°41'E

A.1.4. Facility Contact

Phone: (671) 477-6333 (GPA Fuel Bulk Storage Facility)
(671) 565-2949 (Cabras Dispatch)
(671) 565-9021 (Cabras Dispatch)
(671) 565-2916 (Cabras Dispatch)
Fax: (671) 565-2913 (Cabras Dispatch)

A.1.5. Mailing Address

IP&E Holdings LLC.
643 Chalan San Antonio, Suite 100
Tamuning, Guam 96913-3644

A.1.6. Qualified Individual Contact

(QI) Brian Bamba
Managing Director
Phone: (671) 647-0000 Ext. 134
24-hr Contact no.: (671) 797-3282
(AQI) Joleen Mesa
Director of Supply & Distribution
Phone: (671) 647-0000 Ext. 131
24-hr Contact no.: (671) 797-0481

A.2. Descriptive Facility Location

A.2.1. Marine Transfer Facility

The F3 Dock is located on the western end of Cabras Island Channel - the main commercial port channel.

F3 Dock can be reached by land upon entering the Commercial Port of Guam area, by passing the main commercial port gate and proceed straight to warehouse 1 and turn right, continuing to IP&E Facility.

A.2.2. F3 Storage Facility

The storage facility contains two (2) vertical storage tanks with total capacity of 10,000 barrels. Tank 1936 is 6,000 barrels and Tank 1937 is 4,000 barrels capacity.

The facility was purchased by its current owner (IP&E Holdings LLC.) in August 2010.

A.2.3. GPA Fuel Bulk Storage Facility

The GPA fuel storage facility is located on thirty acres lot adjacent to the Cabras and Piti power plants in the municipality of Piti near Apra Harbor on the island of Guam.

The storage facility is located in Piti, Guam. The facility has two (2) vertical storage tanks with total capacity of 536,000 barrels. Each tank contains 268,000 barrels.

The facility was operated by Vital Energy since 2012. IP&E Holdings, LLC will take over the facility as the new operator on October 2017.

Refer to Appendix E1. Facility Specific Information for further details.

A.3. 24-Hour Contact Procedures

Representatives of IP&E Holdings, LCC can be contacted by calling the Cabras Dispatch Office at (671) 565-2949, (671) 565-9021 or (671) 565-2916 and GPA Fuel Bulk Storage Facility at (671) 477-6333.

For QI, AQI and key personnel 24-hr contact numbers, please refer to Appendix E2 List of Contacts.

A.4. Table of Contents

The table of contents has been included at the front of this plan for ease of access to specific parts of the plan.

A.5. Cross References

A.5.1. USCG

No cross-reference details are required to satisfy 33 CFR, as this plan is completely in accordance with the format required under the Facility Plan preparation guidelines.

A.5.2. Others

Additional sections have been included as appendices at the end of the plan, to enable the plan to completely fulfill the Oil Spill response plan role under the OPA90 system.

A.6. Record of Changes

All changes to this manual are to be recorded. For this purpose the CONTINGENCY PLAN REVISION LOG, has been provided at the front of this manual. On receipt of a revision the holder of a Plan Document is to read and become familiar with the revisions. The pages are then to be entered into the plan and the old copies destroyed.

The holder must then record on Amendment Log the revision number, date of revision, the date entered, the name of the reviser and sign the record.

The REVISION RECEIPT CONFIRMATION, which will be sent with any revision must also be completed and returned as detailed on that document.

B. EMERGENCY RESPONSE ACTION PLAN

B.1. Notification Procedures

This plan includes a form (Figure B.1) which should be used for collecting data on an oil spill event. It is available at all points where an oil spill event could be reported. Please note that it is NOT necessary to wait for all information before contacting those on the notification list.

The Managing Director (QI) will be the primary contact for Worst Case Discharges and will activate the Facility/Corporate Oil Spill Organization Team.

For Tier 1 and 2 responses, the Guam Operations Manager will assume the responsibility of activating resources as required to facilitate operations.

Notification of the three primary contacts, Incident Commander, Spill Supervisor, the Qualified Individual (major spills) and coordinating Government Agency shall be as follows:

B.1.1. Notify Facility Response Personnel

Contact numbers for people listed in the plan available (and included only in) the List of Contacts - Appendix E2 of this Plan.

B.1.2. Notify the Facility Manager

The Facility Manager is the Incident Commander for any recovery operation. He will determine the level of response.

a. Facility Manager **John Robertson** (Guam Operations Manager)
b. Alternate Facility Manager **Michael Francisco** (Terminal Operations Supervisor)

B.1.3. Notify the Response Supervisor

Whose role in the Plan of Spill Supervisor and will determine the level of responders required.

a. Response Supervisor **John Robertson** (Guam Operations Manager)
c. Alternate Response Supervisor **Michael Francisco** (Terminal Operations Supervisor)

B.1.4. Notify the Oil Spill Response Organization (OSRO)

a. Oil Spill Response Operations Company LLC (OSROCO)

B.1.5. Notify the Qualified Individual (QI)

The Facility Manager is to notify the Qualified Individual (QI) and Alternate Qualified Individual (AQI) who has the role of making funds available for the response. QI and AQI are listed in Section A.1.5 for this plan.

B.1.6. Notify Federal, State and Local Agencies

a. Notify the National Response Centre (NRC), USCG Washington DC.
b. Notify United States Coast Guard (Sector Guam).
c. Notify Guam Environmental Protection Agency.
d. Notify the Police and Fire Brigade, where the spill offers a risk of fire, and or significant effect on the public in general.
e. Notify the Harbor master if the spill occurs within the confines of the harbor. Notify the Port Police to control access to spill area.
f. Notify (Commander Naval Forces Marianas) COMNAVMAR, where the spill is likely to affect the Naval Station or other Naval Facilities.

Figure B.1. Incident Notification Procedure

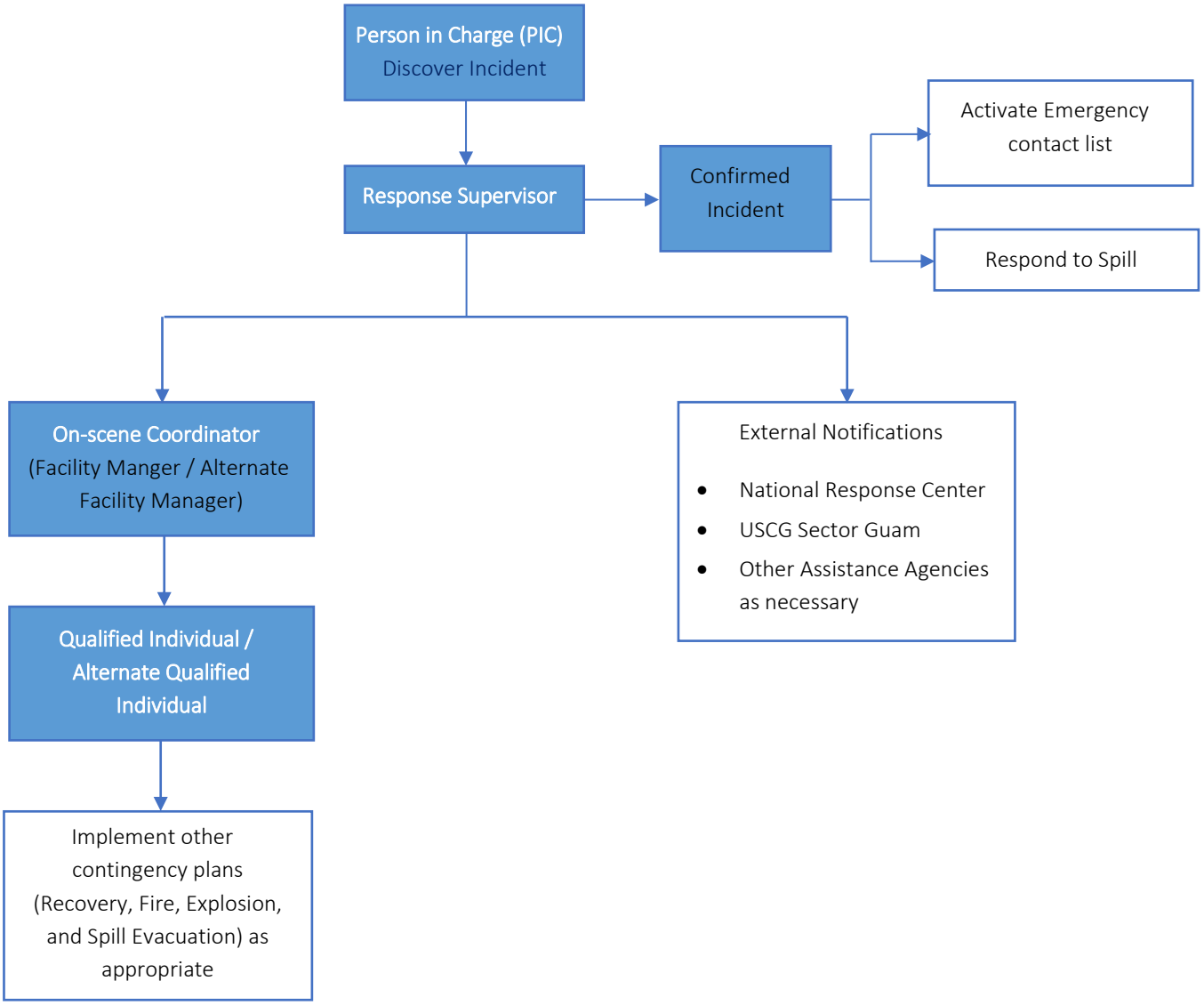


Figure B.2. Organizational Structure - Marine Oil Spill Response

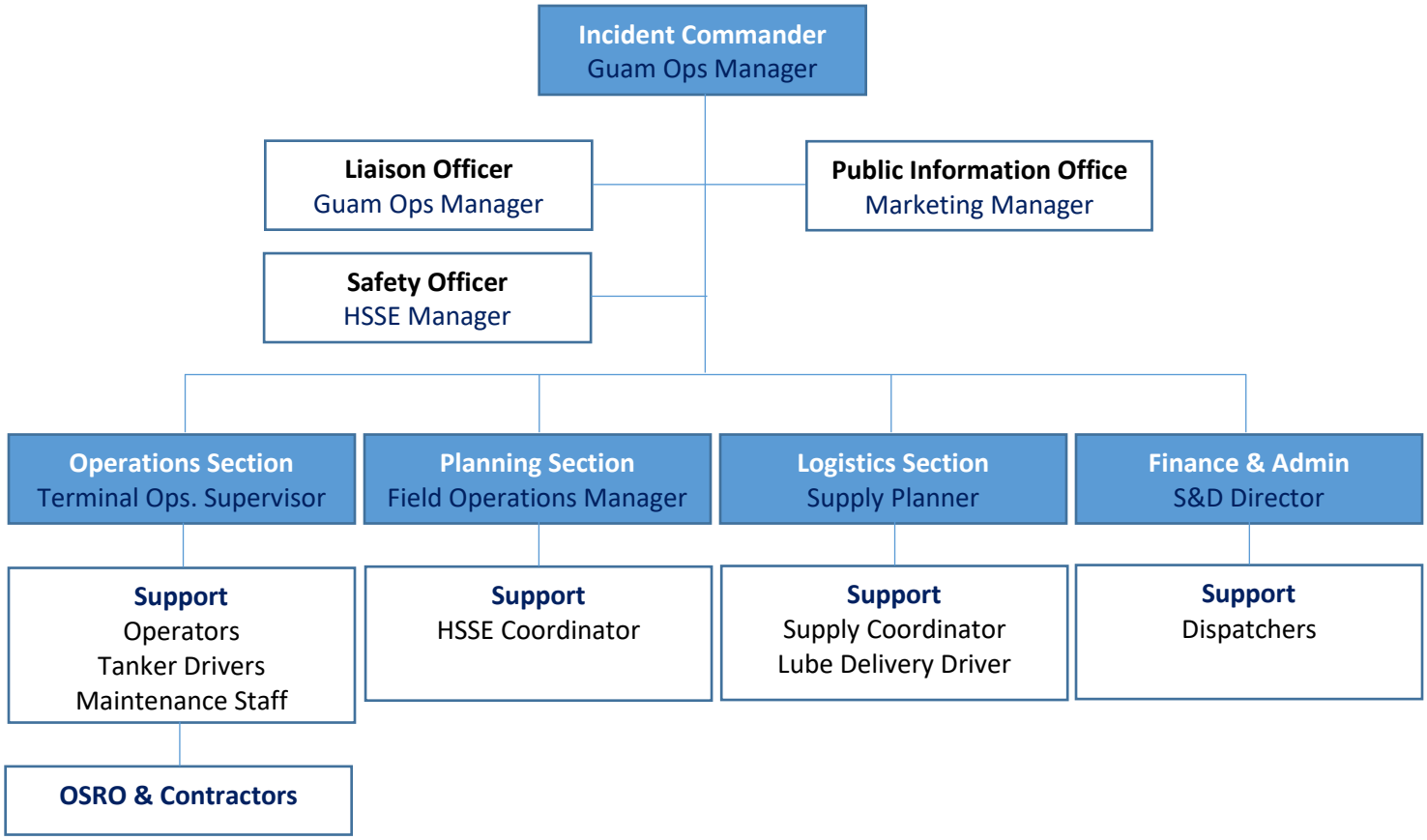


Figure B.3. Information on Discharge

DISCHARGE NOTIFICATION FORM

Involved Parties		
	Reporting Party	Suspected Responsible Party
Name:		
Position:		
Phone:		
Company:		
Address:		
City:		
State / Zip:		

Note: It is not necessary to wait for all information before calling NRC.
National Response Center: 1-800-424-8802 or Direct Telephone: 202-267-2675.

Were materials Discharged? ☐ Yes ☐ No
Calling for Responsible Party? ☐ Yes ☐ No

Incident Description		
Date & Time:		Source and/or Cause of Incident:
Incident Address:		
Nearest City:		
Distance from City:		

Storage Tank Container Type: ☐ Above Ground ☐ Below Ground ☐ Unknown

Facility Capacity		
Tank Capacity	Latitude Degrees	Longitude Degrees

Material		
Type of Product	Discharge Quantity	Estimated Size of Spill

Response Action
Actions taken to Correct or Mitigate Incident:

Impact to People				Impact to Property / Asset	
Evacuation Required?		☐Yes	☐No	Name of Asset	
No. of Fatality		No. of Injury		Estimated Cost of Damage	
Details of Injury				Details of Damage	

External Agency Notification						
☐ 911 / Fire / Police	☐ GEPA / BECQ / EQPB	☐US Coast Guard	☐National Response Center (NRC)	☐Oil Spill Response Company	☐ Public Health	☐Others, Specify
Date & Time	Date & Time	Date & Time	Date & Time	Date & Time	Date & Time	Date & Time

B.2. Facility's Spill Mitigation Procedures

This plan covers three spill scenarios of varying sizes and response requirements. IP&E Holdings, LLC handles Group I (Diesel) and Group III-IV persistent oils (Fuel Oil).

Tier 1 - Average Most Probable Discharge (AMPD)

Responded to with on-island equipment and resources operated by the OSROCO, supplemented and aided by IP&E Holdings, LLC resources.

Tier 2 - Maximum Most Probable Discharge (MMPD)

Responded to with on-island equipment and resources operated by OSROCO, supplemented by IP&E Holdings, LLC resources. Clean-up operation supervised and managed by IP&E Holdings, LLC management.

Tier 3 - Worst Case Discharge (WCD)

Tier 1 of the Tier 3 (WCD) response will be responded to and managed as for MMPD because of the 12 hour response requirement. Tier 2 and Tier 3 response levels for WCD will be responded to with extensive off-island (international) resources as well as the local resources.

B.2.1. Calculated Discharge (Spill) Volume

a. Fixed Facility - F3 Dock

Average Most Probable Discharge Volume:	50 barrels
Maximum Most Probable Discharge Volume:	600 barrels
Worst Case Discharge Volume:	6,000 barrels

b. Fixed Facility - GPA Fuel Bulk Storage Facility

Average Most Probable Discharge Volume:	50 barrels
Maximum Most Probable Discharge Volume:	1,200 barrels
Worst Case Discharge Volume:	268,000 barrels

c. Mobile Facility

Average Most Probable Discharge Volume:	1 barrels
Maximum Most Probable Discharge Volume:	11 barrels
Worst Case Discharge Volume:	107 barrels

For the Worst Case Discharge Calculations, refer to Attachment 1.

B.2.2. Procedures for Facility Personnel to Mitigate or Prevent Discharge

The philosophy for response to spill or possible spill incidents is the three C's. They must always be carried out in order.

1. CONTROL
    - Turn off or isolate the spill source.
    - Evacuate or clear areas where a risk to health exists.
2. CONTAIN
    - Contain the spill to the minimum area, keeping it from waterways, drains etc.

3. CLEAN-UP
    - Remove spilled product and contamination.

Although a prompt response is required, priority must be given to ensuring:

- A planned and controlled response
- Safety of the public and response personnel
- Protection of environmentally sensitive areas during action
- Protection of industrially sensitive areas during action
- Protection of property
- Adequate levels of training and skills in responding manpower

Following are the mitigation procedures which must be carried out in any incident situation. In all cases they cover control, and initial containment. Further containment and the clean-up will be the subject of future sections of this contingency plan.
Control of spills should be limited to isolating the source, (and then only if the isolation operation itself can be safely undertaken) and isolating the area of the spill until a safety assessment has been made, and the health and welfare of personnel responding to the spill can be assured.

A. Failure of Transfer Equipment

In the event of failure of dock hoses, the shore manifold or any other ship to shore transfer equipment, the following actions are to be taken to minimize any resulting or potential spill.

1. Unloading Vessel - Facility operator to radio Ship and F1 Dock Supervisor to stop pumping.
2. Loading vessel - Facility operator to stop pumping.
3. On pumping stop, F1 Dock operator will close shore manifold shutoff valves. Facility Operator to close tank and pipeline isolation valves.
4. The PIC will contact the OSRO and have the spill boat brought to the location of spill.
5. Boom is to be launch and spill contained, and or restricted.

B. Tank Overfill

In the event of a tank overfill, all tanks the facility being contained within bermed areas, the following action are to be taken to minimize any resulting or potential spill.

1. Facility transfer operator to ensure berm valves are closed.
2. Facility transfer operator ensure pumping is stopped.
3. Any area of flow from the bermed area is to be blocked off by whatever means to contain the product within the bermed area.
4. If the spill is not contained within the bermed, area booms, soil and earth or absorbent is to be used to ensure containment/restriction.

C. Tank Failure

In the event of tank failure, all tanks in t the following actions are to be taken to minimize any resulting or potential spill.

1. First facility operator arriving in the scene is to ensure berm valves are closed.
2. Any area of flow from the bermed area is to be blocked off, by whatever means to contain the product within the bermed area.
3. If spill is not contained within the bermed, area booms, soil and earth or

absorbent is to be used to ensure containment / restriction.

D. Piping Rupture

In the event of piping rupture, (major failure under pressure during product transfer), the following actions are to be taken to minimize any resulting spill.

1. Facility or Dock operator, whoever first observed the incident to radio ship (if vessel unloading) or shore (if vessel loading) and have pumping stopped.
2. Dock and Facility operator are to be dispatch by the shore PIC to close the pipeline isolation valves nearest to the scene of rupture shall always be given priority.
3. Any initial action which can be taken to limit flow from the rupture shall then be undertaken.
4. Oil Boom, soil and earth, and absorbent pads will be used to minimize any resulting spill.

E. Piping Leak

In the event of piping leak, the following actions are to be taken to minimize any resulting spill.

If the pipeline is under pressure, tanker discharge or loading:

1. Facility or Dock operator, whoever first observed the incident to radio ship (if vessel unloading) or shore (if vessel loading) and have pumping stopped.
2. Dock and Facility operator are to be dispatch by the shore PIC to close the pipeline isolation valves nearest to the scene of leak. The valve on the terminal side of the rupture shall always be given priority.
3. Any initial action which can be taken to limit the flow from the rupture, shall then be undertaken.
4. Booms, soil and earth, and absorbent are to be mobilized/used to contain/restrict the spill.

If the pipeline is NOT under pressure:

1. First available Facility operator is to be dispatch to close the terminal side pipeline isolation valve nearest to the scene of the rupture.
2. Next available Facility operator is to be dispatch to close the dock side pipeline isolation valve nearest to the scene of the rupture.
3. Any initial action which can be taken to limit the flow from the rupture, shall then be undertaken.
4. Booms, soil and earth, and absorbent are to be mobilized/used to contain/restrict the spill.

F. Explosion and / or Fire

In the event of explosion and / or fire, the following actions are to be taken to minimize any resulting or potential spill.

1. Have all transfer and pumping operations ceased.
2. Operate applicable emergency shut-off system.
3. Notify fire brigade and terminal of the emergency
4. Where the necessary mobilized containment equipment (booms, back hoe, absorbent) to the scene and where safe, contain any spill.

G. Equipment Failure

In the event of an equipment failure, the following actions are to be taken to minimize any resulting or potential spill.

1. Operator noticing the event is to immediately advise the PIC.
2. If the equipment failure has resulted in, or could lead to a spill, every effort should be made to put in place actions which limit the source of the product, and these should then be followed by any actions which can contain any spilling product to the smallest area.
3. Where necessary mobilize containment equipment (booms, back hoe, absorbent) to the scene and where safe, contain any spill.

B.2.3. Equipment and Responsibilities for Average Most Probable (AMP) Discharge

A. Response Plan

This is a first level response. Such a response is rapid, and aimed at immediate control of the situation and avoidance of damage to sensitive areas through fast deployment of containment systems.

It will be handled primarily with IP&E Holdings, LLC personnel and strategically located equipment at F3 dock and GPA Fuel Bulk Storage Facility. A manned vessel for boom placement, and subsequently on-water skimming if required is provided by the OSRO (Oil Spill Response Operations Company LLC (OSROCO)).

The spill scenario is a spill of up to 50 barrels (2100 gallons). Such a spill will most likely occur during bunkering operations (hose or connection leak) at F3 Dock or as a pipeline leak during product transfers at GPA Fuel Bulk Storage Facility.

Response will be undertaken by the IP&E personnel and OSRO personnel. These resources can be supplemented as required with other IP&E spill response trained personnel and further OSRO resources. All response personnel are HAZWOPER trained for Oil Spill Response in accordance with OSHA standards (29 CFR 1910.120).

The Incident Commander is the Guam Operations Manager or his alternate. For small quickly controlled events, the Incident Commander may not arrive at the scene until after the spill has been controlled and contained and perhaps even cleaned up. The Incident Commander shall always ensure that any loss of containment incident is fully investigated, and appropriate remedial corrective actions are determined and put in place to avoid recurrence. The Response Supervisor is also the Guam Operations Manager or his alternate. On being advised that a spill has occurred or is occurring he shall proceed to the oil spill scene and supervise the response.

The first action shall be to assess whether the source of the spill can be safely secured. If safe, secure the source of the spill by whatever means are possible.

These means will primarily include:

- Isolation of pumps,
- Closure of all associated valves,
- Plugging of holes.

Where it is unsafe to secure the spill source, operators shall contact the Fire Department who have the responsibility for hazardous materials response and the Incident Commander. Facility operations personnel are not to put themselves at risk attempting un-safe actions to secure the source.

The second action shall be to control the site of the spill and assess the possible containment alternatives. Control of the site may need to include restriction of access - the Police, Port Security and Contracted Security Agency should be contacted to support site control.

Once it is determined that containment activities can be undertaken safely, the spill should be surrounded by boom. Where the spill cannot be surrounded, boom should be used to direct the spill toward less environmentally sensitive areas. These are mostly located on the western side of the port. Sasa Bay and the upper end of the Piti Channel should be given protection priority. Booming will be undertaken with the use of the OSRO spill response vessel. Once the spill has been contained, or containment is sufficient to allow spill recovery, recovery operations should be initiated. Recovery shall be carried out using the skimmer for on-water recovery and the vacuum truck for closer to shore recovery

B. Equipment

Equipment to contain and recover a first level discharge (Average Most Probable) is located at F-3 Dock and GPA Fuel Bulk Storage Facility.

A contracted, manned, spill response vessel is available through Oil Spill Response Operations Company LLC (OSROCO) to deploy booms and on-water recovery devices. The vessel is available 24 hours per day. Response by further vessels can be initiated through the OSRO.

Full equipment lists for all levels of response is detailed in Appendix E3 of this manual.

B.3. Facility's Response Activities

B.3.1. Initial Facility Personnel's Responsibilities

Pending arrival of the Qualified Individual (QI) or his alternate, the Officer in Charge shall initiate a response action using the facility's response equipment and contact the necessary personnel as detailed in section B.1 (Notification Procedure) of this plan.

The facility personnel will initiate the Tier 1 response. This operation consists of contacting Oil Spill Response Operations Company LLC (OSROCO) and requesting the launch and deployment of the containment boom. OSROCO has available 1,000 feet of boom and can be deployed within one hour. OSROCO can deploy oil recovery device within 2 hours. The on-site supervisor will supervise the deployment of the tier 1 response boom, to contain the spill. Once the spill is contained, the OSRO is to commence recovery operations.

B.3.2. Qualified Individual (QI) Responsibilities and Authorities

The QI (or his alternate) as listed in section A.1.5 (Qualified Individual Contact) has authority to implement the facility's response plan. This authority may be delegated by the Qualified Individual to the Guam Operations Manager for responses limited to mobilizing minor on-island resources (AMPD).

a. The QI is fully authorized to activate the resources and personnel of all OSRO which have been included in the plan. (Oil Spill Response Operations Company LLC.).

b. The QI is authorized to, and will, liaise with the Designated Federal On-Scene Coordinator (USCG COTP (Captain of the Port) or his alternate).

c. The QI has authority to obligate funds, directly or through pre-arranged contracts, to undertake necessary or directed oil response activities.

B.3.3. Facility/Corporate Oil Spill Response Organizational Structure

The organizational structures for spill response are as shown in Figure B.2. This structure offers an expanded organization as the size of the discharge escalates. In the event of a minor spill, the QI would, at the time of the spill, delegate his authority for clean-up response to the operations function.

In the event of a major spill, the organization shown would be supported from the Guam Industry and other resources, particularly in the areas of media management, accounting and spill clean-up operations and planning. Such support would be on-scene within 24 hours.

A. Command and Control.

Command and control of an oil spill shall be the responsibility of and managed by the Qualified Individual. He is the overall responsible of the operations.

Command and Control of an oil spill shall be the responsibility of and managed by the Qualified Individual. He will be supported by the Director of Supply & Distribution. The alternate for extended operations shall be the Director of Supply & Distribution.

B. Public Information.

Public Information will be managed by the Marketing Manager. He / She shall be solely responsible for the release of information from IP&E Holdings, LLC about any spill, or response effort. A designated person shall act as alternate for extended operations.

C. Safety

Responsible for evaluating hazards and safety precautions of the operations. Safety management will be undertaken by the Health Safety Security and Environment (HSSE) Manager and HSSE Coordinator, with relief and support from Operations Department.

D. Liaison with the Government Agencies

Responsible for the preparations and release of agencies information to the government, the media and the general public.

Liaison responsibilities with the USCG for all spills will be performed by the on-scene commander and Qualified Individual. Liaison with other government agencies will be the responsibility of the Guam Operations Manager.

E. Spill Operations

Responsible for field operations to contain, clean-up, and dispose oil and oily wastes recovered and to implement other clean-up techniques. The Guam Operations Manager will have responsibility for management of spill operations.

In the event of worst-case discharge, relief and additions to spill operations personnel will be provided from OSROCO and local industry.

F. Planning

Responsible for collecting, evaluating, analysis and dissemination of response information, preparing general and daily incident action plans, providing technical and scientific assistance, and ensuring the health and safety of responders. Response planning shall be the responsibility of, and managed by the IP&E Holdings, LLC Field Operations Manager.

G. Logistic Support

Logistics support will be managed by the Supply Planner. Responsible for acquisition and transportation of food, shelter, personnel protective equipment and materials to sustain clean-up operations.

H. Finance

Responsible for financial activities associated with oil spill response. Financial activities associated with the spill shall be managed by the Director of Supply & Distribution.

B.3.4. Oil Spill Removal Organizations

A. Response to Maximum Most Probable Discharge

IP&E Holdings, LLC has a contract with Oil Spill Response Operations Company, LLC (OSROCO) that requires it to provide the response to an oil spill event, or possible oil spill event, involving products, assets or vessels or facilities in which IP&E Holdings, LLC has an interest.

OSROCO to respond to the Maximum Most Probable Discharge, or threat of a discharge, when called upon so to do.

Refer to Attachment 5 for OSRO Membership Program and Contractor Designation agreement between IP&E Holdings, LLC and OSROCO.

List of equipment to respond Maximum Most Probable Discharge can be found in Appendix E3.

B. Response to the Worst Case Discharge to the Maximum Extent Possible

IP&E Holdings, LLC has a contract with Oil Spill Response Operations Company, LLC (OSROCO) that requires it to provide the response to an oil spill event, or possible oil spill event, involving products, assets or vessels or facilities in which IP&E Holdings, LLC has an interest.

IP&E Holdings, LLC has, through OSROCO, affiliations with a major U.S. mainland based oil spill Organization T&T Marine Salvage, Inc. A signed contract with OSROCO guarantees that they will respond, when requested so to do, to any discharge in which a member has an interest, whether such interest be in the oil, the facility, the vessel or all three. There is no requirement for IP&E Holdings, LLC to be the “responsible party” in order to initiate a response from these organizations.

C. Trained Personnel

IP&E Holdings, LLC has trained personnel and resources necessary to continue operation of the equipment and staff the oil spill removal organization for the first 7 days of the response.

B.3.5. Management Team Job Description

Job description, duties and responsibilities of the spill management team members within the organization were described in Section B.3.3.

B.3.6. Use of Dispersants

The use of dispersant in the area of Apra Harbor, Inner Harbor, Sasa Bay and its surroundings is not approved by the COTP.

B.3.7. Arial Surveillance Capabilities

IP&E Holdings, LLC has emergency response service contract with OSROCO which has cooperative agreement with Trend Vector Aviation International, LTD and Freedom Air Guam to provide Arial Observation Platform during oil spill response operations. These agreement can be found in Attachment 6 in this plan.

B.3.8. Mobile Marine Transfer Facilities Area of Operation

All Mobile (Marine Transfer) Facilities operate only in the Apra Harbor within COTP zone. Oil Spill removal and spill management will be handled in the same manner as the Fixed Facility.

B.4. Fish and Wildlife and Sensitive Areas

B.4.1. Areas of Economic Importance and Environmental Sensitivity

Listed below are the areas with economic importance, fish and wildlife and sensitive environments which may be impacted by a worst case discharge.

A. Economic Importance

- Commercial Port – Apra Harbor
- Fishing Port – F2 & F3 Docks, Apra Harbor
- Naval Base – Inner Apra Harbor
- Atlantis Small Boat Harbor - Piti Channel
- Marianas Yacht Club - Sasa Bay

B. Environmental Sensitivity

Apra Harbor, Sasa Bay and its surrounding shoreline contains many important resources which should be protected in the event of an oil spill of any size which threatens one or more of its resources.

- Pristine Marine Areas (as defined: UOG Marine Laboratory - Technical Report No. 40 - 1977)
  - Uronao/Ritidian, Double Reef, Haputo Beach, Luminao Barrier Reef, Sasa Bay and Atantano River Mangroves, Orote Submarine Cliffs and the Blue hole, Anae Island, Cetti Bay, Cocos Lagoon and Barrier Reef, Ajagan Bay, Fadian Point, Tarague and Scout Beaches.

- In addition the ACP identifies the following areas of particular concern Tumon Bay (tourism), Umatac Bay (habitat), Cocos Island and Lagoon (tourism), Marine Resources Preserve - 144-56-8E, 13-32-40N to 144-53-55E, 13-37-20N (habitat), Agana Bay (toursim/habitat), Sasa Bay (habitat).

- Marshes and Mangroves - throughout Apra Harbor
  - Sasa Bay
  - Apra Inner Harbor (Atantano River)
- Other areas of Sensitivity
  - Coral Reefs - general throughout Apra Harbor and Channels
  - Wetlands - Gautali River, Aguada River, Sasa River
  - Recreational Beaches - Naval Station and Family Beach
  - Marine Animal breeding grounds and habitats - Southern Apra Harbor, Inner Harbor and Sasa Bay.

C. Endangered Species and Wildlife

In Guam, there are several species of endangered and threatened wildlife. The ACP list the following endangered species below:

- Guam Gallinune
- Micronesian Kingfisher
- Marianas Fruit Dove
- Marianas Fruit Bat
- Little Marianas Fruit Bat
- Green Sea Turtle
- Hawksbill Sea Turtle

D. Environmental Sensitivity Maps

Refer to Attachment 2 for Guam and CNMI Environmental Sensitivity Index and Attachment 3 for ESI Maps (ESI01 & ESI3) prepared by National Oceanic and Atmospheric Administration (NOAA) in August 2005 and NOAA ERMA Chart.

B.4.2. Response Actions to Protect Sensitive Areas

A. Worst Case Discharge Response Action and Resources

In all cases the response to a spill, which will afford the maximum protection of sensitive areas, is the early isolation of the source of the spill, followed by containment and removal of the spilled product.

Priority will be given to the protection of the marshes, mangroves and corals within Sasa Bay and Inner Apra Harbor (boomed by Navy personnel, using Navy boom and equipment).

Boom will be pre-staged on Polaris and Dry Dock points to maximize the speed of response to the protection of this area, despite the fact that the predominant and prevailing winds will in themselves protect this area from inundation in most conditions.

Boom will also be pre-staged at the entry to the Piti Channel, to maximize speed of response to protection of both economically sensitive and environmentally sensitive areas beyond this point. Again the prevailing wind assists in the protection of this area, prior to boom deployment.

Equipment Identified to protect all areas of Economic and Environmental Sensitivity for the distance traveled by oil in three (3) days for river flow and four (4) days for the Harbor is detailed Appendix 3.

Further protective boom will be available to divert or contain spilt oil away from shoals and coral areas elsewhere in the port through Oil Spill Response Operations Company (OSROCO) and T&T Marine Salvage, Inc.

T&T marine Salvage, Inc. is considered as a supplementary secondary OSRO to OSROCO. T&T marine Salvage, Inc. response time is between 24 to 48 hours depending on nature of required support.

Both companies providing the necessary response resources has been evaluated and approved by the USCG.

Response would be as follows:

Response Scenario	OSRO Company
A, M, W	OSROCO, LLC - Guam Suite 114, 1026 Cabras Highway Piti, Guam, 96915
W	T&T Marine Salvage, Inc. CORPORATE OFFICE 9723 Teichman Road Galveston, Texas 77554

B. Equipment & Personnel Required to Protect Fish & Wildlife and Sensitive Environment

B.1. To cover the distance from the facility reached by persistent oil in 48 hours.

The area covered by the definition above would be the entirety of Apra Harbor, including the Inner Harbor and Sasa Bay.

The IP&E Holdings LLC. operations includes a work force of 15 trained personnel supplemented by a contracted trained OSRO staffing (Oil Spill Response Operations Company LLC (OSROCO) staff). Response would be the deployment of protective and containment booms to protect the sensitive areas. Recovery of contained oil would follow; utilizing manpower from OSRO contracted resources.

Equipment required for this protection will be obtained from the OSRO equipment stockpile. The strategy for protection primarily requires the use of hard and sorbent boom, to minimize the spread of any spill into the listed sensitive areas.

B.2. To cover the area of maximum tidal influence for persistent oils from the point of discharge

The area of impact is the area of Apra Harbor, including the Inner Harbor and Sasa Bay. Response would be as above.

B.3. To cover the distance from the facility reached by a non-persistent oil in 24 hours

The area of impact is the area of Apra Harbor, including the Inner Harbor and Sasa Bay.

Little response other than immediate booming of sensitive areas, to prevent the toxic oils impacting those areas, would be required. Guam's extremely and consistently high ambient temperatures would ensure speedy evaporation of non-persistent oil spills.

B.4. To cover the area of maximum tidal influence for non-persistent oils from the point of discharge. (Or 5 miles on ebb and flow)

The area of impact is the area of Apra Harbor, including the Inner Harbor and Sasa Bay. Response would be as above.

Equipment Identified to protect all areas of Economic and Environmental Sensitivity for the distance traveled by oil in three (3) days for river flow and four (4) days for the Harbor is detailed in the following:

- For oil within Apra Harbor the mechanisms detailed above will be used to respond to and protect areas of environmental and economic sensitivity.
- Oil exiting Apra Harbor would speedily disperse due to the very high wave energy existing outside the Harbor, causing little environmental damage due to the huge ocean depths immediately off the island.

Full equipment lists for all levels of response is detailed in Appendix E3 of this manual.

B.5. Disposal Plan

The following plans describes actions to be taken and procedures to be use to ensure that all recovered oil and oil contaminated debris produced as the result of a discharged is disposed of in compliance with Federal and Territorial guidelines. All activities will be coordinated with the Guam Environmental protection Agency and comply with the standards set forth in Title 40, Code of Federal Regulations, Parts 261 and 265 as mandated by the Resource and Recovery Act (RCRA), if applicable.

Disposal activities will be under the supervision IP&E Holdings, LLC management. Oily materials will first be characterized for proper handling. Material handling procedures will take into account worker safety, volume minimization, cost effectiveness, minimization of impact on unaffected areas or already cleaned areas, regulatory compliance, and proper disposal.

A. Recovered Liquid Waste

Strategy for oil and waste collection, storage and disposal is as follows:

- Recovered liquid waste will be pumped back to Oily Water Separator onshore or into Tank Trucks driven to the shore. Waste will then be handled within the facility bounded areas until on-island disposal site is determined unless otherwise directed by the Guam EPA to an alternative temporary storage area.
- Should additional storage tanks be needed, IP&E Holdings, LLC has a contract with OSROCO through which additional storage tanks is made available for the storage of recovered liquids.
- Recovered fuel (4% maximum water) can be burned by Guam Power Authority.

B. Recovered Solid Waste

- In accordance with the ACP, non-hazardous burnable waste shall be burnt at the end of Glass Breakwater after a permit is obtained from GEPA to burn the material. GEPA will normally allow burning to take place only when the wind is from 060 to 080 degrees true and at a speed of at minimum 10 knots.
- In accordance with the ACP, non-hazardous non-burnable waste shall be disposed of in a local landfill.

C. Recovered Hazardous Waste

- Recovered Hazardous Waste shall be disposed of Off-Island. The disposal source is determined by competitive bidding as prices can vary considerably given the waste characteristic.

C. TRAINING AND EXERCISES

C.1. Training Procedures

As a facility owner, IP&E Holdings, LLC shall ensure that all response personnel are trained to meet the Occupational Safety and Health Administration (OSHA) standards for Emergency Response Operations requirements stated in 29 CFR 1910.120.

IP&E Holdings, LLC will adhere to the following:

1. Identify training for each individual identified as having responsibilities under the plan.

2. Contracted Oil Spill Response Organization or supervisory response personnel shall be trained in accordance with the Site Specific Health and Safety Plan included as Appendix 5 of this Response Plan. Training shall include applicable HAZWOPER certification in accordance with OSHA.

3. All volunteers and casual laborers employed for oil spill clean-up duties shall be given not less than four (4) hours training in the hazards associated with the clean-up task prior to commencing work.

4. Training shall take place, in purpose erected class-room, located on a safe site, a near as practicable to the work-site proposed to maximize the understanding. Training shall be given by personnel qualified to provide such training.

5. All training records are to be archived at the facility for a period of not less than three (3) years.

C.2. Exercise Procedures

IP&E Holdings, LLC will comply with exercise and drills in accordance with 33 CFR 154.1055.

a) IP&E Holdings, LLC shall create an exercise program containing both announced and unannounced exercises. At a minimum, the following will covered:
    1) Qualified individual notification exercises (quarterly).
    2) Spill management team tabletop exercises (annually). In a 3-year period, at least one of these exercises must include a worst case discharge scenario.
    3) Equipment deployment exercises:
        i. Semiannually for facility owned and operated equipment.
        ii. Annually for oil spill removal organization equipment.
    4) Emergency procedures exercise (optional).

5) Annually, at least one of the exercises listed in §154.1055(a)(2) through (4) must be unannounced. Unannounced means the personnel participating in the exercise must not be advised in advance, of the exact date, time and scenario of the exercise.
6) Design the exercise program so that all components of the response plan are exercised at least once every 3 years. All of the components do not have to be exercised at one time; they may be exercised over the 3-year period through the required exercises or through an Area exercise.

b) IP&E Holdings, LLC shall participate in unannounced exercises, as directed by the COTP. The objectives of the unannounced exercises will be to test notifications and equipment deployment for response to the average most probable discharge.
c) IP&E Holdings, LLC shall participate in Area exercises as directed by the applicable On-Scene Coordinator. The Area exercises will involve equipment deployment to respond to the spill scenario developed by the Exercise Design Team, of which IP&E Holdings, LLC is a member.
d) IP&E Holdings, LLC shall ensure that adequate records of all required exercises are maintained at the facility for 3 years. Records shall be made available to the Coast Guard upon request.
e) The response plan submitted to meet the requirements of this subpart must specify the planned exercise program. The plan must detail the exercise program, including the types of exercises, frequency, scope, objectives and the scheme for exercising the entire response plan every 3 years.

D. PLAN REVIEW AND UPDATE PROCEDURE

Plan review and update procedures will be implemented in accordance with 33 CFR 154.1065. This plan shall be reviewed and updated as follows:

1. Contact lists every three (3) months following notification drills as necessary.
2. General substance annually and subsequent to any physical deployment or table top drill.
3. Contracts with Oil Spill Organizations annually following the renewal of contracts.
4. A detailed analysis of the plan shall be carried out at least every three (3) years and/or following full deployment drills.
5. A detailed analysis of the plan shall be carried out prior to and/or following any significant change to the operations of the facility as they effect the plan, and the plan shall then be resubmitted to the USCG for their approval.
6. A detailed analysis and re-submission of the plan to the USCG shall be carried out every five (5) years, or at whatever other frequency required by the regulations.

E. LIST OF APPENDICES

F. LIST OF ATTACHMENTS

F.1. Attachment 1. Worst Case Discharge Volume Calculations

F.2. Attachment 2. Guam and CNMI Environmental Sensitivity Index

F.3. Attachment 3. ESI Maps

F.4. Attachment 4. Safety Data Sheet: Gas Oil (Diesel Fuel), Fuel Oil

F.5. Attachment 5. OSRO Membership Program & Contractor Designation Agreement

F.6. Attachment 6. OSROCO Arial Cooperative Agreement

APPENDIX E1. FACILITY SPECIFIC INFORMATION

1. Physical Description of Facility

IP&E Holdings, LLC, trading as IP&E Guam, operates a petroleum transfer and bulk storage terminal in separate locations within the vicinity of Apra Harbor and Piti, on the island of Guam.

The Marine Transfer Facility consists of Foxtrot-3 Wharf (F3 Dock), two (2) storage (Tank1936 - 6000bbls & Tank1937 - 4000bbls) and two (2) permanently connected bunker pits. The facility transfers fuel to vessel one at a time from a meter cart connected to one of the bunker pits located at Foxtrot-3 wharf. The facility handles, stores and transfers only non-persistent oils (Diesel) for commercial customers. Both storage tanks are supplied through pipeline from Tristar Terminal's D-Line connected at the South Pacific Petroleum Corporation (SPPC) valve pit.

The Mobile Facility operation consist of a Road Tanker equipped with hoses and/or hose reels and a PTO pump. Various tankers are utilized as Mobile Facilities for the transfer of product within commercial port wharf F2 to F6. These tankers are equipped with emergency shut off device for the PTO pump and a manual shut off valve, both located at the back of the Truck. Fuel transfer from tanker to vessel can be done simultaneously; the only limitations are the availability of tankers and authorized drivers. For Diesel bunkering using the Road Tanker, there is no meter used as the Tanker Trucks are already equipped with its own meters. The Lube meter cart is used when bulk lubes from drums is transferred from the Lube Trucks to a Vessel and the meter cart have manual shut off valves on the suction and discharge sides.

Size	Designation	Cargo / Products
4,500 gallons	Rigid Tankers: PTB 033, 034, 035	Gasoline, Jet A1, Diesel
Portable Pump	1.5" Portable Pump	Lube Oils
Meter Cart	1 Meter Cart with 3"hose reel 1 Meter Cart with 2-2"hose reel 1 Lube Meter Cart with 2" hose reel	Diesel, Lube Oils
Lube Bunker Trucks	Box Truck: PTA 074 Flat Bed Truck: PTA 075	Lube Oils

IP&E Holdings, LLC operates Guam Power Authority (GPA) Fuel Bulk Storage Facility located on thirty (30) acres of land adjacent to the GPA Cabras and Piti power plants in the municipality of Piti near Apra Harbor on the island of Guam. The two (2) tanks (Tank 1934 & 193, each with 268,000 barrels capacity) are connected by a 24-inch pipeline to the Tristar Terminal's pipeline system approximately 1,500 feet from the facility. The connection is located at the "Navy Tie-In" along Causeway Road. Tristar Terminal Guam Inc. operates the "Navy Tie-In" and receiving facility for GPA Fuel Bulk Storage Facility at Foxtrot-1 Wharf located at the Commercial Port of Guam within Apra Harbor. Tristar has a Facility Response Plan for both "Navy Tie-in" and F1 Dock operations.

2. Types and Sizes of Vessels

A. Foxtrot-3 Wharf

The water front facility is able to handle oil transfer operations for any vessels allowed by Commercial Port of Guam. Only limitations are the equipment (meter cart) capacity and manpower availability.

B. GPA Fuel Bulk Storage Facility

Marine transfer operations for GPA facility is handled by Tristar Terminal Guam Inc. through Foxtrot-1 Wharf.

3. Isolation Valve

A. Foxtrot-3 Wharf

Valves separating the Marine Transfer facility from the Non-Transportation facilities are located at the Pump Station, and within each of the secondary containment areas at the facility.

B. GPA Fuel Bulk Storage Facility

Isolation points from the Navy and GPA Terminal non-Transportation related facilities are located at the "Navy Tie-In" and within the secondary containment areas of Tank 1934 and Tank 1935.

4. Products Handled

Product handled are as follows:

A. Foxtrot-3 Wharf

- Diesel Fuel

B. GPA Fuel Bulk Storage Facility

- Residual Fuel Oil (Low Sulfur & High Sulfur)

Safety Data Sheets of these products can be found in Attachment 4 in this procedure.

Figure 1. Facility Location Plan

Figure 2. F3 Dock Facility Layout

Figure 3. F3 Dock Pipeline Layout

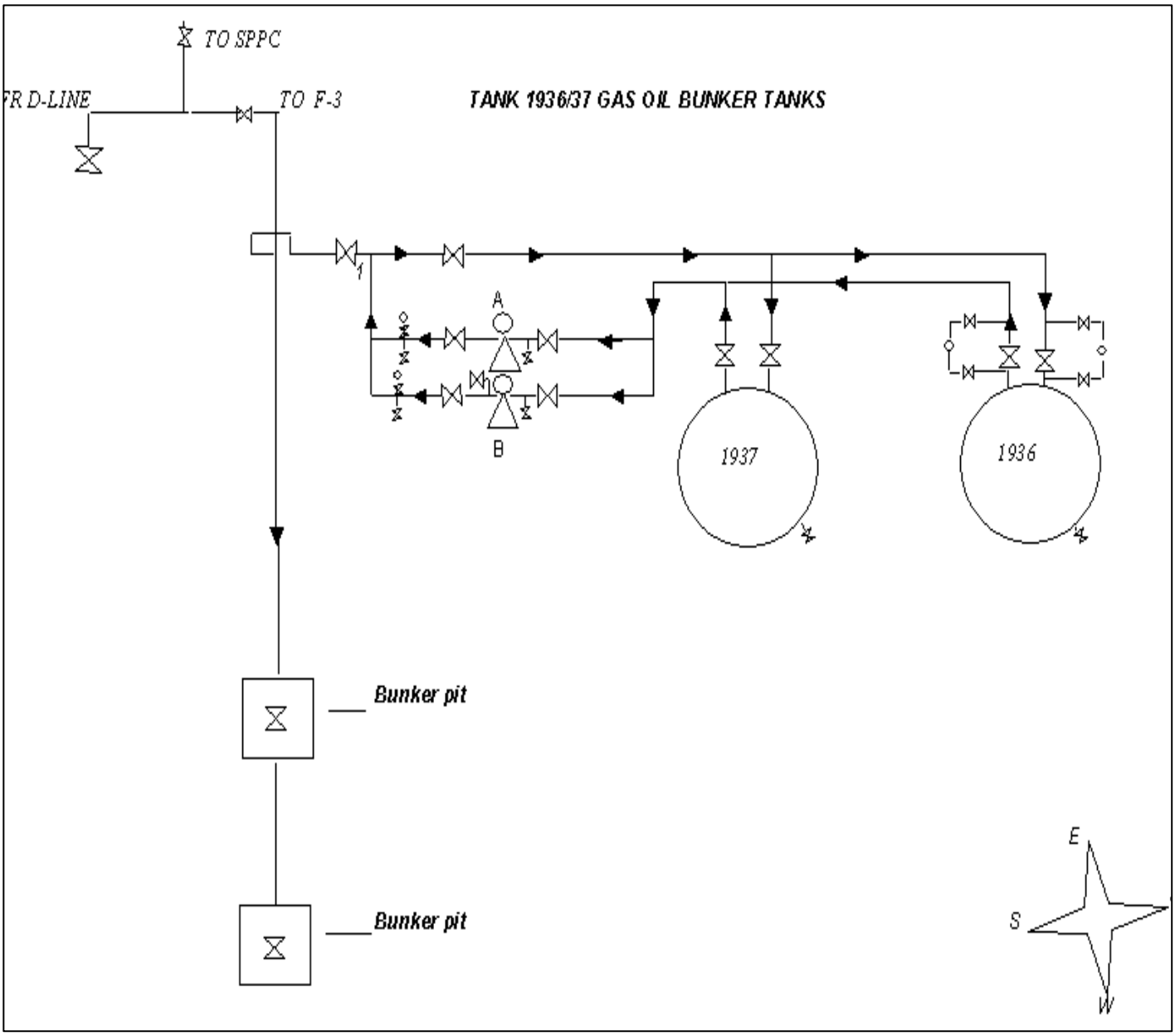
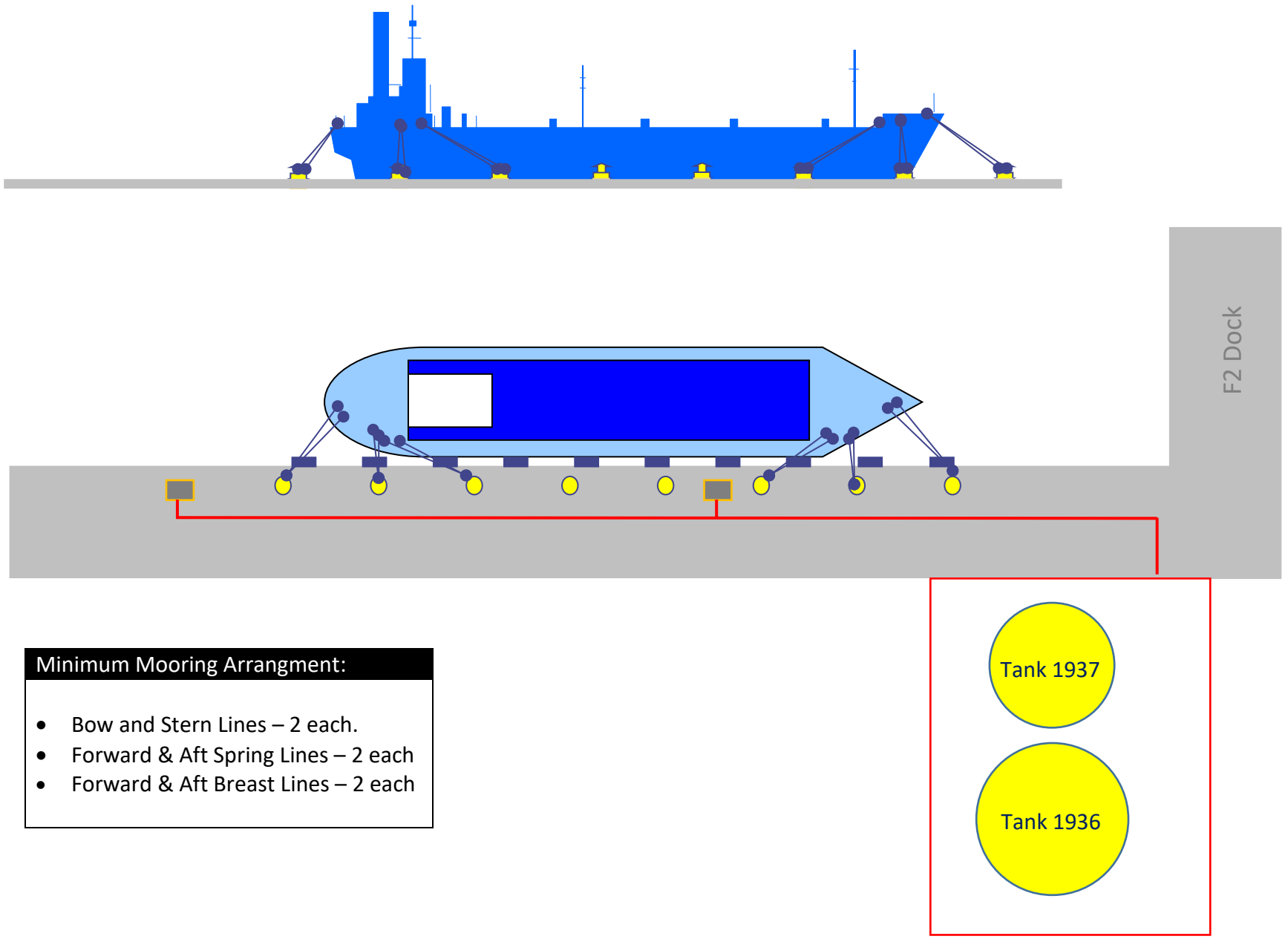


Figure 4. F3 Dock Vessel Mooring Plan



Minimum Mooring Arrangment:

- Bow and Stern Lines – 2 each.
- Forward & Aft Spring Lines – 2 each
- Forward & Aft Breast Lines – 2 each

Figure 5. GPA Facility Location Plan

Figure 6. GPA Fuel Bulk Storage Facility Layout

Figure 7. GPA Fuel Bulk Storage Facility Pipeline Layout

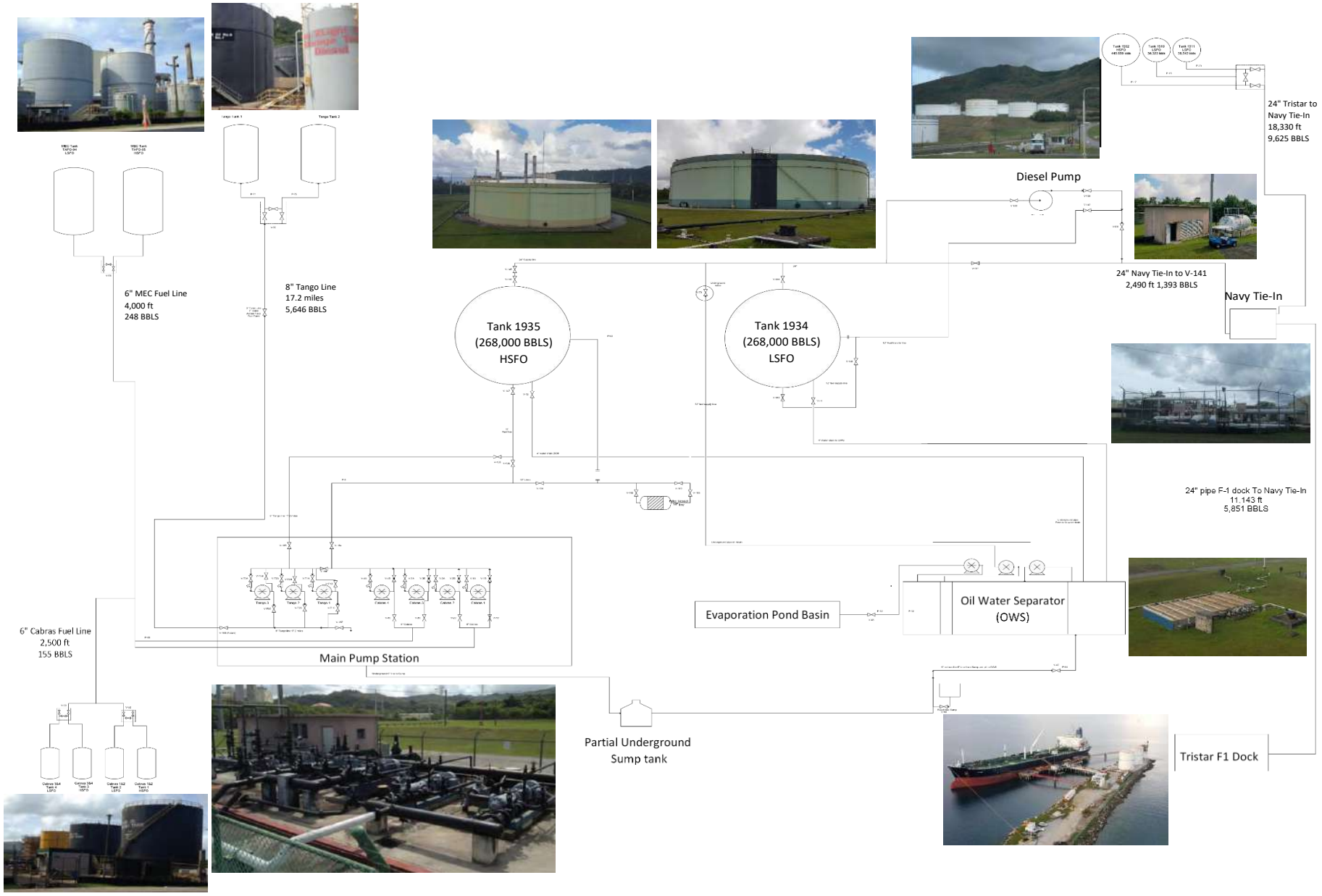


Figure 8. GPA Fuel Bulk Storage Facility Schematic Diagram

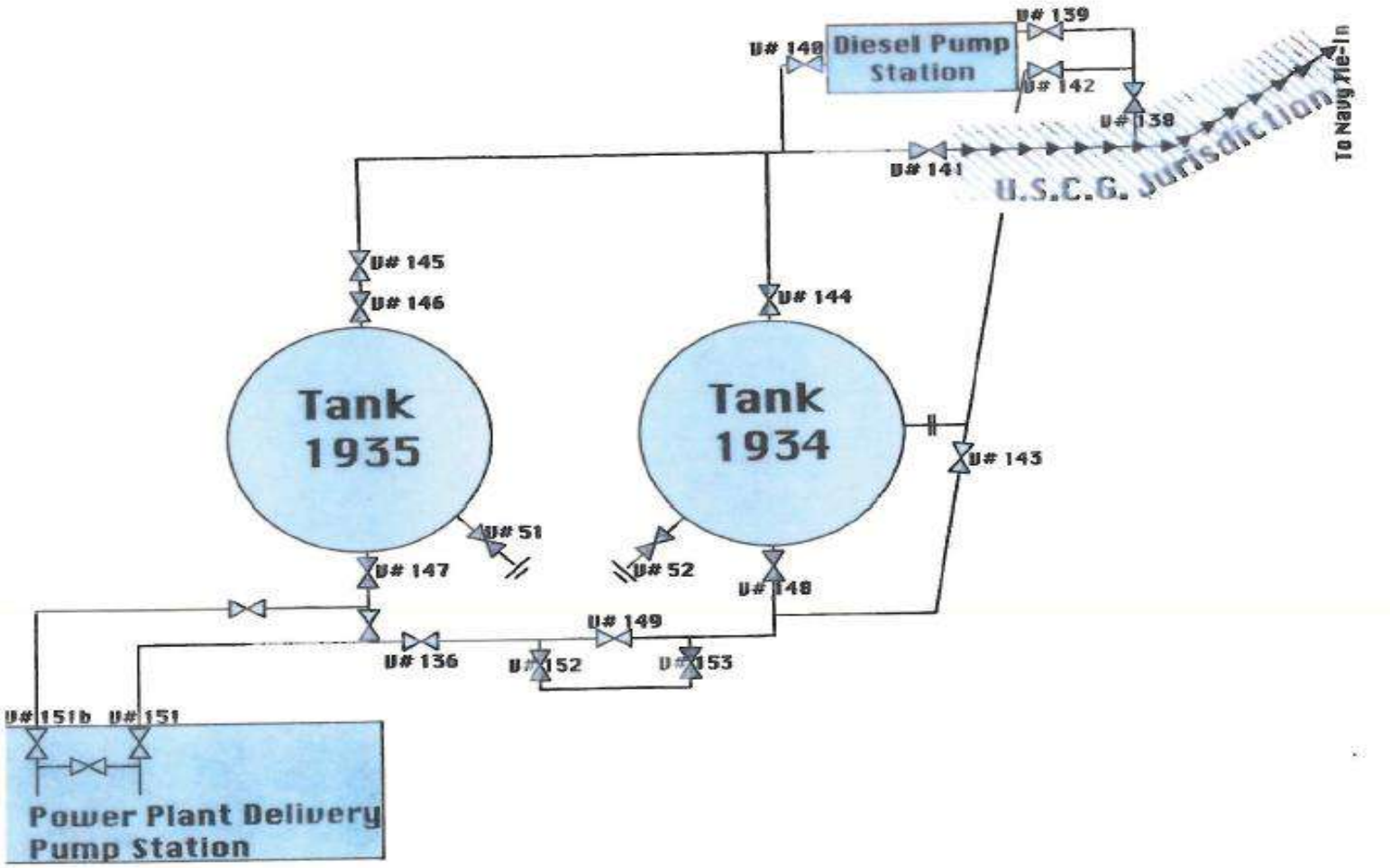


Figure 9. GPA Fuel Bulk Storage Facility USCG Jurisdictions

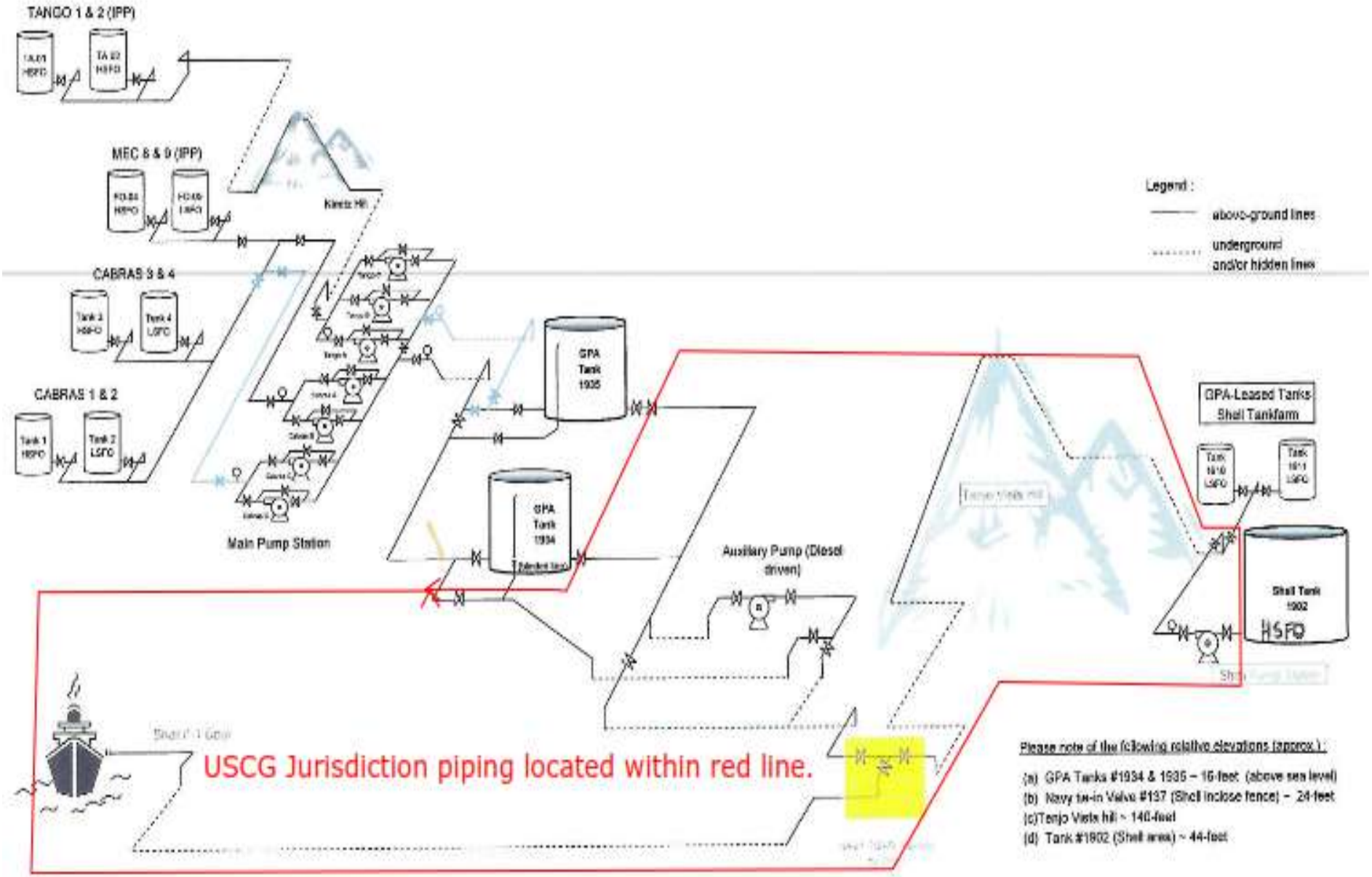


Figure 10. GPA Fuel Bulk Storage Facility Emergency Equipment and Evacuation Plan

EMERGENCY LIST OF CONTACTS

1. Company Personnel

Qualified Individual			
Name	**Position**	**Telephone / Fax Contact Number**	**24H Contact Number**
Brian Bamba	IP&E Managing Director	T: (671) 647-0123 ext. 143 F: (671) 649-4353	C: (671) 797-3282
Joleen Mesa	IP&E Director of Supply & Distribution	T: (671) 647-0123 ext. 131 F: (671) 649-4353	C: (671) 797-0481
Facility Personnel			
John Robertson	Guam Operations Manager / AFSO	T: (671) 565-2949 F: (671) 565-2913	C: (671) 747-2141 R: (671) 1*28014
Michael Francisco	Terminal Operations Supervisor / FSO	T: (671) 565-2949 F: (671) 565-2913	C: (671) 797-0474 R: (671) 1*28013
IP&E Head Office			
Richard Behag	HSSE & Eng'g. Director	T: (671) 647-0123 ext. 129 F: (671) 649-4353	C: (671) 777-8388
Lyndon Entera	Field Operations Manager	T: (671) 647-0123 ext. 135 F: (671) 649-4353	C: (671) 797-0464
Maria Luisa Bisnar	HSSE Manager	T: (671) 647-0123 ext. 174 F: (671) 649-4353	C: (671) 727-2289
Oliver De Vera	HSSE Coordinator	T: (671) 647-0123 ext. 128 F: (671) 649-4353	C: (671) 777-6409
Ramir Perez	Supply Coordinator	T: (671) 565-2916 F: (671) 565-2913	C: (671) 777-3348

2. Oil Spill Response Company

OSRO Company	Telephone/Fax Contact No	24H Number for Personnel
OSROCO, LLC - Guam Suite 114, 1026 Cabras Highway Piti, Guam, 96915	T: (671) 478-6776 T: (671) 477-1818 F: (671) 477-6206	(671) 688-5038 : John Manibusan (671) 689-3819 : Ken McDonald (671) 688-2933 : Tom Perez
T&T Marine Salvage, Inc. CORPORATE OFFICE 9723 Teichman Road Galveston, Texas 77554	T: 24hr (1-409-744-1222) F: 1-409-744-5218	+1-409-770-7634 : Kevin Teichman +1-248-978-5842 : Mike Popa +1-409-739-3412 : Ronnie Rouse +1-409-692-4611 : Jim Elliott

3. Federal, State and Local Agencies

Agency	**Contact Number**
USCG National Response Center	T: 1-800-424-8802 T: 202-267-2675
United States Coast Guard – Sector Guam	Emergency: (671) 355-4821/22/24 T: (671) 355-4835/4881
United States Coast Guard – Captain of the Port	T: (671) 355-4800
Port Authority of Guam – Harbor Master	T: (671) 477-8697 / 5931 Ext. 333 R: *25440/ *1163

Port Authority of Guam – Port Police	T: (671) 472-2703
Guam Homeland Security Office of Civil Defence	T: (671) 475-9600 F: (671) 477-3727
Guam Environmental Protection Agency	T: (671) 300-4751/52/53 F: (671) 300-4531
Fire Department	Emergency : 911 T: (671) 565-2700 (Agat Fire Station) T: (671) 472-8139 (Piti Fire Station)

4. Guam Power Authority

Name	Position	Contact Number
John M. Benavente	General Manager	T: (671) 648-3180 F: (671) 648-3290
Jennifer Sablan	SPORD Manager	T: (671) 648-3103
Albert Florencio	SPORD Engineer III	T: (671) 300-8340
Ronald Okada	Generation Manager	T: (671) 475-5211
Power Plant Emergency Number	GPA Dispatch	T: (671) 475-1472-74
Sylvia Ipanag	Environmental Manager	T: (671) 648-3217
Norbert Madrazo	P&R Engr Supervisor (Env'l)	T: (671) 648 3031 R: 671*11*20151
Roger Pabunan	P&R Engr Supervisor (Env'l)	T: (671) 648 3032 R: 671*11*20152
Noel Cruz	Engineer III (Env'l)	T: (671) 648 3030 R: 671*11*20154

5. Hospitals

Agency	**Contact Number**
Guam Memorial Hospital (GMH)	T: (671) 647-2555
Guam Regional Medical City (GRMC)	T: (671) 645-5500 F: (671) 645-5501
US Naval Hospital Guam	T: (671) 344-9232 / 9211

6. Security Agency

Agency	**Contact Number**
To be updated once Security Contract is awarded.	T: F:

7. Environmental Support Companies

Agency	**Contact Number**
Unitek Environmental Guam	T: (671) 565-3151 F: (671) 565-3391
GRESCO Environmental	T: (671) 474-4738 F: (671) 472-4739
South Pacific Environmental Guam	T: (671) 649-7609 F: (671) 649-7610

APPENDIX E3. EQUIPMENT LIST & RECORDS

1. Introduction

This Appendix incorporates all responses to Section (e.3) of 33 CFR 154.1035 as applicable to the Island of Guam, situated in the United States Coast Guard, Guam Captain of the Port Zone.

It details the specific response requirements, and the contracted oil spill response resources, equipment and organizations.

2. Spill Response Organization

Oil Spill Response Operations Company (OSROCO) is the primary OSRO and has been approved as an OSRO by the USCG.

Classification: E for Inland/Near Shore

3. Spill Scenario

a. Average Most Probable Discharge (AMPD)

The AMPD used for design purposes is 3-barrel spill of Group I - non-persistent oil (Diesel) during bunkering operations at F3 Dock. Refer attachment 1. WCD Volume Calculations.

Equipment is designed to operate at the point of transfer, and is stationed so as to be deployed at the point of transfer within one hour of an oil spill being detected.

The equipment to response is consist of 100 ft. absorbent boom located at the facility. The facility has also stored disposal response equipment at a minimum 20 bales of absorbent pads ready to be deployed for initial containment response.

Spill Management Team:	Contracted Spill Removal Organization (OSRO):
Facility Spill Response Team (IP&E Holdings, LLC)	Oil Spill Response Operations Company (OSROCO)

b. Maximum Most Probable Discharge (MMPD)

Apra Harbor is a small Harbor, with an area of approximately 0.6 square miles. Winds are predominantly North Easterly or Easterly. Tidal movement is approximately 2.5 feet maximum, except during major storms (Typhoons) when the Port is closed to traffic, and all ships are removed from Port. The tidal current is greatest at the Harbor mouth, and would have little effect on oil movement toward the Eastern end of the Harbor.

The strategy for the equipment and resources provided to respond to the MMPD is to protect the sensitive areas to the East and South East of the Harbor, as well as to provide containment boom and both shoreline and on-water skimming capability.

Protective boom has been pre-staged to allow maximum response effectiveness for the protection of the most sensitive areas within the Harbor. This pre-staged boom will be located at either side of the mouth of Sasa Bay (3,500 feet total) and at the entrance to Piti Channel (1,200 feet). Pre-staged boom will be removable, and be able to be utilized elsewhere in the event of a higher alternative need.

Spill Management Team:	Contracted Spill Removal Organization (OSRO):
Facility Spill Response Team (IP&E Holdings, LLC)	Oil Spill Response Operations Company (OSROCO)

c. Worst Case Discharge (WCD)

Since IP&E Holdings, LLC only handles bunkering operations, the Marine Transportation Related WCD planning volume covered by this plan is 289 barrels of Group I - non-persistent oil (Diesel). Refer attachment 1 for the WCD Calculations.

Equipment will be designed to operate at the point of response. Equipment will be provided initially from local reserves and supplemented by internationally based equipment, which would be flown to Guam. Primary response will be requested from response centers having guaranteed (chartered) aircraft available.

The strategy for the equipment and resources provided is an extension of the strategy for the MMPD

Spill Management Team:	Contracted Spill Removal Organization (OSRO):
Facility Spill Response Team (IP&E Holdings, LLC)	Oil Spill Response Operations Company (OSROCO) T&T Marine Salvage, Inc.

4. Equipment List

a. Facility Equipment List

Equipment Description	Minimum Quantity	Location
Communications Equipment		
Telephone	5 units	Cabras Dispatch / GPA Terminal
Cellular Phone	15 units	Staff
Intrinsically Safe (I-Connect) Radio	15 units	Office / Staff
Safety Equipment		
First Aid Kit	3 units	Cabras Dispatch / GPA Terminal
Portable Eye Wash	2 units	Cabras Dispatch / F3 Dock
Emergency Eye Wash	1 units	GPA Terminal
Motor Equipment		
Tanker Trucks	10 units	Cabras Dispatch
Flatbed Truck	1 unit	IP&E Warehouse
Oil Spill Containment & Clean-up Equipment		
Absorbent Pad	20 bales	F3 Dock / GPA Terminal
Absorbent Booms	400 ft	F3 Dock / GPA Terminal
Absorbent Sand / Dust	20 bags	F3 Dock / GPA Terminal
Empty / Salvage Drums	10 pcs	F3 Dock / GPA Terminal

b. OSRO Equipment List

All Oil Spill Response equipment held by OSROCO is registered with the USCG. Complete list of equipment can be found in Attachment 5, Agreement OSRO Membership Program & Contractor Designation Agreement.

APPENDIX E4. COMMUNICATIONS PLAN

The primary method of communications to be used by IP&E Holdings, LLC operations is through I-CONNECT radios.

The system consists of more than fifteen (15) I-CONNECT portable handheld radio, intrinsically safe class I & II Division 1 and 2 groups connected through a repeater system owned and operated by I-Connect. This system will be used by IP&E for internal communications during normal operations and emergency response activities.

During transfer operations, Tristar Terminals Guam, Inc., as the operator of F1 Wharf will provide I-CONNECT radios to be used to all parties involved which are assigned to the following:

- 1 unit - F1 Dock Terminal Supervisor
- 1 unit - Vessel (Duty Officer)
- 1 unit - GPA Fuel Bulk Storage Facility (Terminal Operations Supervisor)

Cellular telephones offer a further communications back-up or alternate system. The cellular system (along with the telephone system) is well developed and has proved reliable through both typhoons and earthquakes.

Satellite telephone systems will be brought in by the overseas OSRO as required during emergency response.

APPENDIX E5. SITE SPECIFIC SAFETY AND HEALTH PLAN

1. Introduction

It is the policy of IP&E Holdings, LLC to carry out its business in such a manner that no person nor any property is knowingly placed at risk of injury or damage. Only employees covered by HAZWOPER are allowed to engage in emergency response operations for the release of, or substantial threats of the release of hazardous substances.

The following health and safety plan details requirements for protective equipment, decontamination, evacuation routes and refuges, and site safety and health plans.

2. Personal Protective Equipment

Response and clean-up workers must be provided with the appropriate personal protective equipment (PPE). The following guidelines will help select PPE for immediate response to spills of typical petroleum products (Diesel Fuel, Mogas, etc.) until more information about the spilled material and exposure conditions are available.

PPE is divided into four categories based on the degree of protection required.

- Level D Protection
  - Consists of a work uniform affording minimal protection used for nuisance contamination only.
- Level C Protection
  - Includes the use of an air purifying respirator when the concentration(s) and type(s) of airborne substance(s) is known and the criteria for using air purifying respirators are met.
- Level B Protection
  - Provides the highest level of respiratory protection but a lesser level of skin protection.
- Level A Protection
  - Required when the highest level of skin and respiratory protection is necessary. It is unlikely that Level A protection will be used for oil spill response.

Additional information on the levels of protection is discussed in 29 CFR 1910.120.

A PPE ensemble shall be selected and used during site entry to provide protection to a level of exposure below the permissible exposure limits and published exposure levels for known or suspected hazardous substances and health hazards.

a. Eye Protection

Safety glasses are needed when there is an eye hazard from flying objects, although they are useful in reducing the risk of eye injuries in any operations. If liquid splashes are a potential problem, liquid proof goggles or a face shield are needed.

b. Protective Clothing

Coveralls or slickers are needed if the task will soak normal work clothes with hydrocarbons. Disposable garments of coated olefin fibers (Tyvek (Reg.T.M.), etc.) are inexpensive and do not have to be decontaminated. Uncoated coveralls are not suitable for protection against liquids. Polyvinyl chloride (PVC) rain suits provide good protection and may be decontaminated. PVC or neoprene-coated nylon is also very good but costly when compared to Tyvek (Reg.T.M.).

c. Personal Floatation Devices

Personal floatation devices (PFD) or life jackets should be used on boats, piers, jetties, ships, or in other instances where the possibility of falling into deep water exists.

d. Hard Hats

Hard hats are required by the nature of work involved (overhead hazards), or at the discretion of management. Hard hats should always be worn in the immediate vicinity of operating cranes.

e. Gloves

PVC or PVC/Nitrile gloves (especially with rough textured surfaces) are a good choice because of cost, service life, and resistance to abrasion. Neoprene and nitrile are also good choices but may be easily punctured. Neoprene may also get slick when coated with oil. Butyl rubber swells in aromatic hydrocarbons and is not recommended for gasoline or other high aromatic hydrocarbons. PVA (polyvinyl alcohol) gloves perform well in permeation tests with petroleum products, but PVA is water-soluble and is not suitable for clean-up operations.

f. Boots

PVC boots or over boots (worn with street shoes) are economical and provide adequate protection against petroleum products. Neoprene also gives good protection but is significantly more expensive than PVC. Boots for response operations should have steel or composite toe caps.

g. Respiratory Protection

The main contaminants to consider when evaluating the need for respiratory protection in oil spill situations are benzene, total hydrocarbon vapors, and hydrogen sulphide (for sulphur containing materials). Refer to Safety Data Sheet (SDS) for the chemicals present in the product, exposure limits and appropriate respiratory protection required.

OSHA Respiratory Protection standards shall be followed.

3. Decontamination

Decontamination is the process of removing or neutralizing contaminants that have accumulated on personnel and equipment and is critical to health and safety in a spill response.

A decontamination plan shall be developed and set up before any personnel or equipment may enter areas where the potential for exposure exists. The decontamination plan should:

- Determine the number and layout of decontamination stations
- Determine the decontamination equipment needed
- Determine appropriate decontamination methods
- Establish procedures to prevent contamination of clean areas
- Establish methods and procedures to minimize worker contact with contaminants during removal of personal protective equipment
- Establish methods for disposing of clothing and equipment that are not completely decontaminated

Decontamination procedures must provide an organized process by which levels of contamination are reduced. The decontamination process should consist of a series of procedures performed in a specific sequence. Each procedure should be performed at a separate station in order to prevent cross-contamination. The sequence of

stations is called a decontamination line. The following sections present more specific decontamination procedures.

a. Personnel Decontamination

Personnel Decontamination for Level D Activities
Whenever decontamination is necessary for level D activities, personnel will go through the decontamination area, remove their coverall (if worn) and wash their boots, gloves, hands and face, before leaving the work area.
Personal Decontamination for Level C, B & A Activities - Minimum Procedures
Station 1: Segregated Equipment Drop Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool down station may be set up in this area. *Station 2: Outer Garment, Boot, and Glove Wash and Rinse* Scrub outer boots, outer gloves, and splash suit with decontamination solution of detergent water. Rinse off using plenty of water. *Station 3: Outer Boot and Glove Removal* Remove outer boots and gloves. Deposit in container lined with plastic. *Station 4: Canister and Mask Change* If worker leaves exclusion zone to change canister and mask, this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty. *Station 5: Boots, Gloves and Outer Garment Removal* Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic. *Station 6: Respiratory Protection Removal* Remove respiratory protection equipment. Avoid touching face with fingers. Equipment to be deposited on plastic sheeting. *Station 7: Field Wash* Hands and face are thoroughly washed. Shower as soon as possible.

b. Equipment Decontamination

Contaminated hand tools should be decontaminated (water wash) before removal from the site. Equipment showing gross contamination will be placed in a wash tub and the gross contamination removed. Gross decontamination should occur near the work site to prevent the spread of contamination.

Equipment that will not be damaged by water should be placed in a wash tub containing detergent and scrubbed on the outside with a bristle brush or similar utensil, and detergent water will be run through the inside. Equipment (inside and out) should be rinsed in a second wash tub. Decontamination should be followed by a distilled water rinse.

Equipment that may be damaged by water, such as instruments, may be carefully wiped clean using a sponge and detergent water or moist towel and rinsed or wiped with distilled water. Care should be taken to prevent any equipment damage.

Following decontamination, equipment should be placed in the support zone on clean plastic sheeting to prevent contact with contaminated soil. If the equipment is not to be used immediately, the equipment should be covered or wrapped in plastic sheeting or placed in containers to minimize potential airborne contamination.

Equipment and tools should be transported to the decontamination area and the following steps used to decontaminate the equipment:

- Personnel should dress in suitable safety gear to minimize personal exposure.
- Gross contamination or dirt should be removed in the exclusion zone. Contamination should be removed using blade scrapers or by other physical methods. Material removed should be handled in the same fashion as other contaminated materials.
- A steam cleaner may be used to clean gross contamination of equipment in the field, if the equipment is rinsed off in a disposal drum and plastic sheeting is placed on the ground around the drum. This gross decontamination should be performed in the exclusion zone with personnel dressed in suitable safety gear.
- A high pressure detergent wash or steam cleaner can be used to remove the contamination from the outside of equipment.
- The equipment should be rinsed with clean water.
- Sludge generated from the cleaning of equipment in the decontamination area should be shoveled from the area and placed in appropriate drums or bins. The sludge should be handled in a manner similar to contaminated materials.

When a transport or other vehicle requires decontamination, the following procedures should be followed:

- Personnel should dress in suitable safety gear to prevent personal exposure.
- Gross (external) contamination or dirt should be removed in the exclusion zone. Contamination should be removed using physical methods. Material removed should be handled in the same fashion as other contaminated materials.
- A steam cleaner may be used to clean gross contamination of equipment in the field. This gross decontamination should be performed in the exclusion zone with personnel dressed in suitable safety gear.
- A high pressure detergent wash or steam cleaner can be used to remove the contamination from the outside of equipment.
- The high pressure detergent wash should be followed by a rinse with clean water.
- Sludge generated from the cleaning of equipment in the decontamination area should be shoveled from the area and placed in appropriate drums or bins. The sludge should be handled in a manner similar to contaminated materials.

It will be necessary to establish exclusion, support and decontamination zones at the spill/clean-up site(s). The exclusion zone should be clearly marked as the area where contamination exists. Support

and decontamination zones should be located on the upwind side of an exclusion zone. The establishment of these zones is particularly important when site access and control is an issue.

4. Evacuation Routes and Refuges

A severe emergency, such as fire or explosion, may cut workers off from the normal exit. Therefore, alternate routes for evacuating victims and endangered personnel should be established in advance, marked and kept clear. Routes should be directed (1) from the exclusion zone through an upwind decontamination zone, and (2) from the support zone to an off-site location in case conditions necessitate a general site evacuation. The following guidelines will help in establishing safe evacuation routes:

- Place the evacuation routes in the predominantly upwind direction of the exclusion zone. (At a very large site, or one with many obstacles, some exits may be placed in the downwind fence line, normally an undesirable location. If this is done, workers must know that they are not "out" until they reach the designated safety area.)
- Run the evacuation routes through the decontamination zone. Even if there is not enough time to process the evacuees through decontamination procedures, there should be mechanism for accounting for all personnel.
- Consider the accessibility of potential routes. Take into account obstructions such as locked gates, trenches, cliffs, pits, tanks, drums, or other barriers, and the extra time or equipment needed to maneuver around or through them.
- Develop two or more routes that lead to safe areas and that are separate or remote from each other. Multiple routes are necessary in case one is blocked by fire, spill or vapor cloud. These routes must not overlap, because, if a common point were obstructed by a fire or other emergency all intersecting routes would be blocked.
- Mark routes as "safe" or "not safe" on a daily basis according to wind direction and other factors.
- Mark evacuation routes with materials such as barricade tape, flagging or traffic cones. Equally important, mark areas that do not offer safe escape or that should not be used in an emergency, such as low ground, which can fill with gases or vapors, or routes blocked by natural barriers, such as streams or cliffs.
- Consider the mobility constraints of personnel wearing protective clothing and equipment.

a. Safe Distances

No single recommendation can be given for evacuation or safe distances because of the wide variety of hazardous substances and releases found at the site. Safe distances can only be determined at the time of the emergency, based on a combination of site- and incident-specific factors. However, planning and outlining emergency scenarios will help familiarize personnel with options to consider. Factors that influence safe distances include:

- The toxicological properties of a substance
- The physical state of a substance
- The quantity released
- The rate of release
- The method of release
- The vapor pressure of the substance

- Vapor density relative to air
- Wind speed and direction
- Atmospheric stability
- The height of release
- Air temperature and temperature change with altitude
- Local topography (e.g., barriers may enhance or retard a cloud or plume, and attenuate a blast.)

b. Refuges

On-site refuges (safety stations) can be set up for localized emergencies that do not require site evacuation. These refuges should only be used for essential needs, such as short rest breaks, emergency response strategy meeting, or temporary relief during mild cases of muscle strain and heat stress. The refuge should be located in a relatively safe, but not necessarily "clean" area, e.g., along the upwind fence in specially cleared places or on the periphery of the exclusion zone. The refuge should never be used for activities such as eating, drinking or air changes. Typical items located in a refuge area include:

- A sitting/resting area that should be shaded if possible
- Water for decontamination
- Wind indicator
- Communications system with the (operations) command post
- First aid supplies (e.g., eye wash, stretcher, blankets)
- Special monitoring devices (e.g., extra detector tubes and personal monitors)
- Bolt cutters
- Fire extinguishers
- Hand tools

Other refuges can be set up in the support zone or, in the case of site-wide evacuation, off site at the safe exit destination. These will provide for emergency needs such as first aid for injured personnel, clean clothing and wash water for chemical exposure victims, and communications with the command post. In a site-wide evacuation, they can be used to house evacuation equipment, thereby reducing security problems. These refuges should be stocked with such items as:

- Decontamination supplies
- Oxygen and/or air
- Water
- Special testing equipment (pH paper, cyanide paper)
- First-aid supplies
- Communications system

5. HAZWOPER Regulations

HAZWOPER regulations require that a site safety and health plan be prepared for spill cleanup operations (post-emergency response phase). The plan must, at minimum, address the following subjects:

- A safety and health risk or hazard analysis for each task in the cleanup operation
- HAZWOPER training requirements
- Personal protective equipment to be used
- Medical surveillance requirements
- Frequency and types of air and personnel monitoring
- Work area sampling techniques and instrumentation to be used, including monitoring/sampling equipment maintenance and calibration procedures
- Site control measures
- Decontamination procedures for personnel, clothing and equipment
- Emergency procedures
- Confined space entry procedures

APPENDIX E6. LIST OF ACRONYMS & DEFINITIONS

ACRONYMS	DESCRIPTION
AQI	Alternate Qualified Individual
AMPD	Average Most Probable Discharge
Bbls	Barrels = 42 US gallons
CFR	Code of Federal Regulation
COMNAVMAR	Commander Naval Forces Marianas
COTP	Captain of the Port
CWA	Clean Water Act
EPA	United States Environmental Protection Authority
GPA	Guam Power Authority
GEPA	Guam Environmental Protection Authority
HAZWOPER	Hazardous Waste Operations Emergency Response
IP&E	IP&E Holdings, LLC
MMPD	Maximum Most Probable Discharge
MTR	Marine Transportation Related
NOAA	National Oceanographic and Atmospheric Administration
NRC	National Response Centre
OPA90	The Oil Pollution Act of 1990
OSRO	Oil Spill Response Organization
OSROCO	Oil Spill Response Operations Company
PAG	Port Authority Of Guam
QI	Qualified Individual
SDS	Safety Data Sheet
WCD	Worst Case Discharge

SCHEDULE G

Spill Prevention, Control and Countermeasure (SPCC)

IP&E

Fueling Excellence

September 2018

SPILL PREVENTION CONTROL & COUNTERMEASURE (SPCC) PLAN
(GPA Fuel Bulk Storage Facility)

(Uncontrolled when Printed)

I. PROFESSIONAL ENGINEER CERTIFICATION [40 CFR 112.3 (d)]

CERTIFICATION: By means of this certification, I attest that I am familiar with the requirements of provisions of 40 CFR Part 112, that I or my designated agent have visited and examined the facility, that this SPCC Plan has been prepared in accordance with good engineering practices, including consideration of applicable industry standards, and with the requirements of this Part, that procedures for required inspections and testing have been established and that the Plan is adequate for the facility.

Engineer Name	GREGORY HARTKOPF	Registration Number	951	State	GUAM

Signature

December 4, 2018

Date

II. MANAGEMENT APPROVAL [40 CFR 112.7]

The undersigned IP&E Management Representative hereby confirms that IP&E is fully committed to the protection of the environment and the navigable waters of the United States, and through the implementation of this Spill Prevention, Control and Countermeasure Plan, IP&E is also committed in maintaining high standards for preventing discharges through training, procedures, equipment, and workforce outline herein. This SPCC plan has full approval of IP&E Management who have committed the necessary resources to implement the plan.

The **Guam Operations Manager (GOM)** is the designated person accountable for the discharge prevention and reports directly to IP&E Management regarding the facility and has the authority to commit necessary resources to implement this SPCC plan.

Authorized Facility Representative:

Joleen M. Mesa
Supply & Distribution Director
9/28/2018
Date

Table of Contents

1. INTRODUCTION

IP&E Holdings, LLC.(dba: IP&E Guam) hereinafter referred to as IP&E Guam came into an agreement with Guam Power Authority (GPA) to operate and manage the GPA Fuel Bulk Storage Facility hereinafter referred to as Facility effective October 1, 2017.

The purpose of this Spill Prevention, Control, and Countermeasure (SPCC) Plan is to describe measures implemented by IP&E Guam to prevent oil discharges from occurring, and to prepare to respond in a safe, effective, and timely manner to mitigate the impacts of a discharge.

This Plan has been prepared to meet the requirements of Title 40, Code of Federal Regulations, Part 112 (40 CFR 112).

This SPCC Plan provides guidance to IP&E Guam management to comply with the SPCC rule in conducting the operations for the Facility.

- Complete site inspections as outlined in the Inspections, Tests, and Records section of this Plan (Section 5.1). Conduct Monthly Inspection as per the checklists included in Appendix C.
- Perform preventive maintenance of equipment, secondary containment systems, and discharge prevention systems described in this Plan as needed to keep them in proper operating condition.
- Conduct annual employee training as outlined in the Personnel, Training, and Discharge Prevention Procedures section of this Plan (Section 5.2).
- If either of the following occurs, submit the SPCC Plan to the EPA Region 9 Regional Administrator and the Guam Environmental Protection Agency (GEPA) along with other information as detailed in Section 3.7 of this Plan:
    1. The facility discharges more than 1,000 gallons of oil into or upon the navigable waters of the U.S. or adjoining shorelines in a single spill event; or
    2. The facility discharges oil in quantity greater than 42 gallons in each of two spill events within any 12-month period.
- Review the Plan on an annual basis. Update the Plan to reflect any "administrative changes" that are applicable, such as personnel changes or revisions to contact information, such as phone numbers. Administrative changes must be documented in the Plan review log of Section 1.2 of this Plan.
- Every five (5) years, following the annual review, amend the SPCC Plan to include more effective prevention and control technology, if such technology will significantly reduce the likelihood of a spill event and has been proven effective in the field at the time of the review.
- Amend the SPCC Plan within six (6) months whenever there is a change in facility design, construction, operation, or maintenance that materially affects the facility's spill potential.

1.1. Location of SPCC Plan [§112.3(e)]

A copy of this SPCC Plan is kept on-site at the Facility, and are available for review by the Regional Administrator (GEPA / EPA) during normal working hours.

Copies of the SPCC plan are also available at the office of the Health, Safety, Security and Environmental (HSSE) Manager of IP&E Guam, located at 643 Chalan San Antonio, Suite 100, Tamuning, Guam 96913.

1.2. Plan Review [§112.5]

IP&E Guam management will review the SPCC plan annually by the person in charge of spill prevention or an authorized staff familiar with the requirements of the applicable regulations. This review entails an inspection of all locations to verify the accuracy of the SPCC plan.

During the annual review, issues that will be addressed includes inspection of spill response equipment; a review of new spill prevention and response technology; new locations containing processes or physical structures on the site that impact the potential size or location of spills; changes in regulations and/or notification requirements to local and federal agencies; changes in onsite and offsite response organization and personnel; and any other amendment to the plan that will aid with the implementation.

In compliance with 40 CFR 112.5(b), a thorough review and evaluation of this Plan will be conducted at least once every five (5) year. IP&E Guam management will review and evaluate for any change in the facility design, construction, operation, or maintenance that materially affects the facility's potential for an oil discharge including, but not limited to:

- Commissioning of above-ground storage tanks (AST);
- Reconstruction, replacement, or installation of piping systems;
- Construction or demolition that might alter secondary containment structures;
- Changes of product or service, revisions to standard operation, modification of testing/inspection procedures, and use of new or modified industry standards; and
- Maintenance procedures.

Amendments of this nature are referred to as Technical amendments, and must be certified by a registered Professional Engineer as per 40 CFR 112.3(d).

Non-technical amendments can be done by the IP&E Guam management. Non-technical amendments include the following:

- Change in the name or contact information (i.e., telephone numbers) of individuals;
- Responsible person for the implementation of this Plan; or
- Change in the name or contact information of spill response or clean up contractors.

The Plan will be implemented as soon as possible following any amendments, but no later than six (6) months from the date of the amendment. The HSSE Manager is responsible for initiating and coordinating revisions to the SPCC Plan.

Appendix A contains a Plan Review and Evaluation Log to be used to document and record reviews, amendments and certifications.

1.3. Cross-Reference with SPCC Provision [§112.7]

This SPCC Plan does not follow the exact order presented in 40 CFR part 112. Table 1.1 presents a cross-reference of Plan sections relative to applicable parts of 40 CFR part 112.

Table 1.1 Plan Cross-reference

40 CFR Provision	Plan Section	Plan Description
112.3(d)	Section I	Professional Engineer Certification
112.3(e)	Section 1.1	Location of SPCC Plan
112.5(a)	Appendix A	Plan Review Log
112.5(b)	Section 1.2	Plan Review
112.7	Section II	Management Approval
112.7	Section 1.3	Plan Cross-Reference
112.7(a)(1)	Section 1.4	Compliance Schedule
112.7(a)(2)	Section 1.5	Deviation to Requirements
112.7(a)(3)	Section 2.1	Physical Layout
112.7(a)(3)(i)	Section 3.1	Oil Types and Container Capacity
112.7(a)(3)(ii)	Section 3.2	Discharge Prevention Measures
112.7(a)(3)(iii)	Section 3.3	Discharge or Drainage Control
112.7(a)(3)(iv)	Section 3.4	Discharge Response and Clean-up
112.7(a)(3)(v)	Section 3.5	Disposal of Recovered Materials
112.7(a)(3)(vi)	Section 3.6	Contact Information
112.7(a)(4)	Section 3.7	Discharge Notification
112.7(a)(5)	Section 3.8	Discharge Response Procedure
112.7(b)	Section 4.1	Potential Discharge and Direction of Flow
112.7(c)	Section 4.2	Secondary Containment
112.7(d)	Section 4.3	Demonstration of Practicability
112.7(e)	Section 5.1	Inspection, Test and Records
112.7(f)	Section 5.2	Personnel, Training and Discharge Prevention Procedures
112.7(g)	Section 5.3	Site Security
112.7(h)	Section 5.4	Facility Tank Truck Loading and Unloading
112.7(i)	Section 5.5	Brittle Fracture Evaluation
112.7(j)	Section 5.6	Applicable Standards
112.7(k)	Section 5.7	Qualified Oil-filled Operational Equipment
112.8(b)	Section 6	Discharge or Drainage Control
112.8(c)(1)	Section 7.1	Container Compatibility
112.8(c)(2)	Section 7.2	Secondary Containment
112.8(c)(3)	Section 7.3	Rainwater Water Drainage
112.8(c)(4-5)	Section 7.4	Buried or Partially Buried Tanks
112.8(c)(6-8)	Section 7.5	Aboveground Storage Tank
112.8(c)(9)	Section 7.7	Effluent Treatment Facility
112.8(c)(10)	Section 7.8	Correct Visible Discharges
112.8(c)(11)	Section 7.9	Mobile or Portable Storage Container
112.8(d)	Section 8	Facility Transfer Operations, Pumping & Facility Process
112.20(e)	Section 9	Substantial Harm Criteria

1.4. Amended Compliance Schedule [§112.7 (a)(1)]

The Compliance Schedule, which must be completed as a consequence of the initial inspections of the facilities, as well as subsequent recommendations made as part of regular inspection or plan amendments, are listed in Table 1.2. Any future change in the facilities design, construction, operation, or maintenance, which materially affects the facility's potential for the discharge of oil to the waters of Guam, must also meet SPCC regulations. An additional Compliance Schedule may be necessary at that time to bring the facility into environmental compliance.

Table 1.2 Amended Compliance Schedule

Action Item	Target Completion	Date Completed	Completion Status
Bulk Fuel Storage Tank: Tank 1934			
The tank underwent an API 653 Out-of-Service Internal (OOSI) inspection in June-August, 2006 and it was recommended to conduct an Out-of-Service Internal Inspection (OOSI) after 10 years. In December 2016 an In-Service External inspection was conducted by a certified inspector (Island CERTS Corporation). Action: Engage the facility owner (GPA) on their plan to conduct the next API 653 OOSI inspections and monitor implementation as per Tank Inspection and Refurbishment Plan – Appendix G.	As soon as possible		
Conduct SPCC Inspection as per the Plan.	Monthly	On-going	
Bulk Fuel Storage Tank: Tank 1935			
The tank underwent an API 653 Out-of-Service Internal (OOSI) inspection in April 2004 and it was recommended to conduct an Out-of-Service Internal Inspection (OOSI) after 10 years. In December 2016 an In-Service External inspection was conducted by a certified inspector (Island CERTS Corporation). Action: Engage the facility owner (GPA) on their plan to conduct the next API 653 OOSI inspections and monitor implementation as per Tank Inspection and Refurbishment Plan – Appendix G.	As soon as possible		
Conduct SPCC Inspection as per the Plan.	Monthly	On-going	
Pipelines			
An API 570 Inspection was conducted in June 2014. The inspection report concluded that all circuits of the piping system were in fair condition except for circuits 3 & 4. A number of repairs and replacements of	As soon as possible		

corroded pipes and fittings were recommended. The inspection report recommends that the 12-inch and 24-inch issue lines be replaced. The existing concrete saddles should also be replaced because they enhance corrosion. Action: Engage the facility owner (GPA) on their plan to implement all recommendations from the June 2014 API 570 Inspection report as soon as possible.			
Conduct SPCC Inspection as per the Plan.	Monthly	On-going	
Cathodic Protection System			
In April 2014, Corrpro conducted an annual survey of the facility Cathodic Protection System. Since then, no annual recommended survey was conducted. Action: Conduct facility Cathodic Protection System survey as soon as possible.	As soon as possible	Completed	Annual Inspection implemented.
Conduct SPCC Inspection as per the Plan.	Monthly	On-going	
Secondary Containment			
The facility cannot discharge water accumulated inside the tank farm due to expired NPDES Permit. After heavy rain substantial amount of water stays inside the tank farm. Action: Apply renewal of NPDES Permit as soon as possible.	As soon as possible		
Release Detection			
The facility automatic release detection system is currently offline and under repair. Action: Engage the facility owner (GPA) on their plan to put the system back online. Conduct daily physical (visual) inspection of the monitoring wells to detect for any release.	As soon as possible		

1.5. Deviation to Requirements [§112.7 (a)(2)]

The facility uses Environmental Equivalency to comply with the requirements of section 112.8(c)(6).

As an operator, IP&E Guam is responsible for routine maintenance of the facility and does not have contractual authority to proceed with any non-routine or major maintenance activities. Major tank maintenance, inspection and repair within the facility are planned, managed, and executed by GPA or their designated contractor.

While waiting for GPA management plan for tank Out-of-Service Internal Inspection, IP&E Guam implemented equivalent means of spill prevention, control, and countermeasure for the Integrity testing of storage tanks. Details can be found in Section 7.5 Aboveground Storage Tank [§112.8(c)(6-7)] of this plan.

In addition, there are two (2) sections that are not applicable to the facility and therefore are not listed within this SPCC Plan namely:

1. There are no procedures, methods, or equipment not fully operational at the facility (112.7) and
2. There are no bulk storage containers with internal heating coils (112.8(c)(7).

2. GENERAL FACILITY INFORMATION

2.1. Physical Layout [§112.7(a)(3)]

This SPCC Plan has been prepared with site-specific information for the following facility:

Facility Owner:	Guam Power Authority (GPA)
Facility Name:	GPA Fuel Bulk Storage Facility
Facility Address:	Eastern Piti Channel, Apra Harbor, Piti, Guam, 96925
Operator Name:	IP&E Holdings, LLC. (dba: IP&E Guam)
Operator Address:	643 Chalan San Antonio, Suite 100 Tamuning, Guam 96913-3644

Guam Power Authority (GPA) Fuel Bulk Storage Facility located on thirty (30) acres land adjacent to the GPA Cabras and Piti Power Plants in the municipality of Piti near Apra Harbor on the island of Guam.

The Facility has two (2) steel aboveground Fuel Oil storage cone roof tanks, with associated piping and valves, pumps to receive, store and deliver Fuel Oil to the power generating plants on the island of Guam. Both tanks are constructed to ASTM and API standards for petroleum oil storage and operating conditions.

Each tank is equipped with eight (8) twelve-inch diameter overflow lines that protects the structural integrity in the event of accidental overfilling. The tanks are also equipped with a mechanical Varec gauge that indicates the liquid level of the tank by level indicator located at ground level.

The GPA Fuel Bulk Storage Facility receives up to approximately three million (3,000,000) barrels of Fuel Oil annually on tankers from various points in Asia and in the Middle East berthing at the Commercial Port of Guam petroleum dock, which is operated by Tristar Terminal Guam, Inc. (Tristar). Tankers up to 280,000 – 300,000 barrel capacity discharge one at a time into a twenty-four (24)-inch pipeline owned and operated by Tristar, and connected to the Facility. Fuel oil is distributed from the Facility by pipeline to three locations: the Cabras Power Plants, Piti and MEC Power Plants both located adjacent to the Facility, and to the Tanguisson Power Plants located approximately 16.7 miles away on the northern portion of the island. Currently, pipeline transfers to Tanguisson Power Plant are no longer operational.

The tanks and associated infrastructure were completed in 1976 on compacted coral limestone with no previous history of hydrocarbon contamination. The operations at the site include the storage and transfer of Fuel Oil in and out of the Facility.

A Facility diagram (Figure 2.1 and 2.2 below), shows the locations of oil containers, piping and spill control structures.

Figure 2.1 Facility Diagram

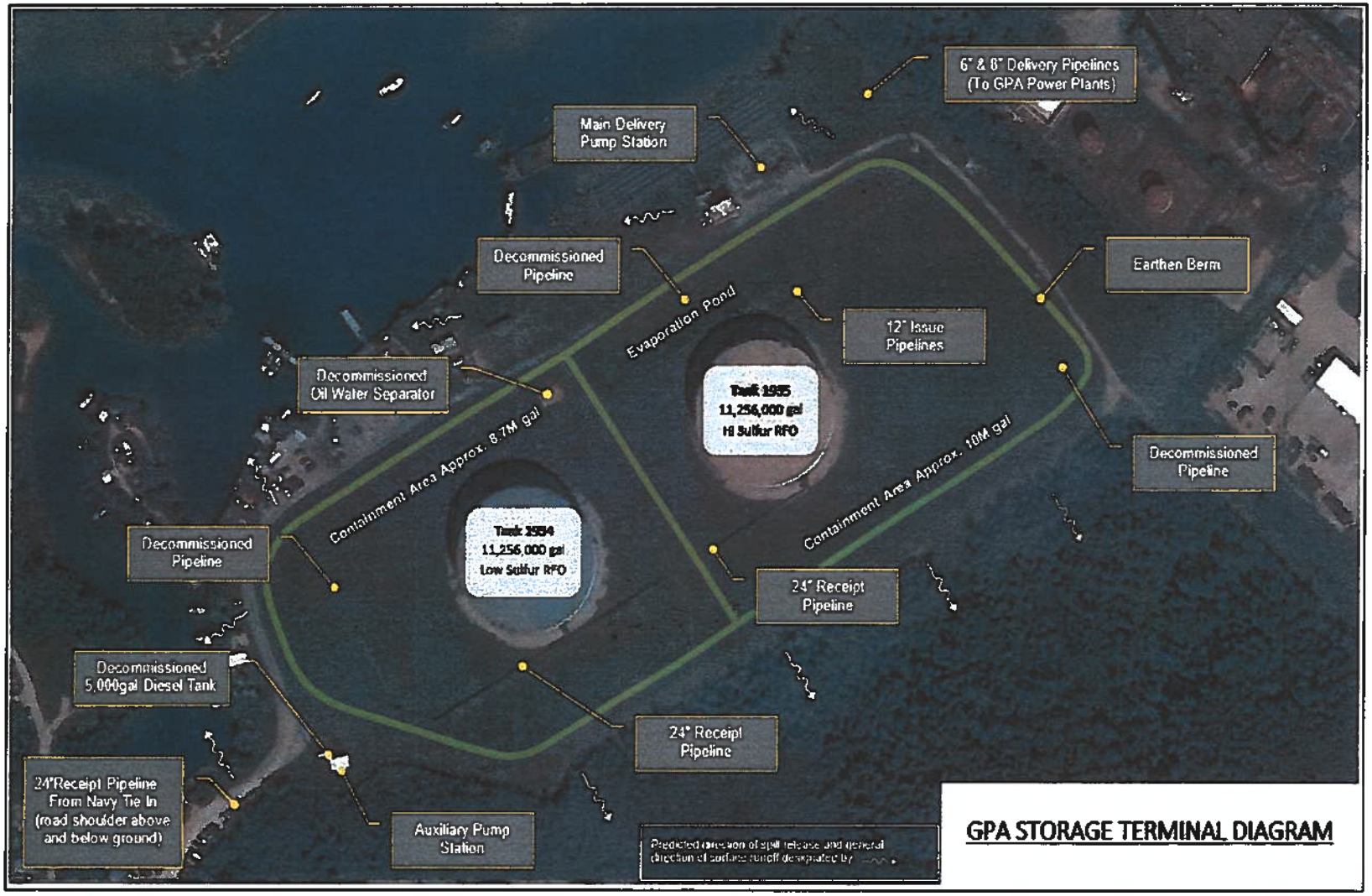


Figure 2.2 Facility Pipeline Layout

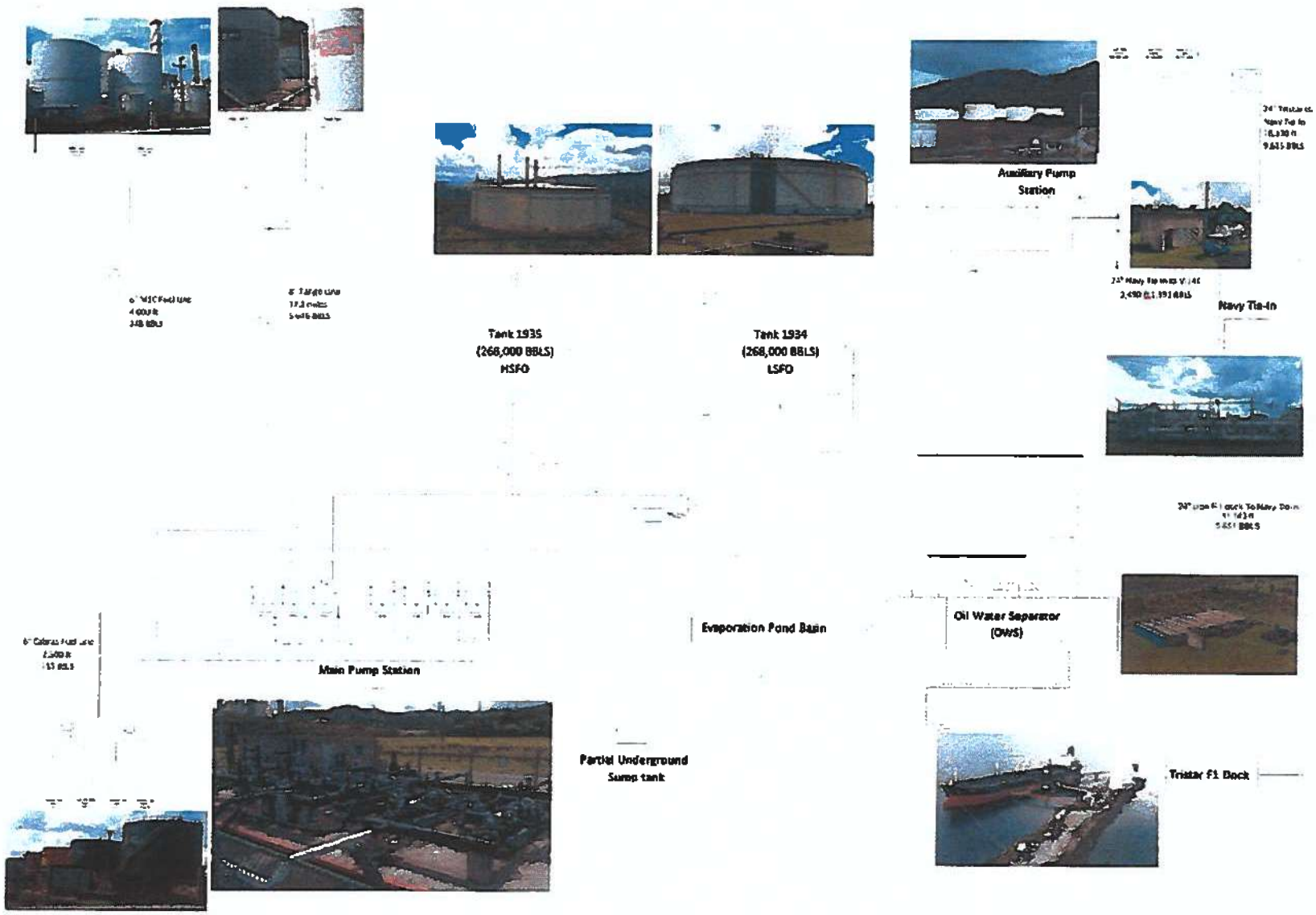
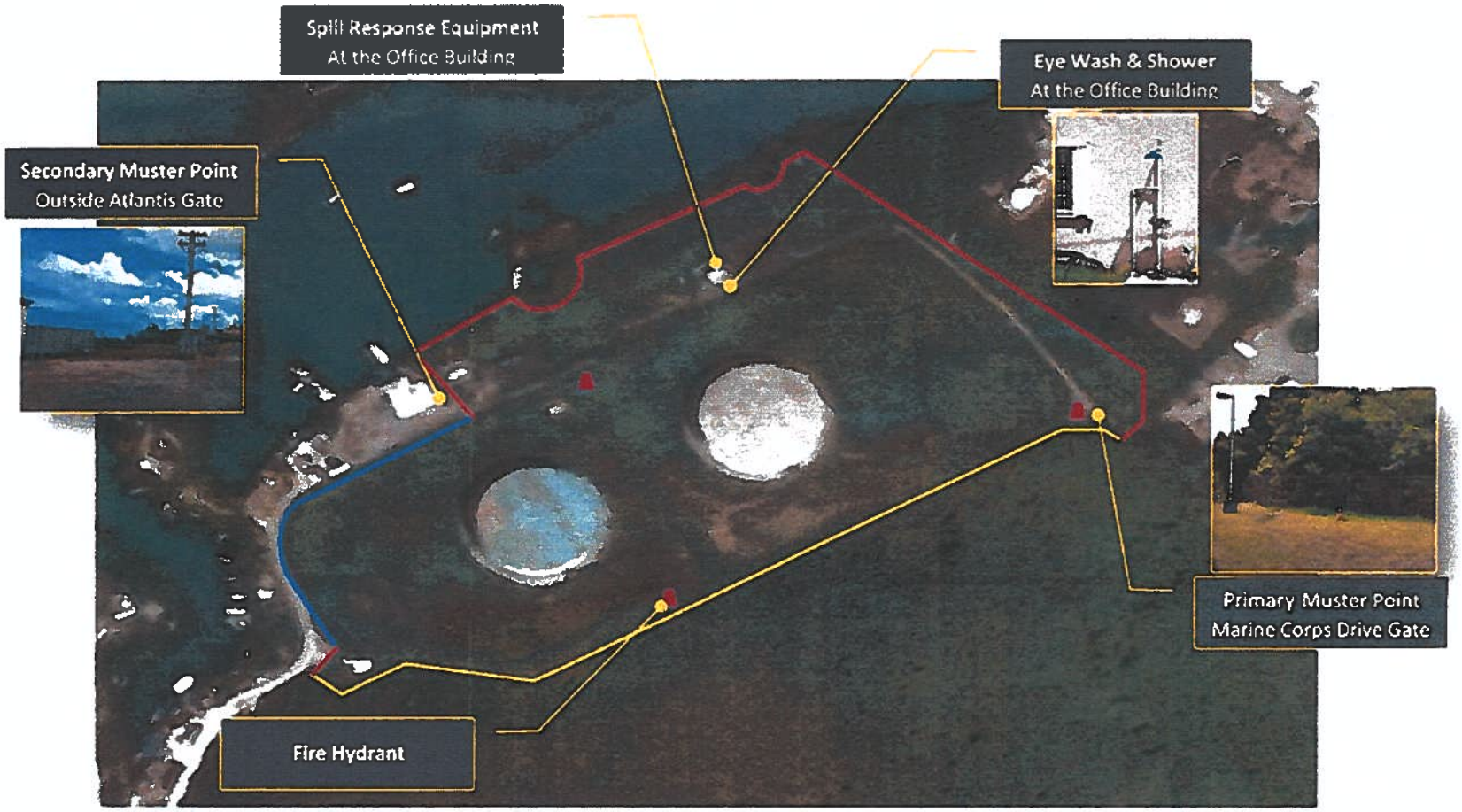


Figure 2.3 Facility Emergency Equipment and Evacuation Plan



3. SPCC PROVISIONS

3.1. Oil Types and Container Capacity [§112.7(a)(3)(i)]

Petroleum products stored at the Facility are summarized in Table 3-1. The capacities of oil containers present at the Facility are also shown in Figure 2-1.

Table 3-1. Oil Types and Container Capacity

Tank	Storage Capacity (gal)	Contents	Installation Date	Description
Bulk Fuel Storage (Tank 1934)	11,256,000	Residual Fuel Oil (RFO)	1976	Single-walled, above-ground, cylindrical, vertical, welded steel tank, within compacted coral, grass-lined, secondary containment.
Bulk Fuel Storage (Tank 1935)	11,256,000	Residual Fuel Oil (RFO)	1976	Single-walled, above-ground, cylindrical, vertical, welded steel tank, within compacted coral, grass-lined, secondary containment.
Pump Station (Drum Storage)	Up to 220	Used Oil / Oily Absorbents	N/A	55-gallon drums to accumulate used oil, and oily response materials. Drums are stored within delivery pump station shallow containment curb.
Rectifier 1 (Cathodic Protection)	60 approx.	Transformer Oil		Oil-cooled Impressed Current Cathodic Protection (ICCP) Systems.
Rectifier 2 (Cathodic Protection)	60 approx.	Transformer Oil		Oil-cooled Impressed Current Cathodic Protection (ICCP) Systems.
Auxiliary Pump Station Fuel Tank (Decommissioned)	5,000	No. 2 Diesel	1976	Single-walled, above-ground, cylindrical, horizontal, welded steel tank, within concrete secondary containment. No longer operational.

3.2. Discharge Prevention Measures [§112.7(a)(3)(ii)]

Tanks 1934 and 1935 are steel aboveground storage tanks with fixed dome roofs. Both tanks have steel floors and are equipped with an external Cathodic Protection system. Tanks were erected by Chicago Bridge & Ironworks (CBI) who built the tanks at the Shell Agat Terminal (currently Tristar Terminals Guam Inc.) at the same time. The tanks have a concrete ring foundation around the perimeter with a compacted sand sub-base below a welded steel plate floor.

In 1999, a hydraulic conductivity analysis of the bermed area was conducted. The analysis states in part:

> *All field data and modeling indicate that any fuel spilled within the bunded area of the tank farm would not travel very far in either the horizontal or vertical direction. The modeling of seven feet of product*

in the tank bund for three days resulted in about 1/8th inch of vertical movement. Horizontal travel during that same time period is estimated to be around six inches. These numbers do not take into account the fact that petroleum hydrocarbons do not travel through the soil matrix as fast as water, resulting in even smaller movement.

There are several product transfer pipes that connect to both tanks. Pipeline gate valves and tank valves are always kept in a closed and locked position, except as necessary to pump fuel. All product transfer piping is situated above ground on supports, except where passing through earthen containment berms. Secondary containment systems for both tanks consist of an earthen bermed area. The secondary containment areas are partially connected hydraulically for a total storage capacity of approximately 15,000,000 gallons. Each tank requires 11,256,000 gallons secondary containment. See Appendix E for Secondary Containment Capacity Calculations.

Inspection checklist is completed for each tank, which includes inspection of the integrity of the tank, piping, and the secondary containment area for signs of any releases. Refer to Appendix C, Facility Inspection Checklist for details.

3.3. Discharge or Drainage Control [§112.7(a)(3)(iii)]

The storage and transfer of fuel and the use of oil-filled equipment in the Facility is made safe by regular inspections, maintenance of pipes and tanks, and proper training of site personnel on fuel transfer and spill response procedures. In addition, controls such as secondary containment structures and pre-positioning of spill prevention and control equipment also mitigate any potential releases from primary containment structures.

Drainage control from secondary containment areas is restrained by lockable valves, which are maintained in the closed, locked position. The accumulated storm water will be inspected prior to discharge to ensure no oil will be discharged to the surrounding area. See Appendix D, Secondary Containment Draining Procedures, for a detailed procedure on berm draining.

3.4. Discharge Response and Clean-up [§112.7(a)(3)(iv)]

Countermeasure are in place at the Facility for discharge recovery, response and clean-up. A full discussion of the procedure is given in Section 3.8 Discharge Response Procedure of this plan.

3.5. Disposal of Recovered Materials [§112.7(a)(3)(v)]

Any impacted materials will be properly disposed according to Guam Environmental Protection Agency (GEPA) and US EPA regulations, as applicable. Impacted sorbents, booms, granular sorbent materials, and soil will be taken to a facility that is licensed to process non-hazardous materials such as petroleum-impacted response items and soil.

3.6. Contact Information [§112.7(a)(3)(vi)]

The personnel responsible for the administration, maintenance and upkeep of this SPCC Plan are listed in the following table.

Table 3.2 Responsible Personnel

Name	Job Title	Contact Number
Joleen M. Mesa	Supply & Distribution Director	671-797-0481
Lyndon C. Entera	Field Operations Manager	671-797-0464
John A. Robertson	Guam Operations Manager / Facility Response Coordinator	671-747-2141
Michael D. Francisco	Terminal Operation Supervisor	671-797-0474
Maria Luisa G. Bisnar	HSSE Manager	671-727-2289
Oliver T. De Vera	HSSE Coordinator	671-777-6409

The primary individual responsible for ensuring the implementation of this SPCC Plan is the **Guam Operations Manager**. Responsibilities with respect to the SPCC Plan include:

- Review of all plans related to oil and hazardous substance storage, handling or transfer facilities for new construction, maintenance, or remodeling to determine if an SPCC Plan amendment is required;
- Initiation of facility modifications to achieve compliance with the SPCC guidelines
- Ensure that the SPCC Plan is current and responsive to the activities and operations performed at the facility; and
- Implementation of inspection plans as listed in this plan.

Notification and reports to outside agencies and regulatory authorities are the responsibility of the Guam Operations Manager in coordination with the HSSE Manager. They will determine if a reportable spill has occurred and make the necessary notifications. Verbal notifications to government agencies and authorities will be made, if necessary.

Table 3.3 Notification Contact Information

Agency	Contact Number	Secondary Contact Number
Federal & Local Agencies		
• National Response Center (NRC)	800-424-8802	202-267-2675
• Guam Environmental Protection Agency (GEPA)	671-300-4751	671-300-4752 to 3
• Fire and Emergency	911	
Environmental Contractors		
• Unitek Environmental	671-689-4656	671-565-3391
• Gresco	671-565-7473	671-565-7575
• Buena Vista Environmental	671-649-0880	671-482-0554
Facility Owner		
• John M. Benavente, GPA General Manager	671-648-3180	
• Jennifer G. Sablan, SPORD Manager	671-648-3103	
• Albert Florencio, SPORD Engineer III	671-300-8340	

If the spill poses a danger to human health or the environment, is in excess of five (5) gallons on land, or causes any sheen on water, the responsible personnel must call GEPA within 24-hours to report the spill. The Guam Operations Manager who is the Facility Response Coordinator (FRC) is responsible to write all spill incident reports and submit them to the GEPA within five (5) days. IP&E Guam will maintain copies of the spill incident reports for at least three (3) years from the date of the incident. The FRC will decide when normal activities may resume at the site.

3.7. Discharge Notification [§112.7(a)(4)]

Whenever a discharge occurs, an incident notification will be initiated. Appendix B shows the Incident Notification Form that will be filled out by IP&E Responsible Personnel as listed in Table 3.2 in this section to inform IP&E and GPA management. The same form will be submitted to GEPA and other agencies as appropriate.

3.8. Discharge Response Procedure [§112.7(a)(5)]

This section is intended to provide guidelines in the determination if a spill is of harmful quantities and notification of appropriate IP&E personnel and other agencies.

In the event of a spill or release of petroleum products from any of the areas described in this plan, the following general guidelines will direct what action is to be taken.

3.8.1. Identification

The person observing the spill or release must immediately notify his/her supervisor who, in turn must notify the Guam Operations Manager or his/her designee. The Guam Operations Manager or his designee will evaluate the situation and determine if harmful quantities of oil or petroleum have been released. For the purposes of this plan harmful quantities will be defined as:

1. A discharge causing a sheen or film on the surface of the waters of the United States or its adjoining shoreline;
2. A discharge of more than 1,000 gallons on land or water;
3. A discharge of more than 42 gallons of oil in each of two discharges occurring within any twelve month period;
4. A discharge causing a sludge or emission to be deposited beneath the surface of the waters of the United States or its adjoining shoreline;
1. A discharge which violates the Guam Water Quality Standards (GWQS Section III, Subpart E); or
2. A discharge that poses an immediate threat to the health and welfare of human beings or the environment.

Any discharges not meeting any of the above criteria will be considered a non-harmful quantity. Small spills of petroleum products within the facility will be cleaned up using absorbent material without disrupting normal operations. Daily inspections of the Facility and specific procedures will identify any small spills which will be addressed immediately.

3.8.2. Immediate Response

The following steps are to be taken when an employee discovers a large or uncontrolled release within the facility:

1. Move away from the area of the release.
2. Alert others of the release verbally or through radio saying **"Release at (location)"**.
3. Stop all Operations.
4. If there are injured persons, remove the victim from the immediate area of danger and render first aid. If injuries are severe, call 911 for emergency medical assistance.
5. Notify the Guam Operations Manager or his/her alternate to inform the current status of the release.
6. The Guam Operations Manager or his/her alternate to assess the situation and decide whether to "**Fight**" or "**Flight**" by obtaining the following information to the best extent possible:
    - Type of product released;
    - Location of the release;
    - Estimated quantity of the release;
    - Rate of the release;
    - Direction of the release; and
    - Potential for fire and/or explosion.

DO NOT EXPOSE PERSONNEL TO THE RISK OF INJURY OR LOSS OF LIFE.

<u>If the decision is to 'FIGHT'</u>

1. Don the appropriate personal protective equipment.
2. Eliminate all possible sources of ignition/detonation.
3. Remove or isolate ignitable and incompatible materials from the area of the release as practical.
4. Locate and stop the source of the release by:
    - Checking and repairing valves;
    - Over-packing a leaking container or placing it into a drip pan;
    - Transferring the product into another containment vessel; or
    - Sealing the source.
5. Contain the release to prevent further migration within and from the Facility by:
    - Constructing a dike with sandbags or sorbent materials around the release if the ground surface is concrete, asphalt, or a comparable substrata;
    - Isolating drains, exposed soils and any surface imperfections such as cracks and potholes in concrete or asphalt from the release using sorbent materials; and
    - Pumping the product into designated recovery tank as soon as practical using a discharge pump or a vacuum truck.

If the decision is to 'FLIGHT'

1. Guam Operations Manager or his/her alternate is to immediately evacuate all personnel and account for everyone. Alert Facility personnel of the order to evacuate via Radio or verbally. *"Evacuate! Evacuate!"*
2. Personnel are to proceed along the nearest evacuation route to the designated assembly area outside the Facility. *See Figure 2.3 Facility Emergency Equipment and Evacuation Plan*
3. Guam Operations Manager or his/her alternate is to call for emergency assistance.

3.8.3. Clean-up Operations

Appropriate personal protective equipment such as boots, gloves, coveralls, respirators, SCBA's, etc. as necessary will be utilized during containment and clean-up activities.

Sorbent materials such as blanketing pads, or booms may be used to form dikes around releases within the facility. Sorbent materials used for diking must be replaced as they become saturated, or reinforced with fresh sorbents if immediate removal is not possible. For large releases, a vacuum truck will be hired to remove standing product from within diked areas. Otherwise, smaller releases of standing product will be removed with sorbent material.

Oil recovery and clean-up operations shall be implemented as soon as possible once the source of the release has been secured and containment activities are completed. Recovery operations must not be postponed unless authorized by the Incident Commander (Guam Operations Manager). If recovery operations are postponed until the following day because of darkness, personnel must be available to maintain close surveillance of the containment booms to ensure accumulations of oil are adequately contained.

Materials such as clothes, absorbents, soil, concrete or asphalt that cannot be effectively decontaminated should be removed to an appropriate disposal facility after the waste has been properly identified. These solid materials will be placed into 55-gallon open head drums for disposal. The waste will be labeled, managed, stored, and disposed of in accordance with applicable environmental regulations.

The spill response materials and equipment maintained at the Facility will be used only for their respective intended purposes.

3.8.4. Spill Response Equipment

The following table lists all spill response equipment that are kept in the Facility. Additional equipment may be made available from other IP&E locations on an "as needed" basis. Equipment listed here constitutes only the minimum requirements for on-site inventory.

Table 3.4 Spill Response Equipment Inventory

Description	Location	Capability
Communication System		
• Radios	With personnel	Emergency notification; request offsite or on-site assistance
• Telephones	Site offices plus cellular phones with staffs	Emergency notification; request offsite or on-site assistance
Safety		
• Emergency Eye Wash	Site office, Loading Rack, and Receipt Manifold	Treatment of chemical/physical exposure
• First-aid kits	Site office	Treatment of exposure/injury
Spill Control/Clean-up		
• Sorbents, booms, pads, granular	Spill clean-up kit in site office and emergency generator building	Absorb releases
• PPE - boots, gloves, etc.	Inside spill clean-up kit at Lubricant Warehouse, Drum Storage Area, and Maintenance Shop	Protect personnel during clean-up
• Open water boom	Within Terminal	Containment of on-water releases
Fire Control		
• Portable fire extinguishers	Site office, gantry, tank farm	Fire fighting

All emergency response equipment will be inspected on a monthly basis using the checklist defined in Appendix C of this document.

In addition to Spill Equipment listed, IP&E Guam has a contract agreement with Oil Spill Response Operations Company LLC. to response at any time during spill event as necessary.

4. SOURCE DESCRIPTIONS

4.1. Potential Discharge and Direction of Flow [§112.7(b)]

Table 4.1 presents expected volume, discharge rate, general direction of flow in the event of equipment failure, and the means of secondary containment for the Facility storage systems. Failure types include: catastrophic tank failure; leaking storage tank walls, bottom, valves, or flanges; overfilling of tank; leaking product transfer pipelines, valves and flanges; improper cleaning procedures; improper water draining procedures.

Table 3.1 Potential Discharge Volumes and Direction of Flow

Tank	Storage Capacity (gal)	Estimated Discharge Rate (gph)	Flow Direction	Containment
Bulk Fuel Storage Tank 1934	11,256,000	11,256,000	Northwest to Apra Harbor	Earthen berm, approximately 8,600,000 gal capacity.
Bulk Fuel Storage Tank 1935	11,256,000	11,256,000	Northwest to Apra Harbor	Earthen berm, approximately 10,100,000 gal capacity.
Pipelines Outside of Secondary Containment Area	10,000	10,000	To Apra Harbor North and West of facility, or to wetland south/east of facility	None
Pipelines (Delivery Pump Station)	520	520	Northwest to Apra Harbor	Containment curb directing flow to Recovery Tank
Drum Storage (Delivery Pump Station)	Up to 550 (10-55 gal drum)	55	Northwest to Apra Harbor	Containment curb directing flow to Recovery Tank
Rectifier 1 (Cathodic Protection for Tanks)	60	60	Northwest to Apra Harbor	Concrete Flooring around the area.
Rectifier 2 (Cathodic Protection for Piping)	60	60	Northwest to Apra Harbor	Concrete Flooring around the area.
Auxiliary Pump Station (Decommissioned)	5,000	5,000	West to Apra Harbor	Concrete dike, 5,000 gallon capacity

4.2. Secondary Containment [§112.7(c)]

4.2.1. Bulk Fuel Storage Tanks 1934 and 1935

The Tank 1934 containment is irregularly shaped, approximately 190,000 ft^2 with 2 x 6 ft. high berm. Additionally, 40 CFR 112.8(c)(2) requires bulk storage operations to "provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation." Should a 12-in rain event occur at the time of a fuel release, the effective containment

height of the berm would be reduced from 6 ft. to 5 ft., which equate to the a volume of 950,000 ft^3 or 7,100,000 gals. Approximately 4,100,000 gals less than the tank capacity.

The Tank 1935 containment is also irregularly shaped, approximately 250,000 ft^2 with 2 x 6 ft. high berm. Applying 1 ft. freeboard for 24-hour rainfall event, the containment capacity equates to a volume of 1,250,000 ft^3, or 9,350,000 gals, which is inadequate to contain the contents of the tank.

In order to handle a catastrophic overflow of one (1) of the storage tanks, a 40 ft. by 4 ft. notch at the midpoint of the earthen berm separating the two containment areas are provided to allow hydraulic connectivity between the two (2) areas. Connecting both berms provides a total containment capacity of about 15,000,000 gallons. See Appendix E for Secondary Containment Capacity Calculations.

Storm water runoff from the secondary containment areas flows through drainage valves onto the adjacent grounds to the south of the Facility. However, the Facility has no valid National Pollutant Discharge Elimination System (NPDES) Permit during the review, thus water discharging outside the Facility is on hold and all discharge valves are closed and locked.

Water accumulation is just allowed to evaporate inside the secondary containment areas or the use of a Vacuum truck to remove the water as needed.

4.2.2. Auxiliary Pump Station

The fuel supply tank at this pump station has a capacity of 5,000 gallons. Secondary containment measures 12.5' x 21.5' x 3.5' x 7.48 gal/ft3 = 7,035 gallons. Allowing for a 12-inch rain event, the capacity of the secondary containment is 5,000 gallons, which is adequate. Storm water collected within the secondary containment is drained under supervision to the surrounding grass. The use of this fuel tank is currently being discontinued (decommissioned) due to the tank not meeting regulatory standards.

4.2.3. Main Delivery Pump Station

The pump station is located just north of the Tank 1935 berm, adjacent to the site office. There are no fuel storage tank in this area. Aside from pumps, the area stores 55-gallon drums that contains accumulated used oil and oily response materials. In addition, there are approximately 64 feet of 12-inch lines, 20 feet of 10-inch lines, and 24 feet of 8-inch lines within a concrete slab that has a shallow containment curb to divert flow to a nearby Recovery Tank that has a total capacity of approximately 520 gallons. Storm water draining is controlled and can only be done by the Terminal Supervisor or by his designated Operator.

4.3. Demonstration of Practicability [§112.7(d)]

It is completely practicable to install, operate, and maintain all secondary containment structures as noted in sections 112.7 (c), 112.7(h)(1), 112.8(c)(2), 112.8(c)(11) to prevent a discharge. Containment systems in this Facility include earthen berms or concrete structures.

5. DISCHARGE PREVENTIONS

5.1. Inspections, Tests and Records [§112.7(e)]

5.1.1. Routine Inspections

IP&E Guam shall conduct regular inspections of the bulk storage tanks and associated lines, containment area and all other regulated units at the facility in order to identify potential leaks and prevent fuel spills. The records shall be kept on-site for a minimum of three (3) years. The details of the on-going facility inspections are given in Appendix C. Table 5.1 that summarizes the various types of inspections performed at the facility.

Table 5.1. Routine Inspection Program

Component	Description	Frequency	Checklist
Walk-through	Inspect for signs of leaks and spill within the facility, water accumulation and conditions of drain valves. Inspection of secondary containment structures	Daily	None
Facility Inspection	Visual Inspection. Inspect signs of deterioration and completeness of equipment. Verifying the proper functioning of overfill prevention systems. ▪ Storage Tank & Secondary Containment ▪ Pipelines ▪ Emergency Equipment ▪ Facility Inspection	Monthly	Appendix C

All problems regarding tanks, piping, containment, or response equipment will be immediately reported to the FRC. Visible oil leaks from tank walls, piping, or other components will be repaired as soon as possible to prevent a larger spill or a discharge to navigable waters or adjoining shorelines. Pooled oil is removed immediately upon discovery.

5.2. Personnel, Training and Discharge Prevention Procedures [§112.7(f)]

All employees whose job involves the storage or handling of oil or hazardous substances must have appropriate spill control training as required by 40 CFR 112.7(f). This training will be the responsibility of the FRC or his designee. The training will include initial training for new employees and newly assigned employees, and follow-up discharge prevention briefings at least once a year to assure adequate understanding of the SPCC Plan.

