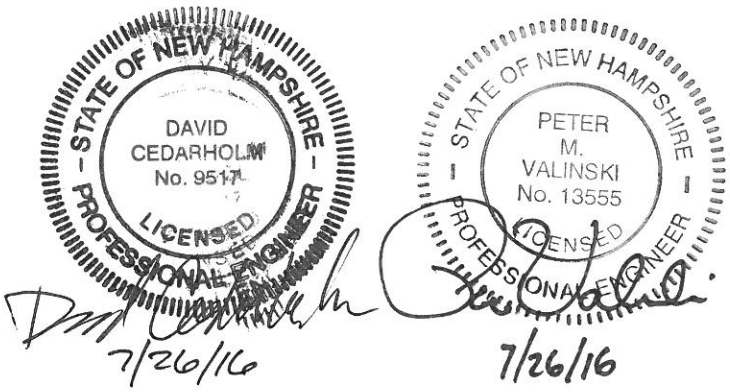
Project Manual
Volume 1 of 1

Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

For BIDDING

City of Portsmouth, New Hampshire
Department of Public Works

Bid Proposal # 06-17



August 2016

Tighe&Bond

Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition
City of Portsmouth
Department of Public Works
Bid Proposal # 06-17
Portsmouth, New Hampshire

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A. BIDDING REQUIREMENTS

City of Portsmouth
Department of Public Works
ADVERTISEMENT FOR BIDS
Bid No. 06-17 Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

Separate sealed BIDS for the work of **Bid No. 06-17 Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition** will be accepted by the City of Portsmouth Purchasing Department, City Hall, 1 Junkins Avenue, Portsmouth, NH 03801 until **2:00 PM on August 31, 2016** and then publicly read aloud. The project includes the demolition of the 0.4-million gallon multi-leg welded steel elevated water tank at Hobbs Hill and the demolition of the 0.2-million gallon multi-leg riveted steel elevated water storage tank located at Osprey Landing with associated site work including abandoning of water mains, minor electrical demolition, removal and/or replacement of chainlink fence enclosures, partial removal of concrete foundations and footings, subgrade structure abandonment and loaming and seeding of all disturbed areas. There will be a **mandatory pre-bid meeting** on **August 17, 2016 at 1:00 PM**. The pre-bid meeting will be held in the first floor conference room located at the City of Portsmouth Department of Public Works, 680 Peverly Hill Road, Portsmouth, New Hampshire, 03801 and followed by a visit to the project sites.

1. Completion time for the Hobbs Hill Water Tank demolition component of the project will be calculated as 90 calendar days for substantial completion and 120 calendar days for final completion from the date specified in the "Notice to Proceed". Completion time for the Osprey Landing Water Tank demolition component of the project will be calculated as 120 calendar days for substantial completion and 150 calendar days for final completion from the date specified in the "Notice to Proceed". It is anticipated that a Notice to Proceed will be issued on or before **September 12, 2016**.

2. Liquidated damages will be in the amount of $500.00 for each calendar day of delay from the date established for substation completion and $500.00 for each calendar day of delay from the date established for final completion.

3. Each General Bid shall be accompanied by a Bid Security in the amount of 5% of the Total Bid Price.

4. The successful Bidder must furnish 100% Performance and Payment Bonds, and will be required to execute the Contract Agreement within 10 days following notification of the acceptance of his Bid.

5. No Bidder may withdraw a Bid within 60 days after the actual date of opening thereof.

6. The owner reserves the right to reject any and all bids, to accept any bid, to waive any informality on bids received, and to omit any item or items it may deem to be in the best interest of the Owner.

7. Any questions regarding bidding should be directed to the Purchasing Department at 603-610-7227. Any technical questions regarding the plans and specifications shall be directed to Tighe & Bond, Inc. at 603-433-8818.

Electronic Contract Documents (Plans, Specifications, and Addenda) may be obtained at the City's website http://www.cityofportsmouth.com/finance/purchasing.htm. Documents are not available for pickup. Addenda to this project, if any, including written answers to questions will not be provided directly to bidders, but will be posted on City's website and listed under the project heading by 4:00 p.m. on August 24, 2016. Bidders are responsible for basing their bids on the complete set of Contract Documents associated with the project and made available on the City's website.

INFORMATION FOR BIDDERS

BIDS will be received by City of Portsmouth
(herein called the "OWNER"), at Purchasing Department, 1 Junkins Ave, Portsmouth, NH
until 2:00 P.M. on August 31, 2016 and then at said office publicly opened and read aloud.

Each BID must be submitted in a sealed envelope, addressed to:

City of Portsmouth Purchasing Department At City Hall, 1 Junkins Ave, Portsmouth, NH 03801

Each sealed envelope containing a BID must be plainly marked on the outside as BID for Bid No. 06-17 Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition and the envelope shall bear on the outside the BIDDER's name, address, and license number if applicable and the name of the project for which the BID is submitted. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at

City of Portsmouth, Purchasing Department, City Hall, 1 Junkins Ave, Portsmouth, NH 03801

All BIDS must be made on the required BID form and be based on the complete set of CONTRACT DOCUMENTS including all ADDENDA. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be fully completed and executed when submitted. Only one copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID SCHEDULE by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other

person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID BOND payable to the OWNER in the amount of five percent (5%) of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsible BIDDERS. When the AGREEMENT is executed, the BONDS of the two remaining unsuccessful BIDDERS will be returned. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned. A certified check may be used in lieu of a BID BOND.

A PERFORMANCE BOND and a PAYMENT BOND, each in the amount of 100 percent of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the AGREEMENT and obtain the PAYMENT BOND and PERFORMANCE BOND within ten (10) calendar days from the date when NOTICE OF AWARD is delivered to the BIDDER. The NOTICE OF AWARD shall be accompanied by the necessary AGREEMENT and BOND forms. In case of failure of the BIDDER to execute the AGREEMENT, the OWNER may at his option consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within ten (10) days of receipt of acceptable PAYMENT BOND, PEERFORMANCE BOND and AGREEMENT signed by the party to whom the AGREEMENT was awarded shall sign the AGREEMENT and return to such party an executed duplicate of the AGREEMENT. Should the OWNER not execute the AGREEMENT within such period, the BIDDER may by WRITTEN NOTICE withdraw his signed AGREEMENT. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the ten (10) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the AGREEMENT without further liability on the part of either party.

The OWNER may make such investigations as he deems necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the AGREEMENT and to complete the WORK contemplated therein.

A conditional or qualified BID will <u>not</u> be accepted.

Award will be made to the lowest responsive and responsible BIDDER.

All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to complete any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to his BID.

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the GENERAL CONDITIONS.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when requested to do so by the OWNER.

SAFETY AND HEALTH REGULATIONS

This project is subject to all of the Safety and Health Regulations (CFR 29 Part 1926 and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Bidders are urged to become familiar with the requirements of these regulations. The subject water storage tank coatings and site soils are known to contain heavy metals and/or other substances associated with steel tank coatings that may cause and/or create hazardous conditions if further released to the environment or exposed to workers or bystanders. The successful Bidder shall be responsible to protect the site, neighboring properties, workers, and the public from exposure to demolition related contaminants and include in his bid appropriate measures to prevent the release of hazardous substances to the environment from loose or airborne paints chips and demolition associated particles.

NON-DISCRIMINATION IN EMPLOYMENT

Contracts for work under this proposal will obligate the contractors and sub-contractors not to discriminate in employment practices.

COPIES OF THE CONTRACT

There shall be at least five (5) executed copies of the Contract to be distributed as follows:

a) One (1) copy each to the Owner, Engineer, and Contractor.
b) Two (2) copies to the New Hampshire Department of Environmental Services.
c) Additional copies as required for other federal or state agencies contributing to or participating in project costs.

BIDDERS QUALIFICATIONS

No award will be made to any Bidder who cannot meet all of the following requirements:

A. The contractor shall submit with their bid, a general qualification statement, which shall address the following:

1. Specific training, knowledge and experience relating to the project.

2. Thorough knowledge of all relevant federal and state codes, regulations, standards and requirements relating to the project, including knowledge of any standards related to demolition and materials disposal.
3. Broad understanding of current demolition and scrap metal industry standards and techniques.
4. Thorough knowledge of any and all building codes as they may relate to the project.
5. Knowledge of appropriate environmental, health, and safety requirements.

B. BIDDER shall submit with their bid a list of five project references of similar scope, at least three of which must include the demolition of elevated steel water storage tanks, and all carried out over the last seven years, making special reference to those projects that included removal and disposal of scrap metal containing lead based paints and paints containing other hazardous materials. References shall include contact names, addresses, and numbers.

C. BIDDER shall be a licensed contractor in the State of New Hampshire, appropriately licensed for this type of work, and shall include a copy of their applicable license with their bid.

D. BIDDER shall provide with their price proposal the proposed name of the project superintendent, their qualifications, a discussion of the number of the BIDDER's own staff that will be used on the project, and identify any subcontractors used and for what purpose.

E. BIDDER shall not have defaulted nor turned the work over to the bonding company on any contract within three years prior to the bid date.

F. BIDDER shall maintain a permanent place of business.

G. BIDDER shall have adequate personnel and equipment to perform the work expeditiously.

H. BIDDER shall have suitable financial status to meet obligations incidental to the work.

I. BIDDER shall be registered with the Secretary of State to do business in New Hampshire.

J. BIDDER shall not have failed to complete previous contracts on time, including approved time extensions.

WITHDRAWAL OF BIDS

Prior to Bid Opening, bids may be withdrawn upon written or telegraphic request of the Bidder provided confirmation of any telegraphic withdrawal over the signature of the Bidder is placed in the mail and postmarked prior to the time set for Bid Opening. Bid documents and security of any Bidder withdrawing his bid in accordance with the foregoing conditions will be returned.

BID

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____
(Corporation, Partnership, Individual)

To the City of Portsmouth (hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK For the construction of Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to the BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to complete the PROJECT within:

90 consecutive calendar days for substantial completion of Hobbs Hill Water Tank demolition, and 120 days for substantial completion of Osprey Landing Water Tank demolition.

120 consecutive calendar days for final completion of Hobbs Hill Water Tank demolition, and 150 days for final completion of Osprey Landing Water Tank demolition.

Liquidated damages will be in the amount of $ 500.00 for each calendar day of delay from the date established for substantial completion and $ 500.00 for each calendar day of delay from the date established for final completion, as provided in Section 18 of the General Conditions.

BIDDER acknowledges receipt of the following ADDENDUM:

_____

_____

_____

The Bidder shall state below what works of a similar character to that of the proposed contract he has performed, and provide such references as will enable the Owner to judge his experience, skill, and business standing.

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, add separate sheets.

1. Name of Bidder.

2. Permanent Main Office address.

3. When organized?

4. Where incorporated?

5. Is bidder registered with the Secretary of the State to do business in New Hampshire?

6. For how many years has your firm engaged in the contracting business under its present name? Also state names and dates of previous firm names, if any.

7. Contracts on hand. (Schedule these, showing gross amount of each contract and the approximate anticipated dates of completion.)

8. General character of work performed by your company.

9. Have you ever failed to complete any work awarded you in the scheduled contract time, including approved time extensions? ___(Yes) __(No).
If so, where and why?

10. Have you ever defaulted on a contract? ___(Yes) __(No).
If so, where and why?

11. Have you ever had liquidated damages assessed on a contract? _____(Yes) ____(No).
If so, where and why?

12. List the more important contracts recently executed by your company, stating approximate cost for each, and the month and year completed.

13. List your major equipment <u>available for this contract</u>.

14. List your key personnel such as Project Superintendent and foreman available for this contract.

15. List any subcontractors whom you would expect to use for the following (unless this work is to be done by your own organization):
    a. _____
    b. _____
    c. _____
    d. _____

16. With what banks do you conduct business?

Do you grant the Engineer permission to contact this (these) institutions? ___(Yes) ___(No)

NOTE: Bidders may be required to furnish their latest financial statement as part of the award process.

Respectfully submitted:

_____ _____
Signature Address

_____ _____
Title Date

_____ Being duly sworn, deposes and says that he is

_____ of _____
(Name of Organization)

and that the answers to the foregoing questions and all statements contained therein are true and correct.

Sworn to before me this _____ day of _____ , 20 _____

_____
Notary Public

My commission expires _____

(Seal - If BID is by Corporation)

ATTEST: _____

BIDDER agrees to perform all the work described in the complete set of CONTRACT DOCUMENTS for the following unit prices or lump sum:

NOTE: BIDS shall include all other applicable taxes and fees.

BID SCHEDULE

Bidder proposes to furnish all labor and materials required for the **Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition** in accordance with the accompanying Bidding Documents for the Contract Price specified below, subject to additions and deductions according to the terms of the Bidding Documents.

This Bid includes Addenda numbered _____.

Item Number	Item Name and Unit Bid Prices Written in Words and Figures	Estimated Quantity	Total Amount of Item (in figures)
1	Mobilization and Demobilization, per lump sum, the price of: _____ ($)	lump sum =	$_____
	Item 1 shall not exceed 5% of total bid		
2	Demolition of the Hobbs Hill Water Storage Tank, including demolition of elevated steel tank, partial removal of foundations and vault, above ground piping and appurtenances, electrical service and components, and site restoration, per lump sum, the price of: _____ ($)	lump sum =	$_____
3	Disconnect and cap the below ground water pipe leading to the Hobbs Hill Water Storage Tank, and abandon the below ground water pipe including capping and plugging pipe ends, filling abandoned pipe, backfill, and site restoration, per lump sum, the price of: _____ ($)	lump sum =	$_____
4	Demolition of the Osprey Landing Water Storage Tank, including demolition of elevated steel tank, partial removal of foundations and vault, above ground piping and appurtenances, electrical service and components, and site restoration, per lump sum, the price of: _____ ($)	lump sum =	$_____

BID SCHEDULE Continued

Item Number	Item Name and Unit Bid Prices Written in Words and Figures	Estimated Quantity	Total Amount of Item (in figures)
5	Disconnect and cap the below ground water pipe leading to the Osprey Landing Water Storage Tank and abandon the below ground water pipe including capping and plugging pipe ends, filling abandoned pipe, backfill, and site restoration, per lump sum, the price of: _____ ($)	lump sum =	$_____

TOTAL AMOUNT OF BID – Sum of Items 1 through 5

_____ dollars
(words)

($_____)
(figures)

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____

_____ as Principal, and

_____ as Surety, are hereby

held and firmly bound unto City of Portsmouth as OWNER

in the penal sum of _____

for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____

The Condition of the above obligation is such that whereas the Principal has submitted to

_____

a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for

the Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

_____

_____

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (Properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise, the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety , for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
Principal

By: _____

_____
Surety

By: _____

IMPORTANT-Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of New Hampshire.

B. CONTRACT

NOTICE OF AWARD

Dated _____ , 20 ____

TO: _____
(BIDDER)

ADDRESS: _____

OWNER'S PROJECT NO: 06-17

PROJECT: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

OWNER'S CONTRACT NO: 06-17

CONTRACT FOR: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

City of Portsmouth, New Hampshire
(Insert name of contract as it appears in the Bid Documents)

You are notified that your Bid dated _____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for:

Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

(Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is _____

_____ Dollars ($ _____).

_____ copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. The same number of sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within ten days of receiving this Notice of Award.

1. You must deliver to the OWNER all of the fully executed counterparts of the Agreement including all the Contract Documents. This includes the sets of Drawings. Each of the Contract Documents must bear your signature on (the cover) (every) page.

2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Information for Bidders and General Conditions.

3. (List other conditions precedent).

Proof of Insurance Coverage

Failure to comply with these conditions within the time specified will entitle **OWNER** to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after receipt of acceptable performance BOND, payment BOND and agreement signed by the party to whom the Agreement was awarded, the **OWNER** will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

City of Portsmouth, NH
(OWNER)

By _____
(AUTHORIZED SIGNATURE)

_____
(TITLE)

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By _____

The _____ day of _____ , 20 _____

By _____

Title _____

Copy to ENGINEER
(Use Certified Mail, Return Receipt Requested)
Bid Proposal #06-17

AGREEMENT

THIS AGREEMENT, made this _____ day of _____ ,20 16 by and between City of Portsmouth, New Hampshire , hereinafter called **"OWNER"**
(Name of Owner)
and _____ doing business as (an individual,) or (a partnership,) or (a corporation) hereinafter called **"CONTRACTOR" .**

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The **CONTRACTOR** will commence and complete the

Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition
(Project)

2. The **CONTRACTOR** will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the completion of the **PROJECT** described herein.

3. The **CONTRACTOR** will commence the work required by the **CONTRACT DOCUMENTS** within 30 calendar days after the date of the **NOTICE TO PROCEED** unless the period for completion is extended otherwise by the **CONTRACT DOCUMENTS.** Completion time for the project will be calculated as calendar days from the date specified in the **NOTICE TO PROCEED** as follows:

90 consecutive calendar days for substantial completion of Hobbs Hill Water Tank demolition, and 120 days for substantial completion of Osprey Landing Water Tank demolition.

120 consecutive calendar days for final completion of Hobbs Hill Water Tank demolition, and 150 days for final completion of Osprey Landing Water Tank demolition.

Liquidated damages will be in the amount of $ 500.00 for each calendar day of delay from the date established for substantial completion and $ 500.00 for each calendar day of delay from the date established for final completion for each tank.

4. The **CONTRACTOR** agrees to perform all of the **WORK** described in the **CONTRACT DOCUMENTS** and comply with the terms therein for the sum of $ _____ or as shown in the **BID** schedule.

5. The term "**CONTRACT DOCUMENTS**" means and includes the following:

(A) ADVERTISEMENT FOR BIDS
(B) INFORMATION FOR BIDDERS
(C) BID
(D) BID BOND
(E) NOTICE OF AWARD
(F) AGREEMENT
(G) LABOR AND MATERIAL PAYMENT BOND
(H) PERFORMANCE BOND
(I) CERTIFICATE OF INSURANCE
(J) NOTICE TO PROCEED
(K) CHANGE ORDER(S)
(L) CERTIFICATON OF SUBSTANTIAL COMPLETION
(M) CERTIFICATION OF FINAL COMPLETION
(N) CONTRACTOR'S AFFIDAVIT
(O) CONTRACTOR'S RELEASE
(P) GENERAL CONDITIONS
(Q) SPECIAL CONDITIONS
(T) DRAWINGS prepared by:

Tighe & Bond, Inc., 177 Corporate Drive, Portsmouth, NH

numbered 1 through _____ , and dated _____ , 20 16

(U) SPECIFICATIONS prepared or issued by:

Tighe & Bond, Inc., 177 Corporate Drive, Portsmouth, NH

_____ , and dated _____ , 20 16

(V) ADDENDA:

No. _____ , dated _____ , 20 ____
No. _____ , dated _____ , 20 ____
No. _____ , dated _____ , 20 ____
No. _____ , dated _____ , 20 ____
No. _____ , dated _____ , 20 ____

6. The **OWNER** will pay to the **CONTRACTOR** in the manner and at such times as set forth in the General Conditions such amounts as required by the **CONTRACT DOCUMENTS.**

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in _____ copies, each of which shall be deemed an original on the date first above written.

OWNER: City of Portsmouth, NH

By: _____

Name: John P. Bohenko, City Manager
(Please type)

(SEAL)

ATTEST: _____

Name: _____

Title: _____

CONTRACTOR: _____

By: _____

Name: _____

Address: _____

_____

(SEAL)

ATTEST: _____

Name: _____

Title: _____

LABOR AND MATERIAL PAYMENT BOND

(This format provided for convenience, actual Labor and Material Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS:

that _____

as Principal, hereinafter called Contractor, and _____ (Surety Company) a corporation organized and existing under the laws of the State of _____ and authorized to do business in the State of New Hampshire hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of _____ _____ Dollars ($_____), for the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal has by written agreement dated _____ entered into a

contract with Owner for **Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition** in accordance with drawings and specifications prepared by Tighe & Bond, Inc., 177 Corporate Drive, Portsmouth NH 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and for the hire of all equipment, tools, and all other things contracted for or used in connection therewith, then this obligation shall be void, otherwise it shall remain in full force and effect, subject however, to the following conditions:

(1) A claimant is defined as one having a direct contract with the Principal or, with a subcontractor of the Principal for labor, material, equipment, or other things used or reasonably required for use in the performance of the Contract. "Labor and material" shall include but not be limited to that part of water, gas, power, light, heat, oil and gasoline, telephone service or rental of equipment applicable to the Contract.

(2) The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such a claimant, may sue on this bond for the use of such claimant, prosecute the suit by final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any such suit or any costs or expenses of any such suit, and principal and surety shall jointly and severally indemnify, defend and hold the Owner harmless for any such suit, costs or expenses.

(3) No suit or action shall be commenced hereunder by any claimant:

(a) Unless Claimant, other than one having a direct contract with the Principal, shall have given notice to all the following:

The Principal, the Owner and the Surety above named, within six (6) calendar months after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of New Hampshire save that such service need not be made by a public officer.

(b) After the expiration of one (1) year following the date on which Principal ceased all work on said contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

(c) Other than in a State court of competent jurisdiction in and for the county or other political subdivision of the State in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

(4) The amount of this bond may be reduced by and to the extent of any payment of payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed on record against said improvement, whether or not claim for the amount of such lien by presented under and against this bond.

Signed and sealed this _____ day of _____, 20___. In the presence of:

_____ BY: _____
(Witness) (Principal) (Seal)

_____
(Surety Company)

_____ BY: _____
(Witness) (Title) (Seal)

Note:
If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized Officer or Officers. If this bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his Power of Attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Agreement.

PERFORMANCE BOND

(This format provided for convenience, actual Performance Bond is acceptable in lieu, if compatible)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS

that _____ as Principal, hereinafter called Contractor, and _____ (Surety Company) a corporation organized and existing under the laws of the State of _____ and authorized to do business in the State of New Hampshire as surety, hereinafter called Surety, are held and firmly bound unto the City of Portsmouth, N.H. Obligee, hereinafter called Owner, in the amount of _____ Dollars ($_____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents. WHEREAS, Contractor has by written agreement dated _____ entered into a contract with Owner for **Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition** in accordance with drawings and specifications prepared by Tighe & Bond, Inc.177 Corporate Drive Portsmouth, NH 03801, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Contractor shall well and faithfully do and perform the things agreed by him to be done and performed, according to the terms of said Contract and such alterations as may be made in said Contract during progress work, and shall further indemnify and save harmless the said Owner in accordance with the Contract and shall remedy without cost to the Owner any defect which may develop within one year from the time of completion and acceptance of the work.

The Surety hereby waives notice of any alteration in work or extension of time made by the Owner or any of its agents or representatives.

Whenever Contractor shall be, and declared by Owner to be, in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions, or

(2) Obtain a bid or bids for submission to the Owner for completing the Contract in accordance with its terms and conditions, and upon determination by Owner and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as work progresses (even though there should be a default or a succession of defaults under the contract of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price", as used in this paragraph, shall mean the total amount payable by the Owner to Contractor under the Contract and any amendments thereto, less the amount paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of (2) years from the date on which final payment under the contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of Owner.

Signed and sealed this _____ day of _____ , 2016.

In the presence of:

_____ BY: _____
(Witness) (Principal) (Seal)

_____
(Surety Company)

_____ BY: _____
(Witness) (Principal) (Seal)

Note:
If the Principal (Contractor) is a partnership, the Bond should be signed by each of the partners.

If the Principal (Contractor) is a corporation, the Bond should be signed in its correct corporate name by its duly authorized Officer or Officers.

If this bond is signed on behalf of the Surety by an attorney-in-fact, there should be attached to it a duly certified copy of his Power of Attorney showing his authority to sign such Bonds.

There should be executed an appropriate number of counterparts of the bond corresponding to the number of counterparts of the Agreement.

NOTICE TO PROCEED

Dated _____ , 20 ____

TO: _____
(Insert Name of Contractor as it appears in the Bid Documents)

ADDRESS: _____

_____

OWNER'S PROJECT NO. _____

PROJECT: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

OWNER'S CONTRACT NO. _____

CONTRACT FOR: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition
City of Portsmouth, New Hampshire

You are notified that the Contract Time under the above contract will commence to run on _____ , 20 ____ . By that date, you are to start performing your obligations under the Contract Documents. In accordance with paragraph 3 of the Agreement, the dates of Substantial Completion and Final Completion are _____ , 20 ____ and _____ , 20 ____ , respectively.

Before you may start any Work at the site, paragraph 27 of the General Conditions provides that you and Owner must each deliver to the other (with copies to ENGINEER) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents. Also before you may start any Work at the site, you must submit:

Certificates plans (i.e. Demolition Plan, Waste Management Plan, etc.) to be develop by Contractor and submitted to engineer as described herein, and Preconstruction Photos and Video
(add other requirements)

Copy to ENGINEER
(Use certified Mail, return Receipt Requested)

City of Portsmouth, NH
(owner)

By _____
(Authorized Representative)

_____
(Title)

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by:

_____
(Contractor)

this the _____ , 20 ____

By: _____

_____

_____

Employer Identification Number: _____

CHANGE ORDER

No. _____

PROJECT: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition DATE OF ISSUANCE: _____

OWNER: City of Portsmouth
1 Junkins Ave, Portsmouth, NH
(Address)

CONTRACTOR: _____ OWNER's Project No. 06-17

CONTRACT FOR: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition ENGINEER Tighe & Bond, Inc.

ENGINEER's Project No. 2507141

You are directed to make the following changes in the Contract Documents.
Description: _____ Justification: _____
Purpose of Change Order: _____
Attachments: (List documents supporting change)

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIME
Original Contract Price $ _____	Original Contract Time _____ (days or date)
Previous Change Orders $ _____	Net change from previous Change Orders _____ (days)
Contract Price prior to this Change Order $ _____	Contract Time prior to this Change Order _____ (days or date)
Net Increase (Decrease) of this Change Order $ _____	Net Increase (decrease) this Change Order _____ (days)
Contract Price with all approved Change Orders $ _____	Contract Time with all Change Orders _____ (days or date)

This document will become a supplement to the CONTRACT and all provisions will apply hereto. The attached Contractor's Revised Project Schedule reflects increases or decreases in Contract Time as authorized by this Change Order.
Stipulated price and time adjustment includes all costs and time associated with the above described change. Contractor waives all rights for additional time extension for said change. Contractor and Owner agree that the price(s) and time adjustment(s) stated above are equitable and acceptable to both parties.

RECOMMENDED:	APPROVED:	APPROVED:	APPROVED:
By: _____	By: _____	By: _____	By: _____
Engineer	Owner	Contractor	
_____	_____	_____	_____
Date	Date	Date	Date

CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER's Project No.: 06-17 ENGINEER's Project No.: 2507141

Project: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition

CONTRACTOR: _____

Contract For: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition Contract Date: _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

To: _____
(Owner)

And To: _____
(Contractor)

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

_____
(Date of Substantial Completion)

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within _____ calendar days of the above date of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

RESPONSIBILITIES:

OWNER: _____

_____

CONTRACTOR: _____

_____

The following documents are attached to and made a part of this Certificate:

_____

_____

_____

_____

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Executed by ENGINEER on _____ , 20 _____

Tighe & Bond, Inc.
(Engineer)

By: _____

CONTRACTOR accepts this Certificate of Substantial Completion on _____ , 20 _____

_____
(Contractor)

By: _____

OWNER accepts this Certificate of Substantial Completion on _____ , 20 _____

City of Portsmouth
(Owner)

By: _____

CERTIFICATE OF FINAL COMPLETION

Owner's Project No. 06-17 Engineer's Project No. 2507141
Project Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition
Owner: City of Portsmouth, New Hampshire
Contractor: _____
Engineer: Tighe & Bond, Inc.

Agreement Date: _____
Notice to Proceed Date: _____
Contractual Substantial Completion Date as modified by Change Orders: _____
Actual Substantial Completion Date: _____
Contractual Final Completion Date as modified by Change Orders: _____

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer the punch list has been completed and the Work of the Contract is hereby declared to be Finally Complete in accordance with the Contract Documents on:

_____
Date of Final Completion

This Certificate does not constitute an acceptance of any Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents. The Warranty for all Work completed subsequent to the date of Substantial Completion expires one year from the date of this Final Acceptance.

Executed by Engineer on: _____, 20____

By:_____

Contractor Accepts this Certificate of Final Completion on: _____, 20____

By:_____

Owner Accepts this Certificate of Final Completion on: _____, 20____

By:_____

CONTRACTOR'S AFFIDAVIT

STATE OF: _____

COUNTY OF: _____

Before me, the undersigned, a _____
(Notary Public, Justice of Peace, Alderman)

in and for said County and State personally appeared, _____
(Individual, Partner or duly

_____ who being duly sworn according to law
authorized representative of corporate contractor)

deposes and says that the cost of all the Work, and outstanding claims and indebtedness of whatever

nature arising out of the performance of the contract between City of Portsmouth, NH
(Owner)

and _____ of _____
(Contractor) (Address)

dated _____ for the Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition
(Project Name)

and necessary appurtenant installations have been paid in full.

_____
(Individual, Partner, or duly authorized representative of corporate contractor)

_____
(Title)

Sworn to and subscribed before me

this _____ day of _____ , 20 ___

_____

_____
Notary Public

CONTRACTOR'S FINAL RELEASE AND WAIVER OF LIEN

Project/Owner	Contractor
Project: Hobbs Hill Water Tank & Osprey Landing Water Tank Demolition	Name:_____
Address: International Drive	Address:_____
Portsmouth NH 03801 City State Zip	_____ City State Zip
Owner: City of Portsmouth	Contractor License:_____
1 Junkins Ave, Portsmouth, NH 03801	Contract Date:_____

TO ALL WHOM IT MAY CONCERN:

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned Contractor hereby waives, discharges, and releases any and all liens, claims, and rights to liens against the above-mentioned project, and any and all other property owned by or the title to which is in the name of the above-referenced Owner and against any and all funds of the Owner appropriated and available for the construction of said project, and any and all warrants drawn upon or issued against any such funds or monies, which the undersigned Contractor may have or may hereafter acquire or process as a result of the furnishing of labor, materials, and/or equipment, and the performance of Work by the Contractor on or in connection with said project, whether under and pursuant to the above-mentioned contract between the Contractor and the Owner pertaining to said project or otherwise, and which said liens, claims or rights of lien may arise and exist.

The undersigned further hereby acknowledges that the sum of

_____

Dollars ($_____) constitutes the entire ***unpaid*** balance due the undersigned in Connection with said project whether under said contract or otherwise and that the payment of said sum to the Contractor will constitute payment in full and will fully satisfy any and all liens, claims, and demands which the Contractor may have or assert against the Owner in connection with said contract or project.

Dated this ___ day of _____20__

_____
Contractor

Witness to Signature

By_____ By_____

Title_____ Title_____

C. GENERAL CONDITIONS

GENERAL CONDITIONS

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GENERAL CONDITIONS

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GENERAL CONDITIONS

1. Contract and Contract Documents. The plans, information for bidders, bids, advertisement for bids, bid payment and performance bonds, Agreements, change orders, notice to proceed, specifications and addenda, hereinafter enumerated in the Agreement, shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

2. Definitions.

2.1 "Addenda" means written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, drawings and specifications, by additions, deletions, clarifications or corrections. Such written or graphic instruments will be issued no less than five days before the bid opening.

2.2 "Bid" means the offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.

2.3 "Bidder" means any person, firm or corporation submitting a bid for the work.

2.4 "Bonds" means bid, performance, and payment bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.

2.5 "Change Order" means a written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.

2.6 "Contract Documents" means the Contract, including any advertisement for bids, information for bidders, bid, bid bond, Agreement, payment bond, performance bond, notice of award, notice to proceed, change orders, drawings, specifications and addenda.

2.7 "Contract Price" means the total monies payable to the Contractor under the terms and conditions of the Contract Documents.

2.8 "Contract Time" means the number of calendar days stated in the Contract Documents for the completion of the Work.

2.9 "Contractor" means the person, firm or corporation with whom the Owner has executed the Agreement.

2.10 "Division" means the state of New Hampshire Department of Environmental Services, Water Division.

2.11 “Drawings” mean the part of the Contract Documents which show the characteristics and scope of the work to be performed and which have been prepared or approved by the Engineer.

2.12 “Engineer” means the person, firm or corporation named as such in the contract documents.

2.13 “Field order” means a written order effecting a change in the work not relating to an adjustment in the contract price or an extension of the contract time and issued by the Engineer to the Contractor during construction.

2.14 “Notice of Award” means the written notice of the acceptance of the Bid from the Owner to the successful Bidder.

2.15 “Notice to Proceed” means the written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work.

2.16 “Owner” means a public or quasi-public body or authority, corporation, association, partnership, or individual for whom the work is to be performed.

2.17 “Plans” means the contract drawings or exact reproductions thereof which show the scope, character, dimensions and details of the work and which have been prepared or approved by the Engineer.

2.18 “Project” means the undertaking to be performed as provided in the Contract Documents.

2.19 “Resident Project Representative” means the authorized representative of the Owner who is assigned to the Project site or any part thereof.

2.20 “Shop Drawings” means all drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the Work shall be fabricated or installed.

2.21 “Special conditions” means revisions or additions to these general conditions, Supplemental General Conditions or specifications applicable to an individual project.

2.22 “Specifications” means a part of the contract documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

2.23 “Subcontractor” means an individual, firm or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

2.24 “Substantial Completion” means that date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in

accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it is intended.

2.25 "Supplemental General Conditions" means modifications to these general conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such documents that may be imposed by applicable State laws.

2.26 "Supplier" means any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

2.27 "Work" means all labor necessary to produce the construction required by the contract documents, and all materials and equipment incorporated or to be incorporated in the project.

2.28 "Written Notice" means any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

3. Additional Instructions and Detail Drawings. The Contractor may be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the contract documents and will be so prepared that they can be reasonably interpreted as part thereof.

4. Shop or Setting Drawings. Shop or setting drawings shall be in accordance with the following:

4.1 The Contractor shall furnish 6 copies of the manufacturer's shop drawings, specific design data as required in the detailed specifications, and technical literature covering all equipment and fabricated materials which he proposes to furnish under this contract in sufficient detail to indicate full compliance with the specifications. Shop drawings shall indicate the method of installing, the exact layout dimensions of the equipment or materials, including the location, size and details of valves, pipe connections, etc.

4.2 No equipment or materials shall be shipped until the manufacturer's shop drawings and specifications or other identifying data, assuring compliance with these specifications, are approved by the Engineer.

4.3 The Contractor shall check and verify all field measurements and shall be responsible for the prompt submission of all shop and working drawings so that there shall be no delay in the work.

4.4 Regardless of corrections made in or approval given to such drawings by the Engineer, the Contractor will nevertheless be responsible for the accuracy of such

drawings and for their conformity to the plans and specifications. The Contractor shall notify the Engineer in writing of any deviations at the time he furnishes such drawings. He shall remain responsible for the accuracy of the drawings showing the deviations but not for the acceptance of the deviations from the original design shown in the plans and specification. Approval by the Engineer and the Owner of any deviation in material, workmanship or equipment proposed subsequent to approval of the shop drawings or design data, shall be requested in writing by the Contractor.

4.5 When submitted for the Engineer's review, Shop Drawings shall bear the Contractor's certification that he has reviewed, checked and approved the Shop Drawings and that they are in conformance with the requirements of the Contract Documents.

5. Materials, Services, Facilities and Workmanship shall be furnished as follows:

5.1 Except as otherwise specifically stated in the contract documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

5.2 Unless otherwise specifically provided for in the specifications, all workmanship, equipment, materials and articles incorporated in the work shall be new and the best grade of the respective kinds for the purpose.

