



THE CITY OF KEY WEST

Post Office Box 1409
Key West, FL 33041-1409

February 20, 2013

To: All Prospective Bidders

Pursuant to the City of Key West's Code of Ordinances Section 2-769: Invitation to Bid (ITB) , the City of Key West is soliciting competitive sealed Bids for **SWITCHGEAR ENCLOSURES & FUEL STATION: ITB NO: 13-011.**

This package contains the following documents.

- Part 1: Procurement Requirements
- Part 2: Contract Documents
- Part 3. Plans and Specifications

Please review your package to ensure it contains all of these documents. If not, contact Sue Snider, City of Key West Purchasing Agent at (305) 809-3815, immediately, to obtain copies of any missing document(s). Please contact Terrence Justice at 305-809-3943 with questions concerning the project.

Firms/corporations submitting a Bid should ensure that the following documents are completed, certified, and returned as instructed: Bid Form, Anti-Kickback Affidavit, Public Entity Crimes Certification, Local Vendor Certification and, past project history.

Contract Documents

For

ITB#13-011: SWITCHGEAR ENCLOSURES & FUEL STATION (US NAVY IN-KIND PROJECT)

CONSISTING OF:

PROCUREMENT REQUIREMENTS
CONTRACT DOCUMENTS
PLANS AND SPECIFICATIONS

ITB# 13-011

PREPARED BY:

The City of Key West
Key West, Florida

February 20, 2013

ITB 13-011

SWITCHGEAR ENCLOSURES & FUEL STATION

PROJECT DESCRIPTION

General: This project proposes the turn-key construction of four enclosures of approximately 1,000 square feet each at existing transformer and switchgear locations at the Truman Annex facility of Naval Air Station Key West (NASKW), three of which are located on the Mole Pier. In addition, this project includes an alternate bid item to construct a fuel storage and delivery facility along the Quay wall at the NASKW Truman Annex facility.

Key features of the project:

Electrical Enclosures Key Items

1. Three enclosures on the pier, 960 sf each. (SW #1 - #3)
2. One enclosure between Pier 8 and NOAA building, 1104 sf. (SW #4)
3. Each building comprised of CMU wall on continuous reinforced footer with precast hollow-core roof planks and bituminous membrane waterproofing.
4. Overall height of each building is 13'4" above grade.
5. Each building will have 3 man-doors and one roll-up door 12 feet in width.
6. Building at SW#4 shall have an additional roll-up door 10-foot in width.
7. Each building will have redundant HVAC systems.
8. Each building will require no plumbing for water or sewer.
9. Each building will have 225A 120/208V single-phase electrical.
10. Each building will be equipped with fire detection and alarm system.
11. Fire suppression systems are not required for these buildings.
12. Each building will be equipped with environmental and systems monitoring telemetry.
13. Each building will be equipped with flood-proofing and sump pumps.
14. Bid options will include specifying stainless steel for roll-up doors, aluminum flood panels for all doors, stainless steel watertight man-doors.
15. The building at SW#4 is an Alternate Bid Item and includes modification of existing fencing.

Fueling Station Key Items

1. Fueling Station at the Quay wall is an Alternate Bid Item.
2. 1000 Gallon fuel tank.
3. Stainless steel tank construction is a bid option.
4. Transformer to convert 13.8kV primary feed.
5. SF6 switchgear.
6. Emergency shutoff systems.
7. Fueling station to be fully fenced in and protected by bollards.
8. 100-foot fuel delivery hose.
9. Submersible electric pump.
10. Manual-retrieve hose reel.
11. Site work includes concrete pads for all equipment.

Notes:

- a. The Contractor to whom this bid is awarded shall at his own expense provide Safety Site and Health Officer responsible to develop, maintain, and report on an Accident Prevention Plan as specifically outlined elsewhere in these bid documents.
- b. The Contractor to whom this bid is awarded shall at his own expense provide Construction Quality Control Manager (QCM) responsible to develop, maintain, and report on a Quality Control Plan as specifically outlined elsewhere in these bid documents.
- c. The Contractor to whom this bid is awarded shall at his own expense retain the services of an independent Construction Administration (CA) firm responsible to oversee and report on Contractor's, subcontractors', QCM's and SSHO's performance and adherence to the provisions and requirements of the contract.
- d. Project location is on US Navy Property. Contractors shall be aware that they will be required to obtain US Navy *RAPID*Gate Passes and shall include the cost of this in their bid. The process for obtaining *RAPID*Gate passes should be undertaken immediately upon Notice of Award.
- e. A professional archaeologist will be on-site to monitor all ground-disturbing activities associated with this undertaking as required by the State Historic Preservation Office. The cost associated with this requirement shall be a part of this bid. The archaeologist will not be required to monitor work at SW#1 through SW#3 located on the Mole Pier. The archaeologist will be required to monitor excavation at SW#4 and at the Fueling Station. A confidential report shall be prepared by the archaeologist and delivered to the US Navy.
- f. Bidders are directed to the Specifications sections for the required submittals.
- g. Bidders are directed to the Bidder's Checklist for the required bid documents.

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END OF SECTION

PART 1

PROCUREMENT REQUIREMENTS

INVITATION TO BID (ITB)

Sealed bids for the City of Key West **SWITCHGEAR ENCLOSURES & FUEL STATION**, addressed to the City of Key West, will be received at the Office of the City Clerk, City of Key West, 3126 Flagler Ave., Key West Florida, 33040 until 3:00 p.m. local time, March 13, 2013 and then will be publicly opened and read. Any bids received after the time and date specified, as determined by the precise time the package is stamped "Received by the City Clerk," will not be considered.

Please submit (3) originals and three (3) USB Drives with one single PDF file of the entire bid package on each USB Drive. Bid package is to be enclosed in a sealed envelope, clearly marked on the outside "**ITB 13-011: SWITCHGEAR ENCLOSURES & FUEL STATION**" addressed and delivered to the City Clerk at the address noted above.

The project proposes to construct concrete enclosures to house currently exposed electrical switchgear and transformer equipment on US Navy property at Truman Annex.

Drawings and Specifications may be obtained from Demand Star by Onvia. Please contact Demand Star at www.demandstar.com or call 1-800-711-1712.

A Mandatory Site Visit will be held at 10:00 a.m. on February 27, 2013 at: Truman Annex, Port Operations Security Entrance southwest of the NOAA Eco Discovery Facility. See Location Map in Part 3.

EACH BID MUST BE SUBMITTED ON THE PRESCRIBED FORM AND ACCOMPANIED BY BID SECURITY AS PRESCRIBED IN THE INSTRUCTIONS TO BIDDERS, PAYABLE TO THE CITY OF KEY WEST, FLORIDA, IN AN AMOUNT NOT LESS THAN FIVE (5) PERCENT OF THE AMOUNT BID.

THE BIDDER MUST BE A LICENSED CONTRACTOR BY THE STATE OF FLORIDA AND SUBMIT PROOF OF SUCH WITH THE BID.

The successful Bidder will be required to furnish the necessary additional bond(s) for the faithful performance of the Contract, as prescribed in the Bidding Documents.

All bid bonds, contract bonds, insurance contracts, and certificates of insurance shall be either executed by or countersigned by a licensed resident agent of the Surety or Insurance Company having his place of business in the State of Florida, and in all ways complying with the insurance laws of the State of Florida. Further, the said Surety or Insurance Company shall be duly licensed and qualified to do business in the State of Florida.

Before a Contract will be awarded for the work contemplated herein, the CITY will conduct such investigation as is necessary to determine the performance record and ability of the apparent low Bidder to perform the size and type of work, compliant with US Navy (NAVFAC) standards as specified under this Contract. Upon request, the Bidder shall

submit such information as deemed necessary by the CITY to evaluate the Bidder's qualifications. Such qualifications shall include but not be limited to the specific experience and credentials of the proposed Quality Control Program Manager (QCM), the proposed Site safety and health Officer (SSHO), and the proposed independent Construction Administration (CA) firm, as described elsewhere in this Invitation to Bid.

For information concerning the proposed work, or for appointment to visit the site of the proposed work, contact the designated Engineer by the General Services and Utilities Department of the City of Key West:

Terrence Justice
City of Key West – Engineering
3140 Flagler Ave.
Key West, FL 33040
tj028x@keywestcity.com

As stated above at the time of the bid submittal the Bidder must provide satisfactory documentation of State Licenses. The successful Bidder must also be able to satisfy the City Attorney as to such insurance coverage and legal requirements as may be demanded by the Bid in question.

The City may reject bids for any and/or all of the following reasons: (1) for budgetary reasons, (2) if the bidder misstates or conceals a material fact in its bid, (3) if the bid does not strictly conform to the law or is non-responsive to the bid requirements, (4) if the bid is conditional, or (5) if a change of circumstances occurs making the purpose of the bid unnecessary to the City. The City may also waive any minor formalities or irregularities in any bid, (6) if such waiver is in the best interest of the City, or (7) if, in the opinion of the City, any or all of the submitted and/or verified qualifications fail to meet the standards set forth in these ITB documents, taken as a whole.

Dated this ___ day of _____ 2013.

CITY OF KEY WEST

By _____
Bob Vitas, City Manager

* * * * *

STATEMENT OF NO BID #13-011

NOTE: IF YOU DO NOT INTEND TO BID, PLEASE RETURN THIS FORM ONLY TO:

CITY OF KEY WEST
FINANCE DEPARTMENT
P.O. BOX 1409
KEY WEST, FLORIDA 33040
ATTN: S. SNIDER

We, the undersigned have declined to bid on the above-noted Invitation to Bid for the following reason(s)

- Insufficient time to respond to Invitation to Bid
- Do not offer this product
- Our schedule will not permit us to perform
- Unable to meet specifications
- Specifications unclear (please explain below)
- Remove us from your "Bidder Mailing List"
- Other (Please specify below)

We understand that if a "No Bid" statement is not returned, our name may be removed from the Bidder's list of the City of Key West.

COMPANY
NAME: _____

AUTHORIZED
AGENT: _____

COMPANY
ADDRESS: _____

DATE: _____ TELEPHONE: _____

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INSTRUCTIONS TO BIDDERS

1. CONTRACT DOCUMENTS

A. FORMAT

The Contract Documents are divided into parts, divisions, and sections for convenient organization and reference. Generally, there has been no attempt to divide the Specification sections into work performed by the various building trades, work by separate subcontractors, or work required for separate facilities in the Project.

B. DOCUMENT INTERPRETATION

The separate sections contained within these Contract Documents are intended to be mutually cooperative and to provide all details reasonably required for the execution of the proposed work.

Should there be any doubt as to the meaning or intent of said Contract Documents, the Bidder should request of the Engineer, in writing (at least 6 working days prior to bid opening) an interpretation thereof. Any interpretation or change in said Contract Documents will be made only in writing, in the form of Addenda to the Documents which will be furnished to all registered holders of Contract Documents. Bidders shall submit with their Bid, or indicate receipt of, all Addenda. The Owner will not be responsible for any other explanation or interpretations of said Documents.

C. DRAWINGS

Details of construction are bound separately.

2. GENERAL DESCRIPTION OF THE PROJECT

A general description of the work to be done is contained in the Invitation to Bid. The scope is specified in applicable parts of these Contract Documents.

3. QUALIFICATION OF CONTRACTORS

The prospective Bidders must meet the statutorily prescribed requirements before award of Contract by the Owner.

Bidders must hold or obtain all licenses or certificates required by federal, state, or local statutes, or regulations in order to bid and perform the work specified herein.

4. BIDDER'S UNDERSTANDING

Each Bidder must inform himself of the conditions relating to the execution of the work, and it is assumed that he will inspect the site and make himself thoroughly familiar with all the Contract Documents. Failure to do so will not relieve the successful Bidder of his obligation to enter into a Contract and complete the contemplated work in strict accordance with the Contract Documents. It shall be the Bidder's obligation to verify for himself and to his complete satisfaction all information concerning site and subsurface conditions. Reference geotechnical report included in bid documents in Part 2, 00 73 00 (Attachment F).

The Owner will make available to prospective Bidders upon request and at the office of the Engineer, prior to bid opening, any information that he may have as to subsurface conditions and surface topography at the worksite, including such existing geotechnical reports as are available.

Information derived from inspection of topographic maps, geotechnical reports, or from Drawings showing location of utilities and structures will not in any way relieve the Contractor from any risk, or from properly examining the Site and making such additional investigations as he may elect, or from properly fulfilling all the terms of the Contract Documents.

Each Bidder shall inform himself of, and the Bidder awarded a Contract shall comply with, federal, state, and local laws, statutes, and ordinances relative to the execution of the work. This requirement includes, but is not limited to, applicable regulations concerning minimum wage rates, nondiscrimination in the employment of labor, protection of public and employee safety and health, environmental protection, the protection of natural resources, fire protection, burning and nonburning requirements, permits, fees, and similar subjects.

5. TYPE OF PROPOSAL

A. LUMP SUM

Bidders shall submit a Bid on lump sum basis as set forth in the Bid Form.

The Lump Sum Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in paragraph 11.02 of the General Conditions.

6. PREPARATION OF PROPOSALS

A. GENERAL

All blank spaces in the Bid form must be filled in for all schedules and associated parts, as required, preferably in BLACK ink. All price information shall be clearly shown in figures where required. No changes shall be made in the phraseology of the forms. **In case of discrepancy between unit prices and extended totals, unit prices shall prevail.**

Any Bid shall be deemed informal which contains omissions, erasures, alterations, or additions of any kind, or prices uncalled for, or in which any of the prices are obviously unbalanced, or which in any manner shall fail to conform to the conditions of the published Invitation to Bid.

Only one Bid from any individual, firm, partnership, or corporation, under the same or different names, will be considered. Should it appear to the Owner that any Bidder is interested in more than one Bid for work contemplated, all Bids in which such Bidder is interested will be rejected.

B. DESCRIPTION OF SUPPLIERS

The manufacturer name, trade name, brand name, or catalog number used in the Specifications is for the purpose of describing and establishing equipment that has been presented for this Project. The basis of design for this fencing project is the use of the Ameristar® Impasse™ Gauntlet™ Fence System. The City will consider substitutes for this project so long as the supplier can demonstrate their product is equal or exceeds the referenced Ameristar® product line.

The Bidder shall submit catalog cuts and applicable warranties for all materials and products proposed on this Project.

C. SIGNATURE

The Bidder shall sign his Bid in the blank space provided therefore. If Bidder is a corporation, the legal name of the corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the corporation. If Bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign Contracts in behalf of the partnership. If signature is by an agent, other than an officer of a corporation or a member of a partnership, a notarized power-of-attorney must be on file with the Owner prior to opening of Bids or submitted with the Bid, otherwise the Bid will be regarded as not properly authorized.

D. SPECIAL BIDDING REQUIREMENTS

The Bidder's attention is brought to the hiring practices and licenses and permits of the City of Key West. These are defined in the addition to Article 39, Ordinances, Permits and Licenses, as set forth in the Supplementary Conditions.

The Bidder shall submit with his Bid experience records showing his experience, SSHO experience, CQM experience, and CA Firm experience and expertise in construction similar to this project. Contractor experience record shall provide at least five current or recent projects of similar work, preferably within Florida or the southeastern United States. For each project the following information shall be provided:

1. Description and location of work.
2. Contract amount.
3. Dates work was performed.
4. Owner.
5. Name of Owner's contact person and phone number.
6. Engineer.
7. Name of Engineer's contact person and phone number.

E. ATTACHMENTS

Bidder shall complete and submit the following forms with this bid:

1. Anti Kickback Affidavit.
2. Public Entity Crimes.
3. Key West Indemnification Form.
4. Disclosure of Lobbying Activities.
5. Non-Collusion Declaration and Compliance with 49 CFR §29.
6. Suspension and Debarment Certification.

F. PUBLIC ENTITY CRIMES

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.”

G. ANTI-KICKBACK AFFIDAVIT

The Bidder shall submit a signed and notarized Anti-Kickback Affidavit with Bid on the form provided herein.

H. SECURITY/SITE ACCESS

The Bidders attention is directed to the requirement to obtain access to the site during construction. Since the site is located on a Navy Facility, access is controlled. The successful Bidder is responsible in obtaining access for personnel, subcontractors, and deliveries. All costs associated with this requirement are to be included in the Bid.

7. STATE AND LOCAL SALES AND USE TAXES

Unless the Supplementary Conditions contains a statement that the Owner is exempt from state sales tax on materials incorporated into the work due to the qualification of the work under this Contract, all state and local sales and use taxes, as required by the laws and statutes of the state and its political subdivisions, shall be paid by the Contractor. Prices quoted in the Bid shall include all nonexempt sales and use taxes, unless provision is made in the Bid form to separately itemize the tax.

8. LOCAL PREFERENCE

Under a competitive bid solicitation, when a responsive, responsible non-local business submits the lowest price bid, and the bid submitted by one or more responsive, responsible local businesses within five percent of the price submitted by the non-local business, then the local business with the apparent lowest bid offer may have the opportunity to submit an offer to match the price(s) offered by the lowest, qualified and responsive non-local bidder within three working days of the notice of the intent to award. If the lowest local bidder submits a bid that fully matches the lowest bid from the lowest bid from the lowest non-local bidder tendered previously, then the award shall be made to such local bidder. If the lowest local bidder declines or is unable to match the lowest non-local bid price(s), then the award shall be made to the non-local business.

9. SUBMISSION OF PROPOSALS

All Bids must be submitted not later than the time prescribed, at the place, and in the manner set forth in the Invitation to Bid. Bids must be made on the Bid forms provided herewith. The Bidder shall submit three (3) originals and **THREE (3) ELECTRONIC COPIES ON THREE (3) USB DRIVES WITH A SINGLE PDF FILE OF THE FULL PROPOSAL** and all required bonds, attachments, and forms.

Each Bid must be submitted in two sealed envelopes one within the other, so marked as to indicate the Bidder's name and its contents without being opened, and addressed

in conformance with the instructions in the Invitation to Bid. Each bid must be STAMPED AS RECEIVED on or before 3:00 PM March 13, 2013 or will not be considered.

10. MODIFICATION OR WITHDRAWAL OF PROPOSALS

Prior to the time and date designated for receipt of Bids, any Bid submitted may be withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder or by telegram. If by telegram, written confirmation over the signature of the Bidder shall be mailed and postmarked on or before the date and time set for receipt of Bids. No Bid may be withdrawn after the time scheduled for opening of Bids, unless the time specified in paragraph Award of Contract of these Instructions to Bidders shall have elapsed.

11. BID SECURITY

Bids must be accompanied by cash, a certified check, or cashier's check drawn on a bank in good standing, or a bid bond issued by a Surety authorized to issue such bonds in the state where the work is located, in the amount of 5 percent of the total amount of the Bid submitted. This bid security shall be given as a guarantee that the Bidder will not withdraw his Bid for a period of 60 days after bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish properly executed Performance and Payment Bonds, each in the full amount of the Contract price within the time specified.

The Attorney-in-Fact who executes this bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond. Where State Statute requires, certification by a resident agent shall also be provided.

If the Bidder elects to furnish a Bid Bond, he shall use the Bid Bond form bound herewith, or one conforming substantially thereto in form and content.

12. RETURN OF BID SECURITY

Within 15 days after the award of the Contract, the Owner will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the Contract. Retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and any guarantees which have been forfeited, will be returned to the respective Bidders whose Bids they accompanied.

13. AWARD OF CONTRACT

The award will be made under one Contract by the Owner on the basis of the Base Bid from the lowest, responsive, qualified, responsible Bidder. The Owner may

award entire Bid or selected line items based on the City's best interest and available funds at time of Award.

Within 60 calendar days after the opening of Bids, the Owner will accept one of the Bids or will act in accordance with the following paragraphs. The acceptance of the Bid will be by written notice of award, mailed to the office designated in the Bid, or delivered to the Bidder's representative. In the event of failure of the lowest responsive, responsible Bidder to sign the Contract and provide an acceptable Performance Bond, Payment Bond, insurance certificate(s) and evidence of holding required licenses and certificates, the Owner may award the Contract to the next lowest responsive, responsible Bidder. Such award, if made, will be made within 75 days after the opening of Bids.

The Owner reserves the right to accept or reject any or all Bids, and to waive any informalities and irregularities in said Bids.

14. EXECUTION OF CONTRACT

The successful Bidder shall, within 14 calendar days after receiving Notice of Award, sign and deliver to the Owner a Contract in the form hereto attached, together with the insurance certificate examples of the bonds as required in the Contract Documents and evidence of holding required licenses and certificates. Within 10 working days after receiving the signed Contract from the successful Bidder, the Owner's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

15. CONTRACT BONDS

A. PERFORMANCE AND PAYMENT BONDS

The successful Bidder shall file with the Owner, at the time of delivery of the signed Contract, a Performance Bond and Payment Bond on the form bound herewith, each in the full amount of the Contract price in accordance with the requirements of Florida Statutes Section 255.05 or 713.23, as applicable, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the construction of the work, and to cover all guarantees against defective workmanship or materials, or both, during the warranty period following the date of final acceptance of the work by the Owner. The Surety furnishing this bond shall have a sound financial standing and a record of service satisfactory to the Owner, shall be authorized to do business in the State of Florida, and shall be listed on the current U.S. Department of Treasury Circular Number 570, or amendments thereto in the Federal Register, of acceptable Sureties for federal projects.

B. POWER-OF-ATTORNEY

The Attorney-in-Fact (Resident Agent in state which work is being performed) who executes this Performance and Payment Bond in behalf of the Surety must attach a notarized copy of his power-of-attorney as evidence of his authority to bind the Surety on the date of execution of the bond.

All Contracts, Performance and Payment Bonds, and respective powers-of-attorney will have the same date.

16. FAILURE TO EXECUTE CONTRACT AND FURNISH BOND

The Bidder who has a Contract awarded to him and who fails to promptly and properly execute the Contract or furnish the required Bonds shall forfeit the bid security that accompanied his bid, and the bid security shall be retained as liquidated damages by the Owner, and it is agreed that this said sum is a fair estimate of the amount of damages the Owner will sustain in case the Bidder fails to enter into a Contract or furnish the required Bonds. Bid security deposited in the form of cash, a certified check, or cashier's check shall be subject to the same requirement as a Bid Bond.

17. PERFORMANCE OF WORK BY CONTRACTOR

The Contractor shall perform on the site and with his own organization, labor equivalent to at least 40 percent of the total amount of the work to be performed under this Contract and materials. If, during the progress of the work hereunder, the Contractor requests a reduction of such percentage, and the Engineer determines that it would be to the client's advantage, the percentage of the labor required to be performed by the Contractor's own organization may be reduced; PROVIDED prior written approval of such reduction is obtained by the contractor from the Engineer.

Each Bidder must furnish with his Bid a list of the items that he will perform with his own forces and the estimated total cost of these items.

18. TIME OF COMPLETION

The time of completion of the work to be performed under this Contract is the essence of the Contract. Delays and extensions of time may be allowed in accordance with the provisions stated in the General Conditions. The time allowed for the completion of the work authorized is stated in the Bid.

19. Schedule Impacts that affect the bid

a. Cruise Ship operations at Outer Mole.

Contractor shall be required to maintain embarkation/debarkation traffic on the Outer Mole Pier at any time a cruise ship is docked and shall cause or create no impediments or delays to that traffic. The ability to continue the use the Outer Mole Pier by cruise ships is critical to the city. No impacts to the docking of cruise ships and the associated services, security, or passenger transportation will be allowed by this project. If contractor activity impacts a cruise ship docking event, the contractor will be charged the damages resulting from the lost revenue and will be taken from the funds allocated on this project. The average revenue for a docking event is \$30,000.

Noise at the Mole Pier sites should not exceed 90 dBa when a cruise ship is at dock.

In developing their construction schedule and their bid, the contractor shall take into account the frequency of use of the Outer Mole Pier (OM). Cruise Ship frequency information can be obtained from

<http://www.keywestcity.com/department/calendar.php>

Contractor is advised that ships up to 1004 feet long and 130k gross tons required use of the outer mole. If a ship arrival time requires adjustment due to weather or mechanical problems, contractor will be given a 48 hour notice of the change.



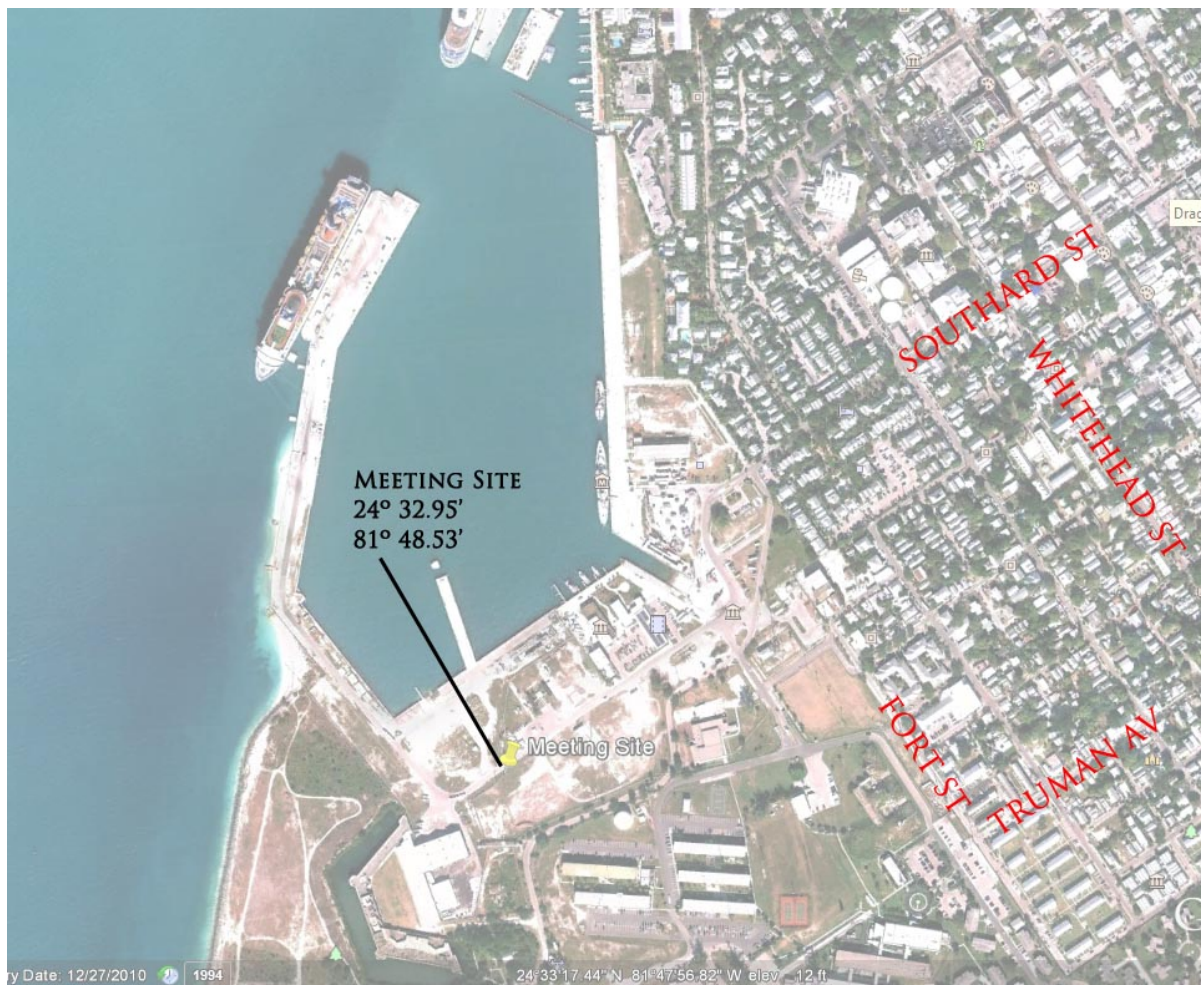
850 foot cruise ship at the Outer Mole Pier (OM)

b. OFFSHORE POWER BOAT RACES:

Early in November the Offshore Power Boat Races occur in Key West. The contractor will not be able to work at the site or access the site during the 9 days of staging and racing (Saturday November 2 through through Sunday 10, 2013). All work and staging areas shall be properly and thoroughly secured from public access.

20. MANDATORY SITE VISIT

An Mandatory Site Visit will be held at 10 AM on 27 February 2013. Contractors should arrive not later than 10:15, shall bring proper identification and be prepared to walk approximately 3,000 feet to the site and back. The meeting point for the site visit is the entrance gate to the Navy Mole Property.



21. ADDITIONAL REQUIREMENTS

Bidders are directed to Attachments D through F inclusive of the Supplementary Conditions for criteria relating to Safety Program, Quality Control Program, and independent Construction Administration requirements of this project.

22. BIDDERS' QUESTIONS

Bidders shall submit any and all questions regarding this bid in writing to.

Terrence Justice
City of Key West – Engineering
3140 Flagler Ave.
Key West, FL 33040
tjustice@keywestcity.com

All project and bid-related questions received before 5:00 pm Wednesday March 6, 2013 will be answered via issuance of an Addendum to the ITB package. Questions received after that time will not be responded to.

END OF SECTION

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NOTE TO BIDDER: Use preferably BLACK ink for completing this Bid form.

BID FORM

To: The City of Key West

Address: 3140 Flagler Ave, Key West, Florida 33040

Project Title: Electrical Enclosures & Fuel Station

City of Key West Project No.: **ITB 13-011**

Bidder's contact for additional information on this Bid:

Company Name: _____

Contact Name: _____

Telephone: _____

BIDDER'S DECLARATION AND UNDERSTANDING

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Bid are those named herein, that this Bid is, in all respects, fair and without fraud, that it is made without collusion with any official of the Owner, and that the Bid is made without any connection or collusion with any person submitting another Bid on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the project, that he has personally inspected the site, that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the Work and to identify the said quantities with the detailed requirements of the Contract Documents, and that this Bid is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Bid.

The Bidder further agrees, as evidenced by signing the Bid, that if awarded a Contract, the Florida Trench Safety Act and applicable trench safety standards will be complied with.

CONTRACT EXECUTION AND BONDS

The Bidder agrees that if this Bid is accepted, he will, within 10 days, not including Sundays and legal holidays, after Notice of Award, sign the Contract in the form annexed hereto, and will at that time, deliver to the Owner examples of the Performance Bond and Payment Bond required herein, and evidence of holding required licenses and certificates, and will, to the extent of his Bid, furnish all machinery, tools, apparatus, and other means of construction and do the Work and furnish all the materials necessary to complete all work as specified or indicated in the Contract Documents.

CERTIFICATES OF INSURANCE

Bidder agrees to furnish the Owner, before commencing the Work under this Contract, the certificates of insurance as specified in these Documents.

START OF CONSTRUCTION AND CONTRACT COMPLETION TIMES

The Bidder agrees to begin work within 10 calendar days after the date of the Notice to Proceed and to achieve Substantial Completion within 150 calendar days from the date when the Contract Times commence to run as provided in paragraph 2.03.A of the General Conditions, and Work will be completed and ready for final payment and acceptance in accordance with paragraph 14.07 of the General Conditions within 180 calendar days from the date when the Contract Times commence to run.

LIQUIDATED DAMAGES

In the event the Bidder is awarded the Contract, Owner and Bidder recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph Start of Construction and Contract Completion Times above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Owner and Bidder also recognize the delays, expense, and difficulties involved in proving in a legal or other dispute resolution proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Bidder agree that as liquidated damages for delay (but not as a penalty) Bidder shall pay Owner **\$500** per day for each day that expires after the time specified for substantial completion.

After Substantial Completion, if Bidder neglects, refuses, or fails to complete the remaining Work within the Contract Times or any Owner-granted extension thereof, Bidder shall pay Owner **\$200** for each day that expires after the time specified in paragraph Start of Construction and Contract Completion Times, above for completion and readiness for final payment. Liquidated damages shall run concurrent.

Owner will recover such liquidated damages by deducting the amount owed from the final payment or any retainage held by Owner.

ADDENDA

The Bidder hereby acknowledges that he has received Addenda Nos. _____, _____, _____, _____, _____, (Bidder shall insert No. of each Addendum received) and agrees that all addenda issued are hereby made part of the Contract Documents, and the Bidder further agrees that his Bid(s) includes all impacts resulting from said addenda.

SALES AND USE TAXES

The Bidder agrees that all federal, state, and local sales and use taxes are included in the stated Bid Prices for the Work. Cash allowances DO NOT include any sales and use tax. Equipment allowance includes taxes as shown in Equipment Suppliers' Bid.

PUBLIC ENTITY CRIMES

“A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list.”

COMBINED UNIT PRICE AND LUMP SUM WORK

The Bidder further proposes to accept as full payment for the Work proposed herein the amounts computed under the provisions of the Contract Documents. For unit price bid items, the estimate of quantities of work to be done is tabulated in the Proposal and, although stated with as much accuracy as possible, is approximate only and is assumed solely for the basis of calculation upon which the award of Contract shall be made. For lump sum bid items, it is expressly understood that the amounts are independent of the exact quantities involved. The Bidder agrees that the amounts for both unit price and lump sum work represent a true measure of labor and materials required to perform the Work, including all allowances for inspection, testing, overhead and profit for each type of work called for in these Contract Documents. The amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

Bid Form ITB 13-011

City of Key West Project: OM1301

Base Bid :

SW#1 through SW#3 Enclosures (inclusive)	(Lump Sum)	_____	(1)
Accident Prevention Plan (APP) Management	(Lump Sum)	_____	(2)
Quality Control (QC) Program Management	(Lump Sum)	_____	(3)
Construction Administration (CA) Program Management	(Lump Sum)	_____	(4)

Total Bid: _____
(1)+(2)+(3)+(4)

_____ Dollars and _____ Cents

Total Bid Written in Words has precedence (Basis of Award)

All Bid Items Below are "Alternate Bid Items" :

Alternate: SW#4 Enclosure (includes all site work within 100 feet of SW#4 Location) (Lump Sum) _____ (5)

Alternate Bid Items for SW#1 - SW#4

(Option # corresponds to Notes on Sheet A601 of Drawing Set)

	Quan.	Meas.	Unit Cost	Ext.	
Alternate: Option 1. Stainless Steel Watertight Man-door 3 ⁰	12	ea.	_____	_____	(6)
Alternate: Option 2. Stainless Steel OH Coil Roll-up Door 12'0"	4	ea.	_____	_____	(7)
Alternate: Option 3. Aluminum Flood Panel for 3 ⁰ Man-door	12	ea.	_____	_____	(8)
Alternate: Option 4. Aluminum Flood Panel for 12'0" Roll-up Door	4	ea.	_____	_____	(9)
Alternate: Option 5. Stainless Steel OH Coil Roll-up Door 10'0"	1	ea.	_____	_____	(10)
Alternate: Option 6. Aluminum Flood Panel for 10'0" Roll-up Door	1	ea.	_____	_____	(11)

Alternate Bid Items: Fueling Station

Alternate: Fueling Station: Site Work, Electrical, Fence, Concrete, Std. Tank (Lump Sum) _____ (12)

Alternate: Stainless Steel Option for 1000 Gal. Fuel Tank (Lump Sum) _____ (13)

SUBCONTRACTORS

The Bidder further proposes that the following subcontracting firms or businesses will be awarded subcontracts for the following portions of the Work in the event that the Bidder is awarded the Contract:

_____ Name

_____ Street _____ City _____ State _____ Zip

_____ Name

_____ Street _____ City _____ State _____ Zip

_____ Name

_____ Street _____ City _____ State _____ Zip

_____ Name

_____ Street _____ City _____ State _____ Zip

Surety

_____ whose address is

_____ Street _____ City _____ State _____ Zip

Bidder

The name of the Bidder submitting this Bid is _____

_____ doing business at

Street

City

State

Zip

which is the address to which all communications concerned with this Bid and with the Contract shall be sent.

The names of the principal officers of the corporation submitting this Bid, or of the partnership, or of all persons interested in this Bid as principals are as follows:

If Sole Proprietor or Partnership

IN WITNESS hereto the undersigned has set his (its) hand this ___ day of _____ 20__.

Signature of Bidder

Title

If Corporation

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this ____ day of 20.

(SEAL)

Name of Corporation

By: _____

Title: _____

Attest: _____

Secretary

END OF SECTION

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FLORIDA BID BOND

BOND NO. _____

AMOUNT: \$ _____

KNOW ALL MEN BY THESE PRESENTS, that _____

hereinafter called the Contractor (Principal), and _____

a corporation duly organized and existing under and by virtue of the laws of the State of Florida, hereinafter called the Surety, and authorized to transact business within the State of Florida, as Surety, are held and firmly bound unto The City of Key West as Owner

(Obligee), in the sum of: _____

_____ DOLLARS (\$ _____), for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the Principal is herewith submitting his or its Bid Proposal for **ITB 13-011 SWITCHGEAR ENCLOSURES & FUEL STATION**.

WHEREAS, the Principal contemplates submitting or has submitted a bid to the Obligee for the furnishing of all labor, materials (except those to be specifically furnished by the Owner), equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Proposal and the detailed Drawings and Specifications, entitled:

WHEREAS, it was a condition precedent to the submission of said bid that a cashier's check, certified check, or bid bond in the amount of 5 percent of the base bid be submitted with said bid as a guarantee that the Bidder would, if awarded the Contract, enter into a written Contract with the Owner for the performance of said Contract, within 10 working days after written notice having been given of the award of the Contract.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal within 14 consecutive calendar days after written notice of such acceptance, enters into a written Contract with the Oblige and furnishes the Performance and Payment Bonds, each in an amount equal to 100 percent of the awarded base bid, satisfactory to the Owner, then this obligation shall be void; otherwise the sum herein stated shall be due and payable to the Oblige and the Surety herein agrees to pay said sum immediately upon demand of the Oblige in good and lawful money of the United States of America, as liquidated damages for failure thereof of said Principal.

Signed and sealed this ____ day of _____, 2013

Principal

By: _____

Surety

By: _____
Attorney-In-Fact

END OF SECTION

ANTI-KICKBACK AFFIDAVIT

STATE OF FLORIDA)
 : SS
COUNTY OF MONROE)

I, the undersigned hereby duly sworn, depose and say that no portion of the sum herein bid will be paid to any employees of the City of Key West as a commission, kickback, reward or gift, directly or indirectly by me or any member of my firm or by an officer of the corporation.

By: _____

Sworn and subscribed before me this
____ day of _____, 2013

NOTARY PUBLIC, State of Florida
at Large

My Commission Expires: _____

END OF SECTION

**SWORN STATEMENT UNDER SECTION 287.133(3)(A)
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

*THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER
AUTHORIZED TO ADMINISTER OATHS.*

1. This sworn statement is submitted with Bid or Proposal for _____

2. This sworn statement is submitted by _____
(name of entity submitting sworn statement)

whose business address is _____

_____ and (if applicable) its Federal Employer

Identification Number (FEIN) is _____

(If the entity has no FEIN, include the Social Security Number of the individual signing this

sworn statement _____

3. My name is _____
(please print name of individual signing)

and my relationship to the entity named above is _____

4. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including but not limited to, any bid or contract for goods or services to be provided to any public or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, material misrepresentation.

5. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication guilt, in any federal or state trial court of record relating to charges brought by indictment information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

6. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means

1. A predecessor or successor of a person convicted of a public entity crime; or
2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

7. I understand that a "person" as defined in Paragraph 287.133(1)(8), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.
8. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies).

____ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989, AND (Please indicate which additional statement applies.)

____ There has been a proceeding concerning the conviction before a hearing of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer did not place the person or affiliate on the convicted vendor list. (Please attach a copy of the final order.)

____ The person or affiliate was placed on the convicted vendor list. There has been a subsequent proceeding before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer determined that it was in the public interest to remove the person or affiliate from the convicted vendor list. (Please attach a copy of the final order.)

____ The person or affiliate has not been put on the convicted vendor list. (Please describe any action taken by or pending with the Department of General Services.)

(signature)

(date)

STATE OF _____

COUNTY OF _____

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

_____ who, after first being sworn by me, affixed his/her
(name of individual signing)

signature in the space provided above on this ____ of _____, 2012.

My commission expires:

NOTARY PUBLIC

CONTRACTOR Insurance/Indemnity Requirements

Insurance

CONTRACTOR is to secure, pay for, and file with the City of Key West, prior to commencing any work under the Contract, all certificates for Workers' Compensation, Public Liability, and Property Damage Liability Insurance and such other insurance coverages as may be required by specifications and addenda thereto, in at least the following minimum amounts with specification amounts to prevail if greater than minimum amounts indicated. Notwithstanding any other provision of the Contract, the **CONTRACTOR** shall provide the minimum limits of liability insurance coverages as follows:

Auto Liability	\$1,000,000	Combined Single Limit
General Liability	\$2,000,000	Aggregate (Per Project)
	\$2,000,000	Products Aggregate
	\$1,000,000	Any One Occurrence
	\$1,000,000	Personal Injury
	\$ 300,000	Fire Damage/Legal
Additional Umbrella Liability	\$2,000,000	Occurrence/Aggregate

CONTRACTOR shall furnish an original Certificate of Insurance indicating, and such policy providing coverage to, City of Key West named as "Additional Insured" on **PRIMARY** and **NON CONTRIBUTORY** basis utilizing an ISO standard endorsement at **least as broad as CG 2010 (11/85) or its Equivalent, (COMBINATION OF CG 20 10 07 04 and CG 20 37 07 04, providing coverage for completed operations is acceptable)** INCLUDING A "**Waiver of Subrogation**" clause in favor of City of Key West on all policies. **CONTRACTOR** will maintain the General Liability and Umbrella Liability insurance coverages summarized above with coverage continuing in full force including the "additional insured" endorsement until at least 3 years beyond completion and delivery of the work contracted herein.