5.2.1. Initial Training

All new employees whose job involves the storage or handling of oil or petroleum substances shall receive training from his or her supervisor or other designated person. The training will include, as a minimum, the following items:

- A requirement to read and understand the pertinent sections of this SPCC Plan;

- Operation and familiarization with all oil-using and oil storage areas. Employees should understand their responsibilities in the event of a spill or release. Also discuss the hydraulic capacities of all spill containment structures;
- Discharge procedure protocols, i.e., the steps necessary to properly drain a bunded area;
- Operation, maintenance, and safety procedures to be used with all equipment in the event of a spill. Employees should understand which measures must be taken to prevent ignition of the spilled or leaked product;
- A review and discussion of past spills that relate to potential causes of spills in the new employee's job;
- Location and use of personal protective equipment;
- Location of fire lanes and procedures to be implemented to allow the fire Division and other assistance teams access to the facility;
- A review of current U.S. Coast Guard, U.S. Environmental Protection Agency, and GEPA regulations pertaining to oil spill prevention and pollution.
- A discussion of spill reporting and emergency response procedures; and
- An acknowledgment by the employee that failure to comply with the federal regulations concerning oil and petroleum substances spill prevention and control may result in adverse action against the employee, including disciplinary action, suspension, or termination, depending on the circumstances.

5.2.2. Follow-up Training

Follow-up training maybe conducted at a frequency determined by IP&E Guam management but at a minimum annually for all IP&E personnel at the Facility. This training may be accomplished individually or in groups, in brief segments, or complete reviews. The training shall include, as a minimum the following items:

- A review of the SPCC Plan sections that are related to the employee's job responsibilities;
- A discussion of spills since the last review to illustrate the need for proper procedures;
- A review of spill reporting and emergency response procedures;
- An opportunity for employee feedback on conditions in their specific work area, including discussions of the results of any inspections relative to spill prevention; and
- A written reaffirmation by the employee of his/her understanding of the SPCC program and the possible ramifications of non-compliance with spill prevention procedures.

As an additional measure, all IP&E Guam employees whose job involves the storage or handling of oil or hazardous substances shall comply with appropriate training as required by 29 CFR 1910.120 (HAZWOPER).

5.3. Site Security [§112.7(g)]

The Facility has a security service personnel at the premises 24 hours a day, 7 days a week. The site is enclosed by a chain link fence on all sides and sufficient lighting that provides an additional measure of security. All tank and transfer valves, and secondary containment drainage valves are locked in the closed position when in non-operating status. Both the inlet and outlet transfer pump areas are secured by an additional chain link fence with locked gate. All pipelines not in current service are blind flanged.

5.4. Facility Tank Truck Loading and Unloading [§112.7(h)]

This Facility does not have a loading/unloading rack and therefore, not subject to the requirements of this section. The Diesel Pump Station Fuel tank is decommissioned.

5.5. Brittle Fracture Evaluation [§112.7(i)]

All of the bulk storage tanks within the tank farm are field-constructed tanks. Therefore, if any of these tanks undergoes a repair, alteration, reconstruction, or a change in service that might affect the risk of a discharge or failure due to brittle fracture, IP&E Guam will coordinate with GPA to evaluate the tank(s) for risk of brittle failure for them take appropriate action, as necessary.

5.6. Applicable Standards [§112.7(j)]

IP&E Guam follows the prevention standards within 40 CFR 112 – Oil Pollution Prevention.

- Subpart A- General Requirements for All Facilities and All Types of Oil,
- Subpart B- Requirements for Petroleum Oils and Non-Petroleum Oils,
    - 112.8 SPCC Plan Requirements for Onshore Facilities (excluding production facilities)

Additionally, IP&E Guam shall follow all applicable industry standards and local standards. These standards include:

- Guam Environmental Protection Agency (GEPA), Guam Water Quality Standards, revised 2001.
- Guam Environmental Protection Agency (GEPA), Guam Water Pollution Control Act, Chapter 47 as revised.
- Steel Tank Institute, Standard SPOO 1: Standard for the Inspection of Aboveground Storage Tanks, revised July 2005.
- American Petroleum Institute, Standard API 570: Piping Inspection Code (Inspection, Repair, Alteration and Rerating of In-Service Piping Systems, revised 1998.
- American Petroleum Institute, Standard API 653: Tank Inspection, Repair, Alteration, Reconstruction, revised 1999.
- National Fire Prevention Association, Standard NFPA 30: Flammable and Combustible Liquids, revised 2000.

5.7. Qualified Oil-filled Operational Equipment [§112.7(k)]

The Facility maintains Oil-filled operational equipment, these pieces of equipment and their capacities are listed on Table 5.3.

It should be noted that there is one (1) Oil-filled electrical equipment (transformer) present in the Facility that is operated and owned by public utilities and is not included in this plan.

Table 5.3. List of Oil-Filled Operational Equipment

Description	Contents	Capacity
Rectifier 1 (Cathodic Protection for Tanks)	Transformer Oil	60 gals (approx.)
Rectifier 2 (Cathodic Protection for Piping)	Transformer Oil	60 gals (approx.)

Figure 5.1 Location of Oil-Filled Operational Equipment

6. FACILITY DRAINAGE

6.1. Diked Storage Area Drainage & Valves [§112.8(b)(1)]

All drainage from secondary containment areas is restrained by lockable valves that are maintained in the closed, locked position. Any accumulated storm water is inspected prior to discharge to ensure that no oil will be discharged to the surrounding area. No pumps or ejectors are used to empty secondary containment areas without approval and supervision.

6.2. Diked Drainage Valves [§112.8(b)(2)]

Only manual, open-and-closed designed valves are used for the secondary containment areas within the Facility. Storm water discharges from bunded areas are only allowed after proper procedures have been followed. See Appendix D for the Secondary Containment Draining Procedures.

6.3. Drainage Systems from Undiked Areas [§112.8(b)(3-4)]

Where transfer piping are not provided with secondary containment, regular daily inspections are conducted at these areas. During product transfers, a pipeline patrol who regularly checks all pipelines will be utilized. Should there be any discharges, it will be immediately cleaned using Facility spill response equipment. Due to its location, any discharges will not reach to nearby waters but will stay in the Facility.

6.4. Lift Station Pump [§112.8(b)(5)]

This portion of the SPCC regulations is not applicable to the Facility since there is no continuous treatment of drainage waters that requires a lift pump from one treatment process to the next; all drainage treatment is via a gravity process. Therefore, no water treatment unit at the Facility would require a backup lift station pump

7. BULK STORAGE CONTAINERS

7.1. Container Compatibility [§112.8(c)(1)]

The oil storage tanks used in the Facility are constructed of steel. The design and construction of all storage containers are compatible with the characteristics of the oil product they contain, and with temperature and pressure conditions. All small tanks meets the Steel Tank Institute (STI) standards for shop fabricated aboveground storage tanks while large tanks meets the American Petroleum Institute (API) standards for field-erected tanks.

Piping between fixed above-ground bulk storage tanks is made of steel and placed aboveground on appropriate supports or belowground.

7.2. Secondary Containment [§112.8(c)(2)]

The secondary containment system for Tanks 1934 and 1935 has sufficient capacity (approximately 15,000,000 gallons) to contain the entire contents of either of the tanks since the two (2) containment berms are sufficiently connected hydraulically. See Appendix E for Secondary Containment Capacity Calculations.

Table 7.1 Secondary Containment Calculations

Source Type	Largest Single Container Capacity	Calculations
Tanks 1934 & 1935	11,256,000 gal	15,000,000 gals [A]
Delivery Pump Station	55 gal	520 gal [B]

Notes:

[A] See Appendix E – Secondary Containment Capacity Calculations.

[B] Area has concrete slab with curb to divert flow to a nearby collection tank that has a total capacity of approximately 520 gallons.

7.3. Rainwater Water Drainage [§112.8(c)(3)]

No drainage of storm water from secondary containment areas is permitted without following discharge protocols. Prior to discharging any storm water, the water is inspected for any sheen, the sheen is removed via sorbent pads, the water is then released to the on-site percolation system and the drain is closed and relocked. See Appendix D for the Secondary Containment Draining Procedures and additional storm water discharge information.

The Facility has no valid National Pollutant Discharge Elimination System (NPDES) Permit during the review, thus water discharging outside the Facility is on hold and all discharge valves are closed and locked.

7.4. Buried or Partially Buried Tanks [§112.8(c)(4-5)]

The Recovery Tank located beside the pump station is considered to be partially buried. This tank has approximately 520 gallons capacity used to hold storm water and if discharges occur in the delivery pump station. Since it is not mainly used to store petroleum products, cathodic protection is not required.

7.5. Aboveground Storage Tank [§112.8(c)(6-7)]

All Shop-Fabricated aboveground storage tanks will be tested for integrity on a regular schedule and after any material repairs. The frequency and type of testing is determined as per SP001- Standard for the Inspection of Aboveground Storage Tanks by the Steel Tank Institute (STI). Refer to Section 5.1 Inspections, Tests and Records for details.

For Field-Constructed tanks (Tank 1934 & Tank 1935), an Environmental equivalency measures are implemented as follows:

1. **Integrity Inspections.** The facility conducts daily walk-through to detect initial signs of spills and leaks around the storage tanks including pipelines. In addition, to inspect signs of deterioration of the tanks and associated appurtenances, a monthly inspection is conducted using the checklist stated in Appendix C. Any abnormalities found during these inspections will be immediately reported to Terminal Supervisor for necessary actions.

2. **Release Detections.** A continuous leak monitoring and detection system with permanent sensors are installed around the tanks. Should there be a leak observed underneath the tanks and its surroundings, the sensor will immediately trigger the alarm located in the Data Logger panel inside the facility office building. Once any alarm is observed, immediate action will be initiated. Moreover, facility personnel inspects the tank farm daily for any signs of leaks.

3. **Overfill Protections.** Each tank is equipped with eight (8) twelve-inch diameter overflow lines that protect the structural integrity in the event of accidental overfilling. The tanks are also equipped with a mechanical Varec gauge that indicates the liquid level of the tank by level indicator located at ground level. To prevent tank over-filling, an operator is stationed at the tank and another individual is stationed either at the fuel-pumping end or at the cargo ship, both with communication radios. The operator at the tank visually observes the fill rate of the tank via a Varec tank gauge and relays the progress to the operator who is in control of the fuel delivery. To allow for a factor of safety, the product transfer is discontinued at 90% full as directed by the tank operator via radio.

4. **Cathodic Protection.** Tanks 1934 and 1935 are steel aboveground storage tanks with fixed dome roofs. Both tanks have steel flooring and are equipped with an impress cathodic protection system to protect tank bottom floors from corrosions. This system is monitored and surveyed annually by a third party company to ensure maximum protection of the tanks.

5. **Secondary Containments.** The facility has a secondary containment berm around the two (2) storage tanks with sufficient size to contain the single largest tank capacity including the precipitation should there be a catastrophic event. The berms are equipped with manually operated valves that are closed and locked to deter un-authorized discharges. Refer to Appendix E for Secondary Containment Capacity Calculations.

6. **Facility Spill Response.** The facility has a response plan in place in the event of any spills or releases while doing operations. This response plan is approved by United Sates Coast Guard (USCG) Sector Guam and is reviewed and tested through quarterly drills and exercises. The facility has also sufficient

spill equipment and trained personnel to respond initial releases. Furthermore, IP&E Guam has a membership agreement with Oil Spill Response Organization to respond for larger spills. The agreement is reviewed and renewed annually. For detailed information, refer to the Facility Response Plan.

There are no heated tank coils within tanks at the facility; therefore §112.8(c)(7) is not applicable.

7.6. Engineered To Avoid Discharges [§112.8(c)(8)(i-v)]

7.6.1. Tanks 1934 and 1935

To prevent tank over-filling, an operator is stationed at the tank and another individual is stationed either at the fuel-pumping end or the cargo ship, both with communication radios. The operator at the tank visually observes the fill rate of the tank via a Varec tank gauge and relays the progress to the operator who is in control of the fuel delivery. To allow for a factor of safety, the product transfer is discontinued at 90% full as directed by the tank operator via radio. There are no automatic overfill protection systems at the Facility.

The tank levels are manually gauged daily by IP&E Guam trained personnel before the start of any product transfers. In addition, a 3rd party surveyor will conduct inventory monthly and prior and prior to the start of any product transfers from the vessel and after the completion of product transfers.

7.7. Effluent Treatment Facility [§112.8(c)(9)]

There is an Oil-Water Separator (OWS) in the Facility however currently not being utilized. Should the OWS be used, this SPCC plan will be revised to include OWS and regular inspections will be conducted.

7.8. Correct Visible Discharges [§112.8(c)(10)]

Through the scheduled inspection of the facility at regular intervals, any leaks from tank seams, bolts, gaskets, piping, pumps, valves, or secondary containment areas are promptly reported and cleaned up. This applies to both inside and outside any containment bunds.

7.9. Mobile or Portable Storage Container [§112.8(c)(11)]

The 55-gallon drums and the 5-gallon containers of Lubricants are stored within the Facility that provides secondary containment for any release.

8. FACILITY TRANSFER OPERATIONS, PUMPING AND FACILITY PROCESS

8.1. Buried Pipeline [§112.8(d)(1)]

The underground cargo pipelines from the Navy Tie-in to the Facility are fitted with protective wrapping and coating. They are also cathodically protected as required in the standards for piping in 40 CFR 280. If a section of buried line is exposed for any reason, it will be carefully inspected for deterioration. If corrosion damage is found, additional examination and corrective actions are conducted as indicated by the magnitude of the damage.

8.2. Terminal Connections [§112.8(d)(2)]

The transfer point for fuel via pipeline connections to the Facility storage tanks is capped or blank-flanged when the pipeline is not in service or when it is in standby service for an extended time.

8.3. Pipe Support Design [§112.8(d)(3)]

All aboveground piping is held in place by supports that minimize abrasion and corrosion. The pipes and pipe supports were in good condition at the time of review. It is part of the standard SPCC procedures to inspect and maintain the pipeline supports.

8.4. Regular Piping & Appurtenances Inspections [§112.8(d)(4)]

All aboveground pipelines are regularly inspected as noted in the Appendix C Inspection Checklist. The inspection checklist for piping includes an assessment of flange joints, expansion joints, valves, catch pans, pipeline supports, valve locks, and general condition of the piping surface and paint.

8.5. Vehicular Warnings [§112.8(d)(5)]

All aboveground piping is either fastened to the concrete containment bunds, structural steel pipe supports, adjacent concrete buildings, or along concrete walls, away from vehicular traffic, or within concrete pipe chases. There are no pipelines or oil transfer operations that would be affected by vehicular traffic in the area of petroleum storage.

9. SUBSTANTIAL HARM CRITERIA [§112.20(e)]

Based on its location, IP&E Guam management has determined that the facility could not, because of its location, reasonably be expected to cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines.

The certification form contained in 40 CFR 112, Appendix C has been completed and maintained. The form can be found in Appendix F in this document.

APPENDIX A – Plan Review & Evaluation Log

APPENDIX B – Incident Notification Form

APPENDIX C – Monthly Terminal Inspection Checklist

1. Tank and Secondary Containment Inspection
2. Pipeline Inspection
3. Facility Inspection
4. Emergency Equipment Inspection

APPENDIX D – Storm Water Draining Procedure & Log

APPENDIX E – Secondary Containment Capacity Calculations

APPENDIX F – Substantial Harm Determination

APPENDIX G – Tank Inspection and Refurbishment Plan

SCHEDULE H

NPDES Permit

UNITED STATES ENVIRONMENAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR BULK FUEL STORAGE FACILITIES

NPDES PERMIT NO. GUG000001

In compliance with the provisions of the Clean Water Act, 33 U.S.C. 1251 et seq., ("the Act"), the following discharges to territorial waters in Guam are authorized in accordance with this general National Pollutant Discharge Elimination System ("NPDES") permit: (1) tank bottom water draws, (2) treated storm water which may be discharged concurrently with tank bottom draws, (3) hydrostatic test water from integrity testing of piping and tankage, (4) service water flows associated with incidental leaks, system tests, and facility maintenance activities, and (5) firewater system testing from five bulk fuel storage facilities in Guam, as specified below.

Discharges shall be in accordance with effluent limitations, monitoring and reporting requirements, and other conditions set forth in Parts I through VI herein. The discharge of pollutants not specifically set forth in this permit is not authorized.

This permit shall become effective on the first day of the month that begins at least 45 days after the final issuance of this general permit. This permit and the authorization to discharge shall expire at midnight, the day before five years from the effective date of the permit.

This permit was issued on:	01/31/2019
This permit shall become effective on:	04/01/2019
This permit shall expire on:	03/31/2024

Signed this 31st day of January, 2019

[S]
Tomás Torres, Director
Water Division
U.S. EPA, Region 9

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I. REQUIREMENTS FOR NPDES PERMITS AND COVERAGE CONDITIONS

A. Permit Applicability and Coverage Conditions

1. Operations Covered. This permit establishes effluent limitations, prohibitions, reporting requirements, and other conditions on discharges from the below named bulk fuel storage facilities located on Guam (section I.A.3).

2. Location of Coverage. The permit coverage area consists of surface and marine waters in the Territory of Guam (Guam) that receive effluent from the five facilities listed below discharge into the following receiving waters: Apra Harbor, Piti Channel, and Big Guatali River. Apra Harbor is a near-shore territorial water of Guam designated as Category M-3 ("Fair" quality) marine water, the Piti Channel is a Category S-3 ("Fair" quality) fresh waterbody, which then discharges to Apra Harbor, and the Big Guatali River is a Category S-3 ("Fair" quality) fresh waterbody located in Agat, Guam.

3. Facilities Covered. This permit is intended to authorize discharges from the following five bulk fuel storage facilities operating in Guam:

A. Mobil Oil Guam Inc./Cabras Terminal,
B. Tristar Guam F-1 Pier Terminal,
C. South Pacific Petroleum Corporation/Cabras Island Terminal,
D. Tristar Guam Agat Terminal, and
E. Guam Power Authority Piti Terminal.

Coverage under this permit is not available for any other facilities. If any of the above-named facilities change ownership or control the new responsible entities shall resubmit NOIs pursuant to paragraph 6. below.

The permitted outfalls for the five facilities above are described as follows. The Mobil Oil Guam Inc./Cabras Terminal has two permitted outfalls (Outfall 001 – Area A Tank Farm; Outfall 002 – Area C Tank Farm). The Tristar Guam F-1 Pier Terminal contains a single outfall (Outfall 001 – drainage from bulk storage area and pipeline receipt and transfer manifold area). The South Pacific Petroleum Corporation/Cabras Island Terminal has two permitted outfalls (Outfall 001 – Drainage from bulk storage area and pipeline receipt ad transfer manifold area; Outfall 002 – Drainage from tank truck loading area). The Tristar Guam Agat Terminal contains a single outfall (Outfall 001 – drainage from bulk storage area and pipeline receipt ad transfer manifold area). The Guam Power Authority Piti Terminal has three permitted outfalls (Outfalls 001, 002 and 003 all collect storm water or any release from the tanks). All Outfalls

authorize discharge of both treated effluent from the operations described above, as well as treated storm water which may be discharged concurrently.

4. Modifications and Revocations. This permit may be modified or revoked at any time on the basis of any new data that was not available at the time of permit issuance if the new data would have justified the application of different permit conditions at the time of issuance. This includes any information indicating that cumulative effects on the environment are unacceptable. Such cumulative effects on the environment include unreasonable degradation of the marine environment due to continued discharges, in which case the Director, Water Division, Region 9 may determine that additional conditions are necessary to protect the marine environment or special aquatic sites. Permit modification will be conducted in accordance with 40 CFR Parts 122.62, 122.63 and 124.

5. Prohibitions. During the term of this general permit, operators are authorized to discharge under the general permit the enumerated waste streams subject to the restrictions set forth herein. This permit does not authorize the discharge of any waste streams that are not part of the normal operation of the facility, or any pollutants that are not ordinarily present in such waste streams.

6. Notification Requirements.

a. Coverage Under This Permit. Procedures for requesting coverage under a general permit are provided by NPDES regulations at 40 CFR 122.28. In accordance with these regulations, all dischargers requesting coverage under the permit shall submit a Notice of Intent ("NOI"). Information to be provided includes the legal name and address of the owner or operator, the facility name and location, type of facility and discharges, previous permits, and the receiving water(s). All NOIs shall be signed in accordance with 40 CFR 122.22.

For the five bulk fuel storage facilities listed above, written NOIs shall be submitted no later than 30 days after the effective date of this permit. Initiation of discharges authorized by this permit may not begin until EPA has reviewed the submitted information and notified the permittee in writing that their NOI has been approved.

b. Termination of Operations. Facility shall notify the Director in writing within 60 days after permanent termination of discharges from their facility.

c. Duty to Provide Notice of Intent for Continued Activity. If the permittee wishes to discharge under the authority of this permit <u>after</u> its expiration date, the permittee must submit a notice of intent to EPA to do so. The Notice of Intent shall be submitted at least 180 days before the expiration date of this permit, and shall include the information specified in Part I.A.6.a above. Timely receipt of a complete Notice of Intent by EPA shall qualify the Permittee

for an administrative extension of its authorization to discharge under this permit pursuant to 5 U.S.C. Section 558(c), until a new permit is issued and becomes effective.

d. Submission of Data and Other Reports. The permittee must electronically submit compliance monitoring data and reports using the electronic reporting tool provided by EPA Region 9 (NetDMR). The permittee must electronically report monthly discharge monitoring reports (DMRs) using NetDMR, which may be accessed from the internet at http://www.epa.gov/netdmr. Other notifications or reports required herein shall be submitted electronically using NetDMR.

B. Requiring an Individual Permit

1. The Director may require any Permittee proposing to discharge or discharging under the authority of this permit to apply for and obtain an individual NPDES permit. The following criteria (40 CFR Part 122.28(b)(3)), as well as other relevant considerations, may be used in making such determinations:

a. Whether the discharger is in compliance with the conditions of this general permit.

b. A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source.

c. Effluent limitations guidelines are promulgated for point sources covered by the general permit.

d. Circumstances have changed since the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary.

e. The discharger(s) is a significant contributor of pollutants. In making this determination, the Director may consider the following factors:

(1) The location of the discharge with respect to waters of the United States;
(2) The size of the discharge;
(3) The quantity and nature of the pollutants discharged to waters of the United States; and
(4) Other relevant factors.

2. The Director may require any Permittee authorized by this permit to apply for an individual NPDES permit only if the Permittee has been notified in writing that an individual permit application is required.

3. Any Permittee authorized by this permit may request to be excluded from the coverage of this general permit by applying for an individual permit. The owner or operator shall submit an application together with the reasons supporting the request to the Director.

4. When an individual NPDES permit is issued to a Permittee otherwise subject to this general permit, the applicability of this general permit to that owner or operator is automatically terminated on the effective date of the individual permit.

5. Any operators who seek to obtain an individual NPDES permit would need to submit a consistency certification to Guam Bureau of Statistics and Plans for review as a federal license or permit activity (15 CFR 930, Subpart D).

II. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Effluent Limits and Monitoring Requirements

1. The discharger is authorized to discharge treated water associated with the following operations: tank bottom water draws, ship to shore transference spills and leaks, hydrostatic test water from integrity testing of piping and tankage, service water flows associated with incidental leaks, system tests, and facility maintenance activities, and firewater system testing. All discharges must be in compliance with the final effluent limits and monitoring requirements specified in Table 1. Compliance with these requirements is based on monitoring at outfall locations described in I.A.3 above.

2. The discharge of pollutants at any point other than the outfall numbers specifically authorized in this permit is prohibited, and constitutes a violation thereof.

3. The discharge shall not:

    a. cause visible floating materials, debris, oils, grease, scum, foam, or other floating matter which degrades water quality or use;

    b. produce visible turbidity, settle to form deposits or otherwise adversely affect aquatic life;

    c. produce objectionable color, odor or taste, directly or by a chemical or biological action;

d. injure or are toxic or harmful to humans, animals, plants or aquatic life; or induce the growth of undesirable aquatic life.

e. cause turbidity values in the receiving water to exceed 1.0 Nepthleometric Turbidity Units (NTU) over ambient conditions.

f. cause temperature of the receiving water to be changed by more than 1.8°F (1.0°C) from ambient conditions.

g. produce concentrations of oil or petroleum products that:

i. cause a visible film, or sheen, or results in visible discoloration of the surface with a corresponding oil or petroleum product odor;

ii. cause damage to fish, invertebrates, or objectionable degradation of drinking water quality; or

iii. form an oil deposit on the shores or bottom of the receiving body of water.

h. cause toxic substances in concentrations that produce detrimental physiological, acute or chronic responses in human, plant, animal or aquatic life.

i. cause toxic substances in concentrations that produce contamination in harvestable aquatic life to the extent that it causes detrimental physiological, acute or chronic responses in humans or protected wildlife, when consumed.

j. cause the survival of aquatic life in marine waters subjected to the discharge, or other controllable water quality factors, to be less than that for the same water body in areas unaffected by the waste discharge.

4. The discharge, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard.

Table 1. Effluent Limits Applicable to All Facilities

Pollutant/Parameter	**Daily Max. Allowable Effluent Limitation**	**Monitoring Requirements**	
		Monitoring Frequency	**Sample Type**
pH (Std. units)[1]	6.5 to 8.5	Once/Month	Grab
Oil and Grease (mg/l)	15	Once/Month	Grab
TSS (mg/l)[2]	100	Once/Month	Grab

[1] pH effluent limits reported as minimum/maximum concentrations; pH shall be measured at the time of sampling.

[2] TSS limit of 100 mg/l applies to all facilities and outfalls except the South Pacific Petroleum Corporation/Cabras Island Terminal and the Mobil Oil Guam Inc./Cabras Terminal (Outfall 001), which must comply with the more stringent limit of 40 mg/l, shown below.

Table 2. Effluent Limits Applicable to Specific Facilities

Pollutant/ Parameter	**Applicable Facilities**	**Daily Max. Allowable Effluent Limitation**	**Monitoring Requirements**	
			Monitoring Frequency	**Sample Type**
Lead (mg/l)	South Pacific Petroleum Corporation/Cabras Island Terminal	0.0081	Once/Month	Grab
Benzene (mg/l)[1]	South Pacific Petroleum Corporation/Cabras Island Terminal and Mobil Oil Guam Inc./Cabras Terminal (Outfall 002)	0.016	Once/Month	Grab
TSS (mg/l)	South Pacific Petroleum Corporation/Cabras Island Terminal and Mobil Oil Guam Inc./Cabras Terminal (Outfall 001)	40	Once/Month	Grab
Ammonia (mg/l)	Mobil Oil Guam Inc./Cabras Terminal	0.15	Once/Month	Grab
Zinc (mg/l)[2]	Mobil Oil Guam Inc./Cabras Terminal	0.086	Once/Month	Grab

[1] The limit for Benzene applies only to the South Pacific Petroleum Corporation/Cabras Island Terminal. For Mobil Oil Guam Inc./Cabras Terminal (Outfall 002) this is a monitoring level.
[2] Zinc effluent limit shall be effective upon effective date of this permit7.

Table 3. Monitoring Requirements Applicable to All Facilities

Pollutant/Parameter	Monitoring Requirements	
	Monitoring Frequency	Sample Type
Flow Rate (MGD)[1]	Continuous	Metered or Calculated
Lead (mg/l)[3]	Once/Month	Grab
Benzene (mg/l)	Once/Month	Grab
Ammonia(mg/l)	Once/Month	Grab
Toluene (mg/l)	Once/Year	Grab
Ethylbenzene (mg/l)	Once/Year	Grab
Xylene (mg/l)	Once/Year	Grab
Whole Effluent Toxicity[2]	Once/Permit Cycle	Grab
Priority Pollutants[2]	Once/Permit Cycle	Grab

[1] MGD means million gallons per day.

[2] In accordance with federal regulations, the permittee shall conduct a concurrent Whole Effluent Toxicity test and Priority Toxics Pollutants scan to ensure that the discharge does not cause toxicity nor contain toxic pollutants in concentrations that may cause violation of water quality standards. Monitoring of WET test and Priority Pollutant scan shall occur upon first discharge at this facility and at least once during permit term. The permittee shall perform all effluent sampling and analyses for the priority pollutants scan in accordance with the methods described in the most recent edition of 40 CFR 136 which provides a complete list of Priority Toxic Pollutants. If the scan results indicate that a limit has actually been exceeded or there is a reasonable potential for such a limit to be exceeded, this permit may be reopened to include appropriate numeric limits.

[3] Lead shall be measured once/year for Mobil Oil Guam Inc. as it has demonstrated the measured concentration of this parameter is ten times below the water quality criterion. Nevertheless, annual monitoring consistent with other parameters likely to be present such as Toluene and Ethylbenzene is warranted.

B. Sampling

1. Samples and measurements taken as required in this permit shall be representative of the volume and nature of the monitored discharge.

2. Effluent samples shall be taken after the last treatment process and prior to mixing with the receiving water, where representative samples can be obtained.

3. For intermittent discharges, the permittee shall monitor on the first day of discharge. The permittee is not required to monitor in excess of the minimum frequency required in Table 1. If there is no discharge, the permittee is not required to monitor.

C. General Monitoring and Reporting

1. All monitoring shall be conducted in accordance with 40 CFR 136 test methods, unless otherwise specified in this permit. For influent and effluent analyses required in this permit, the permittee shall utilize 40 CFR 136 test methods with MDLs and MLs that are lower than the effluent limits in this permit. For parameters without an effluent limit, the permittee must use an analytical method at or below the level of the applicable water quality criterion for the measured pollutant or the amount of the pollutant is high enough that the method detects and quantifies the level of pollutant in the discharge. If all MDLs or MLs are higher than these effluent limits or criteria concentrations, then the permittee shall utilize the test method with the lowest MDL or ML. In this context, the permittee shall ensure that the laboratory utilizes a standard calibration where the lowest standard point is equal to or less than the ML. Influent and effluent analyses for metals shall measure "total recoverable metal", except as provided under 40 CFR 122.45(c).

2. As an attachment to the first DMR, the permittee shall submit, for all parameters with monitoring requirements specified in this permit:

   a. The test method number or title and published MDL or ML,
   b. The preparation procedure used by the laboratory,
   c. The laboratory's MDL for the test method computed in accordance with Appendix B of 40 CFR 136,
   d. The standard deviation (S) from the laboratory's MDL study,
   e. The number of replicate analyses (n) used to compute the laboratory's MDL, and
   f. The laboratory's lowest calibration standard.

   As part of each DMR submittal, the permittee shall notify EPA of any changes to the laboratory's test methods, MDLs, MLs, or calibration standards. If there are any changes to the laboratory's test methods, MDLs, MLs, or calibration standards, these changes shall be summarized in an attachment to the subsequent DMR submittal.

3. The permittee shall develop a Quality Assurance ("QA") Manual for the field collection and laboratory analysis of samples. The purpose of the QA Manual is to assist in planning for the collection and analysis of samples and explaining data anomalies if they occur. At a minimum, the QA Manual shall include the following:

   a. Identification of project management and a description of the roles and responsibilities of the participants; purpose of sample collection; matrix to be sampled; the analytes or compounds being measured; applicable technical, regulatory, or program-specific action criteria; personnel qualification requirements for collecting samples;
   b. Description of sample collection procedures; equipment used; the type and number of samples to be collected including QA/Quality Control ("QC") samples; preservatives

and holding times for the samples (see 40 CFR 136.3); and chain of custody procedures;

c. Identification of the laboratory used to analyze the samples; provisions for any proficiency demonstration that will be required by the laboratory before or after contract award such as passing a performance evaluation sample; analytical method to be used; MDL and ML to be reported; required QC results to be reported (e.g., matrix spike recoveries, duplicate relative percent differences, blank contamination, laboratory control sample recoveries, surrogate spike recoveries, etc.) and acceptance criteria; and corrective actions to be taken in response to problems identified during QC checks; and

d. Discussion of how the permittee will perform data review, report results, and resolve data quality issues and identify limits on the use of data.

4. Throughout all field collection and laboratory analyses of samples, the permittee shall use the QA/QC procedures documented in their QA Manual. If samples are tested by a contract laboratory, the permittee shall ensure that the laboratory has a QA Manual on file. A copy of the permittee's QA Manual shall be retained on the permittee's premises and available for review by regulatory authorities upon request. The permittee shall review its QA Manual annually and revise it, as appropriate.

5. Samples collected during each month of the reporting period must be reported on Discharge Monitoring Report forms, as follows:

   a. For a *maximum daily* permit limit or monitoring requirement when one or more samples are collected during the month, report either:

      The *maximum value*, if the maximum value of all analytical results is greater than or equal to the ML; or
      NODI (Q), if the maximum value of all analytical results is greater than or equal to the laboratory's MDL, but less than the ML; or
      NODI (B), if the maximum value of all analytical results is less than the laboratory's MDL.

   b. For an *average weekly* or *average monthly* permit limit or monitoring requirement when only one sample is collected during the week or month, report either:

      The *maximum value*, if the maximum value of all analytical results is greater than or equal to the ML; or
      NODI (Q), if the maximum value of all analytical results is greater than or equal to the laboratory's MDL, but less than the ML; or
      NODI (B), if the maximum value of all analytical results is less than the laboratory's MDL.

c. For an *average weekly* or *average monthly* permit limit or monitoring requirement when more than one sample is collected during the week or month, report:

The *average value* of all analytical results where 0 (zero) is substituted for *NODI (B)* and the laboratory's MDL is substituted for *NODI (Q)*.

6. In addition to information requirements specified under 40 CFR 122.41(j)(3), records of monitoring information shall include: the laboratory which performed the analyses and any comment, case narrative, or summary of results produced by the laboratory. The records should identify and discuss QA/QC analyses performed concurrently during sample analyses and whether project and 40 CFR 136 requirements were met. The summary of results must include information on initial and continuing calibration, surrogate analyses, blanks, duplicates, laboratory control samples, matrix spike and matrix spike duplicate results, and sample condition upon receipt, holding time, and preservation.

7. The permittee shall electronically submit Discharge Monitoring Reports using NetDMR (http://www.epa.gov/netdmr).

8. DMRs shall be submitted by the 28th day of the month following the previous reporting period. For example, under quarterly submission, the three DMR forms for January, February, and March are due on April 28th. Annual and quarterly monitoring must be conducted starting in the first complete quarter or year following permit issuance. Reporting for annual monitoring is due on January 28th of the following year. A DMR must be submitted for the reporting period even if there was not any discharge. If there is no discharge from the facility during the reporting period, the permittee shall submit a DMR indicating no discharge as required.

9. The permittee shall submit an electronic or paper Discharge Monitoring Report to Guam EPA. Paper DMR forms shall be mailed to:

Administrator
Guam EPA
P.O. Box 22439-GMF
Barrigada, Guam 96921

D. Receiving Water Monitoring

Photo documentation of the discharged effluent is required once per quarter. Photos shall be taken of the effluent as it enters the receiving water and must be of suitable quality to adequately assess visible sheening, discoloration, and turbidity of the receiving water, as a result of the discharge. Each photo must be labeled with the outfall number, date and time and be submitted to EPA as an

electronic attachment to the respective DMR through NetDMR and to Guam EPA, as described above.

III. SPECIAL CONDITIONS

A. Permit Reopener

In accordance with 40 CFR 122 and 124, this permit may be modified by EPA to include effluent limits, monitoring, or other conditions to implement new regulations, including EPA-approved water quality standards; or to address new information indicating the presence of effluent toxicity or the reasonable potential for the discharge to cause or contribute to exceedances of water quality standards.

B. Twenty-four Hour Reporting of Noncompliance

1. The permittee shall report any noncompliance which may endanger human health or the environment. The permittee is required to provide an oral report by directly speaking with an EPA and Guam EPA staff person within 24 hours from the time the permittee becomes aware of the noncompliance. If the permittee is unsuccessful in reaching a staff person, the permittee shall provide notification by 9 a.m. on the first business day following the noncompliance. The permittee shall notify EPA and Guam EPA at the following telephone numbers:

   U.S. Environmental Protection Agency
   Wastewater Enforcement Section (ENF-3-1)
   (415) 972-3577

   Guam Environmental Protection Agency Administrator
   (671) 475-1658

   The permittee shall follow up with a written submission within five days of the time the permittee becomes aware of the noncompliance. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

2. The following shall be included as information which must be reported within 24 hours under this paragraph.

a. Any unanticipated bypass which exceeds any effluent limit in the permit (see 40 CFR 122.44(g)).

b. Any upset which exceeds any effluent limit in the permit.

c. Violation of a maximum daily discharge limit for any of the pollutants listed by the director in the permit to be reported within 24 hours (see 40 CFR 122.44(g)).

3. EPA may waive the written report on a case-by-case basis for reports required under paragraph B.2, if the oral report has been received within 24 hours.

C. Chronic Whole Effluent Toxicity (WET) Requirements

1. Monitoring Frequency

   If discharge occurs, then permittee shall conduct once per permit term chronic toxicity tests on 24-hour composite effluent samples. Once each permit term, the permittee shall split a 24-hour composite effluent sample and concurrently conduct three toxicity tests using a fish, an invertebrate, and an alga species.

   The most sensitive species is the fish, invertebrate, or alga species which demonstrates the largest percent effect level at the Instream Waste Concentration (IWC), where: IWC percent effect level= [(Control mean response - IWC mean response) + Control mean response] x 100.

   Chronic toxicity test samples shall be collected for each point of discharge at the designated NPDES sampling station for the effluent (i.e., downstream from the last treatment process and any in-plant return flows where a representative effluent sample can be obtained). During term of the permit, a split of each sample shall be analyzed for all other monitored parameters at the minimum frequency of analysis specified by the effluent monitoring program.

2. Species and Test Methods

   Freshwater species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the fourth edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, 2002; Table IA, 40 CFR Part 136).

   If the permittee discharges to freshwater, the permittee shall conduct static renewal toxicity tests with the fathead minnow, *Pimephales promelas* (Larval Survival and Growth Test Method 1000.0); the daphnid, *Ceriodaphnia dubia* (Survival and

Reproduction Test Method 1002.01); and the green alga, *Selenastrum capricornutum* (also named *Raphidocelis subcapitata*) (Growth Test Method 1003.0).

If the permittee discharges to marine waters, the permittee shall conduct chronic toxicity tests with the purple sea urchin, *Strongylocentrotus purpuratus* (fertilization test method 1008.0) or the tropical collector sea urchin, *Tripneustes gratilla* (Adapted by Amy Wagner, U.S. EPA Region 9 Laboratory, Richmond, CA from a method developed by George Morrison, U.S. EPA Naragansett, RI and Diance Nacci, Science Applications International Coporation, ORD Naragansett RI, 1998)

3. Chronic WET Permit Trigger

For this discharge, the determination of "Pass" or "Fail" from a single-effluent concentration chronic toxicity test at the IWC of 100 percent effluent is determined using the Test of Significant Toxicity (TST) approach described in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010). For any one chronic toxicity test, the chronic WET permit trigger that must be achieved is rejection of the null hypothesis (H_o):

IWC (100 percent effluent) mean response $\leq$ 0.75 x Control mean response.

A test result that rejects this null hypothesis is reported as "Pass" on the DMR form. A test result that does not reject this null hypothesis is reported as "Fail" on the DMR form. To calculate either "Pass" or "Fail", the permittee shall follow the instructions in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, Appendix A. If a test result is reported as “Fail”, then the permittee shall follow Section 6 (Accelerated Toxicity Testing and TRE/TIE Process) of this permit.

4. Quality Assurance

a. Quality assurance measures, instructions, and other recommendations and requirements are found in the chronic test methods manual previously referenced. Additional requirements are specified below.

b. This discharge is subject to a determination of "Pass" or "Fail" from a single effluent concentration chronic toxicity test at the IWC (for statistical flowchart and procedures, see *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, Appendix A, Figure A-1). The chronic IWC for this discharge is 100 percent effluent.

c. Effluent dilution water and control water should be standard synthetic dilution water, as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*

(EPA/821/R-02/013, 2002). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used.

d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

e. All multi-concentration reference toxicant test results must be reviewed and reported according to EPA guidance on the evaluation of concentration-response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR 136) (EPA 821-B-00-004, 2000).

f. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the permittee shall resample and retest within 14 days.

g. If the discharged effluent is chlorinated, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the permitting authority.

h. pH drift during a toxicity test may contribute to artifactual toxicity when pH-dependent toxicants (e.g., ammonia, metals) are present in the effluent. To determine whether or not pH drift is contributing to artifactual toxicity, the permittee shall conduct three sets of side-by-side toxicity tests in which the pH of one treatment is controlled at the pH of the effluent while the pH of the other treatment is not controlled, as described in Section 11.3.6.l of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, 2002). Toxicity is confirmed to be artifactual and due to pH drift when no toxicity above the chronic WET permit limit or trigger is observed in the treatments controlled at the pH of the effluent. Upon this confirmation and following written approval by the permitting authority, the permittee may use the procedures outlined in Section 11.3.6.2 of the chronic freshwater test methods manual to control effluent sample pH during the toxicity test.

5. Initial Investigation TRE Work Plan

Within 90 days of the permit effective date, the permittee shall prepare and submit to the permitting authority a copy of its Initial Investigation Toxicity Reduction Evaluation (TRE) Work Plan (1-2 pages) for review. This plan shall include steps the permittee intends to follow if toxicity is measured above the chronic WET permit limit or trigger and should include the following, at minimum:

a. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

b. A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the facility.

c. If a Toxicity Identification Evaluation (TIE) is necessary, an indication of who would conduct the TIEs (i.e., an in-house expert or outside contractor).

6. Accelerated Toxicity Testing and TRE/TIE Process

a. If the chronic WET permit limit or trigger is exceeded and the source of toxicity is known (e.g., a temporary plant upset), then the permittee shall conduct one additional toxicity test using the same species and test method. This toxicity test shall begin within 14 days of receipt of a test result exceeding the chronic WET permit limit or trigger. If the additional toxicity test does not exceed the chronic WET permit limit or trigger, then the permittee may return to the regular testing frequency.

b. If the chronic WET permit limit or trigger is exceeded and the source of toxicity is not known, then the permittee shall conduct six additional toxicity tests using the same species and test method, approximately every two weeks, over a 12-week period. This testing shall begin within 14 days of receipt of a test result exceeding the chronic WET permit limit or trigger. If none of the additional toxicity tests exceed the chronic WET permit limit or trigger, then the permittee may return to the regular testing frequency.

c. If one of the additional toxicity tests (in paragraphs 6.a or 6.b) exceeds the chronic WET permit limit or trigger, then, within 14 days of receipt of this test result, the permittee shall initiate a TRE using, according to the type of treatment facility, EPA manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/833/B-99/002, 1999) or EPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EP A/600/2-8 8/070, 1989). In conjunction, the permittee shall develop and implement a Detailed TRE Work Plan which shall include the following: further actions undertaken by the permittee to investigate, identify, and correct the causes of toxicity; actions the permittee will take to mitigate the effects of the discharge and prevent the recurrence of toxicity; and a schedule for these actions.

d. The permittee may initiate a TIE as part of a TRE to identify the causes of toxicity

using the same species and test method and, as guidance, EPA manuals: *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/60016-911003, 1991); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EP A/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase Ill Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EP A/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (FIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996).

7. Reporting of Chronic Toxicity Monitoring Results

   a. The permittee shall report on the DMR for the month in which the toxicity test was conducted: "Pass" or "Fail" (based on the Welch's t-test result) and the calculated "percent mean response at IWC", where:

      percent mean response at IWC = ((Control mean response IWC mean response) ÷ Control mean response)) x 100

   b. The permittee shall submit a full laboratory report for all toxicity testing as an attachment to the DMR for the month in which the toxicity test was conducted. The laboratory report shall contain: the toxicity test results; the dates of sample collection and initiation of each toxicity test; all results for effluent parameters monitored concurrently with the toxicity test(s); and progress reports on TRE/TIE investigations.

   c. The permittee shall notify the permitting authority in writing within 14 days of exceedance of the chronic WET permit limit or trigger. This notification shall describe actions the permittee has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

8. Permit Reopener for Chronic Toxicity

   In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address chronic toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to chronic toxicity.

D. Pollutant Minimization Program

1. To maintain the discharge at or below WQBELs, the permittee shall conduct a pollutant minimization program for each pollutant with a WQBEL below the ML (or

State/Territory/Tribal quantitation level), with the goal to reduce all potential sources of the pollutant in internal and indirect wastewater streams contributing to the discharge. The permittee shall report on this program along with reporting under the Pollution Prevention Plan for storm water discharges outlined in Section IV. Below.

2. The pollutant minimization program should include:

    a. review and monitoring of pollutant sources;

    b. influent and effluent monitoring of the pollutant;

    c. submittal of a control strategy for reducing pollutant loadings to the treatment facility;

    d. implementation of appropriate control measures consistent with the control strategy, as pollutant sources are discovered;

    e. and submittal of an annual status report of activities. This report may be reported with the reporting under the Pollution Prevention Plan for storm water outlined in Section IV. Below.

3. The permitting authority may consider cost-effectiveness when establishing the requirements of a pollutant minimization program. The permitting authority should also consider additional permit conditions (e.g., whole effluent toxicity testing, fish tissue sampling, limitations and/or monitoring on internal waste streams, etc.) to ensure that WQBELs are met and excursions above water quality standards do not occur.

E. Minimization of Potential Impacts to Listed Species

9. Any construction or maintenance activity at the facility shall occur between 7 am and 5 pm, as artificial lighting used for such work at night may impact threatened and endangered species under the Migratory Bird Treaty Act.

10. All materials and waste should be properly disposed and litter controlled to prevent attracting or spreading pest species, which may negatively impact listed species.

IV. POLLUTION PREVENTION PLAN REQUIREMENTS

The Permittee shall develop, if it has not done so, or revise and update, if it already has done developed and implemented a Pollution Prevention Plan (PPP). The PPP shall include the following

program elements in order to reduce pollutants entering the receiving water. If any PPP requirements overlap with SPCC, OPA 90, or HAZMAT plan requirements already implemented, the permittee may simply reference the applicable plan section under the specific PPP requirement.

A. Pollution Prevention Committee

A Pollution Prevention Committee shall be appointed from members within the plant organization. These members shall be responsible for developing the storm water pollution prevention plan and assisting the plant manager in its implementation, maintenance, and revision.

B. Source Identification

The permittee shall identify all activities and significant materials which may potentially be significant pollutant sources. Source identification requirements shall include:

(1) a drainage site map that identifies the drainage area of all storm water outfalls, all existing structural control measures to reduce pollutants in storm water runoff, and surface water bodies;

(2) a topographic map extending one-quarter of a mile beyond the property boundaries of the facility;

(3) a list of significant spills and leaks of toxic or hazardous pollutants that occurred at the facility

(4) a narrative description of significant materials that have been treated, stored, or disposed of in a manner to allow exposure to storm water between the time of three years prior to the date of the issuance of this permit and the present

(5) risk identification and assessment/material inventory identifying the various sources at the plant that contribute pollutants to storm water discharges associated with industrial activity;

(6) a narrative description of the method of on-site storage, disposal and materials management practices employed to minimize contact of these materials with precipitation and storm water runoff;

(7) a narrative description of materials loading and access areas;

(8) a prediction of the direction of flow and estimates of the type of pollutants that are likely to be present in storm water discharges for each area of the plant that generates storm water discharges associated with industrial activity; and

(9) a summary of existing sampling data describing pollutants in storm water discharges.

C. Source Control Best Management Practices (BMPs)

This section of the PPP requires the development and implementation of BMPs designed to prevent pollutants from entering surface waters. The permittee shall describe, in detail, which of the following BMPs can be implemented, and how and when they will be implemented. If certain BMPs are not practicable, the permittee shall describe why they are not. The Pollution Prevention Committee shall make use of the results of Source Identification requirements above when developing the BMPs. As a minimum, BMPs shall be established to ensure the following:

(1) For Vehicle and Equipment Fueling and Fuel Transfer Areas

i. Run-on of storm water and run-off of spills are prevented;

ii. Fueling areas are paved with concrete, not asphalt;

iii. Topping off of fuel is prevented;

iv. Fuel transfer areas have secondary containment

v. Spills are cleaned using absorbent materials rather than hosing down the area; and

vi. Fueling areas are covered if possible.

(2) For Vehicle and Equipment Washing Areas

i. Wash areas are covered where feasible and bermed to contain wash water;

ii. Wash water is discharged to the sanitary sewer (after contacting local sewer authorities to find out if pre-treatment is necessary); and

iii. Wash water is filtered and recycled where feasible

(3) For Vehicle and Equipment Maintenance and Repair Areas

i. Equipment is inspected on a regular basis for cleanliness and leaks;

ii. Vehicle maintenance is performed in designated areas only, which are covered and designed to prevent storm water pollution;

iii. All fluids such as greases, used oil, antifreeze, cleaning solvents, hydraulic and transmission fluids, etc., are kept segregated, recycled or disposed of properly and in accordance with all local, state and federal laws;

iv. Drip pans or containers are used under all areas that may drip;

v. All spills are cleaned using absorbent materials, rather than by hosing down the area; and

vi. Use of solvents is minimized.

(4) For Control of Solid Materials

i. Scrap metal, wood, plastic, miscellaneous trash such as paper and glass, and industrial scrap are removed from the grounds and properly disposed;

ii. Routine clean up of litter and debris in the facility is performed to prevent possible discharge to the receiving water

iii. Oil, paint generators, scrap metal, unused machinery, used batteries, etc., in the facility are stored under cover and disposed of properly and in accordance with all local, state and federal laws; and

iv. Storm drain inlets and outlets are inspected and cleaned following large storm events.

(5) For Hazardous Waste Management

i. Hazardous waste, including used paint, oils, brake fluids, anti-freeze, batteries, petroleum products, degreasers, tool coolants, etc. are properly labeled, recycled when possible or disposed of within the guidelines of RCRA;

ii. Warning signs are posted in locations where there is a significant risk of environmental damage such as spills, and “No Dumping” signs are installed where dumping is likely to occur; and

iii. Trash bins have signs designating the type of material that is acceptable and/or unacceptable.

(6) For Oil, Grease and Fuel Spills
i. Used oils are properly stored in sealed and approved containers and stored in a place that can contain the material in the event of a spill, preferably in a covered shed or warehouse. The contained area shall be surrounded by a curb, dike or berm to provide sufficient volume to contain 10% of the total material stored or 110% of the largest container, whichever is the greater volume;
ii. All paved storage areas are free of cracks and gaps and are sufficiently impervious to contain spills. Fuel and other hydrocarbons shall not be stored on asphalt surfaces
iii. Cleanup is carried out promptly after an oil or grease spill is detected;
iv. Liquid absorbent pads are kept in stock for emergency use; and
v. Loading and unloading of fuels is done in an area that is completely contained and in a manner which will minimize any potential spillage.

(7) For Paint and Solvent Spills
i. Paints and solvents are mixed in designated paint mix areas only which have adequate secondary containment; and
ii. Paint and solvent spills are treated as oil spills and must be contained until cleanup is complete.

(8) For Sediment and Erosion Prevention i. Measures to minimize erosion and fuel contaminated sheet flow runoff for areas that have a high potential for significant soil erosion are implemented. Such measures may include, preservation of natural vegetation, re-vegetation, removal of contaminated soils, and geosynthetics.

(9) For Tank Bottom Water Draws i. Water seepage into the fuel tanks is prevented to the maximum extent practicable;
ii. The release of whole petroleum product from the fuel tank(s) is prevented
iii. The discharge of tank bottom water draws is treated to meet water quality standards prior to discharge; and
iv. Tank bottom water draws are not released onto permeable areas which could cause soil or ground water contamination

(10) For Fuel Line Flushing i. Discharge from fuel line flushing is treated to meet water quality standards prior to discharge;
ii. Discharge from fuel line flushing is not released onto permeable areas; which could cause soil or ground water contamination; and
iii. Water is conserved to the maximum extent practicable.

D. Treatment Control Best Management Practices (BMPs)

The permittee shall also implement the following BMPs which focus on treating contaminated storm water. BMPs shall be established to ensure the following:
(1) For Structural and Vegetative Controls:

i. Additional structural controls (i.e. oil/water separators, detention basins, etc.) and/or vegetative controls (i.e. grassy swales) shall be constructed if and when the implementation of all source control BMPs is unable to completely control storm water contamination.

(2) For Operation and Maintenance of Oil/Water Separator(s):

i. Oil/water separators and other storm water management devices, such as storm drain catch basins, are routinely inspected and cleaned to ensure their proper operation; and

ii. Oil/fuel from the oil water separators is properly disposed.

E. Employee Training

(1) The pemittee shall develop and execute an employee and subcontractor training program emphasizing pollution prevention. Employees must be educated about BMPs, and waste minimization. Employees must understand the proper identification, handling, and disposal of hazardous waste, and Spill Prevention and Response procedures.

F. Visual Inspections and Reporting

(1) The permittee shall perform weekly visual inspections using a checklist to ensure that all aspects of the PPP are properly carried out.

(2) The permittee shall complete incident reports documenting the time, date, nature of the problem(s), counter-measures taken, agencies notified, and recommended revisions to the PPP.
6. Reporting

(3) The permittee shall complete the development or revision (if one already exists) of the PPP within six months of the effective date of this permit or first coverage under the permit and notify EPA of implementation of the PPP. Upon plan implementation, the permittee shall submit a report quarterly certifying either compliance or noncompliance with all conditions of the plan, any problems that occurred that had the potential of adding significant quantities of pollutants to the discharge, steps taken to mitigate those problems, and any new procedures implemented or equipment used to improve the operations during each reporting period.

V. STANDARD CONDITIONS

The permittee shall comply with all EPA Region 9 Standard Conditions below.

A. All NPDES Permits

In accordance with 40 CFR 122.41, the following conditions apply to all NPDES permits and are expressly incorporated into this permit.

1. Duty to comply; at 40 CFR 122.41(a).

   The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the CWA and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

   a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under 405(d) of the CWA within the time provided in the regulations that established these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

   b. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who *negligently* violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both. Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of note more than $250,000 or imprisonment of not more than 15 years, or both. In the case of second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, such as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent

danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

c. Any person may be assessed an administrative penalty by the Administrator for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

2. Duty to reapply; at 40 CFR 122.41(b).

   If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. Any permittee with a currently effective permit shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director.

3. Need to halt or reduce activity not a defense; at 40 CFR 122.41(c).

   It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

4. Duty to mitigate; at 40 CFR 122.41(d).

   The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper operation and maintenance; at 40 CFR 122.41(e).

   The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

6. Permit actions; at 40 CFR 122.41(f).

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

7. Property rights; at 40 CFR 122.41(g).

   This permit does not convey any property rights of any sort, or any exclusive privilege.

8. Duty to provide information; at 40 CFR 122.41(h).

   The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Director upon request, copies of records required to be kept by this permit.

9. Inspection and entry; at 40 CFR 122.41(i).

   The permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

   a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

   b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

   d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

10. Monitoring and records; at 40 CFR 122.41(j).

    a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed

(4) The individuals(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR part 503, unless other test procedures have been specified in the permit.

e. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

11. Signatory requirement; at 40 CFR 122.41(k).

a. All applications, reports, or information submitted to the Director shall be signed and certified. (See 40 CFR 122.22.) All permit applications shall be signed as follows:

(1) For a corporation. By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in 40 CFR 122.22(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under 40 CFR 122.22(a)(1)(ii) rather than to specific individuals.

(2) For a partnership or sole proprietorship. By a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency. By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

b. All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this section;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters of the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(3) The written authorization is submitted to the Director.

c. Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

e. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

12. Reporting requirements; at 40 CFR 122.41(l).

a. Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alternations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1).

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, an such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;

b. Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the CWA. (See 40 CFR 122.61; in some cases, modification or revocation and reissuance is mandatory.)

(1) Transfers by modification. Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under 40 CFR 122.62(b)(2)), or a minor modification made (under 40 CFR 122.63(d)), to identify the new permittee and incorporate such other requirements as may be necessary under CWA.

(2) Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any NPDES permit may be automatically transferred to a new permittee if:

(A) The current permittee notifies the Director at least 30 days in advance of the proposed transfer date in paragraph (b)(2) of this section;

(B) The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

(C) The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify or revoke and reissue the permit. A modification under this subparagraph may also be a minor modification under 40 CFR 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph (b)(2) of this section.

d. Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this section must be submitted electronically by the permittee to the Director or initial recipient, as defined in 40 CFR 127.2(b), in compliance with this section and 40 CFR 3 (including, in all cases, subpart D to part 3), 40 CFR 122.22, and 40 CFR 127.

(2) If the permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR part 136 or, in the case of sludge use or disposal, approved under 40 CFR part 503, or as specified in the permit, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

f. Twenty-four hour reporting.

(1) The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A report shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The report shall contain a description of the noncompliance and its cause; the period of

noncompliance, including exact dates and times), and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combine sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the permittee to the Director or initial recipient, as defined in 40 CFR 127.2(b), in compliance with this section and 40 CFR 3 (including, in all cases, subpart D to part 3), 40 CFR 122.22, and 40 CFR part 127.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(i) Any unanticipated bypass which exceeds any effluent limitation in the permit. (See 40 CFR 122.41(g).)

(ii) Any upset which exceeds any effluent limitation in the permit.

(iii) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 CFR 122.44(g).)

(3) The Director may waive the written report on a case-by-case basis for reports under 40 CFR 122.41(l)(6)(ii) of this section if the oral report has been received within 24 hours.

g. Other noncompliance. The permittee shall report all instances of noncompliance not reported under 40 CFR 122.41(l)(4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.

h. Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a

permit application or in any report to the Director, it shall promptly submit such facts or information.

13. Bypass; at 40 CFR 122.41(m).

a. Definitions.

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 40 CFR 122.41(m)(3) and (m)(4) of this section.

c. Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (l)(6) of this section (24-hour notice).

(3) As of December 21, 2020 all notices submitted in compliance with this section must be submitted electronically by the permittee to the Director or initial recipient, as defined in 40 CFR 127.2(b), in compliance with this section and 40 CFR part 3(including, in all cases, subpart D to part 3), 40 CFR 122.22, and 40 CFR part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of part 127, permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

d. Prohibition of bypass.

(1) Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(iii)The permittee submitted notices as required under paragraph (m)(3) of this section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph (m)(4)(i) of this section.

14. Upset; at 40 CFR 122.41(n).

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent cause by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (n)(3) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (l)(6)(ii)(B) of this section (24 hour notice).

(4) The permittee complied with any remedial measures required under paragraph (d) of this section.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

15. Reopener Clause; at 40 CFR 122.44(c).

For any permit issued to a treatment works treating domestic sewage (including "sludge-only facilities"), the Director shall include a reopener clause to incorporate any applicable standard for sewage sludge use or disposal promulgated under section 405(d) of the CWA. The Director may promptly modify or revoke and reissue any permit containing the reopener clause required by this paragraph if the standard for sewage sludge use or disposal is more stringent than any requirements for sludge use or disposal in the permit, or controls a pollutant or practice not limited in the permit.

16. Minor modifications of permits; at 40 CFR 122.63.

Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of 40 CFR 124. Any permit modification not processed as a minor modification under this section must be made for cause and with 40 CFR 124 draft permit and public notice as required in 40 CFR 122.62. Minor modifications may only:

a. Correct typographical errors;

b. Require more frequent monitoring or reporting by the permittee;

c. Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or

d. Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.

e. Change the construction schedule for a discharger which is a new source. No such change shall affect a discharger's obligation to have all pollution control equipment installed and in operation prior to discharge under 40 CFR 122.29.

f. Delete a point source outfall when the discharge from that outfall is terminated and does not result in discharge of pollutants from other outfalls except in accordance with permit limits.

g. Incorporate conditions of a POTW pretreatment program that has been approved in accordance with the procedures in 40 CFR 403.11 (or a modification thereto that has been approved in accordance with the procedures in 40 CFR 403.18) as enforceable conditions of the POTW's permits.

17. Termination of permits; at 40 CFR 122.64.

a. The following are causes for terminating a permit during its term, or for denying a permit renewal application:

(1) Noncompliance by the permittee with any conditions of the permit;

(2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time;

(3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; or

(4) A change in any condition that requires either a temporary or permanent reduction or elimination of any discharge or sludge use or disposal practice controlled by the permit (for example, plant closure or termination of discharge by connection to a POTW).

18. Availability of Reports; pursuant to CWA section 308

Except for data determined to be confidential under 40 CFR 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the

offices of the Regional Administrator. As required by the CWA, permit applications, permits, and effluent data shall not be considered confidential.

19. Removed Substances; pursuant to CWA section 301

    Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials entering waters of the U.S.

20. Severability; pursuant to CWA section 512

    The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and remainder of this permit, shall not be affected thereby.

21. Civil and Criminal Liability; pursuant to CWA section 309

    Except as provided in permit conditions on "Bypass" and "Upset", nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

22. Oil and Hazardous Substances Liability; pursuant to CWA section 311

    Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the CWA.

23. State, Tribe, or Territory Law; pursuant to CWA section 510

    Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any applicable State, Tribe, or Territory law or regulation under authorities preserved by CWA section 510.

VI. DEFINITIONS

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

2. "Average weekly discharge limitation" means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.
3. "Best Management Practices" or "BMPs" are schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural, and/or managerial practices to prevent or reduce the pollution of waters of the U.S. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may further be characterized as operational, source control, erosion and sediment control, and treatment BMPs.
4. A "composite" sample means a time-proportioned mixture of not less than eight discrete aliquots obtained at equal time intervals (e.g., 24-hour composite means a minimum of eight samples collected every three hours). The volume of each aliquot shall be directly proportional to the discharge flow rate at the time of sampling, but not less than 100 ml. Sample collection, preservation, and handling shall be performed as described in the most recent edition of 40 CFR 136.3, Table II. Where collection, preservation, and handling procedures are not outlined in 40 CFR 136.3, procedures outlined in the 18th edition of Standard Methods for the Examination of Water and Wastewater shall be used.
5. A "daily discharge" means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.
6. A "daily maximum allowable effluent limitation" means the highest allowable "daily discharge."
7. A "DMR" is a "Discharge Monitoring Report" that is an EPA uniform national form, including any subsequent additions, revisions, or modifications for reporting of self-monitoring results by the permittee.
8. A "grab" sample is a single sample collected at a particular time and place that represents the composition of the discharge only at that time and place. Sample collection, preservation, and handling shall be performed as described in the most recent edition of 40 CFR 136.3, Table II. Where collection, preservation, and handling procedures are not outlined in 40 CFR 136.3, procedures outlined in the 18th edition of Standard Methods for the Examination of Water and Wastewater shall be used.
9. The "method detection limit" or "MDL" is the minimum concentration of an analyte that can be detected with 99% confidence that the analyte concentration is greater than zero, as defined by a specific laboratory method in 40 CFR 136. The procedure for determination of a laboratory MDL is in 40 CFR 136, Appendix B.
10. The "minimum level" or "ML" is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the

concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed in a specific analytical procedure, assuming that all the method-specific sample weights, volumes, and processing steps have been followed (as defined in EPA's draft National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-Based Effluent Limitations Set Below Analytical Detection/Quantitative Levels, March 22, 1994). If a published method-specific ML is not available, then an interim ML shall be calculated. The interim ML is equal to 3.18 times the published method-specific MDL rounded to the nearest multiple of 1, 2, 5, 10, 20, 50, etc. (When neither an ML nor MDL are available under 40 CFR 136, an interim ML should be calculated by multiplying the best estimate of detection by a factor of 3.18; when a range of detection is given, the lower end value of the range of detection should be used to calculate the ML.) At this point in the calculation, a different procedure is used for metals, than non-metals:

a. For metals, due to laboratory calibration practices, calculated MLs may be rounded to the nearest whole number.
b. For non-metals, because analytical instruments are generally calibrated using the ML as the lowest calibration standard, the calculated ML is then rounded to the nearest multiple of (1, 2, or 5) x 10n, where n is zero or an integer. (For example, if an MDL is 2.5 µg/l, then the calculated ML is: 2.5 µg/l x 3.18 = 7.95 µg/l. The multiple of (1, 2, or 5) x 10n nearest to 7.95 is 1 x 101 = 10 µg/l, so the calculated ML, rounded to the nearest whole number, is 10 µg/l.)

11. A "NODI(B)" means that the concentration of the pollutant in a sample is not detected. NODI(B) is reported when a sample result is less than the laboratory's MDL.
12. A "NODI(Q)" means that the concentration of the pollutant in a sample is detected but not quantified. NODI(Q) is reported when a sample result is greater than or equal to the laboratory's MDL, but less than the ML.

January 2019
FACT SHEET

General Permit for Bulk Fuel Storage Facilities in Guam
NPDES Permit No. GUG000001

SUMMARY: The Regional Administrator, EPA, Region 9, proposed issuing an NPDES general permit for discharges from bulk fuel storage facilities in the territory of Guam. This new general permit is intended to replace the individual NPDES permits for five bulk fuel storage facilities. Individual NPDES permit coverage for these five bulk fuel storage facilities will be terminated once the facility is covered by this general permit.

Upon issuance the proposed permit will establish effluent limitations, prohibitions, and other conditions on discharges from facilities in the general permit area. These conditions are based on the administrative record. EPA regulations and the permit contain a procedure which allows the owner or operator of a point source discharge to apply for an individual permit instead.

For the proposed permit, Region 9 evaluated the reasonable potential of produced water and storm water discharges to cause or contribute to exceedances of water quality criteria using recent monitoring data submitted by the permittees as developed in the relevant individual NPDES permit reissuances. The proposed effluent limits and monitoring requirements were established based on this evaluation.

PUBLIC NOTICE: This proposed permit was public noticed in the Federal Register on December 6, 2017 and on U.S.EPA's NPDES Permits Webpage. Comments on the proposed general permit were to be received or postmarked no later than February 5, 2018 which is 60 days from the publication of the Notice of Availability in the Federal Register.

ADDRESSES: Public comments were to be sent to: Environmental Protection Agency, Region 9, Attn: Gary Sheth, NPDES Permits Office (WTR-2-3), Water Division, 75 Hawthorne Street, San Francisco, California 94105-3901, or by email to: sheth.gary@epa.gov.

FOR FURTHER INFORMATION, CONTACT: Gary Sheth, EPA Region 9 at the address listed above or telephone (415) 972-3516. Copies of the proposed general permit and fact sheet will be provided upon request, and are also available on Region 9's website at: http://www.epa.gov/region09/water/. Copies of the final general permit and fact sheet will be available EPA's NPDES Permits website at: https://www.epa.gov/npdes-permits/npdes-permits-epas-pacific-southwest

ADMINISTRATIVE RECORD: The proposed general permit, fact sheet and other related documents in the administrative record are on file and may be inspected any time between 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding legal holidays, at the following address:

U.S. EPA, Region 9
NPDES Permits Office (WTR 2-3)
75 Hawthorne Street
San Francisco, CA 94105-3901

I. LEGAL BASIS

Section 301(a) of the Clean Water Act ("CWA" or "the Act"), 33 USC 1311(a), provides that the discharge of pollutants is unlawful except in accordance with the terms of a National Pollutant Discharge Elimination System ("NPDES") permit. CWA Section 402, 33 USC 1342, authorizes EPA to issue NPDES permits allowing discharges on condition they will meet certain requirements, including CWA Sections 301, 304, 401, and 403, 33 USC 1311, 1314, 1341, 1343. These statutory provisions require that NPDES permits include effluent limitations requiring that authorized discharges (1) meet standards reflecting levels of technological capability, (2) comply with EPA-approved state water quality standards, (3) comply with other state requirements adopted under authority retained by states under CWA Section 510, 33 USC 1370 and (4) cause no unreasonable degradation to the territorial seas, waters of the contiguous zone or the oceans.

Because the Territory of Guam (Guam) has not been delegated primary regulatory responsibility for administering the NPDES program, EPA is issuing a NPDES permit which incorporates both federal CWA and Guam water quality requirements. However, EPA will forward this draft permit and fact sheet to Guam EPA and request CWA Section 401(a)(1) certification.

II. GENERAL PERMITS AND PERMIT COVERAGE

A. General Permit. The Regional Administrator has determined that bulk fuel storage facilities operating in the areas described in the proposed general NPDES permit are more appropriately and effectively controlled by a general permit than by individual permits. This decision is based on 40 CFR 122.28, and 40 CFR 125 (Subpart M) and EPA's previous permit decisions on the Guam bulk fuel storage facilities. These facilities and their operational and discharge characteristics are very similar and EPA has determined that it will be more efficient to regulate their discharges by a general permit than to continue issuing individual permits.

B. Request for an Individual Permit. Any operator authorized to discharge under a general permit may request to be excluded from coverage under the general permit by applying for an individual permit as provided by 40 CFR 122.28(b)(3). The operator shall submit an application together with the reasons supporting the request to the Director, Water Division, EPA, Region 9 ("Director").

C. Requesting Coverage Under this Proposed General Permit. Procedures for requesting coverage under a general permit are provided by NPDES regulations at 40 CFR 122.28. In accordance with these regulations, all dischargers requesting coverage under the permit shall submit a Notice of Intent ("NOI"). Information to be provided includes the legal name and address of the owner or operator, the facility name and location, type of facility and discharges,

previous permits, and the receiving water. All NOIs shall be signed in accordance with 40 CFR 122.22.

D. Requiring an Individual Permit. The Director may require any person authorized by this permit to apply for and/or obtain an individual NPDES permit. Any interested person may petition the Director to take action under this paragraph. Where the Director requires a discharger authorized to discharge under this permit to apply for an individual NPDES permit, the Director shall notify the discharger in writing that an individual permit application is required. Any operators who seek to obtain an individual NPDES permit would need to submit a consistency certification to Guam Bureau of Statistics and Plans for review as a federal license or permit activity (15 CFR 930, Subpart D). Coverage under this general permit shall automatically terminate on the effective date of the issuance or denial of the individual permit.

E. Modification, Revocation, and Termination. Procedures for modification, revocation, termination, and processing of NPDES permits are provided by 40 CFR 122.62-122.64.

F. Deadlines for Notice of Intent (NOI) Submittal. For the five bulk fuel storage facilities specified above, NOIs shall be submitted no later than 30 days after the effective date of the permit.

III. DESCRIPTION OF FACILITIES, OPERATIONS, AND NATURE OF DISCHARGES

A. Facility Coverage. Region 9 currently authorizes the wastewater discharge from bulk fuel storage facilities in Guam through various individual permits. The proposed general permit is intended to cover five of these facilities located in Guam. The five existing facilities are: Mobil Oil Guam Inc./Cabras Terminal, Tristar Guam F-1 Pier Terminal, South Pacific Petroleum Corporation/Cabras Island Terminal, Tristar Guam Agat Terminal, and Guam Power Authority Piti Terminal. See Appendix A for a map indicating the approximate location of each facility. Coverage under this permit is not available for any other facilities.

For the five bulk fuel storage facilities listed above, written Notices of Intent ("NOIs") to be covered under this permit shall be submitted no later than 30 days after the effective date of this permit. For any additional bulk fuel storage facilities seeking coverage under this general permit, NOIs shall be submitted prior to initiation of any discharges. Initiation of discharges authorized by this permit may not begin until EPA has reviewed the submitted information and notified the permittee in writing that their NOI has been approved. Facility coverage is not effective until NOIs are received and EPA notifies the permittee, as described in Part I.6.a of the draft permit.

The permit coverage area consists of all surface and marine waters in the Territory of Guam (Guam). The receiving waters for these facilities are subject to Guam water quality standards. The receiving waters for the five facilities listed above are described below. The Mobil Oil Guam Terminal Inc./Cabras Terminal, the Tristar Guam F-1 Pier Terminal and the South Pacific Petroleum Corporation/Cabras Island Terminal all discharge to Apra Harbor, a near-shore

territorial water of Guam designated as Category M-3 ("Fair" quality) marine water. The Guam Power Authority Piti Terminal discharges to Piti Channel, a Category S-3 ("Fair" quality) fresh waterbody, which then discharges to Apra Harbor. The Tristar Guam Agat Terminal discharges to Big Guatali River, a Category S-3 ("Fair" quality) fresh waterbody located in Agat, Guam.

The permitted outfalls for each of these facilities must also be defined. The Mobil Oil Guam Inc./Cabras Terminal has two permitted outfalls (Outfall 001 – Area A Tank Farm; Outfall 002 – Area C Tank Farm). The Tristar Guam F-1 Pier Terminal contains a single outfall (Outfall 001 – drainage from bulk storage area and pipeline receipt and transfer manifold area). The South Pacific Petroleum Corporation/Cabras Island Terminal has two permitted outfalls (Outfall 001 – Drainage from bulk storage area and pipeline receipt and transfer manifold area; Outfall 002 – Drainage from tank truck loading area). The Tristar Guam Agat Terminal contains a single outfall (Outfall 001 – drainage from bulk storage area and pipeline receipt ad transfer manifold area). The Guam Power Authority Piti Terminal has three permitted outfalls (Outfalls 001, 002 and 003 all collect storm water or any release from the tanks).

B. Types of Operations. The facilities covered by this proposed permit are petroleum bulk storage terminals located in Guam. According to the *Technical Support Document for the 2004 Effluent Guidelines Program Plan* (EPA, 2004), typical pollutants for petroleum bulk storage terminals are oil & grease, total petroleum hydrocarbons, biochemical oxygen demand, chemical oxygen demand, total organic carbon, ammonia, total suspended solids, phenols, total dissolved solids, naphthenic acids, aromatics (benzene, toluene, ethylbenzene, xylene), and surfactants. Benzene, toluene, ethylbenzene and xylene are the more volatile components of petroleum hydrocarbons. These pollutants are usually present in petroleum products, but are most associated with petroleum products with lighter ranges of hydrocarbons, such as gasoline. Since discharges from this facility may come into contact with petroleum products, including gasoline, and because oil-water separators are typically the only means of treatment, it is reasonable to expect that these pollutants may be discharged to surface waters.

C. Types of Discharges Authorized. The permittees store and distribute a variety of petroleum products, as described above. Discharges from the facility are intermittent, and may include:

- tank bottom water draws, which originate at the lowest inner part of petroleum storage tanks where liquid drains from interior spaces as a result of rainwater accumulation and water condensation from the petroleum product itself
- treated storm water which may be discharged concurrently with tank bottom water draws
- equipment maintenance activities
- hydrostatic test water from integrity testing of piping and tankage
- service water flows associated with incidental leaks, system tests, and facility maintenance activities
- firewater system testing

The proposed general permit would authorize each of these discharges. The proposed permit does not authorize discharges other than those described above, including pollutants which are

not ordinarily present in those discharges. EPA requires that all minor spills and incidental leaks of petroleum products must be promptly cleaned up.

D. Nature of Discharges. The proposed general permit authorizes the discharges described above from each of the five facilities as well as new facilities seeking coverage under this general permit. Specific requirements and effluent limitations are specified for each facility below and in the proposed permit.

In developing the proposed permit conditions, EPA has evaluated the concentrations of these pollutants relative to the levels allowed under Federal regulations (National Recommended Water Quality Criteria, December 2004), Guam water quality standards (revised and approved by Guam on June 18, 2002) and best professional judgement. The pollutants and discharge parameters limited are summarized in Section IV below.

E. Types of Waste Treatment. The only means of treatment typically utilized at these facilities is oil-water separators, as mentioned above.

IV. SPECIFIC PERMIT CONDITIONS

A. General. When determining effluent limitations, EPA must consider limitations based on the technology available to treat the pollutant(s) (i.e., technology-based limitations) and limitations that are protective of water quality standards (i.e., water quality-based limitations). In accordance with 40 CFR Parts 122.44 and 125.3 and Guam water quality standards, technology and water quality-based effluent limitations for the draft permit are proposed using daily maximum limits.

Technology-based Effluent Limitations

EPA proposes a technology-based effluent limit for oil and grease since oil and grease are common components of oily wastewater. The effluent limit for oil and grease is based on EPA's Best Professional Judgment ("BPJ") as part of developing technology-based effluent limits since there are no applicable effluent limitation guidelines and performance standards for oil and grease. Section 402(a)(1) of the Clean Water Act ("CWA") provides for the establishment of BPJ-based limits when specific national effluent guidelines are not available for a pollutant of concern. The proposed BPJ daily maximum discharge limit for oil and grease is 15.0 mg/l. This limit is consistent with limits on other similar facilities that treat oily wastewater in Guam and this limit was also included in each of the five individual permits for these facilities. Therefore, this limit applies to all facilities covered under this general permit. In addition to this technology-based numeric limit, the narrative water quality-based limit for oil and grease prohibiting visible sheening is included in the draft permit.

EPA also proposes a technology-based effluent limitation for TSS based on BPJ of 100 mg/L as a daily maximum. The effluent limit for TSS is based on BPJ since (1) there are no applicable effluent limitation guidelines and performance standards for TSS, and (2) TSS is a

good indicator of effluent quality for this type of facility. Specifically, the release of heavy metals and polycyclic aromatic hydrocarbons (PAHs) can be reduced by regulating the amount of suspended solids discharged. The limit of 100 mg/l was chosen based on an analysis of relevant TSS limits implemented in various states. As seen below, the limit set in this permit is at the higher end of the range. The limit is a daily maximum to be monitored once per month.

Comparison of Technology-Based TSS Limits

	Monthly Average	Daily Maximum
Maine[1]	50 mg/L	100 mg/L
Massachusetts[2]	30 mg/L	100 mg/L
Tennessee[3]	30 mg/L	45 mg/L
South Carolina[4]	--	100 mg/L
California[5]	--	75 mg/L
Washington[6]	30 mg/L	45 mg/L

[1] https://www3.epa.gov/region1/npdes/permits/2010/finalme0022225permit.pdf
[2] https://www3.epa.gov/region1/npdes/permits/2014/finalma0001929permit.pdf and https://www3.epa.gov/region1/npdes/permits/draft/2014/draftma0001091permit.pdf
[3] http://in.gov/idem/cleanwater/files/permit_notice_petroleum_draft_factsheet.pdf
[4] https://www.scdhec.gov/environment/docs/scg340000.pdf
[5] http://63.199.216.6/permits/docs/6297_R4-2016-0219_WDR_PKG.pdf and http://63.199.216.6/permits/docs/7873_R4-2016-0142_WDR_PKG.pdf
[6] https://fortress.wa.gov/ecy/wqreports/public/WQPERMITS.document_pkg.download_document?p_document_id=119992 and https://fortress.wa.gov/ecy/wqreports/public/WQPERMITS.document_pkg.download_document?p_document_id=133872

Water Quality-Based Effluent Limitations

In accordance with 40 CFR 122.44(d), the draft permit proposes water quality-based effluent limits for several pollutants or parameters since EPA has determined, based on effluent data provided by the permittee and the nature of the discharge, that the effluent discharged from the facility causes, has the reasonable potential to cause, or contributes to an exceedance of

Guam water quality standards. When determining whether an effluent discharge causes, has the reasonable potential to cause, or contributes to an excursion above a narrative or numeric criteria within a State (or Territory) water quality standard, the permitting authority, such as EPA, shall use procedures which account for existing controls on point and nonpoint sources of pollution, and the variability of the pollutant or parameter in the effluent.

In the development of this general permit, EPA relied upon the reasonable potential analyses conducted in each of the most recent individual permits issued to the five existing facilities listed above. The data and reasonable potential calculations described in the respective fact sheets is incorporated as part of the administrative record for this general permit. For all parameters or pollutants that show a reasonable potential, numeric water quality-based effluent limits are included in the draft permit and are described below (40 CFR 122.44(d)(1)). The parameters or pollutants which are consistently determined to have a reasonable potential in the five existing facilities are also automatically applied to any additional facility that may be authorized to discharge under this general permit in the future. Water quality-based effluent limits were established without consideration of a mixing zone.

Each pollutant of concern is addressed specifically below.

1. *pH* - The range of pH values is based on Guam's water quality standards, which require that all Category M-3 and S-3 waters, maintain a pH range of 6.5 to 8.5. Based on the reasonable potential analyses conducted in the most recent individual NPDES permits issued to the five facilities, all facilities have a reasonable potential to violate these pH limits. Therefore, the existing individual permits all contain pH limits and these limits are also included in this proposed general permit. These limits apply to each of the five permitted facilities.

2. *Oil and Grease* -As previously described, a numerical technology-based effluent limit is proposed for oil and grease (15 mg/L). In addition, a narrative water quality-based effluent limit is proposed since oil and grease are commonly found in wastewater from bulk petroleum storage facilities and has a reasonable potential to cause, or contribute to an exceedance of Guam water quality standards. The narrative effluent limit for oil and grease is based on Guam's water quality standards and includes the prohibition of visible sheening (see PART VI (D)). These limits apply to each of the five permitted facilities..

3. *Lead* – Lead is commonly found in fuel oil and oily wastewaters in Guam. The proposed discharge limit for lead is 0.0081 mg/l based on Guam water quality standards for aquatic life protection. The limit is based on total recoverable metal and the potential for acute exposure of lead to aquatic life. Based on the reasonable potential analyses conducted in the most recent individual NPDES permits issued to the five facilities, only the South Pacific Petroleum Corporation/Cabras Island Terminal has the reasonable potential to discharge lead at or above the water quality standard. The Guam Power Authority Piti Terminal permit also contained a lead limit but because the facility has now phased out lead as an additive there is no longer reasonable potential to include a permit limit for that facility. Therefore, this limit only applies to the South Pacific Petroleum facility. Additionally, monthly monitoring for

lead is established for all other facilities based on best professional judgment in order to determine if a permit limit may be required in the future.

4. *Benzene* – Benzene is a common component of gasoline and other petroleum products. Guam's water quality standards do not include surface water quality standards for benzene; however, EPA's human health criteria for organism only is a range of 16 to 58 µg/L. In EPA's update of human health ambient water quality for benzene (2015), EPA recommends using the lower criteria based on the carcinogenic effects of benzene. See EPA 820-R-15-009. Therefore, the proposed discharge limit for benzene is 16 ug/l. In Category M-3 marine waters, aquatic life protection is included as a water quality standard, so fish consumption criteria are applied to all aquatic life uses. Based on the reasonable potential analyses in the most recent individual NPDES permits issued to the five facilities, the South Pacific Petroleum Corporation/Cabras Island Terminal has reasonable potential to discharge benzene at or above the water quality standard. The data submitted by Mobil Oil Guam Inc. in their most recent permit renewal application for their Cabras terminal indicates that there is no reasonable potential for benzene to be exceeded in the effluent. Therefore, this limit only applies to the South Pacific Petroleum Corporation/Cabras Island Terminal. EPA notes that the proposed limit is more stringent than the 71 ug/l effluent limit that was included in the individual permits based on the human health risk (1 x 10-6 carcinogenic risk) of the consumption of aquatic organisms only (not water and aquatic organisms). EPA notes that since this facility has reasonable potential to exceed the less stringent limit, it would also have reasonable potential to exceed the more stringent limit. Therefore, this more stringent limit is warranted to protect human health based on fish consumption. Additionally, monthly monitoring for benzene is established for both Cabras terminals based on BPJ in order to determine if a permit limit may be required in the future.

5. *Total Suspended Solids (TSS)* - Guam water quality standards contain receiving water criteria of 40 mg/l for TSS for category M-3 receiving waters. Based on the most recent individual NPDES permits issued to the five facilities, the South Pacific Petroleum Corporation/Cabras Island Terminal and the Mobil Oil Guam Inc./Cabras Terminal (Outfall 001) discharges have a reasonable potential to cause or contribute to an exceedance of applicable water quality criteria. Therefore, a limit of 40 mg/l applies to these two facilities. Additionally, as described above, all other facilities (including Outfall 002 at the Mobil Oil Guam Inc./Cabras Terminal) must comply with a 100 mg/l maximum daily technology-based effluent limit, based on BPJ, as TSS is considered a typical pollutant of concern for petroleum bulk storage terminals. Narrative effluent limits for TSS have also been included in the proposed permit. These narrative limits include that the discharge shall not (a) cause visible floating materials, debris, oils, grease, scum, foam, or other floating matter which degrades water quality or use; (b) produce visible turbidity, settle to form deposits or otherwise adversely affect aquatic life; and (c) produce objectionable color, odor or taste, directly or by a chemical or biological action.

6. *Ammonia* – According to the *Technical Support Document for the 2004 Effluent Guidelines Program Plan* (EPA, 2004), ammonia is considered a typical pollutant of concern for petroleum bulk storage terminals. Based on the reasonable potential analyses in the most

recent individual NPDES permits issued to the five facilities, the Mobil Oil Guam Inc./Cabras Terminal (Outfall 001) has the reasonable potential to require a permit limit. EPA used the highest receiving water pH (8.41 standard units), highest receiving water temperature (28.7°C), and lowest receiving water salinity (35 parts per thousand) measured in 2011 at the nearest GEPA monitoring station (APM18) to calculate the most protective water quality criterion for total ammonia applicable to the receiving water, 0.15 mg/L. Therefore, this limit is applied only to the Mobil Oil Guam Inc./Cabras Terminal. Additionally, monthly monitoring for ammonia is established for all other facilities based on best professional judgment in order to determine if a permit limit may be required in the future.

7. *Toluene, Ethylbenzene and Xylene* – Based on the reasonable potential analyses in the most recent individual NPDES permits issued to the five facilities, EPA has determined that none of the discharges have reasonable potential to cause or contribute to an exceedance for toluene, ethylbenzene or xylene. However, annual monitoring for these parameters is established for all facilities based on best professional judgment, as these are considered typical pollutants of concern for petroleum bulk storage terminals. At this time there are no numeric water quality-based effluent limits proposed from these pollutants.

8. *Zinc* – Criteria listed in Guam's water quality standards for the protection of saltwater aquatic life and human health (consumption of organisms only), as designated for Category M-3 marine waters, apply to marine receiving waters. Based on the reasonable potential analyses in the most recent individual NPDES permits issued to the five facilities, EPA has determined that only the Mobil Oil Guam Inc./Cabras Terminal has the reasonable potential to cause or contribute to an exceedance of applicable water quality criteria for zinc. Therefore, the draft permit contains effluent limits for zinc at Outfalls 001 and 002 based on the most stringent water quality criteria in Guam Water Quality Standards, 2001 Revision for Category M-3 receiving waters. The 86 µg/l criterion continuous concentration for protection of saltwater aquatic life (a 4-day average that should not be exceeded more than once every three years) is the most stringent applicable water quality criterion for zinc, and is incorporated into the permit as an effluent limit to be monitored once per month. In the most recent individual permit reissuance for this facility, the facility was given a compliance schedule for meeting this zinc limit with a final compliance date of the expiration date of the individual permit (October 31, 2017). Therefore, this limit will be effective upon issuance of the new permit.

Based on the above analyses, the three tables below provide a summary of effluent limitations, monitoring requirements, and sample types for each pollutant or parameter in the proposed permit.

Table 1. Effluent Limits Applicable to All Facilities

Pollutant/Parameter	**Daily Max. Allowable Effluent Limitation**	**Monitoring Requirements**	
		Monitoring Frequency	**Sample Type**
pH (Std. units)[1]	6.5 to 8.5	Once/Month	Grab

Oil and Grease (mg/l)	15	Once/Month	Grab
TSS (mg/l)[2]	100	Once/Month	Grab

[1] pH effluent limits reported as minimum/maximum concentrations; pH shall be measured at the time of sampling.
[2] TSS limit of 100 mg/l applies to all facilities and outfalls except the South Pacific Petroleum Corporation/Cabras Island Terminal and the Mobil Oil Guam Inc./Cabras Terminal (Outfall 001), which must comply with the more stringent limit of 40 mg/l, shown below.

Table 2. Effluent Limits Applicable to Specific Facilities

Pollutant/ Parameter	**Applicable Facilities**	**Daily Max. Allowable Effluent Limitation**	**Monitoring Requirements**	
			Monitoring Frequency	**Sample Type**
Lead (mg/l)	South Pacific Petroleum Corporation/Cabras Island Terminal	0.0081	Once/Month	Grab
Benzene (mg/l)[1]	South Pacific Petroleum Corporation/Cabras Island Terminal and Mobil Oil Guam Inc./Cabras Terminal (Outfall 002)	0.016	Once/Month	Grab
TSS (mg/l)	South Pacific Petroleum Corporation/Cabras Island Terminal and Mobil Oil Guam Inc./Cabras Terminal (Outfall 001)	40	Once/Month	Grab
Ammonia (mg/l)	Mobil Oil Guam Inc./Cabras Terminal	0.15	Once/Month	Grab
Zinc (mg/l)[2]	Mobil Oil Guam Inc./Cabras Terminal	0.086	Once/Month	Grab

[1] The limit for Benzene applies only to the South Pacific Petroleum Corporation/Cabras Island Terminal. For Mobil Oil Guam Inc./Cabras Terminal (Outfall 002) this is a monitoring level.
[2] Zinc effluent limit shall be effective beginning on November 1, 2017.

Table 3. Monitoring Requirements Applicable to All Facilities

Pollutant/Parameter	**Monitoring Requirements**	
	Monitoring Frequency	**Sample Type**
Flow Rate (MGD)[1]	Continuous	Metered
Lead (mg/l)[3]	Once/Month	Grab
Benzene (mg/l)	Once/Month	Grab
Ammonia(mg/l)	Once/Month	Grab
Toluene (mg/l)	Once/Year	Grab
Ethylbenzene (mg/l)	Once/Year	Grab
Xylene (mg/l)	Once/Year	Grab
Whole Effluent Toxicity[2]	Once/Permit Cycle	Grab
Priority Pollutants[2]	Once/Permit Cycle	Grab

[1] MGD means million gallons per day.

[2] In accordance with federal regulations, the permittee shall conduct a concurrent Whole Effluent Toxicity test and Priority Toxics Pollutants scan to ensure that the discharge does not cause toxicity nor contain toxic pollutants in concentrations that may cause violation of water quality standards. Monitoring of WET test and Priority Pollutant scan shall occur upon first discharge at this facility and at least once during permit term. The permittee shall perform all effluent sampling and analyses for the priority pollutants scan in accordance with the methods described in the most recent edition of 40 CFR 136 which provides a complete list of Priority Toxic Pollutants. If the scan results indicate that a limit has actually been exceeded or there is a reasonable potential for such a limit to be exceeded, this permit may be reopened to include appropriate numeric limits.
[3] Lead shall be measured once/year for Mobil Oil Guam Inc. as it has demonstrated the measured concentration of this parameter is ten times below the water quality criterion. Nevertheless, annual monitoring consistent with other parameters likely to be present such as Toluene and Ethylbenzene is warranted.

B. Best Management Practices. Pursuant to 40 CFR 122.44(k), EPA may impose Best Management Practices ("BMPs") which are "reasonably necessary…to carry out the purposes of the Act." The pollution prevention requirements or BMPs in the draft permit operate as technology-based limitations on effluent discharges that reflect the application of Best Available Technology and Best Control Technology. Therefore, the draft permit requires the permittee to develop (or update) and implement a Pollution Prevention Plan with the appropriate pollution prevention measures or BMPs designed to prevent pollutants from entering the receiving waters and other surface waters while maintaining, transporting, and storing petroleum products or other potential pollutants at the facility.

C. Standard Permit Conditions.
NPDES Regulations at 40 CFR 122.41 and 122.42 require that certain standard conditions be included in all NPDES permits. These conditions have been included in Part IV of the proposed permit.

D. Anti-Backsliding
Section 402(o) of the CWA prohibits the renewal or reissuance of an NPDES permit that contains effluent limits less stringent than those established in the previous permit, except as provided in the statute. This general permit does not include any less stringent effluent limits than those in previous individual permits. EPA notes that a lead limit no longer applies to the Guam Power Authority Piti Terminal based on the removal of lead as an additive at that facility resulting in lead not being expected in the discharge.

E. Anti-degradation Policy
EPA's anti-degradation policy at 40 CFR 131.12 and Guam WQS Section 5101.B. require that existing water uses and the level of water quality necessary to protect the existing uses be maintained. As described in this document, the permit establishes effluent limits and monitoring requirements to ensure that all applicable water quality standards are met. The permit does not include a mixing zone: therefore, these limits will apply at the end of pipe without consideration of dilution in the receiving water. Due to the low levels of toxic pollutants present in the effluent, treatment prior to discharge, and water quality based effluent limitations, it is expected that the discharge will not adversely affect receiving water bodies.

VI. RECEIVING WATER MONITORING

Photo documentation of the discharged effluent is required once per quarter. Photos shall be taken of the effluent as it enters the receiving water and must be of suitable quality to adequately assess visible sheening, discoloration, and turbidity of the receiving water, as a result of the discharge. Each photo must be labeled with the outfall number, date and time and be submitted as an electronic attachment to the respective NetDMR submittal, as described in the draft permit.

VII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act. The Endangered Species Act ("ESA") allocates authority to and administers requirements upon Federal agencies regarding threatened or endangered species of fish, wildlife, or plants and habitat of such species that have been designated as critical. Its implementing regulations (50 CFR Part 402) require EPA to ensure, in consultation with the Secretary of the Interior or Commerce, that any action authorized, funded or carried out by EPA is not likely to jeopardize the continued existence of any threatened or endangered species or adversely affect its critical habitat (40 CFR 122.49(c)).

Implementing regulations for the ESA establish a process by which Federal agencies consult with one another to ensure that the concerns of both the U.S. Fish and Wildlife Service ("USFWS") and the National Marine Fisheries Service ("NMFS")(collectively "Services") are addressed.

For the proposed general permit issuance, Region 9 considered the potential effects of the discharges on listed species and critical habitat. Both NMFS and the USFWS maintain updated lists of threatened and endangered species and critical habitat for these species at http://www.nmfs.noaa.gov/pr/species/esa/ and http://ecos.fws.gov/tess_public/.

The threatened and endangered species that were identified by EPA and reviewed by the Services during the issuance of the previous five individual permits that are being replaced by this general permit were as follows:

1. **Mobil Oil Guam Inc./Cabras Terminal**. Green Sea Turtle (*Chelonia mydas*) and Hawksbill Turtle (*Eretmochelys imbricate*)

2. **Tristar Guam F-1 Pier Terminal**. Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (Eretmochelys imbricate), Leatherback Sea Turtle (*Dermochelys coriacea*), Loggerhead Sea Turtle (Caretta caretta), Mariana Gray Swiftlet (*Aerodramus vanikorensis bartschi*), Bridled White-Eye (*Zosterops conspicillatus conspicillatus*), and the Hyun Lagu (*Serianthes nelsonii*)

3. **South Pacific Petroleum Corporation/Cabras island Terminal**. Little Marianas Fruit Bat (*Pteropus tokudae*), Marianas Flying Fox (*Pteropus marianus marianus*), Mariana Crow (*Corvus kubaryi*), Guam Micronesian Moorhen (*Gallinula chloropus guam*), Guam Rail (*Rallus owstoni*) Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricate*), Leatherback Sea Turtle (*Dermochelys coriacea*), Loggerhead Sea Turtle (*Caretta caretta*), Mariana Gray Swiftlet (*Aerodramus vanikorensis bartschi*), Bridled White-Eye (*Zosterops conspicillatus conspicillatus*), and the Hyun Lagu (*Serianthes nelsonii*)

4. **Tristar Guam Agat Terminal.** Little Marianas Fruit Bat (*Pteropus tokudae*), Marianas Flying Fox (*Pteropus marianus marianus*), Mariana Crow (*Corvus kubaryi*), Guam Micronesian Moorhen (*Gallinula chloropus guam*), Guam Rail (*Rallus owstoni*) Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricate*), Leatherback Sea Turtle (*Dermochelys coriacea*), Loggerhead Sea Turtle (*Caretta caretta*), Mariana Gray Swiftlet (*Aerodramus vanikorensis bartschi*), Bridled White-Eye (*Zosterops conspicillatus conspicillatus*), and the Hyun Lagu (*Serianthes nelsonii*)

5. **Guam Power Authority Piti Terminal**. Little Marianas Fruit Bat (*Pteropus tokudae*), Marianas Flying Fox (*Pteropus marianus marianus*), Mariana Crow (*Corvus kubaryi*), Guam Micronesian Moorhen (*Gallinula chloropus guami*), Guam Rail (*Rallus owstoni*) Green Sea Turtle (*Chelonia mydas*), Hawksbill Turtle (*Eretmochelys imbricate*), Leatherback Sea Turtle (*Dermochelys coriacea*), Loggerhead Sea Turtle (*Caretta caretta*), Mariana Gray Swiftlet (*Aerodramus vanikorensis bartschi*), Bridled White-Eye (*Zosterops conspicillatus conspicillatus*), and the Hyun Lagu (*Serianthes nelsonii*)

At the time these five permits were last issued, EPA made findings that the actions would have no effect on listed species or their critical habitats. Drafts of all five individual permits were shared with the Services prior to final issuance and the Services did not provide any comments during the comment period of these permits.

EPA also reviewed information about coral species protected under the Endangered Species Act provided by the National Oceanic and Atmospheric Administraton (NOAA). In reviewing the most recent literature EPA noted that there were four species of coral currently known to be in the vicinity of Guam. These four are: *Acropora globiceps, Acropora retusa, Pavona diffluens, Seritopora aculeate.* None of these species are listed as threatened or endangered. There are currently no prohibitions relating to individual conduct and these species. The only prohibitions apply to the listed elkhorn and staghorn corals in the Caribbean. Additionally, there is no species-specific population information currently available for these species. General threats to these species are factors such as global climate change, and ocean acidification, and possible impacts from human development, changes in native species dynamics, and various fishing practices. However, the severity of these combined threats to the population of each individual species is not known.

In preparing to issue the new general permit, we asked the Services for species lists and any additional information we should consider in evaluating potential effects of the action. We

received no data and information from the Services about potential effects. We also searched for available data and information, but were unable to locate any information that indicated new or different potential effects on these listed species than were evaluated at the time of the last ESA analysis.

In response to our request, the Fish and Wildlife Service in a letter dated February 09, 2018 provided updates to the list of listed species that may be present within or near the project area. In addition to the species listed above, the FWS also indicated that three species of federally endangered snails, the Guan tree snail (Partula radiolata), the Humped tree snail (Partula gibba) and the Fragile tree snail (Samoana fragilis) may be present in the more forested, humid, riverine areas. The plants Phyllanthus saffordi and Hedyotis menaglantha may be found within or close to the project area. The Services also reiterated that there is no proposed or designated critical habitat within the project area.

EPA's review of this new information from the Services indicates that there is no nexus between the three listed tree snail species and two listed plant species identified and no evidence of direct or indirect effects of this action (authorization of treated wastewater discharge) on any of the newly listed species.

We note that the general permit regulates discharges from the existing facilities in a manner identical to the existing individual permits for those facilities and will result in no differences in effluent quality or receiving water outcomes in comparison to the prior individual permits or through issuance of new individual permits.

Additionally, EPA has included under Special Conditions in the final permit provisions to address potential issues related to artificial lighting, construction, disposal of materials and waste, as well as litter control at any facility covered under this permit.

The principal threats to the listed species (including newly listed species) appear to be factors (such as overharvesting and disease) other than the regulated land-based discharges (including bulk fuel storage facilities). FWS noted that there is no designated or proposed critical habitat near the five facilities and near Apra Harbor (Mehrhoff, 2011).

In summary, Region 9 has reconsidered the potential effects of the discharges on listed species and we conclude that the issuance of this general permit and coverage under the general permit in lieu of the existing individual permits would not affect these species. A draft of the proposed permit and factsheet was provided to the Services. In comments received from the FWS, no concerns were raised about this determination.

B. Coastal Zone Management Act. The Coastal Zone Management Act ("CZMA") requires that Federal activities and licenses, including Federally permitted activities, must be consistent with an approved state Coastal Management Plan (CZMA Sections 307(c)(1) through (3)). Section 307(c) of the CZMA and implementing regulations at 40 CFR 930 prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant

certifies that the proposed activity complies with the State (or Territory) Coastal Zone Management program, and the State (or Territory) or its designated agency concurs with the certification. All requirements under CZMA Federal Consistency Review provided by the Guam Bureau of Statistics & Plans are incorporated by reference into the permit.

C. Magnuson-Stevens Fishery Conservation and Management Act. The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act set forth a number of new mandates for NMFS, regional fishery management councils, and Federal agencies to identify and protect important marine and anadromous fish habitat. Regional fishery management councils, with assistance from NMFS, are required to delineate essential fish habitat ("EFH").

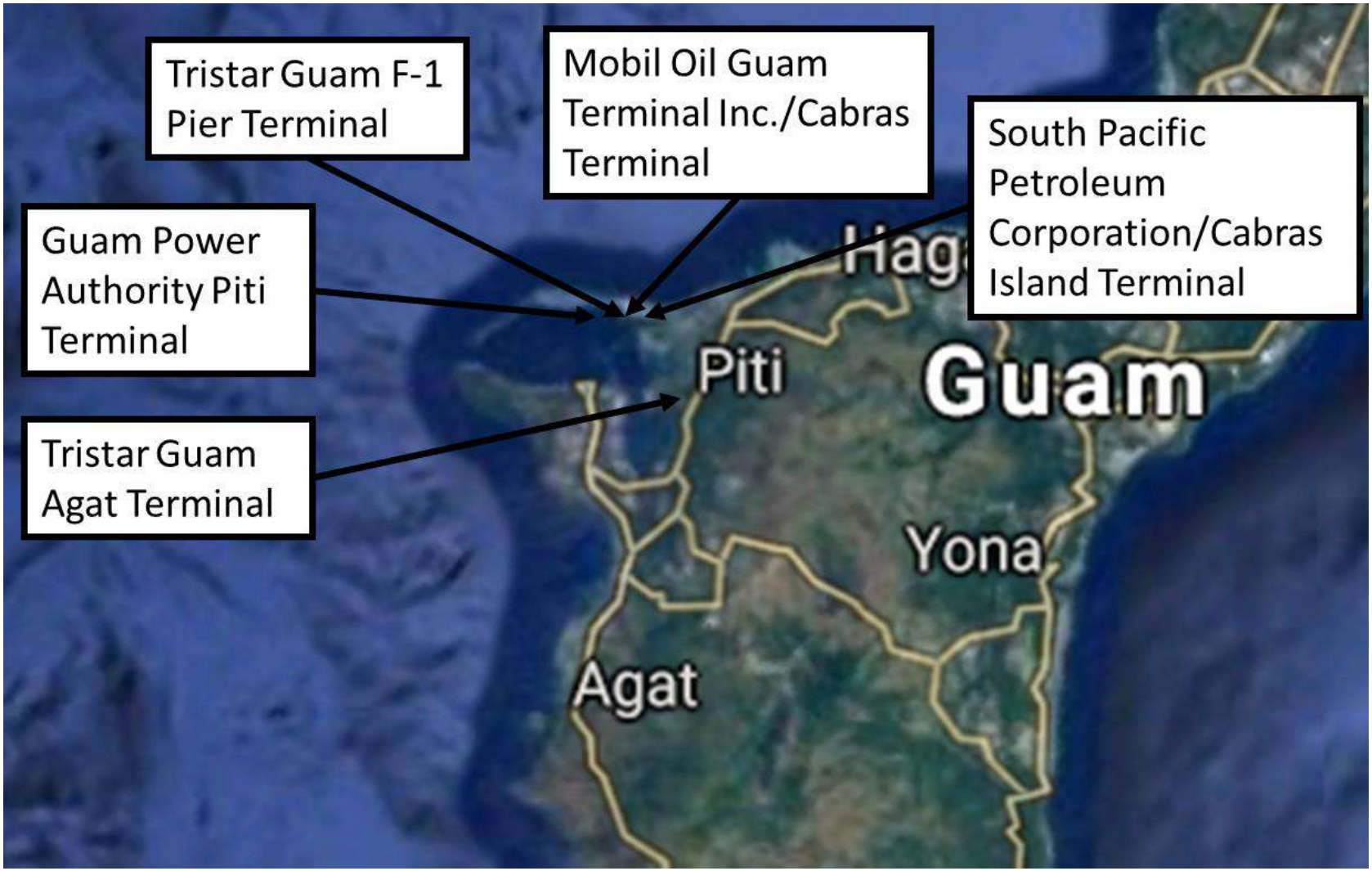
The Magnuson-Stevens Act requires that Federal agencies consult with NMFS on all actions undertaken by the agency which may adversely affect EFH. For the proposed general permit issuance, Region 9 reconsidered the effects of the discharges on EFH. The Southwest Regional Office of NMFS provides updated information concerning EFH on its website at: http://swr.nmfs.noaa.gov/hcd/HCD_webContent/EFH/index_EFH.htm. Region 9 found no new requirements or concerns identified which had not been previously considered in each of the individual permits for the five bulk fuel storage facilities.

In summary, Region 9 reviewed the updated EFH information on the NMFS website for any new requirements or information pertaining to the proposed discharges. We found no new information that would change our previous conclusion that the discharges would not have a significant adverse effect on EFH. As such, Region 9 is not initiating consultation at this time, but will forward the draft permit and fact sheet to NMFS for any comments on Region 9's tentative conclusion concerning the potential effects on EFH.

D. Paperwork Reduction Act. The information collection required by this proposed permit has been approved by Office of Management and Budget ("OMB") under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et. seq.*, in submission made for the NPDES permit program and assigned OMB control numbers 2040-0086 (NPDES permit application) and 2040-0004 (discharge monitoring reports).

E. Water Quality Certification Requirements. For States, Territories, or Tribes with EPA approved water quality standards, on July 2018 EPA requested certification from the Guam Environmental Protection Agency (GEPA) that the proposed permit will meet all applicable water quality standards. Certification under section 401 of the CWA shall be in writing and shall include the conditions necessary to assure compliance with referenced applicable provisions of sections 208(e), 301, 302, 303, 306, and 307 of the CWA and appropriate requirements of Territory law. EPA cannot issue the permit until the certifying State, Territory, or Tribe has granted certification under 40 CFR 124.55 or waived its right to certify. All requirements pursuant to the 401 Certification issued by GEPA are incorporated by reference into the permit.

Location of Existing Bulk Fuel Storage Terminals in Guam



Map obtained from www.google.com/maps on March 21, 2017.

RESPONSE TO COMMENTS
General Permit for Bulk Fuel Storage Facilities in Guam
NPDES Permit No. GUG000001

EPA received comments from the United States Fish and Wildlife Service Pacific Islands and Wildlife Office (USFWS) on EPA's draft NPDES General Permit for Bulk Fuel Storage Facilities in Guam (GGP). EPA has summarized the comments and responded to comments below.

COMMENT 1: USFWS provided information about federally listed species that may be present within or near the project area as follows: "The federally threatened Mariana fruit bat (*Pteropus marianus marianus*) may forage or roost in forested areas; the threatened green sea turtle (*Chelonia mydas*) and endangered hawksbill sea turtle (*Eretmochelys imbricata*) may nest on shoreline areas; and the endangered Mariana common moorhen (*Gallinula chloropus guami*) may occur in wetland or riverine habitats on or near your proposed project work sites. The federally endangered snails (*Partula radiolata*) Guam tree snail, (*Partula gibba*) Humped tree snail, or (*Samoana fragilis*) Fragile tree snail, may be present in the more forested, humid, riverine areas. (*Phyllanthus saffordi*) and (*Hedyotis megalantha*) are savanna species that may be found within or close to your project area. We also have determined that there is no proposed or designated critical habitat within the project area. We recommend that work only occur between 7 am and 5 pm, as artificial lighting used for construction work at night can disorient nesting turtles, foraging or roosting bats, and seabirds, which are protected under the Migratory Bird Treaty Act. Steps should be put in place to dispose of materials and waste properly and litter control to prevent attracting or spreading pest species. If any of this information changes, please contact us before proceeding with the project.

RESPONSE 1: The permit factsheet was amended to include the additional species indicated by the USFWS, and EPA reviewed information available and determined that there was no nexus between the three listed snail species and two listed plant species identified and this permit in lieu of the existing individual permits permit would not affect these species either. Additionally, under the Special Conditions section in the final permit, EPA included language to address potential issues related to artificial lighting, construction, disposed of materials and waste, as well as litter control at the facilities covered under this permit.

EPA received comments from the Mobil Oil Guam Inc. (MOGI) on EPA draft NPDES General Permit for Bulk Fuel Storage Facilities in Guam (GGP). EPA has summarized the comments and responded to comments below.

COMMENT 2: MOGI commented on Section III.C. of the factsheet which addresses the Types of Discharges Authorized. MOGI stated that:

The proposed permit lists five categories of discharges from the bulk terminal. It further states that storm water contaminated by "coming in contact with spills, leaks, improperly stored materials and wastes, and an inadequately cleaned facility" are not authorized by the General Permit but rather are regulated by the Multi-Sector General Permit (MSGP). MOGI believes that this provision is unclear because it appears to require terminals to also apply for the MSGP for the same outfalls authorized by the proposed bulk terminal permit. In addition, MOGI's current NPDES permit authorizes "water from maintenance activities" that is not one of the five enumerated categories of authorized wastewater.

Maintenance activities include repair of pumps that are in product service. Wash down water associated with these activities, following dry clean up, may contain small amounts of petroleum materials. These wastewaters are no different from the "ship to shore transference minor spills and incidental leaks" that are identified as authorized discharges in the proposed permit. MOGI requests that the category of "equipment maintenance activities" be added to the authorized wastewaters for discharge under the proposed General Permit.

MOGI also requests clarification of the reference to the MSGP. Does EPA expect bulk terminals to also apply for MSGP coverage for the same outfalls identified in the proposed General Permit? MOGI does have MSGP coverage for areas of the terminal that do not drain through Outfalls 001 and 002 and are eligible for such coverage.

RESPONSE 2: EPA did not intend for MOGI or other permittees to also apply for MSGP coverage for the same outfalls identified in the proposed General Permit. EPA therefore has removed the language in the factsheet Section III.C. referring to the MSGP. EPA has included the category of "water from maintenance activities" as an enumerated category.

COMMENT 3: MOGI stated that in Section IV.A.4. of the factsheet which refers to the basis for Specific Permit Conditions for Benzene:

The proposed General Permit would establish a limit of 16 µg/L or 0.016 mg/L as a daily maximum. The Fact Sheet indicates that MOGI discharge data for benzene demonstrates a reasonable potential to exceed this limit and thus proposes benzene limit for the discharge.

EPA based its reasonable potential analysis (RPA) for benzene on data submitted by MOGI for the 2012 Cabras Terminal permit. In its application to renew and amend the permit that was filed with EPA on May 4, 2017 MOGI submitted benzene data consisting of 38 Outfall 002 effluent samples analyzed during the term of the current permit (Outfall 001 had no discharge during the permit term). The highest measured benzene concentration is 8.7 µg/L (0.0087 mg/L). Using the EPA RPA equations on page 56 of the Technical Support Document for *Water*

Quality-based Toxics Control (EPA /505/2-90-001) and a coefficient of variation (CV) of 0.6, the Outfall 002 discharge would not have a reasonable potential to exceed the proposed 16 µg/L limit. Therefore, MOGI requests that EPA revise the reasonable potential analysis for benzene for Outfall 002 using data supplied in the 2017 application, which will demonstrate the effluent does not have a reasonable potential to exceed the benzene standard and thus no limit is needed.

In the event that EPA concludes that a benzene limit is necessary, MOGI requests a mixing zone based on its completed mixing zone study. The critical dilution factor is 10.4 to 1 for Outfall 002 and 29.1 to 1 for Outfall 001.

RESPONSE 3: EPA agrees with the commenter that the data submitted with the May 4, 2017 application on benzene indicates that there may be no reasonable potential for benzene to be exceeded in the effluent. However, benzene is present in petroleum products, which are what the bulk fuel facility is designed to store, therefore monitoring for benzene is appropriate. The General Permit is amended to indicate that the 0.016 mg/L level is a monitoring level and not a permit limit. If monitoring data indicates that this level is exceeded then the permit has a re-opener provision to allow for imposition of a permit limit.

As the discharger has demonstrated that there is no reasonable potential for exceedance of the benzene limit there is no need for EPA to authorize a mixing zone for benzene.

COMMENT 4: MOGI further stated that in Section IV.A.6. of the factsheet which refers to the basis for Specific Permit Conditions for Ammonia.

The proposed General Permit would continue the existing limit for proposed ammonia of 0.15 mg/L. In its individual NPDES permit application submitted to EPA in October 2017 MOGI requested a mixing zone for ammonia based upon the analysis in its 2014 mixing zone report. MOGI requests that the General Permit limits for total ammonia for Outfall 002 be adjusted to account for mixing zone with a critical dilution factor of 10.4 to 1 and for Outfall 001 of 29.1 to 1.

RESPONSE 4: In its May 4, 2017 application MOGI indicated that Outfall 001 discharges to Apra Harbor through a pipe at a vertical angle of 0˚(horizontal with respect to the water surface). The pipe depth at opening is -1.0 meter (m) at mean sea level (MSL) (-3.28 feet) and discharges approximately 6 m from shore at low tide. The port lies on the bay bottom. The pipe diameter is 0.305 m (12 inches). Further, Outfall 002 discharges through coral rip-rap at the bank of the harbor. It is not submerged, even at high tide. The discharge pipe diameter is 0.305 m (12 inches).

Pursuant to Section 5104(d)(2)(A) For non-thermal discharges to coastal waters, the mixing zone shall be equal in depth to the depth of the water over the diffuser, in width to twice the depth of the water plus the width of the diffuser, and in length to twice the depth of the water plus the

length of the diffuser, with the diffuser geographically centered within the mixing zone. Based on the information provided by MOGI a mixing zone is not allowable with the current configuration and location of Outfalls 001 and 002.

COMMENT 5: MOGI further stated that in Section IV.A.8. of the factsheet which refers to the basis for Specific Permit Conditions for Zinc.

The proposed General Permit would continue the existing limit for total recoverable zinc of 0.086 mg/L. In its individual NPDES permit application submitted to EPA in October 2017 MOGI requested a mixing zone for ammonia based upon the analysis in its 2014 mixing zone report. MOGI requests that the General Permit limits for total ammonia for Outfall 002 be adjusted to account for mixing zone with a critical dilution factor of 10.4 to 1 and for Outfall 001 of 29.1 to 1.

RESPONSE 5: In its May 4, 2017 application MOGI indicated that Outfall 001 discharges to Apra Harbor through a pipe at a vertical angle of 0˚(horizontal with respect to the water surface). The pipe depth at opening is -1.0 meter (m) at mean sea level (MSL) (-3.28 feet) and discharges approximately 6 m from shore at low tide. The port lies on the bay bottom. The pipe diameter is 0.305 m (12 inches). Further, Outfall 002 discharges through coral rip-rap at the bank of the harbor. It is not submerged, even at high tide. The discharge pipe diameter is 0.305 m (12 inches).

Pursuant to Section 5104(d)(2)(A) For non-thermal discharges to coastal waters, the mixing zone shall be equal in depth to the depth of the water over the diffuser, in width to twice the depth of the water plus the width of the diffuser, and in length to twice the depth of the water plus the length of the diffuser, with the diffuser geographically centered within the mixing zone. Based on the information provided by MOGI a mixing zone is not allowable with the current configuration and location of Outfalls 001 and 002.

COMMENT 6: MOGI questions the justification and value of once/month monitoring for lead applicable to all bulk fuel terminals. As stated in the Fact Sheet (page 7), only one terminal (South Pacific Petroleum Corporation Cabras Island) has sufficient lead concentrations in its effluent to result in a calculated reasonable potential to exceed the water quality criterion. The Fact Sheet states that the proposed once/month testing for lead will be used to determine if any of the other terminals should have WQBELs for lead.

The effluent lead concentration submitted in the Cabras Terminal 2017 application to renew its NPDES permit is 0.0001 mg/L, compared to the water quality criterion of 0.0081 mg/L. Lead data submitted in the 2012 application for the current NPDES permit were all reported as “non-detects”.

Based on the absence of any data suggesting that the bulk terminals that do not show reasonable potential for exceeding the lead water quality criterion, MOGI requests that EPA set the frequency of lead analyses of no more than once/year. This frequency is consistent with the monitoring requirements for ethylbenzene, toluene and xylene and would provide EPA with data that can be used to validate the reasonable potential evaluations for lead.

RESPONSE 6: EPA agrees with MOGI that data does not currently show reasonable potential for exceeding the lead water quality criterion at MOGI's Cabras Terminal. However, as lead may be present in petroleum products that may be stored at the Terminal, annual monitoring for lead is appropriate. The permit has been amended accordingly.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

JUL 2 6 2019

Certified Mail No. 70160750000060441278
Return Receipt Requested

Joleen M. Mesa
Director of Supply and Engineering
IP&E Holdings, LLC
643 Chalan San Antonio, Suite 100
Tamuning, Guam 96913-3644

RE: NPDES Permit no. GUF001006 (Guam Power Authority) pursuant to GGP NPDES Permit. No. GUG000001.

Dear Ms. Mesa:

This office received your letter dated April 30, 2019 providing Notice of Intent (NOI) for coverage under the General Permit for Bulk Fuel Storage Facilities in Guam (GGP or NPDES Permit No. GUG000001) for the Guam Power Authority - Piti Terminal. Based on the NOI letter, and subsequent information provided by the applicant, coverage under the GGP began on July 1, 2019. Coverage under the above referenced NPDES general permit replaces coverage under the corresponding individual NPDES permit assigned to this facility, therefore, individual NPDES Permit No. GU0020354 was terminated effective July 1, 2019.

EPA has assigned a specific General Permit coverage number GUF001006 and prepared a Discharge Monitoring Report (DMR) with this number for you to file electronically under Net-DMR.

If you have any other questions, or need further information please contact Gary Sheth of the NPDES Permits Section at (415) 972-3516.

Sincerely,

Tomás Torres, Director
Water Division

cc: Jesse T. Cruz, Guam EPA

April 30, 2019

Gary Sheth
NPDES Permits Section (WTR-2-3)
Water Division, USEPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: **NOTICE OF INTENT**

Dear Mr. Sheth,

We hereby express our intention to discharge under the National Pollutant Discharge Elimination System for Bulk Fuel Storage Facilities (NPDES Permit No. GUG000001). In accordance with the permit requirements we submit:

Operator & Owner Information	
Facility Operator:	**IP&E Holdings, LCC. (dba: IP&E Guam)**
Operator Address:	643 Chalan San Antonio, Suite 100 Tamuning, Guam 96913-3644
Facility Owner:	**Guam Power Authority (GPA)**
Owner Address:	688 Route 15, Suite 100, Mangilao, Guam 96913-6203

Facility Information	
Facility Name:	Guam Power Authority Piti Terminal
Facility Address:	Eastern Piti Channel, Apra Harbor Piti, Guam 96925
Coordinates:	13.4622°N, 144.6864°W
Ownership Type:	State Government

IP&E Holdings, LLC.
dba: IP&E Guam
Suite 100, 643 Chalan San Antonio
Tamuning, Guam 96913-3644
Tel: 671-647-0000 | Fax: 671-649-4353
Email: corporate@ipehq.com

Discharge Information	
Receiving Water:	Piti Channel, Apra Harbor
Type of Discharges:	Discharges authorized as per Fact Sheet General Permit for Bulk Fuel Storage Facilities in Guam NPDES Permit No. GUG000001 Section III.C
Number of Outfalls:	3 (Outfalls 001, 002 & 003)

Previous Permit Information:	
Permit Number:	GU0020354
Discharger Name:	Peterra, Inc.
Effective Date:	3/1/2011
Expiration Date:	2/29/2016

I certify under penalty of law that this document were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very respectfully,

Joleen M. Mesa
Director of Supply and Engineering
Tel: +1-671-647-0123 Ext. 135
Mobile: +1-671-797-0481
Email: joleen.mesa@ipehq.com

IP&E Holdings, LLC.
dba: IP&E Guam
Suite 100, 643 Chalan San Antonio
Tamuning, Guam 96913-3644
Tel: 671-647-0000 | Fax: 671-649-4353
Email: corporate@ipehq.com

Fueling Excellence

April 2019

POLLUTION PREVENTION PLAN (PPP)
(GPA Fuel Bulk Storage Facility)

(Uncontrolled when Printed)

Document Holder	Document Custodian	Document Owner	Version No. & Date Last Updated
Oliver T. De Vera *HSSE Coordinator*	John A. Robertson *Guam Operations Manager*	Joleen M. Mesa *Director of Supply & Distribution*	Version 00 April 2019

LIST OF AUTHORIZED COPY HOLDERS			
Copy	**Copy Holder**	**Job Title**	**Work Location**
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3	John A. Robertson	Guam Operations Manager	Guam
4	Maria Luisa G. Bisnar	HSSE Manager	Guam
5	Michael D. Francisco	Terminal Operations Superviser	Guam
6	Oliver De Vera	HSSE Coordinator	Guam
7	Guam Power Authority	SPORD / Planning & Regulatory	Guam

CONTINGENCY PLAN REVISION LOG

Revision Number	Sections Amended	Date of Revision	Date Entered	Name (print) and Signature
00	Inital Issue	April 2019		

Table of Contents

A. INTRODUCTION

This plan is developed to meet the requirements of NPDES Permit No. GUG00001 General Permit for Bulk Fuel Storage Facilities for Guam Power Authority (GPA) Fuel Bulk Storage Facility.

A.1. Facility Description

IP&E Holdings, LLC (dba: IP&E Guam) hereinafter referred to as IP&E Guam operates Guam Power Authority (GPA) Fuel Bulk Storage Facility situated on a thirty (30) acres land adjacent to the GPA Cabras and Piti Power Plants in the municipality of Piti near Apra Harbor on the island of Guam.

The Facility has two (2) steel aboveground Fuel Oil storage cone roof tanks, with associated piping and valves, pumps to receive, store and deliver Fuel Oil to the power generating plants on the island of Guam. Both tanks are constructed to ASTM and API standards for petroleum oil storage and operating conditions.

Each tank is equipped with eight (8) twelve-inch diameter overflow lines that protects the structural integrity in the event of accidental overfilling. The tanks are also equipped with a mechanical Varec gauge that indicates the liquid level of the tank by level indicator located at ground level.

The GPA Fuel Bulk Storage Facility receives up to approximately three million (3,000,000) barrels of Fuel Oil annually on tankers from various points in Asia and in the Middle East berthing at the Commercial Port of Guam petroleum dock, which is operated by Tristar Terminal Guam, Inc. (Tristar). Tankers up to 280,000 – 300,000 barrel capacity discharge one at a time into a twenty-four (24)-inch pipeline owned and operated by Tristar, and connected to the Facility. Fuel oil is distributed from the Facility by pipeline to three locations: the Cabras Power Plants and MEC Power Plants both located adjacent to the Facility, and to the Tanguisson Power Plants located approximately 16.7 miles away on the northern portion of the island. Currently, pipeline transfers to Tanguisson Power Plant are no longer operational.

The tanks and associated infrastructure were completed in 1976 on compacted coral limestone with no previous history of hydrocarbon contamination. The operations at the site include the storage and transfer of Fuel Oil in and out of the Facility.

A. Facility Details

Facility Name:	Guam Power Authority (GPA) Fuel Bulk Storage Facility
Location:	Eastern Piti Channel, Apra Harbor Piti, Guam
Coordinates:	13°27'N, 144°41'E

B. Owner Information

Owner Name:	Guam Power Authority (GPA)
Mailing Address:	Gloria B. Nelson Public Service Building 688 Route 15, Suite 100 Mangilao, Guam 96913-6203

C. Operator Information

Operator Name:	IP&E Holdings LLC. (IP&E Guam)
Mailing Address:	643 Chalan San Antonio, Suite 100 Tamuning, Guam 96913-3644

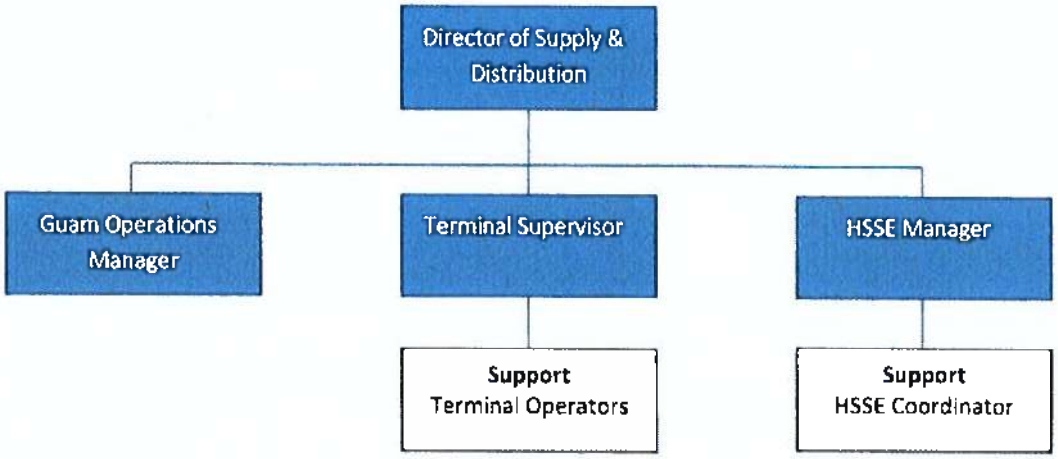
Figure A.1. Facility Location Map

B. POLLUTION PREVENTION COMMITTE

B.1. Organization

The facility Pollution Prevention Committee shall be headed by Director of Supply and Distribution. The members which include the Guam Operations Manager, Terminal Supervisor and HSSE Manager shall be responsible for assisting the Director of Supply and Distribution in its implementation, maintenance, and revision of this Pollution Prevention Plan.

Figure A.1. Facility Organization



B.2. Roles and Responsibilities

D. **Director of Supply and Distribution**

The Director of Supply and Distribution is the owner of this document and is responsible for the overall implementation of this Pollution Prevention Plan.

E. **Guam Operations Manager**

The facility is managed by the Guam Operations Manager; who is responsible for the implementation of all activities in this plan. Implementing and maintaining control measures/BMPs, and taking corrective actions where required.

F. **Terminal Supervisor**

The Terminal Supervisor shall ensure that all daily work activities comply with the standards procedures and instructions and conducts audits and inspections as stated in the plan.

G. **HSSE Manager**

HSSE Manager shall ensure this Pollution Prevention Plan is in compliance with all elements of the NPDES Permit and other relevant procedures, and amend as necessary to reflect changes in the facility operations.

C. SOURCE INDENTIFICATION

C.1. Drainage Site Map

Drainage areas of all storm water outfalls, all existing structural control measures to reduce pollutants in storm water runoff, and surface water bodies.

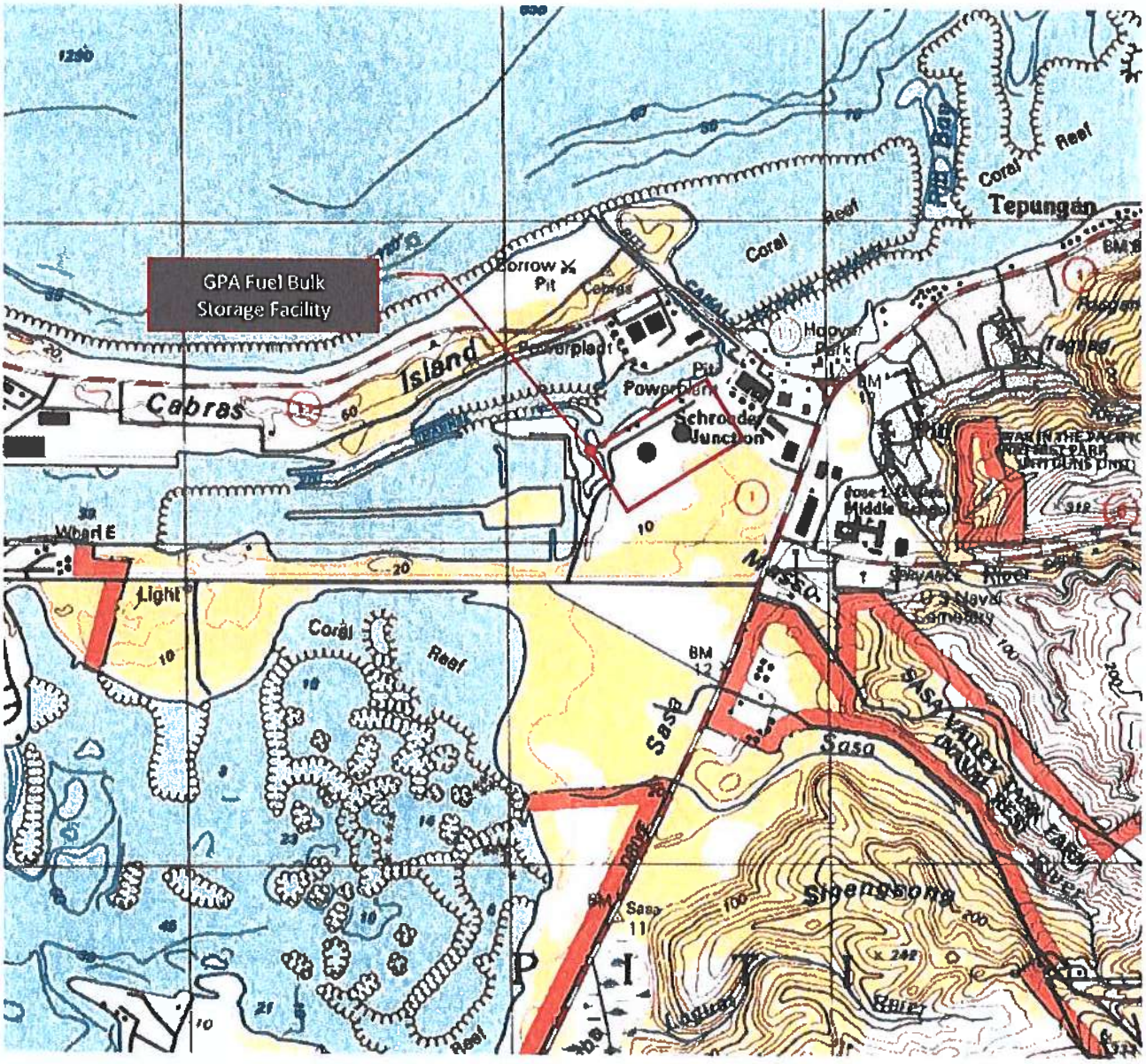
Figure C.1. Facility Drainage Map

C.2. Topographic Map

Topographic map extending one-quarter of a mile beyond the property boundaries of the facility. The map is taken from U.S. Geological Survey for Apra Harbor Guam.

Reference: https://ngmdb.usgs.gov/ht-bin/tv_browse.pl?id=02ea64f6bc48f2fcf21b8f3831dd7377

Figure C.2. Topographic Map



C.3. List of Significant Spill and Leaks

IP&E Guam took over as Facility Operator on October 2017 for GPA Fuel Bulk Storage facility. Since then, no significant spills and leaks occurred in the facility involving toxic or hazardous pollutants.

C.4. Description of Significant Materials

GPA Fuel Bulk Storage facility handles Fuel Oil. Two (2) tanks with fixed cone roofs are utilized to receive, store and supply Fuel Oil to the power plants located adjacent to the facility. Since IP&E Guam took over as

Facility Operator on October 2017, there are no operations involving significant materials being treated, stored, or disposed in a manner to allow exposure to storm water.

C.5. Risk Identification and Assessment

Table C.1 presents expected volume, discharge rate, general direction of flow in the event of equipment failure, and the means of secondary containment for the Facility storage systems. Failure types include: catastrophic tank failure; leaking storage tank walls, bottom, valves, or flanges; overfilling of tank; leaking product transfer pipelines, valves and flanges; improper cleaning procedures; improper water draining procedures.

Table C.1. Potential Discharge Volumes and Direction of Flow

Tank	Storage Capacity (gal)	Estimated Discharge Rate (gph)	Flow Direction	Containment
Bulk Fuel Storage Tank 1934	11,256,000	1-11,256,000	Northwest to Apra Harbor	Earthen berm, approximately 8,600,000 gal capacity.
Bulk Fuel Storage Tank 1935	11,256,000	1-11,256,000	Northwest to Apra Harbor	Earthen berm, approximately 10,100,000 gal capacity.
Pipelines Outside of Secondary Containment Area	10,000	1-10,000	To Apra Harbor North and West of facility, or to wetland south/east of facility	None
Pipelines (Delivery Pump Station)	520	1-520	Northwest to Apra Harbor	Containment curb directing flow to Recovery Tank
Drum Storage (Delivery Pump Station)	Up to 550 (10-55 gal drum)	1-55	Northwest to Apra Harbor	Containment curb directing flow to Recovery Tank
Rectifier 1 (Cathodic Protection for Tanks)	60	1-60	Northwest to Apra Harbor	Concrete Flooring around the area.
Rectifier 2 (Cathodic Protection for Piping)	60	1-60	Northwest to Apra Harbor	Concrete Flooring around the area.
Auxiliary Pump Station (Decommissioned)	5,000	1-5,000	West to Apra Harbor	Concrete dike, 5,000 gallon capacity

C.6. Summary of Existing Sampling Data

Since IP&E Guam took over as Facility Operator on October 2017 for GPA Fuel Bulk Storage facility, no discharges, sampling and monitoring was performed. Once authorized to discharge, IP&E Guam will adhere to the Sampling and Monitoring requirements and all other conditions as stated in NPDES Permit No. GUG00001 General Permit for Bulk Fuel Storage Facilities.

D. SOURCE CONTROL BEST MANAGEMENT PRACTICES (BMPs)

D.1. Vehicle and Equipment Fueling & Fuel Transfer Areas

There is no fueling activities conducted in the facility for vehicles. Facility vehicles are fueled at the Retail Gas Stations outside the facility.

For small maintenance equipment such as bush cutters, blowers and lawnmower; a portable container (2-5 gallons capacity) is used. Fuel transfer area is paved with concrete and under roof located at the back of the office building (workshop). Any spills are cleaned using readily available spill kits.

D.2. Vehicle and Equipment Washing Areas

Vehicle washing is not allowed in the facility. For small maintenance equipment, washing will be done using off-site commercial washing facilities where feasible otherwise will be conducted within the bermed areas.

D.3. Vehicle and Equipment Maintenance and Repair Areas

Vehicle maintenance and repair are done outside of the facility through 3rd party contractors and service centers.

For maintenance equipment, only minor repairs are allowed. The workshop is paved with concrete and covered designed to prevent storm water pollution. Drip pans or containers are used under all areas that have the potential to drip.

Equipment is inspected on a regular basis for cleanliness and leaks. Any spills are cleaned using readily available spill kits.

All fluids such as greases, used oil, antifreeze, cleaning solvents, hydraulic and transmission fluids are kept segregated in their manufacturer packaging. All waste liquids are disposed properly through local service providers in accordance with all local and federal laws.

Use of solvents is minimized.

D.4. Control of Solid Materials

Scrap metal, wood, plastic, miscellaneous trash such as paper and glass, and industrial scrap are removed from the grounds and properly disposed. Routine clean-up of litter and debris in the facility is performed to prevent possible discharge to the receiving water. Oil, paint generators, scrap metal unused machinery, used batteries, etc., in the facility are stored under cover and disposed of properly and in accordance with

all local and federal laws. Storm drain inlets and outlets are inspected and cleaned following large storm events.

D.5. Hazardous Waste Management

Hazardous waste, including used paint, oils, brake fluids, anti-freeze, batteries, petroleum products, degreasers, tool coolants, etc. are properly labeled, recycled when possible or disposed of within the guidelines of RCRA. Trash bin have signs designating the type of material that is acceptable and/or unacceptable.

D.6. For Oil, Grease and Fuel Spills

For oil spill prevention, control & response, refer to the GPA Fuel Bulk Storage Facility Spill Prevention Controls and Countermeasures Plan.

D.7. Paint and Solvent Spills

Spraying, blasting, or sanding activities over open water or where wind may blow paint into water are not practiced in the facility. Employees are trained in the careful application of paints and coatings and spills are wiped with rags and other absorbent materials immediately. All solvents and paint products are stored properly in the storage room to prevent contact with storm water during precipitation.

D.8. Sediment and Erosion Prevention

Measures to minimize erosion and fuel contaminated sheet flow runoff for areas that have a high potential for significant soil erosion are implemented. Such measures may include preservation of natural vegetation, re-vegetation, removal of contaminated soil, and geo synthetics.

D.9. Tank Bottom Water Draws

The discharge of tank bottom water draws is treated to meet water quality standards prior to discharge. Tank bottom water draws are not released onto permeable areas but through piping connected to the facility Oil-Water Separator (OWS)*.

D.10. Fuel Line Flushing

The facility does not practice flushing fuel lines with water. In the event water is used for flashing, it will be processed through the OWS*.

*Note: * Once fully commissioned.*

E. TREATMENT CONTROL BEST MANAGEMENT PRACTICES

E.1. Additional Structural and/or Vegetative Controls

Additional structural controls (i.e. oil/water separators, impounding basins, etc.) and/or vegetative controls (i.e. grassy swales) shall be constructed if and when the implementation of all source control BMPs is unable to completely control storm water contamination.