5.3 The Contractor shall furnish to the Engineer for approval the manufacturer's detailed specifications for all machinery, mechanical and other special equipment, which he contemplates installing together with full information as to type, performance characteristics, and all other pertinent information as required.

5.4 Materials which are specified by reference to the number or symbol of a specific standard, such as an ASTM standard, a federal specification or other similar standard, shall comply with requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the advertisement for bids, except as limited to type, class or grade, or modified in such reference. The standards referred to shall have full force and effect as though printed therein.

5.5 For equipment or for materials, when requested by the Engineer, the Contractor shall submit certificates of compliance from the manufacturer, certifying that the equipment or the materials comply with the requirements of the specifications or the standards.

5.6 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

5.7 Materials, supplies, and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

6. Contractor's Title To Materials. No material, supplies, or equipment to be installed or furnished under this contract shall be purchased subject to any chattel mortgage or under a conditional sale, lease purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by him to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials for the work when formal contract is entered into for such materials.

7. Inspection and Testing of Materials shall be as follows:

7.1 All materials and equipment used in the construction of the project shall be subject to inspection and testing by the Engineer in accordance with accepted standards at any and all times during manufacture or during the project construction and at any or all places where such manufacture is carried on.

7.2 The Contractor shall furnish promptly upon request by the Engineer, all materials required to be tested. All tests made by the Engineer shall be performed in such manner and ahead of scheduled installation, as not to delay the work of the Contractor. When required, testing of concrete, masonry, soils, pipe and pipe materials will be made in accordance with provisions in the specifications.

7.3 Material required to be tested which is delivered to the job site shall not be incorporated into the work until the tests have been completed and approval or acceptance given in writing by the Engineer.

7.4 Each sample submitted by the Contractor for testing shall carry an identification label containing such information as is requested by the Engineer. It shall also include a statement that the samples are representative of the remaining materials to be used on the project.

7.5 Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with the contract requirements.

7.6 The Engineer may, at his own discretion, undertake the inspection of materials at the source. In the event plant inspection is undertaken, the following conditions shall be met:

a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.

b. The Engineer shall have full entry at all reasonable times to such areas as may concern the manufacture or production of the materials being furnished.

c. If required, the Contractor shall arrange for a building for the use of the inspector; such building to be located near the plant, independent of any building used by the material producer, in which to house and use the equipment necessary to carry on the required tests. Cost for such arrangement shall be paid by the Owner as a stated allowance in the bid.

d. Adequate safety measures shall be provided and maintained at all times.

7.7 Except as otherwise specifically stated in the contract, the costs of sampling and testing will be divided as follows:

a. The Contractor shall furnish the Engineer, without extra cost, all samples required for testing purposes. All sampling and testing including the number and selection of samples shall be determined by the Engineer for his own information and use.

b. When testing of materials is specified in the appropriate section of the specifications, the cost of the same shall be charged to the Owner or Contractor, as detailed in the specifications. However, costs of equipment performance tests shall be borne by the Contractor, as detailed in the appropriate section of the specifications.

c. When the Contractor proposes a material, article or component as equal to the ones specified, reasonable tests may, or may not, be required by the Engineer. If the Engineer requires tests of a proposed equal item, the Contractor will be required to assume all costs of such testing.

d. Any material, article or component which fails to pass tests required by the Engineer or by the specifications, will be rejected and shall be removed from the project site. However, if, upon request of the Contractor, retesting or further tests are permitted by the Engineer, the Contractor shall assume all costs related to such retesting or further tests.

e. Neither the Owner nor the Engineer will in any way be charged for the manufacturer's costs in supplying certificates of compliance.

7.8 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved by someone other than the Contractor, the Contractor will give the Engineer

timely notice of readiness. The Contractor will then furnish the Engineer with the required certificates of inspection, testing or approval.

7.9 Inspections, tests, or approvals by the engineer or others shall not relieve the Contractor from obligations to perform the Work in accordance with the requirements of the Contract Documents.

8. "Or Equal" Clause, Substitutions and Contractor Options.

8.1 Whenever a material, article, or piece of equipment is identified on the plans or in the specifications by reference to manufacturer's or vendor's names, trade names, catalogue numbers, etc., it is intended merely to establish a standard of quality and performance. Any material, article, or equipment of other manufacturers and vendors, which will perform satisfactorily the duties imposed by the general design, shall be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Engineer, of equal quality and function. The Engineer shall determine equality based on such information, tests, or other supporting data that may be required of the Contractor.

8.2 Upon acceptance and approval by the Engineer of an equal product, it shall remain the responsibility of the Contractor to coordinate installation of the item with all other items to be furnished to assure proper fitting together of all items. Similar responsibility applies to items which are left to the Contractor's option. Any additional cost of equal items and any additional cost incidental to the coordination and/or fitting together of such items shall be borne by the Contractor at no extra cost to the Owner.

8.3 If a specified or equal item is not available to meet the construction schedule, the Contractor may propose a substitute item of less than equal performance and quality. If this substitute is acceptable to the Engineer, any difference in purchase cost or costs incidental to the installation of such item will be negotiated between the parties to the contract.

8.4 Neither equal nor substitute items shall be installed without written approval of the Engineer.

8.5 The Contractor shall warrant that if substitutes are approved, no major changes in the function or general design of the Project will result.

9. Patents. Patent information is as follows:

9.1 The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents.

9.2 License and/or royalty fees for the use of a process used in wastewater plant design which is authorized by the Owner for the project, must be reasonable, and paid to the holder of the patent, or his authorized licensee.

9.3 If the Contractor uses any design, device or materials in the construction methods for the project covered by patents or copyrights, he shall provide for such use by suitable agreement with the owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the construction of the work or after completion of the work.

10. Surveys. Surveys of land, property and construction shall be as follows:

10.1 The Owner will provide all land surveys and will establish and locate all property lines relating to the project.

10.2 For structures, the Engineer will establish and stake out one or more base lines as needed and will establish bench marks in and around the project site for the use of the Contractor and for the Engineer's own reference in checking the work in progress. For structures such as pipelines, the Engineer will establish the location of the pipe, manholes and other appurtenances, and will establish bench marks along the route of the pipeline at intervals for the using of the Contractor and for his own reference in checking the pipe and manhole inverts and other elevations throughout the project. The Contractor shall utilize the lines and bench marks established by the Engineer to set up whatever specific detail controls he may need for establishing location, elevation lines and grades of all structures. All this work is subject to checking, approval, and continuous surveillance by the Engineer to avoid error. The Contractor shall provide the Engineer with a qualified man or men to assist in this checking as needed and on request of the Engineer.

10.3 For construction other than pipelines and appurtenances in roadways and cross country, the Contractor shall be responsible for the location and setting lines and grades. The Contractor shall establish the location for pump station and wastewater treatment facility structures, associated yard piping including electrical conduits, internal piping and all equipment. Base lines and benchmarks for setting of the lines and grades for the above shall be provided by the Engineer.

10.4 Protection of stakes. The Contractor shall protect and preserve all of the established baseline stakes, bench marks, or other controls placed by the Engineer. Any of these items destroyed or lost through fault of the Contractor will be replaced by the Engineer at the Contractor's expense.

11. Contractor's Obligations are as follows: The Contractor shall and in good workmanlike manner, do and perform all work and furnish and pay for all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time stated in the proposal in accordance with the plans and drawings covered by this contract, and any and all supplemental plans and drawings, in accordance with the directions of the Engineer as given from time to time during the progress of the work, whether or not he considers the direction in accordance with the terms of the contract. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the contract documents, and shall do, carry on and complete the entire work to the satisfaction of the Engineer and Owner.

Contractor shall carry on the work and adhere to the progress schedule during all disputes, disagreements or unresolved claims with the Owner. No work shall be delayed or postponed pending the resolution of any disputes, disagreements, or claims except as the Owner and Contractor may otherwise agree in writing.

12. Weather Conditions. In the event of temporary suspension of work, or during inclement weather, or whenever the Engineer shall direct, the Contractor and his Subcontractors shall protect their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or material shall have been damaged or injured by reason of failure on the part of the Contractor or any of his Subcontractors to so protect his work, such materials shall be removed and replaced at the expense of the Contractor.

13. Protection of Work and Property shall be provided as follows:

13.1 The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work, and that of adjacent property, from damage. The Contractor shall replace or make good any such damage, loss or injury unless caused directly by errors contained in the contract, or by the Owner, or his authorized representatives. The Contractor will notify owners of adjacent utilities when prosecution of the Work may affect them.

13.2 The Contractor shall take all necessary precautions for the safety of employees on the work site, and shall comply with all applicable provisions of federal, state and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the work is being performed. He shall erect and properly maintain at all times, as required by the conditions and progress of the work, all necessary safeguards for the protection of the workmen and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways, trenches and other excavations, and falling materials, and he shall designate a responsible member of his organization on the work, whose duty shall be the prevention of accidents. The name and position of any person so designated shall be reported to the

Engineer by the Contractor. The person so designated shall be available by phone during nonworking hours.

13.3 In case of emergency which threatens loss or injury of property, and/or safety of life, the Contractor is allowed to act, without previous instructions from the Engineer. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted in writing to the Engineer for approval.

13.4 When the Contractor has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer.

13.5 The intention is not to relieve the Contractor from acting, but to provide for consultations between Engineer and Contractor in an emergency which permits time for such consultations.

13.6 The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Article 17 (extra work and change orders) of the general conditions.

14. Inspection of work for conformance with plans and specifications.

14.1 For purposes of inspection and for any other purpose, the Owner, the Engineer, and agents and employees of the Division or of any funding agency may enter upon the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefore. The Engineer shall be furnished with every facility for ascertaining that the work is in accordance with the requirements and intention of this contract, even to the extent of uncovering or taking down portions of finished work.

14.2 During construction and on its completion, all work shall conform to the location, lines, levels and grades indicated on the drawings or established on the site by the Engineer and shall be built in a workmanlike manner, in accordance with the drawings and specifications and the supplementary directions given from time to time by the Engineer. In no case shall any work which exceeds the requirements of the drawings and specifications be paid for as extra work unless ordered in writing by the Engineer.

14.3 Unauthorized work and work not conforming to plans and specifications shall be handled as follows:

a. Work considered by the Engineer to be outside of or different from the plans and specifications and done without instruction by the Engineer, or in wrong location, or done without proper lines or levels, may be ordered by the Engineer to be uncovered or dismantled.

b. Work done in the absence of the Engineer or his agent may be ordered by the Engineer to be uncovered or dismantled.

c. Should the work thus exposed or examined prove satisfactory, the uncovering or dismantling and the replacement of material and rebuilding of the work shall be considered as "Extra Work" to be processed in accordance with article 17.

d. Should the work thus exposed or examined prove to be unsatisfactory the uncovering or dismantling and the replacement of material and rebuilding of the work shall be at the expense of the Contractor.

15. Reports, Records and Data shall be furnished as follows: The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as are required by the Contract Documents or as the Owner, Division or any funding agency may request concerning work performed or to be performed under this contract.

16. Superintendence by Contractor shall be furnished as follows: At the site of the work, the Contractor shall employ a competent construction superintendent or foreman who shall have full authority to act for the Contractor. The superintendent or foreman shall have been designated in writing by the Contractor as the Contractor's representative at the site. It is understood that such representative shall be acceptable to the Engineer and shall be the one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. Such representative shall be present on the site at all times as required to perform adequate supervision and coordination of the Work.

17. Extra Work and Change Orders shall be processed as follows:

17.1 The Engineer may at any time by written order and without notice to the sureties require the performance of such extra work or changes in the work as may be found necessary. The amount of compensation to be paid to the Contractor for any extra work so ordered shall be made in accordance with one or more of the following methods in the order of precedence listed below:

a. A price based on unit prices previously approved; or

b. A lump sum price agreed upon between the parties and stipulated in the order for the extra work;

c. A price determined by adding 15 percent to the "reasonable cost" of the extra work performed, such "reasonable cost" to be determined by the Engineer in accordance with the following paragraph.

17.2 The Engineer shall include the reasonable cost to the Contractor of all materials used, of all labor, both common and skilled, of foreman, trucks, and the fair-market rental rate for all machinery and equipment for the period employed directly on the work. The reasonable cost for extra work shall include the cost to the Contractor of any additional

insurance that may be required covering public liability for injury to persons and property, the cost of workmen's compensation insurance, federal social security, and any other costs based on payrolls, and required by law. The cost of extra work shall not include any cost or rental of small tools, buildings, or any portion of the time of the Contractor, his project supervisor or his superintendent, as assessed upon the amount of extra work, these items being considered covered by the 15 percent added to the reasonable cost. The reasonable cost for extra work shall also include the premium cost, if any, for additional bonds and insurance required because of the changes in the work.

17.3 In the case of extra work which is done by Subcontractors under the specific contract, or otherwise if so approved by the Engineer, the 15 percent added to the reasonable cost of the work will be allowed only to the Subcontractor. On such work an additional percentage of the reasonable cost (before addition of the 15 percent) will be paid to the Contractor for his work in directing the operations of the Subcontractor, for administrative supervision, and for any overhead costs. Such percentage shall be in accordance with the following schedule: reasonable cost up to and including $50,000—10 percent; next $50,000 to and including $100,000—7½ percent; greater than $100,000—5 percent.

17.4 The Engineer may authorize minor changes or alterations in the work not involving extra cost and not inconsistent with the overall intent of the contract documents. These shall be accomplished by a written field order. However, if the Contractor believes that any minor change or alteration authorized by the Engineer entitles him to an increase in the contract price, he may make a claim therefore as provided in article 21.

18. Time For Completion and Liquidated Damages. The following paragraphs address time for completion and liquidated damages:

18.1 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the contract of the work to be done hereunder are Essential Conditions of this contract; and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the "Notice to Proceed."

18.2 The Contractor agrees that said work shall be pursued regularly, diligently and continuously at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

18.3 If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the Owner the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work.

18.4 The liquidated damages amount is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing

and ascertaining the actual damages the Owner would in such event sustain. Said amount is agreed to be the amount of damages which the Owner would sustain and said amount shall be deducted from time to time by the owner from current periodical payments.

18.5 It is further agreed that "time is of the essence" of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall "be of the essence". Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the Owner determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to the Owner; provided, further, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in the completion of the work is due to:

a. A preference, priority or allocation order duly issued by the government;

b. An unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather;

c. Any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article:

18.6 The Contractor shall promptly notify the Owner in writing of the causes of the delay. The Owner shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of his decision in the matter.

19. Defective Work. Defective work shall be processed as follows:

19.1 The Contractor shall promptly remove from the premises all materials and work condemned by the Engineer as failing to meet contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the contract and without expense to the Owner and shall bear the expense of making good all work of other Contractors which was destroyed or damaged by such removal or replacement.

19.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such condemned work and materials within 10 days after receipt of written notice, the Owner may remove them and store the material at the expense of the Contractor. If the Contractor does not pay the expense of such removal and storage within 10 days time thereafter, the Owner may, upon 10 days written notice, sell such materials at auction or at private sale and shall pay to the Contractor any net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

20. Differing Site Conditions. Claims for differing site conditions shall be processed as follows:

20.1 The Contractor shall promptly and before such conditions are disturbed, notify the Engineer in writing of:

a. Subsurface or latent physical conditions at the site differing materially from those indicated in this contract; or,

b. Unknown physical conditions at the site, differing materially from those ordinarily encountered and generally recognized as inherent in the type of work provided for in this contract.

20.2 The Engineer shall promptly investigate the conditions. If he finds that conditions differ materially and will cause an increase or decrease in the Contractor's cost or the time required to perform any part of the work under this contract whether or not changed as a result of such conditions, the Engineer shall make an equitable adjustment and modify the contract in writing.

20.3 No claim of the Contractor under this clause shall be allowed unless the Contractor has given proper notice as required in paragraph 20.1 of this clause.

20.4 No claim by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

21. Claims For Extra Cost. Claims for extra cost shall be processed as follows:

21.1 No claim for extra work or cost shall be allowed unless the same was done pursuant to a written order by the Engineer, approved by the Owner and the claim presented for payment with the first estimate after the changed or extra work is done. When work is performed under the terms of article 17, the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost when requested by the Owner and shall allow the Owner access to accounts relating thereto.

21.2 If the Contractor claims that any instructions by drawings or similar documents issued after the date of the contract involve extra cost under the contract, he shall give the Engineer written notice after the receipt of such instruction and before proceeding to execute the work, except in an emergency which threatens life or property, then the procedure shall be as provided for under article 17, "Extra Work & Change Orders." No claim shall be valid unless so made.

22. Right of Owner to Terminate Contract:

22.1 In the event that any of the provisions of this contract are violated by the Contractor, or by any of his Subcontractors, the Owner may serve written notice upon the Contractor and the surety of its intention to terminate the contract, and unless within 10 days after the serving of such notice upon the Contractor, such violation or delay shall cease and satisfactory arrangement for correction be made, the contract shall, upon the expiration of said 10 days cease and terminate. In the event of any such termination, the Owner shall immediately serve notice thereof upon the surety and the Contractor and the surety shall have the right to take over and perform the contract; provided, however, that if the surety does not commence performance thereof within 10 days from the date of the mailing to such surety of notice of termination, the Owner may take over the work and prosecute the same to completion by contract or by force account for the account and at the expense of the Contractor and the Contractor and his surety shall be liable to the Owner for any excess cost occasioned the Owner thereby, and in such event the Owner

may take possession of and utilize in completing the work, such materials, appliances, and plant as may be on the site of the work and necessary therefore.

22.2 If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should refuse or should fail, except in cases for which extensions of time are provided, to supply enough skilled workmen or materials, or if he should fail to make payments to Subcontractors or for material or labor, so as to affect the progress of the work, or be guilty of a violation of the contract, then the Owner, upon the written notice of the Engineer that sufficient cause exists to justify such action may, without prejudice to any other right or remedy and after giving the Contractor and his surety 7 days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, equipment and other facilities installed on the work and paid for by the Owner, and finish the work by whatever method he may deem expedient. In the case of termination of this contract before completion from any cause whatever, the Contractor, if notified to do so by the Owner, shall promptly remove any part or all of his equipment and supplies at the expense of the Contractor. If such expense exceeds such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be approved by the Engineer.

22.3 Where the contract has been terminated by the Owner, said termination shall not affect or terminate any of the rights of the Owner as against the Contractor or his surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the Owner due the Contractor under the terms of the contract, shall not release the Contractor or his surety from liability for his default.

22.4 After ten (10) days from delivery of a Written Notice to the Contractor and the Engineer, the Owner may, without cause and without prejudice to any other remedy, elect to abandon the Project and terminate the Contract. In such case the Contractor shall be paid for all Work executed and any expense sustained plus reasonable profit.

22.5 If through no act or fault of the Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Engineer or awarded by arbitrators within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) days from delivery of a Written Notice to the Owner and the Engineer terminate the Contract and recover from the Owner payment for all Work executed and all expenses sustained. In addition and in lieu of terminating the Contract, if the Engineer has failed to act on a request for payment or if the Owner has failed to make any payment as aforesaid, the Contractor may upon ten (10) days written notice to the Owner and the Engineer stop the Work until paid all amounts then due, in which event and upon resumption of the Work Change Orders shall be issued for adjusting the Contract Price or Extending the Contract Time or both to compensate for the costs and delays attributable to the stoppage of the Work.

22.6 If the performance of all or any portion of the Work is suspended, delayed, or interrupted as a result of failure of the Owner or Engineer to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time, an adjustment in the Contract Price or an extension of the Contract Time, or both, shall be

made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Owner or Engineer.

23. Construction Schedule and Periodic Estimates shall provide for the following:

23.1 Before starting the work or upon request by the Engineer during its progress, the Contractor shall submit to the Engineer a work plan showing construction methods and the various steps he intends to take in completing the work.

23.2 Before the first partial payment is made, the Contractor shall prepare and submit to the Engineer:

a. A written schedule fixing the dates for submission of drawings; and

b. A written schedule fixing the respective dates for the start and completion of segments of the work. Each such schedule shall be subject to review and change during the progress of the work.

c. Respective dates for submission of Shop Drawings and for the beginning of manufacture, the testing, and the installation of materials, supplies, and equipment.

d. A schedule of payments that the Contractor anticipates will be earned during the course of the Work.

24. Payments to Contractor. Payments to the Contractor shall be made as follows:

24.1 Progress payments. The Owner will once each month make a progress payment to the Contractor on the basis of an estimate of the total amount of work done to the time of the estimate and its value as prepared by the Contractor and approved by the Engineer.

24.2 Retainage by Owner. The Owner will retain a portion of the progress payment, each month, in accordance with the following procedures:

a. The Owner will establish an escrow account in the bank of the Owner's choosing. The account will be established such that interest on the principal will be paid to the Contractor. The principal will be the accumulated retainage paid into the account by the Owner. The principal will be held by the bank, available only to the Owner, until termination of the contract.

b Until the work is 50% complete, as determined by the Engineer, retainage shall be 10% of the monthly payments claimed. The computed amount of retainage will be deposited in the escrow account established above.

c. After the work is 50% complete, and provided the Contractor has satisfied the Engineer in quality and timeliness of the work, and provided further that there is no specific cause for withholding additional retainage no further amount will be withheld. The escrow account will remain at the same balance throughout the remainder of the project, unless drawn upon by the Owner in accordance with articles 19, 22, and 58.

d. Upon substantial or final completion (as defined in article 25), the amount of retainage will be reduced to 2% of the total Contract Price plus an additional retainage based on the Engineer's estimate of the fair value of the punch list items and the cost of completing and/or correcting such items of work, with specified amounts for each incomplete or defective item of work. As these items are completed or corrected, they shall be paid for out of the retainage until the entire project is declared completed (See article 25). The final 2% retainage shall be held during the one-year warranty period and released only after the Owner has accepted the project.

24.3 In reviewing monthly estimates for payments of the value of work done, the Engineer may accept in the estimate, prior to subtracting the retainage, the delivered cost of certain equipment and nonperishable material which have been delivered to the site or off-site location and which are properly stored and protected from damage. With the estimate, the Contractor shall submit to the Engineer invoices as evidence that the material has been delivered to the site. Prior to submitting the next monthly estimate, the Contractor shall provide the Engineer with paid invoices or other evidence that the materials have been paid for. If the Contractor fails to submit such evidence, the Engineer may then subtract the value of such materials or equipment for which the Owner has previously paid, from the next monthly estimate. The type of equipment and material eligible for payment prior to being incorporated in the work will be at the Engineer's discretion. Material and equipment made specifically for the subject job will be eligible for payment.

24.4 All material and work for which partial payments have been made shall thereupon become the sole property of the Owner. This provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or for the restoration of any damaged work, or as a waiver of the right of the Owner to require compliance with all of the terms of the contract.

24.5 Owner's right to withhold payments and make application. The Contractor agrees that he will indemnify and save the Owner or the Owner's agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts, equipment, power, tools and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all claims of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do so, then the Owner may, upon written notice to the Contractor either pay unpaid bills of which the Owner has written notice directly, or withhold from the Contractor's unpaid compensation a sum of money to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged. Payment to the Contractor shall then be resumed in accordance with the terms of this contract but in no event shall the above provisions be construed to impose any obligations upon the Owner to either the Contractor or his surety or any third party. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the Owner shall be considered as payment made under contract by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

24.6 If the Owner fails to make payment forty-five (45) days after approval by the Engineer, in addition to other remedies available to the Contractor, there shall be added to

each such payment interest at an annual rate of 10% commencing on the first day after said payment is due and continuing until the payment is received by the Contractor.

25. Acceptance and Final Payment provisions shall be as follows:

25.1 Substantial completion and payment.

a. Substantial completion shall be that point, as certified by the Engineer, at which the contract has been completed to the extent that the Owner may occupy and/or make use of the work performed for the purposes for which it was intended. Upon substantial completion there may be minor items, such as seeding, landscaping, etc., yet to be completed or items of work to be corrected.

b. Upon receipt of written notice from the Contractor that the work is substantially complete, the Engineer shall promptly make an inspection, and when he finds the work complies with the terms of the contract and the contract is substantially completed, he will issue a signed and dated certificate, and a list of all items to be completed or corrected, stating that the work required by this contract has been substantially completed and is accepted by him.

c. Upon substantial completion, the entire balance due and payable to the Contractor less 2 percent of the Contract Price, and less a retention based on the Engineer's estimate of the fair value for the cost of completing or correcting listed items of work with specified amounts for each incomplete or defective item of work shall be made.

d. The general guarantee period for the work shall begin on the date certified by the Engineer that the work is substantially completed.

25.2 Final completion shall be that point at which all work has been completed and all defective work has been corrected. Unless the Engineer has issued a certificate of substantial completion, the general guarantee period shall begin upon certification by the Engineer of final completion.

25.3 At the end of the general guarantee period for the entire contract which has been certified finally completed or substantially completed, the Owner, through the Engineer, shall make a guarantee inspection of all or portions of the work. When it is found that the work is satisfactory and that no work has become defective under the terms of the contract, the Owner will accept the entire project and make final payment, including the reimbursement of monies retained pursuant to the guarantee period.

25.4 If the guarantee inspection discloses any work as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of such work, and the Contractor shall immediately execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the guarantee inspection, provided the work has been satisfactorily completed.

25.5 Before issuance of final payment, the Contractor shall certify in writing to the Engineer that all payrolls, material bills, and other indebtedness connected with the work have been paid or otherwise satisfied; except that in case of disputed indebtedness or liens, if the contract does not include a payment bond, the Contractor may submit in lieu of certification of payment a surety bond in the amount of the disputed indebtedness or

liens, guaranteeing payment of all such disputed amounts, including all related costs and interest in connection with said disputed indebtedness or liens which the Owner may be compelled to pay upon adjudication.

25.6 If upon substantial completion, full completion is delayed through no fault of the Contractor, and the Engineer so certifies, the Owner may, upon certificate of the Engineer, and without termination of the contract, make payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

25.7 The acceptance by the Contractor of final payment shall release the Owner from all claims and all liability to the Contractor for all things relating to this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations of the performance and payment bond under this contract.

26. Payments by Contractor. The Contractor shall pay the costs:

26.1 For all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered;

26.2 For all materials, tools, and other expendable equipment to the extent of 90 percent of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the work and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools and equipment are incorporated or used; and

26.3 To each of his Subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his Subcontractors to the extent of each Subcontractor's interest therein.

27. Insurance. The Contractor and any Subcontractor shall obtain all the insurance required under this article and such insurance shall be approved by the Owner.

27.1 The Contractor and all Subcontractors shall procure and shall maintain during the life of this contract workmen's compensation insurance as required by applicable state law. The Contractor shall provide and shall cause each Subcontractor to provide adequate employer's liability insurance.

Limits of Liability: $100,000 each accident;
$500,000 disease - policy limit;
$100,000 disease - each employee.

27.2 The Contractor shall procure and shall maintain during the life of this contract Commercial General liability insurance to include contractual liability, explosion, collapse and underground coverages.

Limits of liability: $1,000,000 each occurrence bodily injury and property damage;
$2,000,000 general aggregate - include per project aggregate endorsement;
$2,000,000 products/completed operations aggregate.

If blasting or demolition or both is required by the contract, the Contractor or Subcontractor shall obtain the respective coverage and shall furnish the Engineer a certificate of insurance evidencing the required coverages prior to commencement of any operations involving blasting or demolition or both.

27.3 The Contractor shall procure and shall maintain during the life of this contract comprehensive automobile liability insurance to include all motor vehicles including owned, hired, borrowed and non-owned vehicles.

Limits of liability: $1,000,000 combined single limit for bodily injury and property damage.

27.4 The Contractor shall either:

a. Require each of his Subcontractors to procure and to maintain during the life of his subcontract commercial general liability insurance and comprehensive automobile liability insurance of the type and in the amounts specified in articles 27.2 and 27.3; or

b. Insure the activities of his Subcontractors in his policy.

27.5 The required insurance shall provide adequate protection for the Contractor and his Subcontractors, respectively, against damage claims which may arise from work under this contract, whether such work be by the insured or by anyone employed by him and also against any of the special hazards which may be encountered in the performance of this contract.

27.6 The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such insurance shall not be canceled or materially altered, except after 10 days written notice has been received by the Owner.

27.7 For builder's risk insurance (fire and extended coverage) and until the work is completed and accepted by the Owner, the Contractor is required to maintain builder's risk type insurance on a 100 percent completed value basis on the insurable portion of the work for the benefit of the Owner, the Contractor, and Subcontractors as their interests may appear.

27.8 The Contractor shall take out and furnish to the Owner and maintain during the life of this contract, complete Owner's protective liability insurance.

Limits of Liability: $1,000,000 each occurrence;
$2,000,000 aggregate.

28. Contract Security. The Contractor shall within ten (10) days after the receipt of the Notice of Award furnish the Owner with a performance bond and a payment bond in penal sums equal to the amount of the contract price conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the Work provided by the contract Documents. Such Bonds shall be executed by the Contractor and a corporate bonding company licensed to transact business in the state in which the Work is to be performed

and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these Bonds shall be borne by the Contractor.

29. Additional or Substitute Bond. If at any time a surety on any such Bond is declared as bankrupt or loses its right to do business in the state in which the Work is to be performed, or is removed from the list of Surety Companies accepted on Federal Bonds, the Contractor shall within ten (10) days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.

30. Assignments. The Contractor shall not assign the whole or any part of this contract or any monies due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this contract.

31. Mutual Responsibility of Contractors. If, through acts of neglect on the part of the Contractor, any other Contractor or any Subcontractor shall suffer loss or damage on the work site, the Contractor agrees to settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractors will so settle. If such other Contractor or Subcontractors shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the Owner against any such claim.

32. Subcontracting. When subcontracting, the Contractor:

32.1 May utilize the services of specialty Subcontractors on those parts of the work which, under usual contracting practices, are performed by specialty Subcontractors.

32.2 Shall be as fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

32.3 Shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind Subcontractors to the Contractor by the terms of the contract documents insofar as applicable to the work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provision of the contract documents.

32.4 Shall not create any contractual relation between any Subcontractor and the Owner.

32.5 Shall not award Work to Subcontractor(s), in excess of fifty percent (50%) of the Contract Price, without prior written approval of the Owner.

33. Authority of the Engineer. In performing his duties, the Engineer or his representative shall:

33.1 Have the authority to suspend the work in whole or in part for such periods as he may deem necessary due to the failure of the Contractor to carry out provisions of the Contract or for failure of the Contractor to suspend work in weather conditions considered by the Engineer to be unsuitable for the prosecution of the work. The Engineer shall give all orders and directions under this contract, relative to the execution of the work. The Engineer shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to the work. The Engineer's estimates and decisions shall be final and conclusive, except as otherwise provided. In case any question shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Engineer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected to any extent by such question. The Engineer shall decide the meaning and intent of any portion of the specifications and of any plans or drawings where the same may be found unclear. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the Engineer.

a. The purpose of the above article is not in any way to relieve the Contractor of his responsibilities for the safety of workmen or general public in the execution of the work. Attention is drawn to Article 13 of these Conditions which refers to the safety obligations of the Contractor.

b. The Engineer, acting on behalf of the Owner, has the authority to enforce corrective action for work not in accordance with the specifications.

c. In addition, the Engineer, acting on behalf of the Owner, is to ensure that the work is in accordance with the Contract documents. He is not held responsible, however, for the methods of construction, sequences, schedules and procedures in the execution of the work. The Engineer does have the opportunity under 33.1 to reject the method of construction, work plan schedule, procedures, as he thinks appropriate.

33.2 Appoint assistants and representatives as he desires, and they shall be granted full access to the work under the contract. They have the authority to give directions pertaining to the work, to approve or reject materials, to suspend any work that is being improperly performed, to make measurements of quantities, to keep records of costs, and otherwise represent the Engineer in all matters except as provided below. The Contractor may, however, appeal from their decision to the Engineer himself, but any work done pending its resolution is at the Contractor's own risk. Except as permitted and instructed by the Engineer, the assistants and representatives are not authorized to revoke, alter, enlarge, relax, or release any requirements of these specifications, nor to issue instructions contrary to the plans and specifications. They are not authorized to act as superintendents or foremen for the Contractor, or to interfere with the management of the work by the Contractor. Any advice which the assistants or representatives of the Engineer may give the Contractor shall not be construed as binding the Engineer or the Owner in any way, nor as releasing the Contractor from the fulfillment of the terms of the contract. All transactions between the Contractor and the representatives of the Engineer which are liable to protest or where payments are involved shall be made in writing.

34. Stated Allowances. The Contractor shall include in his proposal for costs of materials not shown in his bid under "cash allowances" or "allowed materials," any cash allowances stated in the supplemental general conditions or other contract documents. The Contractor shall purchase the "allowed materials" as directed by the Owner on the basis of the lowest and best bid of at least 3 competitive bids. If the actual price for purchasing the "allowed materials" is more or less than the "cash allowance," the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "allowed materials" shall be included in the applicable sections of the contract specifications covering this work.

35. Use of Premises, Removal of Debris, Sanitary Conditions. In the use of premises or removal of debris, the Contractor expressly undertakes at his own expense: to take every precaution against injuries to persons or damage to property; to maintain sanitary conditions; to store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not interfere with the progress of his work or the work of any other Contractors; to place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work; to clean up frequently all refuse, rubbish, scrap materials and debris caused by his operations, to the end that at all times the site of the work shall present an orderly and workmanlike appearance; before final payment to remove all surplus material falsework, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in an orderly condition; to effect all cutting, fitting or patching of his work required to make the same conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other Contractor; to provide and maintain in a sanitary condition such toilet accommodations for the use of his employees as may be necessary to comply with the requirements of the state and local boards of health, or of other bodies or authorities having jurisdiction.

36. Quantities of Estimate. Wherever the estimated quantities of work to be done and materials to be furnished under this contract are shown in any of the documents including the proposal, they are given for use in comparing bids and the right is specifically reserved except as herein otherwise specifically limited, to increase or decrease them as may be deemed reasonably necessary by the Owner to complete the work contemplated by this contract, and such increase or decrease shall in no way invalidate this contract, nor shall any such increase or decrease give cause for claims or liability for damages. Such increases or decreases shall not exceed 25 percent of the estimated quantities of work. An increase or decrease in quantities for subsurface materials (e.g. ledge, unsuitable backfill), which overrun or underrun by 25% or more of the bid quantity may be the basis for a contract price adjustment, at the rate of a negotiated adjusted unit rate. Negotiated unit price rates shall be equitable and shall take into account, but not be limited to the following factors; bid unit rate, distribution of rates and bid balance, and the scope of work as affected by the changed quantities. Claims for extra work resulting from changed quantities shall be processed under article 21.

37. Lands and Rights-of-Way. Acquisition and usage of lands and rights-of-way shall be as follows:

37.1 Prior to issuing the Notice to Proceed, the Owner shall legally obtain all lands and rights-of-way necessary for carrying out and completing the work to be performed under this contract.

37.2 The Contractor shall not (except after written consent from the Owner) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer.

37.3 The Owner shall provide to the Contractor information which delineates and describes the lands owned and the rights-of-way acquired.

37.4 The Contractor shall provide at its own expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

38. General Guarantee. With reference to warranties, neither the final certificate of payment nor any provision in the contract documents, nor partial or entire occupancy of the premises by the Owner, shall constitute an acceptance of work not done in accordance with the contract documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which appear within the warranty period one year or longer if required by the contract, from the certified date of completion or substantial completion of the work. The Owner will give notice of observed defects within two working days of their discovery.