Notwithstanding any other provision of the Contract, the **CONTRACTOR** shall maintain complete Workers' Compensation coverage for each and every employee, principal, officer, representative, or agent of the **CONTRACTOR** who is performing any labor, services, or material under the Contract. Further, **CONTRACTOR** shall additionally maintain the following minimum limits of coverage:

Bodily Injury Each Accident	\$1,000,000
Bodily Injury by Disease Each Employee	\$1,000,000
Bodily Injury by Disease Policy Limit	\$1,000,000

If the work is being done on or near a navigable waterway, **CONTRACTOR's** Workers' Compensation policy shall be endorsed to provide **USL&H Act (WC 00 01 06 A)** and **Jones Act (WC 00 02 01 A)** coverage if specified by the City of Key West. **CONTRACTOR** shall provide the City of Key West with a Certificate of Insurance verifying compliance with the workman's compensation coverage as set forth herein and shall provide as often as required by the City of Key West such certification which shall also show the insurance company, policy number, effective and expiration date, and the limits of workman's compensation coverage under each policy.

CONTRACTOR's insurance policies shall be endorsed to give 30 days' written notice to the City of Key West in the event of cancellation or material change, using form CG 0 24, or its equivalent.

Certificates of Insurance submitted to the City of Key West will not be accepted without copies of the endorsements being requested. This includes additional insured endorsements, cancellation/material change notice endorsements, and waivers of subrogation. Copies of USL&H Act and Jones Act endorsements will also be required if necessary. **PLEASE ADVISE YOUR INSURANCE AGENT ACCORDINGLY.**

CONTRACTOR will comply with any and all safety regulations required by any agency or regulatory body including but not limited to OSHA. **CONTRACTOR** will notify City of Key West immediately by telephone at (305) 809-3811 of any accident or injury to anyone that occurs on the jobsite and is related to any of the work being performed by the **CONTRACTOR**.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	NAIC#	
	INSURER A:	
INSURED Contractor Sample	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES: CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY						EACH OCCURRENCE \$1,000,000
<input checked="" type="checkbox"/>	COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence) \$300,000
	CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				MED EXP (Any one person) \$
							PERSONAL & ADV INJURY \$1,000,000
							GENERAL AGGREGATE \$2,000,000
							PRODUCTS - COMP/OP AGG \$2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						
	<input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						\$
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident) \$1,000,000
<input checked="" type="checkbox"/>	ANY AUTO						BODILY INJURY (Per person) \$
	ALL OWNED AUTOS		<input checked="" type="checkbox"/>				BODILY INJURY (Per accident) \$
<input checked="" type="checkbox"/>	HIRED AUTOS		<input checked="" type="checkbox"/>				PROPERTY DAMAGE (Per accident) \$
							\$
<input checked="" type="checkbox"/>	UMBRELLA LIAB						EACH OCCURRENCE \$,000,000
	EXCESS LIAB						AGGREGATE \$,000,000
	DED <input checked="" type="checkbox"/> RETENTION \$						\$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	N/A				E.L. EACH ACCIDENT \$1,000,000
							E.L. DISEASE - EA EMPLOYEE \$1,000,000
							E.L. DISEASE - POLICY LIMIT \$1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER City of Key West P.O. Box 1409 Key West, FL 33041-1409	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR
CONTRACTORS – SCHEDULED PERSON OR
ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

1. Your acts or omissions; or
2. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.

B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:

This insurance does not apply to "bodily injury" or "property damage" occurring after:

1. All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
2. That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 37 07 04

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location And Description Of Completed Operations
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" at the location designated and described in the schedule of this endorsement performed for that additional insured and included in the "products-completed operations hazard".

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**EARLIER NOTICE OF CANCELLATION
PROVIDED BY US**

Number of Days Notice 30

For any statutorily permitted reason **other than nonpayment of premium**, the number of days required for notice of cancellation is increased to the number of days shown in the Schedule above.

If this policy is cancelled by us we will send the Named Insured and any party listed in the following schedule notice of cancellation based on the number of days notice shown above.

Schedule

Name of Person or Organization

Mailing Address

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 24 04 05 09

WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST OTHERS TO US

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Person Or Organization:

Information required to complete this Schedule, if not shown above, will be shown in the Declarations.

The following is added to Paragraph 8, **Transfer Of Rights Of Recovery Against Others To Us** of Section IV – Conditions:

We waive any right of recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazard". This waiver applies only to the person or organization shown in the Schedule above.

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement
Insured

Effective Policy No.

Endorsement No.
Premium

Insurance Company

Countersigned by _____

CITY OF KEY WEST INDEMNIFICATION FORM

CITY OF KEY WEST INDEMNIFICATION FORM

To the fullest extent permitted by law, the CONTRACTOR expressly agrees to indemnify and hold harmless the City of Key West, their officers, directors, agents and employees *(herein called the "indemnitees") from liabilities, damages, losses and costs, including but not limited to, reasonable attorney's fees and court costs, such legal expenses to include costs incurred in establishing the indemnification and other rights agreed to in this Paragraph, to persons or property, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the CONTRACTOR, its Subcontractors or persons employed or utilized by them in the performance of the Contract. Claims by indemnitees for indemnification shall be limited to the amount of CONTRACTOR's insurance or \$1 million per occurrence, whichever is greater. The parties acknowledge that the amount of the indemnity required hereunder bears a reasonable commercial relationship to the Contract and it is part of the project specifications or the bid documents, if any.

The indemnification obligations under the Contract shall not be restricted in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR under Workers' Compensation acts, disability benefits acts, or other employee benefits acts, and shall extend to and include any actions brought by or in the name of any employee of the CONTRACTOR or of any third party to whom CONTRACTOR may subcontract a part or all of the Work. This indemnification shall continue beyond the date of completion of the work.

CONTRACTOR: _____

SEAL:

Address

Signature

Print Name

Title

DATE: _____

**LOCAL VENDOR CERTIFICATION PURSUANT TO CKW ORDINANCE 09-22
SECTION 2-798**

The undersigned, as a duly authorized representative of the vendor listed herein, certifies to the best of his/her knowledge and belief, that the vendor meets the definition of a "Local Business." For purposes of this section, "local business" shall mean a business which:

- a. Principle address as registered with the FL Department of State located within 30 miles of the boundaries of the city, listed with the chief licensing official as having a business tax receipt with its principle address within 30 miles of the boundaries of the city for at least one year immediately prior to the issuance of the solicitation.
- b. Maintains a workforce of at least 50 percent of its employees from the city or within 30 miles of its boundaries.
- c. Having paid all current license taxes and any other fees due the city at least 24 hours prior to the publication of the call for bids or request for proposals.
 - Not a local vendor pursuant to Ordinance 09-22 Section 2-798
 - Qualifies as a local vendor pursuant to Ordinance 09-22 Section 2-798

If you qualify, please complete the following in support of the self certification & submit copies of your County and City business licenses. Failure to provide the information requested will result in denial of certification as a local business.

Business Name _____ Phone: _____
 Current Local Address: _____ Fax: _____
 (P.O Box numbers may not be used to establish status)
 Length of time at this address _____

 Signature of Authorized Representative _____ Date

STATE OF _____
 COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 20____.
 By _____, of _____
 (Name of officer or agent, title of officer or agent) Name of corporation acknowledging)
 or has produced _____ as identification
 (type of identification)

 Signature of Notary

 Print, Type or Stamp Name of Notary

 Title or Rank

Return Completed form with
 Supporting documents to:
 City of Key West Purchasing

BIDDER'S CHECKLIST

(Note: The purpose of this checklist is to serve as a reminder of major items to be addressed in submitting a bid and is not intended to be all inclusive. It does not alleviate the Bidder from the responsibility of becoming familiar with all aspects of the Contract Documents and proper completion and submission of his bid.)

1. All Contract Documents thoroughly read and understood. []
2. All blank spaces in Bid Form filled in, using black ink. []
3. Total and unit prices added correctly. []
4. Addenda acknowledged. []
5. Mandatory Site Visit Attended. []
6. Subcontractors are named as indicated in the Proposal. []
7. Experience record included (see also Item 22). []
8. Bid signed by authorized officer. []
9. Bid Bond completed and executed, including power-of-attorney dated the same date as Bid Bond. []
10. Bidder familiar with federal, state, and local laws, ordinances, rules and regulations affecting performance of the work. []
5. Bidder, if successful, able to obtain and/or demonstrate possession of required licenses and certificates within (10) ten calendar days after receiving a Notice of Award. []
6. Bid submitted intact with the volume containing the Bidding Requirements, Contract Forms, Conditions of the Contract, three (3) copies and four (4) USB drives containing a single complete PDF file. []
7. Bid Documents submitted in sealed envelope and addressed and labeled in conformance with the instructions in the Invitation to Bid. []
14. Bidder must provide satisfactory documentation of State Licenses []
15. Anti-Kickback Affidavit. []
16. Public Entity Crimes. []
17. Local Vendor Certification. []
18. Disclosure of Lobbying Activities. []
19. Non-Collusion Declaration and Compliance. []
20. Suspension and Debarment Certification. []
21. Declaration of Compliance 2-799 Equal Benefits for Domestic Partners []

22. Catalog cuts for ...
- a. Fuel Tank, []
 - b. Fuel Hose Reel []
 - c. Doors []
 - d. Flood Panels []
 - e. HVAC Equipment []
23. Experience and Credentials of ...
- a. SSHO []
 - b. QCM []
 - c. CA Firm []

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

<p>1. Type of Federal Action:</p> <input type="checkbox"/> a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	<p>2. Status of Federal Action:</p> <input type="checkbox"/> a. bid/offer/application b. initial award c. post-award	<p>3. Report Type:</p> <input type="checkbox"/> a. initial filing b. material change For Material Change Only: year _____ quarter _____ date of last report _____
<p>4. Name and Address of Reporting Entity:</p> <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known:	<p>5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:</p> Congressional District, if known:	
<p>6. Federal Department/Agency:</p>	<p>7. Federal Program Name/Description:</p> CFDA Number, if applicable: _____	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p> \$	

<p>10. a. Name and Address of Lobbying Entity <i>(if individual, last name, first name, MI):</i></p> <p style="text-align: center;"><i>(attach Continuation Sheet(s))</i></p>	<p>b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i></p> <p style="text-align: center;"><i>SF-LLLA, if necessary)</i></p>
<p>11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>	<p>Signature: _____</p> <p>Print Name: _____</p> <p>Title: _____</p> <p>Telephone No.: _____ Date: _____</p>
<p>Federal Use Only:</p>	<p>Authorized for Local Reproduction Standard Form – LLL (Rev 7 – 97)</p>

FORM DEP 55-221 (01/01)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

- 1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.**
- 2. Identify the status of the covered Federal action.**
- 3. Identify the appropriate classification of this report. If this is a follow up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by the reporting entity for this covered Federal action.**
- 4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.**
- 5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.**
- 6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.**
- 7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.**

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

Form DEP 55-221 (01/01)

**NON-COLLUSION DECLARATION AND
COMPLIANCE WITH 49 CFR §29.**

ITEM/SEGMENT NO.: _____
F.A.P. NO.: _____
PARCEL NO.: _____
COUNTY OF: _____
BID LETTING OF: _____, _____

I, _____, hereby
(NAME)
declare that I am _____ of _____
(TITLE) (FIRM)
Of _____
(CITY AND STATE)
and that I am the person responsible within my firm for the final decision as to the price(s) and amount of this Bid on this Project.

I further declare that:

1. The prices(s) and amount of this bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition with any other contractor, bidder or potential bidder.
2. Neither the price(s) nor the amount of this bid have been disclosed to any other firm or person who is a bidder or potential bidder on this project, and will not be so disclosed prior to the bid opening.
3. No attempt has been made or will be made to solicit, cause or induce any other firm or person to refrain from bidding on this project, or to submit a bid higher than the bid of this firm, or any intentionally high or non-competitive bid or other form of complementary bid.
4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary bid.
5. My firm has not offered or entered into a subcontract or agreement regarding the purchase of materials or services from any firm or person, or offered, promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project, in consideration for an agreement or promise by any firm or person to refrain from bidding or to submit a complementary bid on this project.
6. My firm has not accepted or been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value by any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting a complementary bid, or agreeing to do so, on this project.
7. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval or submission of my firm's bid on this project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act or other conduct inconsistent with any of the statements and representations made in this Declaration.
8. As required by Section 337.165, Florida Statutes, the firm has fully informed the City of Key West in writing of all convictions of the firm, its affiliates (as defined in Section 337.165(l)(a),

FEBRUARY 14, 2013

NON-COLLUSION DECLARATION
AND COMPLIANCE WITH 49 CFR §29

00 44 02 - 1

Florida Statutes), and all directors, officers, and employees of the firm and its affiliates for violation of state or federal antitrust laws with respect to a public contract or for violation of any state or federal law involving fraud, bribery, collusion, conspiracy or material misrepresentation with respect to a public contract. This includes disclosure of the names of current employees of the firm or affiliates who were convicted of contract crimes while in the employ of another company.

9. I certify that, except as noted below, neither my firm nor any person associated therewith in the capacity of owner, partner, director, officer, principal, investigator, project director, manager, auditor, and/or position involving the administration of Federal funds:

(a) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions, as defined in 49 CFR §29.110(a), by any Federal department or agency;

(b) has within a three-year period preceding this certification been convicted of or had a civil judgment rendered against him or her for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, State or local government transaction or public contract; violation of Federal or State antitrust statutes; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c) is presently indicted for or otherwise criminally or civilly charged by a Federal, State or local governmental entity with commission of any of the offenses enumerated in paragraph 9(b) of this certification; and

(d) has within a three-year period preceding this certification had one or more Federal, State or local government public transactions terminated for cause or default..

10. I(We), certify that I(We), shall not knowingly enter into any transaction with any subcontractor, material supplier, or vendor who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this contract by any Federal Agency unless authorized by the Department.

Where I am unable to declare or certify as to any of the statements contained in the above stated paragraphs numbered (1) through (10), I have provided an explanation in the "Exceptions" portion below or by attached separate sheet.

EXCEPTIONS:

(Any exception listed above will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, indicate to whom it applies, initiating agency and dates of agency action.

Providing false information may result in criminal prosecution and/or administrative sanctions.)

I declare under penalty of perjury that the foregoing is true and correct.

CONTRACTOR: _____ (Seal)

BY: _____ WITNESS: _____
NAME AND TITLE PRINTED

BY: _____ WITNESS: _____
SIGNATURE

Executed on this _____ day of _____, _____

**FAILURE TO FULLY COMPLETE AND EXECUTE THIS DOCUMENT
MAY RESULT IN THE BID BEING DECLARED NONRESPONSIVE**

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FLORIDA TRENCH SAFETY ACT COMPLIANCE
Trench Excavation Safety System and Shoring

CERTIFICATION

All excavation, trenching, and related sheeting, bracing, etc. on this project shall conform to the requirements of the Florida Trench Safety Act (90-96, CS/SB 2626), which incorporates by reference, OSHA's excavation safety standards, 29 CFR 1926.650 Subpart P including all subsequent revisions or updates to the these standards.

By submission of this bid and subsequent execution of this Contract, the undersigned certifies compliance with the above mentioned standards and further stipulates that all costs associated with this compliance are detailed below as well as included in their lump sum bid amount.

Summary of Costs:

Trench Safety Measure	Units	Quantity	Unit Cost	Extended Cost
A. _____	_____	_____	_____	_____
B. _____	_____	_____	_____	_____

Signature

Date

STATE OF _____

COUNTY OF _____

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

_____, who, after first being sworn by me affixed his /her signature in the space,

provided above on the _____ day of _____, 20____.

Notary Public

(Seal)

MY COMMISSION EXPIRES: _____

FEBRUARY 14, 2013

SUSPENSION AND DEBARMENT CERTIFICATION

CERTIFICATION REGARDING DEBARMENTS, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER FEDERALLY FUNDED TRANSACTIONS

1. The undersigned hereby certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. The undersigned also certifies that it and its principals:
 - (a) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.
 - (b) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 2.(a) of this Certification; and
 - (c) Have not within a three-year period preceding this certification had one or more public transactions (Federal, State or local) terminated for cause or default.

3. Where the undersigned is unable to certify to any of the statements in this certification, an explanation shall be attached to this certification.

Dated this _____ day of, 2013.

By _____
Authorized Signature/Contractor

Typed Name/Title

Contractor's Firm Name

Street Address

Building, Suite Number

City/State/Zip Code

Area Code/Telephone Number

RAPIDGate Company Enrollment Form

Thank you for enrolling in the *RAPIDGate*[®] Program. Please follow these instructions:

1. Complete the Enrollment Information (Part A).
2. Carefully read and sign the *RAPIDGate* User Agreement: Companies (Part B).
3. Fax the entire form to 503-924-5320, attention *RAPIDGate* Customer Service.
4. If you have any questions, please call 1-877-RAPIDGate (1-877-727-4342).

Part A: Enrollment Information

The following information is required and must be completed by an authorized representative of your company.

<p>At which installation is your company enrolling? NAVAL AIR STATION, KEY WEST, FL</p>
<p>Does your company require 24x7 access to the installation? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Are you enrolled in the <i>RAPIDGate</i> Program at another installation? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>If yes, list the installation(s) at which you are enrolled:</p>

Your Company Information

Company Name:		
Website Address:		
Phone:	Fax:	
Billing Address:		
City:	State:	Zip Code:
Country:		

Tenant Sponsor Information (This is a government agent at the installation that can verify your company's legitimate business).

Sponsor Organization (i.e. Commissary, Security Office, Hospital, AAFES): NAVFAC SE Public Works Department, NAS Key West, FL		
Sponsor's Name: William Knetge		
Sponsor's Title: Architect-Planner		
Sponsor's Email: william.knetge@navy.mil		
Sponsor's Phone: 305.293.2133		
Contract No.:	Expiration Date: 5 YEAR	

Billing Information

Company Enrollment Fee*: \$199 Employee Registration Fee*: \$159
*The fees to enroll in Multi-Facility is at a discounted rate. Contact <i>RAPIDGate</i> Customer Service at 1-877-727-4342 to find out about the rates. Eid Passport, Inc. reserves the right to change the <i>RAPIDGate</i> Program fees at its sole discretion.
Payment Method (Please Select): Visa <input type="checkbox"/> MasterCard <input type="checkbox"/> Discover <input type="checkbox"/> AMEX <input type="checkbox"/> Check* <input type="checkbox"/> Electronic Check* (Fill out bottom of page 3.) <input type="checkbox"/>
If Credit Card: Cardholder's Name:
Credit Card Number:
Security Code (3 or 4 digits):
Credit Card Expiration: Month: Year:
Credit Card Holder's Billing Address:
City: State: Zip Code:
Expected Number of Employee Registrations:
Please list the names of authorized participating employees names here only if you want the registration fees billed to the form of payment selected above. Do not list the employees' personal information. Attach an additional page for more than 10 authorized employees.
1. SEE ATTACHED LIST
2.
3.
4.
5.
6.
7.
8.
9.
10.
Please initial the appropriate box: <input type="checkbox"/> I authorize payment to enroll my company and to register the number of employees with the form of payment cited above. <input type="checkbox"/> I authorize payment to enroll my company with the form of payment listed above.
* Checks should be made payable to Eid Passport, Inc. Please mail to: Eid Passport, Inc. 10450 SW Nimbus Avenue, Bldg R-A Portland, OR 97223 Attention: Accounts Receivable

Representative from Your Company in Charge of *RAPIDGate* Administration (“*RAPIDGate* Company Administrator”)

Name:	Email:
Title:	
Phone:	Fax:

Individual Enrolling Company Check here if this individual can be a second point of contact for the *RAPIDGate* Program. (This person will have the same authorities as the person listed above).

Name:	Email:
Title:	
Phone:	Fax:

Electronic Check Authorization (Only applicable if you are paying by electronic check).

Name as appears on Check:
Account Number:
Routing Number:
Check Number:
Authorized Debit Amount:
Signature _____ Date _____
I acknowledge that the origination of ACH transactions to my account must comply with the provisions of U.S. law. I agree to notify merchant in writing of any changes in my account information or termination of this authorization 15 days prior to the due date of the charges. I understand that cancellations must be made in writing and I will not dispute merchant debiting my checking/savings account, so long as the amount corresponds to the terms indicated in this contract.



The *RAPIDGate* Program is provided by Eid Passport, Inc.
The *RAPIDGate* Program contains products and services subject to U.S. Patent No. 6,779,721.

Eid Passport and *RAPIDGate* are trademarks of Eid Passport, Inc.

B. *RAPIDGate* USER AGREEMENT: COMPANIES

Terms and Conditions of Your Company's Enrollment, and Renewal of Enrollment, in Eid Passport, Inc.'s *RAPIDGate*® Program.

Please carefully read the following terms and conditions of this *RAPIDGate* User Agreement ("Agreement"). It is a legally binding contract and affects your company's legal rights.

By signing this Agreement below, and in consideration of the mutual covenants, terms and conditions described in this Agreement, you (1) certify that you have the authority to bind your company to the terms and conditions of this Agreement; (2) accept, on behalf of your company, the terms and conditions of this Agreement; and (3) agree, on behalf of your company, to be bound by the terms and conditions of this Agreement.

Eid Passport, Inc. ("Eid Passport") enters into this Agreement with your company on behalf of itself and on behalf of its related companies, subsidiaries, affiliates and successors.

1. Definitions

For purposes of this Agreement, the following definitions apply:

"Applicant" is an individual who has registered to become an authorized *RAPIDGate* badgeholder.

"Authorized *RAPIDGate* badgeholder" is an individual who has passed a *RAPIDGate* background screening, meets all other *RAPIDGate* program eligibility requirements, and has been issued a *RAPIDGate* badge, thereby entitling the individual to the *RAPIDGate* program access privileges at participating facilities.

"Background screening" and "background screenings" refer to a process by which *RAPIDGate* applicants and authorized *RAPIDGate* badgeholders consent to ongoing review of certain information relating to their background, to determine whether they meet the *RAPIDGate* program's eligibility requirements.

"Company" refers to the company, department or entity that enrolls in the *RAPIDGate* program.

"Enroll" is the procedure by which a company seeks and obtains authorization for its employees to register for the *RAPIDGate* program.

"Fail" refers to a background screening result by which an individual is determined to NOT meet the *RAPIDGate* background screening criteria, and which disqualifies the individual from being an authorized *RAPIDGate* badgeholder.

"Participating facility" is any military or other governmental base, installation, department, organization, building, unit, site or other location that offers *RAPIDGate* access privileges to authorized *RAPIDGate* badgeholders.

"Pass" refers to a background screening result by which an individual is determined to meet the *RAPIDGate* background screening criteria, and which qualifies the individual to be an authorized *RAPIDGate* badgeholder if the individual meets all *RAPIDGate* program eligibility requirements.

"*RAPIDGate* badge" is a credential that is issued to authorized *RAPIDGate* badgeholders. Depending upon the participating facility, the *RAPIDGate* badge may be issued either by Eid Passport or by the United States government, and may contain Radio Frequency Identification ("RFID") or other identifying technology.

"*RAPIDGate* Company Administrator" is an employee of a company that is enrolled in the *RAPIDGate* program, whom the company assigns to be in charge of the company's internal *RAPIDGate* administration.

"Register" is the procedure by which an applicant initiates the process to become an authorized *RAPIDGate* badgeholder.

2. *RAPIDGate* Program Introduction

Welcome to Eid Passport's *RAPIDGate* program! The *RAPIDGate* program has been developed to enhance access security at participating United States military and other government facilities. It also is designed to improve on-site access for eligible companies and their employees who conduct official business on such facilities on a recurring basis.

The enrollment process is simple. First, your company must receive approval from a participating facility to enroll in the *RAPIDGate* program. Next, your company completes all required enrollment documentation and pays the *RAPIDGate* enrollment fee. Eid Passport then validates your company's eligibility to enroll in the *RAPIDGate* program. Upon enrollment, your company provides *RAPIDGate* Customer Service with a list of approved employees and pays for their

RAPIDGate registrations. Those employees may then register for the *RAPIDGate* program at the *RAPIDGate* Registration Station located at the participating facility(ies) for which your company is enrolled.

Eid Passport will carefully screen each individual who registers for the *RAPIDGate* program. As part of the registration process, each applicant must pass a confidential *RAPIDGate* background screening. Each applicant who passes the background screening and who meets all other *RAPIDGate* program eligibility requirements will be issued a *RAPIDGate* badge to wear for entrance onto participating facilities. The *RAPIDGate* badge is part of an integrated solution that lets the participating facility know that the individual is an authorized *RAPIDGate* badgeholder who meets the *RAPIDGate* program eligibility requirements for access to the facility. Depending upon the participating facility, the *RAPIDGate* badge may contain RFID or other identifying technology to record when the *RAPIDGate* badgeholder arrives at and departs a participating facility, and to track the *RAPIDGate* badgeholder's whereabouts while on-site at the participating facility.

Your company's *RAPIDGate* enrollment, and its authorized *RAPIDGate* badgeholders' access privileges, are valid for a set period of time as determined by the participating facility, provided that your company and its authorized *RAPIDGate* badgeholders continue to meet the *RAPIDGate* program eligibility requirements at all times. Eid Passport may conduct periodic background screenings of your company's authorized *RAPIDGate* badgeholders on a regular basis, to verify their continued eligibility. Renewals in the *RAPIDGate* program are subject to your company's, and its authorized *RAPIDGate* badgeholders', continued eligibility.

Some participating facilities maintain the *RAPIDGate* program as an optional service. Such facilities do not require companies or their employees to join the *RAPIDGate* program; employees who are not authorized *RAPIDGate* badgeholders continue to have access privileges to the participating facility pursuant to the facility's usual entry requirements and procedures. At other participating facilities, employees will not be allowed to enter the participating facility unless they are authorized *RAPIDGate* badgeholders. Please check with *RAPIDGate* Customer Service or the participating facility for details.

3. The *RAPIDGate* Program is NOT a Pre-Employment or Employee Screening Service

The *RAPIDGate* program is not a pre-employment or employee screening service. Eid Passport conducts background screenings of your company's employees solely for the purpose of determining their eligibility to be authorized *RAPIDGate* badgeholders. Your company may not use the *RAPIDGate* program, including the *RAPIDGate* background screenings, for pre-employment or employment-related purposes.

BY SIGNING THIS AGREEMENT BELOW, YOU AGREE, ON BEHALF OF YOUR COMPANY, THAT YOUR COMPANY WILL NOT USE THE *RAPIDGate* PROGRAM, INCLUDING THE *RAPIDGate* BACKGROUND SCREENINGS, FOR ANY PRE-EMPLOYMENT OR EMPLOYMENT-RELATED PURPOSES. YOU FURTHER AGREE, ON BEHALF OF YOUR COMPANY, THAT YOUR COMPANY WILL DEFEND, INDEMNIFY AND HOLD HARMLESS EID PASSPORT, ITS RELATED COMPANIES, OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, SUBSIDIARIES OR AFFILIATES, AND ANY AGENCY OF THE UNITED STATES GOVERNMENT, FOR AND OF ANY CLAIMS, DEMANDS, OR CAUSES OF ACTION MADE AGAINST EID PASSPORT OR ANY AGENCY OF THE UNITED STATES GOVERNMENT ARISING FROM ANY PRE-EMPLOYMENT OR EMPLOYMENT-RELATED ACTION TAKEN BY YOUR COMPANY AGAINST ANY INDIVIDUAL, RELATING IN ANY WAY TO OR ARISING IN ANY WAY FROM THE *RAPIDGate* PROGRAM.

4. Confidential Background Screenings (Required)

Eid Passport takes seriously its commitment to security. That is why Eid Passport restricts its *RAPIDGate* program to companies and their employees who, at all times, meet all *RAPIDGate* program eligibility requirements including the *RAPIDGate* background screening criteria established for participating facilities.

To register for the *RAPIDGate* program and to become an authorized *RAPIDGate* badgeholder, your company's employees must consent to undergo, and must pass, a background screening to verify their eligibility. Additional background screenings may be conducted on authorized *RAPIDGate* badgeholders at any time or times, to verify their continued eligibility. By registering with the *RAPIDGate* program, the employees consent to such background screenings.

Background screenings will be conducted on individuals under circumstances that may include but are not limited to the following:

- When they first register for the *RAPIDGate* program
- Periodically and at any time or times while they are authorized *RAPIDGate* badgeholders
- When your company renews its employees' *RAPIDGate* badges
- At any time upon request by the participating facility(ies) for which the employees are authorized *RAPIDGate* badgeholders
- At any time upon request by any governmental department or agency that issues *RAPIDGate* badges (see Section 5, below)
- At any time, in Eid Passport's sole discretion, to verify that authorized *RAPIDGate* badgeholders meet the *RAPIDGate* program's eligibility requirements

ANY EMPLOYEE WHO DOES NOT CONSENT TO UNDERGO THE *RAPIDGate* BACKGROUND SCREENINGS, IS INELIGIBLE TO BE AN AUTHORIZED *RAPIDGate* BADGEHOLDER.

Eid Passport contracts with one or more third-party background screening providers to conduct *RAPIDGate* background screenings. The data obtained during the registration process and/or through the background screenings may vary by participating facility and may include any or all of the following:

Individual Information:

- Name
- Social Security Number
- Company-issued Employee Identification Number
- Individual photo
- Date of birth
- Fingerprints
- Address
- Phone number
- Social Security Number verification
- Felony and misdemeanor convictions
- Outstanding warrants
- Sexual offender convictions
- Terrorist or OFAC watch lists
- Driver's license (including all information and images stored on the license)

Public records may be used in the background screening reports, such as civil and/or criminal records. Your company's employees have the right to dispute the information on the report and to request additional disclosures provided under section 606(b) of the Fair Credit Reporting Act ("FCRA"), and a written summary of the employee's rights pursuant to section 609(c) of the FCRA.

If any background screenings produces a "fail" result, Eid Passport and/or its third-party background screening providers will so notify the affected employee. Eid Passport also may notify your company, and possibly also the participating facility(ies), of the employee's "fail" result. In the event of a "fail" result, the employee, and only the employee, will be provided with a copy of his or her background screening report. The employee will be afforded an opportunity to dispute the information in it. If the employee does not timely dispute the background screening results or, if the employee does so but is unsuccessful in changing the results, the employee will not qualify to be an authorized *RAPIDGate* badgeholder. Your company, and possibly also the participating facility(ies) and/or other agency of the United States government, will be so notified.

Eid Passport and/or its third-party background screening providers will NOT provide your company with a copy of the background screening reports or disclose to your company the contents of the background screening reports. Eid Passport may provide the participating facility(ies) and/or other United States government agency with the name and/or other identifying information of your company's employees who are authorized *RAPIDGate* badgeholders. In addition, depending upon the type of *RAPIDGate* badge that is issued to your company's authorized *RAPIDGate* badgeholders (see Section 5, below), Eid Passport also may provide your company, and/or the participating facility(ies) and/or other agency of the United States government, with records of the authorized *RAPIDGate* badgeholders' arrival and departure history, and/or records of their whereabouts, at the participating facility(ies).

YOU HEREBY AUTHORIZE EID PASSPORT AND/OR ITS THIRD-PARTY BACKGROUND SCREENING PROVIDER(S) TO RETAIN YOUR COMPANY'S EMPLOYEES' DATA, AND ANY UPDATES TO THAT DATA, FOR A COMMERCIALLY REASONABLE PERIOD OF TIME. EID PASSPORT AND ITS THIRD-PARTY BACKGROUND SCREENING PROVIDERS ARE COMMITTED TO MAINTAINING THIS DATA IN THE STRICTEST OF CONFIDENCE, AND FOLLOW STRINGENT FAIR INFORMATION PRACTICES IN ACCORDANCE WITH THE FCRA AND OTHER APPLICABLE LAWS AND REGULATIONS.

5. Rights and Obligations of Enrolled Companies and Authorized *RAPIDGate* Badgeholders

- *RAPIDGate badge*. The *RAPIDGate* badge is for the sole and exclusive use of the authorized *RAPIDGate* badgeholder. The *RAPIDGate* badgeholder may not share, lend or transfer his or her *RAPIDGate* badge to anyone else.

The *RAPIDGate* badge by itself does not guarantee quick access to, or any access to, any participating facility. For security reasons and under applicable laws, rules and regulations, the participating facility always has the final say on who may enter, and under what circumstances.

The *RAPIDGate* badge may be issued by Eid Passport, or it may be issued directly by the participating facility or another agency or department of the United States government. A government-issued *RAPIDGate* badge may entitle your company and/or its authorized *RAPIDGate* badgeholders to certain government privileges or rights, and/or impose upon your company and/or its authorized *RAPIDGate* badgeholders certain government obligations or restrictions, in addition to but outside of and unrelated to the *RAPIDGate* program. Eid Passport assumes no responsibility or liability whatsoever for government content or functions of government-issued *RAPIDGate* badges.

In the event that an Eid Passport-issued *RAPIDGate* badge is lost, damaged or stolen, the authorized *RAPIDGate* badgeholder must immediately notify your company. In the event that a government-issued *RAPIDGate* badge is lost, damaged or stolen, the authorized *RAPIDGate* badgeholder must immediately notify

the government department or agency that issued the *RAPIDGate* badge, and follow the department's or agency's instructions and procedures. In addition, if an authorized *RAPIDGate* badgeholder stops working for your company, or is otherwise disqualified as an authorized *RAPIDGate* badgeholder, the individual must immediately return the *RAPIDGate* badge to your company or, in the case of a government-issued *RAPIDGate* badge, to the issuing government agency.

Depending upon the facility, the *RAPIDGate* badge may contain radio frequency identification ("RFID") or other identifying technology. Such technology allows Eid Passport to record when authorized *RAPIDGate* badgeholders arrive at and depart the participating facility, and/or to track the whereabouts of authorized *RAPIDGate* badgeholders while they are on-site at the facility. Please check with *RAPIDGate* Customer Service for details on whether the *RAPIDGate* badge issued to your company's authorized *RAPIDGate* badgeholders contains this technology.

- *Background screenings.* At any time or times while your company's employees are authorized *RAPIDGate* badgeholders, they are subject to periodic background screenings, as often as deemed required by Eid Passport and at its sole discretion. This is done to verify that at all times the employees continue to meet the *RAPIDGate* program eligibility requirements. (See Section 4, above.)
- *Designation of RAPIDGate Company Administrator.* As part of the enrollment process, your company must designate an employee to serve as its *RAPIDGate* Company Administrator. Please provide *RAPIDGate* Customer Service with the name, telephone number, postal address and e-mail address of the Vendor Administrator, in the space provided in Part A, Enrollment Form, above.
- *Personnel or background changes affecting an authorized RAPIDGate badgeholder.* Your company must promptly notify *RAPIDGate* Customer Service of any changes in the employment or background status of its authorized *RAPIDGate* badgeholders that could affect their *RAPIDGate* eligibility. Circumstances giving rise to this duty to notify include but are not limited to an authorized *RAPIDGate* badgeholder's separation from employment; change in job duties eliminating the need to conduct official business on the participating facility(ies); felony or misdemeanor convictions; outstanding warrants; sexual offender convictions; or placement on Terrorist or OFAC watch lists.
- *Refunds.* No refunds will be made to or on behalf of your company, or to or on behalf of any of its employees, if an employee does not pass a *RAPIDGate* background screening or is disqualified as an authorized *RAPIDGate* badgeholder. In such event, your company and its employees will have no remedies or other financial recourse against Eid Passport or its related companies, officers, directors, employees, agents, subsidiaries or affiliates, or against any agency of the United States government.

6. *RAPIDGate* program renewal

a. Company renewal

RAPIDGate Customer Service will contact your company shortly before expiration of its *RAPIDGate* enrollment. If your company wishes to renew its enrollment, it may do so by paying the *RAPIDGate* enrollment renewal fee. *Your company's enrollment renewal is subject to the approval of the participating facility and to your company's continued eligibility in all other respects.*

b. Authorized *RAPIDGate* badgeholder renewals

If your company renews its enrollment for another term, *RAPIDGate* will notify it of the names of its authorized *RAPIDGate* badgeholders whose *RAPIDGate* badges are due to expire. Your company may authorize renewal of their *RAPIDGate* badges for another term, by paying their renewal fee. It may be necessary for the individuals to re-register at the Registration Station at the participating facility(ies). Renewal is contingent upon their passing a *RAPIDGate* background screening and in all other respects meeting the *RAPIDGate* program eligibility requirements. (See Section 4, above.)

Your company is responsible for deciding which *RAPIDGate* badges to renew. If an authorized *RAPIDGate* badgeholder does not wish his or her *RAPIDGate* badge to be renewed, he or she must so notify your company's *RAPIDGate* Company Administrator at least 45 days before expiration of the *RAPIDGate* badge. **YOU HEREBY AGREE, ON BEHALF OF YOUR COMPANY, THAT YOUR COMPANY WILL DEFEND, INDEMNIFY AND HOLD HARMLESS EID PASSPORT AND ITS RELATED COMPANIES, OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, SUBSIDIARIES AND AFFILIATES, AND ANY AGENCY OF THE UNITED STATES GOVERNMENT, OF AND FROM ANY AND ALL CLAIMS, DEMANDS OR CAUSES OF ACTION ARISING FROM YOUR COMPANY'S RENEWAL, OR FAILURE TO RENEW, ANY *RAPIDGate* BADGE FOR ANY COMPANY EMPLOYEE.**

7. Grounds for revoking *RAPIDGate* program enrollment and access privileges

a. Your company

Your company's *RAPIDGate* enrollment is valid for a specified term, provided that at all times it meets the *RAPIDGate* program eligibility requirements. If at any time your company fails to meet any *RAPIDGate* program eligibility requirements, its enrollment will be subject to revocation. If at any time your company no longer is enrolled in the *RAPIDGate* program, its authorized *RAPIDGate* badgeholders no longer will be eligible for the *RAPIDGate* program, and their *RAPIDGate* badges will be deactivated.

Your company could lose its eligibility to be enrolled in the *RAPIDGate* program, and have its *RAPIDGate* enrollment revoked, on grounds including but not limited to:

- The participating facility(ies) for which your company is enrolled in the *RAPIDGate* program no longer participates in the *RAPIDGate* program
- The participating facility(ies), or other agency or department of the United States government, withdraws your company's authorization to be enrolled in the *RAPIDGate* program
- Your company does not pay its *RAPIDGate* enrollment or renewal fee
- Your company violates any term or condition of this Agreement
- An authorized *RAPIDGate* badgeholder of your company violates any term or condition of his or her *RAPIDGate* Individual User Agreement.

b. *RAPIDGate* badges

The *RAPIDGate* badges issued to your company's employees are valid for a specified term, provided that the employees at all times meet the *RAPIDGate* program eligibility requirements. If at any time an authorized *RAPIDGate* badgeholder fails to meet any of the *RAPIDGate* program eligibility requirements, the individual will lose his or her *RAPIDGate* program eligibility, and his or her *RAPIDGate* badge will be deactivated. Your company's authorized *RAPIDGate* badgeholders may lose their *RAPIDGate* program eligibility, and be subject to deactivation of their *RAPIDGate* badge, on grounds including but not limited to:

- The authorized *RAPIDGate* badgeholder no longer works for your company
- The authorized *RAPIDGate* badgeholder does not pass a *RAPIDGate* background screening
- The authorized *RAPIDGate* badgeholder's work functions no longer include visiting the participating facility(ies)
- Your company requests to remove the authorized *RAPIDGate* badgeholder from the *RAPIDGate* program
- Your company no longer is eligible, or otherwise ends its enrollment in, the *RAPIDGate* program
- The facility(ies) for which your company is enrolled in the *RAPIDGate* program no longer participates in the *RAPIDGate* program
- The facility(ies), or other agency or department of the United States government, withdraws your company's authorization to be enrolled in the *RAPIDGate* program
- The facility(ies), or other agency or department of the United States government, withdraws the individual's authorization as a *RAPIDGate* badgeholder and/or requires deactivation of the individual's *RAPIDGate* badge
- The authorized *RAPIDGate* badgeholder violates any term or condition of his or her *RAPIDGate* Individual User Agreement
- The authorized *RAPIDGate* badgeholder uses the *RAPIDGate* program to access the participating facility(ies) for any reason other than for official business.