E.2. Operation and Maintenance of Oil/Water Separator

OWS and other storm water management devices, such as storm drain catch basins, are routinely inspected and cleaned to ensure their proper operation; and oil/fuel from the oil water separators is properly disposed.

F. EMPLOYEE TRAINING

IP&E Guam shall develop an employee and contractor training program emphasizing pollution prevention practices. Employees shall be trained to understand the proper identification, handling, and disposal of hazardous waste, and spill prevention and response procedures.

For additional training details refer to facility Spill Prevention Control and Countermeasures Plan.

G. VISUAL INSPECTIONS

IP&E Guam has implemented regular inspections schedules with the use of a checklist to assess conditions and activities that could impact storm water quality at the facility, and evaluate the effectiveness of best management practices. For details, refer to the facility Spill Prevention Control and Countermeasures Plan.

H. INCIDENT REPORTING

Notification, investigation, reporting, classification, and the review process of all incidents will be processed in accordance with IP&E Incident Management Procedure. Appendix 1 - The Incident Notification Form will be used to report all incidents.

Appendix 1. Incident Notification Form

INCIDENT NOTIFICATION FORM

Company:	IP&E Guam	Facility:	[ ]	Location:	[ ]

Reporter's Name:	[ ]	24Hr Contact No.:	[ ]
Position:	[ ]	Email Add.:	[ ]

Incident Type	Consequence	Severity	Likelihood
Choose an item.	Choose an item.	Choose an item.	Choose an item.

Date of Incident:	[ ]	Time of Incident	[ ]

Description of Incident: *(provide additional sheet as necessary)*

[ ]

Actions Taken to Correct, Control or Mitigate Incident: *(provide additional sheet as necessary)*

[ ]

Impact to People				Impact to Property / Asset	
Evacuation Required?	☐Yes	☐No		Name of Asset	[ ]
No. of Fatality	[ ]	No. of Injury	[ ]	Estimated Cost of Damage	[ ]
Details of Injury	[ ]			Details of Damage	[ ]

Impact to Environment (Spill / Release / LOPC)					
Product Name	[ ]	Duration of Release	[ ]	Source Tank Capacity	[ ]
Estimated Quantity Released	[ ]	Weather Condition	[ ]	Type of Tank	[ ]
Estimated Quantity Recovered	[ ]	Impact to Environment	[ ]	Source of Release	[ ]

External Agency Notification						
☐ 911 / Fire / Police	☐ GEPA / BECQ / EQPB	☐US Coast Guard	☐National Response Center (NRC)	☐Oil Spill Response Company	☐ Public Health	☒Others, Specify [ ]
Date & Time [ ]	Date & Time [ ]	Date & Time [ ]	Date & Time [ ]	Date & Time [ ]	Date & Time [ ]	Date & Time [ ]

Revision No. 02 / August 2017 — Incident Notification Form — Page 1 of 1

SCHEDULE I

Security Contractor Requirements

GPA uses the following guidelines for hiring Security Contractors for its facilities and locations. The GPA Bulk Fuel Storage Facility Contractor shall ensure that the Security Subcontractor providing Security Services for GPA's Bulk Fuel Storage Facility comply with the requirements stated below, as well as other Federal and Local requirements that are applicable to security services for the facility.

REQUIREMENTS:

1. Security Service Contractor must provide proper uniforms to be worn by their security personnel at all times during their guard duty.
2. Security Service Contractor must provide equipment, to include flashlights and portable radios to all assigned security guards.
3. Security Service Contractor must have standard guard capabilities and must instruct all assigned personnel of GPA's special guard requirements.
4. Security Service Contractor must provide the Bulk Fuel Storage Facility Management, Operation & Maintenance Contractor as well as GPA with the qualifications of personnel to be assigned to guard GPA Facilities. Minimum six (6) months experience as a security guard or similar field.
5. Successful bidder must provide a weekly roster of assigned security personnel to GPA Safety Office.
6. Successful bidder must insure that no security guard is assigned a watch which exceeds an eight (8) hour period.
7. No security personnel convicted of a felony is allowed to guard a GPA Facility.
8. Security personnel assigned to GPA must conduct themselves professionally in their line of duty.
9. Security personnel will be required to sign a statement of confidentiality.
10. Security personnel must be a U.S. Citizen or authorized to work in the United States and its territories (must show proof).
11. Security personnel must be able to communicate and write in the English language.

SECURITY GUARD DUTIES:

1. Assigned security guard must conduct and log routine checks of the facility, to include perimeter fencing ensuring that all doors, windows, gates, locks and cyclone fencing are in place and secured (must not be away from post over 15 minutes).

1a. Assigned security guard shall be responsible for conducting hourly perimeter checks and for maintaining an hourly "Guard Log". The guard logs will be maintained at the GPA Bulk Fuel Storage Facility Offices. GPA Safety Office will request copies of the logs as needed.

2. Assigned security guard shall also maintain a daily "Authorized Entrance Log" of all guests including GPA Employees and Official vehicles that have been approved or authorized to enter the Fuel Bulk Storage Facility. Entrance logs shall be provided to the GPA Safety Office upon request.

3. The Bulk Fuel Storage Facility Management, Operation and Maintenance Contractor shall be responsible for enforcing guidelines and procedures for the Security Contractor for the security of the facility. As a guide, GPA's requirements for entering GPA power plant premises are attached.

4. The security guard is responsible for ensuring that employees and Non-GPA employees conduct their business only in the area they are authorized in. The security guard is responsible for ensuring that gates are closed at all times and ensure strict control for entrance.

5. The loading and unloading of materials on/off trucks or vehicles within the compound or power plant premises shall be not permitted unless stated on the written authorization form.

6. The security guards are not permitted to bring guests, friends, or any unauthorized personnel inside the compound and power plant premises. GPA personnel guests / family are not authorized inside the compound.

7. The GPA Bulk Fuel Storage Facility Performance Management Contractor SHALL BE NOTIFIED no later than the following workday if attempts to access the area by individuals not listed on the authorization form, and/or refuses to show their ID when directed, and/or fails to produce an Authorization Form signed by the respective approving authorities, or otherwise argues with the guards. Entries shall be made in the log, and highlighted, with as much information as possible about the incident.

8. Assigned security guard shall report and document any unusual activity, trespassing, loitering, or suspicious vehicles. All reports shall be maintained and forwarded to the GPA Safety Office no later than the following workday.

9. Security guards shall make periodic rounds of the facility for unsecured areas, fire and safety hazards, and secure and report all findings.

11. The security guard shall monitor areas and take preventive measures to guard against thefts, vandalism and vagrancy.

12. The security guard shall maintain and secure keys to both entrance gates and entrance doors of the facility.

13. Assigned security guard is responsible for preparing an incident report for any and all emergency, and notify the proper authority (i.e. Police, Fire) for response.

14. Assigned security guard may be tasked with lending assistance in the event of any natural disaster (i.e. Earthquake, Typhoon) which may take place during his/her shift. During Condition of Readiness COR 2 or 1, the guards will remain on watch in their respective area. Guard will secure inside the facility.

15. Post(s) shall not be left unattended without proper notification and authorization from the Security Agencies Shift Commanders, and only after a replacement reports on-site.

16. At no time will security guard engage in arguments or confrontations with anyone. The security guard must notify his/her Shift Commander if a problem of this nature arises and call proper authorities (GPD) and GPA Safety Inspectors as needed.

17. Assigned security guard must remain alert and maintain a visual surveillance of all areas within sight of his/her post.

18. Prior to assuming duty, security guard will ensure all equipment is in good working condition when received and entered in daily report.

19. If the security guard should encounter suspect(s) in the process of committing vandalism, breaking and entering, theft, etc., the security guard shall notify his Agencies Shift Commander immediately, via radio of the incident and contact the Guam Police Department. The security guard shall immediately give verbal instructions to the individual(s) i.e., "Stop! Stay where you are until the Guam Police arrives!" At no time will the security guard attempt to physically restrain, detain or alter the suspect(s) normal movement.

20. In the event an incident occurs, the on duty security guard must write an incident report. Specific details shall be provided in the report, such as "Who, What, When, and Action Taken". The security guard shall submit all copies of the report to his Agencies Shift Commander for review prior to the original copy being submitted to GPA Safety Administrator.

21. The use of any drug and/or alcohol within, any GPA premises is strictly prohibited. If the use of drugs or alcohol occurs at any time, a report shall be made immediately to the superior and the Safety representatives. Guards are not to confront individuals on the issue of drug and alcohol use, nor search for any drugs or alcohol.

22. If and when any guard is found sleeping, or reported and verified to be sleeping at his/her post, or is verified that required duties stated above are not being performed, GPA may request that the Security Services Agency remove and replace said individual from guard duty at any GPA Facility.

GPA SAFETY REPRESENTATIVE:

The Fuel Bulk Storage Facility Performance Management Contractor and Security Supervisor shall promptly contact the on-call Safety Inspector, when an emergency or out of the ordinary situation occurs.

If all efforts fail to establish communication with at least one of the numbers provided on the Safety Inspector watch bill, the GPA TROUBLE DISPATCHER shall be notified immediately. The Security guard or security personnel shall continue attempts to contact the Safety Office Personnel.

TROUBLE DISPATCHER PHONE NO. 475-1472/3/4.

Entrance to GPA power plant premises:

An "Authorization Form" signed by the Manager of Generation and/or Assistant Manager of Generation must be presented by an employee, with GPA Identification (ID) of their approved access to enter the compound.

Guards are required to access all individuals and vehicles attempting to enter the compound and request to see the Authorization Form and each individuals GPA ID. All employees entering the compound must be identified in the Authorization Form which will also identify the scope of work to be performed and to include items that may be removed from the premises, if any.

The following entries must be recorded in the Authorized Access Log: Name of the Driver, GPA Official License plate number, the number of individuals in the vehicle (if more than one). All individual's names and GPA ID number. Scope of work to be performed. Listing of items they are authorized to remove from the compound if any. Time of arrival and departure.

Assigned security guard shall also inspect authorized GPA vehicles as they are leaving the compound to ensure, as to the extent possible, accountability of all materials loaded as approved.

If an individual wishing to enter the compound does not have his/her GPA ID with them, such individual shall be denied entry unless accompanied by a GPA employee, with the proper credentials, and only if they are both also listed as authorized to enter the premises on the Authorization Form.

Only GPA official vehicles, or other contracted vehicles with written permission on the Authorization Form will be allowed to access the Tanguisson compound and power plant premises. No POVs shall be allowed access.

When needed, contracted workers and vehicles will be identified on GPAs Authorization Form, to include their respective scope of work, and authorization to remove any items or equipment. Contracted workers must be accompanied by a GPA employee, with proper credentials, and also listed on the Authorization Form.

Entrance after normal working hours is strictly prohibited, to include for the most part weekends and holidays. Clearances to work on weekends or holidays may be authorized as needed and will be indicated on the Authorization Form and signed by respective approving authorities.

No entry into the compound will be allowed without an Authorization Form signed by respective approving authorities indicated above.

SCHEDULE J

Tank System Maintenance Workplan

WINZLER & KELLY
CONSULTING ENGINEERS

Tank System Operation and Maintenance Workplan

Task 3.1 – 3.3

for

Guam Power Authority

Prepared for

PITI TANK FARM TANK 1934

Prepared by:

Winzler & Kelly Consulting Engineers

JANUARY 19, 2007

Creative Solutions for Over 50 Years

TANK SYSTEM OPERATION AND MAINTENANCE WORKPLAN

1.0 PURPOSE

The purpose of this workplan is to provide a schedule for future inspections and integrity testing for Tank 1934 and its piping, valves, pumps and other associated equipment. This workplan shall be incorporated into the Spill Prevention Control and Countermeasure (SPCC) Plan for Guam Power Authority Bulk Fuel Storage Facility (Piti, Guam) and the Peterra Operations Manual. This report will also provide recommendations for preventative maintenance and upkeep of the Tank System, within the containment berm.

2.0 INSPECTIONS

All inspections shall follow the current API Standard 653 (see Appendix A for API Standard 653 Section 6), as a minimum guideline. The inspection schedule is subject to change if certain circumstances arise that necessitate a shorter time period between inspections. See API Standard 653, Section 6.2 for a list of circumstances.

The API Standard 653 Tank In-Service Inspection Checklist and Tank Out-of-Service Inspection Checklist are included in Appendix B of this report. Detailed records shall be kept concerning the construction, inspection and repair history of the tank. The tank history is crucial in determining inspection frequency intervals. Without proper records, the "worst-case-scenario" must be assumed; hence, the most stringent inspection frequencies must be followed.

2.1 Tank Inspections

2.1.1 External Inspections

Routine external inspections shall be conducted by owner/operator personnel as dictated in the SPCC Plan, June 1999 (See Appendix C of this report for inspection checklist), but at a frequency not to exceed one (1) month. The inspection shall include: examination of leaks, shell distortions, settlement, corrosion, foundation, paint coatings, and appurtenances. Any observed problems requiring further action shall be addressed promptly.

In addition to the routine external inspections, an authorized inspector (as defined in API Standard 653) shall conduct a detailed inspection "at least every 5 years or RCA/4N years (where RCA is the difference between the measured shell thickness and the minimum required thickness in mils, and N is the shell corrosion rate in mils per year) whichever is less" (API Standard 653, Section 6.3.2.1). Since no precise previous information is available for shell plate thickness to determine original shell thickness or shell deterioration rates, and the lowest bottom shell plate thickness reading was 1.112 inches, exceeding the minimum allowable thickness of the 1.00 inches, it is deemed that **the tank exterior shall be inspected by an authorized inspector at a frequency not to exceed every 5 years**. The next detailed external inspection shall be conducted by **November 29, 2010**, and every five years thereafter. The grounding system shall also be examined as a part of this inspection.

Since the corrosion rate is unknown, **ultrasonic thickness measurements shall be taken at a frequency not to exceed every 5 years** to provide valuable information concerning the integrity of the shell. The next ultrasonic thickness measurements shall be made by **November 29, 2010**, and every five years thereafter. See API Standard 653, Section 6.3.3 for additional information.

2.1.2 Internal Inspections

Internal inspections are necessary for evaluating corrosion, possible leaks, settlement and bottom plate thicknesses and shall be performed as per API Standard 653, Section 6.4. Since there is not an established corrosion rate for Tank 1934, **an internal tank inspection shall be conducted by an authorized inspector at a frequency not to exceed 10 years.** The next internal tank inspection shall be conducted by **November 29, 2015,** and every ten (10) years thereafter. Once a corrosion rate is established, the inspection frequency may be determined by API Standard 653, Section 6.4.2.1, but must not exceed 20 years.

2.3 Leak Detection System Inspection

The leak detection system Operation and Maintenance Workplan prepared by Corrpro Companies Incorporated and International Bridge Corporation is included in Appendix C – Leak Detection System.

3.0 PREVENTATIVE MAINTENANCE

The routine inspections outlined in this workplan, the Peterra Operations Manual and the SPCC Plan require the owner/operator to visually examine the tank and the associated equipment to determine the preventative maintenance actions that need to be implemented. Listed below are some of the preventative maintenance items that need to be addressed on a regular basis:

- Repair any paint failures or corrosion in the tank shell, roof and all appurtenances.
- Repair any paint failures or corrosion on the piping, valves and other exterior equipment.
- Repair any broken, spalling or cracked concrete.
- Seal Coat, as necessary, AC pavement surrounding tank.
- Remove vegetation growing against tank bottom.
- Keep area free of trash and vegetation accumulation.
- Follow inspection scheduling recommendations.
- Any other noted defects or obstructions should be dealt with promptly.

APPENDIX A

SECTION 6—INSPECTION

6.1 GENERAL

Periodic in-service inspection of tanks shall be performed as defined herein. The purpose of this inspection is to assure continued tank integrity. Inspections, other than those defined in 6.3 shall be directed by an authorized inspector.

6.2 INSPECTION FREQUENCY CONSIDERATIONS

6.2.1 Several factors must be considered to determine inspection intervals for storage tanks. These include, but are not limited to, the following:

a. The nature of the product stored.
b. The results of visual maintenance checks.
c. Corrosion allowances and corrosion rates.
d. Corrosion prevention systems.
e. Conditions at previous inspections.
f. The methods and materials of construction and repair.
g. The location of tanks, such as those in isolated or high risk areas.
h. The potential risk of air or water pollution.
i. Leak detection systems.
j. Change in operating mode (for example: frequency of fill cycling, frequent grounding of floating roof support legs).
k. Jurisdictional requirements.
l. Changes in service (including changes in water bottoms).
m. The existence of a double bottom or a release prevention barrier.

6.2.2 The interval between inspections of a tank (both internal and external) should be determined by its service history unless special reasons indicate that an earlier inspection must be made. A history of the service of a given tank or a tank in similar service (preferably at the same site) should be available so that complete inspections can be scheduled with a frequency commensurate with the corrosion rate of the tank. On-stream, nondestructive methods of inspection shall be considered when establishing inspection frequencies.

6.2.3 Jurisdictional regulations, in some cases, control the frequency and interval of the inspections. These regulations may include vapor loss requirements, seal condition, leakage, proper diking, and repair procedures. Knowledge of such regulations is necessary to ensure compliance with scheduling and inspection requirements.

6.3 INSPECTIONS FROM THE OUTSIDE OF THE TANK

6.3.1 Routine In-Service Inspections

6.3.1.1 The external condition of the tank shall be monitored by close visual inspection from the ground on a routine basis. This inspection may be done by owner/operator personnel, and can be done by other than authorized inspectors as defined in 3.5. Personnel performing this inspection should be knowledgeable of the storage facility operations, the tank, and the characteristics of the product stored.

6.3.1.2 The interval of such inspections shall be consistent with conditions at the particular site, but shall not exceed one month.

6.3.1.3 This routine in-service inspection shall include a visual inspection of the tank's exterior surfaces. Evidence of leaks; shell distortions; signs of settlement; corrosion; and condition of the foundation, paint coatings, insulation systems, and appurtenances should be documented for follow-up action by an authorized inspector.

6.3.2 External Inspection

6.3.2.1 All tanks shall be given a visual external inspection by an authorized inspector. This inspection shall be called the external inspection and must be conducted at least every 5 years or *RCA/4N* years (where *RCA* is the difference between the measured shell thickness and the minimum required thickness in mils, and *N* is the shell corrosion rate in mils per year) whichever is less. Tanks may be in operation during this inspection.

6.3.2.2 Insulated tanks need to have insulation removed only to the extent necessary to determine the condition of the exterior wall of the tank or the roof.

6.3.2.3 Tank grounding system components such as shunts or mechanical connections of cables shall be visually checked. Recommended practices dealing with the prevention of hydrocarbon ignition are covered by API RP 2003.

6.3.3 Ultrasonic Thickness Inspection

6.3.3.1 External, ultrasonic thickness measurements of the shell can be a means of determining a rate of uniform general corrosion while the tank is in service, and can provide an indication of the integrity of the shell. The extent of such measurements shall be determined by the owner/operator.

6.3.3.2 When used, the ultrasonic thickness measurements shall be made at intervals not to exceed the following:

a. When the corrosion rate is not known, the maximum interval shall be 5 years. Corrosion rates may be estimated from tanks in similar service based on thickness measurements taken at an interval not exceeding 5 years.
b. When the corrosion rate is known, the maximum interval shall be the smaller of *RCA/2N* years (where *RCA* is the difference between the measured shell thickness and the

minimum required thickness in mils, and N is the shell corrosion rate in mils per year) or 15 years.

6.3.3.3 Internal inspection of the tank shell, when the tank is out of service, can be substituted for a program of external ultrasonic thickness measurement if the internal inspection interval is equal to or less than the interval required in 6.3.3.2b.

6.3.4 Cathodic Protection Surveys

6.3.4.1 Where exterior tank bottom corrosion is controlled by a cathodic protection system, periodic surveys of the system shall be conducted in accordance with API RP 651. The owner/operator shall review the survey results.

6.3.4.2 The owner/operator shall assure competency of personnel performing surveys.

6.4 INTERNAL INSPECTION

6.4.1 General

6.4.1.1 Internal inspection is primarily required to:

a. Ensure that the bottom is not severely corroded and leaking.
b. Gather the data necessary for the minimum bottom and shell thickness assessments detailed in Section 6. As applicable, these data shall also take into account external ultrasonic thickness measurements made during in-service inspections (see 6.3.3).
c. Identify and evaluate any tank bottom settlement.

6.4.1.2 All tanks shall have a formal internal inspection conducted at the intervals defined by 6.4.2 or 6.4.3. The authorized inspector who is responsible for evaluation of a tank must conduct a visual inspection and assure the quality and completeness of the NDE results. If the internal inspection is required solely for the purpose of determining the condition and integrity of the tank bottom, the internal inspection may be accomplished with the tank in-service utilizing various ultrasonic robotic thickness measurement and other on-stream inspection methods capable of assessing the thickness of the tank bottom, in combination with methods capable of assessing tank bottom integrity as described in 4.4.1. Electromagnetic methods may be used to supplement the on-stream ultrasonic inspection. If an in-service inspection is selected, the data and information collected shall be sufficient to evaluate the thickness, corrosion rate, and integrity of the tank bottom and establish the internal inspection interval, based on tank bottom thickness, corrosion rate, and integrity, utilizing the methods included in this standard. An individual, knowledgeable and experienced in relevant inspection methodologies, and the authorized inspector who is responsible for evaluation of a tank must assure the quality and completeness of the in-service NDE results.

6.4.2 Inspection Intervals

6.4.2.1 Intervals between internal inspections shall be determined by the corrosion rates measured during previous inspections or anticipated based on experience with tanks in similar service. Normally, bottom corrosion rates will control and the inspection interval will be governed by the measured or anticipated corrosion rates and the calculations for minimum required thickness of tank bottoms (see 4.4.7). The actual inspection interval shall be set to ensure that the bottom plate minimum thicknesses at the next inspection are not less than the values listed in Table 6-1. In no case, however, shall the internal inspection interval exceed 20 years.

6.4.2.2 When corrosion rates are not known and similar service experience is not available to determine the bottom plate minimum thickness at the next inspection, the actual bottom thickness shall be determined by inspection(s) within the next 10 years of tank operation to establish corrosion rates.

6.4.3 Alternative Internal Inspection Interval

As an alternative to the procedures in 6.4.2, an owner-operator may establish the internal inspection interval using risk-based inspection (RBI) procedures. Combining the assessment of the likelihood of tank leakage or failure and the consequence of tank leakage or failure is the essential element of RBI. A RBI assessment may increase or decrease the internal inspection intervals obtained using the procedures of 6.4.2.1. The RBI process may be used to establish as acceptable the risk of a minimum bottom plate thickness at the next inspection interval independent of the values in Table 6-1. The RBI assessment may also increase or decrease the 20-year inspection interval described in 6.4.2.1. The initial RBI assessment shall be reviewed and approved by an authorized inspector and an engineer(s), knowledgeable and experienced in tank design (including tank foundations) and corrosion. The RBI assessment shall be subsequently reviewed and approved by an authorized inspector and an engineer(s), knowledgeable and experienced in tank design (including tank foundations) and corrosion, at intervals not to exceed 10 years, or more often if warranted by changes in service.

Some of the factors that should be considered in a RBI assessment of a tank include the following:

a. The material of construction, including liners and coatings, relative to the product temperature and ambient conditions.
b. The design codes or standards utilized in the tank construction and repair (including tank bottoms).
c. The methods used for determination of the shell and bottom plate thickness.
d. The availability and effectiveness of the inspection methods and quality of the data collected.

Table 6-1—Bottom Plate Minimum Thickness

Minimum Bottom Plate Thickness[a] at Next Inspection (in.)	Tank Bottom/ Foundation Design
0.10	Tank bottom/foundation design with no means for detection and containment of a bottom leak.
0.05	Tank bottom/foundation design with means to provide detection and containment of a bottom leak.
0.05	Applied tank bottom reinforced lining, > 0.05 in. thick, in accordance with API RP 652.

Note:
[a]See 4.4.7

e. The analysis methods used to determine the product side, soil side, and external corrosion rates and the accuracy of these methods and corrosion rates.
f. The availability, accuracy, and need for leak detection methods and procedures.
g. The effectiveness of corrosion mitigation methods, such as cathodic protection systems, liners, and coatings.
h. The quality of the maintenance, including previous repairs.
i. The probability of and type of failure, i.e., slow leak to the environment, tank bottom rupture or tank shell brittle fracture.
j. The environmental consequence and likelihood of a tank leak or failure.

Historic tank leakage and failure data and information will also be important for this assessment.

It is essential that all RBI assessments be conducted by trained, qualified individuals knowledgeable in RBI methodology, and knowledgeable and experienced in tank foundation design, construction, and corrosion. RBI assessments shall be thoroughly documented, clearly defining all the factors contributing to both the likelihood and consequence of tank leakage or failure.

After an effective RBI assessment is conducted, the results can be used to establish a tank inspection strategy and better define the most appropriate inspection methods, appropriate frequency for internal, external and on-stream inspections, and prevention and mitigation steps to reduce the likelihood and consequence of a tank leak or failure.

6.5 ALTERNATIVE TO INTERNAL INSPECTION TO DETERMINE BOTTOM THICKNESS

In cases where construction, size, or other aspects allow external access to the tank bottom to determine bottom thickness, an external inspection in lieu of an internal inspection is allowed to meet the data requirements of Table 6-1. However, in these cases, consideration of other maintenance items may dictate internal inspection intervals. This alternative approach shall be documented and made part of the permanent record of the tank.

6.6 PREPARATORY WORK FOR INTERNAL INSPECTION

Specific work procedures shall be prepared and followed when conducting inspections that will assure personnel safety and health and prevent property damage in the workplace (see 1.4).

6.7 INSPECTION CHECKLISTS

Appendix C provides sample checklists of items for consideration when conducting in-service and out-of-service inspections.

6.8 RECORDS

6.8.1 General

Inspection records form the basis of a scheduled inspection/maintenance program. (It is recognized that records may not exist for older tanks, and judgments must be based on experience with tanks in similar services.) The owner/operator shall maintain a complete record file consisting of three types of records, namely: construction records, inspection history, and repair/alteration history.

6.8.2 Construction Records

Construction records may include nameplate information, drawings, specifications, construction completion report, and any results of material tests and analyses.

6.8.3 Inspection History

The inspection history includes all measurements taken, the condition of all parts inspected, and a record of all examinations and tests. A complete description of any unusual conditions with recommendations for correction of details which caused the conditions shall also be included. This file will also contain corrosion rate and inspection interval calculations.

6.8.4 Repair/Alteration History

The repair/alteration history includes all data accumulated on a tank from the time of its construction with regard to repairs, alterations, replacements, and service changes (recorded with service conditions such as stored product temperature and pressure). These records should include the results of any experiences with coatings and linings.

6.9 REPORTS

6.9.1 Reports recommending repairs shall include reasons for the repairs, and sketches showing location and extent.

6.9.2 General inspection reports shall include metal thickness measurement, conditions found, repairs, any settlement measurements, and recommendations.

6.10 NON-DESTRUCTIVE EXAMINATIONS

Personnel performing nondestructive examinations shall meet the qualifications identified in 12.1.1.2, but need not be certified in accordance with Appendix D. The results of any NDE work, however, must be considered in the evaluation of the tank by an authorized inspector.

APPENDIX B

TANK IN-SERVICE INSPECTION CHECKLIST (API STANDARD 653)				
	Item		Completed (Date)	Comments
C.1.1	**FOUNDATION**			
	Measure foundation levelness and bottom elevations (See Appendix B of API Standard 653 for extent of measurements).			
C.1.1.2	**Asphalt**			
	a.	Check for settling of tank into asphalt base which would direct runoff rain water under the tank instead of away from it.		
	b.	Look for areas where leaching of oil has left rock filler exposed, which indicates hydrocarbon leakage.		
C.1.1.4	**Rock**			
	Presence of crushed rock under the steel bottom usually results in severe underside corrosion. Make a note to do additional bottom plate examination (ultrasonic, hammer testing, or turning of coupons) when the tank is out of service.			
C.1.1.5	**Site Drainage**			
	a.	Check site for drainage away from the tank and associated piping and manifolds.		
	b.	Check operating condiditon of the dike drains.		
C.1.1.6	**Housekeeping**			
	Inspect the area for buildup of trash, vegetation, and other inflammables buildup.			
C.1.2	**SHELLS**			
C.1.2.1	**External Visual Inspection**			
	a.	Visually inspect for paint failures, pitting, and corrsion.		
	b.	Clean off the bottom angle area and inspect for corrosion and thinning on plate and weld.		
	c.	Inspect the bottom-to-foundation seal.		
C.1.2.4	**Wind Girder**			
	a.	Inspect wind girder and handrail for corrosion damage (paint failure, pitting, corrosion product buildup), especially where it occurs at tack-welded junction, and for broken welds.		
	b.	Check support welds to shell for pitting, especially on shell plates.		
	c.	Note whether supports have reinforcing pads welded to shell.		
C.1.3	**SHELL APPURTENANCES**			
C.1.3.1	**Manways**			
	a.	Inspect for cracks or signs of leakage on weld joint at manways and reinforcing plates.		
	b.	Inspect for flange leaks around bolting.		
C.1.3.2	**Tank Piping Manifolds**			
	a.	Inspect manifold piping, flanges, and valves for leaks.		

*Sub-section numbers not shown are not applicable to Tank 1934 and 1935

TANK IN-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - Continued				
Item			Completed (Date)	Comments
	b.	Inspect fire fighting system components.		
	c.	Check for anchored piping which would be hazardous to the tank shell or bottom connections during earth movement.		
	d.	Check sample connections for leaks and for proper valve operation.		
C.1.3.3	**Autogauge System**			
	a.	Inspect autogauge tape guide and lower sheave housing (floating swings) for leaks.		
	b.	Inspect autogauage head for damage.		
	c.	Bump the checker on autogauge head for proper movement of tape.		
	d.	Compare actual product level to the reading on the autoguage (maximum variation is 2 in.).		
	e.	Inspect condition of board and legibility of board-type autogauges.		
	f.	Test freedom of movement of marker and float.		
C.1.4	**ROOFS**			
C.1.4.1	**Deck Plate Internal Corrosion**			
	For safety, before accessing the roof, check with ultrasonic instrument or lightly use a ball peen hammer to test the deck plate near the edge of the roof for thinning. (Corrosion normally attacks the deck plate at the edge of a fixed roof and at the rafters in the center of the roof first.)			
C.1.4.2	**Deck Plate External Corrosion**			
	Visually inspect for paint failure, holes, pitting, and corrosion product on the roof deck.			
C.1.4.3	**Roof Deck Drainage**			
	Look for indication of standing water. (Significant sagging of fixed roof deck indicates potential rafter failure.)			
C.1.5	**ROOF APPURTENANCES**			
C.1.5.1	**Sample Hatch**			
	a.	Inspect condition and functioning of sample hatch cover.		
	b.	Check for corrosion and plugging on thief and gauge hatch cover.		
	c.	Check for reinforcing pad where sample hatch pipe penetrates the roof deck.		
	d.	Test operation of system.		

*Sub-section numbers not shown are not applicable to Tank 1934 and 1935

TANK IN-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - Continued				
	Item		Completed (Date)	Comments
C.1.5.4	**Autogauge: Inspection Hatch and Guides (Fixed Roof)**			
	a.	Check the hatch for corrosion and missing bolts.		
	b.	Look for corrosion on the tape guide's and float guide's wire anchors.		
C.1.5.5	**Autogauge: Float Well Cover**			
	a.	Inspect for corrosion.		
	b.	Check tape cable for wear or fraying caused by rubbing on the cover.		
C.1.5.12	**Rim Vents**			
	a.	Check condition of the screen on the rim vent cover.		
	b.	Check for plating off or removal of rim vents where jurisdicitional rules do not permit removal.		
C.1.6	**Accessways/Stairways**			
C.1.6.1	**Handrails**			
	a.	Identify and report type (steel pipe, galvanized pipe, square tube, angle) and size of handrails.		
	b.	Inspect for pitting and holes, paint failure.		
	c.	Inspect attachment welds.		
	d.	Identify cold joints and sharp edges. Inspect the handrails and midrails.		
C.1.6.2	**Platform Frame**			
	a.	Inspect frame for corrosion and paint failure.		
	b.	Inspect the attachment of frame to supports and supports to tank for corrosion and weld failure.		
	c.	Check reinforcing pads where supports are attached to shell or roof.		
	d.	Inspect the surface that deck plate or grating rests on, for thinning and holes.		
	e.	Check that flat-surface-to-flat-surface junctures are seal-welded.		
C.1.6.3	**Deck Plate and Grating**			
	a.	Inspect deck plate for corrosion-caused thinning or holes (not drain holes) and paint failure.		
	b.	Inspect plate-to-frame weld for rust scale buildup.		
	c.	Inspect grating for corrosion-caused thinning of bars and failure of welds.		
C.1.6.4	**Stairway Stringers**			
	a.	Inspect stairway supports to shell welds and reinforcing pads.		
	b.	Inspect steel support attachment to concrete base for corrosion.		

*Sub-section numbers not shown are not applicable to Tank 1934 and 1935

TANK OUT-OF-SERVICE INSPECTION CHECKLIST (API STANDARD 653)				
Item			Completed (Date)	Comments
C.2.1	OVERVIEW			
	a.	Check that tank has been cleaned, is gas free, and safe for entry.		
	b.	Check that the tank is completely isolated from product lines, all electrical power, and steam lines.		
	c.	Check that roof is adequately supported, including fixed roof structure and floating roof legs.		
	d.	Check for presence of falling object hazards, such as corroded-through roof rafters, asphalt stalactites, and trapped hydrocarbons in unopened or plugged equipment or appurtenances, ledges, etc.		
	e.	Inspect for slipping hazards on the bottom and roof decks.		
	f.	Inspect structural welds on accessways and clips.		
	g.	Check surfaces needing inspection for a heavy-scale buildup and check weld seams and oily surfaces where welding is to be done. Note areas needing more cleaning, including blasting.		
C.2.2	TANK EXTERIOR			
	a.	Inspect appurtenances opened during cleaning such as lower floating swing sheave assemblies.		
	b.	Hammer test or ultrasonically test the roof.		
C.2.3	BOTTOM INTERIOR SURFACE			
	a.	Using a flashlight held close to and parallel to the bottom plates, and using the bottom plate layout as a guide, visually inspect and hammer test the entire bottom.		
	b.	Measure the depth of pitting and describe the pitting appearance (sharp edged, lake type, dense, scattered, etc.)		
	c.	Mark areas requiring patching or further inspection.		
	d.	Mark locations for turning coupons for inspection.		
	e.	Inspect all welds for corrosion and leaks, particularly the shell-to-bottom weld.		
	f.	Inspect sketch plates for corrosion.		
	g.	Check condition of internal sump, if applicable. Standing liquid should be removed from the sump to allow for complete inspection and vacuum testing of weld seams as appropriate. Sump bottom and sidewall plate and seams need to be evaluated for both product-side and soil-side corrosion.		

*Sub-section numbers not shown are not applicable to Tank #1934 and 1935.

TANK OUT-OF-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - CONTINUED				
Item			Completed (Date)	Comments
	h.	Locate and mark voids under the bottom.		
	i.	Record bottom data on a layout sketch using the existing bottom plates as a grid. List the number and sizes of patches required.		
	j.	Vacuum test the bottom lap welds.		
	k.	Hammer test or ultrasonically examine any slightly discolored spots or damp areas.		
	l.	Check for reinforcing pads under all bottom attached clips, brackets, and supports.		
	m.	Check the column bases of fixed roof supports for adequate pads and restraining clips.		
	n.	Mark old oil and air test connection for removal and patching.		
	o.	Identify and report low areas on the bottom that do not drain adequately.		
	p.	Inspect coating for holes, disbonding, deterioration, and discoloration.		
C.2.4	**SHELL SEAMS AND PLATE**			
	a.	On cone up bottoms, closely inspect and gauge the depth of metal loss on the lower 2 in. to 4 in. of the shell (area of standing water).		
	b.	Measure the depth of pitting on each course.		
	c.	Inspect and estimate the amount of metal loss on the heads of rivets and bolts.		
	d.	Inspect shell-to-bottom riveted lap joints.		
	e.	Inspect for vertical grooving damage from seal assembly protrusions.		
	f.	Inspect existing protective coatings for damage, deterioration, and disbonding.		
	g.	Visually inspect the shell plates and seams for indications of leakage.		
	h.	If the shell has riveted or bolted seams, record the leak locations by film or chart in case the locations are lost during surface preparation for painting.		
	i.	Measure annular space at 40-ft intervals.		
	j.	Survey the shell to check for roundness and plumb.		
C.2.5	**SHELL-MOUNTED OVERFLOWS**			
	a.	Inspect overflow for corrosion and adequate screening.		
	b.	Check location of overflow that is not above any tank valves or equipment.		
C.2.6	**ROOF INTERIOR SURFACE**			
C.2.6.1	**General**			

*Sub-section numbers not shown are not applicable to Tank #1934 and 1935.

TANK OUT-OF-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - CONTINUED				
Item			Completed (Date)	Comments
	a.	Visually inspect the underside surface of the roof plates for holes, scale buildup, and pitting.		
	b.	Hammer test or ultrasonically examine to check for thin areas.		
	c.	Check all clips, brackets, braces, etc., welded to the roof deck plate for welded reinforcing pads and see that they have not broken free.		
	d.	If no pad is present, penetrant test for cracking of the weld or deck plate.		
	e.	Inspect for protective coating for braks, disbondment, and deterioration.		
C.2.6.2	**Fixed Roof Support Structure**			
	a.	Inspect the support columns for thinning in the upper 2 ft.		
	b.	On API columns (two channels welded together) check for corrosion scale breaking on tack welds, unless the joint between the channels is completely seal welded.		
	c.	Check that the reinforcing pad on the bottom is seal-welded to the tank bottom with horizontal movement restraining clips welded to the pad.		
	d.	Determine if pipe clumn supports are concrete filled or open pipe. If open pipe, check for a drain opening in the bottom of the pipe.		
	e.	Inspect guage rafters for thinning, particularly near the center of the roof. Report metal loss.		
	f.	Check for loose or twisted rafters.		
	g.	Inspect girders for thinning and check that they are attached securely to the top of the columns.		
	h.	Inspect and report presence of any roof-mounted swing line bumpers.		
	i.	Photograph the roof structure if no rafter layout drawing exists.		
C.2.7	**FIXED ROOF APPURTENANCES**			
C.2.7.1	**Inspection and Light Hatches**			
	a.	Inspect the hatches for corrosion, paint and coating failures, holes, and cover sealing.		
	b.	On loose covers, check for a safety chain in good condition.		
	c.	On light hatches over 30 in. across, check for safety rods.		
	d.	Inspect the condidtion of the gaskets on bold or latched down hatch covers.		
C.2.7.2	**Staging Support Connection**			
	Inspect the condition of the staging support for corrosion.			
C.2.7.3	**Breathers and Vents**			

*Sub-section numbers not shown are not applicable to Tank #1934 and 1935.

TANK OUT-OF-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - CONTINUED				
Item			Completed (Date)	Comments
	c.	Inspect grating for corrosion-caused thinning of bars and failure of welds.		
C.2.12.4	**Stairway Stringers**			
	a.	Inspect stairway supports to shell welds and reinforcing pads.		
	b.	Inspect steel support attachment to concrete base for corrosion.		

*Sub-section numbers not shown are not applicable to Tank #1934 and 1935.

TANK OUT-OF-SERVICE INSPECTION CHECKLIST (API STANDARD 653) - CONTINUED				
Item			Completed (Date)	Comments
	a.	Inspect and service the breather.		
	b.	Inspect screens on vents and breathers.		
C.2.7.5	**Sample Hatch**			
	a.	Inspect sample hatch for corrosion.		
	b.	Check that the cover operates properly.		
	c.	If the tank has no gauge well, check for a hold-off distance marker and check measurement.		
C.2.11	**COMMON TANK APPURTENANCES**			
C.2.11.2	**Sampling Systems: Roof Sample Hatches**			
	a.	Inspect roof-mounted sample hatches for reinforcing pads and cracking.		
	b.	Inspect cover for operation.		
C.2.11.3	**Shell Nozzles**			
	a.	Inspect shell nozzles for thinning and pitting.		
	b.	Identify type of shell nozzles.		
	c.	Identify and describe internal piping, including elbow-up and elbow-down types.		
	d.	Inspect pipe support pads welded to tank bottom.		
	e.	Inspect nozzle valves for packing leaks and damaged flange faces.		
	f.	In internal elbow-down fill line nozzles, inspect the wear plate on the tank bottom.		
C.2.12	**Accessways/Stairways**			
C.2.12.1	**Handrails**			
	a.	Identify and report type (steel pipe, galvanized pipe, square tube, angle) and size of handrails.		
	b.	Inspect for pitting and holes, paint failure.		
	c.	Inspect attachment welds.		
	d.	Identify cold joints and sharp edges. Inspect the handrails and midrails.		
C.2.12.2	**Platform Frame**			
	a.	Inspect frame for corrosion and paint failure.		
	b.	Inspect the attachment of frame to supports and supports to tank for corrosion and weld failure.		
	c.	Check reinforcing pads where supports are attached to shell or roof.		
	d.	Inspect the surface that deck plate or grating rests on, for thinning and holes.		
	e.	Check that flat-surface-to-flat-surface junctures are seal-welded.		
C.2.12.3	**Deck Plate and Grating**			
	a.	Inspect deck plate for corrosion-caused thinning or holes (not drain holes) and paint failure.		
	b.	Inspect plate-to-frame weld for rust scale buildup.		

*Sub-section numbers not shown are not applicable to Tank #1934 and 1935.

APPENDIX C

verify appropriate cable lengths that satisfy the no-splice requirement with proposed location of the cables between the pipes and rectifier unit."

Winzler & Kelly concurs with Corrpro's recommendation that a new continuous cable be installed. This item should be included as a final punch-list item for repair.

Please contact us, if you have any questions or concerns.

Sincerely,

Andrew W. Smith

Andrew W. Smith
Responsible Managing Engineer, Guam
Winzler & Kelly Consulting Engineers

Attachments

GPA TANKS 1934 AND 1935

LEAK DETECTION SYSTEM REPAIR REPORT

LEAK DETECTION SYSTEM

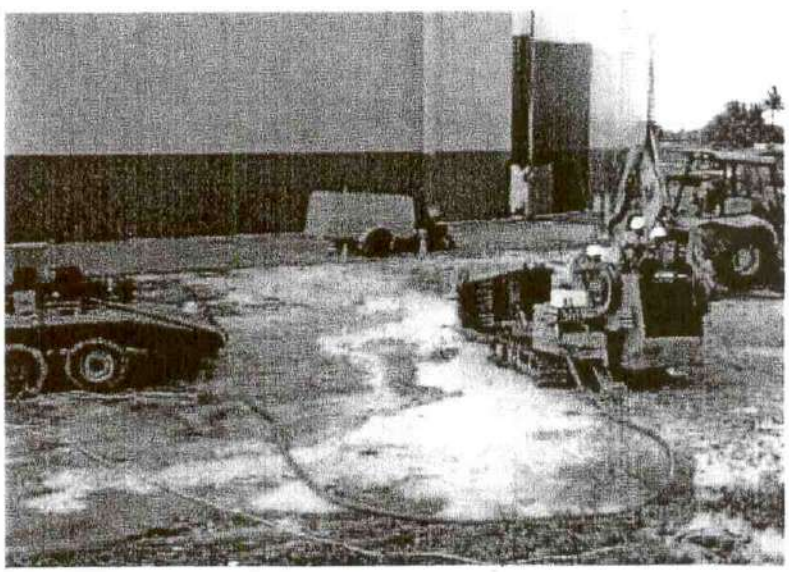
The new leak detection system was installed for Bulk Storage Fuel Tanks No. 1935 and No. 1934, as recommended. The Leak Detection System Commissioning Report, prepared by Corrpro Companies, Incorporated (a sub-contractor to International Bridge Corporation), is included as an attachment. See list of attachments below.

ATTACHMENTS

1. Photographs
2. Leak Detection System Commissioning report
3. Leak Detection System Testing and Commissioning – Attendees list
4. Leak Detection Plan – As Built
5. International Bridge Corporation GPA Leak Detector Installation Instruction
6. International Bridge Corporation Submittals
7. FCI Environmental, Inc. PetroSense CMS-5000 Continuous Monitoring System User's Manual
8. FCI Environmental, Inc. PetroSense DHP-100 & DHP-485 Digital Hydrocarbon Probe User's Manual
9. Leak Detection Program
10. Southwest Windpower, Inc. Air-X Owner's Manual for turbine

PHOTOGRAPHS

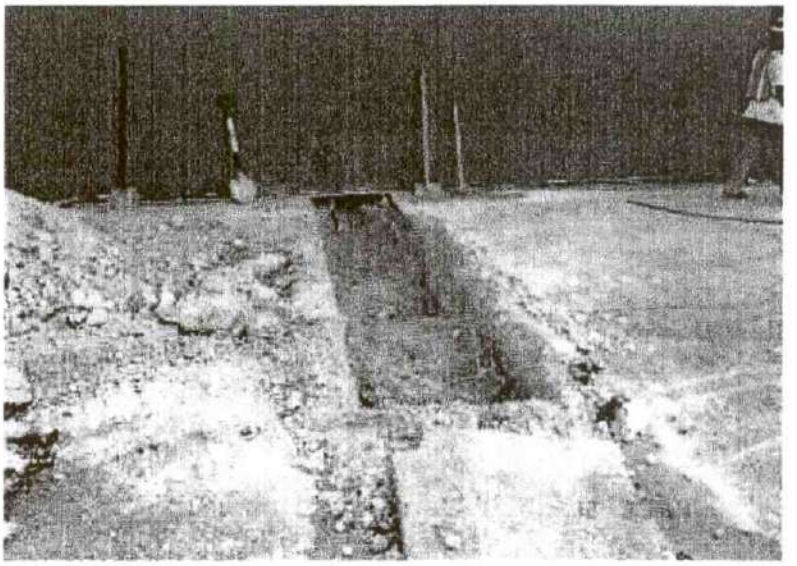
View of horizontal drilling for leak detection system.



View of installation of leak detection system.

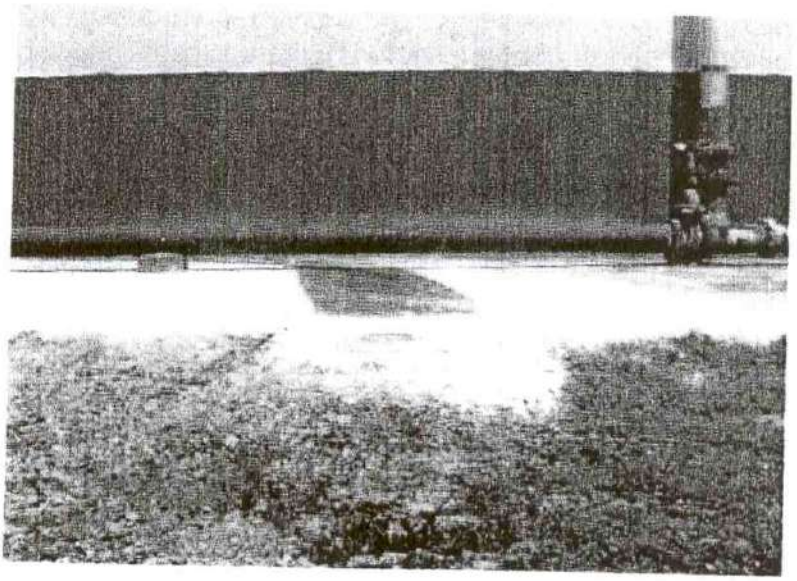
PHOTOGRAPHS

View of perforated PVC pipe for leak detection system.

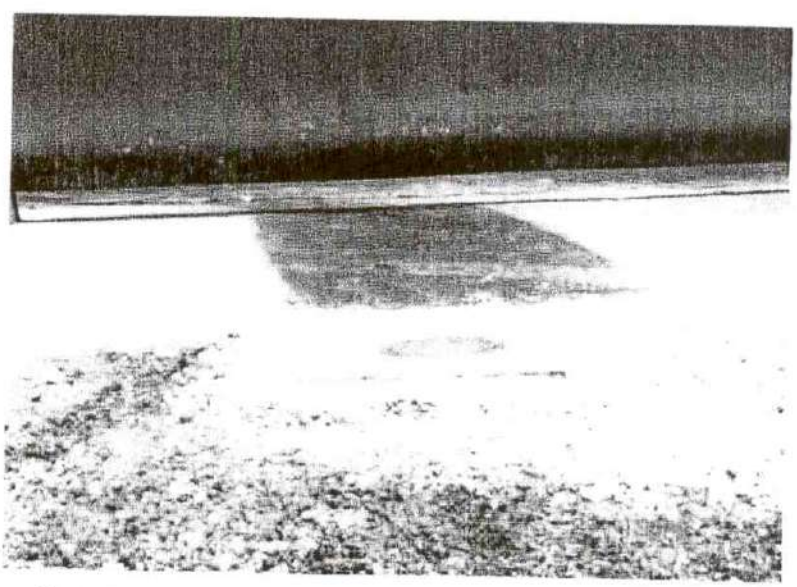


View of trench for installation of leak detection system.

PHOTOGRAPHS

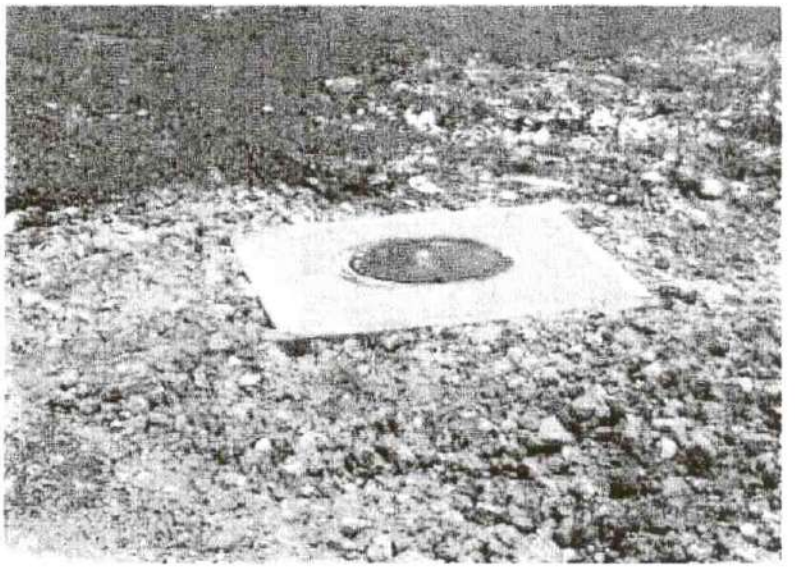


View of completed trench and access construction for leak detection system.

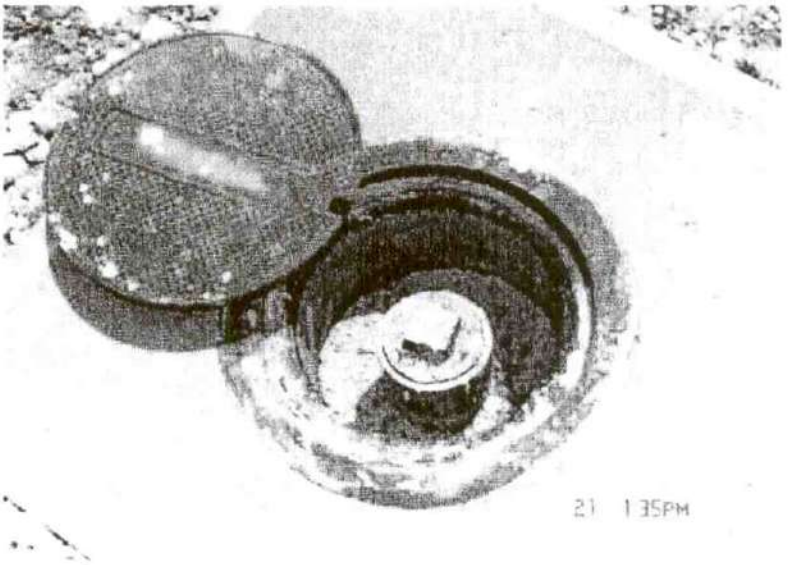


View of completed trench and access construction for leak detection system.

PHOTOGRAPHS

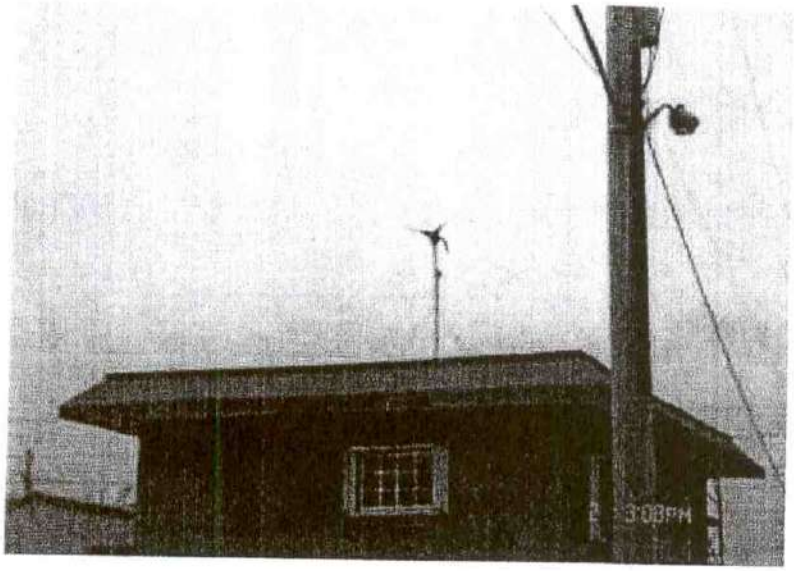


View of access to leak detection cables.

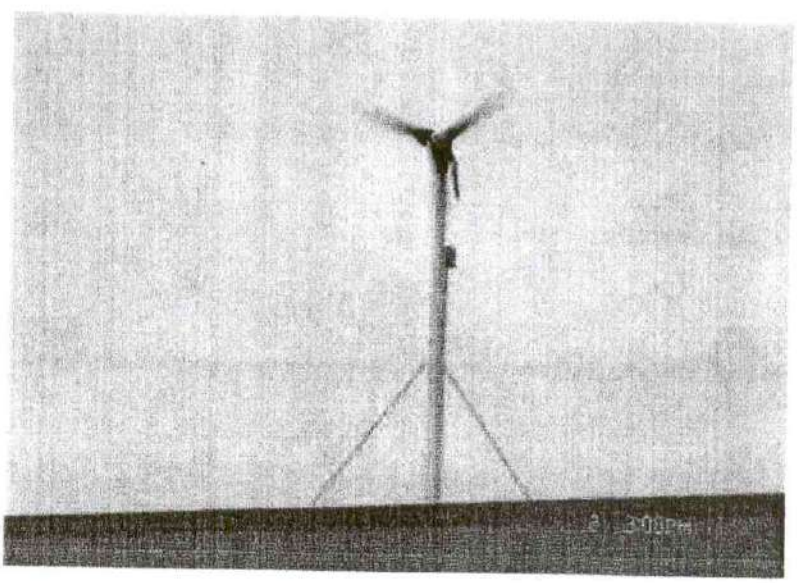


View of access riser for leak detection cables.

PHOTOGRAPHS

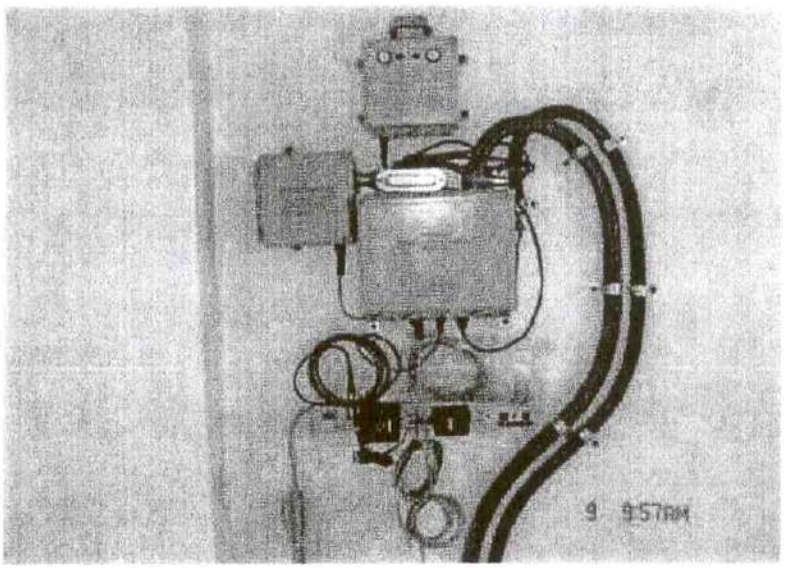


View of wind turbine for generator power on top of new maintenance building.

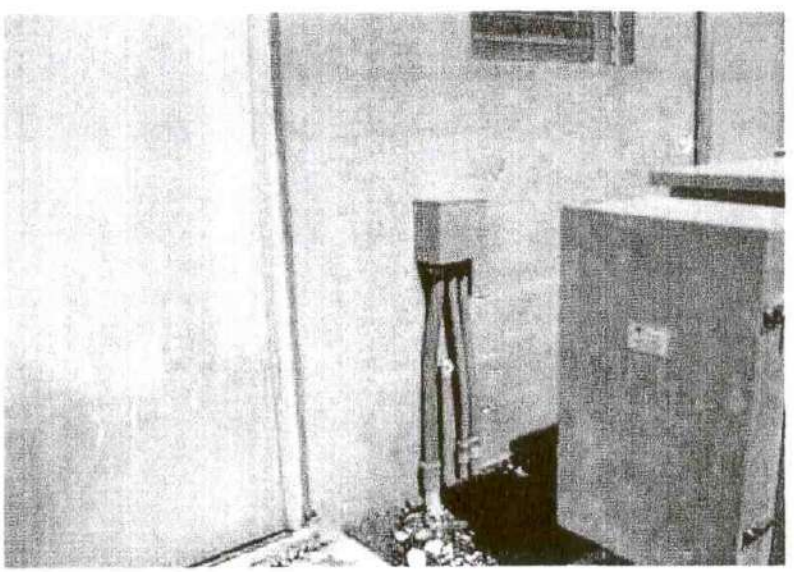


View of wind turbine for generator power.

PHOTOGRAPHS

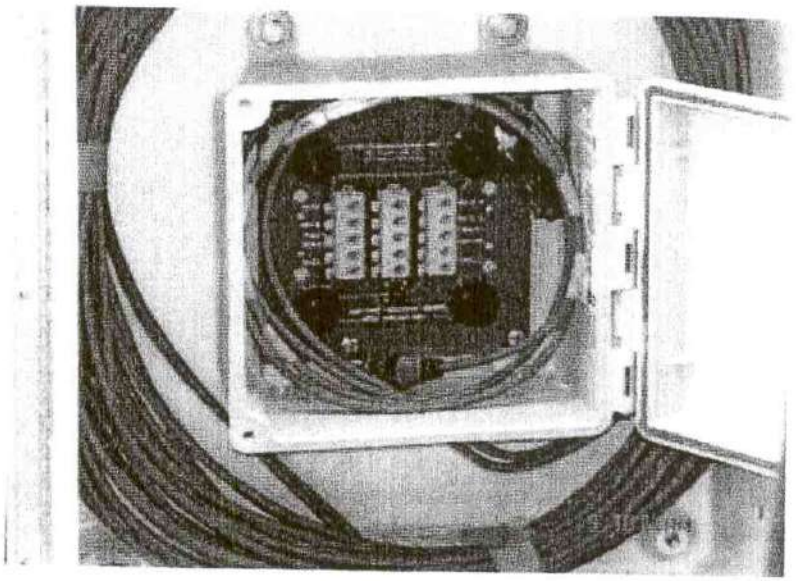


View of data logger for leak detection system inside new maintenance building.

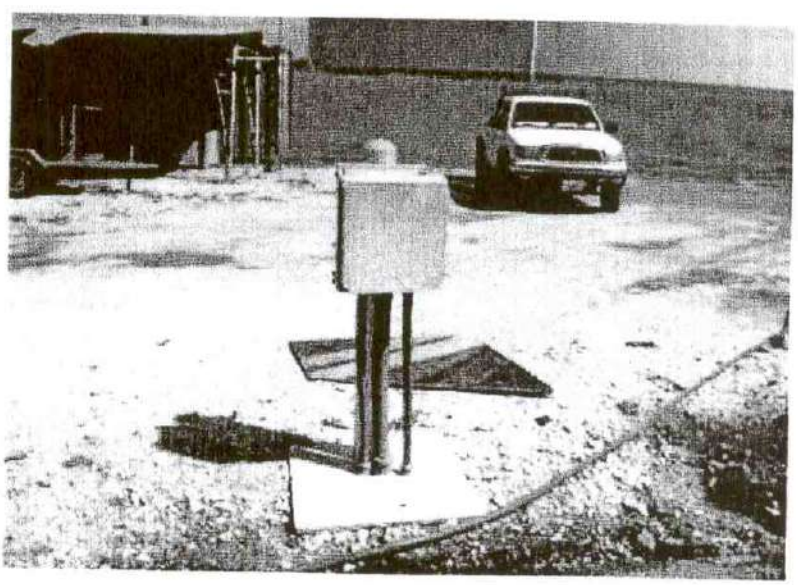


View of junction box for leak detection system, located outside old electrical room.

PHOTOGRAPHS

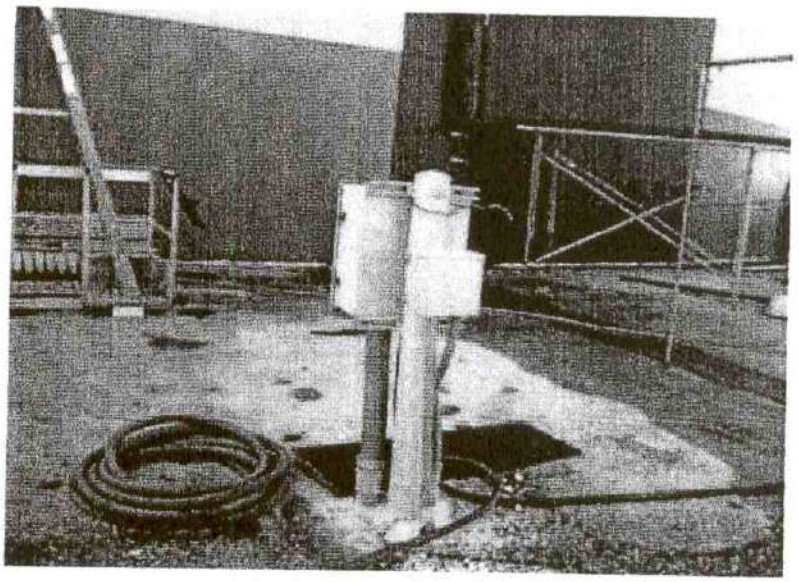


View of inside junction box for leak detection and cathodic protection systems.



View of one of four junction boxes for leak detection and cathodic protection systems.

PHOTOGRAPHS



View of rear of junction box for leak detection and cathodic protection systems.

November 7, 2006

Mr. Felix Baytic
International Bridge Corporation
P.O. Box 21149
CMF Guam
FAX: (671) 653-4032
E-mail: fbaytic@intbridgecorp.com

CORRPRO COMPANIES INC
Preserve and Sustain Global Assets & Infrastructure
2799 Miller Street; San Leandro, CA 94577
Tel: (510) 614-8800 * Fax: (510) 614-8811
http://www.corrpro.com

Subject: **Leak Detection System Commissioning**
Guam Power Authority
Bulk Storage Fuel Tanks 1934 & 1935, CCI # 4307

Dear Felix:

The commissioning of the referenced leak detection system was performed by Corrpro in October 2006. This letter contains our observations, conclusion and recommendations related with this project.

General Information

The leak detection system (designed by others) for the bulk storage fuel tanks 1934 and 1935 located in Guam was provided by Corrpro Co. Inc. The commissioning of the system was performed by Corrpro after completion of the installation.

Services Provided by Corrpro

Services provided by Corrpro included the following:

1. Visual inspection of all of the components of the leak detection system.
2. Terminating and connecting data cables in the junction boxes and in the data logger.
3. Energizing and verifying the proper operation of the leak detection system.
4. Remotely verifying proper operation of the equipment through the modem by the manufacturer.
5. Demonstration of the equipment to the IBC, GPA, GEPA and other interested parties.

Conclusions

The work resulted in the following conclusions:

1. All of the components were found installed properly and in accordance with the GPA design.
2. The equipment communicated properly with manufacturer's remote computer through the modem.
3. The sensors under the tanks were found operational. Each sensor was individually tested and can be used for leak detection.
4. The sensors were found communicating with the data logger.
5. Corrpro has completed the scope of work as provided for the project and shall be paid in full for work done.

Additional Observations During the Field Test Beyond the Scope of the Original Project

The following observations were made during commissioning of the system:

1. The home-run data cable has a splice in the vault at the new building. The splice resulted from extending the cable run from the old building to the new building, which is beyond Corrpro's original scope.
2. All individual sensors work properly and are suitable to take leak detection readings for USEPA.
3. Based on the above we recommend a new continuous, splice-free home-run cable be installed from the closest junction box (LDJB-4) to the data logger in the new building.

Corrpro appreciates the opportunity to work with you on this project. Please contact me with any questions you might have at (510) 614-8800 x227. Fax to (510) 614-8811.

Sincerely,

Geoff Biddick

Geoff Biddick
Project Engineer
Corrpro Companies, Inc.

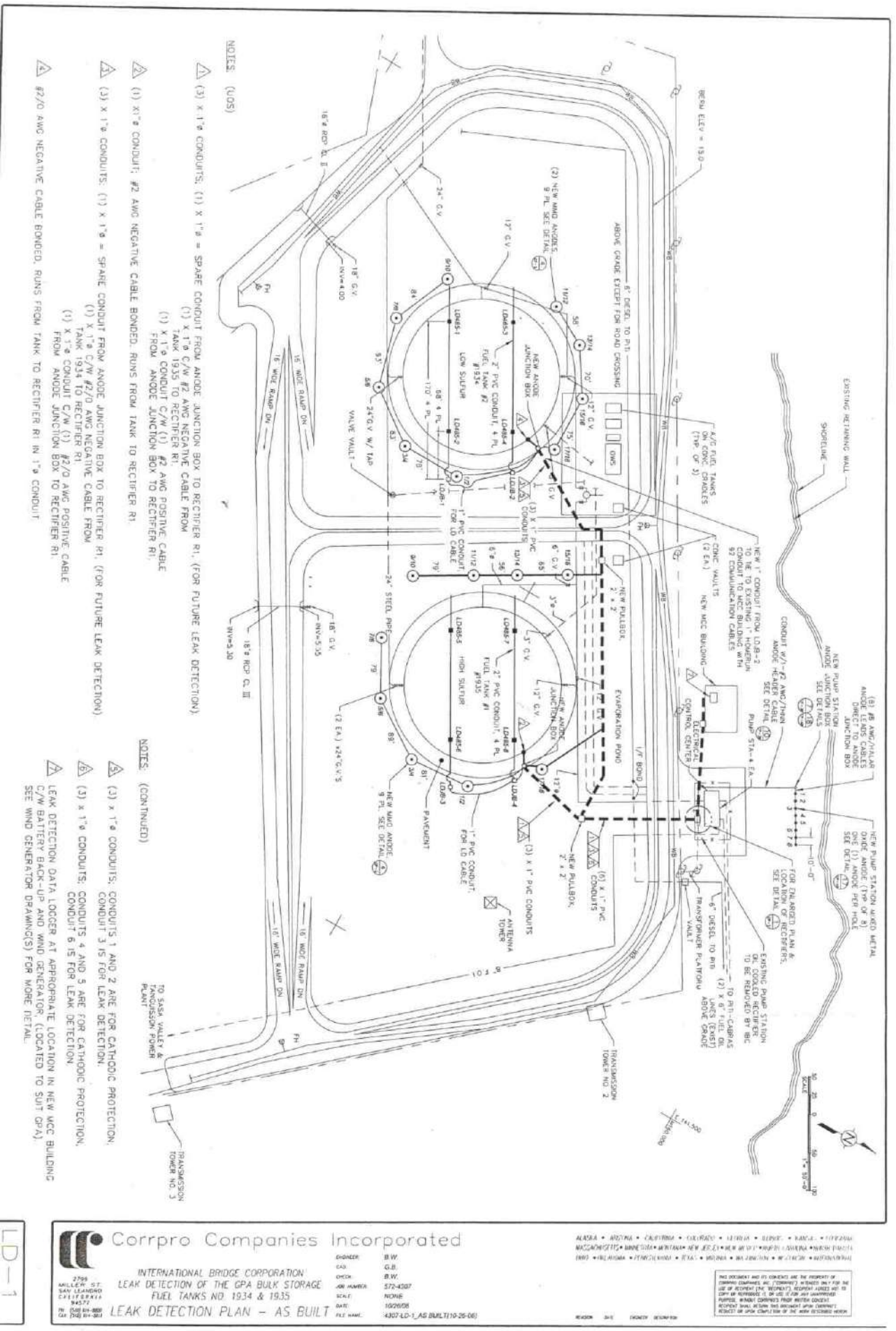
GUAM POWER AUTHORITY
ATURIDÅT ILEKTRESEDÅT GUAHAN
P.O.BOX 2977 • AGANA, GUAM U.S.A. 96932-2977

October 19, 2006

Project:	**Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank No. 1935**
Subject:	**LEAK DETECTION SYSTEM TESTING & COMMISSIONING**
Location:	**NEW FACILITY ADMIN. BUILDING PETERRA/GPA TANK FARM**
Date & Time:	OCTOBER 19, 2006 @ 1400 Hrs.

ATTENDEES:

	Name	Agency/Company
1.	Marian Stec, P. E.	CORRPRO - Tech. Representative, LD System
2.	Manuel Minas	Guam Environmental Protection Agency (GEPA)
3.	Norbert Madrazo	GPA - Planning and Regulatory
4.	Roger Pabunan	GPA - Planning and Regulatory
5.	Perry B. Taladoc	GPA - Project Management
6.	Louie C. Rimorin	GPA - Project Management
7.	Kennedy Ebeya	GR Construction
8.	Felix Baytic	International Bridge Corporation (IBC)
9.	Frank Cruz	Peterra
10.	James Y. Cruz	Peterra
11.	Jose P. Yamashita	Peterra
12.	Joseph C. Yamashita	Peterra
13.	Patrick Cruz	Peterra
14.	Andy Smith, P. E.	Winzler & Kelly
15.	Jessica Townsend	Winzler & Kelly



Corrpro Companies Incorporated

2798 MILLER ST. SAN LEANDRO CALIFORNIA 94577

INTERNATIONAL BRIDGE CORPORATION
LEAK DETECTION OF THE GPA BULK STORAGE FUEL TANKS NO. 1934 & 1935
LEAK DETECTION PLAN – AS BUILT

ENGINEER	B.W.
CAD	G.B.
CHECK	B.W.
JOB NUMBER	572-4007
SCALE	NONE
DATE	10/26/06
FILE NAME	4007-LD-1_AS BUILT(10-26-06)

ALASKA • ARIZONA • CALIFORNIA • COLORADO • FLORIDA • HAWAII • IDAHO • KANSAS • LOUISIANA MASSACHUSETTS • MINNESOTA • MONTANA • NEW JERSEY • NEW MEXICO • NORTH CAROLINA • NORTH DAKOTA OHIO • OKLAHOMA • PENNSYLVANIA • TEXAS • VIRGINIA • WASHINGTON • WISCONSIN

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REVISION DATE ENGINEER DESCRIPTION

LD – 1

INTERNATIONAL BRIDGE CORP.
IBC Bldg, 171 Marine Corps Dr, Yigo, Guam 96927
P.O. Box 21149, GMF, Guam 96921
Ph: (671) 653-4026 Fax: (671) 653-4032

TRANSMITTAL FORM

Date: 03-Apr-06
Transmittal No. 030

CONTRACT: C-029-05
TITLE: LIFE EXTENSION AND REFURBISHMENT
GPA BULK STORAGE TANK 1934/1935
CHANGE ORDER NO. 4 (LEAK DETECTION SYSTEM)

GUAM POWER AUTHORITY
RECEIVED
APR 03 2006
ENGINEERING
PROJECT MGMT

TO: GUAM POWER AUTHORITY
Cabras, Piti
Guam
Attention: Louie Rimorin - Project Engineer

TRANSMITTED HEREWITH ARE: 1 Set

FOR: (x) ACCEPTANCE OR APPROVAL ( ) CLARIFICATION

( ) SELECTION ( ) RECORD

Item No.	Description	Remarks
1.0	IBC GPA Leak Detector Installation Instruction	As Noted
2.0	Corrpro Leak Detection Plan	As Noted

Contractor Signature:
Name: Felix Baytic
Project Manager

Date:

FROM: SUBMITTAL REVIEWER
Signature

TO:

SUBMITTAL IS: ( ) APPROVED ( ) RETURNED FOR CORRECTION

( ) APPROVED AS NOTED ( ) DISAPPROVED & RESUBMIT

REMARKS:

Rec'd: [illegible] 4/3/06

IBC GPA Leak Detector Installation Instructions

Tank 1934

Perform steps 1-10 for each of the two horizontally drilled holes

1. Drill horizontally under the tank and insert 2-inch slotted PVC under the tank, and bring it out approximately 20 feet from each tank edge (by drilling contractor).
2. Attach 3-inch PVC 90 degree sweeps at both ends of 2-inch slotted PVC.
3. Feed the fish tape all the way through the underground pipe from the leak detection junction box (LDJB) end to the other end.
4. Tie two 500-foot pieces of ¼-inch polypropylene rope to the fish tape and pull the rope all the way back through the piping to the LDJB end. This is one 500-foot piece of rope per leak detection probe. Contractor will need 4000 feet of rope for all 8 LD probes.
5. From the LDJB side of the tank, pull one rope out from the ground approximately 200 ft.
6. Tie-wrap a leak detection probe that has a 200ft cable (one with the large green splice) to the rope where it comes out at the LDJB side of the tank.
7. Pull the rope from the far side of the tank until the probe is 170 ft from the leak detection junction box (where the pipe comes above grade), 146 feet from the edge of the tank. Do not pull on the probe cable.
8. From the LDJB side of the tank, pull the other rope out of the ground approximately 100 ft.
9. Tie-wrap a leak detection probe that has a 125ft cable (one with no splice) to the rope where it comes above ground on the LDJB side of the tank.
10. Pull the rope from the far side of the tank until the probe is 68ft from the leak detection junction box (where the pipe comes above), 44 feet from the edge of the tank. Have someone hold the rope attached to the first probe from the LDJB side of the tank to make sure that it does not move while the second probe is moved into place.

11. Where the pipe comes above grade from the drilled hole, install Leak Detection Junction Box #1 (LDJB-1) as per the drawings
    a. Install a 4x4-inch treated wood post.
    b. Install the weatherproof box at the top of the post.
    c. Install the LDJB inside the weatherproof box.
    d. The 3-inch PVC sweep from underneath the tank will come up the post, to the junction box. **Note:** Contractor will need to drill holes in the weatherproof box to insert PVC conduits running to it.
    e. Install a new 1-inch PVC conduit which runs down the post from LDJB-1 to LDJB-2 see drawings.
    f. In the end, LDJB-1 will be inside the larger weatherproof box, on top of a 4x4-inch treated wood post with two conduits running to it: 3-inch PVC from underneath the tank, and 1-inch PVC running to LDJB-2

12. Where the pipe comes above grade from the drilled pipe at LDJB-2, install LDJB-2 as per the drawings
    a. Install a 4x4-inch treated wood post
    b. Install the weatherproof box at the top of the post.
    c. Install the LDJB inside the weatherproof box.
    d. The 3-inch PVC sweep from underneath the tank will come up the post, to the junction box.
    e. The 1-inch PVC conduit from LDJB-1 will come up the post to the junction box.
    f. Install a new 1-inch PVC conduit which runs down the post from LDJB-2 to the spare 1-inch conduit at the existing CP anode junction box.
    g. In the end, LDJB-2 will be inside the larger weatherproof box, on top of a 4x4-inch treated wood post with three conduits running to it: 3-inch PVC from underneath the tank, and 1-inch PVC running from LDJB-1, and 1-inch PVC conduit running to the 1-inch spare conduit at the existing anode junction box.
13. Install christy pull box at the opposite end of the tank from each LDJB where the pipe comes above grade. Leave the ropes inside these boxes, one end of the pull.

Tank 1935

1. Install LD probes in the same manner as for Tank 1934.
2. Where the pipe comes above grade from the drilled pipe at LDJB-3, install LDJB-3 as per the drawings.
    a. Install LDJB-3 in the same manner as for LDJB-1 and 2.
    b. Install a new 1-inch PVC conduit from LDJB-3 to LDJB-4.
    c. In the end, LDJB-3 will be inside the larger weatherproof box, on top of a 4x4-inch treated wood post with two conduits running to it: 3-inch PVC from underneath the tank, and 1-inch PVC running to LDJB-4.
3. Where the pipe comes above grade from the drilled hole at LDJB-4, install LDJB-4 as per the drawings.
    a. Install LDJB-4 in the same manner as the other LDJBs.
    b. Install a new 1-inch PVC conduit from LDJB-4 to the existing anode junction box see drawing.
    c. In the end, LDJB-2 will be inside the larger weatherproof box, on top of a 4x4-inch treated wood post with three conduits running to it: 3-inch PVC from underneath the tank, and 1-inch PVC running from LDJB-3, and 1-inch PVC conduit running to the existing CP anode junction box.
4. Install christy pull box at the opposite end of the tank from each LDJB where the pipe comes above grade. Leave the pull ropes inside these boxes, one end of the pull.

Connecting the LD probes (LD probes attach to LDJB with 5-pin screw connectors)

Note: Each Leak Detection Junction Box has 4x 5-pin screw connectors where LD probes can attach as required, and 3 compression connectors for bare wires where the extension cables can attach as required.

1. At LDJB-1 connect LD probes 1 and 2 using two 5-pin screw connectors. Make sure connectors lock into place. Coil up the excess probe cable in the JB.
2. At LDJB-2 connect LD probes 3 and 4 using two 5-pin screw connectors. Make sure connectors lock into place. Coil up the excess cable in the JB.
3. At LDJB-3 connect LD probes 5 and 6 using two 5-pin screw connectors. Make sure connectors lock into place. Coil up the excess probe cable in the JB.
4. At LDJB-4 connect LD probes 7 and 8 using two 5-pin screw connectors. Make sure connectors lock into place. Coil up the excess probe cable in the JB.

Connecting extension cables (extension cables attach to LDJB with compression connectors)

1. Feed the 1000 foot roll of extension cable from LDJB-2 through the 1-inch spare conduit at the anode JB at tank 1394, through the existing spare 1-inch PVC, to the pull box at tank 1935 and then pull the cable to LDJB-4 from the pull box (ie: do not pull this cable from LDJB-2 to the MCC building).
2. Cut off the excess cable from the 1000 feet (you will need it for the next step) and connect each end to a compression connector in LDJB-2 and LDJB-4.
3. Use the excess cable from the 1000 feet to connect LDJB-3 to LDJB-4. Connect each end of the underground cable at compression connectors in each LDJB.
4. Feed the 500 foot roll of extension cable from LDJB-4, through the anode JB at tank 1935 via the pull box near tank 1935, to the building where the data logger will be.
5. Cut off the excess cable from the 500 feet (you will need it for the next step) and connect one end of the underground cable to a compression connector in LDJB-4 and the other end to the data logger in the MCC building.
6. Use the excess cable from the 500 feet to connect LDJB-1 to LDJB-2 through the new 1-inch PVC. Connect each end of the cable at compression connectors in each LDJB.

International Bridge Corporation

LIFE EXTENSION AND REFURBISHMENT
OF THE GPA BULK STORAGE FUEL TANK 1934/1935
IBC JOB REF. NO. 574

SUBMITTALS

For

GPA BULK STORAGE FUEL TANK 1935 REPAIRS
CONTRACT NO. C-029-05
CHANGE ORDER NO. 4
LEAK DETECTION SYSTEM

Prepared By

International Bridge Corporation
P.O. Box 21149
GMF, Guam 96921
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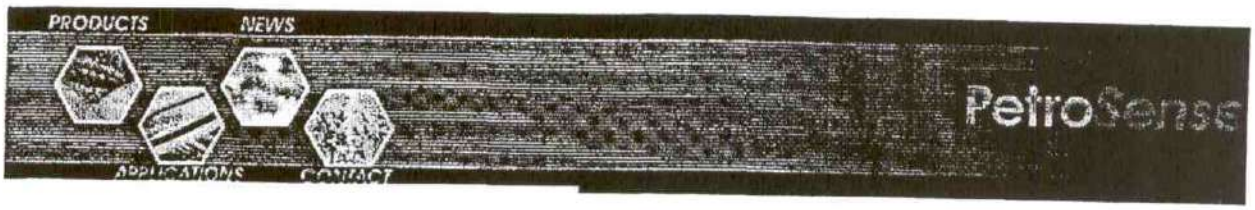

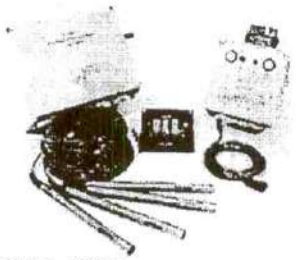

CMS-5000

Our Product Line:

PHA-100
DHP Digital Hydrocarbon Probe
CMS-4000
CMS-5000
OilSense-4000
PetroSense-1100

CMS-5000

The CMS-5000 Continuous Monitoring System is a low-cost alternative for owners/operators of aboveground and underground storage tanks (ASTs & USTs). It measures hydrocarbons in water or vapor interchangeably and controls 1 to 16 digital hydrocarbon probes (DHPs). With the DHPs, the CMS-5000 is capable of detecting leaks much smaller than the EPA mandated 0.2 gal./hr. New leaks can be detected in the presence of old contamination, and there is no response to naturally occurring hydrocarbons such as methane.

Alarm levels and how often sampling is performed can be programmed remotely. The optional alarm unit has auditory and visual alarm indicators which are activated by environmental and equipment alarms. These alarm units can be mounted on site or remotely. The CMS-5000 is also equipped with remote communication capabilities and can be connected via telephone, cellular and satellite to a PC.

The DHP probes have been Third Party Certified by Ken Wilcox Associates (www.kwaleak.com). Underwriters Laboratories has performed UL, CUL and KEMA ia certifications for use of the DHP in hazardous locations. The DHP and its analog counterpart are listed in the U.S. Environmental Protection Agency (USEPA) *List of Leak Detection Evaluations for Underground Storage Tank Systems* (www.epa.gov/OUST/pubs/index.htm) and the State of California *List of Leak Detection Equipment and Methods for Underground Storage Tanks, LG 113-12* (www.swrcb.ca.gov/cwphome/ust/lg113/lg113.htm). The DHP has also been specified in Florida Department of Environmental Protection's Approval File No. EQ-308 and is approved as a leak detection device in areas that have been previously contaminated.

Typical applications for the CMS-5000 include leak detection at ASTs, USTs and pipelines; and monitoring of remediation sites, wastewater discharge and storm water.

It operates for extended periods without operator attention and features self-diagnostic software, auto zeroing and optional automatic cleaning functions. It can control up to 4 Digital Hydrocarbon Probes (DHPs) and has 0-5 Volt or 4-20 mAmp

output which allows the customer to perform on-line command and control functions and have remote access to the unit for data collection when necessary.

The optional Programmable In-Line Cleaning System can be programmed to clean the probes at specified intervals between measurements.

The CMS-4000 has an optional skid mount for easy installation at remote and cramped locations. The system has no moving parts, has corrosion protected components and has NEMA-4X (explosion proof) enclosures. It comes with Class I Division 1 or 2 and Exp II air purge options.

The DHP probes have been Third Party Certified by Ken Wilcox Associates (www.kwaleak.com). Underwriters Laboratories has performed UL, CUL and KEMA ia certifications for use of the DHP in hazardous locations.

INTRODUCTION

1.1 OVERVIEW

1.1.1 General

This manual is organized in 5 major sections. The first section provides a quick overview of the Continuous Monitoring System CMS-5000 and its accessories and its operations. The second section describes system configuration. The third and fourth sections covers system setup and system operation, and the last section describes factory set defaults.

1.1.2 Operation Overview

The CMS-5000 can monitor up to 16 DHP-100 Digital Hydrocarbon Probes. It provides in-situ analyses of hydrocarbons. It consists of a microcomputer-based logger/monitor instrument. The data is logged for reference and is monitored in real time to determine if any alarm conditions exist. Digital outputs are available to drive an alarm system. Data and system operation can be accessed either via modem (using a remote computer) or via locally connected computer.

FCI's DHP-100 probe's operation is based on a proprietary coated optical fiber. The refractive index of the coating changes when hydrocarbons are present in the surrounding environment. This results in a measurable loss of infrared light signal as it propagates along the fiber. The FCI DHP is most sensitive to aromatics including C_6 and above (such as benzene, xylene, and the components of gasoline, etc.) with a low level of response to alkanes and no sensitivity to methane. FCI's proprietary chemical coating allows a reversible response in seconds to increasing or decreasing levels of hydrocarbons. The probe is calibrated to p-xylene, therefore a quantitative measurement in parts per million equivalent to p-xylene is obtained. When analyzing other known hydrocarbons, a multiplier may be used to convert the p-xylene equivalent reading to ppm of the known hydrocarbon. The index change is also a function of ambient temperature and humidity of the surrounding media type (vapor or water). The probe measures the ambient temperature, and media type (vapor or water), and the concentration is computed from the light loss accounting for known temperature dependencies and chemical sensitivity factors. For detail on DHP operation refer to DHP user's manual.

1.2 FEATURES

The CMS-5000 continuous monitoring system equipped with DHP-100 digital hydrocarbon probes provides readings in-situ in ppm equivalent to p-xylene. The probes can also be calibrated to a specific hydrocarbon or fuel blend instead of p-xylene. In-situ analyses reduce the need for costly laboratory sample analyses, offer immediate information for effective decision making and most importantly eliminate the numerous

errors associated with collection, transportation, storage and handling of samples. Key features are:

- Provides in-situ, real-time monitoring
- Detects hydrocarbons in water, vapor or at the water interface
- Provides concentration measurements that are temperature corrected
- Chemical and temperature coefficients are stored in the probes
- Stores up to 50000 data points. Once the memory is full the oldest data is removed and the space is used for new data (rolling barrel)
- Can store multiple parameters from the probe, including temperature, media (vapor or water), ppm
- Can select sampling frequency for probes (by direct connection or remotely)
- Can select high and low alarm levels in vapor or in water for each probe (by direct connection or remotely)
- Provides audio and visual alarms
- Can automatically adjust baseline to track environmental changes
- Can take additional (unscheduled) measurements (by direct connection or remotely)
- Can retrieve data (by direct connection or remotely) without stopping the logger
- Data files are in spreadsheet format for graphing and analysis
- Easy field installation
- Easy probe calibration and verification (xylene based)
- All DHP Digital Hydrocarbon Probes are attached to CMS-5000 logger via a single data bus
- Probes can be attached to the data logger with a maximum total cable length of 2000 feet
- Can autodial to a remote location in case an alarm occurs
- Can troubleshoot the system remotely
- Can perform any function remotely that can be done by direct connection
- Operates from 110 VAC or 220 VAC power sources
- System is equipped with a battery which is continuously trickle charged
- NEMA 4X enclosure and weatherproof connectors

1.3 APPLICATIONS

Among the many uses, the CMS-5000 can be used for:

- Leak detection UST/AST
- Remediation
- Waste water discharge monitoring
- Bilge water monitoring
- Water quality monitoring
- Groundwater monitoring
- Site assessment (from initial characterization through post remedial monitoring)
- Monitoring oil-water separators
- Monitoring of storm drain effluents
- Static soil gas headspace analysis

SECTION 2
SYSTEM CONFIGURATION

The system consists of a logger unit, an optional alarm unit and a set of DHP-100 Digital Hydrocarbon Probes (up to 16). The logger unit can be attached to AC power, to a computer (for data retrieval or system checking or system setup), and to a phone line.

2.1 DATA LOGGER

The CMS-5000 data logger is equipped with the following (refer to Appendix A for the logger outline and connector pin configurations):

- An Intrinsic Safety Barrier (ISB) which provides a probe connection port on the side of the box. It provides safe circuitry to DHP-100 probes which can be installed in Class I Division 1 Group D (Zone 0 in Europe) hazardous locations.

- Two lugs for Earth ground. These two ground lugs must be attached to two independent earth grounds for intrinsic safety in Class 1 Division 1 Group D (Zone 0) hazardous locations.

- An internal battery that is continuously trickle charged from an external charger unit. In the case of AC Mains failure, the system can continue to operate and capture data for several days. The failure of Mains power can be inferred by a drop in system voltage from the normal charger level (around 14 V) to the battery level (around 12 V when charged). This information is logged.

- An internal modem allows remote communication with the unit. It is used for autodialing a sequence of telephone numbers when alarm conditions occur.

- A direct computer connection port which allows an operator to access data in real time, to upload the logged data, to change the system operating parameters (e.g. the alarm limits), and to communicate directly with the probes (e.g. for calibration or verification). When the port is not being used by an operator, it can be programmed to provide a continuous output of the system operation (e.g. the concentration readings from each of the probes).

- A telephone connection port to be able to communicate with the logger remotely.

- A port to provide power to the modem and trickle charge the battery

- A port that provides digital inputs and outputs (a total of 1 digital input and 6 digital outputs are available) and 12 VDC.

2.2 DHP-100 PROBES AND ACCESSORIES

Up to 16 DHP-100 probes can be attached to the CMS-5000. The probes are all connected to the data bus line on the logger via junction boxes or junction boards. Extension cables can be used to extend the data bus line. 25, 50, 75 and 100 feet extension cable are available. The maximum total cable length must be less than 2000 feet. For details on the DHP-100 probe, refer to DHP user's manual for details.

2.3 ALARM UNIT

The alarm unit attached to the digital input/output port on the data logger provides the following functions, (with default factory configuration in the logger):

- Audio and visual alarms in case of environmental alarm, when concentration readings are in the alarm range
- Test button to verify the audio and visual alarms are functional
- Acknowledgment button to acknowledge environmental alarm and turn OFF the audio alarm until a new alarm occurs
- Equipment alarm in case any probe does not respond
- Low battery indicator
- Logging indicator
- Digital input/output port (same as on the logger)

Refer to Appendix A for the alarm unit outline.

2.4 POWER CABLE

Two versions of power cables are available, the 110 VAC version and the 220 VAC version. they are both 10 feet long. the chargers are regulated to limit the charging current to 0.5 A maximum. DO NOT CHARGE THE LEAD ACID BATTERY IN THE LOGGER AT A RATE GREATER THAN 0.5 A AT 14 V. SEVERE DAMAGE TO THE BATTERY AND TO THE UNIT MAY RESULT FROM OVERCHARGING.

The 110 VAC version power cable has a 4-pin connector at one end. The other end of the cable is split in two, for attaching the battery charger and the modem power supply. Refer to 110 VAC charger drawing in Appendix A.

The 220 VAC version power cable is same as above except the power cable is permanently crimped to the battery charger cable on the European charger (which does not have screw terminals). Refer to 220 VAC charger drawing in Appendix A.

A 110 VAC and telephone surge protector is available to protect the equipment from harmful surges in the AC and telephone line. Refer to surge protector drawing in Appendix A.

2.5 COMPUTER CABLE

A computer cable is provided which allows direct communication with the logger, i.e. logger setup, data retrieval, inquiries from the probes. This computer cable has a 6-pin connector at one end and a DB-9 connector at the other end. Communication can also be done remotely using a telephone cable as described in the next section. Refer to Appendix A "cables outline".

2.6 TELEPHONE CABLE

A telephone cable is supplied with the system. The functions mentioned in section 2.5 can be accomplished using the telephone cable and a remote terminal. The cable is 10 feet long and has an RJ-11 at one end and a 2-pin connector at the other end. Refer to Appendix A "cable outline".

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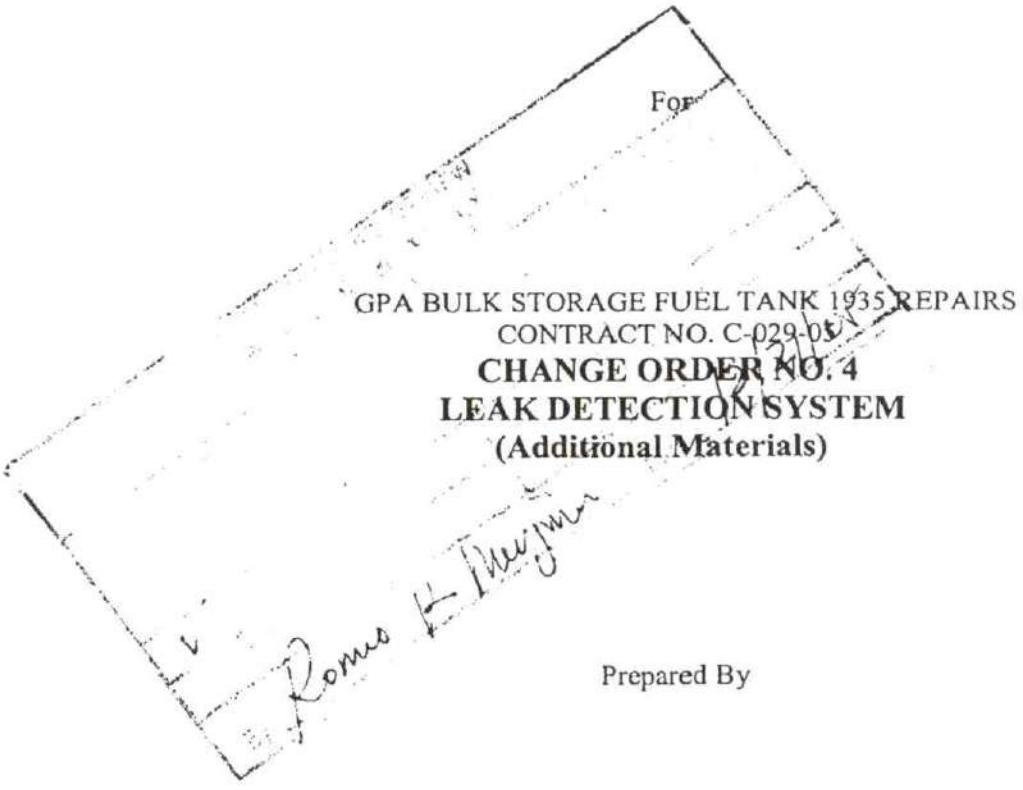
LIFE EXTENSION AND REFURBISHMENT
OF THE GPA BULK STORAGE FUEL TANK 1934/1935
IBC JOB REF. NO. 574

SUBMITTALS



For

GPA BULK STORAGE FUEL TANK 1935 REPAIRS
CONTRACT NO. C-029-05

CHANGE ORDER NO. 4
LEAK DETECTION SYSTEM
(Additional Materials)

Prepared By

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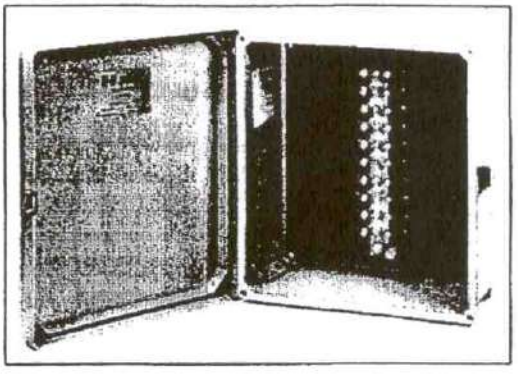
Corrpro Type T

Standard Terminal Junction Box

For Basic Wire Connections

Choosing the right electrical components is an important part of any impressed-current cathodic protection design. To make this selection process easier, Corrpro offers a full line of high-quality electrical components and junction boxes. The company's standard terminal box is designed for basic wire connections that do not require shunts or resistors, and contains only terminal lugs. The lugs have a parallel arrangement, and can be used to create between one and fifty circuits. They are provided in various sizes to accommodate numerous types of wires. To ensure compliance with Corrpro's high quality standards, the terminals are installed by knowledgeable electrical technicians who mount the terminal lugs on NEMA grade C phenolic panels. The non-conductive panels are resistant to warpage and weathering.

Protecting wire connections from dust, water, and moisture requires a truly sealed enclosure. The cabinet utilized on Corrpro's standard terminal box accomplishes this task. It is manufactured from a special fiberglass composite, which meets NEMA Type 4X enclosure standards. In order to address numerous circuit configurations, the enclosure is available in sized ranging from 4" × 4" × 4" through 60" × 36" × 12". Hardware on the cabinet is made from stainless steel, and conduit access is provided by hubs located on the bottom of the cabinet.



Typical Applications

Corrpro's standard terminal box is equipped only with terminal lugs. It is designed to house wire connections that do not require shunts or resistors. The most common application for this type of box is on cathodic protection systems with multiple anode or negative-lead wires going to or from a rectifier. Because the terminal-box enclosure is NEMA 4X rated, it may be used indoors or out, and can withstand the most severe environments.

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For Every Corner of Your World
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Tel: 1-330-723-5082 · Fax: 1-330-723-0694
http://www.corrpro.com

Inspiron 1300	Intel® Celeron® M Processor 360 (1.40 GHz/1MB Cache/400MHz FSB)	edit
Operating System (Office software not included)	Genuine Windows® XP Home Edition	edit
Operating System Backup & Recovery	PC Restore recovery system by Symantec	edit
LCD Panel	15.4in WXGA Display	edit
Memory	256MB DDR2 SDRAM 1 Dimm	edit
Dell Printers	None	edit
Hard Drive	40GB Hard Drive	edit
External Hard Drive	None	edit
Combo/DVD+RW Drives	24X CD Burner/DVD Combo Drive	edit
Video Card	Integrated Intel® Media Accelerator 900 Graphics	edit
Primary Battery	4-cell Lithium Ion Primary Battery (29 WHr)	edit
Spare Power Adapter	None	edit
Wireless Networking Cards	No Wireless Selected	edit

SECTION 5

CALIBRATION AND VERIFICATION METHODOLOGY

The DHP Digital Hydrocarbon Probe sensor operation is based on the absorption and desorption of petroleum hydrocarbons from the fiber optic surface. As with a gas chromatography column, to obtain the most accurate results, a baseline equilibrium needs to be established. For semi-quantitative measurements or screening/identification measurements, this is not critical. The probes have been calibrated at the factory for use in both water and vapor. The user's individual requirements for accuracy and the type of measurement required determine whether a full calibration for quantitative analysis or a verification for qualitative measurements is to be made.

Preconditioning - is necessary when quantitative measurements are needed, the sensor should always be preconditioned. Preconditioning is accomplished by simply soaking the sensor in dissolved petroleum hydrocarbons at a concentration equal to or greater than those which will be measured.

Verification - of the probes is a very easy one point confirmation test. The verification process is shorter than calibration and will provide the user with readings which verify that the probes are still within user acceptable calibration standards. Verification is typically performed with a C1 Calibration Standard, but can be adapted for other concentrations or analytes.

Calibration - of the probes is a simple process where the probes are sequenced through a blank and calibration standards. The probes can be calibrated in water or in vapor. Water calibration can be a two-point, analytical calibration or a one-point, quick calibration. p-Xylene was chosen as the standard BTEX and TPH calibrator because it is present in fuels such as diesel and JP-4, whereas benzene is not. Vapor calibration is a one-point calibration. After calibration, the accuracy of the probes is 10% in water and 15% in air (the best accuracy occurs when the calibration standards approximate the level of contamination to be measured.) The precision of the DHP probes is 3% in water.

5.1 CALIBRATION SOLUTIONS:

Pre-made calibration solutions equivalent to 25 and 50 ppm of p-xylene in water are now available from FCI Environmental. These ampules consist of p-xylene in water with a small amount of co-solvent. Small straws are provided with these ampules to facilitate the transfer of solution from the ampule to the calibration tube. (After breaking the sealed top, the small straw is inserted into the top of the ampule and the solution is poured into the calibration tube).

5.3 VERIFICATION

The verification procedure is a quick check of the accuracy of the probe. The basic verification method is to zero the probe in clean water and then measure a single calibration standard. If the probe response is acceptable to the user, it is ready for use. There are two verification methods depending on the medium in which the field analysis will be done: Water Verification, or Vapor Verification.

5.3.1 Water Verification

Verification begins with determining if the probe needs preconditioning (see previous section). Place the preconditioned probe in 0-ppm water and observe the concentration readings. Observe the readings for approximately one minute. The reading should be 0 ppm (± 3 ppm). If the reading is not zero, zero the probe (see section 4.1.1). If the reading is acceptable, remove the probe from the 0 ppm water, gently shake the probe to remove excess water, wipe the probe housing dry and place it into a C1 Calibration Solution. Observe the readings and when they stabilize, compare the readings with the C1 value. If the reading is acceptable, rinse the probe thoroughly. The probe is ready for use.

5.3.2 Vapor Verification

The Vapor Verification method conforms with standard NIOSH formats for gas sampling and analyses utilizing gas sampling bags. A bag with a fitting which accepts the DHP probe is described. This bag can be ordered separately and comes with an Application Note for its use . The following are the basic steps for performing a Vapor Verification

1. Place the DHP probe in a clean 8 liter sample bag with probe fitting.
2. Inflate the sample bag with 0 ppm vapor.
3. Measure 0 ppm in continuous measurement mode. Zero Probe if necessary (see section 4.1.1).
4. Expel the 0 ppm air and fill the bag with a known gas standard. Flow at least 3 volumes of gas into the bag to ensure proper gas exchange.
5. Measure the vapor concentration.

5.4 CALIBRATION

The DHP response is based upon light transmission through the fiber optic sensor component of the probe. Calibration serves to establish the direct relationship between concentrations of hydrocarbons in contact with the probe to this light intensity. The DHP is calibrated in the factory to initially set the parameters for the probe in both water and vapor. The calibration procedure should generally be repeated when quantitative, analytical measurements are necessary; or, when the verification procedure did not provide sufficient correlation (as defined by the user for each specific application). In general practice, the DHP probes should be

Note: The "a" at the beginning of each command below is the probe address (See section 2 and Appendix D for a detailed explanation of the commands).

Read and record the calibration parameter stored in the probe:

- Send "aMc!", the probe will respond with a0009
- Send "aD7!", the probe will respond with a<Kwater>
- Record the value as "Old Kwater"

Take measurements, and make sure that the readings are stable (± 3 ppm):

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- If the readings are stable (± 3 ppm in 5 minutes) proceed to zeroing the probe. otherwise let the probe stabilize longer (5 minutes) and repeat the measurement process. If the readings are still not stable, either the water is not 0 ppm, or the probe has not been rinsed properly, or the probe needs to be cleaned and preconditioned before calibration.

Zero the probe:

- Send "aD7". The probe will respond with a<Rnorm>.
- Send "ac0<Rnorm>!". Record the value as R0w.

Verify the probe reads 0 ppm:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>. where <Concentration> is the concentration reading in ppm equivalent of p-xylene. It should be 0 ± 3 ppm.

5.4.1.1 One-point calibration

Read the ppm in solution C1:
Pour Calibration Solution #1 (C1) into the test tube with yellow label.

Remove the probe from 0 ppm water and gently shake and wipe the metal surface quickly with a clean paper towel. Place the probe in the test tube with C1. Move the probe ½ inch up and down 3-4 times without lifting it out of the solution. This helps remove any air bubbles from the sensor surface.

After 20 minutes stabilization time, send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means that the measurement is complete. Send "aD8!". The probe will respond with a<ppm>. Record the value as "read ppm".

Read the normalized ratio in C2:
Immediately, pour Calibration Solution #2 (C2) into the test tube with the red label. Remove the probe from C1 solution and gently shake and wipe the metal surface quickly with a clean paper towel. Place the probe in C2 calibration solution. Move the probe ½" up and down 3-4 times without lifting it out of the solution. This helps remove any air bubbles from the sensor surface.

After 20 minutes stabilization time, send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means that the measurement is complete. Send "aD7". the probe will respond with a<Rnorm>. Record the value as "R2".

Calculate new sensitivity parameter (Kwater):
From the results (R0w, R1, R2) obtained above, and with C1 and C2 values, calculate the new Kwater using the following formula (for least square fit forced through zero):

$$\text{New Kwater} = \frac{(R0w - R1) * C1 * C2^2 + (R0w - R2) * C2 * C1^2}{(R0w - R1)^2 * C2^2 + (R0w - R2)^2 * C1^2}$$

Enter the New Kwater in the probe:
Send "ac7<New Kwater>!".
The probe will respond with "a".
To double check if the value has been entered correctly, read Kwater as described above. This completes the calibration procedure.

Make sure to dispose of the used and unused calibration solutions and washings according to Federal, State and Local laws. The charcoal filter cartridge provided in the kit removes up to 98-99 % of the hydrocarbons from the calibration solutions. This cartridge should be used for no more than 5 calibrations.

Rinse probe:
On completion of the C2 standard calibration, remove the probe from C2 solution and use the squirt bottle to rinse with 0-ppm water. Rinse for about 10-15 seconds, making sure to rinse the fiber surface. Fill the Clean Water test tube with 0 ppm water, and place the probe into the tube for 1 minute. Then, remove the probe, empty and rinse out the test tube, refill the test tube with 0 ppm water and replace the probe for an additional minute. Replace the 0 ppm water and rinse for a third time. With thorough rinsing completed, rinse the 0 ppm test tube out again and refill with 0 ppm water.

The probe must be zeroed before taking measurements. See "zero probe" above. Record the "R0w", normalized ratio reading in a log book. This is used as a criteria to verify if a probe is dirty, later in sample measurements. See Appendix C for cleaning criteria and procedure.

The calibration procedure has started with a preconditioned probe and run through a 0 ppm, calibration standard(s) and 0 ppm sequence. The calibration is now complete. The water calibration has also set the values for vapor measurements based upon conversions using Kvw.

Verify the probe reads 0 ppm:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>, where <Concentration> is the concentration reading in ppm equivalent of p-xylene. It should be 0 ± 100 ppm.

Introduce vapor standard:

Remove the septum from the bag, turn the On/Off valve to On and flow at least 3 volumes (5 volumes of gas is preferred) of certified gas into the bag, allowing the air or nitrogen to escape via the septum port. The exchange of gas can be improved if the air or nitrogen is manually expelled from the bag prior to introducing the calibrated gas. Fill the bag with calibrated gas by replacing the septum; again, make sure that at least 1 L of gas remains in the bag. After the bag is filled to the appropriate level, turn the On/Off valve to Off.

Read the ppm reported by the probe:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>, where <Concentration> is the concentration reading in ppm equivalent of p-xylene.

Calculate the new Kwater:

$$New\ Kwater = Old\ Kwater \times \frac{Cgas}{read\ ppm}$$

Enter the New Kwater in the probe:

Send "ac7<New Kwater>!".
The probe will respond with "a".
To double check if the value has been entered correctly, read Kwater as described above. This completes the calibration procedure.

Exchange the calibration gas with zero air the same way as above (at least 3 volumes, and preferably 5 volumes of gas should be exchanged), rezero the probe before making another measurement.

5.4.2.2 Liquid-Volume Method

If a certified gas standard is not available, a vapor standard can be generated in the bag by injecting a known volume of liquid calibrant (e.g., pure p-xylene) into a known volume of zero air in the bag. To calculate the amount of liquid to be injected into the bag for the liquid-volume method, use the following equation:

$$Vs = \frac{Cppm \times MW \times Vair}{\rho \times 22400}$$

Wind Generator - Air X Marine, 12V
Shopper Rating:
Read/Write

Email this Item to a Friend

Manufacturer
WINDPOWER -

Style
009_271_005_501

Description

View this product in the eCatalog

The new AIR-X Marine Wind Generator electronics are completely revised, utilizing a microprocessor to control the RPM, and to provide pulse-width modulating (PWM) control for optimal battery charging. The new advancements in electronics provides a greater improvement over typical diode-rectification and simple (shunt style) voltage regulation.

- New technology reduces noise by as much as 80%
- Programmed to charge batteries at different rates (bulk, taper, & float)
- More sensitive charge management through charge control system
- Limits power to the electronics by torque control of blades
- Microprocessor control allows charging to begin at 500 RPM
- Improved energy capture in low winds (7-12 MPH)
- Turbine produces more power in strong winds with less heat

SALES AGREEMENT

1. Sale and Purchase. Upon the terms and conditions set forth in this Agreement, FCI Environmental, Inc. ("Seller") sells the equipment described on the opposite side hereof ("the Equipment") and grants to Buyer a License, as defined in paragraph 8 hereof to use the Software, as defined in paragraph 8 hereof, and Buyer purchases the Equipment from Seller and accepts such license to use the Software. (Collectively, the Equipment and the Software are sometimes referred to herein as the "Goods".)

2. Price and Payment. Unless otherwise specified on the opposite side hereof, a cash deposit (the "Deposit") of 20% of the total purchase and license price for the Goods (the "Price") shall be paid by Buyer to Seller on the date Buyer delivers an order to Seller for the Goods ("the Order Date"). The balance of the Price shall be due and payable net 30 calendar days from the Delivery Date, as defined in paragraph 4 hereof, (the "Payment Due Date"). Overdue payments will be charged interest at the rate of 1 and 1/2% per month (18% per annum) or the maximum amount legally chargeable by seller under applicable law, whichever is less. Should Buyer become delinquent in the payment of any sum due Seller, after ten calendar days from the date of written notice thereof to Buyer, Seller shall not be obligated to continue performance under this Agreement or Seller's other agreements, if any, with Buyer, and Seller may immediately terminate this Agreement and any other agreements with Buyer.

3. Exclusions from Price. All freight, transportation, packing and insurance costs and other such charges, if any, are not included in, and shall be paid by Buyer in addition to, the Price. The Price does not include any sales, excise, use, property, gross receipts or any other tax, duty or fee which Seller may be requested or required to pay or collect in connection with the sale and license of the Goods to Buyer (collectively, "Assessments"). All Assessments shall be the full responsibility and obligation of Buyer and, if assessed to Seller, shall be paid in full by Buyer to Seller upon Seller's actual or constructive demand of Buyer therefor.

4. Delivery and Shipment. For purposes of this Agreement, the date of Seller's delivery of the Goods to a common carrier shall be the "Delivery Date". Seller's delivery of the Goods to a common carrier on the Delivery Date will be deemed satisfactory delivery by Seller to Buyer. The Goods will be delivered to Buyer F.O.B. Seller's plant. Seller's responsibility for the Goods ceases and risk of loss passes to Buyer (regardless of whether or not the Price has been fully paid) upon delivery of the Goods to the common carrier for shipment. Buyer shall designate in writing to Seller not less than 10 calendar days prior to the Delivery Date (i) the common carrier for such shipment and (ii) the name of the insurer, the amount of insurance and the nature of coverage, if any, for or in connection with such shipment. If Buyer fails to timely designate any or all such items, Buyer agrees that Seller may, but shall not have any obligation to, designate on behalf of and for the benefit of Buyer, a common carrier for shipment and/or declare the full value of the Goods shipped at the time of the delivery to the common carrier. In any case, Buyer agrees that Seller shall not have any obligation or liability whatsoever to Buyer for or in connection with Seller's designation or failure to designate any or all such items. In the event of loss or damage of any kind or nature affecting the Goods or any portion thereof during or in connection with such shipment, Buyer agrees to make any and all claims against the common carrier and/or insurer, if any, and not Seller. Buyer shall indemnify and hold Seller harmless from and against all claims, suits, actions, damages and costs of Seller based upon any loss.

5. Title and Security Interest. Title to the Equipment, but not title to the Software, shall pass to Buyer upon delivery of the Goods to a common carrier. Until Buyer performs all of its obligations hereunder, including, without limitation, payment in full of the Price, Buyer hereby grants to Seller and Seller hereby retains a purchase money security interest in the Goods, including all accessories thereto and replacements thereof, if any, and the proceeds thereof to secure performance of all such obligations of Buyer. Upon demand of Seller, Buyer agrees to take or consent to the taking of any action deemed necessary or desirable by Seller to perfect Seller's security interest in the Goods, including, without limitation, executing any financing statement, security agreement, chattel mortgage and/or similar document. Buyer represents and covenants that, until the Price has been paid in full, Buyer (i) will keep the Goods in good order and repair, and (ii) will not encumber or attempt to encumber in any fashion or transfer or attempt to transfer any interest in the Goods, except in accordance with this Agreement.

6. Inspection. Buyer shall inspect the Goods upon receipt and promptly either accept or reject the Goods. Buyer shall be conclusively deemed to have accepted the Goods if Buyer fails to give Seller written notice of rejection within 10 calendar days after the Delivery Date.

7. Cancellation; Liquidated Damages. Buyer or Seller may cancel the order for the Goods only in accordance with the following terms and conditions: (i) in the event that Buyer gives and Seller receives written notice of such cancellation prior to the Delivery Date and within 10 calendar days of the Order Date, the deposit shall be refunded to Buyer in full and without interest; (ii) in the event that Buyer gives or Seller receives such notice after the Delivery Date or more than 10 calendar days after the Order Date, Seller may retain the Deposit as liquidated damages, and not as a penalty, for Buyer's defaulting cancellation hereunder; (iii) in the event that Seller gives Buyer notice of cancellation of the order at any time prior to the Payment Due Date, the Deposit shall be refunded to Buyer in full and without interest; and (iv) neither party may cancel the order for the Goods after the Payment Due Date. Upon cancellation as set forth herein, Seller and Buyer shall have no other claim or remedy under this Agreement.

8. Software license. Seller retains the ownership of and reserves all right, title and interest in and to (i) any and all computer programs or software supplied at any time in connection with the Equipment (the "Software") and (ii) the technology, trade secrets and any other property or rights in connection with the Software (the "Trade Secrets"). Subject to Buyer's performance and fulfillment at all times of all of Buyer's obligations under this Agreement, Seller grants to Buyer a perpetual, non-exclusive, limited license (the "License") to use the Software only in the form in which the Software is delivered to Buyer and for the sole purpose of operating the Equipment in accordance with Seller's written instructions, including, without limitation, any instructions set forth in any operator's manual(s) or other writings supplied at any time(s) in connection with the Goods (collectively the "Manuals"). Buyer may not duplicate, copy, modify, disassemble, decompile or reverse engineer the Software nor apply any other technique to derive or use the Trade Secrets for an unauthorized purpose. In the event of a failure or refusal of Buyer or its agents, employees or representatives to comply with any terms and conditions of the License, the License shall without any further action by Seller or any other party, immediately terminate. Buyer acknowledges and agrees that unauthorized use of the Software will leave Seller without an adequate remedy at law and Buyer agrees that, in addition to any other rights or remedies which may be available to Seller under law or otherwise, injunctive or other equitable relief shall be appropriate to restrain such use, whether threatened or actual.

9. Proprietary Information. Buyer shall keep confidential all proprietary information furnished or disclosed to Buyer by Seller, including, without limitation, the Manuals and the Trade Secrets, unless such information has become a part of the public domain through no fault of Buyer or its agents, employees or representatives. Buyer shall not, without the prior written consent of Seller, use such information for any purpose other than in connection with the Goods and upon the terms and conditions of this Agreement.

10. Limited Warranty. Seller warrants that the Goods, under normal use and service as described in the Manuals are free from defects in workmanship and materials for a period of one year from the Delivery Date (the "Warranty"). Seller's sole obligation and liability and Buyer's sole remedy under valid Warranty claims shall be, at Seller's sole option and expense, the repair or replacement of defective components or parts of the Goods. The Warranty shall not apply if the Goods have been altered or repaired by other than Seller or Seller's authorized agents, or if damage to the Goods or any integral part thereof is a result of improper handling or application, misuse, abuse, accident or negligence, or is a result of failure to clean, calibrate and otherwise maintain the Goods in accordance with the Manuals. The Warranty does not extend to expendable items such as batteries, shields, and cleaning and calibration supplies. No claim will be allowed under this Warranty unless Buyer notifies Seller of such claim in writing promptly after Buyer learns of facts giving rise to such claim.

11. Further Limitation of Liability. THE OBLIGATIONS, LIABILITIES AND WARRANTY INDEMNITY OF SELLER HEREUNDER ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WITHOUT LIMITING THE FOREGOING, SELLER ASSUMES NO LIABILITY FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR OTHER DAMAGES, WHETHER BASED UPON NEGLIGENCE, IN CONNECTION WITH THE INCORPORATION OF THE GOODS INTO OR WITH PRODUCTS OR EQUIPMENT SOLD BY OTHERS. SELLER'S LIABILITY UNDER THIS AGREEMENT SHALL NOT IN ANY CASE EXCEED THE PRICE PAID BY BUYER TO SELLER FOR THE GOODS.

12. Force Majeure; Inability to Perform. Seller shall not be required to perform its obligations, nor will Seller be liable for its failure to perform such obligations, under this Agreement if such performance is prevented, hindered or delayed by any act of God, accident, perils of sea or fire, war or civil disturbance, strike or other labor difficulty, transportation contingency, failure by a supplier of Seller, law, regulation, ordinance, order or act of any governmental body, agency or official, or any other cause, occurrence, circumstance or event beyond the reasonable control of Seller.

13. Changes in Goods. Seller may from time to time change the construction or design of the Parts or the Goods without notice to Buyer so long as the function and performance of the Parts or the Goods are not substantially altered thereby.

14. Manufacture. Seller reserves the right to utilize refurbished components or parts in the manufacture and repair of the Parts or the Goods. To the extent such components or parts are utilized, they shall be subject to the same incoming inspection and quality control procedures as all other materials used in the manufacture of the Parts or the Goods and shall be warranted to the same extent as all other Parts under the Warranty.

15. Assignment. Neither this Agreement, nor Buyer's rights, duties and obligations under this Agreement, and/or the Goods shall not be assigned or delegated by Buyer, in whole or in part, by operation of law or otherwise (an "Assignment") without prior written consent of Seller, which consent shall not be unreasonably withheld by Seller. Any assignment or attempted assignment by Buyer without such consent shall be null and void and of no force or effect. Nothing herein shall be interpreted to prevent Buyer's resale of the Equipment and the sub-licensing of the Software to third party buyers in the ordinary course of business, provided that such third party buyers agree in writing to the provisions of paragraphs 8, 9, 10, and 11 hereof, and provided that such resale and sub-licensing shall not relieve Buyer of any obligations under this Agreement.

16. Governing Law; Venue. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of Nevada. Jurisdiction and venue in any legal action or proceeding arising under this Agreement shall be in a court of competent subject matter jurisdiction in Clark County, Nevada.

17. Attorney's Fees. If any legal action or proceeding is brought for the enforcement of this Agreement or as a result of any alleged dispute, breach, default or misrepresentation in connection with this Agreement, the ultimately successful or prevailing party shall be entitled to recover reasonable attorneys' fees and other costs incurred in such action or proceeding, in addition to any other relief to which such party may be entitled, except as prohibited by applicable law.

18. Severability. If any terms or provisions of this Agreement are determined to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining terms or provisions of this Agreement shall not in any way be affected or impaired thereby.

19. Default. If either party hereto materially breaches any term or provision of this Agreement, which breach remains unresolved for a period of 30 calendar days from receipt of written notice from the non-defaulting party specifying such breach, the non-defaulting party may, at its option, terminate this Agreement and exercise such other remedies as may be available at law and/or equity. No such termination shall affect Seller's rights and Buyer's obligations hereunder.

20. Notices. Except as otherwise indicated in this Agreement, all notices, demands and other communications either necessary or required hereunder shall be in writing and shall be delivered personally or mailed addressed to the Buyer or Seller, as the case may be, at the respective addresses set forth on the opposite side hereof, or to such other address as either party may from time to time designate by notice hereunder.

21. Waiver. The failure of any party hereto to at any time enforce any of the terms or provisions of this Agreement shall not (i) be deemed or construed to be a waiver of any such term or provision or (ii) in any way affect the validity of this Agreement or the right of any party hereto to thereafter enforce each and every term or provision of this Agreement.

22. Entire Negotiated Agreement; Modifications. Buyer acknowledges that Buyer has read and understands this entire Agreement, which has been the subject of discussion and negotiation between Buyer and Seller, and agrees to be bound by all of its terms and conditions including any terms and conditions set forth on the opposite side hereof. This Agreement, including the opposite side hereof, is intended by the parties as a final, complete and exclusive expression of their agreement. No course of prior dealings between the parties and no usage of trade shall be relevant or admissible to supplement, explain, or vary this Agreement. Acceptance of or acquiescence in a course of performance rendered under this Agreement or any prior agreement shall not be relevant or admissible to determine the meaning of this Agreement. No other agreements, understandings, affirmations, representations, warranties or indemnities, other than those set forth in this Agreement, have been authorized or made by Seller or Seller's agents, employees or representatives, or relied upon by Buyer, relating to the Parts, the Goods or this Agreement. This Agreement can be modified only in writing signed by Buyer and Seller or their duly authorized agents.

PetroSense®

CMS-5000
Continuous Monitoring System

USER'S MANUAL

992015
Release 1.0

June 1996

FCI ENVIRONMENTAL, INC.
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TABLE OF CONTENTS

SECTION 1
INTRODUCTION

1.1 OVERVIEW

1.1.1 General

This manual is organized in 5 major sections. The first section provides a quick overview of the Continuous Monitoring System CMS-5000 and its accessories and its operations. The second section describes system configuration. The third and fourth sections covers system setup and system operation, and the last section describes factory set defaults.

1.1.2 Operation Overview

The CMS-5000 can monitor up to 16 DHP-100 Digital Hydrocarbon Probes. It provides in-situ analyses of hydrocarbons. It consists of a microcomputer-based logger/monitor instrument. The data is logged for reference and is monitored in real time to determine if any alarm conditions exist. Digital outputs are available to drive an alarm system. Data and system operation can be accessed either via modem (using a remote computer) or via locally connected computer.

FCI's DHP-100 probe's operation is based on a proprietary coated optical fiber. The refractive index of the coating changes when hydrocarbons are present in the surrounding environment. This results in a measurable loss of infrared light signal as it propagates along the fiber. The FCI DHP is most sensitive to aromatics including C_6 and above (such as benzene, xylene, and the components of gasoline, etc.) with a low level of response to alkanes and no sensitivity to methane. FCI's proprietary chemical coating allows a reversible response in seconds to increasing or decreasing levels of hydrocarbons. The probe is calibrated to p-xylene, therefore a quantitative measurement in parts per million equivalent to p-xylene is obtained. When analyzing other known hydrocarbons, a multiplier may be used to convert the p-xylene equivalent reading to ppm of the known hydrocarbon. The index change is also a function of ambient temperature and humidity of the surrounding media type (vapor or water). The probe measures the ambient temperature, and media type (vapor or water), and the concentration is computed from the light loss accounting for known temperature dependencies and chemical sensitivity factors. For detail on DHP operation refer to DHP user's manual.

1.2 FEATURES

The CMS-5000 continuous monitoring system equipped with DHP-100 digital hydrocarbon probes provides readings in-situ in ppm equivalent to p-xylene. The probes can also be calibrated to a specific hydrocarbon or fuel blend instead of p-xylene. In-situ analyses reduce the need for costly laboratory sample analyses, offer immediate information for effective decision making and most importantly eliminate the numerous

SECTION 2
SYSTEM CONFIGURATION

The system consists of a logger unit, an optional alarm unit and a set of DHP-100 Digital Hydrocarbon Probes (up to 16). The logger unit can be attached to AC power, to a computer (for data retrieval or system checking or system setup), and to a phone line.

2.1 DATA LOGGER

The CMS-5000 data logger is equipped with the following (refer to Appendix A for the logger outline and connector pin configurations):

- An Intrinsic Safety Barrier (ISB) which provides a probe connection port on the side of the box. It provides safe circuitry to DHP-100 probes which can be installed in Class I Division 1 Group D (Zone 0 in Europe) hazardous locations.

- Two lugs for Earth ground. These two ground lugs must be attached to two independent earth grounds for intrinsic safety in Class 1 Division 1 Group D (Zone 0) hazardous locations.

- An internal battery that is continuously trickle charged from an external charger unit. In the case of AC Mains failure, the system can continue to operate and capture data for several days. The failure of Mains power can be inferred by a drop in system voltage from the normal charger level (around 14 V) to the battery level (around 12 V when charged). This information is logged.

- An internal modem allows remote communication with the unit. It is used for autodialing a sequence of telephone numbers when alarm conditions occur.

- A direct computer connection port which allows an operator to access data in real time, to upload the logged data, to change the system operating parameters (e.g. the alarm limits), and to communicate directly with the probes (e.g. for calibration or verification). When the port is not being used by an operator, it can be programmed to provide a continuous output of the system operation (e.g. the concentration readings from each of the probes).

- A telephone connection port to be able to communicate with the logger remotely

- A port to provide power to the modem and trickle charge the battery

- A port that provides digital inputs and outputs (a total of 1 digital input and 6 digital outputs are available) and 12 VDC.

A 110 VAC and telephone surge protector is available to protect the equipment from harmful surges in the AC and telephone line. Refer to surge protector drawing in Appendix A.

2.5 COMPUTER CABLE

A computer cable is provided which allows direct communication with the logger, i.e. logger setup, data retrieval, inquiries from the probes. This computer cable has a 6-pin connector at one end and a DB-9 connector at the other end. Communication can also be done remotely using a telephone cable as described in the next section. Refer to Appendix A "cables outline".

2.6 TELEPHONE CABLE

A telephone cable is supplied with the system. The functions mentioned in section 2.5 can be accomplished using the telephone cable and a remote terminal. The cable is 10 feet long and has an RJ-11 at one end and a 2-pin connector at the other end. Refer to Appendix A "cable outline".

SECTION 3
SYSTEM SETUP

3.1 EQUIPMENT REQUIREMENTS

To set up the system, the following items will be needed:

- A computer running Windows Terminal or other terminal emulator, with a DB-9 COM port connection
- A source of 120 VAC (or 240 VAC for European battery charger)
- A wire to Earth Ground (or two independent grounds if the ISB is used).
- If the digital outputs are to be used, a cable to the receiving device/system (e.g. Alarm Unit)
- If remote operation is needed, access to a dedicated telephone line.

3.2 EQUIPMENT CONNECTIONS

3.2.1 Power and Earth Ground

The controller should be connected to earth (safety) ground using AWG 12 wire to the grounding post. When the ISB option is selected, there are two grounding posts (lugs) which must be connected to independent grounds to comply with the NEC. The controller contains transient suppressers which discharge to earth ground. Power is 120 VAC (or 240 VAC as a factory alternate). The 4-pin connector on the power cable supplied should be attached to the "Charger" port on the logger. At the other end, it should be attached to the battery charger and the modem power supply.

3.2.2 DHP-100 Probes

The DHP-100 probes are connected to the logger via a "daisy chained" data bus. The user can attach a cable (according to the specs on the installation drawings in Appendix A) through the logger box fitting between the screw terminal on the intrinsic safety barrier and the terminal on a junction board. Otherwise, a "pigtail" cable with a 4-pin connector (matching FCI's cabling) or the connector mounted on the side of the logger is available for the data bus, depending on the logger version. The "pigtail" has four wires:

1) Black ground which gets connected to the intrinsic safety barrier "GND";
2) Red +12 VDC power which gets connected to the ISB's POWER +;

SECTION 4.0
SYSTEM OPERATION

If the system has been pre-loaded with a program for the correct number of probes, the controller will begin data logging and alarm monitoring one minute after the application of power. If all of the required parameters have been set, there is not need for further action (and the computer interface may be removed).

First, the computer interface is described followed by some general information about the software menu and changing options. Then, key functions such as: probe communication mode (for i.e. checking, zeroing, calibration), uploading of logged data, changing alarm levels and uploading and downloading programs to and from the logger will described. Note that all the functions mentioned in this section can be done by direct connection to the logger or by remote communication via modem.

4.1 COMPUTER INTERFACE

The computer interface works with the Window Terminal emulator (or other terminal emulators e.g. Procomm) with the following settings: 9600 Baud, 8 data bits, 1 Stop bit, no parity. With this setting and direct connection, you can monitor the output from the controller, or interrupt the controller operation to change some operating parameters. If communication is established remotely via modem, the remote computer's modem baud rate can be 9600 or lower.

4.2 LOGGER SOFTWARE AND MENUS

The menu which allows communication with the logger resides in the logger software. Once the hardware connections are made and the terminal emulator is ready, type "u"<Enter> to display the main menu.

Selections are made by typing a character and then <Enter>. The special character for each option is displayed in parentheses. A selection can branch into another menu. In general, "u" is the user or main menu and "z" is the "zeno" (logger type) programming menu. There is an on-line help system available which can be accessed by typing "h" followed by the character or digit representing the menu item in question.

In programming "zeno" mode, once examining the list of sensors, processes, or outputs, typing "n"<Enter>" will display the items in Next process record; "p"<Enter> will display items in the Previous process record, and "j[n]"<Enter> will Jump to the selected record number, for example "j15"<Enter> will display items of record 15 in the list.

EXCEL or LOTUS 1-2-3). Using windows terminal, put the logger into the User mode "u"<Enter>, and go to the Data Retrieval menu "d"<Enter>. The most reliable data transfer is to use the XMODEM protocol, so use the "x" in front of whatever retrieval option is selected (e.g. to get all of the data use "x*"<Enter>). Then from the TERMINAL toolbar TRANSFERS, select "Receive Binary File". Follow the instructions on the screen, and the history file will be transferred. To examine the data (e.g. using EXCEL), when the data is imported into a spread sheet, make sure that the "coma" separator is chosen for text conversion, otherwise the data may not be properly formatted into columns.

4.7 CHANGING ALARM LEVELS

To change alarm levels, put the logger into User mode "u" <Enter>, then press "z"<Enter>, then press "zeno" for password. To change the alarm process where the alarm levels are located, press "p"<Enter>. Press "n"<Enter> to go to the next process. Locate the process that contains the alarm levels (± 4000 ppm in vapor and ±50 ppm in water) and change the levels. For example to change item "n" to "x", press "cn/x"<Enter>.

4.8 CHANGING MINIMUM NUMBER OF PROBES IN ALARM

The user can select the minimum number of probes in alarm for determining an environmental alarm status. For example if 8 probes are installed, the user can choose to turn ON audio and visual alarms or autodial if at least 2 probes are in alarm. To change the default minimum number ("1"- if any probe is in alarm), put the logger into User mode "u" <Enter>, then press "z"<Enter>, then press "zeno" for password. Press "p"<Enter> for processes. Press "n"<Enter> to go to the next process until process category code 3 and process type code 9 is reached. Press "n" again until the last of these type processes is displayed. Change item 11 to the number desired. For example to change minimum number to 4, type "c11/4"<Enter>.

4.9 CHANGING LOGGER CONFIGURATION

The logger configuration can be uploaded to the computer, or a new configuration can be downloaded into the logger. First press "u"<Enter> to get into User mode, then "z"<Enter> to get into zeno programming mode. Then press "zeno"<Enter> when prompted for a password. Press "l"<Enter> for loading. Press "xt"<Enter> for loading configuration from the logger, an press "xr"<Enter> for loading configuration to the logger. Then begin your upload (send binary file) or download (receive binary file).

SECTION 5
DEFAULT CONFIGURATIONS

There are default configurations available for 1 through 16-probe systems in the distribution disk provided. These configurations can be modified by the user.

5.1 DATA LOGGING AND SAMPLING RATE

The default programs loaded into the controller log four data items for each probe, the temperature in degrees C, the media sense value (indicating if the probe is in vapor or in water), the temperature corrected ratio, and the concentration in ppm. The sampling rate is set to 15 minutes.

5.2 PERIODIC BASELINE ADJUSTMENT

The periodic baseline adjustment is done automatically once a day at 6 A.M. for all probes. The maximum baseline change is 1 ppm per day in water and 50 ppm per day in vapor towards the running average of readings over the last 3 days. The time of day for this function can be changed and if not wanted, the function can be disabled as discussed in section 4.3.

5.3 DIGITAL OUTPUTS

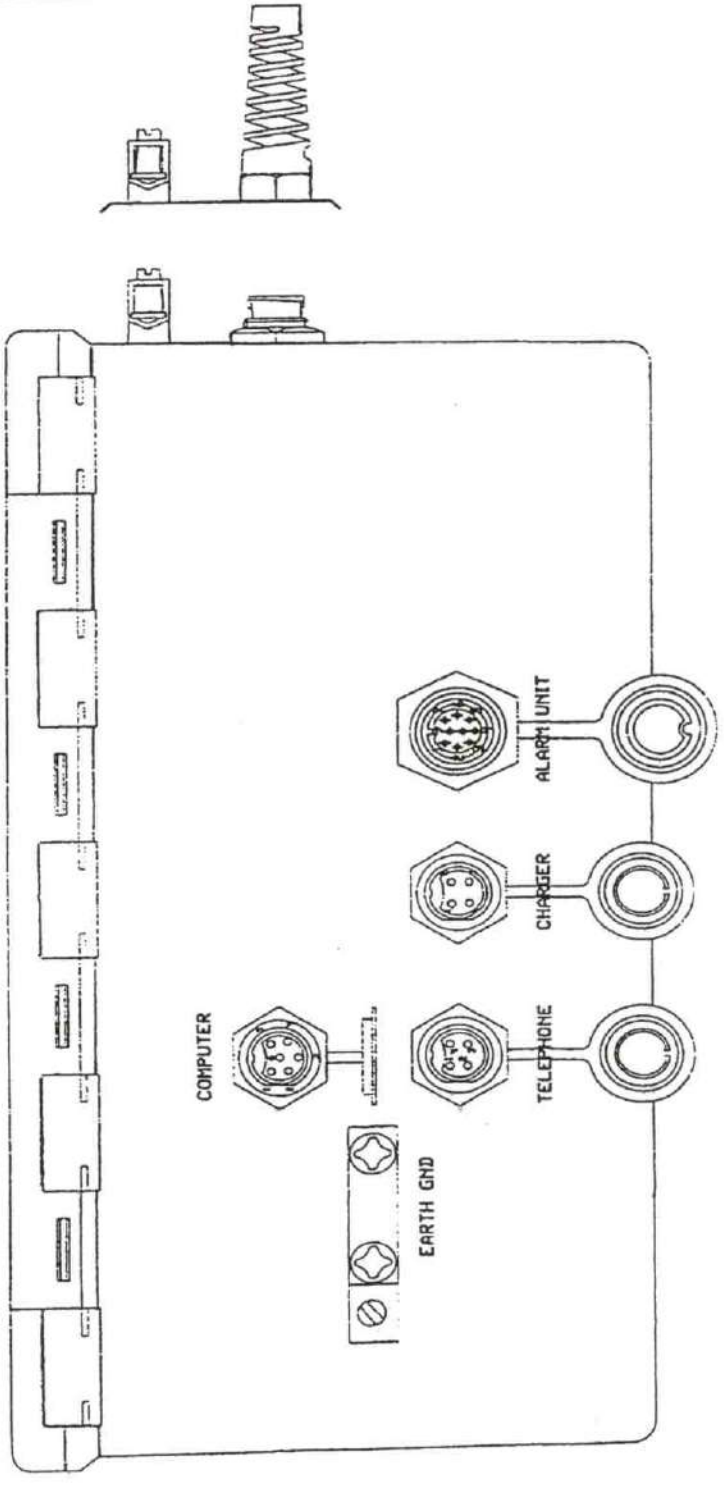
There are six digital outputs available.