39. Errors and Inconsistencies. With reference to errors and inconsistency in contract documents, any provisions in any of the contract documents which may be in conflict with the paragraphs in these general conditions shall be subject to the following order of precedence for interpretation:

39.1 Drawings will govern technical specifications.

39.2 General conditions will govern drawings and technical specifications.

39.3 Supplemental general conditions will govern general conditions, drawings and technical specifications.

39.4 Special conditions will govern supplemental general conditions, general conditions, drawings and technical specifications.

39.5 The Contractor shall take no advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers such an error or omission, he shall notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the plans and specifications.

39.6 Figure dimensions on Drawings shall govern over general drawings.

40. Notice and Service Thereof. Any notice to the Contractor from the Owner relative to any part of this contract will be in writing and will be considered delivered and the service completed, when said notice is mailed, by certified registered mail, to the Contractor at

his last given address, or delivered in person to the Contractor or his authorized representative on the work.

41. Required Provisions Deemed Inserted. Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly inserted (example; miswording, etc.), then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.

42. Protection of Lives and Health. The work under this contract is subject to the safety and health regulations (CRF 29, part 1926, and all subsequent amendments) as promulgated by the U.S. Department of Labor on June 24, 1974. Contractors are urged to become familiar with the requirements of these regulations.

43. OSHA Construction Safety Program.

43.1 Pursuant to NHRSA 277:5-a, the Contractor shall provide an Occupational Health and Safety Administration (OSHA) 10-hour construction safety program for its on-site employees. All employees are required to complete the program prior to beginning work. The training program shall utilize an OSHA-approved curriculum. Graduates shall receive a card from OSHA certifying the successful completion of the training program.

43.2 Any employee required to complete the OSHA 10-hour construction safety program, and who can not within 15 days provide documentation of completion of such program, shall be subject to removal from the job site.

43.3 The following individuals are exempt from the requirements of the 10-hour construction safety program: law enforcement officers involved with traffic control or jobsite security; flagging personnel who have completed the training required by the Department of Transportation; all relevant federal, state and municipal government employees and inspectors; and all individuals who are not considered to be on the site of work under the federal Davis-Bacon Act, including, but not limited to, construction and non-construction delivery personnel and non-trade personnel.

44. Equal Employment Opportunity. Under equal employment opportunity requirements and during the performance of this contract the Contractor agrees to the following:

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

44.2 The Contractor will in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment, without regard to race, creed, color, national origin, or sex.

44.3 The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the labor union or worker's representative of the Contractor's commitment under section 202 of executive order no. 11246 of September 24, 1965, and 11375 of October, 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

44.4 The Contractor will comply with all provisions of executive orders no. 11246 and 11375.

44.5 The Contractor will furnish all information and reports required by executive orders no. 11246 and 11375.

44.6 In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part by the Owner or the Department of Labor and the Contractor may be declared ineligible for further government contracts or federally-assisted construction, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the Department of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

44.7 A breach of this article may be grounds for termination of this contract and for debarment as provided in 29 CFR 5.6.

45. Interest of Federal, State or Local Officials. No federal, state or local official shall be admitted to any share or part of this contract or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

46. Other Prohibited Interests. No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiating, making, accepting, or approving any architectural, Engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, Engineer or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

47. Use and Occupancy Prior to Acceptance. Use and occupancy of a portion or unit of the project, upon completion of that portion or unit, and before substantial completion of the project, shall be a condition of this contract with the following provisions:

47.1 The Owner will make his request for use or occupancy to the Contractor in writing.

47.2 There must be no significant interference with the Contractor's work or performance of duties under the contract.

47.3 The Engineer, upon request of the Owner and agreement by the Contractor, will make an inspection of the complete part of the work to confirm its status of completion.

47.4 Consent of the surety and endorsement of the insurance carrier must be obtained prior to use and/or occupancy by the Owner. Also, prior to occupancy, the Owner will secure the required insurance coverage on the building.

47.5 The Owner will have the right to exclude the Contractor from the subject portion of the project after the date of occupancy but will allow the Contractor reasonable access to complete or correct items.

47.6 The warranty period shall begin upon substantial completion.

48. Suspension of Work. The Owner may, at any time and without cause, suspend the work or any portion thereof for a period of not more than 90 days by notice in writing to the Contractor and the Engineer. The Owner shall fix the date on which work shall be resumed. The Contractor will be allowed an increase in the contract price or an extension of the contract time, or both, directly attributable to any suspension if he makes a claim therefore as provided in articles 17 and 21.

49. [Reserved]

50. [Reserved]

51. [Reserved]

52. Project Sign. Furnish and erect a sign at the project site to identify the project and to indicate that the State Government is participating in the development of the project. Place the sign in a prominent location as directed by the Engineer. Do not place or allow the placement of other advertising signboards at the project site or along rights-of-way furnished for the project work. See Exhibit 1 for details of construction.

53. [Reserved]

54. Public Convenience and Traffic Control requirements:

54.1 The Contractor shall at all times so conduct his work as to assure minimal obstruction to traffic. The safety and convenience of the general public and the residents along the work site route and the protection of property shall be provided for by the Contractor. The Contractor shall be responsible for timely notification to local residents before causing any interruptions of their access.

54.2 Fire hydrants and water holes for fire protection on or adjacent to the work site shall be kept accessible to fire apparatus at all times, and no obstructions shall be placed within 10 feet of any such facility. No footways, gutters, drain inlets, or portions of highways adjoining the work site shall be obstructed. In the event that all or part of a roadway is officially closed to traffic during construction, the Contractor shall provide and maintain safe and adequate traffic accessibility, satisfactory to the Engineer, for residences and businesses along and adjacent to the roadway so closed.

54.3 When the maintenance of traffic is considered by the Engineer to be minimal, the contract may not show this work as a pay item. In such cases, the Contractor shall bear all expense of maintaining traffic over the sections of road undergoing improvement and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary, without direct reimbursement.

55. Pre-Construction Conference. The Contractor shall not commence work until a pre-construction conference has been held at which representatives of the Contractor, Engineer, Division and Owner are present. The pre-construction conference shall be scheduled by the Engineer.

56. Maintenance During Construction.

56.1 The Contractor shall maintain the work during construction and until it is accepted by the Owner. This maintenance shall be continuous and effective work prosecuted day by day, with adequate equipment and forces, to the end that roads or structures are kept in satisfactory condition at all times.

56.2 All cost of maintenance during construction and before the work is accepted by the Owner shall be included in the unit prices bid on the various pay items and the Contractor shall not be paid an additional amount for such maintenance.

56.3 If the Contractor, at any time, fails to comply with the provisions above, the Engineer may direct the Contractor to do so. If the Contractor fails to remedy unsatisfactory maintenance within the time specified by the Engineer, the Engineer may immediately cause the project to be maintained and the entire cost of this maintenance will be deducted from money to become due the Contractor on this contract.

57. Cooperation with Utilities.

57.1 The Owner will notify all utility companies, all pipe line owners, or other parties affected, and have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction made as soon as practicable.

57.2 Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners of such utilities at their expense, except as may otherwise be provided for in the special conditions or as noted on the plans.

57.3 It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and as evident on the site, and that no additional compensation will be allowed for any delays, inconvenience, damage sustained by him due to any interference from such utility appurtenances or the operation of moving them.

57.4 The Contractor shall cooperate with the Owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication of rearrangements may be reduced to a minimum, and that services rendered by those parties will be minimal.

57.5 In the event of interruption to a water or utility service as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with said authority in the restoration of services. If water service is interrupted, repair work shall be continuous until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority. If any utility service is interrupted for more than 4 hours, the Contractor shall make provisions for temporary service at his own expense until service is resumed.

58. Work Performed at Night and on Sundays and Holidays shall comply with the following:

58.1 No work will be permitted at night or on Sundays or holidays except as approved in writing by the Engineer, and provided such work is not in violation of a local ordinance. When working at night, the Contractor shall provide flood lighting sufficient to insure the same quality of workmanship and the same conditions regarding safety as would be achieved in daylight.

58.2 Whenever Memorial Day or Fourth-of-July is observed on a Friday or a Monday and during the weekend of Labor Day, the Contractor may be required to suspend work for the 3 calendar days. Prior to the close of work, the work site shall be placed in a condition acceptable to the Engineer for the comfort and safety of the traveling public. An arrangement shall be made for responsible personnel acceptable to the Engineer to maintain the project in the above conditions.

59. Laws to be Observed. With reference to laws that shall be observed:

59.1 The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations, and all orders and decrees of tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the state and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

59.2 Indemnification

The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from the performance of the Work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

In any and all claims against the Owner or the Engineer, or any of their agents of employees, by any employees of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by disability benefit or other employee benefit acts.

The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications.

60. Permits. Permits to be obtained by the Contractor shall be in accordance with the following:

60.1 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be obtained and paid for by the Contractor. Permits, licenses and easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the Owner. Permits may include:

a. New Hampshire Department of Transportation Highway Trench Permits.

b. RSA 485-A:17 and 483-A N.H. DES Wetlands Bureau Dredge and Fill Permit.

c. RSA 485-A:17 - N.H. DES Site Specific Permit (Water Quality)

d. RSA 149-M:10 N.H. DES Solid Waste Management Bureau - disposal of construction debris and/or demolition waste.

e. N.H. Department of Environmental Services Air Resources Division (burning permits).

f. Other permits, as required by State and Local laws and ordinances.

g. Notice of intent for coverage under EPA's General NPDES Permit for construction dewatering activities.

61. Control of Pollution due to construction shall comply with the following:

61.1 During construction, the Contractor shall take precautions sufficient to avoid the leaching or runoff of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride and any other polluting materials which are unsightly or which may be harmful to humans, fish, or other life, into groundwaters and surface waters of the State.

61.2 In waters used for public water supply or used for trout, salmon, or other game or forage fish spawning or nursery, control measures must be adequate to assure that turbidity in the receiving water will be increased not more than 10 standard turbidity units (s.t.u.) in the absence of other more restrictive locally-established limitations, unless otherwise permitted by the Division. In no case shall the classification for the surface water be violated.

61.3 In water used for other purposes, the turbidity must not exceed 25 s.t.u. unless otherwise permitted by the Division.

62. Use of Explosives.

62.1 When the use of explosives is necessary for the prosecution of the Work, exercise the utmost care not to endanger life or property. The Contractor shall be responsible for any and all damage resulting from the use of explosives.

62.2 Store all explosives in a secure manner, in compliance with all State and local laws and ordinances, and legally mark all such storage places. Storage shall be limited to such quantity as may be needed for the work underway.

62.3 Designate as a "Blasting Area" all sites where electric blasting caps are located and where explosive charges are being placed. Mark all blasting areas with signs as required by law. Place signs as required by law from each end of the blasting area and leave in place while the above conditions prevail. Immediately remove signs after blasting operations or the storage of caps is over.

62.4 Notify each property Owner and public utility company having structures in proximity to the site of the work sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property. Such notice shall not relieve the Contractor of any of his responsibility for damage resulting from his blasting operation. Warn all persons within the danger zone of blasting operations and do not perform blasting work until the area is cleared. Provide sufficient flagmen outside the danger zone to stop all approaching traffic and pedestrians. Provide watchmen during the loading period and until charges have been exploded. Place adequate protective covering over all charges before being exploded.

63. Arbitration by Mutual Agreement.

63.1 All claims, disputes, and other matters in question arising out of, or relating to, the Contract Documents or the breach thereof, except for claims which have been waived by making an acceptance of final payment as provided in Section 25, may be decided by arbitration if the parties mutually agree. Any agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

63.2 Notice of the request for arbitration shall be filed in writing with the other party to the Contract Documents and a copy shall be filed with the Engineer. Request for arbitration shall in no event be made on any claim, dispute, or other matter in question which would be barred by the applicable statute of limitations.

63.3 The Contractor will carry on the Work and maintain the progress schedule during any arbitration proceedings, unless other wise mutually agreed in writing.

64. Taxes. The Contractor shall pay all sales, consumer, use, and other similar taxes required by the laws of the place where the Work is performed.

65 Separate Contracts.

65.1 The Owner reserves the right to let other contracts in connection with this Project. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work, and shall properly connect and coordinate the Work with theirs. If the proper execution or results of any part of the Contractor's Work depends upon the Work of any other Contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such Work that render it unsuitable for such proper execution and results.

65.2 The Owner may perform additional Work related to the Project or the Owner may let other contracts containing provisions similar to these. The Contractor will afford the other Contractors who are parties to such Contracts (or the Owner, if the Owner is performing the additional Work) reasonable opportunity for the introduction and storage of materials and equipment and the execution of the Work, and shall properly connect and coordinate the Work with theirs.

65.3 If the performance of the additional Work by other Contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice shall thereof be given to the Contractor prior to starting such additional Work. If the Contractor believes that the performance of such additional Work by the Owner or others involves it in additional expense or entitles it to an extension of the Contract Time, the Contractor may make a claim thereof as provided in Sections 17 and 18.

SPECIAL CONDITIONS

Special Conditions

The following special conditions modify, change, delete, or add to the "General Conditions." Where any part of the General Conditions is modified or voided by these Sections, the unaltered provisions of that part shall remain in effect.

SPECIAL CONDITIONS

SC-17.1 Extra Work and Change Orders

The first sentence is modified to read: "The Engineer, with the approval of the Owner, may at any time by written order and without notice to the sureties require the performance of such extra work or changes in the work as may be found necessary."

SC-20.2 Claims for Differing Site Conditions

Delete paragraph 20.2 in its entirety. **Replace** with the following:

"The Engineer shall promptly investigate the conditions. If he finds that conditions differ materially and will cause an increase or decrease in the Contractor's cost or the time required to perform any part of the work under this contract whether or not changed as a result of such conditions, the Engineer will notify the Owner and recommend an equitable adjustment. Following recommendations by the Engineer, the Contractor and Owner will enter into negotiations to modify the contract in writing."

SC-22.5 Right of Owner to Terminate Contract

The following language is **deleted** from the first sentence in paragraph 22.5: "approved by the Engineer or awarded by arbitrators within thirty (30) days of it approval and presentation", and **replaced** with "claimed as due".

SC-24.2a Payments to Contractor

Delete paragraph 24.2a in its entirety.

SC-24.2b Payments to Contractor

Delete the second sentence in paragraph 24.2b.

SC-24.6 Payments to Contractor

The following is **deleted** from the first sentence in paragraph 24.6: "approval by the engineer", and **replaced** with "Engineer's review".

SC-27 Insurance (Special Condition to GC27)

Change the following in paragraph two, Article 27.2:

"Limits of liability: ~~$1,000,000~~ $2,000,000 each occurrence bodily injury and property damage;
$2,000,000 general aggregate- include per project aggregate endorsement;
$2,000,000 products/completed operations aggregate."

SPECIAL CONDITIONS

$2,000,000 each occurrence and aggregate Professional Liability

Add the following to Article 27.2:

"Coverage amounts may be satisfied by excess or umbrella policies provided the City of Portsmouth is listed as an additional insured on the excess/umbrella policy as well as the general liability policy. The City of Portsmouth shall be named as additional insured as follows:

City of Portsmouth
Attn: Legal Department
1 Junkins Avenue
Portsmouth, NH 03801"

Change the following in paragraph two, Article 27.3:

"Limits of liability: ~~$1,000,000~~ $2,000,000 combined single limit for bodily injury and property damage."

Add the following to Article 27.3:

"Coverage amounts may be satisfied by excess or umbrella policies provided the City of Portsmouth is satisfied with coverage."

Change the following in Article 27.6:

The second sentence shall read: "Such insurance shall not be cancelled or materially altered, except after 30 days written notice has been received by the Owner."

Delete paragraph 27.7 in its entirety.

Add the following to Article 27.8:

"The Engineer and Engineer's Subcontractors shall be named as Additional Insured on the Owners policy provided by the Contractor. Contractor shall procure and shall maintain during the life of the contract pollution liability insurance and such coverage shall be at least $1,000,000".

Change the following in paragraph two, Article 27.8:

"Limits of Liability: $2,000,000 each occurrence;
$2,000,000 aggregate."

SPECIAL CONDITIONS

SGC-28 Contract Security (Supplement to GC 28)

Add the following paragraphs to Article 28 of the General Conditions:

> The payment bond and performance bond furnished by the contractor shall be in the form of the bonds shown on Page C-2.5 and C-2.6 and C-2.7 and C-2.8, unless approved otherwise by the engineer.
>
> The terms contained in the performance bond shall in no way invalidate the provisions of the contract documents or the right of the owner to terminate the contract as specified therein.

SC-44 Non-Discrimination

Add the following sentence to paragraph 44.2:

"Pursuant to New Hampshire law, the Contractor shall not discriminate on the basis of sexual orientation."

SC-52 Project Sign

Delete paragraph 52 in its entirety.

SC-58 Work Performed at Night and on Sundays and Holidays (Special Condition to GC 58.1)

Delete the first paragraph in its entirety.

Replace with the following paragraph:

"No work will be permitted at night or on Saturdays or on Sundays or holidays except as approved in writing by the Engineer, and provided such work is not in violation of a local ordinance. When working at night, the Contractor shall provide flood lighting sufficient to insure the same quality of workmanship and the same conditions regarding safety as would be achieved by daylight.

SC-59.2 Indemnification (Special Condition to GC 59.2)

Delete the first paragraph in its entirety.

Replace with the following paragraph:

"Contractor will indemnify Owner and Engineer against all suits, claims, judgments, awards, loss, cost or expense (including without limitation attorneys fees) arising in any way out of the Contractor's negligence or breach of it's obligations or warranties under this Contract. Contractor will defend all such actions with counsel satisfactory to the Owner at Contractor'

expense, including attorneys' fees and will satisfy any judgment rendered against Owner in such action."

SC-62.5 Use of Explosives (Special Condition to GC 62)

Add the following after paragraph 62.4:

All blasting shall conform fully with all applicable local, state and Federal laws. See Appendix A for City of Portsmouth Blasting Rules and Procedures and City of Portsmouth Blasting Ordinance.

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work of the Contract is shown and described in Drawings and Project Manual entitled:

City of Portsmouth
Hobbs Hill Water Tank and
Osprey Landing Water Tank Demolition
Portsmouth, New Hampshire

2. The Work includes the following major items:

a. Demolition of 400,000 gallon multi-leg steel elevated water storage tank, supporting structure(s) and appurtenances located at Hobbs Hill

b. Demolition of 200,000 gallon multi-leg steel elevated water storage tank, supporting structure(s) and appurtenances located at Osprey Landing

c. Minor clearing and grubbing

d. Disconnecting, capping, and abandoning existing water lines leading to tanks including completely filling abandoned pipe with flowable fill.

e. Minor electrical demolition

f. Coordination of utility pole, overhead wires, and electrical appurtenance removals

g. Chainlink fence removal/replacement

h. Restoration of all disturbed areas including loaming and seeding, vegetation, pavement, sidewalks, curbing

3. Related Sections:

a. Section 01350 – Health and Safety Plan

b. Section 01570 – Temporary Controls

c. Section 02220 – Demolition

d. Section 13010 – Elevated Storage Tank Demolition

1.2 SUBMITTALS

A. Informational Submittals

1. Submit copies of permits or approvals required for the Work, and submittals required under other Sections prior to initiating the Work.

1.3 EXISTING SYSTEM DESCRIPTION

A. The existing 400,000 gallon Hobbs Hill elevated water storage tank located at Hobbs Hill on the Pease Tradeport and is a multi-leg welded steel tank that was constructed in 1954. The tower is approximately 147 feet tall with a 55-foot diameter bowl. The water main ties into the existing water main located on opposite side of International Drive.

B. The existing 200,000 gallon Osprey Landing elevated water storage tank located within the Osprey Landing Apartment Community near Staysail Way and is a multi-leg riveted steel tank that was constructed in 1924. The tower is approximately 70 feet tall with a 38-foot diameter bowl and was formerly referred to as the Seacrest Village Water Tank. The water main ties into the existing water main located on Staysail Way. The Osprey Landing tank has been out of service since 2011, and will be demolished in the same time frame as the Hobbs Hill tank.

1.4 PROJECT/SITE CONDITIONS

A. Permits

1. Obtain the permits and/or approvals listed below:

a. Permits and licenses of a temporary nature necessary to perform the Work.

b. Permits for disposal of construction wastes including disposal of cleared and grubbed materials and scrap metal if required.

c. Other permits or licenses required for the Contractor's operations or required elsewhere in the Contract Documents and not included herein.

2. Comply with the permits and/or approvals listed below:

a. Federal Aviation Administration Determination of No Hazard to Air Navigation.

b. Federal Aviation Administration Form 7460-1

c. Federal Aviation Administration Form 7460-2

3. Submit copies of permits prior to performance of Work authorized by permits.

B. Existing Conditions

1. Use of Premises and Off-site Work

a. The Work shall occur on the Owner's property and within the limits of work, as shown on the Drawings.

b. Use of any property owned by others for access and staging will be performed in accordance with an access agreement or memorandum of understanding signed by all parties and coordinated with the property owner.

c. Obtain permits and approvals for use of any land and access thereto that is deemed necessary for the Work, where such land is not available for use by the Owner, including land for temporary construction facilities,

access and egress, or for storage of materials. Confine apparatus and storage to such additional areas.

d. Obtain permits and written approvals from appropriate jurisdictional agencies for the use of premises not available for use by the Owner, including all offsite staging areas, borrow pits and waste areas. Submit copies of all permits and approvals to the Owner prior to using areas.

e. Provide for the disposal of waste materials off-site in accordance with all applicable laws.

f. Maintain functioning drainage ditches and culverts.

g. Maintain public access to businesses and residences including driveways and parking lots at all times during the Work.

h. The Contractor shall remove all existing telemetry and communications equipment from the tank and dispose of or set equipment aside at a safe designated location on the site as determined by owner of said equipment prior to the commencement of demolition.

PART 2 PRODUCTS

2.1 MATERIALS FURNISHED BY OWNER

A. The Owner will not furnish any materials, labor or equipment under this Contract.

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01140

WORK RESTRICTIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Work Schedule
2. Construction Constraints
3. Vehicle Access
4. Available Work Area
5. Site Usage Plan

B. Related Requirements

1. Section 01310 - Coordination
2. Section 01325 - Scheduling of Construction

1.2 SUBMITTALS

A. Incorporate the requirements of this Section in the project schedule submitted under Section 01325.

B. Action Submittals

1. Submit site usage plan within 30 days of the Notice to Proceed.

1.3 WORK SCHEDULE

A. Conduct the Work during daylight hours on Monday through Friday, and within the time between 7:00 a.m. and 5:00 p.m. No work is to be done on Owner's holidays, Saturdays, Sundays or outside of the work hours described above. No equipment or machinery may be started at the sites before 7:00 a.m. and all equipment must be shut off by 5:00 p.m.

B. Cutting of paved surfaces, excavation within any paved roadway, or pavement resurfacing activities is not allowed from November 15th to April 1st unless expressly approved by the Owner in writing.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONSTRUCTION CONSTRAINTS

A. The following are constraints for the Work. Incorporate these constraints into the schedule required to be submitted under Section 01325.

1. All components of the existing distribution system must remain in operation throughout the demolition.

2. At no time shall the demolition affect the operations or the quality of the water in the water distribution system.

3.2 AVAILABLE WORK AREA

A. The Contractor is responsible for obtaining any temporary easements necessary for use during demolition. Temporary easement locations shall be shown on the Site Usage Plan. No construction vehicles or activities will be permitted outside the temporary easements or the Owner's property.

B. Limits of construction are defined on the Drawings. No work will be permitted to be performed outside these boundaries.

3.3 SITE USAGE PLAN

A. Locations of available staging areas are shown on the Drawings.

B. Submit a site usage plan showing all proposed staging areas, locations of all office and storage trailers, and material laydown areas. The site usage plan should be a drawing showing the proposed locations and shall include on-site traffic modifications and temporary utilities as may be applicable.

END OF SECTION

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SECTION 01290

APPLICATION AND CERTIFICATE FOR PAYMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Definition and description of measurement and payment to be used for the Work

2. Payment procedures

B. Related Requirements

1. Section 01295 - Schedule of Values

1.2 GENERAL

A. The following paragraphs describe payment procedures for the work to be done under the respective items in the Bid Form.

B. Each lump sum will be deemed to include an amount considered by the Contractor to be adequate to cover the Contractor's overhead and profit for each separately identified item.

C. No separate measurement or payment will be made for Work called for in Division A/B/C or Division 1 of the Contract Specifications, unless specifically covered under the Bid items listed below. All costs associated with this Work will be considered incidental to the Contract Bid price.

D. Division 2 work will be measured and paid for at the Contractor's lump sum Bid price as indicated on the Bid form. Those payable Work items, and related prices as Bid, will be the basis for all compensation to the Contractor for Work performed under this Contract. Work not specifically included as a Bid item, but which is required to properly and satisfactorily complete the Work is considered ancillary and incidental to the Bid item Work, and payment for such Work is considered to be included in the values as Bid for payable items.

E.

1.3 LUMP SUM ITEMS

A. Each lump sum price stated in the Bid form shall constitute full compensation for all labor, equipment and materials necessary and required to complete the work specified under that particular item, and also all costs for doing related work as set forth in the Contract Documents or implied in carrying out their intent.

B. Item 1 – Mobilization and Demobilization

1. Measurement and Payment - The lump sum Bid price will be paid in two equal installments. The first installment will occur at the time the first payment requisition is submitted after the Contractor has initiated full-time

construction activity. The second installation will be paid when the Contractor has completed all construction activity including final cleanup and punchlist items. In no case will the total of both installments exceed 5 percent of the total bid price.

C. Item 2 – Hobbs Hill Elevated Water Tank Demolition

1. Measurement

a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

a. The lump sum payment shall be full compensation for furnishing all labor, materials, tools, equipment, and services necessary for the demolition of the Hobbs Hill steel multi-leg elevated water tower, in its entirety as detailed in the Contract Documents.

D. Item 3 – Disconnect and Abandon Hobbs Hill Water Storage Tank Below Ground Piping

1. Measurement

a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

a. The lump sum payment shall be full compensation for furnishing all labor, coordination, traffic control, materials, tools, equipment, and services necessary to disconnect and cap the below ground water pipe leading to the Hobbs Hill Water Storage Tank, abandon below ground water pipe including capping and plugging pipe ends, completely filling abandoned pipe with flowable fill, backfill and compact, and site restoration as detailed in the Contract Documents.

E. Item 4 – Osprey Landing Elevated Water Tank Demolition

1. Measurement

a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

a. The lump sum payment shall be full compensation for furnishing all labor, materials, tools, equipment, and services necessary for the demolition of the Osprey Landing steel multi-leg elevated water tower, in its entirety as detailed in the Contract Documents.

F. Item 5 – Disconnect and Abandon Osprey Landing Water Storage Tank Below Ground Piping

1. Measurement

a. There will be no measurement of quantities for lump sum items. Periodic partial payments for this Work, included under the Agreement, shall be based on the percent completion of each work item listed in the Schedule of Values provided under Section 01295 estimated by the Contractor and approved by the Engineer.

2. Payment

a. The lump sum payment shall be full compensation for furnishing all labor, coordination, traffic control, materials, tools, equipment, and services necessary to disconnect and cap the below ground water pipe leading to the Osprey Landing Water Storage Tank, abandon below ground water pipe including capping and plugging pipe ends, completely filling abandoned pipe with flowable fill, backfill and compact, and site restoration as detailed in the Contract Documents.

1.4 PAYMENT PROCEDURES

A. Informal submittal: Unless otherwise directed by the Engineer:

1. Make an informal submittal of request for payment by filling in, with erasable pencil, pertinent portions of EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.

2. Make this preliminary submittal to the Engineer at the last regular job meeting of each month.

3. Revise the preliminary submittal as approved by the Engineer and incorporate the approved payments into the formal submittal.

B. Formal submittal: Unless otherwise directed by the Engineer:

1. Make formal submittal of request for payment by filling in the agreed data, by typewriter or electronically on EJCDC C-620, Contractor's Application for Payment, plus continuation sheet or sheets.

2. Sign and notarize the Application for Payment.

3. Submit the original of the Application for Payment, plus six identical copies of the continuation sheet or sheets, to the Engineer.

4. The Engineer will compare the formal submittal with the approved informal submittal and, if acceptable, will sign the Contractor's Application for Payment, and present the Application to the Owner.

5. Provide a signed and notarized Certificate for Stored Materials and proof of storage in a dry, watertight, heated and insured warehouse facility.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

Contractor's Application for Payment No. _____

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE	$
2. Net change by Change Orders	$
3. Current Contract Price (Line 1 ± 2)	$
4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate)	$
5. RETAINAGE:	
a. X _____ Work Completed	$
b. X _____ Stored Material	$
c. Total Retainage (Line 5a + Line 5b)	$
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)	$
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)	$
8. AMOUNT DUE THIS APPLICATION	$
9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)	$

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:

Payment of: $ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ _____
(Engineer) (Date)

Payment of: $ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ _____
(Owner) (Date)

Approved by: _____ _____
Funding Agency (if applicable) (Date)

Progress Estimate - Lump Sum Work

Contractor's Application

For (Contract):	Application Number:
Application Period:	Application Date:

			Work Completed		E	F		G
A		B	C	D				
Specification Section No.	Description	Scheduled Value ($)	From Previous Application (C+D)	This Period	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
	Totals							

SECTION 01295

SCHEDULE OF VALUES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Schedule of Values

1.2 SUBMITTALS

A. Action Submittals

1. Submit 3 copies of the Schedule of Values for approval within 10 days after the Effective Date of the Agreement.

1.3 SCHEDULE OF VALUES

A. Schedule of Values shall be a detailed breakdown of the lump sum Work items showing values allocated to the various elements of the Work.

B. The format of the Schedule of Values shall be a breakdown by Specification Section and content and shall be submitted on EJCDC C-620, Contractor's Application for Payment. The Engineer may require additional detailed documentation to support the values in the form of executed purchase orders, subcontracts, or other agreements.

C. The Engineer will determine the level of breakdown and detail required. The breakdown shall include materials, installation, and start-up for equipment and controls where applicable. The final document will be the basis of payment requests for the duration of the Contract. No progress payment will be made until the Schedule of Values is approved by the Engineer.

D. An unbalanced Schedule of Values providing overpayment on items of work performed first will not be accepted.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01310

COORDINATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Project Management

2. Coordination

3. Project Meetings

B. Related Requirements

1. Section 01140 - Work Restrictions

2. Section 01325 - Scheduling of Construction

C. Related Work Not Included

1. Operation of existing facilities will be performed by the Owner unless otherwise specified. The Owner will assist in arranging operation of any existing facilities or equipment required by the Contractor to connect to existing facilities, and the Contractor shall not operate existing valves or equipment. Only the Owner will operate Owner valves.

1.2 SUBMITTALS

A. Incorporate the requirements of this Section, as well as Work which may impact the existing system operation, or the operations of any adjacent utility, in the project schedule submitted under Section 01325.

B. Informational Submittals

1. Submit to the affected utility company, the Owner, and the Engineer, in writing, all requests for temporary shutdowns of facilities or interruption of operations. No shutdowns of the water system or interruptions to existing operations will be permitted except as outlined in this Section. Submit requests at least 2 weeks prior to the beginning of the Work requiring shutdown or interruption. No shutdown shall occur without the approval of the utility company or the Owner.

2. At the pre-construction conference, supply to the Owner the cell phone number of a responsible person who may be contacted during off-hours for emergencies 24 hours a day, seven days a week.

3. Prepare a contact list of phone numbers, including cell phone numbers, and emails for all Project personnel and submit to the Engineer at the pre-construction conference. Include Contractor, Owner, Engineer, and City/Town personnel including police, fire, and ambulance.

4. Submit to the Owner and Engineer, in writing, all requests for valve operations at least 2 weeks prior to commencing operation.

1.3 PROJECT MANAGEMENT

A. Retain a full-time Superintendent, satisfactory to the Owner and Engineer. The Superintendent shall not be changed except with the consent of the Owner and Engineer. The Superintendent shall be in full charge of the Work.

B. Complete the Work in a continuous uninterrupted operation. Use sufficient personnel and adequate equipment to complete the Work within the Contract Time.

C. No work shall be performed on site without the designated project superintendent present.

1.4 COORDINATION

A. Do not interfere with the operation of the existing facilities.

B. Perform all coordination necessary to complete abandonment of the existing water mains without causing interruptions to the service of water to customers.

C. Coordinate with appropriate utility companies, as well as with the Owner, where the Work crosses or is adjacent to existing utilities.

1.5 PROJECT MEETINGS

A. Pre-Construction Conference

1. The Contractor shall be prepared to discuss the following subjects at the Pre-Construction Conference. Documentation for these items is required to be submitted within the time frames included in individual specification sections.

a. Project scheduling

b. Sequencing of critical path Work items

c. Shop Drawing procedures

d. Project changes and clarification procedures

e. Use of sites, access to Work areas, storage areas, security and temporary facilities

f. Contractor safety plan and representative

g. Progress payments and procedures

h. Required documentation

i. Project personnel contact list

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL

A. Notify DIGSAFE at 811 at least 72 hours prior to any digging, trenching, rock removal, demolition, borings, backfill, grading, landscaping, or any other earth moving operations.

3.2 COORDINATION WITH THE OWNER'S OPERATIONS

A. Notify the Owner and Engineer, in writing, a minimum of 1 week in advance of commencing Work on site. Work on site shall not occur until all necessary permits are obtained.

B. Notify the Owner and Engineer, in writing, a minimum of 1 week before commencing any work which may affect the Owner's operations.

C. Perform all construction activities so as to avoid interference with operations of the on-site facilities and the work of others.

D. Coordinate the following operations with the Owner and the Engineer:

1. Operation of existing valves. The opening and closing of existing valves will be performed by the Owner.

3.3 SHUTDOWNS & SAFETY

A. Water service shutdowns as a result of pipeline construction activities are not permitted, unless otherwise noted in this Section. Existing water mains owned by other utilities shall not be shut down unless authorized by the appropriate utility company and the Owner. Rescheduling or reactivation of any temporary shutdowns may be required if an emergency occurs in the distribution system, such as a major pipeline break or fire.

B. Furnish all labor, materials, tools and equipment necessary to provide temporary light, ventilation, safety personnel and equipment, gas monitoring equipment, supports and braces necessary to perform the demolition work in a safe and secure manner. Observe all safety regulations in force at the existing facilities.

END OF SECTION

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SECTION 01320

CONSTRUCTION PHOTOGRAPHS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Photographs taken at specified intervals before, during and after construction.

2. Pre-construction video taken before construction.

1.2 SUBMITTALS

A. Informational Submittals

1. Submit electronic files of each photograph on a CD and videos on a DVD.

PART 2 PRODUCTS

2.1 CONSTRUCTION PHOTOGRAPHS AND VIDEOGRAPHY

A. Electronic files shall be in .jpg image format and MOV or equal video format.

PART 3 EXECUTION

3.1 PRECONSTRUCTION PHOTOGRAPHY AND VIDEOGRAPHY

A. Prior to the commencement of any Work under this Contract, perform a pre-construction video of every major feature on the site and any area accessed off the site, and take photographs daily and from a variety of perspectives and locations to capture the important activities of the project. The video and photographs will serve as a record of the original conditions where construction activities will occur.

B. The area to be photographed shall include, but not be limited to, the area within and adjacent to the proposed construction and/or demolition, including roadways, utilities, driveways, landscaping, trees, structures and buildings.