8. General Restrictions, Limitations and Resolution of Disputes

- This enrollment does not by itself confer on your company or its employees any rights or privileges under the *RAPIDGate* program. Enrollment is subject to the approval of the participating facility(ies). In addition, your company's enrollment is subject to the terms and conditions set forth in this Agreement. Your company's employees who register for the *RAPIDGate* program are subject to the terms and conditions of their *RAPIDGate* Individual User Agreement.
- This enrollment does not guarantee your company's authorized *RAPIDGate* badgeholders access to any participating facility. The participating facility(ies) maintains the right to deny entrance to your company's authorized *RAPIDGate* badgeholders and to take any security precautions it deems necessary, including but not limited to conducting random inspections of your company's authorized *RAPIDGate* badgeholders and/or their vehicles.
- Your company's enrollment is valid only for the participating facility(ies) that have authorized your company to enroll in the *RAPIDGate* program and for which your company has enrolled.
- A participating facility may revoke your company's, and/or its authorized *RAPIDGate* badgeholders', access privileges under the *RAPIDGate* program at any time for any reason. You agree on behalf of your company that, in such event, your company and its employees have no financial, legal or other remedies against Eid Passport or any of its related companies, officers, directors, employees, agents, subsidiaries or affiliates, or against any agency of the United States Government.
- Eid Passport takes pride in its background screening service but cannot guarantee the accuracy of the data obtained. As explained in Section 4, above, your company's employees have the right to dispute a "fail" result of a *RAPIDGate* background screening. **You agree on behalf of your company that neither your company, nor its employees, has any remedy, in equity or law, and will initiate no legal action, against Eid Passport or any of its related companies, officers, directors, employees, agents, subsidiaries or affiliates, or against any agency of the United States government, arising from any dispute over the accuracy or completeness of data derived from a *RAPIDGate* background screening, or arising from an employee not passing a *RAPIDGate* background screening.**

- *RAPIDGate* badges that are issued by the government may entitle the authorized *RAPIDGate* badgeholders and/or your company to certain government privileges or rights, or impose upon them certain government obligations or restrictions, in addition to but outside of and unrelated to the *RAPIDGate* program. Eid Passport assumes no responsibility or liability whatsoever for government content or functions of government-issued *RAPIDGate* badges. **You agree on behalf of your company that neither your company, nor its employees, has any remedy, in equity or law, and will initiate no legal action, against Eid Passport or any of its related companies, officers, directors, employees, agents, subsidiaries or affiliates, arising from any dispute over any government content or functions of government-issued *RAPIDGate* badges.**
- Eid Passport contracts with one or more third parties to conduct *RAPIDGate* background screenings. Such third party(ies) conform to the highest standards of care with respect to protection of personally identifiable data. Eid Passport stores on its own servers only limited personally identifiable information on *RAPIDGate* participants. Eid Passport does not store on its servers, and maintains no database containing, the contents of background screenings conducted on *RAPIDGate* participants. Such data is stored with Eid Passport's third-party background screening provider(s). **You agree on behalf of your company that neither your company nor its employees has any remedy, in equity or law, and will initiate no legal action, against Eid Passport or any of its related companies, officers, directors, employees, agents, subsidiaries or affiliates, arising from the storage of any personally identifiable data on any employee that is not maintained on Eid Passport's own servers or contained in Eid Passport's own database.**
- You agree that, if your company has a dispute with Eid Passport arising from or relating to the *RAPIDGate* program, your company will so notify Eid Passport in writing within six months of the event or the action giving rise to the dispute, at the address listed in Section A, Enrollment Form, above. You agree that your company will make every effort to resolve the dispute informally. You further agree that, in the event of a breach of this Agreement by Eid Passport, your company's sole and exclusive remedy will be an amount equal to your company's enrollment fee for the year in which the breach occurred.
- This Agreement is governed by the laws of the State of Oregon, notwithstanding conflicts of laws principles. You agree that any legal action brought under this Agreement must be brought in Washington County, Oregon. The prevailing party shall be entitled to recover its/his/her legal costs and attorney's fees.
- If any provision of this Agreement is found by a proper legal authority to be unenforceable, that provision shall be severed and the remainder of this Agreement shall continue in full force and effect.

This Agreement constitutes the entire agreement between your company and Eid Passport with respect to the *RAPIDGate* program. This Agreement supersedes any proposal or any prior or contemporaneous writings or other agreement, oral or written, and any other communications or representations between your company and Eid Passport relating to the *RAPIDGate* program.

I hereby (1) certify that I have the authority to bind my company to the terms and conditions of this Agreement; (2) accept, on behalf of my company, the terms and conditions of this Agreement; and (3) agree, on behalf of my company, to be bound by the terms and conditions of this Agreement.

Name (Signed)

Date

Name (Printed)

Title

Name of company on whose behalf individual is signing

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The *RAPIDGate* Program is provided by Eid Passport, Inc.
The *RAPIDGate* Program contains products and services subject to U.S. Patent No. 6,779,721.
Eid Passport and *RAPIDGate* are trademarks of Eid Passport, Inc.

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DEPARTMENT OF THE NAVY

NAVAL AIR STATION
PO BOX 9001
KEY WEST FL 33040-9001

5530
Ser N00/429
17 Aug 10

From: Commanding Officer, Naval Air Station, Key West
To: Distribution
Subj: ACCESS CONTROL CHANGES EFFECTIVE 1 OCTOBER 2010
Encl (1) RAPIDGate Program Enrollment Information

1. Effective 1 October 2010, Naval Air Station (NAS), Key West will be implementing significant changes to its access procedures to increase the security posture of the installation. In accordance with Commander, Navy Installations Command (CNIC) Memo 5530, upcoming changes are being directed by CNIC. NAS Key West is aligning its procedures to be in compliance with these requirements. These new procedures will directly impact vendors, contractors, sub-contractors and service providers who regularly access NAS Key West. Our priority is to maintain a safe and secure installation and offer a solution that will also provide streamlined access onto the installation.

2. To summarize, due to safety and security requirements, access will be delayed if you are accessing the installation using a NAS Key West Contractor Badge, Short Term Pass, or Day Pass. Part of the increase in security will require additional vehicle screenings that may occur during each visit. To gain streamlined access onto the installation, we encourage you to review the benefits of the RAPIDGate Program. Below are the details about the changes and how to gain streamlined access onto the installation through the RAPIDGate Program.

a. Access Privilege Management

Table with 4 columns: Category, RAPIDGate Participant, Contractor ID/Short Term Pass, Day Pass. Rows include Inspection Requirements, Days Credential is valid, and Vehicle Pass.

*Inspections will only occur Monday - Friday, of 0700 - 1000 (7 a.m. - 10 a.m.) at the Commercial Gate. Access will be denied outside of those hours if you do not possess a RAPIDGate Credential.

b. Personnel who choose to participate in the RAPIDGate Program will have streamlined access onto the installation. RAPIDGate participants will only be subject to random vehicle inspections and

Subj: ACCESS CONTROL CHANGES EFFECTIVE 1 OCTOBER 2010

will be able to utilize the fast lane at Pass and ID to pick up their *RAPIDGate* Credentials. Access will be allowed during the times needed to perform business onto the installation.

c. Personnel who choose not to participate in the *RAPIDGate* Program will be required to obtain a day pass in Pass and ID each day and undergo a mandatory vehicle inspection prior to each access. All inspections will occur at the Commercial Gate no matter which Annex is being accessed. Inspection times will be limited to 0700 - 1000 Monday - Friday.

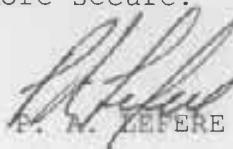
d. After 1 October 2010, NAS Key West Contractor Badges will no longer be issued. Only Day Passes will be issued. All Contractor Badges that were issued prior to these changes will maintain their existing expiration date.

e. The *RAPIDGate* Program provides the accepted background checks and may be a time/cost savings benefit to companies desiring to conduct business on NAS Key West.

3. The *RAPIDGate* Program will provide you with streamlined access onto the installation. To enroll, please follow the guidelines on the attached document, *RAPIDGate* Program Enrollment Information. Questions about the NAS Key West *RAPIDGate* Program should be addressed to info@rapidgate.com with the subject line RE: *RAPIDGate* Program.

4. We strongly encourage your participation in the *RAPIDGate* Program. It will assist us with streamlining access for your employees, improving the ability of our access control personnel, and maintaining higher levels of security and efficiency.

5. NAS Key West appreciates your continued support of our efforts to make this installation safer and more secure.



P. W. ZEPHRE

Distribution: (NASKWNOTE 5216)
Lists A and C

RAPIDGate Program Enrollment Information

1. Enroll your company by calling 1-877-RAPIDGate (877) 727-4342.

To enroll your company in the *RAPIDGate* Program, call Eid Passport at 1-877-RAPIDGate (877) 727-4342. A Customer Service Representative will give you all the necessary information regarding the *RAPIDGate* Program and send you the enrollment forms to enroll your company. On the Enrollment Forms you will need to provide your NAS Key West sponsor point of contact, including a name, phone number, and e-mail address. NAS Key West must authorize your request to participate in the *RAPIDGate* Program. The minimum elapsed time from company enrollment to an employee receiving his or her *RAPIDGate* Credential is approximately two weeks. **Enroll today to ensure your employees have their *RAPIDGate* Credentials by the Program effective date of 1 October 2010.**

If your company is already enrolled in the *RAPIDGate* Program at another installation, it may request access for its employees at this installation by calling 1-877-RAPIDGate (877) 727-4342. Once your company is approved by NAS Key West, your employees who already hold *RAPIDGate* Credentials may be able to use the same Credentials at the additional installation.

2. Employees register at onsite Registration Stations.

Once your company has been approved for enrollment and paid the enrollment fee, instruct your employees who need access to NAS Key West to register at the self-service registration station located at NAS Key West Pass and ID Office. Each employee should be ready to provide your company's *RAPIDGate* company code, his or her address, phone number, date of birth, and Social Security number. The Registration Station will capture the employee's photograph for badging and fingerprints for identity verification.

Assisted registration at your company's location may be available if you have 30 or more employees to register. Call 1-877-RAPIDGate (877) 727-4342 for details.

3. The *RAPIDGate* Program performs background screening and credentialing.

Once your company has approved each employee for participation and paid the registration fee, the *RAPIDGate* Program performs identity authentication and background screening. Your company will be notified when qualified employees may pick up their personalized *RAPIDGate* Credentials at the NAS Key West Pass and ID. To retrieve a Credential, each employee must show proof of identity by presenting one form of identification from List A (page 2 of this enclosure), or two forms of identification from List B. Prior to a *RAPIDGate* Credential being issued, the individual will also need to demonstrate that the vehicle they will be driving onto the installation is registered and has valid insurance.

After activating their *RAPIDGate* Credentials, employees present their Credentials to request entry to NAS Key West, and must wear and display the Credentials at all times while on the installation. Questions about the NAS Key West *RAPIDGate* Program should be addressed to info@rapidgate.com with the subject line RE: *RAPIDGate* Program.

Forms of Acceptable Identification for picking up your credential:

List A - One Needed

- U.S. Passport (unexpired or expired)
- Permanent Resident Card or Alien Registration Receipt Card (Form I-551)
- Unexpired foreign passport, with I-551 stamp or attached Form I-94 indicating unexpired employment authorization
- Unexpired Employment Authorization Document that contains a photograph (Form I-766, I-688, I688A, I-688B)

List B - Two Needed

- Driver's license or ID card issued by a state
- ID Card issued by federal, state or local government agencies or entities
- School ID card with a photograph
- Voter's registration card
- U.S. Military card or draft record
- Military Dependent's ID card
- U.S. Coast Guard Merchant Mariner Card
- Native American tribal document
- Driver's license issued by a Canadian government authority
- U.S. Social Security card issued by the Social Security Administration
- Certification of Birth Abroad issued by the Department of State (Form FS-545 or Form DS-1350)
- Original or certified copy of a birth certificate issued by a state, county, municipal authority or outlying possession of the United States bearing an official seal
- U.S. Citizen ID Card (Form I-197)
- ID Card for use of Resident Citizen in the United States (Form I-179)
- Unexpired employment authorization document issued by DHS (other than those listed under List A)



DEPARTMENT OF THE NAVY

NAVAL AIR STATION
PO BOX 9001
KEY WEST FL 33040-9001

5530
Ser NOU/1012
22 May 12

From: Commanding Officer, Naval Air Station, Key West
To: Distribution

Subj: NAVY COMMERCIAL ACCESS CONTROL SYSTEM (NCACS) UPDATE

1. Effective 1 October 2012, Naval Air Station Key West will no longer issue a 30-day temporary pass to NCACS (RAPIDGate) applicants. This privilege was initiated to allow for the quick implementation of NCACS and to hinder any work-stoppage that could have been potentially resulted with the implementation of this enterprise wide system. Contract sponsors shall ensure contractors, sub-contractors, vendors, and service providers understand this update and temporary base access will not be granted until the NCACS vetting process is complete and a credential is issued.

2. In the interim, NCACS applicants may continue to use the convenience of the 30-day temporary pass pending completion of NCACS process.

3. For further questions you may contact LT Ivan Afanador, Security Officer at COMM: (305) 293-3830 or via e-mail: ivan.afanador@navy.mil.



P. A. LEFERE

Distribution:
Lists A and C (NASKWNOTE 5216)

City of Key West Ordinance

Sec. 2-799. - Requirements for city contractors to provide equal benefits for domestic partners.

(a)

Definitions. For purposes of this section only, the following definitions shall apply:

(1)

Benefits means the following plan, program or policy provided or offered by a contractor to its employees as part of the employer's total compensation package: sick leave, bereavement leave, family medical leave, and health benefits.

(2)

Bid shall mean a competitive bid procedure established by the city through the issuance of an invitation to bid, request for proposals, request for qualifications, or request for letters of interest.

(3)

Cash equivalent means the amount of money paid to an employee with a domestic partner in lieu of providing benefits to the employee's domestic partner. The cash equivalent is equal to the employer's direct expense of providing benefits to an employee for his or her spouse.

The cash equivalent of the following benefits apply:

a.

For bereavement leave, cash payment for the number of days that would be allowed as paid time off for the death of a spouse. Cash payment would be in the form of the wages of the domestic partner employee for the number of days allowed.

b.

For health benefits, the cost to the contractor of the contractor's share of the single monthly premiums that are being paid for the domestic partner employee, to be paid on a regular basis while the domestic partner employee maintains such insurance in force for himself or herself.

c.

For family medical leave, cash payment for the number of days that would be allowed as time off for an employee to care for a spouse who has a serious health condition. Cash payment would be in the form of the wages of the domestic partner employee for the number of days allowed.

(4)

Contract means any written agreement, purchase order, standing order or similar instrument entered into pursuant to the award of a bid whereby the city is committed to expend or does expend funds in return for work, labor, professional services, consulting services, supplies, equipment, materials, construction, construction-related services or any combination of the foregoing.

(5) *Contractor* means any person or persons, sole proprietorship, partnership, joint venture, corporation, or other form of doing business, that is awarded a bid and enters into a covered contract with the city, and which maintains five or more full-time employees.

(6) *Covered contract* means a contract between the city and a contractor awarded subsequent to the date when this section becomes effective valued at over \$20,000.00.

(7) *Domestic partner* shall mean any two adults of the same or different sex, who have registered as domestic partners with a governmental body pursuant to state or local law authorizing such registration, or with an internal registry maintained by the employer of at least one of the domestic partners. A contractor may institute an internal registry to allow for the provision of equal benefits to employees with domestic partners who do not register their partnerships pursuant to a governmental body authorizing such registration, or who are located in a jurisdiction where no such governmental domestic partnership registry exists. A contractor that institutes such registry shall not impose criteria for registration that are more stringent than those required for domestic partnership registration by the City of Key West pursuant to [chapter 38](#), article V, of the Key West Code of Ordinances.

(8) *Equal benefits* means the equality of benefits between employees with spouses and employees with domestic partners, and/or between spouses of employees and domestic partners of employees.

(b) *Equal benefits requirements.*

(1) Except where otherwise exempt or prohibited by law, a contractor awarded a covered contract pursuant to a bid process shall provide benefits to domestic partners of its employees on the same basis as it provides benefits to employees' spouses.

(2) All bid requests for covered contracts which are issued on or after the effective date of this section shall include the requirement to provide equal benefits in the procurement specifications in accordance with this section.

(3) The city shall not enter into any covered contract unless the contractor certifies that such contractor does not discriminate in the provision of benefits between employees with domestic partners and employees with spouses and/or between the domestic partners and spouses of such employees.

(4)

Such certification shall be in writing and shall be signed by an authorized officer of the contractor and delivered, along with a description of the contractor's employee benefits plan, to the city's procurement director prior to entering into such covered contract.

(5)

The city manager or his/her designee shall reject a contractor's certification of compliance if he/she determines that such contractor discriminates in the provision of benefits or if the city manager or designee determines that the certification was created, or is being used for the purpose of evading the requirements of this section.

(6)

The contractor shall provide the city manager or his/her designee, access to its records for the purpose of audits and/or investigations to ascertain compliance with the provisions of this section, and upon request shall provide evidence that the contractor is in compliance with the provisions of this section upon each new bid, contract renewal, or when the city manager has received a complaint or has reason to believe the contractor may not be in compliance with the provisions of this section. This shall include, but not be limited to, providing the city manager or his/her designee with certified copies of all of the contractor's records pertaining to its benefits policies and its employment policies and practices.

(7)

The contractor may not set up or use its contracting entity for the purpose of evading the requirements imposed by this section.

(c)

Mandatory contract provisions pertaining to equal benefits. Unless otherwise exempt, every covered contract shall contain language that obligates the contractor to comply with the applicable provisions of this section. The language shall include provisions for the following:

(1)

During the performance of the covered contract, the contractor certifies and represents that it will comply with this section.

(2)

The failure of the contractor to comply with this section will be deemed to be a material breach of the covered contract.

(3)

If the contractor fails to comply with this section, the city may terminate the covered contract and all monies due or to become due under the covered contract may be retained by the city. The city may also pursue any and all other remedies at law or in equity for any breach.

(4)

If the city manager or his designee determines that a contractor has set up or used its contracting entity for the purpose of evading the requirements of this section, the city may terminate the covered contract.

(d)

Enforcement. If the contractor fails to comply with the provisions of this section:

(1)

The failure to comply may be deemed to be a material breach of the covered contract; or

(2)

The city may terminate the covered contract; or

(3)

Monies due or to become due under the covered contract may be retained by the city until compliance is achieved; or

(4)

The city may also pursue any and all other remedies at law or in equity for any breach.

(5)

Failure to comply with this section may also subject the contractor to the procedures set forth in division 5 [sic] of this article, entitled "Debarment of contractors from city work."

(e)

Exceptions and waivers. The provisions of this section shall not apply where:

(1)

The contractor does not provide benefits to employees' spouses.

(2)

The contractor is a religious organization, association, society or any nonprofit charitable or educational institution or organization operated, supervised or controlled by or in conjunction with a religious organization, association or society.

(3)

The contractor is a governmental entity.

(4)

The sale or lease of city property.

(5)

The provision of this section would violate grant requirement, the laws, rules or regulations of federal or state law (for example, the acquisition services procured pursuant to F.S. § 287.055 known as the "Consultants' Competitive Negotiation Act").

(6)

Provided that the contractor does not discriminate in the provision of benefits, a contractor may also comply with this section by providing an employee with the cash equivalent of such benefits, if the city manager or his/her designee determines that either:

a.

The contractor has made a reasonable yet unsuccessful effort to provide equal benefits. The contractor shall provide the city manager or his/her designee with sufficient proof of such inability to provide such benefit or benefits which shall include the measures taken to provide such benefit or benefits and the cash equivalent proposed, along with its certificate of compliance, as is required under this section.

(7)

The city commission waives compliance of this section in the best interest of the city, including, but not limited to, the following circumstances:

a.

The covered contract is necessary to respond to an emergency.

b.

Where only one bid response is received.

c.

Where more than one bid response is received, but the bids demonstrate that none of the bidders can comply with the requirements of this section.

(f)

City's authority to cancel contract. Nothing in this section shall be construed to limit the city's authority to cancel or terminate a contract, deny or withdraw approval to perform a subcontract or provide supplies, issue a nonresponsibility finding, issue a nonresponsiveness finding, deny a person or entity prequalification, or otherwise deny a person or entity city business.

(g)

Timing of application. This section shall be applicable only to covered contracts awarded pursuant to bids which are after the date when this section becomes effective.

(Ord. No. 12-05, § 1, 2-22-2012)

To:

City of Key West
3140 Flagler Ave.
Key West, FL 33040

RE: Equal Benefits Compliance Declaration
Reference: City of Key West Ordinance 2-799

Company: _____

Address: _____

Phone: _____

Pursuant to City Ordinance Section 2-799, Requirements for City Contractors to Provide Equal Benefits for Domestic Partners, _____ makes the following declaration:

_____ makes all benefits available on an equal basis to its employees with spouses and its employees with domestic partners, and to the spouses and domestic partners of employees, in all locations where work on the contracts with the City of Key West is performed, except where Federal Law dictates otherwise. Benefits affected by such regulations include, but may not be limited to, family medical leave, Flexible Spending Accounts, and Health Savings Accounts. Further, the IRS dictates which of these benefits may be taxable.

Please contact _____ at _____ with any questions regarding this declaration.

I declare under penalty of perjury under the laws of the State of Florida that the foregoing is true and correct and that I am authorized to bind this entity contractually.

Signature of Authorized Person

Date

Printed Name of Authorized Person

PART 2

CONTRACT DOCUMENTS

AGREEMENT

This Agreement, made and entered into this ____ day of April, 2013,
by and between the **City of Key West**, hereinafter called the "**Owner**," and
_____, hereinafter called the "**Contractor**";

WITNESSETH:

The Contractor, in consideration of the sum to be paid him by the Owner and of the covenants and agreements herein contained, hereby agrees at his own proper cost and expense to do all the work and furnish all the materials, tools, labor, and all appliances, machinery, and appurtenances for Construction of **SWITCHGEAR ENCLOSURES & FUEL STATION**, to the extent of the Bid made by the Contractor, dated the ____ day of April, 2013, all in full compliance with the Contract Documents referred to herein.

The BIDDING REQUIREMENTS, including the signed copy of the Bid, the CONTRACT FORMS, the CONDITIONS OF THE CONTRACT, the SPECIFICATIONS, and the DRAWINGS, which consist of Detailed Drawings for "**Switchgear Enclosures & Fuel Station-ITB 13-011**" are hereby referred to and by reference made a part of this Contract as fully and completely as if the same were fully set forth herein and are mutually cooperative therewith.

In consideration of the performance of the work as set forth in these Contract Documents, the Owner agrees to pay to the Contractor the amount bid in the Bid as adjusted in accordance with the Contract Documents, or as otherwise herein provided, and to make such payments in the manner and at the times provided in the Contract Documents.

The Contractor agrees to complete the work within the time specified and to accept as full payment hereunder the amounts computed as determined by the Contract Documents and based on the said Bid.

The Contractor agrees to remedy all defects appearing in the work or developing in the materials furnished and the workmanship performed under this Contract during the warranty period after the date of final acceptance of the work by the Owner, and further agrees to indemnify and save the Owner harmless from any costs encountered in remedying such defects.

It is agreed that the Project, based upon the Bid, shall be substantially complete within **180** consecutive calendar days from the date the Notice to Proceed is issued, and will be totally completed and ready for final payment and acceptance within **180** consecutive calendar days from the date the Notice to Proceed is issued.

Liquidated Damages: The Contractor recognizes that time is of the essence and that the Owner will suffer financial loss if the Work is not completed within the times specified in

paragraph above, plus any extensions thereof allowed in accordance with Article 12, of the General Conditions.

Owner and Contractor also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by the Owner, if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay the Owner **\$500** for each day that expires after the time specified for substantial completion. After Substantial Completion if Contractor shall neglect, refuse or fail to complete the remaining Work within the contract time or any proper extension thereof granted by the Owner, Contractor shall pay the Owner **\$200** for each day that expires after the time specified for completion and readiness for final payment. Liquidated damages shall run concurrent.

IN WITNESS WHEREOF, we, the parties hereto, each herewith subscribe the same this _____ day of April, A.D., 2013.

CITY OF KEY WEST

Owner: _____

By: Bogdan Vitas

Title: City Manager

Contractor: _____

By: _____

Title: _____

Approved as to Form

Attorney for Owner

END OF SECTION

PERFORMANCE BOND

BOND NO.
AMOUNT: \$

KNOW ALL MEN BY THESE PRESENTS, that in accordance with Florida Statutes Section 255.05, _____ with offices at _____ hereinafter called the CONTRACTOR (Principal), and _____ with offices at _____

_____ a corporation duly organized and existing under and by virtue of the laws of the State of Florida, hereinafter called the SURETY, and authorized to transact business within the State of Florida, as SURETY, are held and firmly bound unto **CITY OF KEY WEST**, represented by its _____, hereinafter called the CITY (Obligee), in the sum of: _____

_____ (\$ _____), lawful money of the United States of America, for the payment of which, well and truly be made to the CITY, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the CITY, dated _____, 20____, to furnish at his own cost, charges, and expense all the necessary materials, equipment, and/or labor in strict and express accordance with said Contract and the Contract Documents as defined therein, all of which is made a part of said Contract by certain terms and conditions in said Contract more particularly mentioned, which Contract, consisting of the various Contract Documents is made a part of this Bond as fully and completely as if said Contract Documents were set forth herein;

NOW THEREFORE, the conditions of this obligation are such that if the above bounden CONTRACTOR:

1. Shall in all respects comply with the terms and conditions of said Contract and his obligation there under, including the Contract Documents (which include the plans, drawings, specifications, and conditions as prepared by the CITY, invitation to bid, instructions to bidders, the CONTRACTOR’S bid as accepted by the above CITY, the bid and contract performance and payment bonds, and all addenda, if any, issued prior to the opening of bids), being made a part of this bond by reference, at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying PRINCIPAL with labor, materials, or supplies, used directly or indirectly by PRINCIPAL in the prosecution of the work provided for in the contract; and
3. Pays CITY all losses, costs, expenses, damages, attorney’s fees, including appellate proceedings, injury or loss of whatever kind and however arising including, without

limitation, delay damages to which said CITY may be subject by reason of any wrongdoing, misconduct, want of care or skill, negligence, failure of performance, breach, failure to petition within the prescribed time, or default, including patent infringements, on the part of said CONTRACTOR, his agents or employees, in the execution or performance of said Contract; and

4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this obligation shall be void; otherwise, to remain in full force and effect for the term of said Contract.

AND, the said Surety for value received, hereby stipulates and agrees that no change involving any extension of time, or addition to the terms of the Contract Documents, or to the work to be performed, or materials to be furnished there under shall affect said obligation of said Surety on this Bond, and the said Surety does hereby waive notice of any such changes, extension of time, alterations, or additions of the terms of the Contract Documents, or to the work.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

IN WITNESS WHEREOF, the above parties bonded together have executed this instrument this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

By: _____

(SEAL)

ATTEST

SURETY

By: _____

(SEAL)

ATTEST

PAYMENT BOND

BOND NO.
AMOUNT: \$

KNOW ALL MEN BY THESE PRESENTS, that in accordance with Florida Statutes Section 255.05, _____ with offices at _____ hereinafter called the CONTRACTOR (Principal), and _____ with offices at _____

_____ a corporation duly organized and existing under and by virtue of the laws of the State of _____, hereinafter called the SURETY, and authorized to transact business within the State of Florida, as SURETY, are held and firmly bound CITY OF KEY WEST, represented by its _____, hereinafter called the City (Obligee), in the sum of _____ lawful money of the United States of America, for the payment of which, well and truly be made to the CITY, and the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract for _____ attached hereto, with the CITY, dated _____, 2013 to furnish at his own cost, charges, and expense the necessary materials, equipment, and/or labor in strict and express accordance with said Contract and the plans, drawings (if any), and specifications prepared by the CITY, all of which is made a part of said Contract by certain terms and conditions in said Contract more particularly mentioned, which Contract, consisting of the various Contract Documents specifically mentioned herein and relative hereto, is made a part of this Bond as fully and completely as if said Contract Documents were set forth herein.

NOW THEREFORE, the conditions of this obligation are such that if the above bounden CONTRACTOR shall in all respects comply with the terms and conditions of said Contract and his obligation thereunder, including the Contract Documents (which include the plans, drawings, specifications, and conditions prepared by the CITY, invitation to bid, instructions to bidders, the CONTRACTOR’S bid as accepted by the CITY, the bid and contract and payment bonds, and all addenda, if any, issued prior to the opening of bids), and further that if said CONTRACTOR shall promptly make payments to all persons supplying materials, equipment, and/or labor, used directly or indirectly by said CONTRACTOR or subcontractors in the prosecution of the work for said contract in accordance with Florida Statutes, Section 255.05 or Section 713.23, then this obligation shall be void; otherwise to remain in full force and effect for the term of

said contract, including and all guarantee periods as specifically mentioned in said Contract Documents.

AND, the said SURETY for value received, hereby stipulates and agrees that no change involving any extension of time, or addition to the terms of the Contract or to the work to be performed, or materials to be furnished thereunder, or in the Contract Documents and specifications accompanying the said contract shall affect said obligation of said SURETY on this Bond, and the said SURETY does hereby waive notice of any such changes, extension of time, alternations, or additions of the terms of the Contract, or to the work, to the Contract Documents, or to the specifications.

Claimant shall give written notice to the CONTRACTOR and the SURETY as required by Section 255.05 or Section 713.23, Florida Statutes. Any action instituted against the CONTRACTOR or SURETY under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2) or Section 713.23, Florida Statutes.

IN WITNESS WHEREOF, the above parties bounded together have executed this instrument this _____ day of _____, 2013, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

By: _____

(SEAL)

ATTEST

SURETY

By: _____

(SEAL)

ATTEST



City of Key West
P.O. Box 1409
Key West, FL 33041

Notice of Award

Date: April 3, 2013

Project Number: **OM1301**
ITB 13-011

Owner: City of Key West
Company:
Address: Office of the City Clerk
City of Key West
P.O. Box 1409
Key West, FL 33041-1409

Project Name: **SWITCHGEAR ENCLOSURES & FUEL STATION (ITB 13-011)**

To Whom it May Concern:

You are hereby notified of the City of Key West's intent to award to _____ the contract for **Mole Pier Switchgear Enclosures**.

Enclosed please find three copies of the Contract Documents for your execution. Please complete the necessary pages, affixing signatures, notary and / or corporate seals, etc. where necessary and return to this office by **April 15, 2013**.

The following items must be received prior to issuance of the Notice to Proceed:

1. The Certificate of Insurance must be attached to the documents; one original and two copies are acceptable.
2. Powers – of – Attorney must be submitted in each bond document; one original and two copies are acceptable.
3. Properly executed Payment Bond.

It is also recommended that the *RAPIDGate* application process is initiated immediately.

Sincerely,

Terrence Justice
Engineering
cc: Cheri Smith, City Clerk
Project File

FEBRUARY 14, 2013

NOTICE OF AWARD
00 62 00 - 1

CERTIFICATE OF FINAL COMPLETION

Project: Switchgear Enclosures & Fuel Station

Project No.: OM1301

Date of Issuance: _____

City: City of Key West

Contractor _____ **Engineer** _____

~~~~~  
This Certificate of Completion applies to all Work under the Contract Documents.  
~~~~~

The Work to which this Certificate applies has been inspected by authorized representatives of CITY and ENGINEER, and that Work is hereby declared to be complete in accordance with the Contract Documents on

DATE OF COMPLETION

Executed by ENGINEER on _____ , (Date)

ENGINEER By: _____
Authorized Signature

Executed by US Navy on _____ , (Date)

US Navy By: _____
Authorized Signature

~~~~~  
**CONTRACTOR accepts this Certificate of Completion on** \_\_\_\_\_ , (Date)

\_\_\_\_\_  
CONTRACTOR By: \_\_\_\_\_  
Authorized Signature

~~~~~  
CITY accepts this Certificate of Completion on _____ , (Date)

ENGINEER By: _____
Authorized Signature

US Navy accepts this Certificate of Completion on _____ , (Date)

US Navy By: _____
Authorized Signature

NOTICE TO PROCEED

Date: April 15, 2013

Project No: OM1301
ITB 13-011

Contractor: _____

Address: _____

Project: **ITB 13-011 Switchgear Enclosures & Fuel Station (US Navy In-Kind Project)**

Project No.: **OM1301**

You are hereby notified to commence work on April 15, 2013 for the **Switchgear Enclosures & Fuel Station** and all related work, as designated by the City in accordance with the Contract made with the City of Key West on the 3rd day of April, 2013. The amount of time to complete the work is one hundred eighty (180) consecutive calendar days and should be fully completed on or before October 12, 2013.

Sincerely,

Project Manager

Receipt of this NOTICE TO PROCEED is hereby acknowledged this, the
____ day of _____, 20____.

CONTRACTOR: _____

By: _____

TITLE: _____

DATE: _____

Please return one (1) copy of this signed notice to:

City Clerk
City of Key West
3126 Flagler Ave.
Key West, FL 33040

PAYMENT APPLICATION AND CERTIFICATE

Date: _____

Application No.: _____ of _____
Period From: _____ to _____, 20____.

Sheet: _____ of _____

Project: **Switchgear Enclosures & Fuel Station**

Project No.: **OM1301**

Contractor: _____

Original Contract Sum \$ _____

Contract Modifications Approved in Previous Applications

Additions \$ _____ Deductions: \$ _____

Contract Modifications Approved this Period (List Contract Modifications Nos. _____)

Additions \$ _____ Deductions: \$ _____

- 1. Net Change by Contract Modifications (sum of lines 2 and 3) \$ _____
- 2. Revised Contract Amount (Sum of Lines 1 and 4) \$ _____
- 3. Total Value of Work to Date (Estimate Attached) \$ _____
- 4. Percent Project Complete (Line 6 / Line 5 x 100) = _____ %
- 5. Total Materials on Hand (Listing Attached) \$ _____
- 6. Subtotal – Work Completed and Stored (Sum of Lines 6 and 8) \$ _____
- 7. Total Retainage (10% x Line 9) \$ _____
- 8. Total Earned to Date, Less Retainage (Line 9 less Line 10) \$ _____
- 9. Less Previous Certificates for Payments (item 11 from
Previous Application) \$ _____
- 10. Current Payment Due (Line 11 less Line 12) \$ _____
- 11. Amount paid to Subcontractors Previous Pay Application \$ _____

The undersigned Contractor certifies that the Work covered by this Application for Payment has been completed in accordance with the Contract Documents that the current payment shown herein is now due, and that title for all Work, materials, and equipment covered in this Application will pass to the CITY free and clear of all liens at the time of payment.

Contractor By Date

I hereby acknowledge that the material and labor involved on the above estimate is correct to the best of my knowledge, information and belief, and payment on same is due Contractor.

CA Manager Date

Project Manager Date

CITY OF KEY WEST

Construction Compliance Certification with Specifications and Plans

Project Number

Date

PO Number

Monthly

Final

Prime Contractor for the above referenced contract hereby verifies based on personnel knowledge or reasonable investigation and good faith belief, all Quality Control functions and Quality Control sampling and test results are in substantial compliance with the pertinent specification requirements for this project The represents work completed between _____ and _____. Exceptions are listed

below.
(add addition sheets as required)
Item No.
Exception:

A false statement or omission made in connection with this certification is sufficient cause for suspension, revocation, or denial of qualification to bid, and a determination of non-responsibility, and may subject the person and /or entity making the false statement to any civil and criminal penalties available pursuant to applicable State and Federal Law.

Contractor: _____ date; _____

State of Florida
County of:

Sworn to and subscribed before me this _____ day

of _____,

By _____
(print name of person signing certification)

Notary Public

Commission Expires

Certificate of Final Payment

Date:
Page: 1 of 2

Payment Application No. _____

Period From: _____ to _____

Project: **Switchgear Enclosures & Fuel Station** _____

Project No.: **OM1301** _____

Contractor: _____

I Hereby Acknowledge that this contract has been completed in substantial compliance with the items of the agreement, Specifications and Plans, as-builts, work change directives and field orders. I, therefore, request acceptance of the work and processing of this final estimate as showing the total amount of money due in compliance with the terms of the Contract.

I _____ certify to the Owner that the Contractor met the Grant requirements provided in the contract documents

Contractor: _____

Address: _____

With the acceptance of this final payment, we, the Contractor, release the Owner and the Engineer and their agents, from all claims and liability to us, the Contractor, for all things done or furnished in connection with the Work, and every act of the Owner and others relating to, or arising, out of the Work.

Signature

Date

Title

Sworn and subscribed before me this _____ day of _____, 20__

NOTARY PUBLIC, State of Florida at Large

My Commission Expires:

ACCEPTED BY:

Project Manager

Date

Owner

By: _____

Date

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

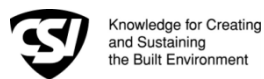
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The Associated General Contractors of America



Construction Specifications Institute

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1420 King Street, Alexandria, VA 22314

American Council of Engineering Companies
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract

Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and

14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and

easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating

all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of

insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended

result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor

shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
- b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all

of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed

by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data,

b. locating all Underground Facilities shown or indicated in the Contract Documents,

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous

Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous

Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an

agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to

the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct

physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5

on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary

circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require

a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or-equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as

Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs,

losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of

or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:* Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular

means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will

constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by

or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract

Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper

execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status

under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques,

sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be

performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each

applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,
2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or

10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK;
ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and

returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or

for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will

be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract

Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be

uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but

not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction

period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefore as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action,

Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to

Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under

Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and

guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

- a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;
- b. consent of the surety, if any, to final payment;
- c. a list of all Claims against Owner that Contractor believes are unsettled; and
- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. Engineer's Review of Application and Acceptance

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04

are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. 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

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. 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 on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to 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 Laws or Regulations, by special warranty or guarantee, or by other

provisions of the Contract Documents. The provisions of this Paragraph will 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.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

REVISIONS AND ADDITIONS TO THE GENERAL CONDITIONS

The General Conditions are hereby revised as follows:

ARTICLE 1.01.A.19 "Engineer"

Add the following:

Wherever in these Documents the word "Engineer" appears, it shall be understood to mean the **Construction Manager** and their authorized representatives, acting either directly or indirectly as authorized agents of the Owner.

ARTICLE 1.01.A.30 "Owner"

Add the following:

Wherever in these Documents the word "Owner" appears, it shall be understood to mean the City of Key West whose address is 3140 Flagler Street, Key West, Florida 33040.

SC-1.01.A.43. Supplement paragraph 1.01.A.43 of the General Conditions as follows:

Substantial Completion is further defined as (i) that degree of completion of the Project's operating facilities or systems sufficient to provide Owner the full time, uninterrupted, and continuous beneficial operation of the Work; and (ii) all required functional, performance and acceptance or startup testing has been successfully demonstrated for all components, devices, equipment, and instrumentation and control to the satisfaction of Engineer in accordance with the requirements of the Specifications.

SC-1.01.A.51. Add a new paragraph immediately following paragraph 1.01.A.50 of the General Conditions as follows:

1.01.A.51. *Specialist*—The term Specialist refers to a person, partnership, firm, or corporation of established reputation (or if newly organized, whose personnel have previously established a reputation in the same field), which is regularly engaged in, and which maintains a regular force of workers skilled in either (as applicable) manufacturing or fabricating items required by the Contract Documents, or otherwise performing Work required by the Contract Documents. Where the Specifications require the installation by a Specialist, that term shall also be deemed to mean either the manufacturer of the item, a person, partnership, firm, or corporation licensed by the manufacturer, or a person, partnership, firm, or corporation who will perform the Work under the manufacturer's direct supervision.

SC-2.03.A. Delete the third sentence of paragraph 2.03.A *Commencement of Contract Times: Notice to Proceed* of the General Conditions in its entirety.

ARTICLE 4.04 "UNDERGROUND FACILITIES"

Add the following:

It will be the Contractor's responsibility to coordinate and bear any and all cost for providing utility location services. All underground utilities will be located and marked by the governing agencies or third party location services before issuance of required excavation permits. The City will provide to the best of its ability contact information for the various location service providers. Currently, only underground communications can be located and marked without cost to CONTRACTOR. All other facilities will require a third party locating service, the cost of which shall be borne entirely by the contractor.

Add the following:

It will be the Contractor's responsibility to protect and work around existing sheet-pile tiebacks that are present in the pier earthworks as necessary.

ARTICLE 5.04 "CONTRACTOR'S LIABILITY INSURANCE"

Add the following:

Before commencing work as specified in the contract Contractor shall obtain at its own cost and expense the following insurance in insurance companies authorized in the State of Florida, with an A.M. Best rating of A-:VI or higher and shall provide evidence of such insurance to the City. The policies or certificates shall provide thirty (30) days prior to cancellation notices of same shall be given to the City by registered mail, return receipt requested, for all of the required insurance policies stated below. All notices shall name the Contractor and identify the agreement or contract number. The City of Key West, all Departments, Agencies, Boards and Commissions, its officers, agents, servants and employees are to be added as "Additional Insured" as respects liability arising out of activities performed by or on behalf of the Contractor.

Contractor shall maintain limits no less than those stated below:

1. **Worker's Compensation** – Statutory – in compliance with the Workers' Compensation law of the State of Florida. The coverage must include Employer's Liability with a limits of not less than One Million (\$1,000,000) Dollars per employee per accident, One Million (\$1,000,000) Dollars per employee per disease.
2. **Commercial General Liability** Insurance with a minimum limit of liability per occurrence of One Million (\$1,000,000.) Dollars/ Two Million (\$2,000,000) Dollars aggregate.
3. **Business Automobile Liability** Insurance with a minimum limit of liability per occurrence of One Million (\$1,000,000) Dollars for bodily injury and property damage unless otherwise indicated in the contract specifications. This insurance shall include for bodily injury and property damage the following coverage:
 - Owned automobiles
 - Hired automobiles
 - Non-owned automobiles
 - Location of operation shall be "All Locations."

4. **Excess/Umbrella Liability** shall have a minimum limit of Two Million (\$2,000,000) per occurrence/Two Million (\$2,000,000) aggregate. This coverage is to be following form and include the Commercial General Liability and Automobile Liability Policies.
5. **Waiver of Subrogation** - All insurance required by this contract shall include a waiver of subrogation as to the Owner, Consultant, Contractor and their respective officers, agents, employees and sub-contractors.
6. It shall be the responsibility of the Contractor to ensure that all subcontractors comply with the same insurance requirements as is required of Contractor
7. Certificates of Insurance meeting the required insurance provisions shall be forwarded to Engineer, Owner's and Risk Management.

The following **Indemnification Agreement** shall be made a provision of the contract:

*To the fullest extent permitted by law, the CONTRACTOR expressly agrees to indemnify and hold harmless the City of Key West, their officers, directors, agents and employees *(herein called the "indemnitees") from liabilities, damages, losses and costs, including but not limited to, reasonable attorney's fees and court costs, such legal expenses to include costs incurred in establishing the indemnification and other rights agreed to in this Paragraph, to persons or property, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the CONTRACTOR, its Subcontractors or persons employed or utilized by them in the performance of the Contract. Claims by indemnitees for indemnification shall be limited to the amount of CONTRACTOR's insurance or \$1 million per occurrence, whichever is greater. The parties acknowledge that the amount of the indemnity required hereunder bears a reasonable commercial relationship to the Contract and it is part of the project specifications or the bid documents, if any.*

The indemnification obligations under the Contract shall not be restricted in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR under Workers' Compensation acts, disability benefits acts, or other employee benefits acts, and shall extend to and include any actions brought by or in the name of any employee of the CONTRACTOR or of any third party to whom CONTRACTOR may subcontract a part or all of the Work. This indemnification shall continue beyond the date of completion of the work.