- Digital output 1 (audio alarm on alarm unit) and digital output 2 (flashing lamp on the alarm box) turn ON in case of environmental alarm - If the ppm readings are outside user selected operating range.
- Digital output 3 (green LED) turns ON when logging
- Digital output 4 (red LED) turns ON if battery voltage is below 11.5 Volts. A dual color LED is used for digital outputs 3 and 4. Same LED turns green or red.
- Digital output 5 (red blinking LED) turns ON in case of equipment failure - If a probe does not respond.
- Digital output 6 is spare

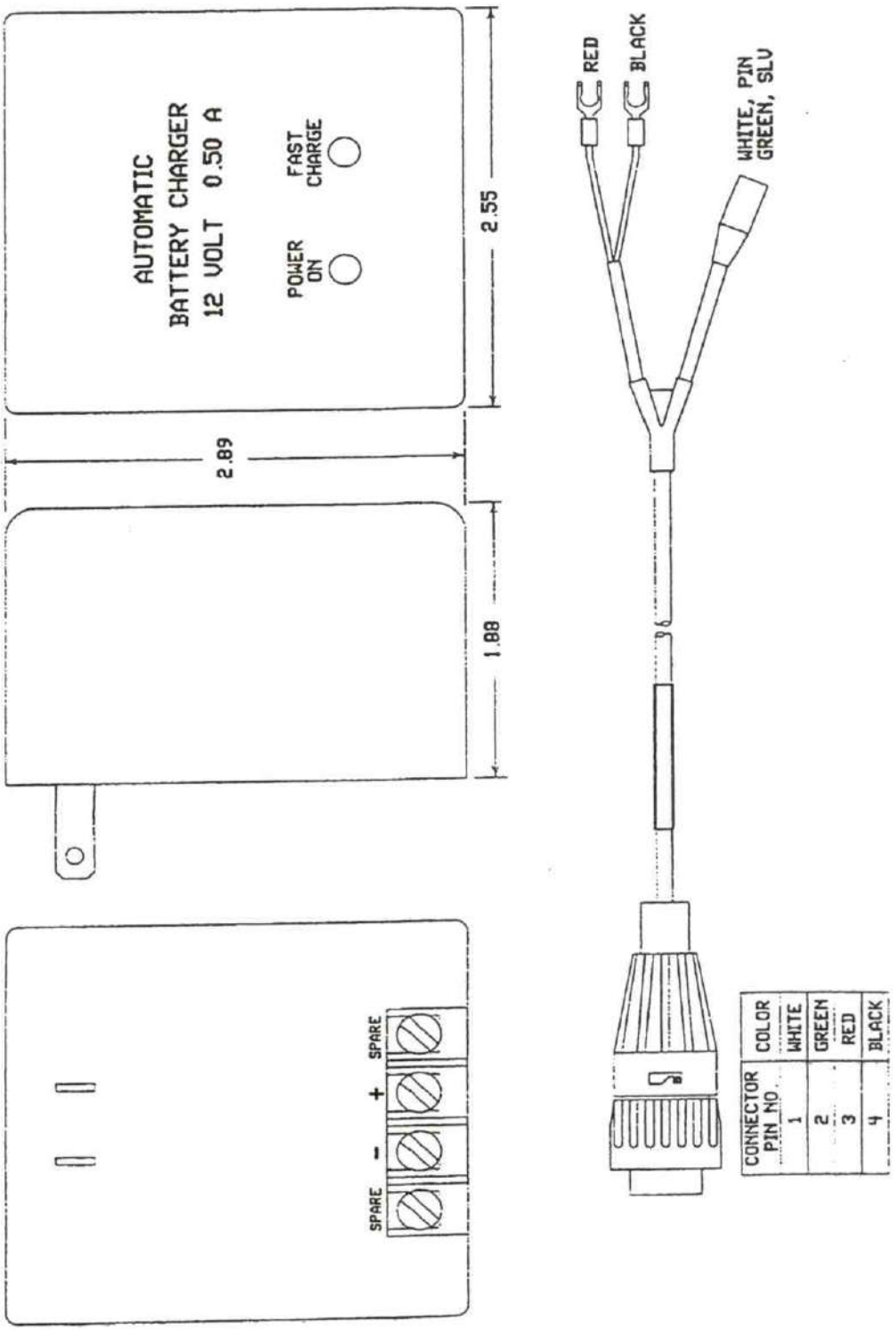
The audio alarm can be acknowledged with digital input 1, by pressing the yellow button on the alarm unit.

APPENDIX A
DRAWINGS

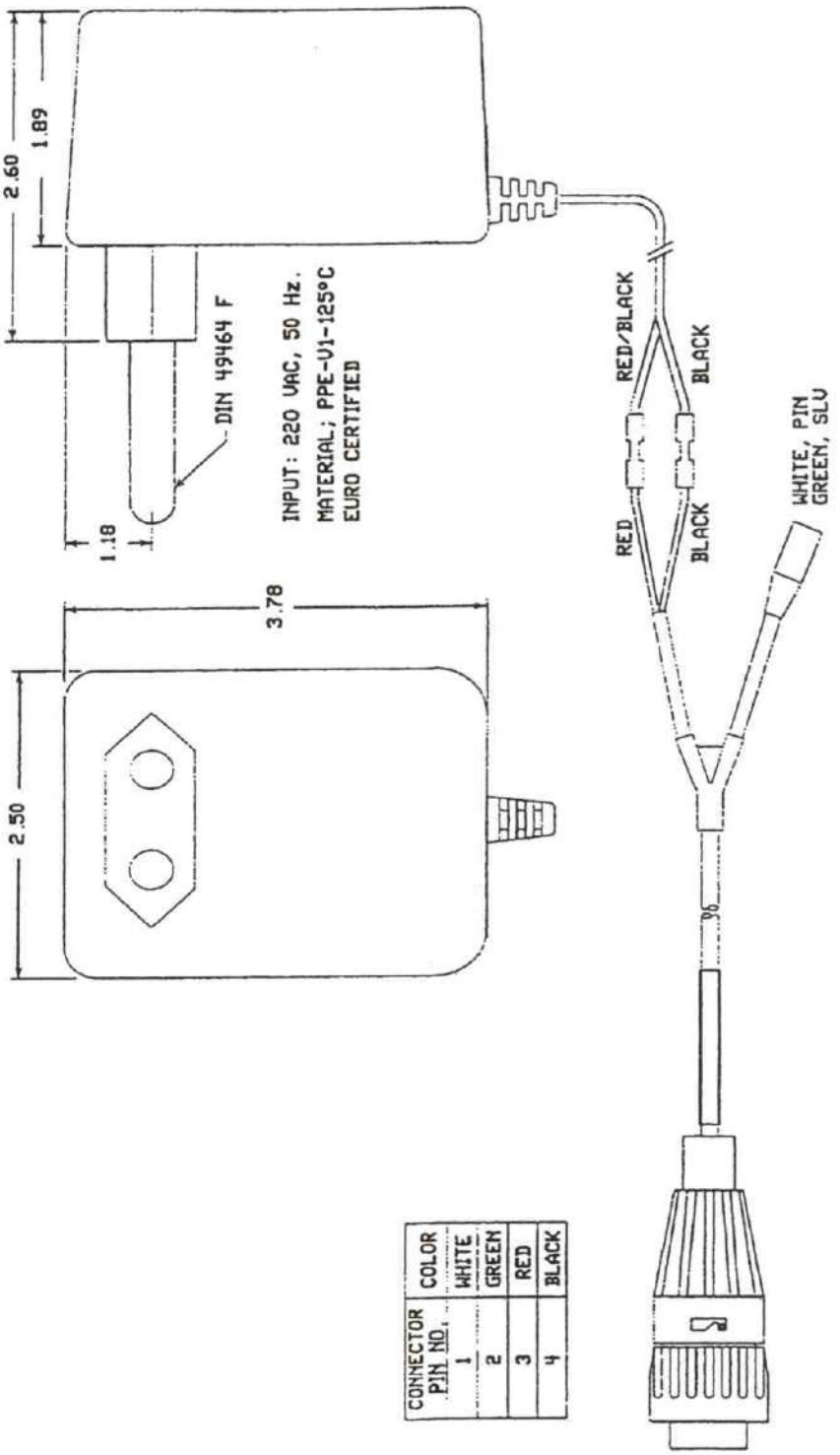
LIST OF DRAWINGS



CMS-5000 OUTLINE BOTTOM VIEW



110 VAC CHARGER AND CABLE



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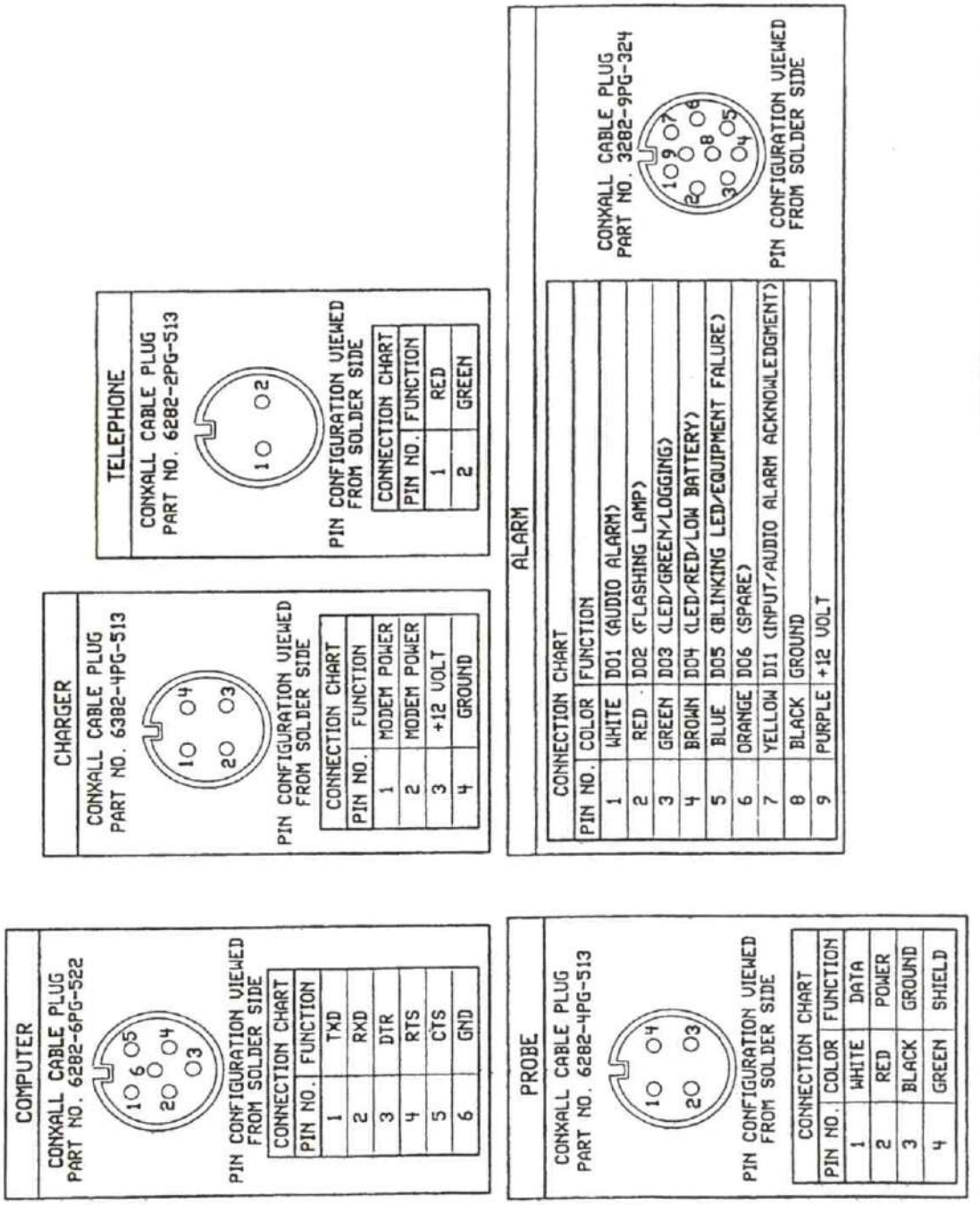
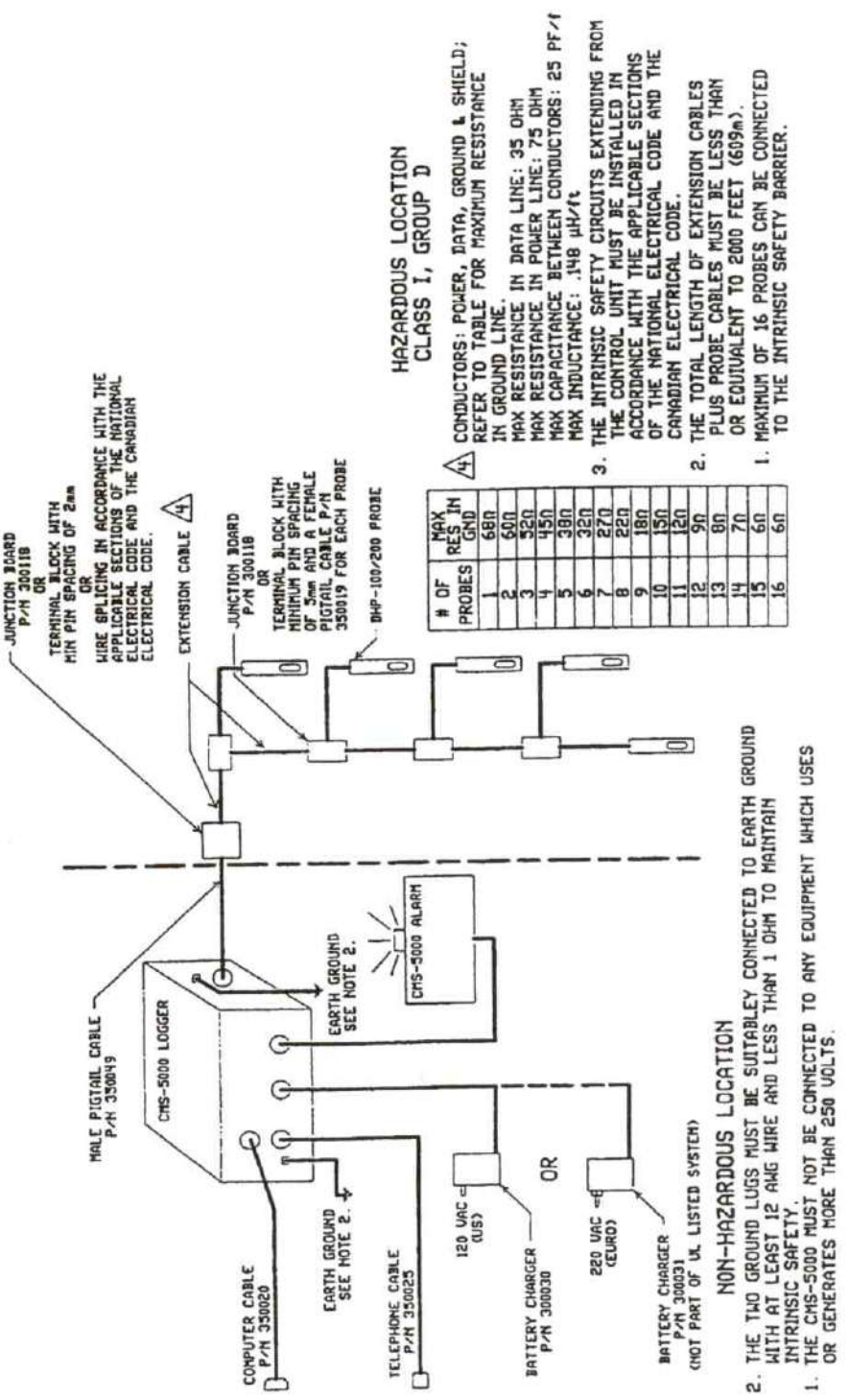


CONNECTORS PIN CONFIGURATION



INSTALLATION DRAWING WITH JUNCTION BOARDS AND CABLE SPECS

PetroSense®

DHP-100 & DHP-485
Digital Hydrocarbon Probe

USER'S MANUAL

992023
Version 1.0

May 1996

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TABLE OF CONTENTS

SECTION 1
INTRODUCTION

1.1 OVERVIEW

1.1.1 General

This manual is organized in six major sections. The first section provides a quick overview of the Digital Hydrocarbon Probe (DHP) and its accessories and its operation. The second section presents communication with the probe. The third section covers probe installation. The fourth and fifth sections describe baseline adjustment and calibration procedure, respectively, and the last section briefly describes the steps performed inside the probe for each measurement.

Temperature and chemical specifications along with probe dimensions are listed in Appendix A. Preparation of calibration solutions is described in Appendix B. The probe and syringe cleaning procedures and the conditions for cleaning and cleaning solution preparation are described in Appendix C. Details of the command set for communicating with the probe are included in Appendix D. All equations used to convert the raw data to parts-per-million readings in the probe software are described in Appendix E. Appendix F presents the drawings of the probes, accessories and typical installation and Appendix G covers the probe warranty.

1.1.2 Operation Overview

The FCI probe operation is based on a proprietary coated optical fiber. The refractive index of the coating changes when hydrocarbons are present in the surrounding environment. This results in a measurable loss of light signal as it propagates along the fiber. The FCI DHP is sensitive to hydrocarbons with 6 or more carbons, and it is more sensitive to aromatic hydrocarbons. The probe is not sensitive to low molecular weight alkanes (less than 5 carbons) and it has no sensitivity to methane. FCI's proprietary chemical coating allows a reversible response in seconds to increasing or decreasing levels of hydrocarbons. The probe is calibrated to p-xylene, therefore a quantitative measurement in parts per million equivalent to p-xylene is obtained. When analyzing other known hydrocarbons, a multiplier may be used to convert the p-xylene equivalent reading to ppm of the known hydrocarbon. The probe measures the ambient temperature and media type (vapor or water); the concentration is computed from the light loss accounting for known temperature dependencies and chemical sensitivity factors.

In operation, the FCI DHP measures the response of signal and reference beam photo detectors. A light transmission ratio, excluding ambient light, is then calculated. After the ambient temperature is measured, a temperature-compensated, transmission ratio is calculated. A measurement is then performed to distinguish between vapor and liquid surrounding environments. Finally for the given medium type, a chemical concentration value is calculated

- Up to 16 probes can be attached to the data bus
- Probes can be attached to a controller with a maximum total cable length of 2000 feet
- Chemical and temperature coefficients are stored in the probes
- Can troubleshoot probes remotely
- Easy probe calibration and verification

1.1.4 Applications

Among the many uses, the DHP-100 or DHP-485 can be used for:

- Leak detection UST/AST
- Remediation
- Waste water discharge monitoring
- Bilge water monitoring
- Water quality monitoring
- Groundwater monitoring
- Site assessment (from initial characterization through post remedial monitoring)
- Monitoring oil-water separators
- Monitoring of storm drain effluents
- Static soil gas headspace analysis

1.2 PRODUCT DESCRIPTION

1.2.1 Digital Hydrocarbon Probes

FCI Environmental's DHP-100 or DHP-485 Digital Hydrocarbon Probe measures hydrocarbons in vapor, dissolved in water and as a sheen at the vapor/water interface. For probe outline refer to Appendix F. For specifications refer to Appendix A. The probe is a self-contained chemical sensing instrument housing sensor, conditioning amplifiers, analog-to-digital converter, and microprocessing elements. It performs low-level physical measurements and computes chemical concentrations using stored factory-set sensitivity factors and field-adjustable calibration parameters. Using a Continuous Monitoring System supplied by FCI or an equivalent controller, up to 16 DHP-100 probes can be daisy chained to a given 3-wire interface (1 data line, power, ground) which provides an easy and quick installation. See Appendix F for DHP-100 probe wiring diagram. Also, using a RS-485 serial communication PC card or a RS-485 controller, up to 16 DHP-485 probes can be daisy chained to a given 4-wire interface (2 data lines, power, ground). See Appendix F for DHP-485 probe wiring diagram. Therefore, the DHP-100 and DHP-485 probes use different electrical interfaces but they both communicate with a simple serial communication protocol (see section 2 and Appendix D). Note that only the DHP-100 can be directly attached to FCI's Continuous Monitoring Systems.

Each junction board has 4 connectors to attach probes, and it also has 3 terminal strips to attach extension cables without connectors (see cable specifications in Appendix F). The levers on the terminal strips are pushed down with a screw driver to place the wire in the cage and levers are released to clamp the wire. These boards are most efficient for connection of 3 or 4 probes to the data bus. See drawing in Appendix F for the junction boards. The boards are designed to mount onto the mounting plate #10-32 bosses in a 6" NEMA 4 (or 4X) enclosure. They can also be mounted using snap-in DIN 35 rail mounts.

1.2.4 Extension Cables

To extend the data bus, standard and custom made (heavy duty) extension cables are available from FCI. To give the user more flexibility, any cable with specifications in installation drawings in Appendix F can also be used (following UL/CUL/KEMA guidelines). FCI's probe and 25, 50, 75 and 100 feet standard extension cables are built using a 3-wire (22 AWG) shielded cable (see drawing in Appendix F). Longer heavy duty extension cables (4-wire, 20 AWG) are also available to be used when the probes are placed further away from the data logger (see drawing in Appendix F). These special heavy duty extension cables are custom made and must be used for reducing the voltage drop. In the system configuration the total cable length must be less than 2000 feet.

SECTION 2
COMMUNICATION WITH THE PROBE

2.1 OVERVIEW

Communications with a DHP probe (or set of probes) from a PC requires an RS-485 interface set to half duplex two wire mode (as opposed to four wire full duplex mode). All commands and responses use the standard printable ASCII character set. Because the communication is half duplex (compatible with single channel radio), there are some timing requirements that must be considered to allow "turn around" of the communications direction.

2.2 COMMUNICATIONS FORMAT

The communications protocol is a simple command-response protocol designed to allow multiple probes to be serviced using a single (or two wire differential) data bus. Thus each probe can be assigned a network address by the user, taking care that there are no duplicate addresses..

The general format of a message to a probe is:

1. An address character (0-9, A-G) The wildcard address "?" can be used. Its primary use is with one probe attached to the controller, to reset the address from whatever it was to a specific network address.
2. A command character
3. An item identifier (if needed by the command)
4. Data (if needed by the command)
5. The command termination character '!'.

The general format of a message from a probe is:

1. Probe address character
2. Data item (if needed)
3. The two response termination characters <CR><LF>.

When a command is sent from the PC, the probe will provide an immediate response to that command. If data is requested, the data will be provided immediately. If the probe was commanded to take a measurement, it will immediately respond with a time to completion message, and then again respond when the measurement has been taken (about 12 seconds). If data has been sent for storage, the probe will respond with its address to indicate that the command was executed. If the probe cannot execute a command, it will not respond.

To get measurement data, there is a two step process. The first step is to send the probe a Measure command which causes the probe to initiate a measurement sequence. The second step

2.4 ELECTRICAL CONNECTIONS

The DHP-485 (differential/2 data lines) probes are terminated in a five pin connector. The pinout is:

Pin 1	Data A	White
Pin 2	Data B	Green
Pin 3	Power	Red
Pin 4	Ground	Black
Pin 5	Shield	Braid.

The DHP-100 (single data line) probes are terminated in a four pin connector. The pinout is:

Pin 1	Data	White
Pin 2	Power	Red
Pin 3	Ground	Black
Pin 4	Shield	Braid.

Power supplied can be unregulated +12 VDC (10-15 VDC). The probe has a maximum current draw of 15 mA (typical 5 mA) during the 12 second measurement period. Idle current is approximately 1.0 mA. When probe power is first applied (or if power is switched to reduce power consumption), there should be a delay of at least one second before attempting communications. (Note: When using the two data wire differential probes, we have found some discrepancy among vendors as to the definition of A and B. The A and B may have to be reversed to be compatible with your particular system.)

SECTION 3
INSTALLATION AND STARTUP

This section covers procedures for the installation and startup of DHP probes. Section 3.1 covers considerations regarding installation of the probes and accessories for proper operation, and section 3.2 describes the physical installation of conduits, cabling and probes.

3.1 INSTALLATION CONSIDERATIONS

3.1.1 Digital Hydrocarbon Probes

- The probes can be installed up to 10 feet under water. It is recommended that the probes be as close to the surface as possible since most hydrocarbons will be found closer to the surface of the water.
- Do not place the probe in pure hydrocarbons for long duration. Long exposure to pure products will deteriorate the probe.
- For highest accuracy in vapor, reduce the variation in air flow to 50 cubic centimeter per minute. If air flow is present in the measurement environment, the probe needs to be zeroed in a 0 ppm environment with same level of air flow.

3.1.2 Intrinsic Safety Barriers

The intrinsic safety barriers must be installed in weatherproof enclosures with two ground lugs to be attached to two independent earth grounds, to maintain intrinsic safety for Class I Division 1.

3.1.3 T-junctions And Junction Boards

Both the t-junction boxes and junction boards must be installed in weatherproof enclosures. They should not be exposed to water.

3.1.4 Extension Cables

Extension cables are not designed for direct burial. The cables must be placed in conduits and excess cables should be placed in enclosures, preferably above ground. The connectors are weathertight, however they should not be placed under water. A typical above ground enclosure is attached to two conduits. One conduit goes under the tank where the probe is placed and the other leads to the rest of the system via extension cables. The junction boxes or junction boards and excess cables are placed inside the enclosure.

3.2.4 Grounding

The purpose of electrical system grounding is to provide a path to earth for discharge of transients. To maintain intrinsic safety, the barrier ground must be connected to two earth ground lugs on the barrier enclosure. The installer should attach at least a 12 AWG wire with a resistance of less than 1 ohm between each earth ground lug and earth grounds.

3.2.5 Greasing Connectors

In order to make the connectors on probes, t-junction boxes and extension cables weathertight, the cavity of all connectors exposed to weather must be filled with a silicone compound (e.g., GC Electronics, Cat. No. 10-8101 Type Z5) before connecting. Fill both the male and female connectors with grease; mate the connectors letting the extra grease escape from the sides. If the connectors are disconnected, more grease must be placed in the connectors cavities before reconnection. It is very important to keep the connectors clean and not expose them to dust or dirt before installation, since particles can stick to the grease and prevent proper connection. Furthermore, all male connectors have 2 O-rings for making the connections weathertight.

3.2.6 Extension Cables

Before pulling the extension cables through the conduits make sure the connectors are covered properly to protect them from water or soil. This can be done for example by covering the connectors with plastic and securing temporarily with tape. Conduits might have some water which will corrode the connectors gradually even if they are exposed to water for a short duration. Also, if extension cables without connectors are used in the system, protect the cable end so water would not enter inside the cable jacket.

3.2.7 T-junctions And Junction Boards

Protect the t-junctions and junction boards from water. They must be placed in enclosures. After attaching each junction board or t-junction on line, make sure that power (at least 9 V) is available between connector pins 2 (power) and 3 (ground). Refer to drawing in Appendix F.

3.2.8 Digital Hydrocarbon Probes

If the probes are sent out with a logger from the factory, they are addressed and labeled 1 through the number of probes desired. For example a 4-probe system will have probes that are labeled 1 through 4. However, probes that are shipped alone, are addressed "0" (zero). probes are calibrated in the factory and once received by the user, they are ready to be installed.

It is recommended to connect one probe at a time to the data bus. This allows the system probe's address to be set and check the probe response to assure proper connection before more cables,

SECTION 4
BASELINE ADJUSTMENT METHODOLOGY

After communication with the DHP probes has been established and each probe is set to its desired address, it is recommended that the probes be allowed to stabilize in the measurement environment, and then their baseline adjusted to 0 ppm in vapor or water, depending on the measurement environment (section 4.1). Then, it is recommended to adjust the baseline periodically (section 4.2) for obtaining more stability in a slowly changing environment.

4.1 INITIAL BASELINE ADJUSTMENT

Initial baseline adjustment to 0 ppm or to a concentration level can be done by sending direct commands to the probe.

4.1.1 Adjusting The Baseline To 0 ppm (Zeroing)

If the probe is in a contaminated environment, to cancel the background concentration and read 0 ppm, offsets in vapor and water can be used. Offset W and Offset V are generally used to set the ppm level artificially to 0 in order to report the change in ppm readings instead of absolute readings. Note that in vapor, the Offset V can only be used to adjust the baseline after the correct R0v is stored in the probe (because of the vapor sensitivity correction factor SC). Registers 8 and 9 from Mc commands contain the values of concentration (ppm) offsets in water and vapor respectively. For example, if the probe is reading 1000 ppm (in vapor), with Offset V set to 0, and the baseline needs to be adjusted to 0 ppm, send "ac91000!" to set the baseline offset in vapor to 0 ppm. To verify that the probe is adjusted properly, send "aM!", wait for the measurement to be complete, then send "aD8!". The concentration reported must be 0 ±100 ppm. This will cause the probe to report the change in ppm instead of absolute ppm readings.

In a clean environment, make sure these offsets are set to zero by reading the values in registers 8 and 9: send "aMc!" and then "aD8!". The probe will respond with "a<Offset W>". Send "aD9!", the probe will respond with "a<Offset V>". If the offsets are not zero and you wish to set them to zero, send "ac80!" to set the water baseline offset to zero, and send "ac90!" to set the vapor baseline offset to zero.

If the probe is in a clean (0 ppm) environment, the baseline can be adjusted to 0 ppm by reading the normalized ratio from the probe and equating it to zero ppm. With the probe in the zeroing environment:

- Send "aM!". The probe will respond with a0129. After approximately 12 seconds, it will respond with "a", which means that the measurement is complete.

- Read Kvw by sending "aMf!", the data will be available immediately. Send "aD6!", the probe will respond with "a<Kvw>". Record Kvw.

- Read Sc by sending "aMu!". The data will be available immediately. Send "aD0!". The probe will respond with "a<Sc>". Record Sc.

- To adjust the baseline in vapor, calculate the R0v in order to read the desired concentration using the following equation (refer to Appendix E-2-2):

$$R0v = \frac{ppm}{Kwater * Kvw * [(T-25) * Sc + 1]} + Rnorm$$

then send "ac1<R0v>!".

- To adjust the baseline in water, calculate the R0w in order to read the desired concentration using the following equation (assuming no offset, refer to Appendix E-2-1):

$$R0w = \frac{ppm}{Kwater} + Rnorm$$

then send "ac0<R0w>!".

- To verify that the probe reads the desired concentration, send "aM!", wait for the probe measurement to be complete, then send "aD8!". The probe will respond with "a<concentration>".

4.2 PERIODIC BASELINE ADJUSTMENT

Once the probe is installed and is stabilized, it is recommended to adjust probe reading every 2 to 3 days based on the running average of the normalized (temperature compensated) ratio. The periodic adjustment is useful for obtaining more stability in a slowly changing environment. Note that you should not change the baseline by more than 0.1% a day which is equivalent to approximately 50 ppm in vapor and 1 ppm in water, in order to read the concentration properly.

To adjust the zero baseline periodically:

- Calculate the running average of the normalized ratio over the last 3 days making sure that the normalized ratio readings (M-Reg 7) correspond to the same media type (all vapor or all water).

- If the probe is in vapor (media reading, M-Reg 1, is above the value in Mf-Reg 8- see Appendix D) and the calculated running average of the normalized ratio is within 0.1% of the normalized ratio in 0 ppm vapor (R0v)(Mc-Reg 1), replace R0v with the calculated running

SECTION 5
CALIBRATION AND VERIFICATION METHODOLOGY

The DHP Digital Hydrocarbon Probe sensor operation is based on the absorption and desorption of petroleum hydrocarbons from the fiber optic surface. As with a gas chromatography column, to obtain the most accurate results, a baseline equilibrium needs to be established. For semi-quantitative measurements or screening/identification measurements, this is not critical. The probes have been calibrated at the factory for use in both water and vapor. The user's individual requirements for accuracy and the type of measurement required determine whether a full calibration for quantitative analysis or a verification for qualitative measurements is to be made.

Preconditioning - is necessary when quantitative measurements are needed, the sensor should always be preconditioned. Preconditioning is accomplished by simply soaking the sensor in dissolved petroleum hydrocarbons at a concentration equal to or greater than those which will be measured.

Verification - of the probes is a very easy one point confirmation test. The verification process is shorter than calibration and will provide the user with readings which verify that the probes are still within user acceptable calibration standards. Verification is typically performed with a C1 Calibration Standard, but can be adapted for other concentrations or analytes.

Calibration - of the probes is a simple process where the probes are sequenced through a blank and calibration standards. The probes can be calibrated in water or in vapor. Water calibration can be a two-point, analytical calibration or a one-point, quick calibration. p-Xylene was chosen as the standard BTEX and TPH calibrator because it is present in fuels such as diesel and JP-4, whereas benzene is not. Vapor calibration is a one-point calibration. After calibration, the accuracy of the probes is 10% in water and 15% in air (the best accuracy occurs when the calibration standards approximate the level of contamination to be measured.) The precision of the DHP probes is 3% in water.

5.1 CALIBRATION SOLUTIONS:

Pre-made calibration solutions equivalent to 25 and 50 ppm of p-xylene in water are now available from FCI Environmental. These ampules consist of p-xylene in water with a small amount of co-solvent. Small straws are provided with these ampules to facilitate the transfer of solution from the ampule to the calibration tube. (After breaking the sealed top, the small straw is inserted into the top of the ampule and the solution is poured into the calibration tube).

5.3 VERIFICATION

The verification procedure is a quick check of the accuracy of the probe. The basic verification method is to zero the probe in clean water and then measure a single calibration standard. If the probe response is acceptable to the user, it is ready for use. There are two verification methods depending on the medium in which the field analysis will be done: Water Verification, or Vapor Verification.

5.3.1 Water Verification

Verification begins with determining if the probe needs preconditioning (see previous section). Place the preconditioned probe in 0-ppm water and observe the concentration readings. Observe the readings for approximately one minute. The reading should be 0 ppm (± 3 ppm). If the reading is not zero, zero the probe (see section 4.1.1). If the reading is acceptable, remove the probe from the 0 ppm water, gently shake the probe to remove excess water, wipe the probe housing dry and place it into a C1 Calibration Solution. Observe the readings and when they stabilize, compare the readings with the C1 value. If the reading is acceptable, rinse the probe thoroughly. The probe is ready for use.

5.3.2 Vapor Verification

The Vapor Verification method conforms with standard NIOSH formats for gas sampling and analyses utilizing gas sampling bags. A bag with a fitting which accepts the DHP probe is described. This bag can be ordered separately and comes with an Application Note for its use . The following are the basic steps for performing a Vapor Verification

1. Place the DHP probe in a clean 8 liter sample bag with probe fitting.
2. Inflate the sample bag with 0 ppm vapor.
3. Measure 0 ppm in continuous measurement mode. Zero Probe if necessary (see section 4.1.1).
4. Expel the 0 ppm air and fill the bag with a known gas standard. Flow at least 3 volumes of gas into the bag to ensure proper gas exchange.
5. Measure the vapor concentration.

5.4 CALIBRATION

The DHP response is based upon light transmission through the fiber optic sensor component of the probe. Calibration serves to establish the direct relationship between concentrations of hydrocarbons in contact with the probe to this light intensity. The DHP is calibrated in the factory to initially set the parameters for the probe in both water and vapor. The calibration procedure should generally be repeated when quantitative, analytical measurements are necessary; or, when the verification procedure did not provide sufficient correlation (as defined

At this stage, the probe must have been preconditioned and properly rinsed (see section 5.2). To start the one-point or two-point calibration procedure, place the probe in clean 0 ppm water and let it stabilize for 20 minutes. This is a good time to prepare calibration solutions (section 5.1).

Note: The "a" at the beginning of each command below is the probe address (See section 2 and Appendix D for a detailed explanation of the commands).

Read and record the calibration parameter stored in the probe:

- Send "aMc!", the probe will respond with a0009
- Send "aD7!", the probe will respond with a<Kwater>
- Record the value as "Old Kwater"

Take measurements, and make sure that the readings are stable (± 3 ppm):

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- If the readings are stable (± 3 ppm in 5 minutes) proceed to zeroing the probe. otherwise let the probe stabilize longer (5 minutes) and repeat the measurement process. If the readings are still not stable, either the water is not 0 ppm, or the probe has not been rinsed properly, or the probe needs to be cleaned and preconditioned before calibration.

Zero the probe:

- Send "aD7". The probe will respond with a<Rnorm>.
- Send "ac0<Rnorm>!". Record the value as R0w.

Verify the probe reads 0 ppm:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>, where <Concentration> is the concentration reading in ppm equivalent of p-xylene. It should be 0 ± 3 ppm.

5.4.1.1 One-point calibration

Read the ppm in solution C1:
Pour Calibration Solution #1 (C1) into the test tube with yellow label.

Remove the probe from 0 ppm water and gently shake and wipe the metal surface quickly with a clean paper towel. Place the probe in the test tube with C1. Move the probe ½ inch up and down 3-4 times without lifting it out of the solution. This helps remove any air bubbles from the sensor surface.

After 20 minutes stabilization time, send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means that the measurement is complete. Send "aD8!". The probe will respond with a<ppm>. Record the value as "read ppm".

Read the normalized ratio in C2:
Immediately, pour Calibration Solution #2 (C2) into the test tube with the red label. Remove the probe from C1 solution and gently shake and wipe the metal surface quickly with a clean paper towel. Place the probe in C2 calibration solution. Move the probe ½" up and down 3-4 times without lifting it out of the solution. This helps remove any air bubbles from the sensor surface.

After 20 minutes stabilization time, send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means that the measurement is complete. Send "aD7". the probe will respond with a<Rnorm>. Record the value as "R2".

Calculate new sensitivity parameter (Kwater):
From the results (R0w, R1, R2) obtained above, and with C1 and C2 values, calculate the new Kwater using the following formula (for least square fit forced through zero):

$$\text{New } Kwater = \frac{(R0w-R1)*C1*C2^2+(R0w-R2)*C2*C1^2}{(R0w-R1)^2*C2^2+(R0w-R2)*C1^2}$$

Enter the New Kwater in the probe:
Send "ac7<New Kwater>!".
The probe will respond with "a".
To double check if the value has been entered correctly, read Kwater as described above. This completes the calibration procedure.

Make sure to dispose of the used and unused calibration solutions and washings according to Federal, State and Local laws. The charcoal filter cartridge provided in the kit removes up to 98-99 % of the hydrocarbons from the calibration solutions. This cartridge should be used for no more than 5 calibrations.

Rinse probe:
On completion of the C2 standard calibration, remove the probe from C2 solution and use the squirt bottle to rinse with 0-ppm water. Rinse for about 10-15 seconds, making sure to rinse the fiber surface. Fill the Clean Water test tube with 0 ppm water, and place the probe into the tube for 1 minute. Then, remove the probe, empty and rinse out the test tube, refill the test tube with 0 ppm water and replace the probe for an additional minute. Replace the 0 ppm water and rinse for a third time. With thorough rinsing completed, rinse the 0 ppm test tube out again and refill with 0 ppm water.

The probe must be zeroed before taking measurements. See "zero probe" above. Record the "R0w", normalized ratio reading in a log book. This is used as a criteria to verify if a probe is dirty, later in sample measurements. See Appendix C for cleaning criteria and procedure.

Verify the probe reads 0 ppm:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>, where <Concentration> is the concentration reading in ppm equivalent of p-xylene. It should be 0 ± 100 ppm.

Introduce vapor standard:

Remove the septum from the bag, turn the On/Off valve to On and flow at least 3 volumes (5 volumes of gas is preferred) of certified gas into the bag, allowing the air or nitrogen to escape via the septum port. The exchange of gas can be improved if the air or nitrogen is manually expelled from the bag prior to introducing the calibrated gas. Fill the bag with calibrated gas by replacing the septum; again, make sure that at least 1 L of gas remains in the bag. After the bag is filled to the appropriate level, turn the On/Off valve to Off.

Read the ppm reported by the probe:

- Send "aM!". The probe will respond with a0129. Within 12 seconds, it will respond with "a", which means the measurement is complete.
- Send "aD8!". The probe will respond with a<Concentration>, where <Concentration> is the concentration reading in ppm equivalent of p-xylene.

Calculate the new Kwater:

$$New\ Kwater = Old\ Kwater \times \frac{Cgas}{read\ ppm}$$

Enter the New Kwater in the probe:

Send "ac7<New Kwater>!".
The probe will respond with "a".
To double check if the value has been entered correctly, read Kwater as described above. This completes the calibration procedure.

Exchange the calibration gas with zero air the same way as above (at least 3 volumes, and preferably 5 volumes of gas should be exchanged), rezero the probe before making another measurement.

5.4.2.2 Liquid-Volume Method

If a certified gas standard is not available, a vapor standard can be generated in the bag by injecting a known volume of liquid calibrant (e.g., pure p-xylene) into a known volume of zero air in the bag. To calculate the amount of liquid to be injected into the bag for the liquid-volume method, use the following equation:

SECTION 6
MEASUREMENT PROCESS

6.1 MEASUREMENT METHODOLOGY

The sequence of operations for the probe to take a measurement consists of determining whether the probe is in water or in vapor (media sense), taking five measurements of the signal ratio and averaging them, and calculating the resulting chemical concentration.

The media sense process consists of measuring the ambient temperature using a low resistance thermocouple, driving enough current through the thermocouple to heat the surrounding media, and measuring the resulting thermocouple temperature. If the probe is in a liquid, the thermal conductivity of the liquid is sufficient to prevent any significant thermal rise in the thermocouple temperature. If the probe is in vapor, there can be a more significant rise in the thermocouple temperature. The amount of rise to be observed to declare that the probe is in vapor is set at the factory in variable f8. (See Appendix D, Table 2.)

The dark sense and reference measurement consists of measuring the signal from the reference detector and the sense detector when the LED light source is turned off. This reading is representative of the detector dark currents, the amplifier offsets, and any ambient light entering the system. The LED is then turned on and brought to an output level that is as high as possible without saturating the inputs to the analog-to-digital converter. These sense and reference values, less the corresponding dark values, are then used to calculate the raw ratio of sense over reference. Five sets of measurements are taken and the results averaged to determine the raw ratio of the measurement sequence.

Because the probe is sensitive to temperature, a factory temperature calibration process is performed which determines the temperature coefficient of the probe in vapor and in water. These coefficients are stored in the probe, and are used to perform temperature correction on the raw ratio to determine the temperature corrected ratio as would exist at 25°C. This temperature corrected ratio is then used to calculate the chemical concentration.

At the factory, the sensitivity of the probe in vapor (Kvapor) and the sensitivity of the probe in water (Kwater) are determined. The Kwater and the ratio between Kvapor and Kwater are stored in the probe as Kvw (see Appendix E). Thus, if the media sensor determines that the probe is in water, Kwater is used. If the probe is in vapor, Kvapor is used. When the probe is recalibrated in the field using water solutions, only Kwater is changed, and the probe characteristic Kvw is used to determine Kvapor on an as needed basis.

If the probe is in vapor, the sensitivity is a function of temperature. The sensitivity factor Kvapor is then corrected for actual temperature at which the reading was taken.

APPENDIX A
SPECIFICATIONS

Dormant state current consumption	700 µA typical, 1.5 mA maximum
Active state consumption	6 mA typical, 15 mA maximum
Weight	8 oz (277 g)
Diameter	3/4" (19 mm)
Housing	Stainless steel (304)
Housing length	10" (254 mm)
Cable	Teflon jacketed, 3-conductor AWG 22, shielded for DHP-100 Teflon jacketed, 4-conductor AWG 20, shielded for DHP-485
Cable length	35 feet (10 m) and 125 feet (38 m) standards
Cable pull strength	150 pounds (68 kg)
Connector	4-pin male for DHP-100 5-pin male for DHP-485

Performance Specifications

Operating Temperature Range	0 to 50 °C in water 0 to 45 °C in vapor
Probe Operating Range	0-2,000 ppm as TPH in water 0-20,000 ppm as TPH in vapor

MEASUREMENT PARAMETERS	WATER		VAPOR	
	Third Party* Certification	Optimum Operating Range	Third Party** Certification	Optimum Operating Range
Probe Temperature	25°C	10-30°C	25°C	10-30°C
Lower Detect Limit	0.1 ppm	0.1 ppm	< 10 ppm	< 10 ppm
Accuracy	3 ppm	3 ppm or 10% whichever greater	50 ppm	50 ppm or 15% whichever greater
Repeatability	3%	3%	3%	3%
Response Time @95% of measurement	≤5 minutes	1 minutes	<1 minute	<1 minute***
Fall Time Probe recovery time	<1 minute	< 1 minute	<1 minute	<1 minute
G.C. Correlation	99%	95%	98%	95%

Lower Detection Limits for the PetroSense® DHP

	Vapor		Water	
	KWA 12/5/94 (1)	FCIE	KWA-8020 12/6/94 (2)	FCIE
Benzene	280	54.45	.377	.38
Ethyl benzene	9.59	9.59	.10	.10
Toluene	144	22.45	.30	.30
p-Xylene	12.94	9.78	.13	.13
BTEX			.11	.11
Diesel	5.79	4.0		.44
Unleaded gas	9.25	3.0		.4
Synthetic fuel	13.26	13.26		.5
Kerosene	14.65	7.4		.3
JP4	5.26	5.3		.9
JP8	10.89	7.5		.81
Trichloroethylene		65.0		5.0
Perchloroethylene		35.0		1.5

(1) These values are "Third Party Certified" for the EPA.

(2) There is no certification process for this test method.

calibration solutions. The cartridge, however, should not be used for more than five calibrations before replacement.)

STEP 5. Extract 300 µL of p-xylene from the vial with the syringe provided. Be sure that the syringe is completely filled (no air bubbles.) Invert the syringe, tap it lightly and eliminate any air bubbles and extract more of the standard from the vial until exactly 300 µL is in the syringe.

STEP 6. Carefully place the syringe through one hole in the plastic safety cap to puncture the septum of the C1 vial. Insert the needle to its full length into the vial and push the syringe plunger down, smoothly and quickly to inject all of the liquid into the C1 solution vial. Some water may escape from the vial through the pre-punched holes---this is not of concern.

STEP 7. After removing the syringe and the plastic safety cap from the C1 Solution vial, dry the vial and the syringe. The C1 Solution should sit for 10 minutes to allow adequate mixing and is then ready to use.

B-3 PREPARATION OF CALIBRATION SOLUTION C2 (66 ppm)

STEP 8. Place the plastic safety cap over the septum cap of the C2 (red labeled) vial. The C2 solution will require two 300 µL injections of p-xylene solution.

STEP 9. Again, relieve the pressure from the vial with the 20-gauge needle and rotate the safety cap.

STEP 10. Add 300 µL of p-xylene solution to the red-labeled C2 vial as described is Step 5. Wipe the outside of the syringe needle dry and rotate the safety cap 90 .

STEP 11. Add an additional 300 µL of p-xylene solution to the same C2 vial to make the standard 66 ppm. The C2 Solution vial should set for 10 minutes to allow adequate mixing.

CAUTION

Do not expose the probe or any calibration solutions to direct sunlight during the calibration, zeroing, or measurement process.

After measurement of contaminated samples, the probes used with the FCI instruments may need to be cleaned. Three methods are commonly used to clean the probes. Probes should be cleaned using the least stringent procedure that effectively returns the probe to operating condition, i.e., if a clean water rinse works, do not use any of the other more stringent procedures.

C-1-1 Part A Cleaning Procedure - Mildly Contaminated Probes

The preferred method of cleaning a probe is simply rinsing it with water. A stream of water should be directed onto the fiber through each of the windows with a squirt bottle. Additionally, the probe body should be rinsed to remove all external contamination.

Place the probe in 0 ppm water. Read norm. Proceed to normal use if either:

a. Rnorm is higher than the Rnorm recorded as reference (either after receiving the probe or after last calibration); or

b. Rnorm is lower, but still within 15% of the reference Rnorm.

C-1-2 Part B Cleaning Procedure - Moderately Contaminated Probes

A cleaning kit has been designed that includes a special cleaning solution containing alcohols and surfactants designed to remove contamination from the fiber without damaging the sensitive components. A spritzer bottle is included to provide a directed stream of cleaning solution onto the fiber.

Procedure:

1. Hold the probe over a container to catch used cleaning solution.
2. Pump up the spritzer bottle and direct a stream of cleaning solution onto the fiber through the windows in the probe and over the probe body. Spray the fiber from both sides. Use approximately half of the bottle
3. Repeat steps 1 and 2 two or three times as required to clean the fiber to return it to at least 85-90% of the reference Rnorm. Read norm. Proceed if either:
   a. Rnorm is higher than the Rnorm recorded as reference (either after receiving the probe or after last calibration); or
   b. Rnorm is lower, but still within 15% of the reference Rnorm.

   Otherwise, if the Rnorm is still too small, proceed with decontamination of heavily contaminated probes in the next section.
4. Rinse the probe thoroughly with clean water and place in the probe in the zero tube.
5. Fill the tube with clean water and allow to soak for 5 minutes.

- "aMc!", where a is the probe address (0-9 or A-G, upper case) and Mc is the command to place the calibration parameters in the ten registers. M must be in upper case and c in lower case.

- "aD0!", where a is the probe address, D is the read data command and 0 specifies the data register 0.

Table 2. Parameters available from the ten data registers by measurement commands.

Reg	M command	Mc command	Mf command	Mu command
0	Temperature (2)	R0w at 25C (5)	TCw (5)	Sc (5)
1	Probe ΔT (2)	R0v at 25C	F (5)	F (5)
2	Ref dark (0)	? (5)	TCv (5)	F (5)
3	Sig dark (0)	? (5)	F (5)	F (5)
4	Ref - dark (0)	? (5)	F (5)	F (5)
5	Sig - dark (0)	? (5)	F (5)	F (5)
6	R (Sig/Ref) (5)	Reserved (5)	Kvw (5)	F (5)
7	Rnorm (5)	Kwater (2)	T offset (2)	F (2)
8	Concentration (2)	Offset W (2)	Media threshold (2)	F (2)
9	Light level (0)	Offset V (0)	Serial Num (0)	F (0)

Data values are set into the internal data registers for the measurement commands. Values generally handle signed quantities with 9 digits of precision. Data is handled internally in fixed-point notation where the number of digits after the decimal point is given by the number in parentheses. Entries with a question mark (?) are available for non-volatile storage. Entries with an F are used by the factory and do not affect probe operation.

The available values from the "M" (or "M0") command are:

M -Reg 0 — Ambient temperature -- Reported in degrees Centigrade from -5°C to 55°C with 0.1°C absolute accuracy and ± .01°C repeatability.

M -Reg 1 — Media type detection temperature rise (probe ΔT) -- Reported in Centigrade degrees temperature increase. The amount of rise is inversely proportional to the thermal conductivity of the surrounding medium. A rise greater than the factory stored threshold value (Mf-Reg 8 , typically about 1.6 degrees) indicates that a vapor medium is present -- otherwise, a liquid medium is assumed.

M -Reg 2 — Dark reference beam level (Ref dark) -- Raw ADC count in the range of 0 to 65535 and measured with LED off. A high value here (greater than about 20,000) indicates an excessive ambient light level.

M -Reg 3 — Dark signal beam level (Sig dark) -- Raw ADC count in the range of 0 to 65535 and measured with LED off. A high value here (greater than about 20,000) indicates an excessive ambient light level. The probe will continue to operate with reduced precision for ambient levels up to about 50,000.

M -Reg 4 — Reference beam value minus ambient (dark) reference value (Ref-dark) -- Count in the range of 0 to 65535. The measured increase in reference beam photodetector level due to the internal light

Mf -Reg 0 Temperature coefficient in water (TCw) -- This coefficient is used to compensate for the temperature effects in water and to calculate the normalized ratio in water.

Mf -Reg 1 Factory use

Mf -Reg 2 Temperature coefficient in vapor (TCv) -- This coefficient is used to compensate for the temperature effects in vapor and to calculate the normalized ratio in vapor.

Mf -Reg 3,5 Factory use

Mf -Reg 6 Ratio of probe sensitivity in vapor to probe sensitivity in water (Kvw) -- This coefficient is fixed for the lifetime of the probe and is used to calculate the probe sensitivity in vapor (Kvapor). Every time the probe is calibrated in water, updating the Kwater, the Kvapor is also updated with this coefficient.

Mf -Reg 7 Temperature offset (T offset) -- This value represents the temperature offset in degree C. This value can be positive or negative, and is added to the temperature reading before the temperature is reported.

Mf -Reg 8 Media threshold -- If the media type detection temperature rise (probe Δt from M -Reg 1) is below this value, the probe is determined to be in water, otherwise the probe is in vapor.

Mf -Reg 9 Serial Number -- This value is the probe serial number. This number is also etched on the probe housing.

Only one value is available from the "Mu" (or "M3") command:

Mu -Reg 0 Sensitivity coefficient used in vapor calculations (SC) -- This coefficient is used to compensate for the temperature effects on the concentration readings and is represented in fractional change per degree C. This value does not affect the ppm readings if the temperature is 25 C or the current normalized ratio is equal to the normalized ratio in 0 ppm vapor (M -Reg 1).

Mu -Reg 1,9 Factory use

E-2-2 In Vapor

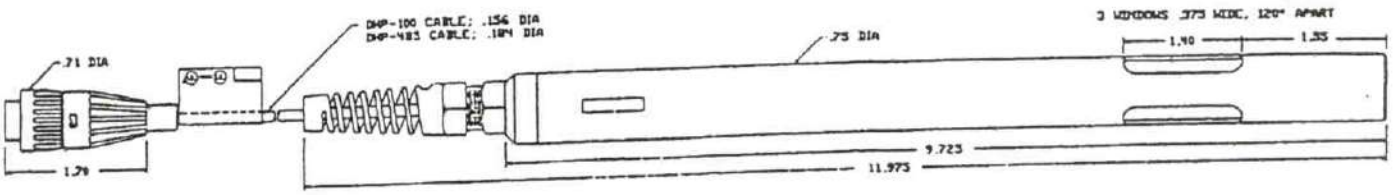
The following equations are used for ppm readings in vapor:

$$Kvapor = Kwater * Kvw * (1 + [T - 25] * SC)$$

$$ppm = (R0v - Rnorm) * Kvapor - OffsetV$$

Where for the above equations:

SC is the vapor sensitivity correction factor resulting from temperature deviations
Rnorm is the normalized ratio as read by the probe
R0v is the normalized ratio in zero ppm vapor, stored in Register 1 (Mc Commands, See Appendix A, Table 2)
Kvw is a constant determined at the factory. (Each probe has a unique Kvw.)
Kvapor is the probe sensitivity to p-xylene in vapor with units measured in ppm/ratio change
Offset V is the baseline offset in vapor



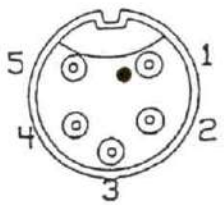
Cable
DHP-100 probe and extension cables:
3 conductors, AWG 22, shielded, Teflon jacket
Belden part No. 83553 (bend radius 1.6" minimum)

DHP-485 probe and heavy duty extension cables:
4 conductors, AWG 20, shielded, Teflon jacket
Belden part No. 83604 (bend radius 1.9" minimum)

Stainless steel 304 housing

Nylon fittings

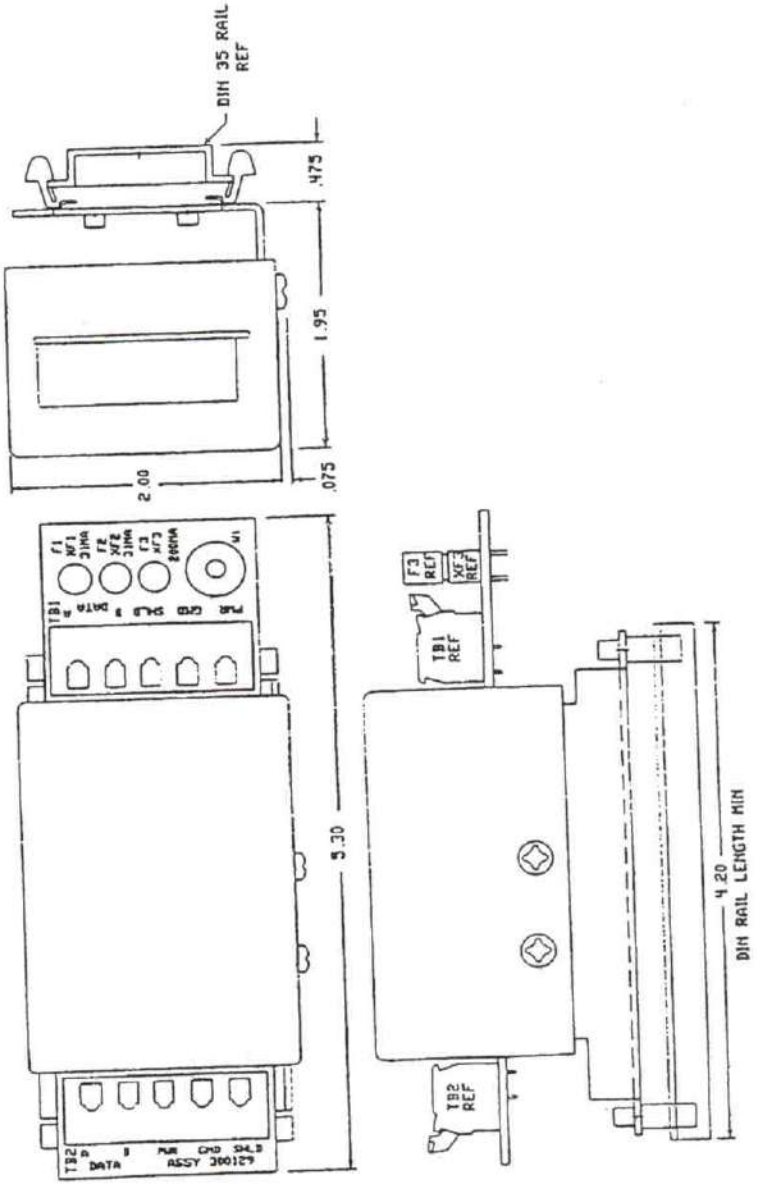
DIGITAL HYDROCARBON PROBE (DHP) OUTLINE



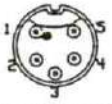
PIN CONFIGURATION VIEWED FROM MATING END

CONNECTION CHART		
SIGNAL	PIN #	COLOR
DATA A	1	WHITE
DATA B	2	GREEN
POWER	3	RED
GROUND	4	BLACK
SHIELD	5	YELLOW

DHP-485 PROBE WIRING DIAGRAM

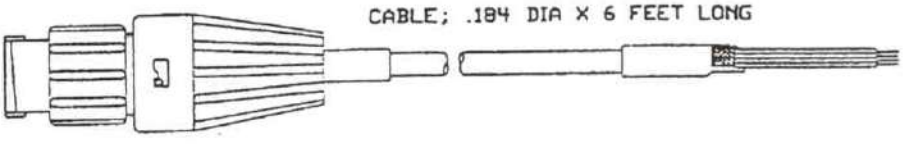


INTRINSIC SAFETY BARRIER (ISB) OUTLINE
MOUNTING ON DIN 35 RAIL

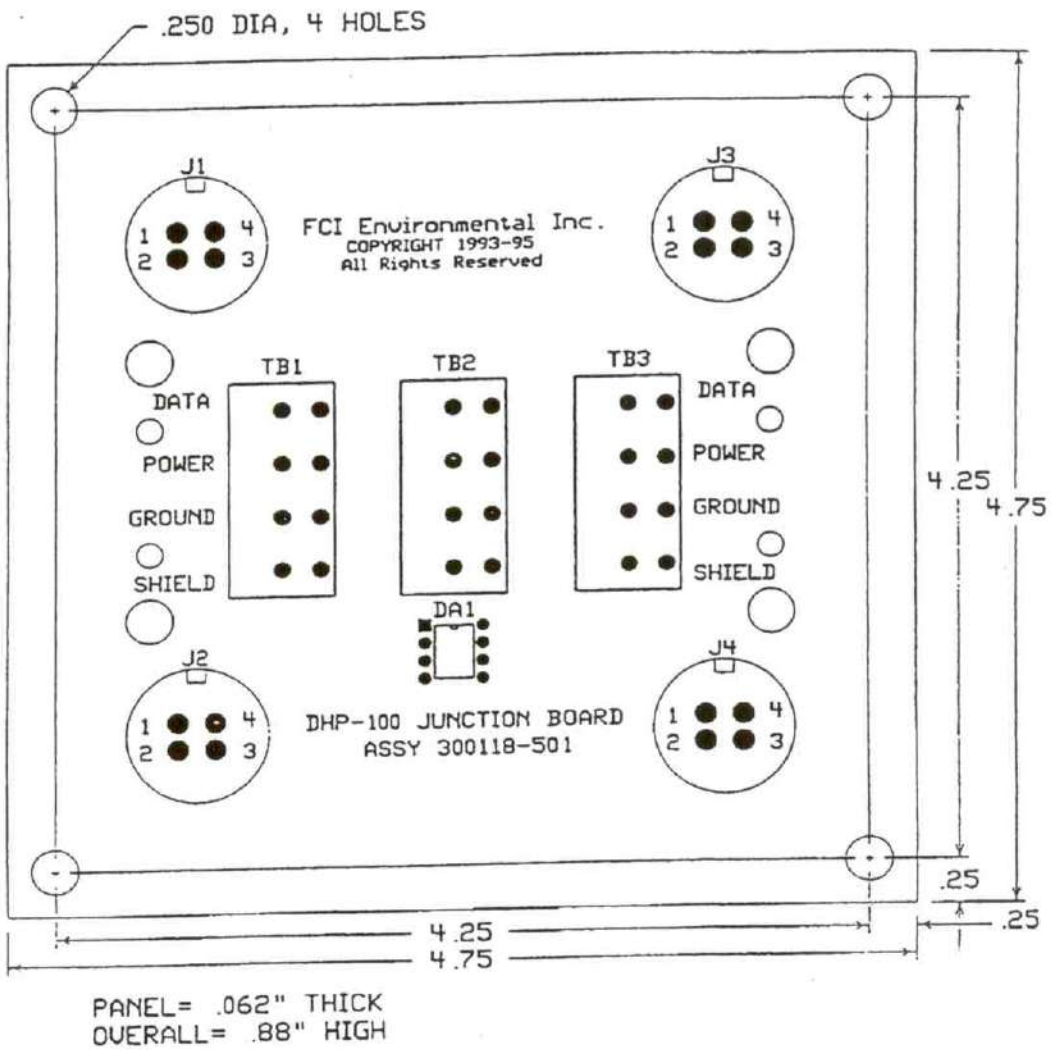


PIN CONFIGURATION
VIEWED FROM MATING END

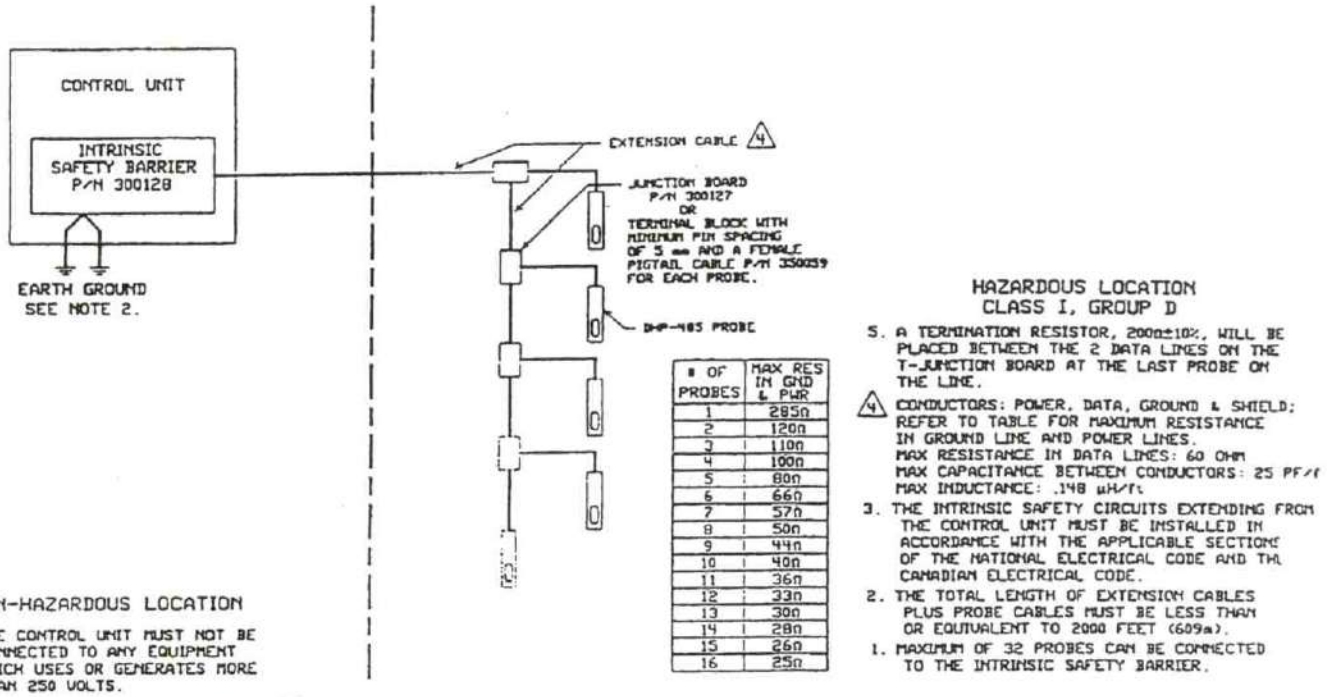
CONNECTION CHART		
SIGNAL	PIN #	COLOR
DATA A	1	WHITE
DATA B	2	GREEN
POWER	3	RED
GROUND	4	BLACK
SHIELD	5	YELLOW



DHP-485 FEMALE PIGTAIL CABLE

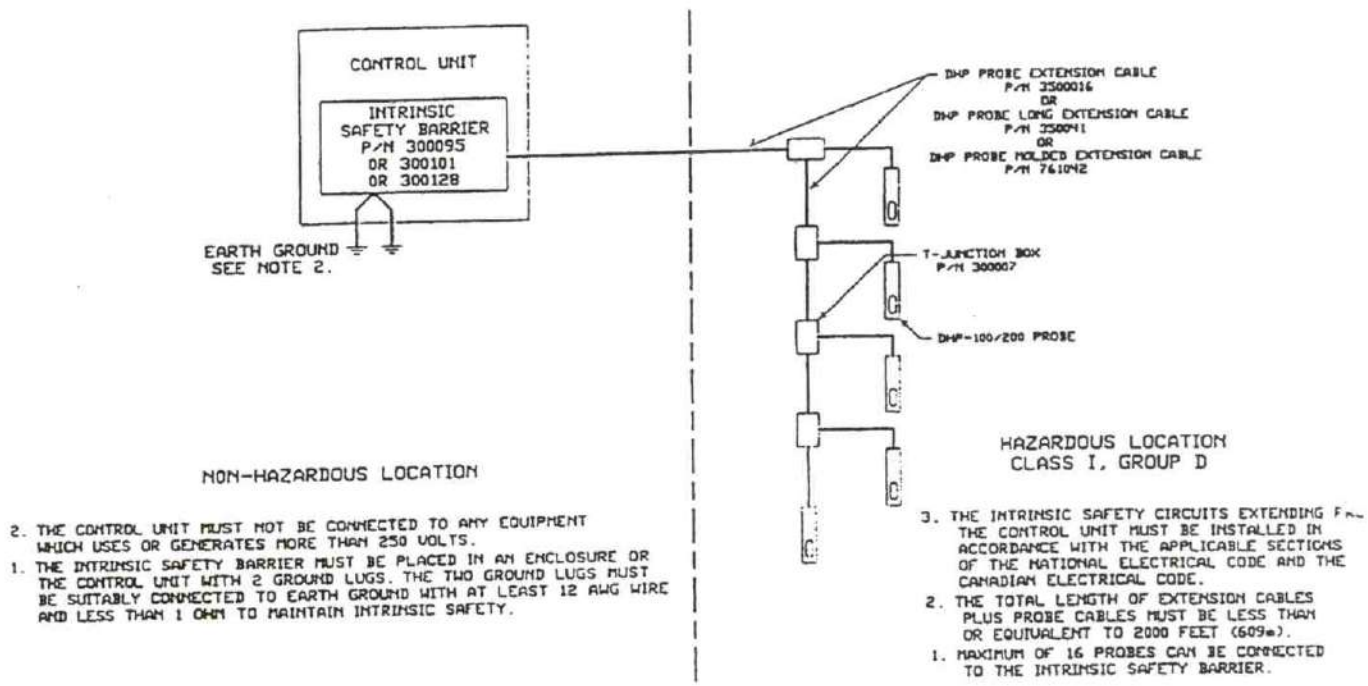


DHP-100 JUNCTION BOARD



# OF PROBES	MAX RES IN GND & PWR
1	285Ω
2	120Ω
3	110Ω
4	100Ω
5	80Ω
6	66Ω
7	57Ω
8	50Ω
9	44Ω
10	40Ω
11	36Ω
12	33Ω
13	30Ω
14	28Ω
15	26Ω
16	25Ω

INSTALLATION DRAWING FOR DHP-485, JUNCTION BOARDS AND ISB



INSTALLATION DRAWING FOR DHP-100, T-JUNCTION BOXES AND ISB

LEAK DETECTION PROGRAM

Contractor	: International Bridge Corporation
Sub-contractor	: Corrpro Companies, Inc.
Project	: Life Extension and Refurbishment of GPA Bulk Storage Tank 1934 & 1935
Location	: Piti, Guam
Date	: 17 October 2006

To display probe information such as serial number
Type:

- 1I, ENTER

To take a measurement with probe 1.

Type:

- 1M, ENTER

To change a probe address (you probably wont have to do this)
Type:

- xAy, ENTER

Where 'x' is the current number of a probe and 'y' is the new number you wish to assign to it. You cannot assign the same number to two probes. For example to change probe 8 to 9 you would type 8A9, ENTER.

You must save any changes you have made by typing:

- E, ENTER

To quit out of a sub menu
Type

- Q, ENTER

Data Menu

To download all data to a file (this may take up to an hour)
Type:

- X*, ENTER

To download the last 'y' number of readings to a file
Type:

- XLy, ENTER

Where 'y' is the number of readings you want to download.

Next, to complete the download process
Click:

- Transfer (on the top menu bar)
- Receive

Make sure the modem setting is 'Xmodem'

Save the file.

Once in the DOS program (after entering the CMS serial number and initiating the program) Type:

- Z, ENTER

to zero the probe.
Follow instructions on screen to view the real time graph. Hit the 'page up' or 'page down' keys to switch between probe graphs.
Take the probe out of water and shake it off or dry the outside with a clean towel. DO NOT TOUCH THE INSIDE OF THE PROBE, IT WILL BE RUINED.
Watch the graph change from water to vapor stage.
Put the probe in a clean tube and at a hydrocarbon standard. Watch the graph change back to liquid and the concentration of hydrocarbon increase.
Wash off the probe with clean water and place it back in clean water.
Watch the graph and the concentration of hydrocarbon drop.
This verifies that the probe is working properly qualitatively.

NOTICES:

- This information is believed to be reliable; however, Southwest Windpower, Inc. assumes no responsibility for inaccuracies or omissions. **The user of this information and product assumes full responsibility and risk.**

- All specifications are subject to change without notice.

- Wind generators, like other sources of electrical power, must be installed following the guidelines established by state and local regulations. Consult a local electrical contractor or the local planning and zoning office for details and regulations.

- For your convenience and protection write the serial number of your wind turbine on the front of this manual. Store your purchase invoice with this manual as well. You will need this information in the event of a warranty claim. It also helps the customer service department at Southwest Windpower when you have questions about your specific turbine. Thank you.

Made in the USA by:

Southwest Windpower, Inc.
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Web: www.windenergy.com

CE

New Features of the AIR-X

The *AIR-X* is the latest evolution of the AIR series of wind turbines from Southwest Windpower. From the outside, the *AIR-X* looks almost identical to the AIR 303 and AIR 403. The improvements are almost all inside the turbine.

The AIR-X Features:

- **New Electronics:** The ***AIR-X*** incorporates an entirely new rectifier and controller. The microprocessor based controller provides voltage regulation, peak power tracking, and quiet, stall control in high winds. The ***AIR-X*** uses a synchronous rectifier bridge which results in cooler, more efficient operation. The ***AIR-X*** also incorporates a voltage boosting function which allows the turbine to reach charging voltage at a much lower RPM.
- **New Alternator:** A more efficient alternator has been built into the ***AIR-X***. The alternator was designed to complement the peak power tracking ability of the control electronics. The alternator uses a larger wire size than that of the **AIR 403**, and thus has lower internal resistance. The result is cooler operating temperatures for improved reliability. The strong permanent magnet rotor can be felt in rotating the rotor shaft; a slight "catch" can be felt when spinning the shaft with your fingers. This is normal, and is quickly overcome when the blades begin spinning.
- **New Blades:** The rotor blades use a highly efficient, true airfoil. They are manufactured using a precision injection molding process that produces blades of exceptional consistency. The result is quieter performance and minimal vibration. The **AIR-X** blades differ from the **AIR 403** blades in their tip angles. The AIR-X blades have an increased tip angle which improves their ability to start rotating, and moves "flutter" to higher wind speeds. Unlike the **AIR 403** and earlier **303**, the **AIR-X** does not rely on blade flutter for over-speed protection. The control electronics will slow the blades before the turbine reaches the point of flutter. Increasing the tip angle helps to ensure that the flutter noise is not heard.
- **New Yaw Shaft:** The yaw shaft is the part of the turbine that mounts to the tower and allows the turbine to rotate into the wind. The **AIR-X** features a new yaw shaft that allows for stronger clamping forces to the tower, and more rigidity in the turbine.

The AIR-X also retains these features of the AIR 403:

- **Hysteresis Braking:** The regulation control circuitry incorporates hysteresis. This will lock the turbine in a silent regulation mode once the batteries are fully charged. The turbine begins producing power again when the battery voltage drops slightly below fully charged. This means, for a factory set 12V turbine, the turbine will regulate (shut down) when the batteries have reached 14.1V, and will resume charging when the voltage drops to 12.75V. Minimal output is wasted, as non-charging battery voltages above 12.75V represent mostly a "surface charge" with very little energy. This feature prevents the turbine from fluctuating in and out of regulation mode, resulting in a quieter, better-behaved machine.
- **New Body, New Hub:** The ***AIR-X*** body is made from a precision casting process that not only enhances fit and finish, but also leads to a stiffer, more durable body. The aluminum casting also acts as a heat sink and transfers heat from the stator and the electronics into the wind flowing past the turbine. The die cast aluminum hub design has been engineered to be the strongest, stiffest hub we have ever produced.

1. SAFETY PRECAUTIONS

The ***AIR-X*** has been designed with your safety in mind. However, there are inherent dangers involved with any electrical and/or mechanical equipment.

Safety must be the primary concern as you plan the location, installation and operation of the turbine. At all times be aware of electrical, mechanical and rotor blade hazards.

1.1 Mechanical Hazard

Rotating blades present the most serious mechanical hazard. The ***AIR X's*** rotor blades are made of very strong thermoplastic. At the tip, the blades may be moving at velocities over 275 miles per hour (440 km/hr). At this speed, the tip of a blade is nearly invisible and can cause serious injury. ***Under no circumstances should you install the turbine where a person could come in contact with moving rotor blades.***

> **CAUTION:** DO NOT INSTALL THE TURBINE WHERE ANYONE CAN APPROACH THE PATH OF THE BLADES.

1.2 Electrical Hazards

The ***AIR-X*** is equipped with sophisticated electronics designed to provide protection from overcurrent electrical dangers. The internal electronics of the ***AIR-X*** prevent open circuit voltages from rising above 20 volts for 12-volt systems or above 40 volts for 24-volt systems. Please note that the inherent personal dangers from electrical current still exist, therefore caution should always be used when connecting this and other electrical devices.

Heat in wiring systems is often a result of too much current flowing through an undersized wire or through a bad connection. It is important to follow the wire-sizing chart in Section 3.1.2 on page 10 to insure a safe electrical system.

> **CAUTION:** FOLLOW THE WIRE SIZING CHART IN SECTION 3.1.2 ON PAGE 10 TO HELP AVOID THE RISK OF AN ELECTRICAL FIRE.

Batteries can deliver a dangerous amount of current. If a short occurs in the wiring from the batteries, a fire can result. In order to avoid this threat, a properly sized fuse or circuit breaker is required in the lines connecting to the battery. Refer to Section 3.1.4 on page 12 for fuse sizing information.

> **CAUTION:** FUSE ALL CONNECTIONS. FOLLOW THE FUSE SIZING GUIDELINES IN SECTION 3.1.4 ON PAGE 12 TO MINIMIZE THE RISK OF FIRE AND/OR AN ELECTRICAL FAILURE.

2. PACKAGE CONTENTS

Compare the parts shown in Figure 1 to ensure that the contents of the box contain all necessary parts.

CAUTION: THE EDGES OF THE ROTOR BLADES ARE SHARP. PLEASE HANDLE WITH CARE.

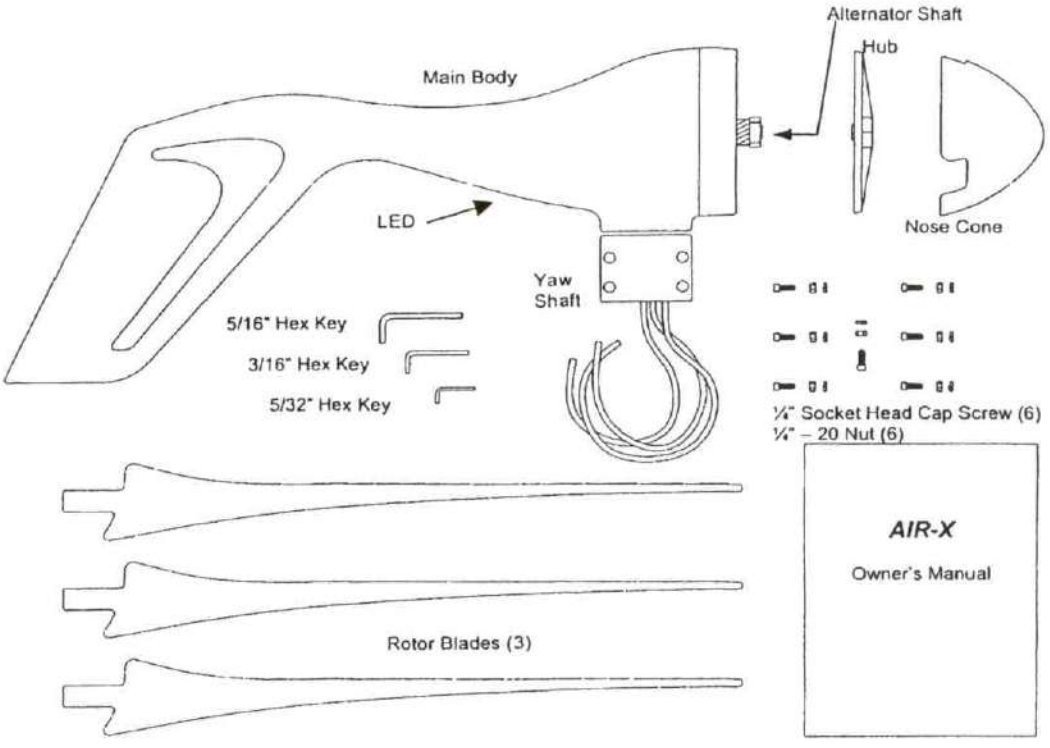


Figure 1

AWG SIZE	14	12	10	8	6	4	3	2	1	0	2/0	3/0	4/0
X-Section Area [in^2]	0.004	0.005	0.008	0.013	0.021	0.033	0.041	0.052	0.069	0.083	0.105	0.132	0.166
X-Section Area [mm^2]	2.68	3.31	5.26	8.37	13.3	21.1	26.7	33.6	44.2	53.5	67.4	85.0	107

Wire Color Codes
RED = positive
BLACK = negative
GREEN = earth ground

3.1.2 Wire Size

To select the appropriate size wire, measure the distance from the batteries to your ***AIR-X***, then refer to the following wire sizing chart as *minimum* sizes. If cost is not an issue, a larger sized wire will improve the performance of your ***AIR-X***.

All electrical systems lose energy from the resistance of the wires used. Larger wiring sizes have smaller losses, but can be considerably more costly. The following wiring sizes provide maximum annual energy losses of 5% or less for sites with a 12mph average wind speed (assuming the standard Rayleigh distribution of wind speeds,) which is sufficient for most sites. If you know your average wind speed to be different, compensate the wiring LENGTHS given in the charts using the factors given at the end of this section. Table entries with a "*" denote cases which should use additional bus lines.

We recommend these as the *minimal* wire sizes; for optimal performance you should use the largest wires that are practical and affordable. Local, state, and national electrical codes supercede these recommendations, and should be followed to insure the safety of your system.

12V *AIR-X*: Wire Size, Considering 12mph (5.2 m/s) Wind Average and 95% Energy Transmission Efficiency. Wire Size: AWG / sq mm

# Turbines	0-30ft	30ft-60ft	60ft-90ft	90ft-150ft	150ft-190ft	190ft-250ft	250ft-310ft	310ft-390ft	390ft-500ft
1	8g/8	6g/13	4g/21	2g/34	1g/53	0g/53	00g/67	000g/85	000g/85
2	6g/13	4g/21	1g/44	00/67	000g/85	0000g/107	*	*	*
3	4g/21	2g/34	0g/53	000g/85	0000g/107	*	*	*	*

Fuse: 50 Amp Slow-Blow per turbine

* If your system requires this length of wire, consider using additional, parallel wire(s).

24V *AIR-X*: Wire Size, Considering 12mph (5.2 m/s) Wind Average and 95% Energy Transmission Efficiency. Wire Size: AWG / sq mm

# Turbines	0-30ft	30ft-60ft	60ft-90ft	90ft-150ft	150ft-190ft	190ft-250ft	250ft-310ft	310ft-390ft	390ft-500ft
1	14g/2.7	12g/3.3	10g/5.3	8g/8	6g/13	4g/21	4g/21	4g/21	2g/34
2	12g/3.3	8g/8	6g/13	4g/21	4g/21	2g/34	2g/34	1g/44	0g/53
3	10g/5.3	8g/8	6g/13	4g/21	2g/34	2g/34	1g/44	0g/53	00g/67

Fuse: 30 Amp Slow-Blow per turbine

Delta manufactures surge arrestors for lightning protection, such as their model LA 302-RG. Contact: Delta Lighting Arrestors P.O. Box 750, Big Springs TX 79721, Phone (915) 267-1000 Fax (915) 267-1035 or your dealer for more information.

3.1.4 Fusing

The ***AIR-X*** is capable of producing high amperages. As with all electrical installations, you must protect each of your turbines with a properly sized fuse or circuit breaker. The ***AIR-X*** should be wired with an appropriately sized "slow-blow" type fuse between itself and the batteries. If a stop switch is used, the fuse should be placed between the switch and the batteries.

Recommended Size for Circuit Breakers or Slow-Blow Fuses

- 12-volt model: 50 amps D.C.
- 24-volt model: 30 amps D.C.

3.1.5 Stop Switch

Southwest Windpower recommends the use of a stop switch with your ***AIR-X*** to provide a convenient method for shutting down the turbine. A 50-amp single-pole double-throw switch will work as a stop switch for most applications. These switches are available from Southwest Windpower and should be wired as shown in Figure 2. The switch disconnects the battery and then shorts the turbine wires causing the turbine to stop spinning (in high winds the blades will spin slowly). Shorting the turbine will not cause any damage or additional wear. The stop switch model offered by Southwest Windpower is sufficient for most systems, but it should not be used in applications where a code compliant switch is necessary, or for 12V turbines used in very high wind applications.

NOTE: The center post must be positive from the turbine. Outside posts can be swapped as either battery positive or battery/turbine negative.

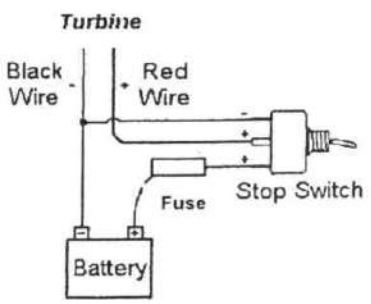


Figure 2 Stop Switch Wiring

If you need a code compliant switch and the voltage of your turbine is 24V, then contact Schott Applied Power and purchase the AIR 403 shutoff/circuit breaker combination. This code compliant switch entails a pair of interlocked 60-amp breakers that work as both a stop switch and a circuit breaker for your turbine. Be sure to follow the installation instructions from Schott Applied Power Their part number for this switch is 10-160-003 and they can be reached at 800-777-6609.

Choose the appropriate suggested wiring diagram below for proper wiring information.

A. Single AIR-X Wiring

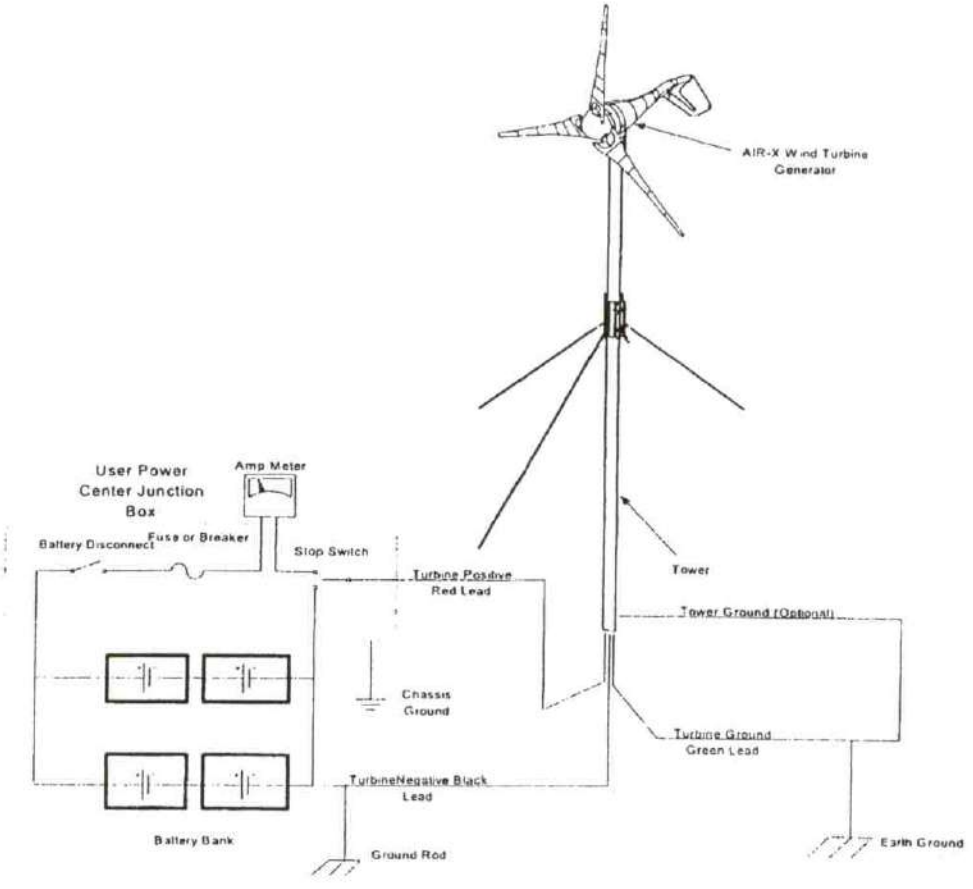


Figure 3

C. AIR-X In a System With Solar Panels (Hybrid System)

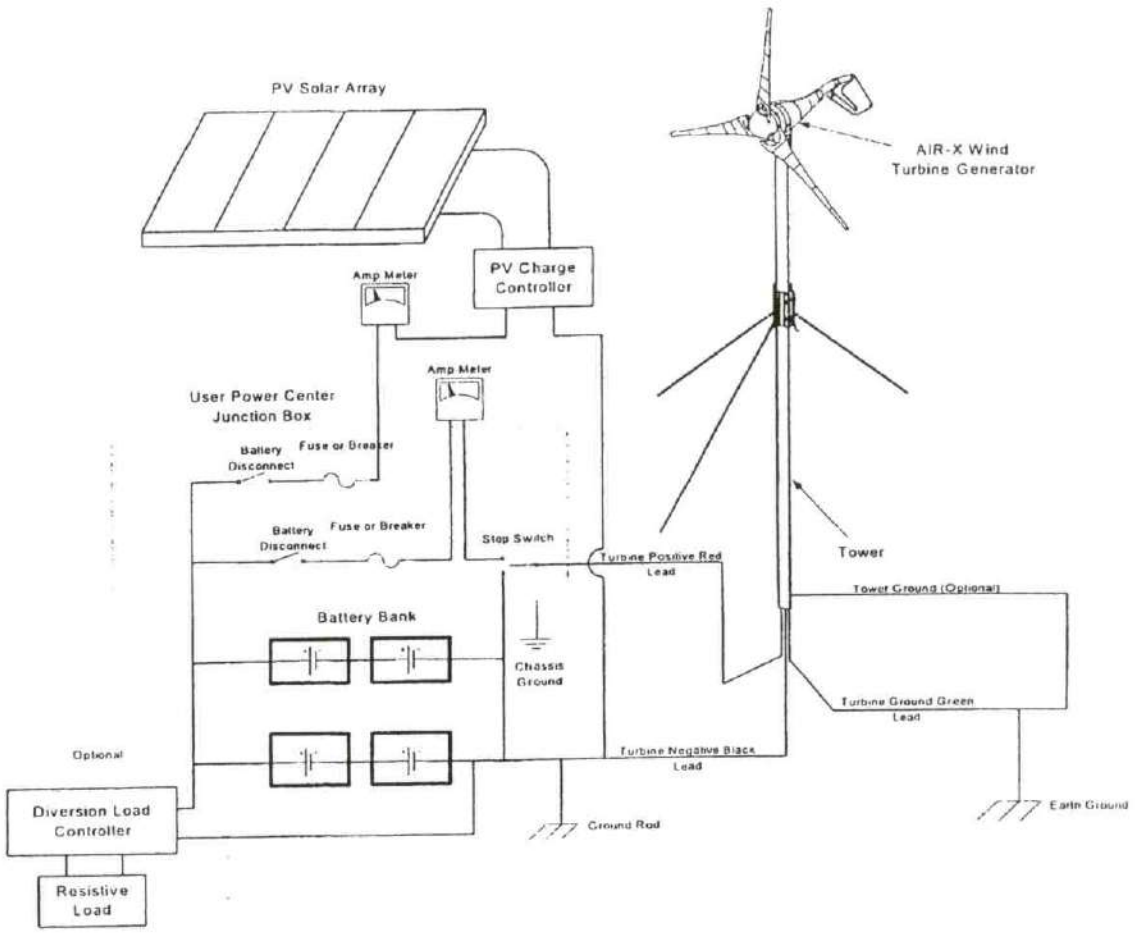


Figure 4

NOTE: In this drawing the ***AIR-X's*** internal regulator is used. A diversion type external regulator can also be used. The diversion type regulator could be used in any of the systems.

NOTE: Do NOT accidentally connect the turbine "backwards" to the battery for even a second (i.e. turbine positive to battery negative and turbine negative to battery positive). Doing this will damage the circuit inside the turbine and void your warranty.

3.2 Mounting To Tower

The ***AIR-X*** is designed to be mounted on tubing or pipe with a 1.875 inch (48mm) outside diameter. This is equivalent to 1 ½ inch SCH 40 pipe, which can be used in some tower applications. There is a soft coupling inside the yaw shaft mount that is designed to provide a secure fit and to dampen some of the noise transmitted down the tower. The pole must be mounted with hardware specifically designed for small wind turbines. Southwest Windpower offers a complete stand-alone tower package and a "Roof Mount Kit" for mounting to structures, which provides secure mounting and superior noise isolation. Contact your dealer for details.

CAUTION: Use only properly sized metal pipe for towers.

3.2.1 Attaching to Pole

While attaching the turbine to the tower, be careful not to pinch the yaw wires. Slide the yaw all the way down over the end of pole. After the yaw is seated on the pole, move it back up a 1/8th inch (2mm) to prevent the bottom of the yaw from contacting the top of the pole. This way the only contact between the tower and yaw is through the rubber pad, which will reduce noise transmission. Tighten all mounting fasteners to 3 - 5 foot lbs. (4.1-6.8 N.m.).

Make sure that your tower allows for proper clearance of the blades. A minimum 2-inch (20 mm) clearance must be given between the blade tips and any obstructions. Refer to Figure 6 below, and the "Sphere of Operation" drawing in Section 7.3 on page 31 for proper clearances.

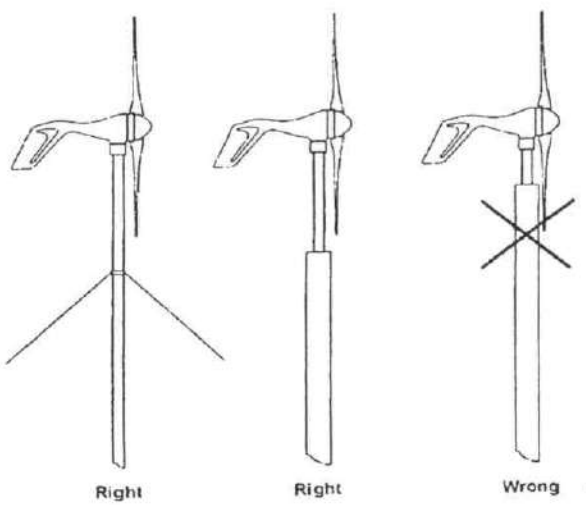


Figure 6 Proper Blade-to-Tower Clearances

Please note that over-torque of blades may cause damage to the blade and compromise the safety of the product.

NOTE: TORQUE THE BLADE BOLTS TO 8 – 10 FOOT-LBS (10.8 – 13.6 Nm). DO NOT OVER-TORQUE.

NOTE: You may need to "thread" the screws through the hub with the hex wrench.

3.3.2 Mounting the Hub and Rotor

CAUTION: THE BLADES ARE SHARP. USE CAUTION WHILE HANDLING THE BLADES.

Remove the 5/8" nut from the alternator shaft. Carefully slide the blade assembly onto the alternator shaft. Place the nut on the shaft and thread the nut on by spinning the blade assembly. Insert the 5/16" hex key torque wrench into the alternator shaft and tighten the nut by holding the hub set and tightening the shaft with the torque wrench. The nut should be tightened to 50 - 65 foot pounds (68 – 88 Nm). When the blade set assembly is tightened, spin it to be sure it turns freely. While mounting the blade assembly to the turbine, be careful not to push the rotor shaft into the turbine.

3.3.3 Attaching Nose Cone

Carefully place the nose cone over the center of the hub and the blades. Snap the nose cone into place. Be sure all three edges catch. Check to see that the nose cone is secure by firmly pulling on it. The nose cone does not affect the performance of the turbine and may be left off, if desired.

3.4 Step-By-Step Instructions

The following *Step-By-Step-Installation-Procedures* provides you with an outline of the ***AIR-X*** installation process. This consolidated reference should only be used as an outline during installation. Refer to the appropriate sections for further details.

1) Run the wires from the battery (do not connect to the battery), through the pole to the top of the tower. **Be sure not to connect the wires to the battery until everything else has been completed.**

2) Strip the insulation back from each set of wires.

3) Mark both ends of all the wires with tape to identify which is negative, positive and earth ground.

AIR-X color-codes:
RED = Positive
BLACK = Negative
GREEN = Ground.

4) Connect the wires from the ***AIR-X*** to the wires running to the battery.

5) Insulate the connections using either heat shrink tubing or a quality electrical tape.

4. TESTING

4.1 General Discussion of Operation

The available energy in the wind scales with the cube of the wind speed. This means that each time you double the wind speed you get eight times the power. The unique design of the ***AIR-X*** is such that it can take full advantage of the power in the wind. The efficiencies of other wind turbines are usually linear and cannot take advantage of the cube effect of the wind. These turbines are efficient at only one or two points along the power curve. The ***AIR-X*** controller uses peak power tracking to match the efficiency curve of the turbine with the available energy in the wind, making it efficient all along the curve. This is an important reason why the ***AIR-X*** is able to provide you with such a large amount of power from a small turbine. The peak power tracking works by continually adjusting the loading of the alternator to keep the blades running at their optimal angle of attack at all wind speeds. The result is high blade efficiency and lower blade noise throughout the power curve. The control is managed by the **AIR-X's** microprocessor.

4.1.1 Alternator

The ***AIR-X*** uses a three-phase brushless permanent magnet alternator. The electronics internally rectify the power to D.C. The rotor is comprised of 12 Neodymium Iron Boron arced magnets, the most powerful magnet material available. The alternator was designed simultaneously with the new control electronics to provide efficient power generation throughout the operating range.

4.1.2 Voltage Regulator

The AIR-X continually monitors the battery voltage and compares it to the regulation set point. The regulation set point is field adjustable, and is factory set to 14.1V (12V Turbine) or 28.2V (24V System). When the battery voltage rises above the set point, the turbine enters regulation mode. During regulation mode, the turbine automatically shuts off. It stops rotating, and no power is generated. Before entering regulation mode, the AIR-X will momentarily stop charging in order to get a true reading of the battery voltage. If the turbine was sensing a high voltage due to line loss in the system, this will be detected and the AIR-X will continue to charge. This process takes a fraction of a second and will not be visible.

Once in regulation mode, the AIR-X will simply wait for the battery voltage to drop. Normal charging will resume when the battery voltage drops slightly below the fully charged level. For 12v turbines the turbine will resume charging at 12.75V (25.5V for 24V turbines). The AIR-X controller will blink the 10 times each second (fast blink) to indicate that it is in regulation mode.

NOTE: Bad connections, undersized wires, and inline diodes will cause the internal regulator to not work properly. It is very important that the ***AIR-X*** can "sense" the proper battery voltage.

In regulation mode, the ***AIR-X*** controller will blink the LED 10 times each second (fast blink).

d) Stall Mode

Stall mode is the over-speed condition described in section 4.1.3. In stall mode, the RPM will drop between 500 and 700 RPM, depending on the exact wind speed. Above 50 mph, the turbine will shut off completely and the RPM will slow to almost zero.

In stall mode, the ***AIR-X*** controller will blink the LED two times each second (slow blink).

e) Braking

Braking can be accomplished by directly shorting the turbine negative and positive wires or through the use of a Stop Switch. The Stop Switch will disconnect the turbine from the battery, and then short the positive and negative leads from the generator together.
The blades could still spin slowly but will not charge the battery.

4.2 Bench Testing

Three quick bench tests can verify if your ***AIR-X*** is working correctly. Test 1 does not require any equipment. For tests 2 and 3 you will need your battery bank and a power drill. Because of the voltage boosting circuitry in the ***AIR-X***, the open circuit voltage test that is performed on the ***AIR 403*** is not easy to interpret on the ***AIR-X***, and is not recommended.

Test 1

1. Remove blade assembly from turbine and place in a safe location. *(Do not stand the blade assembly against a wall.)*

2. Spin rotor shaft with your fingers or the allen wrench provided while at the same time connecting and disconnecting the Red and Black yaw wires. (Be careful not to press the rotor shaft into the turbine body.)

3. With the yaw wires connected, the rotor shaft should become more difficult to rotate and feel "lumpy". With the yaw wires disconnected it should spin freely. If these conditions do not exist, you should contact your turbine dealer or Southwest Windpower.

Test 2

1. Remove blade assembly from turbine and place in a safe location. *(Do not stand the blade assembly against a wall. Do not press the rotor shaft into the turbine body.)*

2. Connect the turbine power wires to the appropriate terminals on your battery: RED= Positive, BLACK = Negative.

3. Each time the ***AIR-X*** is connected to a battery, the LED will blink two times to indicate that the controller is running properly. You may need to wait 10 seconds between iterations of this test in order to let any internal voltage drain. If the LED does not blink when the ***AIR-X*** is connected to a battery, you should contact your turbine dealer or Southwest Windpower.

Test 3

1. Leave the ***AIR-X*** connected to your battery bank. With a 5/16" hex drive in an electric drill, spin the rotor shaft while observing the LED. *(Cut a small piece off of the Hex Key provided if necessary.)* **Be very careful not to push in on the rotor shaft while performing this test. Doing so could damage the control electronics.**

***AIR-X* Adjustable Voltage Range**

12v	13.6v	to	17.0v	preset to 14.1v
24v	27.2v	to	34.0v	preset to 28.2v

READ THIS BEFORE YOU CONSIDER ADJUSTING THE REGULATION SETPOINT

Turning "up" the regulation set point adjustment will **NOT** increase the ***AIR-X's*** output voltage or amperage. It simply adjusts the "shut down" point for the generators' voltage regulator. When the battery voltage reaches the regulation set point voltage, the turbine will slow down and stop charging the batteries. Turning the screw completely clockwise will **NOT** increase the voltage or power output and will only increase the probability of overcharging your batteries.

5. TROUBLE SHOOTING

If the turbine does not work properly after following the installation instructions, then read this chapter and carefully compare your installation with each section.

5.1 Assembly

Make sure the blade assembly is on tight. You can check by placing the 5/16" hex key in the shaft, holding it and attempting to turn the blade assembly. If you can turn the blade, retighten the blade assembly.

To minimize noise, make sure that you have loosened the four mounting screws and moved the turbine up 1/8" inch (2mm) and then re-tighten the screws. This will prevent the top of the pole from touching the aluminum in the yaw shaft assembly.

5.2 Electrical System

Measure the voltage at the battery terminals to which the *AIR-X* is connected. For the factory regulation set point, if the voltage for a 12v system reads 14.1V or higher *(24v 28.2)*, then the turbine will sense the battery is charged and stop producing power.

NOTE: THE *AIR-X* ELECTRONICS INCLUDE INTERNAL DIODES. DO NOT PUT ADDITIONAL BLOCKING DIODES IN BETWEEN THE *AIR-X'S* WIRES AND THE BATTERIES. ANY DIODES BETWEEN THE TURBINE AND THE BATTERIES WILL PREVENT THE TURBINE FROM PROPERLY "SENSING" THE BATTERIES.

While you are conducting output tests, make sure no other devices such as alternators or photovoltaic panels are charging the batteries at the same time. The total voltage from other charging sources could increase the battery voltage causing the ***AIR-X's*** regulator to think the batteries are charged and prematurely stop charging.

It is a good idea to connect the wires from the ***AIR-X*** to separate battery terminals on the battery bank to ensure the turbine reads the battery voltage instead of output voltages from other charging sources. Higher input voltages from solar panels can trick the ***AIR-X*** into thinking the battery is charged.

Also, check the condition of each individual battery. One bad battery can create high voltages (16-18 volts) and stop the turbine from charging. Consult the battery manufacturer for testing individual batteries or cells.

5.3 Elevation

6. WARRANTY POLICY

What Is Covered And For How Long
For turbines that are three years old or less from date of original purchase or three years and three months from date of build, any defective part will be replaced at no charge. Either a Southwest Windpower technician or an Authorized Service Center determines a defective part.

What Is Not Covered
- Damage due to lightning
- Damage due to extreme winds (110 MPH+; 60 m/s)
- Damage due to improper installation (including to but not limited to poor tower design & inverted hanging)
- Damage due to improperly wiring to batteries
- Blade damage resulting from contact with flying debris

Limitations And Exclusions
1) No one has the authority to add to or vary this limited warranty, or to create any other obligation in connection to Southwest Windpower and its products.

2) ANY IMPLIED WARRANTY APPLICABLE TO SOUTHWEST WINDPOWER'S PRODUCTS IS LIMITED IN DURATION TO THE SAME PERIOD OF TIME AS THIS WRITTEN WARRANTY.

3) SOUTHWEST WINDPOWER SHALL NOT BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL, OR CONTINGENT DAMAGES THAT ANY PERSON OR PROPERTY MIGHT SUFFER AS A RESULT OF ITS BREACH TO THIS WRITTEN AND OR IMPLIED WARRANTY.

4) This warranty applies to the original purchaser and may be transferred.

The Customer's Responsibilities
All of Southwest Windpower's products must be installed and operated in accordance to the owner's manual and local codes. Any modifications to the turbine design will void the warranty and compromise the safety of the machine.

You should keep a copy of the invoice or canceled check to verify the purchase date.

You will be responsible for shipping the turbine to the repair center if necessary.

If You Experience A Problem With Your Southwest Windpower Product
Contact your nearest authorized service center or Southwest Windpower to determine the nature of the problem.

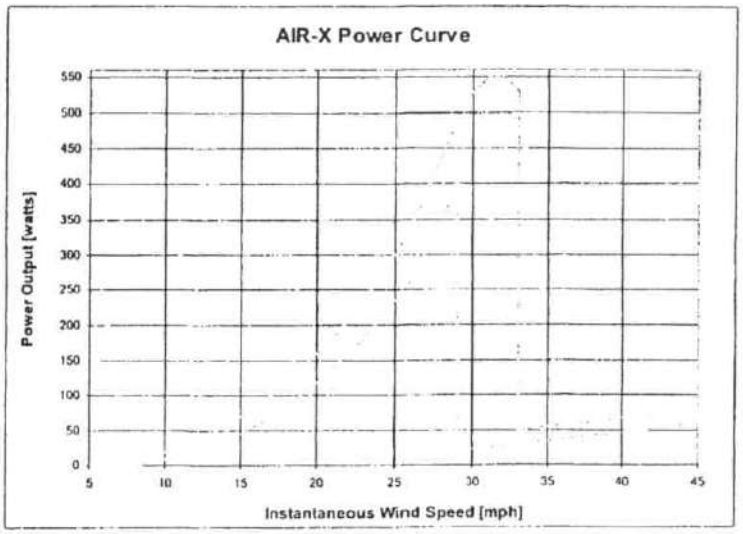
Either Southwest Windpower or the Authorized Service Center will issue a return authorization number to return the turbine, or send you the replacement parts needed to repair the machine. (Southwest Windpower or the Service Center will pay least cost return shipping back to the customer. If express is required, the customer will be required to pay the difference in freight charges.)

7.2 PERFORMANCE SPECIFICATIONS

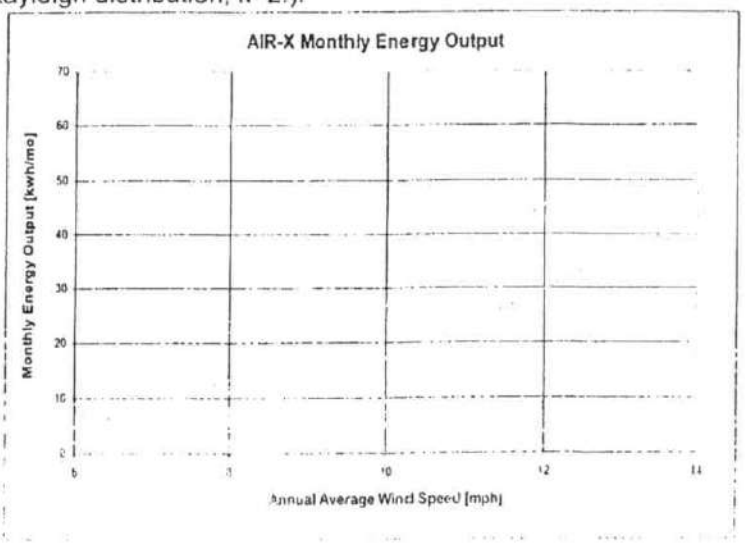
The following curve shows the performance you should expect from your ***AIR-X*** wind turbine. The ***AIR-X*** is rated with a "band-width" of power for a given wind speed. This is an attempt to cover the variability in turbine output due to different levels of wind turbulence. During smooth, steady wind, you should expect to see outputs along the upper curve. During turbulent wind conditions, the power output could drop towards the lower curve.

To convert between power [watts] and current [amps] use the following formula:

POWER = VOLTAGE * AMPS



The power curve band-width shown above gives the range of monthly energy production shown below. The energy calculations were done with standard statistical wind speed distributions (Rayleigh distribution, k=2.).



8. MAINTENANCE

Although your ***AIR-X*** has been designed to run for long periods without requiring any maintenance, reliability and performance will be enhanced if you periodically inspect your system. Before performing any inspection, be sure to shut down the turbine.

CAUTION: NEVER APPROACH THE TURBINE DURING OPERATION.

CAUTION: THE ROTOR BLADES ARE SHARP. PLEASE HANDLE WITH CARE.

The following items should be checked two months after the initial installation and then every six months thereafter:

- Check blades for chips or nicks. Replace blades if damaged. **Do not operate the turbine with chipped or unbalanced blades. This can cause severe wear, damage, and possible failure. Do not install individual blades. The blades are balanced as sets.**

- Check the blade bolts and the hub nut for tightness.

- Make sure the yaw clamp bolts securing your ***AIR-X*** are tightened to the appropriate torque specification see Section 3.2.1.

- Inspect the tower.

- Dirt or debris build-up on the blades and body may cause a decrease in performance of the turbine and or long-term damage that is not covered by the warranty. Wash off any build-up with clean soap and water.

- Check all electrical connections to make sure they are tight and free from corrosion.

- As with all charging systems, check your battery water levels and add distilled water in accordance with manufacturer's recommendation.

- Check the nose cone.

- Southwest Windpower suggests replacing the blades and bearings every five years for optimal performance.

9. SYSTEM REQUIREMENTS AND CONSIDERATIONS

9.1 Batteries

The following is a brief description of three common batteries. There are many grades, sizes, voltages, and chemistries available. Battery life can vary from less than one year to more then ten years. **It is important to consult your dealer for the most up-to-date information and for help in selecting the appropriate battery.**

NOTE: Never use "automotive batteries" or any non deep-cycle battery.

NOTE: Refer to battery manufacture for specific recommendations regarding installation, maintenance, charging and operation.

9.2 Regulator Options

The internal electronics protect you and your batteries from excess voltage from the ***AIR-X***, they control the turbine rotor RPM, and serve as a sophisticated battery charge regulator. The internal regulator senses the voltage from the battery and determines whether or not to continue charging. Once the battery voltage matches the regulation set point the regulator will "stop" the turbine from charging. *(In high winds there may still be a trickle charge.)*

It is important to keep in mind that battery charge efficiency varies in extreme temperatures. If these conditions exist, an external regulator with a temperature compensation sensor should be used to optimize the charge rate. There are several regulators available that adjust the charge rate based on ambient battery temperature.

There are some conditions in which the ***AIR-X's*** internal regulator is not appropriate as the primary regulator. These conditions include:

- Systems where battery temperature varies widely
- If batteries are extremely sensitive to charge voltage
- Multiple turbines used with a bus system, where turbine to bus wire lengths or types vary

The ***AIR-X*** offers you three basic regulation choices:

1. Use the ***AIR-X*** at its factory settings.

AIR-X **Adjustable Voltage Range**	
12v	13.6v – 17.0v *preset to 14.1v*
24v	27.2v – 34.0v *preset to 28.2v*

2. Adjust the regulator to your systems requirements. The voltage adjustment is external as indicated in Figure 7 on page 17. This allows you to adjust the ***AIR-X's*** internal regulator to the exact voltage specified by the battery manufacturer. Refer to Section 4.4 on page 22 for regulator adjustment instructions.

NOTE: Refer to the battery manufacturers' specifications for exact regulation set points.

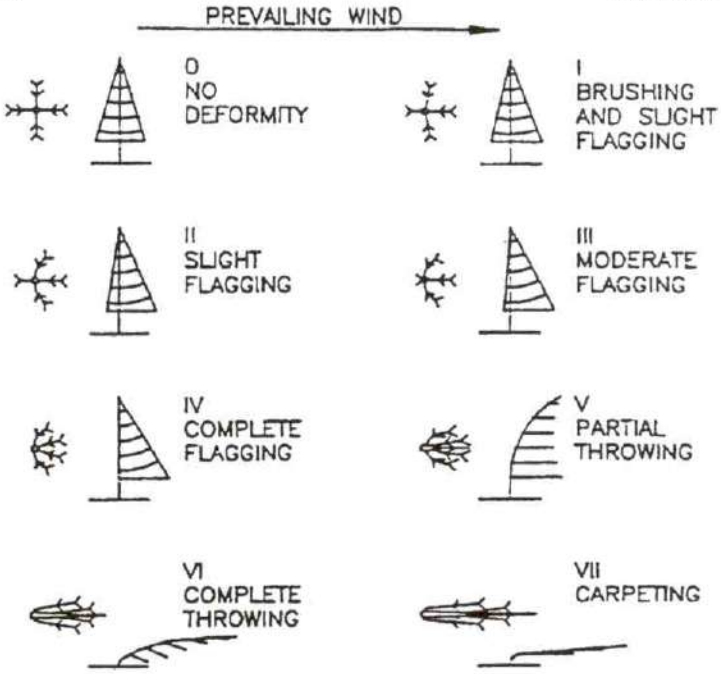
3. Use an external regulator. A standard diversion load regulator like that used with solar panels will work fine. If you choose to use this option you must turn "off" the internal regulator by gently turning the adjustment screw all the way clockwise.

Types Of Regulators

The three types of regulators available are shunt, Pulse Width Modulated *(PWM)* and diversion style regulators. The first two types charge the battery at full turbine output and reduce the output as the battery becomes full. The ***AIR-X*** is not designed to work with these two types of regulators.

A diversion style regulator charges the battery and as the batteries become charged the excess power is diverted to a resistive load. This allows you to capture full output of the turbine even when the battery is full. The most common use for this excess power is heating water. If you are going to use an external regulator, it is best to use a diversion style regulator.

NOTE: If you elect to use an external regulator do not use one that will open circuit the turbine as a means of regulation. The ***AIR-X*** turbine was not meant to operate "open-circuit"



WIND SPEED RATING SCALE BASED ON THE SHAPE OF THE CROWN AND DEGREE TWIGS, BRANCHES AND TRUNK ARE BENT (GRIGGS–PUTNAM INDEX: WADE AND BAKER, 1977)

MEAN ANNUAL WIND SPEED VERSUS THE GRIGGS–PUTNAM INDEX

GRIGGS–PUTNAM INDEX	0	I	II	III	IV	V	VI
PROBABLE MEAN ANNUAL WIND SPEED RANGE (mph)	0–7	7–9	9–11	11–13	13–16	15–18	16–21
WIND SPEED RANGE (m/s)	0–3	3–4	4–5	5–6	6–8	7–9	8–10

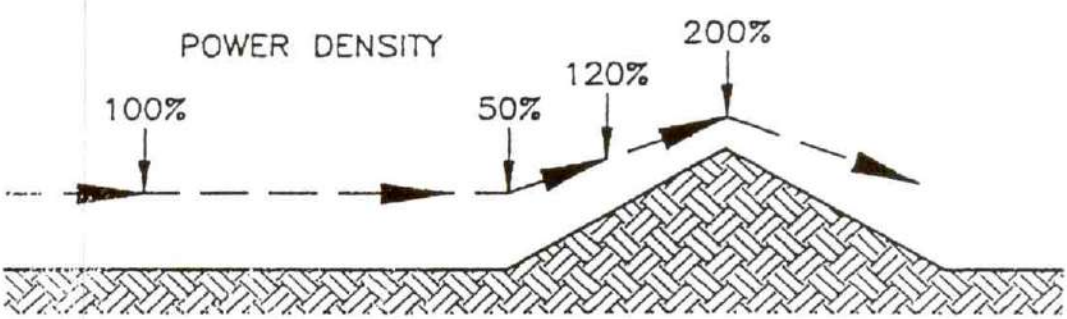


Figure 9

Basic aerodynamics show that as wind moves over or around objects, the wind compresses and accelerates. It is possible to use a building rooftop to increase the turbine's output using this accelerated wind. The amount of acceleration will vary greatly with house design, wind direction, local obstructions and terrain.

There are considerable differences in acceleration due to the angle and height of a structure and nearby obstructions. However, a location of 5 feet (1.5 m) to 8 feet (2.5 m) above the structure produces substantial acceleration in average situations and is tolerant of different wind directions.

For ideal sites where the prevailing wind is perpendicular to the roof-ridge line, the turbines may be mounted fairly close together 9 feet (2.75 m), center to center. However, if your wind primarily comes from a direction along the roof-ridge line, then the turbines must be spaced to minimize interference 12 to 15 feet (3.6 to 4.5 m) and mounted as high as possible (8 feet (2.5 m) maximum unsupported pipe). Blockage occurs when the wind is parallel to the roofline.

When the prevailing wind is perpendicular to the roof edge, mount your first ***AIR-X*** in the center of the roof ridge and add modules to either side along the roof ridge. Where the prevailing wind parallels the roof-ridge line, mount your first ***AIR-X*** on the end of the structure closest to the wind, and about 3 feet (1 meter) from the edge.

Although a rooftop can be used to accelerate the wind flowing past a house, a tower that is much taller will experience higher winds and greater output. The advantages of rooftop mounting are ease of mounting, low tower cost and multiple installations. The disadvantages are lower wind speeds, increased turbulence and potential for noise.

NOTE: Uniform building code requires that a structure must support the wind load it creates by the area presented to the wind. The structural load applied by the wind increases with wind speed. Any additional loads that increase area during serious storms must be compensated for.

NOTE: Any wind generator can create vibration. Always use some type of vibration isolator when attaching the turbine to a structure. The roof mount and house mount tower kits from Southwest Windpower feature vibration isolation mounts and are economical and easy to install. If available it is always better to mount a wind generator on an unoccupied building.

CAUTION: DO NOT INSTALL THE TURBINE WHERE THE PATH OF THE BLADES CAN BE REACHED DURING NORMAL OPERATION.

The microprocessor in the ***AIR-X*** constantly monitors turbine RPM, and is programmed to stall the blades in high winds. The blades are put into a low efficient region which drops the turbine to roughly ¼ of its peak RPM. This allows the turbine to survive high wind events with low mechanical stresses. Also, since the blades are running inefficiently in stall mode, they are not delivering substantial power to the electronics, and the alternator and the power electronics remain cool in stall mode. When the microprocessor senses that the wind speed has dropped, it will release the ***AIR-X*** from stall mode, and normal charging will resume.

#5 What is the maximum wind speed the *AIR-X* will survive, and do I need to take it down in a storm?

NEVER approach the ***AIR-X*** or any turbine in strong wind conditions. The ***AIR-X*** is designed to run without attention in storm conditions; however, if you wish to shut down the turbine you can do that remotely as described in Section 3.1.5 on page 12. The ***AIR-X*** is rated to 110 mph. If you expect higher winds, shut down the turbine and either lash down the blades or remove the hub and blade set.

#6 How long will the bearings or other wearing parts last?

According to engineering calculations, the bearings should have a 10-year life in 12-mph (6 m/s) average wind speed sites. Bearing life will vary from one application to another; however, you should expect at least a five-year performance in adverse conditions and 10 years in normal conditions.

The copper brushes should last a lifetime. The yaw shaft has been tested to over 100,000 revolutions with no visible wear on the brushes or slip rings.

#7 Why is there a cut-out in the tail?

The cutout helps to balance the AIR on its turning axis to better track the wind and to give it stability in rough seas. This balance keeps the turbine pointed into the wind even when the boat is heeled over. Since the turbine is properly balanced, more power can be extracted from the wind no matter how slight or directionally unstable.

Installation

#8 Can the AIR be connected in reverse-polarity to the battery without causing any damage?

NO! If you connect the turbine in reverse-polarity to the battery you will damage the turbine and void your warranty. Make sure to connect the positive (red) wire to the positive post on the battery, and connect the negative (black) wire to the negative battery post.

#9 Will it hurt my AIR to short-circuit the output?

No, the ***AIR-X*** is designed to be short-circuited as a normal shutdown procedure. The function of the stop switch is to both disconnect the turbine from the batteries as well as short-circuit the output of the turbine. BE SURE NOT TO SHORT YOUR BATTERIES!

#10 Will it not short my batteries when I use a stop switch?

When a single pole, double throw switch that is rated for proper current and voltage is connected as shown in the manual the turbine positive is disconnected from the

are used. If your turbines are at various distances from the batteries, make sure turbines with longer wire runs have bigger wires.

There will be some variation at what voltage turbines will enter into regulation based on the relative wind to which each turbine is exposed. Small differences in line loss can be significant in strong winds.

Accessories

#16 Where can I locate a stop switch?

If you want to install a stop switch it must be a 50-amp or greater DC Single-Pole Double-Throw toggle switch (see Section 3.1.5 on page 12). This can be purchased from some automotive electrical repair shops, your dealer, or from Southwest Windpower directly.

#17 Can I use household AC fuses or breakers to fuse my AIR?

You should only use DC rated devices with your ***AIR-X***, as AC components are typically sized differently. Because DC breakers and fuses in the required sizes may be hard to find in your area, Southwest Windpower carries a 30A and 50A breaker. You may purchase these from some local dealers and distributors or from Southwest Windpower direct.

#18 Can I use an external charge controller to regulate my AIR?

We recommend using only diversion load type charge regulators with the ***AIR-X***. These regulators divert excess power to a heating element or power resistor when the batteries are full. This excess power can be used to assist in hot water or room heating. PV type regulators should never be used. Series type regulators that disconnect the power source when batteries are full will often give undesirable results such as causing the Autobrake to fluctuate on and off when the batteries become full.

#19 I just installed my AIR with an automotive style amp meter, but I don't see any current. How can this be?

Given that all wiring has been done correctly, and other precautions have been heeded, chances are that the amp meter is wired backwards and the needle is attempting to move in the negative direction. If "zero" is on the left-hand side of the meter, then the needle cannot move and looks as if the unit is not producing. Simply reverse the leads on the meter and see if current will register.

#20 Where can I locate tubing to make a tower?

The AIR-X uses 1 1/2" schedule 40 steel pipe. (Actual outside diameter (O.D.) of the pipe is 1.875 inches, 48 mm) Steel pipe is available at any hardware or plumbing store. Fencing supply stores can also be an excellent source for steel tubing.

Wiring

#21 The recommended wire sizes on your chart seem small for 400 Watts output. Why is that?

Because the output of the AIR follows the cubic power in the wind, the output increases rapidly with increasing wind speed until over-speed stall occurs and the

in amp-hours and have some indication of the number of charge-discharge cycles that are available. Beware of the dubious claims of "deep-cycle" claimed by the manufacturers of inexpensive batteries.

#27 Why shouldn't I use automotive batteries in my DC system?

Automotive batteries are meant to discharge a large amount of current in a very brief time. The lead plates are thinner and often porous to allow rapid discharge. They will also wear faster and are not intended to be discharged far below their normal voltage. True deep cycle batteries are intended for more moderate loading and deeper discharge, and are made with thicker, longer lasting plates. The casing and construction of batteries intended for renewable energy systems is typically much tougher and of higher quality than automotive batteries.

#28 Is lightning protection necessary?

Lightning protection is ALWAYS a good idea when erecting a metal tower. The Delta Lightning Arrestor (model LA 301-DC) is widely used in outdoor power and antenna applications. While this is still no guarantee that Mother Nature wont find a way, these arrestors are not very expensive and may save some very expensive equipment.

Radio Interference

#29 What effect does radio interference have on my *AIR-X*?

The internal circuitry of the ***AIR-X*** is shielded and filtered to prevent radio interference, and has been tested to insure electro-magnetic compatibility.

#30 What effect does my AIR have on radio transmissions?

The ***AIR-X*** normally does not affect radio transmitters. Care should be taken, however, to route power lines from the ***AIR-X*** away from the power and antenna lines of a radio transmitter. An old ham radio operator's trick is to twist positive and negative wires together to provide an even distribution of EMF noise across both wires, which serves to cancel out the electrical noise created. This technique can be used on the ***AIR-X*** power lines, on the radio's power lines, and on transmission wires. Transmission lines should always be kept as far from power lines as is practically possible. Proper grounding of the ***AIR-X*** and other system components must also be observed.

#31 Will it affect the regulation of my *AIR-X* to install an RF (radio frequency) filter?

An RF filter should not affect the regulation of the ***AIR-X***, but any electronic devices placed in line with the turbine must be rated for the proper current and voltage. It is best to place any line filters on the power lines for the load device (transmitter) that requires it, and as close to the device as possible.

13. ACCESSORIES

Southwest Windpower offers a [illegible] of accessories for your turbine. Some of these accessories are difficult to find due to the high DC outputs. We offer them as a convenience

Guyed tower Kits

We offer 27' (8.2 m) and 45' (13.7 m) guyed towers. These towers are relatively low cost and easy to install. Contact your dealer or Southwest Windpower for pricing and product information. You can call Southwest Windpower toll free at (866) 805-9463 or visit our website at http://www.windenergy.com.

Southwest Windpower
Renewable Energy Made Simple

All shipments are F.O.B. factory. Any claims for packing shortages must be made within 30 days. Claims for shipping damage or loss must be made with the carrier. A handling and processing fee is included in the shipping costs of every Southwest Windpower order. Instances when SWWP utilizes a customer's personal or company account freight forwarder or the order is received by a freight forwarder at our location the following Handling/Processing fees will apply:

Air Turbines	USD $2.00 per turbine
Whisper Turbines	USD $5.00 per turbine
Spare Parts	USD $2.00 flat fee

DROP SHIPMENTS: Southwest Windpower will drop ship to any location via the most economical carrier; buyer will bear all shipping charges plus a drop ship fee. These fees will not apply to the distributor's warehouse(s). Drop ship charges are flat fees, no discounts apply.

In the event that multiple items are ordered, one drop ship fee will apply to the entire order. If the order contains a combination of models the customer will be charged one drop ship fee, for the highest dollar amount. (Example: An order requests one Whisper and one AIR. The Customer is charged a $30 fee only). Any questionable shipment instructions should be directed to the sales representative who handles the respective distributors account. The following drop ship fees apply:

Whisper Units and Whisper Towers:	$30 per order
Air Units and Air Towers:	$20 per order

TAXES: The buyer agrees to bear all federal, state, local and other taxes.

CANCELLATIONS: Cancellations from shipped or partially shipped orders will result in a charge back to the distributor of a 25% restocking fee.

RETURNED MERCHANDISE must have prior factory authorization for credit. Distributors must contact the Southwest Windpower sales office and prepare a "Request for Return Goods Authorization". Merchandise returned must be of current model in salable condition. Acceptance of the merchandise by Southwest Windpower is final only after factory inspection. Transportation charges must be paid by the distributor/dealer on all goods returned for credit. Credit will be issued based upon billing price or current price; whichever is lower, less a 25% handling charge. Any returned merchandise received that does not follow, or otherwise does not meet the above policy will be returned to the distributor freight collect.

GOVERNMENT AND O.E.M. BUSINESS: The factory reserves the right to quote and sell direct on requirement for any agency of any government. The factory reserves the right to quote on and sell direct to any firm using a standard or special Southwest Windpower product as an Original Equipment Manufacturer.

Lightning Protection
R.H. Golde
Chemical Publishing Co., Inc., 1975
New York

Lightning Code Section 78
National Fire Codes, Volume 7, 1978
National Fire Protection Association
(Available at your Library)

Resources

National Renewable Energy Lab (NREL)
1617 Cole Blvd
Golden, CO
80401-3393
(303) 275-3000
http://www.nrel.gov

National Technical Information Service
United States Department of Commerce
5285 Port Royal Rd.
Springfield, VA 22161
(703) 487-4600

The American Wind Energy Association (AWEA)
122 C Street NW, Fourth Floor
Washington, D.C. 20001
(202) 408-8988
http://www.awea.org

NRG Systems (Monitoring Equipment Manufacturer)
110 Commerce Street
Hinesburg, VT 05461
(802) 482-2255

National Electrical Codes

National Electrical Code (NEC)
National Fire Protection Association

WINZLER & KELLY
CONSULTING ENGINEERS

Tank System Repair Report

Task 2.1.2

for

Guam Power Authority

Prepared for

PITI TANK FARM
TANK 1935

Prepared by:

Winzler & Kelly
Consulting Engineers

December 13, 2005

Creative Solutions for Over 50 Years

GPA TANK 1935

TANK SYSTEM REPAIR REPORT

GPA TANK 1935

TANK SYSTEM REPAIR REPORT

ES EXECUTIVE SUMMARY

Tank 1935 was determined to be in fair condition, but required the implementation of various repairs to remain suitable for continued service. The following is a summary of the repairs exercised:

Tank Bottom Plating:
The tank bottom required several lap joint fillet weld repairs and shell-to-bottom fillet weld repairs. There were also areas of isolated deep pitting that were plug welded and areas of heavy pitting that required the installation of doubler plates. There were 1,532 square feet of doubler plates needed; only 300 square feet of doubler plate repairs were listed in the original bid schedule. The difference is attributed to the amount of scale that had to be removed in order to better analyze the pitting problems. After completion of the tank bottom repairs, the floor was sand blasted and coated with an epoxy primer and topcoat.

Tank Shell:
During the repair process, a small hole was discovered in the tank shell, near the wind girder. The hole was repaired and the tank shell interior was sand blasted and coated with an epoxy primer and topcoat. The tank shell exterior required 200 SF of touch-ups. Additive Bid Item No. 2, Tank Exterior Coating, is currently under cost negotiations for the painting of the entire tank shell exterior. There were also repairs of various tank shell appurtenances. The items repaired include: manholes, access openings, overflow vents, pipe nozzles, stairway, liquid level sensor, wind girders, and gate valves.

Tank Roof:
The roof rafter that fell was replaced and re-welded to the supporting beams. The interior roof was sand blasted and coated with an epoxy primer and topcoat. The minor areas of corrosion on the tank roof exterior were sand blasted and re-coated. There were also repairs of various tank roof appurtenances. The items repaired include: goose neck vents, access openings, and sampling port cover.

Leak Detection System:
A continuous monitoring leak detection system with permanent sensor for tanks 1935 and 1934 is currently under construction.

Cathodic Protection System:
A new cathodic protection system was installed for tanks 1935 and 1934, as recommended.

Oil Water Separator Repair:
Various repairs were made to the oil water separator to make it functioning for tanks 1935 and 1934.

GPA TANK 1935

TANK SYSTEM REPAIR REPORT

1.0 INTRODUCTION

1.1 Background

Guam Power Authority (GPA) owns two bulk fuel storage tanks, 1935 and 1934, located in Piti Tank Farm in the Municipality of Piti between the Atlantis Submarine pier and the former Navy Power unit on the Piti Channel. These tanks are used to supply fuel to the Cabras and the Tanguisson Power Plant located adjacent to the tank farm. GPA has contracted the operation of the two-tank facility to Peterra Inc.

The tanks and associated infrastructure were completed in 1976 by the United States Military and resides on compacted coral limestone fill with no previous history of hydrocarbon contamination. The operations at the site include the storage of fuel oil, transfer of fuel oil into and out of the facility, and the processing of oily water. The tanks have been in service continually since construction was completed except for a period of time while the facility was transferred from military to civilian control.

The type of fuel stored in these two tanks is Fuel Oil #6, or Bunker Fuel C. Fuel Oil #6 is a mixture of petroleum distillate hydrocarbons and has a boiling point greater than 400 degrees Fahrenheit. This fuel is commonly broken into two categories depending on the relative levels of sulfur contained in the fuel. High sulfur fuel, also known as sour fuel, is more corrosive and often has increased sulfur levels in stack emissions. The second type fuel is low sulfur fuel also known as sweet fuel. Both of these fuels are used at the Power Plants. Previously both of these fuels were mixed between the two fuel storage tanks on site. This practice was stopped some years before and Tank 1935 is now used to store the high sulfur fuel.

These tanks have not been drained and inspected prior to this report so a base line of corrosion cannot be established. In addition, no construction records or record drawings for the tanks could be located.

In February 2001 the United States Environmental Protection Agency (USEPA) Region IX issued a Unilateral Administrative Order For Piti Tank Farm to GPA to “perform abatement activities necessary to address conditions that may present an imminent and substantial endangerment”. These abatement activities “require integrity inspections, maintenance, installation of leak detection and repair of cathodic protection.”

Due to continued operations at the Power Plants, one tank is to be inspected and repaired at a time. PSC Industrial Services Group is the contractor that has been retained by GPA to clean the tank. Winzler & Kelly Consulting Engineers has been retained to perform the tank inspection and repair reports. This Task System Repair Report (including the Cathodic Protection Repair Report), for Tank 1935, is in accordance with the Scope of Work issued in Appendix A of the Administrative Order. This Scope of Work is included within this report in Appendix A.

1.2 Site Description

The two bulk storage tanks at the Piti Tank Farm are approximately 48 ft high with a diameter of 200 ft, having capacity of approximately 254,000 barrels each. They are supplied by a 24" above ground pipeline that is interconnected to the U.S. Navy and Shell Tank farms. The supply line terminates with a double gate valve at Tank 1935. Discharge from the tanks is through a 12" pipeline with a gate valve at the tank discharge port. This piping is connected to a pump manifold that distributes fuel to GPA Cabras and Tanguisson Power Plants.

The oil-water separator (OWS) situated within the containment berm of tank 1934 consists of a partially buried cast-in-place concrete tank with three interior sections. The wood and tin cover was placed over the tanks to keep out rain and other objects, but this was removed by the cleaning Contractor. The system is connected to each bulk storage tank with a 3" or 4" discharge line. The OWS is also connected to the 12" tank discharge piping; the interconnection includes an in-line filter. This system is not functioning and the electrical controllers are missing and in-line pumps and/or motors have been removed. Three above ground truck trailer tanks are nearby and connected to the OWS but stand empty. There is also a collection sump on the berm by the entry road for truck discharge of waste oil to the OWS.

1.3 Repair Description

The tank repairs were conducted in accordance with API Standard 653 "Tank Inspection, Repair, Alteration, and Reconstruction" and API Standard 650 "Welded Steel Tanks for Oil Storage". International Bridge Corporation of Guam performed the tank repairs, and Winzler & Kelly personnel conducted the construction and repair inspections.

The repairs are quantified in the table below: Table 1 "Bulk Storage Fuel Tank No. 1935 Repair Quantities". Table 1 lists both the estimated quantities from the original bid schedule and the actual quantities from the construction process.

GPA TANK 1935

TANK SYSTEM REPAIR REPORT

TABLE 1
BULK FUEL STORAGE TANK NO. 1935 REPAIR QUANTITIES

Item	Description	Estimated Qty.	Unit	Actual Qty.
1.0	**BID ITEM NO. 1 – Repair of GPA Bulk Storage Fuel Tank No. 1935**			
1.1	Mobilization & Demobilization	1	LS	1
1.2	Repair Fillet Welds on Tank Bottom	30	LF	72
1.3	Weld Deep Pits in Tank Bottom Plates	200	EA	260
1.4	Install Doubler Plates at Heavily Pitted Areas	300	SF	1,532
1.5	Reinstall Existing Roof Rafter	1	LS	1
1.6	Weld Repair-Tank Roof	3	LF	3
1.7	Paint Touch-up Tank Exterior	200	SF	200
1.8	Sand Blast & Coat Tank Bottom	31,416	SF	31,416
1.9	Sand Blast & Coat Tank Shell	30,159	SF	30,159
1.10	Sand Blast & Coat Underside of Roof Plating, Roof Rafters, & Upper Portion of Roof Support Columns	57,841	SF	57,841
2.0	**BID ITEM NO. 2 – Cathodic Protection & Leak Detection System**			
2.1	Cathodic Protection System for Tanks #1934 & #1935	1	LS	1
2.2	Continuous Monitoring Leak Detection System with Permanent Sensor for Tanks #1934 & #1935	1	LS	(1)
2.3	Directional Drilling for CP & LD System Installation below Tanks #1934 & #1935	1	LS	1
3.0	**BID ITEM NO. 3 – Oil Water Separator Repair**			
3.1	Install Ceramic Floor & Wall Tiles	1	LS	1
3.2	Concrete Wall & Rotary Pipe Skimmer	1	LS	1
3.3	Install OWS Roof & Framing	1	LS	1
	ADDITIVE BID ITEMS			
	Additive Bid No. 1 Tank Roof Railing	1	LS	(2)
	Additive Bid No. 2 Tank Exterior Coating	1	LS	(3)

Notes:

1. *Continuous monitoring leak detection system currently under construction.*
2. *Additive Bid Item No. 1 not exercised by GPA.*
3. *Additive Bid Item No. 2 currently under negotiation.*

There were some problems encountered during the repair process that should be mentioned. One problem was the refilling of the tank with oil after it had emptied and cleaned in February 2004. GPA filled the tank with eight (8) feet of oil, in an effort to protect the structure during an impending typhoon in June 2004. The tank exhibited some leaking of oil during the time period that is was filled. After the storm passed, the tank was emptied and re-cleaned. This contamination plume does not affect the leak detection system that was specified, which will be calibrated to exclude background levels of hydrocarbons.

The contractor encountered some difficulties repairing the leaks around the bolts of the large access opening. Because of the original layout, the bolts were difficult to tighten. The contractor managed to re-tighten the bolts and applied a sealant to prevent further leaks. The bolts were vacuum tested to ensure proper repair.

During the repair process, an additional defect was noted in the tank shell. The portion of the shell containing the small hole was removed and replaced with a plate of the same thickness.