3.2 PROGRESS PHOTOGRAPHY

A. Take photographs of utility abandonments.

B. Take photographs of relocated or modified utility connections.

C. Take photographs of pipeline backfill, intersections and loamed areas.

END OF SECTION

SECTION 01325

SCHEDULING OF CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Progress Schedule

B. Related Requirements

1. Section 01140 - Work Restrictions

2. Section 01310 - Coordination

1.2 MILESTONES

A. If, in the opinion of the Owner, the progress of the Work is insufficient to achieve the scheduled completion of the milestone, the Contractor shall be required to take such measures as are necessary to achieve completion by the milestone date. Such measures may include, but shall not be limited to, employing additional equipment and personnel, working overtime, added shifts or any combination thereof, all at no additional cost to the Owner.

1.3 PROGRESS SCHEDULE

A. Graphically show the order and interdependence of activities, sequence of Work, how the start of a given activity depends on completion of preceding activities, and how completion of an activity may restrain the start of subsequent activities.

B. The Work shall be planned by the Contractor and his Project field superintendent in coordination with all Subcontractors and Suppliers whose Work is shown on the Progress Schedule.

C. Include, at a minimum, the following activities on the Progress Schedule:

1. Project mobilization

2. Submittals and approval of Shop Drawings

3. Demolition of water storage tanks and appurtenances

4. Final inspecting

5. Punchlist

6. Final cleanup

7. Other activities that may be critical to the Progress Schedule

8. All activities of the Owner and the Engineer which affect progress and/or affect required dates for completion of the Work

9. Milestone completion dates

D. Take into consideration Shop Drawing submittal and approval time, the delivery times of equipment and materials, Subcontractors' Work, availability and abilities of workmen, weather conditions, any restrictions in operations at the Work site, and all other items that may affect completion of the Work within the Contract Time and specified milestones.

E. The Progress Schedule shall reflect the requirements and constraints outlined in Section 01310, Coordination.

F. The Progress Schedule shall reflect Work restrictions outlined in Section 01140.

G. Show information in such detail that duration times of activities will range from one to 15 days. The selection and number of activities shall be subject to the approval of the Owner and Engineer.

H. The Progress Schedule should show preceding and following event numbers for each activity, description of each activity, and activity duration in calendar days.

I. Submit the Progress Schedule on maximum sheet size 30-inches high by the width required.

1.4 SUBMITTALS

A. Informational Submittals

1. Submit four prints of the preliminary Progress Schedule prepared in accordance with the requirements of this section. Progress schedule must be submitted within 10 days after the Effective Date of the Agreement. Progress Schedule must be approved by the Owner and Engineer before the first progress payment will be made.

2. Revised analyses - Within 10 days after receipt of the review comments, submit four prints of the Progress Schedule revised in accordance with those comments.

3. Periodic reports - On the first progress meeting of each month, submit four prints of the updated Progress Schedule, as well as a report of construction activities in the prior month.

4. Before initiating the Work, submit an estimated monthly rate of Contractor payments for the project. If the payment schedule deviates from the original projection, submit a revised rate of expenditure schedule.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Action Submittals

2. Informational Submittals

1.2 DEFINITIONS

A. Action Submittals – includes written and graphic information submitted by Contractor that requires Engineer's approval.

B. Informational Submittals – includes information submitted by Contractor that does not require Engineer's approval. The Engineer will acknowledge receipt of such documents and provide comments when the submittals lack the detail required by the Contract Documents.

1.3 ACTION SUBMITTALS

A. Shop Drawings

1. Shop Drawings as defined in the General Conditions, and as specified in individual work sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation drawings, schedule information, piece part drawings, actual shopwork manufacturing instructions, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certification, as applicable to the Work.

2. Shop Drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard size drawings shall be

a. 24-inches by 36-inches

b. 22-inches by 34-inches

c. 11-inches by 17-inches

d. 8.5-inches by 11-inches

3. Submit Shop Drawings at the proper time so as to prevent delays in delivery of materials. Coordinate submittals for related or interdependent equipment.

4. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.

5. Check all Shop Drawings regarding measurements, size of members, materials, and details to determine if they conform to the Contract Documents. Shop Drawings found to be inaccurate, not in compliance, or

otherwise in error shall be returned to the Subcontractors or Suppliers for correction before submission to the Engineer. Drawings that are current shall be marked with the date, name, and approval stamp of the Contractor.

6. All details on Shop Drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the Shop Drawings before being submitted for approval.

7. No material or equipment shall be purchased or fabricated until the required Shop Drawings have been submitted and approved. Materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by the Shop Drawings.

8. Until the necessary approval has been given, do not proceed with any portion of the work, the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which approval is required.

B. Product Data: Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing, and printed product warranties, as applicable to the Work.

C. Schedule of Values: In accordance with Section 01295.

D. Site Usage Plan: In accordance with Section 01140.

1.4 INFORMATIONAL SUBMITTALS

A. Schedule of Submittals

1. Submit a preliminary Schedule of Submittals within 10 days of the Effective Date of the Agreement.

B. Schedule of Manufacturers and Suppliers

1. Submit a schedule of manufacturers and Suppliers within 7 days after Notice to Proceed including the names and addresses of the manufacturers and Suppliers of materials and equipment to be incorporated into the Work.

C. Schedule of Major Products

1. Submit a schedule of major products within 30 days after Notice to Proceed including a complete list of major products proposed for use, with specification section number, name of manufacturer, trade name, and model number of each product.

D. Product Listing and Manufacturers Qualifications

1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards. Specifically identify the products, the anticipated schedule for delivery and storage, and the estimated value thereof for materials which the Contractor intends to request approval for off-site storage.

E. Certificates of Compliance

1. General:

a. Submit sworn certificates from the manufacturer or material supplier that the materials and fabrications provided under the Specification section conform to the Contract Documents.

b. Certificates shall be signed by an officer of the manufacturer's corporation and witnessed by a Notary Public.

2. Installer: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements as specified in individual Specification sections.

3. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

4. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency, or when specified in individual Specification sections.

5. Manufacturer's Certificate of Compliance: In accordance with individual Specification sections.

F. Application for Payment

1. Submit applications for payment in accordance with Section 01290, Application and Certificate for Payment.

G. Construction Photography: Provide preconstruction, progress, and post-construction photography in accordance with Sections 01320.

H. Contract Closeout Submittals: In accordance with Section 01770.

I. Contractor Design Data

1. Written and graphic information

2. List of assumptions

3. List of performance and design criteria

4. Summary of loads or load diagram

5. Calculations

6. List of applicable codes and regulations

7. Name and version of software

8. Information requested in individual Specification section

J. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual Specification sections.

K. Schedules - Submit construction progress schedules and schedule updates in accordance with Section 01325.

L. Statement of Qualifications: Submit evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty subcontractor, trade, specialist, consultant, installer, and other professionals.

M. Submittals Required by Laws, Regulations, and Governing Agencies

1. Submit promptly notifications, reports, certifications, payrolls, and other required information as may be required, directly to the applicable federal, state, or local governing agency or their representative.

2. Transmit to Engineer for Owner's records, one copy of correspondence and transmittals (including enclosures and attachments) between Contractor and governing agency.

N. Test and Inspection Reports

1. Submit test and inspection reports as required by individual Specification sections.

2. Test and inspection reports shall contain signature of person responsible for test or report.

3. Reports shall include identification of product and Specification, project name, date and time of test, type of test, location, test results, corrective action required if report indicates test is not in compliance with Contract Documents, interpretation of test results, and other information as required in individual Specification sections.

O. Equipment Data: Submit information on equipment to be used in the performance of the Work as required by individual Specification sections.

P. Health & Safety Plans: When specified in individual Specification sections, prepare and submit a Health and Safety Plan modified or supplemented to include job-specific considerations.

Q. Submittals stamped by another Professional Engineer: When specified in individual Specification sections, prepare and submit calculations and/or drawings stamped by a Professional Engineer licensed in the State where the work is being performed.

R. Work Plans: When specified in individual Specification sections, prepare and submit copies of all work plans needed to demonstrate to the Owner that Contractor has adequately thought-out the means and methods of construction and their interface with existing facilities.

S. Shutdown Requests: Submit notification of any outages required (electrical, flow processes, etc.) as may be required to tie-in new work into existing facilities. Unless otherwise specified, provide outage requests a minimum of 7 days notice shall be provided.

T. Equipment Data: When specified in other Specification sections, information on equipment used by the Contractor to complete the Work, such as compaction equipment and closed-circuit television inspection equipment.

1.5 PROCEDURES

A. Coordination

1. Prepare and submit documentation in advance of fabrication and product manufacturer, so that the installation will not be delayed, other related work can be properly coordinated, and there is adequate time for review and resubmission, if required.

2. Provide no less than 30 days for review of submittals from the time received by the Engineer. For submittals of major equipment, that require more than 30 days to review, due to complexity and detail or those requiring review by multiple engineering disciplines, Engineer will notify Contractor of the circumstances and identify the anticipated date when the submittal will be returned.

3. Re-submittals will be subject to same review time.

4. No extension of time will be authorized due to failure to provide approvable submittals sufficiently in advance of the Work.

B. Review Shop Drawings, product data, and samples prior to submission and verify and determine:

1. Field measurements

2. Conformance with the Contract Documents. Advise the Engineer in writing of any deviations from the requirements of the Contract Documents.

3. Delete or strike out information that is not applicable to the Work.

C. Upload the electronic submittal files via Newforma Information Exchange. Access to Newforma Information Exchange will be provided by the Engineer. Files must be in .pdf format. The submittals will be returned in electronic .pdf format via Newforma Information Exchange.

1. Samples – Provide one unless otherwise noted in the individual Specification section. Sample will be retained by Engineer in the field.

D. Numbering: Submissions shall be accompanied by a transmittal form referencing the project name and applicable Specification section. Submittals shall be numbered sequentially, with the applicable Specification section and a hyphen preceding the number. (*e.g.* Submittal number 11330-01) Resubmittals shall bear the same transmittal number with a sequential letter suffix commencing with "A". (*e.g.* Submittal number 11330-01A)

E. Provide a copy of the Submittal certification form (copy attached at the end of this section) which shall be attached to every copy of each Submittal. Apply the Contractor's stamp and initials or signature certifying that the submission has been thoroughly reviewed for completeness, compliance with the Contract Documents, coordination with adjacent construction and dimensional compatibility. Items submitted without the stamp or that are incomplete will be returned by the Engineer for rework and resubmission.

F. Provide a copy of the P.E. certification form (copy attached at the end of this section) which shall be attached to every copy of each Submittal stamped by another Professional Engineer. Items submitted without the completed certification form will be returned by the Engineer for resubmission.

G. Distribute copies of reviewed submittals along with the Engineer's transmittal to concerned parties with instructions to promptly report any inability to comply with the provisions or integrate the requirements with interfacing work.

H. Partial and Incomplete Submittals

1. Shop Drawings shall be submitted as a complete package by Specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials, and samples associated with each Specification section be included as a single submittal for the Engineer's review.

2. Engineer will return entire submittals if preliminary review deems it incomplete including:

a. Missing or incomplete Submittal certification form

b. Insufficient number of copies

c. Missing content

3. Partial submittals may be considered, at Engineer's option, only when necessary to expedite the Project.

4. Partial submittals shall be clearly identified as such on the transmittal to identify missing components.

I. Submittals not required by the Specification will be returned without review or action code.

J. Resubmission

1. Make corrections and modifications required by the Engineer and resubmit until approved.

2. Clearly identify changes made to submittals and indicate other changes that have been made other than those requested by the Engineer.

3. A maximum of two re-submissions of each shop drawing will be reviewed, checked and commented upon without charge to the Contractor (total of 3 submittals). Any additional submissions which are required by the Engineer to fulfill the stipulations of the Contract Documents will be charged to the Contractor.

K. Distribution

1. Distribute approved Shop Drawings and approved product data to the Project Site and elsewhere as required to communicate the information to Suppliers, Subcontractors, and field personnel.

1.6 ENGINEER'S REVIEW

A. The Engineer will review submittals for design, general methods of construction and detailing. The Engineer's review and approval of submittals shall not be construed as a complete check nor does it relieve the Contractor from responsibility for any departures or deviations from the requirements of the Contract Documents unless he has, in writing, called the Engineer's attention to such deviations at the time of submission. It will not extend to means, methods, technique, sequences, or procedures of construction (except where specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto.

B. The Engineer's review of the submittals shall not relieve the Contractor from the responsibility for proper fitting of the Work, or the responsibility of furnishing any work required by the Contract Documents which may not be indicated on the submittals. The Contractor shall be solely responsible for any quantities shown on the submittals.

C. If the Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, the Contractor shall provide written notice to the Engineer at least 7 working days prior to release for manufacture.

D. When the submittals have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

E. Action submittals as defined in paragraph 1.3 will be reviewed and returned under one of the following codes:

1. Approved (Action Code 1) is assigned when there are no notations or comments on the submittal. Equipment or materials may be released for manufacture, provided that it complies with requirements of the Contract Documents.

2. Approved as Noted (Action Code 2) is assigned when there are notations or comments on the submittal, but the equipment or materials may still be released for manufacture. All notations and comments must be incorporated in the final product. Resubmission is not necessary.

3. Revise and Resubmit (Action Code 3) is assigned when there are notations and comments requiring a resubmittal of the package. Work cannot proceed until the submittal is revised and resubmitted for review.

4. Not Approved (Action Code 4) is assigned when the submittal contains non-specified items or does not meet the requirements of the Contract Documents. It may also be assigned when there is a significant amount of missing material required for the Engineer to perform a complete review. The entire package must be resubmitted, revised to bring the submittal into conformance. It may

be necessary to resubmit using a different manufacturer/vendor to meet the requirements of the Contract Documents.

F. Informational submittals as defined in paragraph 1.4 do not require approval by the Engineer. Such submittals will be returned under one of the following codes:

1. Receipt Acknowledged (Action Code 5) is assigned when the submittal is provided for documentation purposes and is acknowledged as received. Comments may be noted using this action code.

2. Revise and Resubmit (Action Code 6) is assigned when there are notations and comments requiring a resubmittal of the package.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SUBMITTAL CERTIFICATION FORM

PROJECT:_____
ENGINEER:_____ ENGINEER'S PROJECT NO.:_____
CONTRACTOR:_____ CONTRACTOR'S PROJECT NO.:_____

TRANSMITTAL NO.:_____ SUBMITTAL NO.:_____
SPECIFICATION NO.:_____ DRAWING NO:_____
DESCRIPTION:_____
MANUFACTURER:_____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the materials and/or equipment meets or exceeds the project specification requirements; that field measurements, dimensions, quantities, specified performance criteria, installation requirements, materials, catalog numbers and related materials have been verified; that all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the work has been determined and verified; that review includes all information related to the contractor's sole responsibility for means, methods, techniques, sequences, and procedures of construction and safety; and item has been coordinated with the overall project with:

☐ NO DEVIATIONS

☐ A COMPLETE LIST OF DEVIATIONS AS FOLLOWS:

_____
_____
_____
_____
_____
_____

SUBMITTED BY:_____ DATE:_____

GENERAL CONTRACTOR'S STAMP

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a professional engineer registered in the State of New Hampshire and that he/she has been employed by

_____ to design
(Name of Contractor)

_____
(Insert P.E. Responsibilities)

In accordance with Specification Section _____for the

_____
(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

_____
(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

_____	_____
P.E. Name	Contractor's Name
_____	_____
Signature	Signature
_____	_____
Title	Title
_____	_____
Address	Address

SECTION 01350

HEALTH & SAFETY PLAN

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Furnish all labor, equipment and materials and perform all operations in connection with providing health and safety protection for all Contractor personnel, occupants of abutting properties, and the public.

2. Develop a site specific Health and Safety Plan (HASP) specifically addressing the potential hazards that may be encountered. This plan shall meet all OSHA requirements.

3. Review the requirements and data presented and supplement the program with any additional measures deemed necessary to fully comply with regulatory requirements and adequately protect personnel on the site.

1.2 REFERENCES

A. OSHA Regulation 29 CFR 1910.120

1.3 DEFINITIONS

A. Site Safety Official (SSO) - The individual located on the site(s) who is responsible to the Contractor and has the authority and knowledge necessary to implement the site safety and health plan and verify compliance with applicable safety and health requirements.

1.4 SUBMITTALS

A. Informational Submittals

1. Submit the following within fifteen (15) days after the Effective Date of the Agreement.

a. Site-specific HASP including the Emergency Response Plan for review, including provisions for decontamination and a contingency plan for unforeseen emergencies. The Engineer’s review is only to determine if the HASP meets basic regulatory requirements and the minimum requirements of this section. The review will not determine the adequacy of the HASP to address all potential hazards, as that remains the sole responsibility of the Contractor.

b. Current certification of employee's health and safety training and certification of employee's baseline medical exam status.

c. Certification of additional required health and safety training for supervisors.

d. Qualifications and experience of the SSO for approval.

2. Submit minutes of weekly safety meetings at periodic progress meetings.

1.5 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor is solely responsible for the health and safety of workers employed by the Contractor, any subcontractor and anyone directly or indirectly employed by any of them.

B. Work under this contract is not being performed on an "Uncontrolled Hazardous Waste Site," as defined in 29 CFR 1910.120 and Article 1.3 B, above; however, the Contractor shall develop the site specific Health & Safety Plan (HASP) in accordance with the requirements of 29 CFR 1910.120 and paragraph 1.6.

C. Provide a full-time SSO regardless of whether or not the Work is at a defined Uncontrolled Hazardous Waste Site.

D. Pre-arrange emergency medical care services at a nearby hospital, including establishment of emergency routes of travel.

E. Conduct weekly safety meetings with all site personnel, documenting attendance and topics covered.

F. Train all workers assigned to areas where contaminated media are likely to be encountered in accordance with 29 CFR 1910.120.

G. At all times, prevent oil or other hazardous substances from entering the ground, sewers, drainage areas and piping systems.

H. Control site access to protect occupants of abutting properties and the public.

1.6 HEALTH & SAFETY PLAN (HASP) REQUIREMENTS

A. The following items shall be addressed in the HASP:

1. safety and health hazard assessment;

2. procedures for emergency medical treatment and first aid;

3. map indicating route to hospital for emergency medical care;

4. Lead Exposure Control Plan (29 CFR 1926.62);

5. assume coatings containing polychlorinated biphenyls are present;

6. equipment decontamination procedures;

7. personal protective equipment and decontamination;

8. physical hazard evaluation and abatement including:

a. equipment operation;

b. confined space entry;

c. slips and falls;

d. building collapse;

e. falling debris;

f. encountering unmarked utilities;

g. cold and heat stress;

h. hot work (cutting and welding);

i. excavation entry;

9. training requirements;

10. recordkeeping requirements;

11. emergency response plan that includes:

a. names of three (3) Emergency Response Contractors, experienced in the removal and disposal of oils and hazardous chemicals, that the Contractor intends to use in the event of an emergency;

b. evacuation routes and procedures;

c. emergency alerting and response procedures.

1.7 CONTINGENCY MEASURES & NOTIFICATIONS

A. The potential for encountering hazardous buried objects or materials that could pose a threat to human health or the environment exists. In the event that potentially hazardous materials are encountered during the work under this contract, the responsibilities of the Contractor and the Engineer are described herein.

B. The procedures and protocols to be used by the SSO in defining materials that are potentially hazardous include screening with a photo-ionization detector, odor, visual appearance of a material, and obvious oil or chemical contaminated materials.

C. Upon encountering suspected hazardous buried objects or materials as described above, cover the excavation immediately if no imminent danger, as defined by the SSO, is present. If there is an imminent danger, as defined by the SSO, Evacuate the area immediately. The SSO shall then notify the Engineer and the Owner of the situation.

D. Establish, properly barricade, and mark the area as an exclusion zone under the direction of the SSO. The SSO shall establish the exclusion zone boundaries based upon air quality monitoring using a photo-ionization detector and other equipment as appropriate. The exclusion zone shall be established at a minimum 50-foot radius around the location where the potentially hazardous material is encountered. Work within the exclusion zone shall be discontinued until the hazardous condition has been remediated and testing indicates that a hazard does not exist. Other activities of the site, outside the limits of the exclusion zone shall continue. Ambient air quality monitoring shall be performed by the SSO to demonstrate that ambient air quality in other portions of the site is not adversely impacted by the exclusion zone condition.

E. Notify the Engineer and the Owner regarding the presence of potentially hazardous materials. The Owner may direct the Contractor to notify regulators and to obtain necessary regulatory approvals for remediation.

F. Mobilize the appropriate equipment and personnel to sample and test the hazardous material within the exclusion zone to determine the remedial action required, subject to the Engineer's direction. The Contractor may be directed to remove and legally dispose of the material. Compensation for the removal and disposal of hazardous material will be as a Change in Work and Change in Contract Price in accordance with the General Conditions, if not covered under a specific bid item.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01420

REFERENCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standards referenced in the Contract Documents.

1.2 GENERAL

A. Comply with the requirements of standards referenced in the Contract Documents.

1.3 ABBREVIATIONS

A. Abbreviations used in the Specifications are defined as follows:

1. AA – Aluminum Association
2. AABC – Associated Air Balance Council
3. AASHTO – American Association of State Highway and Transportation Officials
4. ACI - American Concrete Institute
5. ACOE - U.S. Army Corps of Engineers
6. ADA – Americans with Disabilities Act
7. ADC – Air Diffusion Council
8. AFBMA – Antifriction Bearing Manufacturers Association
9. AGA – American Gas Association
10. AGC – Associated General Contractors of America
11. AGMA - American Gear Manufacturer Association
12. AI – Asphalt Institute
13. AIA – American Institute of Architects
14. AISC – American Institute of Steel Construction
15. AISI - American Iron and Steel Institute
16. AITC - American Institute of Timber Construction
17. AMCA – Air Movement and Control Association
18. ANSI – American National Standards Institute
19. APA – American Plywood Association
20. API – American Petroleum Institute

21. ARI – Air Conditioning and Refrigeration Institute
22. ASCE – American Society of Civil Engineers
23. ASHRAE – American Society of Heating, Refrigeration and Air Conditioning Engineers
24. ASME – American Society of Mechanical Engineers
25. ASPA – American Sod Producers Association
26. ASTM – American Society for Testing and Materials
27. AWG – American Wire Gauge
28. AWI - Architectural Woodwork Institute
29. AWPA – American Wood Preservers' Association
30. AWS – American Welding Society
31. AWWA – American Water Works Association
32. BIA – Brick Institute of America
33. CDA – Copper Development Association
34. CLFMI – Chain Link Fence Manufacturer's Institute
35. CPM - Critical Path Method
36. CPVC – Chlorinated Polyvinyl Chloride
37. CRSI – Concrete Reinforcing Steel Institute
38. CI – Cast Iron
39. DHI – Door and Hardware Institute
40. DI – Ductile Iron
41. EJCDC – Engineers' Joint Contract Documents Committee
42. EJMA – Expansion Joint Manufacturers Association
43. EPDM – Ethylene Propylene Diene Monomer
44. EPT – Electrical Plastic Tubing
45. EVT – Equiviscous Temperature
46. FGMA - Flat Glass Marketing Association
47. FM – Factory Mutual
48. FS – Federal Specifications
49. GA – Gypsum Association
50. GFCI – Ground Fault Circuit Intempter
51. GPR - Ground Penetrating Radar

52. GPS – Global Positioning System
53. HVAC – Heating, Ventilating and Air Conditioning
54. IBC – International Building Code
55. IBR – Institute of Boiler and Radiator Manufacturers
56. ICBO – International Conference of Building Officials
57. ICS – Industrial Control and Systems
58. IEEE – Institute of Electrical and Electronics Engineers
59. IMI – International Masonry Institute
60. ISA – Instrument Society of America
61. JIC – Joint Industrial Council
62. LCD – Liquid Crystal Display
63. MBMA – Metal Building Manufacturer's Association
64. MEC – Massachusetts Electric Code
65. MFMA Maple Flooring Manufacturers Association
66. ML/SFA – Metal Lath/Steel Framing Association
67. MSDS – Material Safety Data Sheets
68. MSS – Manufacturer's Standardization Society
69. NAAMM – National Association of Architectural Metal Manufacturers
70. NAVD – North American Vertical Datum
71. NCMA – National Concrete Masonry Association
72. NEBB – National Environmental Balancing Bureau
73. NEC – National Electrical Code
74. NECA – National Electrical Contractors Association
75. NEMA – National Electrical Manufacturers Association
76. NFPA – National Fire Protection Association
77. NHDES – New Hampshire Department of Environmental Services
78. NRCA – National Roofing Contractors Association
79. NRS – Non-rising Stem
80. NSF – National Sanitation Foundation
81. NSWMA – National Solid Waste Management Association
82. NWMA – National Woodwork Manufacturers Association

83. O&M – Operation and Maintenance
84. OSHA – Occupational Safety and Health Administration
85. PCA – Portland Cement Association
86. PCI – Precast/Prestressed Concrete Institute
87. PDOP – Positional Dilution of Precision
88. PLC – Programmable Logic Controller
89. PS – Product Standard
90. PVC – Polyvinyl Chloride
91. QA/QC – Quality Assurance/Quality Control
92. RCP – Reinforced Concrete Pipe
93. RCSHSB – Red Cedar Shingle and Handsplit Shake Bureau
94. RIS – Redwood Inspection Service
95. RTU – Remote Telemetry Unit
96. SCADA – Supervisory Control and Data Acquisition
97. SDI – Steel Deck Institute
98. SSPC – The Society for Protective Coatings
99. TCA – Tile Council of America
100. UL – Underwriter's Laboratories
101. UPS – Uninterruptable Power Supply
102. USCS – Unified Soil Classification System
103. USDA – United States Department of Agriculture
104. WCLIB – West Coast Lumber Inspection Bureau
105. WOG – Water, Oil, Gas
106. WWPA – Western Wood Products Association

END OF SECTION

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SECTION 01450

QUALITY CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Quality assurance and control of the Work
2. Testing and inspection services
3. Product test reports
4. Manufacturer's field service

B. Related Requirements

1. Testing requirements are described in various Sections of the Project Manual.

1.2 SUBMITTALS

A. Informational Submittals

1. Product test reports

1.3 QUALITY ASSURANCE

A. Monitor quality control over Suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.

B. Comply fully with manufacturer's instructions. Should these instructions conflict with the Specifications, request clarification from the Owner before proceeding.

C. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or requirements indicate higher standards or more precise workmanship.

1.4 TESTING SERVICES FURNISHED BY CONTRACTOR

A. Furnish all testing services required for materials and equipment proposed to be used in the Work, and quality control tests made in the field including:

1. Soil structure and nutrient analyses for all loam and topsoil used on the Project
2. All other tests and engineering data as required in the Contract Documents.
3. All testing results shall be held in strict confidentially and shared only with the Owner and/or Engineer.

B. Secure and deliver the required number of samples to the laboratory as required by the Contract Documents.

C. Notify Owner and Engineer of time, location and material being sampled.

D. Schedule necessary testing laboratory services.

E. Furnish written reports of each test within 48 hours of completion of testing.

F. Notify the Engineer 48 hours prior to operations requiring inspections and laboratory testing services so the Engineer may witness testing. All failed test areas shall be re-worked and re-tested until passing results are obtained.

G. The Owner may hire its own independent testing laboratory for quality control tests made in the field or laboratory on materials and equipment during and after their incorporation in the Work. Cooperate with the Owner and independent testing laboratory and furnish samples of materials, design, mix, equipment, tools, storage, and assistance as requested.

H. Re-work all failed test areas until passing results are obtained. All re-tests required as a result of the Contractor's failure to perform the work in accordance with the Contract Documents shall be at the Contractor's expense.

1.5 CODE COMPLIANCE TESTING

A. Provide inspections and tests required by codes or ordinances, or by a legally constituted authority having jurisdiction over the Work.

1.6 PRODUCT TEST REPORTS

A. Submit 2 copies of product test reports where required by the Contract Documents.

1.7 MANUFACTURERS' FIELD SERVICE

A. Provide qualified field service and installation personnel from material and equipment suppliers to observe site conditions, installation techniques, quality of workmanship, equipment start-up, adjustment, and performance test where required by the Contract Documents. Observations are to be reported and incorporated in the Work procedures.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Temporary electricity
2. Temporary lighting for construction purposes
3. Temporary water service
4. Temporary fire protection
5. Temporary Fuel Oil

1.2 QUALITY ASSURANCE

A. Maintain temporary utilities in proper and safe condition throughout the progress of the Work.

1.3 TEMPORARY ELECTRICITY

A. Provide and pay all charges for temporary electrical service capable of providing sufficient power throughout the site for both temporary power and temporary lighting for the Work. Temporary electrical service shall consist of all wiring, breakers, breaker boxes, poles, supports and all other materials necessary for a totally operable system.

B. Make all arrangements with the electric service company including all permits, securities and inspections fees to obtain the separately metered temporary services.

C. Furnish and connect the temporary electric service point to the utility and coordinate metering as required.

D. All connection points and distribution systems shall be in conformance with applicable electrical codes, OSHA, and enforcement agencies having jurisdiction.

E. Provide a general power distribution system including all wires, cables, supports, protective devices, transformers, motor starters, etc., as required for a complete electrically protected and safe system to handle construction services.

F. Provide all outlets with circuit breaker protection and comply with ground fault protection requirements of the NEC.

G. All connection points and distribution systems shall be in conformance with applicable electrical codes, OSHA, and enforcement agencies having jurisdiction.

H. Provide all outlets with circuit breaker protection and comply with ground fault protection requirements of the NEC.

1.4 TEMPORARY LIGHTING

A. Temporary general lighting system shall provide sufficient artificial light so that all Work may be done in a workmanlike manner within enclosed structures and chambers, where there is not sufficient daylight. A minimum of 300 watts of lamp per each 200 square foot or less of work area shall be provided.

B. Temporary general lighting system shall consist of wiring, switches, necessary insulated supports, poles, fixtures, receptacles, lamps, guards, cut-outs, fuses, and other materials necessary for a totally operable system.

1.5 TEMPORARY WATER SERVICE

A. Temporary Drinking Water

1. Provide adequate potable drinking water, so piped or transported as to keep it safe and fresh, and served from single service containers or satisfactory types of sanitary drinking stands or fountains.

2. Provide all such facilities and services in strict accordance with existing and governing health regulations.

B. Water for Construction Purposes

1. Provide adequate water for construction, so piped or transported as to keep it safe and fresh, and served from single service containers.

2. Provide all such facilities and services in strict accordance with existing and governing health regulations.

1.6 TEMPORARY FIRE PROTECTION

A. Comply with all applicable fire protection and prevention requirements that may be established by Federal, State or local governmental agencies.

B. Prohibit smoking in hazardous areas. Post suitable warning signs in areas that are continuously or intermittently hazardous.

C. Determine the fire protection adequacy of existing facilities related to the Work being performed and have standby fire protection available if needed.

1.7 TEMPORARY FUEL OIL

A. No fuel storage is permitted on the site excepting within vehicles and equipment.

B. Take all necessary precautions to avoid leakage and spillage of all petroleum products, including lubricating oils.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01520

CONSTRUCTION FACILITIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Temporary sanitary and first-aid facilities

1.2 QUALITY ASSURANCE

A. Maintain temporary construction facilities in proper and safe condition throughout the progress of the Work.

1.3 TEMPORARY SANITARY AND FIRST AID FACILITIES

A. Provide suitably enclosed chemical or self-contained toilets for the use of the labor force employed on the Work. Toilets shall be located near the Work sites and secluded from observation insofar as possible. Toilets shall be serviced weekly, kept clean and supplied throughout the course of the Work.

B. Contractor shall enforce proper use of sanitary facilities.

C. Provide a first aid station at the site.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01570

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Mulch
2. Dust and particle control
3. Ground protection
4. Drainage and erosion control

B. Related Requirements

1. Section 02920 – Lawns and Grasses

1.2 SUBMITTALS

A. Ground Protection Plan

B. Informational Submittals

1. Materials and methods proposed for use in dust and particle control

PART 2 PRODUCTS

2.1 MULCH

A. Hay mulch shall consist of mowed cured grass, clover, alfalfa, timothy, oats, or wheat. No salt hay shall be used.

PART 3 EXECUTION

3.1 DUST & PARTICLE CONTROL

A. Control dust and particles during the Work using sweeping and vacuum equipment, and encapsulation as needed.

B. Prevent dust and particles from becoming a nuisance or hazard. During demolition or land disturbance, raw or coated materials, excavated material, and open or stripped areas are to be policed and controlled to prevent dust or loose particles from spreading or leaving the limits of work.

C. Control dust and particles during the work on-site using calcium chloride and/or water.

D. During the earthwork or transportation of demolition debris, all paved road and driveway surfaces shall be scraped and broomed free of excavated or demolition materials on a daily basis. The surfaces shall be hosed down or otherwise treated to eliminate active or potential dust conditions and the natural road or wearing surface shall be exposed.

3.2 GROUND PROTECTION PLAN

A. Prepare a written Ground Protection Plan (GPP) for review and approval describing the proposed methods for controlling the release and deposition of dust and particles and how the site will protected from contamination by demolition activities.

B. Include frequency of inspections, maintenance activities, and emergency response procedures.

C. Include approach to restore the site to pre-demolition conditions.

D. Maintain a copy of the GPP on site throughout the project duration.

E. Comply with the GPP including control of loose or airborne particles that have the potential of being hazardous to workers or from being released to the environment through the use of structural and non-structural means.

3.3 DRAINAGE AND EROSION CONTROL

A. Control erosion and siltation during the construction through mulching, haybales, siltation fencing, diversion and control of storm water run-off, ponding areas and similar methods.

B. Provide and maintain sediment trapping systems.

C. Discharge surface runoff from any disturbances to the site into silt containment basins. Utilize siltation prevention measures including haybale and geotextile fences before discharge to drainage systems.

3.4 RESTORATION

A. Provide erosion control, seed and mulch and netting for surface restoration of areas disturbed during construction activities.

B. Provide temporary stabilization of disturbed areas that remain inactive greater than 14 consecutive days to minimize erosion. Methods to minimize erosion may include but are not limited to:

1. Spreading straw and/or providing temporary planting stabilization.

2. Installing jute netting.

3. Preparing surfaces to increase the runoff flow path, reduce the runoff flow velocity, or create small storage pockets to retain surface flows. Methods of accomplishing this include using mechanical devices such as track equipment or sheep's foot rollers.

C. Restore the ground surface in brush and/or woodland areas by machine spreading of existing stripped surface soils (loam and humus), liming, fertilizing, seeding and mulching, as well as installing jute netting where required by steep slopes.

D. Salvage existing loam and topsoil and stockpile this material for re-spreading where originally removed. On backfilling, grading shall be returned to preconstruction contours and the stockpile of loam shall be spread over areas disturbed during construction activities.

E. Place mulch on seeded areas. Use jute netting on areas having a slope greater than 3 horizontal to 1 vertical, to anchor the mulch until a satisfactory growth is obtained. If seeding is not possible because of the time of the year, apply mulch and netting to stabilize the area until such time as seed can be sown.

F. Provide grading, refertilizing, reseeding, remulching and/or netting to maintain the restored areas until the Work is accepted by the Owner.

G. Seed shall be as specified under Section 02920.

3.5 CLEANING

A. Remove any sediment when accumulation has reached 1/3 of the effective height of the sediment control.

B. Clean sediment trapping devices periodically during the Work. Devices shall be cleaned on a weekly basis, or more frequently if the devices become clogged.