ARTICLE 5.04 "CONTRACTOR'S LIABILITY INSURANCE"

Add the following Article:

SURETY AND INSURER QUALIFICATIONS

All bonds, insurance contracts, and certificates of insurance shall be either executed by or countersigned by a licensed resident agent of the Surety or insurance company, having his place of business in the State of Florida, and in all ways complying with the insurance laws of the State of Florida. Further, the said Surety or insurance company shall be duly licensed and qualified to do business in the State of Florida.

ARTICLE 5.04 “CONTRACTOR’S LIABILITY INSURANCE”

Include the **City of Key West**, the **United States Navy**, and the designated independent **Construction Administration (CA) Firm** as additional insureds.

ADD ARTICLE 5.04A “CONSTRUCTION ADMINISTRATION (CA) FIRM LIABILITY INSURANCE”

Before commencing work as specified in the contract Contractor’s independent Construction Administration (CA) Firm shall obtain at its own cost and expense the following insurance in insurance companies authorized in the State of Florida, with an A.M. Best rating of A-:VI or higher and shall provide evidence of such insurance to the City. The policies or certificates shall provide thirty (30) days prior to cancellation notices of same shall be given to the City by registered mail, return receipt requested, for all of the required insurance policies stated below. All notices shall name the Contractor and identify the agreement or contract number. The City of Key West, all Departments, Agencies, Boards and Commissions, its officers, agents, servants and employees are to be added as “Additional Insured” as respects liability arising out of activities performed by or on behalf of the Contractor.

Construction Administration (CA) Firm shall maintain limits no less than those stated below:

1. **Worker’s Compensation** – Statutory – in compliance with the Workers’ Compensation law of the State of Florida. The coverage must include Employer’s Liability with a limits of not less than One Million (\$1,000,000) Dollars per employee per accident, One Million (\$1,000,000) Dollars per employee per disease.
2. **Commercial General Liability** Insurance with a minimum limit of liability per occurrence of One Million (\$1,000,000.) Dollars/ Two Million (\$2,000,000) Dollars aggregate.
3. **Professional Liability** Insurance with a minimum limit of liability per **occurrence** of One Million (\$1,000,000.) Dollars/ Two Million (\$2,000,000) Dollars aggregate.
4. **Business Automobile Liability** Insurance with a minimum limit of liability per occurrence of One Million (\$1,000,000) Dollars for bodily injury and property damage unless otherwise indicated in the contract specifications. This insurance shall include for bodily injury and property damage the following coverage:
 - Owned automobiles
 - Hired automobiles
 - Non-owned automobiles
 - Location of operation shall be “All Locations.”
5. **Excess/Umbrella Liability** shall have a minimum limit of Two Million (\$2,000,000) per occurrence/Two Million (\$2,000,000) aggregate. This coverage is to be following form and include the Commercial General Liability and Automobile Liability Policies.

6. **Waiver of Subrogation** - All insurance required by this contract shall include a waiver of subrogation as to the Owner, Consultant, Contractor and their respective officers, agents, employees and sub-contractors.
7. **Certificates of Insurance** meeting the required insurance provisions shall be forwarded to Engineer, Owner's and Risk Management.
8. Include the **City of Key West** and the **United States Navy** as additional insureds.

ARTICLE 5.06 "BUILDER'S RISK COVERAGE"

- A. The **Contractor** shall purchase and maintain at **Contractor's** expense, Builder's Risk insurance as will protect **Owner** against claims which may arise from operations under the Contract Documents. This policy shall have a minimum limit in an amount of the full value of the materials or buildings being constructed.

ARTICLE 5.07 "WAIVER OF RIGHTS"

Replace Paragraph A with the following:

- A. **Contractor** waives all rights against the **Owner**, respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against the Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused.

ARTICLE 5.07 PROPERTY INSURANCE

Delete Article B in its entirety.

Delete Article C in its entirety.

6.03. Add the following new paragraphs immediately after Paragraph 6.03.C:

6.03.D. Domestic Products:

6.03.D.1. Contractor agrees to use materials, supplies, and products manufactured, mined, processed, or produced in the United States or its territories, if products are available at reasonable and competitive prices and are not contrary to any sole source specification. If Agreement to use domestic products is breached and domestic products are not used, there shall be a downward adjustment in Contract price equal to any realized savings or benefits to Contractor.

6.03.D.2. Contractor agrees to use steel produced within the United States when specifications require the use of steel and do not limit its supply to a sole source specification. Owner has right to waive this requirement in the event of national

emergency, national strike, or other cause. If Agreement to use domestic steel is breached and domestic steel is not used, there shall be a downward adjustment in Contract price equal to any realized savings or benefits to Contractor.

ARTICLE 6.09 "LAWS AND REGULATIONS"

Add the following:

The Contractor shall comply with the City of Key West Noise Ordinance.

ARTICLE 6.09 "LAWS AND REGULATIONS"

Add the following Subarticles:

Within 10 days of Notice of Award, the successful Bidder must represent that he holds all applicable state, county, and City of Key West licenses and permits required to do business as a contractor with respect to the work described in the Contract Documents.

Further, the successful Bidder must, within 10 days of Notice of Award, furnish documentation showing that, as a minimum, he has complied with the provisions of Chapter 91 of the Code of Ordinances of the City of Key West in order to enter into the Agreement contained in the Contract Documents.

Specifically, within 10 days after Notice of Award, the successful Bidder must demonstrate that he holds, as a minimum, the following licenses and certificates:

2. All licenses or certificates required by federal, state, or local statutes or regulations.
3. State of Florida General Contractor's License.

FOLLOWING ARTICLE 6.09 "LAWS AND REGULATIONS"

Add the following Article:

HISTORIC PRESERVATION

The Contractor shall comply with Florida's Archives and Historic Act (Florida Statutes, Chapter 267) and the regulations of the local historic preservation board as applicable and protect against the potential loss or destruction of significant historical or archaeological data, sites, and properties in connection with the project.

ARTICLE 6.13 "SAFETY AND PROTECTION"

Add the following Subarticle:

OCCUPATIONAL SAFETY AND HEALTH

The Contractor shall observe and comply with all applicable local, state, and federal occupational safety and health regulations during the prosecution of work under this Contract. In addition, full compliance by the Contractor with the U.S. Department of Labor's Occupational Safety and Health Standards, as established in Public Law 91-596, will be required under the terms of this Contract. Furthermore, the Contractor shall observe and comply with all provisions of the U.S. Army Corps of Engineers **Safety and Health Requirements Manual EM 385-1-1**.

Add the following Subarticle:

SITE SAFETY AND HEALTH OFFICER (SSHO)

The Contractor shall provide a full-time SSHO to be on-site at all times during which work is underway. The qualifications and requirements for the SSHO are detailed in Attachment D, made a part of these Supplemental Conditions.

ARTICLE 6.20 "INDEMNIFICATION"

Add the following:

The obligation of the Contractor under this Article shall be limited to the contractual liability as specified in the Supplementary Conditions, Article Insurance and Liability.

ARTICLE 13.01 "NOTICE OF DEFECTS"

Add the following subarticle:

13.01.B The Contractor shall conduct without additional cost to owner a warranty walk-through of the entire project escorted by Owner or Owner's representative during the eleventh month after issuance of the Notice of Final Completion.

ARTICLE 13.03 "TESTS AND INSPECTIONS"

SC-13.03.B Delete 13.03.B in its entirety and insert the following:

Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents.

SC-13.03.D. Supplement paragraph 13.03.D of the General Conditions as follows:

Tests required by Contract Documents to be performed by Contractor that require test certificates be submitted to Owner or Engineer for acceptance shall be made by an independent testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required, testing laboratories or agencies shall meet following applicable requirements:

13.03.D.1. "Recommended Requirements for Independent Laboratory Qualification," published by the American Council of Independent Laboratories.

13.03.D.2. Basic requirements of ASTM E329, "Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction" as applicable.

13.03.D.3. Calibrate testing equipment at reasonable intervals by devices of accuracy traceable to either the National Bureau of Standards or accepted values of natural physical constants.

13.07 Correction Period

13.07.A. Change the first sentence from "If within one year after the date of Substantial Completion..." TO "If within five years after the date of Substantial Completion..."

13.07.D. Change the sentence from "...will be extended for an additional period of one year after such corrections or removal..." TO "...will be extended for an additional period of five years after such correction or removal..."

ARTICLE 14 "PAYMENTS TO CONTRACTOR AND COMPLETION"

Add the following to the end of Subarticle 14.02.B.1:

Add the following subarticles:

14.02.B1.1 The Owner will deduct from the estimate, and retain as part security, 10 percent of the amount earned for work satisfactorily completed. A deduction and retainage of 10 percent will be made on the estimated amount earned for approved items of material delivered to and properly stored at the jobsite but not incorporated into the work.

14.02.B1.2 After deducting the retainage and the amount of all previous partial payments made to the Contractor from the amount earned, the amount due will be made payable to the Contractor. Recommendations for payment received by the Owner less than 40 days prior to the scheduled day for payment will not be processed or paid until the following month.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION – LOWER TIER COVERED TRANSACTIONS

Note: This certification/clause has been extracted from Appendix B to 40 CFR Part 32 and is applicable to all goods and services (including construction) contracts and subcontracts with a price equaling or exceeding \$25,000 and in all solicitations for such contracts and subcontracts.

Instructions for Certification:

1. By signing and submitting this Proposal, the prospective lower tier participant is providing the certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this Proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered transaction,” “participant,” “person,” “primary covered transaction,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this Proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this Proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this Proposal that it will include this clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions,” without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

SUPPLEMENTS

- A. The supplements listed below, following “END OF SECTION,” are hereby made a part of this Specification.

Attachment A – Hierarchy of Governing Documents
Attachment B – Sample Gantt Chart Construction Schedule
Attachment C – NAVFAC-SE WORM (Risk Management) Requirement
Attachment D – SSHO Qualifications and Requirements
Attachment E – QCM Qualifications and Requirements
Attachment F – CA Firm Qualifications and Requirements

END OF SECTION

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Supplementary Conditions - Attachment A

Hierarchy of plans and specifications in the event of a contradiction.

Supplemental Conditions (00 73 00 including Attachments A through F)

General Conditions (00 72 00)

Specifications (PART 3 - Sections C and D)

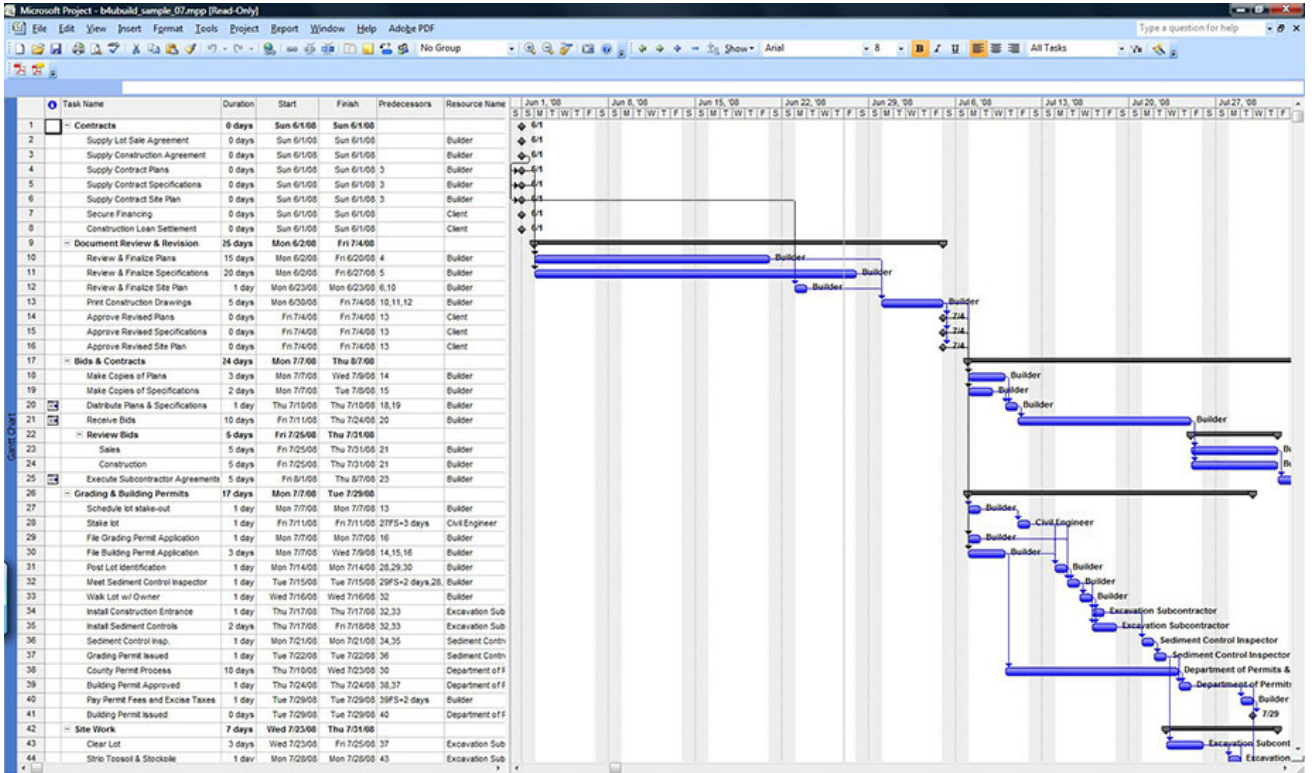
Plans and Drawings (PART 3 - Sections E & F)

In the event of a contradiction or discrepancy between documents made a part of this contract, the document higher on the above hierarchal list shall take precedence and supersede any document lower on the list.

Supplementary Conditions - Attachment B

An up-to-date, detailed, and accurate construction schedule that separately depicts timelines for each identifiable feature of work shall be submitted for approval as to form and detail and shall be updated by the Contractor for presentation at all QC and Progress Meetings and shall be updated to accompany all payment applications.

A sample construction schedule Gantt chart depicting an adequate level of timeline and task detail:



NAVFAC-SE WORM (RISK MANAGEMENT) REQUIREMENT

1. The contractor shall designate a Site Superintendent who will be required to attend no fewer than two WORM Risk Management meetings during the course of the 180-day construction period, site(s) and time(s) as designated by US Navy NAVFAC-SE personnel.

Supplementary Conditions - Attachment D

Site Safety and health Officer Requirements

Site Safety and Health Officer (SSHO) requirements are as specified in the NAVFAC UNIFIED FACILITIES GUIDE SPECIFICATIONS (UFGS-01525) as Level 3. The credentials, certification, and experience required are as follows:

SSHO Level 3:

- A minimum of 5 years safety work on similar projects.
- 30-hour OSHA construction safety class or equivalent within the last 5 years.
- An average of at least 24 hours of formal safety training each year for the past 5 years.
- Competent person training as needed for the nature of work to be performed on the subject project.

Furthermore, the SSHO shall be on the job site at all times that work is ongoing. The SSHO shall not be tasked with duties other than the specified administration and oversight of the project's Accident Prevention Plan.

Supplementary Conditions - Attachment E

Quality Control Program Requirements

Quality Control Program and Quality Control Program Manager (QCM) requirements are provided in the following:

PART 3 - PLANS AND SPECIFICATIONS Sub-Part E, NAVFAC "DESIGN BID BUILD PROJECT SPECIFICATIONS" Section 01 45 00.10 25 Pages 1 through 10 inclusive.

Failure of the QCM to perform the above duties will result in dismissal of the superintendent and/or QCM and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

CONSTRUCTION ADMINISTRATION (CA)

1.01 OVERVIEW OF CONSTRUCTION ADMINISTRATION

The selection of a Construction Administration Manager (CAM) is a very important step in managing the construction processes. The CAM is responsible for assessing and reporting on the construction activities in a role that serves as an owner's representative with respect to oversight of the Quality Control (QC) and Safety programs, and recommendations to the owner on administrative enforcement of the terms and requirements of the contract.

The CA firm must be independent of and entirely unaffiliated with the Contractor, other subcontractors, and suppliers.

1.02 CONSTRUCTION MANAGEMENT SERVICES

1. Pre-Mobilization Phase

- a. Baseline evaluation of project schedule and required submittals.
- b. Tracking of submittals using supplied submittal log(s).
- c. Review and comment on shop drawings.
- d. Chair Pre-Construction "Mutual Understanding" meeting. QCM shall record and publish minutes.
- e. Attend Pre-Construction Safety meeting chaired by SSHO.
- f. Attend a Pre-Construction Quality Control (QC) Meeting chaired by QCM.

2. Construction and Post-Construction Phases

- a. Provide administration and management of construction contracts, including schedule coordination and performance reports.
- b. Coordinate and chair weekly construction progress meeting, maintain and publish minutes and track action items through final resolution.
- c. Review submittals and shop drawings, recommend, and coordinate approval process with the A/E, Project Manager, and US Navy.
- d. Maintain a construction site presence to monitor and assess contractor activities and schedule, ensure quality control, observe safety practices, coordinate construction sequencing, monitor overall project progress, and submit informative reports to Owner.
- e. Process and track requests for information (RFI) and Owner response. Coordinate this process with Owner's

representative and US Navy. Owner and US Navy must both approve any response to an RFI.

- f. Review and recommend to Owner administrative enforcement response regarding QCM and SSHO performance requirements, including daily reporting.
- g. Report and recommend to Owner the rejection of non-conforming work and monitor and report corrective action by the Contractor.
- h. Review and recommend Contractor applications for payment.
- i. Review and recommend change requests to the Owner.
- j. Coordinate building commissioning and start-up operations.
- k. Coordinate final inspection/punch list development.
- l. Prepare and submit weekly reports assessing overall compliance of Contractor, QCM, and SSHO with contract requirements with a focus on quality, schedule, and detailed reporting.

1.03 CONSTRUCTION MANAGEMENT QUALIFICATIONS

CONSTRUCTION ADMINISTRATION (CA) FIRM QUALIFICATIONS

1. Corporately and financially independent organization functioning as an unbiased Quality Assurance and Construction Administration authority.
2. Professionally independent of manufacturers, suppliers, and installers of equipment and facilities being constructed on this project.
3. Employers of architects and/or engineers regularly engaged in similar construction project management.
4. Architect and/or Professional Engineer Licensed in the State of Florida with five years similar experience.

CONSTRUCTION ADMINISTRATION MANAGER (CAM) QUALIFICATIONS

1. Architect or Professional Engineer Licensed in the State of Florida with five years similar construction administration experience.
2. Experience with EM385-1-1.
3. Experience with NAVFAC or Army Corps of Engineers projects.
4. Experience in the areas of hazard identification and safety compliance.
5. Current certificate for NAVFAC/Corps "Construction Quality Management for Contractors" (Course #784). Course may be completed before issuance of the Notice to Proceed.

1.04 CONSTRUCTION ADMINISTRATION PERFORMANCE

Failure to perform the above duties will result in dismissal of the Construction Administration Firm (CA) and/or specific personnel and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement firm and/or personnel.

PART 3

PLANS AND SPECIFICATIONS

- A. PROJECT DESCRIPTION.
- B. LOCATION MAP.
- C. NAVFAC SPECIFICATIONS -- *Transmitted in separate file.*
- D. FUELING STATION SPECIFICATIONS -- *Transmitted in separate file.*
- E. PLANS – SWITCHGEAR ENCLOSURES -- *Transmitted in separate file.*
- F. PLANS – FUEL STATION -- *Transmitted in separate file.*
- G. SAMPLE GEOTECHNICAL REPORT.
- H. ADDITIONAL REQUIREMENTS AND CATALOG CUTS.

ITB 13-011

SWITCHGEAR ENCLOSURES & FUEL STATION

PROJECT DESCRIPTION

General: This project proposes the turn-key construction of four enclosures of approximately 1,000 square feet each at existing transformer and switchgear locations at the Truman Annex facility of Naval Air Station Key West (NASKW), three of which are located on the Mole Pier. In addition, this project includes an alternate bid item to construct a fuel storage and delivery facility along the Quay wall at the NASKW Truman Annex facility.

Key features of the project:

Electrical Enclosures Key Items

1. Three enclosures on the pier, 960 sf each. (SW #1 - #3)
2. One enclosure between Pier 8 and NOAA building, 1104 sf. (SW #4)
3. Each building comprised of CMU wall on continuous reinforced footer with precast hollow-core roof planks and bituminous membrane waterproofing.
4. Overall height of each building is 13'4" above grade.
5. Each building will have 3 man-doors and one roll-up door 12 feet in width.
6. Building at SW#4 shall have an additional roll-up door 10-foot in width.
7. Each building will have redundant HVAC systems.
8. Each building will require no plumbing for water or sewer.
9. Each building will have 225A 120/208V single-phase electrical.
10. Each building will be equipped with fire detection and alarm system.
11. Fire suppression systems are not required for these buildings.
12. Each building will be equipped with environmental and systems monitoring telemetry.
13. Each building will be equipped with flood-proofing and sump pumps.
14. Bid options will include specifying stainless steel for roll-up doors, aluminum flood panels for all doors, stainless steel watertight man-doors.
15. The building at SW#4 is an Alternate Bid Item and includes modification of existing fencing.

Fueling Station Key Items

1. Fueling Station at the Quay wall is an Alternate Bid Item.
2. 1000 Gallon fuel tank.
3. Stainless steel tank construction is a bid option.
4. Transformer to convert 13.8kV primary feed.
5. SF6 switchgear.
6. Emergency shutoff systems.
7. Fueling station to be fully fenced in and protected by bollards.
8. 100-foot fuel delivery hose.
9. Submersible electric pump.
10. Manual-retrieve hose reel.
11. Site work includes concrete pads for all equipment.

Notes:

- a. The Contractor to whom this bid is awarded shall at his own expense provide Safety Site and Health Officer responsible to develop, maintain, and report on an Accident Prevention Plan as specifically outlined elsewhere in these bid documents.
- b. The Contractor to whom this bid is awarded shall at his own expense provide Construction Quality Control Manager (QCM) responsible to develop, maintain, and report on a Quality Control Plan as specifically outlined elsewhere in these bid documents.
- c. The Contractor to whom this bid is awarded shall at his own expense retain the services of an independent Construction Administration (CA) firm responsible to oversee and report on Contractor's, subcontractors', QCM's and SSHO's performance and adherence to the provisions and requirements of the contract.
- d. Project location is on US Navy Property. Contractors shall be aware that they will be required to obtain US Navy *RAPID*Gate Passes and shall include the cost of this in their bid. The process for obtaining *RAPID*Gate passes should be undertaken immediately upon Notice of Award.
- e. A professional archaeologist will be on-site to monitor all ground-disturbing activities associated with this undertaking as required by the State Historic Preservation Office. The cost associated with this requirement shall be a part of this bid. The archaeologist will not be required to monitor work at SW#1 through SW#3 located on the Mole Pier. The archaeologist will be required to monitor excavation at SW#4 and at the Fueling Station. A confidential report shall be prepared by the archaeologist and delivered to the US Navy.
- f. Bidders are directed to the Specifications sections for the required submittals.
- g. Bidders are directed to the Bidder's Checklist for the required bid documents.



PROJECT LOCATION

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August 18, 2010
Revised October 6, 2010

DRAFT

Mr. George N. Gray, P.E.
Appledore Marine Engineering, Inc.
600 State Street, Suite E
Portsmouth, NH 03801
Phone: (603) 766-1870
Fax: (603) 766-4599

Re: Final Report of Geotechnical Engineering Services
Key West Naval Air Station (Breakwater 497)
Truman Annex, Key West, Florida
N&A Project No. 08-09-0021-102

Dear Mr. Gray:

Nodarse & Associates, Inc. (N&A) is pleased to present our final report of geotechnical engineering services for the proposed above referenced project in Key West, Monroe County, Florida. The initial geotechnical services were performed in accordance with our proposal number 08-09-0021-101 dated May 12, 2009. This final report was performed in accordance with our proposal number 08-09-0021-102 dated January 13, 2010.

N&A appreciates being of service to Appledore Marine Engineering, Inc. If you have any questions regarding the contents of this report, please contact us at (305) 820-1997.

Yours sincerely,
Nodarse & Associates, Inc.

Julio De Blas, P.E.
Geotechnical Engineer
Florida License No. 64653

Hugo E. Soto, P.E.
Senior Geotechnical Engineer
Florida License No. 36440

cc: Addressee (1)
File (1)

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APPENDIX A

Figure 1: U.S.G.S. Quadrangle Map

Figure 2: Boring Location Plan

Figure 3: Soil/Rock Profiles

APPENDIX B

Table 1: Summary of Laboratory Tests Results (Rock Coring Program)

Table 2: Summary of Rock Side Shear Determination per FDOT SFH 2009

Table 3: Summary of Rock Unit Weight Determination

Figures 4 to 6: Photographs of Rock Cores

APPENDIX C

Case I – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 250 psf

Case II – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 600 psf

Case III – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Point Load 8 kips

Case IV – Anchored Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 600 psf

1.0 PROJECT INFORMATION

The project is located within the Truman Annex at the Key West Naval Air Station in Key West, Monroe County, Florida. The general site location is presented in the USGS map on **Figure 1** of **Appendix A**. From our review of Appledore Marine's Facility Assessment Report (Appledore Project no. 5024Z dated April 1, 2009) and the 60% design submission plans, we understand that the project consists of the partial replacement of the existing bulkhead wall (breakwater 497) with a new steel sheet pile wall. The existing wall is about 1,646 feet long with a top elevation of about 7.76 feet and consists of a steel sheet pile with an upper concrete encasement and tie rods at about elevation -3 feet. From station 0+00 to 12+90, the mud line was found ranging from elevation +7 to -3 feet and from station 12+90 to 16+46 it was found ranging from -3 to -16 feet.

As we understand it, the existing substructure is in poor condition (e.g. corrosion holes and deck settlement due to the sheet pile wall condition). The recommendations call for installing a new steel sheet pile wall outboard of the existing one and filling the gap between the old and new wall with crushed stone fill. Three (3) options/concepts are being considered: steel sheet pile with anchors socketed into the limestone formation (Concept A), cantilever steel sheet pile (Concept B), and deadman anchored steel sheet pile (Concept C).

The rock coring program included in this final geotechnical report was performed in order to support the evaluation of concepts A and B (steel sheet pile wall anchored into the natural limestone formation and cantilever steel sheet pile wall, respectively).

2.0 SCOPE OF WORK

Our initial geotechnical services consisted of performing a subsurface exploration consisting of three (3) Standard Penetration Test (SPT) borings along the damaged bulkhead wall. The SPT borings were used to determine the subsurface conditions along the bulkhead wall and to provide geotechnical engineering recommendations in order to repair or replace the existing bulkhead wall. The initial services were performed between September 15 and 18, 2009. A preliminary geotechnical engineering report was submitted on December 1, 2009.

For the final design phase of the project, a rock coring program to better determine the rock strength characteristics of the natural limestone formation was performed. The rock coring program was performed between July 27 and July 30, 2010. The rock coring program consisted of performing 4-inch diameter rock coring as close as possible to each of the three (3) SPT locations previously performed in order to correlate the results with the SPT findings and to support the evaluation of concepts A and B. The rock coring was performed at three (3) locations from approximately the depth of 28 to 48 feet below existing ground surface (approximately elevation -22.0 to -42.0 feet, NAVD88). At location TB-1, the coring was extended from 48 to 53 feet below the existing ground surface (approximately elevation -42.0 to -47.0 feet, NAVD88). In addition, Ground Penetrating Radar (GPR) was performed by N&A's sub-consultant Wingerter Laboratories, Inc. The results of the GPR services are presented under a different report cover.

3.0 FIELD EXPLORATION

3.1 General

N&A conducted a field exploration program consisting of three (3) Standard Penetration Test (SPT) borings (TB-1 through TB-3) to depths varying from 75 to 90 feet below the existing ground surface. The tests were performed between September 15 and 18, 2009. The SPT borings were performed using a light hydraulic mini rig using rotary drilling procedures. The tests were located in the field by others.

The rock coring program was performed about 1 to 2 feet from the previously performed SPT borings (except location TB-2 which was performed about 25 feet away from SPT boring location due to possible unsafe ground conditions given the weight of the drill-rig) in order to correlate the rock coring results with the SPT findings and in order to avoid underground utility conflicts. The rock coring program was performed between July 27 and July 30, 2010. The light hydraulic mini rig previously used for the SPT boring locations could not be used to perform the rock coring. It was initially proposed to perform the rock coring farther away from the wall but as close as possible to the SPT boring locations given the deteriorating conditions of the wall. Nonetheless, given the multiple underground utilities that exist at the site, it was decided to perform the rock coring adjacent to the SPT borings where is clear of underground utilities. The approximate location of the borings/rock coring is presented in **Figure 2 of Appendix A**.

3.2 Standard Penetration Test (SPT) Borings

Standard Penetration Test (SPT) borings were performed using the techniques of ASTM D-1586. After seating the sampler six (6) inches, the number of successive blows required to drive the sampler twelve (12) inches into the soil constitutes the test result commonly referred to as the "N" value. The "N" value has been empirically correlated with various soil properties and is considered to be indicative of the relative density of cohesionless soils and the consistency of cohesive soils. The SPT borings were performed using a hydraulic mini rig equipped with a safety hammer. The recovered split spoon samples were visually classified in the field and placed in sealed containers and transported to the laboratory for further review. The soil profiles are presented in **Figure 3 of Appendix A**.

3.3 Rock Coring

Sixty-five (65) feet of rock coring was performed for the project: twenty-five (25) feet at location TB-1, and twenty (20) feet at each location TB-2 and TB-3. The rock coring program was performed using a 4-inch conventional core barrel. Five (5) foot runs were recovered and placed in boxes. The length of each individual coring was 5 feet. The cores were removed carefully from the barrel and were placed in core boxes equipped with longitudinal separators. Spacer blocks were marked with core run and depth and inserted into the core column to indicate the beginning and end of each core run.

Core recoveries were calculated for each run, which is defined as the total length of core recovered from the hole as a percentage of the total length of rock drilled during the coring run. In addition, the Rock Quality Designation (RQD) for each rock core sample was determined. The RQD is defined as the sum total length of all pieces of core exceeding 4 inches as a percentage of the total length of rock drilled during coring run. The RQD value is intended to reflect the in-situ fracture characteristics of the rock. The rock recovery, RQD, and coring time information is included in the Soil/Rock Profiles presented in **Figure 3 of Appendix A**.

4.0 LABORATORY TESTING

4.1 General

Representative samples collected from the test boring locations were visually reviewed in the laboratory by a geotechnical engineer to confirm the field classifications. The samples were classified using the Unified Soil Classification System (USCS) in general accordance with the American Society of Testing and Materials (ASTM) test designation D 2487. The soil classification was based on visual observations only. In addition, no corrosion (environmental) laboratory tests were performed. However, given the proximity of the site to the ocean (marine environment), we recommend an Extremely Aggressive (EA) environmental classification for the superstructure and substructure in accordance with FDOT Structure Design Guidelines. Rock strength testing was performed on representative samples recovered from the field activities.

4.2 Rock Strength Testing

Strength tests were performed in the laboratory on the rock core specimens recovered from the rock coring program for of this project. The strength testing performed included unconfined compression (in accordance with ASTM Test Designation D-2938-86) and splitting tensile (in accordance with ASTM Test Designation D-3967-86). In addition, unit weight determination was made of the selected rock core samples. The test results obtained are presented in the Soil/Rock Profiles presented in **Figure 3** of **Appendix A**, and in **Table 1** of **Appendix B**.

5.0 SUBSURFACE AND GROUNDWATER CONDITIONS

5.1 General Subsurface Conditions

The general subsurface conditions disclosed by the SPT borings are presented in **Figure 3** in **Appendix A** and generalized in **Table A** below:

Table A: General Subsurface Soil Conditions

Bottom Depth Range (ft)	“N _{safety} ” Range (bpf)	General Soil Description	Unified Soil Classification System
-	-	Asphaltic Concrete (Thickness ranges from 1 to 2 inches)	-
-	-	Concrete (Thickness ranges from 5 to 6 inches)	-
10	4 - 14	Light Brown to Brown LIMEROCK with Slightly Silty Medium to Coarse Sand, Some Shell (Fill)	GP, GP-GM
28.5-30	3 - 8	Gray to Light Brown Medium to Coarse SAND with Few to Some Shell and Limestone Fragments	SP
75-90	14 - 50/0”	Light Brown LIMESTONE with Slightly Silty Fine Sand	-

5.2 Groundwater Conditions

During the initial subsurface exploration (between September 15 and 18, 2009), the groundwater was found at depths ranging from 3.0 to 3.3 feet with an average depth of 3.1 feet below the existing ground surface (elevation 3.2 feet, NAVD88). During the rock coring program (between July 27 and July 30, 2010), the groundwater was found at depths ranging from 5.0 to 5.5 feet with an average depth of 5.3 feet below the existing ground surface (elevation 1 foot, NAVD88). Fluctuations in the groundwater level should be expected principally due to tidal conditions and other construction activities.

5.3 General Geotechnical Design Parameters

The following geotechnical parameters were obtained by using empirically established relationships between the SPT “N” values with various soil properties. The limestone geotechnical parameters were obtained from rock coring program, laboratory testing and the rock shear strength relationship proposed by McVay and Townsend (1992). The geotechnical design parameters were used for lateral support system design evaluation (i.e. sheet piles). The general geotechnical soil parameters are presented in the following **Table B**.

Table B: Recommended Geotechnical Design Parameters

General Strata Description	Bottom Depth Range (ft)	Average “N _{safety} ” (bpf)	Unit Weight (γ) (pcf)			Soil Friction Angle (φ) (deg)	Steel Wall Friction Angle (δ) (deg)	Side Shear Strength (psf)	Adhesion (psf)
			γ _{sat}	γ _{wet}	γ _v				
Fill (Stratum 1)	10	9	115	110	53	34	22	-	0
Sand (Stratum 2)	28.5-30	6	110	105	48	32	17	-	0
Limestone (Stratum 3)	75-90	50/3”	125	⁽²⁾ 120	63	-	-	⁽¹⁾ 12,000	0

Notes: ⁽¹⁾ Derived from rock core test results presented in Appendix B and report section 5.3.1 and corresponds to the design ultimate unit side shear strength [$f_{su} \text{ (design)}$].

⁽²⁾ Derived from unit weight results presented in Appendix B and corresponds to the ‘modified’ limestone wet unit weight.

5.3.1 Rock Side Shear Strength Derivation

The ultimate side shear strength (f_{su}) value of the natural limestone formation was obtained from results of laboratory strength testing using established empirical correlations. The ultimate side shear strength (f_{su}) value of the limestone formation was evaluated using the relationship proposed by McVay and Townsend (1992) and recommended as the most appropriate method for the Florida Limestones [Florida Department of Transportation Soils and Foundation Handbook (SFH), 2009, Appendix A]. The limestone ultimate side shear resistance is expressed as follows:

$$f_{su} = \frac{1}{2} * \sqrt{q_u} * \sqrt{q_t}$$

Where: q_u : Average unconfined compressive strength of the rock specimen based on statistical analyses suggested by the FDOT's SFH (2009) and

q_t : Average splitting tensile strength of the rock specimen based on statistical analyses suggested by the FDOT's SFH (2009)

The above equation is applicable to intact rock specimens (i.e. percent recovery = 100%). The rock coring recoveries from the field exploration program ranged from 20 to 100 percent with a statistical average of 48.5 percent. The Rock Quality Designation (RQD) values ranged from 0 to 45 percent with a statistical average of 9.2 percent. According to research by Deere et. al., RQD values ranging from 25 to 50 percent are representative of poor rock conditions. Therefore, we recommend calculating the ultimate side shear as the average of the modified mean and lower bound values (see Table 2 of Appendix B) instead of using the modified mean side shear value. The resulting ultimate side shear also correlates well with the initially used empirical correlation suggested by the FDOT SFH (2009).

The previous equation was modified to take into account the percent recovery of the rock at this site as follows:

$$f_{su} = \frac{1}{2} * \sqrt{q_u} * \sqrt{q_t} = 12.6 \text{ tsf}$$

$$f_{su(DSIGN)} = \%REC * f_{su} = \%REC * \left(\frac{1}{2} * \sqrt{q_u} * \sqrt{q_t} \right) = 0.485 * 12.6 = 6.1 \text{ tsf}$$

q_u average	=	793.75 psi
q_t average	=	154.86 psi
% recovery average	=	48.5%

The use of the above values and the previous equation yields an average design side shear strength [$f_{su(design)}$] of about 6 tons per square foot (tsf). This is considered a global $f_{su(design)}$ value as it is based on all rock recoveries from the three locations. This value is consistent with results obtained from the Florida Limestone in other projects and our local experience.

6.0 ENGINEERING RECOMMENDATIONS

We understand that several options/concepts are being considered to replace/repair the existing bulkead wall. These options considered are as follows:

1. Steel sheet pile with anchors socketed into the limestone formation (Concept A)
2. Cantilever steel sheet pile (Concept B)
3. Deadman anchored steel sheet pile (Concept C)

6.1 Steel Sheet Pile with Anchors Socketed into the Limestone Formation (Concept A)

We understand that a 1-1/4" diameter post-tensioned anchor bar (e.g. Dywidag bar anchors) at a 1:0.8 (H:V) slope with a bonding zone of about 5 inches in diameter is being evaluated to laterally support the new bulkhead wall. We understand that the required uplift anchor capacity is 144 kips (72 tons). A factor of safety of 2.0 was used for the anchor socket/bonding length calculations. The required rock socket/bonding length in order to achieve 144 kips of uplift capacity is noted in **Table C** below:

Table C: Recommendations for Drilled Anchors into the Limestone Formation

Design Criteria for Rock Anchors		Installation Criteria for 1-1/4" dia. Anchor		
Bond Stress Between Grout and Rock (tsf)	Rock Cone Failure Angle (degrees)	Estimated Diameter of Bonding Zone (inches)	Minimum Rock Socket/Bonding Length (feet)	Allowable Uplift Capacity (Tons)
6.0	30	5	18	72

The steel sheet pile wall and soil modeling, assumptions, CWALSHT input/output files and calculations are the same as Case IV (anchored sheet pile wall with 600 psf surcharge) presented in **Appendix C**.

6.2 Cantilever and Deadman Anchored Steel Sheet Pile Walls (Concepts B and C, respectively)

We understand that a cantilever or deadman steel sheet pile wall system is being considered to replace the existing bulkhead wall. As requested, we have performed steel sheet pile wall analyses using the USACE software CWALSHT for the following cases:

- Case I: Cantilever sheet pile wall with 250 psf surcharge
- Case II: Cantilever sheet pile wall with 600 psf surcharge
- Case III: Cantilever sheet pile wall with 8000 lbs point load
- Case IV: Anchored sheet pile wall with 600 psf surcharge

Our sheet pile wall analyses assumed a water differential of 2 feet between the inside and outside face of the wall. Following the recommendations from Naval Facilities Engineering Command (NAVFAC) Design Manual 7.02 (Foundations and Earth Structures), the sheet pile penetration was increased by 40% to result in a factor of safety of 2.0. Also, if case IV (deadman anchor) is selected, we recommend that the 'Design Criteria for Deadman Anchorage' presented in NAVFAC Manual 7.02 be used to design the deadman anchors. A summary of the sheet pile wall analyses is presented in **Table D** below:

Table D: Summary of Sheet Pile Wall Analyses

Case	Required Wall Penetration Elevation (ft), NAVD88	Maximum Unfactored Bending Moment (kip-ft)	Required Section Modulus, S (in ³)		Anchor Unfactored Force (kips)	⁽¹⁾ Estimated Top Wall Deflection (in.)	Wall Penetration to Wall Unsupported Height
			Grade A-328 Steel	Grade A-572 Steel			
I	-33.0	120.77	61.9	48.3	-	4.9	0.76
II	-34.0	156.87	80.4	62.7	-	4.0	0.80
III	-35.0	183.46	94.1	73.4	-	4.5	0.85
IV	-28.0	28.18	14.5	11.3	5.26	0.5	0.54

Note: ⁽¹⁾The estimated top wall deflection is based on the smallest section that meets the required section modulus (see Appendix C)

The steel sheet pile wall and soil modeling, assumptions, CWALSHT input/output files and calculations for all four cases are presented in **Appendix C** of this report.

7.0 CONSTRUCTION RECOMMENDATIONS

7.1 Steel Sheet Pile Installation

Geotechnical design soil parameters for the evaluation of temporary lateral support systems (e.g. sheet piles) are provided in Table B (Section 5.3). The following are our suggestions for the installation of the steel sheet piles:

1. Sheet pile refusal may occur on a random and unpredictable basis due to zones relatively hard rock materials not revealed by the test borings may be found. We recommend that predrilling be considered prior to the installation of the sheet piles. Predrilling is required in order to prevent refusal conditions, damage of the structural section of the sheeting and minimize vibrations-induced settlements to nearby structures. Following predrilling, the piles should be set in place and vibrated or driven to the required tip elevations.
2. The pile installation equipment will produce vibration and noise levels that may be considered disturbing to people and can produce vibrations noticeable in structures. The potential for damage to any adjacent structures during the pile installations will be dependent on the distance from the adjacent structures to the location of the piles installation, the subsurface conditions, and the level of sensitivity of the structure to any type of vibration.
3. We suggest that the recommendations provided in Section 455-1.1 of the FDOT Standard Specifications should be followed for the protection of the existing structures during sheet piling operations. All those structures and or utilities located adjacent to the proposed excavation shall be surveyed as well as monitored for vibrations and settlements in accordance with Section 455-1.1 of the FDOT Standard Specifications.

7.2 Excavation Recommendations without Lateral Support

The existing subsurface materials may be excavated using conventional excavation equipment. It is to be noted that the limestone formation may require special equipment to excavate. Temporary excavations of the existing subsurface materials without the use of lateral support system may be accomplished as follows:

- For granular soils (fill) with maximum side slopes of 1V:2H (min. factor of safety is 1.3)
- For the natural limestone formation with maximum side slopes of 1V:1H (min. factor of safety of 1.3)

As a reference, we recommend that temporary excavations be performed in accordance with OSHA 29 CFR, Standard Number 1926 Subpart P Appendix B, titled "Sloping and Benching".