2.0 TANK BOTTOM REPAIRS

2.1 Bottom Plate Fillet Weld

Thirteen (13) leaks were originally detected on the bottom plate lap joint fillet welds. An additional bottom plate lap joint fillet weld defect was observed during the repair process, located between bottom plates No. 170 and 171 (42 LF). A total of 72 LF of fillet weld repairs were made.

The defective welds found in the tank bottom were repaired by air-arc gouging and re-welding the fillet weld. See Appendix B – Repair Detail Drawing “Bottom Plate Plan” for locations of the repairs.

2.2 Shell-to-Bottom Plate Fillet Weld

Nine (9) leaks were originally detected on the shell-to-bottom plate fillet welds. An additional two (2) shell-to-bottom plate fillet weld defects were observed during the repair process. A total of eleven (11) repairs were made.

The defective welds found in the shell-to-bottom plate connections were repaired by air-arc gouging and re-welding the fillet weld. See Appendix B – Figure 1 “Bottom Plate Plan” for locations of the repairs.

2.3 Bottom Plate Pitting

The build-up of scale on the tank bottom was removed, allowing the contractor to more accurately identify areas of pitting. There were 260 areas of isolated deep pitting that were filled with plug weld material and made flush with the top of the plates. These areas are located and quantified in Appendix B – Table 2 "GPA Tank 1935 Tank Bottom Plate Re-Assessment Record".

Upon removal of the scale, the contractor discovered some areas of heavy pitting that required doubler plate repairs. As identified in the plans, areas of excessive deep pitting larger than nine (9) square feet were repaired using doubler plates. The various sized doubler plates were fillet welded to the tank bottom. A total of 1,532 SF of repair was needed; only 300 SF of repair was estimated in the original bid schedule. See Appendix B – Figure 1 "Bottom Plate Plan" for locations of the repairs and Table 2 "GPA Tank 1935 Tank Bottom Plate Re-Assessment Record" for details.

A doubler plate was also utilized to repair the dent in the tank bottom, resulting from a fallen rafter. The plate was placed over the damaged area and sealed by fillet welding.

2.4 Interior Tank Bottom

After the completion of the tank bottom repairs, the floor was sand blasted and coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.

3.0 TANK SHELL REPAIRS

3.1 Tank Shell

3.1.1 Tank Shell Interior

During the repair process, a small hole was discovered in the tank shell, approximately 44 feet above the tank bottom and near a wind girder. The portion of the tank shell with excessive corrosion was removed and replaced with a plate of the same thickness and rounded corners.

The tank shell interior was sand blasted, removing the existing scale and previous coating. The interior shell was coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.

3.1.2 Tank Shell Exterior

There were approximately 200 SF of touch-ups required on the tank shell exterior. These areas of minor corrosion were cleaned and re-coated. Additive Bid Item No. 2, Tank Roof Exterior Coating, is currently under cost negotiations with the tank repair contractor.

3.2 Tank Shell Appurtenances

3.2.1 Manholes

The areas of minor corrosion on the manholes were sand blasted and re-coated.

3.2.2 Access Openings

The access opening, a 67 SF opening with 160 – ¾" bolts, exhibited some seepage of tank product. The bolts were re-tightened, sealed, and vacuum tested to ensure proper repair.

3.2.3 Overflow Vents

One of the eight overflow vents (the lowest vent, designed to discharge product first) exhibited signs of seepage along the vent-to-piping connection. The connection was repaired.

3.2.4 Pipe Nozzles

The areas of minor corrosion on the pipe nozzles were sand blasted and re-coated.

3.2.5 Stairway

Several welds that connected the metal grate steps to the tank shell and the metal handrail to the steps had failed. These welds were repaired, and the areas of minor corrosion were sand blasted and re-coated.

3.2.6 Liquid Level Sensor

A new liquid level sensor was installed to replace the original sensor that exhibited corrosion and had a broken roof attachment.

3.2.7 Wind Girders

There were two (2) areas of minor corrosion on the wind girders that were sand blasted and re-coated.

3.2.8 Ground Strap

The ground strap that electrically connects the tank shell to the earth below was reconnected.

3.2.9 Gate Valves

Peterra Inc. replaced four (4) of the gate valves that exhibited leaking and one 12" gasket.

4.0 TANK ROOF REPAIRS

4.1 Roof Plating

4.1.1 Tank Roof Interior

The roof rafter that fell was bent at one end; it was straightened and re-welded to the supporting beams. The interior roof rafters, plating, and the top 10 feet of the support columns were sand blasted and coated with an epoxy primer and topcoat, Ameron Amercoat 395FD.

4.1.2 Tank Roof Exterior

There was only minor corrosion present on the tank roof exterior. These areas were sand blasted and re-coated.

4.2 Roof Top Appurtenances

4.2.1 Goose Neck Vents

The goose neck vents were sand blasted and re-coated and the corroded bolts replaced.

4.2.2 Access Openings

All four (4) access opening covers were replaced due to the presence of advanced corrosion.

4.2.3 Sampling Port

A new sampling port cover was installed to replace the missing original cover.

4.2.4 Handrail

The tank roof railing was included as Additive Bid item No. 1 in the bid documents. Guam Power Authority did not exercise this upgrade.

5.0 CATHODIC PROTECTION SYSTEM

The new cathodic protection system was installed for Bulk Storage Fuel Tanks No. 1935 and No. 1934, as recommended. The installation/operation report, prepared by Corrpro Companies, Incorporated and International Bridge Corporation, is included in Appendix D – "Cathodic Protection Installation & Energization Program". The As-Built drawings are also included in Appendix D.

6.0 LEAK DETECTION SYSTEM

The continuous monitoring leak detection system with permanent sensor for Bulk Storage Fuel Tanks No. 1935 and No. 1934 is currently under construction. A separate Leak Detection Installation Report will be prepared by the contractor upon completion of construction, as per the Administrative Order – Scope of Work (see Appendix A).

7.0 OIL WATER SEPARATOR REPAIR

Various repairs and upgrades were made to the nonfunctioning oil water separator on site. The work is substantially completed, with a new cover and rotary pipe skimmer installed, partition wall constructed, and new effluent/influent piping put in place. The original interior coating was removed and replaced with a ceramic tile finish.

8.0 HYDROSTATIC TESTING

A hydrostatic test was performed on Bulk Storage Fuel Tank No. 1935, by Island Certs, on November 4, 2005. The test was certified by an API 653 Inspector as following the API 653 Section 12 – Examination and Testing requirements. A copy of the report is included in Appendix E – "Hydrostatic Test Report & Monitoring Data" (submitted by International Bridge Corporation).

TANK SYSTEM REPAIR REPORT

APPENDIX A

ATTACHMENT A

SCOPE OF WORK
UNILATERAL ADMINISTRATIVE ORDER
FOR PITI TANK FARM

INTRODUCTION

This Scope of Work ("SOW") is provided as Attachment A to an Order directed to Respondent, Guam Power Authority, by the United States Environmental Protection Agency ("EPA"), Region 9 (Administrative Order U.S. EPA Docket No. CWA-9-2001-0001) ("Order").

The purpose of this SOW, and the Order of which it is a part, is to require Respondents to perform the tasks necessary to abate an imminent and substantial endangerment associated with the storage of oil at the Piti Tank Farm ("the Facility").

DEFINITIONS

Unless otherwise expressly provided herein, terms used in this SOW, and the Orders of which it is a part, shall have the meanings which are assigned to them in the Clean Water Act and the Oil Pollution Act. Except where otherwise noted, the definitions provided in EPA's Order will apply to this SOW.

SOW PLAN DEVELOPMENT, IMPLEMENTATION AND REPORTING

Required Tasks: Within thirty (30) Working Days of the Effective Date of the Order of which this Scope of Work is a part, Respondent shall submit plans and workplans for Phase I - Tasks 1.1, 1.2, 1.3, 1.4 and 1.5, and provide proposed schedules for conducting the Work required for Phases I, II, III and IV. The proposed schedule for all tasks due after the Phase I submittals shall run from EPA approval of the appropriate prior submittal. EPA intends to provide an opportunity for review and comment by Guam EPA prior to its approval, approval with modifications or disapproval of Respondent's deliverables. All tasks in this SOW must be conducted by qualified and certified personnel, in accordance with industry standards and applicable laws and requirements.

Sequencing of Tasks: EPA is aware that GPA can only take one of the two tanks at its Facility (Tanks 1934 and 1935) out of service at any given time, in order to maintain the fuel supply necessary to continue providing energy to its customers. As a result, GPA's proposed schedule for Task 1.3 (Tank System Integrity), Task 1.4 (Tank Cleaning and Bottom Sludge) and Task 2.1 (Tank System Repair) Workplans and Reports, should reflect that the tanks will be emptied, assessed and repaired sequentially. This should also be reflected in the Project Schedule for all Tasks required by Task 1.5. As a result, GPA should be aware that some Phase

II tasks will begin before all Phase I tasks have been completed. GPA should also determine if Leak Detection installation needs to occur when each tank is empty and sequence this activity to occur before each tank is refilled and put back into service, if appropriate.

Required Quarterly Progress Reports: During all Phases of SOW implementation, in addition to all other submittals required by this SOW, Respondent must submit Quarterly Progress Reports as described in paragraphs 47 and 48 of Section VI (Work to be Performed) of the Order.

PHASE I PLAN PREPARATION and IMPLEMENTATION

Task 1.1. Health & Safety Plan

1.1. HASP: Within thirty (30) Working Days of the Effective Date of the Order, Respondent shall prepare and submit for EPA review and comment a Health and Safety Plan ("HASP") that ensures the protection of the human health and safety during performance of on-site and off-site work under this Order. This plan shall be prepared and updated in accordance with the applicable portions of EPA's Standard Operating Safety Guide, (November 1984, updated July 1988, and any additional updates). In addition, the plan shall comply with all current applicable Occupational Safety and Health Administration ("OSHA") regulations, including but not limited to Hazardous Waste Operations and Emergency Response (29 C.F.R. Part 1910), Construction Standards (29 C.F.R. Part 1926), General Industry Standards (29 C.F.R. Part 1910), and the general duty requirement of Section 5(a)(1) of the Occupational Safety and Health Act of 1970 (29 U.S.C. §651 et seq.). Respondent shall incorporate all changes to the plan requested by EPA and implement the plan during the pendency of this Order.

Task 1.2. Quality Assurance/Quality Control Plan

1.2 QA/QC Plan: Within thirty (30) Working Days of the Effective Date of the Order, Respondent shall submit a Quality Assurance/Quality Control Plan that complies with all requirements of Section XV (Quality Assurance, Sampling, Data Analysis and Prior Notice of Field Activities) of the Order. Respondent shall incorporate all changes to the plan requested by EPA and implement the plan during the pendency of this Order.

Task 1.3. Tank System Integrity Testing Workplan, Implementation and Reporting

1.3.1. Tank System Integrity Testing Workplan and Implementation: Within thirty (30) Working Days of the Effective Date of the Order, Respondent shall submit and, following EPA approval, implement a comprehensive structural integrity testing/inspection workplan for the tanks and associated equipment at the Facility ("Tank

System Integrity Testing Workplan"). The workplan must address Tanks 1934 and 1935 and their associated piping, valves, and pumps (See Figure 3), and be developed in accordance with industry inspection standards including the applicable American Petroleum Institute ("API") standards. The evaluation shall consider deterioration and corrosion of the tanks including, but not limited to, the entire Tank Bottom, shell to bottom welds, and tank foundations. The workplan shall include a proposed schedule for conducting the Work associated with this task, taking into account that only one tank can be taken out of service at a time. This schedule shall also consider the schedule for completion of Task 1.4 of Phase I (since the removal of tank bottom sludge will be necessary to complete the work for Task 1.3) and Task 2.3 of Phase II (since some types of leak detection equipment may need to be installed while the tanks are empty).

1.3.2. Tank System Testing Report: Within thirty (30) Working Days after completion of all inspections needed to assess the integrity of each of the tanks and associate piping and equipment, as provided in the approved Tank System Integrity Testing Workplan, Respondent shall submit to EPA a Tank System Integrity Testing Report (separate reports must be presented for each tank, "Tank 1934 System Integrity Testing Report" and "Tank 1935 System Integrity Testing Report"), which documents the findings, and provides supporting engineering analysis and recommendations for repair, alteration, reconstruction and/or foundation modifications, if any. The Tank System Integrity Testing Report and recommendations should be based on the inspection/integrity testing conducted in accordance with the Tank System Testing Workplan, previous inspections and historical information, and shall include all work necessary to maintain or restore the tanks and associated equipment to a condition suitable for safe operation in accordance with API and other applicable standards and requirements.

Task 1.4. Tank Cleaning and Bottom Sludge Workplan, Implementation and Reporting

1.4.1. Tank Cleanout Workplan and Implementation: Within thirty (30) Working Days of the Effective Date of the Order, Respondent shall submit and, following EPA approval, implement a workplan for tank cleaning and bottom sludge removal, management and disposal ("Tank Cleanout Plan"). The Tank Cleanout Plan shall describe the process for each tank and associated equipment to be cleaned, for determining the nature and volume of tank bottom sludge, and for proper disposal of sludge. It shall also include details regarding the characterization, removal, storage, management, transportation, treatment and disposal of tank bottom sludge from each tank in a manner designed to avoid spills and comply with all applicable laws and regulations. It shall also comply with all provisions of the Order, including Paragraph 51 of Section VI (Work to Be Performed).

1.4.2. Tank Cleanout Report: Within thirty (30) Working Days after completion of the Work required by the approved Tank Cleanout Plan for each tank, Respondent shall

submit to EPA a tank cleaning and bottom sludge report ("Tank 1934 Cleanout Report" and "Tank 1935 Cleanout Report"). Each Tank Cleanout Report shall document the nature, quantity, disposition, transportation, treatment and disposal information regarding the tank bottom sludge which is recovered from the tank and other equipment referenced in the Tank System Testing Report. It shall also include any problems encountered, and the methods used to address such problems, during the implementation of the Tank Cleanout Workplan and any recommendations for preventative maintenance and operational changes.

Task 1.5. Proposed Project Schedule for All Tasks

1.5.1. Proposed Project Schedule: Within thirty (30) Working Days of the Effective Date of the Order, Respondent shall propose an overall Project Schedule, including all of the tasks required by Phases I, II, III and IV of this SOW. Once approved by EPA, Respondent shall implement the Work in accordance with the approved Project Schedule. The Project Schedule will set the deadlines for Respondent's submittals for subsequent Phases of the work, including Tasks 2.2.1 (Cathodic Protection Workplan) and 2.3.1. (Leak Detection Workplan). Respondent may choose to, or determined that it is necessary to, submit some of the Cathodic Protection (Task 2.2) and Leak Detection (Task 2.3) deliverables during the pendency of the Phase I Tasks. Respondent may also propose to alter the phasing or sequencing of the required work, subject to EPA approval.

PHASE II TANK SYSTEM REPAIR, CATHODIC PROTECTION AND LEAK DETECTION IMPLEMENTATION

Task 2.1. Tank System Repair and Alteration

2.1.1 Tank System Repair Workplan: Within thirty (30) Working Days of EPA approval of the Phase I - Task 1.3.2. Tank System Testing Report for the first tank to be emptied and assessed, Respondent shall prepare and, following EPA approval, implement a tank system repair, alteration and upgrade plan ("Tank System Repair Workplan") for the tank that has been assessed. The Tank System Repair Workplan must address proposed repairs, alterations and upgrades to the Tank System associated with that tank. The Tank System Repair Plan shall describe the tank system modifications which shall be implemented, including the recommendations listed in the Tank System Testing Report, along with testing methods to ensure that the repaired/upgraded Tank System is fit for service. It shall also provide a proposed schedule for implementation of all items addressed in the Tank System Repair Workplan. Within thirty (30) Working Days of EPA approval of the second tank's Tank System Integrity Report, pursuant to Task 1.3.2 Tank System Testing Report, Respondent shall submit a second Tank System Repair Workplan for that tank.

2.1.2. Task System Repair Report: Within thirty (30) Working Days after completion of the fieldwork necessary to implement each Tank System Repair Workplan, Respondent shall prepare a Tank System Repair Report. The Tank System Repair Report shall describe the repairs, alterations and upgrades which were conducted, including a section describing any problems encountered, and the methods used to address such problems, during implementation of the Tank System Repair Workplan. The Tank System Repair Report must include all documentation on post-repair testing and certification of each tank for service.

Task 2.2. Cathodic Protection System Workplan, Implementation and Reporting

Respondent may chose to utilize the existing "GPA Cathodic Protection (CP) Survey Pettera Tank Farm Facility, Agana, Guam" assessment report written by ConCeCo Engineering, Inc. dated Sept. 2, 1999 (Appendix C) as its CP Assessment Report, in lieu of completing Tasks 2.2.1 and 2.2.2. below. If Respondent determines that this is its preferred course, then Respondent shall leave Tasks 2.2.1. and 2.2.2. off the Proposed Project Schedule, and instead propose a date for submission of Task 2.2.3. (CP Repair Workplan) as its first Cathodic Protection deliverable.

2.2.1. CP Assessment Workplan: In accordance with the approved Project Schedule (see Task 1.5.1), Respondent shall submit and implement a work plan to assess the Facility's cathodic protection system ("CP Assessment Plan"). GPA should consider the findings of the "GPA Cathodic Protection (CP) Survey Pettera Tank Farm Facility, Agana, Guam" assessment report written by ConCeCo Engineering, Inc. dated Sept. 2, 1999 (Appendix C). The assessment shall be conducted in accordance with industry standards, including API and the National Association of Corrosion Engineers (NACE).

2.2.2. CP Assessment Report: Within thirty (30) Working Days of completion of the tasks required by the CP Assessment Workplan, Respondent shall submit a report on the condition of the Facility's cathodic protection system ("CP Assessment Report").

2.2.3. CP Repair Workplan: Within thirty (30) Working Days of approval of the CP Assessment Report, or as otherwise provided in the approved Project Schedule, Respondent shall submit, and, following EPA approval, implement a CP Repair Workplan, that provides for repair or replacement of the Facility's cathodic protection system. Repairs and/or upgrades shall be conducted in accordance with industry standards, including the API and the National Association of Corrosion Engineers ("NACE"). Respondent must demonstrate that adequate cathodic protection has been achieved for the Facility in accordance with industry standards including API and NACE.

Task 2.2.4. CP Repair Report: Within thirty (30) Working Days of completion of the Work required pursuant to the CP Repair Workplan, Respondent shall submit a CP Repair Report. The Report shall describe the Work conducted pursuant to the CP Repair

Report and demonstrate that the system is operating properly, including that adequate cathodic protection has been achieved for the Facility in accordance with industry standards, including API and NACE standards. The CP Repair Report shall also include a description of any problems encountered, and the methods used to address such problems, during the implementation of the CP Repair Plan.

Task 2.3. Leak Detection Workplan, Implementation and Reporting

2.3.1. Leak Detection Workplan: In accordance with the approved Project Schedule, Respondent shall submit and, following EPA approval, implement a workplan to assess leak detection methods for installation at the Facility ("Leak Detection Assessment Plan"). The assessment must include technologies for detection of leaks from tanks, piping and transfer systems. The assessment shall be conducted in accordance with industry standards including API and include at least three different types of technologies or methods.

2.3.2 Leak Detection Assessment Report: Within thirty (30) Working Days after completion of the Work required by the Leak Detection Assessment Workplan, the Respondent shall provide a report ("Leak Detection Assessment Report") detailing the assessment conducted in accordance with the Leak Detection Assessment Plan. The Leak Detection Assessment Report shall describe all methods and technologies assessed for detection of leaks from tanks, piping and transfer systems. It shall also include a summary of the benefits and issues associated with each technology, method, vendor and product. The Report shall also provide cost information for all leak detection systems covered by the Leak Detection Assessment Report. The Leak Detection Assessment Report shall provide a recommendation for implementation of a leak detection system for the Facility.

2.3.3. Leak Detection Installation Workplan: Within thirty (30) Working Days of approval of the Leak Detection Assessment Report, Respondent shall submit, and, after EPA approval, implement a Leak Detection Installation Workplan, for the installation, operation, and maintenance of a leak detection system that will detect tank bottom and piping leaks, in accordance with the recommendations described in the Leak Detection Assessment Report.

2.3.4. Leak Detection Installation Report: Within thirty (30) Working Days, after the leak detection system has been installed in accordance with the Leak Detection Installation Workplan, Respondent shall submit a Leak Detection Installation Report to EPA, documenting the installation of the leak detection system and demonstrating that the system is operating properly and that appropriate external leak detection has been achieved for the Facility in accordance with all applicable industry standards, including API standards. If Respondent installs leak detection equipment separately for each tank prior to returning that tank to service, then Respondent shall submit a Leak Detection

Installation Report within thirty (30) Working Days of installation of the leak detection system for each tank.

Task 2.4. Updated Project Schedule

2.4.1. Updated Project Schedule: Respondent shall submit an updated project schedule at the same time that Respondent submits the Leak Detection Installation Report, required in Task 2.3.4. If leak detection is installed separately for each tank prior to returning that tank to service, Respondent shall submit an updated project schedule when each Leak Detection Installation Report is submitted.

PHASE III OPERATION AND MAINTENANCE WORKPLANS AND IMPLEMENTATION

Task 3.1. Tank System Operation and Maintenance Workplan

3.1.1. Tank System Operation and Maintenance Workplan: Within thirty (30) Working Days after EPA approval of the Tank System Repair Report, Respondent shall submit and, following EPA approval, implement a Tank System Operation and Maintenance Workplan, which shall include a future inspection and integrity testing schedule for Tanks 1934 and 1935 and their associated piping, valves, pumps and other equipment. This schedule shall be submitted to EPA for approval and incorporated into the Facility's SPCC Plan. The Tank System Operations Plan must also provide recommendations for preventative maintenance and upkeep of the Tank System.

Task 3.2. Cathodic Protection Operation and Maintenance Workplan

3.2.1. Cathodic Protection Operation and Maintenance Workplan: Within thirty (30) Working Days after EPA approval of the CP Repair Report, Respondent shall submit and, after EPA approval implement, a CP Operation and Maintenance Workplan which provides a schedule for annual surveys by a qualified engineer, training for appropriate staff, monthly monitoring, operations and maintenance of the CP system. The CP Operations Plan shall also include recommendations for preventative maintenance.

Task 3.3. Leak Detection Operation and Maintenance Workplan

3.3.1. Leak Detection Operation and Maintenance Workplan: Within thirty (30) Working Days after EPA approval of the Leak Detection Installation Report, Respondent shall submit and, after EPA approval, implement a Leak Detection System Operation and Maintenance Workplan which describes the operation and maintenance requirements of the leak detection system and specifies a schedule for monitoring and maintenance, to be incorporated into the Facility's SPCC Plan. If leak detection is installed separately for

each tank prior to returning that tank to service, Respondent shall submit an initial Leak Detection Operation and Maintenance Workplan after installation the system for the first tank, and an updated Workplan after the installation of the leak detection system for the second tank.

Task 3.4 Updated Project Schedule

3.4.1. Updated Project Schedule: Respondent shall submit an updated project schedule at the same time that Respondent submits the Leak Detection Operation and Maintenance Workplan, required in Task 3.3.1. If an updated Workplan is required, Respondent shall also submit an updated project schedule at that time.

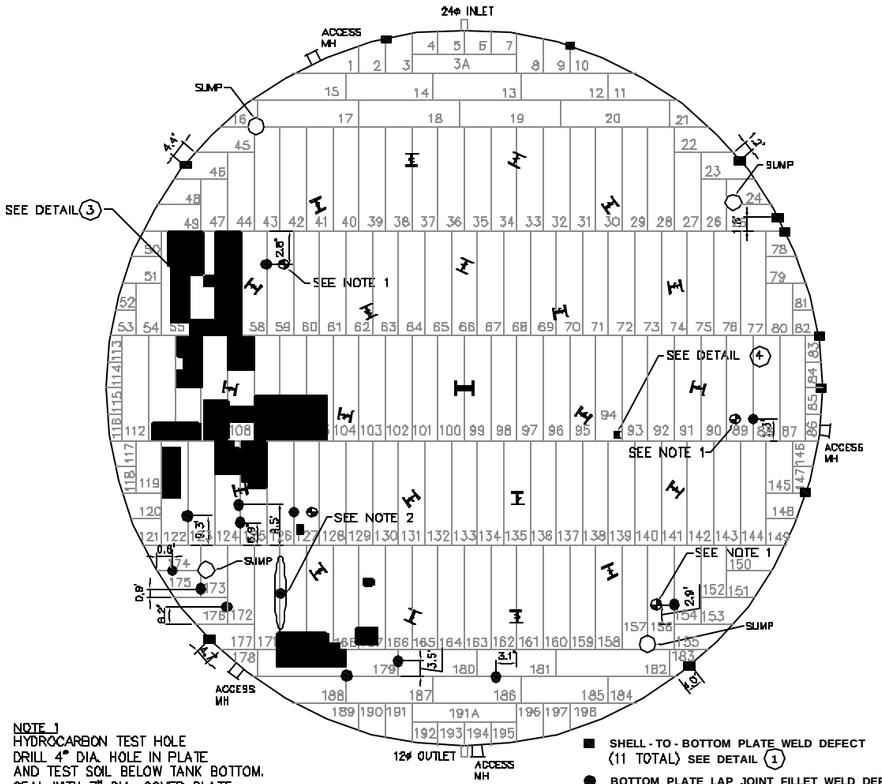
PHASE IV FINAL REPORT AND CORRECTION OF DISCREPANCIES

4.1. Final Report: Within thirty (30) Working Days after EPA approval of the Task 3.1, 3.2 and 3.3. Workplans, Respondent must submit a Final Report as required by paragraph 49 of Section VI (Work to be Performed) of the Order.

4.2. Correction of Discrepancies or Deficiencies in Final Report: Within thirty (30) Working Days after EPA provides Respondents with its comments on the Final Report, Respondent must submit a Corrected Final Report, in accordance with EPA's comments and paragraph 50 of Section VI (Work to be Performed) of the Order.

TANK SYSTEM REPAIR REPORT

APPENDIX B



NOTE 1
HYDROCARBON TEST HOLE
DRILL 4" DIA. HOLE IN PLATE AND TEST SOIL BELOW TANK BOTTOM. SEAL WITH 7" DIA. COVER PLATE. (TYPICAL AT 4 LOCATIONS)

NOTE 2
BOTTOM PLATE LAP JOINT FILLET WELD DEFECT BETWEEN PLATES #170:171 REQUIRED 42 LF OF REPAIR

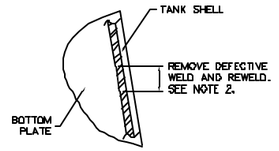
■ SHELL-TO-BOTTOM PLATE WELD DEFECT (11 TOTAL) SEE DETAIL (1)

● BOTTOM PLATE LAP JOINT FILLET WELD DEFECT (14 TOTAL) SEE DETAIL (2)

BOTTOM PLATE WELD REPAIR

PLAN
NTS

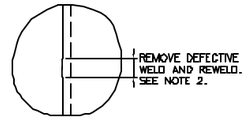
A / C-4 BOTTOM PLATE WELD REPAIR PLAN
NTS



PLAN

SECTION

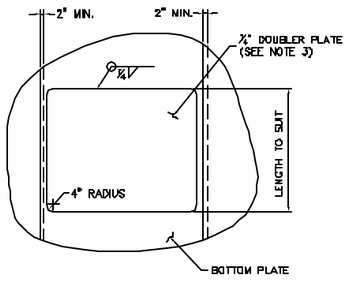
1 / C-4 REPAIR OF SHELL TO BOTTOM PLATE WELD
NTS



PLAN

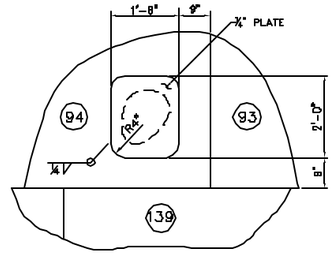
SECTION

2 / C-4 REPAIR OF BOTTOM PLATE LAP JOINT FILLET WELDS
NTS



PLAN

3 / C-4 NEW DOUBLER PLATE AT EXCESSIVE BOTTOM PLATE PITTING LOCATIONS
SCALE: 3/8"=1'-0"



PLAN

4 / C-4 REPAIR OF DENT IN TANK BOTTOM PLATE 94
SCALE: 3/4"=1'-0"

GPA TANK 1935
INTEGRITY TESTING REPORT

WINZLER & KELLY CONSULTING ENGINEERS
417 MONTGOMERY SUITE 600 PH (415) 283-4970
SAN FRANCISCO, CA 94104 FAX (415) 283-4980

GUAM POWER AUTHORITY
P.O. BOX 2977
AGANA, GUAM
USA, 96910

DES	RHM
DR	MAP
SCALE	NOT TO SCALE
DATE	DEC 2005

TITLE
FIGURE 1.0
BOTTOM PLATE PLAN

Table 2

GPA TANK 1935 TANK BOTTOM PLATE RE-ASSESSMENT RECORD						
PLATE	ASSESMENT CODE					REMARKS
NO.	DOUBLER PLATE			DEEP PITTING		
	SIZE	INITIAL	ACTUAL	INITIAL	ACTUAL	
	(FT)	(SF)	(SF)	(EA)	(EA)	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Table 2

GPA TANK 1935 TANK BOTTOM PLATE RE-ASSESSMENT RECORD

PLATE	ASSESMENT CODE					REMARKS
NO.	DOUBLER PLATE			DEEP PITTING		
	SIZE	INITIAL	ACTUAL	INITIAL	ACTUAL	
	(FT)	(SF)	(SF)	(EA)	(EA)	
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55		135	135			5x10,5x10,5x7
56		110	110	8	8	5x10,3x4,5x7,4.33x3.17
57		210	210			7x30
58				1	1	
59				18	18	
60				9	9	
61				1	1	
62				2	2	
63						
64				3	3	
65				1	1	
66				6	6	
67						
68						
69				3	3	
70				1	1	
71				5	5	
72				1	1	
73						
74				2	2	
75						
76				5	5	
77				4	4	
78						

Table 2

79						
80						
GPA TANK 1935 TANK BOTTOM PLATE RE-ASSESSMENT RECORD						
PLATE	ASSESMENT CODE					REMARKS
NO.	DOUBLER PLATE			DEEP PITTING		
	SIZE	INITIAL	ACTUAL	INITIAL	ACTUAL	
	(FT)	(SF)	(SF)	(EA)	(EA)	
81						
82				2	2	
83						
84						
85						
86						
87						
88						
89						
90						
91				10	10	
92						
93						
94						
95				5	5	
96						
97						
98				5	5	
99						
100						
101						
102				10	10	
103				20	20	
104				6	6	
105		65	65			5x13
106		91	91			7x13
107		91	91			7x13
108		112	112			5x10,2.67x10,5x7
109		84	84			5x10,2x10,2x7
110		142.5	142.5	6	6	5x10,2x6,6.5x7,5x7
111		35	35			5x7
112						
113						
114						
115						
116						
117						

Table 2

118						
119						
120						
GPA TANK 1935 TANK BOTTOM PLATE RE-ASSESSMENT RECORD						
PLATE	ASSESMENT CODE					REMARKS
NO.	DOUBLER PLATE			DEEP PITTING		
	SIZE	INITIAL	ACTUAL	INITIAL	ACTUAL	
	(FT)	(SF)	(SF)	(EA)	(EA)	
121						
122		75	75	19	19	5x15
123				2	2	
124		66	66	18	18	5x10,2x8
125		94	94			5x7,5x7,5x4,2x2
126						
127		4.5	4.5			1.83x2.5
128						
129						
130						
131						
132						
133						
134						
135						
136				8	8	
137				1	1	
138				14	14	
139						
140						
141						
142						
143						
144						
145						
146						
147						
148						
148						
150						
151						
152						
153						
154						
155						

Table 2

156						
157						
158						
159						
160						

GPA TANK 1935 TANK BOTTOM PLATE RE-ASSESSMENT RECORD

PLATE	ASSESMENT CODE					REMARKS
NO.	DOUBLER PLATE			DEEP PITTING		
	SIZE	INITIAL	ACTUAL	INITIAL	ACTUAL	
	(FT)	(SF)	(SF)	(EA)	(EA)	
161						
162						
163						
164						
165						
166						
167		36	36	9	9	2x3,5x6
168		6	6	4	4	2x3
169		35	35			5x7
170		35	35			5x7
171		5	5			1x5
172						
173						
174						
175						
176						
177						
178						
179		100	100			5x20
180						
181						
182						
183						
184						
185						
186						
187						
188						
189						
190						
191						
192						
193						

Table 2

194						
195						
196						
197						
198						
TOTAL		**1532**	**1532**	**209**	**209**	
BALANCE		**0**		**0**		

TANK SYSTEM REPAIR REPORT

APPENDIX C

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 10/14/05
Location: Piti, Guam
Remarks: Testing of column coating thickness

Date: 10/14/05
Location: Piti, Guam
Remarks: Typical coated column base

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 8/21/05
Location: Piti, Guam
Remarks: Tank Roof and rafter blasted to SP 6 (rejected and re-blasted)

Date: 8/21/05
Location: Piti, Guam
Remarks: Tank Roof and shell blasted to SP 6 (rejected and re-blasted due to remaining oil)

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

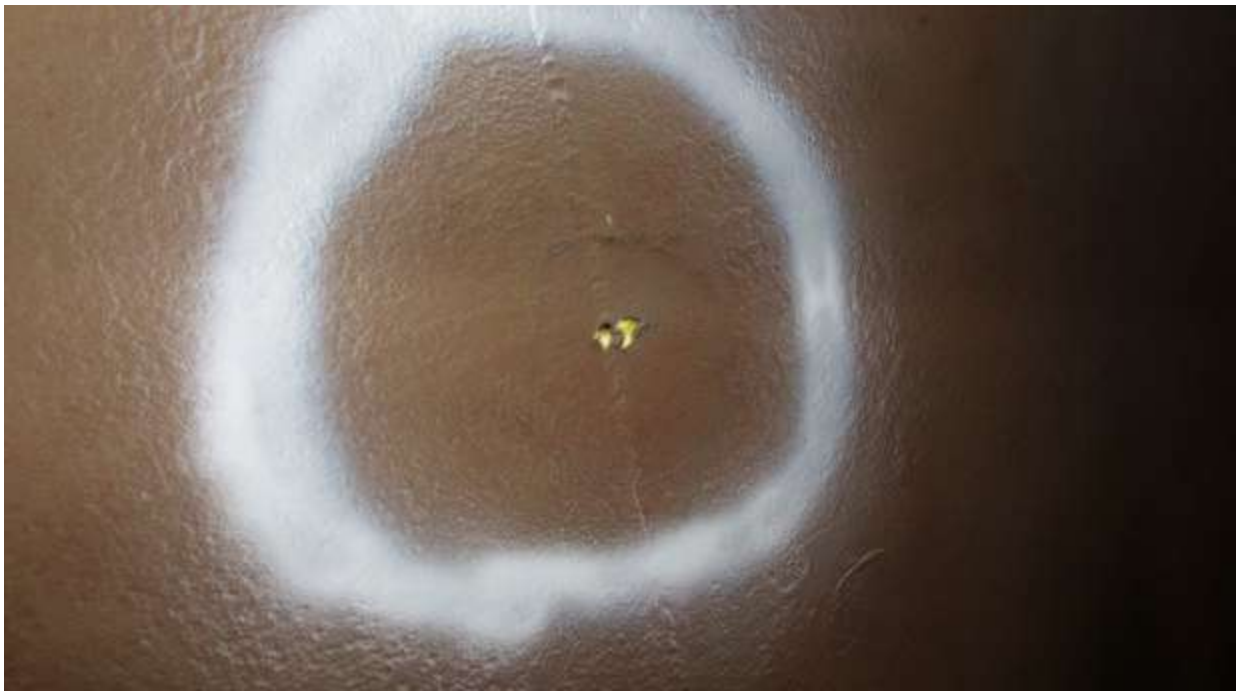
PROJECT NO: **01405108**

Date: 10/17/05
Location: Piti, Guam
Remarks: Water sampling prior to hydro test discharge

Date: 10/17/05
Location: Piti, Guam
Remarks: Water sampling prior to hydro test discharge

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**



Date: 7/28/05
Location: Piti, Guam
Remarks: Tank shell hole due to corrosion

Date: 10/14/05
Location: Piti, Guam
Remarks: Patch plate on shell corrosion hole

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

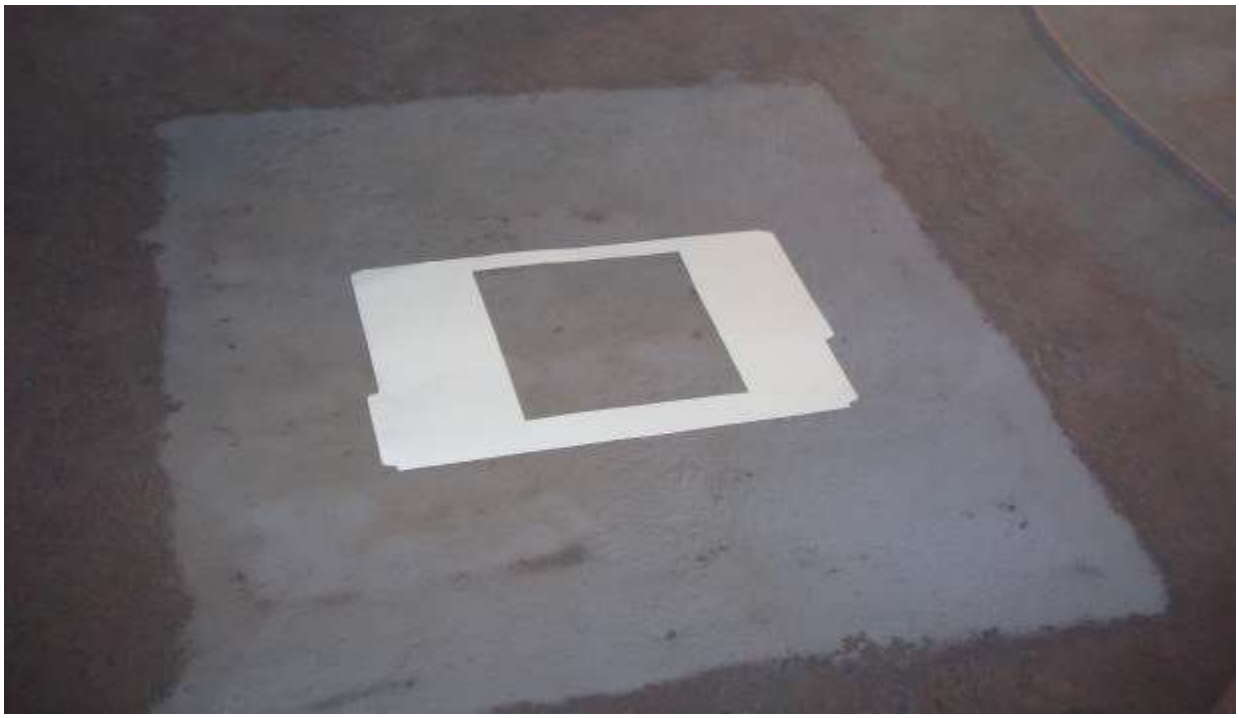
Date: 8/18/05
Location: Piti, Guam
Remarks: Tank shell after sand blasting to SP 6 (shell was rejected and re-blasted)

Date: 8/18/05
Location: Piti, Guam
Remarks: Tank Bottom Plate

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 8/02/05
Location: Piti, Guam
Remarks: Sand blasting of tank bottom plate



Date: 8/2/05
Location: Piti, Guam
Remarks: Sample sand blasted portion of tank bottom plate at SSPC SP 6

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 7/2/05
Location: Piti, Guam
Remarks: Assessment marking for Bottom Plate welding repair and Doubler Plate

Date: 7/2/05
Location: Piti, Guam
Remarks: Tank Bottom Plate marking for plug welds of deep piting

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 7/2/05
Location: Piti, Guam
Remarks: Plug weld repair of Bottom Plate deep pitting

Date: 7/2/05
Location: Piti, Guam
Remarks: Typical Tank Bottom Plate deep pittings

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 4/20/05
Location: Piti, Guam
Remarks: Tank Bottom patch plate on soil sampling core

Date: 4/20/05
Location: Piti, Guam
Remarks: Tank Bottom Plate with thru corrosion hole

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 11/14/05
Location: Piti, Guam
Remarks: Tank Bottom Plate after hydrostatic test and rinsing

Date: 11/14/05
Location: Piti, Guam
Remarks: Tank Bottom Plate and shell after hydrostatic test and rinsing

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 8/18/05
Location: Piti, Guam
Remarks: Tank Column blasted to SP 6

Date: 8/18/05
Location: Piti, Guam
Remarks: Tank Column blasted to near SP 10 due to heavy oil residue

PROJECT: **Life Extension and Refurbishment of the GPA Bulk Storage Fuel Tank 1935**

PROJECT NO: **01405108**

Date: 11/14/05
Location: Piti, Guam
Remarks: Tank shell and roof after hydrostatic and rinsing

Date: 11/14/05
Location: Piti, Guam
Remarks: Tank shell and roof after hydrostatic test and rinsing

GPA TANK 1935

TANK SYSTEM REPAIR REPORT

APPENDIX D

CATHODIC PROTECTION INSTALLATION AND ENERGIZATION PROGRAM GPA TANKS 1934 AND 1935 CABRAS PITI, GUAM

PREPARED FOR:

GUAM POWER AUTHORITY

PREPARED BY:

IBC

INTERNATIONAL BRIDGE CORPORATION
"Built With Strength, Built On Performance"

Physical Address: 171 Marine Corps Drive; Yigo, Guam 96929
Mailing Address: P.O. Box 21149; GMF, Guam 96921
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November 2005

TABLE OF CONTENTS

1.0 SCOPE OF WORK

1.1 Supply and install a new R1 impressed current cathodic protection system for GPA Tank 1934 and Tank 1935.

1.2 Supply and install a new R2 impressed current cathodic protection system for pipelines.

1.3 Supply and install an electrical interference bond at the Piti Unit No. 7 diesel fuel pipeline which runs through the Tank Farm.

1.4 Provide a report summarizing the work performed.

2.0 CONCLUSIONS

2.1 The new 30 Volt – 110 Ampere two circuits R1 impressed current cathodic protection system was installed, as recommended, around Tanks 1934 and 1935. The 36 anodes (18 anodes per tank) were installed as noted on the enclosed drawing and the R1 rectifier was mounted on a concrete pad outside the MCC Building.

2.2 Following the installation of the new R1 impressed current system, interrupted potentials were measured on Tanks 1934 and 1935 to confirm if the additional current improved structure potentials. As noted in Appendix 2, the current has improved the potentials and readings indicative of complete cathodic protection were measured.

2.3 The new R2 impressed current CP system for the pipelines was installed on a concrete pad outside the MCC Building as noted on the enclosed As-Built drawing.

2.4 Following the installation of the new R2 rectifier and groundbed, interrupted potentials were measured on pipelines in the vicinity of the rectifier and they confirm improved protection with potentials exceeding the industry criterion noted.

2.5 An electrical interference bond was installed on the Piti Unit No. 7 diesel fuel pipeline, which runs through the Tank Farm. This bond eliminates interference.

3.0 RECOMMENDATIONS

3.1 Operate the rectifiers at the following target current outputs:

R1 - Circuit #1 = Tank 1934 = 25 Amps
- Circuit #2 = Tank 1935 = 25 Amps

R2 - Pipelines = 10 Amps

3.2 GPA should provide a monthly cathodic protection rectifier maintenance program to confirm that the R1 and R2 impressed current systems are operating properly at the target outputs

3.3 GPA should authorize an annual complete cathodic protection survey to ensure that the DC current is continuing to provide adequate protection for the tank bottoms and underground metallic piping at the subject Tank Farm.

4.0 DISCUSSION

4.1 New R1 Distributed Anode Impressed Current System for Tanks 1934/1935:

The existing cathodic protection system at the GPA Tank 1934 and Tank 1935 site had been inoperative for a number of years. GPA had a new cathodic protection system designed (by others than Corrpro) and bid this system out for installation in 2004. The original designed system was bid, but not installed as its cost for horizontal drilled anodes under the tanks exceeded the budget cost. GPA subsequently had the system redesigned (by others than Corrpro) and a vertical distributed anode configuration was issued for bid in 2005. Corrpro, as a Subcontractor to IBC, was awarded the bid for supply and installation of the cathodic protection system. The system was installed in August and September 2005 and energized in October 2005, the results of which are in this report.

An oil cooled rectifier designated as R1 with two independent Circuits #1 and #2 each with 30 Volts – 110 Amperes capacity was installed on a concrete pad outside the MCC Building as shown on the As-Built drawing in Appendix 4. Circuit #1 is for Tank 1934 and Circuit #2 is for Tank 1935. These circuits are independent and have independent negative cables from each respective tank and independent positive anode cables from the anode junction box at each tank. 18 MMO anodes are installed vertically in 9 – 23 foot deep anode holes (2 per hole) with #8 Haylar cables routed back to a single anode junction box per tank. The original design called for 18 vertical holes at 15 foot holes; however, the deeper hole is more desirable as it ensures the anodes are maintained below water table which is better for the anode operation, as it provides a lower circuit resistance and longer anode life. The As-Built drawing is provided in Appendix 4.

With the rectifier operating at 25 Amps for each of Circuits #1 and #2 for Tanks 1934 and 1935, respectively, a pulse generator was inserted into the negative circuit and a series of "on" and "instant off" structure potentials were measured on the tank bottoms and in the immediate vicinity of the new installation. The current outputs of the individual anodes were measured at the anode junction boxes and all were well within the 7 Amperes rating of the MMO anodes indicating proper anode operation. Based on this information, at least a 100% longer anode life than design should be achieved. As only 25 Amperes is required to protect each of Tank 1934 and 1935, this is less than 25% of the rectifier capacity which leaves lots of additional current capacity should it be needed in the future.

Prior to energizing the rectifier a "Static" pipe-to-soil potential survey was performed by taking tank-to-soil potentials around the perimeter of each tank and on associated piping. It should be noted that high static potentials were recorded which identified partial protection for both tank bottoms and piping due to a short to the NAVY tie-in and influence from a NAVY cathodic protection system on nearby NAVY pipelines and tanks. Isolation is not recommended at the NAVY tie-in as this could create harmful cathodic interference and also isolation is not essential to establish protection on either the NAVY or GPA as adequate protection is presently achieved on both. Therefore, no insulation kit is recommended as the risk of interference due to placement of an insulation kit outweighs the benefit.

With the R1 rectifier energized and the current electrically interrupted, On and Off with a pulse generator to eliminate "IR" drop error in the potential measurements, potentials were recorded on the Tank 1934 and 1934 tank bottoms around each tank perimeter and on piping. Potential reading significantly exceeded (negatively) the -850 mV structure-to-earth potential criterion as required by NACE (National Association of Corrosion Engineers) indicating that complete cathodic protection has been achieved on each tank bottom and associated piping.

4.2 New R2 Impressed Current System for Pipelines

A new rectifier designated as R2 and 8 MMO anode groundbed installation was recommended to protect pipelines associated with the pump station. A new R2 rectifier groundbed was installed at the location shown on the As-Built drawing in Appendix 4.

As noted on the drawing, the individual #8 Haylar new anode leads were run from the new vertical anode wells to new anode junction box. At that point, a new anode junction box was installed and the new leads were connected using a terminal board. The terminal board has been equipped with shunts to facilitate the measurement of the current output of each new anode.
The new anodes were connected to the R2 rectifier via a #2 cable in a conduit. The R2 rectifier was energized and left operating at 10 Amps which achieve protection on all piping at the pump station and within the yard. This includes the 8" Tijan pipeline which is receiving protection from this rectifier. Insulation kits originally specified for the 12" lines to the tanks and the 8" Tijan line are not necessary as complete protection on all facilities is achieved without the insulation kits (insulation kits un-necessary). Furthermore, installation of insulation kits would only increase the risk of electrical interference and increase maintenance. This increase in risk is not associated with a benefit (as all lines are presently protected) therefore, installation of insulation kits is not recommended. Refer to Appendices 1 and 2 for anode current data and structure potentials.

4.3 Interference Control Bond to Foreign Isolated Piti Unit No. 7 Diesel Line

The field data taken during the survey concluded that the 6" Piti Unit No. 7 Diesel Line was not electrically continuous with the other underground structures. As interference was noted, it was subsequently recommended that the Piti line be bonded to the piping to Tanks 1934 and 1935 where it crossed the line. This bonding was done during the survey and field data taken after the bonding shows interference has been controlled on the isolated 6" Piti Unit No. 7 Diesel Line.

APPENDIX 1

RECTIFIER DATA

APPENDIX 1

GUAM POWER AUTHORITY
TANKS 1934 AND 1935
RECTIFIER DATA

Designation: R1 - For Tanks 1934 and 1935
Location: Outside of MCC Building
Manufacturer: Corrpower
Model: COYCS 30 (2) - 110 (2); R2 = 2 Separate 30 Volts - 110 Amperes D.C. Circuits
Serial Number: C052034
AC Input Rating: 240 Volts - 45.52 Amperes - 1 Phase
DC Output Rating: 30 Volts x 110 Amperes for Each of 2 Separate D.C. Circuits
Type: Two 30 Volts x 110 Amperes D.C. Circuits
Circuit #1 = Tank 1934
Circuit #2 = Tank 1935

Recommended Minimum Target Current:
Circuit #1 = Tank 1934 = 25 Amperes
Circuit #2 = Tank 1935 = 25 Amperes

TABLE 1.0
RECORD OF READINGS AND INSPECTIONS

Date	Status	Setting	Volts	Amperes	By	Remarks
		CIRCUIT #1 - TANK 1934				
10/29/2005	As Found	Off				
	As Energized	CB, F1	7.5	15	BW	
						6.0 mV x 125 A
	Actual	CB, F1	7.5	15	BW	+ 50 mV = 15.0 Amps
10/30/2005	As Surveyed	CC, F1	15	30	BW	
10/30/2005	As Left	CC, F1	15	30	BW	
		CIRCUIT #2 - TANK 1935				
10/30/2005	As Found	Off				
10/30/2005	As Energized	CC, F1	14	27.5	BW	
10/30/2005	Actual	CC, F1	14	27.5	BW	
10/30/2005	As Surveyed/As Left	CC, F1	14	27.5	BW	

Anode Junction Box Currents at Each Tank

ANODE JUNCTION BOX - TANK 1934		ANODE JUNCTION BOX - TANK 1935	
Anode No.	Amps	Anode No.	Amps
1	2	1	1.5
2	2	2	1.8
3	2.3	3	0.8
4	2.1	4	2.4
5	2.3	5	0.8
6	1.6	6	1.1
7	1.1	7	2.7
8	1.7	8	1.9
9	2.1	9	0.8
10	1.8	10	1.0
11	1.5	11	0.8
12	1.7	12	1.0
13	1.8	13	2.0
14	1.1	14	3.4
15	1.3	15	2.6
16	1.0	16	1.0
17	1.0	17	0.9
18	1.6	18	1.0
Total:	30.0	Total:	27.5

APPENDIX 1

GUAM POWER AUTHORITY
TANKS 1934 AND 1935

RECTIFIER DATA

Designation: R2 - For Pump Station Piping
Location: Outside Electrical Room
Manufacturer: Corrpower
Model: COYSA - 24 - 50
Serial Number: C052035
AC Input Rating: 120 Volts - 17.78 Amperes - 1 Phase
DC Output Rating: 24 Volts x 50 Amperes
Recommended Minimum Target Current: 10 Amperes

Date	Status	Setting	Volts	Amperes	By	Remarks
10/28/2005	As Found	Off	- New Installation		BW	
10/28/2005	As Energized	CA, F4	6.0	6.0	BW	
10/28/2005	Actual	CA, F4	6.0	6.0	BW	9.9 mV x 60 A
10/29/2005	As Surveyed	CC, F1	10	12.0	BW	÷ 50 mV = 12.0 Amps
10/29/2005	As Left	CC, F1	10	12	BW	

Anode Current Output at Anode Junction Box

Anode No.	Amps
1	1.5
2	1.2
3	1.1
4	1.0
5	1.3
6	1.4
7	2.1
8	2.4
Total:	12.0

APPENDIX 2

POTENTIAL DATA
TANK 1934, TANK 1935 AND PIPING

APPENDIX 2

GUAM POWER AUTHORITY
TANKS 1934 AND 1935

OCTOBER 2005

Stationing		Structure-To-Soil Potentials (-mV) Static	On	Off	Final Survey On	Final Survey Off	Remarks
12" Pipe @ Inlet Header @ Pump Sta.		1075	1355	1160	1470	1220	R2 Negative Drain
12" Pipe @ Inlet Header		1075	1355	1160	1470	1220	
Tank 1935	N	1195	1360	1180	2300	1380	
	NE	1172	1340	1180	2410	1390	
	E	1180	1360	1200	2150	1310	
	ES	1190	1370	1210	2100	1300	
	S	1190	1360	1240	1940	1360	
	SW	1190	1360	1210	2110	1345	
	W	1176	1360	1220	2410	1340	
	NW	1231	1370	1260	2400	1350	
24" Pipe at Berm Between Tank 1934 & 1935		1140	2064	1390	2460	1310	
Tank 1934	N	1236	2240	1390	2480	1390	
	NE	1220	2480	1360	2500	1380	
	E	1235	2544	1390	2600	1390	
	ES	1240	2140	1380	2200	1390	
	S	1200	2300	1390	2400	1390	
	SW	1250	2290	1360	2300	1380	
	W	1250	2300	1390	2400	1390	
	NW	1260	2670	1390	2700	1400	
12" @ Tank 1934		1250	2600	1310	2700	1400	
Valves South of Tank 1934		1275	2400	1295	2400	1390	
South of 1934 - 24" Valve To NAVY	U/S	1275	2370	1290	2380	1390	Line to NAVY
- 24" Valve	D/S	1270	2270	1280	2370	1380	Line to Tanks
6" Piti Line		009	009	009	009	009	Locked Valve Box - Independent Line Operated by Piti Unit No.7 Power Plant

GUAM POWER AUTHORITY
TANKS 1934 AND 1935

OCTOBER 2005

Stationing	Structure-To-Soil Potentials (-mV) Static	On	Off	Final Survey On	Final Survey Off	Remarks
Pump Station Piping						
8" Oil to Cabras	700	845	733	1650	1171	White Top
8" Oil to Cabras	680	800	700	1445	1044	Black
8" Isolated Diesel Line to Piti	600	700	620	1360	1000	Bonded During Survey
8" Diesel Line to Pit Line in Pit	1170	340	500	1120	1090	Locked for Test
8" Piti Diesel Line	1188	340	500	1120	1090	Isolated by Rubber Gasket Under Water
8" Tijan Line @ Berm	810	1610	1240	1780	1240	Inside Berm
12" Tank 1935 Line @ Berm	1180	1630	1230	1830	1220	
12" Tank 1934 Line @ Berm	1180	1670	1240	1850	1240	
8" Piti Diesel Line from NAVY	120	173	120	1980	1230	At Locked Valve Box,
12" Header	1180	1844	1340	1844	1340	As Left - Line Bonded to 12" Line Going to Tank 1935
8" Piti Diesel Line Above Grade Inside 1935 Berm	120	129	169	1920	1200	Bonded
8" Other H_2O	607	607	607	640	646	
12" @ Berm Between Tanks	1160	2036	1360	2036	1360	
8" Piti Diesel Line Above Grade from NAVY - Inside 1934 Berm - West Side Valve Box @	120	153		120	120	Inside Berm for 1934
12" @ 1934 Oil Separate	1160	1971				Line is Isolated at 2 Valve Boxes
8" Piti Diesel Line Above Grade @ NAVY - South of 1934	2	2		9		Note: This 8" Piti Diesel above grade line only goes below grade at road crossing and has been unprotected for years. GPA should issue a separate contract to protect this line.

APPENDIX 3

RECTIFIER OPERATIONS MANUAL

CORRPOWER
RECTIFIER DIVISION

OPERATING MANUAL

FOR

MANUAL CONSTANT VOLTAGE CATHODIC PROTECTION RECTIFIERS

DISTRIBUTED BY
CORRPRO COMPANIES INC.

CORRPOWER RECTIFIER DIVISION

IMPORTANT!
READ ALL OF THESE INSTRUCTIONS

To assure the best performance from your Corrpower Cathodic Protection Rectifier, please give special attention to all WARNING, INSTALLATION and OPERATING instructions supplied with this unit.

WARNING! ELECTRICAL EQUIPMENT

Direct all installation and servicing to properly trained and qualified personnel. Failure to correctly install or service this electrical equipment may expose you to dangerous voltage points or other risks resulting in injury or death.

Refer to the manual for further instructions.

INSTALLATION INSTRUCTIONS

INSPECTION

Inspect the packaging as well as the inside and outside of the rectifier for shipping damage. DO NOT attempt to install or operate damaged equipment.

Inspect and tighten any hardware or wiring that may have come loose during shipment.

INSTALLATION - THE ENCLOSURE MUST BE PROPERLY GROUNDED

Be sure AC voltage and phase correspond to the AC rating of the unit. That rating is on the serial number label on the inside of the front door. If the rectifier has dual ratings, be sure the Hi/Low voltage change buss bar is set for the input voltage

Anodes should be wired to the (+) terminal; Structure to the (-) terminal.

Set voltage taps on the lowest settings (A-1), 3-phase models must have each phase set to the same coarse and fine position For start-up of Automatic rectifiers, see manual.

If oil cooled, be sure oil is to the cold fill line and that VOLT-ESSO 35 or equivalent NEMA grade 10C uninhibited oil is used.

If air cooled, be sure there are no obstructions blocking the air vents, louvers, or screen.

START-UP

Turn the AC breaker to "ON" and check the output via DC meters. If the breaker trips or if overheating is observed, turn the breaker off and refer to the users manual for troubleshooting.

Adjust taps up one step at a time until desired DC current or voltage is obtained.
DO NOT EXCEED RATED OUTPUT OF RECTIFIER!

For further information, refer to the enclosed manual.

TABLE OF CONTENTS

INTRODUCTION

This Operation Manual has been prepared for the specific rectifier as identified by the serial number on the unit. It is recommended that it be kept inside the rectifier enclosure for quick reference. Store it in the space provided. Do not place it so that it will impede air flow through the enclosure.

CORRPOWER Rectifiers are built by skilled personnel and are designed by an engineering staff with years of experience. Every effort has been made to use the latest in reliable components, so that these rectifiers are of the highest quality consistent with reasonable costs.

CORRPOWER maintains a file on every rectifier by serial number only. Therefore, the **SERIAL NUMBER** must be specified when requesting information, or ordering parts, for this rectifier unit.

DELIVERY INSPECTION

If damage has occurred during shipment, **FILE A CLAIM WITH THE CARRIER IMMEDIATELY**. Even if the rectifier unit is not being installed at the field site immediately, the rectifier should still be removed from the carton and inspected for shipping damage prior to storage of the unit. If it is necessary to contact your supplier or the manufacturer concerning damaged or missing components, be sure to include all information such as Serial Number, Purchase Order Number and Invoice Number. This will ensure that you obtain proper and expeditious service.

STORAGE

If units are to be stored prior to use for extended periods of time, it is recommended that they be stored in a dry area, preferably indoors. However, if this is not possible, cardboard wrapping should be removed from around enclosures designed for outdoor use to prevent holding rain or snow moistened packing against the enclosure. Indoor designed enclosures should have, at least, the benefit of some overhanging protection or be covered with a moisture-proof material.

INSTALLATION

Proper rectifier installation procedures are necessary to ensure the integrity of the cathodic protection system. These procedures are as follows:

1. Check all electrical connections to make sure they are tight. Though this is done at the factory, it is a good idea to re-tighten all connections, especially those that carry electrical current.

2. Select the mounting site for the rectifier; paying special attention to accessibility, proper ventilation, shielding from sources of high ambient temperatures, and most importantly, convenience to A.C. and cathodic protection connections.

3. Mount rectifier securely on mounting pad, wall or post (as applicable).

4. Have a qualified electrician make electrical connections, following the electrical and local codes. A disconnect switch is required ahead of the A.C. input to the rectifier. We do not recommend connecting the rectifier to the same AC circuit as other large pieces of equipment (such as a pump-jack motor) that may cause the AC power input to fluctuate.

5. **BEFORE ENERGIZING**, double check to ensure the rectifier is appropriately sized for the A.C. input being applied.

6. **ENSURE CORRECT POLARITY ON D.C. CONNECTIONS**, connecting negative to the structure being protected and positive to the anode leads.

7. **BEFORE** turning on the input breaker, ensure the taps are at the lowest setting: **COARSE "A" & FINE "1".** Tap adjustments should always be made from the lowest setting to prevent damage to the rectifier or prematurely blowing the rectifier fuse. For variable transformer adjusted units, ensure the adjustment knob is at the "0" setting.

8. On three phase units, ensure that all three sets of adjustment taps are set alike.

9. Initially set the rectifier to approximately half of the required output current by moving the tap bars, or variable transformer adjustment knob, as required. Increase the **COARSE** adjustment bar position by one step (from A to B), energize the unit, and check the rectifier output (as displayed on the panel meters). Repeat as required until the rectifier output current is close to half the required output. The rectifier should be left energized for several minutes to allow for examination. If operation appears normal, the **COARSE** & **FINE** adjustment bar can then be further increased until the required rectifier output current has been achieved.

10. The rectifier should be operated at the required D.C. output current for about one hour to determine that there are no defects in the connections. Shut the A.C. power **OFF** at the disconnect switch and immediately feel all current carrying connections to see that none of them are overheating. Connections may be warm, but should not feel excessively hot.

11. Air-cooled rectifiers utilize natural air convection for cooling and are typically manufactured with screened openings on the top and bottom of the enclosure. Ensure these vents are not obstructed by plugged screens or by placing the rectifier manual over the bottom vent.

12. Periodically monitor the rectifier, re-adjusting as necessary to maintain the level of cathodic protection current required.

MAINTENANCE

C.P. rectifiers rarely have moving parts other that the indicating meter movements and therefore, maintenance is largely of a preventative nature. Bear in mind there are primarily three conditions that will affect the life of a C.P. rectifier:

1. Excessive component temperatures.
2. Voltage surges and lightning.
3. Excessive current output.

Maintenance can be the best deterrent against rectifier failure due to excessive temperatures. Regular checks for blocked venting and/or heat from a man-made source should be undertaken. Periodic re-tightening of electrical connections is good insurance against future trouble.

CAUTION: Hazardous voltages are present within the rectifier. ALWAYS interrupt the A.C. power at the nearby disconnect. The rectifier A.C. breaker DOES NOT totally remove all incoming A.C. power from the rectifier.

If excessive heating of rectifier components and/or wiring is suspected, a temperature probe is a very useful maintenance tool. The following is a guide for maximum temperatures. These temperatures are based on a 45°C ambient. The difference between 45°C and the ambient temperature at time of testing should be subtracted from the readings in this table:

COMPONENT TEMPERATURE TABLE

COMPONENT	MEASUREMENT POINT	MAX. TEMPERATURE
Moulded Bridge	Moulded Body	110°C
Silicon Diode	Body	115°C
Main Transformer	Primary Winding	160°C
Filter Inductor (Choke)	Winding	160°C
Filter Capacitor	Case	80°C
Secondary / Output Fuse	Metal End Cap	130°C

*Current Shunt	Center Element	75°C
Electrical Connections	Bolt Body	90°C
Electrical Wiring	Wire Harness	90°C

*(Based on a typical vented, air-cooled type rectifier unit.)

Maintenance against voltage surges is largely one of ensuring the lightning and surge protection supplied with the unit is intact. Keep large motor driven equipment (such as pump-jack motor) or similar surge producing electrical equipment from being attached to the same A.C. power line as the rectifier, whenever possible. Lightning rods may prove invaluable in excessive lightning areas.

Maintenance against excessive current output requires monitoring of rectifier output and logging the data to enable the operator to predict when an over current situation may occur. If a protective device (input breaker or rectifier fuse) has operated, it is an indication of overload or component failure. If a fuse has operated, always replace it with the rating and type as indicated on the rectifier Specification / Parts Listing (included with this manual) or as shown on the damaged fuse itself. Prior to re-energizing the unit, the rectifier diode bridge should be tested (as per Step 7 of the Troubleshooting section) to ensure that if there were a shorted diode in the bridge, it would be found and replaced prior to damaging the newly installed fuse.

Meter readings should be verified with an external Digital Voltmeter. A quick calibration for ammeter accuracy can be made by measuring the millivolt drop across the shunt. This should be done with a high input impedance meter set to the "mV" range. The actual reading is given by:

$$I(DC) = \frac{V \times I(SHUNT)}{50}$$

Where:
- I (DC) = Actual D.C. Current Output (amperes)
- V = Voltage Reading Across Shunt Element (millivolts)
- I (SHUNT) = Shunt Current Rating

Meter accuracy should be within 2% of the full-scale deflection of the meter combined with an allowance for temperature of 0.85% per 10°C for temperatures other than 25°C.

A periodic check of rectifier conversion efficiency will also indicate if the rectifier is functioning properly. If a portable A.C. wattmeter is unavailable, the utility pole mounted watt-hour meter could be used. This, of course, is if no other electrical loads are drawing power when the A.C. draw is being determined.

$$\text{A.C. Power (Watts)} = \frac{3600\ KN}{T}$$

Where: K = Watt-hour meter constant (shown on meter face)
N = Number of revolutions of watt-hour meter disk
T = Time in seconds for the number of revolutions

D.C. Power is the product of the measured D.C. Voltage X D.C. Amperage

Rectifier conversion efficiency will be:

$$\frac{\text{D.C. Power Out}}{\text{A.C. Power In}} \times 100 = \%\ \text{conversion efficiency}$$

For manual, constant voltage, full-wave silicon diode bridge rectifiers, conversion efficiencies of approximately 75% for single phase will indicate a properly functioning rectifier.

TROUBLE SHOOTING

Although quality construction and preventative maintenance will reduce rectifier down time, failures will occasionally occur. A good knowledge of rectifier operation will enable a potential problem to be quickly traced and repaired.

RECTIFIER TEST EQUIPMENT:

The following equipment is essential for basic rectifier trouble-shooting.

1.	Electronic Multi-Meter:	preferably with a 750 VAC and a diode check range. (Fluke 70 or 20 series)
2.	Clamp-on A.C. Ammeter:	must have low current D.C. measurement capability. (Fluke or Amprobe recommended)
3.	Resistive Load:	2-5 ohms with a 1000 Watt capacity recommended.
4.	Misc. Hand Tools:	1/4" - 3/4" S.A.E. combination wrenches; 1/4" - 1/2" S.A.E. nut-drivers; 3/16", 1/4" and 5/16" blade screwdrivers; #1, #2 and #2 long socket screwdrivers; 3/8" drive S.A.E. socket set with deep sockets.

5. Temperature probe: (Optional) must have a range of -50° to +150° C. (Fluke 80T-150U)

TROUBLE SHOOTING PROCEDURE:

The majority of rectifier faults are easy to diagnose. They include loss of A.C. input, blown fuses, loose terminals, faulty meters, blown M.O.V. suppressors, open circuits, faulty cathodic load connections, and lightning damage. Visual inspection and smell can be very useful for the initial examination of a faulty rectifier for the above faults.

The initial inspection should be followed by a systematic isolation of various rectifier components to determine the cause of non-operation. This should be conducted as follows (refer to the schematic for test point locations).

CAUTION: Beware of hazardous electrical voltages and where they are present in the rectifier. If doing any work on a rectifier other than taking voltage or current measurements, **DISCONNECT THE A.C. POWER**, preferably at the rectifier disconnect, not just using the rectifier circuit breaker.

1. Check whether A.C. voltage is present at the rectifier input terminals and that it is the correct level for the rectifier input rating. Provided the input breaker has not tripped **OFF**, this voltage check should be done with the rectifier **ON**. This will eliminate any static voltage reading such as might be experienced if only one A.C. line entering the rectifier is broken.

2. If the input breaker continues to trip **OFF** when energized, this usually indicates a short circuit within the rectifier. Proceed as follows;

   a) Remove both tap bars (shown by Coarse & Fine taps on schematic) to isolate the bridge. Again, energize the breaker. If the breaker now holds, the problem is a shorted diode(s) in the bridge assembly. Check the bridge assembly and replace defective diode(s). (See #7 below)

   b) With the rectifier disconnected from the A.C. supply, do an ohmmeter check between ground lug and the load side(s) of the input breaker (right side of CB1 on schematic). Any detectable resistance will indicate a primary to ground breakdown. A "Megger" test instrument is preferred for this test if available. Any fault will necessitate replacement of the transformer.

   c) Visually inspect the transformer for any signs of burned or shorted windings.

d) Check for shorted A.C. lightning arrestors.

3. An intermittent voltage reading nearly always indicates a loose or burned connection.

4. Verify there is transformer secondary voltage. A measurement of the voltage across **COARSE 'E' to FINE '5'** should be 1.35 to 1.6 times the D.C. output voltage rating of the rectifier.

5. Verify the **COARSE** steps as being approximately 20% of the measurement (item 4 above) and that the **FINE** steps are approximately 20% of the voltage of each **COARSE** step.

6. Measure the A.C. voltage at the diode bridge assembly (same as connection points of MOV1 on schematic). It should be the same as measured across the tap bars, otherwise the fuse has operated or the wire is burned or broken.

7. Conduct a diode check of the bridge assembly as follows:

   a) Disconnect power from the rectifier and remove the tap bars.

   b) With the multimeter set to the diode check range, place the **POSITIVE** (Red) lead on the bridge negative terminal (negative side of shunt on the schematic) and touch the **NEGATIVE** (Black) lead to the bridge A.C. terminals (same as connection points of MOV1 on schematic). A good diode will measure between 0.3 & 0.6 and the Fluke meter will give a single BEEP. This will check diodes D3 and **D4**. An open (OL with no beep) or short circuit (0.0 with a continuous beep) reading will indicate a faulty diode.

   c) Similarly, place the **NEGATIVE** meter lead on the bridge positive terminal (connection point between D1 & D2 on schematic) and now touch the other lead to the bridge A.C. terminals. This will check diodes D1 and D2.

   d) Replace faulty diodes with the same type and polarity. Do not over-tighten stud mount diodes. Recommended torque is 30 inch-pounds for a ¼" Stud device.

8. Check for the presence of voltage at the D.C. positive and negative terminals of the bridge and at the rectifier D.C. output lugs. If the voltage is present at the stack but not at the terminals, check for open circuits in the wiring (or a blown D.C. fuse).

NOTE:With no load, a sensitive electronic meter may read a static potential which is much higher that the actual D.C. voltage. It may be necessary to place a small test load across the rectifier output lugs that will eliminate the false reading of the electronic voltmeter.

9. **If the correct D.C. voltage is measured at the rectifier D.C. output terminals but no D.C. output current is measured, there is an open circuit in the D.C. output circuit.** This open circuit could be either in the cables leading to the C.P. load or in the connection to the C.P. load.

10. Ensure to verify rectifier panel meter readings with an external Digital Voltmeter (DVM). Rectifier meters may indicate a rectifier fault when no actual fault exists.

11. Meter switches are often a source of meter reading faults, especially in corrosive or H_2S environments. If the rectifier switches are a continuous problem, environmentally sealed switches should be used to replace normal types. The added cost for these may save future repair work and rectifier troubleshooting time. Jumpers carefully placed across the closed contacts of a suspect switch will reveal any high resistance contact problems that may exist.

12. Lightning and surge suppressors can be checked for shorts by removing their connections from the rectifier circuit and checking them with an ohmmeter. Normally these should exhibit an open circuit (infinite resistance).

If you require any assistance when troubleshooting the rectifier, please contact the local Corrpro office or the factory for technical assistance. A few minutes of technical help can, in many cases, save many hundreds of dollars in on-site time or repair freight charges.

SAFETY

Cathodic protection rectifiers do present electrical shock hazards to personnel unfamiliar with the operation and/or components of a rectifier unit. Electrical safety can be enhanced by following a few guidelines:

1. When approaching a rectifier to inspect or repair, always remember to touch the case latch with the **BACK** of your hand first. If you feel any voltage 'Tingle' **DO NOT** grab the lock or latch with your hand as you may not be able to let go. You should turn off the A.C. power at the external disconnects and call an electrician.

2. Understand where potential hazards exist so as not to contact them bodily or with tools.

3. When working on energized equipment, use a rubber mat to stand on and, if possible, work in pairs.

4. When taking readings use only one hand, if possible.

5. Lock out the supply disconnect or circuit breaker to prevent accidental re-energizing of the circuit.

6. Wear safety glasses when soldering any connection.

7. When in doubt on a particular test procedure, contact an experienced technician or the factory.

CORRPOWER

RECTIFIER SPECIFICATION SHEET

CUSTOMER: ZZCOR6
MODEL: COYSC 30(2)-110(2) RZ (OPTIONS)
S/N: C-052034
AC VOLTS: 240 DC VOLTS: 30(2) PH: 1
AC AMPS: 45.52 DC AMPS: 110(2) O/P CCTS: 2 CCTS.

PO#: 574165-LMR DATE: 08/19/200
CRD PART #: OC-30220-99
MSO: CO055060
FREQ: 60Hz INPUT VA: 10924.8
TYPE: TAP-ADJUST

QTY.	CRD P/N	DESCRIPTION
1	63-O-1600	ENCL OA6 HDG
1	63-F-1600	OIL-COOLED FRAME OA6
1	63-F-1050	BRIDGE ASSM. FRAME OA4 - OA6
1	63-P-0200	ENCL, OIL GAUGE W/THERMOMETER
1	98-P-0405	DRAIN VALVE APPOLO #4726K13 MCM
1	98-P-0200	ELBOW, 45 deg. STREET 1 1/2" GALV
1	63-O-0150	ENDHOUSING OI SERIES,11GA,HDG <150A
1	33-X-0226	TH3223R,2P,100A,120/240V LORD ELECT
2	A1-T-30110-C	TRANSFORMER, 240 VAC, TAP 30-110
4	41-C-0020	METER, 3.5" 50mV
2	42-G-0041	SCALE, 3.5" NUMBERS 0-40
2	42-G-0050	SCALE, 3.5" NUMBERS 50 DIVISIONS
2	20-B-5400	RESISTOR 40K2 1% .6W MRS25F PHILIP
4	30-B-0025	CIRCUIT BREAKER 25.0A 240V AA1-BO-
4	00-P-0170	DIODE, 150K120A, 150A, 1200V PIV
4	00-P-0171	DIODE, 150K120AR, 150A, 1200V PIV
4	75-P-0060	HEATSINK, #441-K ANODIZED
1	08-L-7002	ARRESTOR, 240 VAC, 1-PHASE, 3-WIRE
1	08-X-0010	ARRESTOR, MOUNTING BRKT, 16GA-316SS
2	08-L-8100	ARRESTOR, 60VAC.(100V.PEAK),2-TERM
2	07-S-3130	M.O.V., SIOV-S20K130, 130V
2	43-B-5125	SHUNT, 125 AMP 50 MV HOLLOWAY
4	45-B-0020	SWITCH TOGGLE, DPDT(S-335), ON-N-MOM
4	36-A-0160	FUSE, 150 AMP, 130 V BRUSH SF13X150
4	36-A-0150	FUSE, 125 AMP, 130 VAC
1	39-C-0020	CUTOUT, REMOTE BULB THERM
1	44-M-2100	MERCURY RELAY 100NC 120V MDI
1	58-C-0036	TRANSFORMER, 240/480:120/240, 50 VA
1	38-P-0010	FUSEHOLDER, HKP. 1/4" x 1-1/4"
2	34-T-0040	FUSE, 1/2 AMP, 250 V BUSS MDL-1/2
3	88-D-0355	TERM BLOCK,3-POS,85AMP,600V
4	89-C-0040	LUG 4/0-#2 XT-40 COPPER PLTD ILSCO
4	68-C-0080	TAP BAR, 1/4" X 1.0" #479
1	*MANUAL05	OPERATING MANUAL, CONSTANT VOLTAGE

NOTES:

"R" - NON-STANDARD ENCLOSURE FINISH, HOT-DIPPED GALVANIZED (unpainted).
"Z72" - INCLUDES AN "OFF / MOMENTARY ON" SWITCH FOR AMMETER & VOLTMETER.
"Z91" - NON-STANDARD DC POSITIVE OUTPUT FUSE (supplied with one spare).
"Z140" - PROVISION OF MAIN-DISCONNECT SWITCH WITH ENCLOSURE.
"Z203" - THERMAL CUTOUT DEVICE WITH AUTOMATIC RESET.
"Z254" - NON-STANDARD ENCLOSURE OPTION: END HOUSING (contains metering, shunt, AC & DC

NOTES CONTINUED ON NEXT PAGE...

CORRPOWER

RECTIFIER SPECIFICATION SHEET

CUSTOMER: ZZCOR6
MODEL: COYSC 30(2)-110(2) RZ (OPTIONS)
S/N: C-052034
AC VOLTS: 240
AC AMPS: 45.52
DC VOLTS: 30(2) PH: 1
DC AMPS: 110(2) O/P CCTS: 2 CCTS.
PO#: 574165-LMR
CRD PART #: OC-30220-99
MSO: CO055060
FREQ: 60Hz
INPUT VA: 10924.8
TYPE: TAP-ADJUST
DATE: 08/19/2005

NOTES CONTINUED FROM PREVIOUS PAGE...

lug terminals).
"Z260" - NON-STANDARD ENCLOSURE OPTION: OIL LEVEL SIGHT GAUGE.
"Z504" - PROVISION OF NON-STANDARD SILVER PLATED TAP BAR ASSEMBLIES (instead of the standard electro-less nickel plating).
"Z821" - "OA6" OIL-COOLED ENCLOSURE - EXPORT CRATE.

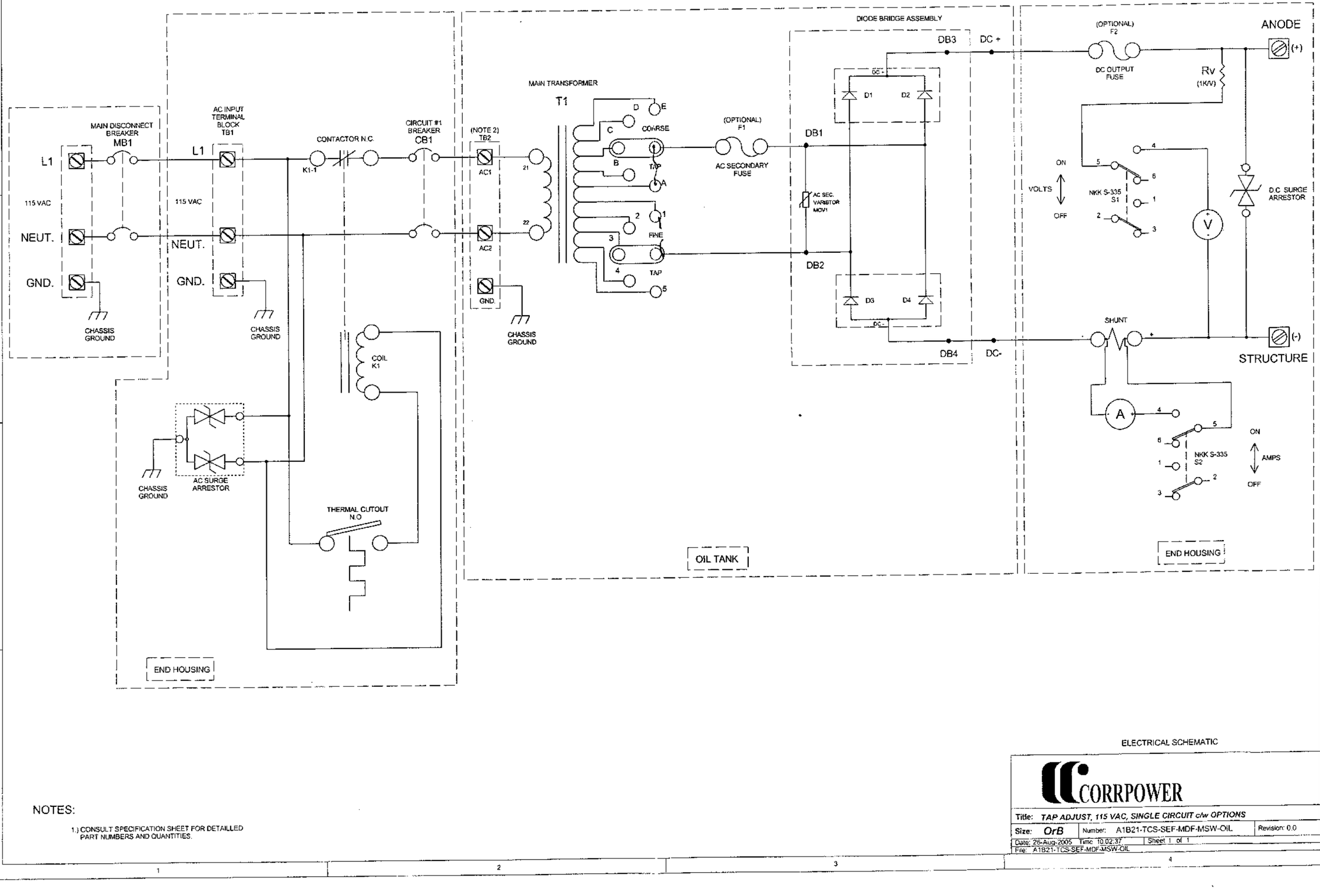
AC WIRE SIZE: #6 EXANE
AC SECONDARY/DC WIRE SIZE: #2 EXANE

CORRPRO

ONE YEAR GUARANTEE ON ALL CORRPOWER CATHODIC PROTECTION RECTIFIERS

Unless otherwise specified, all products designed and manufactured by the 'CORRPOWER Rectifier Division are guaranteed against defects in material and/or workmanship for a period of one (1) year, from date of purchase by the original purchaser. The obligation of the CORRPOWER Rectifier Division under this guarantee is limited to repair, adjustment or replacement at our factory of any rectifier, or parts thereof, which may, after being returned with transportation charges prepaid, be found defective in material and/or workmanship upon detailed examination. CORRPOWER reserves the right to make any change in design or specification that it deems an improvement, with no liability to make same changes on existing equipment. This guarantee is in lieu of all other guarantees or warranties, expressed or implied, which might otherwise exist. The purchaser is relying only upon this guarantee and not upon any representations not herein expressed. This warranty is void if any damage is caused by vandalism, misuse, incorrect installation, or any alterations to the product by un-authorized personnel. This warranty does not cover damage caused by lightning, flooding, or any other acts of God. Any materials being returned to the factory must first have a return materials authorization number (RMA) from the CORRPOWER Rectifier Division repair department, for an RMA number please contact (780) 447-4565 extension 381.

CORRPOWER
RECTIFIER DIVISION



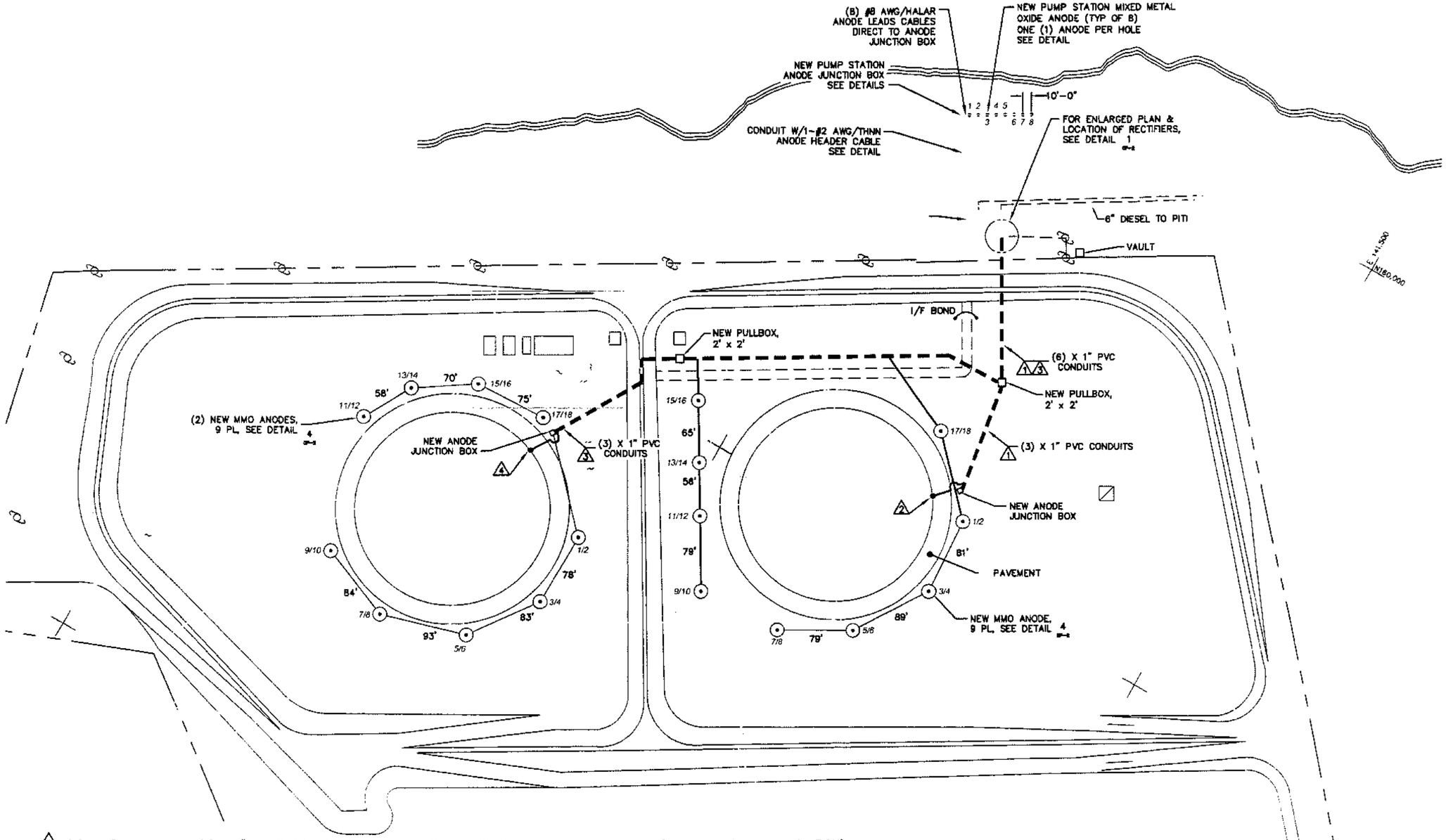
NOTES:

1.) CONSULT SPECIFICATION SHEET FOR DETAILLED PART NUMBERS AND QUANTITIES.

ELECTRICAL SCHEMATIC

CORRPOWER

Title: *TAP ADJUST, 115 VAC, SINGLE CIRCUIT c/w OPTIONS*		
Size: *OrB*	Number: A1B21-TCS-SEF-MDF-MSW-OIL	Revision: 0.0
Date: 26-Aug-2005 Time: 10:02:37	Sheet 1 of 1	
File: A1B21-TCS-SEF-MDF-MSW-OIL		



1 (3) X 1"ø CONDUITS; (1) X 1"ø = SPARE CONDUIT FROM ANODE JUNCTION BOX TO RECTIFIER R1, (FOR FUTURE LEAK DETECTION).
(1) X 1"ø C/W #2 AWG NEGATIVE CABLE FROM TANK 1935 TO RECTIFIER R1.
(1) X 1"ø CONDUIT C/W (1) #2 AWG POSITIVE CABLE FROM ANODE JUNCTION BOX TO RECTIFIER R1.

2 (1) X1"ø CONDUIT; #2 AWG NEGATIVE CABLE BONDED, RUNS FROM TANK TO RECTIFIER R1.

3 (3) X 1"ø CONDUITS; (1) X 1"ø = SPARE CONDUIT FROM ANODE JUNCTION BOX TO RECTIFIER R1, (FOR FUTURE LEAK DETECTION).
(1) X 1"ø C/W #2/0 AWG NEGATIVE CABLE FROM TANK 1934 TO RECTIFIER R1.
(1) X 1"ø CONDUIT C/W (1) #2/0 AWG POSITIVE CABLE FROM ANODE JUNCTION BOX TO RECTIFIER R1.

4 #2/0 AWG NEGATIVE CABLE BONDED, RUNS FROM TANK TO RECTIFIER R1 IN 1"ø CONDUIT.

AS-BUILT SITE PLAN

AS-BUILT

ALASKA • ARIZONA • CALIFORNIA • COLORADO • GEORGIA • ILLINOIS • KANSAS • LOUISIANA
MASSACHUSETTS • MINNESOTA • MONTANA • NEW JERSEY • NEW MEXICO • NORTH CAROLINA • NORTH DAKOTA
OHIO • OKLAHOMA • PENNSYLVANIA • TEXAS • VIRGINIA • WASHINGTON • WISCONSIN • INTERNATIONAL

REVISION	DATE	ENGINEER	DESCRIPTION

Corrpro Companies Incorporated
2799 MILLER ST. WYLIE, TEXAS 75098
PH: (972) 442-9638
FAX: (972) 442-6271

LIFE EXTENSION REFURBISHMENT OF THE GPA BULK STORAGE FUEL TANKS NO. 1934 & 1935 AS BUILTS

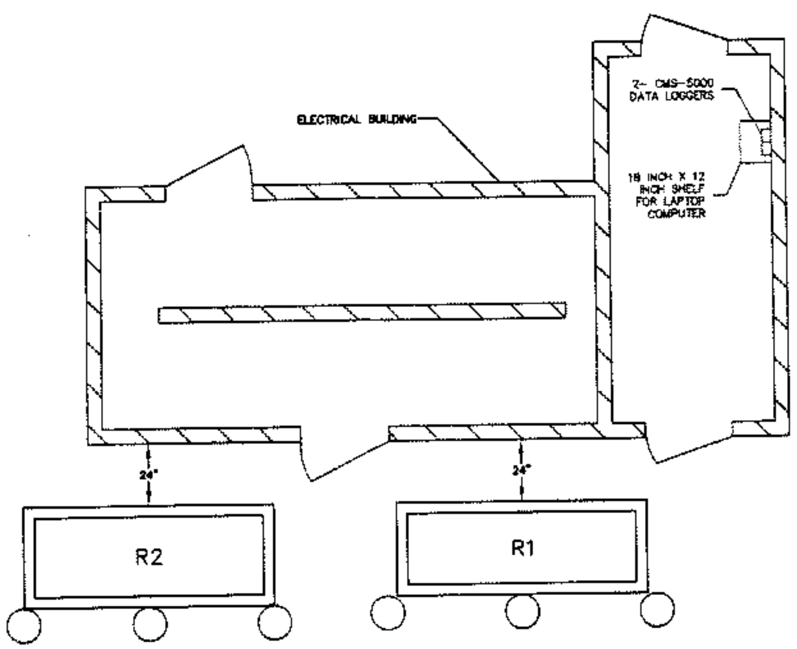
CATHODIC PROTECTION PLAN

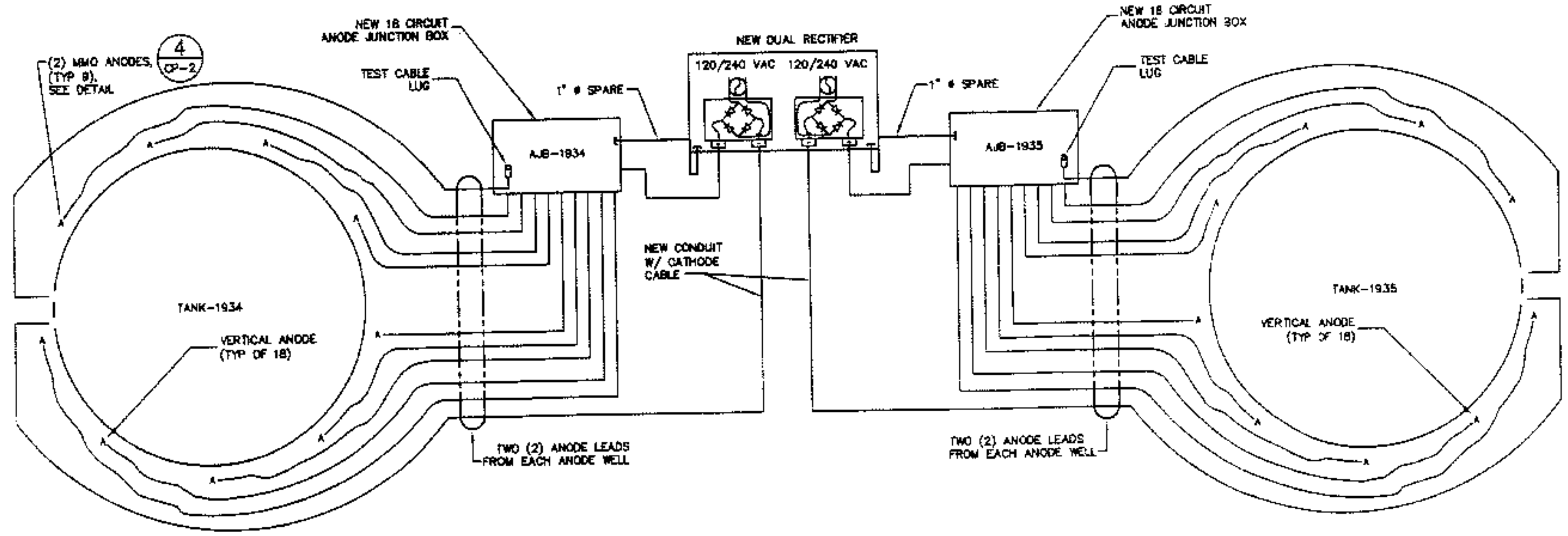
ENGINEER:	RR
CAD:	MH
CHECK:	DW
JOB NUMBER:	57-21165
SCALE:	AS NOTED
DATE:	10/27/05
FILE NAME:	21165cp1_AB 10/27/05

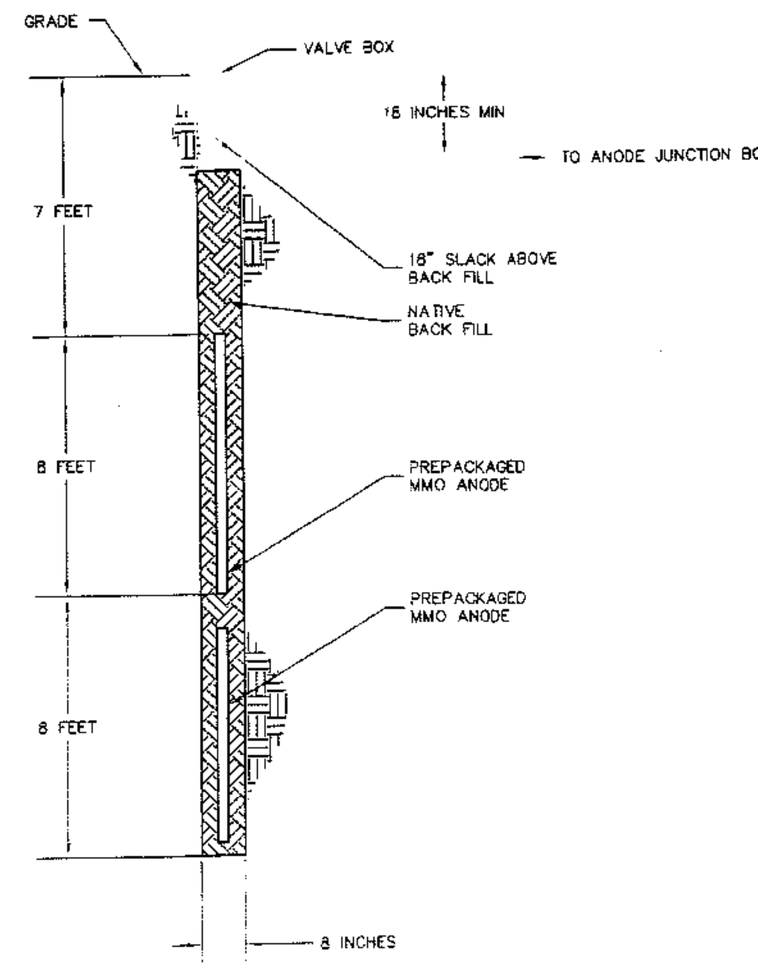
AS-BUILT

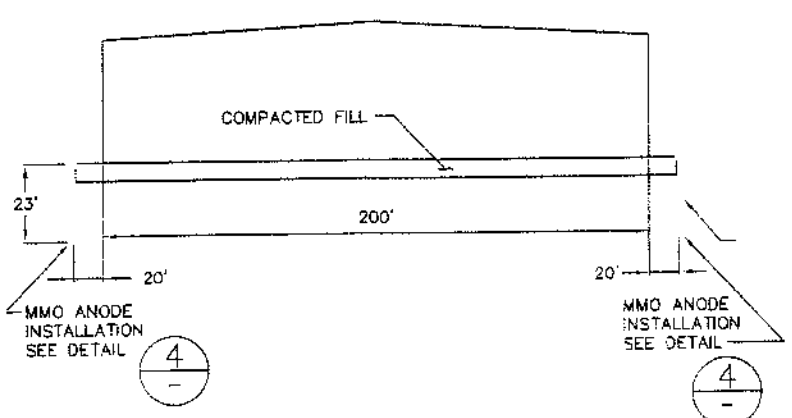
CP-1

SHEET 1 OF 2 SHEETS









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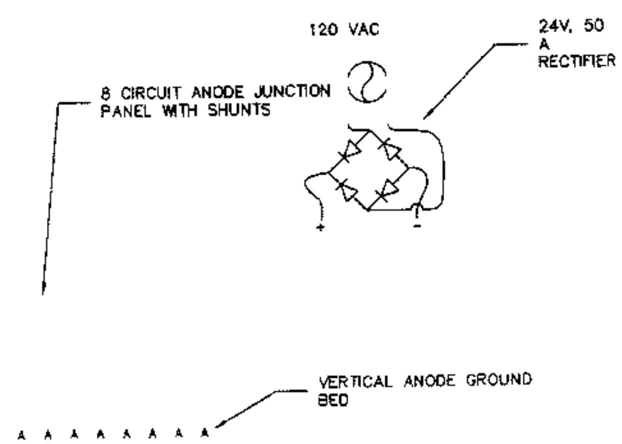

ALASKA • ARIZONA • CALIFORNIA • COLORADO • GEORGIA • ILLINOIS • KANSAS • LOUISIANA
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OHIO • OKLAHOMA • PENNSYLVANIA • TEXAS • VIRGINIA • WASHINGTON • WISCONSIN • INTERNATIONAL

Corrpro Companies Incorporated

2769 MILLER ST. SAN LEANDRO CALIFORNIA 94577

LIFE EXTENSION REFURBISHMENT OF THE GPA BULK STORAGE FUEL TANKS NO. 1934 & 1935 AS BUILTS

CATHODIC PROTECTION DETAILS

AS-BUILT

CP-2

SHEET 2 OF 2 SHEETS

TANK SYSTEM REPAIR REPORT

APPENDIX E

HYDROSTATIC TEST RESULT & MONITORING DATA

For

Contract No. C-029-05
Life Extension and Refurbishment
GPA Bulk Storage Tank No. 1935

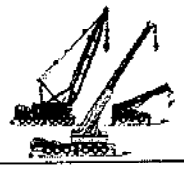
Submitted by:

INTERNATIONAL BRIDGE CORPORATION
P.O. Box 21149, GMF, GUAM 96921
Tel No. (671) 653-4026
Fax No. (671) 653-4032
November 3, 2005

TABLE OF CONTENTS

TANK 1935 FILL CHART

DATE	FEET OF WATER	CUMULATIVE FEET OF WATER	REMARKS
10/12/2005	2.50	2.50	Start pumping and filling water into tank at 10:40 A.M. using 2 sets of pumps
10/13/2005	4.50	7.00	Water is rising at a steady rate. Note: two pumps are leaking from the bearing and the housing.
10/14/2005	4.50	11.50	Water was still being pumped. Oil and fuels are checked regularly. Pumps were shutdown to look where leaks are coming from.
10/15/2005	4.00	15.50	Resume water pumping.Oil being checked every 4 hours and pumps are being shut down for an average of 2 hours per day to avoid overheating.
10/16/2005	4.50	20.00	Pumps were shutdown to check fluid levels and replace hose clamps due to leaking problem.
10/17/2005	4.50	24.50	One pump started to leak from the housing and needs maintenance. Continue pumping water with one pump only.
10/18/2005	3.50	28.00	Standby pump was set up in lieu of cracked pump. Continued pumping with two pumps and observe shut down every 4 hours to allow pumps to cool down.
10/19/2005	3.00	31.00	Leaks are being developed at the hose fitting near the pump outlet. Immediate repair was made, pumping was shutdown for two hours.
10/20/2005	2.00	33.00	Leaks are still showing at the hose fitting near the pump outlet. Repair was made right away and pumping was shutdown for at least 1-1/2 hours.
10/21/2005	2.00	35.00	Continue pumping with two pumps at a slower rate.
10/22/2005	1.50	36.50	An additional 3" pump was set up into the tank from the roof. Water still continue to rise but at a slower rate.
10/23/2005	1.50	38.00	Three pumps were used for pumping water. Tank is filling up at a slower rate.
10/24/2005	1.00	39.00	Pumping still continues, water rising slowly. No pump breakdown recorded.
10/25/2005	1.00	40.00	Filling of tank complete at 40'-0" level. GPA approved level reached.



ISLAND CERTS

Construction Equipment Regulatory Testing Services

Certificate of Hydrostatic Test of Above Ground Storage Tank

Owner: Guam Power Authority
Date: November 04, 2005
Tank No: Tank 1935
Report No: GPA19352005
Diameter: 200.00 ft.
Maximum Fill Height: 40.00 ft
Calculated Maximum Hydrostatic Fill Height: 40.00 ft (sea water)
Reason for Hydrostatic Test: Bottom/weld repair **Date of Initial Survey:** Oct 12, 2005
Surveying Agency: International Bridge Corporation
Date of Fill Height Completion: Oct 25, 2005 **Length of time held:** >24 hours
Number of Projection Plate Elevation Measurement Points: 20 @ 31.4 ft arc length
Planar tilt before filling: _____ in. **Planar tilt after filling:** _____ in.
Calculated Deflection: 1.15 in. **Maximum Deflection Permitted:** 1.401 in.

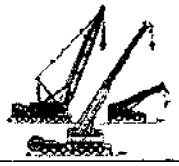
Settlement Measurements (inches) taken during monitoring of Hydrostatic Testing
Survey conducted clockwise from reference point 1 located at stairway bottom

	Date:	**10-12-05**	**10-16-05**	**10-17-05**	**10-20-05**	**10-25-05**	**10-26-05**
Point	**Station-ft**	Empty	20 ft	24.5 ft	33 ft	40 ft	40 ft-24 hrs
1	0.00	*12.65*	*12.64*	*12.63*	*12.64*	*12.64*	*12.64*
2	31.4	*13.11*	*13.10*	*13.11*	*13.10*	*13.09*	*13.10*
3	62.8	*13.27*	*13.27*	*13.27*	*13.26*	*13.26*	*13.27*
4	94.2	*13.68*	*13.68*	*13.69*	*13.68*	*13.67*	*13.67*
5	125.6	*13.80*	*13.81*	*13.80*	*13.79*	*13.78*	*13.79*
6	157	*13.55*	*13.56*	*13.55*	*13.54*	*13.53*	*13.54*
7	188.4	*13.40*	*13.39*	*13.40*	*13.39*	*13.38*	*13.38*
8	219.8	*13.20*	*13.20*	*13.20*	*13.19*	*13. 18*	*13.18*
9	251.2	*13.50*	*13.50*	*13.49*	*13.49*	*13.48*	*13.49*
10	282.6	*13.10*	*13.10*	*13.09*	*13.08*	*13.07*	*13.09*
11	314	*13.41*	*13.41*	*13.41*	*13. 40*	*13.38*	*13.41*
12	345.4	*13.35*	*13.33*	*13.35*	*13.35*	*13.34*	*13.33*
13	376.8	*13.63*	*13.64*	*13.65*	*13.65*	*13.64*	*13.62*
14	408.2	*13.23*	*13.22*	*13.23*	*13.22*	*13.23*	*13.21*
15	439.6	*13.28*	*13.29*	*13.31*	*13.30*	*13.29*	*13.29*
16	471	*13.40*	*13.41*	*13..43*	*13.42*	*13.41*	*13.41*
17	502.4	*13.57*	*13.60*	*13.60*	*13.61*	*13.61*	*13.59*
18	533.8	*13.63*	*13. 65*	*13.64*	*13.65*	*13.65*	*13.63*
19	565.2	*13.96*	*13.97*	*13.98*	*13.98*	*13.98*	*13.97*
20	596.6	*13.19*	*13.21*	*13.20*	*13.20*	*13.20*	*13.20*
Difference		*1.15*	*1.17*	*1.17*	*1.15*	*1.14*	*1.15*

Hydrostatic Test Fill Height Calculation, API 653 Para 4.3.3.2

$$H_t = \frac{S_t \, Et_{min}}{2.6D + 1}$$

$$\frac{20{,}840 \times 1}{2.6 \times 200 + 1} = \frac{20{,}840}{521} = 40.00 \text{ ft}$$



ISLAND CERTS
Construction Equipment Regulatory Testing Services

Pg 2

Owner: Guam Power Authority
Tank No: Tank 1935

Date: Nov 04, 2005
Report No: GPA19352005

Maximum Permissible Out-of-Plane Deflection Calculations

$$S \leq \frac{(L^2 \times Y \times 11)}{2\,[(E \times H)]}$$

where

S = deflection, in ft (out of plane distortion)
L = arc length between measurement points, 31.4 ft
Y = yield strength, in lbf/in.^{2}, 30,000
E = Young's Modulus, in lbf/in.^{2}, 29^6
H = tank height, in ft

$$S \leq \frac{31.4^2 \times 30{,}000 \times 11 = 325{,}366{,}800}{2 \times (29{,}000{,}000 \times 48) = 2{,}784{,}000{,}000}$$

.1168 (ft) x 12 (in) = 1.401 in. Maximum Deflection

We hereby certify the above tank has been successfully hydrostatically tested per API 653 Para 12.3. Initial survey and monitoring of settlement at designated number of measuring points has been performed per API 653 Para 12.5, and tank settlement measurements have been evaluated and accepted in accordance with API 653 Appendix B.

The undersigned certifies the above test has been witnessed for procedure accuracies per API 653 Section 12-Examination and Testing and all information recorded as correct.

David A. Barnhouse API 653 Inspector

Date: 11-07-05
Certificate No: 23408

Owner's Representative

Date: 18 Nov 05

Title: 1520

Applied P & CH Laboratories
13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Unitek Environmental-Guam
Attention: David Yamartino
P.O. Box 24607
Barrigada Gu 96921
Tel: (671)565-3151 Fax: (671)565-3391

Service ID #: 801-054492
Collected by: David Y.
Collected on: 10/24/05

Received: 10/26/05
Extracted: N/A
Tested: 10/26/05
Reported: 10/26/05

Sample Description: Water from Peterra Tank 1935.
Project Description: 0112 IBC Water Samples

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result IBC-1 05-04492-1	IBC-2 05-04492-2	IBC-3 05-04492-3
TRPH	418.1	mg/L	6	1.9	ND	ND	ND

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & CH Laboratories

Applied P & Ch Laboratory

APCL

13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Chain of Custody

Please Print in pen Page 1 of 1

Client: UNITEK ENVIRONMENTAL Contact: DAVID YAMARTINO Tel #: (671) 565-3151 Fax #: 565-3391

Address: P.O. BOX 24607 City: BARRIGADA State: GU Zip code: 96921

Bill to:

Project Name/Code IBC WATER SAMPLES Job # 0112 P.O. # 42301

Project Address PETERRA TANK 1935 APCL Quotation #

Due Date: ☐ regular ☒ rush: ___ days 24 hours Sampled by: D. Yamartino

Field Sample ID No.	Sample Description	Date Collected	Time	Sample Matrix	Preservation	# of Containers	TRPH	Analysis Items	Remarks
IBC-1	TANK BOTTOM 0-2	10-24-05	0912	WATER	H_2SO_4	1	X		
IBC-2	TANK SURFACE 0-2	"	0907	"	"	1	X		
IBC-3	SOURCE	"	0929	"	"	1	X		

4492

White – With report
Yellow – Lab copy
Pink – Originator

QC Requirement: ☒ Regular; ☐ QA/QC Report; ☐ WIP; ☐ Raw Data; ☐ Extended Raw Data ☐ CLP; ☐ ACE ☐ AFCEE ☐ NEESA ___ (E, C or D); ☐ Other _____ (Please specify)

Sample Disposal: ☐ Return ☒ Disposal by APCL ☐ Hold for _____ days after receiving date. If not specified, samples will be discarded 45 days after samples are received.

Sample Conditions: ☐ Intact; ☐ Broken. Cooler Seal: ☐ Intact; ☐ Broken; ☐ None. Tag # _____ Temperature: ☐ Room ☐ Cold (____ °C).

Relinquished by D. Yamartino Date/Time / Received by Date/Time 10/26/05 / 1000

Relinquished by Date/Time / Received by Date/Time /

APCL USE ONLY Service # Note:

Clients understand that all terms described in the proposals, quotations for this project, and/or the general terms provided in the current APCL price schedules will be followed. APCL reserves the right to terminate its service or withhold delivery of any reports, if in APCL's sole discretion the terms of the project have been broken.

APCL Form 4-101 Ver. 4.0 Dec. 20, 1994. Root-file:CUST_DATA_LABCHAIN_ROOT.TEX File:CUST_DATA_LABCHAIN.TEX

Applied P & CH Laboratories
13760 Magnolia Ave., Chino, CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

APCL Analytical Report

Submitted to:
Unitek Environmental-Guam
Attention: David Yamartino
P.O. Box 24607
Barrigada Gu 96921
Tel: (671)565-3151 Fax: (671)565-3391

Service ID #: 801-054599
Collected by: David Y.
Collected on: 10/31/05

Received: 11/02/05
Extracted: N/A
Tested: 11/02/05
Reported: 11/03/05

Sample Description: Water from Peterra Tank 1935.
Project Description: IBC Water Samples

Analysis of Water Samples

Component Analyzed	Method	Unit	PQL	MDL	Analysis Result IBC-4 05-04599-1	IBC-5 05-04599-2
Dilution Factor					1	1
Lead	6010B	mg/L	0.005	0.0013	<0.005	<0.005
BTXE						
Dilution Factor					1	1
Benzene	8021B	µg/L	1	0.18	<1	<1
Ethylbenzene	8021B	µg/L	1	0.27	<1	<1
Toluene	8021B	µg/L	1	0.24	<1	<1
o-Xylene	8021B	µg/L	2	0.59	<2	<2
m/p-Xylene	8021B	µg/L	3	0.80	<3	<3

PQL: Practical Quantitation Limit. MDL: Method Detection Limit. CRDL: Contract Required Detection Limit
N.D.: Not Detected or less than the practical quantitation limit. "-": Analysis is not required.
J: Reported between PQL and MDL.
Listed Dilution Factors (DF) are relative to the method default DF. All unlisted DFs are 1.0

Respectfully submitted,

Dominic Lau
Laboratory Director
Applied P & CH Laboratories

Applied P & Ch Laboratory

APCL

13760 Magnolia Ave. Chino CA 91710
Tel: (909) 590-1828 Fax: (909) 590-1498

Chain of Custody

Please Print in pen Page 1 of 1

Client: UNITEK ENVIRONMENTAL Contact: DAVID YAMARTINO Tel #: 671 565 3157 Fax #: 565-3391

Address: P.O. BOX 24607 City: BARRIGADA State: GUAM Zip code: 96921

Bill to:

Project Name/Code IBC WATER SAMPLES Job # P.O. # 42366

Project Address PETERRA TANK 1935 APCL Quotation #

Due Date: ☐regular ☒rush: ___ days 24 hours Sampled by: D. Yamartino

Field Sample ID No.	Sample Description	Date Collected	Time Collected	Sample Matrix	Preservation	# of Containers	Analysis Items: TOTAL Pb	Analysis Items: BTEX
IBC-4	TANK SURFACE	10.31.05	1013	WATER	ACID/ICE	4	X	X
IBC-5	TANK BOTTOM	10.31.05	1106	WATER	ACID/ICE	4	X	X

White - With report
Yellow - Lab copy
Pink - Originator

Remarks:
pH = 8.13
pH = 8.20

4599

QC Requirement: ☒Regular; ☐QA/QC Report; ☐WIP; ☐Raw Data; ☐Extended Raw Data ☐CLP; ☐ACE ☐AFCEE ☐NEESA ___(E, C or D); ☐Other _____(Please specify)

Sample Disposal: ☐Return ☒Disposal by APCL ☐Hold for _____ days after receiving date. If not specified, samples will be discarded 45 days after samples are received.

Sample Conditions: ☐Intact; ☐Broken. Cooler Seal: ☐Intact; ☐Broken; ☐None. Tag # _____ Temperature: ☐Room ☐Cold (_____ °C).

Relinquished by D. Yamartino Date/Time 10.31.05 / 1500 Received by _____ Date/Time 11/2/05 / 0930

Relinquished by _____ Date/Time / Received by _____ Date/Time /

APCL USE ONLY Service # Note:

Clients understand that all terms described in the proposals, quotations for this project, and/or the general terms provided in the current APCL price schedules will be followed. APCL reserves the right to terminate its service or withhold delivery of any reports, if in APCL's sole discretion the terms of the project have been broken.

APCL Form 4-101, Ver. 4.0, Dec. 20, 1994.

TANK 1935 DISCHARGE CHART

DATE	TIME READING TAKEN	HEIGHT OF WATER	APPROX HEIGHT DISCHARGE	NEW RECORDED HEIGHT	REMARKS
10/26/2005	11:00 AM	40'-0"	2'-1"	37'-11"	Initial discharge to OWS and Evaporation Pond to check ins any oil sheen is present. Discharge witnessed by GEPA, GPA, IBC and Facility Operator representatives.
10/31/2005	5:30 PM	37'-11"	-	37'-11"	Commence discharging into the Piti Channel using gravity flow. Additional water samples taken from top and bottom of tank for the additional parameters required, e.g., Lead, BETX and ph. Ph taken on site.
11/1/2005	10:45 AM	37'-11"	3'- 11 7/8"	33'-11 1/8"	Continue discharging to the Piti Channel.
11/2/2005	9:45 AM	33'-11 1/8"	4'-2 3/8"	29'-8 3/4"	Continue discharging to the Piti Channel.
11/3/2005	1:30 PM	29'-8 3/4"	4'-7 3/4"	25'-1"	Continue discharging to the Piti Channel.
11/3/2005	5:20 PM	25'-1"	0'-7"	24'-6"	Continue discharging to the Piti Channel.
11/4/2005	10:00 AM	24'-6"	2'-8"	21'-10"	Continue discharging to the Piti Channel.
11/6/2005	9:30 AM	21'-10"	6'-10"	15'-0"	Continue discharging to the Piti Channel.
11/7/2005	10:00 AM	15'-0"	3'-6 1/2"	11'-5 1/2"	Continue discharging to the Piti Channel.
11/8/2005	10:00 AM	11'-5 1/2"	4'-1 1/2"	7'-4"	Continue discharging to the Piti Channel.
11/9/2005	9:25 AM	7'-4"	4'-0"	3'-4"	Continue discharging to the Piti Channel.
11/9/2005	1:45 PM	3'-4"	0'-5"	2'-11"	Discharging to OWS & Evaporation Pond. Discharge witnessed by GEPA, GPA and Facility Operator representatives.
11/10/2005		2'-11"	2'-5"	0'-6"	Clean up residues of sandblasting grit dust at Tank Bottom.
11/11/2005		0'-6"	-	0'-0"	Continue removing and cleaning bottom of tank from sea water and sandblasting residues.
11/12~13/2005					Commence rinsing interior using tap water from pump station.
11/14/2005					Discharge rinse water and commence cleanup of remaining sandblasting grit on tank bottom floor and along shell and floor plates.
11/15/2005					Tank interior cleanup completed.

SCHEDULE K

GPA Bulk Fuel Storage Facility Asset List

GUAM POWER AUTHORITY
GPA FUEL TANK FARM Fixed
Asset Inventory: Sorted by EQ Type

BREAKDOWN BY TYPE

TANKS	Qty	Year Installed	Last Upgrade
Tank 1934	1	1976	2005*
Tank 1935	1	1976	2005*
Waste Oil Holding Tank	1	1976	
Diesel Tank 5000 Gallon Capacity	1	2005	2022

PIPELINES	Qty	Year Installed	Last Upgraded
Navy Tie-in to Tk 1935 - 24" diameter	1 lot	1976	2019
Navy Tie-in to TEMES CT (DFO) - 8" diameter	1 lot	1976	Deactivated
Tk 1934 disch to Pump Station Suction - 12" diameter	1 lot	1976	2005
Tk 1935 disch to Pump Station Suction - 12" diameter	1 lot	1976	2005
Cab Pump A&B disch to Plant Perimeter Fence - 6" diameter	1 lot	1976	2005
Cab Pump C&D disch to Plant Perimeter Fence - 6" diameter	1 lot	1976	2005
24"-dia Receiving P/L to Auxillary Pump Suction - 16" diameter	1 lot	1976	IFB for Upgrading in FY 2017
Auxillary Pump disch to Tk 1934 - 16" diameter	1 lot	1976	2005
24"-dia P/L to navy Tie-in	1 lot	1976	2005
Guardrails along the road to Navy tie-in	1 lot	1976	2013*
Tanguisson Discharge Pipeline 8" diameter	1 lot	1976	

ELECTRICAL ROOM	Qty	Year Installed	Last Upgraded
Switches	1 lot	1976	2005
Breakers	1 lot	1976	2005
Power meters	1 lot	1976	

AUXILLARY PUMP STATION (DIESEL-DRIVEN)	Qty	Year Installed	Last Upgraded
Pump	1	1976	2005*
Strainer	1	1976	2005*
Pressure Gauges	1	1976	2005*
Chain Block	1		2005*

OIL-WATER SEPARATOR (OWS)	Qty	Year Installed	Last Upgraded
Containment	1	1976	2004*
Pumps	3	1976/2005	2004*

CATHODIC PROTECTION	Qty	Year Installed	Last Upgraded
Rectifiers & Anodes	2	1976	2005*

LEAK DETECTION SYSTEM	Qty	Year Installed	Last Upgraded
Probes	1	2005	2016*
System Monitoring (CMS-100)	1	2005	2016*
Laptop for System Monitoring	1	2005	2016*

GUAM POWER AUTHORITY
GPA FUEL TANK FARM Fixed
Asset Inventory: Sorted by EQ Type

MAIN PUMP STATION		Qty	Year Installed	Last Upgraded
Cabras 1	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	2004	
Cabras 2	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	2004	
Cabras 3	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	1976	
Cabras 4	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	1976	
Tango 1	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	1976	
Tango 2	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	1976	
Tango 3	Pump/Motor/Strainer/Relief Valves/Pressure Gauge/ Pressure Switch/Suction Valve/Discharge Valve/Circulation Valve/Sump	1ea	2004	

OFFICE BUILDING	Qty	Year Installed	Last Upgraded
Building Structure	1	1976	2005*
Transformer	1	1976	2005*
Wind Turbine	1	2005	
Maintenance Room	1	1976	2005*
Air Conditioners	2	2005	2012*
Restroom	1	1976	2005*

GATES	Qty	Year Installed	Last Upgraded
Front	1	1976	
Main	1	1976	
Back	1	1976	
Man Gate	6	1976	

PERIMETER FENCE	Qty	Year Installed	Last Upgraded
East	1 lot	1976	2013*
West	1 lot	1976	2013*
North	1 lot	1976	2013*
South	1 lot	1976	2013*

PERIMETER LIGHTING	Qty	Year Installed	Last Upgraded
Front	2	2005	
Back	9	2005	

GUAM POWER AUTHORITY
GPA FUEL TANK FARM Fixed
Asset Inventory: Sorted by EQ Type

VALVES		Qty	Year Installed	Last Upgraded
Valve # 136	Tk 1934 & Tk 1935 discharge tie-in	1	1976	
Valve # 137		1	1976	
Valve # 138	Auxillary pump disch to 24" main line	1	1976	
Valve # 139	Auxillary pump disch (primary)	1	1976	
Valve # 140	Auxillary pump suction	1	1976	
Valve # 141	Main receiving valve	1	1976	
Valve # 142	Auxillary pump disch (secondary)	1	1976	
Valve # 143	Tk 1934 overflow	1	1976	
Valve # 144	Tk 1934 inlet	1	1976	
Valve # 148	Tk 1934 outlet	1	1976	
Valve # 145	Tk 1935 inlet	1	1976	
Valve # 146	Tk 1935 inlet	1	1976	
Valve # 147	Tk 1935 outlet (Primary)	1	1976	
Valve # 148	Tk 1934 outlet (Primary)	1	1976	
Valve # 149	Tk 1934 outlet (Secondary)	1	1976	
Valve # 150	Tk 1935 overflow	1	1976	
Valve # 151	Cabras Pumps Main Suction Header	1	1976	
Valve # 152	Air Eliminator isolation	1	1976	
Valve # 153	Air Eliminator isolation	1	1976	
Valve # 154		1	1976	
1934 Dike Valve		1	1976	
Out-Fall Valve #1		1	1976	2021
1935 Dike Valve		1	1976	
Out-Fall Valve #2		1	1976	2021

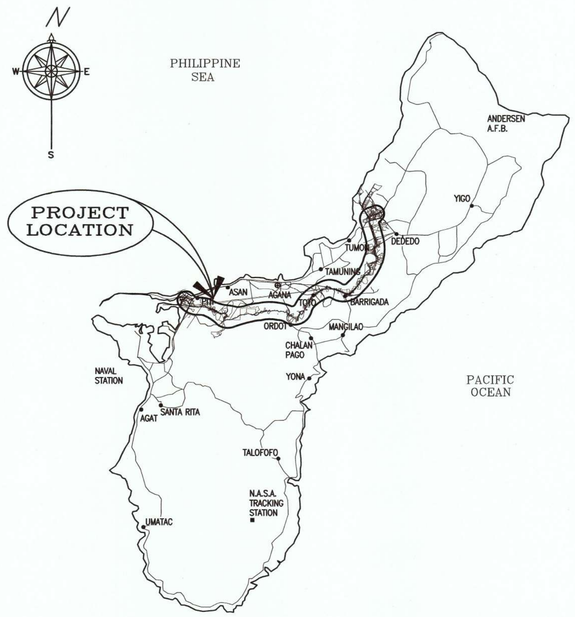
SCHEDULE L

Proposed ULSD and LNG Pipeline Piti to UKUDU

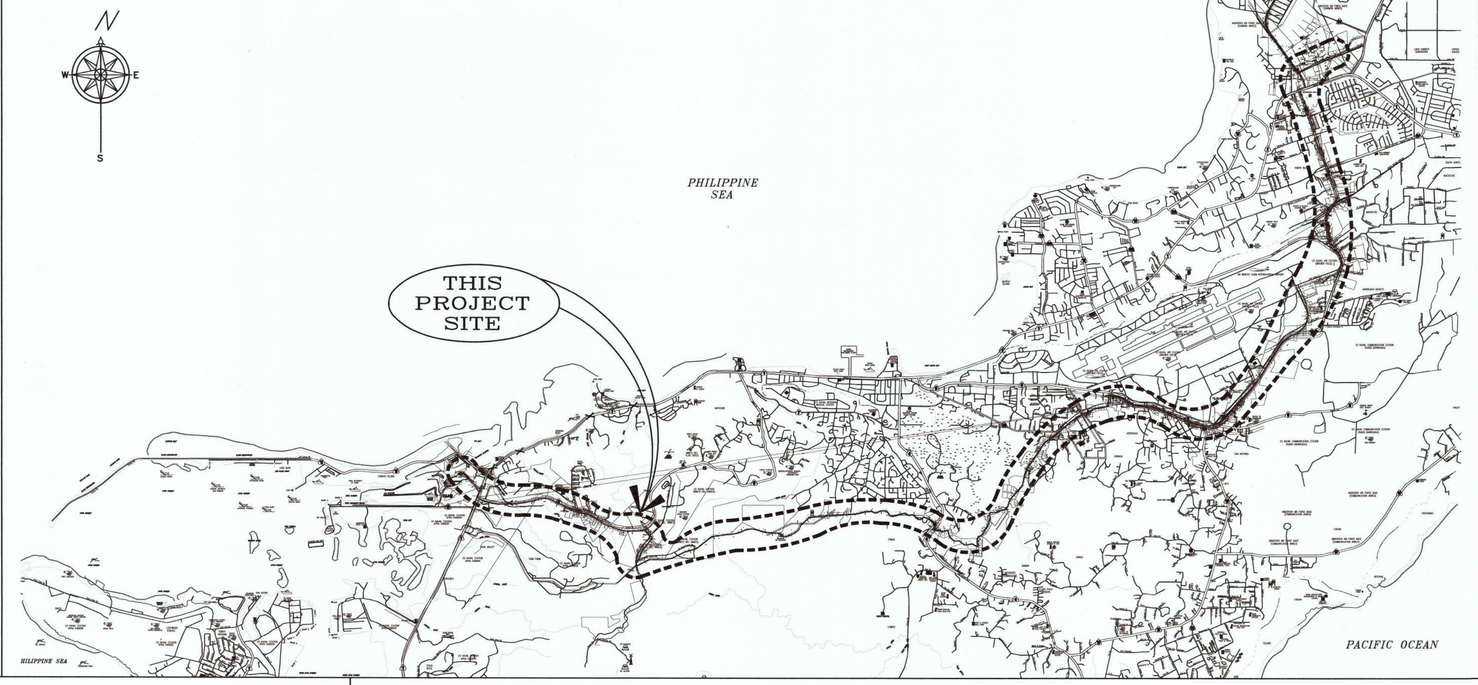
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY

LOCATION MAP



PROJECT LOCATION



LEGENDS

	EXISTING FUEL PIPELINE TO BE ABANDONED-IN-PLACE
	EXISTING FUEL PIPELINE TO BE REMOVED & DISPOSED
	SILT FENCE
	NEW ABOVE GROUND FUEL PIPELINE WITH NEW PEDESTAL SUPPORT
	NEW UNDERGROUND FUEL PIPELINE
	DRAIN LOCATION
	FOUND #4 REBAR, NO IDENTIFICATION OR AS NOTED
	SET #4 REBAR W/ CAP MARKED "PLS75"
	4x4 CONCRETE MONUMENT
	SURVEY STATION
	1993 GGN CONTROL MONUMENT
	AC PATCH
SM	SURFACE MARKER FOR UNDERGROUND UTILITY LINE
	CONCRETE HEADWALL
	CONCRETE PATCH
CPT	CATHODIC PROTECTION TEST STATION
	GATE POST
	12"ø TREE UNLESS NOTED OTHERWISE
	COCONUT TREE

CHH CH	COMMUNICATIONS HANDHOLE
	COMMUNICATIONS MANHOLE
EMH	ELECTRIC MANHOLE
CPP	CONCRETE POWER POLE
SPP	STEEL POWER POLE
	WOODEN POWER POLE
ALP	AREA LIGHT POLE
	GUARD RAIL
	FIRE HYDRANT
	LIGHT POST
OE	OVERHEAD POWER LINE
S S_X	SEWER LINE (DATA PROVIDED BY GWA)
	SEWER MANHOLE
	SIGN
SL	SURVEY LIMIT
UHH	UTILITY HANDHOLE
UMH	UTILITY MANHOLE
	VEGETATION
W_X	WATER LINE (DATA PROVIDED BY GWA)
WMH	WATER MANHOLE
WM WM	WATER METER
WV WV WV	WATER VALVE

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SUITE C202 EAST WEST BUSINESS CENTER
744 NORTH MARINE CORP. DRIVE, UPPER TUMON GUAM 96913
TEL: 647-4233
EMAIL: admin@coevaldesignpartners.net

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ENGINEERING SERVICES, LLC
MECHANICAL & FIRE PROTECTION CONSULTING
ENGINEERS & CONSTRUCTION MANAGEMENT SVCS.

ENGINEERING RESOURCES INTERNATIONAL
1128 N. Marine Corps Dr. #104
Tamuning, Guam 96913
Tel: (671) 687-4718
Email: pat.mizuta@nca-engineers.com

CIVIL	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
NEMENCIO C. MACARIO CERTIFICATE NO. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER	FRANCISCO Z. DIMAION CERTIFICATE NO. 320 ARCHITECT EXP. 4-30-22 GUAM REGISTERED ARCHITECT	NEMENCIO C. MACARIO CERTIFICATE NO. 942 (STRUCTURAL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER	MARION P. NOTARTE CERTIFICATE NO. 1264 (MECHANICAL) EXP. 4/30/22 GUAM PROFESSIONAL ENGINEER	PATRICK S. MIZUTA COMMONWEALTH OF THE NORTHERN MARIANAS NO. 130 (ELECTRICAL) EXP. 5/7/2022 PROFESSIONAL ENGINEER
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION DATE:_____	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION DATE: 9/8/21	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION DATE:_____	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION DATE:_____	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION DATE:_____

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
PROJECT TITLE, LOCATION MAP, PROJECT LOCATION & LEGENDS

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	1 OF 134	G-001	–

22" x 34" (559 x 864mm)

OVERALL SITE UTILITY KEYPLAN

N.T.S.