END OF SECTION

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SECTION 01725

PRESERVATION AND RESTORATION OF PROJECT FEATURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Protection and replacement of trees, shrubs, signs, property markers, fences, and related project features.

2. Taking precautions, implementing safeguards, and providing programs, and taking actions necessary to protect persons, public and private property, and facilities that are outside the demolition scope from damage caused by demolition activities.

1.2 DEFINITIONS

A. Underground Structures

1. Underground structures are defined to include, but not be limited to, sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.

2. Underground structures known to the Engineer are shown on the Drawings to the extent that locations are available. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall be responsible for checking on the actual locations of water, sewer, gas electric and telephone service connection lines to avoid potential interferences.

B. Surface Structures

1. Surface structures are defined as existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks, communication equipment, and all other facilities that are visible above the ground surface.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 REPAIR/RESTORATION

A. Trees, shrubs, and similar items shall not be removed except where indicated on the drawings or as necessary to access the required demolition work, as approved by the Owner and Engineer prior to commencing the work. Items to be removed shall be clearly marked as directed by the Engineer. If objects not to be removed are damaged or removed, they shall be repaired or replaced to their original condition.

B. Trees and shrubs on private property, which are removed or damaged by the Contractor shall be replaced with plantings of equal value and similar in size.

C. Signs, fences, property markers, walls, guard rails and other public or private property that are outside the demolition scope shall be replaced in kind if damaged. Supports and protective devices required shall be provided.

D. Underground and Surface Structures

1. In the event of damage, injury or loss to existing utilities and structures that were not indicated to be removed or abandoned, whether shown on the Drawings or not, make all reasonable efforts to facilitate repairs and to mitigate the impact of such events upon the utility or structure owner's normal operations. Restore the existing utility or structure to the condition required by the owner of the utility or structure or at least to the condition found immediately prior to the Work. In the event that the utility owner elects to make the repairs, provide all reasonable access and assistance, and reimburse the utility owner for the cost of repairs. If utility service is interrupted due to damage to facilities, alternate facilities shall be provided.

2. All other existing surface facilities, including but not limited to, guard rails, posts, guard cables, signs, poles, markers and curbs which are temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Contractor's expense unless otherwise indicated in other sections of these specifications.

3. Wherever water, sewer, gas or petroleum mains, electric or telephone lines, 2-way communication receiving and transmitting equipment, cables, conduit, or other utilities, structures, and appurtenances are encountered and may be in any way interfered with, inform the Engineer and the appropriate utility company. Cooperate with the Engineer and utility company in the protection, removal, relocation, and replacement of structures and facilities.

4. At least 14 days prior to the start of demolition activities, the Contractor shall provide notification in writing to direct abutters of the proposed start date of Work and describe the characteristics, magnitude, and schedule of proposed inconveniences.

5. Work affecting water distribution systems, which will take fire hydrants out of service, must be coordinated with the local fire department. The Contractor shall be prepared to restore fire flows in the event of an emergency or to provide for temporary fire flow service in accordance with the requirements of the local fire department.

6. Materials used for relocation or replacement of utilities and structures shall be of an equivalent material, type, class, grade and construction as the existing or as approved by the respective owners thereof, unless otherwise shown or specified.

7. When any survey monument or property marker, whether of stone, concrete, wood or metal, is in the line of any trench or other demolition work and may have to be removed, notify the Engineer in advance of removal. Under no circumstances shall any monument or marker be removed or disturbed by the

Contractor or by any of his Subcontractors, employees or agents, without the permission of the Engineer. Monuments or markers removed or disturbed shall be reset by a land surveyor licensed in the State where the Work is located at the Contractor's expense. Should any monuments or markers be destroyed through accident, neglect or as a result of the Work under this Contract, the Contractor shall, at his own expense, employ a land surveyor licensed in the State where the Work is located to re-establish the monument or marker.

3.2 PROTECTION

A. The construction of certain portions of the project may require excavation within the root systems of trees. Roots with a diameter of 2 inches or more within the excavation shall not be cut. If necessary, excavation shall be made with small powered equipment or by hand to comply with this requirement. It may be necessary to excavate from more than one direction to avoid damage to the roots.

B. The trunks of trees that are to remain and are within the swing radius of the excavating machine bucket when fully extended shall be wrapped with burlap and 2 inch by 4 inch protective wood slats (8 inch spacing maximum) wired around the circumference of the trees to protect them from damage.

C. Tree limbs shall not be cut except upon written approval of the Owner and the Engineer. Tree limbs cut shall be painted with approved forestry paint manufactured specifically for that purpose.

D. Underground and Surface Structures

1. Sustain in their places and protect from direct or indirect injury underground and surface structures designated to remain within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.

2. Pay utility service company charges related to the temporary support of utility poles if required to complete the Work.

3. Assume risks associated with the presence of underground and surface structures within or adjacent to the limits of the Work. The Contractor shall be responsible for damage and expense for direct or indirect injury caused by his Work to any structure. Immediately repair damage caused by the Work to the satisfaction of the owner of the damaged structure.

END OF SECTION

SECTION 01770

CLOSEOUT PROCEDURES

1.1 SUMMARY

A. Section Includes

1. Documentation required for the transfer of the completed Work to the Owner

2. Final Cleaning

1.2 SUBMITTALS

A. Closeout Submittals

1. As-built drawings

2. Operation and maintenance manuals

3. Evidence of payment and release of liens

4. List of Subcontractors, service organizations, and principal vendors

1.3 SUBSTANTIAL COMPLETION

A. Refer to Article 25 in Section C-1, General Conditions, for procedures relating to obtaining Substantial Completion. Refer to Section B-2, Agreement, for Contract times.

1.4 PROJECT CLOSEOUT DOCUMENTS

A. As-built Drawings - Submit as-built drawings review, approval, or comment. The as-built drawings shall show the completed work, including all deviations from the Drawings. The as-built drawings shall depict the location of all conduit, water main, and valve abandonment locations and all field changes.

1. Take swing ties to all underground work from a minimum of two horizontal locations. Vertical dimensions to all below grade work shall also be obtained. At a minimum, the following information should be shown on the as-built drawings for exterior construction:

a. Ties to other utility crossings and abandoned pipelines from two horizontal measurements to permanent surface reference points. Include depth below permanent grade and spacing between crossing utilities.

b. Ties to partially dismantled concrete foundations.

c. Change to pipes and materials.

2. Locate all utilities and appurtenances concealed in construction. Provide detail not shown on Contract Documents. Use colored pencils or felt tipped pens to record all revisions to the as-built drawings. Use the following color code unless otherwise approved by the Engineer:

a. Process and Mechanical: Red

b. Structural: Purple

c. Plumbing: Brown

d. HVAC: Green

e. Electrical: Orange

f. Other: Black

B. Final Documentation – Submit the following final documentation:

1. As-Built documentation shall include all previous submittals, as described in this Specification, updated to reflect the as-built system.

C. Provide keys and keying schedule, where applicable.

D. Provide evidence of payment and release of liens.

E. List of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

1.5 FINAL CLEANING & REPAIRS

A. Complete cleaning prior to final inspection. Thoroughly wipe clean all exposed surfaces. Clean debris from lawns, roofs, downspouts and gutters. Sweep paved surfaces and rake lawns and landscaped areas.

B. Use only cleaning materials that will not create hazards to health or property.

C. Remove and entirely dispose of material or debris that has washed, flowed or has been placed in existing watercourses, ditches, gutters, drains, pipe, or structures, for work done under the Contract work limits. Leave ditches, channels, drains, pipes, structures, and watercourses in a clean and neat condition upon completion of the Work.

D. On or before the completion of the Work, tear down and remove all temporary buildings and structures, remove all temporary works, tools, and machinery or other construction equipment, remove all rubbish from any grounds which has been occupied and leave the roads and all parts of the premises and adjacent property in a neat and satisfactory condition.

E. Restore or replace any public or private property damaged or removed during the course of the Work. Property shall be returned to a condition at least equal to that existing immediately prior to the beginning of operations. Complete all highway or driveway, walk, and landscaping work using suitable materials, equipment and methods. Perform restoration of existing property, signs or structures promptly as work progresses; do not leave restoration work until the end of the Contract Time.

1.6 COMPLETION

A. The Contract shall be considered complete and final payment made, only when:

1. All provisions of the Contract Documents have been strictly adhered to.

2. All damage to adjoining areas caused by the Work has been repaired.

3. The project and premises have been left in good order, including removal of all temporary construction, Contractor-owned and extraneous materials as required.

4. All as-built drawings as required by the Contract Documents have been submitted to the Owner.

5. All monies owed the Owner for services performed for the Contractor by Owner's forces in connection with the Contract have been paid.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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DIVISION 02 - SITE CONSTRUCTION

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Demolition and disposal of the existing water tanks as shown on the Drawings.

2. Pipe abandonment.

B. Related Sections

1. Section 01320 - Construction Photographs
2. Section 01350 - Health & Safety Plan
3. Section 01570 – Temporary Controls
4. Section 01725 - Preservation and Restoration of Project Features
5. Section 02280 – Pipeline and Underground Structure Abandonment
6. Section 02315 - Excavation, Backfill and Compaction
7. Section 02920 - Lawns and Grasses
8. Section 13010 – Elevated Storage Tank Demolition

1.2 DEFINITIONS

A. Demolish – To tear down, segregate waste streams and lawfully recycle or dispose of all debris generated in the process including structure contents.

B. Limit of Work – Area delineated on Drawings that defines the extent of demolition work under the Contract.

1.3 SUBMITTALS

A. Quality Control Submittals prior to commencement of on-site demolition:

1. Demolition Plan describing the methods of demolition and equipment proposed to demolish structures. This submittal should be sufficient to demonstrate a thorough understanding of the Work to be completed and the means that will be implemented to safely complete the demolition within the Contract Time without damage to surrounding structures, property, or resources. The Engineer will review the submittal for completeness, but will not approve the means and methods.

2. Waste Management Plan to indicate the types of wastes to be generated and the proposed disposal or recycling locations. Include back-up disposal facilities.

3. Copies of any authorizations and permits required to perform the work, including disposal/recycling facility permits.

B. The following records and disposal documentation must be maintained and kept current throughout the project. The documents will be maintained in chronological order in a 3-ring notebook with appropriate tabbed dividers. The notebook will be reviewed for completeness at each progress meeting. Monthly pay requisitions may be rejected, in whole or in part, if documentation is not current.

1. Records of the amounts of waste generated, by waste type
2. Evidence of lawful disposal or recycling of all wastes generated
3. Documentation of underground structures and utilities as identified in Part 3 of this Section
4. Copies of any analytical results generated as a result of waste stream characterization

1.4 REGULATORY REQUIREMENTS

A. Contractor is solely responsible for obtaining permits or approvals which may be required to perform the work of this section, including all costs, fees and taxes required or levied, except for the following permits that will be obtained by the Owner:

B. Notify and obtain such permits or approvals from agencies having jurisdiction over demolition prior to starting work.

C. Comply with all applicable federal, state, and local environmental, safety and health requirements regarding the demolition of structures and other site features and recycling or disposal of demolition debris, as applicable.

D. Conform to procedures identified in Section 01350 – Health and Safety Plan if hazardous or contaminated materials are discovered.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 PROJECT MANAGEMENT

A. Provide a full-time Project Superintendent, fluent in English, who shall serve as a direct communication among the Contractor, Subcontractors, Engineer, and the Owner.

B. Require all subcontractors to provide a foreman or superintendent who is fluent in English. That individual must be on site at all times that the subcontractor is working.

3.2 GENERAL REQUIREMENTS

A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures and utilities prior to start of work and notify the Engineer in writing, of any hazardous conditions and/or discrepancies. Primary structures and other site features are shown on the Drawings; other smaller structures, including, but not limited to, concrete walks and pads, miscellaneous signs, lamp posts, railings, and fencing may not be shown on the Drawings, but may exist within the Limit of Work and shall be demolished.

B. Unknown Site Conditions – The information provided on the Drawings and in the Specifications is believed accurate. Field verify all information. Bear full responsibility for obtaining all locations of underground structures, utilities and their connections. Maintain services to buildings outside the limits of work, at no additional cost to the Owner.

C. Use methods that will not cause damage to surrounding structures, underground and overhead utilities, or other existing items and structures that are to remain in place.

D. Promptly and properly manage all debris as the demolition progresses. Construct and/or prepare material staging/stockpile areas at locations approved by the Engineer.

3.3 SITE PREPARATION

A. Remove and/or stabilize all overhead and ground based hazards, prior to commencing work near any structure. Where hazards can not be stabilized, mark and control hazard areas to prohibit access. This shall be performed with caution tape, saw horses, safety fence or other types of barricades as determined by applicable safety codes.

3.4 HAZARDOUS MATERIALS

A. Lead Based Paints

1. A number of state, federal and local agencies regulate work which involves lead based paint. Tests results on paint coating samples associated with the structures to be demolished suggest the presence of heavy metals including lead. This lead could present a hazard to workers and requires regulatory compliance with 29 CFR 1926.62 "Lead in Construction." Paint coatings on the structures to be demolished may also contain other hazardous materials.

2. Of specific concern is the cutting of steel components using torch methods. If the Contractor intends to torch cut painted steel, lead based paint must be removed from the area to be cut with a chemical stripper or other means prior to cutting. Sufficient paint must be removed from the area to prevent volatilization of lead and other materials during the heating of the steel. Other means of controlling worker exposure to hazardous paint will be acceptable provided that they are addressed in the Lead Exposure Control Plan outlined in Section 01350 and that they meet the requirements of 29 CFR 1926.62.

3. Where activities may generate dust/particles or impact a leaded painted surface, regulate work area so that dust and particle migration is contained properly within the regulated work area. Once the work is complete, properly clean up and dispose of leaded paint dust, particles, and materials.

B. Polychlorinated Biphenyls (PCBs)

1. Assume the paint coatings contain PCBs and perform work accordingly to protect workers and prevent the release of dust and particles from the limit of work.

C. Asbestos Cement (AC) Pipe

1. Contractor is responsible for following proper industry best management practices and taking all precautions in accordance with applicable state and federal regulations.

3.5 ELECTRICAL DEMOLITION

A. Examination

1. Verify field measurements and circuiting arrangements are as shown on Drawings.

2. Verify that abandoned wiring and equipment serve only abandoned structures.

3. Demolition Drawings are based on field observation and existing record documents. Report discrepancies to the Engineer before disturbing existing installation.

4. Beginning of demolition means installer accepts existing conditions.

5. Work within live and active panels shall only be conducted by a qualified electrician. If it is not certain as to whether a panel is live or not, it shall be assumed that it is.

B. Demolition of existing electrical work

1. Demolish electrical work under provisions of this Section and in coordination with the Owner and Electric Utility.

2. Remove abandoned wiring to source of supply.

3. Remove exposed abandoned conduit. Cut conduit three feet (3') below ground surface and cap or fill ends to prevent soils from entering conduit.

4. Disconnect, remove, and dispose of electrical devices and equipment serving structure that are to be demolished not including devices and equipment owned by Electric Utility.

5. Repair adjacent construction and finishes damaged during demolition and extension work.

6. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

3.6 DEMOLITION

A. Demolished all concrete foundations and sub-grade structures and abandon piping in the following manner

1. Demolish all footing and foundation components to at least one (1) foot below grade and break up large slabs in place to promote free drainage (maximum 3′ x 3′ sections).

2. Abandon under ground piping per Section 02280.

3. Abandon all sub-grade supporting structures greater than 1 foot below finished ground surface in place.

4. Modify piping so that existing network which is proposed to remain is service can sustain full system pressure, and perform pressure testing and chlorination to the satisfaction of the Water Department.

5. Demolish all fences and gates within the Limit of Work unless otherwise noted on the Drawings.

6. Trees are an important resource and shall be treated as such. Unless specifically noted to be demolished/removed, protect all trees and obtain approval of the Engineer prior to removing or pruning any other trees. Refer to Section 01725.

3.7 DISPOSAL

A. Legally dispose of or recycle all materials from demolition as well as equipment and other materials that are within the structures. The disposal site shall be permitted to accept the waste stream by the applicable State Agency. Perform the loading of demolition materials in a manner that prevents materials and activities from generating excessive dust and ensures minimum interference with roads, sidewalks and streets both onsite and offsite.

B. Provide evidence that the demolition materials have been received at a legal disposal, recycle, reuse or salvage location. Such proof may include truck weigh slips from an approved disposal facility or documentation of transfer of title. Transport of all materials off site shall be in accordance with applicable Department of Transportation Regulations. All materials identified for demolition and removal from the site shall become the property of the Contractor.

3.8 SITE RESTORATION

A. Prior to any backfilling, document the location of any structures that remain in place through construction photographs and by obtaining swing ties to and elevations of any structures to be buried. Progress payments may be withheld if current documentation is not maintained.

B. Backfill foundation areas and areas from which structures were removed to match the surrounding grade or to achieve the final grades indicated on the Drawings. Backfilling shall be conducted in accordance with Section 02315.

C. Restore damaged areas of the site or neighboring properties in accordance with Section 01725 and stabilize slopes in accordance with the erosion and sedimentation control requirements of the Contract and the stormwater permit.

D. Loam and seed all disturbed areas in accordance with Section 02920.

E. Restore disturbed pavement, sidewalk, and curbing to equal or better than original condition meeting the Owner's satisfaction. Existing pavement edges shall be sawcut and finished pavement shall be minimum 2-1/2 inch base course asphalt mix and 1-1/2 wearing (top) course asphalt mix.

END OF SECTION

SECTION 02280

PIPELINE AND UNDERGROUND STRUCTURE ABANDONMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Abandonment of pipe

2. Abandonment of existing underground structures

B. Related Sections

1. Section 02220, Demolition

2. Section 02320, Borrow Material

1.2 SUBMITTALS

A. Prior to execution of any pipeline abandonment, the Contractor shall submit a Pipeline Abandonment Plan for review and approval to the Engineer describing the proposed methods and means of abandonment meeting all applicable local, state and federal regulations. The Plan shall include but not limited to descriptions of methods and means of deactivating or disconnecting exiting pipelines, removal and disposal of pipe appurtenances and/or compromised/broken pipe, pipe capping or plugging, fill methods and materials, approach to prevent air entrapment, and site restoration.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods required for proper performance of the work in this section.

B. Use equipment of adequate size, capacity and quantity to accomplish the work of this Section in a safe timely manner.

PART 2 PRODUCTS

2.1 MATERIALS

A. Gravel borrow shall meet the requirements of Section 02320, Borrow Material.

B. Concrete shall have a 28-day compressive strength of 3000 psi and a maximum stone size of 1½ inches.

C. Controlled Low Strength Material (flowable fill) shall have a 28-day compressive strength of 75-100 psi, 7" (+/-2") slump, 20-30% air content, and the mix shall be as follows:

1. Cement – 50 lbs
2. Fly ash – 250 lbs
3. Sand – 2,200+/- lbs
4. Water 42 gallons

PART 3 EXECUTION

3.1 ABANDONING DRAINS

A. Abandon existing pipelines as part of completion of the Work.

B. Seal gravity pipes that are to be abandoned at each end with a concrete plug not less than 1½ times the pipe diameter long in the barrel of the pipeline. For example, a 10-inch diameter pipe will require that a minimum 15-inch long plug be installed.

3.2 ABANDONING WATER MAINS

A. The deactivation of the water mains shall be done as part of the demolition work.

1. Installation and successful testing of the new pipeline including all hydrants and appurtenances.

2. Removal and reconnection of all buildings from the existing pipelines to the new pipelines.

3. Prior approval for the deactivation or disconnection of the water mains by the Engineer or Owner.

4. Accurate ties and record drawings documenting the location of all abandoned pipe shall be developed and provided to the Engineer or Owner.

5. Asbestos cement (AC) water mains shall be decommissioned according to proper industry best management practices and all precautions shall followed in accordance with applicable state and federal regulations to prevent breaking or crushing any existing AC pipe to prevent fragments from becoming airborne and subjecting workers or the public to asbestos particle exposure.

a. All AC pipe proposed for abandonment shall be capped or plugged at the ends with concrete and completely filled with flowable fill.

b. For AC pipes that are greater than 25 feet in length, Contractor shall propose methods of completely filling pipe to prevent air entrapment. Contractor may propose alternative mixes of fill material to the Engineer for approval to aid flowability.

c. Any broken pieces or fragments of AC pipe shall be bagged and disposed as required by state and federal regulations. No fragments or broken piecs of AC pipe shall be buried on site.

B. Excavate and remove sections of the existing water main as shown on the Drawings.

1. If the open end of the water main to be abandoned is subject to line pressure, the end of the pipe shall be sealed with a mechanical joint cap or plug.

2. If the open end of the water main to be abandoned is not subject to line pressure, the end of the pipe shall be sealed with a concrete plug with a length no less than 2 times the pipe diameter. For example, an 8-inch diameter pipe

will require that a minimum 16-inch long plug be installed inside the barrel of the abandoned pipe.

C. After the pipe has been capped, the top sections of all gate boxes shall be removed and stacked, the holes filled in with suitable backfill material.

3.3 REPAIR/RESTORATION

A. Match surface repairs to its immediate surrounding area. Complete this work in accordance with the applicable specification section.

END OF SECTION

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SECTION 02315

EXCAVATION, BACKFILL, COMPACTION AND DEWATERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Excavation, backfill and compaction
2. Earth retention systems
3. Temporary dewatering systems

B. Related Sections

1. Section 01570 – Temporary Controls
2. Section 02320 – Borrow Materials
3. Section 02920 – Lawns and Grasses

1.2 REFERENCES

A. ASTM D1557-07 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

B. ASTM D1556-07 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

C. ASTM D2487-06e1 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

D. ASTM D6938-08a - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

E. 29 CFR Part 1926 Subpart P - OSHA Excavation Regulations 1926.650 through 1926.652 including Appendices A through F

1.3 DEFINITIONS

A. Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

B. Earth Retention Systems - Any structural system, such as sheeting and bracing or cofferdams, designed to retain in-situ soils in place and prevent the collapse of the sides of an excavation in order to protect employees and adjacent structures.

C. Excavation - Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

D. Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include earth retention systems,

sloping and benching systems, shield systems, and other systems that provide the necessary protection.

E. Registered Professional Engineer - A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

F. Shield System - A structure that is designed to withstand the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either pre-manufactured or job-built in accordance with 29 CFR 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

G. Sloping - A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

H. Temporary Dewatering System – A system to lower and control water to maintain stable, undisturbed subgrades at the lowest excavation levels. Dewatering shall be provided for all pipelines, structures and for all other miscellaneous excavations.

I. Trench - A narrow excavation (in relation to its length) made below the surface of the ground, of at least three feet in depth. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m).

1.4 SUBMITTALS

A. Drawings and calculations for each Earth Retention System required in the Work. The submittal shall be in sufficient detail to disclose the method of operation for each of the various stages of construction required for the completion of the Earth Retention Systems.

1. Submit calculations and drawings for Earth Retention Systems prepared, signed and stamped by a Professional Engineer registered in the state where the work is performed.

B. Performance data for the compaction equipment to be utilized

C. Modified Proctor Test (ASTM D1557) results and soil classification (ASTM D2487) for all proposed backfill materials at the frequency specified below:

1. For suitable soil materials removed during Excavation, perform one test for every 1,000 cubic yards of similar soil type. Similarity of soil types will be as determined by the Engineer.

2. For borrow materials; perform tests at frequency specified in Section 02320, Borrow Materials.

D. Compaction test results (i.e. ASTM D6938 or ASTM D1556) at a frequency of one test for every 100 cubic yards of material backfilled or at a minimum of one test per lift. The Engineer will determine the locations and lifts to be tested. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

1. Methods and equipment proposed for compaction shall be subject to prior review by the Engineer. Compaction generally shall be done with vibrating equipment. Static rolling without vibration may be required by the Engineer on sensitive soils that become unstable under vibration. Displacement of, or damage to existing utilities or structure shall be avoided. Any utility or structure damaged thereby shall be replaced or repaired as directed by the Engineer.

2. Additional compaction testing may be required when there is evidence of a change in the quality of moisture control or the effectiveness of compaction.

   a. Any costs associated with correcting and retesting as a result of a failure to meet compaction requirements shall be borne by the Contractor.

3. If all compaction test results within the initial 25% of the total anticipated number of tests indicate compacted field densities equal to or greater than the project requirements, the Engineer may reduce frequency of compaction testing. In no case will the frequency be reduced to less than one test for every 500 cubic yards of material backfilled.

4. The Contractor is cautioned that compaction testing by nuclear methods may not be effective where trenches are so narrow that trench walls impact the attenuation of the gamma radiation, when adjacent to concrete that impacts the accuracy of determining moisture content, or where oversize particles (i.e. large cobbles or coarse gravels) are present. In these cases, other field density testing methods may be required.

E. Dewatering plan for the excavation locations. Design shall include calculations and drawings stamped and signed by a Professional Engineer registered in the state where the work is performed.

1.5 QUALITY ASSURANCE

A. All Excavation, Trenching, and related Earth Retention Systems shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P), 520 CMR 14.00, and other State and local requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.

B. Employ the services of a dewatering specialist or firm when well points, deep wells, recharge systems, or equal systems are required. Specialist shall have completed at least 5 successful dewatering projects of equal size and complexity and with equal systems.

1.6 PROJECT CONDITIONS

A. Notify Dig Safe and obtain Dig Safe identification numbers.

B. Notify utility owners in reasonable advance of the work and request the utility owner to stake out on the ground surface the underground facilities and structures. Notify the Engineer in writing of any refusal or failure to stake out such underground utilities after reasonable notice.

C. Make explorations and Excavations to determine the location of existing underground structures, pipes, house connection services, and other underground facilities in accordance with Paragraph 3.2.D of this Section.

D. No person shall, except in an emergency, make an excavation in any public way, public property, or privately owned land until a permit is obtained from the appropriate designated permitting authority. For this project, the permit should be obtained from Pease Development Authority.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Fill material is subject to the approval of the Engineer and may be either material removed from excavations or borrow from off site. Fill material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted, it will make a dense, stable fill.

B. Satisfactory fill materials shall include materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, SW, and SP.

C. Satisfactory fill materials shall not contain trash, refuse, vegetation, masses of roots, individual roots more than 18 inches long or more than 1/2 inch in diameter, or stones over 6 inches in diameter. Unless otherwise stated in the Contract Documents, organic matter shall not exceed minor quantities and shall be well distributed.

D. Satisfactory fill materials shall not contain frozen materials nor shall backfill be placed on frozen material.

E. Excavated surface and/or pavement materials such as gravel or trap rock that are salvaged may be used as a sub-grade material, if processed to the required gradation and compacted to the required degree of compaction. In no case shall salvaged materials be substituted for the required gravel base.

2.2 DEWATERING MATERIALS

A. Provide haybales and silt fence in accordance with Section 01570.

PART 3 EXECUTION

3.1 PREPARATION

A. Public Safety and Convenience

1. Take precautions for preventing injuries to persons or damage to property in or about the Work.

2. Provide safe access for the Owner and Engineer at site during construction.

3. Do not obstruct site drainage, natural watercourses or other provisions made for drainage.

4. Site entry gate shall be locked at all times that the Contractor is not on-site. Access to the site shall be limited to only the Contractor.

3.2 CONSTRUCTION

A. Earth Retention Systems

1. Provide Earth Retention Systems necessary for safety of personnel and protection of the Work, adjacent work, utilities and structures.

2. Maintain Earth Retention Systems for the duration of the Work.

3. Systems shall be constructed using interlocking corner pieces at the four corners. Running sheet piles by at the corners, in lieu of fabricated corner pieces, will not be allowed.

4. Drive sheeting ahead of and below the advancing excavation to avoid loss of materials from below and from in front of the sheeting.

5. Sheeting is to be driven to at least the depth specified by the designer of the earth retention system, but no less than 2 feet below the bottom of the Excavation.

6. Remove sheeting, unless designated to be left in place, in a manner that will not endanger the construction or other structures. Backfill and properly compact all voids left or caused by the withdrawal of sheeting.

7. Remove earth retention systems, which have been designated by the Engineer to be left in place, to a depth of 3 feet below the established grade.

B. Excavation

1. Perform excavation to the lines and grades indicated on the Drawings. Backfill unauthorized over-excavation in accordance with the provisions of this Section.

2. Excavate with equipment selected to minimize damage to existing utilities or other facilities. Hand excavate as necessary to locate utilities or avoid damage.

3. During excavation, material satisfactory for backfill shall be stockpiled in an orderly manner at a distance from the sides of the excavation equal to at least one half the depth of the excavation, but in no case closer than 2 feet.

a. Excavated material not required or not suitable for backfill shall be removed from the site.

b. Perform grading to prevent surface water from flowing into the excavation.

c. Pile excavated material in a manner that will endanger neither the safety of personnel in the excavation nor the Work itself. Avoid obstructing sidewalks and driveways.

d. Hydrants under pressure, valve pit covers, valve boxes, manholes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the Work is completed.

4. Grade or create berms or swales to direct surface water from excavations to appropriate structures designed to accommodate storm water. If no structures exist, direct water to areas that minimize impacts to adjacent structures and properties.

5. Perform the excavation in such a manner as to prevent disturbance of the final subgrade. If excessive subgrade disturbance is occurring, as judged by the Owner or Engineer, then the final 6 inches of the excavation must be performed by hand.

a. Grade the trench bottom to provide uniform bearing and support for the bottom quadrant of each section of pipe.

b. Excavate bell holes at each joint to eliminate point bearing.

c. Remove stones greater than 6 inches in any dimension from the bottom of the trench to avoid point bearing.

6. If satisfactory materials are not encountered at the design subgrade level, excavate unsatisfactory materials to the depth directed by the Engineer and properly dispose of the material. Backfill the resulting extra depth of excavation with satisfactory fill materials and compact in accordance with the provisions of this Section.

C. Backfill and Compaction

1. Unless otherwise specified or indicated on the Drawings, use satisfactory material removed during excavation for backfilling trenches. The Engineer may require stockpiling, drying, blending and reuse of materials from sources on the Project.

2. Spread and compact the material promptly after it has been deposited. When, in the Engineer's judgment, equipment is inadequate to spread and compact the material properly, reduce the rate of placing of the fill or employ additional equipment.

3. When excavated material is specified for backfill and there is an insufficient amount of this material at a particular location on the Project due to rejection of a portion thereof, consideration will be given to the use of excess material from one portion of the Project to make up the deficiency existing on other portions of the Project.

a. Use borrow material if there is no excess of excavated material available at other portions of the Project.

4. Backfilling and compaction methods shall attain 95% of maximum dry density at optimum moisture content as determined in accordance with ASTM D1557.

5. Do not place stone or rock fragment larger than six inches in greatest dimension in the backfill.

6. Maximum loose lift height for backfilling existing or borrow material shall be 18 inches, unless satisfactory compaction is demonstrated otherwise to the Engineer through field-testing. In no case shall loose lift height for backfilling exceed 3 feet.

7. Do not drop large masses of backfill material into the trench endangering any pipe or adjacent utilities.

8. Place and compact backfill around manholes, vaults, pumping stations, gate boxes or other structures in six inch layers, from a point 1 foot over the pipe. Exercise care to protect and prevent damage to the structures.

D. Dewatering

1. Obtain the following construction dewatering permits, as required:

   a. US EPA Dewatering General Permit

2. Provide, operate and maintain adequate pumping, diversion and drainage facilities in accordance with the approved dewatering plan to maintain the excavated area sufficiently dry from groundwater and/or surface runoff so as not to adversely affect construction procedures nor cause excessive disturbance of underlying natural ground. Locate dewatering system components so that they do not interfere with construction under this or other contracts.

3. Conduct operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work.

4. Take actions necessary to ensure that dewatering discharges comply with permits applicable to the Project. Dispose of water from the trenches and excavations in such a manner as to avoid public nuisance, injury to public health or the environment, damage to public or private property, or damage to the work completed or in progress.

5. Repair any damage resulting from the failure of the dewatering operations and any damage resulting from the failure to maintain all the areas of work in a suitable dry condition.

6. Take precautions to protect new work from flooding during storms or from other causes. Control the grading in the areas surrounding all excavations so that the surface of the ground will be properly sloped to prevent water from running into the excavated area. Where required, provide temporary ditches for drainage. Upon completion of the work, all areas shall be restored to original condition.

7. Do not excavate until the dewatering system is operational and the excavation may proceed without disturbance to the final subgrade.

8. Where subgrade materials are unable to meet the subgrade density requirements due to improper dewatering techniques, remove and replace the materials in accordance with Section 02320.

9. Notify the Engineer immediately if any settlement or movement is detected of survey points adjacent to excavations being dewatered. If settlement is deemed by the Engineer to be related to the dewatering, submit a modified dewatering plan to the Engineer within 24 hours. Implement the approved modified plan and repair any damage incurred to the adjacent structure.

10. Dewatering discharge:

    a. Install sand and gravel, or crushed stone, filters in conjunction with sumps, well points, and/or deep wells to prevent the migration of fines from the existing soil during the dewatering operation.

    b. Transport pumped or drained water without interference to other work, damage to pavement, other surfaces, or property. Pump water to a sedimentation basin prior to discharge to grade of drainage system.

    c. Do not discharge water into any sanitary sewer system.

    d. Provide separately controllable pumping lines.

    e. The Engineer reserves the right to sample discharge water at any time.

11. Install erosion/sedimentation controls for velocity dissipation at point discharges onto non-paved surfaces.

12. Removal

    a. Do not remove dewatering system without written approval from the Engineer.

    b. Backfill and compact sumps or ditches with screened gravel or crushed rock in accordance with Section 02320.

3.3 PROTECTION

A. Protection of Existing Structures

1. All existing foundations, conduits, wall, pipes, wires, poles, fences, property line markers and other items which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from injury by the Contractor. Should such items be injured, they shall be restored by the Contractor to at least as good condition as that in which they were found immediately before the work began.

B. Accommodation of Traffic

1. Streets and drives shall not be unnecessarily obstructed. The Contractor shall take such measures at his own expense to keep the street or road open and safe for two-way traffic.

2. Construct and maintain such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. Provide substantial barricades at crossings of trenches, or along the trench to protect the traveling public.

3. Where deemed necessary, such additional passageways as may be directed shall be maintained free of such obstructions. All material piles, open excavations, equipment, and pipe which may serve as obstructions to traffic shall be protected by proper lights, signage, or guards as necessary.

4. All traffic controls shall be in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition.

C. Erosion and Sedimentation Control

1. Take all necessary steps to prevent soil erosion.

2. Plan the sequence of construction so that only the smallest practical area of land is exposed at any one time during construction.

3. Temporary vegetation and/or mulching shall be used to protect critical areas exposed during construction as judged by the Engineer.

END OF SECTION

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SECTION 02320

BORROW MATERIALS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Standard Gravel Borrow
2. Processed Gravel Borrow for Pavement Base Course
3. Granular Fill
4. Sand Borrow
5. Stone Borrow
6. Ordinary Borrow

1.2 REFERENCES

A. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

B. ASTM C117 - Standard Test Method for Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

C. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

D. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb./ft3)

E. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head)

F. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)

G. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

H. AASHTO – Standard Specification for Transportation Materials and Methods of Sampling and Testing, 1986 Edition as amended

I. New Hampshire Department of Transportation “Standard Specifications for Road and Bridge Construction”, 2010 Edition as amended

1.3 SUBMITTALS

A. Representative Samples of borrow materials taken from the source. Tag, label, and package the Samples as requested by Engineer. Provide access to the borrow site for field evaluation and inspection.