7.3 Groundwater Control

Given that the project site is a man-made pier surrounded by the ocean water, groundwater conditions and any dewatering operations will be directly influenced by the ocean tidal conditions. If necessary, dewatering may be accomplished through use of a wellpoint system or submersible pump.

7.4 Testing of Anchors Socketed into Limestone (Concept A)

We recommend that anchor performance tests be conducted to verify the anchor design assumptions and to verify movement or creep. The performance test consists of cyclic incremental loading and unloading of the anchor to the maximum design load. We suggest conducting performance tests in the first two anchors followed by performance tests on two percent of the remaining anchors. The performance tests must be followed by proof tests on every production anchor (not previously performance tested). The proof test is a single cycle test in which the design load is applied in increments until the maximum load is reached. We recommend that the anchor's manufacturer provides the required testing specifications for its product.

8.0 CLOSURE

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data. No other warranties are implied or expressed.

The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings and rock coring performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed bulkhead wall.

This report has been prepared for the exclusive use of Appledore Marine Engineering, Inc. for the specific application to the design and construction of the damaged bulkhead wall at Breakwater 497 at the Key West Naval Station in Monroe County, Florida.

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APPENDIX A

Figure 1: U.S.G.S. Quadrangle Map

Figure 2: Boring Location Plan

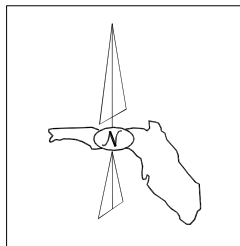
Figure 3: Soil/Rock Profiles

Aug13, 2010-2:32pm R:\2009\08-09-0021\102\A\cad\08-09-0021-101a-Figure-1.dwg

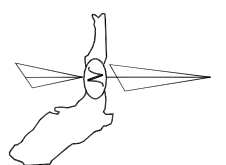


REFERENCE: U.S.G.S. "KEY WEST, FLORIDA" QUADRANGLE MAP
 SECTION: N/A
 TOWNSHIP: 67 SOUTH
 RANGE: 25 EAST
 SCALE: 1" = 2000'

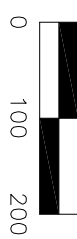
ISSUED: 1971 REVISED: NONE



U.S.G.S. QUADRANGLE MAP KEY WEST AIR STATION (BREAKWATER 497) TRUMAN ANNEX KEY WEST, FLORIDA		
DRAWN: MG	 NODARSE & ASSOCIATES, INC.	
CHKD: JB		
SCALE: 1"=2000'		
DATE: 8-13-10	PROJ. NO: 08-09-0021-102A	FIGURE: 1



HORIZONTAL SCALE - IN FEET



LEGEND

-  APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING
-  APPROXIMATE LOCATION OF 4 INCH DIAMETER ROCK CORING

BORING AND ROCK CORING LOCATION PLAN
 KEY WEST NAVAL AIR STATION
 (BREAKWATER 497) TRUMAN ANNEX
 KEY WEST, FLORIDA

DRAWN: MCG

CHKD: JB

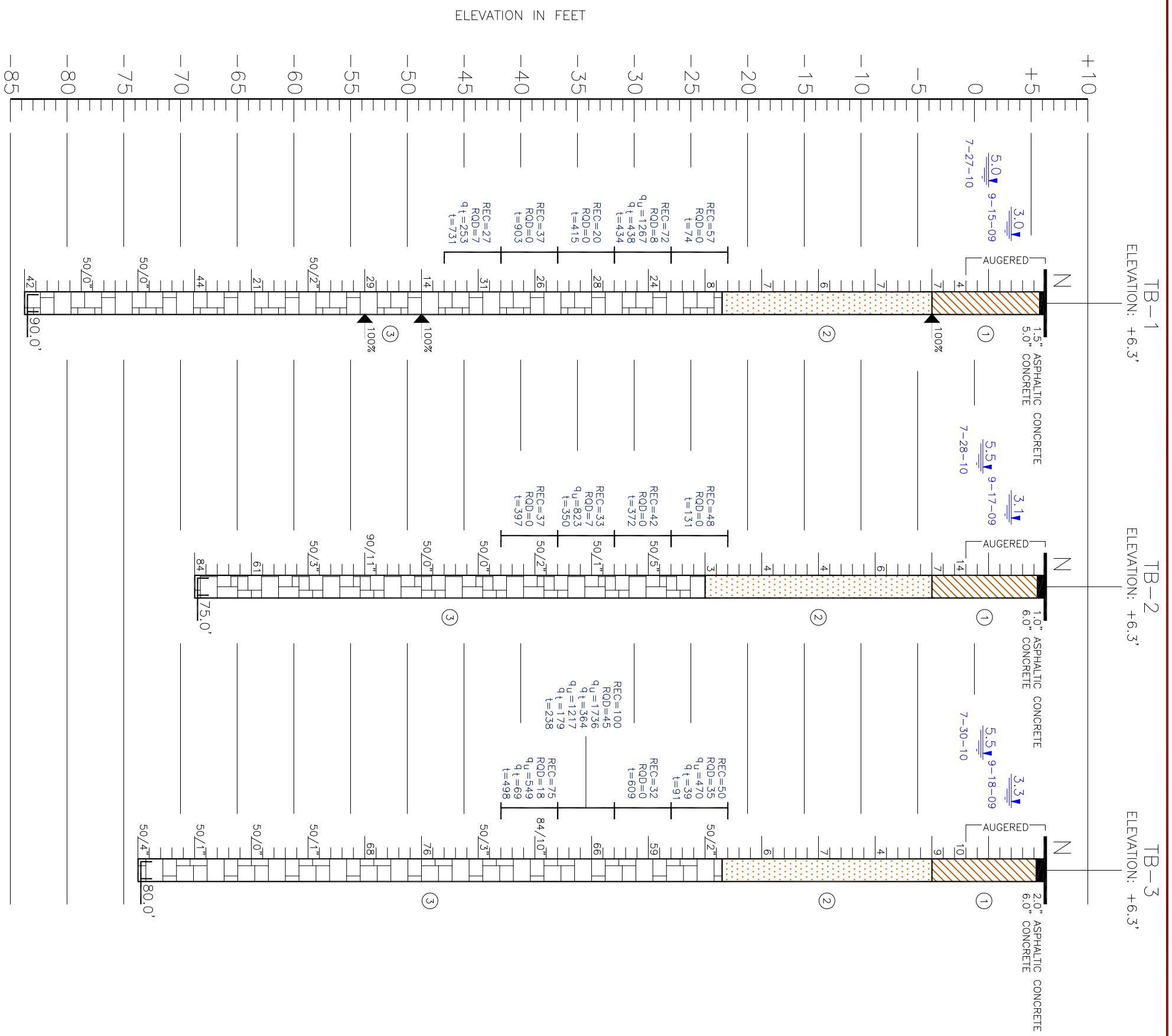
SCALE: 1"=2000'

DATE: 8-13-10



PROJ. NO.: 08-09-0021-102A

FIGURE: 2



LEGEND

- 1 LIGHT BROWN TO BROWN LIMESTONE WITH SLIGHTLY SILTY MEDIUM TO COARSE SAND, SOME SHELL (FILL) (GP)(GP-GM)
- 2 GRAY TO LIGHT BROWN MEDIUM TO COARSE SAND WITH FEW TO SOME SHELL AND LIMESTONE FRAGMENTS (SP)
- 3 LIGHT BROWN LIMESTONE WITH SLIGHTLY SILTY FINE SAND
- (SP) UNIFIED SOIL CLASSIFICATION GROUP SYMBOL AS DETERMINED BY VISUAL EXAMINATION
- 3.3" DATE OF READING
- 9-18-09
- N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT
- 50/3" (50) BLOWS REQUIRED TO DRIVE SAMPLING SPOON (3) INCHES
- 180.0' DEPTH TO WHICH NW CASING WAS DRIVEN IN FEET (NOTE: 3-INCH CASING)
- 100% CIRCULATION LOSS (%)

ROCK CORE INFORMATION

- REC RECOVERY (%)
- ROD ROCK QUALITY DESIGNATION (%)
- q_u UNCONFINED COMPRESSION STRENGTH (PSI)
- q_t SPLIT TENSILE STRENGTH (PSI)
- t CORING TIME (SECONDS)

NOTE:
 BORING ELEVATIONS WERE SCALED FROM DRAWINGS PROVIDED TO NODARSE AND ASSOCIATES, INC AND SHOULD BE CONSIDERED APPROXIMATE. ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD).

DRAWN: MG		<p>NODARSE ASSOCIATES, INC.</p>
CHKD: JB		
SOIL/ROCK BORING PROFILES KEY WEST NAVAL AIR STATION (BREAKWATER 497) TRUMAN ANNEX KEY WEST, FLORIDA		
DATE: 9-30-09	PROJ. NO.: 08-09-0021-102A	FIGURE: 3

APPENDIX B

Table 1: Summary of Laboratory Tests Results (Rock Coring Program)

Table 2: Summary of Rock Side Shear Determination per FDOT SFH 2009

Table 3: Summary of Rock Unit Weight Determination

Figures 4 to 6: Photographs of Rock Cores



**NAVAL AIR STATION BREAKWATER 497
KEY WEST, FLORIDA**

PROJECT NO. 08-09-0021-102

TABLE 1 : SUMMARY OF LABORATORY TEST RESULTS (ROCK CORING PROGRAM)

Sample ID				Geometry			WEIGHT						Uniaxial Compression Test				Split Tensile Test	
Sample ID	Boring No.	Core Run Depth (ft)		Sample Height (inches)	Sample Diameter (inches)	Volume (cubic-feet)	Sample Weight (lbs)		Water Content %	Saturated Sample Weight (lbs)	γ wet (pcf)	γ dry (pcf)	Failure Load (lbs)	L/D Ratio	Correction Factor	qu (psi)	Failure Load (lbs)	qt (psi)
		From	To				Wet	Dry										
C-1	TB-1	33.0	38.0	3.59	3.78	0.023	0.3	0.2	11.5	2.9	123	110	16060.0	1.0	1.13	1267		
C-2	TB-2	38.0	43.0	3.90	3.78	0.025	0.3	0.3	12.4	3.2	128	114	10280.0	1.0	1.11	823		
C-3	TB-3	28.0	33.0	5.14	3.92	0.036	0.3	0.2	15.9	4.0	112	97	6010.0	1.3	1.06	470		
C-4	TB-3	38.0	43.0	7.47	3.87	0.051	0.3	0.3	14.7	6.5	127	111	20530.0	1.9	1.00	1736		
C-5	TB-3	38.0	43.0	4.14	3.82	0.027	0.3	0.3	16.0	3.5	128	110	15360.0	1.1	1.10	1217		
C-6	TB-3	43.0	48.0	5.73	3.73	0.036	0.4	0.3	22.0	3.5	96	79	6220.0	1.5	1.04	549		
S-1	TB-1	33.0	38.0	2.6	3.8	0.018	1.0	0.9	8.3	2.3	133	123					6920.0	438
S-2	TB-1	48.0	53.0	2.0	3.8	0.014	0.8	0.7	6.4	1.5	114	107					3080.0	253
S-3	TB-3	28.0	33.0	4.5	3.9	0.031	1.6	1.3	26.7	3.4	109	86					1080.0	39
S-4	TB-3	38.0	43.0	2.9	3.9	0.019	1.0	0.8	14.8	2.5	127	110					6330.0	364
S-5	TB-3	38.0	43.0	2.8	3.8	0.019	1.1	1.0	15.0	2.1	112	97					3030.0	179
S-6	TB-3	43.0	48.0	3.0	3.8	0.020	1.1	1.0	14.2	2.0	100	87					1270.0	69



NAVAL AIR STATION BREAKWATER 497
KEY WEST, FLORIDA
PROJECT NO. 08-09-0021-102

TABLE 2 : SUMMARY OF ROCK SIDE SHEAR DETERMINATION PER FDOT SFH 2009

Boring No.	Core Sample Interval		Unmodified		Modified	
	Top	Bottom	q _u (tsf)	q _t (tsf)	q _u (tsf)	q _t (tsf)
TB-1	33	38	91.2	31.5	91.2	-
TB-1	48	53	-	18.2	-	18.2
TB-2	38	43	59.2	-	59.2	-
TB-3	28	33	33.8	2.8	-	-
TB-3	38	43	125.0	26.2	-	26.2
TB-3	38	43	87.6	12.9	87.6	12.9
TB-3	43	48	39.6	5.0	39.6	5.0

Mean and lower bound Average

	Unmodified		Modified		f _{SU} (unmodified), tsf	f _{SU} (modified), tsf	f _{SU} (modified), tsf
SUM	436.5	96.6	277.6	62.3	-	-	12.6 ←
MEAN (μ)	72.7	16.1	69.4	15.6	17.1	16.4	
STANDARD DEVIATION (σ)	34.9	11.4	24.5	8.9	-	-	
UPPER BOUND (μ+σ)	107.7	27.5	93.9	24.5	27.2	24.0	
LOWER BOUND ((μ-σ)	37.8	4.7	44.9	6.7	6.6	8.6	



NAVAL AIR STATION BREAKWATER 497
KEY WEST, FLORIDA
PROJECT NO. 08-09-0021-102

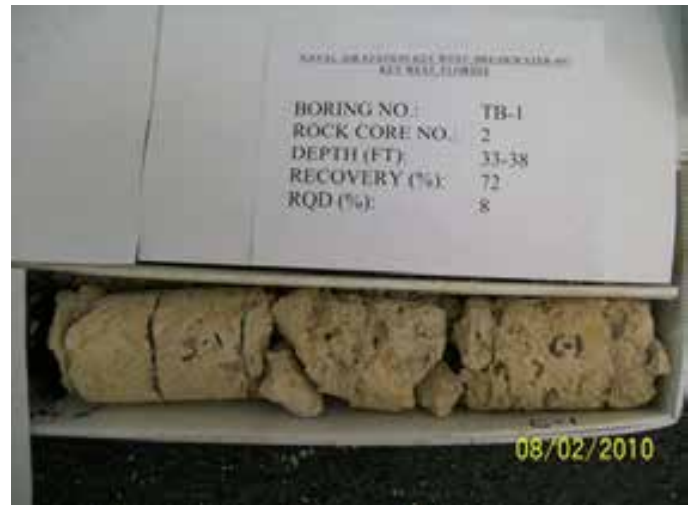
TABLE 3 : SUMMARY OF ROCK UNIT WEIGTH DETERMINATION

Boring No.	Core Sample Interval		Unmodified	Modified
	Top	Bottom	Unit Weight (pcf)	Unit Weight (pcf)
TB-1	33	38	122.8	122.8
TB-2	38	43	127.9	127.9
TB-3	28	33	112.2	112.2
TB-3	38	43	126.9	126.9
TB-3	38	43	127.9	127.9
TB-3	43	48	96.4	-
TB-1	33	38	133.2	-
TB-1	48	53	114.3	114.3
TB-3	28	33	109.2	109.2
TB-3	38	43	126.7	126.7
TB-3	38	43	112.0	112.0
TB-3	43	48	99.6	-

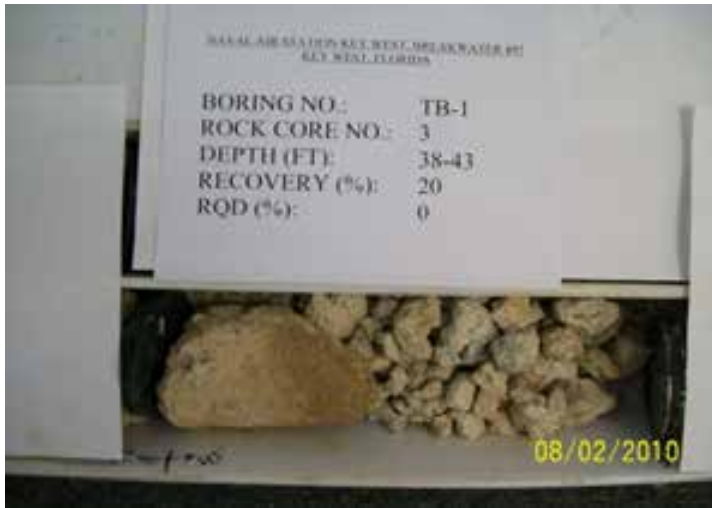
	Unmodified	Modified
SUM	1409.0	1079.8
MEAN (μ)	117.4	120.0 ←
STANDARD DEVIATION (σ)	11.9	7.9
UPPER BOUND ($\mu+\sigma$)	129.3	127.9
LOWER BOUND ($\mu-\sigma$)	105.5	112.1



TB-1, Core Run 1, Depth Interval 28-33 feet



TB-1, Core Run 2, Depth Interval 33-38 feet



TB-1, Core Run 3, Depth Interval 38-43 feet



TB-1, Core Run 4, Depth Interval 43-48 feet



TB-1, Core Run 5, Depth Interval 48-53 feet

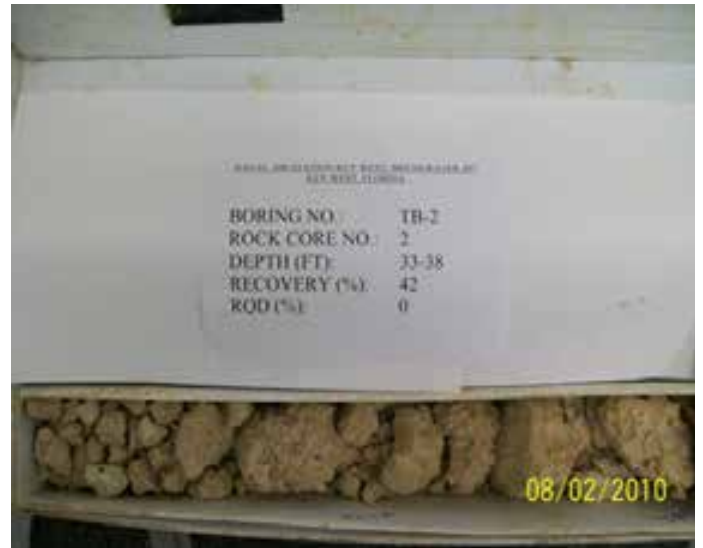
Naval Air Station Breakwater 497
Key West, Florida



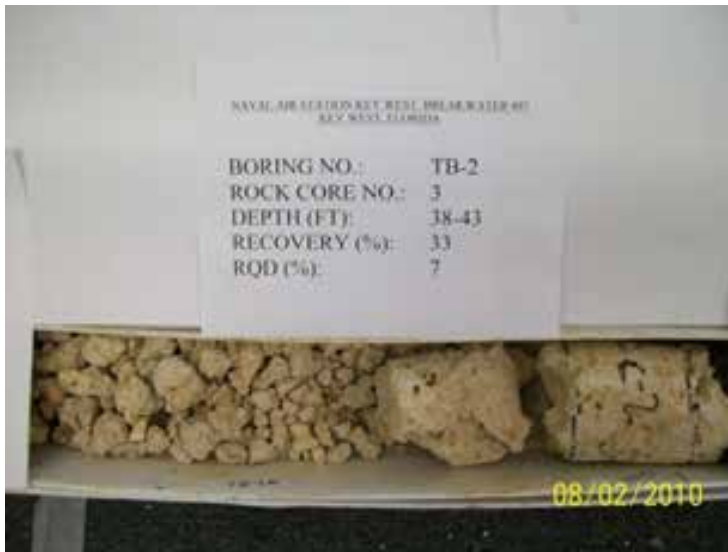
Figure 4: Photographs of Rock Cores
N&A Project No. 08-09-0021-102



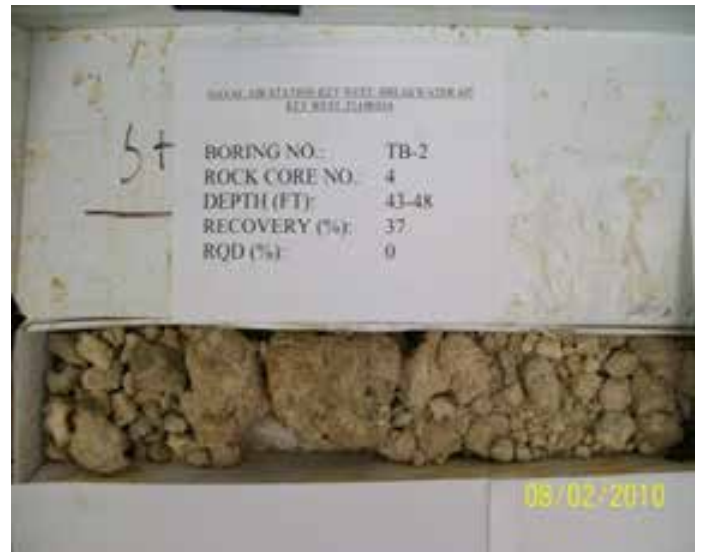
TB-2, Core Run 1, Depth Interval 28-33 feet



TB-2, Core Run 2, Depth Interval 33-38 feet



TB-2, Core Run 3, Depth Interval 38-43 feet

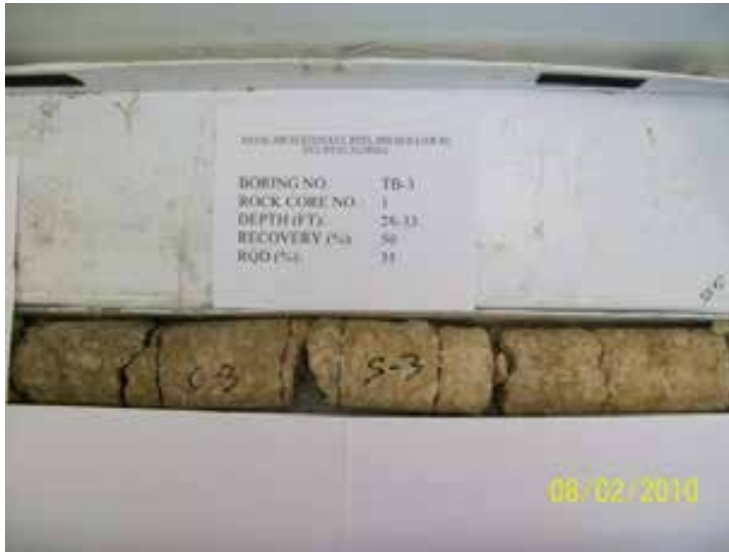


TB-2, Core Run 4, Depth Interval 43-48 feet

Naval Air Station Breakwater 497
Key West, Florida



Figure 5: Photographs of Rock Cores
N&A Project No. 08-09-0021-102



TB-3, Core Run 1, Depth Interval 28-33 feet



TB-3, Core Run 2, Depth Interval 33-38 feet



TB-3, Core Run 3, Depth Interval 38-43 feet



TB-3, Core Run 4, Depth Interval 43-48 feet

Naval Air Station Breakwater 497
Key West, Florida



Figure 6: Photographs of Rock Cores
N&A Project No. 08-09-0021-102

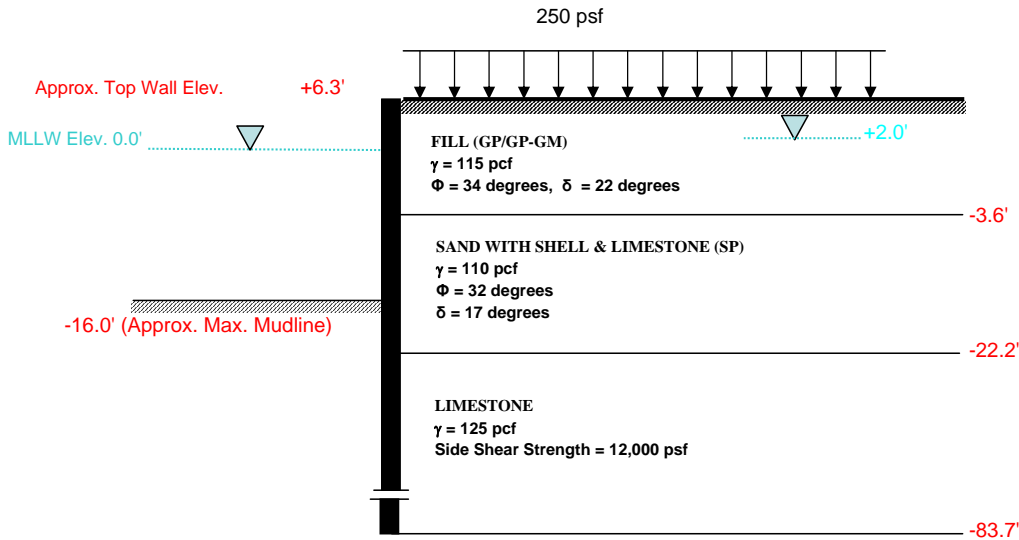
APPENDIX C

- Case I** – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 250 psf
- Case II** – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 600 psf
- Case III** – Cantilever Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Point Load 8 kips
- Case IV** – Anchored Deadman/Socket into Limestone Steel Sheet Wall Analysis and CWALSTH Input and Output Files – Surcharge 600 psf



Key West Naval Air Station (Breakwater 497)
Truman Annex, Key West, Florida
N&A Project No. 08-09-0021-101

CASE I: Steel Sheet Pile Bulkhead, Cantilever (Sta. 12+90 to 16+46)



Input from CWALSHT Output

(Calculated) Wall Penetration (ft) = **11.73** → Elevation (ft) = **-28.00**
 (Required) Wall Penetration (ft) = **17.0** → Elevation (ft) = **-33.00**

Maximum Bending Moment, Mmax (Kips-ft) = **120.77**

Nominal Yield Strength for Grade A-328 Steel (ksi) = 39
 Allowable Working Stress for Grade A-328 Steel, Fb (ksi) = 60% * 39 = 23.4

Nominal Yield Strength for Grade A-572 Steel (ksi) = 50
 Allowable Working Stress for Grade A-572 Steel, Fb (ksi) = 60% * 50 = 30

Required Section Modulus, S (in³) for A-328 = $M_{max} / F_b = 61.9$
 Required Section Modulus, S (in³) for A-572 = $M_{max} / F_b = 48.3$

Scaled Deflection (lbs-in³) = **5.77180E+10**

*Section	Section Modulus (in ³ /ft)	Moment of Inertia (in ⁴ /ft)	Deflection (in)
AZ-25	45.7	382.6	-
AZ-26	48.4	406.5	4.90
AZ-28	51.2	431.6	4.61
AZ-37	68.9	676.6	2.94
AZ-39	72.5	714	2.79
AZ-41	76.2	751.4	2.65
AZ-46	85.5	808.8	2.46
AZ-48	89.3	847.1	2.35
AZ-50	93.3	886.5	2.25

*The sheet pile section was selected to estimate the top wall deflection. The actual sheet pile section should be selected by The Designer.

Cantilever 250 psf

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTI LEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010 TIME: 14:48:50

* INPUT DATA *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --CONTROL
CANTI LEVER WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.00

III. --WALL DATA
ELEVATION AT TOP OF WALL = 6.30 FT.

IV. --SURFACE POINT DATA

IV. A. --RIGHTSIDE
DIST. FROM ELEVATION
WALL (FT) (FT)
100.00 6.30

IV. B. --LEFTSIDE
DIST. FROM ELEVATION
WALL (FT) (FT)
100.00 -16.00

V. --SOIL LAYER DATA

V. A. --RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
115.00	110.00	34.00	0.00	22.00	0.00	-3.60	0.00	DEF	DEF
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00120000	0.00	0.00	0.00			DEF	DEF

V. B. --LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00120000	0.00	0.00	0.00			DEF	DEF

VI. --WATER DATA
UNIT WEIGHT = 62.40 (PCF)
RIGHTSIDE ELEVATION = 2.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

Cantilever 250 psf

VII. --VERTICAL SURCHARGE LOADS
VII. A. --VERTICAL LINE LOADS
NONE

VII. B. --VERTICAL UNIFORM LOADS
LEFTSIDE RIGHTSIDE
(PSF) (PSF)
0.00 250.00

VII. C. --VERTICAL STRIP LOADS
NONE

VII. D. --VERTICAL RAMP LOADS
NONE

VII. E. --VERTICAL TRIANGULAR LOADS
NONE

VII. F. --VERTICAL VARIABLE LOADS
NONE

VIII. --HORIZONTAL LOADS
NONE

Cantilever 250 psf

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTI LEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010 TIME: 14:48:52

* SOIL PRESSURES FOR *
* CANTI LEVER WALL DESIGN *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

ELEV. (FT)	NET WATER (PSF)	<--LEFTSIDE-->		<-----NET-----> (SOIL + WATER)		<--RIGHTSIDE-->	
		PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.3	0.0	0.0	0.0	59.0	1741.3	59.0	1741.3
5.3	0.0	0.0	0.0	84.9	2507.5	84.9	2507.5
4.3	0.0	0.0	0.0	110.8	3273.6	110.8	3273.6
3.3	0.0	0.0	0.0	136.8	4039.8	136.8	4039.8

Cantilever 250 psf			
2.3	0.0	0.0	0.0
2.0	0.0	0.0	0.0
1.3	43.7	0.0	0.0
0.3	106.1	0.0	0.0
0.0	124.8	0.0	0.0
-0.7	124.8	0.0	0.0
-1.7	124.8	0.0	0.0
-2.7	124.8	0.0	0.0
-3.6+	124.8	0.0	0.0
-3.6-	124.8	0.0	0.0
-3.7	124.8	0.0	0.0
-4.7	124.8	0.0	0.0
-5.7	124.8	0.0	0.0
-6.7	124.8	0.0	0.0
-7.7	124.8	0.0	0.0
-8.7	124.8	0.0	0.0
-9.7	124.8	0.0	0.0
-10.7	124.8	0.0	0.0
-11.7	124.8	0.0	0.0
-12.7	124.8	0.0	0.0
-13.7	124.8	0.0	0.0
-14.7	124.8	0.0	0.0
-15.7	124.8	0.0	0.0
-16.0	124.8	0.0	0.0
-16.7	124.8	182.1	8.8
-17.0	124.8	260.1	12.6
-17.7	124.8	442.1	21.5
-18.2	124.8	579.4	28.1
-18.7	124.8	702.2	34.1
-19.7	124.8	962.3	46.7
-20.7	124.8	1222.4	59.3
-21.7	124.8	1482.5	72.0
-22.2+	124.8	1612.5	78.3
-22.2-	124.8	24295.1	0.0
-22.7	124.8	24326.4	0.0
-23.7	124.8	24389.0	0.0
-24.7	124.8	24451.6	0.0
-25.7	124.8	24514.2	0.0
-26.7	124.8	24576.8	0.0
-27.7	124.8	24639.4	0.0
-28.7	124.8	24702.0	0.0
-29.7	124.8	24764.6	0.0
-30.7	124.8	24827.2	0.0
-31.7	124.8	24889.8	0.0
-32.7	124.8	24952.4	0.0
-33.7	124.8	25015.0	0.0
-34.7	124.8	25077.6	0.0
-35.7	124.8	25140.2	0.0
-36.7	124.8	25202.8	0.0
-37.7	124.8	25265.4	0.0
-38.7	124.8	25328.0	0.0
-39.7	124.8	25390.6	0.0
-40.7	124.8	25453.2	0.0
-41.7	124.8	25515.8	0.0
-42.7	124.8	25578.4	0.0
-43.7	124.8	25641.0	0.0
-44.7	124.8	25703.6	0.0
-45.7	124.8	25766.2	0.0
-46.7	124.8	25828.8	0.0
-47.7	124.8	25891.4	0.0
-48.7	124.8	25954.0	0.0
-49.7	124.8	26016.6	0.0
-50.7	124.8	26079.2	0.0

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Cantilever 250 psf			
-51.7	124.8	26141.8	0.0
-52.7	124.8	26204.4	0.0
-53.7	124.8	26267.0	0.0
-54.7	124.8	26329.6	0.0
-55.7	124.8	26392.2	0.0
-56.7	124.8	26454.8	0.0
-57.7	124.8	26517.4	0.0
-58.7	124.8	26580.0	0.0
-59.7	124.8	26642.6	0.0
-60.7	124.8	26705.2	0.0
-61.7	124.8	26767.8	0.0
-62.7	124.8	26830.4	0.0
-63.7	124.8	26893.0	0.0
-64.7	124.8	26955.6	0.0
-65.7	124.8	27018.2	0.0
-66.7	124.8	27080.8	0.0
-67.7	124.8	27143.4	0.0
-68.7	124.8	27206.0	0.0
-69.7	124.8	27268.6	0.0
-70.7	124.8	27331.2	0.0
-71.7	124.8	27393.8	0.0
-72.7	124.8	27456.4	0.0
-73.7	124.8	27519.0	0.0
-74.7	124.8	27581.6	0.0
-75.7	124.8	27644.2	0.0
-76.7	124.8	27706.8	0.0
-77.7	124.8	27769.4	0.0
-78.7	124.8	27832.0	0.0
-79.7	124.8	27894.6	0.0
-80.7	124.8	27957.2	0.0
-81.7	124.8	28019.8	0.0
-82.7	124.8	28082.4	0.0
-83.7	124.8	28145.0	0.0
-26017.0	27874.4	0.0	27749.6
-26079.6	27937.0	0.0	27812.2
-26142.2	27999.6	0.0	27874.8
-26204.8	28062.2	0.0	27937.4
-26267.4	28124.8	0.0	28000.0
-26330.0	28187.4	0.0	28062.6
-26392.6	28250.0	0.0	28125.2
-26455.2	28312.6	0.0	28187.8
-26517.8	28375.2	0.0	28250.4
-26580.4	28437.8	0.0	28313.0
-26643.0	28500.4	0.0	28375.6
-26705.6	28563.0	0.0	28438.2
-26768.2	28625.6	0.0	28500.8
-26830.8	28688.2	0.0	28563.4
-26893.4	28750.8	0.0	28626.0
-26956.0	28813.4	0.0	28688.6
-27018.6	28876.0	0.0	28751.2
-27081.2	28938.6	0.0	28813.8
-27143.8	29001.2	0.0	28876.4
-27206.4	29063.8	0.0	28939.0
-27269.0	29126.4	0.0	29001.6
-27331.6	29189.0	0.0	29064.2
-27394.2	29251.6	0.0	29126.8
-27456.8	29314.2	0.0	29189.4
-27519.4	29376.8	0.0	29252.0
-27582.0	29439.4	0.0	29314.6
-27644.6	29502.0	0.0	29377.2
-27707.2	29564.6	0.0	29439.8
-27769.8	29627.2	0.0	29502.4
-27832.4	29689.8	0.0	29565.0
-27895.0	29752.4	0.0	29627.6
-27957.6	29815.0	0.0	29690.2
-28020.2	29877.6	0.0	29752.8

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010

TIME: 14:48:53

* SUMMARY OF RESULTS FOR *
* CANTILEVER WALL DESIGN *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

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Cantilever 250 psf

WALL BOTTOM ELEV. (FT) : -27.73
 PENETRATION (FT) : 11.73
 MAX. BEND. MOMENT (LB-FT) : 1.2077E+05
 AT ELEVATION (FT) : -22.45
 MAX. SCALED DEFL. (LB-IN^3) : 5.7718E+10
 AT ELEVATION (FT) : 6.30

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED/CANTILEVER SHEET PILE WALLS BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 14:48:53

 * COMPLETE OF RESULTS FOR *
 * CANTILEVER WALL DESIGN *

I.--HEADING
 KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 TRUMAN ANNEX, KEY WEST, FLORIDA

II.--RESULTS (LB)

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.30	0.0000E+00	0.	5.7718E+10	58.96
5.30	3.3804E+01	72.	5.5341E+10	84.90
4.30	1.5251E+02	170.	5.2964E+10	110.85
3.30	3.8207E+02	294.	5.0588E+10	136.79
2.30	7.4842E+02	443.	4.8212E+10	162.73
2.00	8.8887E+02	493.	4.7499E+10	170.52
1.30	1.2803E+03	631.	4.5837E+10	222.88
0.30	2.0353E+03	891.	4.3465E+10	297.69
0.00	2.3164E+03	984.	4.2754E+10	320.13
-0.70	3.0844E+03	1211.	4.1096E+10	328.81
-1.70	4.4620E+03	1546.	3.8733E+10	341.22
-2.70	6.1808E+03	1894.	3.6377E+10	353.62
-3.60	8.0298E+03	2217.	3.4266E+10	364.79
-3.60	8.0298E+03	2217.	3.4266E+10	394.68
-3.70	8.2534E+03	2256.	3.4032E+10	395.95
-4.70	1.0710E+04	2659.	3.1702E+10	408.57
-5.70	1.3575E+04	3074.	2.9390E+10	421.20
-6.70	1.6861E+04	3501.	2.7101E+10	433.82
-7.70	2.0581E+04	3941.	2.4842E+10	446.45
-8.70	2.4748E+04	4394.	2.2618E+10	459.07
-9.70	2.9373E+04	4859.	2.0437E+10	471.70
-10.70	3.4471E+04	5337.	1.8307E+10	484.32
-11.70	4.0052E+04	5828.	1.6237E+10	496.94
-12.70	4.6131E+04	6331.	1.4236E+10	509.57
-13.70	5.2719E+04	6847.	1.2314E+10	522.19
-14.70	5.9829E+04	7376.	1.0484E+10	534.82

Cantilever 250 psf

-15.70	6.7474E+04	7917.	8.7573E+09	547.44
-16.00	6.9874E+04	8082.	8.2614E+09	551.23
-16.70	7.5652E+04	8407.	7.1473E+09	378.01
-17.00	7.8190E+04	8509.	6.6891E+09	303.78
-17.70	8.4206E+04	8661.	5.6680E+09	130.56
-18.23	8.8788E+04	8695.	4.9453E+09	0.00
-18.70	9.2892E+04	8668.	4.3343E+09	-116.90
-19.70	1.0146E+05	8427.	3.1611E+09	-364.36
-20.70	1.0966E+05	7939.	2.1631E+09	-611.81
-21.70	1.1726E+05	7204.	1.3546E+09	-859.27
-22.20	1.2026E+05	3845.	1.0255E+09	-12576.66
-22.70	1.2013E+05	-5350.	7.4822E+08	-24201.62
-22.70	1.2010E+05	-5456.	7.4602E+08	-24201.90
-23.70	1.0433E+05	-24563.	3.4642E+08	-14180.13
-24.70	7.4357E+04	-33710.	1.2285E+08	-4114.12
-25.70	4.0268E+04	-32791.	2.7187E+07	5951.90
-26.70	1.2130E+04	-21806.	1.9598E+06	16017.92
-27.70	1.0394E+01	-755.	9.4317E-01	26083.93
-27.73	0.0000E+00	0.	0.0000E+00	26373.82

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

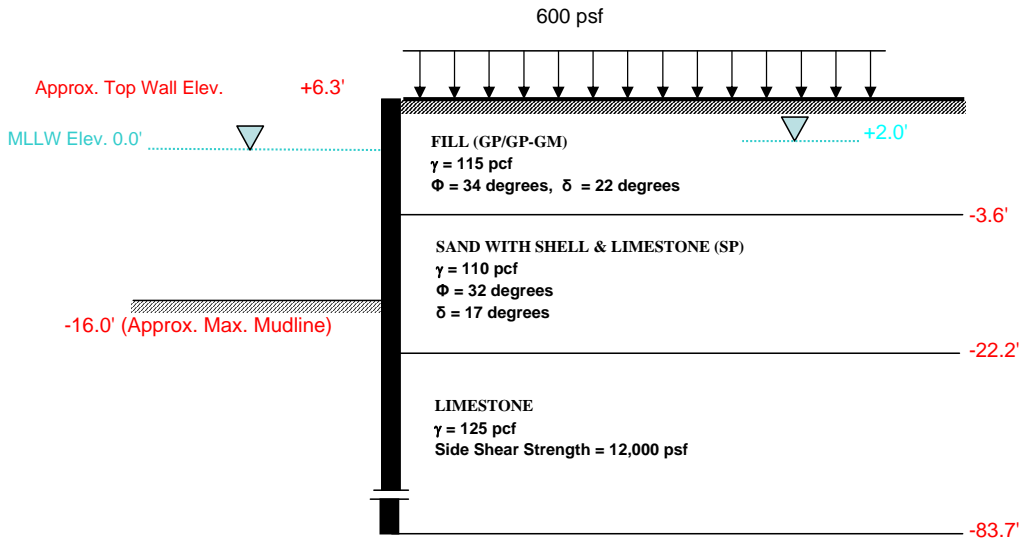
ELEVATION (FT)	WATER PRESSURE (PSF)	<-----SOIL PRESSURES----->			
		<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.30	0.	0.	0.	59.	1741.
5.30	0.	0.	0.	85.	2507.
4.30	0.	0.	0.	111.	3274.
3.30	0.	0.	0.	137.	4040.
2.30	0.	0.	0.	163.	4806.
2.00	0.	0.	0.	171.	5036.
1.30	44.	0.	0.	179.	5292.
0.30	106.	0.	0.	192.	5659.
0.00	125.	0.	0.	195.	5769.
-0.70	125.	0.	0.	204.	6025.
-1.70	125.	0.	0.	216.	6391.
-2.70	125.	0.	0.	229.	6758.
-3.60+	125.	0.	0.	240.	7088.
-3.60+	125.	0.	0.	270.	5560.
-3.70	125.	0.	0.	271.	5586.
-4.70	125.	0.	0.	284.	5846.
-5.70	125.	0.	0.	296.	6106.
-6.70	125.	0.	0.	309.	6366.
-7.70	125.	0.	0.	322.	6626.
-8.70	125.	0.	0.	334.	6886.
-9.70	125.	0.	0.	347.	7146.
-10.70	125.	0.	0.	360.	7406.
-11.70	125.	0.	0.	372.	7666.
-12.70	125.	0.	0.	385.	7927.
-13.70	125.	0.	0.	397.	8187.
-14.70	125.	0.	0.	410.	8447.
-15.70	125.	0.	0.	423.	8707.
-16.00	125.	0.	0.	426.	8785.
-16.70	125.	182.	9.	435.	8967.
-17.00	125.	260.	13.	439.	9045.
-17.70	125.	442.	21.	448.	9227.
-18.23	125.	579.	28.	455.	9364.