PLAN NORTH

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project

PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner

GUAM UKUDU POWER

Owner's Consultant

EPC Contractor

DOOSAN

EPC Contractor's Consultant

N.C. MACARIO & ASSOCIATES, INC.
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Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE

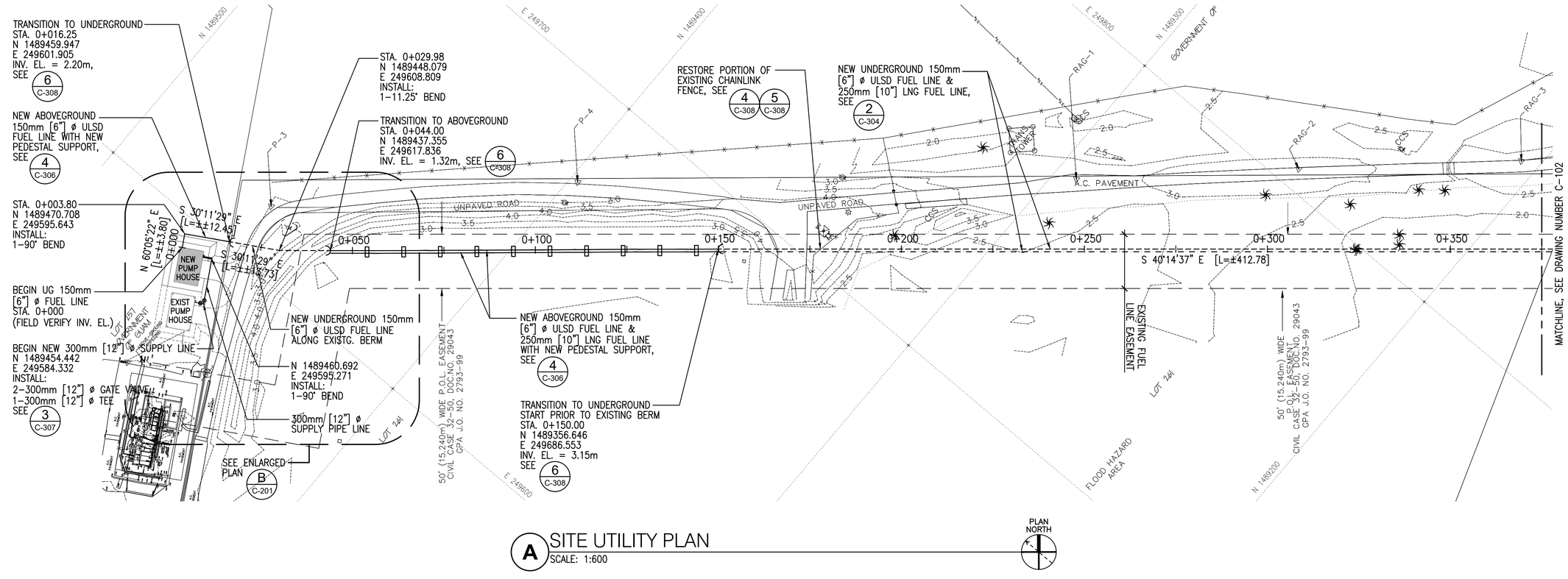
OVERALL SITE UTILITY KEYPLAN

NEMENCIO C. MACARIO
CERTIFICATE
No 607
(CIVIL)
EXP. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

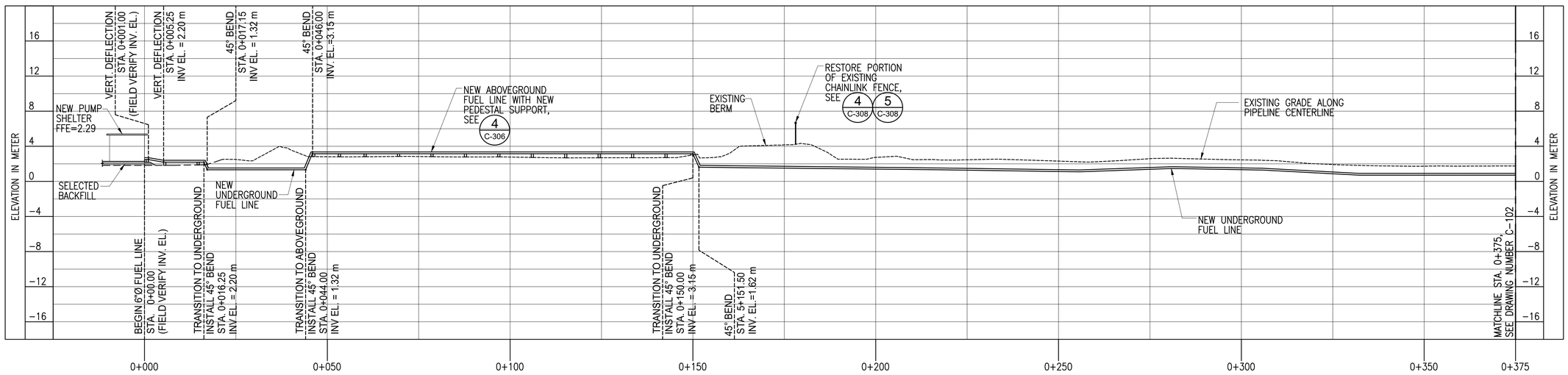
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	31 OF 134	C-001	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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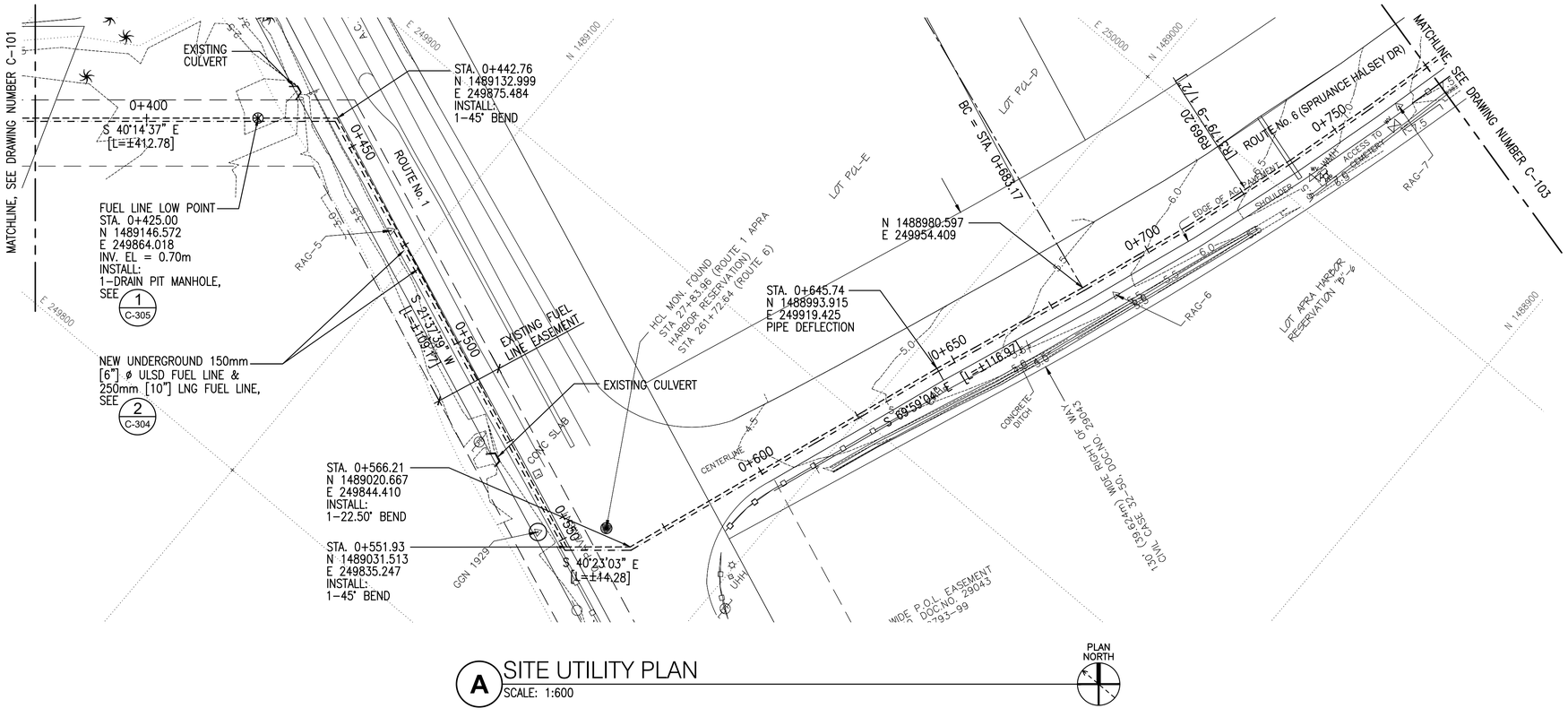
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

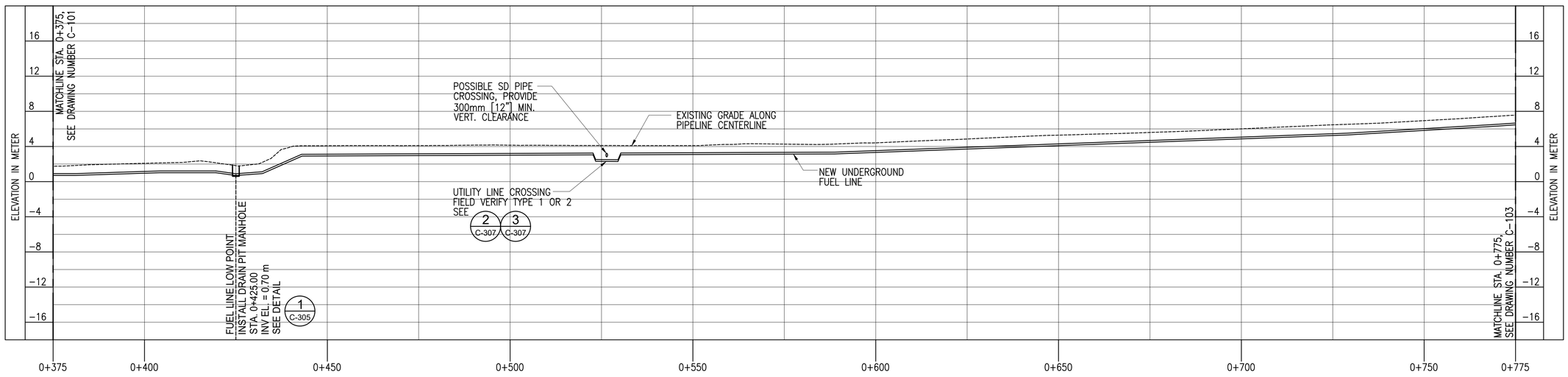
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	32 OF 134	C-101	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

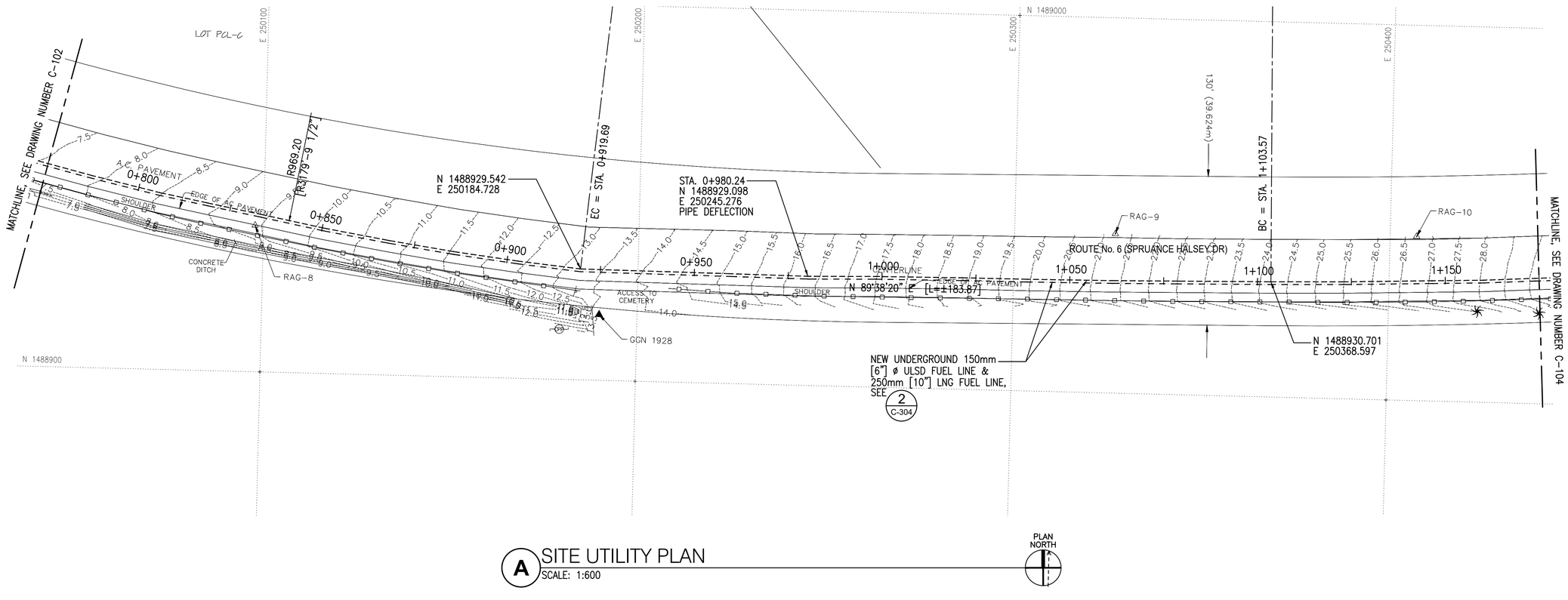
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

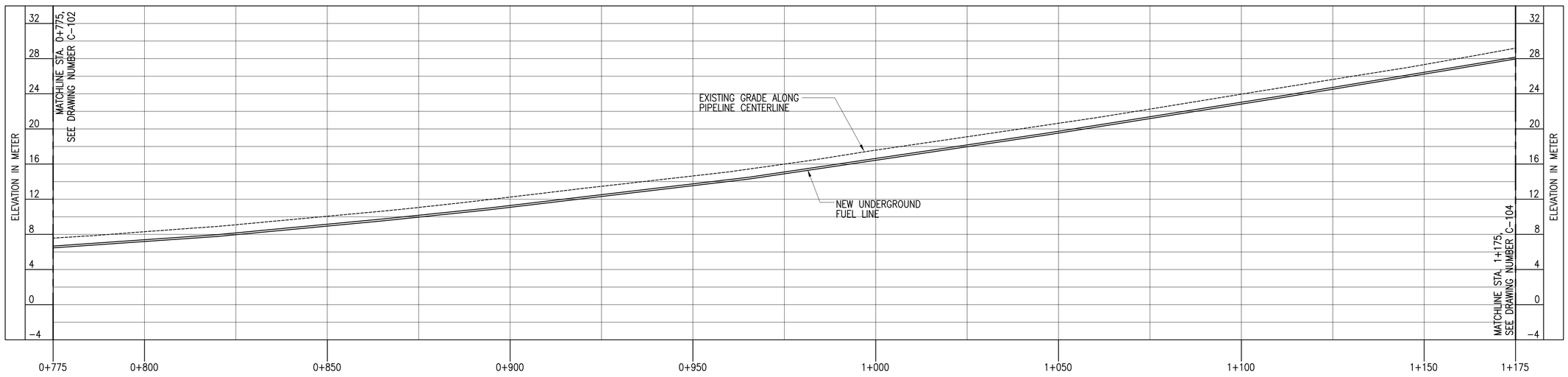
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	33 OF 134	C-102	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- WETLAND
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- EXISTING GUARD RAIL
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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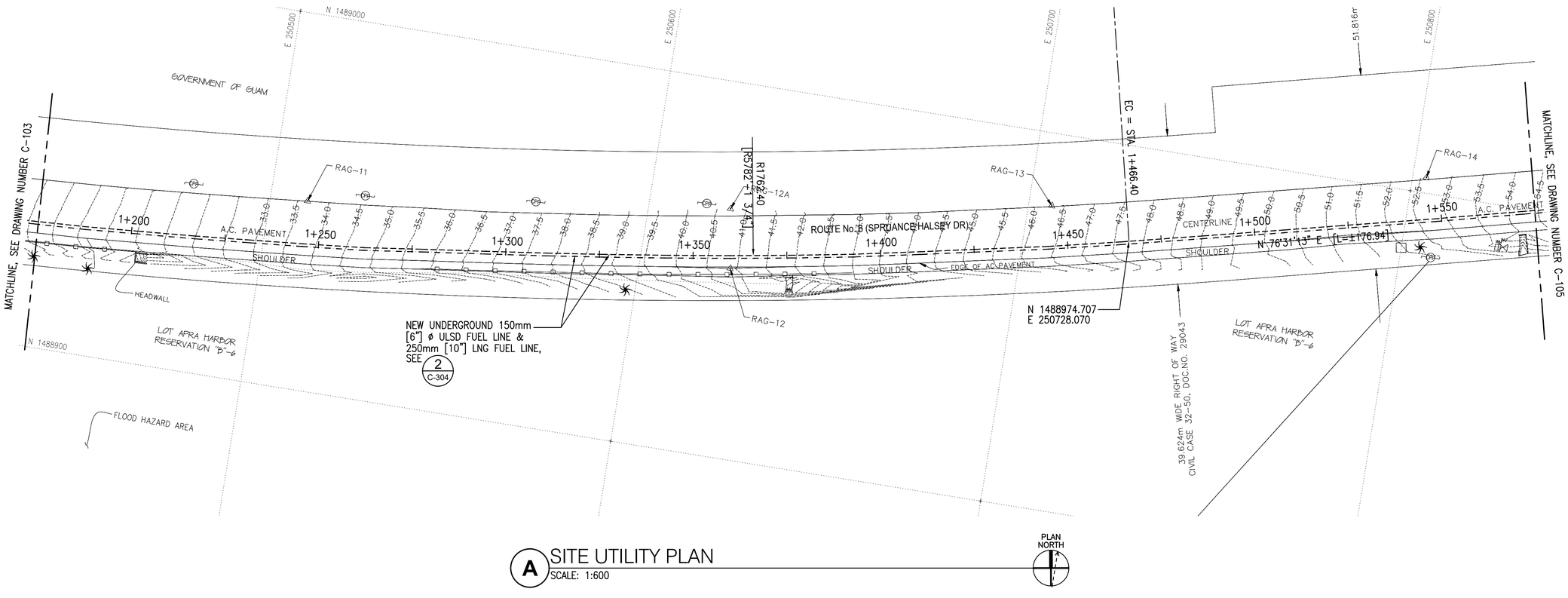
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

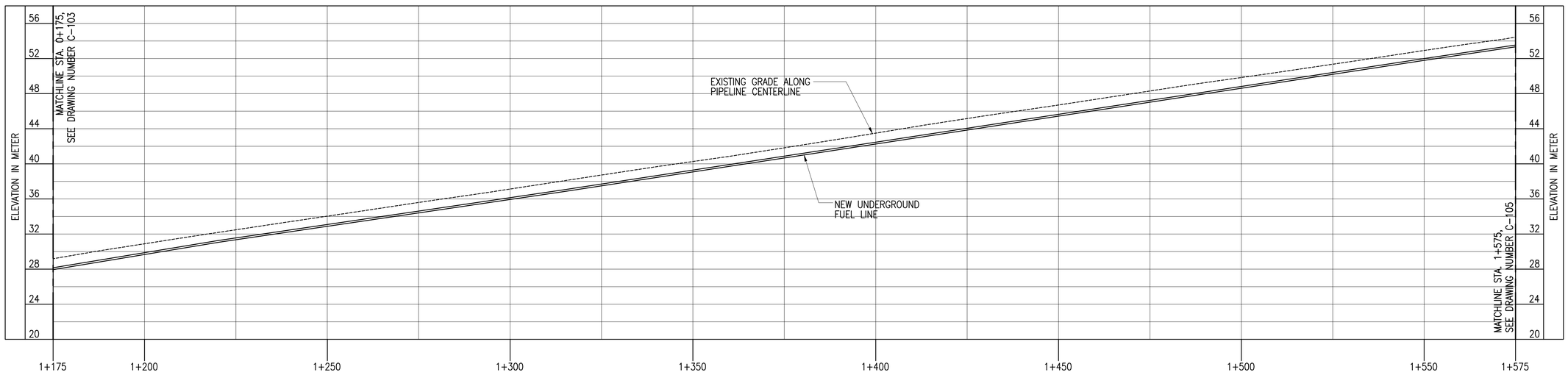
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	34 OF 134	C-103	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

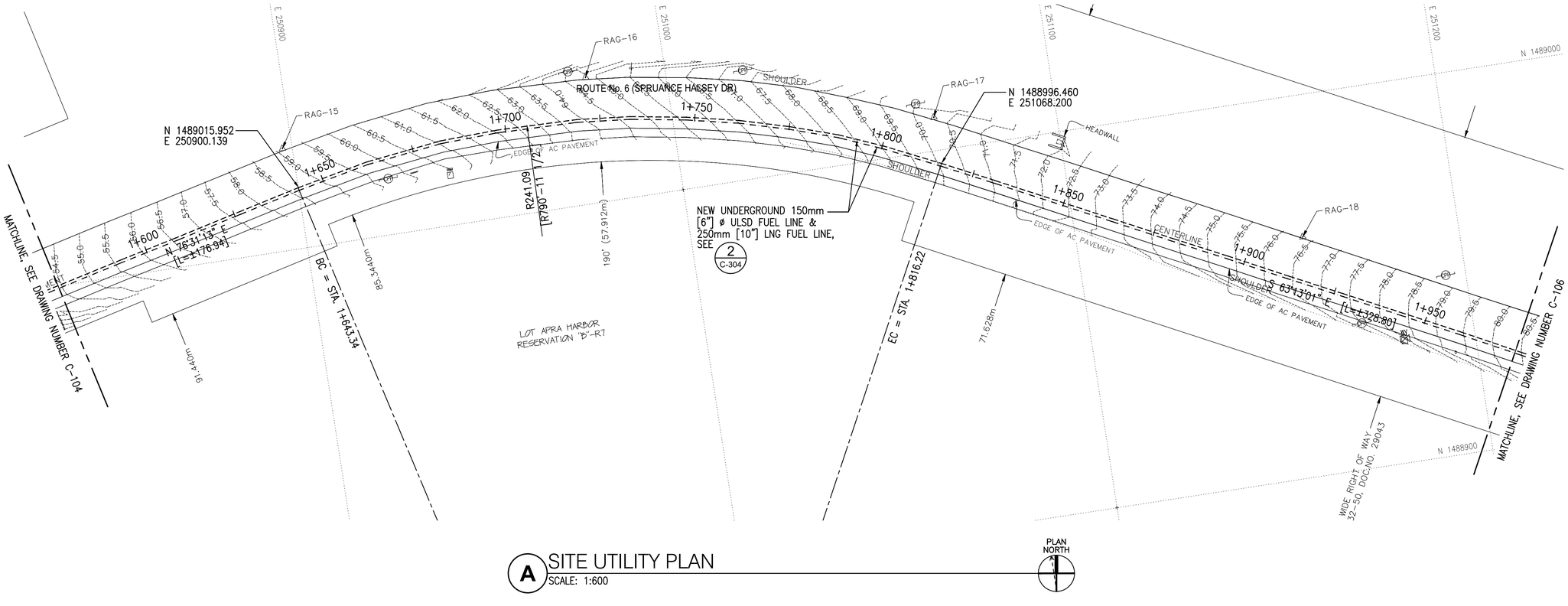
NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

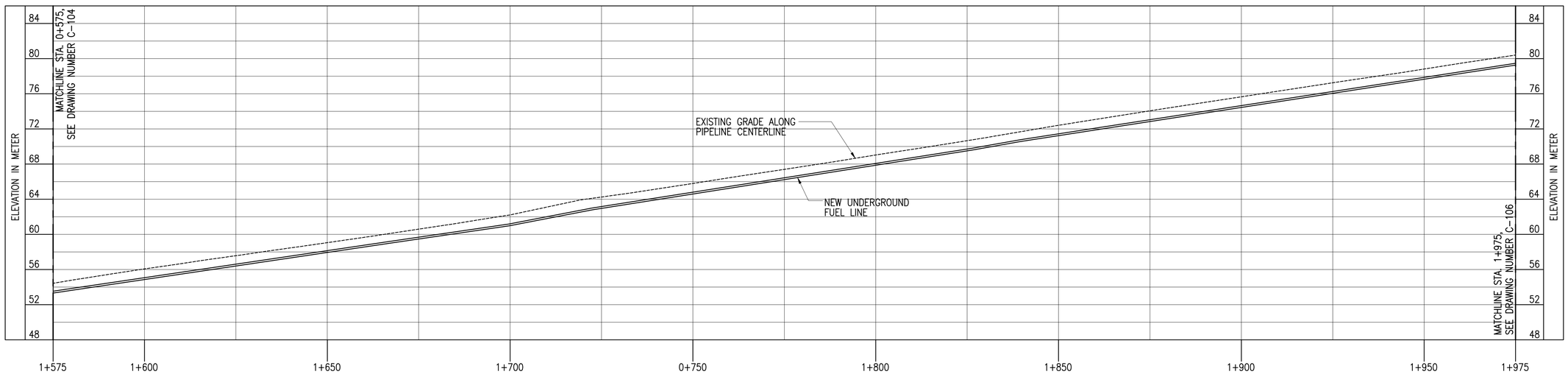
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	35 OF 134	C-104	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- $S S_x$ EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

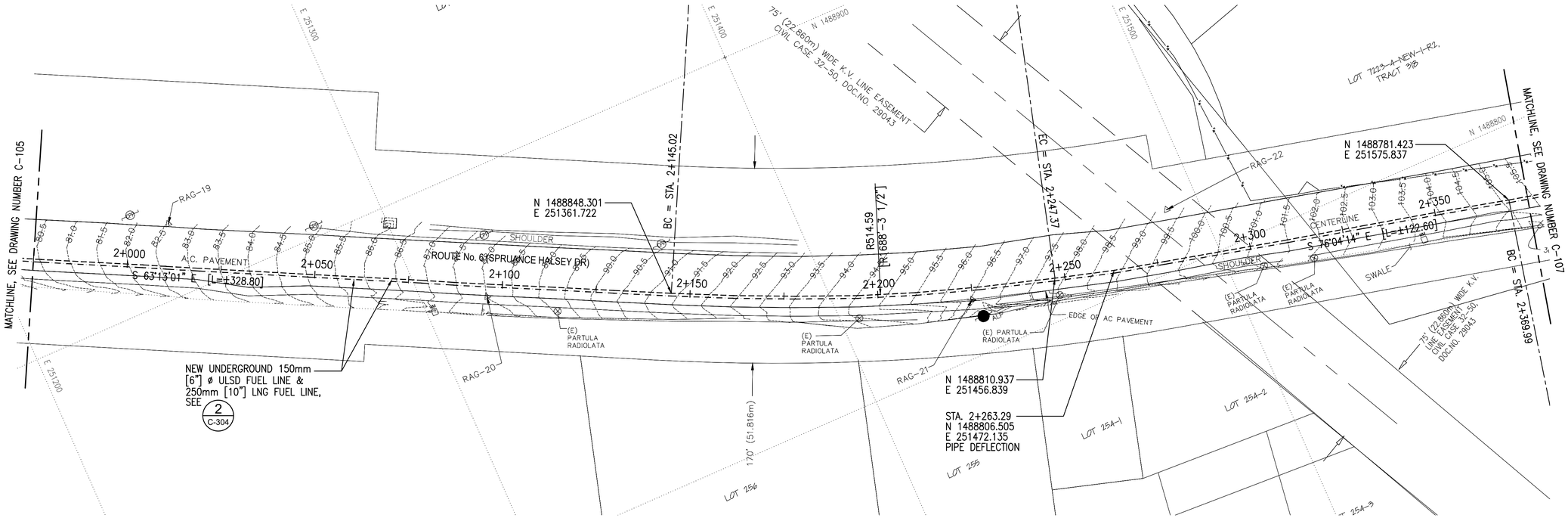
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

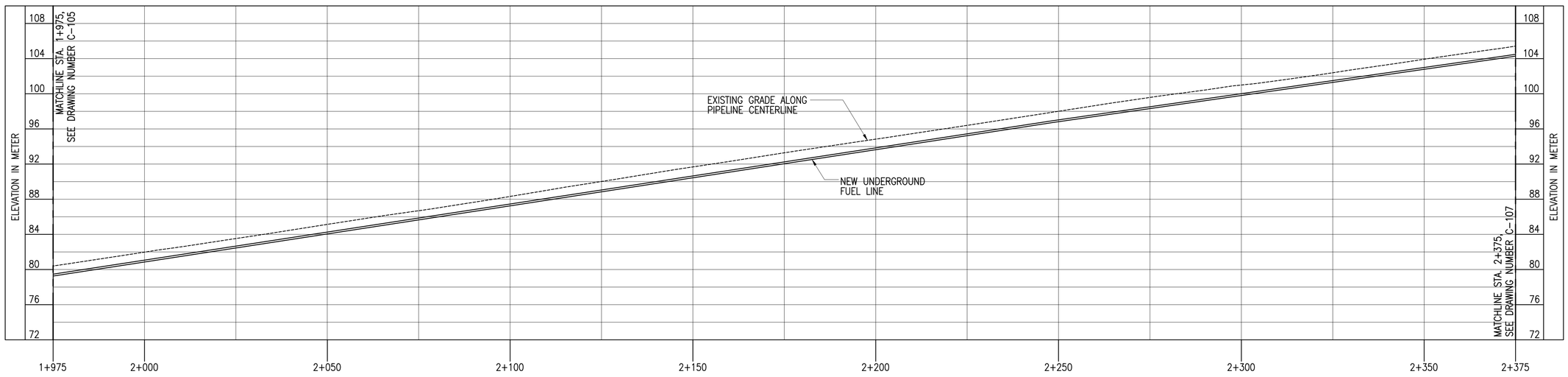
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	36 OF 134	C-105	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

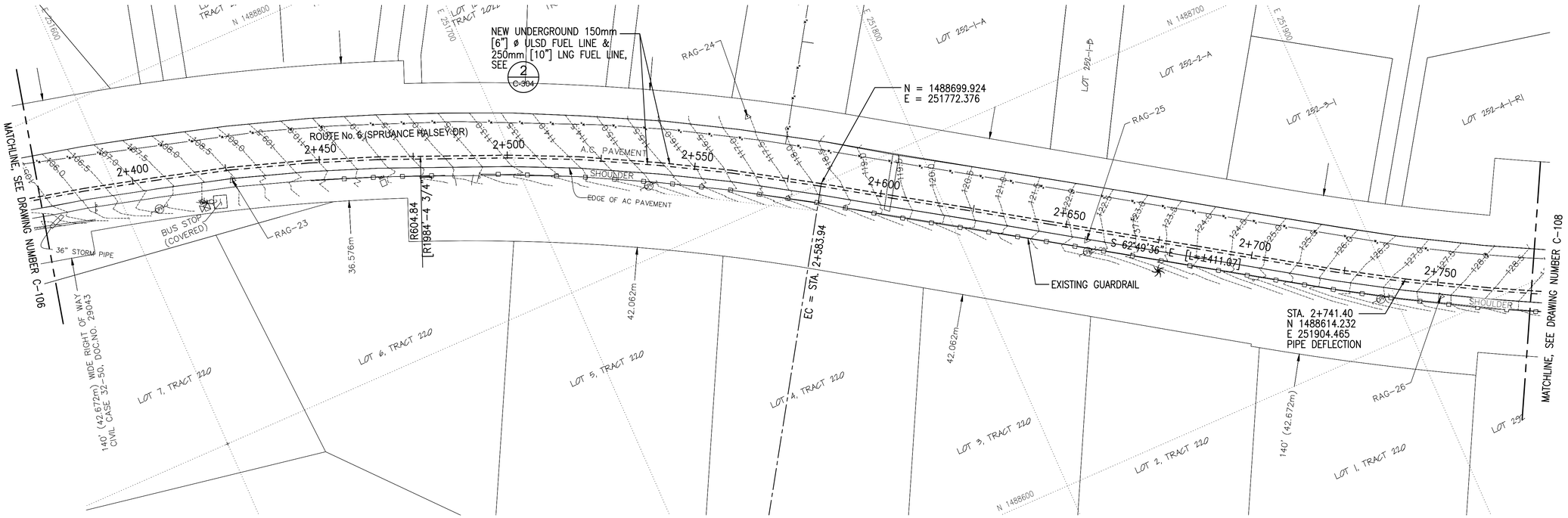
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

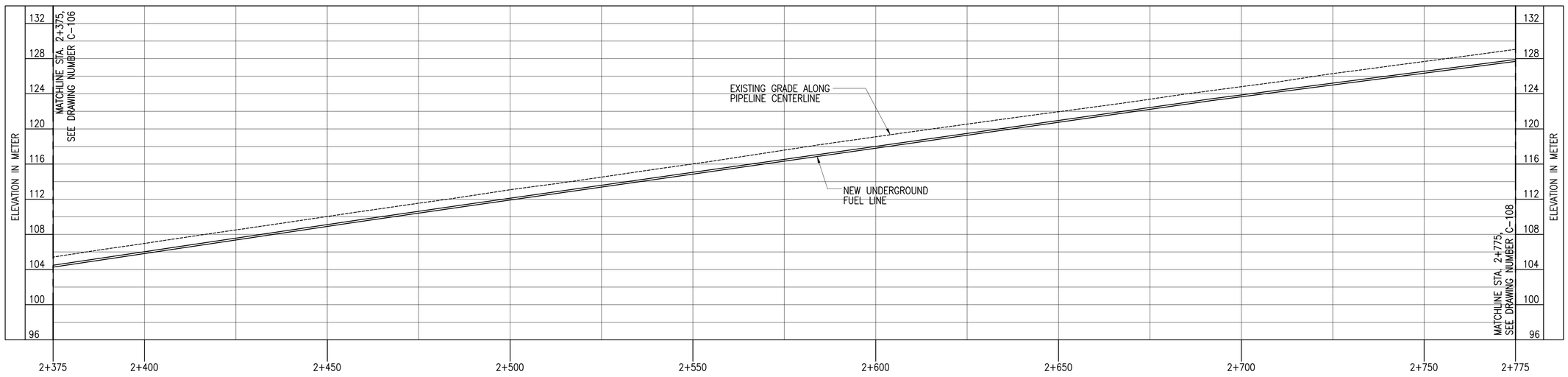
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	37 OF 134	C-106	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- HIGH / LOW POINT LOCATION
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- EXISTING GUARD RAIL
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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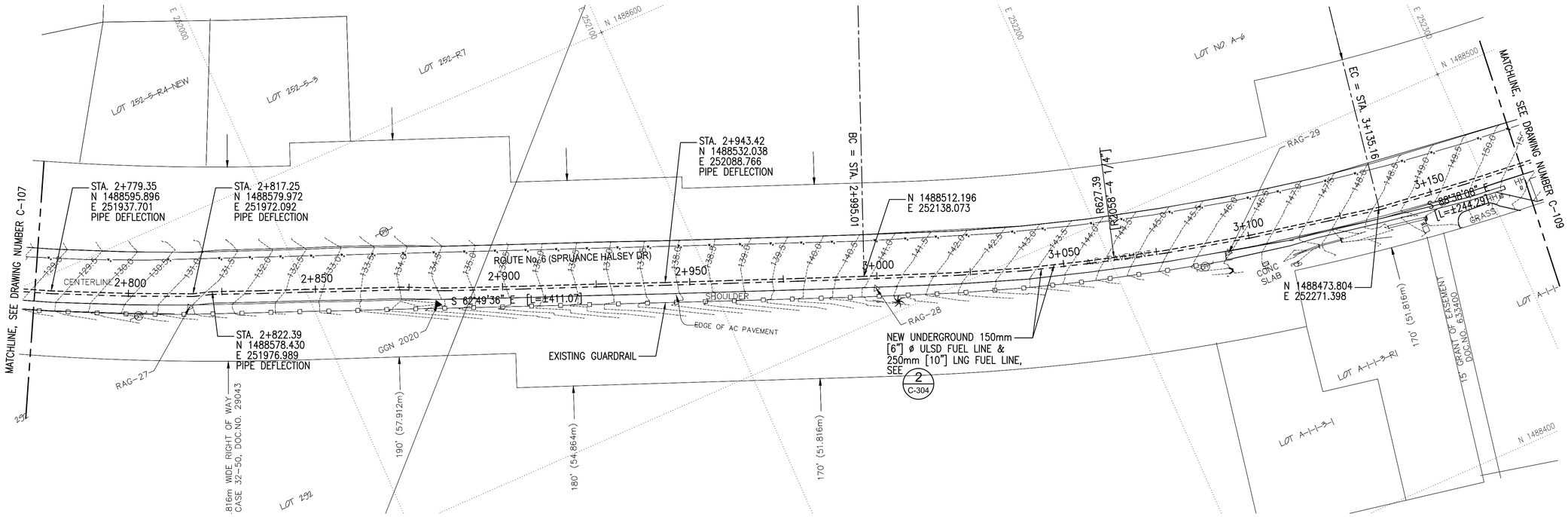
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

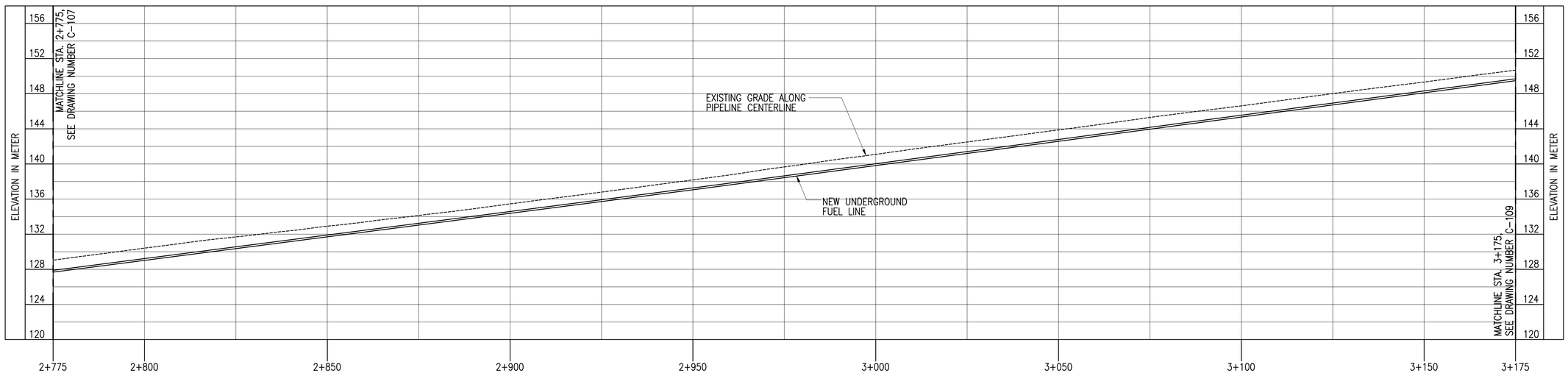
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	38 OF 134	C-107	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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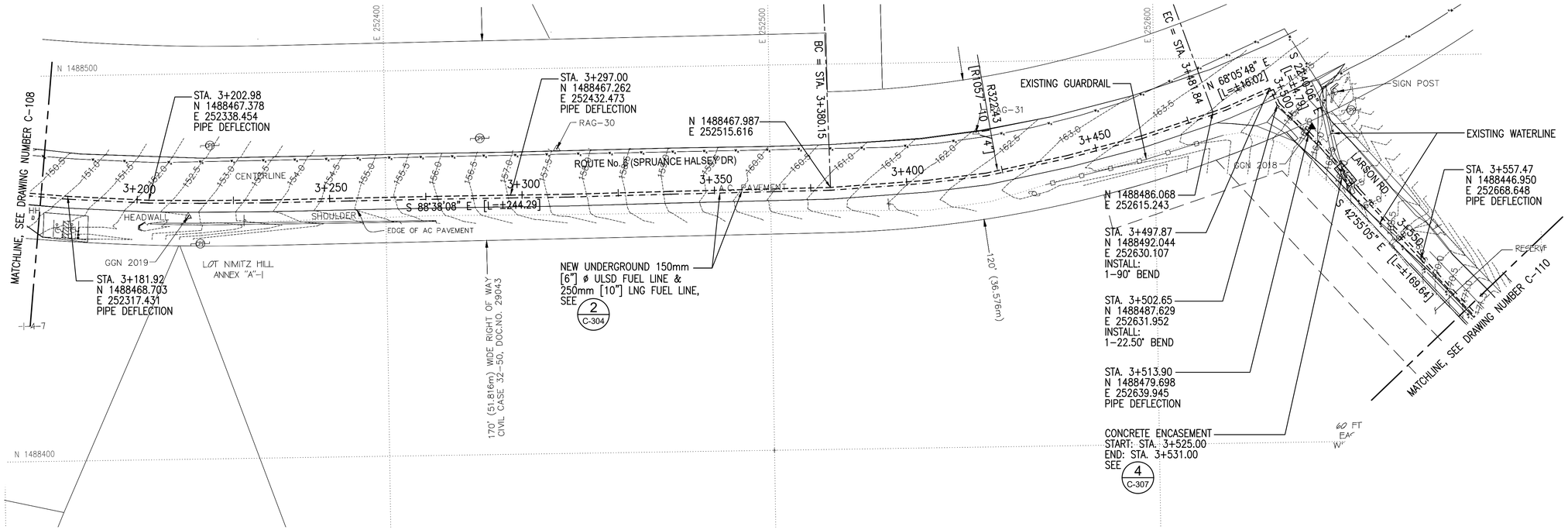
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

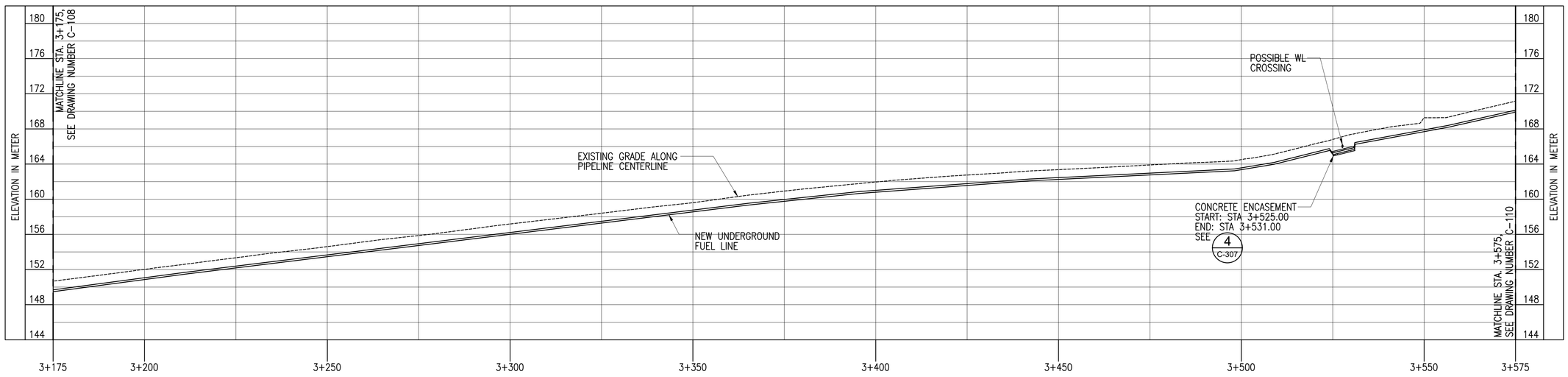
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	39 OF 134	C-108	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

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GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
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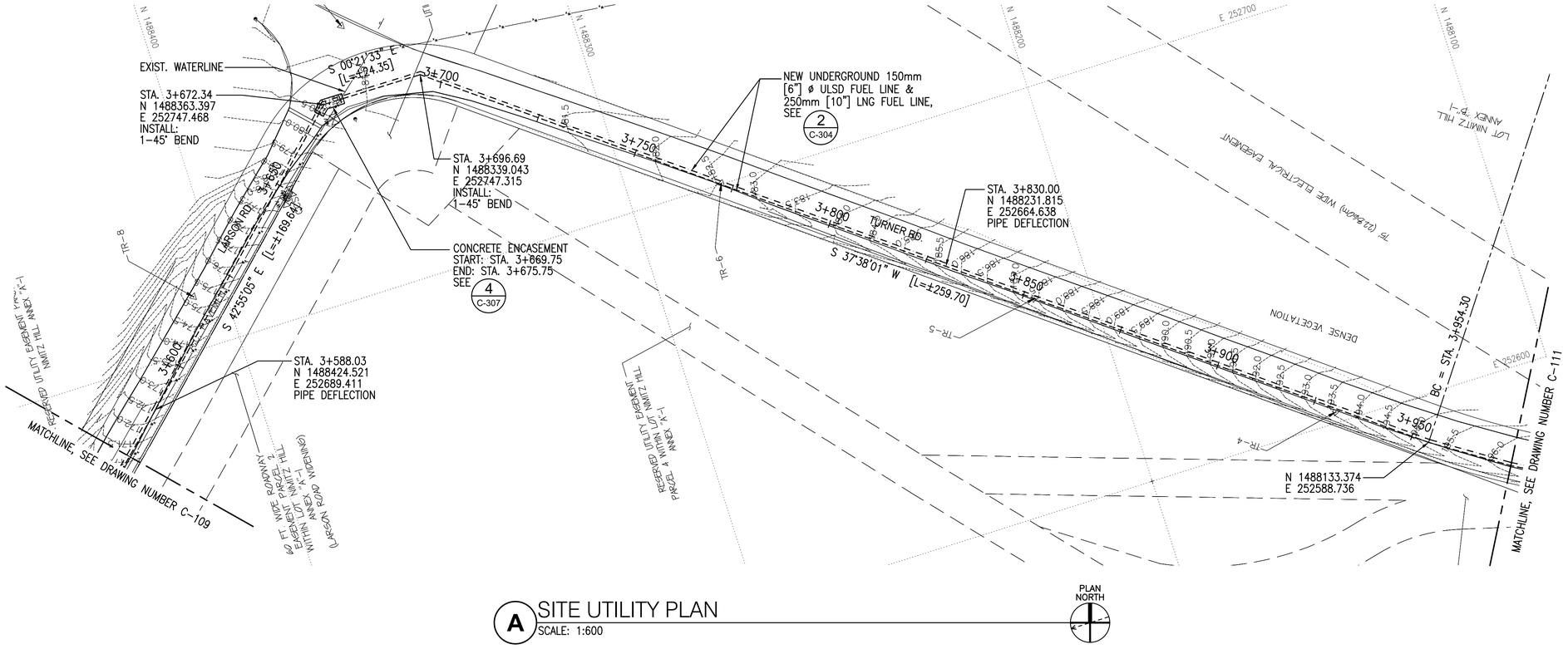
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

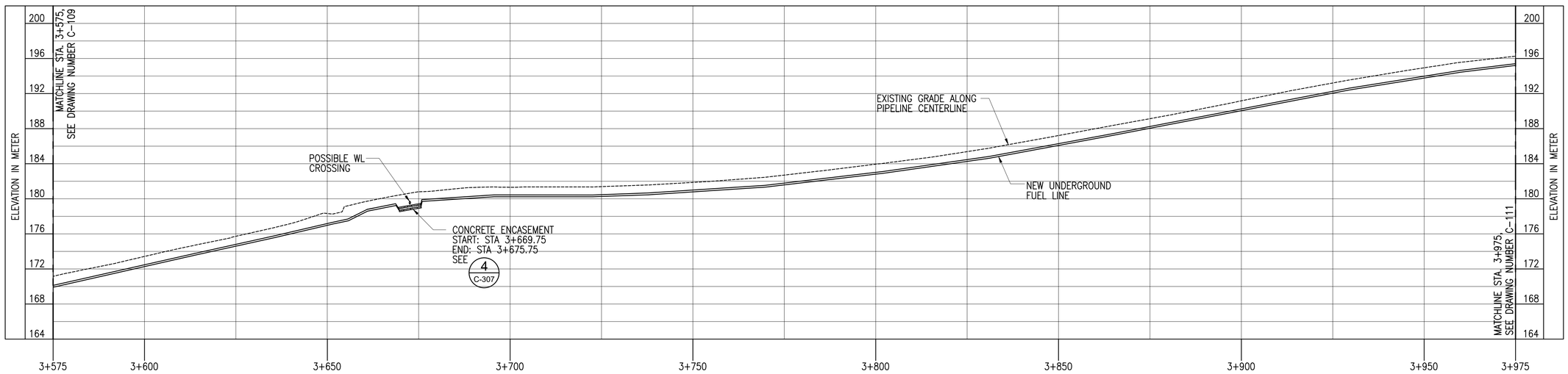
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	40 OF 134	C-109	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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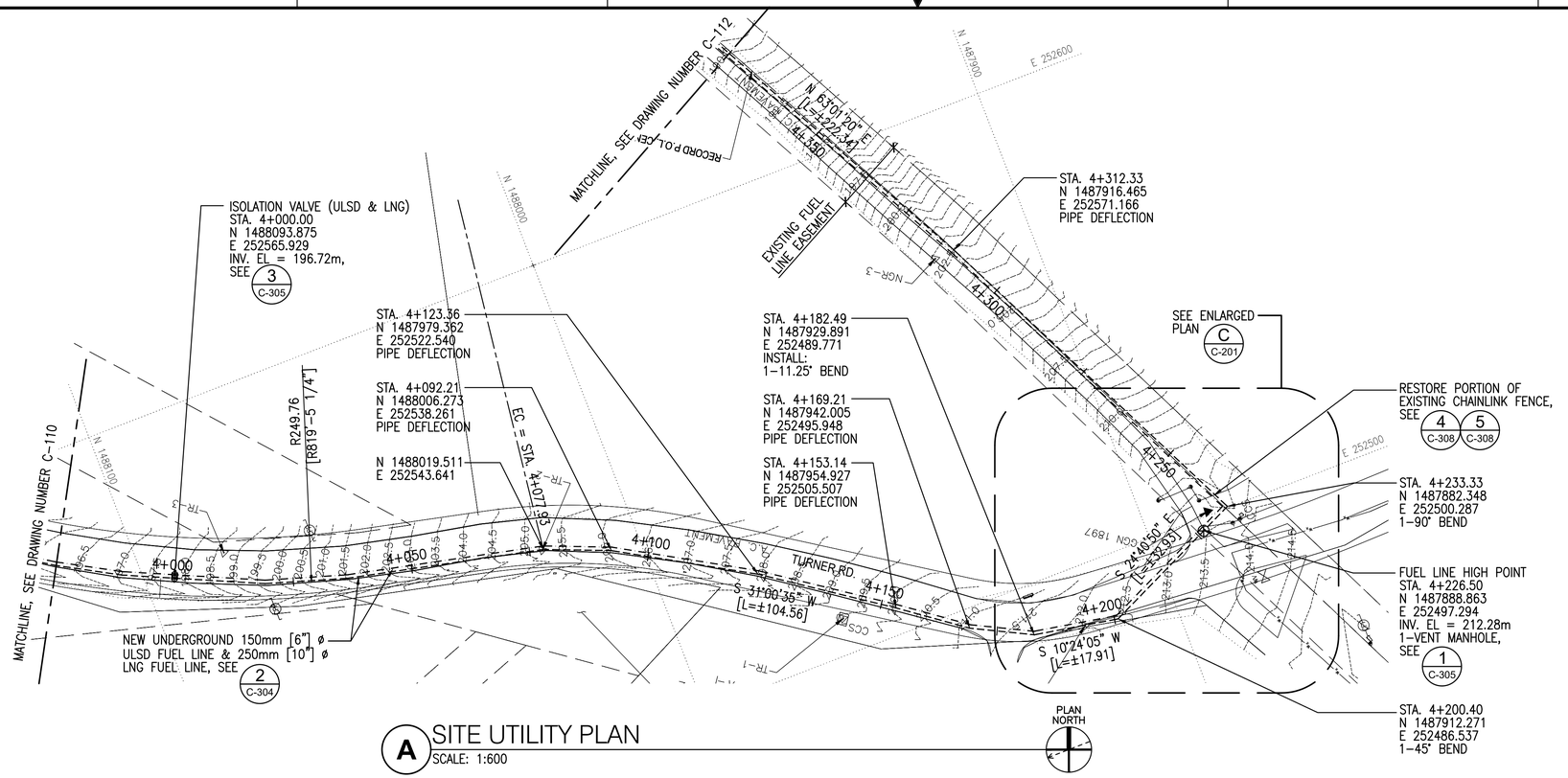
Sub Consultant

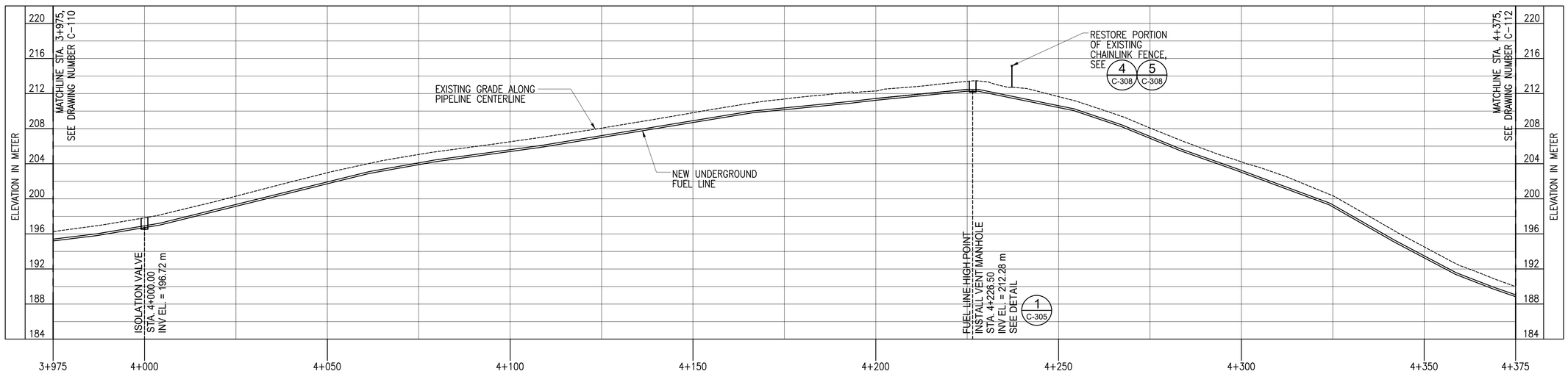
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	41 OF 134	C-110	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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Email: ncma@guam.net

Sub Consultant

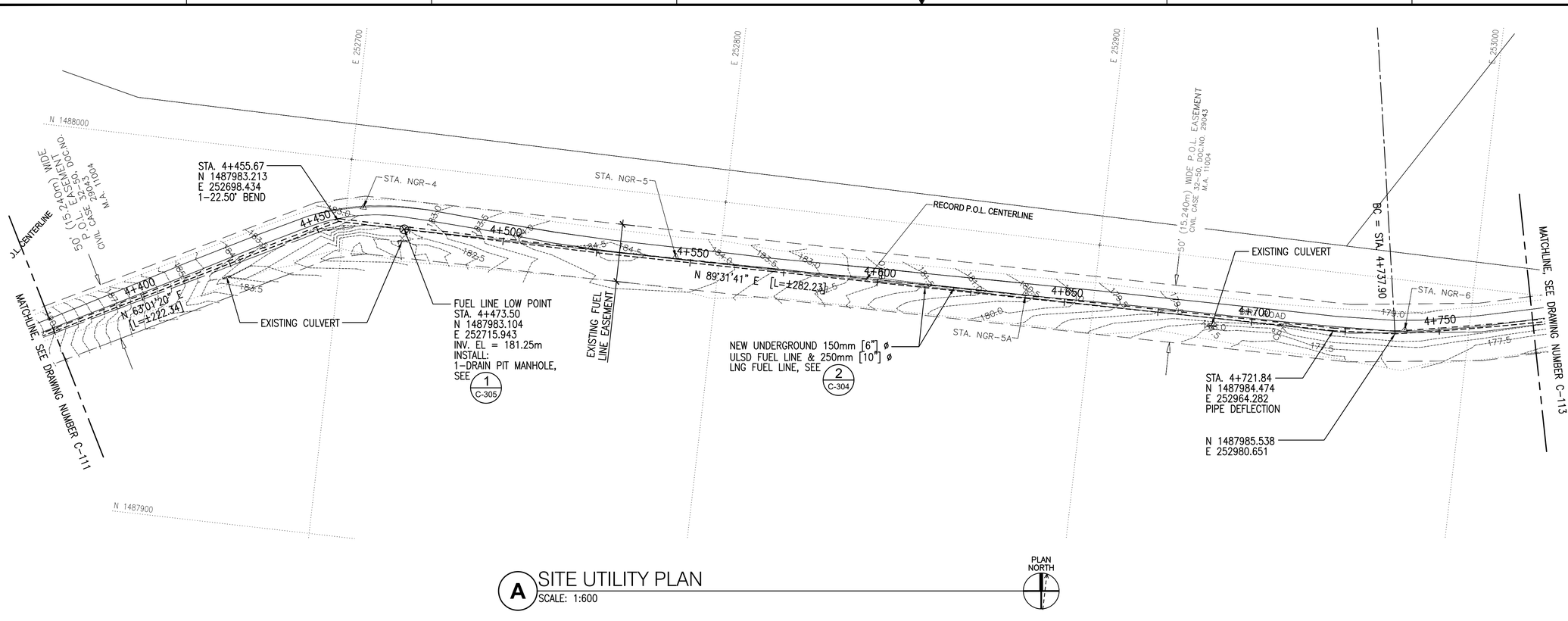
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

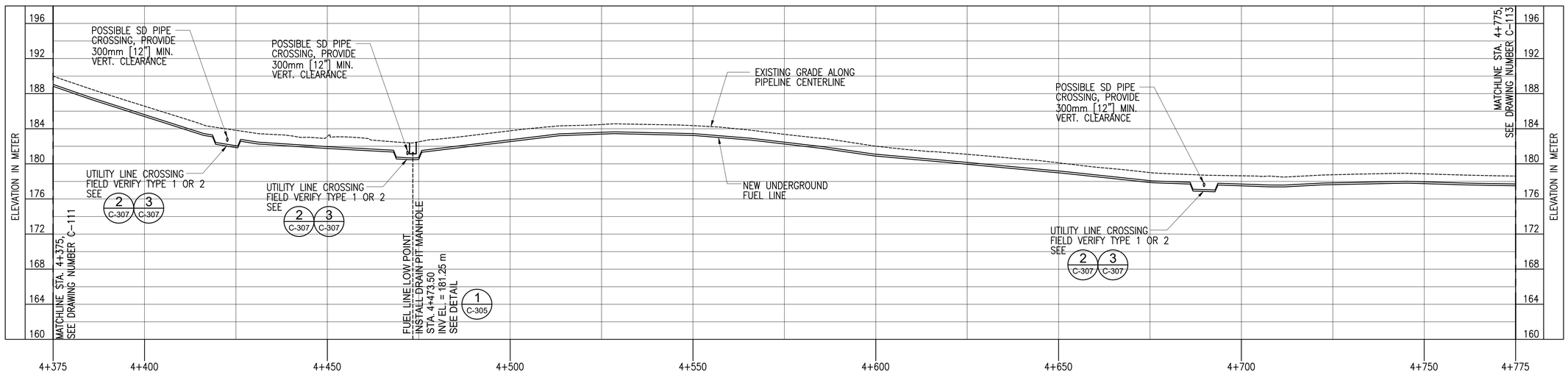
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	42 OF 134	C-111	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

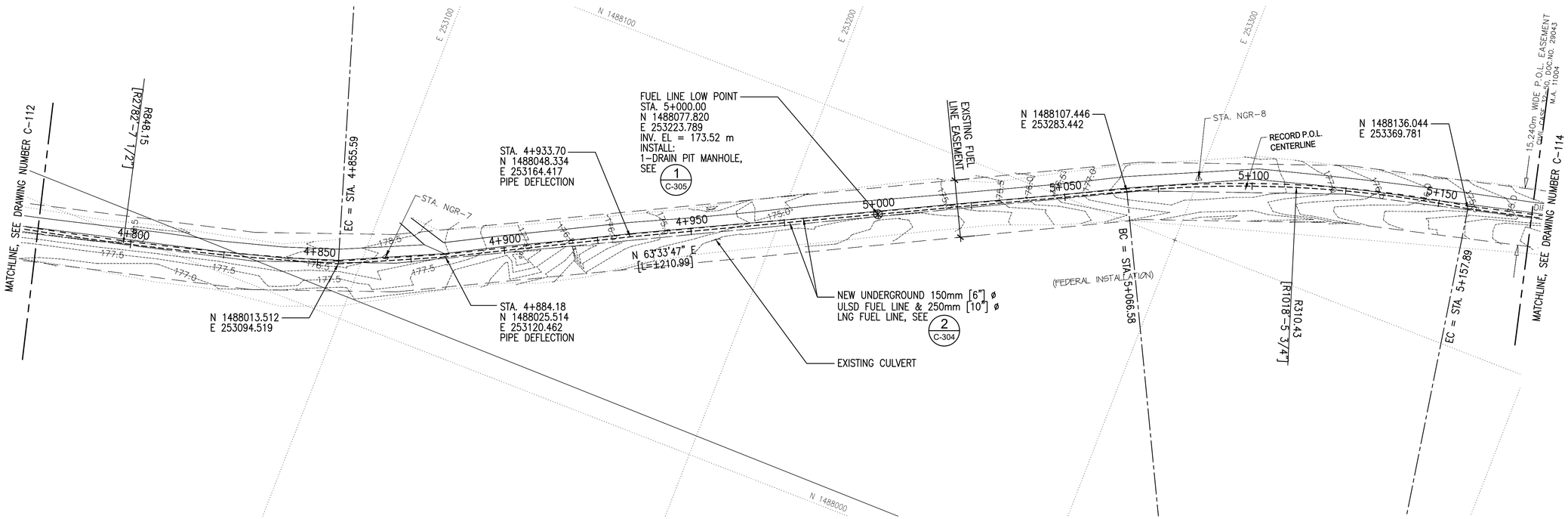
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

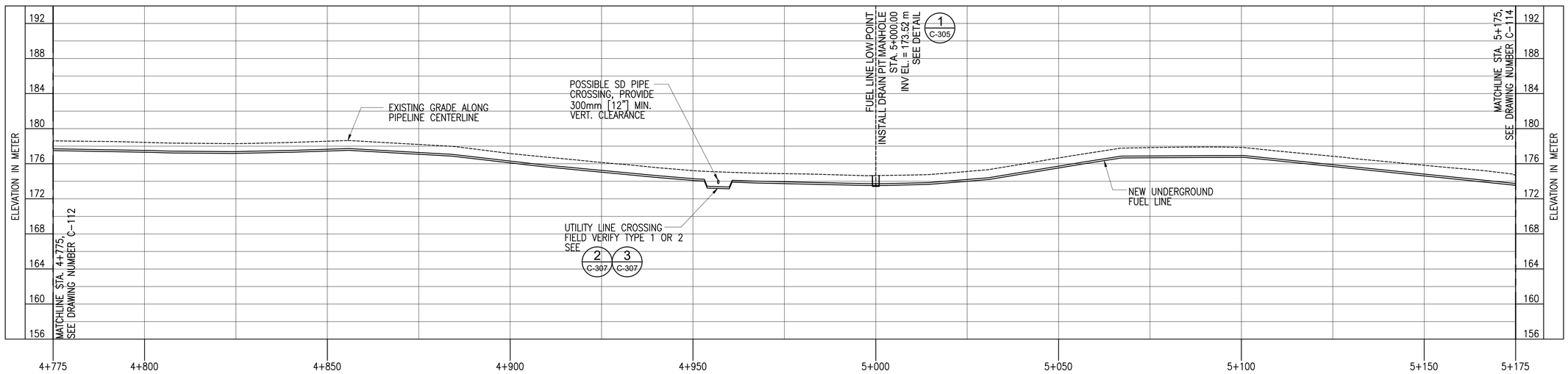
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	43 OF 134	C-112	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

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Project
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GUAM POWER AUTHORITY
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Tel. 646-0947/48 Fax: 646-0901
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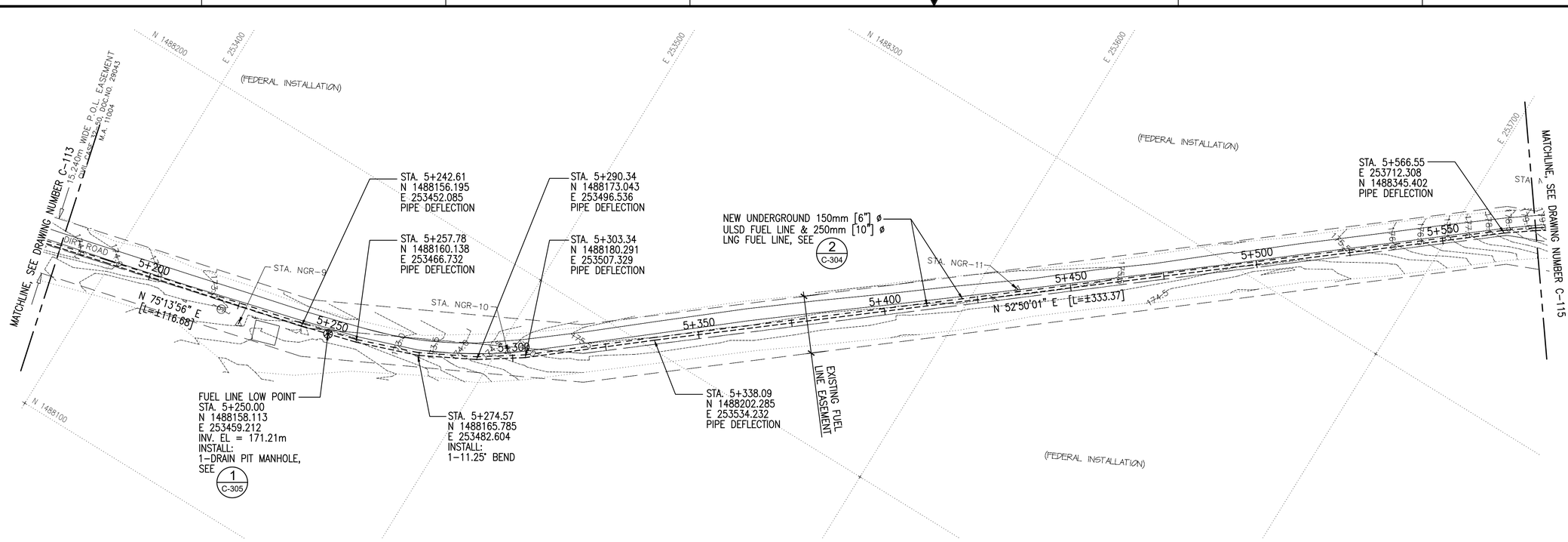
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

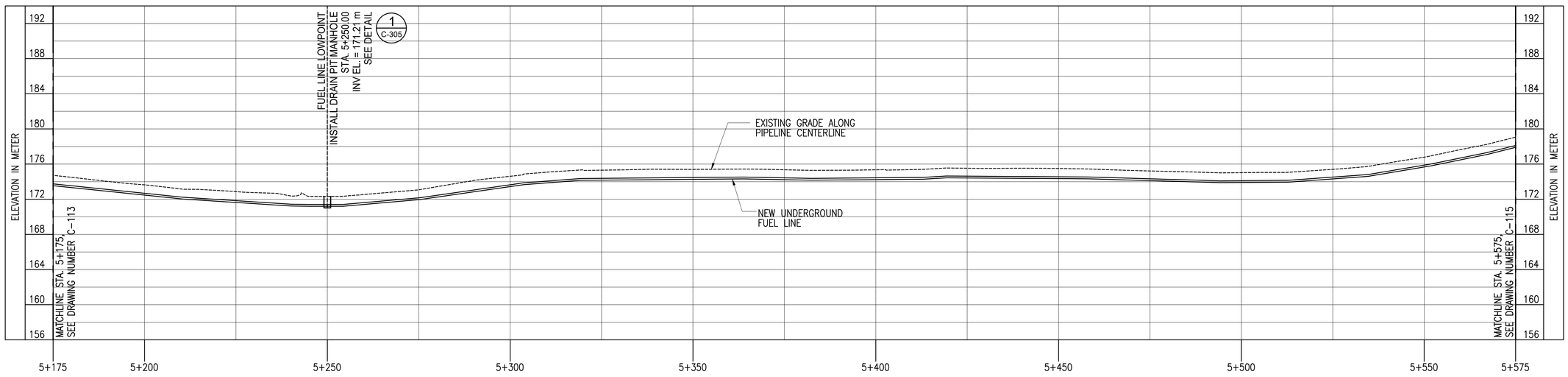
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	44 OF 134	C-113	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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GUAM POWER AUTHORITY
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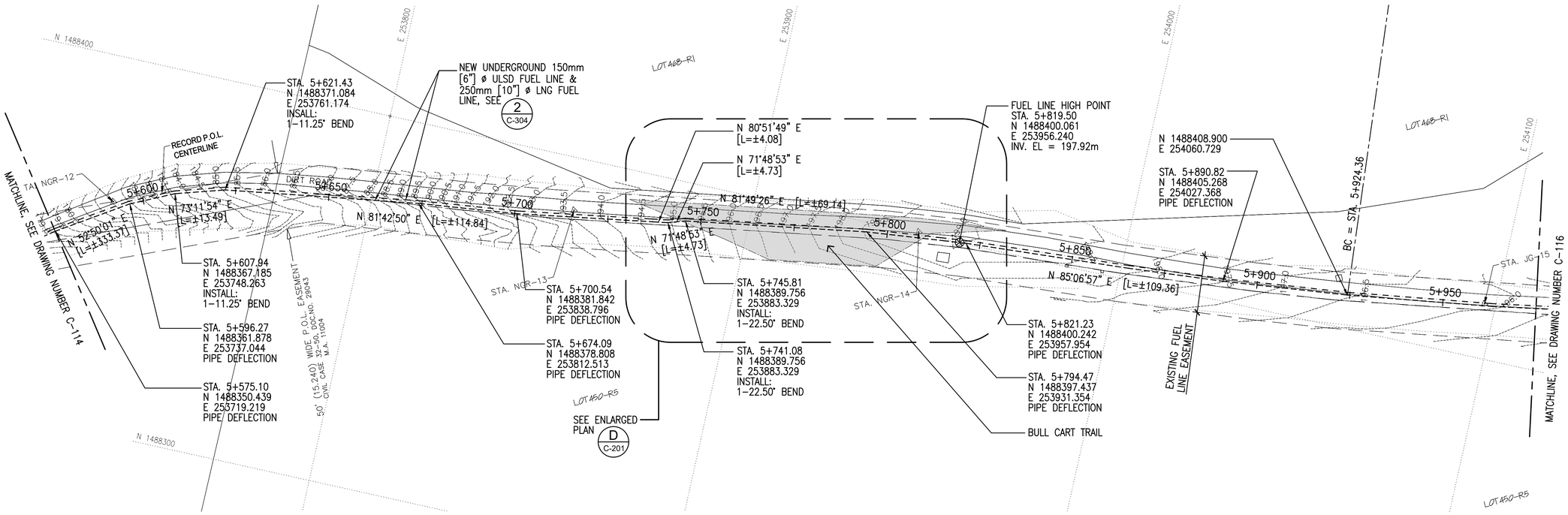
Tel: 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

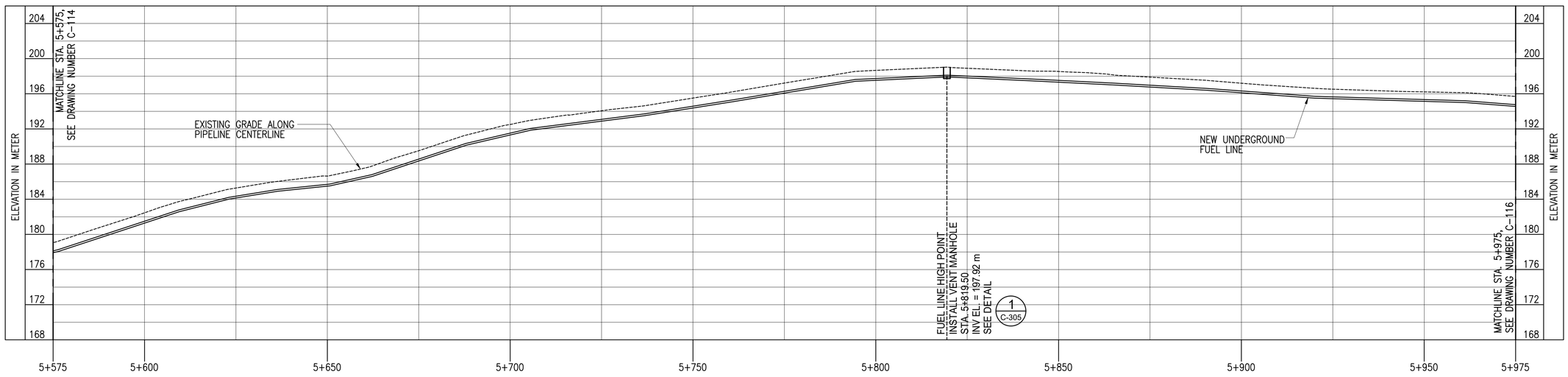
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	45 OF 134	C-114	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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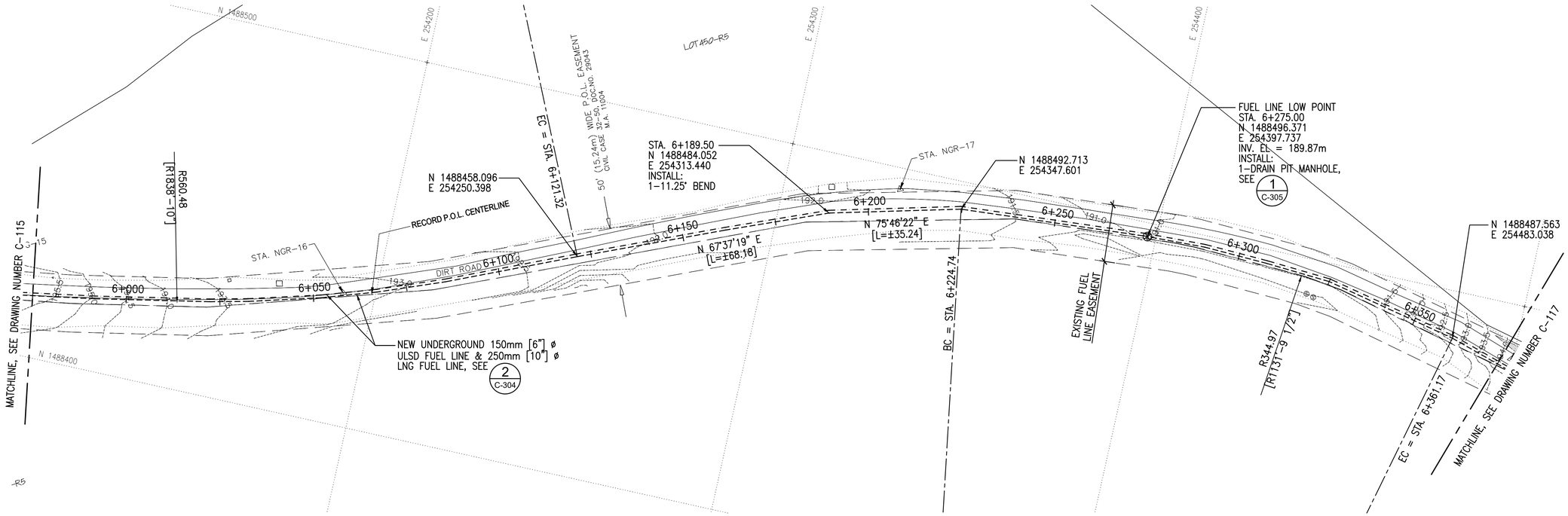
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

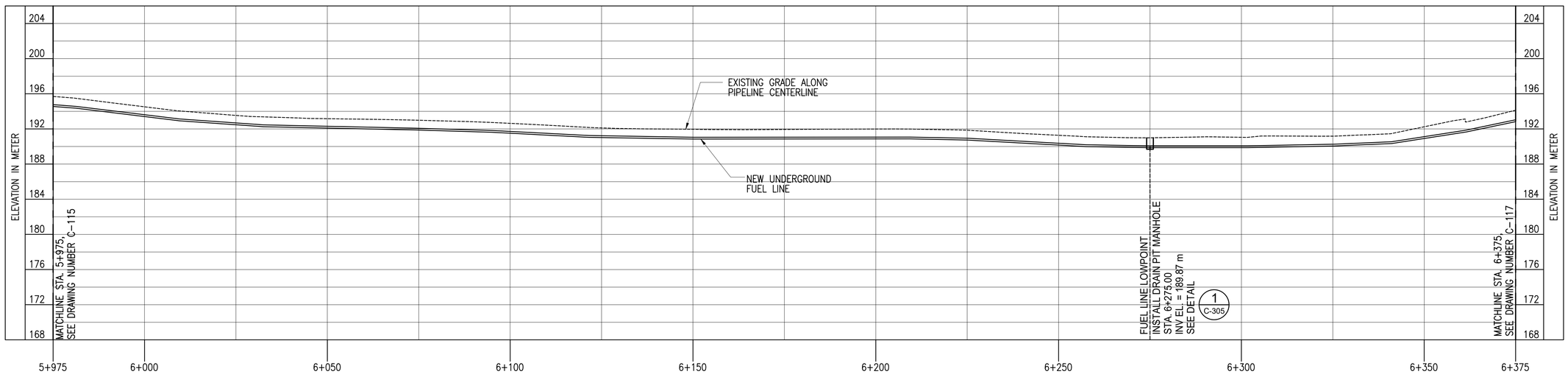
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	46 OF 134	C-115	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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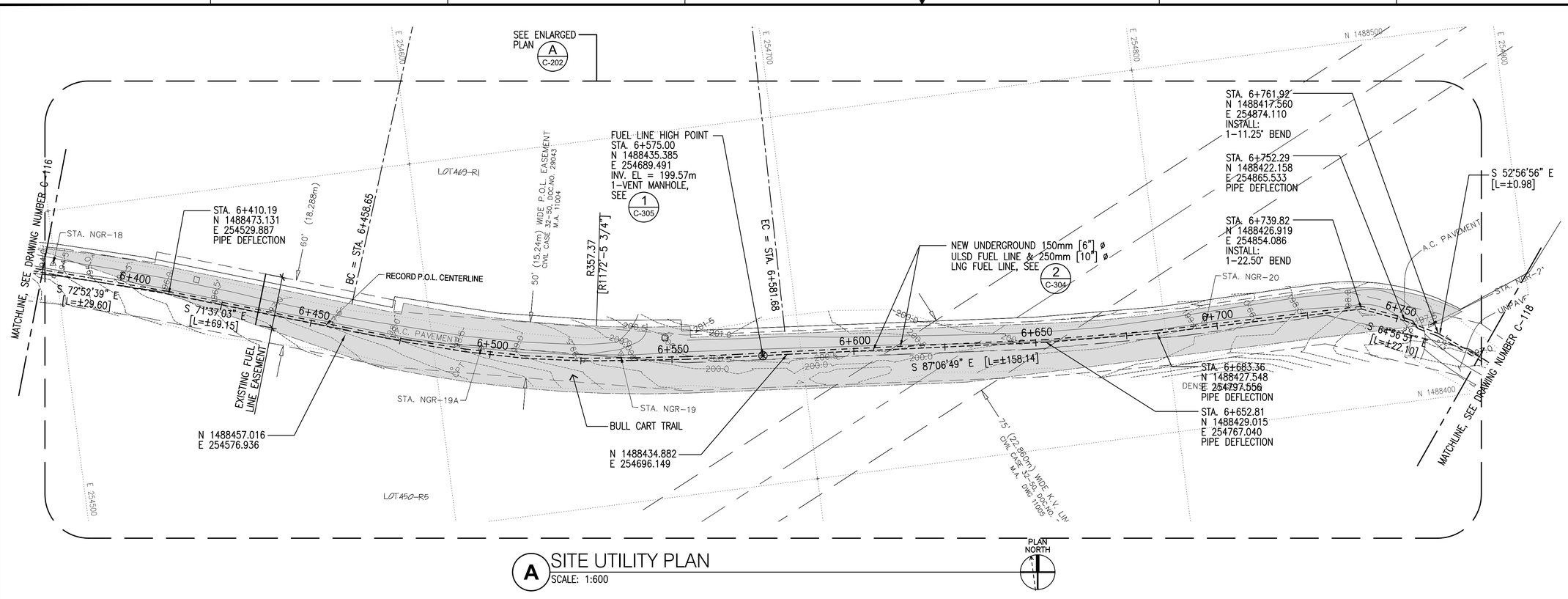
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

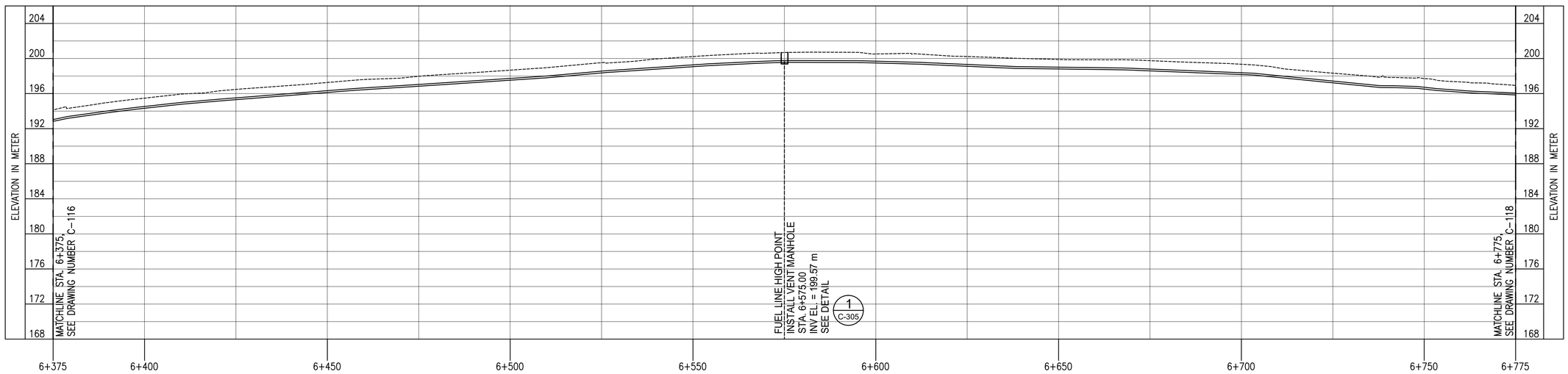
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	47 OF 134	C-116	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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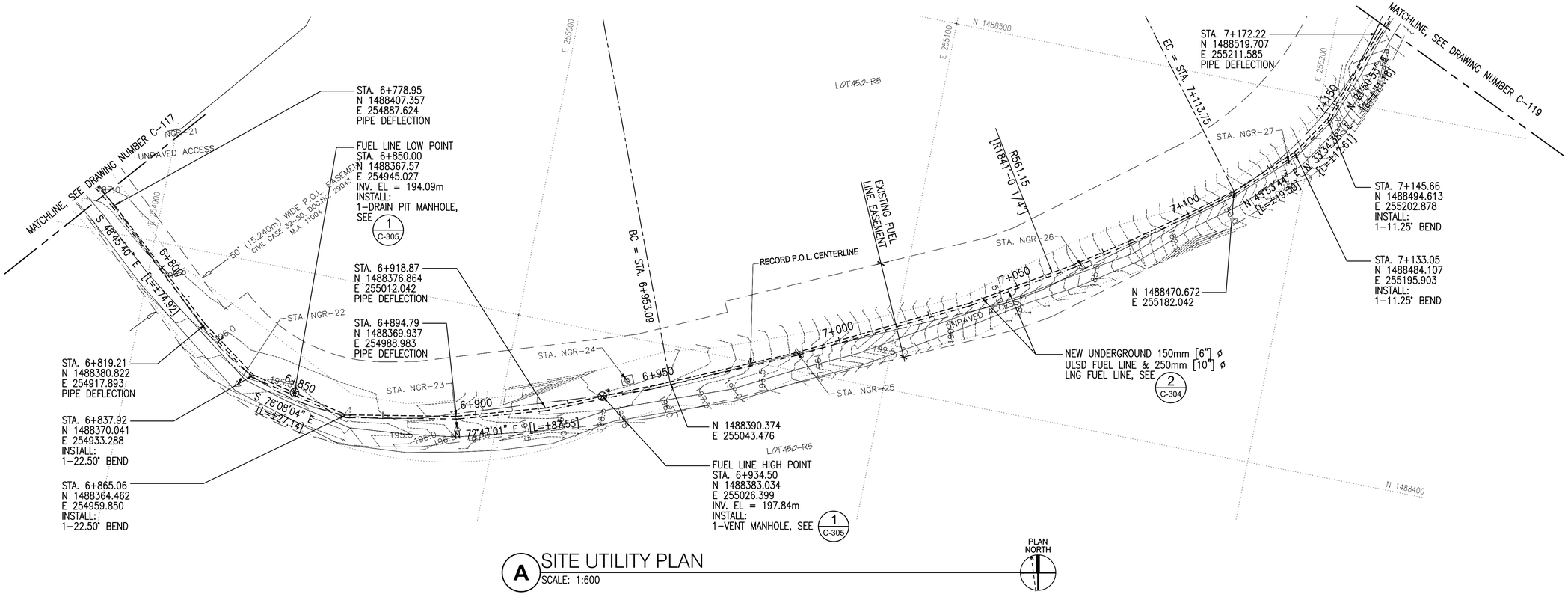
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

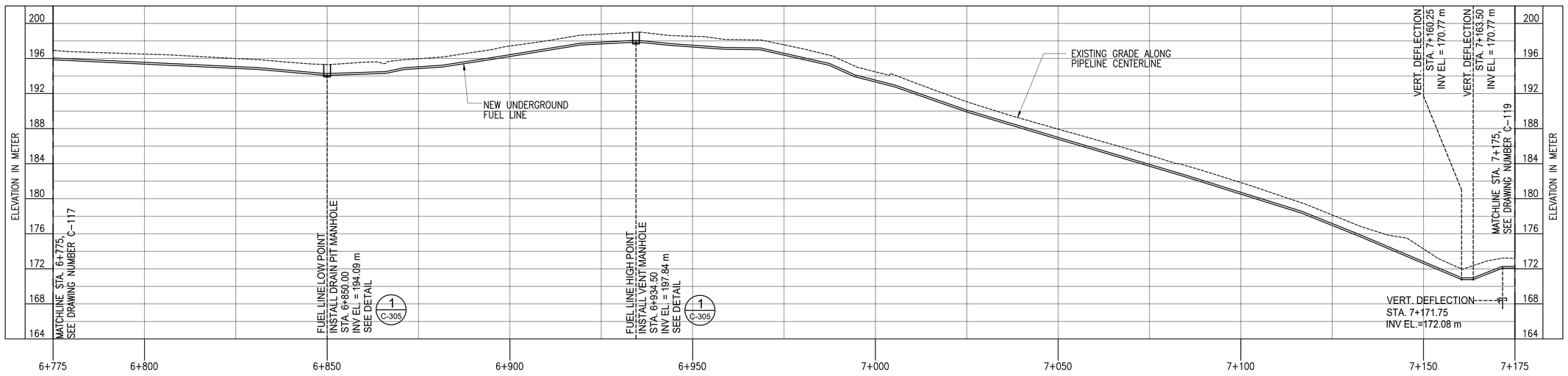
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	48 OF 134	C-117	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



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1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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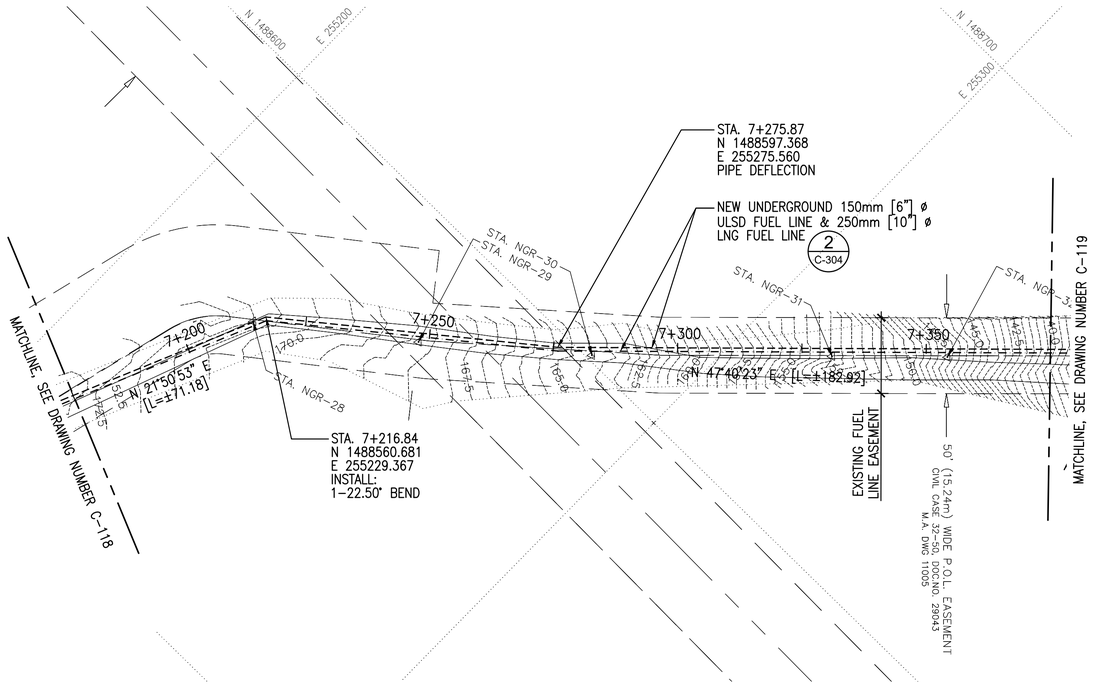
Sub Consultant

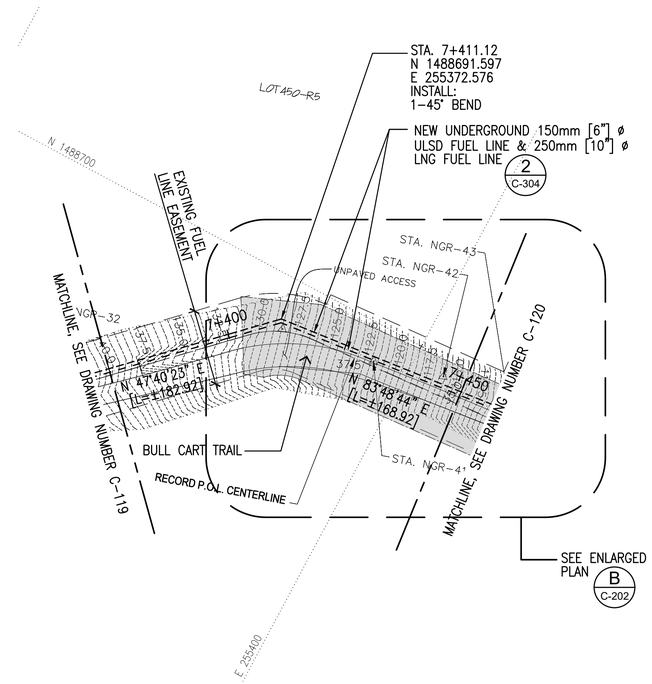
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	49 OF 134	C-118	–

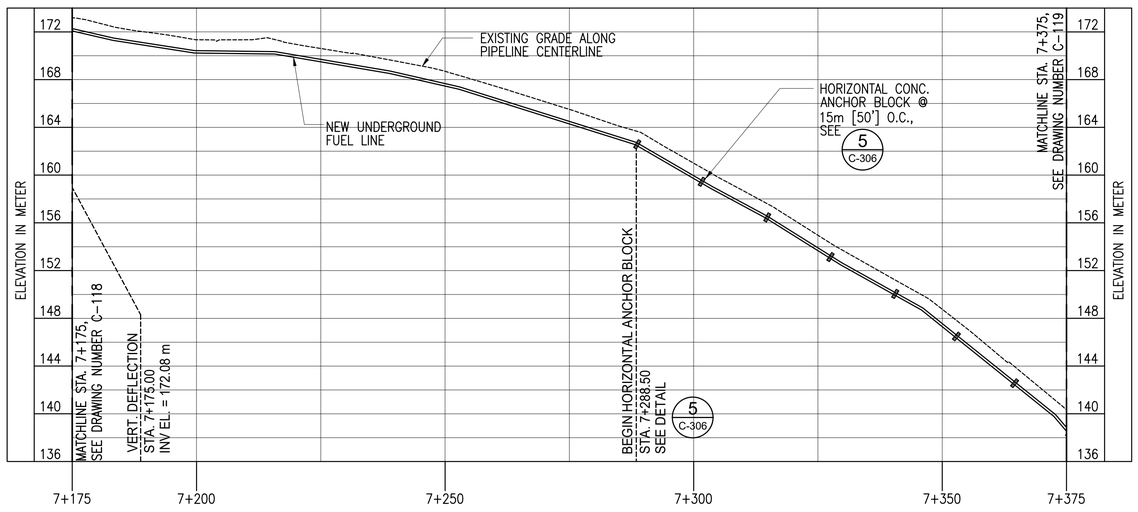
22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



B SITE UTILITY PLAN
SCALE: 1:600



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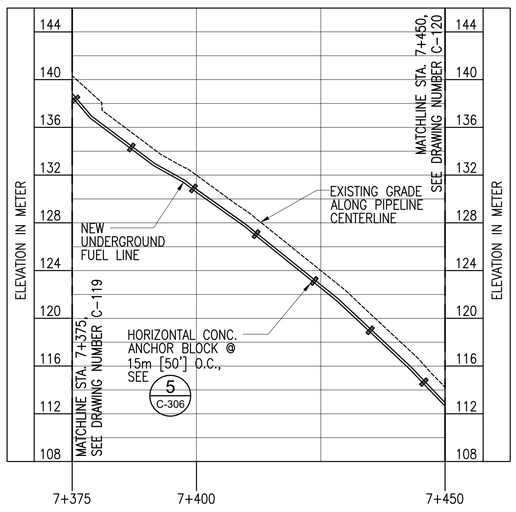
1:600 (HOR.) ; 1:250 (VER.)



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SCALE: 1:600
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EXP. 4/30/2022
GUAM
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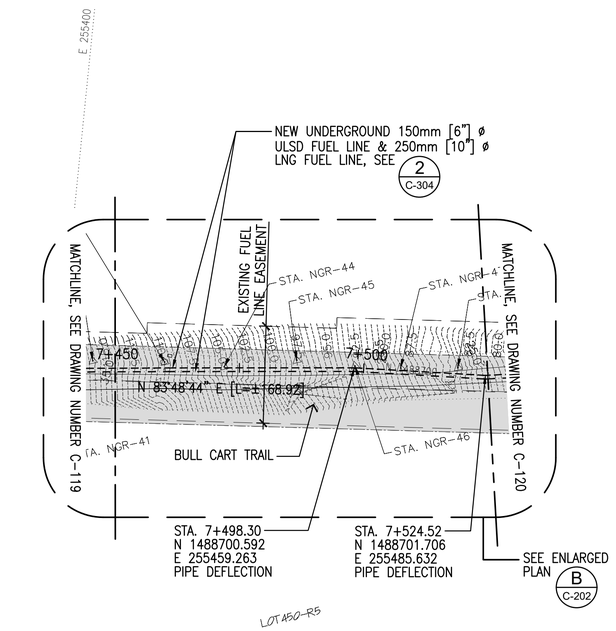
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

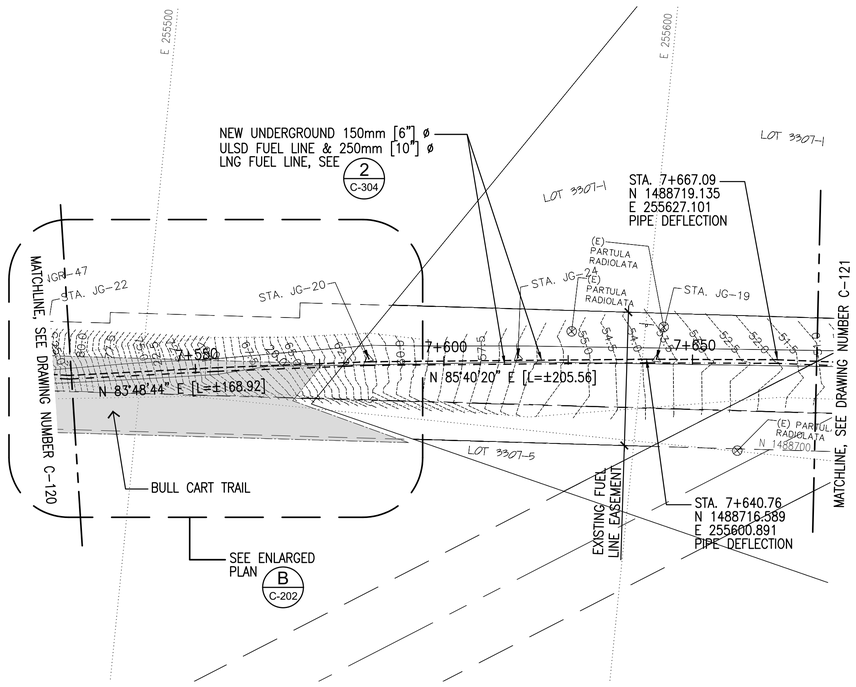
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	50 OF 134	C-119	–

22" x 34" (559 x 864mm)



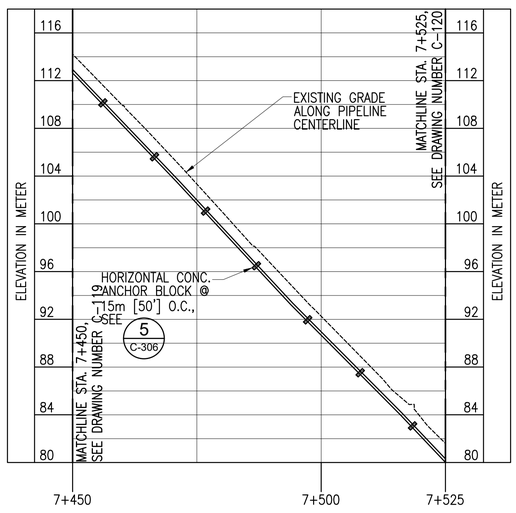
A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH

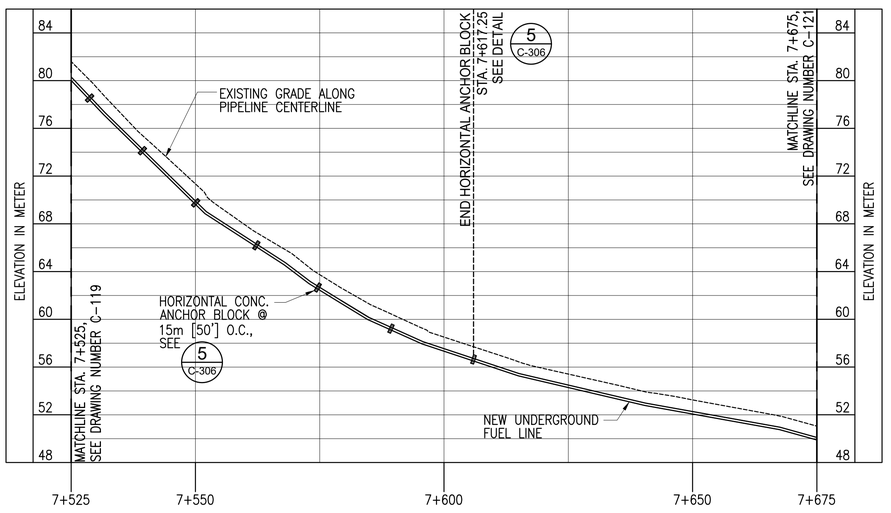


B SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)



2 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel: 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

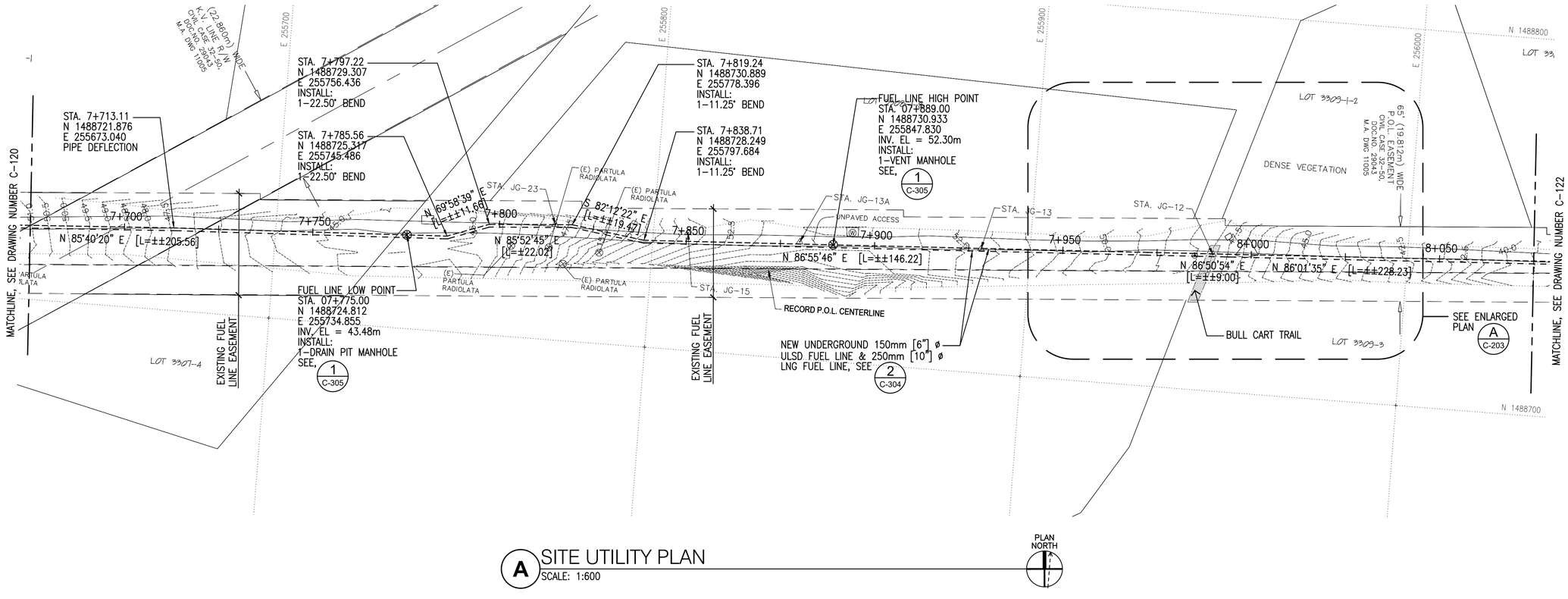
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

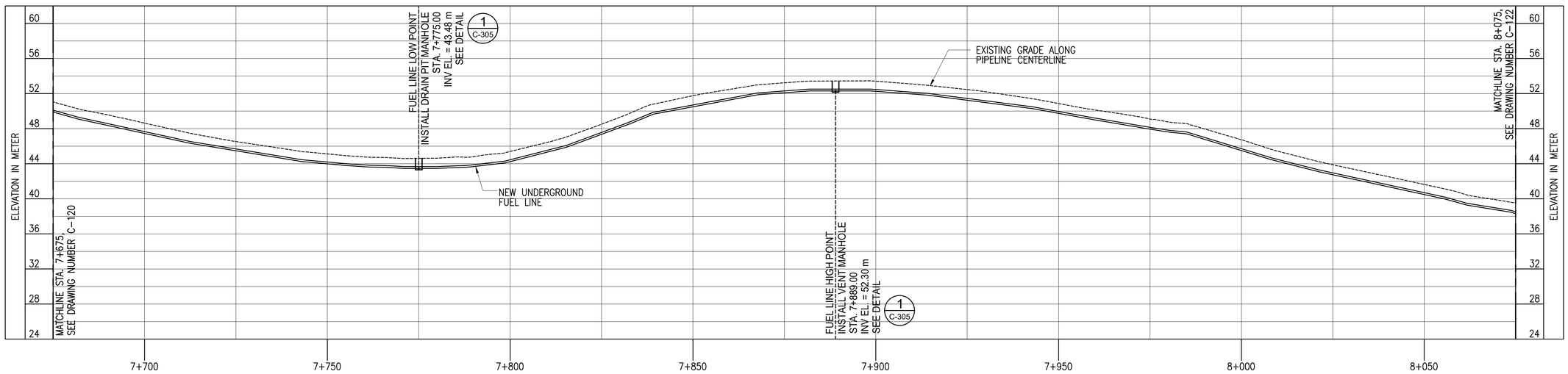
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	51 OF 134	C-120	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_X EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_X EXISTING WATER LINE (DATA PROVIDED BY GWA)

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2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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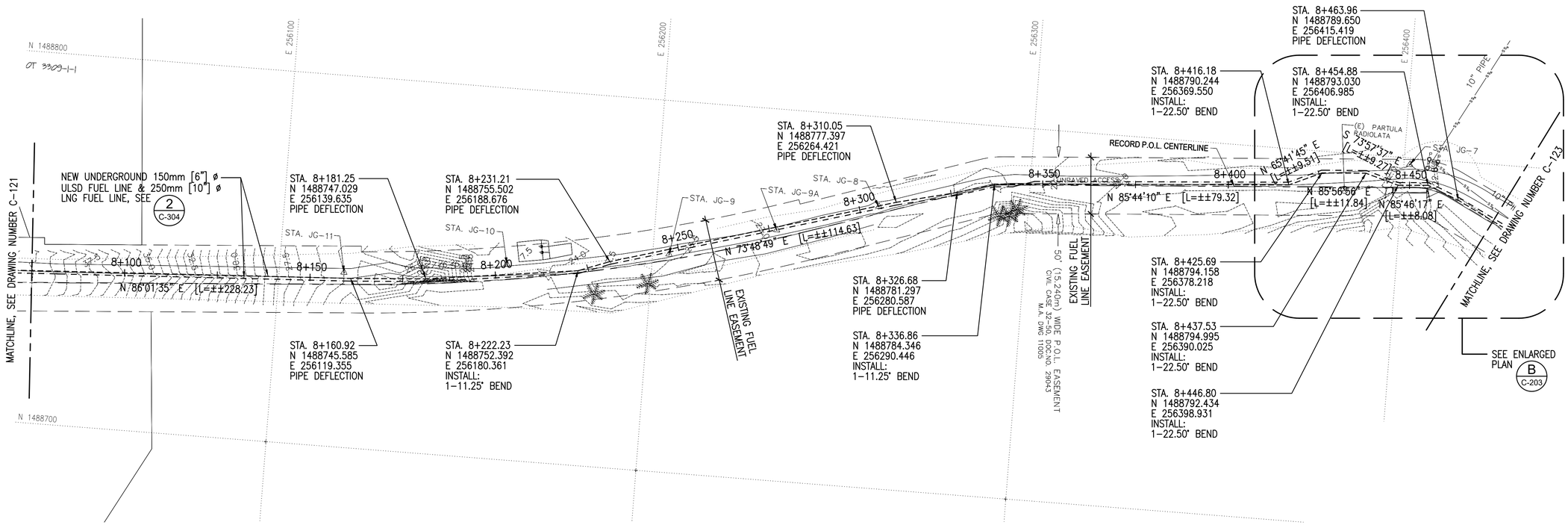
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

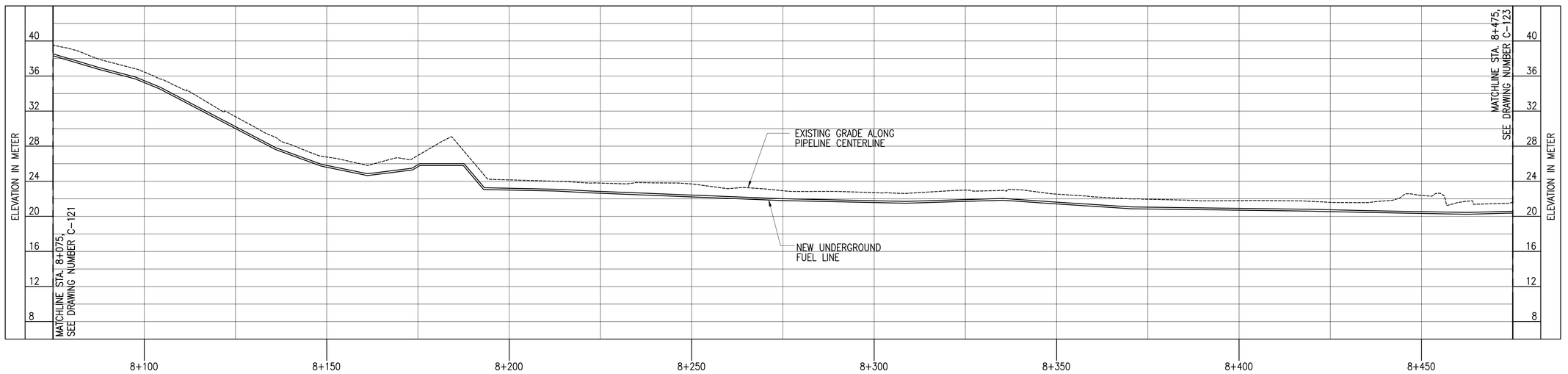
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	52 OF 134	C-121	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- $S S_X$ EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_X EXISTING WATER LINE (DATA PROVIDED BY GWA)

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2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

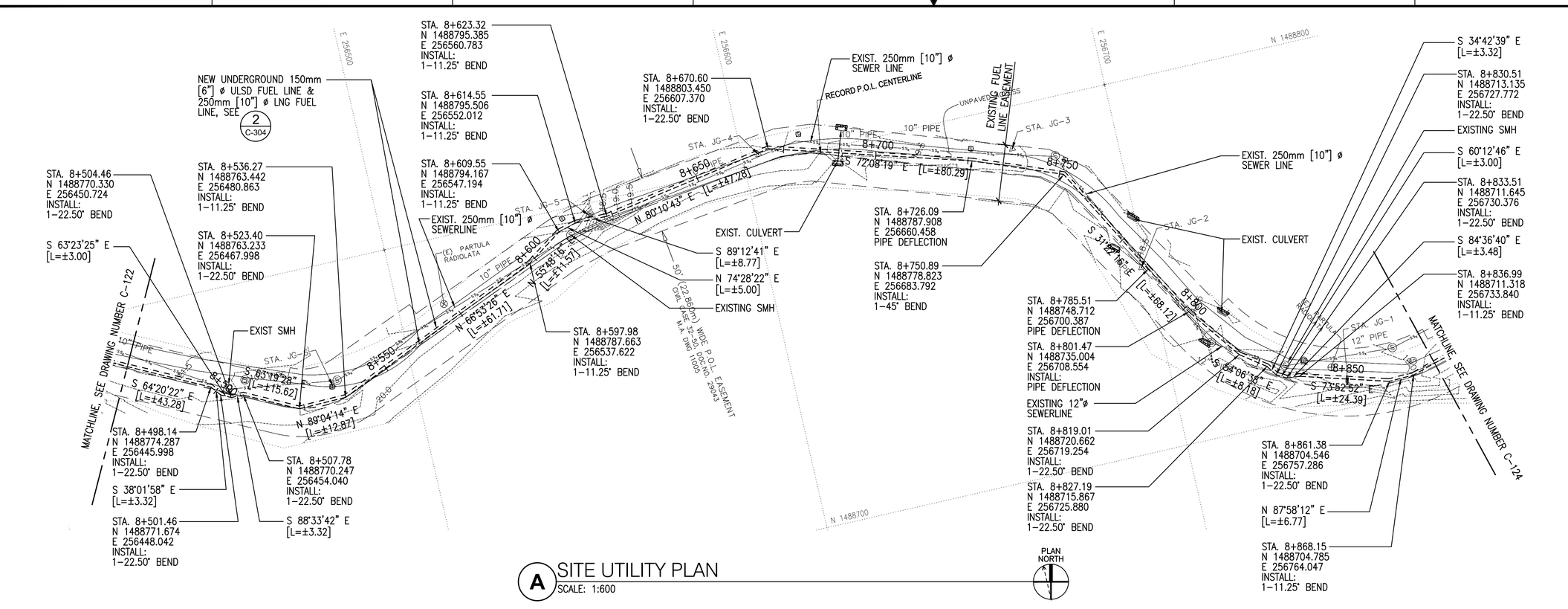
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

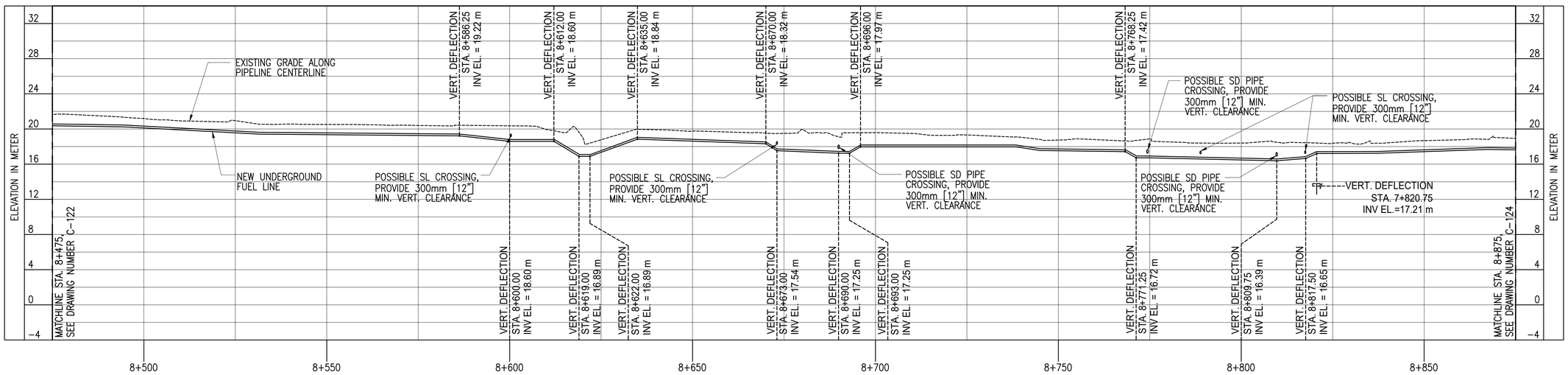
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	53 OF 134	C-122	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- $S\,S_x$ EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

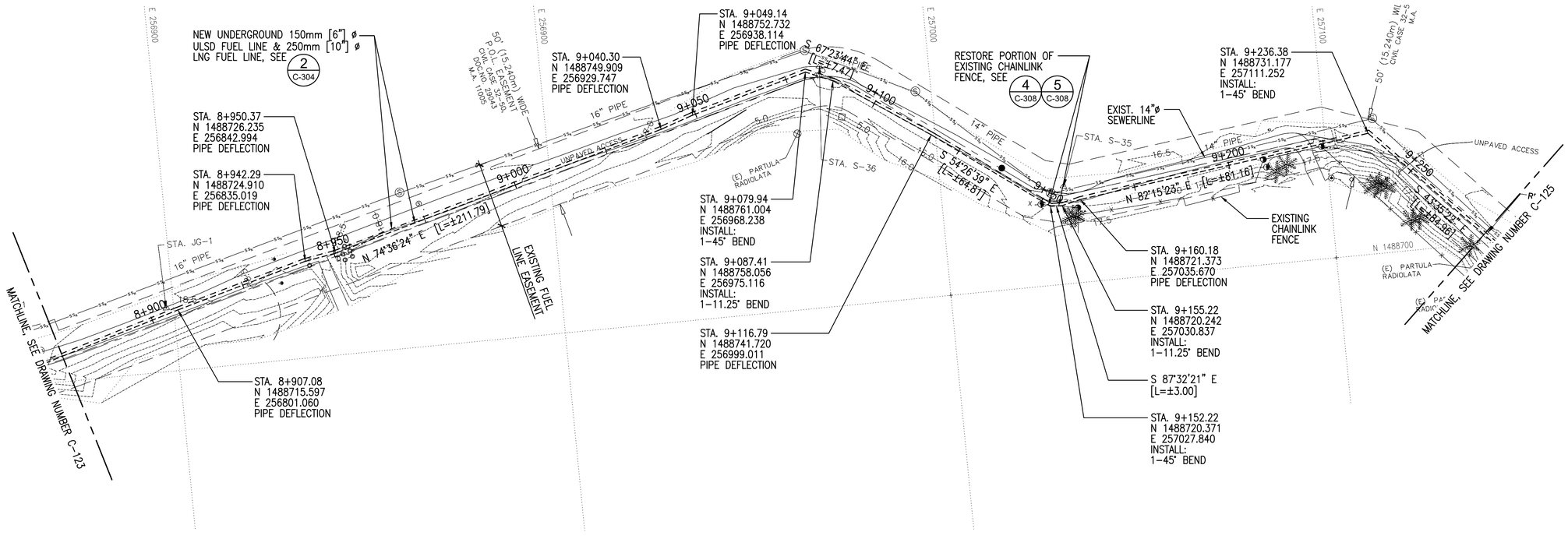
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel: 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

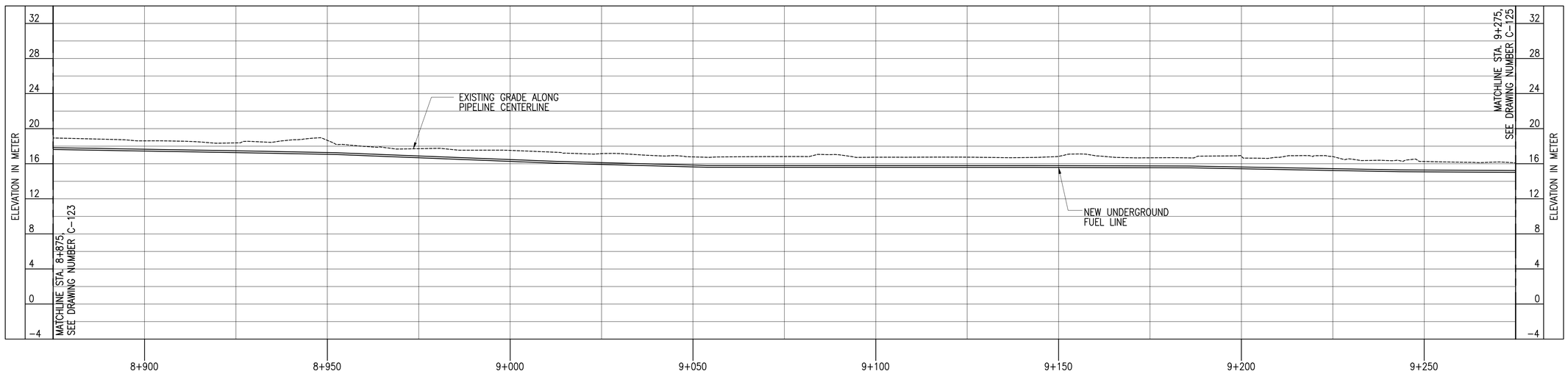
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	54 OF 134	C-123	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
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- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

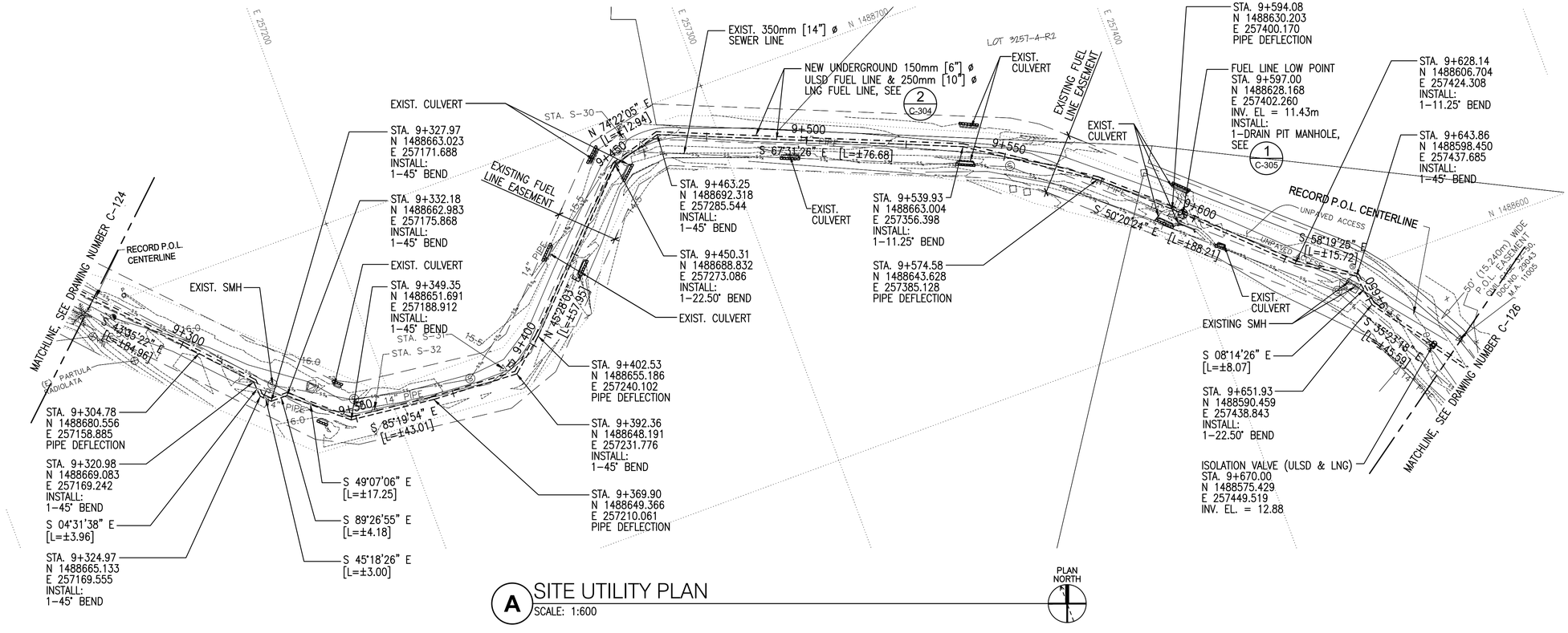
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	55 OF 134	C-124	–

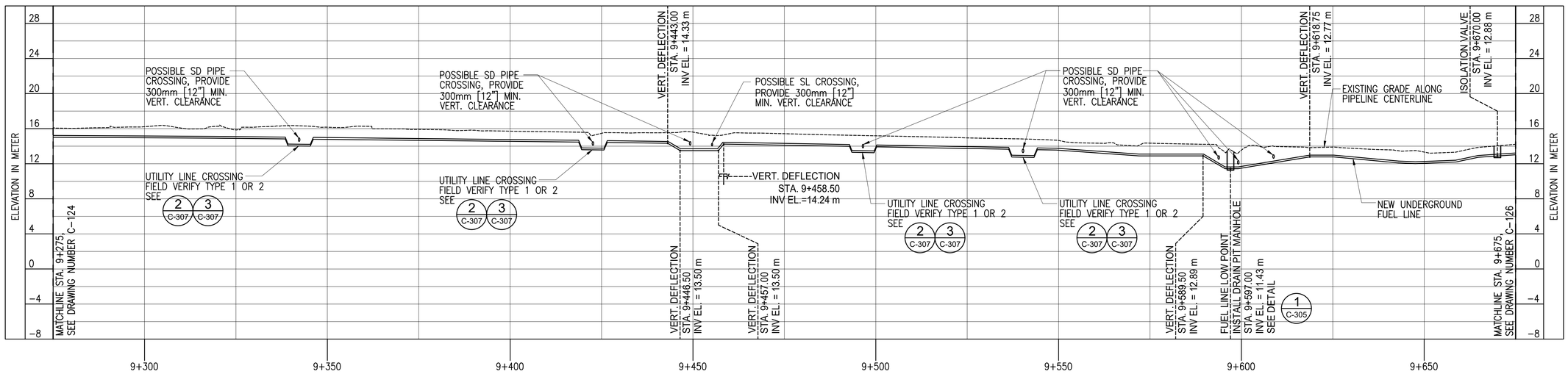
22" x 34" (559 x 864mm)



A SITE UTILITY PLAN

SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE

1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

LEGEND:

- 150mm [6"]Ø ULSD FUEL UNDERGROUND PIPELINE
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
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Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

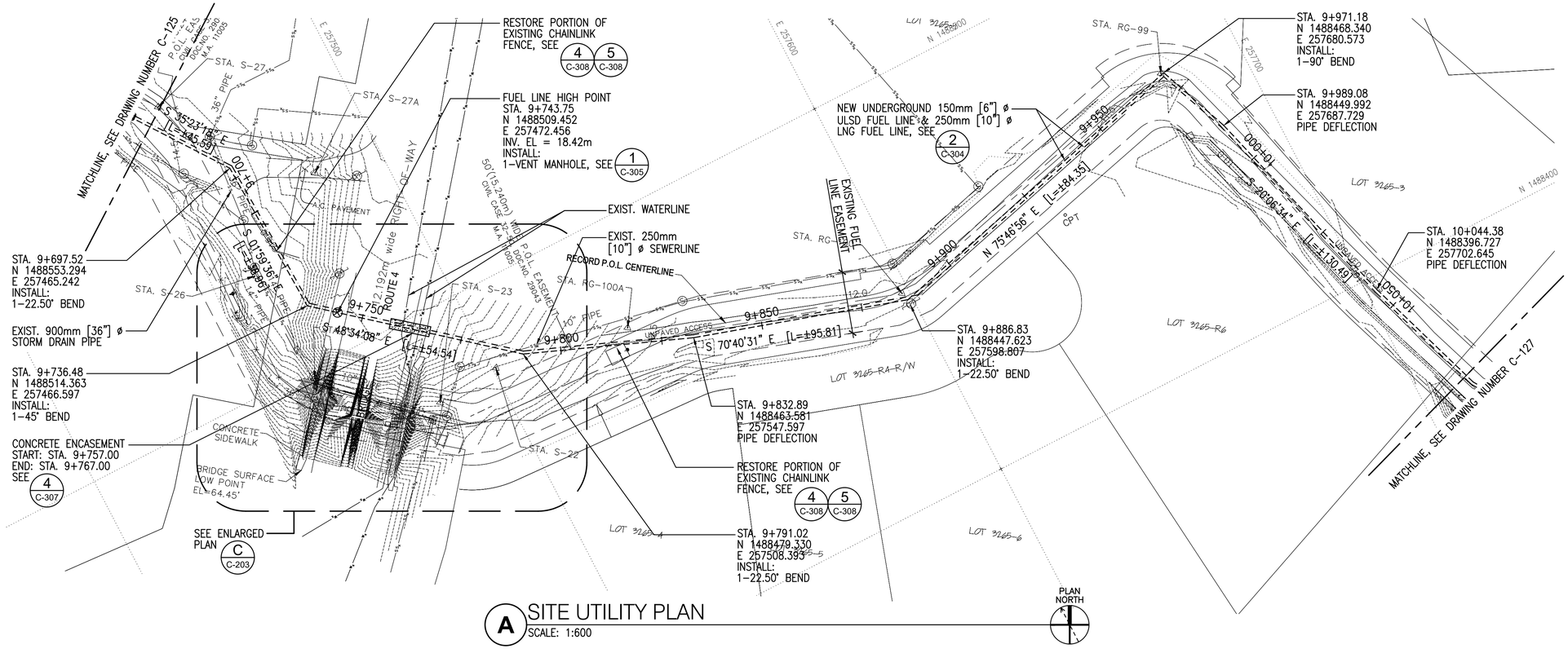
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	56 OF 134	C-125	–

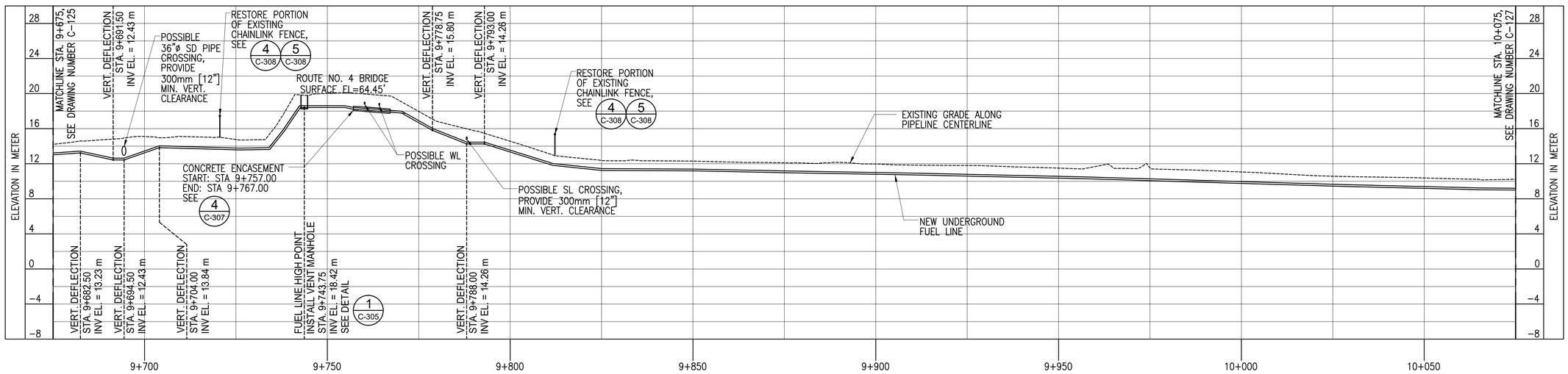
22" x 34" (559 x 864mm)



A SITE UTILITY PLAN

SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE

1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project

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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner

GUAM UKUDU POWER

Owner's Consultant

EPC Contractor

DOOSAN

EPC Contractor's Consultant

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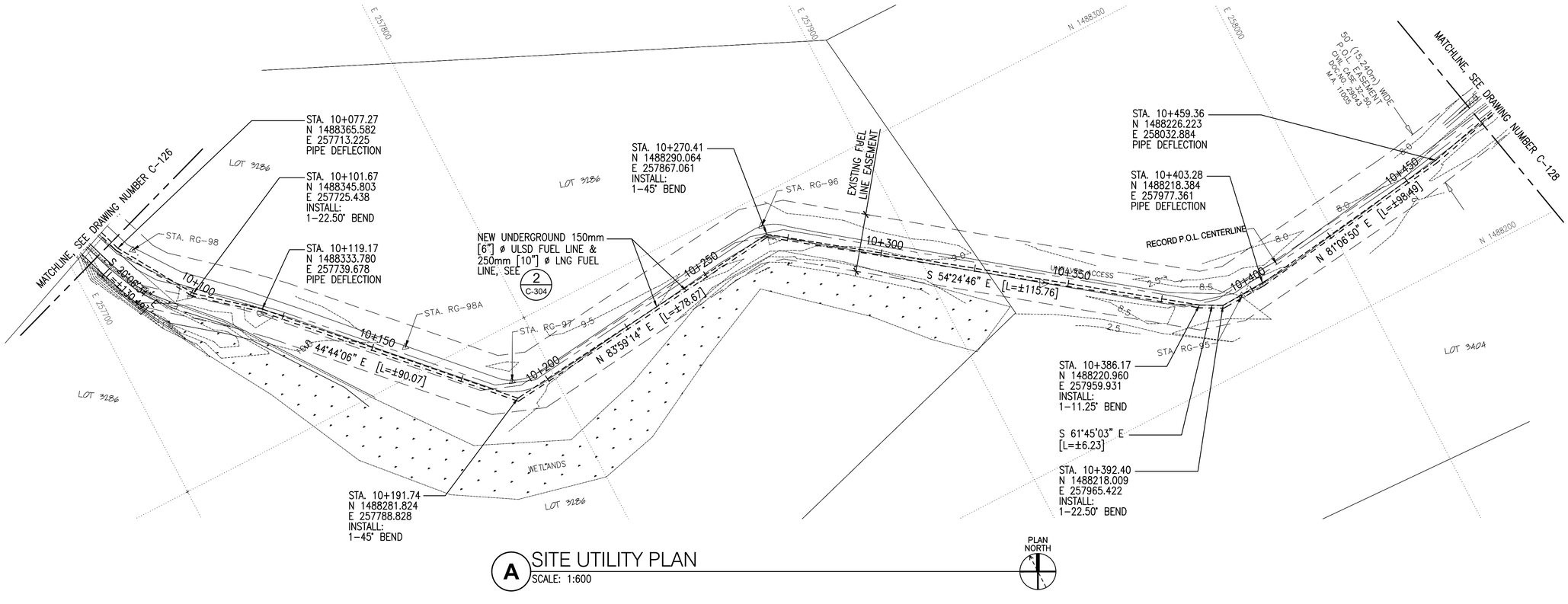
Sub Consultant

DRAWING TITLE

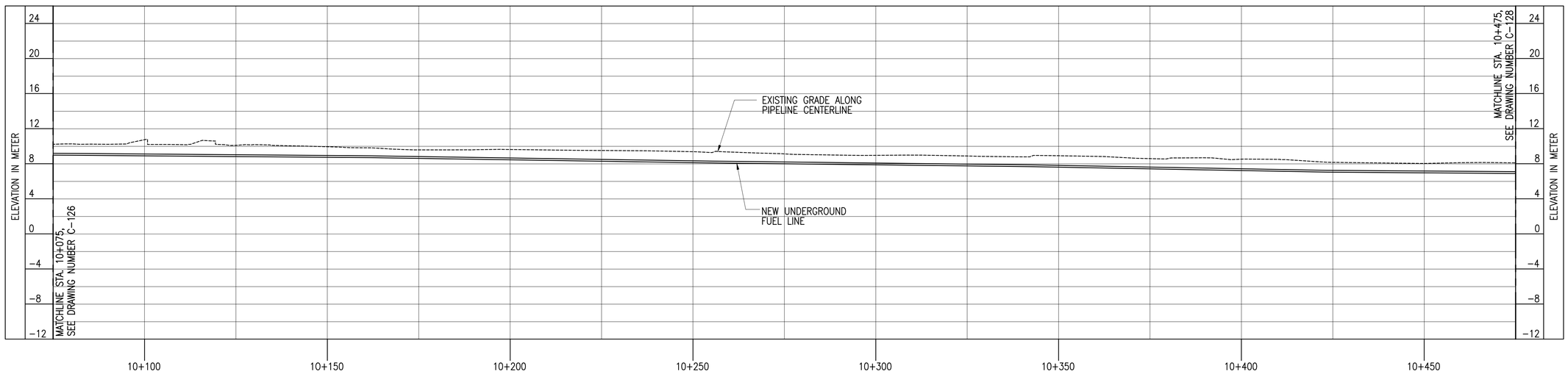
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	57 OF 134	C-126	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

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2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932–2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

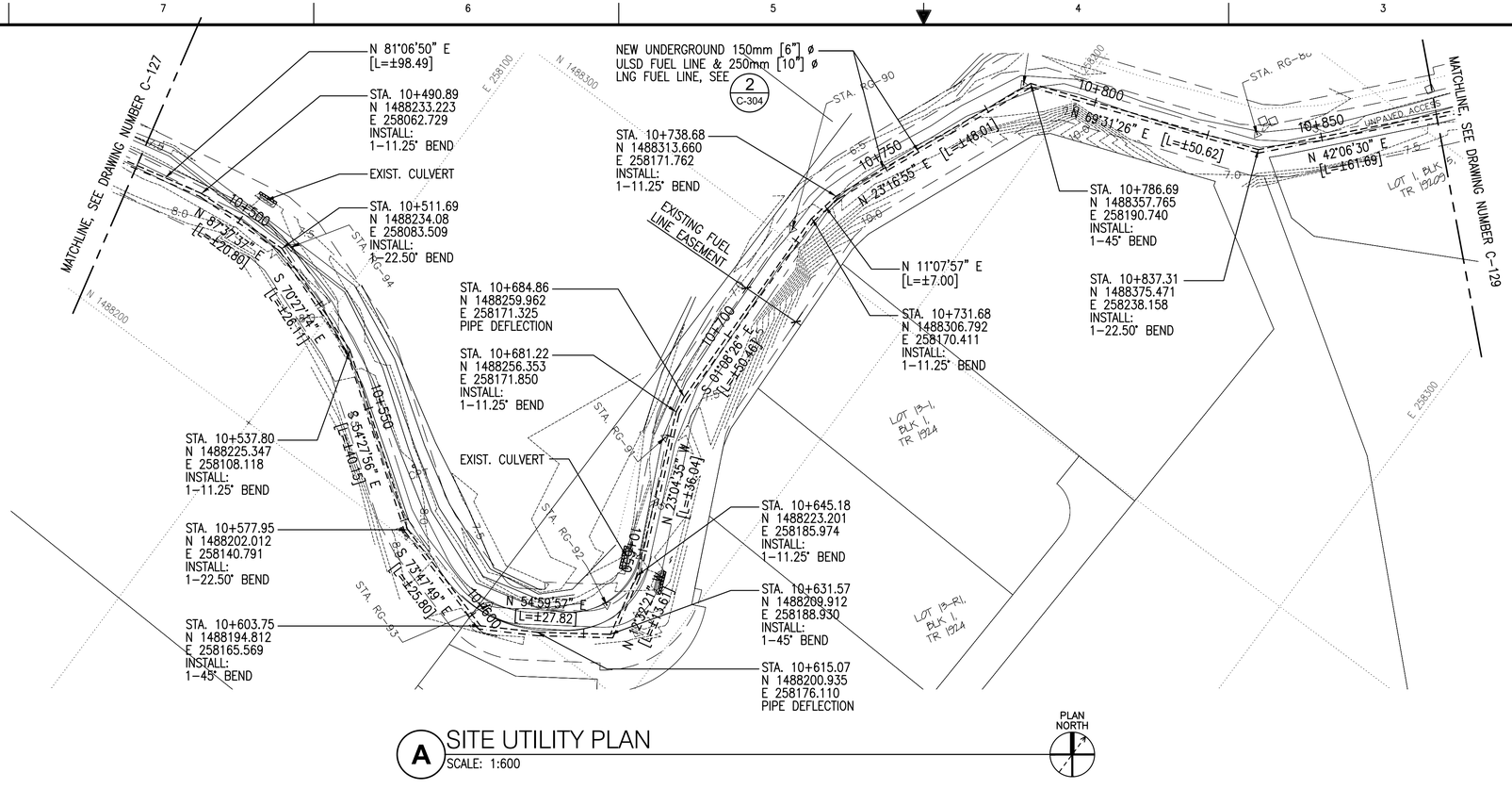
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646–0947/48 Fax: 646–0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

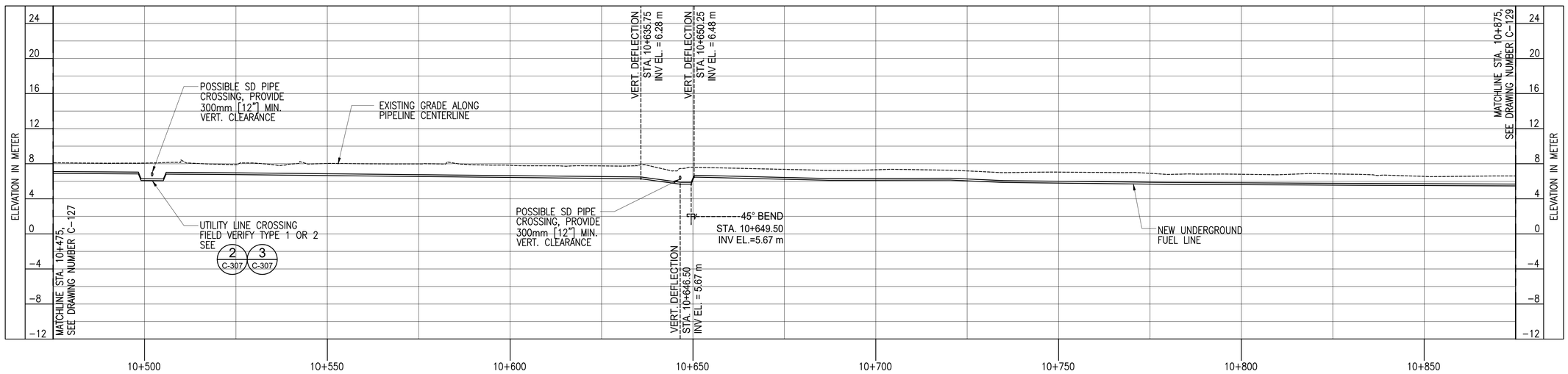
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	58 OF 134	C-127	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
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SCALE: 1:250

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- EXISTING GUARD RAIL
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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Owner's Consultant

EPC Contractor
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Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

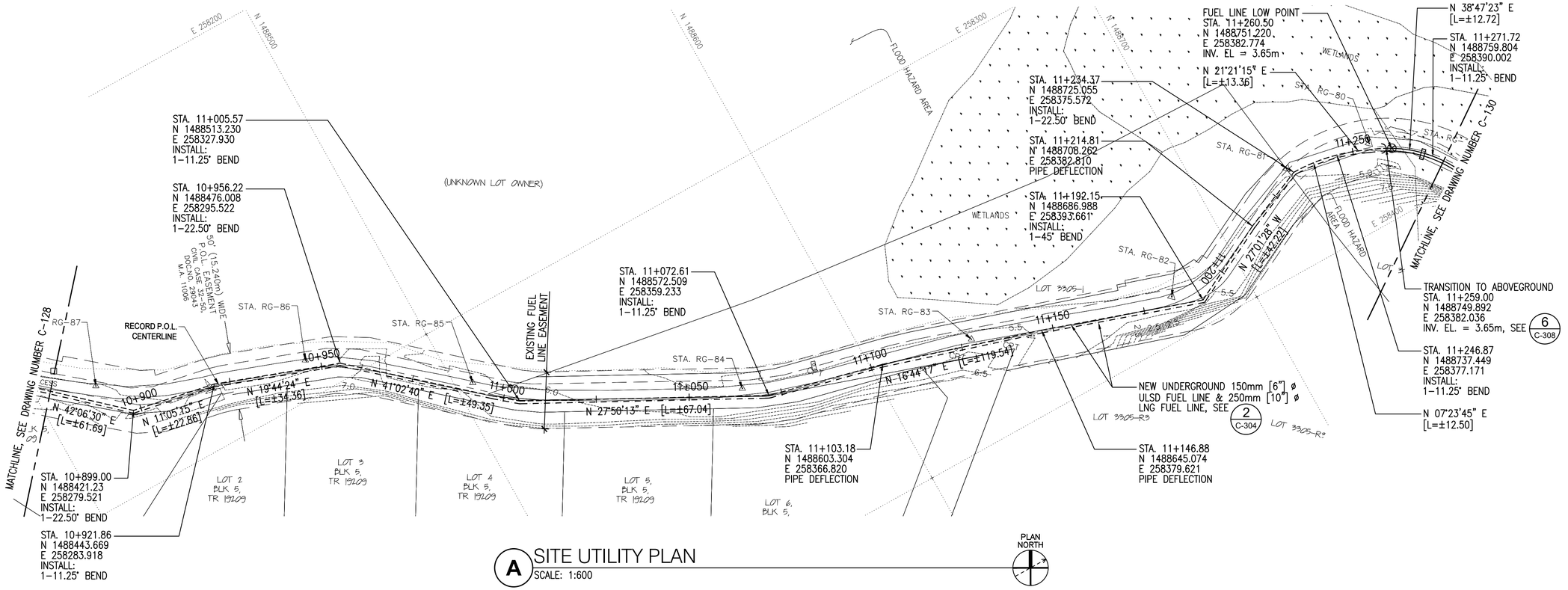
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