B. Provide sieve analysis (ASTM C136) and permeability analysis (ASTM D2434) from certified soils testing laboratory for all borrow materials. Take and test a sample, at no additional cost to the Owner for each 1,500 c.y. of borrow material placed.

C. Provide modified proctor analysis (ASTM D1557) from certified soils testing laboratory for all borrow materials.

D. The Engineer reserves the right to require more frequent testing than that which is specified above should the borrow characteristics change.

1.4 QUALITY ASSURANCE

A. No borrow shall be placed prior to the approval of Samples by the Engineer.

1.5 PROJECT/SITE CONDITIONS

A. Existing Conditions

1. Comply with any environmental requirements and restrictions.

2. Keep all public and private roadway surfaces clean during hauling operations and promptly and thoroughly remove any borrow or other debris that may be brought upon the surface before it becomes compacted by traffic. Frequently clean and keep clean the wheels of all vehicles used for hauling to avoid bringing any dirt upon the paved surfaces.

PART 2 PRODUCTS

2.1 STANDARD GRAVEL BORROW

A. Gravel borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements for gravel shall be determined by NHDOT 304.2 and shall conform to the following:

Sieve	Percent Passing
6 inch	100
No. 4	25 - 75
No. 200 *	0 - 12

* Fraction passing the No. 4 sieve.

C. Maximum stone size shall not exceed 3 inches.

2.2 PROCESSED GRAVEL BORROW FOR PAVEMENT BASE COURSE

A. The compacted processed gravel borrow to be used for gravel access roads and pavement base, or other area where a firm, free-draining subgrade is needed shall consist of inert material that is hard, durable stone and coarse sand, free from loam

and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements for gravel shall be determined by NHDOT 304.3 and shall conform to the following:

Sieve	Percent Passing
3”	100
2”	95 – 100
1”	55 – 85
No. 4	27 – 52
No. 200 *	0 - 12

* Fraction passing the No. 4 sieve.

C. Stockpile the processed materials in such a manner to minimize segregation of particle sizes. All processed gravel shall come from approved stockpiles.

2.3 GRANULAR FILL

A. Granular Fill to be used as fill material to achieve gravel base grade beneath structures, pavement, or other area requiring structural fill shall consist of inert material that is hard, durable stone and sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear, by the Los Angeles Abrasion Test, of not more than 50.

B. Gradation requirements for gravel shall be determined by NHDOT 304.1 and shall conform to the following:

Sieve	Percent Passing
2/3rds loose lift thickness	95 – 100
No. 4	70 - 100
No. 200 *	0 - 12

* Fraction passing the No. 4 sieve.

2.4 SAND BORROW

A. Sand borrow material shall be supplied from an off-site borrow area approved by the Engineer. Testing of the off-site sand borrow shall be at the Contractor’s expense.

B. Sand borrow shall consist of clean, inert, hard, durable grains of quartz or other hard, durable, rock, free from loam or clay, surface coatings and deleterious materials. The allowable amount of material passing a No. 200 sieve as determined by ASTM-C117 shall not exceed 10% by weight.

C. Material shall consist of a clean, non-plastic, granular material conforming to the requirements of a SW, SP or SM under the Unified Soil Classification System (USCS) (ASTM D2487).

D. The material shall have the characteristics that when placed and compacted, the soil particles will bind together so as to form a solid, stable surface capable of supporting rubber-tired vehicular traffic during wet weather periods as well as extended dry weather periods. The borrow material shall not contain fines to the extent that the surface layer becomes "greasy" when wet.

E. The material shall not contain stones larger than 3/8 inch in diameter.

F. Material consisting of frozen clogs, ice and snow will be rejected.

G. All sand borrow material to be used shall be subject to approval by Engineer, and Engineer reserves the right to reject any borrow material from the job that does not meet the above requirements.

2.5 STONE BORROW

A. Crushed Stone Borrow

1. Crushed stone borrow shall consist of one of the following materials:

a. Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight. Thin stones shall be considered to be such stones whose average width exceeds 4 times their average thickness. Elongated stones shall be considered to be stones whose average length exceeds 4 times their average width.

b. Durable crushed gravel stone obtained by artificial crushing of gravel boulders or fieldstone with a minimum diameter before crushing of 8 inches.

2. The crushed stone shall be free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone.

3. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) as follows:

a. Crushed Stone for Subbase 45%

4. Gradation requirements for crushed stone borrow shall conform to the following:

¾" Crushed Stone

Sieve	Percent Passing
1 inch	100
¾ inch	90 - 100
3/8 inch	20 - 55
No. 4	0 - 10

B. Placed Riprap Borrow

1. Stone used for placed riprap shall be hard, durable, subangular in shape, resistant to weathering and shall meet the gradation requirement specified. Neither breadth nor thickness of a single stone should be less than one-third its length. Rounded stone or boulders will not be accepted unless authorized by the Engineer. Stone shall be free from overburden, spoil, shale, or organic material and shall meet the gradation requirement as specified.

Size of Stone	Maximum Percent of Total Weight Smaller Than Given Size
400 lb.	100
300 lb.	80
200 lb.	50
*25 lb.	10

*No more than 5% by weight shall pass a 2" sieve.

2. Each load of riprap shall be reasonably well graded from the smallest to the maximum size specified. Stones smaller than the specified 10% size and spall will not be permitted in an amount exceeding 10% by weight of each load.

2.6 ORDINARY BORROW

A. Ordinary borrow shall have the physical characteristics of soils designated as type GW, GP, GM, SW, SP or SM, under USCS and shall not be specified as gravel borrow, sand borrow, special borrow material or other particular kind of borrow. It shall have properties such that it may be readily spread and compacted for the formation of embankments. The borrow shall not include rocks with a major dimension greater than 8 inches.

PART 3 EXECUTION

3.1 INSTALLATION

A. Prior to the placement of borrow material, site preparation shall be completed as required by the Contract Documents, and approved by the Engineer.

B. Ensure that all materials are properly stockpiled on site to prevent contamination by other materials.

C. Place borrow material over the entire area in uniform lifts and compact in accordance with Section 02315.

D. Utilize on-site soils prior to using off-site borrow provided on-site soils meet the requirements of the specifications.

E. Utilize gravel borrow in all locations where a surface treatment has not been specified but requires a firm finish surface.

F. Processed gravel for pavement base course is intended to provide a stable foundation for driveways, sidewalk and roadway repair where a gravel base has been specified.

G. Borrow shall be used as a replacement for unsuitable materials where poor soil conditions are encountered during the progress of the work, where approved by the Engineer. Borrow type will be determined by the Engineer. Borrow material used as a replacement for unsuitable soil is not intended to be an aid to dewatering.

H. Shape borrow used for pipe foundation material so that it supports the pipe properly and will not damage the pipe, bells, collars, or the pipe fittings.

I. Place all borrow to keep it free of other materials and to prevent segregation.

END OF SECTION

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SECTION 02920

LAWNS AND GRASSES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Restoration of all vegetated areas disturbed during construction including.

2. New loam and seed areas

3. Loam, starter fertilizer, lime, and seed

4. Mulch

1.2 SUBMITTALS

A. Lawn seed mixture including percent by weight of each seed type, and manufacturer/Supplier name.

B. Suitable laboratory analysis of the topsoil to determine the quantity of fertilizer and lime to be applied.

C. Lime and starter fertilizer application rates based on laboratory soil tests.

D. A sworn certificate indicating each variety of seed, weed content, germination of seed, net weight, date of shipment and manufacturer's name shall accompany each seed shipment.

1.3 QUALITY ASSURANCE

A. Place seed only between the periods from April 15th to June 1st, and from August 15th to October 1st, unless otherwise approved by the Engineer.

PART 2 PRODUCTS

2.1 MATERIALS

A. Loam

1. Loam from offsite, as required for Work, shall be taken from a well-drained, arable site, and shall be free of subsoil, large stones, earth clods, sticks, stumps, clay lumps, roots or other objectionable, extraneous matter or debris. Loam shall also be free of quack-grass rhizomes, Agropyron Repens, and the nut-like tubers of nutgrass, Cyperus Esculentus, and all other primary noxious weeds. Loam shall not be delivered or used for planting while in a frozen or muddy condition. Topsoil as delivered to the Site or stockpiled shall have pH between 6.0 and 7.0 and shall contain not less than 5 percent or more than 8 percent organic matter as determined by loss of ignition of moisture-free Samples dried at 100 degrees Celsius.

2. Onsite loam may be available from stripping of onsite topsoil. Onsite topsoil shall be tested as specified below and shall be amended as necessary to meet Specification requirements for loam.

3. Soil Analysis: The Contractor shall submit representative Samples of loam, which he intends to bring onto the Site, and Samples of loam from onsite sources, to a Soil and Plant Testing Laboratory acceptable to the Engineer. All reports shall be sent to the Engineer for approval. Samples of loam to be brought to the Site must be approved prior to delivery of soil. Deficiencies in the loam shall be corrected by the Contractor, as directed by the Engineer after review of the testing agency report by a soils consultant. Testing reports shall include the following tests and recommendations.

   a. Mechanical gradation (sieve analysis) shall be performed and compared to the USDA Soil Classification System.

   b. The silt clay content shall be determined by a Hydrometer Test.

   c. Percent of organics shall be determined by an Ash Burn Test or Walkley/Black Test.

   d. Chemical analysis shall be undertaken for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium, Aluminum, Soluble Salts, and acidity (pH).

   e. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies as necessary, and for additives necessary to accomplish particular lawn and planting objectives noted.

   f. All tests shall be performed in accordance with the current standards of the Association of Official Agriculture Chemists.

4. Loam for General Lawn and Site Restoration Areas: Loam shall conform to the following grain size distribution for material passing the #10 sieve:

	Percent Passing	
U.S. Sieve Size Number	**Minimum**	**Maximum**
10	100	----
18	84	100
35	63	72
140	26	40
270	22	34
0.002 mm	2	5

[1]The ratio of the particle size for 80% passing (D_{80}) to the particle size for 30% passing (D_{30}) shall be 6 or less ($D_{80}/D_{30} < 6$).

[2]Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 20% by weight of the total sample.

[3]Tests shall be by combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

[4]The organic content shall be between 4.0 and 6.0 percent.

B. Typical Sand Amendment

1. Sand to be mixed with topsoil shall meet the following requirements. The material shall be uniformly graded coarse sand consisting of clean, inert, rounded grains of quartz or other durable rock and free from loam or clay, surface coatings, mica, other deleterious materials with the following gradation.

	Percent Passing	
U.S. Sieve Size Number	**Minimum**	**Maximum**
10	100	----
18	60	80
35	35	55
60	8	20
140	0	8
270	0	3
0.002 mm	0	0.3

[1]Maximum size shall be one-inch largest dimension. The maximum retained on the #10 sieve shall be 10% by weight of the total sample.
[2]The ratio of the particle size for 70% passing (D_{70}) to the particle size for 20% passing (D_{30}) shall be 3.0 or less ($D_{70}/D_{20} < 3.0$).
[3]Tests shall be combined hydrometer and wet sieving in compliance with ASTM D422 after destruction of organic matter by ignition.

C. Starter Fertilizer

1. Starter fertilizer shall bear the manufacturer's name and guaranteed statement of analysis, and shall be applied in accordance with the manufacturer's directions.

2. Starter fertilizer shall be Scott's Starter Fertilizer, or equal, with timed nitrogen release to prevent burning.

D. Lime

1. Lime shall be an agricultural type ground limestone.

2. Lime shall be pelletized type for prolonged time release to soil.

E. Seed

1. Seed shall be of the previous year's crop.

2. Required properties:

a. Purity > 90%

b. Germination > 80%

c. Crop < 0.5%

d. Weed < 0.3%

e. Noxious Weed – 0%

f. Inert < 8%

Natural Area Seed Mix	% Weight
Kentucky 31 Fescue	40%
Palmer Perennial Ryegrass	30%
Birds Foot Trefoil (Empire Variety)	15%
Red Clover	5%
White Clover	5%
Redtop (Streaker Variety)	5%

3. All seed shall comply with State and Federal seed Laws and Regulations.

F. Mulch

1. Shall be a specially processed 100 percent Virgin wood fiber mulch containing no growth or germination-inhibiting factors. Wood fiber mulch shall be Second Nature Regenerated wood fiber as by Central Fiber Corporation, Wellsville, KS or equal. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogenous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the wood fiber shall be marked by the manufacturer to show the air dry weight content and not contain in excess of 10 percent moisture.

PART 3 EXECUTION

3.1 PREPARATION

A. After rough grading of the subgrade has been completed and approved, the subgrade surface shall be scarified to a depth of six (6) inches. Then furnish and install a layer of loam providing a rolled six (6) inch thickness. Any depressions which may occur during rolling shall be filled with additional loam, regraded and rerolled until the surface is true to the finished lines and grades. All loam necessary to complete the Work under this section shall be supplied by the Contractor.

B. The ground surface shall be fine graded and raked to prepare the surface of the loam for lime, fertilizer and seed.

C. The loam shall be prepared to receive seed by removing stones and grading to eliminate water pockets and irregularities prior to placing seed. Finish grading shall result in straight uniform grades and smooth, even surfaces without irregularities to low points.

D. All stones over one-half (½) inch in diameter remaining on the surface after raking shall be removed.

E. Shape the areas to the lines and grades required. The Contractor's attention is directed to the scheduling of Loaming and Seeding of graded areas to permit sufficient time for the stabilization of these areas.

F. All areas disturbed by construction within the property lines and not covered by structures, pavement, or bark mulch shall be loamed and seeded.

G. Limestone shall be thoroughly incorporated into the loam layer at a minimum rate of 3 ton per acre or more as recommended by the loam analysis in order to provide a pH value of 5.5 to 6.5.

H. Fertilizer shall be spread on the top layer of loam at the minimum rate of 500 pounds per acre or more as recommended by the loam analysis and worked into the surface

3.2 LOAM AND SEED AREAS

A. The seed mixtures shall be applied at a minimum rate of 200 pounds per acre, or 4.5 pounds per 1,000 square feet.

B. Seed shall be sown at the rates indicated above by rotary or drop spreader. Sowing shall be done on a calm, dry day. Immediately before seeding, the soil shall be lightly raked. One half the seed shall be sown in one direction and the other half at right angles to the original direction. It shall be lightly raked into the soil to a depth not over 1/4 inch and rolled with a hand roller weighing not over 100 pounds per linear foot of width.

1. Straw mulch shall be applied immediately after seeding at a rate of 1.5 to 2 tons per acre. Mulch that blows or washes away shall be replaced immediately and anchored using appropriate techniques.

2. The surface shall be watered and kept moist with a fine spray as required, without eroding the soil, until the grass is well established. Any areas, which are not satisfactorily covered with grass, shall be reseeded, and all noxious weeds shall be removed.

C. Unless otherwise approved, seeding shall be done during the approximate periods of early Spring to May 20, and August 10 to September 15, when soil conditions and weather are suitable for such Work.

3.3 MAINTENANCE

A. Maintenance shall include watering, weeding, removal of stones and other foreign objects over one half (½) inch in diameter, cutting the grass until final acceptance. Mow at least weekly, removing no more than 30-40 percent of the leaf tissue using well sharpened blades. Mow grass between one (1) and two (2) inches high in the spring and fall. Mowing heights shall be an additional one-half to an inch in the summer to reduce temperature stress. Leave the clippings in place to help recycle essential plant nutrients needed for growth. All bare or dead spots which become apparent shall be properly prepared, re-loamed, limed, aerated, fertilized, and reseeded as many times as necessary to secure a good growth. The entire area shall be maintained, watered and cut until final acceptance of the lawn installation.

B. The dressed and seeded areas shall be sprinkled with water as necessary from time to time. Signs and barricades should be placed to protect the seeded areas.

C. To be acceptable, seeded areas shall consist of a uniform stand without bare or dead spots of at least 90 percent established permanent grass species, with uniform count of at least 200 plants per square foot.

D. The Engineer shall determine whether maintenance shall continue in any part.

E. After all necessary corrective Work and clean-up has been completed, and maintenance instructions have been received by the Owner, the Engineer will certify in writing the acceptance of the lawns.

END OF SECTION

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DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13010

ELEVATED STORAGE TANK DEMOLITION

PART 1 – GENERAL

1.1 SUMMARY

A. The Contractor shall provide all labor, equipment, materials and professional services required to demolish the subject elevated water storage tanks and properly dispose of water tank structures and appurtenances as described in the project reference Drawings associated with the removal of the 400,000 gallon Hobbs Hill elevated water storage tank and the 200,000 gallon Osprey Landing elevated water storage tank in accordance with all applicable state, federal and local regulatory requirements associated with scrap metal salvaging and related demolition activities. The contract includes partial removal of the reinforced concrete tank foundations, capping of certain piping, and removal of other equipment and appurtenances per the project Drawings.

B. The project is being bid as a turnkey project. The contractor shall have the necessary experienced with demolition of similar elevated water storage tanks, and be licensed to perform such demolition salvage as required by the State of New Hampshire for demolition and salvage services. The plans and specifications are intended to outline for the contractor the City of Portsmouth's performance objectives for this work and not to detail the means and methods, materials, actions, tools, equipment and procedures required in order to complete the work.

C. The contractor shall develop and submit for review and approval a written demolition plan, ground protection plan, waste management plan, pipe abandonment plan, and health and safety plan. The contractor is solely responsible for the means and methods of the proposed work, and shall provide the required insurance.

D. Related Requirement

1. Section 01350 – Health & Safety Plan
2. Section 01570 – Temporary Controls
3. Section 02220 – Demolition
4. Section 02280 – Pipeline & Underground Structure Abandonment

1.2 DESCRIPTION OF ELEVATED STORAGE TANKS

A. The Hobbs Hill elevated multi-legged storage tank consists of a welded steel structure, fabricated in 1954 of approximately 400,000 gallons volume. The overall height of the tank structure is approximately 147 feet from the ground to the top of the tank. See accompanying Drawings which provides a plan view, limits of demolition and work, and other information describing existing site features. The tank will be taken out of service prior to contract award date. Associated valves and controls are to be removed by the contractor as part of this work. The tank's most recent tank inspection report is provided as Appendix "A" to these specifications. Data indicate the tank exterior was last coated in the 1980s. The site also contains a 600,000 gallon composite water tank that was recently constructed

to replace the multi-legged water storage tank that must be protected from any level damage during demolition activities.

B. The Osprey Landing elevated multi-legged storage tank consists of a riveted steel structure, fabricated in 1921, of approximately 200,000 gallons volume. The overall height of the tank structure is approximately 70 feet from the ground to the top of the tank. See accompanying drawings which provides an aerial view, property outline, limits of demolition and work, and other information describing existing site features. The tank is currently not in service. Associated valves and controls are to be removed by the contractor as part of this work. Data indicate the tank exterior was last coated in the 1990s.

1.3 SUBMITTALS

A. Submittals to be provided by the contractor for review are listed below. The review is for the purpose of observing the contractor's planning and progress with the performance objectives of this work, and are not determinations of the adequacy of the contractor's plans. The following items shall be submitted by the Contractor prior to mobilization to the demolition site:

1. Demolition Plan (See Section 02220)
2. Health and Site Safety Plan (See Section 01350)
3. Contractor Insurance Certificates
4. Ground Protection Plan (See Section 01570)
5. Waste Management Plan (See Section 02220)
6. Pipeline Abandonment Plan (See Section 02280)

1.5 SALVAGE

A. The accompanying drawings indicate the equipment, valves and piping which are to be removed by the contractor and delivered to the City of Portsmouth Department of Public Works Facility for salvage. All other material unless shown on the plans to "remain" are for removal, salvage or disposal by the contractor. All such materials demolished shall become the property of the Contractor and shall be removed from the premises and disposed of as specified herein

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION

3.1 GENERAL SEQUENCE

A. The contractor is expected to make his own inspection and assessment of the condition of the tank prior to demolition. The contractor will then prepare Submittals comprising the demolition, waste management, ground protection plan, pipe abandonment plan health and site safety plans, and shall obtain the required permits. The site will be prepared in accordance with these plans, and demolition/salvage work commenced. The material shall be removed from the site, and the site restored.

3.2 DEMOLITION PLAN

A. The Contractor shall prepare and submit for review a demolition plan in accordance with Section 02220 that details all means, methods, and procedures proposed for demolition of the elevated storage tanks including a detailed schedule

describing the sequence of tasks necessary to complete the project. The demolition plan shall confirm that the tank has been structurally assessed and that the demolition plan and sequence of demolition will not result in a premature tank structural failure. Plan shall consider the potential for reduced structural integrity as the structure is dismantled and susceptibility of partially dismantled but still standing components from wind effects. Plan should provide the most expeditious dismantling of the structure safely feasible to minimize the duration of time partially standing structures remain.

3.3 WASTE MANAGEMENT PLAN

A. The Contractor shall prepare and submit for review a waste management plan in accordance with Section 02220 indicating the types of waste to be generated and the proposed disposal or recycling locations and updated to include the documentation described in the disposal section below.

3.4 GROUND PROTECTION PLAN

A. The Contractor shall prepare and submit for review a ground protection plan in accordance with Section 01570 proposing methods and means of protecting the ground surface from being the negatively impacted by the demolition activities and/or the release of potentially harmful substances.

3.5 PIPE ABANDONMENT PLAN

A. The Contractor shall prepare and submit for review a pipe abandonment plan in accordance with Section 02280 proposing methods and means of the existing watermain abandonment activities.

3.6 HEALTH AND SITE SAFETY PLAN

A. Contractor shall prepare and submit for review a health and safety plan in accordance with Section 01350 that meet the requirements of OSHA Standard 1926.62 related to health and safety of employees and possible exposure to lead, asbestos, and other potentially hazardous material. Contractor shall perform an exposure assessment and develop and implement a plan that includes appropriate safeguards, personal protective equipment, monitoring, documentation, and recordkeeping. The safety plan shall address the security and protection of the site, to restrict access and to warn the public of possible dangers associated with the demolition.

B. The safety plan shall address how the public and occupants of abutting properties are to be protected during the demolition. The contractor is responsible to provide and implement at the contractors cost any traffic maintenance plan thereby needed. Contractor's safety plan shall address how the contractor plans to comply with OSHA standards for removal and lowering of demolished material, and fall protection for all staff and subcontractors working on the structure and site. The plan should address the OSHA standards applicable, training and certification of staff and subcontractors to safely carryout the work, the supervision requirements, and all equipment needed and procedures to be followed.

C. The safety plan should envision possible site emergencies and provide procedures for handling same.

3.7 INSPECTIONS

A. Prior to starting demolition, make inspection and notify the Owner of observable defects and structural weaknesses of construction designated for demolition. If unsatisfactory conditions are found, during the pre-demolition inspection, do not

commence demolition until the demolition plan has been appropriately updated to address said conditions and the required staff and equipment in place to safely proceed with the demolition.

E. During demolition, continue to make inspections and notify the Owner of defects and structural weaknesses of items as they are partially demolished, cut or removed. Contractor's demolition plan should include procedures for handling such conditions.

3.8 PREPARATION

A. Protect existing structures, appurtenances, and landscaping which are not to be demolished and/or which are to be salvaged.

B. Verify the location of existing above and below ground utilities prior to the start of any demolition. This includes, but is not limited to, electric, phone, and water lines. Contact the appropriate utility to properly mark each of the utilities. Coordinate with utility personnel when disconnecting, removing, capping, or relocating a utility within the demolition area.

C. Upon mobilization, the Contractor shall secure the site and shall provide barricades, fencing, signs, lights, etc. to restrict access and to warn the public of possible dangers associated with the demolition. All equipment to be removed by the contractor for Owners salvage shall be protected and preserved, unless otherwise permitted by the Owner.

D. The Owner will be responsible for draining the tank of water and valving the tank off and isolating it from their distribution system.

3.9 PROTECTION OF SURROUNDING AREA AND EQUIPMENT

A. The Contractor shall take proper and effective measures to ensure that there will be no damage to equipment, structures, elements, or portions thereof which are not to be removed, and which could be effected by demolition, either on or offsite. Erect and maintain temporary bracing and other means as necessary or required to safeguard the structural integrity of the existing portions of the tank as demolition is taking place, as well as equipment and components to remain.

B. Erect and maintain temporary bracing, shoring, lights, barricades, signs, containment, and other means to protect the site and neighboring properties, the public, workers, and other persons, in accordance with applicable regulatory requirements.

3.10 DEMOLITION REQUIREMENTS

A. Conduct demolition in accordance with this section and Section 02220, and to minimize interference with adjacent roadways, structures, or utilities and abutting properties.

B. Cease operations immediately if structures, the public, roadways, traffic appear to be in danger. Notify Owner and Owner's Representative immediately.

C. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.

D. Demolish and salvage indicated structure in an orderly and careful manner.

E. Contractor shall take all precautions during demolition and removal of the tank from the site to minimize chipping or flaking of the paint and deposit of paint particles on the Owner's or abutting properties. Best management practices shall be

employed to prevent the release of paint particles and/or contain and collect loose particles. Any particles which are removed from the tank surfaces accidentally or otherwise shall be properly recovered, contained and removed from the site.

Contractor shall take all necessary precautions to protect his workers and the public from unnecessary exposure to existing paint materials and associated particles, and shall follow all local, state and national ordinances regarding the presence of lead and other substances associated with steel tank coatings while performing the work. Blasting, scraping or other similar procedures which may cause paint to be removed from the tank surfaces and become airborne shall not be permitted as a part of the demolition operations.

F. Contractor shall disconnect, decommission, and abandon piping as indicated on the Drawings and in accordance with Section 02280, and in such a manner as to minimize disturbing or damaging adjacent facilities.

G. Clean up site and perform site restoration in accordance with the restoration section below.

3.11. DISPOSAL

A. All removed materials, debris and rubbish resulting from the demolition operations shall be removed from the site and disposal of by and at the expense of the Contractor. Contractor in responsible for identifying and obtaining all necessary permits, and shall provide thorough and complete written documentation of the removal, scrapping, and disposal of the existing elevated multi-legged water storage tank(s) and associated appurtenances described herein. The documentation shall include permits and manifests describing the material(s), date of removal, date of delivery to the receiving facility, and date of "destruction" of the material in the processing facility's waste stream. The documentation shall include the written verification of the receiving facility, and shall be of a format and descriptiveness acceptable to the Owner. All expenses, permits fees, disposal and transportation costs are the responsibility of the Contractor. The Contractor shall bear full responsibility for any and all fines against the project resulting from the improper handling and disposal of the waste materials.

3.12 RESTORATION

A. At the completion of the demolition work, the entire site shall be cleaned of all debris and rubbish. Restoration shall be made as required to return the site to equivalent or better condition than existed prior to the work. This shall include redressing of disturbed areas, repairs to any paved surfaces, sodding of disturbed areas, restoration of any fencing temporarily taken down or damaged. All restoration work shall be subject to acceptance by Owner.

END OF SECTION

APPENDIX A

Existing Water Tank Information

Hobbs Hill Water Tank & Osprey Landing Water Tank

PCB Testing Results

ANALYTICAL REPORT

Lab Number:	L1517652
Client:	Tighe & Bond, Inc. 177 Corporate Drive Portsmouth, NH 03801
ATTN:	Bettina Eames
Phone:	(603) 433-8818
Project Name:	CITY OF PORTSMOUTH
Project Number:	HOBBSHILL
Report Date:	08/06/15

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: CITY OF PORTSMOUTH
Project Number: HOBBSHILL

Lab Number: L1517652
Report Date: 08/06/15

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1517652-01	OSPREY LANDING WT-LEG 1	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 10:20	07/29/15
L1517652-02	OSPREY LANDING WT-LEG 3	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 10:30	07/29/15
L1517652-03	OSPREY LANDING WT-LEG 5	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 10:40	07/29/15
L1517652-04	HOBBS HILL WT LEG 2	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 11:15	07/29/15
L1517652-05	HOBBS HILL WT LEG 4	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 11:20	07/29/15
L1517652-06	HOBBS HILL WT LEG 6	PAINT CHIPS	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	07/29/15 11:25	07/29/15

Project Name: CITY OF PORTSMOUTH
Project Number: HOBBSHILL

Lab Number: L1517652
Report Date: 08/06/15

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	CITY OF PORTSMOUTH	**Lab Number:**	L1517652
Project Number:	HOBBSHILL	**Report Date:**	08/06/15

Case Narrative (continued)

PCBs

L1517652-01RE, -02RE, and -03RE: The sample has elevated detection limits due to limited sample volume available for analysis.

The surrogate recoveries for the following samples were outside the acceptance criteria; however, re-extraction achieved similar results. The results of both extractions are reported:

L1517652-01: 2,4,5,6-tetrachloro-m-xylene (7%/7%) and decachlorobiphenyl (3%/4%)

L1517652-01RE: 2,4,5,6-tetrachloro-m-xylene (5%/5%) and decachlorobiphenyl (3%/3%)

L1517652-02: 2,4,5,6-tetrachloro-m-xylene (10%9%) and decachlorobiphenyl (5%/6%)

L1517652-02RE: 2,4,5,6-tetrachloro-m-xylene (8%/8%) and decachlorobiphenyl (3%/3%)

L1517652-03: 2,4,5,6-tetrachloro-m-xylene (9%/9%) and decachlorobiphenyl (5%/6%)

L1517652-03RE: 2,4,5,6-tetrachloro-m-xylene (3%/3%) and decachlorobiphenyl (1%/1%)

L1517652-04: 2,4,5,6-tetrachloro-m-xylene (13%/12%) and decachlorobiphenyl (11%/12%)

L1517652-04RE: 2,4,5,6-tetrachloro-m-xylene (3%/4%) and decachlorobiphenyl (3%/2%)

L1517652-05: 2,4,5,6-tetrachloro-m-xylene (2%/2%) and decachlorobiphenyl (1%/1%)

L1517652-05RE: 2,4,5,6-tetrachloro-m-xylene (3%/2%) and decachlorobiphenyl (1%/1%)

L1517652-06: 2,4,5,6-tetrachloro-m-xylene (5%/5%) and decachlorobiphenyl (4%/5%)

L1517652-06RE: 2,4,5,6-tetrachloro-m-xylene (2%/2%) and decachlorobiphenyl (1%/1%)