		Cantilever 250 psf			
-18. 70	125.	702.	34.	461.	9487.
-19. 70	125.	962.	47.	473.	9747.
-20. 70	125.	1222.	59.	486.	10007.
-21. 70	125.	1482.	72.	498.	10267.
-22. 20+	125.	1612.	78.	505.	10397.
-22. 20+	125.	24295.	0.	0.	25903.
-22. 70	125.	24326.	0.	0.	25934.
-22. 70	125.	24327.	0.	0.	25934.
-23. 70	125.	24389.	0.	0.	25997.
-24. 70	125.	24452.	0.	0.	26059.
-25. 70	125.	24514.	0.	0.	26122.
-26. 70	125.	24577.	0.	0.	26185.
-27. 70	125.	24639.	0.	0.	26247.
-27. 73	125.	24702.	0.	0.	26310.
-29. 70	125.	24765.	0.	0.	26372.



Key West Naval Air Station (Breakwater 497)
 Truman Annex, Key West, Florida
 N&A Project No. 08-09-0021-101

CASE II: Steel Sheet Pile Bulkhead, Cantilever (Sta. 12+90 to 16+46)



Input from CWALSHT Output

(Calculated) Wall Penetration (ft) = **12.53** → Elevation (ft) = **-29.00**
 (Required) Wall Penetration (ft) = **18.0** → Elevation (ft) = **-34.00**

Maximum Bending Moment, Mmax (Kips-ft) = **156.87**

Nominal Yield Strength for Grade A-328 Steel (ksi) = 39
 Allowable Working Stress for Grade A-328 Steel, Fb (ksi) = 60% * 39 = 23.4

Nominal Yield Strength for Grade A-572 Steel (ksi) = 50
 Allowable Working Stress for Grade A-572 Steel, Fb (ksi) = 60% * 50 = 30

Required Section Modulus, S (in³) for A-328 = $M_{max} / F_b =$ **80.4**
 Required Section Modulus, S (in³) for A-572 = $M_{max} / F_b =$ **62.7**

Scaled Deflection (lbs-in³) = **7.93600E+10**

Section	Section Modulus (in ³ /ft)	Moment of Inertia (in ⁴ /ft)	Deflection (in)
AZ-25	45.7	382.6	-
AZ-26	48.4	406.5	-
AZ-28	51.2	431.6	-
AZ-37	68.9	676.6	4.04
AZ-39	72.5	714	3.83
AZ-41	76.2	751.4	3.64
AZ-46	85.5	808.8	3.38
AZ-48	89.3	847.1	3.23
AZ-50	93.3	886.5	3.09

*The sheet pile section was selected to estimate the top wall deflection. The actual sheet pile section should be selected by The Designer.

Cantilever 600 psf
 PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 14:56:01

 * INPUT DATA *

I. --HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --CONTROL
 CANTILEVER WALL DESIGN
 FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
 FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.00

III. --WALL DATA
 ELEVATION AT TOP OF WALL = 6.30 FT.

IV. --SURFACE POINT DATA

IV. A. --RIGHTSIDE
 DIST. FROM ELEVATION
 WALL (FT) (FT)
 100.00 6.30

IV. B. --LEFTSIDE
 DIST. FROM ELEVATION
 WALL (FT) (FT)
 100.00 -16.00

V. --SOIL LAYER DATA

V. A. --RIGHTSIDE
 LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
 LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
115.00	110.00	34.00	0.00	22.00	0.00	-3.60	0.00	DEF	DEF
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00	2000.00	0.00	0.00			DEF	DEF

V. B. --LEFTSIDE
 LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
 LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00	2000.00	0.00	0.00			DEF	DEF

VI. --WATER DATA
 UNIT WEIGHT = 62.40 (PCF)
 RIGHTSIDE ELEVATION = 2.00 (FT)
 LEFTSIDE ELEVATION = 0.00 (FT)
 NO SEEPAGE

Cantilever 600 psf
 VII. --VERTICAL SURCHARGE LOADS

VII. A. --VERTICAL LINE LOADS
 NONE

VII. B. --VERTICAL UNIFORM LOADS
 LEFTSIDE (PSF) 0.00
 RIGHTSIDE (PSF) 600.00

VII. C. --VERTICAL STRIP LOADS
 NONE

VII. D. --VERTICAL RAMP LOADS
 NONE

VII. E. --VERTICAL TRIANGULAR LOADS
 NONE

VII. F. --VERTICAL VARIABLE LOADS
 NONE

VIII. --HORIZONTAL LOADS
 NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 14:56:03

 * SOIL PRESSURES FOR *
 * CANTILEVER WALL DESIGN *

I. --HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
 AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
 AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

ELEV. (FT)	NET WATER (PSF)	<--LEFTSIDE-->		<--NET--> (SOIL + WATER)		<--RIGHTSIDE-->	
		PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.3	0.0	0.0	0.0	141.5	4179.1	141.5	4179.1
5.3	0.0	0.0	0.0	167.5	4945.3	167.5	4945.3
4.3	0.0	0.0	0.0	193.4	5711.5	193.4	5711.5
3.3	0.0	0.0	0.0	219.3	6477.6	219.3	6477.6

				Cantilever 600 psf			
2.3	0.0	0.0	0.0	245.3	7243.8	245.3	7243.8
2.0	0.0	0.0	0.0	253.1	7473.7	253.1	7473.7
1.3	43.7	0.0	0.0	305.4	7773.8	261.7	7730.1
0.3	106.1	0.0	0.0	380.2	8202.6	274.2	8096.5
0.0	124.8	0.0	0.0	402.7	8331.2	277.9	8206.4
-0.7	124.8	0.0	0.0	411.4	8587.7	286.6	8462.9
-1.7	124.8	0.0	0.0	423.8	8954.0	299.0	8829.2
-2.7	124.8	0.0	0.0	436.2	9320.4	311.4	9195.6
-3.6+	124.8	0.0	0.0	447.3	9650.1	322.5	9525.3
-3.6-	124.8	0.0	0.0	487.5	7597.0	362.7	7472.2
-3.7	124.8	0.0	0.0	488.8	7623.0	364.0	7498.2
-4.7	124.8	0.0	0.0	501.4	7883.1	376.6	7758.3
-5.7	124.8	0.0	0.0	514.0	8143.2	389.2	8018.4
-6.7	124.8	0.0	0.0	526.6	8403.2	401.8	8278.4
-7.7	124.8	0.0	0.0	539.3	8663.3	414.5	8538.5
-8.7	124.8	0.0	0.0	551.9	8923.4	427.1	8798.6
-9.7	124.8	0.0	0.0	564.5	9183.5	439.7	9058.7
-10.7	124.8	0.0	0.0	577.1	9443.6	452.3	9318.8
-11.7	124.8	0.0	0.0	589.8	9703.6	465.0	9578.8
-12.7	124.8	0.0	0.0	602.4	9963.7	477.6	9838.9
-13.7	124.8	0.0	0.0	615.0	10223.8	490.2	10099.0
-14.7	124.8	0.0	0.0	627.6	10483.9	502.8	10359.1
-15.7	124.8	0.0	0.0	640.3	10744.0	515.5	10619.2
-16.0	124.8	0.0	0.0	644.1	10822.0	519.3	10697.2
-16.7	124.8	182.1	8.8	470.8	10995.2	528.1	10879.2
-17.0	124.8	260.1	12.6	396.6	11069.4	531.9	10957.3
-17.7	124.8	442.1	21.5	223.4	11242.7	540.7	11139.3
-18.6	124.8	676.9	32.9	0.0	11466.0	552.1	11374.1
-18.7	124.8	702.2	34.1	-24.1	11490.1	553.3	11399.4
-19.7	124.8	962.3	46.7	-271.5	11737.6	566.0	11659.5
-20.7	124.8	1222.4	59.3	-519.0	11985.0	578.6	11919.6
-21.7	124.8	1482.5	72.0	-766.4	12232.5	591.2	12179.6
-22.2+	124.8	1612.5	78.3	-12530.2	19367.0	597.5	12309.7
-22.2-	124.8	24295.1	0.0	-12530.2	19367.0	0.0	26252.9
-22.7	124.8	24326.4	0.0	-24201.6	26409.0	0.0	26284.2
-23.7	124.8	24389.0	0.0	-24264.2	26471.6	0.0	26346.8
-24.7	124.8	24451.6	0.0	-24326.8	26534.2	0.0	26409.4
-25.7	124.8	24514.2	0.0	-24389.4	26596.8	0.0	26472.0
-26.7	124.8	24576.8	0.0	-24452.0	26659.4	0.0	26534.6
-27.7	124.8	24639.4	0.0	-24514.6	26722.0	0.0	26597.2
-28.7	124.8	24702.0	0.0	-24577.2	26784.6	0.0	26659.8
-29.7	124.8	24764.6	0.0	-24639.8	26847.2	0.0	26722.4
-30.7	124.8	24827.2	0.0	-24702.4	26909.8	0.0	26785.0
-31.7	124.8	24889.8	0.0	-24765.0	26972.4	0.0	26847.6
-32.7	124.8	24952.4	0.0	-24827.6	27035.0	0.0	26910.2
-33.7	124.8	25015.0	0.0	-24890.2	27097.6	0.0	26972.8
-34.7	124.8	25077.6	0.0	-24952.8	27160.2	0.0	27035.4
-35.7	124.8	25140.2	0.0	-25015.4	27222.8	0.0	27098.0
-36.7	124.8	25202.8	0.0	-25078.0	27285.4	0.0	27160.6
-37.7	124.8	25265.4	0.0	-25140.6	27348.0	0.0	27223.2
-38.7	124.8	25328.0	0.0	-25203.2	27410.6	0.0	27285.8
-39.7	124.8	25390.6	0.0	-25265.8	27473.2	0.0	27348.4
-40.7	124.8	25453.2	0.0	-25328.4	27535.8	0.0	27411.0
-41.7	124.8	25515.8	0.0	-25391.0	27598.4	0.0	27473.6
-42.7	124.8	25578.4	0.0	-25453.6	27661.0	0.0	27536.2
-43.7	124.8	25641.0	0.0	-25516.2	27723.6	0.0	27598.8
-44.7	124.8	25703.6	0.0	-25578.8	27786.2	0.0	27661.4
-45.7	124.8	25766.2	0.0	-25641.4	27848.8	0.0	27724.0
-46.7	124.8	25828.8	0.0	-25704.0	27911.4	0.0	27786.6
-47.7	124.8	25891.4	0.0	-25766.6	27974.0	0.0	27849.2
-48.7	124.8	25954.0	0.0	-25829.2	28036.6	0.0	27911.8
-49.7	124.8	26016.6	0.0	-25891.8	28099.2	0.0	27974.4
-50.7	124.8	26079.2	0.0	-25954.4	28161.8	0.0	28037.0

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				Cantilever 600 psf			
-51.7	124.8	26141.8	0.0	-26017.0	28224.4	0.0	28099.6
-52.7	124.8	26204.4	0.0	-26079.6	28287.0	0.0	28162.2
-53.7	124.8	26267.0	0.0	-26142.2	28349.6	0.0	28224.8
-54.7	124.8	26329.6	0.0	-26204.8	28412.2	0.0	28287.4
-55.7	124.8	26392.2	0.0	-26267.4	28474.8	0.0	28350.0
-56.7	124.8	26454.8	0.0	-26330.0	28537.4	0.0	28412.6
-57.7	124.8	26517.4	0.0	-26392.6	28600.0	0.0	28475.2
-58.7	124.8	26580.0	0.0	-26455.2	28662.6	0.0	28537.8
-59.7	124.8	26642.6	0.0	-26517.8	28725.2	0.0	28600.4
-60.7	124.8	26705.2	0.0	-26580.4	28787.8	0.0	28663.0
-61.7	124.8	26767.8	0.0	-26643.0	28850.4	0.0	28725.6
-62.7	124.8	26830.4	0.0	-26705.6	28913.0	0.0	28788.2
-63.7	124.8	26893.0	0.0	-26768.2	28975.6	0.0	28850.8
-64.7	124.8	26955.6	0.0	-26830.8	29038.2	0.0	28913.4
-65.7	124.8	27018.2	0.0	-26893.4	29100.8	0.0	28976.0
-66.7	124.8	27080.8	0.0	-26956.0	29163.4	0.0	29038.6
-67.7	124.8	27143.4	0.0	-27018.6	29226.0	0.0	29101.2
-68.7	124.8	27206.0	0.0	-27081.2	29288.6	0.0	29163.8
-69.7	124.8	27268.6	0.0	-27143.8	29351.2	0.0	29226.4
-70.7	124.8	27331.2	0.0	-27206.4	29413.8	0.0	29289.0
-71.7	124.8	27393.8	0.0	-27269.0	29476.4	0.0	29351.6
-72.7	124.8	27456.4	0.0	-27331.6	29539.0	0.0	29414.2
-73.7	124.8	27519.0	0.0	-27394.2	29601.6	0.0	29476.8
-74.7	124.8	27581.6	0.0	-27456.8	29664.2	0.0	29539.4
-75.7	124.8	27644.2	0.0	-27519.4	29726.8	0.0	29602.0
-76.7	124.8	27706.8	0.0	-27582.0	29789.4	0.0	29664.6
-77.7	124.8	27769.4	0.0	-27644.6	29852.0	0.0	29727.2
-78.7	124.8	27832.0	0.0	-27707.2	29914.6	0.0	29789.8
-79.7	124.8	27894.6	0.0	-27769.8	29977.2	0.0	29852.4
-80.7	124.8	27957.2	0.0	-27832.4	30039.8	0.0	29915.0
-81.7	124.8	28019.8	0.0	-27895.0	30102.4	0.0	29977.6
-82.7	124.8	28082.4	0.0	-27957.6	30165.0	0.0	30040.2
-83.7	124.8	28145.0	0.0	-28020.2	30227.6	0.0	30102.8

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010

TIME: 14:56:05

* SUMMARY OF RESULTS FOR *
* CANTILEVER WALL DESIGN *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

Page 4

Cantilever 600 psf

WALL BOTTOM ELEV. (FT) : -28.53
 PENETRATION (FT) : 12.53
 MAX. BEND. MOMENT (LB-FT) : 1.5687E+05
 AT ELEVATION (FT) : -22.58
 MAX. SCALED DEFL. (LB-IN^3) : 7.9360E+10
 AT ELEVATION (FT) : 6.30

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED CANTILEVER SHEET PILE WALLS BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 14:56:05

 * COMPLETE OF RESULTS FOR *
 * CANTILEVER WALL DESIGN *

I.--HEADING
 KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 TRUMAN ANNEX, KEY WEST, FLORIDA

II.--RESULTS (LB)

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.30	0.0000E+00	0.	7.9360E+10	141.51
5.30	7.5077E+01	154.	7.6109E+10	167.45
4.30	3.1760E+02	335.	7.2859E+10	193.39
3.30	7.5353E+02	541.	6.9608E+10	219.34
2.30	1.4088E+03	774.	6.6360E+10	245.28
2.00	1.6520E+03	848.	6.5385E+10	253.06
1.30	2.3121E+03	1044.	6.3113E+10	305.43
0.30	3.5211E+03	1387.	5.9871E+10	380.23
0.00	3.9545E+03	1504.	5.8900E+10	402.67
-0.70	5.1067E+03	1789.	5.6635E+10	411.36
-1.70	7.1034E+03	2207.	5.3408E+10	423.76
-2.70	9.5239E+03	2636.	5.0193E+10	436.17
-3.60	1.2075E+04	3034.	4.7313E+10	447.33
-3.60	1.2075E+04	3034.	4.7313E+10	487.51
-3.70	1.2381E+04	3083.	4.6994E+10	488.78
-4.70	1.5710E+04	3578.	4.3817E+10	501.40
-5.70	1.9541E+04	4086.	4.0668E+10	514.03
-6.70	2.3886E+04	4606.	3.7552E+10	526.65
-7.70	2.8757E+04	5139.	3.4477E+10	539.27
-8.70	3.4168E+04	5685.	3.1453E+10	551.90
-9.70	4.0131E+04	6243.	2.8487E+10	564.52
-10.70	4.6658E+04	6814.	2.5591E+10	577.15
-11.70	5.3762E+04	7397.	2.2775E+10	589.77
-12.70	6.1456E+04	7993.	2.0053E+10	602.40
-13.70	6.9752E+04	8602.	1.7437E+10	615.02
-14.70	7.8664E+04	9223.	1.4941E+10	627.65

Cantilever 600 psf

-15.70	8.8203E+04	9857.	1.2581E+10	640.27
-16.00	9.1189E+04	10050.	1.1902E+10	644.06
-16.70	9.8368E+04	10440.	1.0374E+10	470.84
-17.00	1.0152E+05	10570.	9.7445E+09	396.60
-17.70	1.0900E+05	10787.	8.3373E+09	223.39
-18.60	1.1880E+05	10888.	6.6597E+09	0.00
-18.70	1.1986E+05	10887.	6.4886E+09	-24.07
-19.70	1.3069E+05	10739.	4.8471E+09	-271.53
-20.70	1.4126E+05	10344.	3.4314E+09	-518.98
-21.70	1.5130E+05	9701.	2.2597E+09	-766.44
-22.20	1.5556E+05	6377.	1.7707E+09	-12530.24
-22.70	1.5670E+05	-2806.	1.3489E+09	-24201.62
-22.88	1.5578E+05	-7227.	1.2117E+09	-24213.05
-23.70	1.4261E+05	-24001.	7.0588E+08	-16830.19
-24.70	1.1170E+05	-36315.	3.0684E+08	-7797.58
-25.70	7.2990E+04	-39596.	9.9691E+07	1235.04
-26.70	3.5517E+04	-33845.	1.8846E+07	10267.66
-27.70	8.3117E+03	-19061.	8.5299E+05	19300.28
-28.53	0.0000E+00	0.	0.0000E+00	26773.81

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

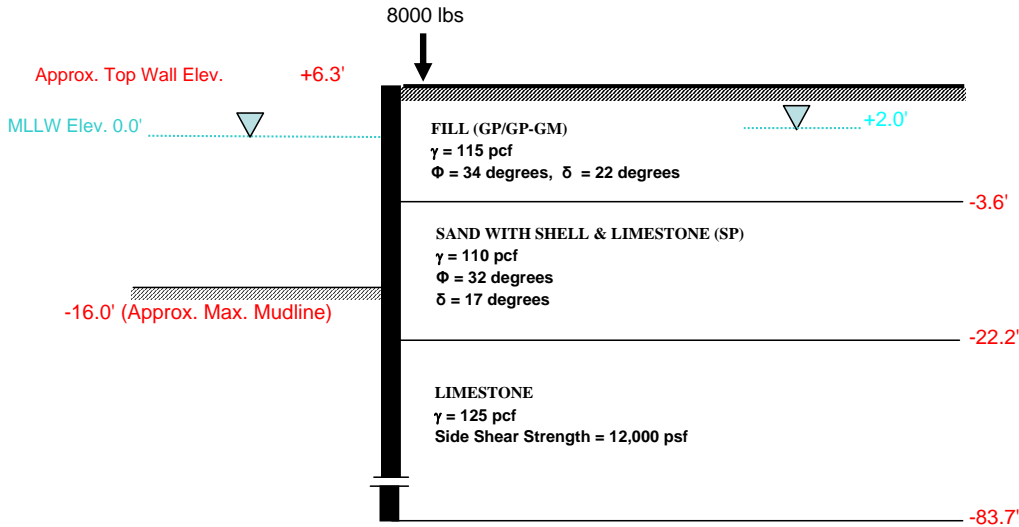
ELEVATION (FT)	WATER PRESSURE (PSF)	<-----SOIL PRESSURES----->			
		<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.30	0.	0.	0.	142.	4179.
5.30	0.	0.	0.	167.	4945.
4.30	0.	0.	0.	193.	5711.
3.30	0.	0.	0.	219.	6478.
2.30	0.	0.	0.	245.	7244.
2.00	0.	0.	0.	253.	7474.
1.30	44.	0.	0.	262.	7730.
0.30	106.	0.	0.	274.	8096.
0.00	125.	0.	0.	278.	8206.
-0.70	125.	0.	0.	287.	8463.
-1.70	125.	0.	0.	299.	8829.
-2.70	125.	0.	0.	311.	9196.
-3.60+	125.	0.	0.	323.	9525.
-3.60+	125.	0.	0.	363.	7472.
-3.70	125.	0.	0.	364.	7498.
-4.70	125.	0.	0.	377.	7758.
-5.70	125.	0.	0.	389.	8018.
-6.70	125.	0.	0.	402.	8278.
-7.70	125.	0.	0.	414.	8539.
-8.70	125.	0.	0.	427.	8799.
-9.70	125.	0.	0.	440.	9059.
-10.70	125.	0.	0.	452.	9319.
-11.70	125.	0.	0.	465.	9579.
-12.70	125.	0.	0.	478.	9839.
-13.70	125.	0.	0.	490.	10099.
-14.70	125.	0.	0.	503.	10359.
-15.70	125.	0.	0.	515.	10619.
-16.00	125.	0.	0.	519.	10697.
-16.70	125.	182.	9.	528.	10879.
-17.00	125.	260.	13.	532.	10957.
-17.70	125.	442.	21.	541.	11139.
-18.60	125.	677.	33.	552.	11374.

		Cantilever 600 psf			
-18. 70	125.	702.	34.	553.	11399.
-19. 70	125.	962.	47.	566.	11659.
-20. 70	125.	1222.	59.	579.	11920.
-21. 70	125.	1482.	72.	591.	12180.
-22. 20+	125.	1612.	78.	598.	12310.
-22. 20+	125.	24295.	0.	0.	26253.
-22. 70	125.	24326.	0.	0.	26284.
-22. 88	125.	24338.	0.	0.	26296.
-23. 70	125.	24389.	0.	0.	26347.
-24. 70	125.	24452.	0.	0.	26409.
-25. 70	125.	24514.	0.	0.	26472.
-26. 70	125.	24577.	0.	0.	26535.
-27. 70	125.	24639.	0.	0.	26597.
-28. 53	125.	24702.	0.	0.	26660.
-29. 70	125.	24765.	0.	0.	26722.



Key West Naval Air Station (Breakwater 497)
 Truman Annex, Key West, Florida
 N&A Project No. 08-09-0021-101

CASE III: Steel Sheet Pile Bulkhead, Cantilever (Sta. 12+90 to 16+46)



Input from CWALSHT Output

(Calculated) Wall Penetration (ft) = **13.08** → Elevation (ft) = **-30.00**
 (Required) Wall Penetration (ft) = **19.0** → Elevation (ft) = **-35.00**

Maximum Bending Moment, Mmax (Kips-ft) = **183.46**

Nominal Yield Strength for Grade A-328 Steel (ksi) = 39
 Allowable Working Stress for Grade A-328 Steel, Fb (ksi) = 60% * 39 = 23.4

Nominal Yield Strength for Grade A-572 Steel (ksi) = 50
 Allowable Working Stress for Grade A-572 Steel, Fb (ksi) = 60% * 50 = 30

Required Section Modulus, S (in³) for A-328 = $M_{max} / F_b = 94.1$
 Required Section Modulus, S (in³) for A-572 = $M_{max} / F_b = 73.4$

Scaled Deflection (lbs-in³) = **9.93080E+10**

Section	Section Modulus (in ³ /ft)	Moment of Inertia (in ⁴ /ft)	Deflection (in)
AZ-25	45.7	382.6	-
AZ-26	48.4	406.5	-
AZ-28	51.2	431.6	-
AZ-37	68.9	676.6	-
AZ-39	72.5	714	-
AZ-41	76.2	751.4	4.56
AZ-46	85.5	808.8	4.23
AZ-48	89.3	847.1	4.04
AZ-50	93.3	886.5	3.86

*The sheet pile section was selected to estimate the top wall deflection. The actual sheet pile section should be selected by The Designer.

Cantilever Point Load
 PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 15:00:44

 * INPUT DATA *

I. --HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --CONTROL
 CANTILEVER WALL DESIGN
 FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
 FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.00

III. --WALL DATA
 ELEVATION AT TOP OF WALL = 6.30 FT.

IV. --SURFACE POINT DATA

IV. A. --RIGHTSIDE
 DIST. FROM ELEVATION
 WALL (FT) (FT)
 100.00 6.30

IV. B. --LEFTSIDE
 DIST. FROM ELEVATION
 WALL (FT) (FT)
 100.00 -16.00

V. --SOIL LAYER DATA

V. A. --RIGHTSIDE
 LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
 LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
115.00	110.00	34.00	0.00	22.00	0.00	-3.60	0.00	DEF	DEF
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00120000	0.00	0.00	0.00			DEF	DEF

V. B. --LEFTSIDE
 LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
 LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGHT. (PCF)	MOIST. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT.	<--FACTOR--> PASS.
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF	DEF
125.00	120.00	0.00120000	0.00	0.00	0.00			DEF	DEF

VI. --WATER DATA
 UNIT WEIGHT = 62.40 (PCF)
 RIGHTSIDE ELEVATION = 2.00 (FT)
 LEFTSIDE ELEVATION = 0.00 (FT)
 NO SEEPAGE

Cantilever Point Load
 VII. --VERTICAL SURCHARGE LOADS

VII. A. --VERTICAL LINE LOADS

VII. A. 1. --RIGHTSIDE
 DIST. FROM LINE LOAD
 WALL (FT) (PLF)
 1.00 8000.00

VII. A. 2. --LEFTSIDE
 NONE

VII. B. --VERTICAL UNIFORM LOADS
 NONE

VII. C. --VERTICAL STRIP LOADS
 NONE

VII. D. --VERTICAL RAMP LOADS
 NONE

VII. E. --VERTICAL TRIANGULAR LOADS
 NONE

VII. F. --VERTICAL VARIABLE LOADS
 NONE

VIII. --HORIZONTAL LOADS
 NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 15:00:46

 * SOIL PRESSURES FOR *
 * CANTILEVER WALL DESIGN *

I. --HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
 AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
 AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

ELEV.	NET WATER	<--LEFTSIDE-->		<-----NET-----> (SOIL + WATER)		<--RIGHTSIDE-->	
		PASSIVE	ACTIVE	PASSIVE	ACTIVE	PASSIVE	ACTIVE

Cantilever Point Load					
(FT)	(PSF)	(PSF)	(PSF)	(PSF)	(PSF)
6.3	0.0	0.0	0.0	0.0	0.0
5.3	0.0	0.0	0.0	150.4	890.6
4.3	0.0	0.0	0.0	283.2	1763.6
3.3	0.0	0.0	0.0	386.7	2607.4
2.3	0.0	0.0	0.0	457.5	3418.4
2.0	0.0	0.0	0.0	472.7	3655.7
1.3	43.7	0.0	0.0	533.2	3964.0
0.3	106.1	0.0	0.0	601.5	4386.3
0.0	124.8	0.0	0.0	618.9	4509.8
-0.7	124.8	0.0	0.0	611.9	4750.5
-1.7	124.8	0.0	0.0	595.7	5088.4
-2.7	124.8	0.0	0.0	576.6	5423.2
-3.6+	124.8	0.0	0.0	559.4	5724.6
-3.6-	124.8	0.0	0.0	581.9	4572.2
-3.7	124.8	0.0	0.0	580.1	4595.1
-4.7	124.8	0.0	0.0	563.1	4825.6
-5.7	124.8	0.0	0.0	548.8	5058.7
-6.7	124.8	0.0	0.0	537.4	5294.8
-7.7	124.8	0.0	0.0	529.0	5533.9
-8.7	124.8	0.0	0.0	523.4	5775.7
-9.7	124.8	0.0	0.0	520.1	6019.9
-10.7	124.8	0.0	0.0	519.1	6266.3
-11.7	124.8	0.0	0.0	519.9	6514.6
-12.7	124.8	0.0	0.0	522.3	6764.4
-13.7	124.8	0.0	0.0	526.1	7015.7
-14.7	124.8	0.0	0.0	531.1	7268.1
-15.7	124.8	0.0	0.0	537.1	7521.6
-16.0	124.8	0.0	0.0	539.0	7597.8
-16.7	124.8	182.1	8.8	361.9	7767.0
-17.0	124.8	260.1	12.6	286.0	7839.7
-17.7	124.8	442.1	21.5	109.3	8009.4
-18.1	124.8	555.0	26.9	0.0	8114.9
-18.7	124.8	702.2	34.1	-142.5	8252.5
-19.7	124.8	962.3	46.7	-393.9	8496.0
-20.7	124.8	1222.4	59.3	-644.8	8740.0
-21.7	124.8	1482.5	72.0	-895.3	8984.5
-22.2+	124.8	1612.5	78.3	-12595.3	17456.7
-22.2-	124.8	24295.1	0.0	-12595.3	17456.7
-22.7	124.8	24326.4	0.0	-24201.6	25836.7
-23.7	124.8	24389.0	0.0	-24264.2	25896.9
-24.7	124.8	24451.6	0.0	-24326.8	25957.3
-25.7	124.8	24514.2	0.0	-24389.4	26018.0
-26.7	124.8	24576.8	0.0	-24452.0	26078.9
-27.7	124.8	24639.4	0.0	-24514.6	26140.0
-28.7	124.8	24702.0	0.0	-24577.2	26201.2
-29.7	124.8	24764.6	0.0	-24639.8	26262.6
-30.7	124.8	24827.2	0.0	-24702.4	26324.1
-31.7	124.8	24889.8	0.0	-24765.0	26385.6
-32.7	124.8	24952.4	0.0	-24827.6	26447.3
-33.7	124.8	25015.0	0.0	-24890.2	26509.1
-34.7	124.8	25077.6	0.0	-24952.8	26570.9
-35.7	124.8	25140.2	0.0	-25015.4	26632.8
-36.7	124.8	25202.8	0.0	-25078.0	26694.8
-37.7	124.8	25265.4	0.0	-25140.6	26756.8
-38.7	124.8	25328.0	0.0	-25203.2	26818.8
-39.7	124.8	25390.6	0.0	-25265.8	26880.9
-40.7	124.8	25453.2	0.0	-25328.4	26943.1
-41.7	124.8	25515.8	0.0	-25391.0	27005.2
-42.7	124.8	25578.4	0.0	-25453.6	27067.5
-43.7	124.8	25641.0	0.0	-25516.2	27129.7
-44.7	124.8	25703.6	0.0	-25578.8	27192.0
-45.7	124.8	25766.2	0.0	-25641.4	27254.2

Page 3

Cantilever Point Load					
-46.7	124.8	25828.8	0.0	-25704.0	27316.5
-47.7	124.8	25891.4	0.0	-25766.6	27378.9
-48.7	124.8	25954.0	0.0	-25829.2	27441.2
-49.7	124.8	26016.6	0.0	-25891.8	27503.6
-50.7	124.8	26079.2	0.0	-25954.4	27566.0
-51.7	124.8	26141.8	0.0	-26017.0	27628.4
-52.7	124.8	26204.4	0.0	-26079.6	27690.8
-53.7	124.8	26267.0	0.0	-26142.2	27753.2
-54.7	124.8	26329.6	0.0	-26204.8	27815.6
-55.7	124.8	26392.2	0.0	-26267.4	27878.1
-56.7	124.8	26454.8	0.0	-26330.0	27940.5
-57.7	124.8	26517.4	0.0	-26392.6	28003.0
-58.7	124.8	26580.0	0.0	-26455.2	28065.5
-59.7	124.8	26642.6	0.0	-26517.8	28127.9
-60.7	124.8	26705.2	0.0	-26580.4	28190.4
-61.7	124.8	26767.8	0.0	-26643.0	28252.9
-62.7	124.8	26830.4	0.0	-26705.6	28315.4
-63.7	124.8	26893.0	0.0	-26768.2	28377.9
-64.7	124.8	26955.6	0.0	-26830.8	28440.4
-65.7	124.8	27018.2	0.0	-26893.4	28502.9
-66.7	124.8	27080.8	0.0	-26956.0	28565.4
-67.7	124.8	27143.4	0.0	-27018.6	28628.0
-68.7	124.8	27206.0	0.0	-27081.2	28690.5
-69.7	124.8	27268.6	0.0	-27143.8	28753.0
-70.7	124.8	27331.2	0.0	-27206.4	28815.5
-71.7	124.8	27393.8	0.0	-27269.0	28878.1
-72.7	124.8	27456.4	0.0	-27331.6	28940.6
-73.7	124.8	27519.0	0.0	-27394.2	29003.2
-74.7	124.8	27581.6	0.0	-27456.8	29065.7
-75.7	124.8	27644.2	0.0	-27519.4	29128.3
-76.7	124.8	27706.8	0.0	-27582.0	29190.8
-77.7	124.8	27769.4	0.0	-27644.6	29253.4
-78.7	124.8	27832.0	0.0	-27707.2	29315.9
-79.7	124.8	27894.6	0.0	-27769.8	29378.5
-80.7	124.8	27957.2	0.0	-27832.4	29441.0
-81.7	124.8	28019.8	0.0	-27895.0	29503.6
-82.7	124.8	28082.4	0.0	-27957.6	29566.1
-83.7	124.8	28145.0	0.0	-28020.2	29628.7
			0.0		27191.7
			0.0		27254.1
			0.0		27316.4
			0.0		27378.8
			0.0		27441.2
			0.0		27503.6
			0.0		27566.0
			0.0		27628.4
			0.0		27690.8
			0.0		27753.2
			0.0		27815.6
			0.0		27878.2
			0.0		27940.7
			0.0		28003.1
			0.0		28065.6
			0.0		28128.1
			0.0		28190.6
			0.0		28253.1
			0.0		28315.6
			0.0		28378.1
			0.0		28440.6
			0.0		28503.2
			0.0		28565.7
			0.0		28628.2
			0.0		28690.7
			0.0		28753.3
			0.0		28815.8
			0.0		28878.4
			0.0		28940.9
			0.0		29003.5
			0.0		29066.0
			0.0		29128.6
			0.0		29191.1
			0.0		29253.7
			0.0		29316.2
			0.0		29378.8
			0.0		29441.3
			0.0		29503.9

PROGRAM COWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010 TIME: 15:00:47

* SUMMARY OF RESULTS FOR *
* CANTILEVER WALL DESIGN *

I. --HEADING
KEY WEST NAVAL AIR STATION (BREAKWATER 497)
TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SUMMARY

Page 4

Cantilever Point Load

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

WALL BOTTOM ELEV. (FT) : -29.08
PENETRATION (FT) : 13.08

MAX. BEND. MOMENT (LB-FT) : 1.8346E+05
AT ELEVATION (FT) : -22.59

MAX. SCALED DEFL. (LB-IN^3) : 9.9308E+10
AT ELEVATION (FT) : 6.30

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF
ELASTICITY IN PSI TIMES PILE MOMENT
OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010

TIME: 15:00:47

* COMPLETE OF RESULTS FOR *
* CANTILEVER WALL DESIGN *

I. --HEADING

* KEY WEST NAVAL AIR STATION (BREAKWATER 497)
* TRUMAN ANNEX, KEY WEST, FLORIDA

II. --RESULTS. (LB)

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.30	0.0000E+00	0.	9.9308E+10	0.00
5.30	2.5060E+01	75.	9.5217E+10	150.36
4.30	1.9756E+02	292.	9.1125E+10	283.18
3.30	6.4835E+02	627.	8.7034E+10	386.70
2.30	1.4804E+03	1049.	8.2945E+10	457.48
2.00	1.8159E+03	1189.	8.1718E+10	472.73
1.30	2.7686E+03	1541.	7.8857E+10	533.22
0.30	4.5872E+03	2108.	7.4775E+10	601.54
0.00	5.2469E+03	2291.	7.3552E+10	618.91
-0.70	7.0017E+03	2722.	7.0701E+10	611.86
-1.70	1.0027E+04	3326.	6.6639E+10	595.71
-2.70	1.3647E+04	3912.	6.2594E+10	576.58
-3.60	1.7399E+04	4423.	5.8974E+10	559.37
-3.60	1.7399E+04	4423.	5.8974E+10	581.93
-3.70	1.7844E+04	4481.	5.8573E+10	580.10
-4.70	2.2612E+04	5053.	5.4583E+10	563.10
-5.70	2.7944E+04	5609.	5.0632E+10	548.78
-6.70	3.3825E+04	6152.	4.6729E+10	537.44
-7.70	4.0244E+04	6685.	4.2885E+10	529.03
-8.70	4.7193E+04	7211.	3.9111E+10	523.36
-9.70	5.4665E+04	7733.	3.5418E+10	520.14

Cantilever Point Load

-10.70	6.2658E+04	8252.	3.1820E+10	519.08
-11.70	7.1170E+04	8772.	2.8330E+10	519.89
-12.70	8.0202E+04	9293.	2.4963E+10	522.32
-13.70	8.9757E+04	9817.	2.1735E+10	526.12
-14.70	9.9838E+04	10346.	1.8662E+10	531.10
-15.70	1.1045E+05	10880.	1.5761E+10	537.08
-16.00	1.1374E+05	11041.	1.4928E+10	539.05
-16.70	1.2159E+05	11357.	1.3052E+10	361.86
-17.00	1.2501E+05	11454.	1.2279E+10	286.03
-17.70	1.3308E+05	11592.	1.0552E+10	109.35
-18.13	1.3812E+05	11616.	9.5378E+09	0.00
-18.70	1.4469E+05	11576.	8.2831E+09	-142.53
-19.70	1.5615E+05	11307.	6.2637E+09	-393.88
-20.70	1.6722E+05	10788.	4.5141E+09	-644.77
-21.70	1.7764E+05	10018.	3.0533E+09	-895.25
-22.20	1.8205E+05	6645.	2.4369E+09	-12595.34
-22.70	1.8332E+05	-2554.	1.8991E+09	-24201.62
-22.85	1.8264E+05	-6272.	1.7498E+09	-24211.23
-23.70	1.6948E+05	-23864.	1.0585E+09	-17358.39
-24.70	1.3828E+05	-37174.	5.0828E+08	-9262.06
-25.70	9.7825E+04	-42388.	1.9567E+08	-1165.73
-26.70	5.6204E+04	-39506.	5.1936E+07	6930.60
-27.70	2.1512E+04	-28527.	6.3191E+06	15026.93
-28.70	1.8483E+03	-9452.	3.9698E+04	23123.26
-29.08	0.0000E+00	0.	0.0000E+00	26224.73

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF
ELASTICITY IN PSI TIMES PILE MOMENT
OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

III. --WATER AND SOIL PRESSURES

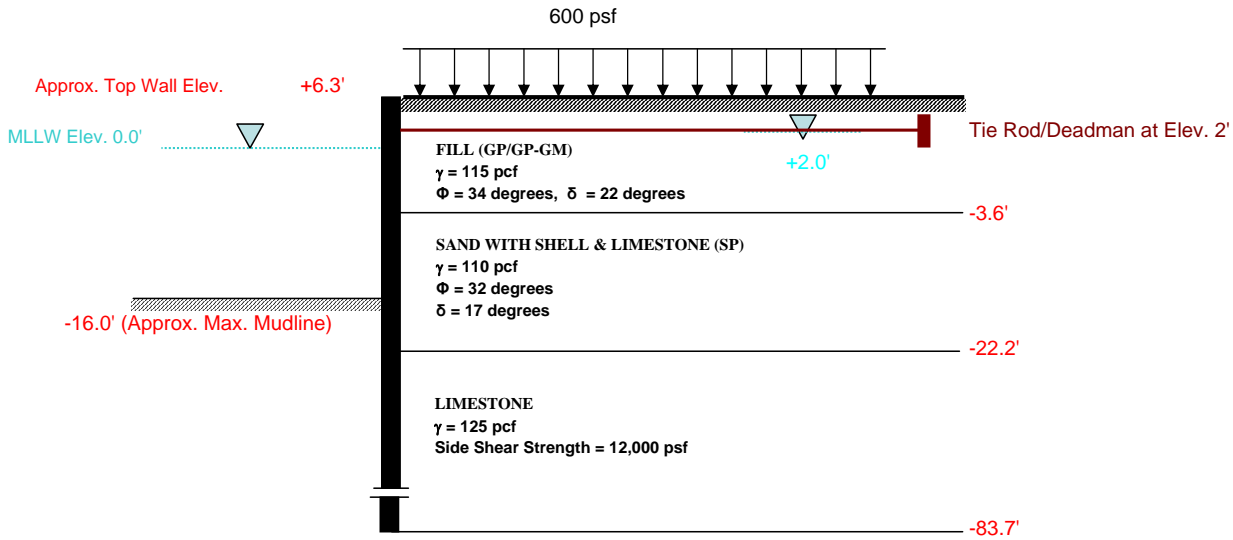
ELEVATION (FT)	WATER PRESSURE (PSF)	<-----SOIL PRESSURES----->			
		<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.30	0.	0.	0.	0.	0.
5.30	0.	0.	0.	150.	891.
4.30	0.	0.	0.	283.	1764.
3.30	0.	0.	0.	387.	2607.
2.30	0.	0.	0.	457.	3418.
2.00	0.	0.	0.	473.	3656.
1.30	44.	0.	0.	490.	3920.
0.30	106.	0.	0.	495.	4280.
0.00	125.	0.	0.	494.	4385.
-0.70	125.	0.	0.	487.	4626.
-1.70	125.	0.	0.	471.	4964.
-2.70	125.	0.	0.	452.	5298.
-3.60+	125.	0.	0.	435.	5600.
-3.60+	125.	0.	0.	457.	4447.
-3.70	125.	0.	0.	455.	4470.
-4.70	125.	0.	0.	438.	4701.
-5.70	125.	0.	0.	424.	4934.
-6.70	125.	0.	0.	413.	5170.
-7.70	125.	0.	0.	404.	5409.
-8.70	125.	0.	0.	399.	5651.
-9.70	125.	0.	0.	395.	5895.
-10.70	125.	0.	0.	394.	6141.
-11.70	125.	0.	0.	395.	6390.
-12.70	125.	0.	0.	398.	6640.
-13.70	125.	0.	0.	401.	6891.
-14.70	125.	0.	0.	406.	7143.