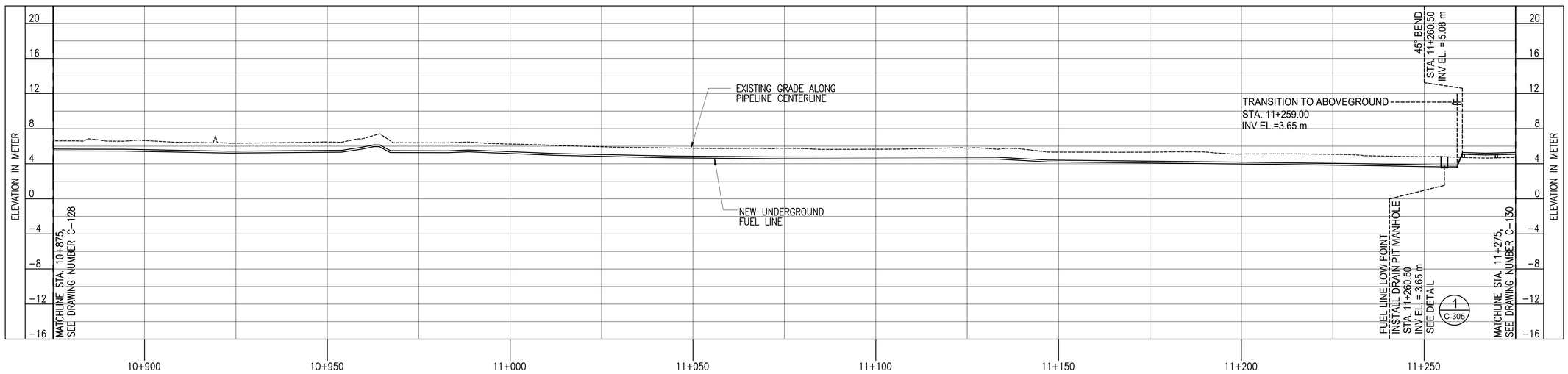
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	59 OF 134	C-128	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
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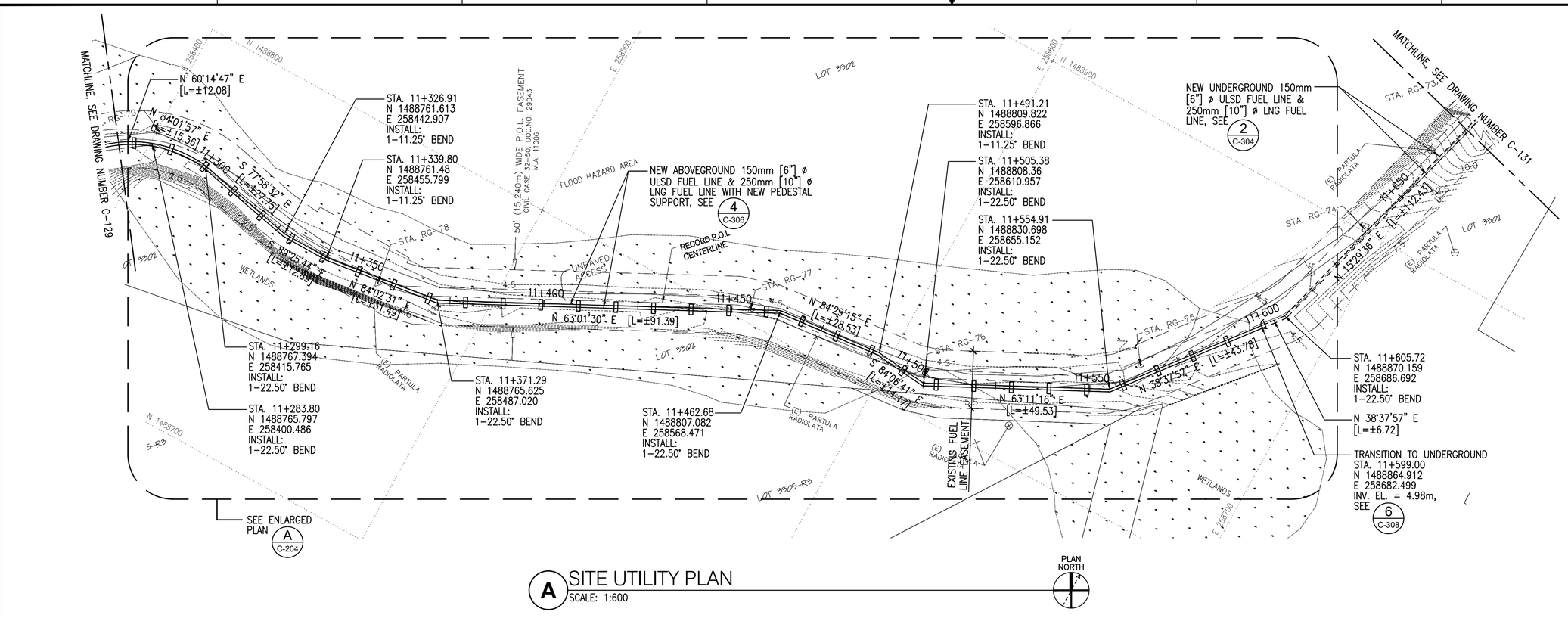
Sub Consultant

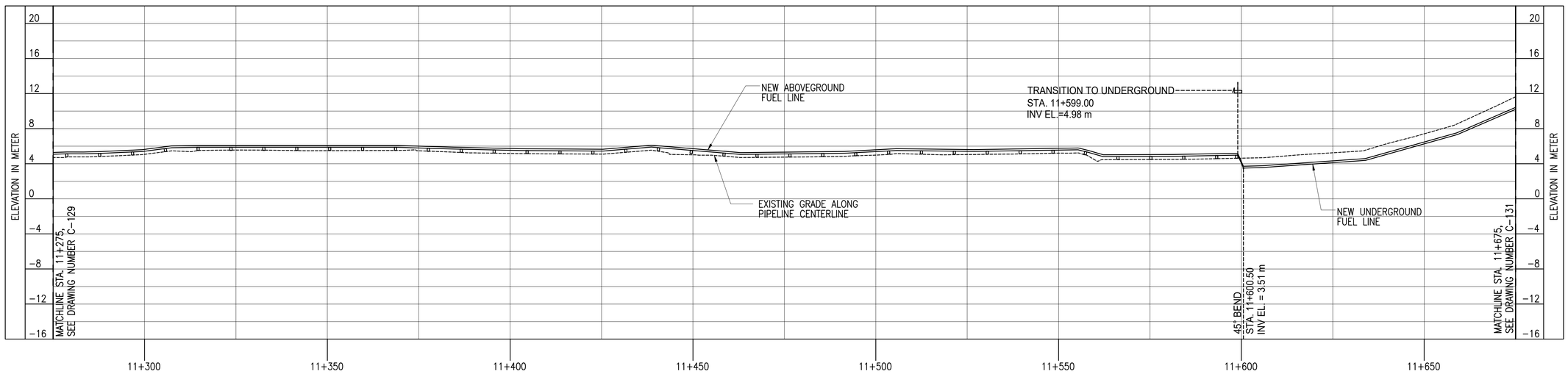
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	60 OF 134	C-129	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
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GRAPHIC SCALE:
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SCALE: 1:600
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SCALE: 1:250

LEGEND:

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
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Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

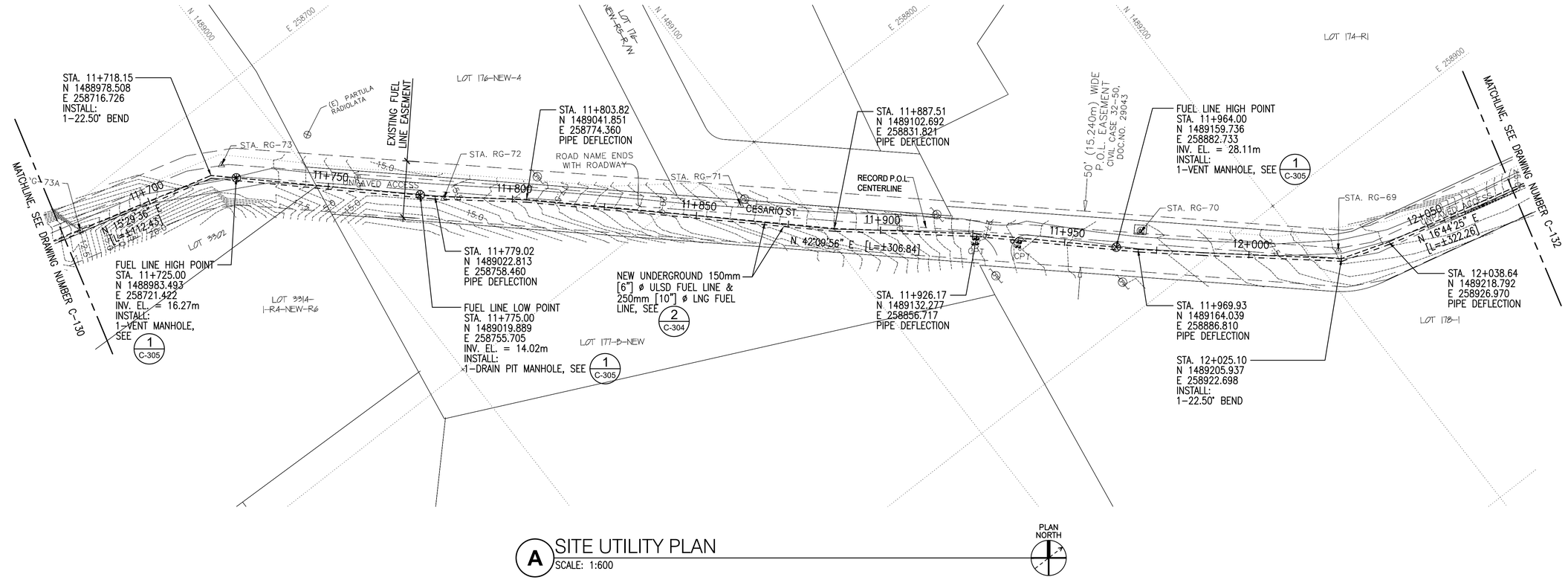
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

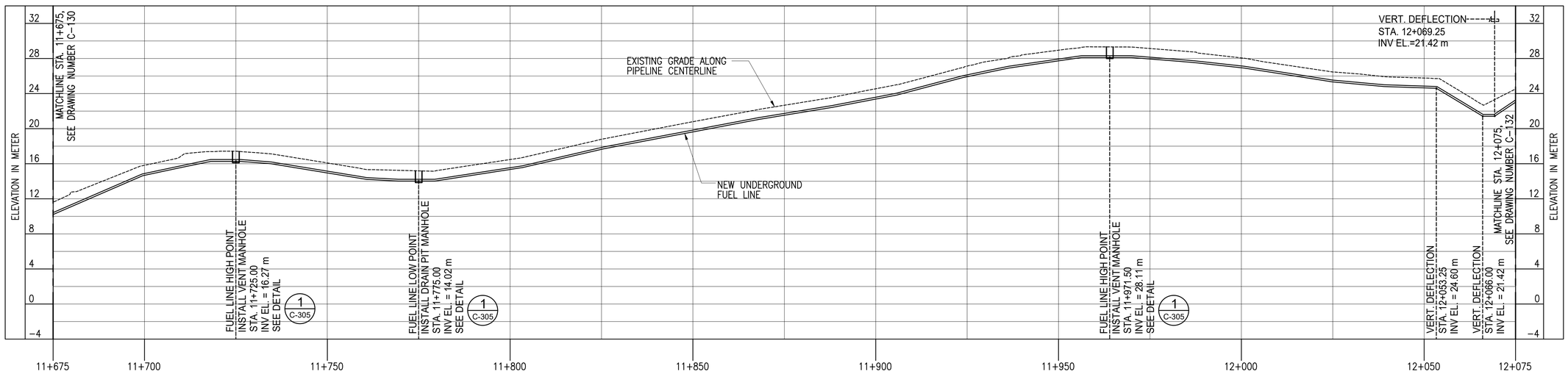
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	61 OF 134	C-130	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

LEGEND:

- 150mm [6"]Ø ULSD FUEL UNDERGROUND PIPELINE
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GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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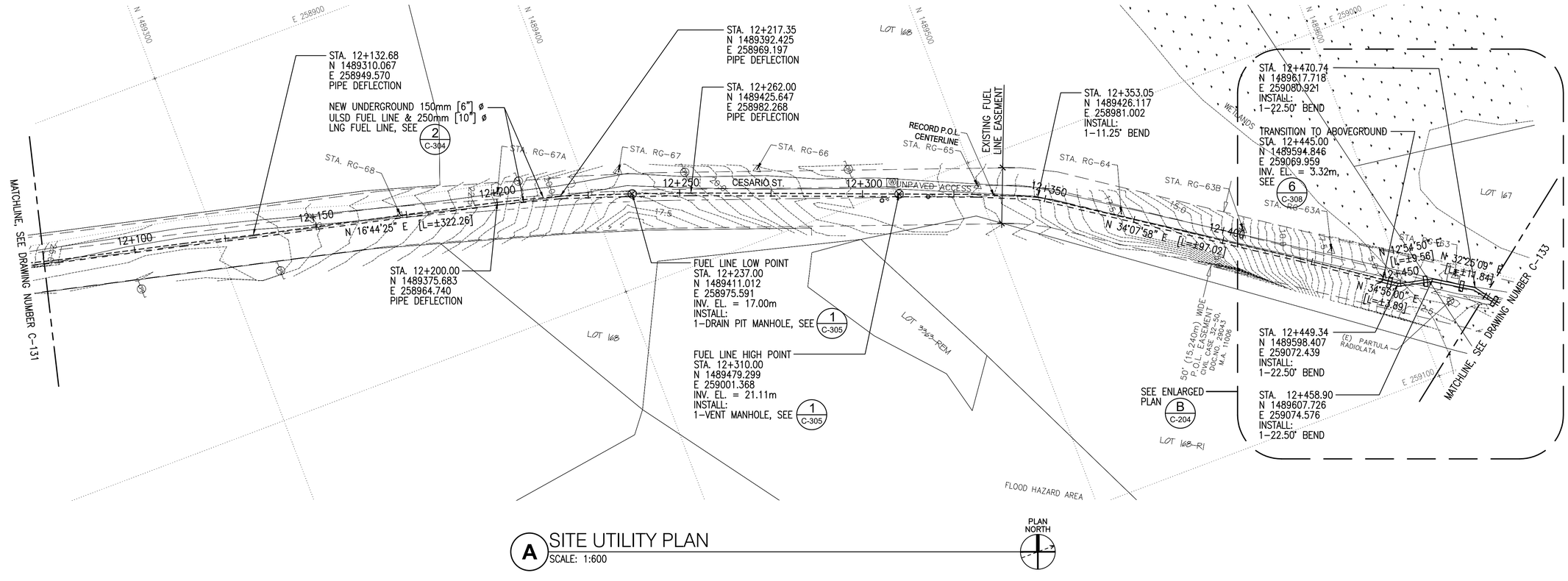
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

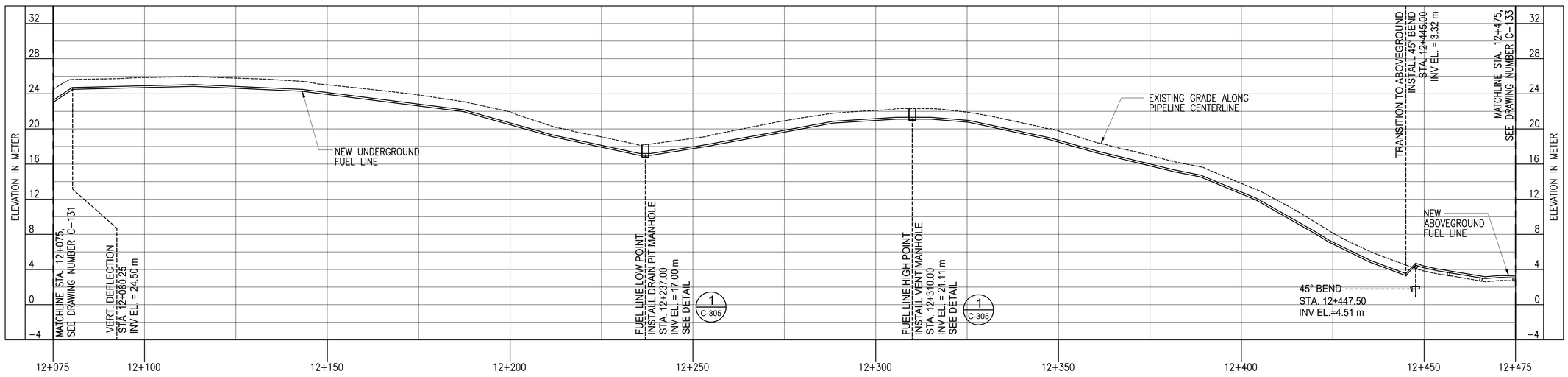
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	62 OF 134	C-131	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
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GRAPHIC SCALE:
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SCALE: 1:600
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NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) Exp. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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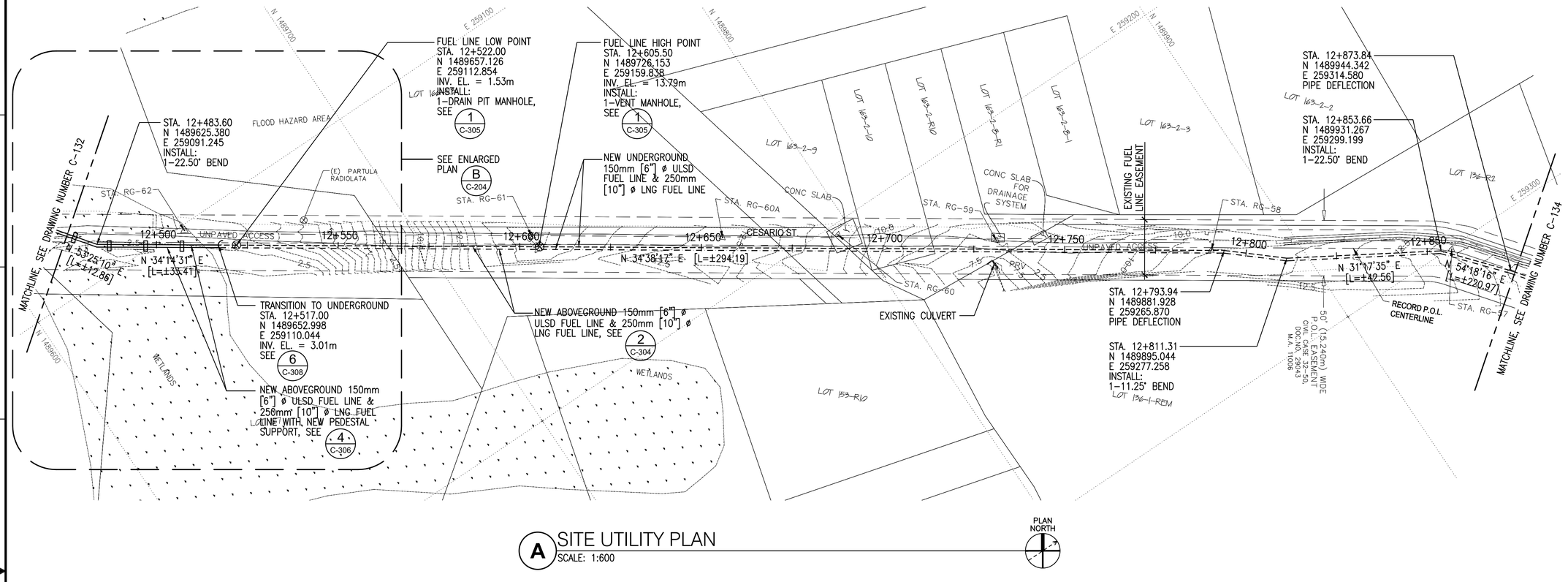
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

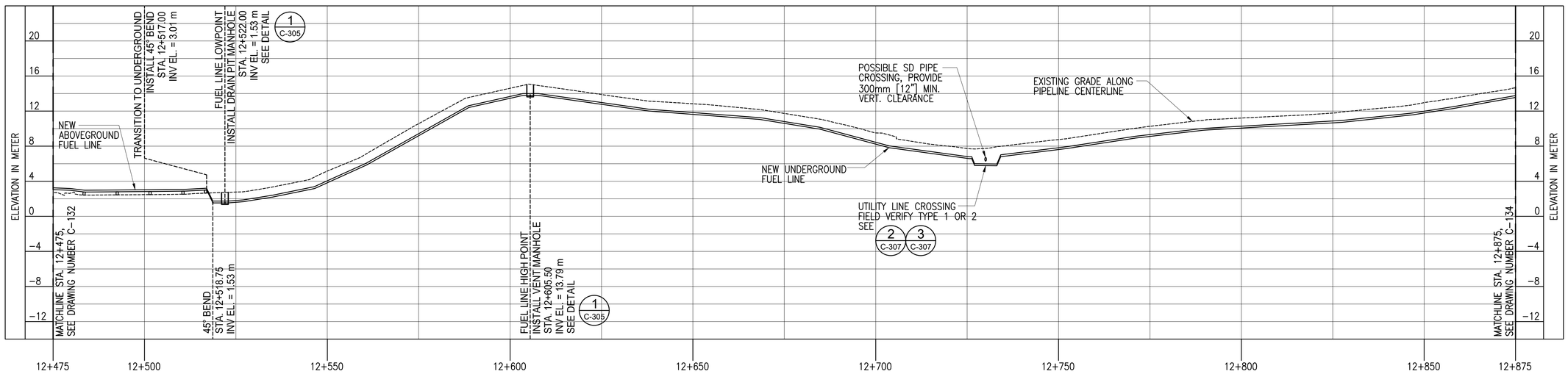
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	63 OF 134	C-132	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

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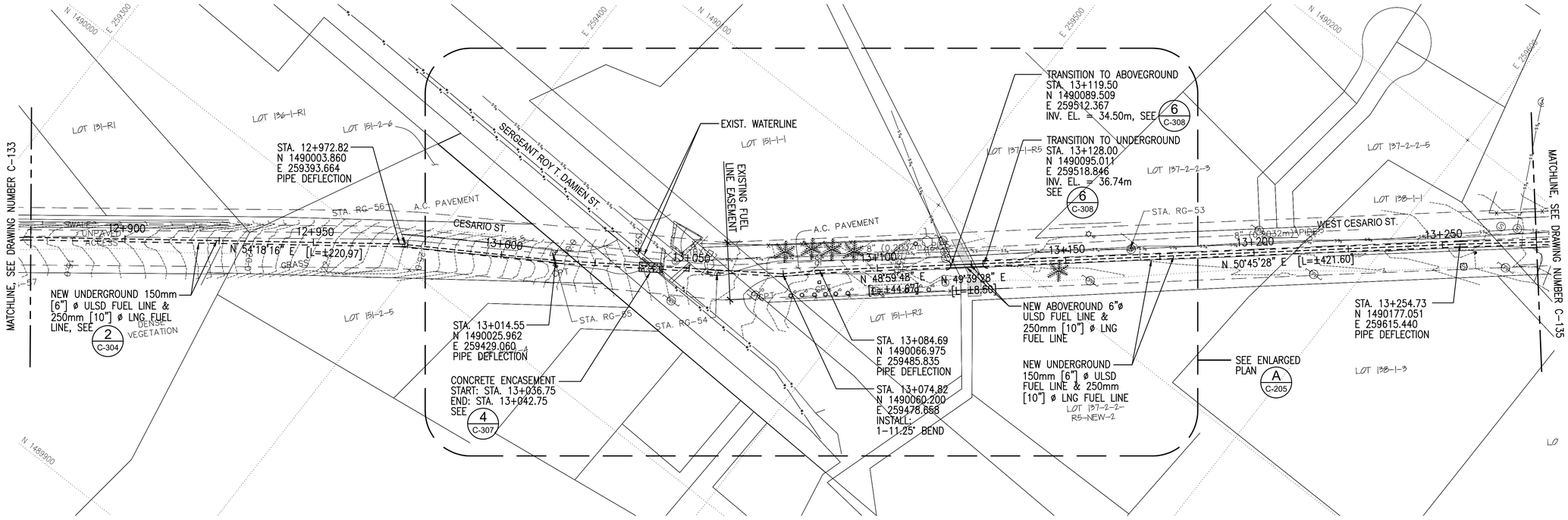
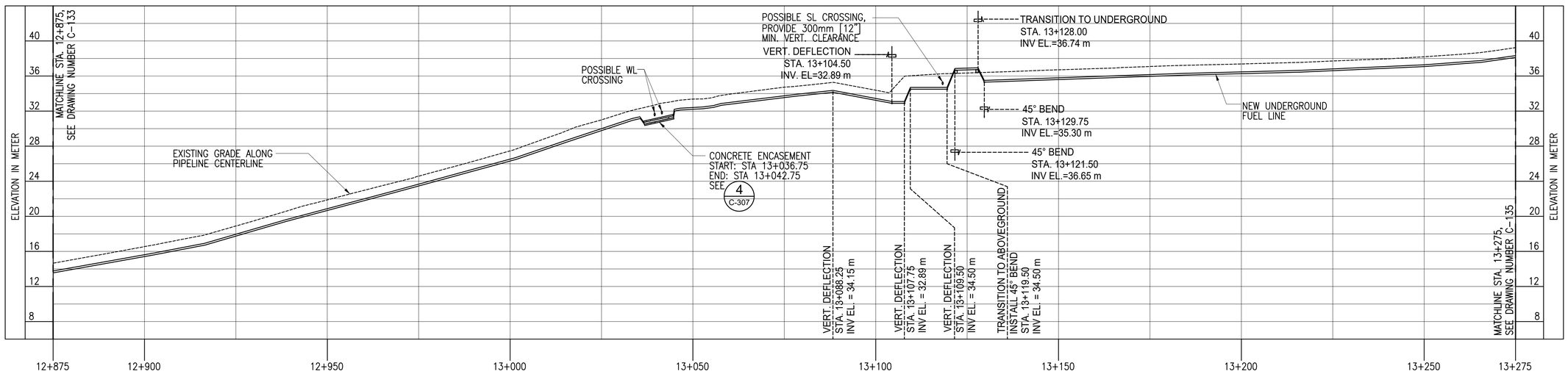
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	64 OF 134	C-133	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



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1:600 (HOR.) ; 1:250 (VER.)

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SCALE: 1:600
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NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

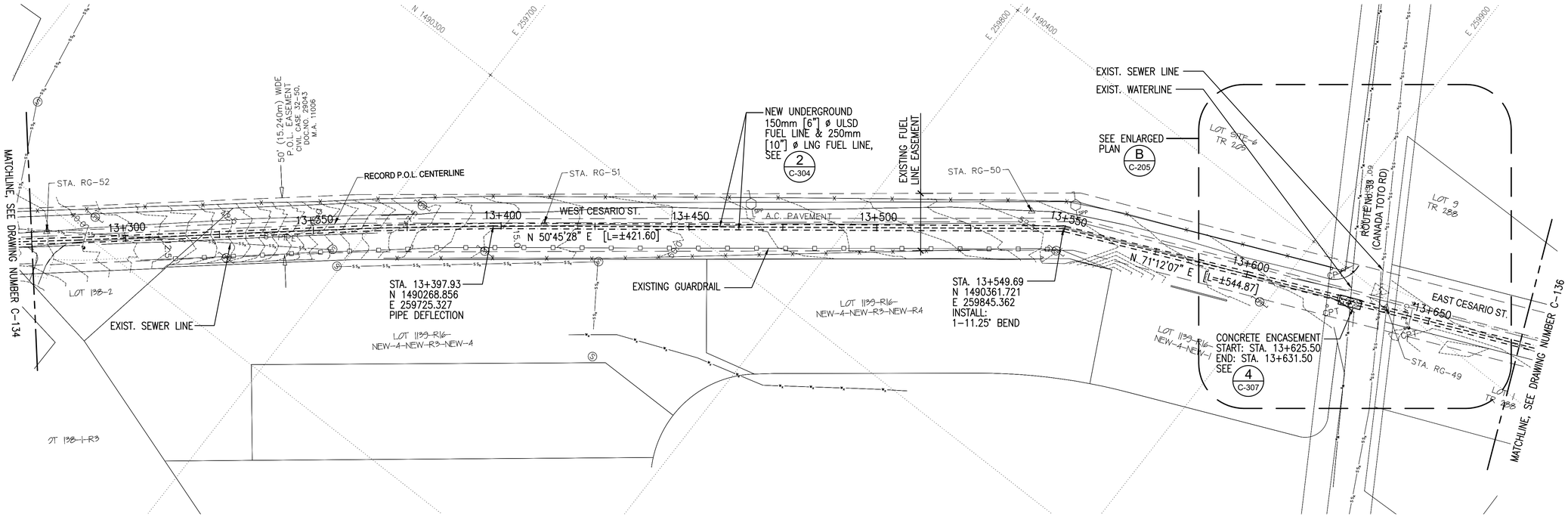
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

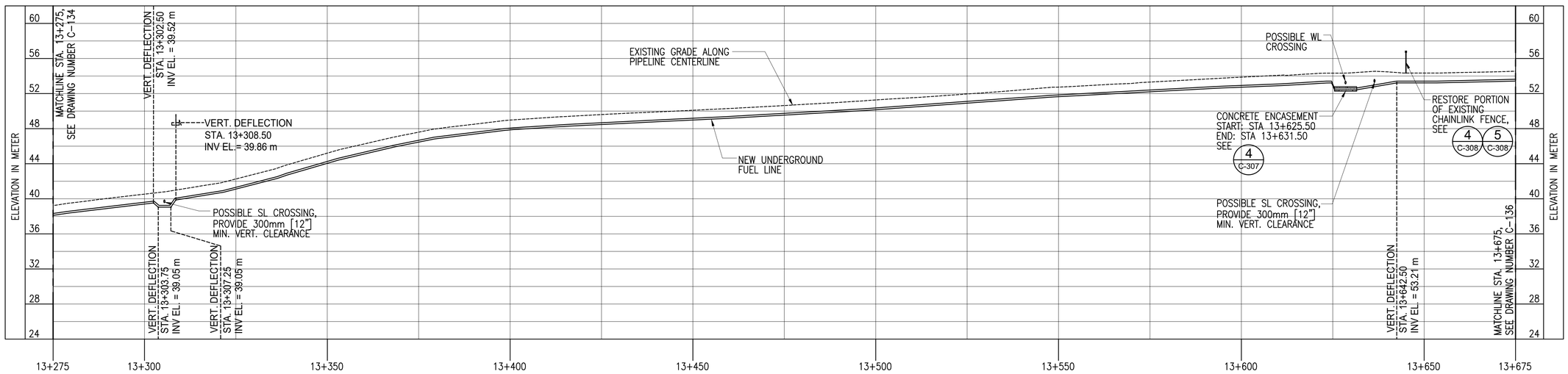
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	65 OF 134	C-134	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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Sub Consultant

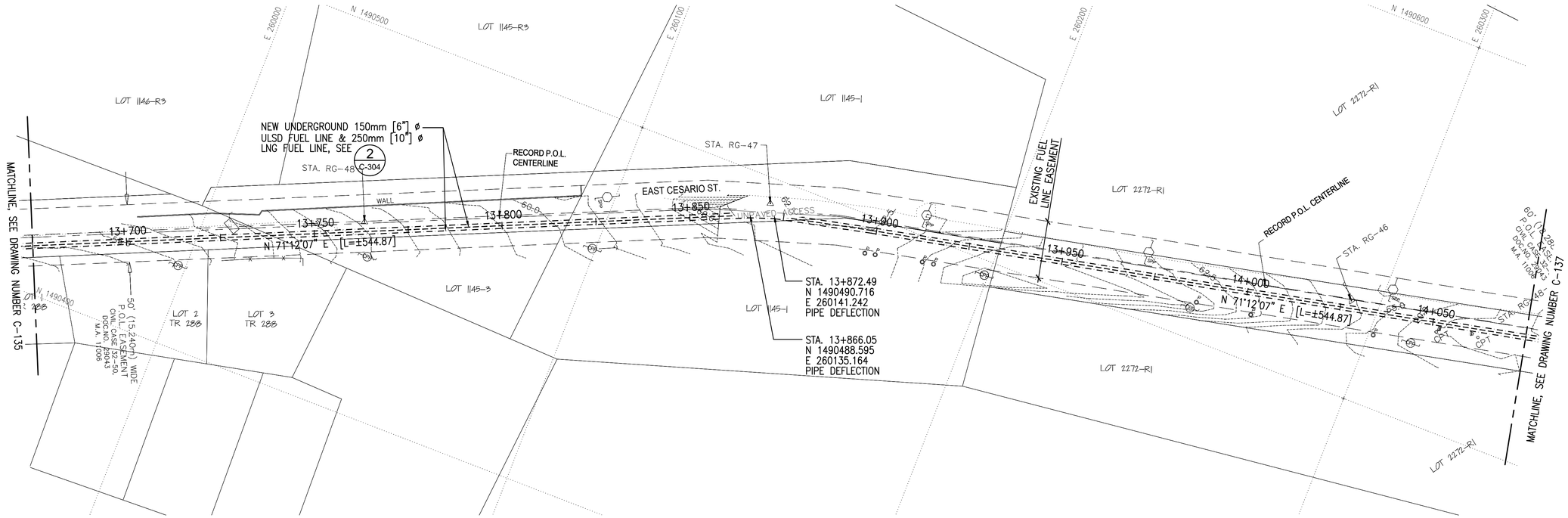
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

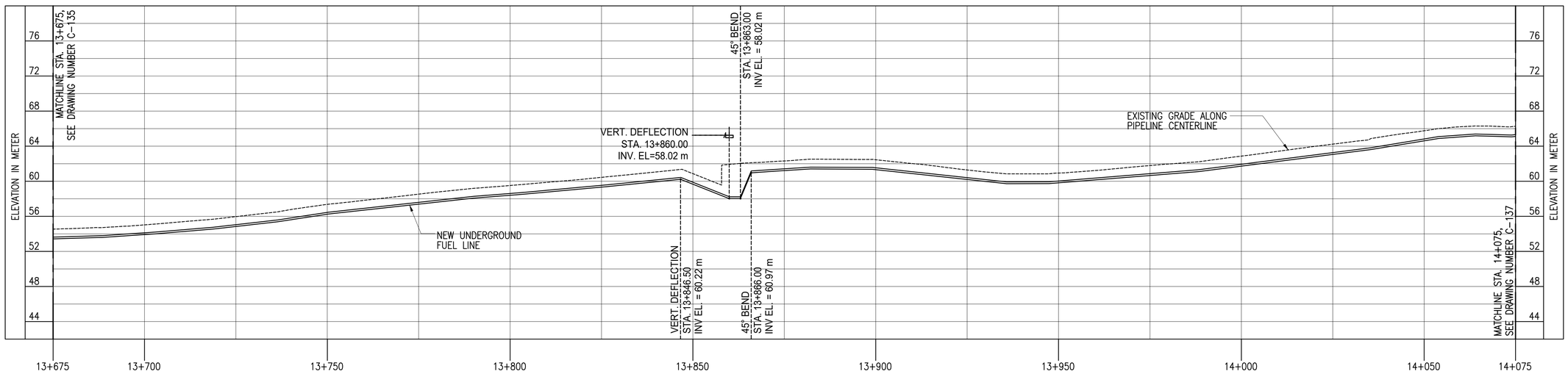
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	66 OF 134	C-135	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]Ø ULSD FUEL UNDERGROUND PIPELINE
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- WETLAND
- HIGH / LOW POINT LOCATION
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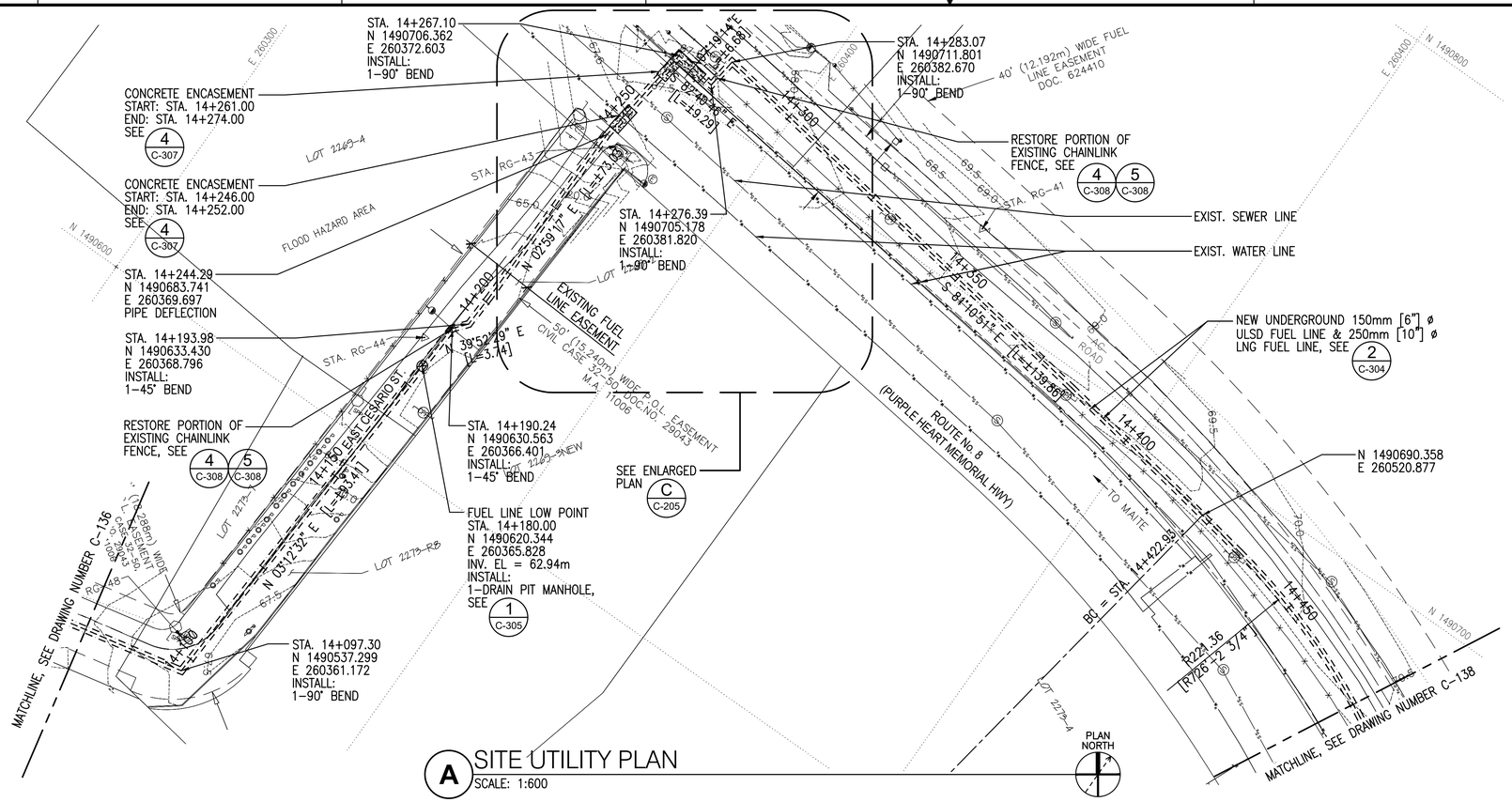
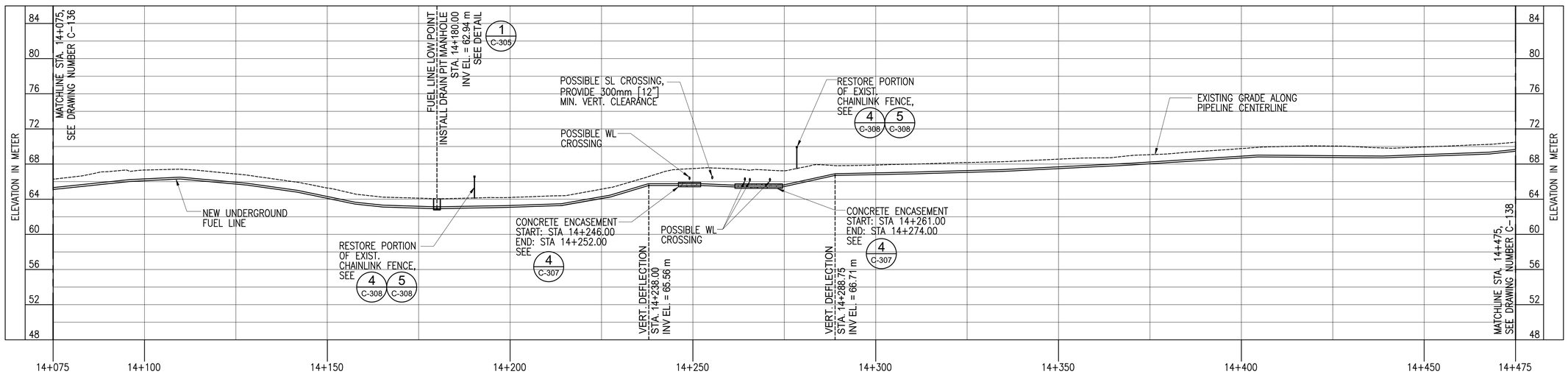
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	67 OF 134	C-136	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
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SCALE: 1:250

LEGEND:

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- WETLAND
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932–2977

Owner
GUAM UKUDU POWER

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EPC Contractor
DOOSAN

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Sub Consultant

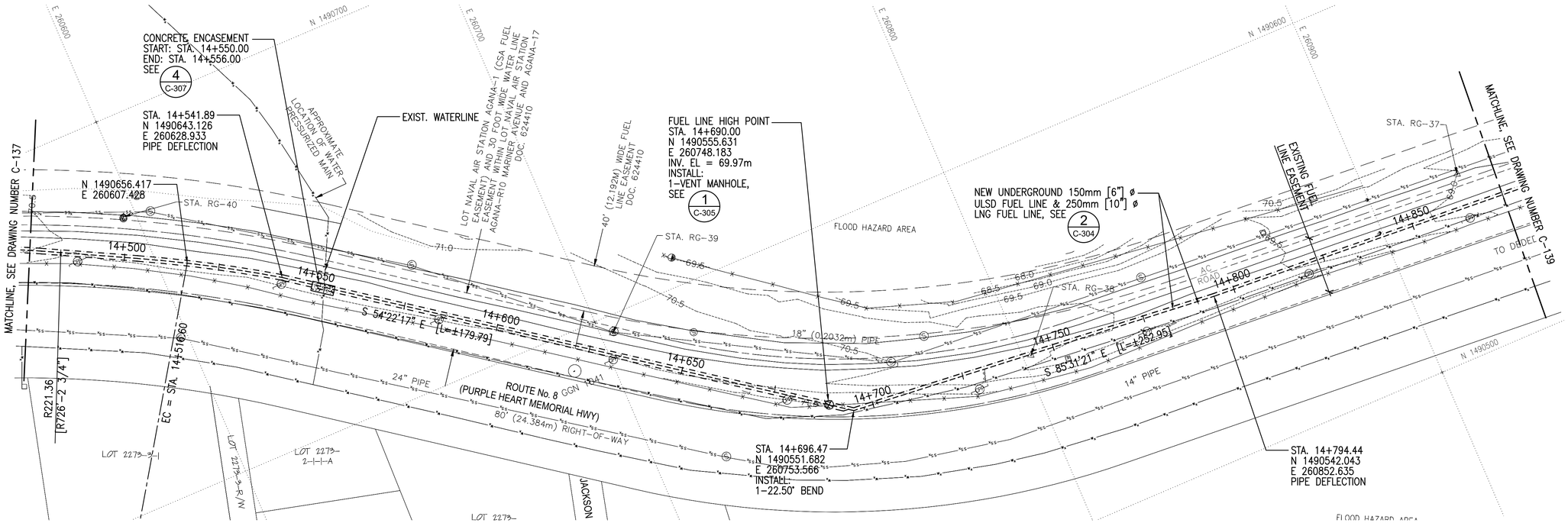
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NERENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) Exp. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

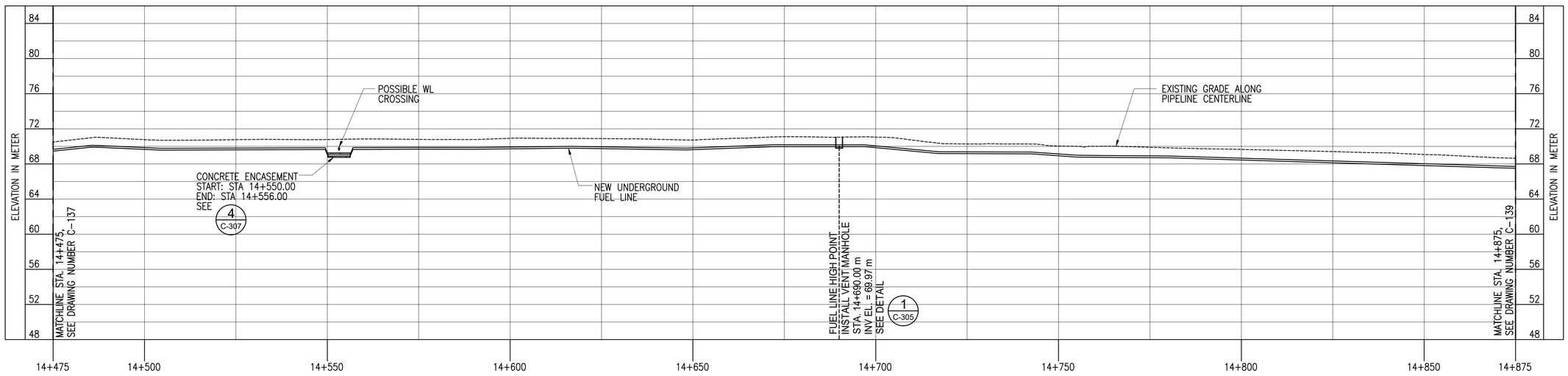
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	68 OF 134	C-137	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
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SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
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- EXISTING GUARD RAIL
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
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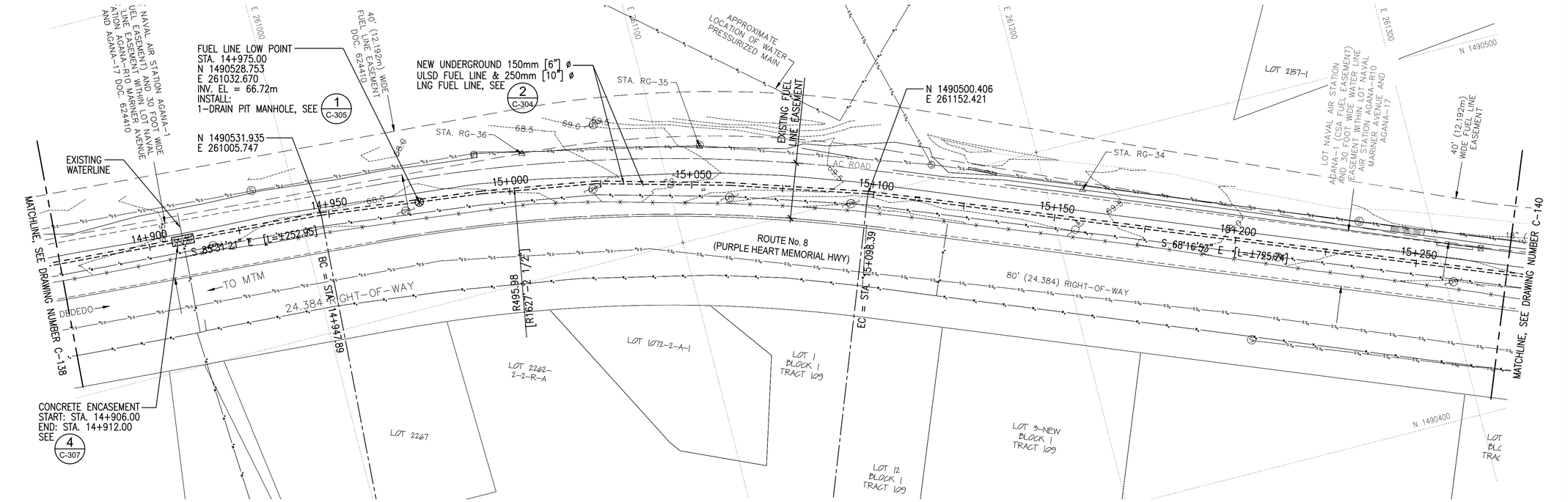
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

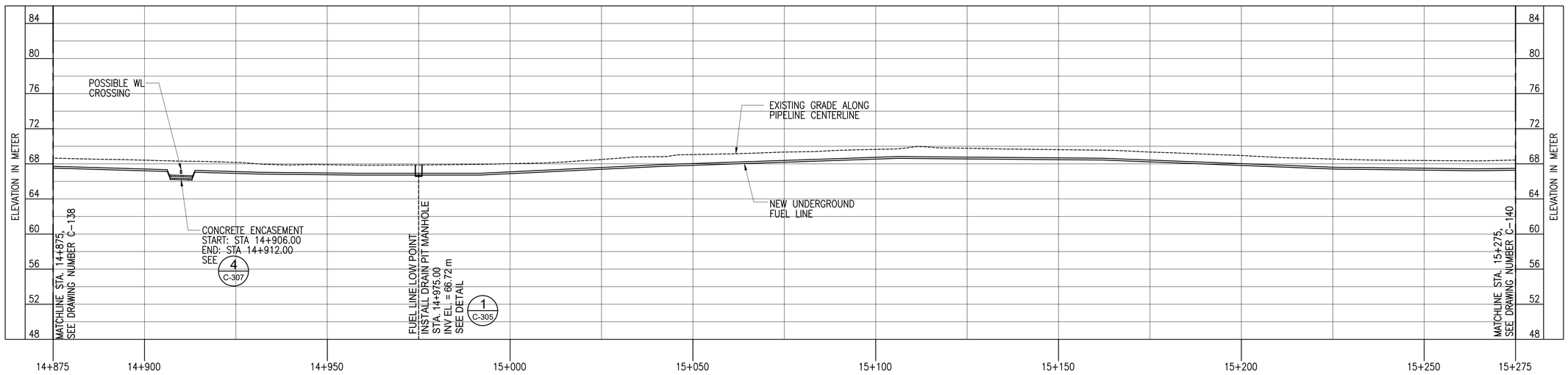
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	69 OF 134	C-138	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- WETLAND
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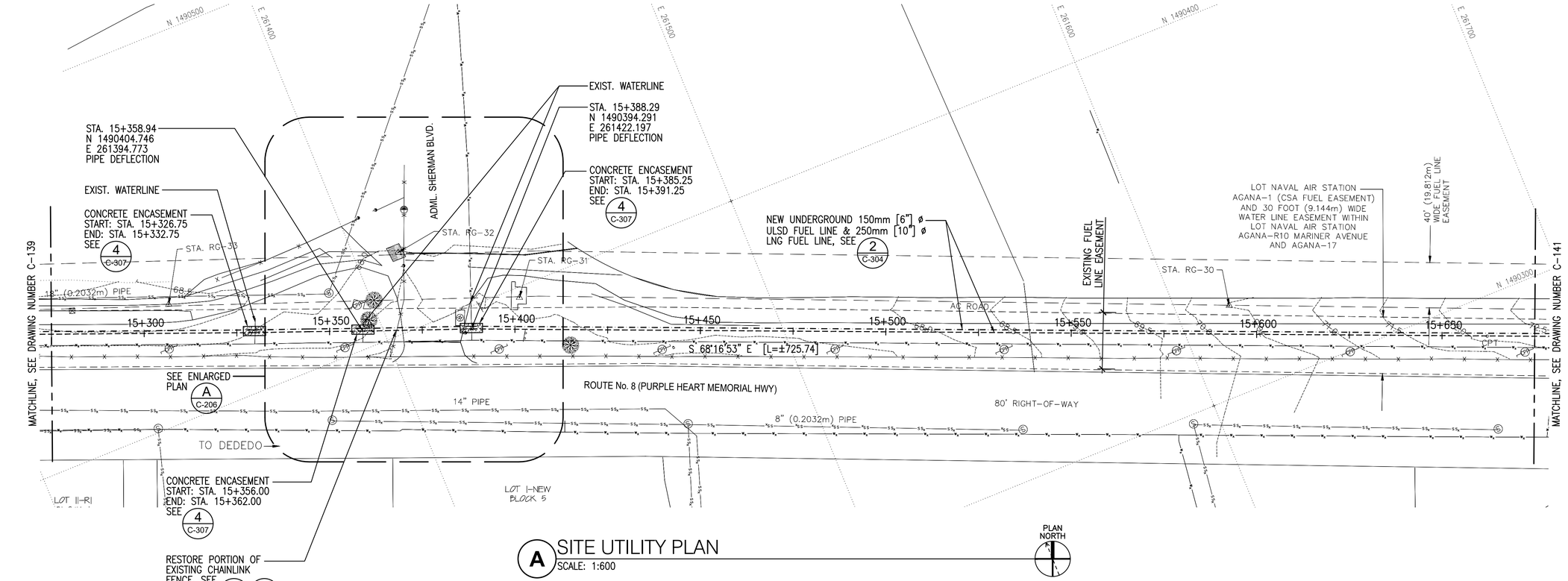
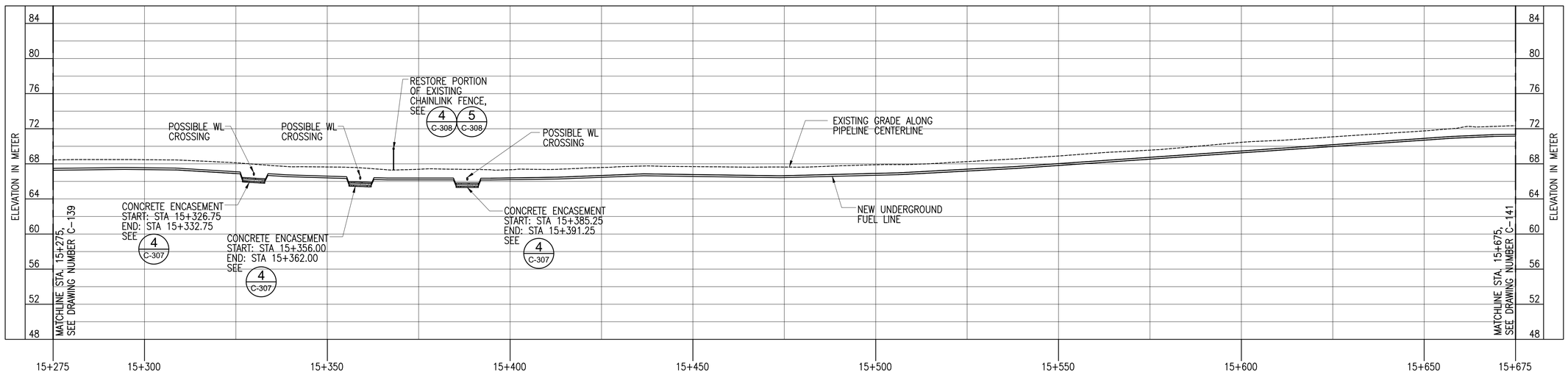
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	70 OF 134	C-139	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



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1:600 (HOR.) ; 1:250 (VER.)

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GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NERENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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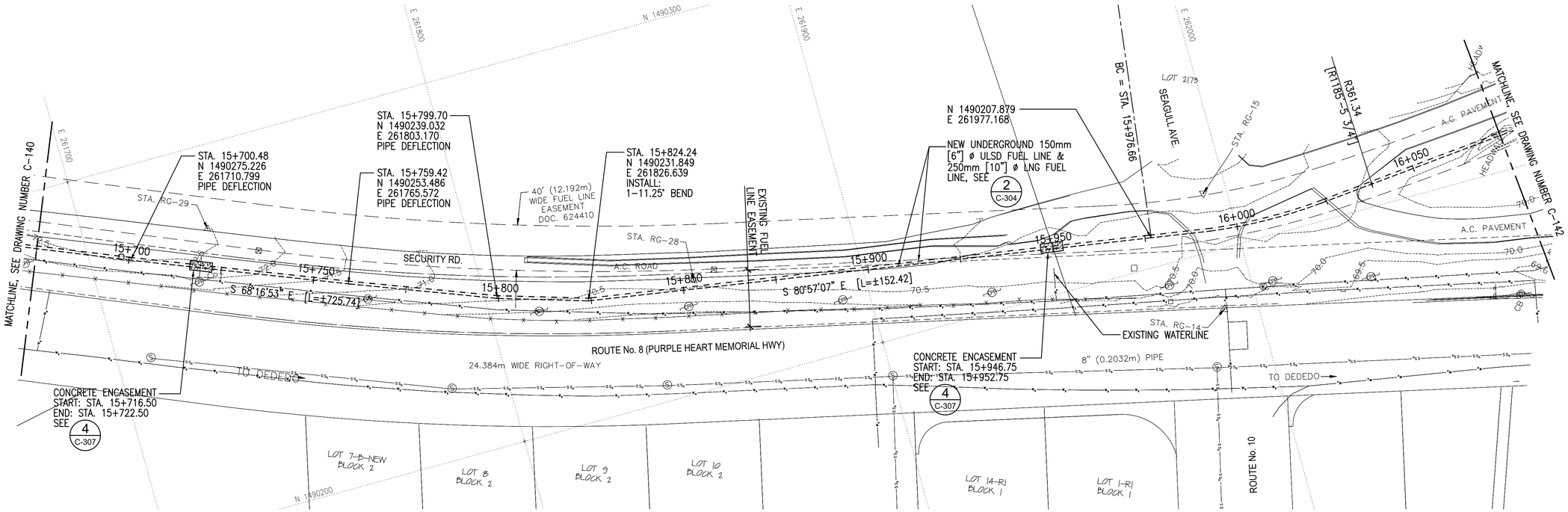
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

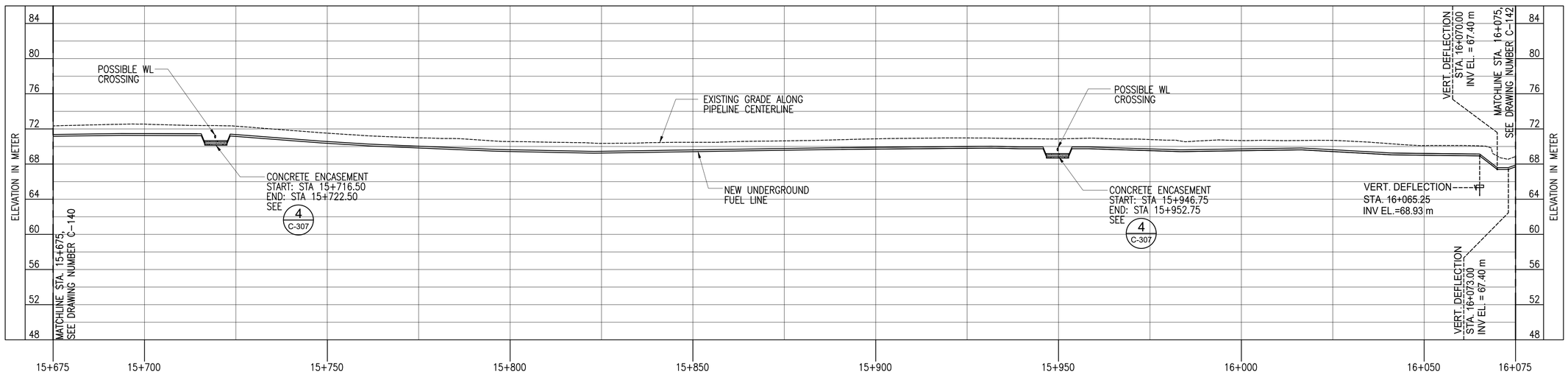
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	71 OF 134	C-140	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



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1:600 (HOR.) ; 1:250 (VER.)

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SCALE: 1:600
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DRAWING TITLE
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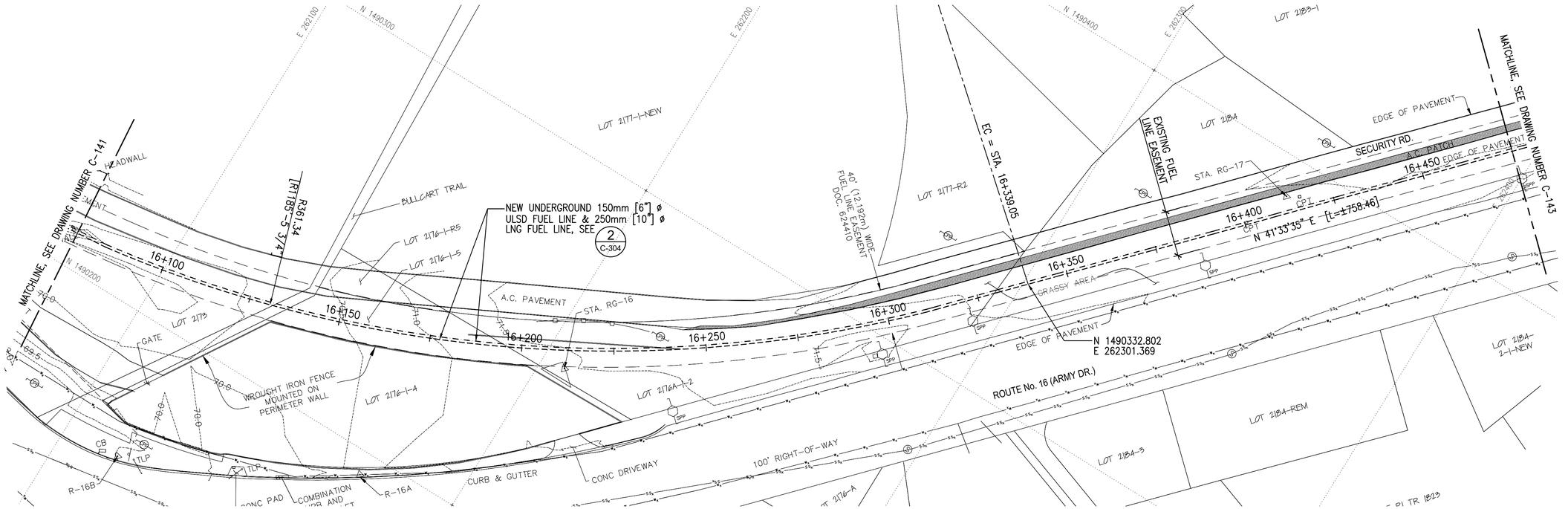
SITE UTILITY PROFILE

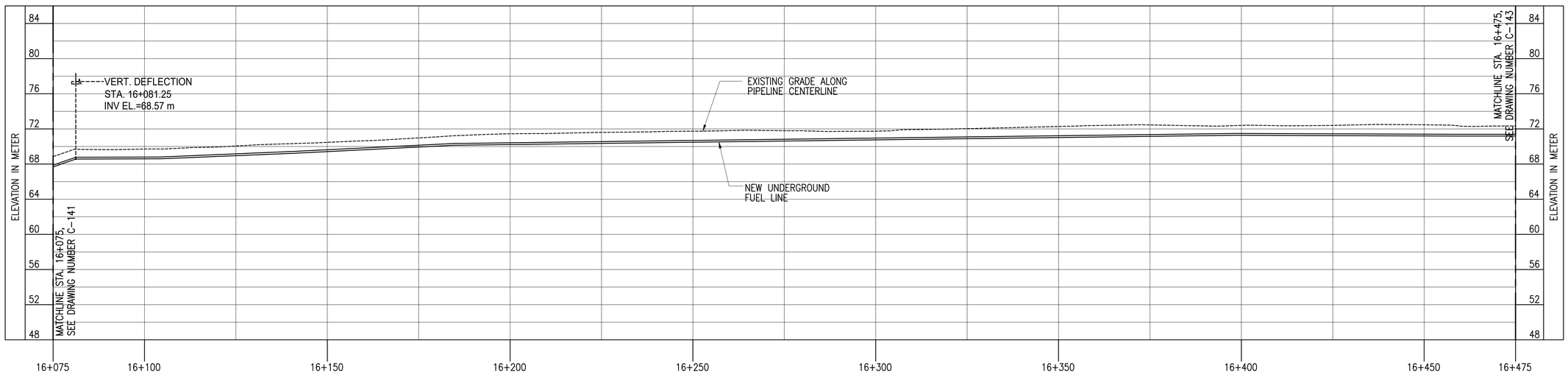
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	72 OF 134	C-141	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
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SCALE: 1:600
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- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

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2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

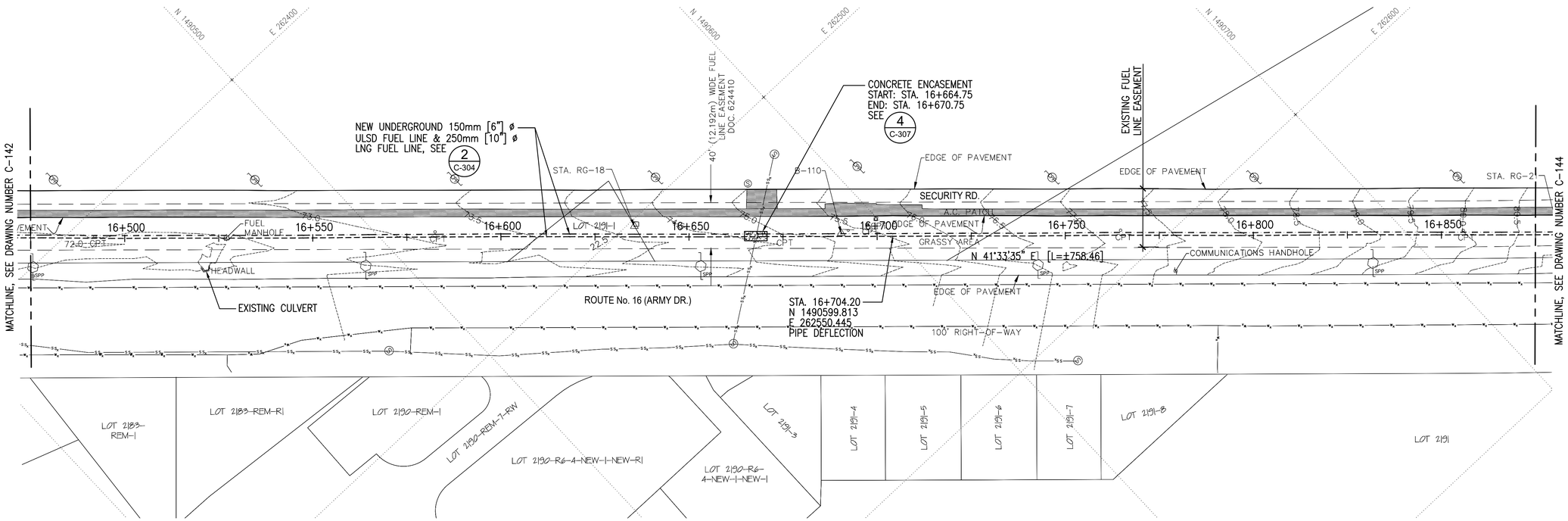
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

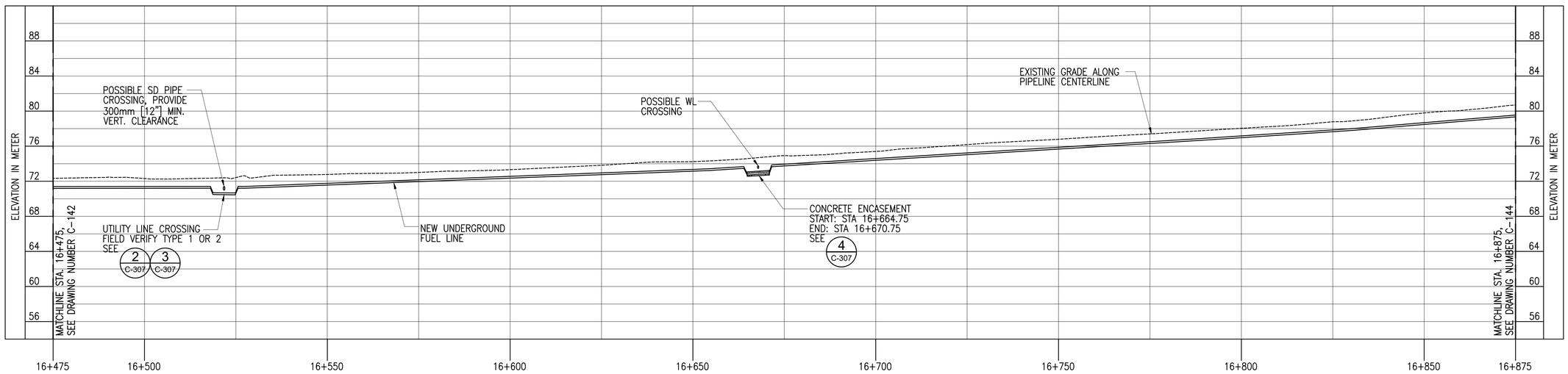
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	73 OF 134	C-142	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- WETLAND
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

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GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
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EPC Contractor's Consultant
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Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

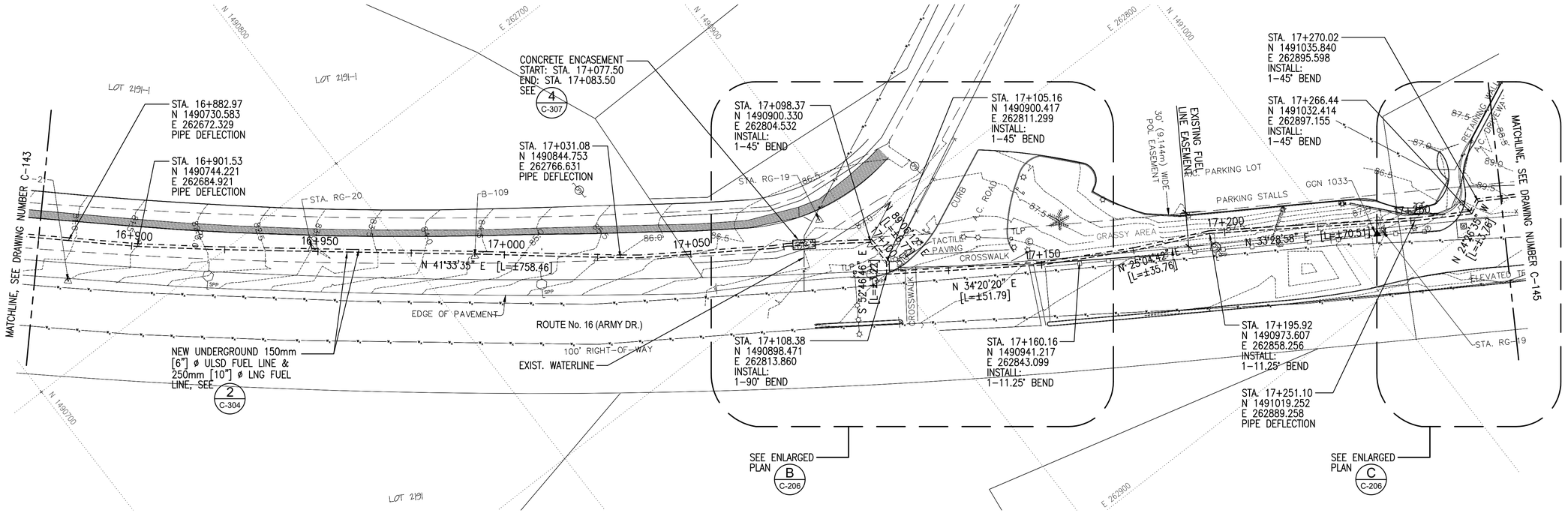
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

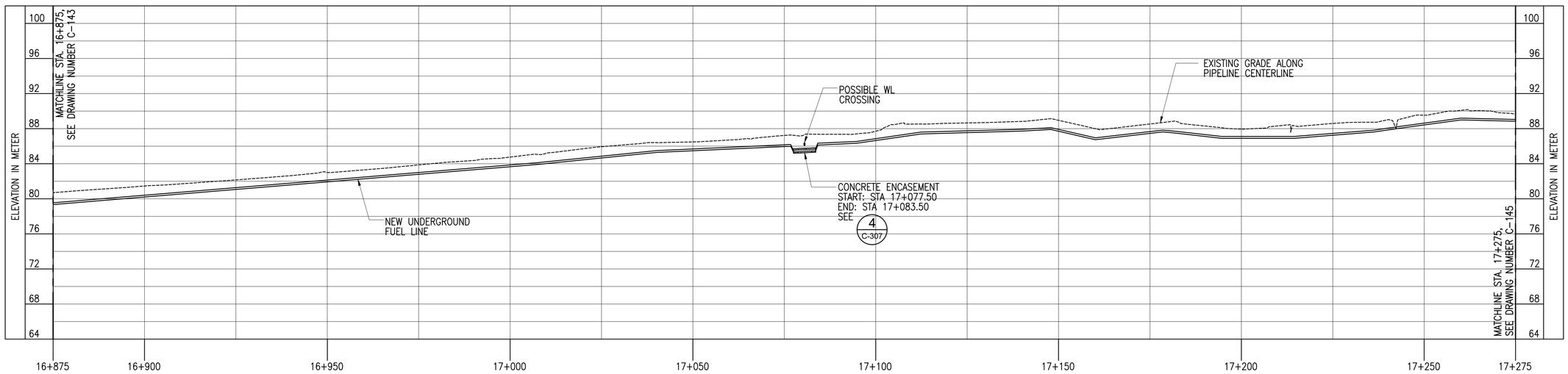
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	74 OF 134	C-143	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- WETLAND
- HIGH / LOW POINT LOCATION
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- EXISTING GUARD RAIL
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
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Owner's Consultant

EPC Contractor
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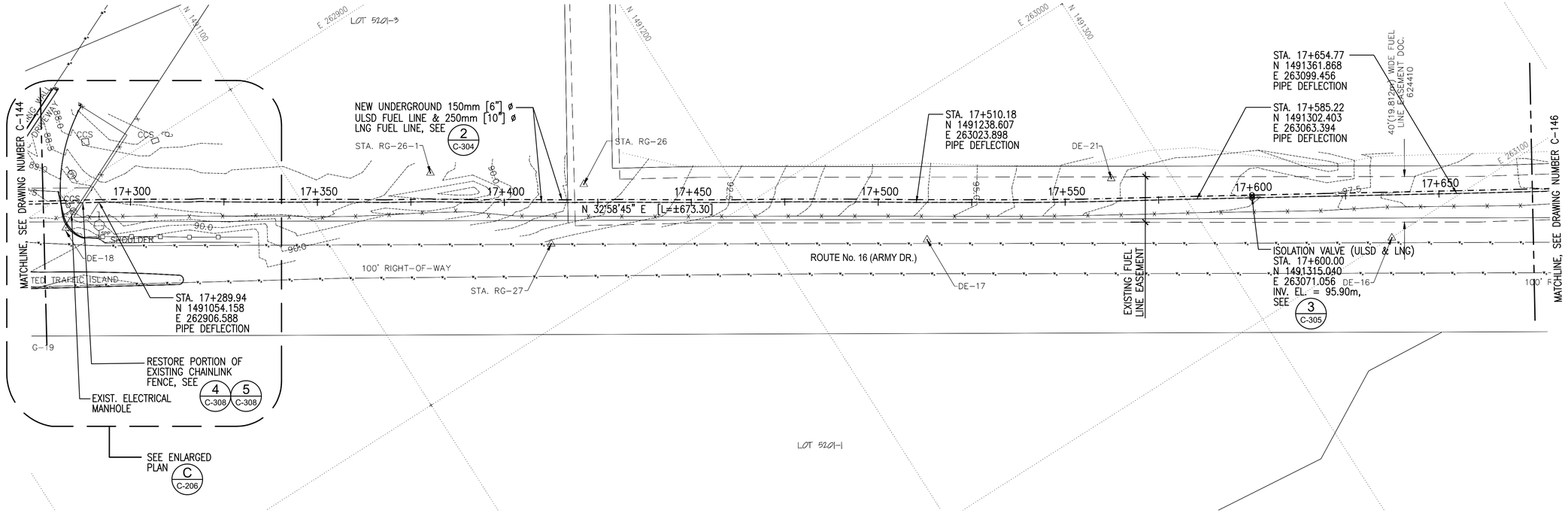
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

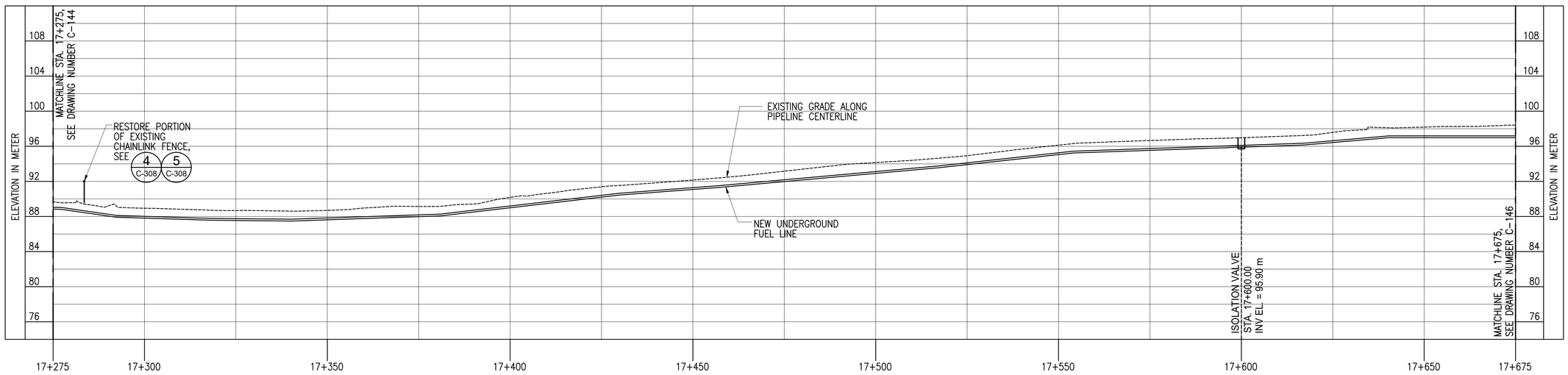
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	75 OF 134	C-144	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_X EXISTING SEWER LINE (DATA PROVIDED BY GWA)
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

EPC Contractor's Consultant
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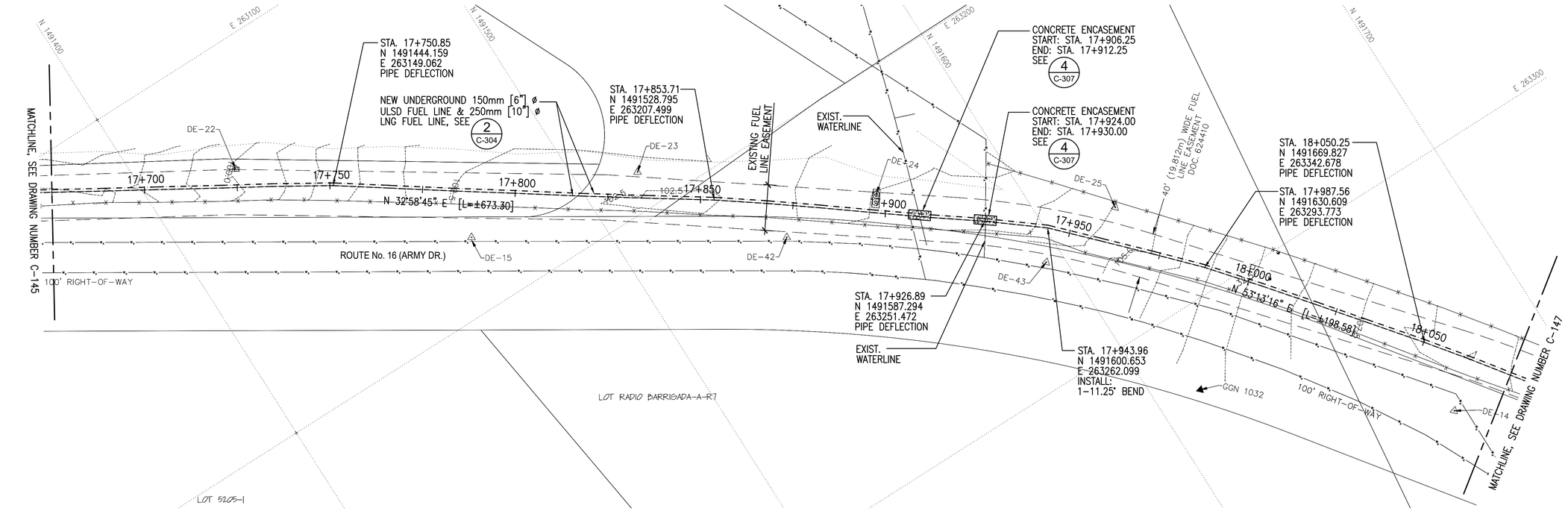
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

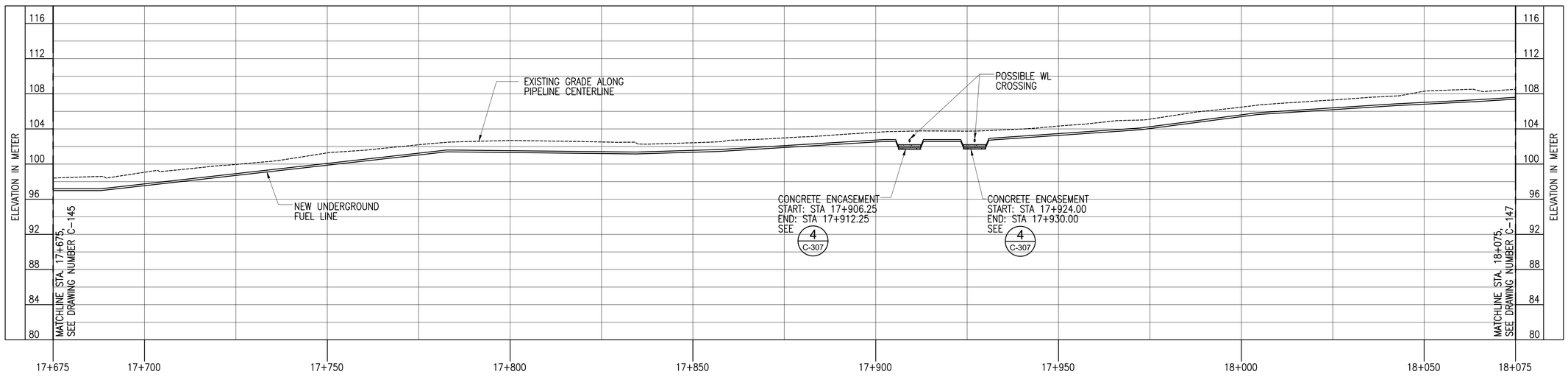
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	76 OF 134	C-145	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
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- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- $S S_x$ EXISTING SEWER LINE (DATA PROVIDED BY GWA)
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NOTE:

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GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

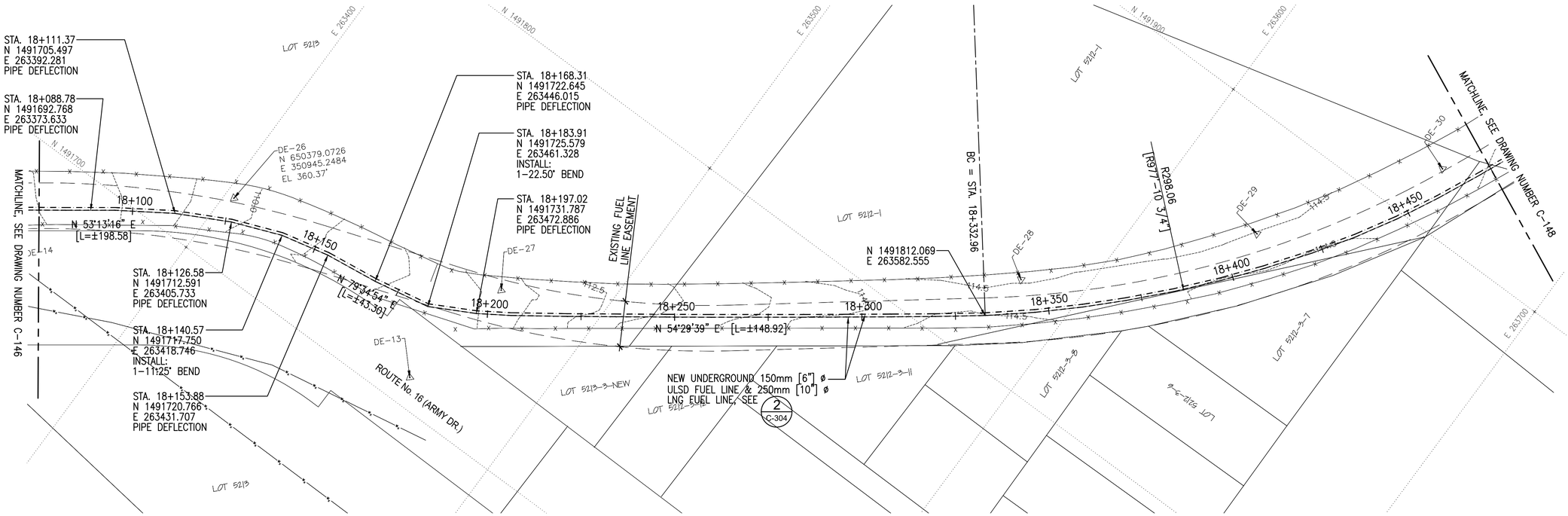
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

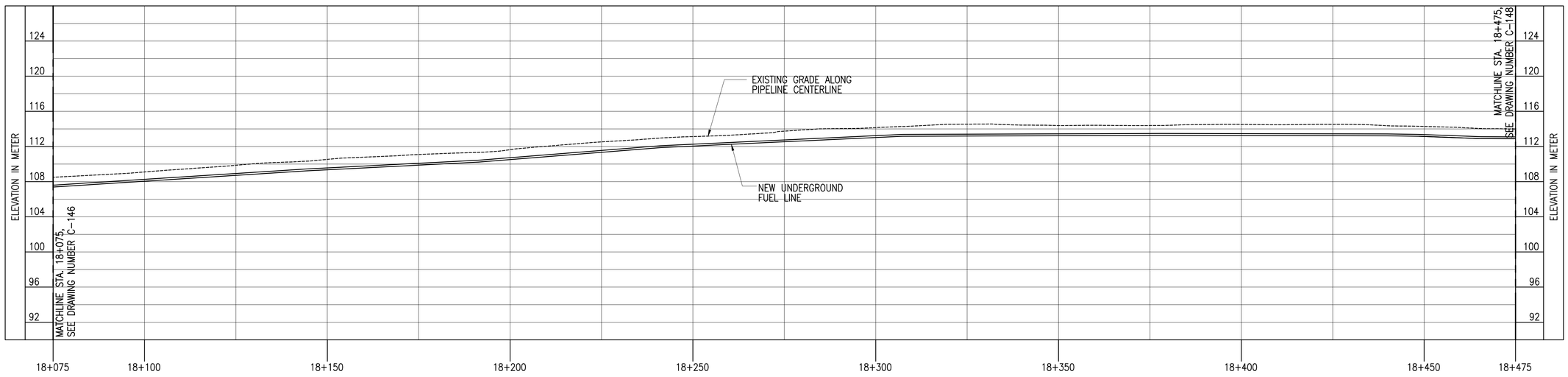
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	77 OF 134	C-146	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
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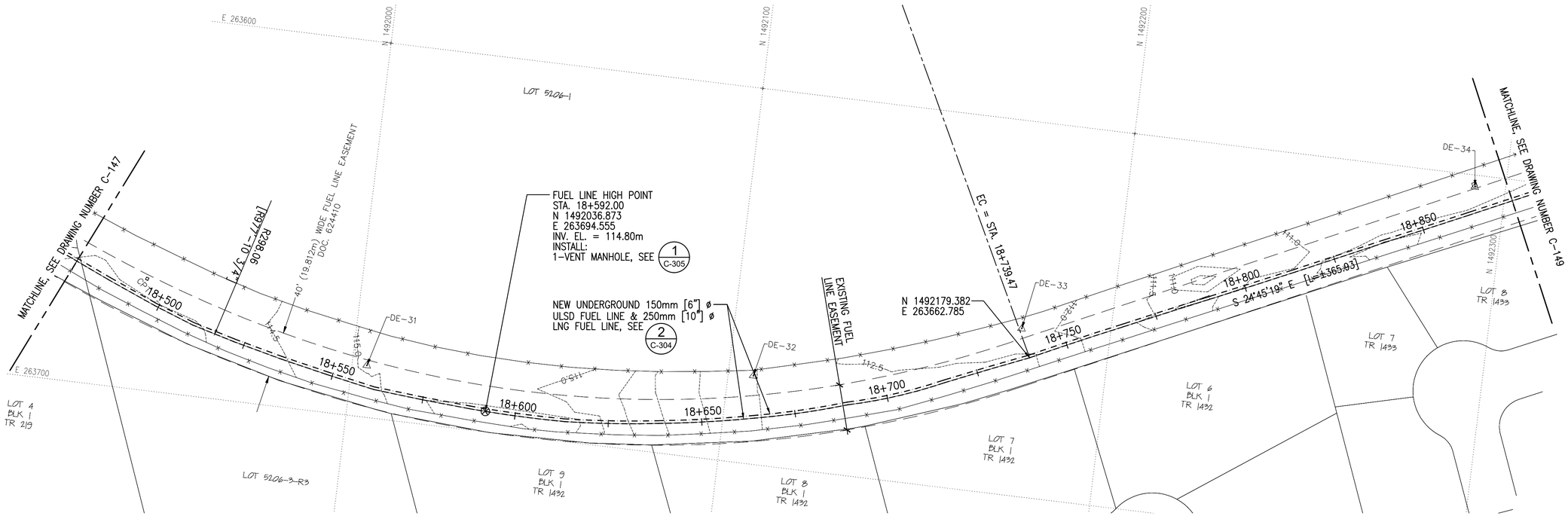
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

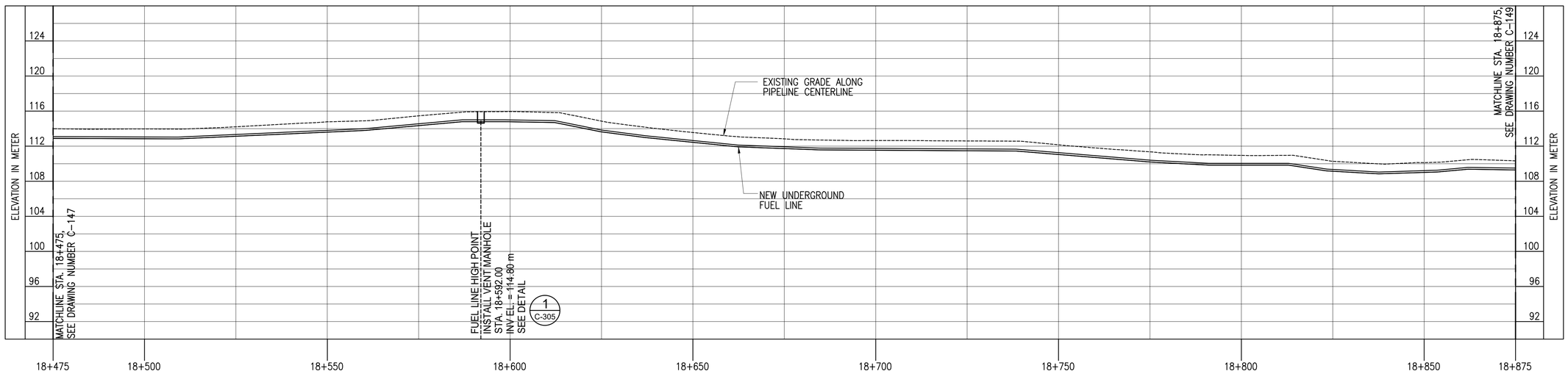
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	78 OF 134	C-147	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
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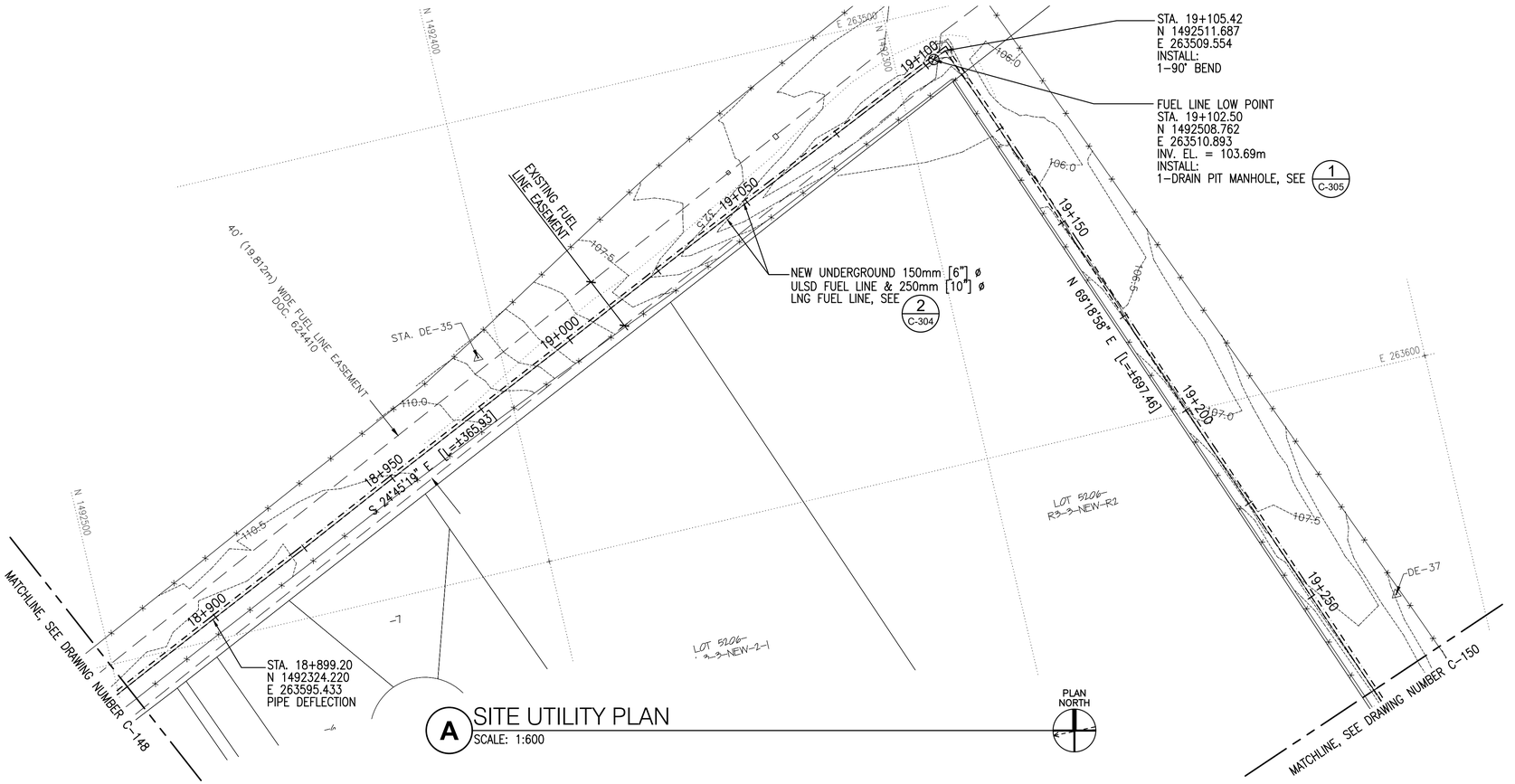
Sub Consultant

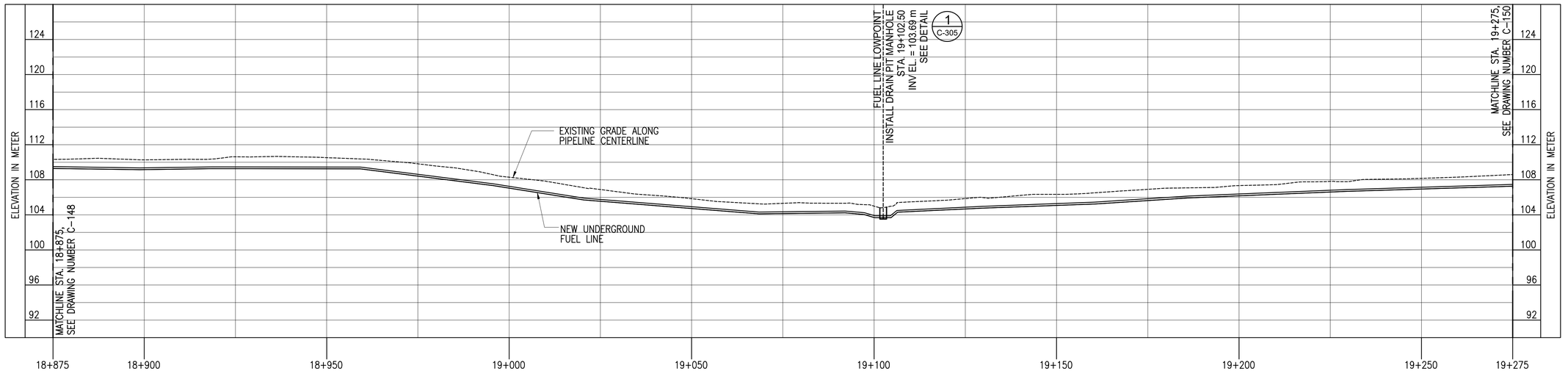
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	79 OF 134	C-148	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
Exp. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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GUAM POWER AUTHORITY
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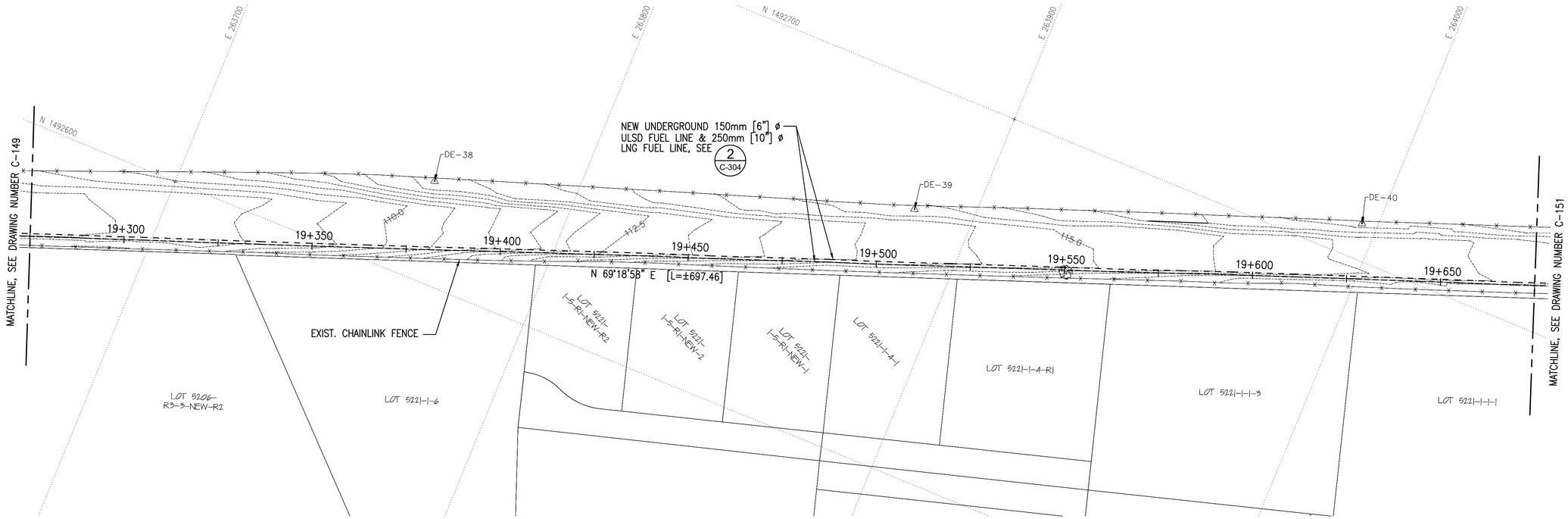
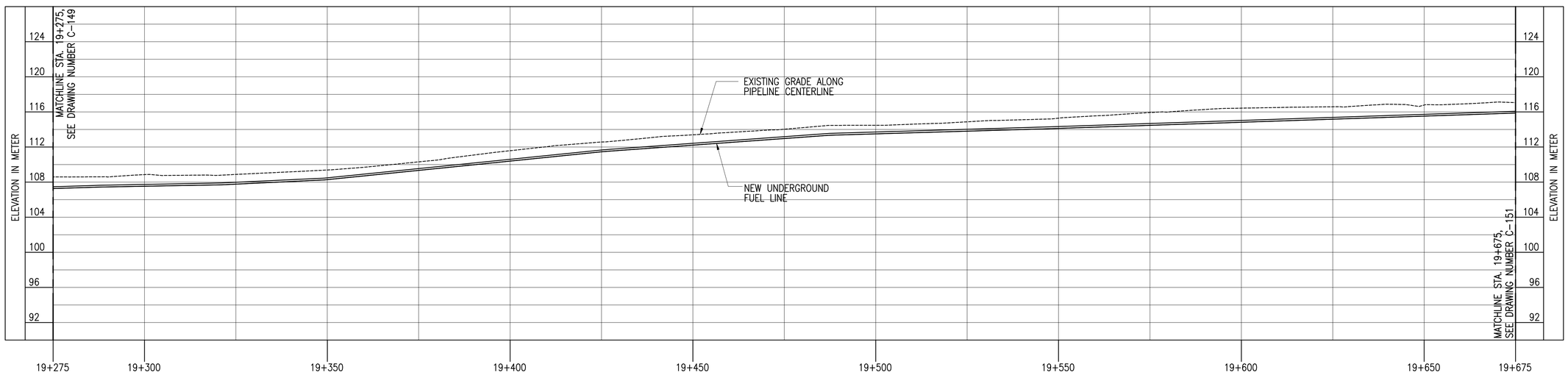
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	80 OF 134	C-149	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

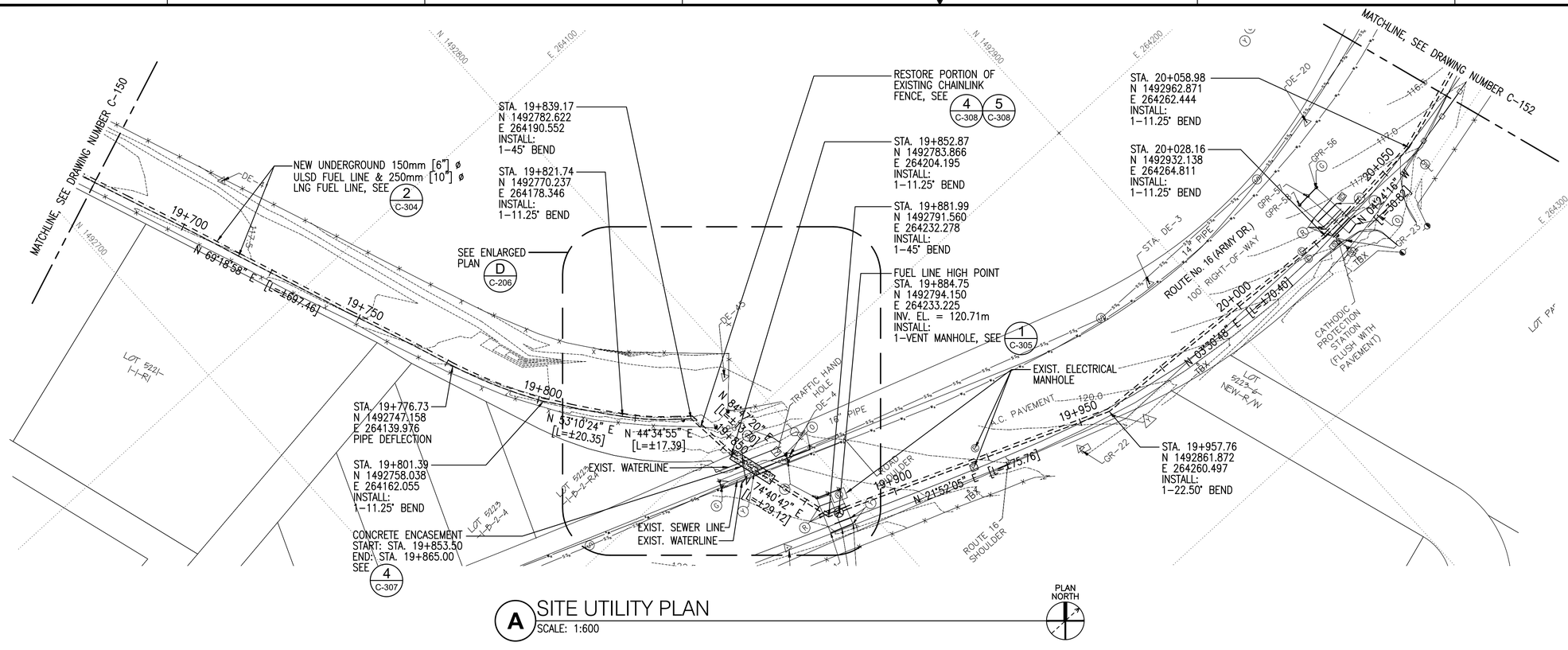
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

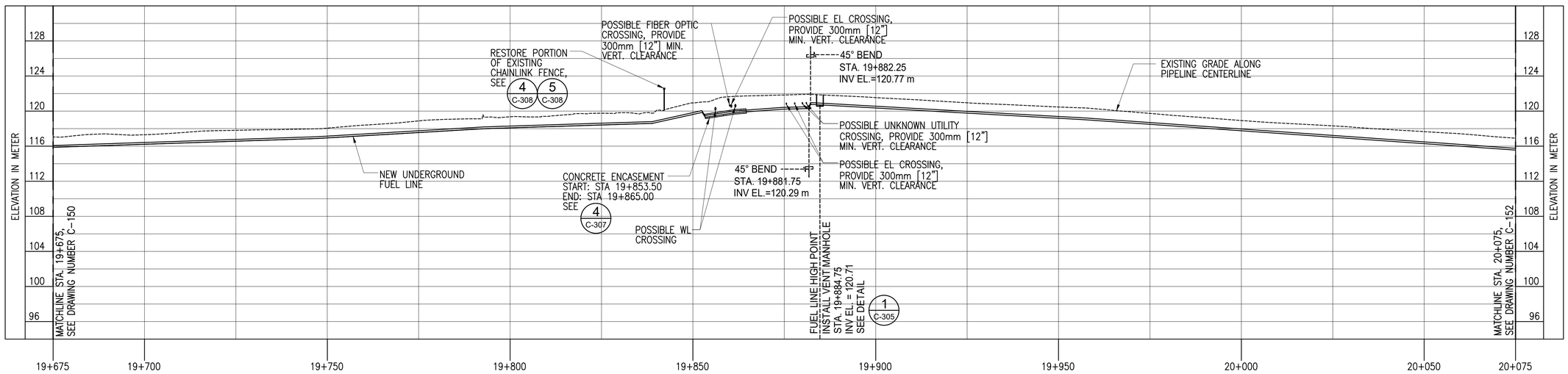
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	81 OF 134	C-150	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_x EXISTING SEWER LINE (DATA PROVIDED BY GWA)
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

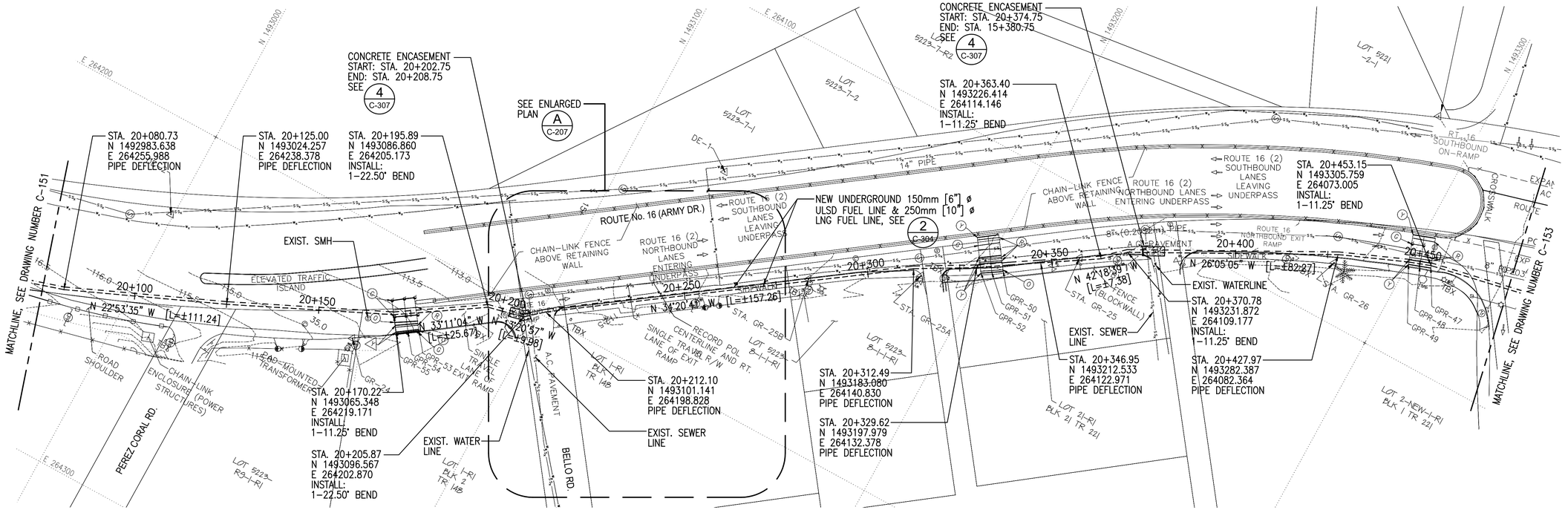
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	82 OF 134	C-151	–

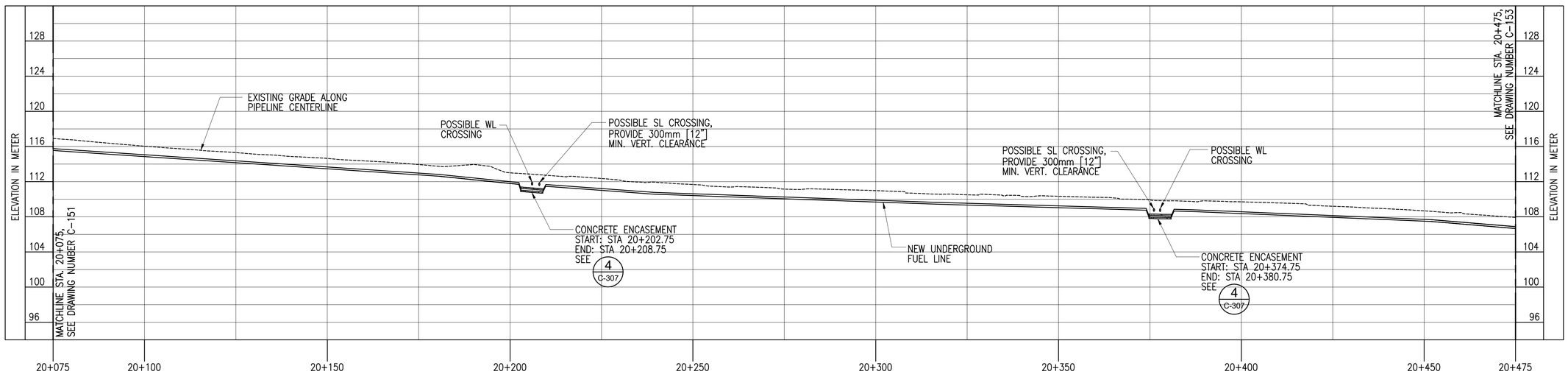
22" x 34" (559 x 864mm)



A SITE UTILITY PLAN

SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE

1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project

PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner

GUAM UKUDU POWER

Owner's Consultant

EPC Contractor

DOOSAN

EPC Contractor's Consultant

N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

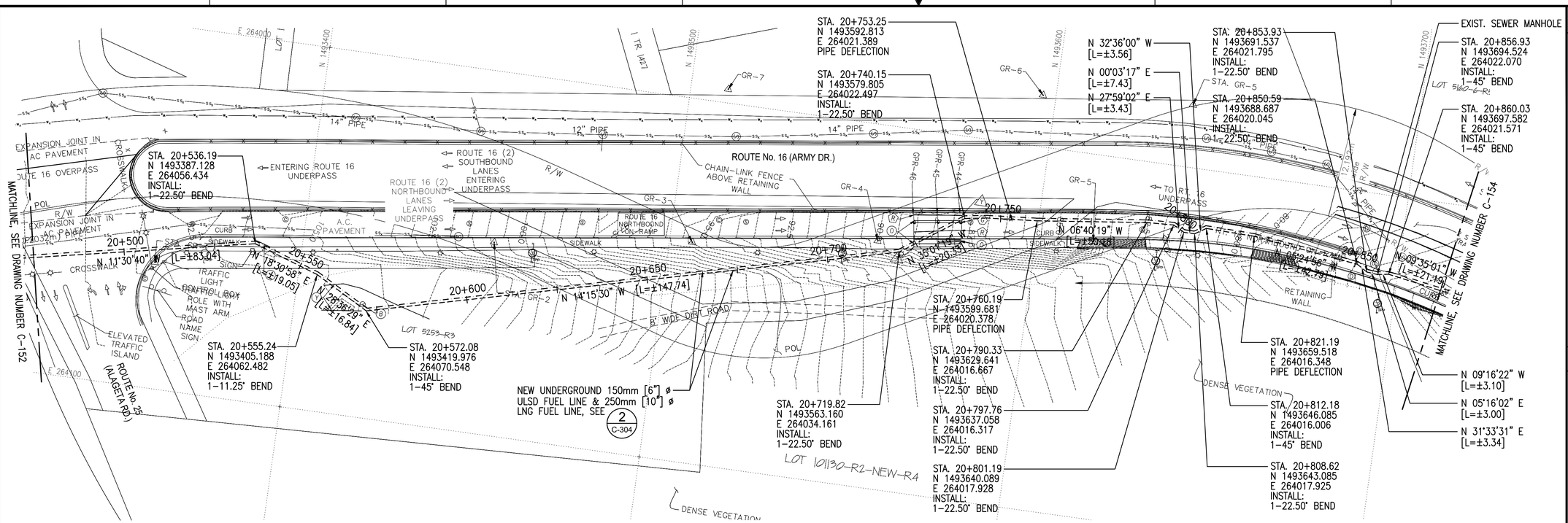
Sub Consultant

DRAWING TITLE

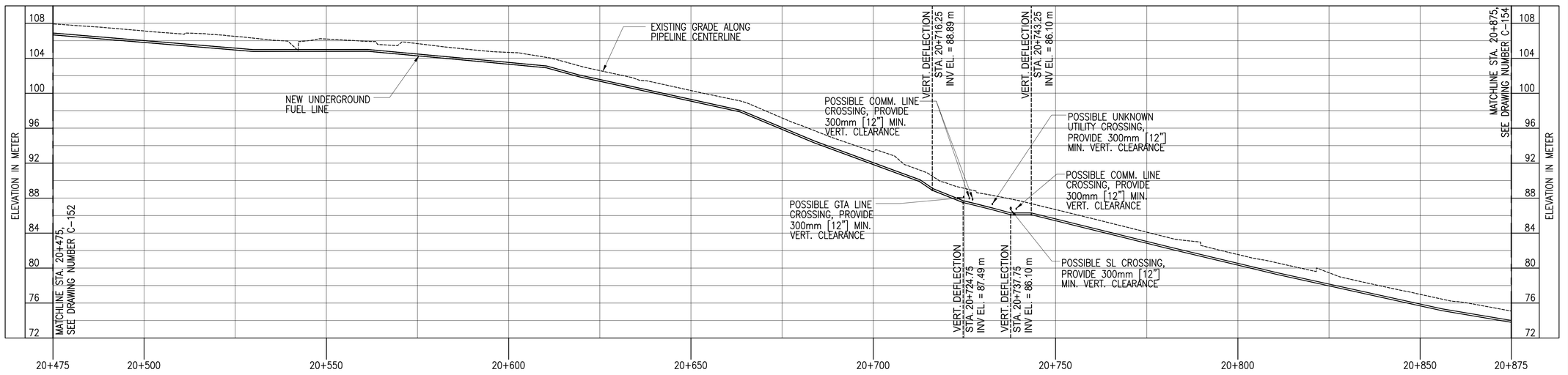
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	83 OF 134	C-152	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) Exp. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
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- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932–2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

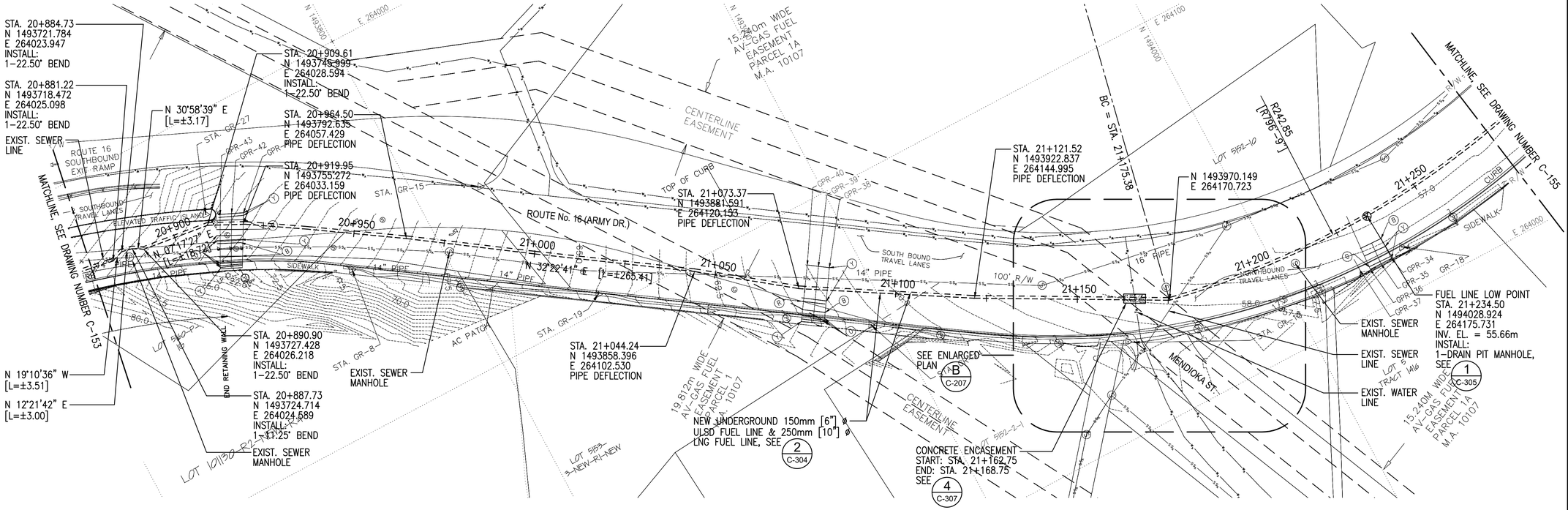
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646–0947/48 Fax: 646–0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

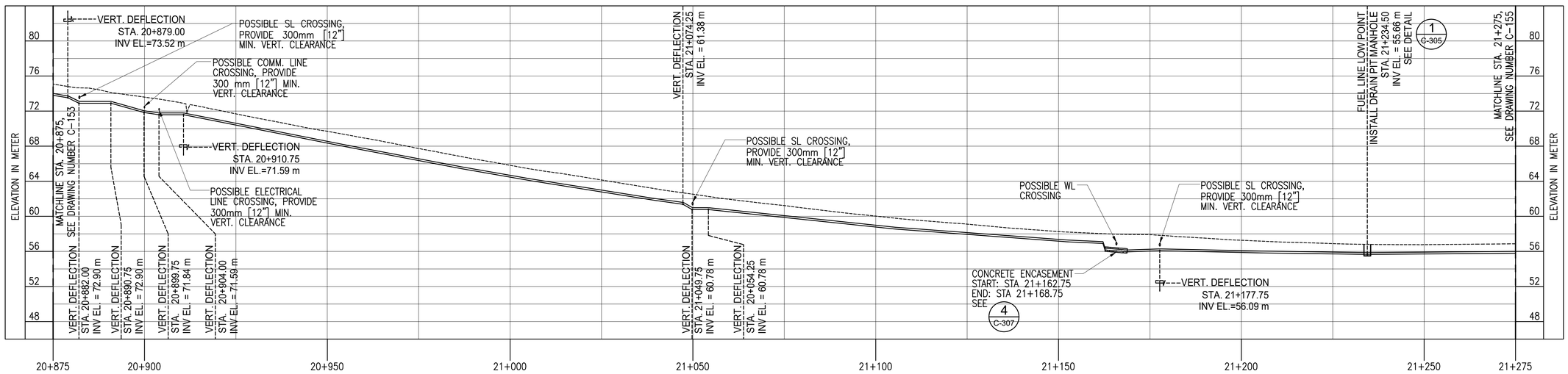
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	84 OF 134	C-153	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]Ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- $S S_x$ EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_x EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

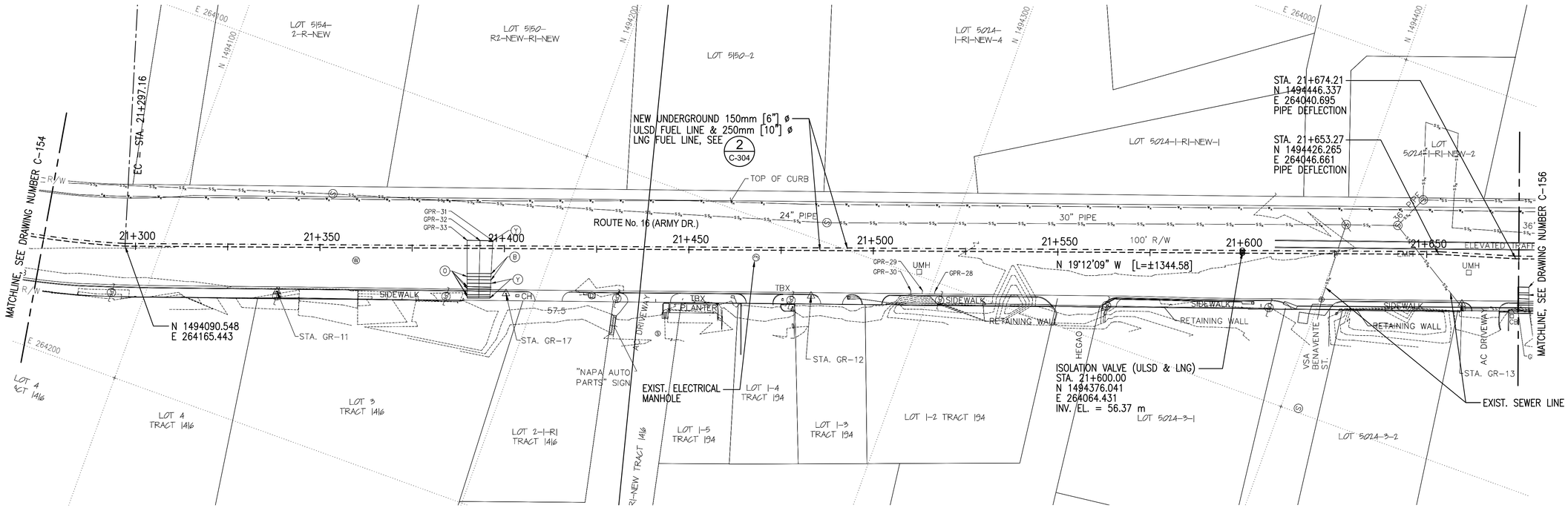
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

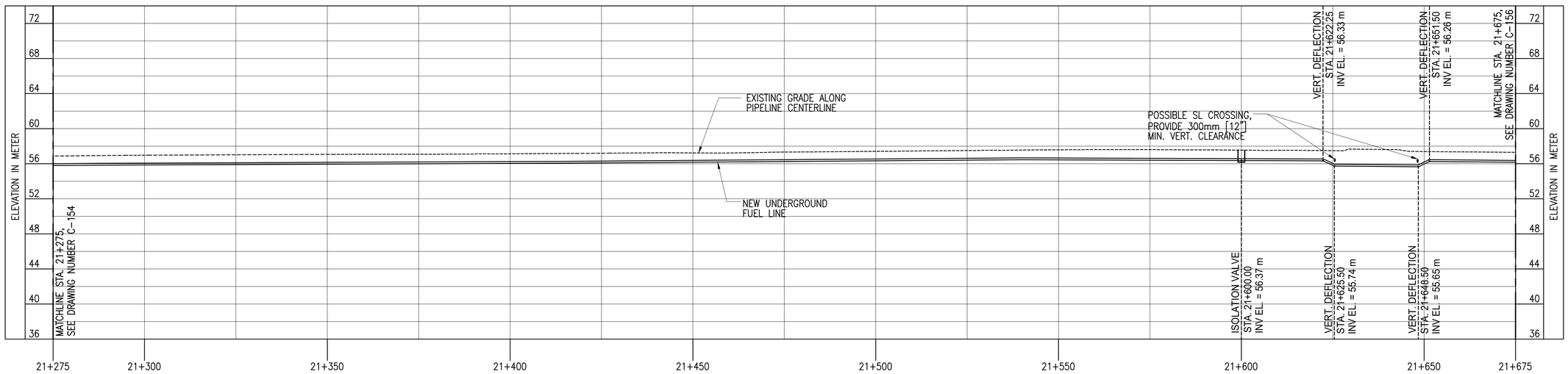
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	85 OF 134	C-154	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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Tel. 646–0947/48 Fax: 646–0901
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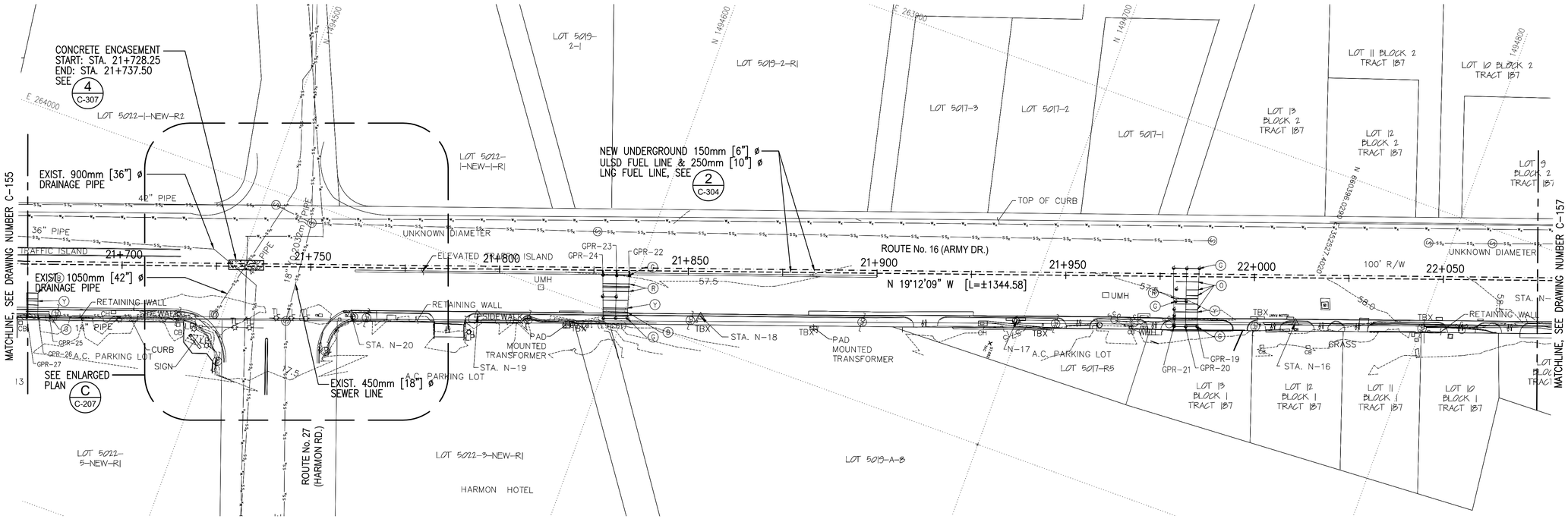
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

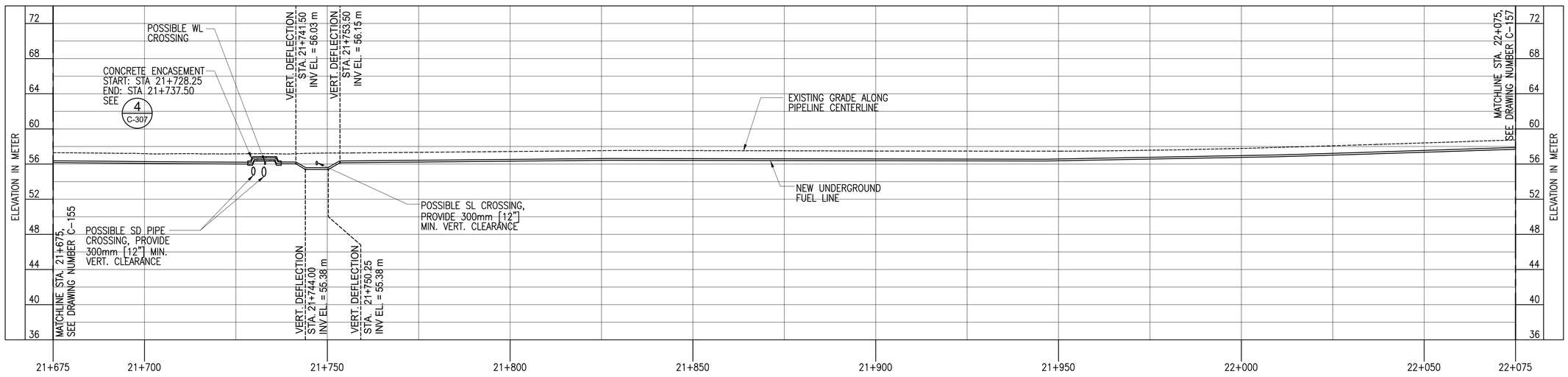
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	86 OF 134	C-155	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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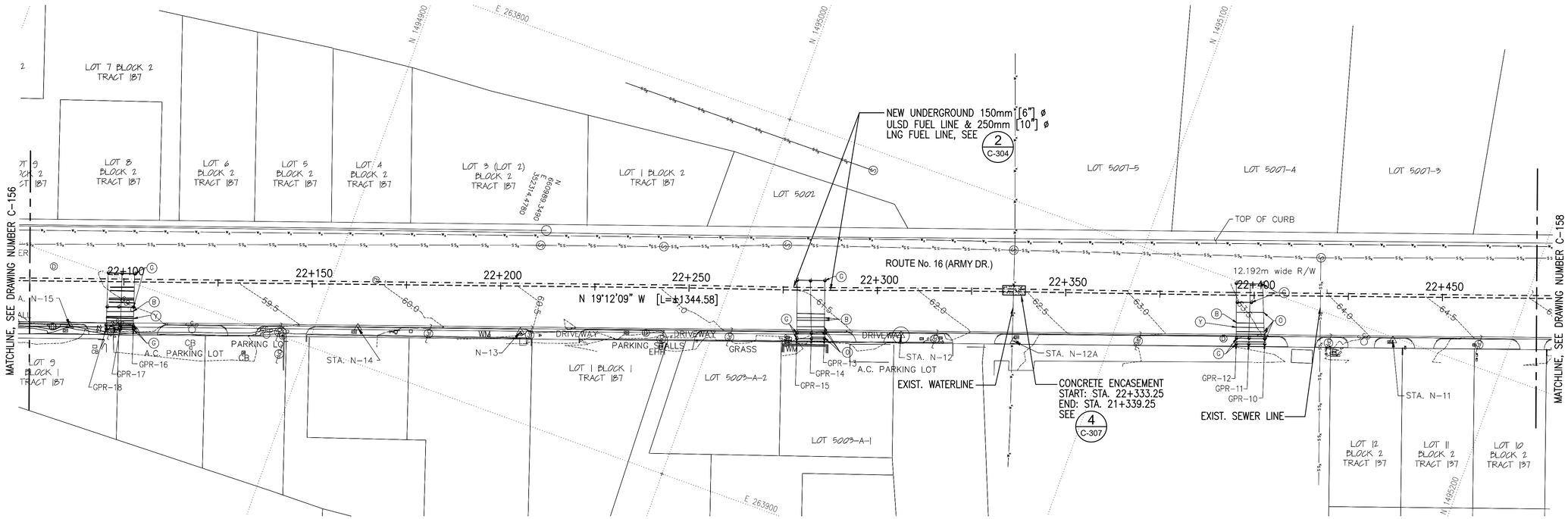
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

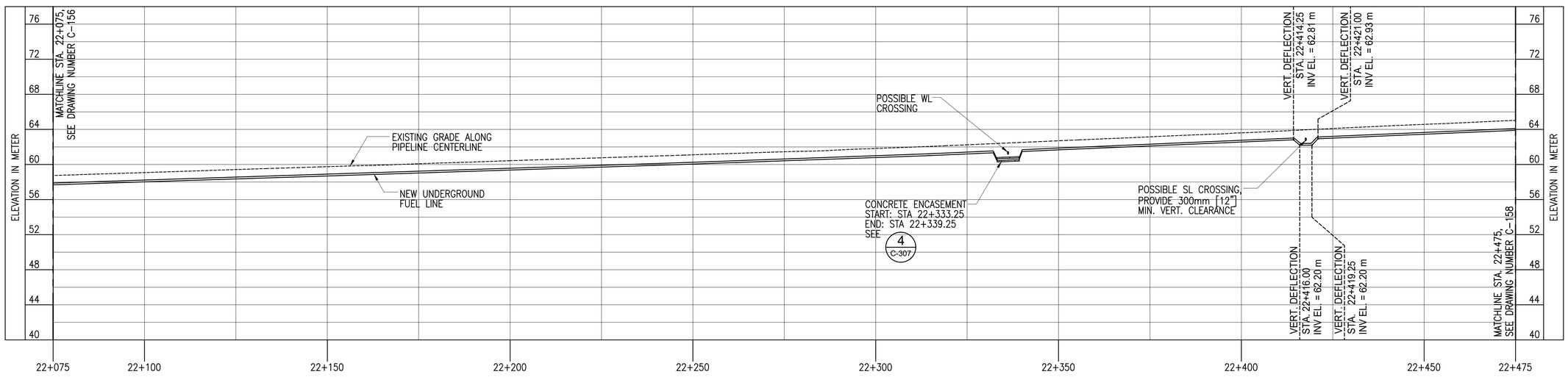
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	87 OF 134	C-156	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

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- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
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- W_X EXISTING WATER LINE (DATA PROVIDED BY GWA)

NOTE:

1. PROVIDE SILT FENCE ALONG THE FUEL LINE TRENCH DURING CONSTRUCTION. REFER TO DETAILS 1, 4, 5 IN DRAWING NO. C-302 FOR THE SILT FENCE DETAILS. FIELD VERIFY ACTUAL SLOPE OF THE EXISTING GROUND SURFACE AND PLACE SILT FENCE AGAINST THE NATURAL FLOW OF WATER, ACCORDINGLY. FOLLOW ALL APPROVED ENVIRONMENT PROTECTION PLAN (EPP) AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
2. ALL PIPE DEFLECTIONS AND BENDS SHALL BE TYPICAL TO BOTH ULSD AND LNG PIPELINES.