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly Stenstrom

Title: Technical Director/Representative Date: 08/06/15

ORGANICS

PCBS

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID:	L1517652-01	Date Collected:	07/29/15 10:20
Client ID:	OSPREY LANDING WT-LEG 1	Date Received:	07/29/15
Sample Location:	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	Field Prep:	Not Specified
Matrix:	Paint Chips	Extraction Method:	EPA 3540C
Analytical Method:	1,8082A	Extraction Date:	08/01/15 09:18
Analytical Date:	08/03/15 17:21	Cleanup Method:	EPA 3665A
Analyst:	JT	Cleanup Date:	08/02/15
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	87.4	--	1	A
Aroclor 1221	ND		ug/kg	87.4	--	1	A
Aroclor 1232	ND		ug/kg	87.4	--	1	A
Aroclor 1242	ND		ug/kg	87.4	--	1	A
Aroclor 1248	ND		ug/kg	87.4	--	1	A
Aroclor 1254	ND		ug/kg	87.4	--	1	A
Aroclor 1260	ND		ug/kg	87.4	--	1	A
Aroclor 1262	ND		ug/kg	87.4	--	1	A
Aroclor 1268	ND		ug/kg	87.4	--	1	A
PCBs, Total	ND		ug/kg	87.4	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**7**	Q	30-150	A
Decachlorobiphenyl	**3**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**7**	Q	30-150	B
Decachlorobiphenyl	**4**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID:	L1517652-01 RE	Date Collected:	07/29/15 10:20
Client ID:	OSPREY LANDING WT-LEG 1	Date Received:	07/29/15
Sample Location:	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	Field Prep:	Not Specified
Matrix:	Paint Chips	Extraction Method:	EPA 3540C
Analytical Method:	1,8082A	Extraction Date:	08/04/15 20:00
Analytical Date:	08/05/15 17:59	Cleanup Method:	EPA 3665A
Analyst:	JT	Cleanup Date:	08/05/15
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	495	--	1	A
Aroclor 1221	ND		ug/kg	495	--	1	A
Aroclor 1232	ND		ug/kg	495	--	1	A
Aroclor 1242	ND		ug/kg	495	--	1	A
Aroclor 1248	ND		ug/kg	495	--	1	A
Aroclor 1254	ND		ug/kg	495	--	1	A
Aroclor 1260	ND		ug/kg	495	--	1	A
Aroclor 1262	ND		ug/kg	495	--	1	A
Aroclor 1268	ND		ug/kg	495	--	1	A
PCBs, Total	ND		ug/kg	495	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**5**	Q	30-150	A
Decachlorobiphenyl	**3**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**5**	Q	30-150	B
Decachlorobiphenyl	**3**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID:	L1517652-02	Date Collected:	07/29/15 10:30
Client ID:	OSPREY LANDING WT-LEG 3	Date Received:	07/29/15
Sample Location:	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	Field Prep:	Not Specified
Matrix:	Paint Chips	Extraction Method:	EPA 3540C
Analytical Method:	1,8082A	Extraction Date:	08/01/15 09:18
Analytical Date:	08/03/15 17:36	Cleanup Method:	EPA 3665A
Analyst:	JT	Cleanup Date:	08/02/15
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	92.6	--	1	A
Aroclor 1221	ND		ug/kg	92.6	--	1	A
Aroclor 1232	ND		ug/kg	92.6	--	1	A
Aroclor 1242	ND		ug/kg	92.6	--	1	A
Aroclor 1248	ND		ug/kg	92.6	--	1	A
Aroclor 1254	ND		ug/kg	92.6	--	1	A
Aroclor 1260	ND		ug/kg	92.6	--	1	A
Aroclor 1262	ND		ug/kg	92.6	--	1	A
Aroclor 1268	ND		ug/kg	92.6	--	1	A
PCBs, Total	ND		ug/kg	92.6	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**10**	Q	30-150	A
Decachlorobiphenyl	**5**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**9**	Q	30-150	B
Decachlorobiphenyl	**6**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-02 RE
Client ID: OSPREY LANDING WT-LEG 3
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/05/15 18:15
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 10:30
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	272	--	1	A
Aroclor 1221	ND		ug/kg	272	--	1	A
Aroclor 1232	ND		ug/kg	272	--	1	A
Aroclor 1242	ND		ug/kg	272	--	1	A
Aroclor 1248	ND		ug/kg	272	--	1	A
Aroclor 1254	ND		ug/kg	272	--	1	A
Aroclor 1260	ND		ug/kg	272	--	1	A
Aroclor 1262	ND		ug/kg	272	--	1	A
Aroclor 1268	ND		ug/kg	272	--	1	A
PCBs, Total	ND		ug/kg	272	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**8**	Q	30-150	A
Decachlorobiphenyl	**3**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**8**	Q	30-150	B
Decachlorobiphenyl	**3**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID:	L1517652-03	Date Collected:	07/29/15 10:40
Client ID:	OSPREY LANDING WT-LEG 5	Date Received:	07/29/15
Sample Location:	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	Field Prep:	Not Specified
Matrix:	Paint Chips	Extraction Method:	EPA 3540C
Analytical Method:	1,8082A	Extraction Date:	08/01/15 09:18
Analytical Date:	08/03/15 17:52	Cleanup Method:	EPA 3665A
Analyst:	JT	Cleanup Date:	08/02/15
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	94.2	--	1	A
Aroclor 1221	ND		ug/kg	94.2	--	1	A
Aroclor 1232	ND		ug/kg	94.2	--	1	A
Aroclor 1242	ND		ug/kg	94.2	--	1	A
Aroclor 1248	ND		ug/kg	94.2	--	1	A
Aroclor 1254	ND		ug/kg	94.2	--	1	A
Aroclor 1260	ND		ug/kg	94.2	--	1	A
Aroclor 1262	ND		ug/kg	94.2	--	1	A
Aroclor 1268	ND		ug/kg	94.2	--	1	A
PCBs, Total	ND		ug/kg	94.2	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**9**	Q	30-150	A
Decachlorobiphenyl	**5**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**9**	Q	30-150	B
Decachlorobiphenyl	**6**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-03 RE
Client ID: OSPREY LANDING WT-LEG 5
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/05/15 18:32
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 10:40
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	417	--	1	A
Aroclor 1221	ND		ug/kg	417	--	1	A
Aroclor 1232	ND		ug/kg	417	--	1	A
Aroclor 1242	ND		ug/kg	417	--	1	A
Aroclor 1248	ND		ug/kg	417	--	1	A
Aroclor 1254	ND		ug/kg	417	--	1	A
Aroclor 1260	ND		ug/kg	417	--	1	A
Aroclor 1262	ND		ug/kg	417	--	1	A
Aroclor 1268	ND		ug/kg	417	--	1	A
PCBs, Total	ND		ug/kg	417	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**3**	Q	30-150	A
Decachlorobiphenyl	**1**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**3**	Q	30-150	B
Decachlorobiphenyl	**1**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-04
Client ID: HOBBS HILL WT LEG 2
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/03/15 18:08
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 11:15
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/01/15 09:18
Cleanup Method: EPA 3665A
Cleanup Date: 08/02/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	88.2	--	1	A
Aroclor 1221	ND		ug/kg	88.2	--	1	A
Aroclor 1232	ND		ug/kg	88.2	--	1	A
Aroclor 1242	ND		ug/kg	88.2	--	1	A
Aroclor 1248	ND		ug/kg	88.2	--	1	A
Aroclor 1254	590		ug/kg	88.2	--	1	B
Aroclor 1260	ND		ug/kg	88.2	--	1	A
Aroclor 1262	ND		ug/kg	88.2	--	1	A
Aroclor 1268	ND		ug/kg	88.2	--	1	A
PCBs, Total	590		ug/kg	88.2	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**13**	Q	30-150	A
Decachlorobiphenyl	**11**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**12**	Q	30-150	B
Decachlorobiphenyl	**12**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-04 RE
Client ID: HOBBS HILL WT LEG 2
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/05/15 18:49
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 11:15
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	97.5	--	1	A
Aroclor 1221	ND		ug/kg	97.5	--	1	A
Aroclor 1232	ND		ug/kg	97.5	--	1	A
Aroclor 1242	ND		ug/kg	97.5	--	1	A
Aroclor 1248	ND		ug/kg	97.5	--	1	A
Aroclor 1254	327		ug/kg	97.5	--	1	B
Aroclor 1260	ND		ug/kg	97.5	--	1	A
Aroclor 1262	ND		ug/kg	97.5	--	1	A
Aroclor 1268	ND		ug/kg	97.5	--	1	A
PCBs, Total	327		ug/kg	97.5	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**3**	Q	30-150	A
Decachlorobiphenyl	**3**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**4**	Q	30-150	B
Decachlorobiphenyl	**2**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID:	L1517652-05	Date Collected:	07/29/15 11:20
Client ID:	HOBBS HILL WT LEG 4	Date Received:	07/29/15
Sample Location:	OSPREY LANDING WT/PEASE TRADEPOST/HOBBS	Field Prep:	Not Specified
Matrix:	Paint Chips	Extraction Method:	EPA 3540C
Analytical Method:	1,8082A	Extraction Date:	08/01/15 09:18
Analytical Date:	08/03/15 18:24	Cleanup Method:	EPA 3665A
Analyst:	JT	Cleanup Date:	08/02/15
Percent Solids:	Results reported on an 'AS RECEIVED' basis.	Cleanup Method:	EPA 3660B
		Cleanup Date:	08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	84.7	--	1	A
Aroclor 1221	ND		ug/kg	84.7	--	1	A
Aroclor 1232	ND		ug/kg	84.7	--	1	A
Aroclor 1242	ND		ug/kg	84.7	--	1	A
Aroclor 1248	ND		ug/kg	84.7	--	1	A
Aroclor 1254	85.9		ug/kg	84.7	--	1	B
Aroclor 1260	ND		ug/kg	84.7	--	1	A
Aroclor 1262	ND		ug/kg	84.7	--	1	A
Aroclor 1268	ND		ug/kg	84.7	--	1	A
PCBs, Total	85.9		ug/kg	84.7	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**2**	Q	30-150	A
Decachlorobiphenyl	**1**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**2**	Q	30-150	B
Decachlorobiphenyl	**1**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-05 RE
Client ID: HOBBS HILL WT LEG 4
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/05/15 20:27
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 11:20
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	96.5	--	1	A
Aroclor 1221	ND		ug/kg	96.5	--	1	A
Aroclor 1232	ND		ug/kg	96.5	--	1	A
Aroclor 1242	ND		ug/kg	96.5	--	1	A
Aroclor 1248	ND		ug/kg	96.5	--	1	A
Aroclor 1254	132		ug/kg	96.5	--	1	B
Aroclor 1260	ND		ug/kg	96.5	--	1	A
Aroclor 1262	ND		ug/kg	96.5	--	1	A
Aroclor 1268	ND		ug/kg	96.5	--	1	A
PCBs, Total	132		ug/kg	96.5	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**3**	Q	30-150	A
Decachlorobiphenyl	**1**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**2**	Q	30-150	B
Decachlorobiphenyl	**1**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-06
Client ID: HOBBS HILL WT LEG 6
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/03/15 18:40
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 11:25
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/01/15 09:18
Cleanup Method: EPA 3665A
Cleanup Date: 08/02/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/02/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	94.2	--	1	A
Aroclor 1221	ND		ug/kg	94.2	--	1	A
Aroclor 1232	ND		ug/kg	94.2	--	1	A
Aroclor 1242	ND		ug/kg	94.2	--	1	A
Aroclor 1248	ND		ug/kg	94.2	--	1	A
Aroclor 1254	98.9		ug/kg	94.2	--	1	B
Aroclor 1260	ND		ug/kg	94.2	--	1	A
Aroclor 1262	ND		ug/kg	94.2	--	1	A
Aroclor 1268	ND		ug/kg	94.2	--	1	A
PCBs, Total	98.9		ug/kg	94.2	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**5**	Q	30-150	A
Decachlorobiphenyl	**4**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**5**	Q	30-150	B
Decachlorobiphenyl	**5**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH **Lab Number:** L1517652

Project Number: HOBBSHILL **Report Date:** 08/06/15

SAMPLE RESULTS

Lab ID: L1517652-06 RE
Client ID: HOBBS HILL WT LEG 6
Sample Location: OSPREY LANDING WT/PEASE TRADEPOST/HOBBS
Matrix: Paint Chips
Analytical Method: 1,8082A
Analytical Date: 08/05/15 20:43
Analyst: JT
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Date Collected: 07/29/15 11:25
Date Received: 07/29/15
Field Prep: Not Specified
Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
PCB by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	96.0	--	1	A
Aroclor 1221	ND		ug/kg	96.0	--	1	A
Aroclor 1232	ND		ug/kg	96.0	--	1	A
Aroclor 1242	ND		ug/kg	96.0	--	1	A
Aroclor 1248	ND		ug/kg	96.0	--	1	A
Aroclor 1254	ND		ug/kg	96.0	--	1	B
Aroclor 1260	ND		ug/kg	96.0	--	1	A
Aroclor 1262	ND		ug/kg	96.0	--	1	A
Aroclor 1268	ND		ug/kg	96.0	--	1	A
PCBs, Total	ND		ug/kg	96.0	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**2**	Q	30-150	A
Decachlorobiphenyl	**1**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**2**	Q	30-150	B
Decachlorobiphenyl	**1**	Q	30-150	B

Project Name: CITY OF PORTSMOUTH
Project Number: HOBBSHILL

Lab Number: L1517652
Report Date: 08/06/15

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 08/05/15 21:00
Analyst: JT

Extraction Method: EPA 3540C
Extraction Date: 08/04/15 20:00
Cleanup Method: EPA 3665A
Cleanup Date: 08/05/15
Cleanup Method: EPA 3660B
Cleanup Date: 08/05/15

Parameter	Result	Qualifier	Units	RL	MDL	Column
PCB by GC - Westborough Lab for sample(s): 01-06 Batch: WG808988-1						
Aroclor 1016	ND		ug/kg	86.2	--	A
Aroclor 1221	ND		ug/kg	86.2	--	A
Aroclor 1232	ND		ug/kg	86.2	--	A
Aroclor 1242	ND		ug/kg	86.2	--	A
Aroclor 1248	ND		ug/kg	86.2	--	A
Aroclor 1254	ND		ug/kg	86.2	--	A
Aroclor 1260	ND		ug/kg	86.2	--	A
Aroclor 1262	ND		ug/kg	86.2	--	A
Aroclor 1268	ND		ug/kg	86.2	--	A
PCBs, Total	ND		ug/kg	86.2	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		30-150	A
Decachlorobiphenyl	100		30-150	A
2,4,5,6-Tetrachloro-m-xylene	90		30-150	B
Decachlorobiphenyl	107		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: CITY OF PORTSMOUTH

Project Number: HOBBSHILL

Lab Number: L1517652

Report Date: 08/06/15

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
PCB by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG808988-2 WG808988-3									
Aroclor 1016	79		83		40-140	5		50	A
Aroclor 1260	82		87		40-140	6		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		79		30-150	A
Decachlorobiphenyl	101		103		30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		89		30-150	B
Decachlorobiphenyl	106		106		30-150	B

Project Name: CITY OF PORTSMOUTH
Project Number: HOBBSHILL

Lab Number: L1517652
Report Date: 08/06/15

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1517652-01A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)
L1517652-02A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)
L1517652-03A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)
L1517652-04A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)
L1517652-05A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)
L1517652-06A	Glass 60mL/2oz unpreserved	A	N/A	4.8	Y	Absent	PCB-8082-3540C(14)

*Values in parentheses indicate holding time in days

Project Name:	CITY OF PORTSMOUTH	**Lab Number:**	L1517652
Project Number:	HOBBSHILL	**Report Date:**	08/06/15

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

Report Format: Data Usability Report

Project Name:	CITY OF PORTSMOUTH	**Lab Number:**	L1517652
Project Number:	HOBBSHILL	**Report Date:**	08/06/15

Data Qualifiers

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	CITY OF PORTSMOUTH	**Lab Number:**	L1517652
Project Number:	HOBBSHILL	**Report Date:**	08/06/15

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

Last revised December 16, 2014

The following analytes are not included in our NELAP Scope of Accreditation:

Westborough Facility
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether.
EPA 8260C: 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene, Iodomethane (methyl iodide), Methyl methacrylate, Azobenzene.
EPA 8270D: 1-Methylnaphthalene, Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 625: 4-Chloroaniline, 4-Methylphenol.
SM4500: Soil: Total Phosphorus, TKN, NO2, NO3.
EPA 9071: Total Petroleum Hydrocarbons, Oil & Grease.

Mansfield Facility
EPA 8270D: Biphenyl.
EPA 2540D: TSS
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

The following analytes are included in our Massachusetts DEP Scope of Accreditation, Westborough Facility:

Drinking Water
EPA 200.8: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl; **EPA 200.7**: Ba,Be,Ca,Cd,Cr,Cu,Na; **EPA 245.1:** Mercury;
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, Enterolert-QT.**

Non-Potable Water
EPA 200.8: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn;
EPA 200.7: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn;
EPA 245.1, SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2340B, SM2320B, SM4500CL-E, SM4500F-BC, SM426C, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, SM4500P-B, E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Serial_No:08061511:51

CHAIN OF CUSTODY

PAGE 1 OF 1

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Date Rec'd in Lab: 7/29/15

ALPHA Job #: L1517652

Client Information

Client: ~~City of Portsmouth~~
Address: Tighe + Bond.
177 Corporate Drive
Phone: Hampton, NH 03842
Email: beeames@tighebond.com

Additional Project Information:

Project Information

Project Name: City of Portsmouth
Project Location: Osprey Landing Water Release Tradeport / Tank Hobbs Hill
Project #:
Project Manager: Dave Cedzholm
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Report Information - Data Deliverables

☐ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Potential PCB-containing paint - pls. use caution.

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: PCB	Sample Comments	TOTAL # BOTTLES
17652-01	Osprey Landing WT-Leg 1	7/29/15	10:20	paint chip	BEE	X	soxhlet	1
02	Osprey Landing WT-Leg 3	7/29/15	10:30	↓	BEE	X	extraction	1
03	Osprey Landing WT-Leg 5	7/29/15	10:40	↓	BEE	X	↓	1
04	Hobbs Hill WT Leg 2	7/29/15	11:15	paint chip	BEE	X		1
05	Hobbs Hill WT Leg 4	7/29/15	11:20	↓	↓	X		1
06	Hobbs Hill WT Leg 6	7/29/15	11:25	↓	↓	X		1
						Container Type: A		
						Preservative: -		

ANALYSIS: ☐ VOC: ☐ 8260 ☐ 624 ☐ 524.2 ☐ SVOC: ☐ ABN ☐ PAH ☐ METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15 ☐ METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13 ☐ EPH: ☐ Ranges & Targets ☐ Ranges Only ☐ VPH: ☐ Ranges & Targets ☐ Ranges Only ☐ PCB ☐ PEST 8082 - Total Aroclors ☐ TPH: ☐ Quant Only ☐ Fingerprint

SAMPLE INFO
Filtration: ☐ Field ☐ Lab to do
Preservation: ☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Bethany Eames	7/29/15 1135	Jessica L. Wagner AAL	7/29/15 1135
Jessica L. Wagner	7/29/15 1340	[illegible]	7/29/15 1340
[illegible]	7/29/15 1732	[illegible]	7/29/15 1732

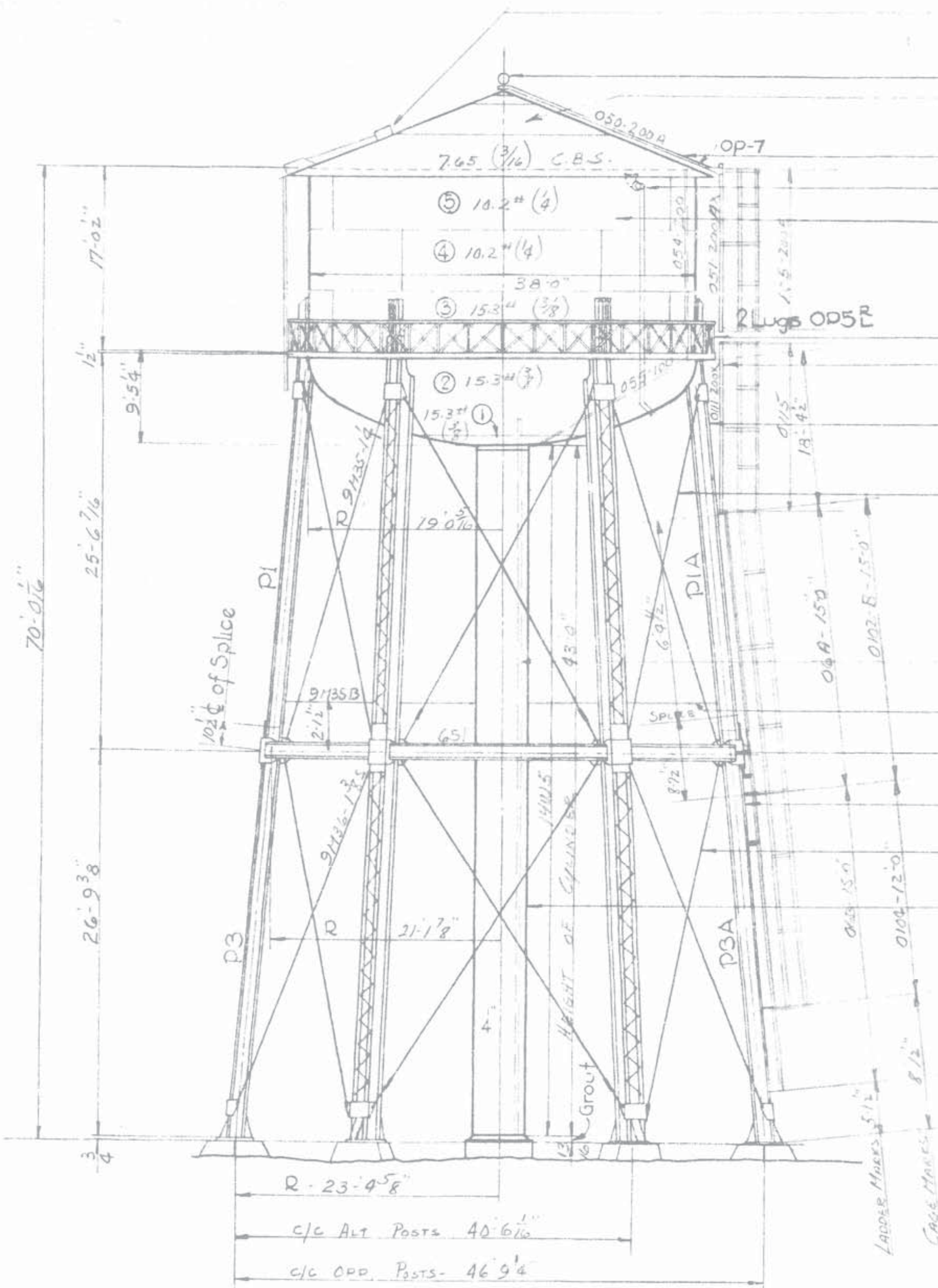
All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Existing Osprey Landing Water Tank Information

(Formerly referred to as Seacrest Village Water Tank)

DIAMETER OF TANK AT TOP = 38'-1/4" Inside



STD. INDICATOR

Std. 12" Finial Patt. # 9C9-BX
Std Conical Steel Roof (Copper Bearing Steel)
(Door in roof to right of ladder) 1P20
Std. Revolving Ladder Roof & Tank
Std. 4" C.I. Overflow Patt. # 9C4 I With Extention to Balcony
Std. 200,000 Gallon Tank
38'-0" Diam. 17'-6" High

Std. 30" Balcony & 36" Handrail
Std. Balcony to Post Ladder

6 Posts = { 2B 12" @ 30.1# x 26'-1/2" ; 1P 15" x 9/16" x 23'8" }

12 Tower Rods 1 1/4 ⌀ x 30'1/2 B to B

Std. Post Ladder (Slotted hole & crimp at Top)
___ Lugs OP
STD CAGES FOR LADDERS

10" ⌀ INLET PIPE FURN BY C.B.&I. & TO 1'0" ABOVE BOTTOM
4 Cylinder Rods 3/4" ⌀ x 18-2 3/4 B to E
6 Struts 2 [s 6" @ 8.2# x 21'5 1/2" Bend to Bend

6 Posts = { 2B 12" @ 30.1# x ... ; 1P 15" x 9/16" x 26'7 3/8" }
12 Tower Rods 1 3/8 ⌀ x 32'1/2 B to B

Cylinder 5'-0" Dia 43'-0" High
in 1 Sections
Outlet Pipe 10" ⌀ Furnished by C.B.&I. Co.

Std. 12x18 Manhole Cover Patt. # 9C7-2-6

Foundation Std. Furnished by Others.
Anchor Bolts 1 3/4" ⌀ x 6' long
2" ⌀ Bored Hole in ctr of Shoe
6" BLOWOFF FURN BY C.B.&I. Co.

Customer's Inspection { Mill No ; Shop No ; Field Yes }

LOCATION OF PIPE OPENINGS IN BOTTOM OF CYLINDER

FORM 218

LIST OF DRAWINGS

FOLIO	INDEX	DESCRIPTION
	SHEET #1	GENERAL PLAN
	F	FOUNDATION PLAN
150-200EA	200E6X	FIGURE SHEET FOR TOWER —
150-200E	21 A200	ROOF (X: SEE DWG #1 FOR CAGE TIE & POST LADDERS)
"	22 B200	TANK
"	23 C200	BALCONY & HANDRAIL
"	24 B200	BOTTOM
14-17	14W5	CYLINDER – TOP SECTION
"	14W5	BOTTOM SECTION
"	14W5	HEAD PLATE
150-200E	25 A200	TOP POST
"	27 A200	BOTTOM POST
"	28 B12	STRUTS
O	050	REVOLVING LADDER
O	051X	OUTSIDE TANK LADDER X HOLES FOR CAGE
O	0111X	TANK TO POST LADDER X: HOLES FOR CAGE
O	06	POST LADDERS
150-200E	20A200	ROOF FRAMING
O	054 055	INSIDE TANK LADDERS
9M	9M 35/36	RODS
9C	9C9X	FINIAL (1 1/4 CASING WELDED IN TOP)
9C	9C4	OVERFLOW
	B.S.#1	
9C	9C7	MANHOLE
	1P20	ROOF DOOR
9C	9P76	LEAD JOINT
	B.S.#2	GRATING
9C	9C15	FOOT ELBOW
	B.S.#3	PIPING DIAGRAM
9D	B.S.#4 9D18X	INDICATOR
O	0105-0113 0102-0104	CAGES
9C	9C51	BLOWOFF
	P2	PAINT

PAINT
SHOP- 1 COAT S&W # 6761 RED LEAD INS & OUTS
FIELD- PATCH COAT RED LEAD INSIDE & OUTS
2 COATS S&W #6761 RED LEAD INSIDE
2 COATS ORANGE & WHITE CHECKER-BOARD OUTSIDE IN ACCORDANCE WITH B.S. P2

19-5 A1

STANDARD 6-POST TOWER

REVISIONS			
NO	DATE	BY	REMARKS

CHICAGO BRIDGE & IRON WORKS
CHICAGO, ILLINOIS

— GENERAL PLAN —
200,000 GAL. ELEVATED TANK 70'-0 1/16" TO TOP
FOR PUBLIC BUILDINGS ADMINISTRATION
LOCATION PORTSMOUTH, N.H.

DRAWN BY WESSMAN DATE 9-3-41
TRACED BY ...... " ......
CHECKED BY ...... " ......
SHEET (1) OF (7)

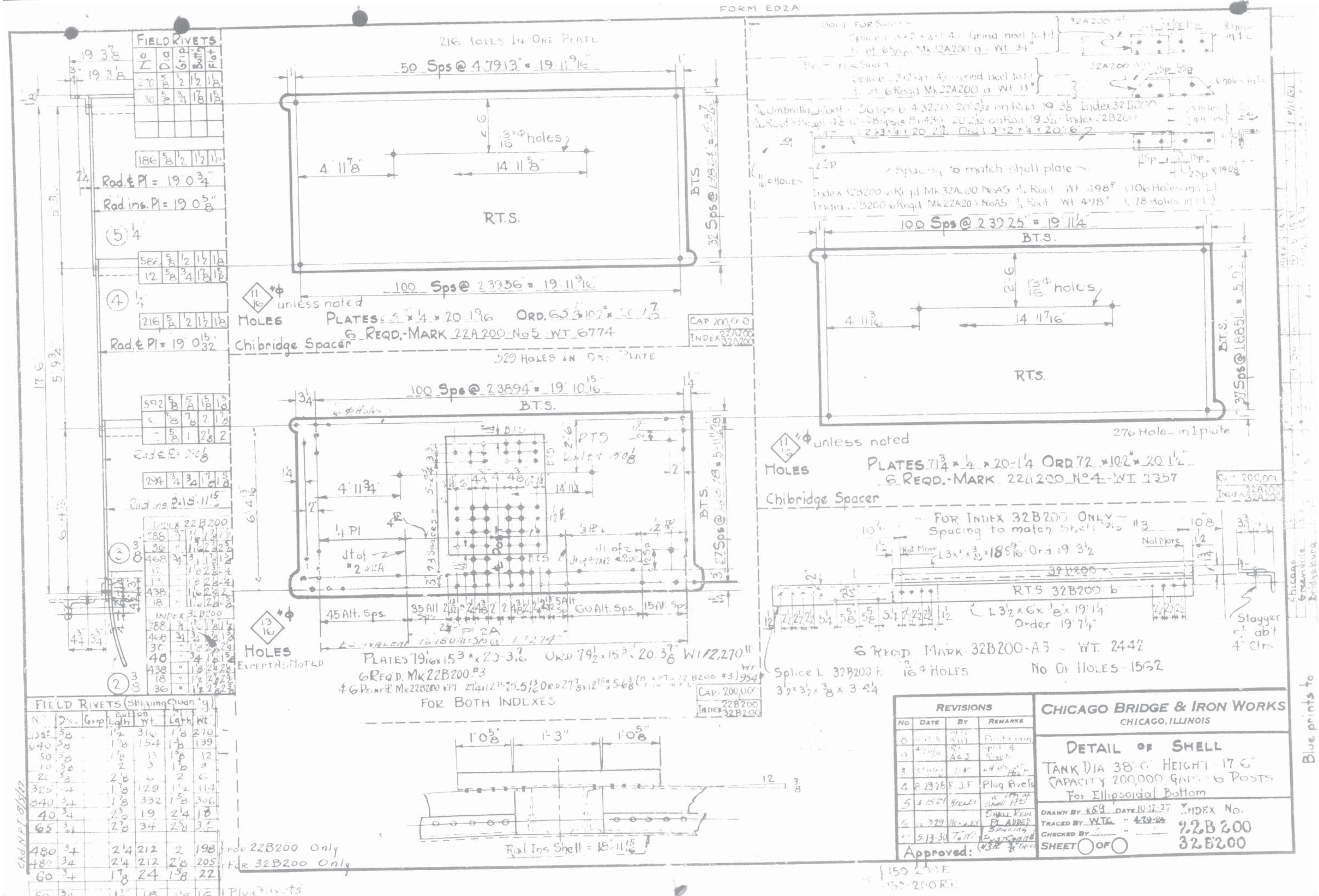
CONTRACT NO. 3-6396

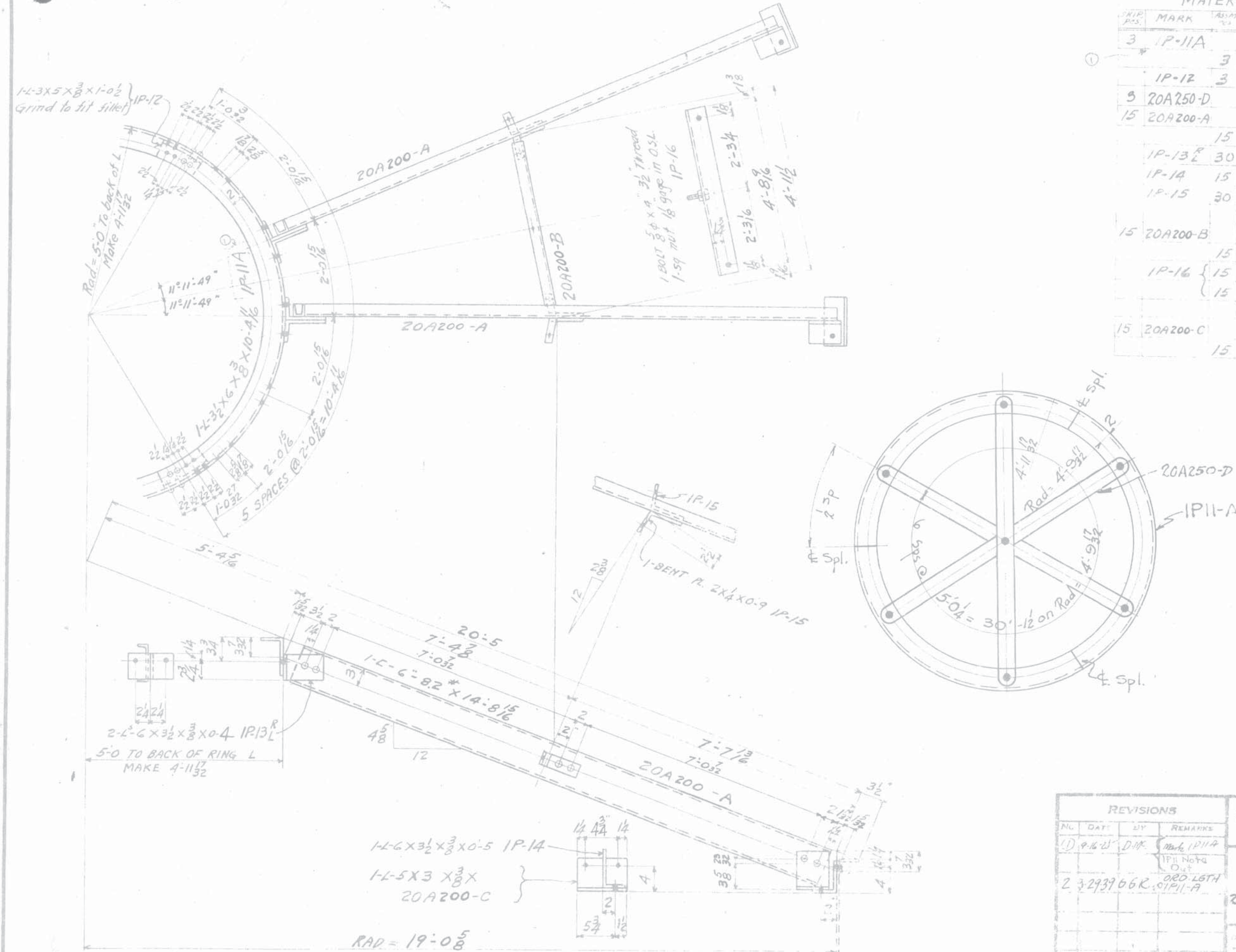
DEFENSE CONTRACT

Approved By

Wessman 9-20-29

PLANS MASS ...


FORM ED2A
216 Holes In One Plate
50 Sps @ 4.7913" = 19' 11 9/16"
13/16" φ holes
4' 11 7/8"
14' 11 5/8"
R.T.S.
B.T.S.
100 Sps @ 2.3956 = 19' 11 9/16
11/16" φ unless noted
Holes
Plates 65 1/2 x 1/4 x 20 1 9/16
6 Reqd.-Mark 22A200 No5 WT 6774
Chibridge Spacer
529 Holes In One Plate
100 Sps @ 2.3894 = 19' 10 15/16
13/16" φ
Holes
Except As Noted
45 Alt. Sps.
60 Alt. Sps.
Plates 79 1/16 x 15 3/8 x 20-3 7/8
6 Reqd. Mk 22B200 #3
For Both Indexes
Rad Ins Shell = 18' 11 15/16
FIELD RIVETS
Rod & Pl = 19' 0 3/4"
Rad. ins. Pl = 19' 0 5/8"
Rad. & Pl = 19' 0 15/32
FIELD RIVETS (Shipping Quan'y)
For 22B200 Only
For 32B200 Only
Plug Rivets
100 Sps @ 2.3925" = 19' 11 1/4"
13/16" φ holes
4' 11 3/16
14' 11 7/16"
RTS.
37 Sps @ 1.885 = 5' 2"
276 Holes in 1 plate
11/16" φ unless noted
Holes
Plates 71 3/4 x 1/4 x 20-1 1/4 Ord 72 x 102" x 20' 1 1/2"
6 Reqd.-Mark 22A200 No 4 - WT 2357
Chibridge Spacer
For Index 32B200 Only
Spacing to match Shell Pls #3
RTS 32B200 b
L 3 1/2 x 6 x 3/8 x 19' 1 1/4
Order 19' 7 1/4"
Stagger c-c abt 4" Ctrs
6 Reqd Mark 32B200-A3 - WT 2442
No Of Holes - 1552
Splice L 32B200 F
Spacing to match shell plate
Blue prints to Chicago Greenville Bridgeburg
REVISIONS
No | Date | By | Remarks
Approved:
CHICAGO BRIDGE & IRON WORKS
CHICAGO, ILLINOIS
DETAIL OF SHELL
TANK DIA 38' 6" HEIGHT 17' 6"
CAPACITY 200,000 GALS - 6 POSTS
For Ellipsoidal Bottom
DRAWN BY
DATE 10-12-27
TRACED BY WTC
CHECKED BY
SHEET OF
INDEX NO.
22B200
32B200



MATERIAL FOR INDEX 20A

SHIP PCS.	MARK	ASSM PCS	DESCRIPTION	LENGTH FT	LENGTH IN	ORDERED LENGTH	WT	HOLES
3	1P-11A		TOP RING	OR ORD. 1L-6x3 1/2x3/8x32'-6" 1 CUTS 3 AFTER ROLLING				
		3	L^s-6x3 1/2x3/8	10	4 11/16	10'-10 3/8	365	54
	1P-12	3	L^s-5x3x3/8	1	0 1/2		31	24
9	20A250-D		Bars 2x1/4	9	9		50	9
15	20A200-A		RAFTERS					
		15	C^s-6-8.2#	14	8 15/16		1814	90
	1P-13 R/L	30	L^s-6x3 1/2x3/8	0				90
	1P-14	15	L^s-6x3 1/2x3/8	0	5			45
	1P-15	30	Bent pls 2x1/4	0	9		39	90
15	20A200-B		PURLINS					
		15	L^s-3x2x1/4	4	8 9/16		290	45
	1P-16	15	Bolts 5/8φ. 3 1/2" thd.	0	4		8	
		15	sq. nuts					
15	20A200-C		LUGS TO TANK					
		15	L^s-5x3 x3/8	0	7 1/4		88	45

GENERAL NOTES
RIVETS 5/8 φ
OPEN HOLES 11/16 φ

Shop Rivets			
35	5/8	1 5/8	8
50	"	1 3/4	13
35	"	2	9

REVISIONS			
NO.	DATE	BY	REMARKS
(1)	9-16-25	D.McC.	Mark 1P11A 1P11 Note Out
2	3-29-39	G.G.K.	ORD. LGTH of 1P11-A

APPROVED:

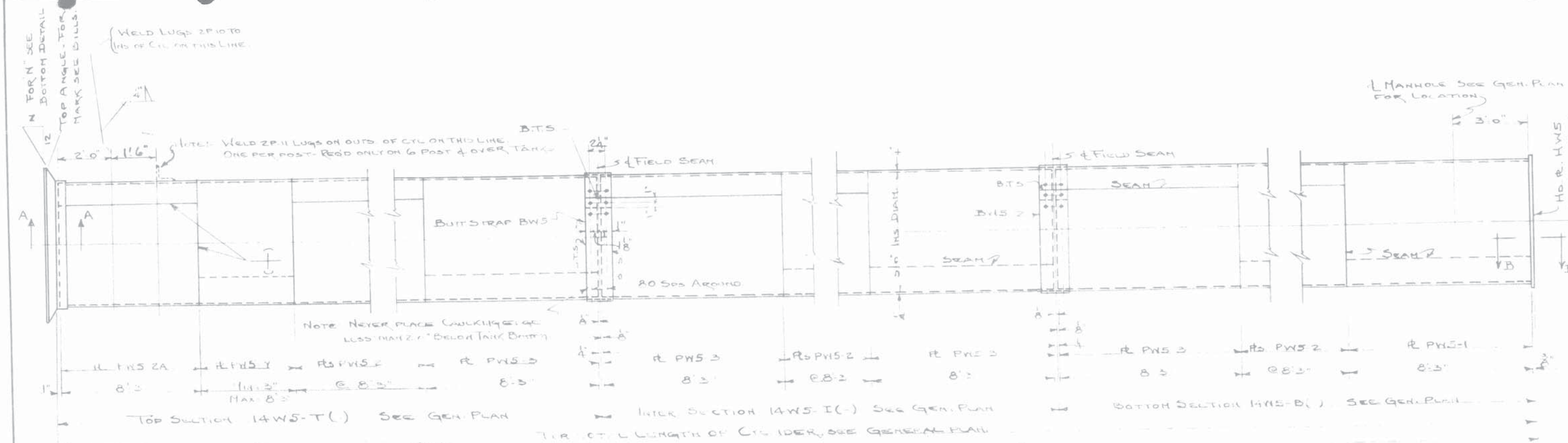
CHICAGO BRIDGE & IRON WORKS
CHICAGO, ILLINOIS

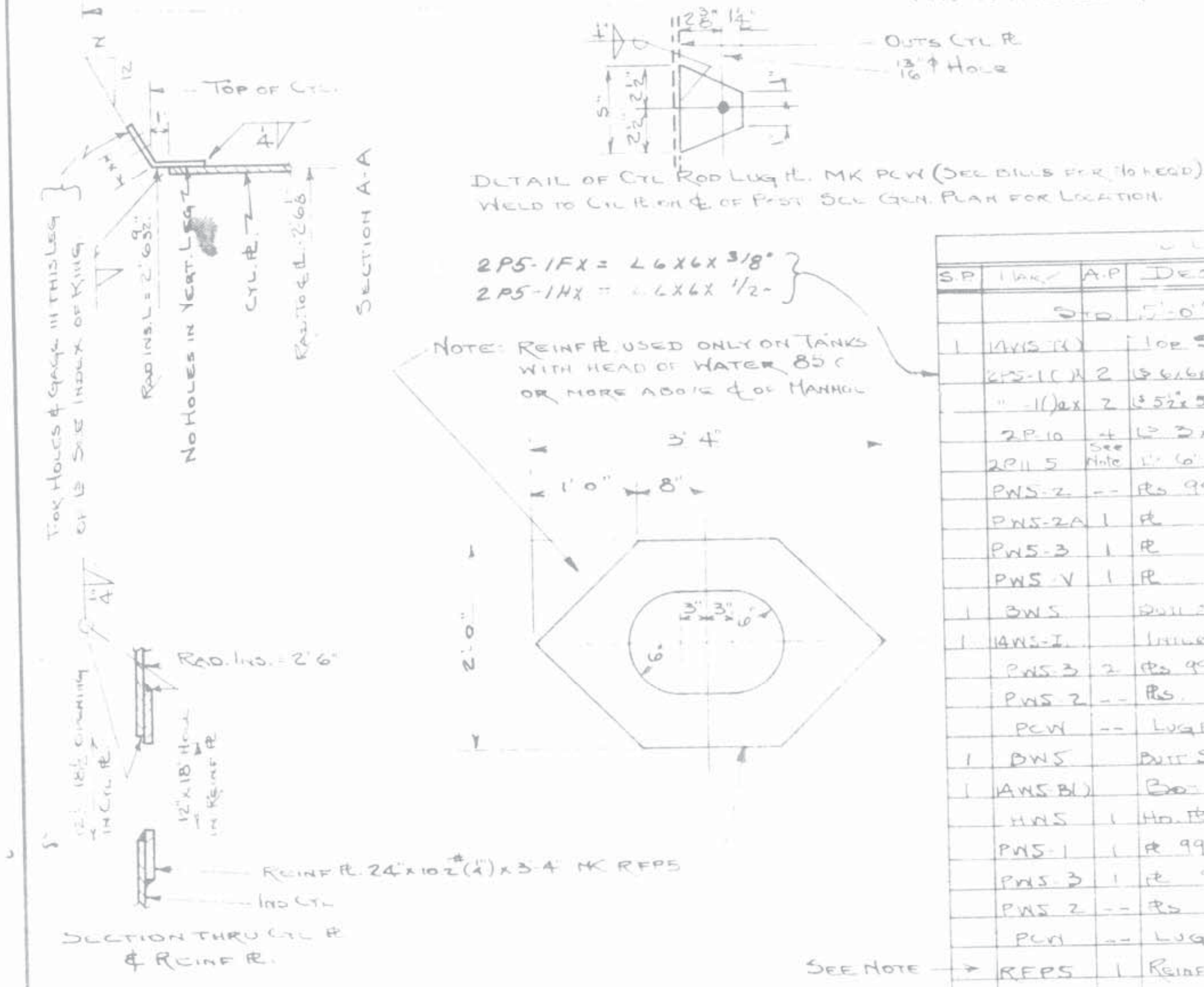
STANDARD ROOF FRAMING
FOR 38'-0" DIA. TANK
200,000 GAL. ELLIPTICAL TANK

DRAWN BY R.G. DATE 3-31-24
TRACED BY R.G. 3-31-24
CHECKED BY D.McC. 9-16-24
SHEET ( ) OF ( )

INDEX No. 20A200

Folio 150·200E





SHOP NOTE

Make as straight a shear as possible along all edges of Cylinder Pls. to be welded.
Make vertical joints smooth where Joints contact Butt Straps & Top L Ring.
13/16" φ Holes for 3/4" φ Rivets unless noted.
Stagger Vertical Joints 180°.