		Cantilever Point Load			
-15.70	125.	0.	0.	412.	7397.
-16.00	125.	0.	0.	414.	7473.
-16.70	125.	182.	9.	419.	7651.
-17.00	125.	260.	13.	421.	7728.
-17.70	125.	442.	21.	427.	7906.
-18.13	125.	555.	27.	430.	8017.
-18.70	125.	702.	34.	435.	8162.
-19.70	125.	962.	47.	444.	8418.
-20.70	125.	1222.	59.	453.	8675.
-21.70	125.	1482.	72.	462.	8932.
-22.20+	125.	1612.	78.	467.	9060.
-22.20+	125.	24295.	0.	0.	25682.
-22.70	125.	24326.	0.	0.	25712.
-22.85	125.	24336.	0.	0.	25721.
-23.70	125.	24389.	0.	0.	25772.
-24.70	125.	24452.	0.	0.	25833.
-25.70	125.	24514.	0.	0.	25893.
-26.70	125.	24577.	0.	0.	25954.
-27.70	125.	24639.	0.	0.	26015.
-28.70	125.	24702.	0.	0.	26076.
-29.08	125.	24765.	0.	0.	26138.
-30.70	125.	24827.	0.	0.	26199.



Key West Naval Air Station (Breakwater 497)
 Truman Annex, Key West, Florida
 N&A Project No. 08-09-0021-101

CASE IV: Steel Sheet Pile Bulkhead, Anchored/Deadman (Sta. 12+90 to 16+46)



Input from CWALSHT Output

(Calculated) Wall Penetration (ft) = **7.89** → Elevation (ft) = **-24.00**
 (Required) Wall Penetration (ft) = **12.0** → Elevation (ft) = **-28.00**

Maximum Bending Moment, Mmax (Kips-ft) = **28.184**

Anchor Force (kips) = **5.26**

Nominal Yield Strength for Grade A-328 Steel (ksi) = 39
 Allowable Working Stress for Grade A-328 Steel, Fb (ksi) = 60% * 39 = 23.4

Nominal Yield Strength for Grade A-572 Steel (ksi) = 50
 Allowable Working Stress for Grade A-572 Steel, Fb (ksi) = 60% * 50 = 30

Required Section Modulus, S (in³) for A-328 = $M_{max} / F_b = 14.5$
 Required Section Modulus, S (in³) for A-572 = $M_{max} / F_b = 11.3$

Scaled Deflection (lbs-in³) = **1.85560E+09**

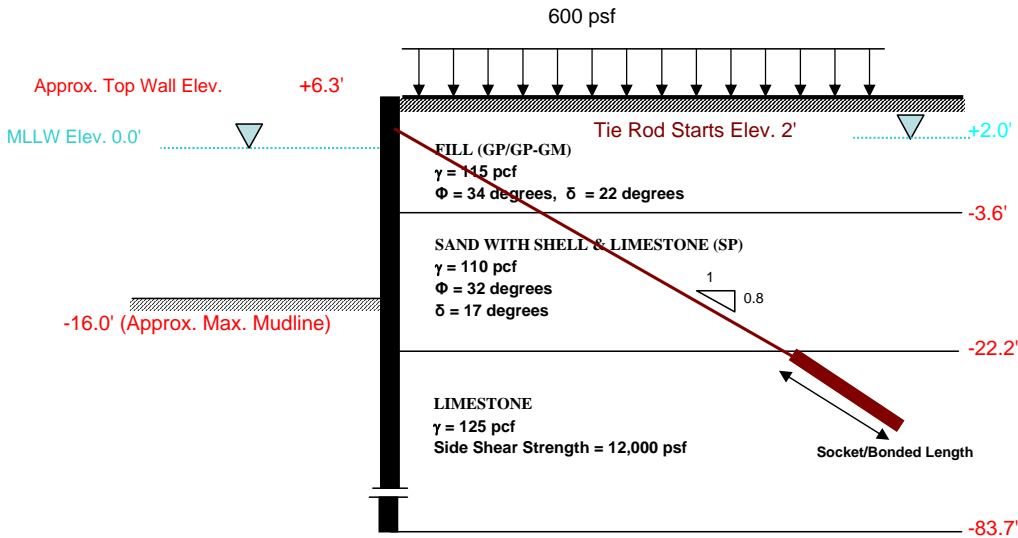
Section	Section Modulus (in ³ /ft)	Moment of Inertia (in ⁴ /ft)	Deflection (in)
AZ-12	22.3	132.8	0.48
AZ-18	33.5	250.4	0.26
AZ-26	48.4	406.5	0.16
AZ-37	68.9	676.6	0.09
AZ-39	72.5	714	0.09
AZ-41	76.2	751.4	0.09
AZ-46	85.5	808.8	0.08
AZ-48	89.3	847.1	0.08
AZ-50	93.3	886.5	0.07

*The sheet pile section was selected to estimate the top wall deflection. The actual sheet pile section should be selected by The Designer.



Key West Naval Air Station (Breakwater 497)
 Truman Annex, Key West, Florida
 N&A Project No. 08-09-0021-101

CASE IV: Steel Sheet Pile Bulkhead, Anchored to Limestone (Sta. 12+90 to 16+46)



Input from CWALSHT Output

(Calculated) Wall Penetration (ft) = **7.89** → Elevation (ft) = **-24.00**
 (Required) Wall Penetration (ft) = **12.0** → Elevation (ft) = **-28.00**

Maximum Bending Moment, Mmax (Kips-ft) = **28.184**

Anchor Force (kips) = **5.26**

Nominal Yield Strength for Grade A-328 Steel (ksi) = 39
 Allowable Working Stress for Grade A-328 Steel, Fb (ksi) = 60% * 39 = 23.4

Nominal Yield Strength for Grade A-572 Steel (ksi) = 50
 Allowable Working Stress for Grade A-572 Steel, Fb (ksi) = 60% * 50 = 30

Required Section Modulus, S (in³) for A-328 = $M_{max} / F_b = 14.5$
 Required Section Modulus, S (in³) for A-572 = $M_{max} / F_b = 11.3$

Scaled Deflection (lbs-in³) = **1.85560E+09**

Section	Section Modulus (in ³ /ft)	Moment of Inertia (in ⁴ /ft)	Deflection (in)
AZ-12	22.3	132.8	0.48
AZ-18	33.5	250.4	0.26
AZ-26	48.4	406.5	0.16
AZ-37	68.9	676.6	0.09
AZ-39	72.5	714	0.09
AZ-41	76.2	751.4	0.09
AZ-46	85.5	808.8	0.08
AZ-48	89.3	847.1	0.08
AZ-50	93.3	886.5	0.07

*The sheet pile section was selected to estimate the top wall deflection. The actual sheet pile section should be selected by The Designer.

Anchored_Deadman

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010 TIME: 15:04:30

* INPUT DATA *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.00
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.00

III. --WALL DATA
ELEVATION AT TOP OF WALL = 6.30 FT.
ELEVATION AT ANCHOR = 2.00 FT.

IV. --SURFACE POINT DATA

IV. A. --RIGHTSIDE
DIST. FROM ELEVATION
WALL (FT) (FT)
100.00 6.30

IV. B. --LEFTSIDE
DIST. FROM ELEVATION
WALL (FT) (FT)
100.00 -16.00

V. --SOIL LAYER DATA

V. A. --RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGT. (PCF)	MOIST WGT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT. PASS.
115.00	110.00	34.00	0.00	22.00	0.00	-3.60	0.00	DEF DEF
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF DEF
125.00	120.00	0.0012000	0.00	0.00	0.00			DEF DEF

V. B. --LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = 1.00
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = 1.00

SAT. WGT. (PCF)	MOIST WGT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COHESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADHESION (PSF)	<--BOTTOM--> ELEV. (FT)	<--FACTOR--> SLOPE (FT/FT)	<--SAFETY--> ACT. PASS.
110.00	105.00	32.00	0.00	17.00	0.00	-22.20	0.00	DEF DEF
125.00	120.00	0.0012000	0.00	0.00	0.00			DEF DEF

VI. --WATER DATA
UNIT WEIGHT = 62.40 (PCF)
RIGHTSIDE ELEVATION = 2.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

Anchored_Deadman

VII. --VERTICAL SURCHARGE LOADS

VII. A. --VERTICAL LINE LOADS
NONE

VII. B. --VERTICAL UNIFORM LOADS
LEFTSIDE RIGHTSIDE
(PSF) (PSF)
0.00 600.00

VII. C. --VERTICAL STRIP LOADS
NONE

VII. D. --VERTICAL RAMP LOADS
NONE

VII. E. --VERTICAL TRIANGULAR LOADS
NONE

VII. F. --VERTICAL VARIABLE LOADS
NONE

VIII. --HORIZONTAL LOADS
NONE

Anchored_Deadman

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010 TIME: 15:04:32

* SOIL PRESSURES FOR *
* ANCHORED WALL DESIGN *

I. --HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE--->		<-----NET-----> (SOIL + WATER)		<---RIGHTSIDE--->	
		PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.3	0.0	0.0	0.0	141.5	141.5	4179.1	
5.3	0.0	0.0	0.0	167.5	167.5	4945.3	
4.3	0.0	0.0	0.0	193.4	193.4	5711.5	

Anchored_Deadman			
3.3	0.0	0.0	0.0
2.3	0.0	0.0	0.0
2.0	0.0	0.0	0.0
1.3	43.7	0.0	0.0
0.3	106.1	0.0	0.0
0.0	124.8	0.0	0.0
-0.7	124.8	0.0	0.0
-1.7	124.8	0.0	0.0
-2.7	124.8	0.0	0.0
-3.6+	124.8	0.0	0.0
-3.6-	124.8	0.0	0.0
-3.7	124.8	0.0	0.0
-4.7	124.8	0.0	0.0
-5.7	124.8	0.0	0.0
-6.7	124.8	0.0	0.0
-7.7	124.8	0.0	0.0
-8.7	124.8	0.0	0.0
-9.7	124.8	0.0	0.0
-10.7	124.8	0.0	0.0
-11.7	124.8	0.0	0.0
-12.7	124.8	0.0	0.0
-13.7	124.8	0.0	0.0
-14.7	124.8	0.0	0.0
-15.7	124.8	0.0	0.0
-16.0	124.8	0.0	0.0
-16.7	124.8	182.1	8.8
-17.0	124.8	260.1	12.6
-17.7	124.8	442.1	21.5
-18.6	124.8	676.9	32.9
-18.7	124.8	702.2	34.1
-19.7	124.8	962.3	46.7
-20.7	124.8	1222.4	59.3
-21.7	124.8	1482.5	72.0
-22.2+	124.8	1612.5	78.3
-22.2-	124.8	24295.1	0.0
-22.7	124.8	24326.4	0.0
-23.7	124.8	24389.0	0.0
-24.7	124.8	24451.6	0.0
-25.7	124.8	24514.2	0.0
-26.7	124.8	24576.8	0.0
-27.7	124.8	24639.4	0.0
-28.7	124.8	24702.0	0.0
-29.7	124.8	24764.6	0.0
-30.7	124.8	24827.2	0.0
-31.7	124.8	24889.8	0.0
-32.7	124.8	24952.4	0.0
-33.7	124.8	25015.0	0.0
-34.7	124.8	25077.6	0.0
-35.7	124.8	25140.2	0.0
-36.7	124.8	25202.8	0.0
-37.7	124.8	25265.4	0.0
-38.7	124.8	25328.0	0.0
-39.7	124.8	25390.6	0.0
-40.7	124.8	25453.2	0.0
-41.7	124.8	25515.8	0.0
-42.7	124.8	25578.4	0.0
-43.7	124.8	25641.0	0.0
-44.7	124.8	25703.6	0.0
-45.7	124.8	25766.2	0.0
-46.7	124.8	25828.8	0.0
-47.7	124.8	25891.4	0.0
-48.7	124.8	25954.0	0.0
-49.7	124.8	26016.6	0.0

Anchored_Deadman			
-50.7	124.8	26079.2	0.0
-51.7	124.8	26141.8	0.0
-52.7	124.8	26204.4	0.0
-53.7	124.8	26267.0	0.0
-54.7	124.8	26329.6	0.0
-55.7	124.8	26392.2	0.0
-56.7	124.8	26454.8	0.0
-57.7	124.8	26517.4	0.0
-58.7	124.8	26580.0	0.0
-59.7	124.8	26642.6	0.0
-60.7	124.8	26705.2	0.0
-61.7	124.8	26767.8	0.0
-62.7	124.8	26830.4	0.0
-63.7	124.8	26893.0	0.0
-64.7	124.8	26955.6	0.0
-65.7	124.8	27018.2	0.0
-66.7	124.8	27080.8	0.0
-67.7	124.8	27143.4	0.0
-68.7	124.8	27206.0	0.0
-69.7	124.8	27268.6	0.0
-70.7	124.8	27331.2	0.0
-71.7	124.8	27393.8	0.0
-72.7	124.8	27456.4	0.0
-73.7	124.8	27519.0	0.0
-74.7	124.8	27581.6	0.0
-75.7	124.8	27644.2	0.0
-76.7	124.8	27706.8	0.0
-77.7	124.8	27769.4	0.0
-78.7	124.8	27832.0	0.0
-79.7	124.8	27894.6	0.0
-80.7	124.8	27957.2	0.0
-81.7	124.8	28019.8	0.0
-82.7	124.8	28082.4	0.0
-83.7	124.8	28145.0	0.0

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTI LEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 15:04:33

 * SUMMARY OF RESULTS FOR *
 * ANCHORED WALL DESIGN *

I. --HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II. --SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS
 AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

LEFTSIDE SOIL PRESSURES DETERMINED BY COULOMB COEFFICIENTS

Anchored_Deadman

AND THEORY OF ELASTICITY EQUATIONS FOR SURCHARGE LOADS.

METHOD	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	-22.20	-23.89
PENETRATION (FT)	6.20	7.89
MAXIMUM BENDING MOMENT (LB-FT)	-3.5110E+04	2.8184E+04
AT ELEVATION (FT)	-10.03	-22.28
MAXIMUM SCALED DEFLECTION (LB-IN^3)	3.5767E+09	1.8556E+09
AT ELEVATION (FT)	-9.70	-8.70
ANCHOR FORCE (LB)	6.4282E+03	5.2655E+03

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 15:04:33

 * COMPLETE OF RESULTS FOR *
 * ANCHORED WALL DESIGN *
 * BY FREE EARTH METHOD *

I. --HEADING
 * KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 * TRUMAN ANNEX, KEY WEST, FLORIDA

II. --RESULTS (ANCHOR FORCE= 6428. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.30	0.0000E+00	0.	-1.9906E+09	141.51
5.30	7.5077E+01	154.	-1.5286E+09	167.45
4.30	3.1760E+02	335.	-1.0664E+09	193.39
3.30	7.5353E+02	541.	-6.0370E+08	219.34
2.30	1.4088E+03	774.	-1.3964E+08	245.28
2.00	1.6520E+03	848.	0.0000E+00	253.06
2.00	1.6520E+03	-5580.	0.0000E+00	253.06
1.30	-2.1876E+03	-5384.	3.2626E+08	305.43
0.30	-7.4069E+03	-5042.	7.8837E+08	380.23
0.00	-8.9019E+03	-4924.	9.2491E+08	402.67
-0.70	-1.2249E+04	-4639.	1.2377E+09	411.36
-1.70	-1.6681E+04	-4222.	1.6660E+09	423.76
-2.70	-2.0689E+04	-3792.	2.0655E+09	436.17
-3.60	-2.3923E+04	-3394.	2.3947E+09	447.33
-3.60	-2.3923E+04	-3394.	2.3947E+09	487.51
-3.70	-2.4260E+04	-3345.	2.4293E+09	488.78
-4.70	-2.7359E+04	-2850.	2.7512E+09	501.40
-5.70	-2.9956E+04	-2343.	3.0260E+09	514.03
-6.70	-3.2040E+04	-1822.	3.2490E+09	526.65
-7.70	-3.3596E+04	-1289.	3.4168E+09	539.27

Anchored_Deadman

-8.70	-3.4614E+04	-744.	3.5266E+09	551.90
-9.70	-3.5080E+04	-185.	3.5767E+09	564.52
-10.70	-3.4981E+04	385.	3.5662E+09	577.15
-11.70	-3.4305E+04	969.	3.4953E+09	589.77
-12.70	-3.3039E+04	1565.	3.3653E+09	602.40
-13.70	-3.1170E+04	2174.	3.1783E+09	615.02
-14.70	-2.8687E+04	2795.	2.9375E+09	627.65
-15.70	-2.5576E+04	3429.	2.6472E+09	640.27
-16.00	-2.4519E+04	3622.	2.5512E+09	644.06
-16.70	-2.1840E+04	4012.	2.3128E+09	470.84
-17.00	-2.0616E+04	4142.	2.2048E+09	396.60
-17.70	-1.7634E+04	4359.	1.9407E+09	223.39
-18.60	-1.3638E+04	4460.	1.5785E+09	0.00
-18.70	-1.3204E+04	4459.	1.5382E+09	-24.07
-19.70	-8.7992E+03	4311.	1.1129E+09	-271.53
-20.70	-4.6654E+03	3916.	6.7229E+08	-518.98
-21.70	-1.0506E+03	3273.	2.2358E+08	-766.44
-22.20	0.0000E+00	0.	0.0000E+00	-12433.56

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III. --WATER AND SOIL PRESSURES

ELEVATION (FT)	WATER PRESSURE (PSF)	<-----SOIL PRESSURES----->			
		<---LEFTSIDE---> PASSIVE (PSF)	<---LEFTSIDE---> ACTIVE (PSF)	<---RIGHTSIDE---> ACTIVE (PSF)	<---RIGHTSIDE---> PASSIVE (PSF)
6.30	0.	0.	0.	142.	4179.
5.30	0.	0.	0.	167.	4945.
4.30	0.	0.	0.	193.	5711.
3.30	0.	0.	0.	219.	6478.
2.30	0.	0.	0.	245.	7244.
2.00	0.	0.	0.	253.	7474.
1.30	44.	0.	0.	262.	7730.
0.30	106.	0.	0.	274.	8096.
0.00	125.	0.	0.	278.	8206.
-0.70	125.	0.	0.	287.	8463.
-1.70	125.	0.	0.	299.	8829.
-2.70	125.	0.	0.	311.	9196.
-3.60+	125.	0.	0.	323.	9525.
-3.60+	125.	0.	0.	363.	7472.
-3.70	125.	0.	0.	364.	7498.
-4.70	125.	0.	0.	377.	7758.
-5.70	125.	0.	0.	389.	8018.
-6.70	125.	0.	0.	402.	8278.
-7.70	125.	0.	0.	414.	8539.
-8.70	125.	0.	0.	427.	8799.
-9.70	125.	0.	0.	440.	9059.
-10.70	125.	0.	0.	452.	9319.
-11.70	125.	0.	0.	465.	9579.
-12.70	125.	0.	0.	478.	9839.
-13.70	125.	0.	0.	490.	10099.
-14.70	125.	0.	0.	503.	10359.
-15.70	125.	0.	0.	515.	10619.
-16.00	125.	0.	0.	519.	10697.
-16.70	125.	182.	9.	528.	10879.
-17.00	125.	260.	13.	532.	10957.
-17.70	125.	442.	21.	541.	11139.
-18.60	125.	677.	33.	552.	11374.
-18.70	125.	702.	34.	553.	11399.

Anchored_Deadman					
-19.70	125.	962.	47.	566.	11659.
-20.70	125.	1222.	59.	579.	11920.
-21.70	125.	1482.	72.	591.	12180.
-22.20+	125.	1612.	78.	598.	12310.
-22.20+	125.	24295.	0.	0.	26253.

Anchored_Deadman				
-19.70	1.6431E+04	5473.	3.1370E+08	-271.53
-20.70	2.1727E+04	5078.	1.7379E+08	-518.98
-21.70	2.6505E+04	4436.	7.1353E+07	-766.44
-22.20	2.8137E+04	1111.	3.6789E+07	-12530.24
-22.70	2.6640E+04	-8072.	1.4268E+07	-24201.62
-23.70	6.4570E+03	-32305.	6.6998E+04	-24264.22
-24.70	0.0000E+00	-36838.	0.0000E+00	-24275.91

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
 BY CLASSICAL METHODS
 DATE: 18-AUGUST-2010 TIME: 15:04:33

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF
 ELASTICITY IN PSI TIMES PILE MOMENT
 OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
 IN INCHES.

 * COMPLETE OF RESULTS FOR *
 * ANCHORED WALL DESIGN *
 * BY FIXED EARTH METHOD *

III.--WATER AND SOIL PRESSURES

I.--HEADING
 ' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
 ' TRUMAN ANNEX, KEY WEST, FLORIDA

II.--RESULTS (ANCHOR FORCE= 5266. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.30	0.0000E+00	0.	-1.1542E+09	141.51
5.30	7.5077E+01	154.	-8.8670E+08	167.45
4.30	3.1760E+02	335.	-6.1906E+08	193.39
3.30	7.5353E+02	541.	-3.5084E+08	219.34
2.30	1.4088E+03	774.	-8.1285E+07	245.28
2.00	1.6520E+03	848.	0.0000E+00	253.06
2.00	1.6520E+03	-4417.	0.0000E+00	253.06
1.30	-1.3738E+03	-4222.	1.9022E+08	305.43
0.30	-5.4303E+03	-3879.	4.5935E+08	380.23
0.00	-6.5765E+03	-3761.	5.3857E+08	402.67
-0.70	-9.1102E+03	-3477.	7.1916E+08	411.36
-1.70	-1.2379E+04	-3059.	9.6328E+08	423.76
-2.70	-1.5224E+04	-2629.	1.1861E+09	436.17
-3.60	-1.7412E+04	-2231.	1.3643E+09	447.33
-3.60	-1.7412E+04	-2231.	1.3643E+09	487.51
-3.70	-1.7633E+04	-2183.	1.3826E+09	488.78
-4.70	-1.9569E+04	-1688.	1.5488E+09	501.40
-5.70	-2.1004E+04	-1180.	1.6812E+09	514.03
-6.70	-2.1924E+04	-660.	1.7773E+09	526.65
-7.70	-2.2319E+04	-127.	1.8357E+09	539.27
-8.70	-2.2173E+04	419.	1.8556E+09	551.90
-9.70	-2.1476E+04	977.	1.8372E+09	564.52
-10.70	-2.0215E+04	1548.	1.7819E+09	577.15
-11.70	-1.8376E+04	2132.	1.6916E+09	589.77
-12.70	-1.5947E+04	2728.	1.5697E+09	602.40
-13.70	-1.2916E+04	3336.	1.4204E+09	615.02
-14.70	-9.2704E+03	3958.	1.2488E+09	627.65
-15.70	-4.9968E+03	4592.	1.0612E+09	640.27
-16.00	-3.5904E+03	4784.	1.0030E+09	644.06
-16.70	-9.7778E+01	5175.	8.6517E+08	470.84
-17.00	1.4746E+03	5305.	8.0592E+08	396.60
-17.70	5.2709E+03	5522.	6.6900E+08	223.39
-18.60	1.0316E+04	5622.	4.9949E+08	0.00
-18.70	1.0863E+04	5621.	4.8197E+08	-24.07

ELEVATION (FT)	WATER PRESSURE (PSF)	SOIL PRESSURES			
		LEFTSIDE PASSIVE (PSF)	LEFTSIDE ACTIVE (PSF)	RIGHTSIDE ACTIVE (PSF)	RIGHTSIDE PASSIVE (PSF)
6.30	0.	0.	0.	142.	4179.
5.30	0.	0.	0.	167.	4945.
4.30	0.	0.	0.	193.	5711.
3.30	0.	0.	0.	219.	6478.
2.30	0.	0.	0.	245.	7244.
2.00	0.	0.	0.	253.	7474.
1.30	44.	0.	0.	262.	7730.
0.30	106.	0.	0.	274.	8096.
0.00	125.	0.	0.	278.	8206.
-0.70	125.	0.	0.	287.	8463.
-1.70	125.	0.	0.	299.	8829.
-2.70	125.	0.	0.	311.	9196.
-3.60+	125.	0.	0.	323.	9525.
-3.60+	125.	0.	0.	363.	7472.
-3.70	125.	0.	0.	364.	7498.
-4.70	125.	0.	0.	377.	7758.
-5.70	125.	0.	0.	389.	8018.
-6.70	125.	0.	0.	402.	8278.
-7.70	125.	0.	0.	414.	8539.
-8.70	125.	0.	0.	427.	8799.
-9.70	125.	0.	0.	440.	9059.
-10.70	125.	0.	0.	452.	9319.
-11.70	125.	0.	0.	465.	9579.
-12.70	125.	0.	0.	478.	9839.
-13.70	125.	0.	0.	490.	10099.
-14.70	125.	0.	0.	503.	10359.
-15.70	125.	0.	0.	515.	10619.
-16.00	125.	0.	0.	519.	10697.
-16.70	125.	182.	9.	528.	10879.
-17.00	125.	260.	13.	532.	10957.
-17.70	125.	442.	21.	541.	11139.
-18.60	125.	677.	33.	552.	11374.
-18.70	125.	702.	34.	553.	11399.
-19.70	125.	962.	47.	566.	11659.
-20.70	125.	1222.	59.	579.	11920.
-21.70	125.	1482.	72.	591.	12180.
-22.20+	125.	1612.	78.	598.	12310.
-22.20+	125.	24295.	0.	0.	26253.
-22.70	125.	24326.	0.	0.	26284.
-23.70	125.	24389.	0.	0.	26347.
-24.70	125.	24452.	0.	0.	26409.

Anchored_Deadman

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 18-AUGUST-2010

TIME: 15:04:41

* PRELIMINARY DESIGN DATA FOR *
* FREE EARTH DESIGN IN SAND *

I.--HEADING
' KEY WEST NAVAL AIR STATION (BREAKWATER 497)
' TRUMAN ANNEX, KEY WEST, FLORIDA

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.78
ANCHOR HEIGHT RATIO (BETA) = 0.15

SHEET PILE DATA:

<SECTION PROPERTIES> (PER FOOT OF WALL)					
SHEET PILE NAME	SECTION MODULUS (IN ³)	MOMENT OF INERTIA (IN ⁴)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)	
PZ40	60.70	490.80	2.40E+04	2.90E+07	
PZ38	46.80	280.80	2.40E+04	2.90E+07	
PZ35	48.50	361.20	2.40E+04	2.90E+07	
PZ32	38.30	220.40	2.40E+04	2.90E+07	
PZ27	30.20	184.20	2.40E+04	2.90E+07	
PZ22	18.10	84.40	2.40E+04	2.90E+07	
PLZ25	32.80	223.25	2.40E+04	2.90E+07	
PLZ23	30.20	203.75	2.40E+04	2.90E+07	

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H ⁴ /EI)	ROWE'S MOMENT REDUCTION COEF.		RATIO OF ALLOWABLE MOMENT TO REDUCED FREE EARTH MOMENT	
		LOOSE	DENSE	LOOSE	DENSE
PZ40	-4.33	1.00*	1.00*	3.46	3.46
PZ38	-4.09	1.00*	1.00*	2.67	2.67
PZ35	-4.20	1.00*	1.00*	2.76	2.76
PZ32	-3.99	1.00*	1.00*	2.18	2.18
PZ27	-3.91	1.00*	1.00*	1.72	1.72
PZ22	-3.57	1.00*	1.00*	1.03	1.03
PLZ25	-3.99	1.00*	1.00*	1.87	1.87
PLZ23	-3.95	1.00*	1.00*	1.72	1.72

* REDUCTION NOT APPLICABLE DUE TO LOG(H⁴/EI) LESS THAN -3.5 OR GREATER THEN -1.5.

PART 3 SECTION H

ADDITIONAL REQUIREMENTS

There are some specific minor requirements for each of the Switchgear Enclosures that are not presented in the included plans and specifications but shall be included in the scope of this project and also in the submitted bid costs for each distinct enclosure. The sections below describe these requirements in detail:

1. SW#4 - Replace the existing Low Pressure Relief Device with a Qualitrol XPRD as described in the included catalog cut for “Qualitrol XPRD.” This replacement shall include appropriate testing of the transformer, transformer oil, and the reestablishment of the transformer’s nitrogen “blanket.” (Note that similar replacements have already been completed for SW#1 through SW#3.)
2. SW#1 through SW#4 – Plumb each of the XPRD pressure-relief devices to a containment tank using piping configuration per the included catalog cuts:
 - a. One such installation at each switchgear enclosure location.
 - b. Containment tank shall be new, clean, labeled, and restrained 55-gallon steel drum.
 - c. The tank shall be vented with a 1½” ID pipe topped by a 180° vent hood.
 - d. Piping shall be configured with disconnects such that the tank may be replaced.
 - e. Approved shop drawings required prior to procurement.
3. SW#4 – Sheets C141 and C142 of the Switchgear Enclosures drawing package depict removal and reconfiguration of existing fencing at SW#4. The fencing product to be used is specified as “Ameristar Impasse Gauntlet 3-rail 8-foot” for which catalog cuts are included in this section. Approved shop drawings of this installation are required prior to material procurement.

QUALITROL® XPRD

Extra protection relief device



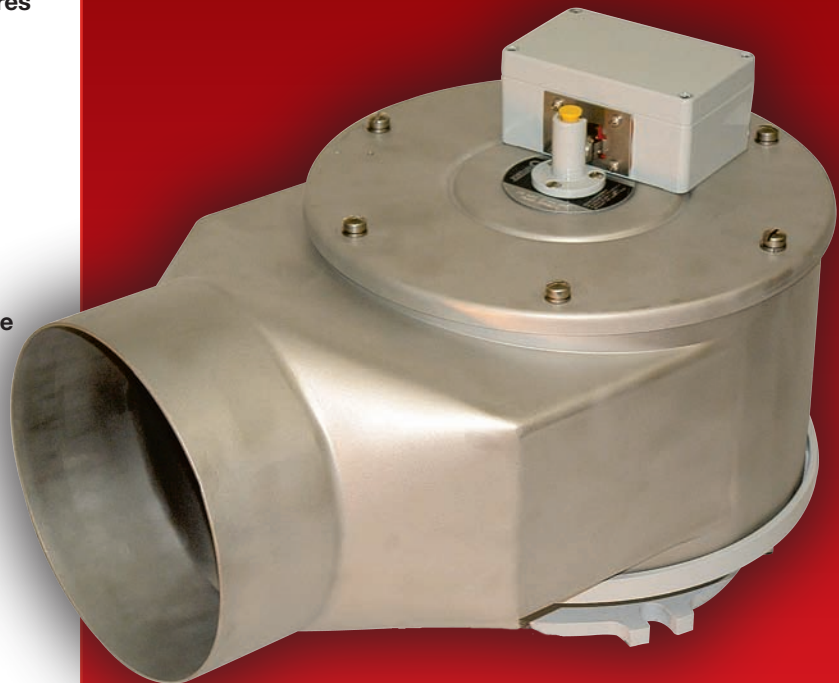
50% more tank protection during overpressure events

- Reduce environmental impact and clean up
- Protect workers and assets from dangerous oil exhaust
- Corrosion resistant construction
- Highly flexible installation

Product Summary

Description Mechanical overpressure protection device with integrated directional discharge outlet. Provides pressure relief and insulating fluid containment (requires optional piping) on transformers and load tap changers during overpressure conditions. Automatically reseals once pressure has fallen.

Application For maximum overpressure protection on critical oil filled transformers, load tap changers and other liquid filled apparatus.



QUALITROL® XPRD extra protection relief device

50% more tank protection during overpressure events

- Larger diameter throat and discharge outlet for increased flow
- Flow rate of 12,600 SCFM—independently verified by third party, exceeds IEC and CE standards
- Dual spring-loaded valve for precise operation and resealing
- Patented single-piece, dual-acting gasket for quick, consistent operation with leak-free resealing

Reduce environmental impact and clean up

- Improved environmental protection with directed flow for easy clean up
- Optional piping can be used to discharge to containment vessels

Protect workers and assets from dangerous oil exhaust

- Directed flow with piped discharge dramatically minimized risk of hot oil reaching workers and equipment
- Improved environmental protection with directed flow for easy clean up
- Optional piping can be used to discharge to containment

Corrosion resistant construction

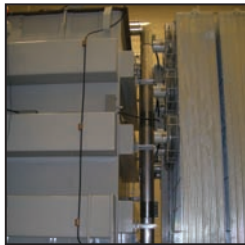
- Salt water resistant stainless steel cover and valve components
- Springs made from ASTM A229 oil-tempered spring wire with corrosion resistant epoxy/polyester coating in accordance with ASTM B117-90
- Alarm switch housing and mounting flange made from die-cast aluminum with chromate and polyester coating
- Aluminum alarm indicator assembly

Highly flexible installation

- Utilizes same bolt pattern as the industry standard QUALITROL large pressure relief device enabling direct retrofit
- Variety of alarm switches available to fit various alarm and wiring schemes
- Rotatable discharge outlet for easy installation of discharge piping
- Variety of discharge piping, flanges, and animal screens available

Components and accessories

Aluminum piping (PPE-600-1, CPG-601-1)



- Most robust solution for directed flow
- Optional bolt type compression coupling design does not require welding (CPG-602-1)
- Large radius elbow (ELB-600-1) insures maximum flow, a 90 degree mitered elbow (ELB-601-1) is available for more compact installation
- Compatible with protective screen (SCN-600-1)

PVC piping option (KIT-046)



- Most affordable solution for directed flow
- Threaded PVC adaptors available (ADP-635-X)
- Compatible with protective screen (SCN-600-1)

Protective screen (SCN-600-1)



- Stepped radius allows for mounting to various diameter piping
- Designed to mount directly to the QUALITROL XPRD or QUALITROL Aluminum and PVC piping



TECHNICAL SPECIFICATIONS

Mechanical	Recommended tank opening	171.5 mm [6.75"]	
	Shield turning radius:	323.3 mm [12.73"]	
Electrical	Switch options	10 A @ 125/250 VAC (standard) 0.5 A @ 125 VDC non-inductive 0.25 A @ 250 VDC non-inductive High DC (SPDT only): 10 A @ 125 VDC Low level circuit (gold plated contacts): 0.1 A @ 125 VAC DPDT: 10 A @ 125/250 VAC, 0.5 A @ 125 VDC non-inductive, 0.25 A @ 250 VDC non-inductive, 0.25 A @ 250 VDC non-inductive	
	Dielectric strength	2000 VAC, 50/60 Hz for 1 minute	
	Environmental	Ambient operating temperature	-40°C to 80°C (-40°F to 176°F) tank fluid at 30°C
		Salt spray testing	Materials and coating withstand 1000 hours of salt spray testing per ASTM B:117 with no appreciable loss of strength in any structural members
		Switch enclosure	Meets IP54 requirements
Materials	Base flange	Cast aluminum, ASA 70 light gray polyester powder coat	
	Ring	Cast aluminum, chromate conversion coated	
	Valve	Stainless steel, sealing areas lubricated with silicone based lubricant	
	Indicator (semaphore)	Nylon or epoxy/polyester painted aluminum	
	Spring	ASTM A229 oil-tempered spring wire, epoxy/polyester painted	
	Gaskets	Nitrile (standard) or viton (optional)	
	Shield/hardware	Stainless steel	
	Alarm switch enclosure	Die-cast aluminum with polyester powder coats	
Relief protection	Flow rate	12,600 standard feet ³ per minute at 15 PSI with 10 PSI operating pressure	

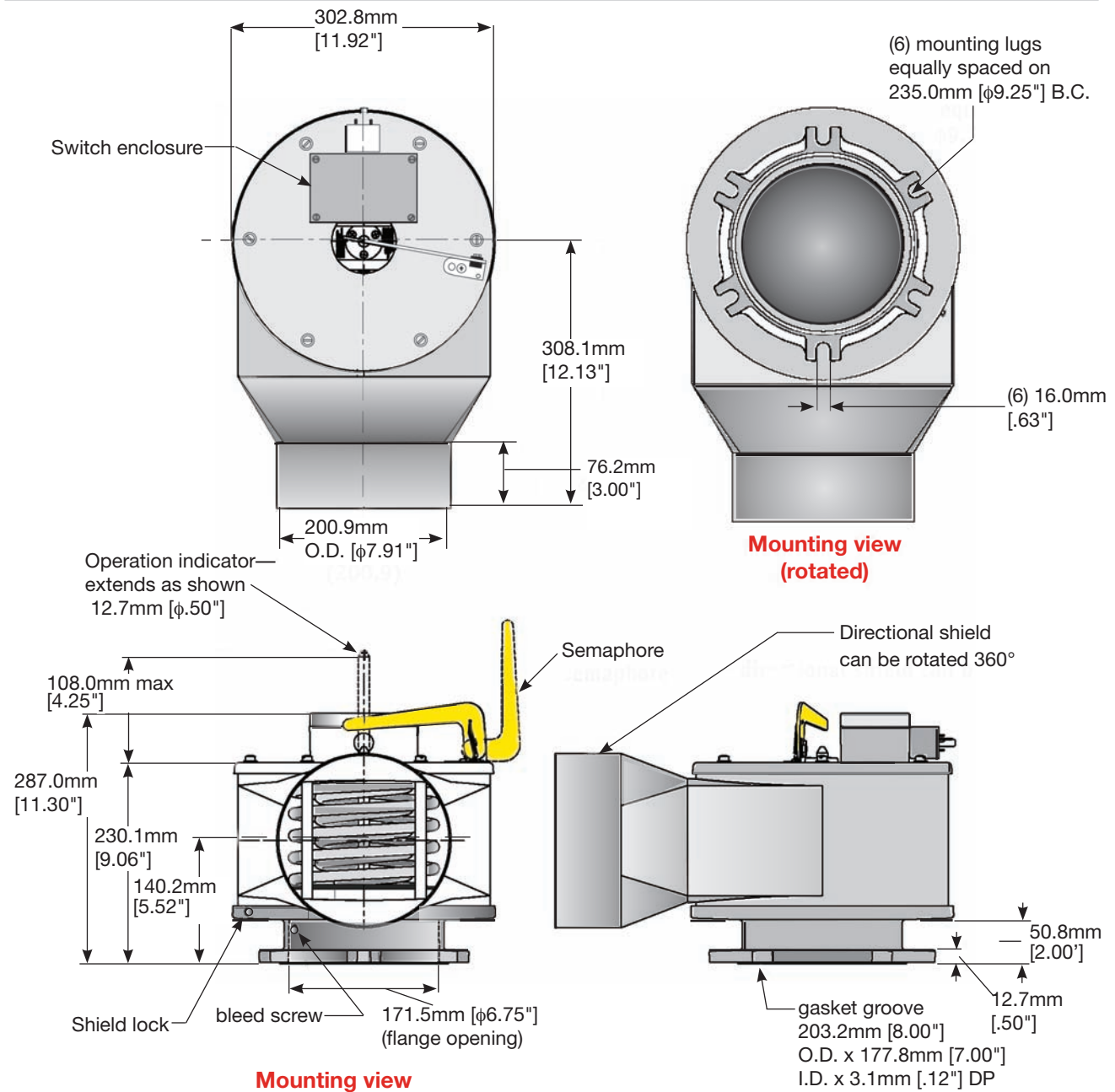


Don't see what you need?

QUALITROL regularly creates models with special customer requirements. Contact your local sales representative or QUALITROL Application Engineer to review your special requirements.



QUALITROL® XPRD extra protection relief device



QUALITROL® Field Services

To further improve reliability, QUALITROL provides comprehensive education and on-site commissioning services, maintenance contracts and technical support to all customers worldwide. Emergency response is available on all products and services.

About QUALITROL®

QUALITROL® manufactures substation transformer monitoring and protection devices used by electric utilities and manufacturing companies. It is the global leader in sales and installations of transformer asset protection equipment, fault recorders and fault locators. Established in 1945, QUALITROL produces thousands of different types of products on demand, each customized to customers' unique requirements.

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Qualitrol

XPRD Options for Exhausting Oil or Gas Discharge

BACKGROUND

The Qualitrol Series XPRD00 Extra Protection Relief Device is equipped with a Shield designed to mate with Schedule 40 pipe so that any oil or gas discharged during operation can be safely routed away from personnel and/or to a containment vessel.

Qualitrol now offers an assortment of 8 inch pipe and fittings to accommodate a wide range of XPRD locations and tank sizes. You can pick and choose the number of pipe lengths, elbows, and couplings you need.

Qualitrol also offers a screen to cap the end of the pipe or XPRD directional shield, preventing animals and foreign debris from hindering the operation of the XPRD.

OPTIONS

1. **Metal Piping Options:** Sold as separate parts are PPE-600-1 (Aluminum Schedule 10, 5 FT Straight Pipe), CPG-601-1 (Aluminum Schedule 40, Coupling Adaptor), CPG-602-1 (Steel Schedule 10, Compression Coupling), ELB-600-1 (Aluminum Schedule 10, 90° elbow with 32" Radius), ELB 601-1 (Aluminum Schedule 10, 90° mitered elbow). All parts include Stainless steel fastening screws and instructions.
2. **PVC Piping Options:** KIT-046 consists of (1) 90° elbow, (1) coupling, (1) 5 ft. length of Schedule 40 PVC pipe, and a customer-specified number of 5 ft. lengths of Schedule 80 PVC pipe. Stainless steel fastening screws are also provided. Threaded adaptors are also available (ADP-635-1, ADP-635-2).
3. **Protective Screen:** The protective screen (SCN-600-1) ensures that animals and foreign debris do not enter the piping or XPRD. It can be mounted to either XPRD directional shield or to any of the available piping options from Qualitrol.
4. **Flange Adaptor:** The flange (FLA-704-1) allows a user to mate piping to the XPRD based on a 6 bolt hole pattern.