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

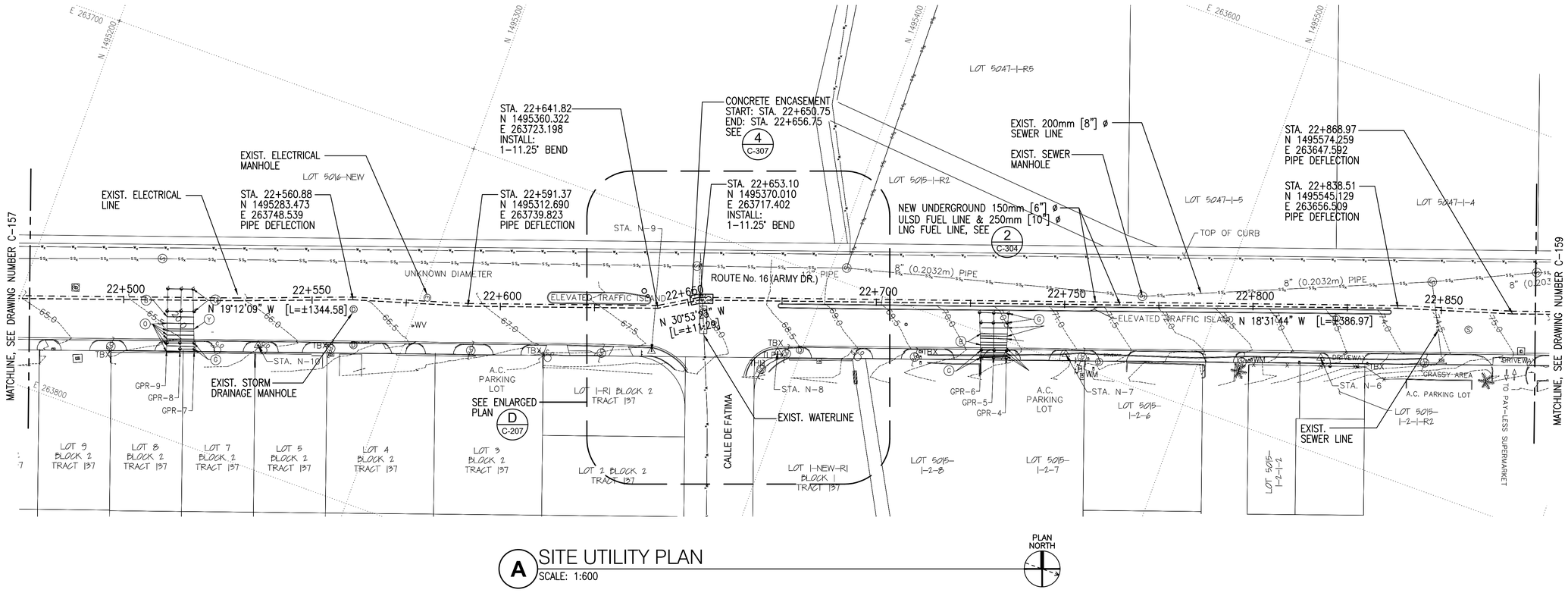
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

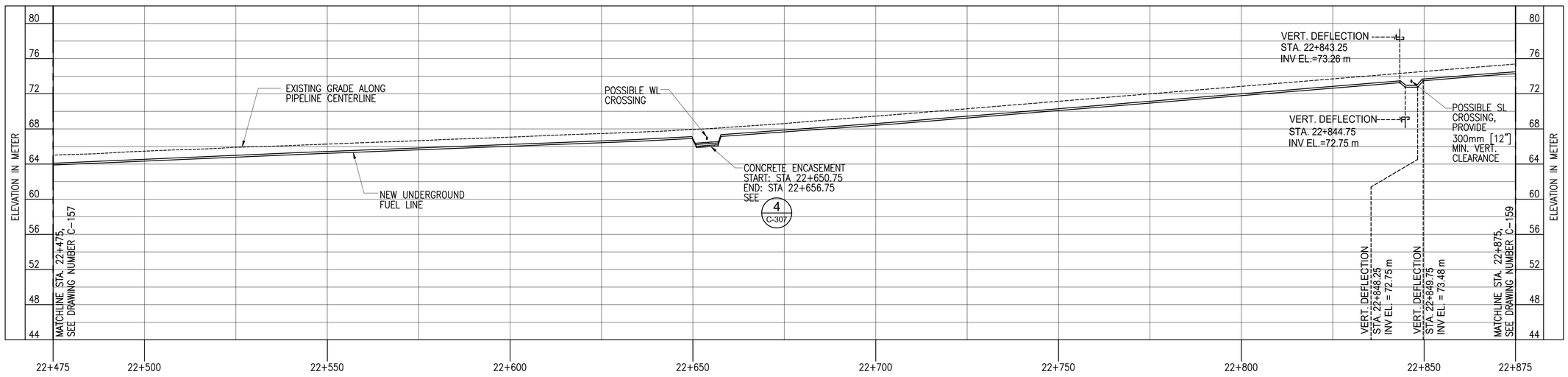
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	88 OF 134	C-157	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
- ISOLATION VALVE LOCATION
- EXISTING GUARD RAIL
- SS_X EXISTING SEWER LINE (DATA PROVIDED BY GWA)
- W_X EXISTING WATER LINE (DATA PROVIDED BY GWA)

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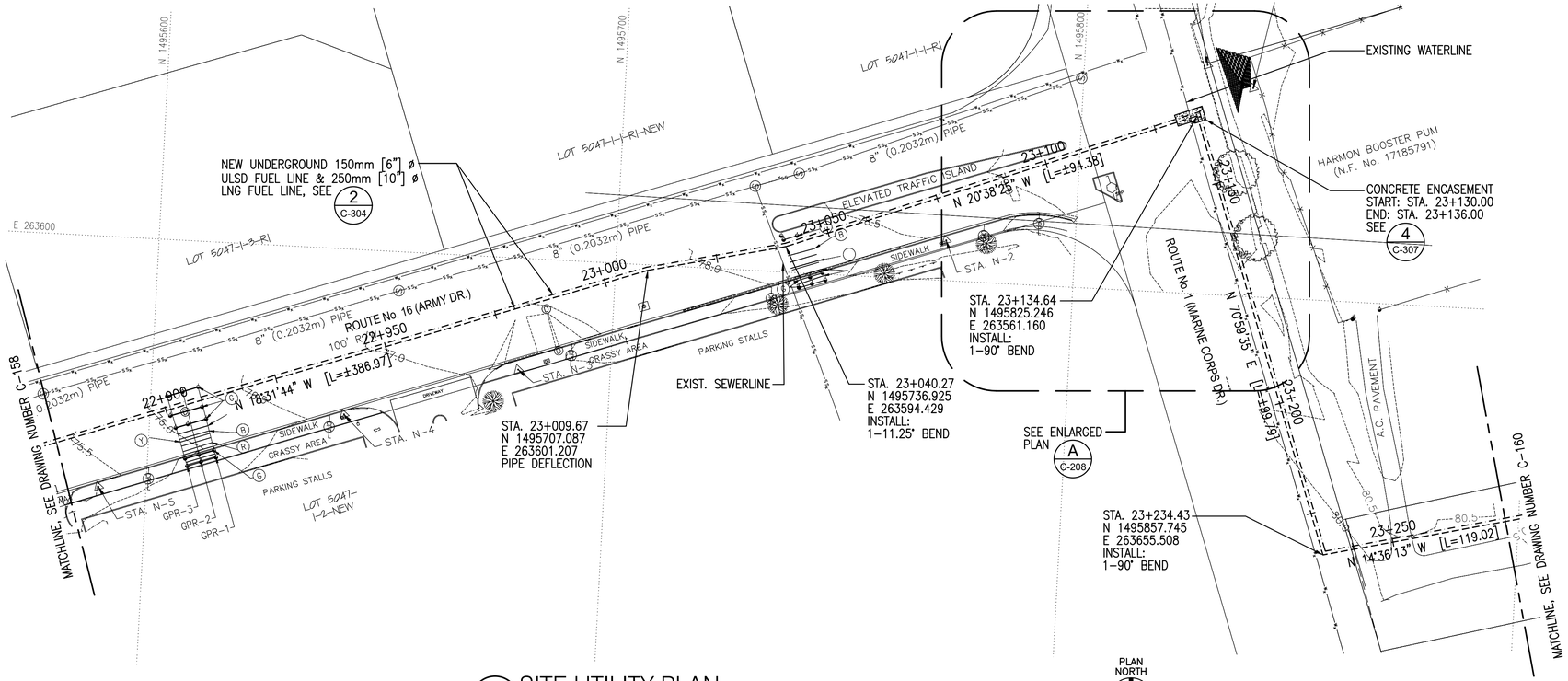
Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

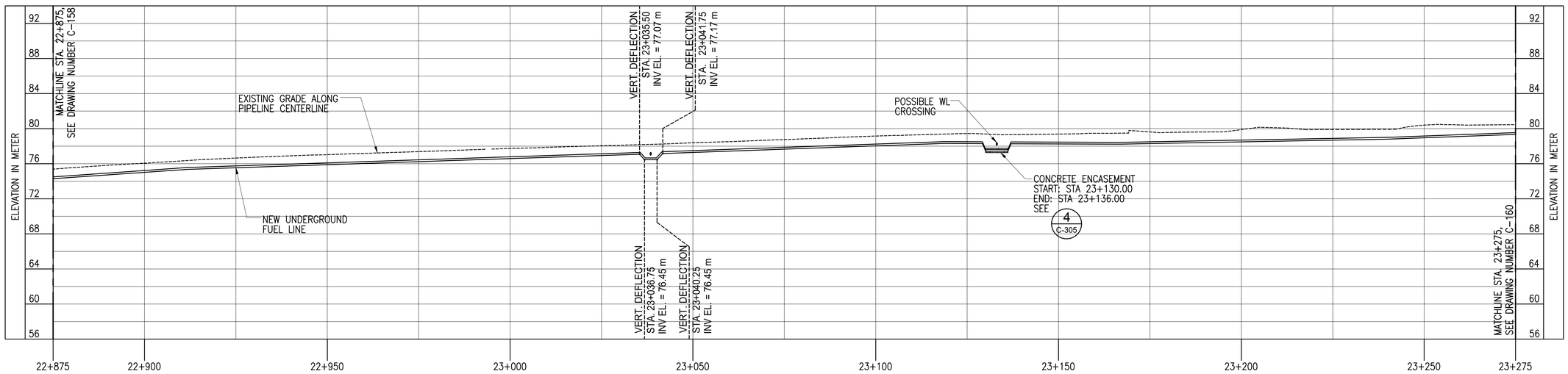
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	89 OF 134	C-158	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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- BULL CART TRAIL
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- HIGH / LOW POINT LOCATION
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
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Owner's Consultant

EPC Contractor
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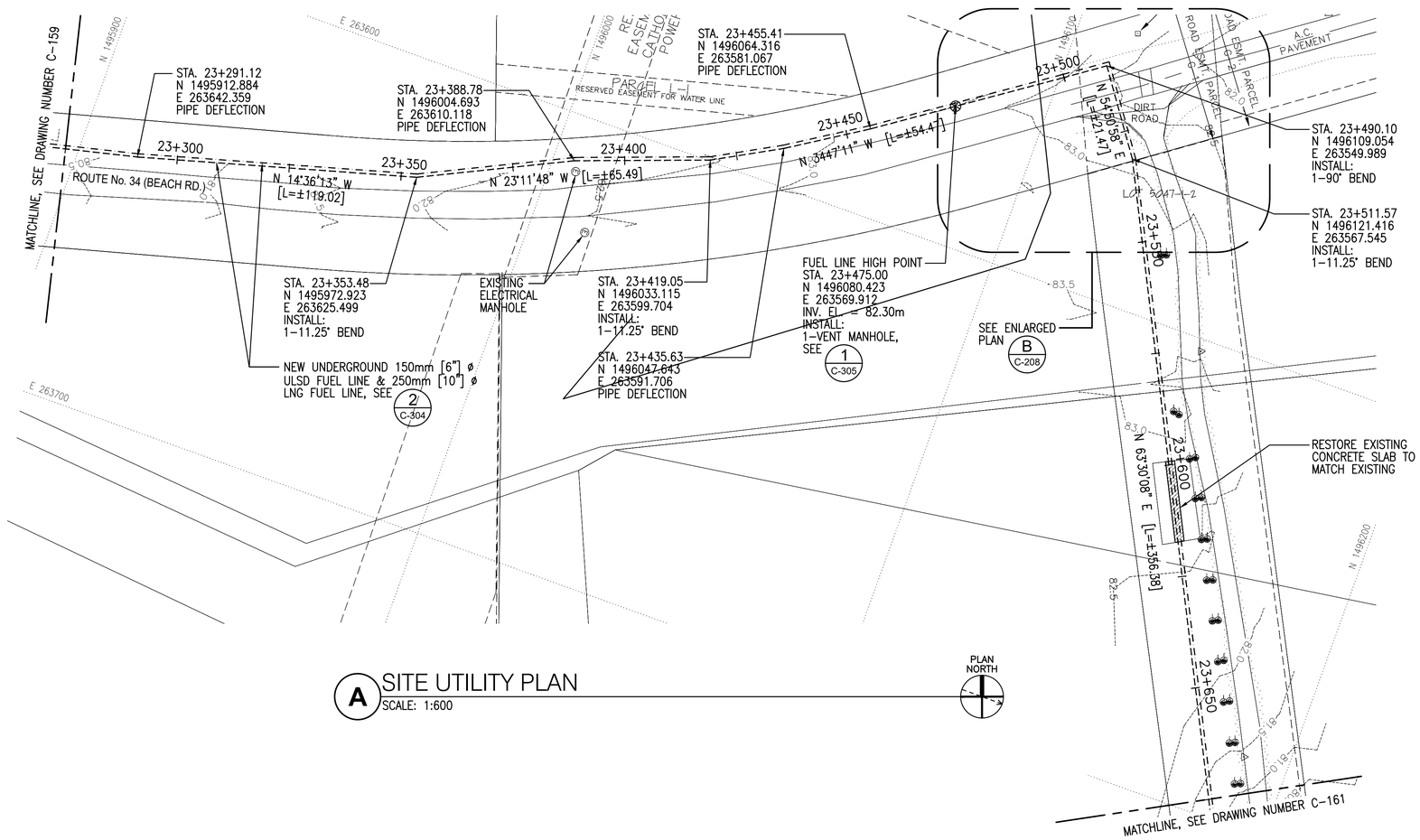
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

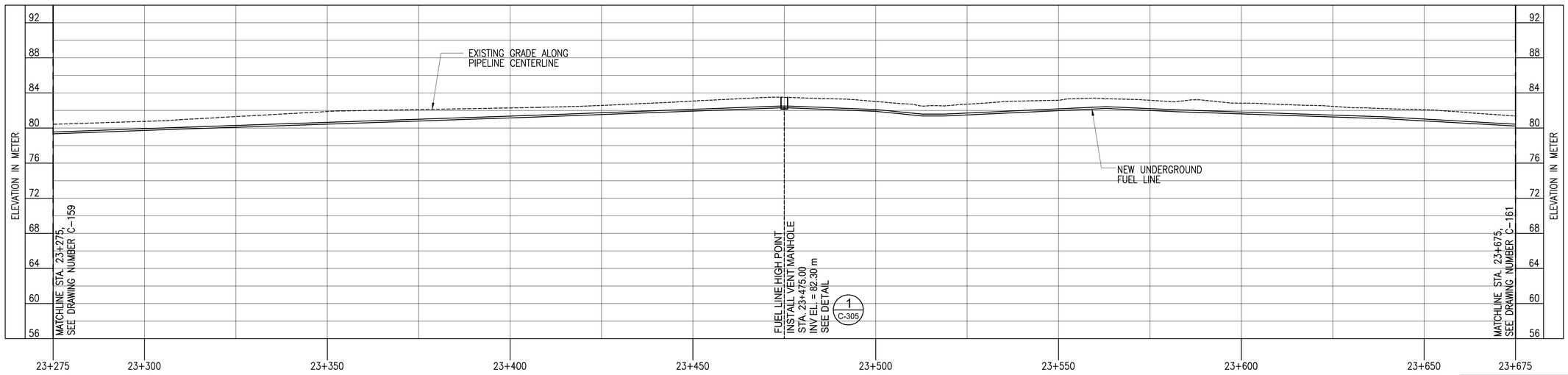
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	90 OF 134	C-159	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600

PLAN NORTH



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
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Owner's Consultant

EPC Contractor
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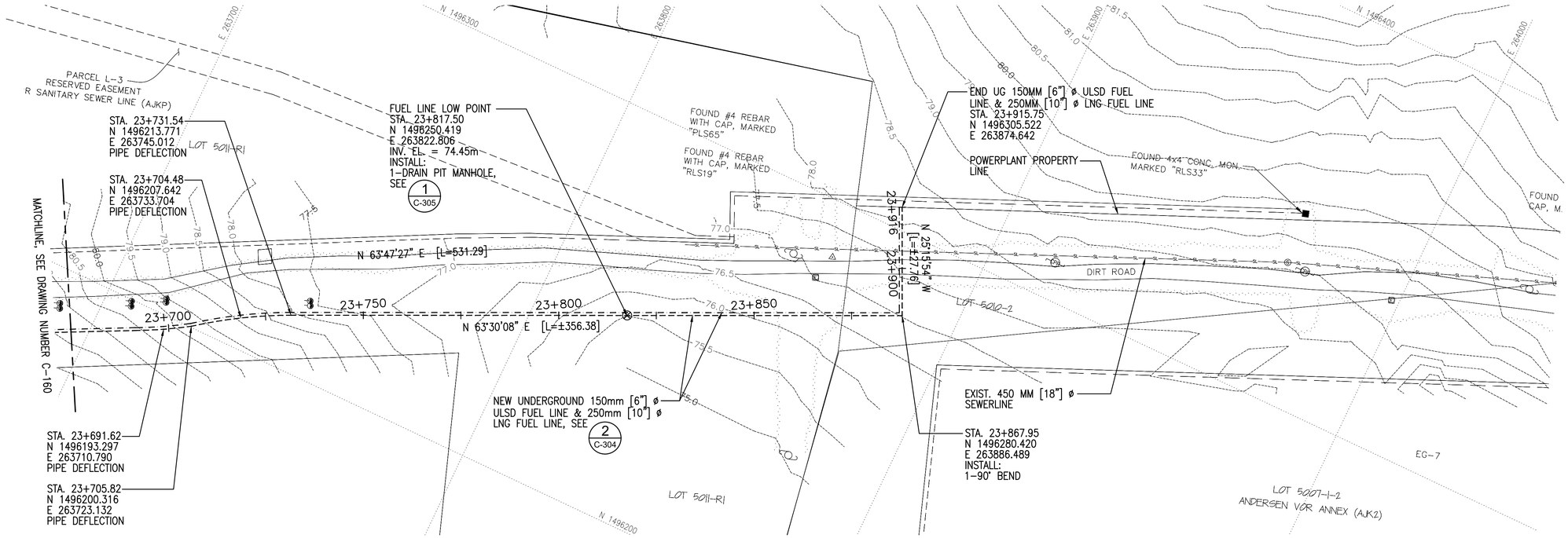
Sub Consultant

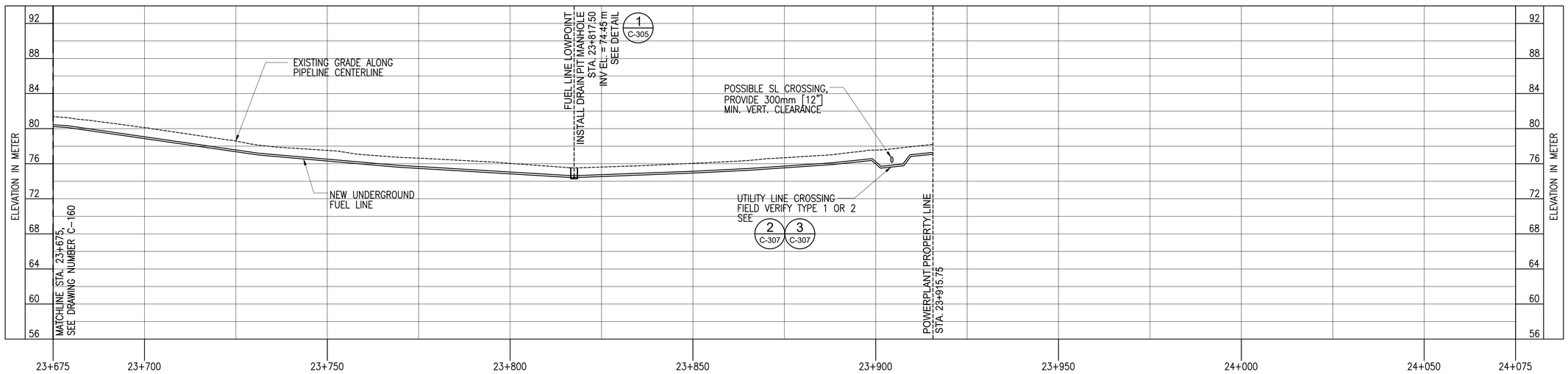
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	91 OF 134	C-160	–

22" x 34" (559 x 864mm)



A SITE UTILITY PLAN
SCALE: 1:600



1 SITE UTILITY PROFILE
1:600 (HOR.) ; 1:250 (VER.)

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 5 10 15 20 25m
SCALE: 1:250

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

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- WETLAND
- HIGH / LOW POINT LOCATION
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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
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Tel. 646-0947/48 Fax: 646-0901
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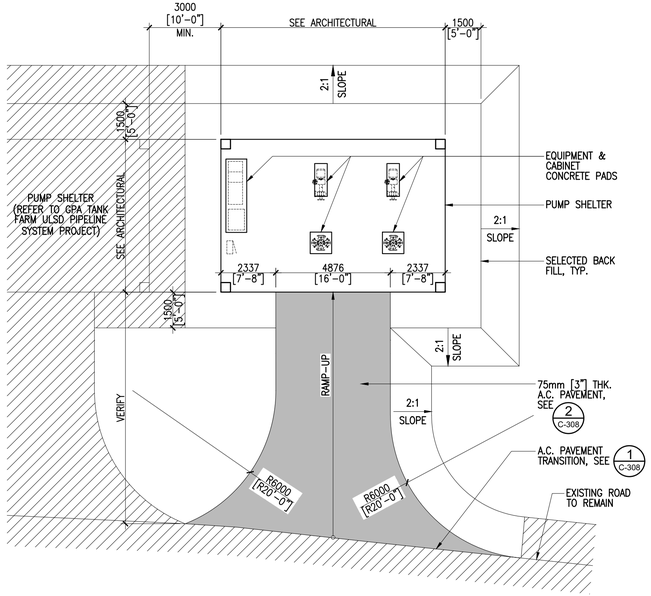
Sub Consultant

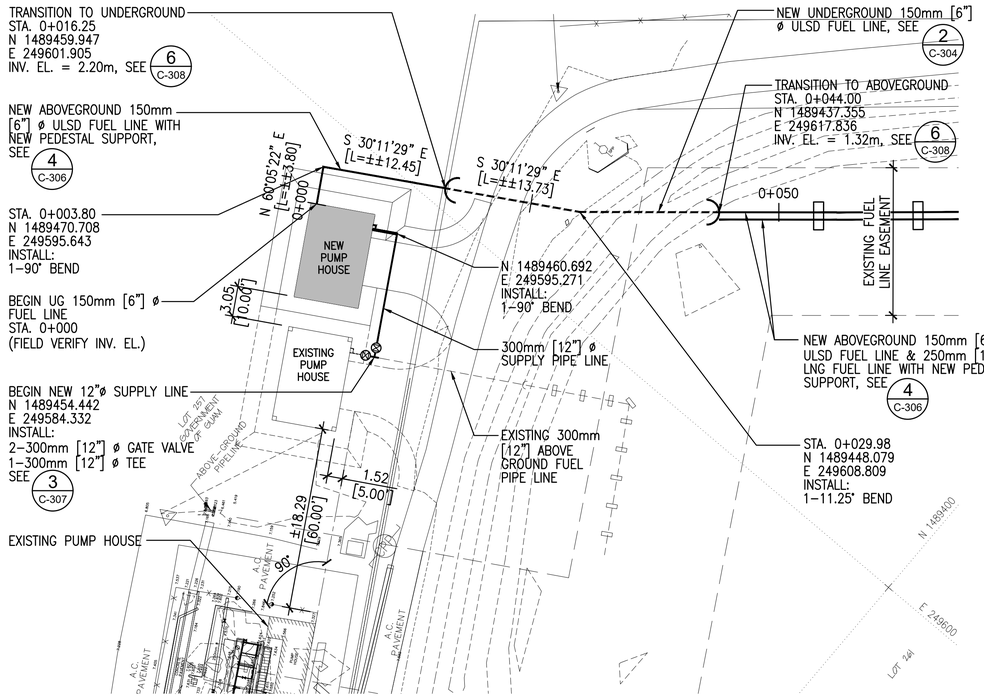
DRAWING TITLE
SITE UTILITY PLAN
SITE UTILITY PROFILE

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	92 OF 134	C-161	–

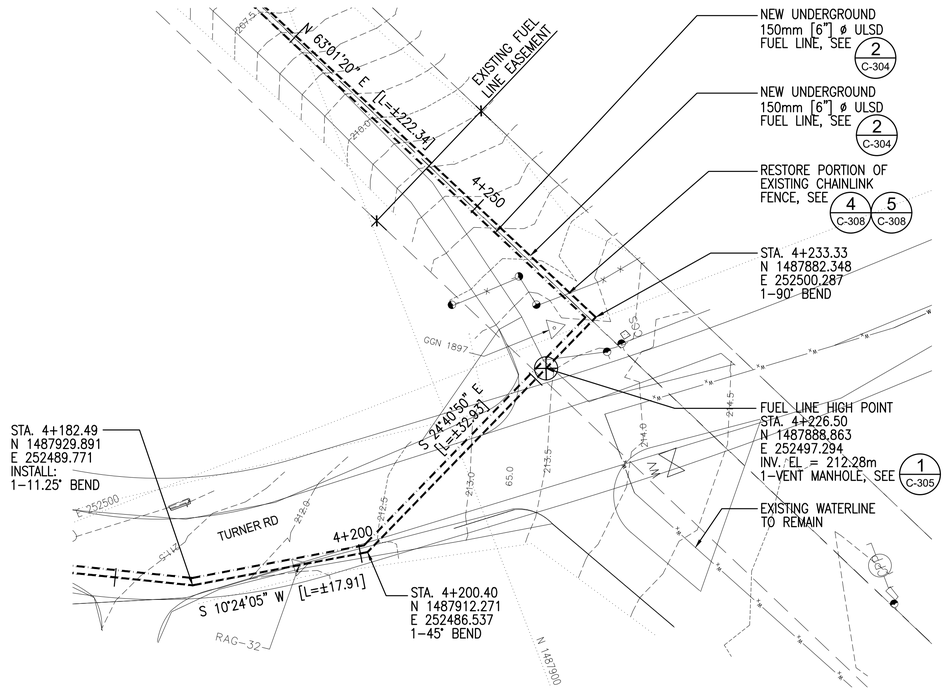
22" x 34" (559 x 864mm)



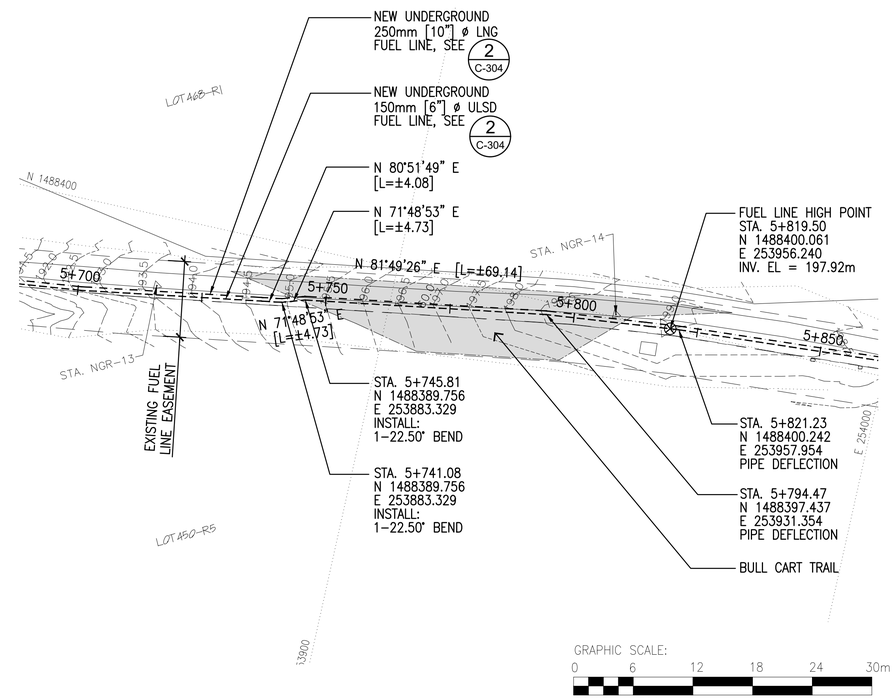
A PUMP HOUSE SITE PLAN
N.T.S



B SITE UTILITY ENLARGED PLAN
SCALE: 1:300



C SITE UTILITY ENLARGED PLAN
SCALE: 1:300



D SITE UTILITY ENLARGED PLAN
SCALE: 1:600

GRAPHIC SCALE:
0 6 12 18 24 30m
SCALE: 1:300
0 12 24 36 48 60m
SCALE: 1:600

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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LEGEND:

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- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION

NOTE:

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

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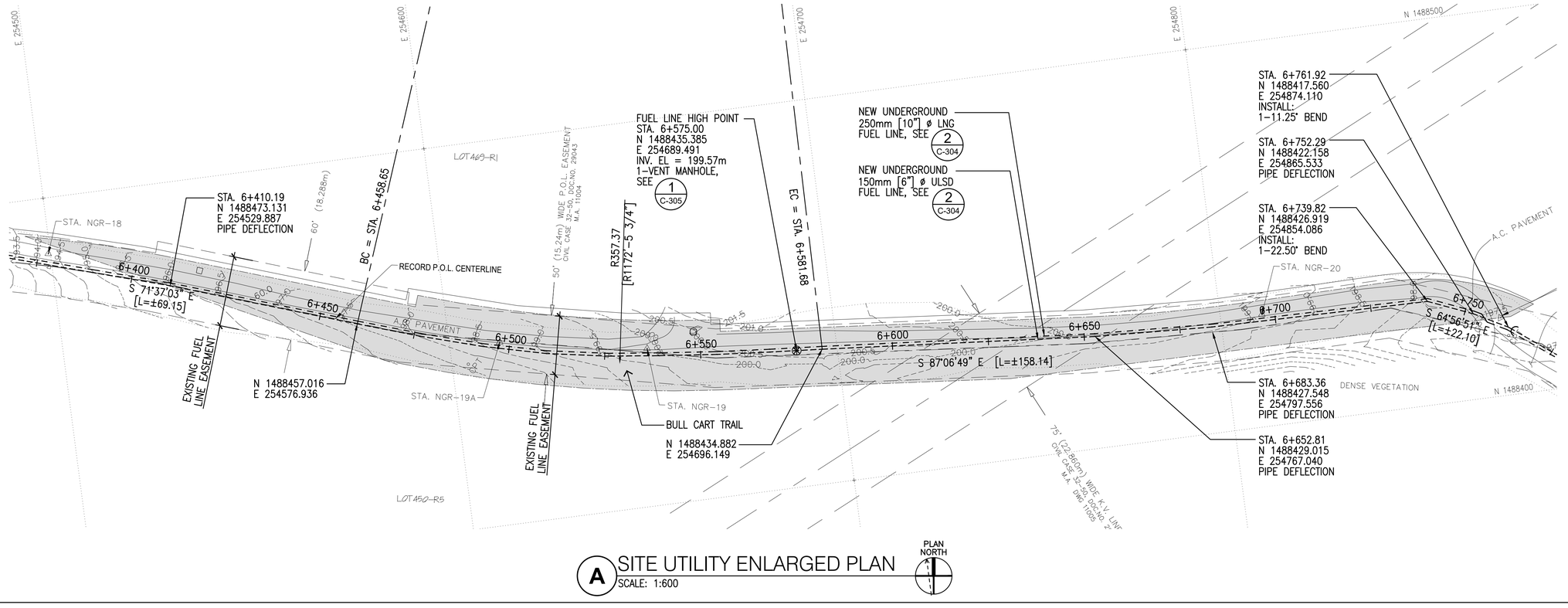
Sub Consultant

DRAWING TITLE
SITE UTILITY ENLARGED PLAN

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	93 OF 134	C-201	–

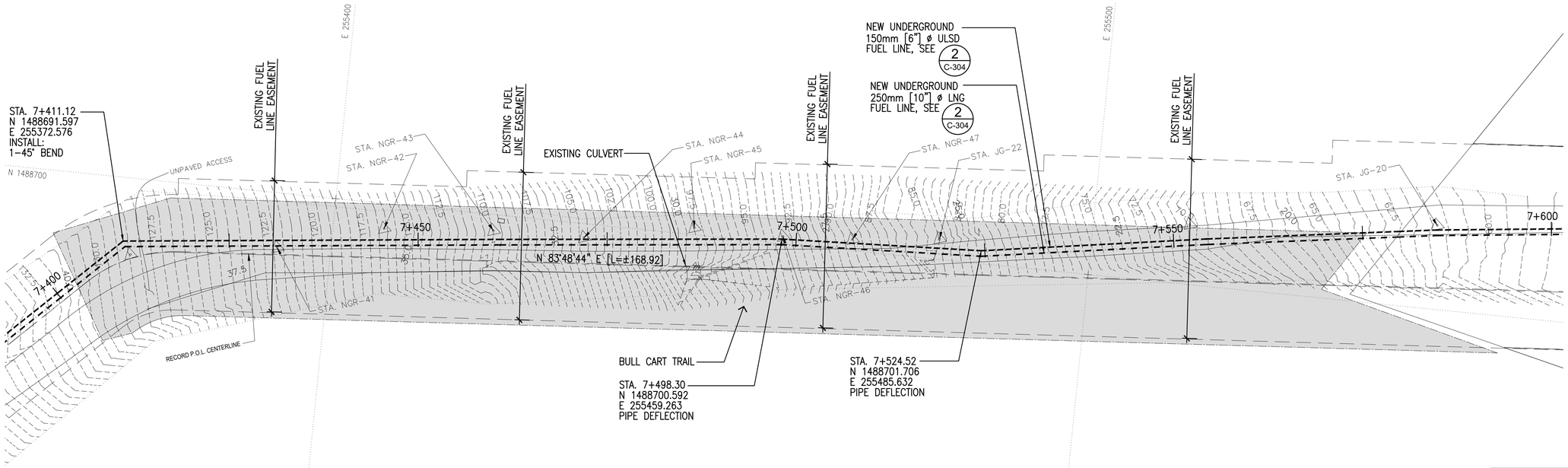
22" x 34" (559 x 864mm)



A SITE UTILITY ENLARGED PLAN

SCALE: 1:600

PLAN NORTH



B SITE UTILITY ENLARGED PLAN

SCALE: 1:300

PLAN NORTH

GRAPHIC SCALE:
0 6 12 18 24 30m
SCALE: 1:300
0 12 24 36 48 60m
SCALE: 1:600

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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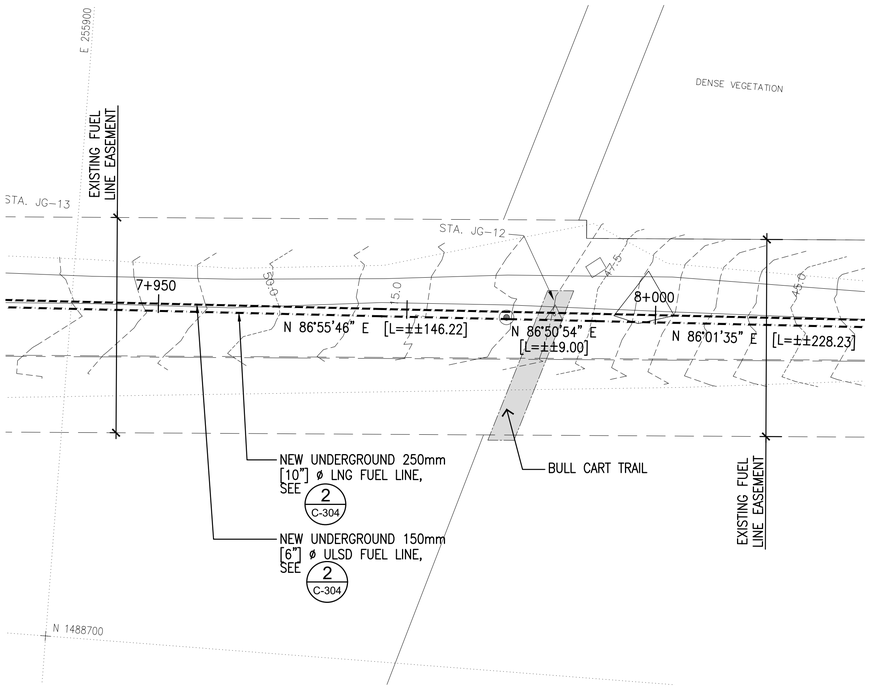
Sub Consultant

DRAWING TITLE

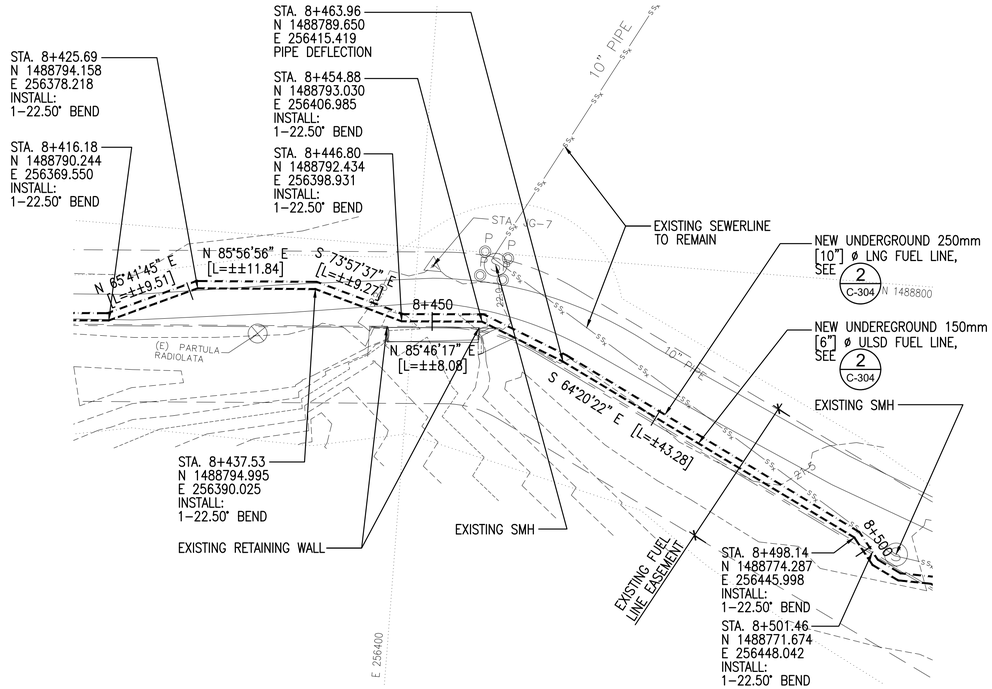
SITE UTILITY ENLARGED PLAN

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	94 OF 134	C-202	–

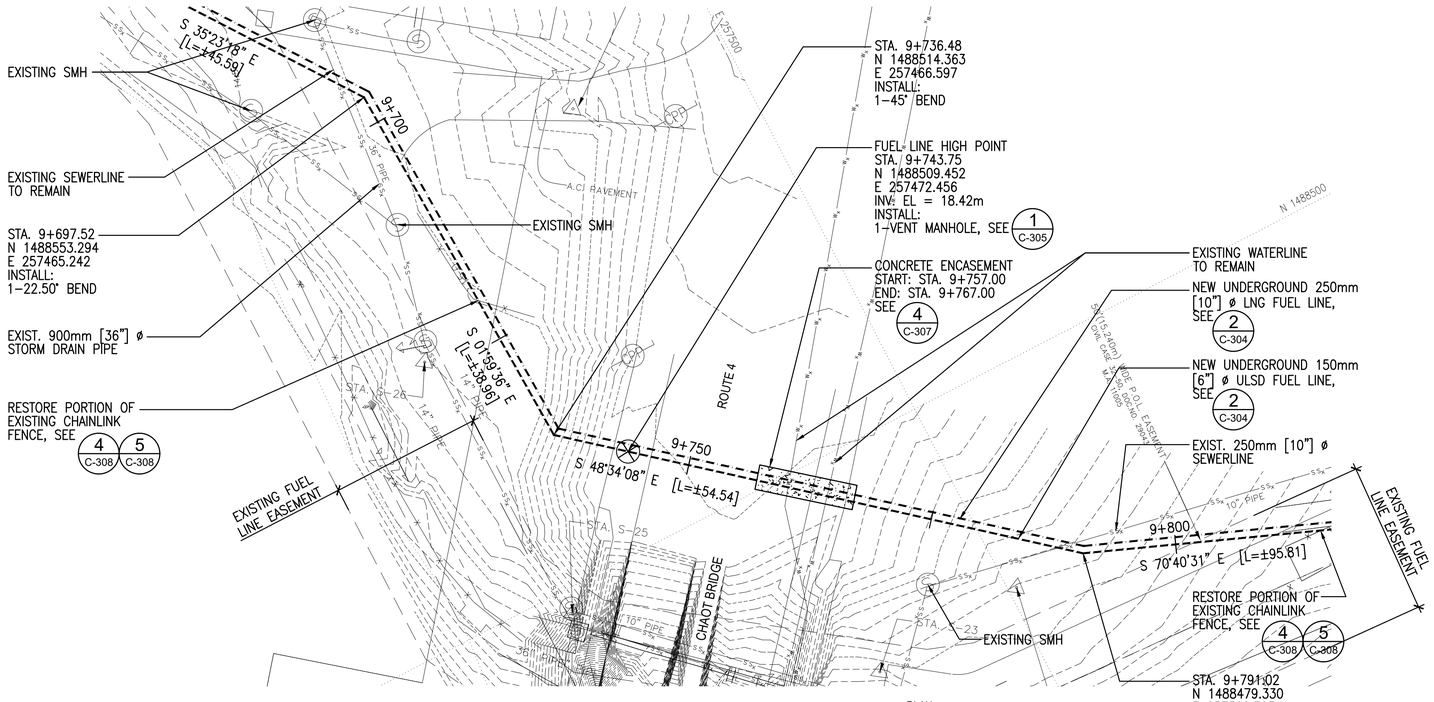
22" x 34" (559 x 864mm)



A SITE UTILITY ENLARGED PLAN
SCALE: 1:300



B SITE UTILITY ENLARGED PLAN
SCALE: 1:300



C SITE UTILITY ENLARGED PLAN
SCALE: 1:300

GRAPHIC SCALE:
0 6 12 18 24 30m
SCALE: 1:300

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
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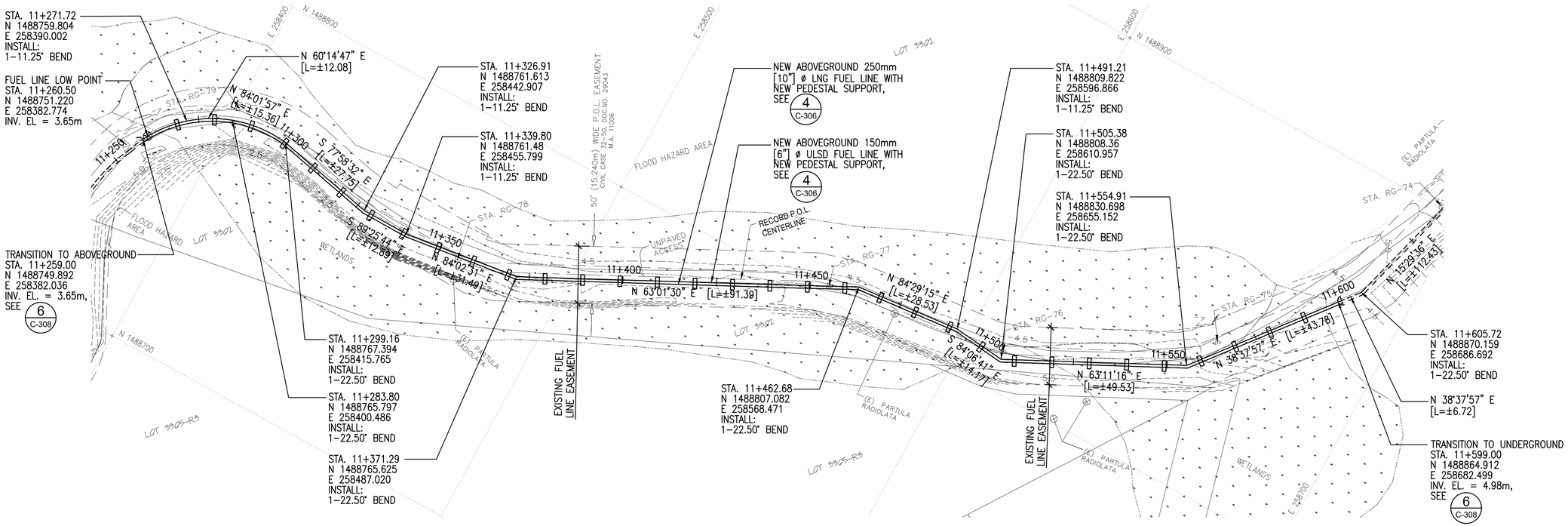
Sub Consultant

DRAWING TITLE
SITE UTILITY ENLARGED PLAN

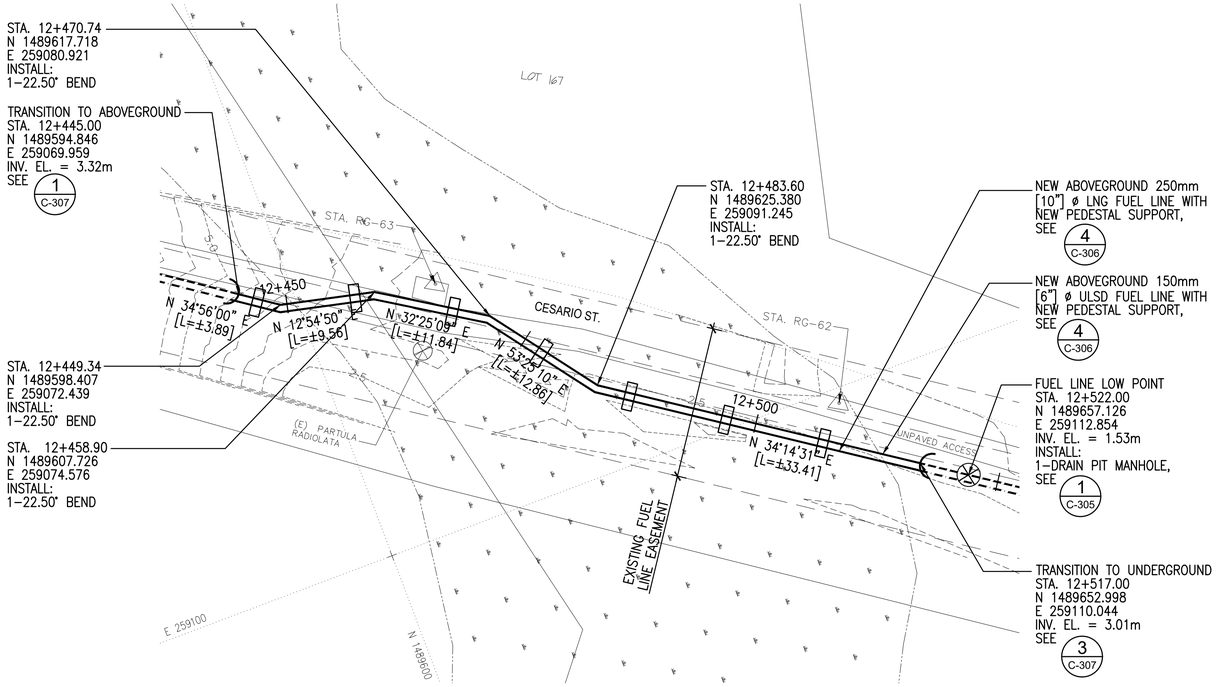
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	95 OF 134	C-203	–

22" x 34" (559 x 864mm)



A SITE UTILITY ENLARGED PLAN
SCALE: 1:600

PLAN NORTH



B SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
- 150mm [6"]ø ULSD FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL ABOVEGROUND PIPELINE
- 250mm [10"]ø LNG FUEL UNDERGROUND PIPELINE
- BULL CART TRAIL
- WETLAND
- HIGH / LOW POINT LOCATION

NOTE:

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GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 6 12 18 24 30m
SCALE: 1:300

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.
NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner
GUAM UKUDU POWER

Owner's Consultant

EPC Contractor
DOOSAN

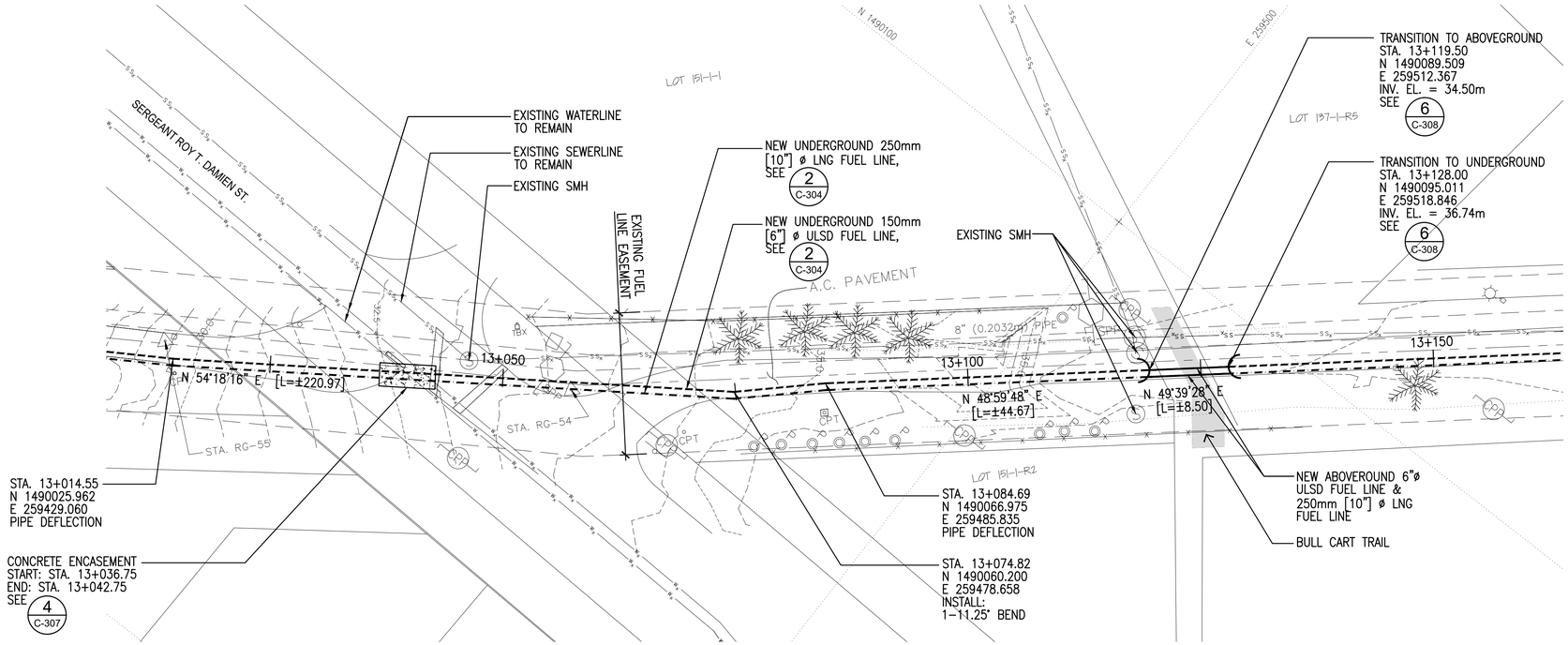
EPC Contractor's Consultant
N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY ENLARGED PLAN

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	96 OF 134	C-204	–

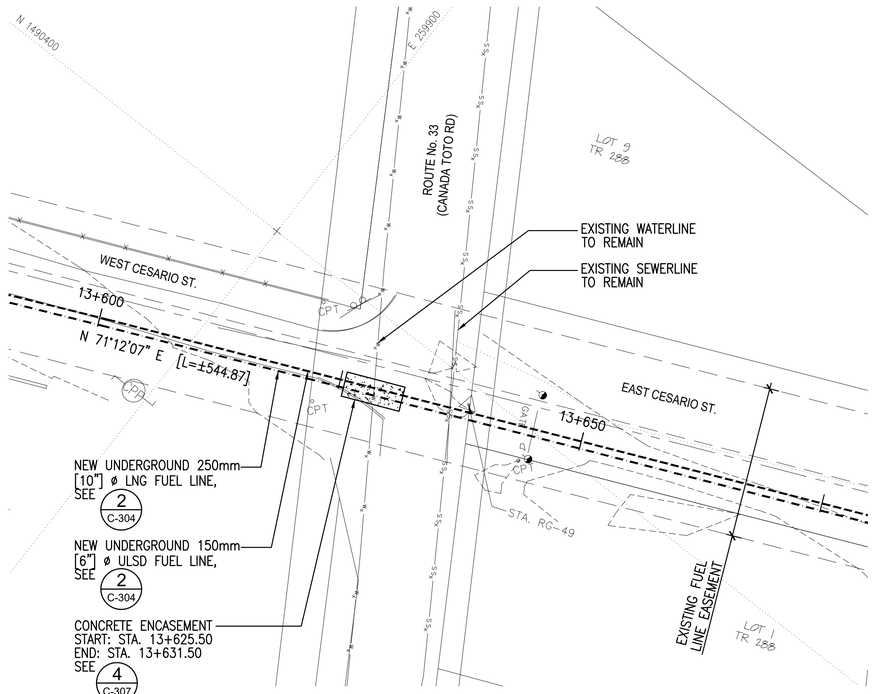
22" x 34" (559 x 864mm)



A SITE UTILITY ENLARGED PLAN

SCALE: 1:300

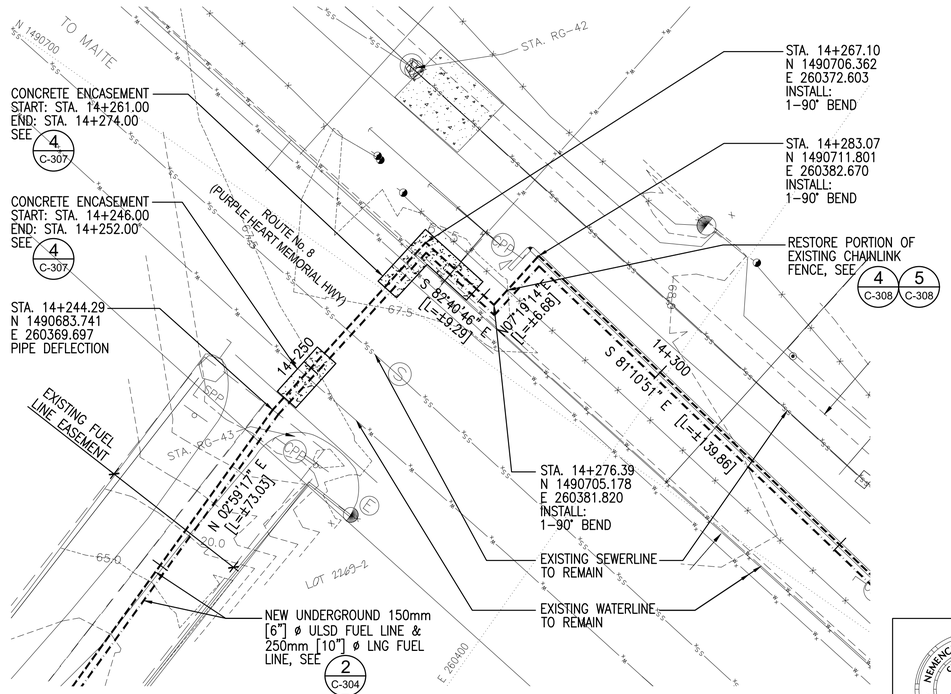
PLAN NORTH



B SITE UTILITY ENLARGED PLAN

SCALE: 1:300

PLAN NORTH



C SITE UTILITY ENLARGED PLAN

SCALE: 1:300

PLAN NORTH

GRAPHIC SCALE: 0 6 12 18 24 30m

SCALE: 1:300

LEGEND:

- 150mm [6"]ø ULSD FUEL UNDERGROUND PIPELINE
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NEMENCIO C. MACARIO CERTIFICATE No. 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project

PROPOSED 6" ULSD PIPELINE AND 10" LNG PIPELINE FROM GPA TANK FARM, PITI TO UKUDU POWER PLANT, DEDEDO, GUAM

GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

Owner

GUAM UKUDU POWER

Owner's Consultant

EPC Contractor

DOOSAN

EPC Contractor's Consultant

N.C. MACARIO & ASSOCIATES, INC.
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

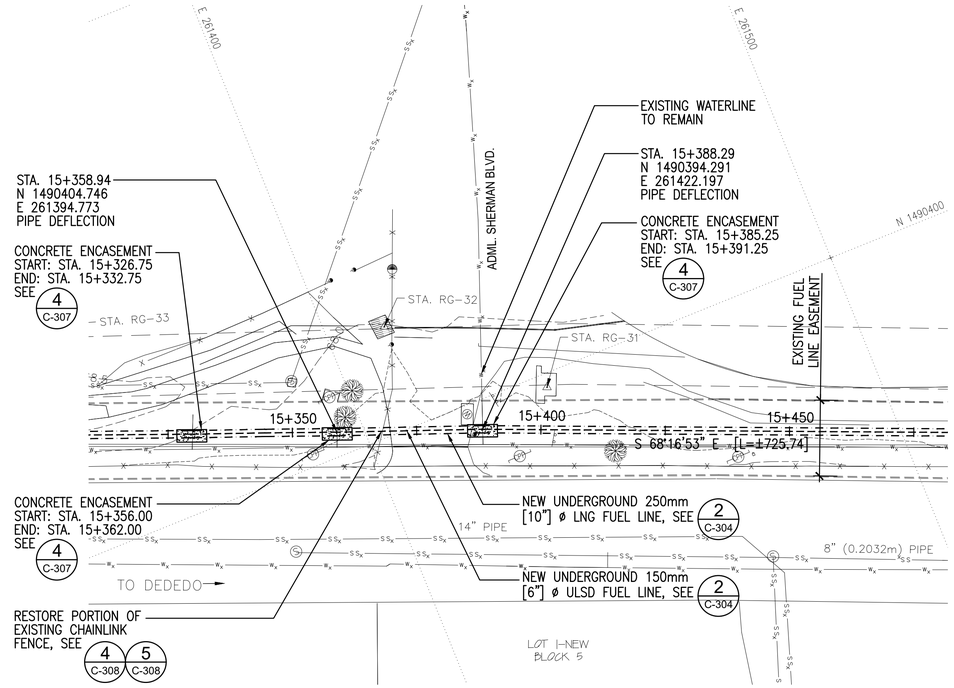
Sub Consultant

DRAWING TITLE

SITE UTILITY ENLARGED PLAN

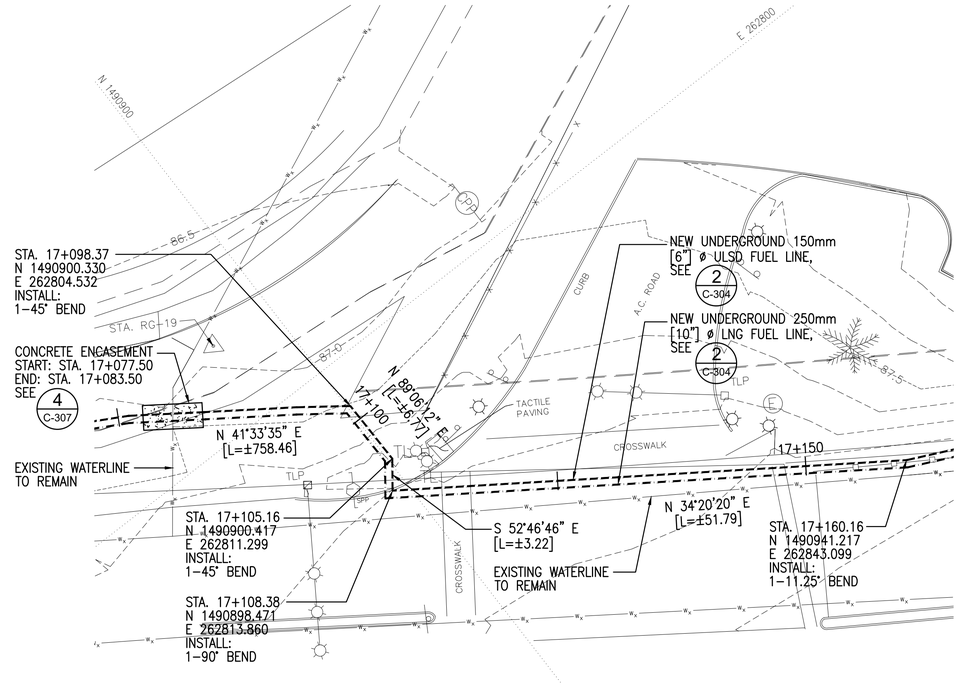
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	97 OF 134	C-205	–

22" x 34" (559 x 864mm)



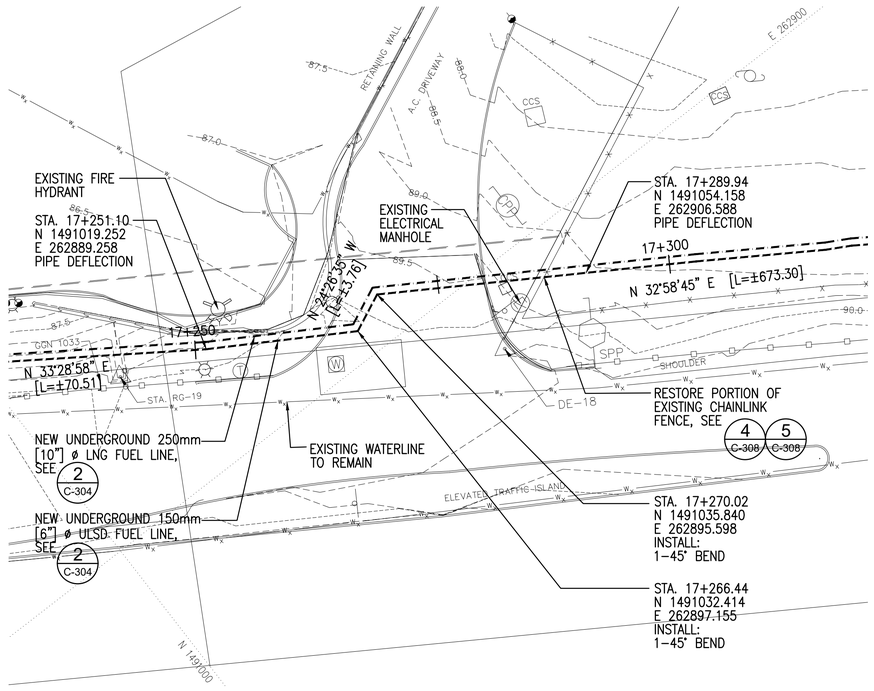
A SITE UTILITY ENLARGED PLAN
SCALE: 1:600

PLAN NORTH



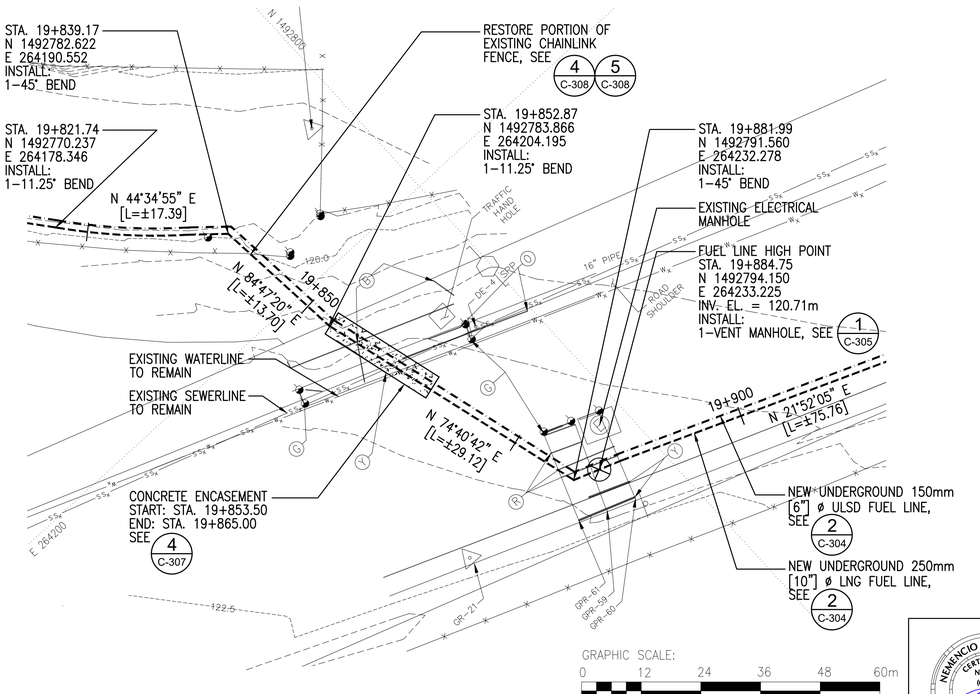
B SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH



C SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH



D SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 6 12 18 24 30m
SCALE: 1:300

NEMENCIO C. MACARIO
CERTIFICATE No 607 (CIVIL)
EXP. 4/30/2022
GUAM
PROFESSIONAL ENGINEER

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100% SUBMITTAL

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

Project
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GUAM POWER AUTHORITY
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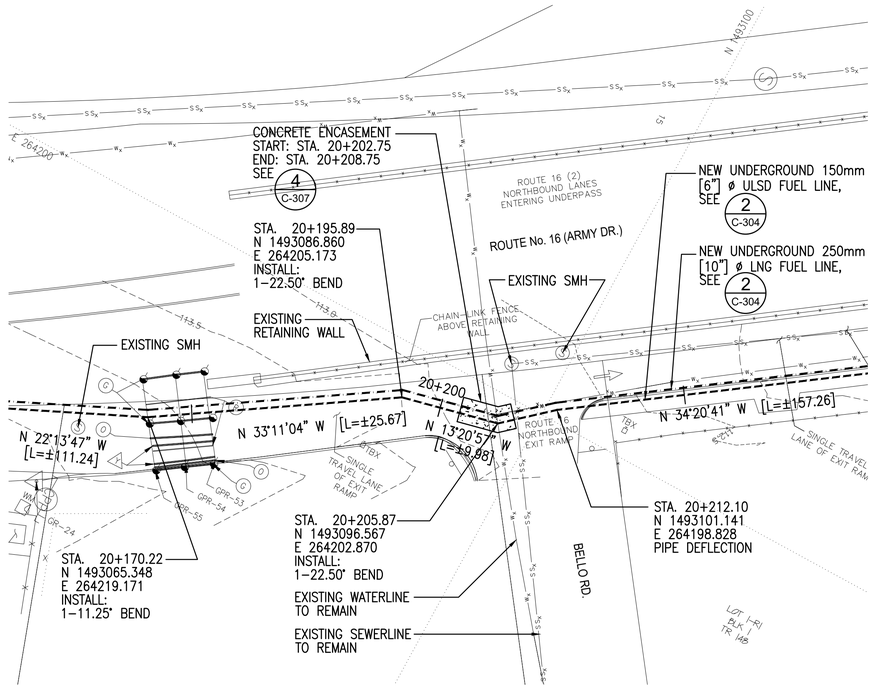
Email: ncma@guam.net

Sub Consultant

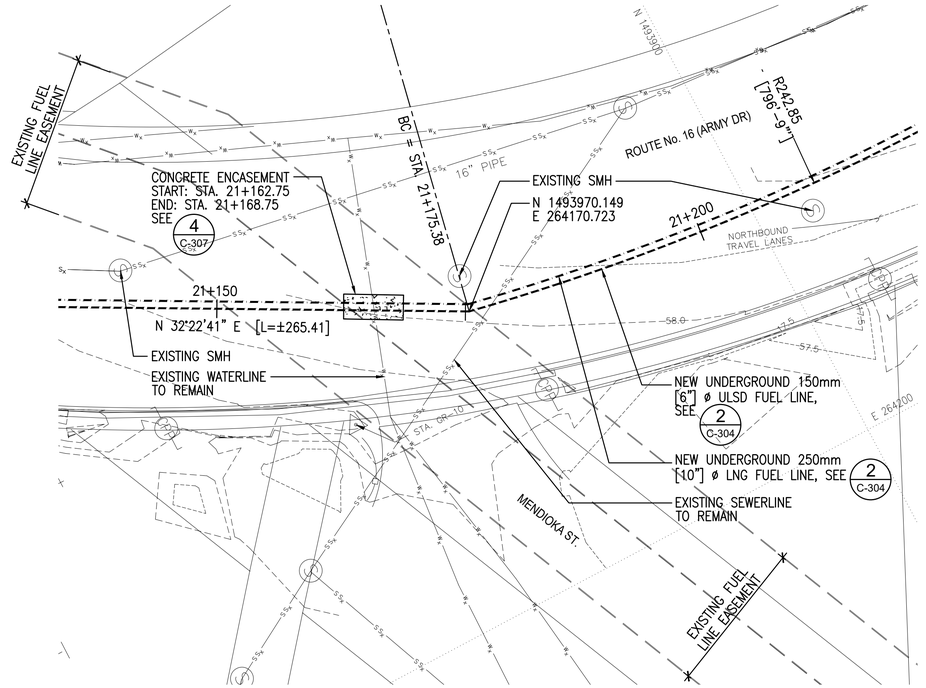
DRAWING TITLE
SITE UTILITY ENLARGED PLAN

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	98 OF 134	C-206	–

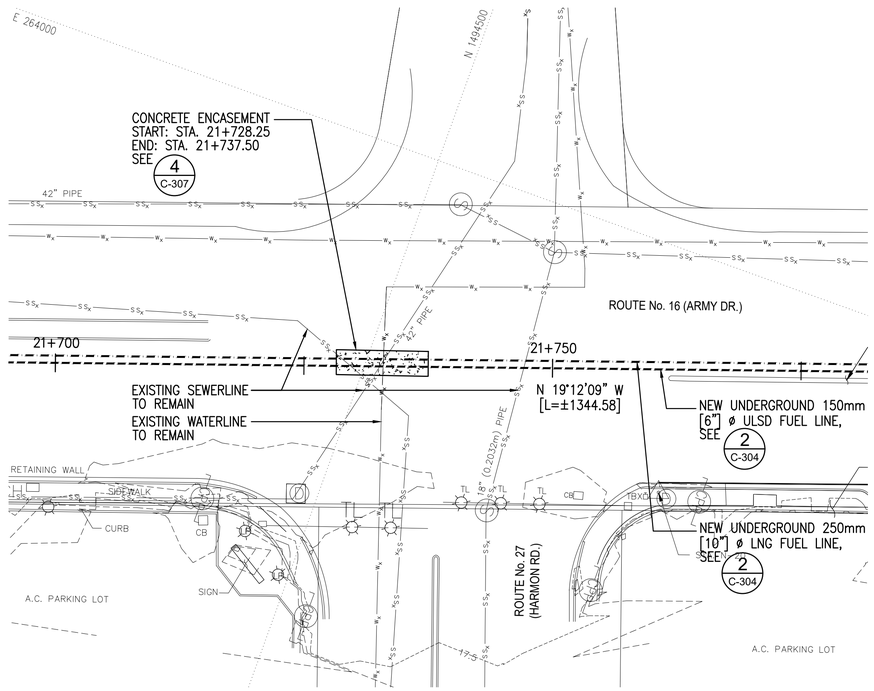
22" x 34" (559 x 864mm)



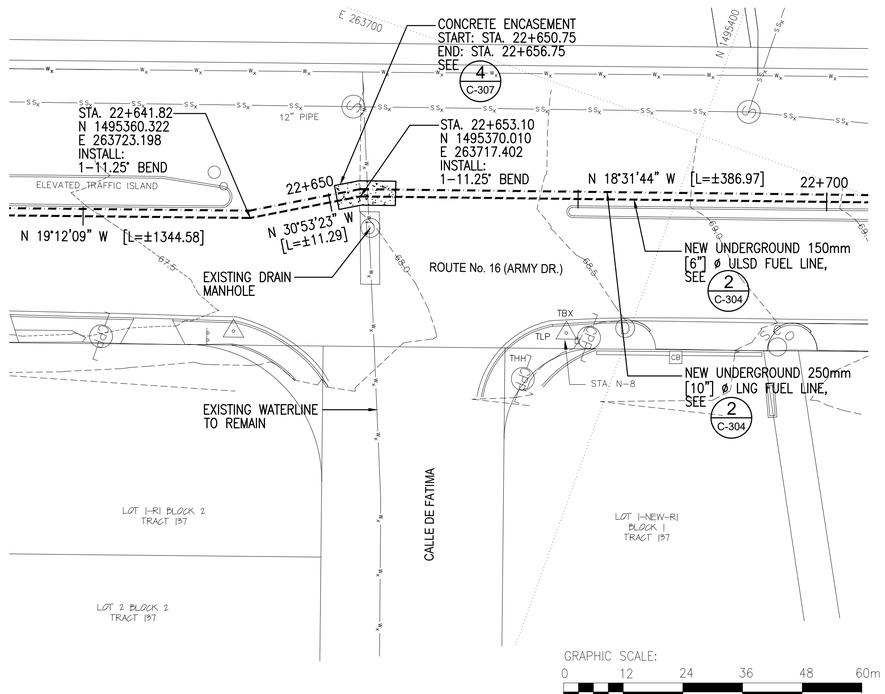
A SITE UTILITY ENLARGED PLAN
SCALE: 1:600



B SITE UTILITY ENLARGED PLAN
SCALE: 1:300



C SITE UTILITY ENLARGED PLAN
SCALE: 1:300



D SITE UTILITY ENLARGED PLAN
SCALE: 1:300

GRAPHIC SCALE:
0 12 24 36 48 60m
SCALE: 1:600
0 6 12 18 24 30m
SCALE: 1:300

NEMENCIO C. MACARIO CERTIFICATE No 607 (CIVIL) EXP. 4/30/2022 GUAM PROFESSIONAL ENGINEER

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GUAM POWER AUTHORITY
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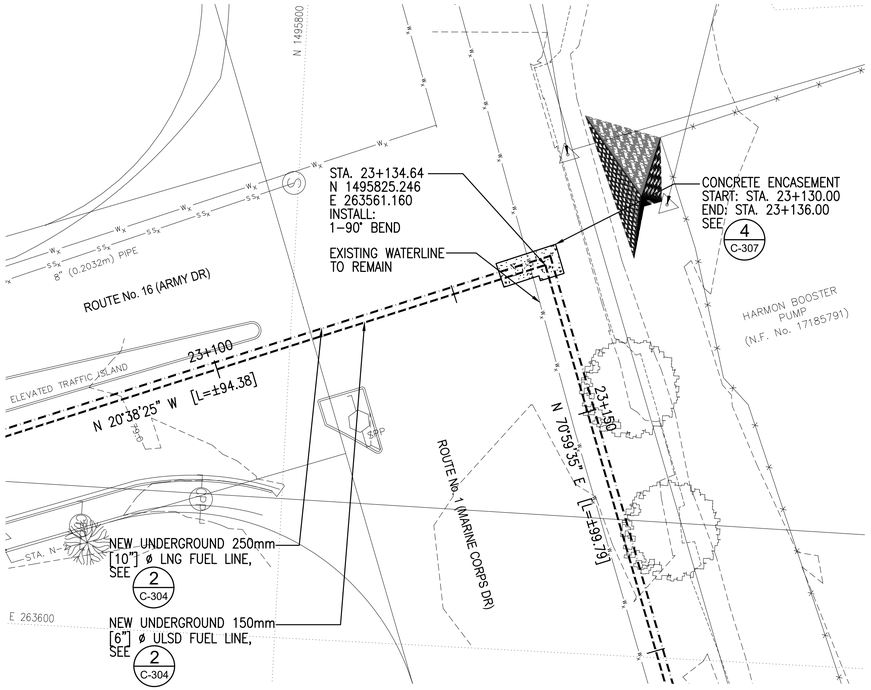
P.O. Box 784 Agana, Guam 96910
Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY ENLARGED PLAN

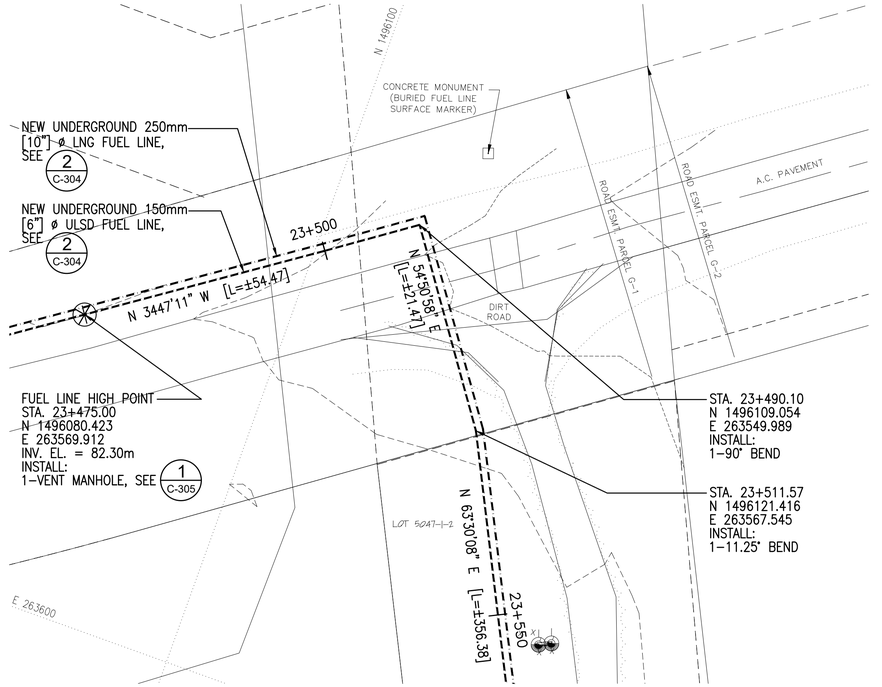
DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	99 OF 134	C-207	–

22" x 34" (559 x 864mm)



A SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH



B SITE UTILITY ENLARGED PLAN
SCALE: 1:300

PLAN NORTH

LEGEND:

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GRAPHIC SCALE:
0 6 12 18 24 30m
SCALE: 1:300

NEMENCIO C. MACARIO
CERTIFICATE No. 607 (CIVIL)
EXP. 4/30/2022
GUAM PROFESSIONAL ENGINEER

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REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD.	APPD.

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GUAM POWER AUTHORITY
P.O. BOX 2977, HAGATNA, GUAM, USA 96932-2977

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Tel. 646-0947/48 Fax: 646-0901
Email: ncma@guam.net

Sub Consultant

DRAWING TITLE
SITE UTILITY ENLARGED PLAN

DATE	SHEET NO.	DRAWING NO.	REV. NO.
SEPTEMBER 09, 2021	100 OF 134	C-208	–

22" x 34" (559 x 864mm)

SCHEDULE M

Oil Spill History

Schedule M

Oil Spill And Related Clean-up Activities

Date	Location	Description
03/21/05	Bulk fuel farm	GPA's Central Maintenance repaired pipeline and conducted cleanup. Contractor called in to assist in cleanup
04/11/05	Tank 1935	Oil spill on tanks outside wall and ground. Contractor conducted cleanup.
05/21/05	Tank 1935	Leak occurred on the Tangguisson pipeline where the pipeline at point of underground entry. Repairs done by Central Maintenance and cleanup done by Fuel Bulk Storage facility Contractor.
11/15/06	De livery Pump Station	Caused by thermal expansion; tank valve at Cabras1/2 was opened to relieve pressure. Fuel Bulk Storage Facility Contractor conducted cleanup.
11/07/12	12-inch Delivery Pipeline, West of Tank 1935	Corrosion underneath the pipeline directly in contact with the concrete pedestal. Doubler plate installed. Fuel Bulk Storage Facility Contractor conducted cleanup.
03/25/13	24-inch pipeline bend next to main valve #141	Corrosion underneath the pipeline directly in contact with the concrete pedestal. Doubler plate installed. Fuel Bulk Storage Facility Contractor conducted cleanup. Approximately 2 gallons of oil spill retrieved.
06/22/13	12-inch delivery pipeline west of Tk1934	Corrosion underneath the pipeline directly in contact with the concrete pedestal. Doubler plate installed. Fuel Bulk Storage Facility Contractor conducted cleanup. Approximately 1 gallon of oil spill retrieved.
03 /29/16	12-inch pipeline at Navy Tie-in	Pinhole leak on welded joint on the interconnection with the TTGI pipeline header at the Navy tie-in. Fuel Bulk Storage Facility Contractor conducted clean up. Approximately 1 gallon of oil spill retrieved.

SCHEDULE N

Historical Power Consumption

Schedule N

GPA Bulk Fuel Storage Facility Power Consumption

Kilowatt Usage	2017	2018	2019	2020	2021	2022
January		23,333.04	12,444.96	8,356.80	3,204.48	3,678.48
February		18,577.20	14,913.60	8,757.84	2,413.68	
March		17,140.56	13,993.68	8,519.28	2,432.40	
April		18,580.08	16,227.36	11,877.12	6,209.04	
May		19,598.88	12,631.44	15,592.80	7,319.04	
June		16,884.72	11,563.92	8,380.56	7,523.04	
July		17,284.80	14,264.16	8,698.08	9,619.68	
August		19,068.72	12,520.80	12,788.88	10,965.12	
September		14,664.24	12,516.48	10,721.52	10,349.04	
October	24,560.64	16,298.40	13,861.20	11,362.80	9,980.16	
November	26,371.20	19,888.32	11,261.04	11,016.24	3,402.48	
December	22,625.28	14,396.40	12,354.24	3,850.80	768.96	

STEP 1 - Qualitative Proposal Scoring Worksheet

QUALITATIVE / TECHNICAL PROPOSAL INSTRUCTIONS

GPA-015-22 PMC for GPA's Fuel Bulk Storage Facility

Task 0: Replace this Text with Bidder's Name.

INSTRUCTIONS

BIDDERs will be given an electronic copy of this Qualitative Proposal Scoring Worksheet which shall be used during evaluation.

BIDDERs must fill in the Part 1 - Qual Support References tab and return an electronic copy of this workbook with their IFB Submittals. GPA will review the proposals to ensure that the references truly comply with the Bid Requirements.

BIDDERs may use the *Proposal Scoring Information* and *Part 2- Qual Eval Worksheet* tabs of this workbook to evaluate the strength of their submittals. However, **only GPA's Evaluation Committee Scores will count**.

Please refer to figure below for instructions in setting up your MS Excel options prior to using this worksheet.

This Task is for PROPONENT to Complete

Task 1 **PROPONENT Shall Complete Part 1 Qualitative Scoring**

Step	Directions
1	Go to the "Part 1 - Qual Support References" Worksheet.
2	In Column C, cite the volume, chapter, section, page number, etc where the information supporting the RFP responder's compliance for the PMC Checklist Item can be found. Be specific as possible. Leave the Cell Blank if the proposal does not contain adequate supporting information.

The Succeeding Tasks are for GPA to Complete

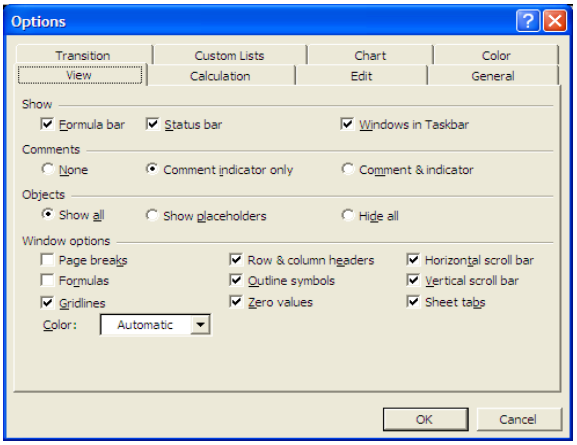
Task 2 GPA shall review the Proponent's entries made under Task 1.

Step	Directions
1	Review PROPONENT Inputs to the Part 1 - Qual Support References. Check the supporting documents to determine whether or not to accept the PROPONENTS entries.

Task 3 GPA shall evaluate the PROPONENT's qualifications based on the submittals.

Step	Directions
1	Go to the "Part 2 - Qual Eval Scoresheet" Worksheet.
2	In Column C, Rate the Quality of the PROPONENT's Qualifications based upon his Submittal.

Setup your EXCEL options to the following:



Qualitative Proposal Scoring: Part 1 - Qualitative Proposal Supporting References / PMC Checklist Items

Item	BIDDER Checklist Items	Task 0: Replace this Text with Bidder's Name. -- Supporting Information Referenced in Proposal.
1	**Petroleum and Fuel Bulk Storage Facility Management Experience**	
	Supporting information showing a minimum of five (5) years progressive experience in Petroleum Management, Handling or Storage; Ship-to-Shore Transfer and Receiving of Bulk Petroleum Products; Pipeline Product Transfer and other related activities.	
	Supporting information showing a minimum of five (5) years progressive experience in Fuel Facility Management, Operations and Maintenance.	
2	**Business Structure and Approach**	
	Description of business concepts to be used in performance of contract and meeting or achieving objectives.	
	Description of Operation Model to be utilized in support of the Operations and Maintenance of the Fuel Bulk Storage Facility.	
3	**Organizational Chart**	
	Provide Proposed Organizational Chart for the management, operations and maintenance of GPA's Fuel Bulk Storage Facility. Include position title and number of employees filling the position, name(s), functions and duties, and qualifications.	
	Describe how facility staffing shall be optimized based on proposed chart.	
4	**At least three Years Historical Financial Information, reviewed or audtied by qualified reviewing or auditing firm:**	
	0	
	Balance Sheet (Audited)	
	Income Statement (Audited)	
	Financial Ratios	
5	**Insurance Policy**	
	Provide a copy of your Insurance Policy for GPA's review, and proof of compliance with GPA's Insurance Requirements.	
6	**Mobilization Capability Checklist**	
	Proof Of Capability To Mobilize Full Support Services No Later Than 30 days after contract signing.	
7	**General Experience and Expertise**	
	Supporting information outlining and/or illustrating past and current successful experience in similar contracts, including project description summaries.	
	Experience with Operation and Maintenance of Fuel Bulk Storage Facility, including successful implementation of capital improvement projects, major repairs, or major operational activities such as tank inspection, pipeline rehabilitation, transition from one fuel type to another, etc.	
	Experience with Fuel Handling, Ship-to-shore transfer and receiving of bulk petroleum products, and Pipeline Product Transfer.	
	Experience with Fuel Facility Maintenance.	
	Knowledge and experience in complying with OPA 90, SPCC Plan, FRP, and other applicable Environmental Regulations and Reporting Requirements (BMP, SPCC, NPDES, etc.)	
8	**Other Documents**	
	At least three (3) Client References for work performed under a scope similar to this solicitation, and certifications related to Petroleum Handling Work.	
	Certificate of Good Standing to conduct business in jurisdiction of residence.	
	Proof of membership or intent to become a member of a Guam-based oil spill response company, including documentation showing oil spill response company's certification from Coast Guard.	
	Additional Information Provided.	

Qualitative Proposal Scoring: Proposal Scoring Information

Item	BIDDER Checklist Items	Checklist Weight	Maximum Raw Rating Score	Maximum Weighted Score	Percent of Maximum Possible Points For Item	Percent of Total Weighted Score
	Petroleum and Fuel Bulk Storage Facility Management Experience	**15**		**75**		**15.0%**
1	Supporting information showing a minimum of five (5) years progressive experience in Petroleum Management, Handling or Storage; Ship-to-Shore Transfer and Receiving of Bulk Petroleum Products; Pipeline Product Transfer and other related activities.	7	5	35	100.0%	.
	Supporting information showing a minimum of five (5) years progressive experience in Fuel Facility Management, Operations and Maintenance.	8	5	40	100.0%	
	Business Structure and Approach	**10**		**50**		**10.0%**
2	Description of business concepts to be used in performance of contract and meeting or achieving objectives.	5	5	25	100.0%	
	Description of Operation Model to be utilized in support of the Operations and Maintenance of the Fuel Bulk Storage Facility.	5	5	25	100.0%	
	Organizational Chart	**15**		**75**		**15.0%**
3	Provide Proposed Organizational Chart for the management, operations and maintenance of GPA's Fuel Bulk Storage Facility. Include position title and number of employees filling the position, name(s), functions and duties, and qualifications.	8	5	40	100.0%	
	Describe how facility staffing shall be optimized based on proposed chart.	7	5	35	100.0%	
	At least three Years Historical Financial Information, reviewed or audtied by qualified reviewing or auditing firm:	**9**		**45**		**9.0%**
4						
	Balance Sheet (Audited)	3	5	15	100.0%	
	Income Statement (Audited)	3	5	15	100.0%	
	Financial Ratios	3	5	15	100.0%	
	Insurance Policy	**3**		**15**		**3.0%**
5	Provide a copy of your Insurance Policy for GPA's review, and proof of compliance with GPA's Insurance Requirements.	3	5	15	100.0%	
	Mobilization Capability Checklist	**3**		**15**		**3.0%**
6	Proof Of Capability To Mobilize Full Support Services No Later Than **30** days after contract signing.	3	5	15	100.0%	
	General Experience and Expertise	**30**		**150**		**30.0%**
	Supporting information outlining and/or illustrating past and current successful experience in similar contracts, including project description summaries.	8	5	40	100.0%	
	Experience with Operation and Maintenance of Fuel Bulk Storage Facility, including successful implementation of capital improvement projects, major repairs, or major operational activities such as tank inspection, pipeline rehabilitation, transition from one fuel type to another, etc.	5	5	25	100.0%	
7						
	Experience with Fuel Handling, Ship-to-shore transfer and receiving of bulk petroleum products, and Pipeline Product Transfer.	6	5	30	100.0%	
	Experience with Fuel Facility Maintenance.	6	5	30	100.0%	
	Knowledge and experience in complying with OPA 90, SPCC Plan, FRP, and other applicable Environmental Regulations and Reporting Requirements (BMP, SPCC, NPDES, etc.)	5	5	25	100.0%	
	Other Documents	**15**		**75**		**15.0%**
	At least three (3) Client References for work performed under a scope similar to this solicitation, and certifications related to Petroleum Handling Work.	5	5	25	100.0%	
8	Certificate of Good Standing to conduct business in jurisdiction of residence.	5	5	25	100.0%	
	Proof of membership or intent to become a member of a Guam-based oil spill response company, including documentation showing oil spill response company's certification from Coast Guard.	5	5	25	100.0%	
	Additional Information Provided.					
	PMC Qualifications Score	**100**		**500**	100.0%	**100.0%**

Minimum Score - Potentially Acceptable Proposal	375.00
Minimum Score - Acceptable Proposal	400.00
Maximum Compliance Score	500.00
Minimum Percent Score - Potentially Acceptable Proposal	75.0%
Minimum Percent Score - Acceptable Proposal	80.0%

RATINGS GUIDE:

5 - Excellent and plentiful relevant qualifications and project experience. Very highest client references.

3 - Average relevant qualifications and project experience. Average client references.

1 - Poor relevant qualifications and few relevant projects. Fair Client references.

0 - No substantial relevant experience.

Qualitative Proposal Scoring: PMC Qualifications Checklist

Item	BIDDER Checklist Items	Task 0: Replace this Text with Bidder's Name. -- Supporting Information Referenced in Proposal.
1	**Petroleum and Fuel Bulk Storage Facility Management Experience**	
	Supporting information showing a minimum of five (5) years progressive experience in Petroleum Management, Handling or Storage; Ship-to-Shore Transfer and Receiving of Bulk Petroleum Products; Pipeline Product Transfer and other related activities.	
	Supporting information showing a minimum of five (5) years progressive experience in Fuel Facility Management, Operations and Maintenance.	
2	**Business Structure and Approach**	
	Description of business concepts to be used in performance of contract and meeting or achieving objectives.	
	Description of Operation Model to be utilized in support of the Operations and Maintenance of the Fuel Bulk Storage Facility.	
3	**Organizational Chart**	
	Provide Proposed Organizational Chart for the management, operations and maintenance of GPA's Fuel Bulk Storage Facility. Include position title and number of employees filling the position, name(s), functions and duties, and qualifications.	
	Describe how facility staffing shall be optimized based on proposed chart.	
4	**At least three Years Historical Financial Information, reviewed or audtied by qualified reviewing or auditing firm:**	
	0	
	Balance Sheet (Audited)	
	Income Statement (Audited)	
	Financial Ratios	
5	**Insurance Policy**	
	Provide a copy of your Insurance Policy for GPA's review, and proof of compliance with GPA's Insurance Requirements.	
6	**Mobilization Capability Checklist**	
	Proof Of Capability To Mobilize Full Support Services No Later Than 30 days after contract signing.	
7	**General Experience and Expertise**	
	Supporting information outlining and/or illustrating past and current successful experience in similar contracts, including project description summaries.	
	Experience with Operation and Maintenance of Fuel Bulk Storage Facility, including successful implementation of capital improvement projects, major repairs, or major operational activities such as tank inspection, pipeline rehabilitation, transition from one fuel type to another, etc.	
	Experience with Fuel Handling, Ship-to-shore transfer and receiving of bulk petroleum products, and Pipeline Product Transfer.	
	Experience with Fuel Facility Maintenance.	
	Knowledge and experience in complying with OPA 90, SPCC Plan, FRP, and other applicable Environmental Regulations and Reporting Requirements (BMP, SPCC, NPDES, etc.)	
8	**Other Documents**	
	At least three (3) Client References for work performed under a scope similar to this solicitation, and certifications related to Petroleum Handling Work.	
	Certificate of Good Standing to conduct business in jurisdiction of residence.	
	Proof of membership or intent to become a member of a Guam-based oil spill response company, including documentation showing oil spill response company's certification from Coast Guard.	
	Additional Information Provided.	

MS GPA-015-22 Qualitative Proposal Scoring: Qualitative Evaluation Worksheet

BID EVALUATOR :

BIDDER:

Item	BIDDER Checklist Items	Checklist Weight	Raw Rating Score	Weighted Score	Percent of Total Possible Points For Item
1	**Petroleum and Fuel Bulk Storage Facility Management Experience**	**15**			
	Supporting information showing a minimum of five (5) years progressive experience in Petroleum Management, Handling or Storage; Ship-to-Shore Transfer and Receiving of Bulk Petroleum Products; Pipeline Product Transfer and other related activities.	7			
	Supporting information showing a minimum of five (5) years progressive experience in Fuel Facility Management, Operations and Maintenance.	8			
2	**Business Structure and Approach**	**10**			
	Description of business concepts to be used in performance of contract and meeting or achieving objectives.	5			
	Description of Operation Model to be utilized in support of the Operations and Maintenance of the Fuel Bulk Storage Facility.	5			
3	**Organizational Chart**	**15**			
	Provide Proposed Organizational Chart for the management, operations and maintenance of GPA's Fuel Bulk Storage Facility. Include position title and number of employees filling the position, name(s), functions and duties, and qualifications.	8			
	Describe how facility staffing shall be optimized based on proposed chart.	7			
4	**At least three Years Historical Financial Information, reviewed or audtied by qualified reviewing or auditing firm:**	**9**			
	Balance Sheet (Audited)	3			
	Income Statement (Audited)	3			
	Financial Ratios	3			
5	**Insurance Policy**	**3**			
	Provide a copy of your Insurance Policy for GPA's review, and proof of compliance with GPA's Insurance Requirements.	3			
6	**Mobilization Capability Checklist**	**3**			
	Proof Of Capability To Mobilize Full Support Services No Later Than 30 days after contract signing.	3			
7	**General Experience and Expertise**	**30**			
	Supporting information outlining and/or illustrating past and current successful experience in similar contracts, including project description summaries.	**8**			
	Experience with Operation and Maintenance of Fuel Bulk Storage Facility, including successful implementation of capital improvement projects, major repairs, or major operational activities such as tank inspection, pipeline rehabilitation, transition from one fuel type to another, etc.	**5**			
	Experience with Fuel Handling, Ship-to-shore transfer and receiving of bulk petroleum products, and Pipeline Product Transfer.	**6**			
	Experience with Fuel Facility Maintenance.	**6**			
	Knowledge and experience in complying with OPA 90, SPCC Plan, FRP, and other applicable Environmental Regulations and Reporting Requirements (BMP, SPCC, NPDES, etc.)	**5**			
8	**Other Documents**	**15**			
	At least three (3) Client References for work performed under a scope similar to this solicitation, and certifications related to Petroleum Handling Work.	**5**			
	Certificate of Good Standing to conduct business in jurisdiction of residence.	**5**			
	Proof of membership or intent to become a member of a Guam-based oil spill response company, including documentation showing oil spill response company's certification from Coast Guard.	**5**			
	Additional Information Provided.				
	Evaluated PMC Qualifications Score				

STEP 2 - Price Proposal Worksheet

GPA-015-22 GPA Fuel Bulk Storage Facility PMC

VENDOR NAME:

(Enter name of company here)

A	B
	(1) Fill in highlighted fields below. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.
	(2) If left blank, this means there are no additional O&M items that the proponent will require to operate and maintain the facility.
	(3) Proponents may use own descriptions, and add to the line items below if needed.
	(4) Total cost should be equivalent to line item 7 of BIDDER DATA ENTRY .
	(5) For evaluation purposes, cost for Item 17 should be entered under "Contract Year 1".

GPA has the option to award all, some or none of the CONTRACT ITEMS below.

	OPTIONAL O&M BUDGET BREAKDOWN	Contract Year			OPTIONAL Contract Years	
		1	2	3	1	2
1		$ -				
2		$ -	$ -	$ -	$ -	$ -
3		$ -	$ -	$ -	$ -	$ -
4		$ -	$ -	$ -	$ -	$ -
5		$ -	$ -	$ -	$ -	$ -
6		$ -	$ -	$ -	$ -	$ -
7		$ -	$ -	$ -	$ -	$ -
8		$ -	$ -	$ -	$ -	$ -
9		$ -	$ -	$ -	$ -	$ -
10		$ -	$ -	$ -	$ -	$ -
11		$ -	$ -	$ -	$ -	$ -
12		$ -	$ -	$ -	$ -	$ -
13		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
		$ -	$ -	$ -	$ -	$ -
	TOTAL	$ -	$ -	$ -	$ -	$ -

Multi Step Bid GPA-015-22 Management, Operation and Maintenance of GPA's Fuel Bulk Storage Facility

VENDOR NAME:

(Enter name of company here)

INSTRUCTIONS:

(1) Fill in all highlighted fields below. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.
(2) Contract Item 1 (Management and Administration Fees) should be exclusive of Contract Items 2 to 7.
(3) Contract item 6 ("Operation and Maintenance Budget (Required)") will be expanded in the "O&M Budget (Required)" tab.
(4) Contract Item 7 is for all O&M expenses in addition to the "O&M Budget (Required)". This will not be included in the evaluation of price proposal. If not submitting optional O&M items, please indicate "No Bid".
(5) An entry of "0" or blank for any of the Contract Items mean Bidder does not expect to incur any costs pertaining to these items.

GPA has the option to award all, some or none of the CONTRACT ITEMS below.

		CONTRACT ITEMS (BREAKDOWN)	Contract Year 1	Contract Year 2	Contract Year 3	OPTIONAL Contract Years 1	OPTIONAL Contract Years 2
MANDATORY	1	Management and Administration Fees (Include all expenses for: staffing; office maintenance; utilities; transportation; communications; management fees and administration fees)	$ -	$ -	$ -	$ -	$ -
	2	Security Contractor	$ -	$ -	$ -	$ -	$ -
	3	Spill Response Company Membership Fees	$ -	$ -	$ -	$ -	$ -
	4	Insurance Fees (Volume I - 5.41)	$ -	$ -	$ -	$ -	$ -
	5	Inventory - Environmental / Oil Spill Equipment *Oil Spill Response & Environmental Compliance (OPA 90, SPCC and FRP, etc.)	$ -	$ -	$ -	$ -	$ -
	6	Operation and Maintenance Budget (REQUIRED) *PLEASE EXPAND AND PROVIDE INFORMATION IN "O&M Budget (Required)" tab/worksheet.	$ -	$ -	$ -	$ -	$ -
		TOTAL PRICE PROPOSAL	$ -	$ -	$ -	$ -	$ -
OPTIONAL		***OPTIONAL ITEMS:***					
	7	*Operation and Maintenance Budget (optional)* **PLEASE EXPAND AND PROVIDE INFORMATION IN "O&M Budget (optional)" tab/worksheet. These items are for O&M activities that the bidder may deem necessary for the fuel farm but is not included in the O&M Budget (REQUIRED). GPA and the Contractor will discuss these costs during the Contract Finalization period. THIS IS NOT INCLUDED IN THE EVALUATION OF PRICE PROPOSAL AND WILL BE ADDITIONAL INFORMATION ONLY.*	$ -	$ -	$ -	$ -	$ -
		Total of Optional Operation and Maintenance Budget	$ -	$ -	$ -	$ -	$ -

GPA-015-22: GPA Bulk Fuel Storage Facility PMC

VENDOR NAME:

(Enter name of company here)

INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) An entry of "0" or blank for any of the Contract Items mean Bidder does not expect to incur any costs pertaining to these items.

(3) The total cost for the O&M (Required) Budget will be part of the evaluation of lowest price proposal.

(4) Proponents cannot add to any of the items below. For services where specifications are required, please illustrate or describe in a separate sheet.

(5) Total cost should be equivalent to line item 6 of BIDDER DATA ENTRY .

(6) Each line item in the O&M Budget Breakdown should be broken down further, see additional tabs "O&M 1" through "O&M 16". For example, for line item 1, "O&M of Tank System (Tk 1934, Tk 1935, Diesel Tank, Sump, etc.)", bidder must enter the costs for each year on columns D through H on this worksheet. And then on tab labeled "O&M 1", bidder shall enter each activity falling under "O&M of Tank System" and the corresponding costs. The total cost for each contract year for all activities in "O&M 1" should match the cost on this worksheet.

(7) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

GPA has the option to award all, some or none of the CONTRACT ITEMS below.

A	B	C	D	E	F	G	H
		O&M BUDGET BREAKDOWN (please breakdown specific activities under each item further in the corrseponding tabs)	**Contract Year**			**OPTIONAL Contract Years**	
			1	**2**	**3**	**1**	**2**
	1	O&M of Tank System (Tk 1934, Tk 1935, Diesel Tank for Auxiliary pump, Sump, etc.)	$ -	$ -	$ -	$ -	$ -
	2	O&M of all Pumps in the Facility	$ -	$ -	$ -	$ -	$ -
	3a	O&M of all Valves & Pipeline System (includes pipe supports, etc.) within the facility up to the tie-in flange connection at: Tristar pipeline manifold; Cabras 1&2, Piti 7, Piti 8&9, and KEPCO plant fuel storage tanks.	$ -	$ -	$ -	$ -	$ -
	3b	O&M of all Valves & Pipeline System (includes pipe supports, etc.) within the facility up to the Ukudu Plant perimeter fence.	$ -	$ -	$ -	$ -	$ -
	4	O&M of Oil Water Separator (OWS) System	$ -	$ -	$ -	$ -	$ -
	5	O&M of Auxiliary (diesel-driven) Pump System	$ -	$ -	$ -	$ -	$ -
	6	O&M of Leak Detection (LD) System	$ -	$ -	$ -	$ -	$ -
	7	O&M of Cathodic Protection (CP) System	$ -	$ -	$ -	$ -	$ -
	8	O&M of all Instrumentation and Electrical Systems	$ -	$ -	$ -	$ -	$ -
	9	Building & Fencing Maintenance	$ -	$ -	$ -	$ -	$ -
	10	Grounds Maintenance	$ -	$ -	$ -	$ -	$ -
	11	Environmental Compliance	$ -	$ -	$ -	$ -	$ -
	12	Technical Services (please specify)	$ -	$ -	$ -	$ -	$ -
	13	Other Professional Services (please specify)	$ -	$ -	$ -	$ -	$ -
	14	Other Contractual Services (please specify)	$ -	$ -	$ -	$ -	$ -
	15	Inventory for Operation & Maintenance Activities	$ -	$ -	$ -	$ -	$ -
	16	Equipment Rental (please specify or explain)	$ -	$ -	$ -	$ -	$ -
		TOTAL	$ -	$ -	$ -	$ -	$ -

INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

1	O&M of Tank System (Tk 1934, Tk 1935, Diesel Tank for Auxiliary pump, Sump, etc.)

A	B	C	D	D	F
ACTIVITIES	COST				
	Contract Year			OPTIONAL Contract Years	
	1	2	3	1	2
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

2	O&M of all Pumps in the Facility

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

3a	**O&M of all Valves & Pipeline System (includes pipe supports, etc.) within the facility up to the tie-in flange connection at: Tristar pipeline manifold; Cabras 1&2, Piti 7, Piti 8&9, and KEPCO plant fuel storage tanks.**

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

3b	**O&M of all Valves & Pipeline System (includes pipe supports, etc.) within the facility up to the Ukudu Plant perimeter fence.**

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

4	**O&M of Oil Water Separator (OWS) System**

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

5	O&M of Auxiliary (diesel-driven) Pump System

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
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	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

6	O&M of Leak Detection (LD) System

A	B	C	D	D	F
ACTIVITIES	COST				
	Contract Year			OPTIONAL Contract Years	
	1	2	1	1	2
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

7	O&M of Cathodic Protection (CP) System

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

8	O&M of all Instrumentation and Electrical Systems

A	B	C	D	D	F
ACTIVITIES	COST				
	Contract Year			OPTIONAL Contract Years	
	1	2	3	1	2
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

9	**Building & Fencing Maintenance**

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

10	Grounds Maintenance

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
	$ -	$ -	$ -	$ -	$ -
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

11	Environmental Compliance

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

12	Technical Services (please specify)

A	B	C	D	D	F
ACTIVITIES	COST				
	Contract Year			OPTIONAL Contract Years	
	1	2	3	1	2
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

13	Other Professional Services (please specify)

A	B	C	D	D	F
	COST				
ACTIVITIES	**Contract Year**			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

14	Other Contractual Services (please specify)

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

15	Inventory for Operation & Maintenance Activities

A	B	C	D	D	F
ACTIVITIES	**COST**				
	Contract Year			**OPTIONAL Contract Years**	
	1	**2**	**3**	**1**	**2**
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INSTRUCTIONS:

(1) For the purpose of providing fair evaluation of price proposals, all Proponents are required to fill in all the highlighted fields below indicating the annual fees for each O&M budget line item. Enter only Constant or Increasing Fees. Front-end Loaded or Decreasing Fees, Reimbursements and Exceptions not allowed.

(2) For any on-going infrastructure projects directly related to a particular line item, the annual funding shall be pro-rated, and request for reimbursement of O&M expenses shall commence after the official turn-over of the infrastructure to the contractor.

Under Column A below, list all activities falling under this O&M item. Under Columns B through F, list the corresponding costs.

16	Equipment Rental (please specify or explain)

A	B	C	D	D	F
ACTIVITIES	COST				
	Contract Year			OPTIONAL Contract Years	
	1	2	3	1	2
	$ -	$ -	$ -	$ -	$ -
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GOVERNMENT OF GUAM

GENERAL TERMS AND CONDITIONS

SEALED BID SOLICITATION AND AWARD

Only those Boxes checked below are applicable to this bid.

[X] 1. **AUTHORITY:** This solicitation is issued subject to all the provision of the Guam Procurement Act (5GCA, Chapter 5) And the Guam Procurement Regulations (copies of both are available at the Office of the Complier of laws, Department of Law, copies available for inspection at the Guam Power Authority). It requires all parties involved in the Preparation, negotiation, performance, or administration of contracts to act in good faith.

[X] 2. **GENERAL INTENTION**: Unless otherwise specified, it is the declared and acknowledged intention and meaning of these General Terms and conditions for the bidder to provide the Government of Guam (Government) with specified services or with materials, supplies or equipment completely assembled and ready for use.

[X] 3. **TAXES**: Bidders are cautioned that they are subject to Guam Income Taxes as well as all other taxes on Guam Transactions. Specific information on taxes may be obtained from the Director of Revenue and Taxation.

[X] 4. **LICENSING**: Bidders are cautioned that the Government will not consider for award any offer submitted by a bidder who has not complied with the Guam Licensing Law. Specific information on licenses may be obtained from the Director of Revenue and Taxation.

[X] 5. **LOCAL PROCUREMENT PREFERENCE**: All procurement of supplies and services where possible, will be made from among businesses licensed to do business on Guam in accordance with section 5008 of the Guam Procurement Act (5GCA, Chapter 5) and Section 1-104 of the Guam Procurement Regulations.

[X] 6. **COMPLIANCE WITH SPECIFICATIONS AND OTHER SOLICITATION REQUIREMENTS**: Bidders shall comply with all specifications and other requirements of the Solicitation.

[ ] 7. **"ALL OR NONE" BIDS**: Unless otherwise allowed under this Solicitation. "all or none" bids may be deemed to be non-responsive. If the bid is so limited, the Government may reject part of such proposal and award on the remainder.

NOTE: By checking this item, the Government is requesting all of the bid items to be bided or none at all. **The Government will not award on an itemized basis**. Reference: Section 3-101.06 of the Guam Procurement Regulations.

[X] 8. **INDEPENDENT PRICE DETERMINATION**: The bidder, upon signing the Invitation for Bid, certifies that the prices in his bid were derived at without collusion, and acknowledge that collusion and anti-competitive practices are prohibited by law. Violations will be subject to the provision of Section 5651 of that of the Guam Procurement Act. Other existing civil, criminal or administrative remedies are not impaired and may be in addition to the remedies in Section 5651 of the Government code.

[X] 9. **BIDDER'S PRICE**: The Government will consider not more than two (2) (Basic and Alternate) item prices and the bidder shall explain fully each price if supplies, materials, equipment, and/or specified services offered comply with specifications and the products origin. Where basic or alternate bid meets the minimum required specification, cost and other factors will be considered. Failure to explain this requirement will result in rejection of the bid.

[X] 10. **BID ENVELOPE**: Envelope shall be sealed and marked with the bidder's name, Bid number, time, date and place of Bid Opening.

[X] 11. **BID GUARANTEE REQUIREMENT**: Bidder is required to submit a Bid Guarantee Bond or standby irrevocable Letter of Credit or Certified Check or Cashier's Check in the same bid envelope to be held by the Government pending award. The Bid Guarantee Bond, Letter of Credit, Certified Check or Cashier's Check must be issued by any local surety or banking institution licensed to do business on Guam and made payable to the Guam Power Authority in the amount of **no less than One Hundred Fifty Thousand Dollars (US$150,000.00)**. The Bid Bond must be submitted on Government Standard Form BB-1 (copy enclosed). Personal Checks will not be accepted as Bid Guarantee. If a successful Bidder (contractor) withdraws from the bid or fails to enter into contract within the prescribed time, such Bid guarantee will be forfeited to the Government of Guam. Bids will be disqualified if not accompanied by Bid Bond, Letter of Credit, Certified Check or Cashier's check. Bidder must include in his/her bid, valid copies of a Power of Attorney from the Surety and a Certificate of Authority from the Government of Guam to show proof that the surety company named on the bond instrument is authorized by the Government of Guam and qualified to do business on Guam. For detailed information on bonding matters, contact the Department of Revenue and Taxation. Failure to submit a valid Power of Attorney and Certificate of Authority on the surety is cause for rejection of bid. (GPR Section 3-202.03.3) **Pursuant to Public Law 27-127, all competitive sealed bidding for the procurement of supplies or services exceeding $25,000.00 a 15% Bid Security of the total bid price must accompany the bid package.**

[X] 12. **PERFORMANCE BOND REQUIREMENT:** The Bidder may be required to furnish a Performance Bond on Government Standard Form BB-1 or standby irrevocable Letter of Credit or Certified Check or Cashier's Check payable to the Guam Power Authority issued by any of the local Banks or Bonding Institution in the amount equal to the **Annual Contract Fee** for that full or partial fiscal year within the term of the contract as security for the faithful performance and proper fulfillment of the contract. In the event that any of the provisions of this contract are violated by the contractor, the Chief Procurement Officer shall serve written notice upon both the contractor and the Surety of its intention to terminate the contract. Unless satisfactory arrangement or correction is made within ten (10) days of such notice the contract shall cease and terminate upon the expiration of the ten (10) days. In the event of any such termination, the Chief Procurement Officer shall immediately serve notice thereof upon the Surety. The Surety shall have the right to take over and perform the contract, provided, however, that if the Surety does not commence performance thereof within

10 days from the date of the mailing of notice of termination, the Government may take over and prosecute the same to complete the contract or force account for the account and at the expense of the contractor, and the contractor and his Surety shall be liable to the Government for any excess cost occasioned the Government thereby (GPR Section 3-202.03.4).

[X] 13. **PERFORMANCE GUARANTEE**: Bidders who are awarded a contract under this solicitation, guarantee that goods will be delivered or required services performed within the time specified. Failure to perform the contract in a satisfactory manner may be cause for suspension or debarment from doing business with the Government and to enforce Section 23 of these General Terms and Conditions. In addition, the Government will hold the Vendor liable and will enforce the requirements as set forth in Section 41 of these General Terms and Conditions.

[X] 14. **SURETY BONDS**: Bid and Performance Bonds coverage must be signed or countersigned in Guam by a foreign or alien surety's resident general agent. The surety must be an Insurance Company, authorized by the government of Guam and qualified to do business in Guam. Bids will be disqualified if the Surety Company does not have a valid Certificate of Authority from the Government of Guam to conduct business in Guam.

[X] 15. **COMPETENCY OF BIDDERS**: Bids will be considered only from the such bidders who, in the opinion of the Government, can show evidence of their ability, experience, equipment, and facilities to render satisfactory service.

[X] 16. **DETERMINATION OF RESPONSIBILITY OF BIDDERS**: The Chief Procurement Officer reserves the right for securing from bidders information to determine whether or not they are responsible and to inspect plant site, place of business; and supplies and services as necessary to determine their responsibility in accordance with Section 15 of these General Terms and Conditions (GPR Section 3-401).

[X] 17. **STANDARD FOR DETERMINATION OF LOWEST RESPONSIBLE BIDDER**: In determining the lowest responsible offer, the Chief Procurement Officer shall be guided by the following:

a) Price of items offered.
b) The ability, capacity, and skill of the Bidder to perform.
c) Whether the Bidder can perform promptly or within the specified time.
d) The quality of performance of the Bidder with regards to awards previously made to him.
e) The previous and existing compliance by the Bidder with laws and regulations relative to procurement.
f) The sufficiency of the financial resources and ability of the Bidder to perform.
g) The ability of the bidder to provide future maintenance and services for the subject of the award.
h) <u>The compliance with all of the conditions to the Solicitation.</u>

[X] 18. **TIE BIDS**: If the bids are for the same unit price or total amount in the whole or in part, the Chief Procurement Officer will determine award based on Section 3.202.15.2, or to reject all such bids (GPR Section 3-202.15.2).

[ ] 19. **BRAND NAMES**: Any reference in the Solicitation to manufacturer's Brand Names and number is due to lack of a satisfactory specification of commodity description. Such preference is intended to be descriptive, but nor restrictive and for the sole purpose of indicating prospective bidders a description of the article or services that will be satisfactory. Bids on comparable items will be considered provided the bidder clearly states in his bid the exact articles he is offering and how it differs from the original specification.

[ ] 20. **DESCRIPTIVE LITERATURE**: Descriptive literature(s) as specified in this solicitation must be furnished as a part of the bid and must be received at the date and time set for opening Bids. The literature furnished must clearly identify the item(s) in the Bid. The descriptive literature is required to establish, for the purpose of evaluation and award, details of the product(s) the bidder proposes to furnish including design, materials, components, performance characteristics, methods of manufacture, construction, assembly or other characteristics which are considered appropriate. Rejection of the Bid will be required if the descriptive literature(s) do not show that the product(s) offered conform(s) to the specifications and other requirements of this solicitation. Failure to furnish the descriptive literature(s) by the time specified in the Solicitation will require rejection of the bid.

[ ] 21. **SAMPLES**: Sample(s) of item(s) as specified in this solicitation must be furnished as a part of the bid and must be received at the date and time set for opening Bids. The sample(s) should represent exactly what the bidder proposes to furnish and will be used to determine if the item(s) offered complies with the specifications. Rejection of the Bid will be required if the sample(s) do not show that the product(s) offered conform(s) to the specifications and other requirements of this solicitation. Failure to furnish the sample(s) by the time specified in the Solicitation will require rejection of the Bid.

[ ] 22. **LABORATORY TEST**: Successful bidder is required to accompany delivery of his goods with a Laboratory Test Report indicating that the product he is furnishing the Government meets with the specifications. This report is on the bidder's account and must be from a certified Testing Association.

[X] 23. **AWARD, CANCELLATION, & REJECTION**: Award shall be made to the lowest responsible and responsive bidder, whose bid is determined to be the most advantageous to the Government, taking into consideration the evaluation factors set forth in this solicitation. No other factors or criteria shall be used in the evaluation. The right is reserved as the interest of the Government may require to waive any minor irregularity in bid received. The Chief Procurement Officer shall have the authority to award, cancel, or reject bids, in whole or in part for any one or more items if he determines it is in the public interest. Award issued to the lowest responsible bidder within the specified time for acceptance as indicated in the solicitation, results in a bidding contract without further action by either party. In case of an error in the extension of prices, unit price will govern. It is the policy of the Government to award contracts to qualified local bidders. The government reserves the right to increase or decrease the quantity of the items for award and make additional awards for the same type items and the vendor agrees to such modifications and additional awards based on the bid prices for a period of thirty (30) days after original award. No. award shall be made under this solicitation which shall require advance payment or irrevocable letter of credit from the government (GPR Section 3-202.14.1).

[ ] 24. **MARKING**: Each outside container shall be marked with the Purchase Order number, item number, brief tem description and quantity. Letter marking shall not be less than 3/4" in height.

[ ] 25. **SCHEDULE FOR DELVERY**: Successful bidder shall notify the **Guam Power Authority, Dededo Warehouse at (671) 653-2073**, Information Technology Division at (671) 648-3060, GPA Transportation Supply at (671) 300-8318 and/or Guam Power Authority Cabras Warehouse at (671) 475-3319 at least twenty-four (24) hours before delivery of any item under this solicitation.

[ ] 26. **BILL OF SALE**: Successful supplier shall render Bills of Sale for each item delivered under this contract. Failure to comply with this requirement will result in rejection of delivery. The Bill of Sale must accompany the items delivered but will not be considered as an invoice for payment. Supplier shall bill the Government in accordance with billing instructions as indicated on the Purchase Order.

[ ] 27. **MANUFACTURER'S CERTIFICATE**: Successful bidder is required, upon delivery of any item under this contract, to furnish a certificate from the manufacturer indication that the goods meet the specifications. Failure to comply with this request will result in rejection of delivery payment. Supplier shall bill the Government in accordance with billing instructions as indicated on the Purchase Order.

[X] 28. **INSPECTION**: All supplies, materials, equipment, or services delivered under this contract shall be subject to the inspection and/or test conducted by the Government at destination. If in any case the supplies, materials, equipment, or services are found to be defective in material, workmanship, performance, or otherwise do not conform with the specifications, the Government shall have the right to reject the items or require that they be corrected. The number of days required for correction will be determined by the Government.

[ ] 29. **MOTOR VEHICLE SAFETY REQUIREMENTS**: The Government will only consider Bids on motor vehicles which comply with the requirements of the National Traffic and Motor Vehicle safety Act of 1966 (Public Law 89-563) and Clean Air Act as amended (Public Law 88-206), that are applicable to Guam. Bidders shall state if the equipment offered comply with these aforementioned Federal Laws.

[ ] 30. **SAFETY INSPECTION**: All motor vehicles delivered under this contract must pass the Government of Guam Vehicle Inspection before delivery at destination.

[X] 31. **GUARANTEE**:

a) **Guarantee of Vehicle Type of Equipment**:
The successful bidder shall guarantee vehicular type of equipment offered against defective parts, workmanship, and performance, for a period of not less than one (1) year after date of receipt of equipment. Bidder shall also provide service to the equipment for at least one (1) year. Service to be provided shall include, but will not be limited to tune ups (change of spark plugs, contact points and condensers) and lubrication (change of engine and transmission oil). All parts and labor shall be at the expense of the bidder. All parts found defective and not caused by misuse, negligence or accident within the guarantee period shall be repaired, replaced, or adjusted within six (6) working days after notice from the Government and without cost to the Government. Vehicular type of equipment as used in this context shall include equipment used for transportation as differentiated from tractors, backhoes, etc.

b) **Guarantee of Other Type of Equipment**:
The successful bidder shall guarantee all other types of equipment offered, except those mentioned in 31a, above, against defective parts, workmanship, and performance for a period of not less than three (3) months after date of receipt of equipment. Bidder shall also provide service to the equipment for at least three (3) months. All parts found defective within that period shall be repaired or replaced by the Contractor without cost to the Government. Repairs, adjustments or replacements of defective parts shall be completed by the contractor within six (6) working days after notice from the Government.

c) **Compliance with this Section is a condition of this Bid.**

[X] 32. **REPRESENTATION REGARDING ETHICS IN PUBLIC PROCUREMENT**: The bidder or contractor represents that it has not knowingly influenced and promises that it will not knowingly influence a Government employee to breach any of the ethical standards and represents that it has not violated, is not violating, and promises that it will not violate the prohibition against gratuities and kickbacks set forth on Chapter 11 (Ethics in Public Contracting) of the Guam Procurement Act and in Chapter 11 of the Guam Procurement Regulations.

[X] 33. **REPRESENTATION REGARDING CONTINGENT FEES**: The contractor represents that it has not retained a person to solicit or secure a Government contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except for retention of bona fide employees or bona fide established commercial selling agencies for the purpose of securing business (GPR Section 11-207).

[X] 34. **EQUAL EMPLOYMENT OPPORTUNITY**: Contractors shall not discriminate against any employee or applicant of employment because of race, color, religion, se, or national origin. The contractor will take affirmative action to ensure that employees are treated equally during employment without regards to their race, color, religion, sex, or national origin.

[X] 35. **COMPLIANCE WITH LAWS**: Bidders awarded a contract under this Solicitation shall comply with the applicable standard, provisions, and stipulations of all pertinent Federal and/or local laws, rules, and regulations relative to the performance of this contract and the furnishing of goods.

[X] 36. **CHANGE ORDER**: Any order issued relative to awards made under this solicitation will be subject to and in accordance with the provisions of Section 6-101-03.1 of the Guam Procurement Regulations.

[X] 37. **STOP WORK ORDER**: Any stop work order issued relative to awards made under this solicitation will be subject to and in accordance with the provisions of Section 6-101-04.1 of the Guam Procurement Regulations.

[X] 38. **TERMINATION FOR CONVENIENCE**: Any termination order for the convenience of the Government issued relative towards made under this solicitation will be subject to and in accordance with the provisions of Section 6-101.10 of the Government Procurement Regulations.

[X] 39. **TIME FOR COMPLETION**: It is hereby understood and mutually agreed by and between the contractor and the Government that the time for delivery to final destination or the timely performance of certain services is an essential condition of this contract. If the contractor refuses or fails to perform any of the provisions of this contract within the time specified in the Purchase Order (from the date Purchase Order is acknowledged by vendor), then the contractor is in default. Defaults will be treated subject to and in accordance with the provisions of Section 6-101-08 of the Guam Procurement Regulations.

[X] 40. **JUSTIFICATION OF DELAY**: Bidders who are awarded contracts under this Solicitation, guarantee that the goods will be delivered to their destination or required services rendered within the time specified. If the bidder is not able to meet the specified delivery date, he is required to notify the Chief Procurement Officer of such delay. Notification shall be in writing and shall be receive by the Chief Procurement Officer at least twenty-four (24) hours before the specified delivery date. Notification of delay shall include an explanation of the causes and reasons for the delay including statement(s) from supplier or shipping company causing the delay. The Government reserves the right to reject delay justification if, in the opinion of the Chief Procurement Officer, such justification is not adequate.

[X] 41. **LIQUIDATED DAMAGES**: When the contractor is given notice of delay or nonperformance as specified in Paragraph 1 (Default) of the Termination for Default Clause of this contract and fails to cure in the time specified, the contractor shall be liable for damages for delay in the amount of one-fourth of one percent (1%) of outstanding order per calendar day from date set for cure until either the territory reasonable obtains similar supplies or services if the contractor is terminated for default, or until the contractor provides the supplies or services if the contractor is not terminated for default. To the extent that the contractor's delay or nonperformance is excused under Paragraph (4) (Excuse for Nonperformance or Delayed Performance) of the Termination for Default Clause of this contract, liquidated damages shall not be due the territory. The contractor remains liable for damages caused other than by delay (GPR Section 6-101-09.1).

[X] 42. **PHYSICAL LIABILITY**: If it becomes necessary for the Vendor, either as principal, agent or employee, to enter upon the premises or property of the Government of Guam in order to construct, erect, inspect, make delivery or remove property hereunder, the Vendor hereby covenants and agrees to take, use, provide and make all proper, necessary and sufficient precautions, safeguards and protections against the occurrence of any accidents, injuries or damages to any person or property during the progress of the work herein covered, and to be responsible for, and to indemnify and save harmless the Government of Guam from the payment of all sums of money by reason of all or any such accidents, injuries or damages that may occur upon or about such work, and fines, penalties and loss incurred for or by reasons of the violations of any territorial ordinance, regulations, or the laws of Guam or the United States, while the work is in progress. Contractor will carry insurance to indemnify the Government of Guam against any claim for loss, damage or injury to property or persons arising out of the performance of the Contractor or his employees and agents of the services covered by the contract and the use, misuse or failure of any equipment used by the contractor or his employees or agents, and shall provide certificates of such insurance to the Government of Guam when required.

[X] 43. **CONTACT FOR CONTRACT ADMINISTRATION**: If your firm receives a contract as a result of this Solicitation, please designate a person whom we may contact for prompt administration.

Name: _____ Title: _____

Address: _____ Telephone: _____

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GOVERNMENT OF GUAM

SEALED BID SOLICITATION INSTRUCTIONS

1. **BID FORMS:** Each bidder shall be provided with two (2) sets of Solicitation forms. Additional copies may be provided upon request. Bidders requesting additional copies of said forms will be charged per page in accordance with Section 6114 of the Government Code of Guam. All payments for this purpose shall be by cash, certified check or money order and shall be made payable to the Guam Power Authority.

2. **PREPARATIONS OF BIDS:**
   a) Bidders are required to examine the drawings, specifications, schedule, and all instructions. Failure to do so will be at bidder's risk.
   b) Each bidder shall furnish the information required by the Solicitation. The bidder shall sign the solicitation and print or type his name on the Schedule. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent are to be accompanied by evidence of this authority unless such evidence has been previously furnished to the issuing office.
   c) Unit price for each unit offered shall be shown and such price shall include packing unless otherwise specified. A total shall be entered in the amount column of the Schedule for each item offered. In case of discrepancies between a unit price and extended price, the unit price will be presumed to be correct.
   d) Bids for supplies or services other than those specified will not be considered. Time, if stated as a number of days, means calendar days and will include Saturdays, Sundays, and holidays beginning the day after the issuance of a Notice to Proceed. Time stated ending on a Saturday, Sunday or Government of Guam legal holiday will end at the close of the next business day.

3. **EXPLANATION TO BIDDERS:** Any explanation desired by a bidder regarding the meaning or interpretation of the Solicitation, drawings, specifications, etc., must be submitted in writing and with sufficient time allowed for a written reply to reach all bidders before the submission of their bids. Oral explanations or instructions given before the award of the contract will not be binding. Any information given to a prospective bidder concerning a Solicitation will be furnished to all prospective bidders in writing as an amendment to the Solicitation if such information would be prejudicial to uninformed bidders.

4. **ACKNOWLEDGEMENT OF AMENDMENTS TO SOLICITATIONS:** Receipt of an amendment to a Solicitation by a bidder must be acknowledged by signing an acknowledgement of receipt of the amendment.
   Such acknowledgement must be received prior to the hour and date specified for receipt of bids.

5. **SUBMISSION OF BIDS:**
   a) Bids and modifications thereof shall be enclosed in sealed envelopes and addressed to the office specified in the Solicitation. The bidder shall show the hour and date specified in the Solicitation for receipt, the Solicitation number, and the name and address of the bidder on the face of the envelope.
   b) Telegraphic bids will not be considered unless authorized by the Solicitation. However, bids may be modified or withdrawn by written or telegraphic notice, provided such notice is received prior to the hour and date specified for receipt (see paragraph 6 of these instructions).
   c) Samples of items, when required, must be submitted within the time specified, unless otherwise specified by the Government, at no expense to the Government. If not destroyed by testing, samples will be returned at bidder's request and expense, unless otherwise specified by the Solicitation.
   d) Samples or descriptive literature should not be submitted unless it is required on this solicitation. Regardless of any attempt by a bidder to condition the bid, unsolicited samples or descriptive literature will not be examined or tested at the bidder's risk, and will not be deemed to vary any of the provisions of this Solicitation.

6. **FAILURE TO SUBMIT BID:** If no bid is to be submitted, do not return the solicitation unless otherwise specified. A letter or postcard shall be sent to the issuing office advising whether future Solicitations for the type of supplies or services covered by this Solicitation are desired.

7. **LATE BID, LATE WITHDRAWALS, AND LATE MODIFICATIONS:**
   a) Definition: Any bid received after the time and date set for receipt of bids is late. Any withdrawal or modification of a bid received after the time and date set for opening of bids at the place designated for opening is late (Guam Procurement Regulations Section 3-202)
   b) Treatment: No late bid, late modification, or late withdrawal will be considered unless received before contract award, and the bid, modification, or withdrawal would have been timely but for the action or inaction of territorial personnel directly serving the procurement activity.

8. **DISCOUNTS:**
   a) Notwithstanding the fact that prompt payment discounts may be offered, such offer will not be considered in evaluating bids for award unless otherwise specified in the Solicitation. However, offered discounts will be taken if payment is made within the discount period, even though not considered in the evaluation of bids.
   b) In connection with any discount offered, time will be computed from date of delivery and acceptance of the supplies to the destination as indicated in the purchase order or contract. Payment is deemed to be made for the purpose of earning the discount on the date of mailing of the Government check.

9. **GOVERNMENT FURNISHED PROPERTY:** No material, labor or facilities will be furnished by the Government unless otherwise provided for in the Solicitation.

10. **SELLERS' INVOICES:** Invoices shall be prepared and submitted in quadruplicate (one copy shall be marked "original") unless otherwise specified. Invoices shall be "certified true and correct" and shall contain the following information: Contract and order number (if any), item numbers, description of supplies or services, sizes, quantities, unit prices, and extended total. Bill of lading number and weight of shipment will be shown for shipments made on Government bills of lading.

11. **RECEIPT, OPENING AND RECORDING OF BIDS:** Bids and modifications shall be publicly opened in the presence of one or more witnesses, at the time, date, and place designated in the Invitation for Bids. The name of each bidder, the bid price, and such other information as is deemed appropriate by the Procurement Officer, shall be read aloud and recorded, or otherwise made available. The names and addresses of required witnesses shall be recorded at the opening. The opened bids shall be available for public inspection except to the extent the bidder designates trade secrets or other proprietary data to be confidential as set forth in accordance with Section 12 below. Material so designated shall accompany the bid and shall be readily separable from the bid in order to facilitate public inspection of the non-confidential portion of the bid. Prices, makes and models or catalogue numbers of the items offered, deliveries, and terms of payment shall be publicly available at the time of bid opening regardless of any designation to the contrary (Guam Procurement Regulations Section 3-202.12.2).

12. **CONFIDENTIAL DATA:** The Procurement Officer shall examine the bids to determine the validity of any requests for nondisclosure of trade secrets and other proprietary date identified in writing. If the parties do not agree as to the disclosure of data, the Procurement Officer shall inform the bidders in writing what portions of the bid will be disclosed and that, unless the bidders protest under Chapter 9 of the Guam Procurement Act (P.L. 16-124), the bids will be so disclosed. The bids shall be opened to public inspection subject to any continuing prohibition on the disclosure of confidential data (Guam Procurement Regulations Section 3-202.12.3).

13. **MULTI-STEP SEALED BIDDING:**

a. It is defined as two-phase process consisting of a technical first-phase composed of one or more steps in which bidders submit unpriced technical offers to be evaluated by the territory, and a second-phase in which those bidders whose technical offers are determined to be acceptable during the first-step have their priced bids considered. It is designed to obtain the benefits of competitive sealed bidding by award of a contract to t h lowest responsive, responsible bidder, and at the same time obtained the benefits of the competitive sealed proposals procedure through the solicitation of technical offers and the conduct of discussions to evaluate and determine the acceptability of technical offers.

b. In addition to the requirements set forth in the General Terms and Conditions and the Special provisions, the following applies:
   1). only unpriced technical offers are requested in the first phase;
   2). priced bids will be considered only in the second phase and only from bidders whose unpriced technical offers are found acceptable in the first phase;
   3). the criteria to be used in the evaluation at those specified in the Special Provisions and the General Terms and Conditions;
   4). the territory, to the extent the Procurement Officer finds necessary, may conduct oral or written discussion of the unpriced technical offers;
   5). the bidders, may designate those portions of the unpriced technical offers which contain trade secrets or other proprietary data which are to remain confidential; and,
   6). the service being procured shall be furnished generally in accordance with bidder's technical offer as found to be finally acceptable and shall meet the requirements of the Invitation for Bids.

c. **RECEIPT AND HANDLING OF UNPRICED TECHNICAL OFFERS.**
Unpriced technical offers shall not be opened publicly, but shall be opened in front of two or more procurement officials. Such offers shall not be disclosed to unauthorized persons. Bidders may request nondisclosure of trade secrets and other proprietary data identified in writing.

d. **EVALUATION OF UNPRICED TECHNICAL OFFERS.**
The unpriced technical offers submitted by bidders shall be evaluated solely in accordance with the criteria set forth in the Invitation for Bids. The unpriced technical offers shall be categorized as:
   1). acceptable;
   2). potentially acceptable, that is, reasonably susceptible of being made acceptable; or
   3). unacceptable. The Procurement Officer shall record in writing the basis for finding an offer unacceptable and make it part of the procurement file.

The Procurement Officer may initiate Phase Two of the procedure if, in the Procurement Officer's opinion, there are sufficient acceptable unpriced technical offers to assure effective price competition in the second phase without technical discussions. If the Procurement Officer finds such is not the case, the Procurement Officer shall issue an amendment to the Invitation for Bids or engage in technical discussions as set forth in Subsection 3-202.20.5of this Section.

e. Upon the completion of Phase One, the Procurement Officer shall invite each acceptable bidder to submit a price bid. Upon submission of prices, the Procurement Officer shall prepare the final evaluation and reconsideration for the Chief Procurement Officer's approval.