FASTENING TO THE XPRD

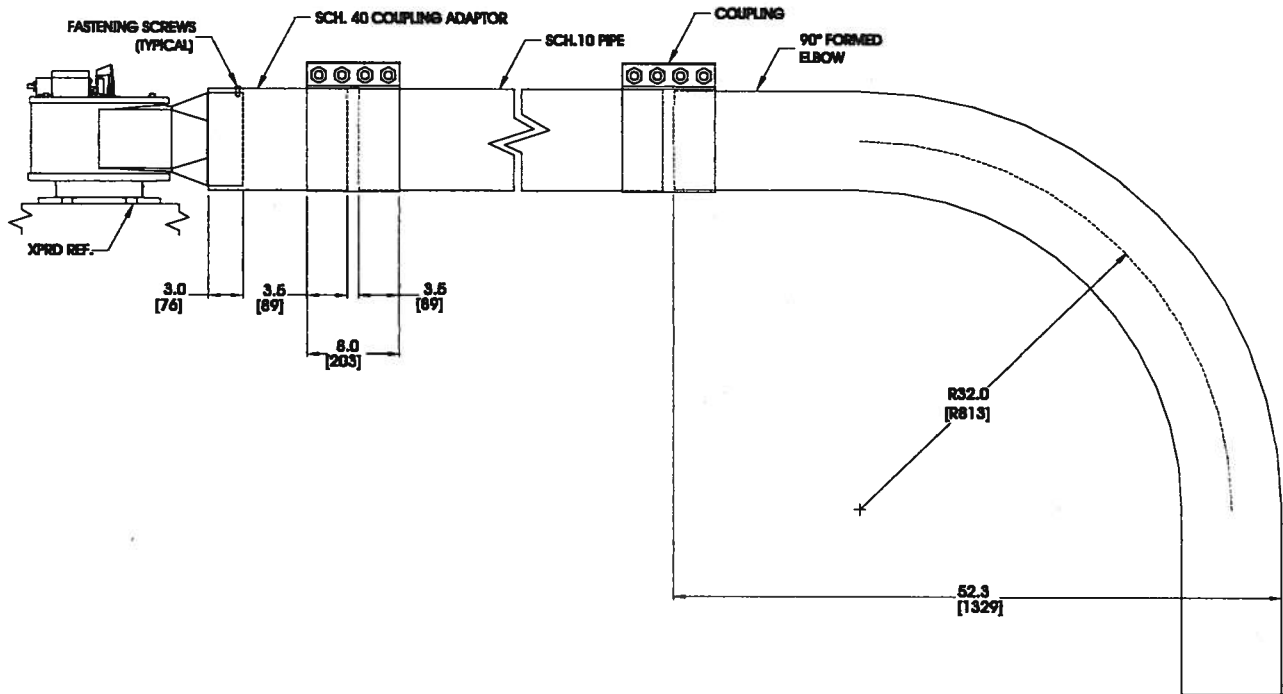
Slip the white adaptor pipe (for PVC option) or the coupling adaptor (CPG-601-1 for Metal Piping option) over the XPRD shield opening and drill (3) equally spaced .156 diameter holes around the pipe, approximately 1 inch from the end of the pipe. Fasten using the supplied screws. Repeat for the fittings and additional pipe (for PVC option). Drilling and fastening with screws is also recommended for the compression coupling – do not rely only on the compression coupling to maintain the assembly.

NOTE: The pipe must be independently supported; Qualitrol recommends using clamps or hangers to fasten the piping securely to the tank.

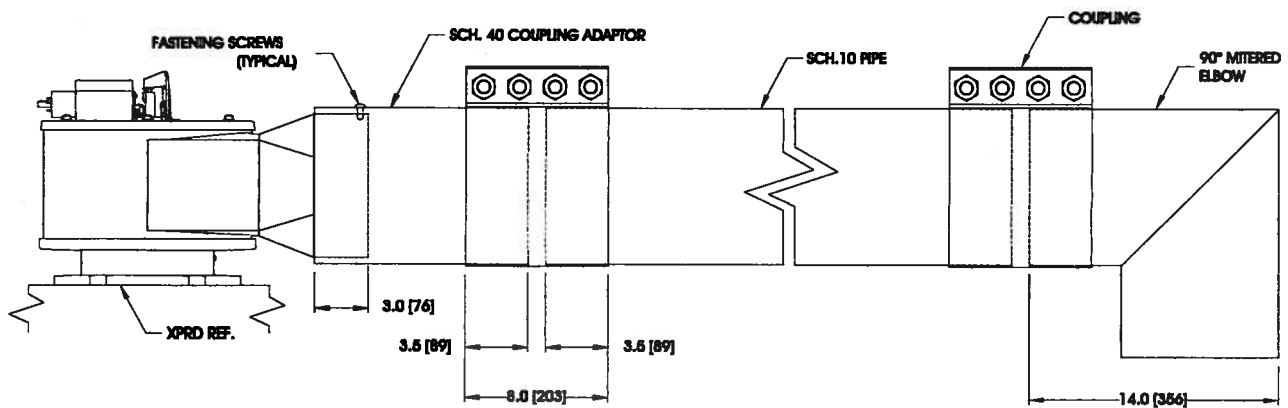
ASSEMBLY SPECIFICATIONS (METAL PIPING)

Representations of typical piping configurations using aluminum piping are shown below with part lengths and approximate fitting overlaps.

Configuration with Aluminum Schedule 10, 90° Elbow with 32" Radius



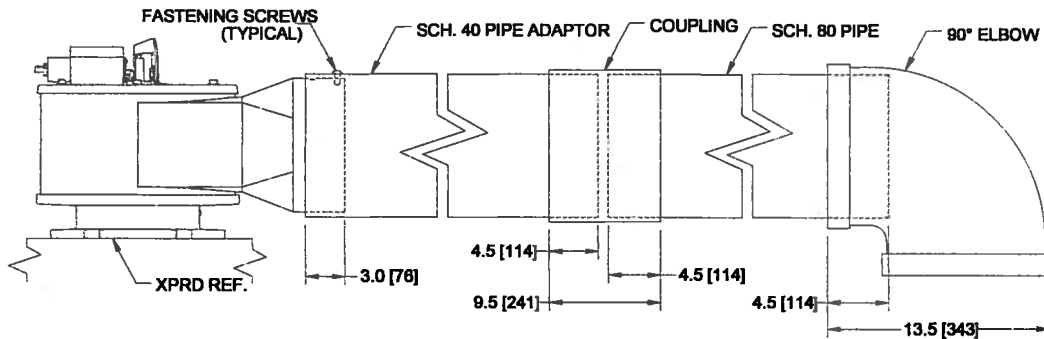
Configuration with Aluminum Schedule 10, 90° Mitered Elbow



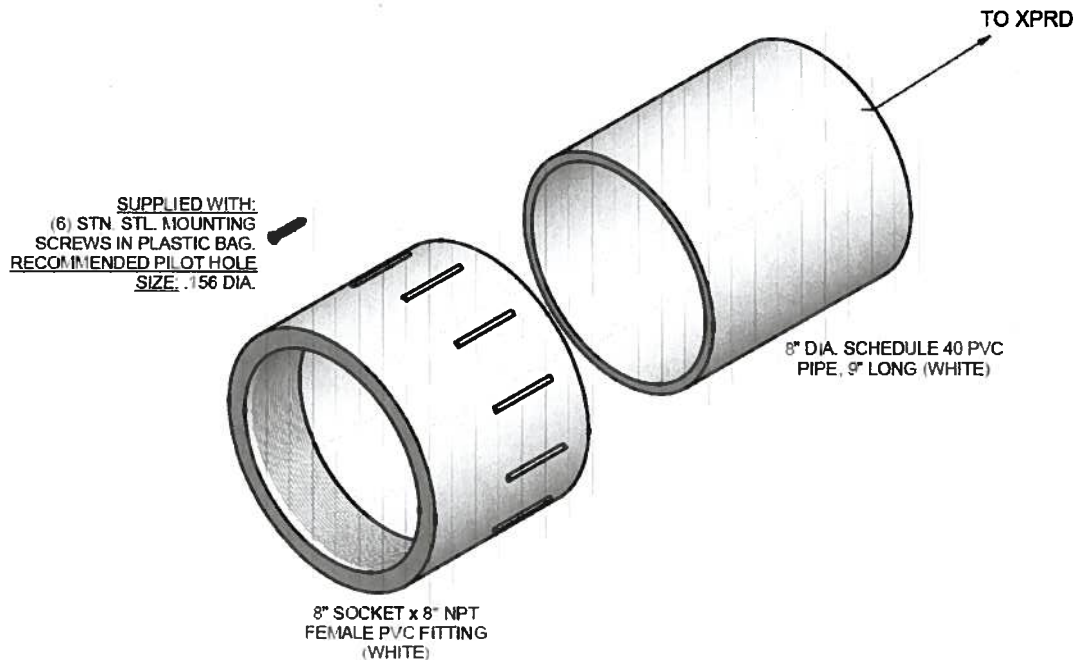
PVC PIPING OPTIONS (KIT-046)

A representation of a typical PVC piping configuration is shown below with part lengths and approximate fitting overlaps. Additional threaded PVC options are also shown (ADP-635-1, ADP-635-2). PVC should be painted to help maintain properties under long term UV exposure.

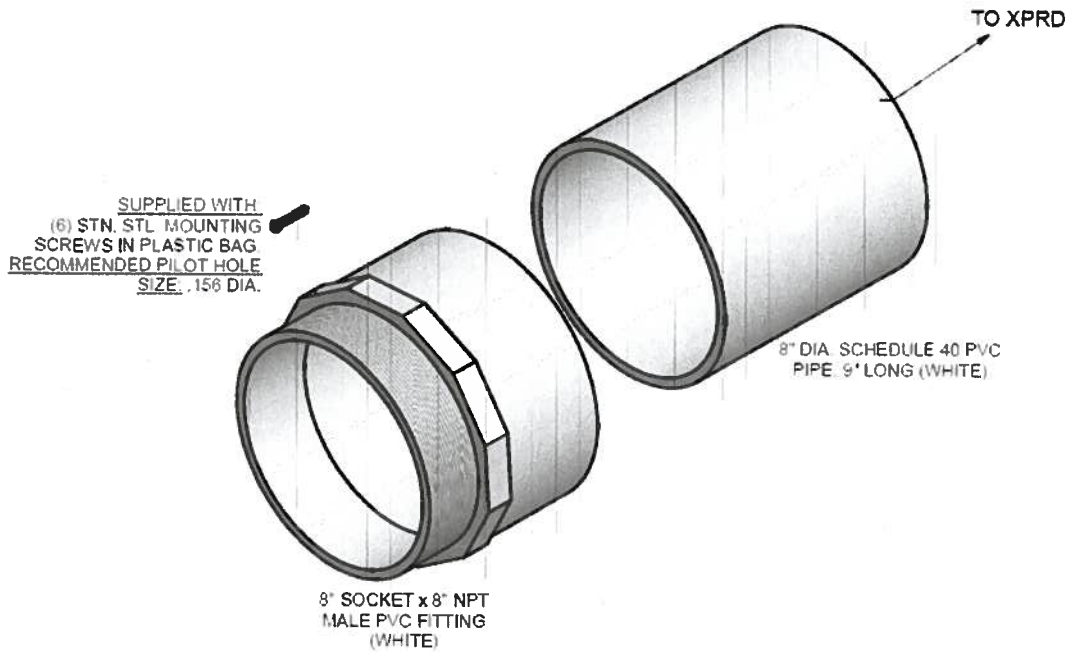
Configuration with PVC Piping



Threaded PVC Adaptor (ADP-635-1)

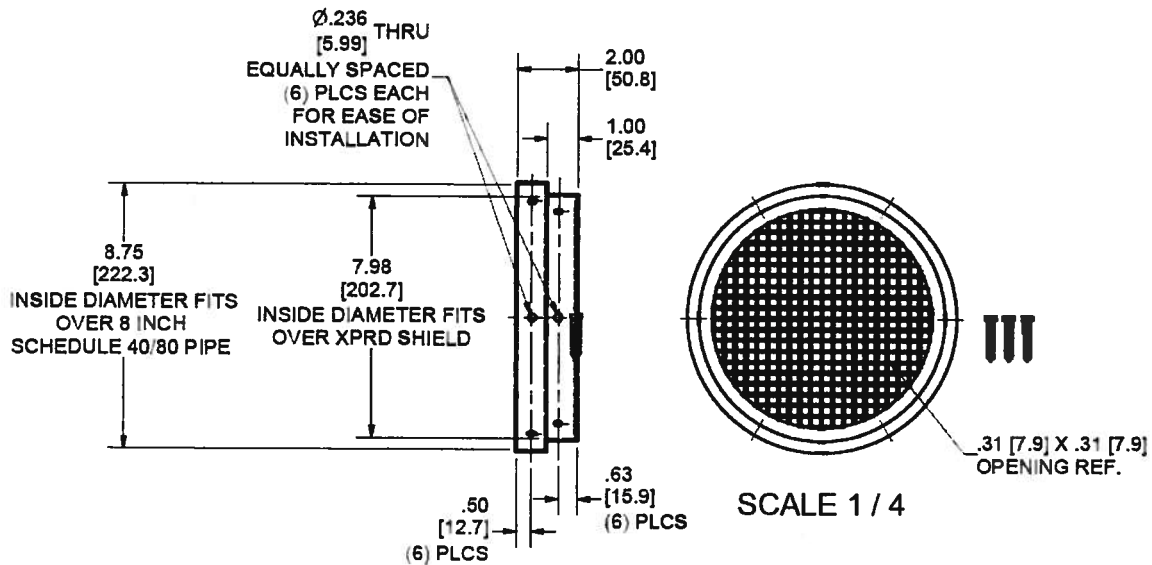


Threaded PVC Adaptor (ADP-635-2)



SCREEN OPTION (SCN-600-1)

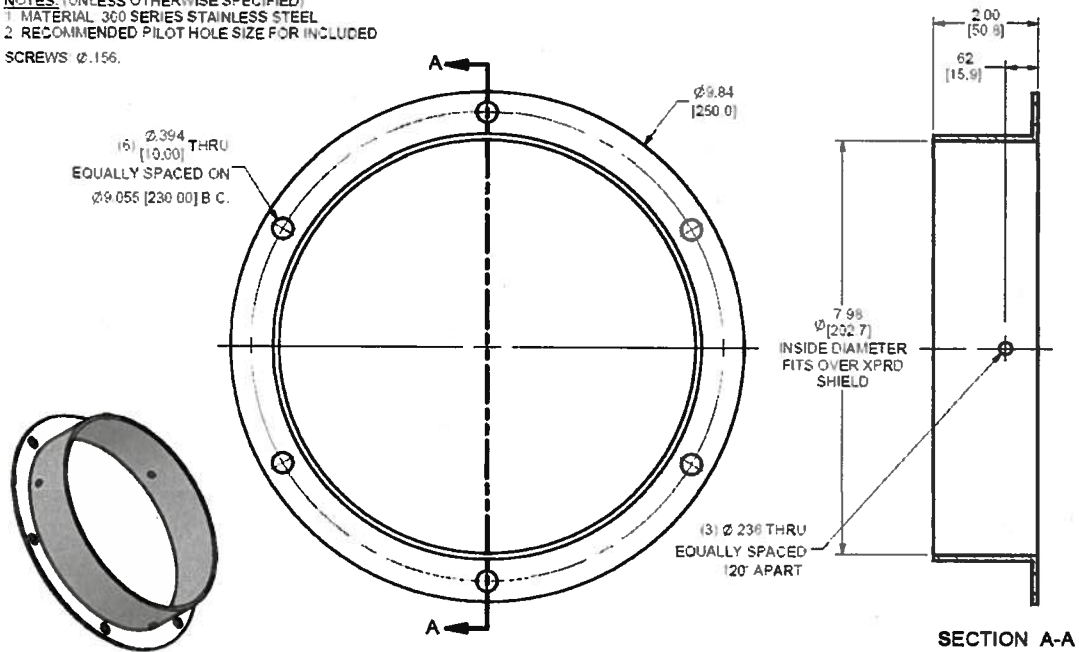
Qualitrol's stainless steel screen can be mounted directly to the XPRD directional shield or any of the available piping, details are shown below. The screen includes fastening screws.



MOUNTING FLANGE OPTION (FLA-704-1)

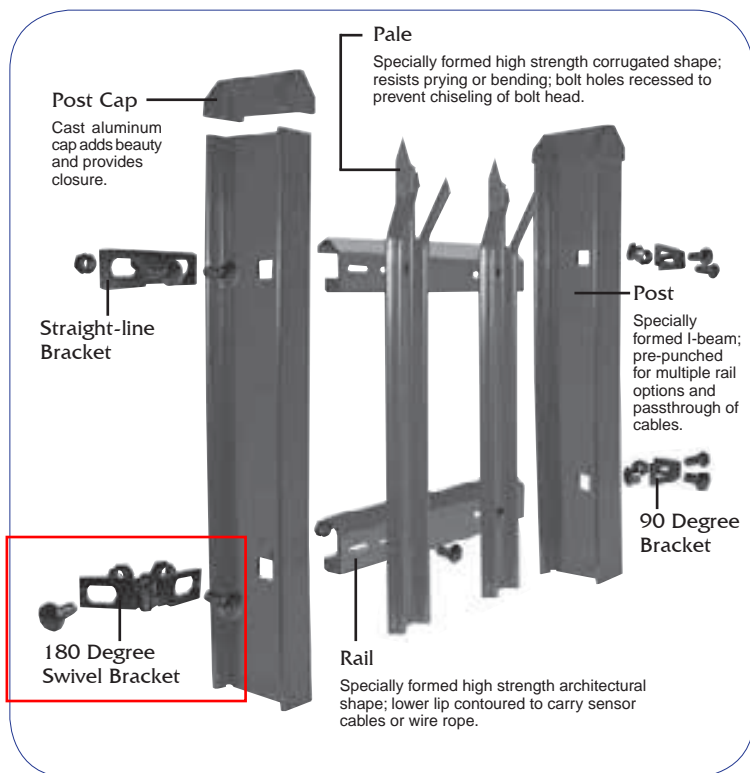
This flange can be mounted directly to the XPRD directional shield in order to mount piping based on a six bolt hole pattern, details are shown below.

NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. MATERIAL 300 SERIES STAINLESS STEEL
 2. RECOMMENDED PILOT HOLE SIZE FOR INCLUDED
 SCREWS: ϕ .156.



Detect Delay
IMPASSE®
 Deter Deny
 Ornamental Pale Security Fence

Traditional security fences of chain-link or wire mesh and barbed razor tape are no longer enough to meet today's increased security demands. They do not delay serious attacks or intrusion attempts for more than a few seconds. Ameristar's (Patent Pending) Impasse Security Fence offers the resistive strength of heavy-duty steel spears secured vertically to a framework of specially formed steel rails and I-beam posts. The stylish design of the Impasse, combined with its strength and security, provides a successful first line of defense. The structural configuration of the Impasse system not only delays aggressive attacks, but also allows for the seamless integration of additional security features such as anti-ram cables, sensors and alarm systems.



Standard security features of the Impasse® fence include the unique roll-formed Impasse® I-beam which acts as a strong barrier to support the entire fence system. The mounting bracket, a solid steel flat bar, fits through slotted holes pre-punched into the post. Heavy stainless steel tamperproof nuts and bolts attach adjacent rails to either end of the mounting bracket, ensuring a solid and secure connection. Tamperproof carriage bolts fit snugly into the recessed depression on the face of each pale, deterring attempts to pry or chisel the bolt head.

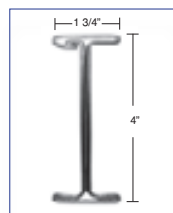


Break-Away Hex Nut

Stainless steel security nut prevents tampering or removal by normal tools.

The Impasse® Pale (picket) is designed with a special corrugated shape to ensure greater resistance to bending loads, particularly with attempts at pale separation.

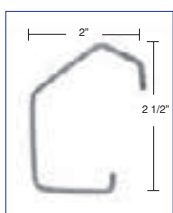
Impasse® I-Beam



Structural Parameters	Impasse® I-Beam	Std RSJ H-Post	Square Post		Round Post	
Architectural Profile of Post						
Bending Strength (lb/in)	93,700	68,875	36,950	54,520	24,400	43,900

NOTE: Materials roll-formed to achieve a double wall effective thickness of 0.200"

Impasse® Rail



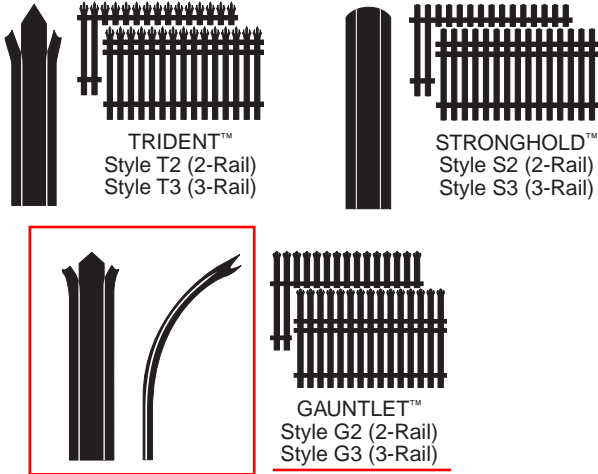
Structural Parameters	Impasse® Rail	Std RSA Rail	U-Channel Rail	Square Rail	Round Rail	
Architectural Profile of Rail						
		2" x 2-1/2"	1-1/2" x 1-3/8"	1-1/2" x 1-1/2"	1-5/8" Dia	
Design Load (Vert)	P _{vd} 6' Span	425	338	178	211	191
	P _{vd} 8' Span	319	253	134	158	143



COMPONENT SIZES

System	Pales	Rails	Posts
Impasse® High Security	3/4" x 2-3/4"	2" x 2-1/2"	1-3/4" x 4"

STYLES



Also available 4-Rail and 5-Rail

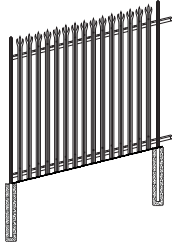
COLORS

Request Color Chip samples for actual color



BIASABILITY

No Stair Stepping Required



Panel will rack over 30 degrees without special drilling or assembly operations.

GATES



Contact the Ameristar Architectural Department for detailed information and literature on gates.

WIND LOADING

Height (FT)	Rail Length	I-Post Size	Impasse® Wind Load Capacity Factor (PSF)	Wind Speed Capacity (3 Second Gust) (MPH)
6	6	1-3/4x4x12Ga	100.3	206.8
	8	1-3/4x4x12Ga	75.3	179.1
7	6	1-3/4x4x12Ga	73.8	177.4
	8	1-3/4x4x12Ga	55.3	153.5
8	6	1-3/4x4x12Ga	56.5	155.2
	8	1-3/4x4x12Ga	42.4	134.4
9	6	1-3/4x4x12Ga	44.6	137.9
	8	1-3/4x4x12Ga	33.5	119.5
10	6	1-3/4x4x12Ga	36.1	124.1
	8	1-3/4x4x12Ga	27.1	107.5

Note: Mph calculated using ANSI/ASCE 7-02, "American Society of Civil Engineers Minimum Design Loads for Buildings and Other Structures" Exposure Category C (open terrain with scattered obstructions having lengths generally less than 30 feet). For wind loading applicable to a particular specification, consult the appropriate Building Code.

PERMACOAT® FINISH

See Pages 4 and 5 for a detailed discussion of the PermaCoat® process and its comparative advantages over other coating systems.

AVAILABILITY

Shipping

Impasse® security fence components (e.g., pales, rails, posts, etc.) are carefully layered in bulk on special pallets to ensure the most economical damage-free shipping.

Ordering Information

To order, simply specify the fence or gate design series, color and height desired. Then figure and provide the quantities needed. Contact Ameristar® for the nearest distributor or if any other assistance is needed.

WARRANTY

A written 15 year limited warranty is extended on Ameristar's Impasse® fence systems. Call Ameristar® for a copy.

MAINTENANCE

Little or no maintenance is required for the fence and gate systems supplied by Ameristar®. The PermaCoat® epoxy and polyester coated steel in Impasse® will remain corrosion free for years to come. Damages to coated surfaces can be readily covered with Ameristar's matching custom finishes (either spray or paint pen application).

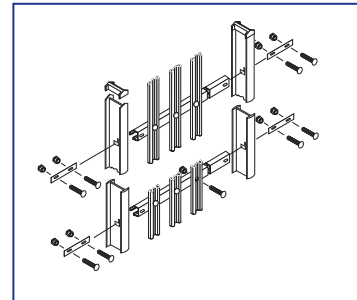
Trident™



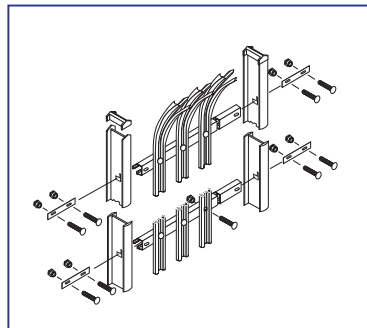
The Impasse® Trident™ is designed for high-risk security applications. It is the most suited first line of defense to surround a military installation, a government complex, an airport or seaport, a nuclear or chemical plant, a munitions facility or armory, a reservoir, or any other facility in need of the utmost protection from the possibility of attack. High-tensile steel corrugated pales rise above the topmost rail and terminate with a menacing triple-pointed and splayed spear tip.

Stronghold™

The blunt slightly rounded tip of the Stronghold™ is ideal for facilities like schools, hospitals, sports complexes, racetracks and other public situations where strength is necessary, but safety of the general populace is also an important design consideration.



Gauntlet®



The Gauntlet® is the most serious Impasse® design as it couples the fearsome triple point with an outward curve that discourages attempts to gain entry by climbing. Barbed tape can be attached to make an even more difficult obstacle.

CONSTRUCTION SPECIFICATION

SECTION 32 31 00 - ARCHITECTURAL METAL FENCE

Impasse® - For High-Risk Security Assets and Facilities

(MEETS "BUY AMERICAN" DOMESTIC PROCUREMENTS)

PART 1 – GENERAL

1.01 WORK INCLUDED

The contractor shall provide all labor, materials and appurtenances necessary for installation of the steel corrugated pale fence system defined herein at ([specify project site](#)).

1.02 RELATED WORK

Section 022 __ - Earthwork
Section 030 __ - Concrete

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total steel corrugated pale fence system of the Ameristar® Impasse® ([specify Trident™, Stronghold™ or Gauntlet®](#)) design. The system shall include all components (i.e., pales, rails, posts, gates and hardware) required.

1.04 QUALITY ASSURANCE

The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process. ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus. ASTM D523 - Test Method for Specular Gloss. ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact). ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.

1.06 SUBMITTAL

The manufacturer's literature shall be submitted prior to installation.

1.07 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials

shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

PART 2 – MATERIALS

2.01 MANUFACTURER

- A. The steel corrugated pale fence system shall conform to Ameristar® Impasse® ([specify Trident™, Stronghold™ or Gauntlet®](#)) ([specify number of rails](#)) style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.
- B. The entire fence system, and all associated gates, accessories, fittings, and fasteners shall be obtained from a single source.

2.02 MATERIAL

- A. Steel material for fence framework (i.e., corrugated pales, rails and posts) when galvanized prior to forming, shall conform to the requirements of ASTM A924/A924M, with a minimum yield strength of 45,000 psi (344 MPa). The steel shall be hot-dip galvanized to meet the requirements of ASTM A653/A653M with a minimum zinc coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
- B. The manufactured galvanized framework shall be subjected to the PermaCoat® thermal stratification coating process (high-temperature, in-line, multi-stage, multi-layer) including, as a minimum, a six-stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The base coat shall be a thermosetting epoxy powder coating (gray in color) with a minimum thickness of 2 mils (0.0508mm). The topcoat shall be a "no-mar" TGIC polyester powder coat finish with a minimum thickness of 2 mils (0.0508mm). The color shall be ([specify Black, Bronze, White or Desert Sand](#)). The stratification-coated framework shall be capable of meeting the performance requirements for each quality characteristic shown in Table 1.

- C. Material for corrugated pales shall have a nominal material thickness of 0.075 inches. The cross-sectional shape of the rails shall conform to the manufacturer's Impasse® rail design with a nominal thickness of 0.100 inches. Pre-drilled holes in the Impasse® rail shall be spaced 6" o.c. Tamperproof fasteners shall be used to fasten each pale to each rail. Posts shall conform to the manufacturer's Impasse® double wall I-Beam design with a nominal membrane thickness of 0.100 inches (0.200" effective wall thickness).

2.03 FABRICATION

- A. Pales, rails and posts shall be pre-cut to specified lengths. Impasse® rails shall be pre-punched to accept the tamperproof security fasteners.
- B. Completed panels shall be capable of supporting a 400 lb. load (applied at midspan) without permanent deformation. Panels shall be biasable to a 30 degree change in grade.
- C. Gates shall be fabricated using Impasse® pales. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding.

PART 3 - EXECUTION

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 INSTALLATION

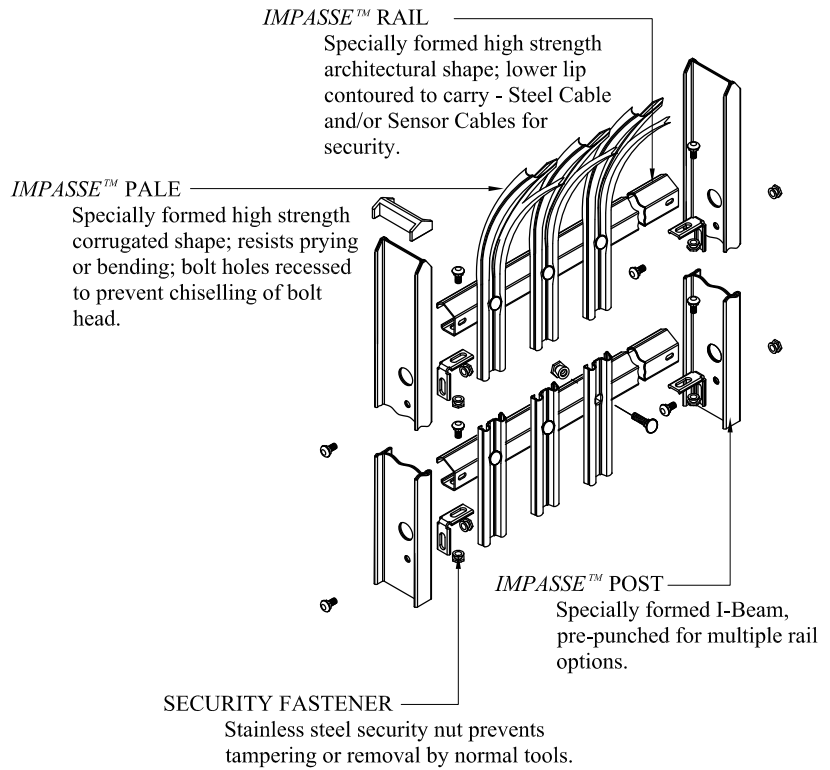
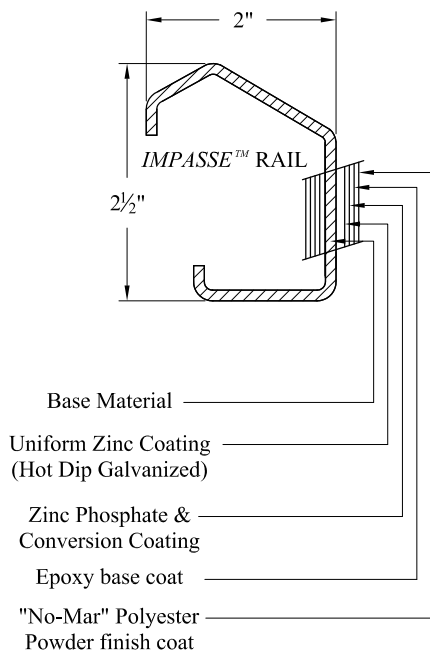
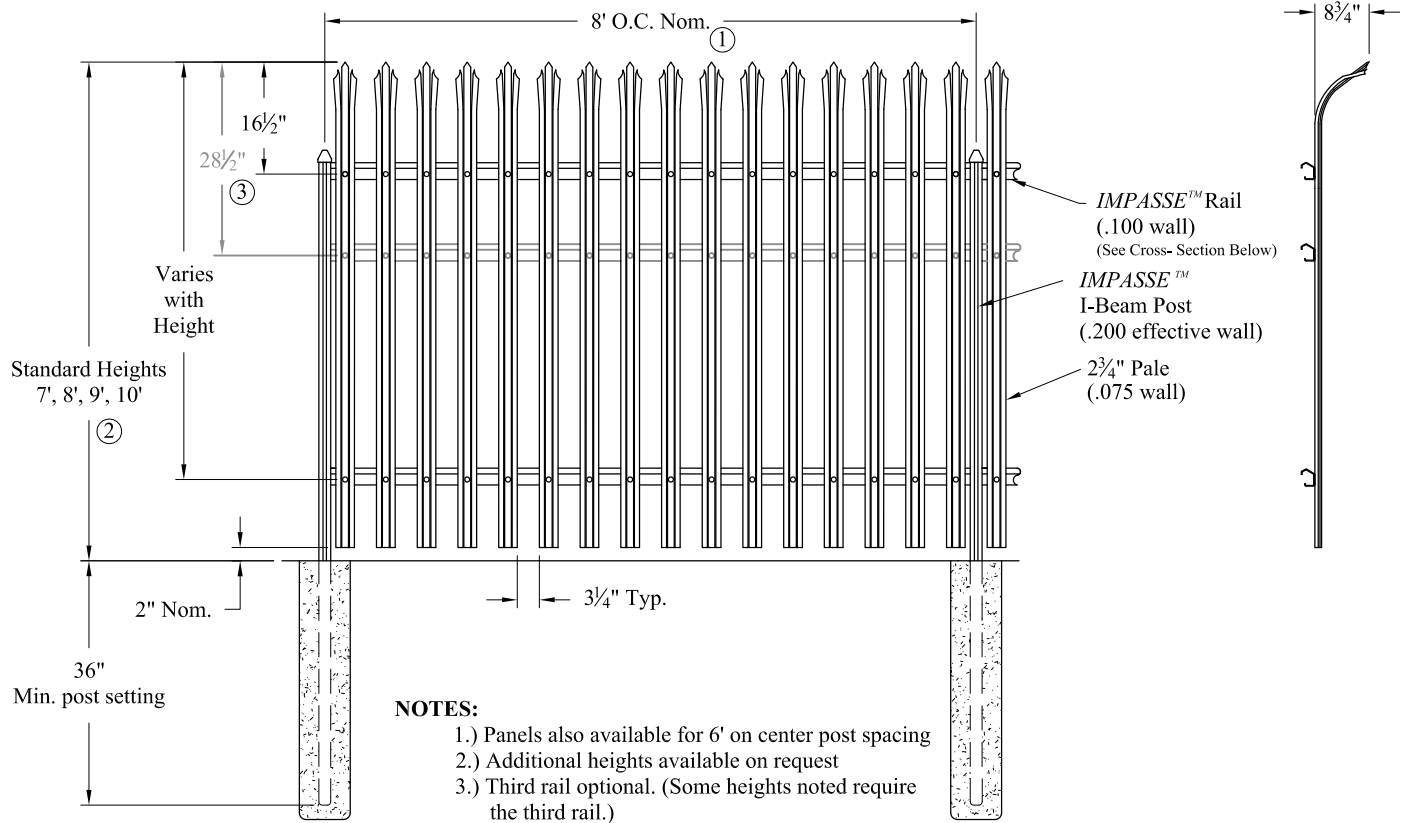
Fence posts for 8' nominal spans shall be set 96" O.C., plus or minus 1/2". Fence posts for 6' nominal spans shall be set 72" O.C., plus or minus 1/2". Gate posts shall be spaced according to the gate openings specified in the construction plans. The "Earthwork" and "Concrete" sections of this specification shall govern post base material requirements. Impasse® panels shall be attached to posts using mounting brackets and tamperproof security fasteners supplied by the manufacturer.

3.03 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1

Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (retention of coating) over 90% of test area (tape and knife test).
Corrosion Resistance	B117 & D1654	Corrosion resistance over 3,500 hours (scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact resistance over 60 inch lb. (forward impact using 0.625" ball).
Weathering Resistance	D822, D2244, D523 (60° Method)	Weathering resistance over 1,000 hours (failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).



Values shown are nominal and not to be used for installation purposes. See product specification for installation requirements.

HIGH SECURITY STEEL FENCE

Title: **IMPASSE GAUNTLET 2/3-RAIL**

DR: CI SH . 1 of 1 SCALE: DO NOT SCALE

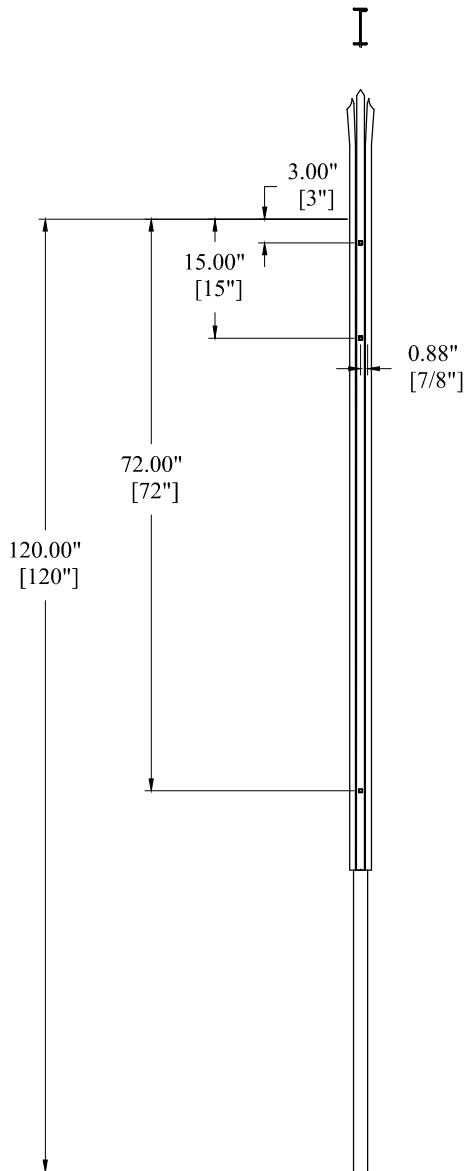
CK: BS Date 6/25/10 REV: d



AMERISTAR®

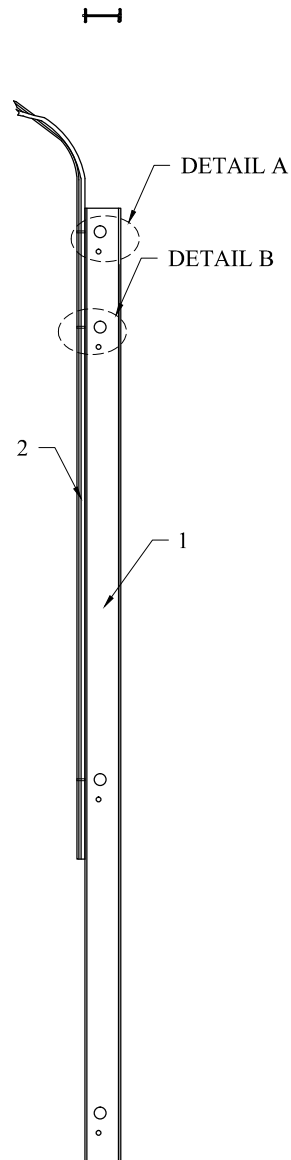
1555 N. Mingo
Tulsa, OK 74116
1-888-333-3422
www.ameristarfence.com

#	DESCRIPTION
1	4" I-BEAM POST
2	2 3/4" WIDE PALE

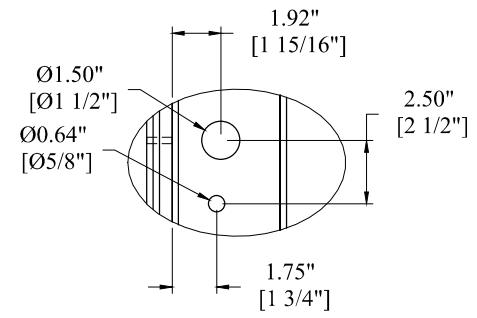


FRONT VIEW

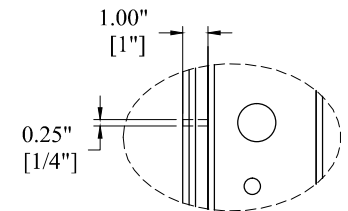
TOP VIEW



SIDE VIEW



DETAIL A



DETAIL B

<small>Unless Noted Otherwise</small> x Decimal * 0.010 xx Decimal * 0.030 xxx Decimal * 0.050 xxxx Decimal * 0.100		<small>DO NOT SCALE</small> OFF DRAWING Angular * 0.5°	<small>PROPRIETARY INFORMATION</small> This drawing is the proprietary property of AMERISTAR, Tulsa, OK and must not be duplicated or used in whole or in part for the making of drawings, prints or parts to the dimensions of or form to, the cover, it according to the drawing. The recipient agrees to keep the information contained confidential.	1555 N. Mingo Tulsa, OK 74116 1-888-333-3422 www.ameristarfence.com
<small>REVISION HISTORY</small>				
REV	ECN	AUTHOR	DATE	DESCRIPTION
TITLE: IMIPASSE STEEL I BEAM W/ GAUNTLET PALE - SPECIAL		DATE: 02/01/13		SHEET: 1 of 1
DRN BY: TLS		REV: A		
DRAWING NO: 90-112-10745				