BILLER NOTE

Marks for Top L Ring - (Show on cards & Bills)
2PS-1FX For Tanks under 300 000 Gal. Cap.
2PS-1HX " " 400000 & 500000 " "

SYMBOLS.

LIST OF MATERIAL

S.P.	MARK	A.P.	DESCRIPTION	LENGTH	WT	MILL ORDER
	STD		5'-0" φ WELDED CYLINDER -- LONG IN -- SECTIONS			
1	14W5-T( )		TOP SECTION	VARIES		
	2P5-1( )X	2	Ls 6x6x (" φ Holes in Vert Leg)	9'5 3/8"		10'6 or 10'7"
	" -1( )ax	2	Ls 5 1/2x5 1/2x3/8 (do)	See Bills		cut from above
	2P.10	4	Ls 3x2x1/4	0'6 1/2"		
	2P11 5	See Note	L 6x3 1/2x3/8	0'6 1/2"		
	PW5-2	--	Pls 99"x1/4"	15'9 3/4"		99 3/8 x 1/4" x 15'9 5/8"
	PW5-2A	1	Pl do	15'9 3/4"		do
	PW5-3	1	Pl do	15'9 3/4"		do
	PW5 V	1	Pl do	15'9 3/4"		[illegible] do
1	BW5		BUTT STRAP 4 1/4"x1/4"	16'0 7/8		4 1/4" x 10.2# x 16'1 1/8"
1	14W5-I		INTERMEDIATE SECTION	VARIES		
	PW5 3	2	Pls 99"x1/4"	15'9 3/4"		99 3/8" x 1/4" x 15'9 5/8"
	PW5 2	--	Pls do	15'9 3/4"		do
	PCW	--	Lug Pls 3 5/8"x3/8"	0'5"		
1	BW5		BUTT STRAP 4 1/4"x1/4"	16'0 7/8		4 1/4" x 10.2# x 16'1 1/8"
1	14W5 B( )		BOTTOM SECTION	VARIES		
	HW5	1	Hd. Pl. 62" φ x 15.3# (3/8")			62" φ x 15.3#
	PW5-1	1	Pl 99"x1/4" x (with Manhole)	15'9 3/4"		99 3/8" x 1/4" x 15'9 5/8"
	PW5 3	1	Pl 99"x1/4"	15'9 3/4"		do
	PW5 2	--	Pls do	15'9 3/4"		
	PCW	--	Lug Pls 3 5/8"x3/8"	0'5"		
	See Note → REPS	1	Reinf. Pl. [illegible]			Pl 2' 9/16 x 10.2# x 2'4 5/16

REVISIONS

No.	DATE	BY	REMARKS
1	9/30/40	[illegible]	2P5-( )X
2	2/25/41	[illegible]	ADDED FLOOR 2 [illegible]

CHICAGO BRIDGE & IRON CO.
CHICAGO, ILLINOIS.

STANDARD 5'0" DIA
WELDED CYLINDER.

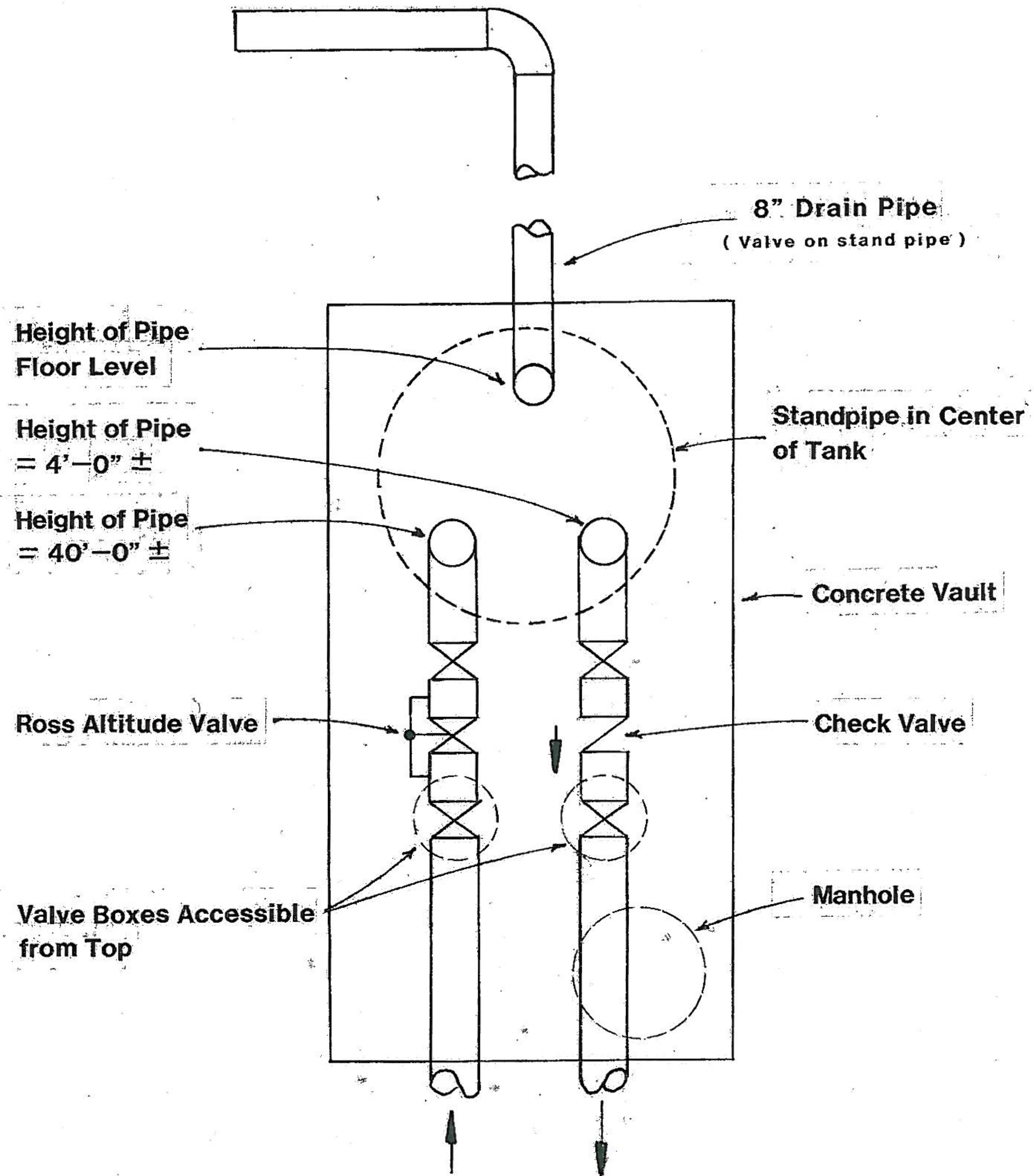
DRAWN BY [illegible]
TRACED BY:
CHECKED BY: [illegible]

INDEX No
14W5

Chicago 11-11-39 | Greenville 11-11-39 | Birmingham 11-11-39

PRINTS TO

10" Model 4 AWR SER # 41192 - INSTALLED 1941
Ross Alt. Valve
CONV. TO 30AWR RECOMMENDED 1971.



Constructed ~~1941~~ 1924 By C.B.I.

Vault Floor El. ~~93.76~~ 93.76 7/30/93

APPROVED:	PORTSMOUTH WATER DIVISION SEACREST VILLAGE **WATER TANK VALVE PIT**	REV. 0 DATE 12/83	DWG. NO.
ENGINEERING			

Eastern Analytical, Inc.

professional laboratory & drilling services

Regina Arthur
Utility Service Group
PO Box 1350
Perry , GA 31069-1330

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 135577
Client Identification: Seacrest Tank 200,000 Elevated | City of Portsmouth
Date Received: 9/8/2014

Dear Ms. Arthur :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw

Lorraine Olashaw, Lab Director	9.15.14	3
	Date	# of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **135577**

Client: **Utility Service Group**

Client Designation: **Seacrest Tank 200,000 Elevated | City of Portsmouth**

Temperature upon receipt (°C): 23.7 **Received on ice or cold packs (Yes/No): N**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
135577.01	AFM 131252 Interior	9/8/14	8/27/14	solid		Adheres to Sample Acceptance Policy
135577.02	AFM 131252 Exterior	9/8/14	8/27/14	solid		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983

2) Standard Methods for Examination of Water and Wastewater,20th Edition, 1998 and 22nd Edition, 2012

3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB

4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **135577**

Client: **Utility Service Group**

Client Designation: **Seacrest Tank 200,000 Elevated | City of Portsmouth**

Sample ID:	AFM 131252 Interior	AFM 131252 Exterior	Analytical Matrix	Units	Date of Analysis	Method	Analyst
Lab Sample ID:	135577.01	135577.02					
Matrix:	solid	solid					
Date Sampled:	8/27/14	8/27/14					
Date Received:	9/8/14	9/8/14					
Chromium	**670**	**32000**	SolAsRec	mg/kg	9/10/14	6020	DS
Lead	**4700**	**450**	SolAsRec	mg/kg	9/10/14	6020	DS
Arsenic	**33**	**4.5**	SolAsRec	mg/kg	9/10/14	6020	DS
Barium	**610**	**3200**	SolAsRec	mg/kg	9/10/14	6020	DS
Cadmium	< 1	**5.2**	SolAsRec	mg/kg	9/10/14	6020	DS
Mercury	< 0.2	< 0.2	SolAsRec	mg/kg	9/10/14	6020	DS
Selenium	< 1	**1.6**	SolAsRec	mg/kg	9/10/14	6020	DS
Silver	< 1	< 1	SolAsRec	mg/kg	9/10/14	6020	DS

135577

Utility Service Group

CHAIN - OF - CUSTODY RECORD

TYPE SAMPLE: PAINT CHIPS (PAINT CHIPS, SPENT ABRASIVE, SOIL) STATE: NH

1. TANK INFO:	**Seacrest Tank** **200,000** **Elevated**	**2. CUSTOMER / LOCATION:**	**City of Portsmouth, NH**
3. NAME OF SAMPLER:	**Amanda Maier/Scott Kelley** **EMPLOYEE DEPT #: 119**	**4. SIGNATURE:**	**5. DATE:** 09/04/14
6. RETURN ADDRESS:	UTILITY SERVICE CO., INC. ATTN: REGINA ARTHUR / LARA ANDERSON P O BOX 1350 PERRY, GA 31069	****RETURN COPY OF THIS RECORD WITH RESULTS****	

7. SAMPLE NO.		8. SAMPLE REMOVAL DATA			9. ANALYSIS REQUESTED	
		DATE	TIME	SPECIFIC LOCATION	LEAD	OTHER (ARSENIC, CADMIUM, CHRONIUM)
AFM 131252	INTERIOR	08/27/14	9:30am	Riser		8 RCRA
AFM 131252	EXTERIOR	08/27/14	9:00am	Exterior surface		8 RCRA
AFM 131252	ADDT'L	08/27/14	N/A	N/A		8 RCRA

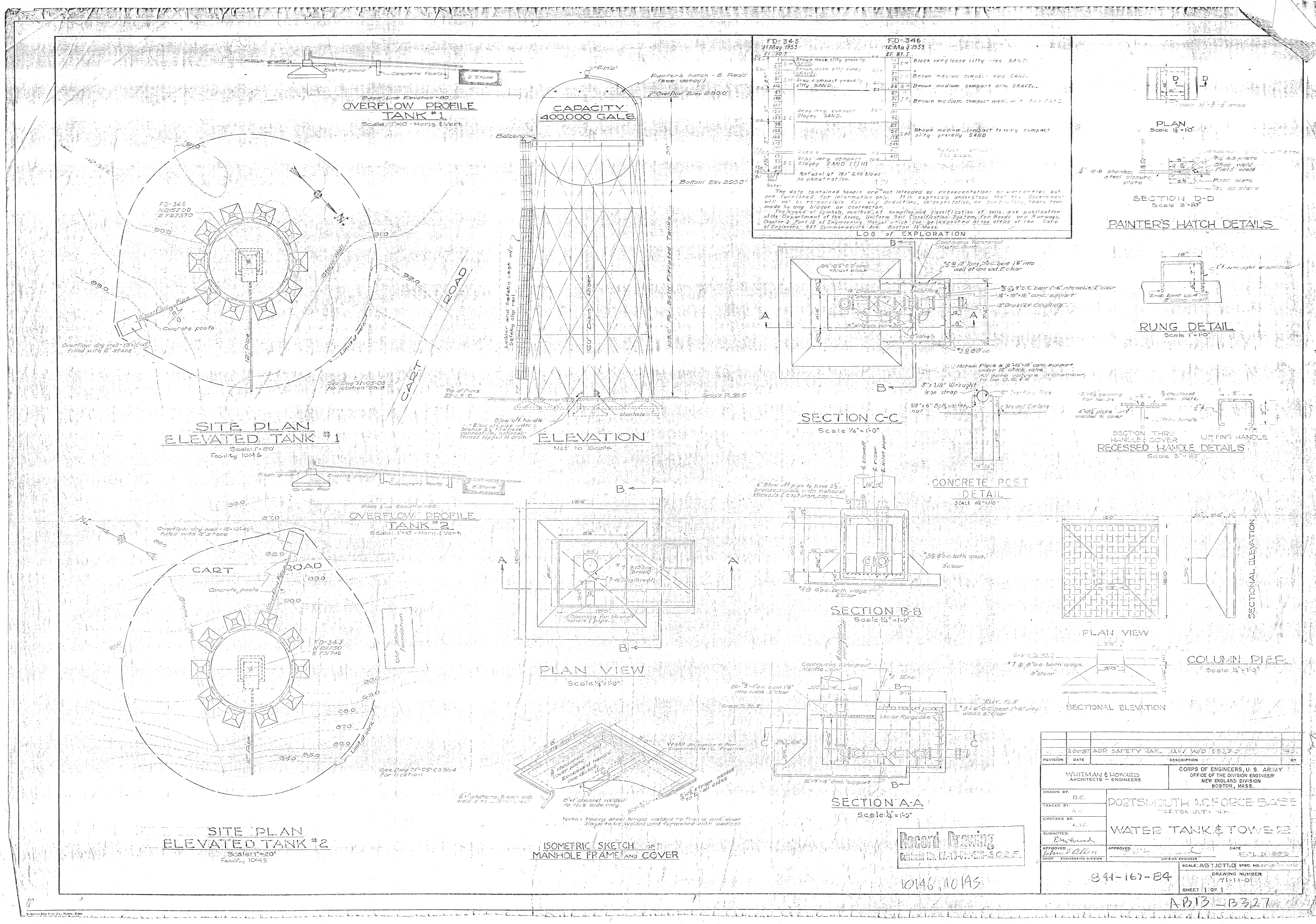
10. SAMPLES RELINQUISHED BY:			11. SAMPLES RECEIVED BY:		
NAME	Date	Time	NAME	DATE	TIME
Amanda Maier/Scott Kelley	09/04/14	3:12 PM			
USPS	9/8/14	1145			

UTILITY SERVICE COMPANY INC. skelley@utilityservice.com rarthur@utilityservice.com REGINA ARTHUR (478) 988-5234
WATER TANK MAINTENANCE amaier@utilityservice.com laraanderson@utilityservice.com LARA ANDERSON (478) 988-5274
FAX: (478) 987-2991

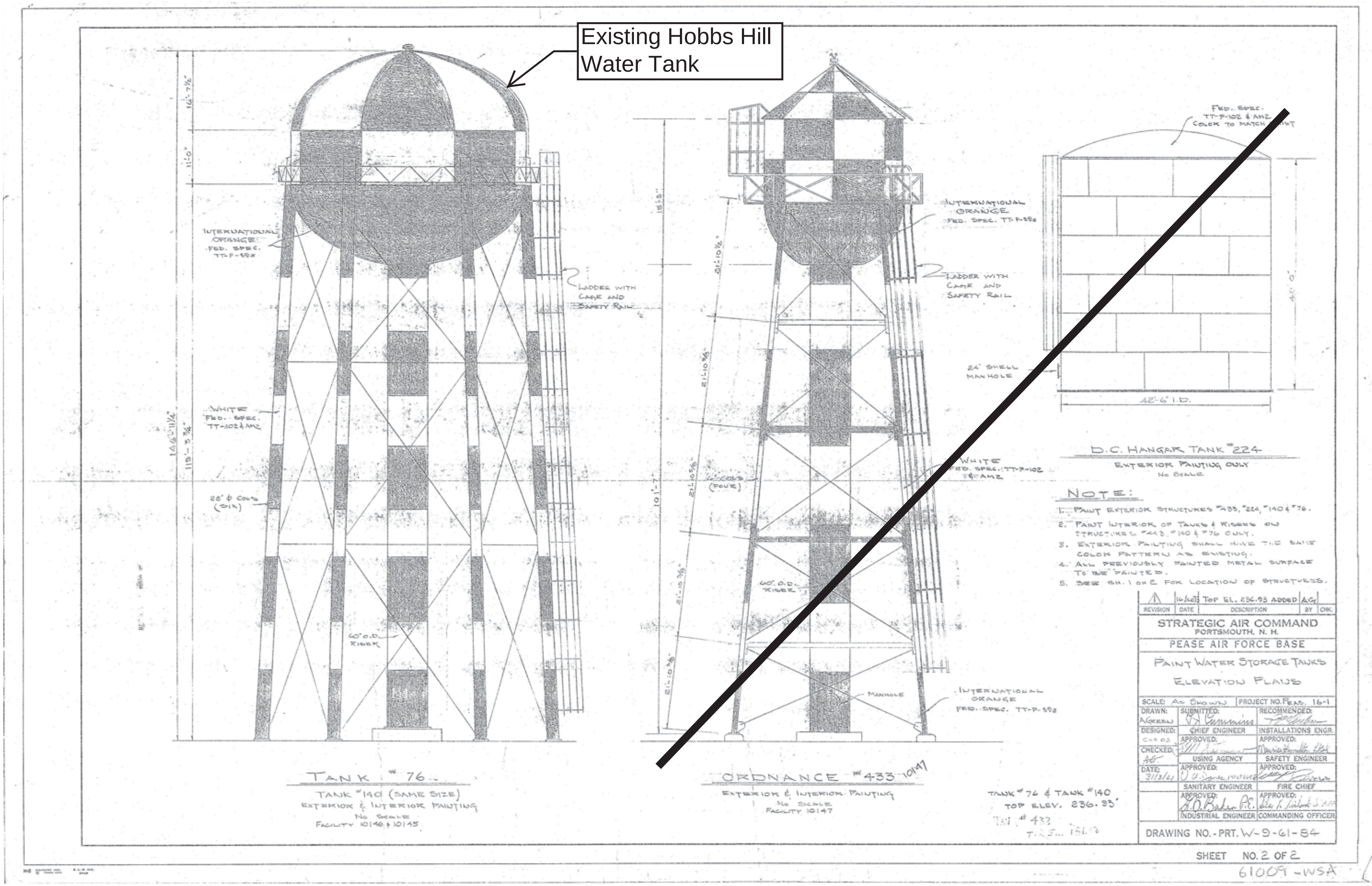
Invoices to: accountspayable@utilityservice.com

23.7°C
mono

Existing Hobbs Hill Water Tank Information



OVERFLOW PROFILE TANK #1
CAPACITY 400,000 GALS.
Overflow Elev. 230.0
Bottom Elev. 200.0
Balcony
Finial
LOG OF EXPLORATION
FD-345
FD-346
PLAN
SECTION D-D
PAINTER'S HATCH DETAILS
RUNG DETAIL
Scale 1"=1'-0"
SITE PLAN ELEVATED TANK #1
Scale 1"=20'
Facility 10146
ELEVATION
Not to Scale
SECTION C-C
Scale 1/4"=1'-0"
CONCRETE POST DETAIL
RECESSED HANDLE DETAILS
LIFTING HANDLE
OVERFLOW PROFILE TANK #2
CART ROAD
PLAN VIEW
Scale 1/4"=1'-0"
SECTION B-B
Scale 1/4"=1'-0"
SECTIONAL ELEVATION
COLUMN PIER
SECTION A-A
Scale 1/4"=1'-0"
SITE PLAN ELEVATED TANK #2
Scale 1"=20'
Facility 10145
ISOMETRIC SKETCH OF MANHOLE FRAME AND COVER
Record Drawing
WHITMAN & HOWARD ARCHITECTS - ENGINEERS
CORPS OF ENGINEERS, U.S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.
PORTSMOUTH AIR FORCE BASE
WATER TANK & TOWER
DRAWING NUMBER
71-11-01
841-167-84
10146, 10145
AB13-B327



Existing Hobbs Hill Water Tank
International Orange Fed. Spec. TT-P-59a
Ladder with Cage and Safety Rail
White Fed. Spec. TT-102 & Am2
28" ϕ Cols (Six)
60" O.D. Riser
Tank #76
Tank #140 (Same Size)
Exterior & Interior Painting
No Scale
Facility 10146 & 10145
Ordnance #433 10147
Exterior & Interior Painting
No Scale
Facility 10147
Manhole
24" Shell Manhole
D.C. Hangar Tank #224
Exterior Painting Only
No Scale
42'-6" I.D.
Note:
1. Paint exterior structures #433, #224, #140 & #76.
2. Paint interior of tanks & risers on structures #433, #140 & #76 only.
3. Exterior painting shall have the same color pattern as existing.
4. All previously painted metal surface to be painted.
5. See sh. 1 of 2 for location of structures.
Tank #76 & Tank #140 Top Elev. 236.93'
Strategic Air Command
Portsmouth, N. H.
Pease Air Force Base
Paint Water Storage Tanks
Elevation Plans
Scale: As Shown
Project No. Peas. 16-1
Drawing No. - PRT. W-9-61-84
Sheet No. 2 of 2
61009-WSA

Utility Service Co.
INCORPORATED
128 Elm St
Bridgewater, MA 02324
508-279-9965
508-279-9948 Fax

The Hobbs Hill 400,000 Gallon Elevated Inspection Report

City of Portsmouth , NH

Prepared For:

Peter Valinski, P.E.
Tighe & Bond, Inc.
53 Southampton Rd
Westfield, MA 01085

Prepared By:

David L. Merithew
Utility Service Co., Inc.
Merithew Service Center

Inspection Performed June 11, 2012

INTRODUCTION

On June 11, 2012 Utility Service Co., Inc. (USCI) conducted a visual inspection of the Hobbs Hill 400KG elevated tank. The purpose of the inspection was to determine the condition of the **coatings** and **structure**, and evaluate the tank for compliance with current **sanitation** guidelines, **safety** & **security** regulations and guidelines in accordance with AWWA, OSHA, and related state and federal agencies. The information contained herein is as accurate as could be obtained by USCI personnel at the time of the inspection. No other assurance or warranty is expressed or implied. We assume no responsibility for any errors or omissions in this report, but will attempt to resolve concerns with the content of this report upon request.

Any estimates or opinions with respect to tank rehabilitation provided by USCI in this report are based on our experience and qualifications as consultants and represent our best judgment as experienced and qualified consultants familiar with the potable water tank construction industry. Since USCI has no control over costs of labor, materials, equipment or services furnished by others or over competitive bidding or market conditions, it cannot guarantee that proposals, bids or actual project costs or construction costs will not vary from any estimates or opinions of costs prepared by USCI.

Since the condition of the storage facility will change over time, the accuracy of the condition of the storage facility described herein will decrease with time. This report can no longer be considered accurate when the date for re-evaluation specified in the recommendations has been reached or after one year if immediate tank remediation is recommended. Once the specified timeframe has elapsed, the storage facility should be re-inspected to determine the current conditions at that time.

SUMMARY

The coatings along the exterior and interior surfaces of the subject tank have exhausted their serviceable life and are no longer providing an effective corrosion barrier to the underlying steel surfaces. In order to prevent any aggressive metal loss of already exposed steel substrate surfaces along both the interior and exterior surfaces as well as prevent further contamination of the surroundings grounds due to continued degradation of the exterior coatings it is recommended that the subject tank be scheduled for complete rehabilitation as soon as feasible to do so. The estimated cost for the scope of work outlined below is Six Hundred Fifty-four Thousand ($654,000.00) dollars based on current 2012 pricing. This cost estimated does not included costs for engineering, specification and contract generation, quality control services or costs associated with the de-watering or filling of the subject tank.

EXTERIOR COATING RECOMMENDATIONS

All exterior surfaces inclusive of all appurtenances should be abrasive blast cleaned to a SSPC-SP #6 Commercial blast grade followed by the application of a (4) coat Zinc/Epoxy/Urethane coating system which consists of (2) coats of an Acrylic polyurethane finish material. Due to actionable levels of lead and chromium along the exterior surfaces of the tank it will be necessary to completely encapsulate localized areas of the tank if not the entire tank structure within a class 1A containment structure during the abrasive blast cleaning operations so as not to adversely impact or contaminate the surrounding area or grounds. This containment structure should conform to the guidelines set forth within SSPC-Guide 6 (Guide

for Containing Surface preparation Debris During Paint Removal Operations) with strict limits on emissions. Both pre and post soil sampling should be performed around the perimeter of the tank and air quality monitoring should be performed during the abrasive blast cleaning phase of the tank rehabilitation.

INTERIOR COATING RECOMMENDATIONS

Due to the extensive blistering of the existing coating observed along the shell and bowl surfaces as well as the extent of complete failure to the substrate and subsequent corrosive activity it is recommended that all interior surfaces inclusive but not limited to the roof, shell, bowl and riser be completed abrasive blast cleaned to an SSPC-SP #10 Near-White Metal grade followed by the application of a (3) coat Zinc/Epoxy system.

STRUCTURAL RECOMMENDATIONS

In addition to the cleaning and painting recommendations stated above the following structural repairs and/or modifications should be performed to ensure the continued structural integrity and sanitary condition of the subject tank.

1. The roof hatch assembly appears intact and functional at this time however there is evidence of past as well as active metal loss taking place therefore cleaning and painting is required to prevent aggressive metal loss of the interior of the raised neck and the hasp
2. The cover to the weir box has completely broken free from the top of the weir box at the hinges and should be repaired by replacing the existing hinges and re-welding them to the cover and top of the weir box. The locking hasp along the cover is also gone and needs to be replaced.
3. The bottom (2) overflow pipe support brackets have broken from the pipe while (1) has also broken free from its point of attachment to the leg column. These brackets should be fit back into place and re-welded as necessary. All remaining brackets should then be closely inspected for structural integrity and repaired as required.
4. Additional drainage holes should be cut along the low lying areas of the walkway in order to alleviate water retention.
5. The anchor bolt assemblies along the base of the riser are exhibiting severe metal loss of the retention nuts as well as some of the threads along the bolt themselves. This metal loss has result in a significant reduction in the size of (3) of the (4) anchor bolt nuts which should be replaced at such time as the tank is rehabilitated. Nut replacement may involve welding blank retention nuts into place due to deteriorated threads along some of the bolts.
6. Consideration should be given removing all damaged surface concrete along all concrete footings back to sound material, preparing the concrete surfaces above ground as necessary to remove any dirt, old paint or other interference material then applying a high solids epoxy sealer to these footings in order to help preserved their integrity. The vegetation surrounding the access ladder column footing should also be cleaned back to prevent damage to the footing from roots or vegetation growth.

7. All areas of metal loss in the form of pitting representing a 35% or greater reduction in corresponding plate thickness should be spot welded as necessary to bring pits at least flush with the original plate surfaces, the ground smooth if not flush to ensure continuity of the completed coating system. All areas which develop holes should have steel plates sufficiently sized to cover the hole and tie into sound surrounding metal welded over the interior face of the holes with at least a continuous 1/4" fillet weld around the perimeter of the plate and the outside face of the hole fill welded and ground flush. The steel plates should be a minimum of at least 1/4" in thickness.
8. All areas of weld seams exhibiting severe undercut or sectional loss to the degree in which the remaining weld is below the adjoining plates should be re-welded as necessary to restore the sectional loss and provide a weld crown at least level with the parent metal.
9. All areas of pitting and/or metal loss representing greater than a 20% reduction in corresponding plate thickness but less than 35% should be filled with a NSF approved 100% solids epoxy filler/surfacer material so as to bring this surfaces flush with the original plate surface.

The majority of these repairs should be performed prior to sandblasting and painting operations at least where practical. Areas which need to be addressed after the specified blasting and painting should be re-cleaned and primed as originally specified. For budget purposes estimated costs for welding (500) pits, (50) linear feet of seams and (10) square feet of patching as well as the application of (20) gallons of 100% solids epoxy filler/surfacer were included within the estimated cost for rehabilitation of the subject tank.

SANITARY RECOMMENDATIONS

The entire finial vent, inclusive of the center stub should be completely replaced as soon as possible with a new center stub receiver flange and an aluminum freeze/vacuum resistant vent. The opening of the overflow pipe should also be fit with either a one way check valve as manufactured by Red Valve or a bolting flange in which a 24 mesh screen and flapper assembly can be installed.

SAFETY & SECURITY RECOMMENDATIONS

The ladder assembly is attached to the center stub of the finial vent which was noted to be exhibiting substantial corrosive activity along the interior surfaces of the stub as well as slight to moderate metal loss making the structural integrity of the vent as well as the ladder questionable. The finial vent assembly inclusive of the center stub should be completely replaced and the existing roof/shell ladder assembly permanently mounted to the roof and shell surfaces by welding steel standoffs to the roof and shell surfaces as well as to the side rails of the ladder.

The height of the handrail does not comply with current standards therefore consideration should be given to increasing the overall height of the handrail to 42" to ensure compliance with current OSHA regulations at such time as the subject tank is rehabilitated.

Consideration should be given to installing a 2nd roof hatch approximately 180 degrees from the existing roof hatch and installing safety rails along both of the hatches for future maintenance considerations.

Consideration should also be given to removing the bottom (2) sections of ladder cage and installing a hinged and lockable ladder gate which completely encapsulates at least 8' of the access ladder in order to enhance overall security of the subject tank.

WATER STORAGE TANK INSPECTION REPORT

Utility Service Co. INCORPORATED

Date: 6/11/12	Project: 125071	Task: 001.001			
Tank Name: Hobbs Hill Tank					
Location: Pinecrest Terrace	City: Portsmouth	State: NH			
Capacity: 400,000 gallons	Tank Type: Elevated (Leg)	Construction: Welded Steel			Shell Rings: 2
HWL: 139'	LWL: 104'8"	Diameter: 48'	Yr Built: 1954	By: PDM, Inc.	Contract: N/A
Owner: City of Portsmouth, NH		Contact: Peter Valinski, T&B		Phone: 413-572-3231	PWS ID:
Inspector: Chad Merithew	NACE#: 8874	Standard: AWWA Guidelines		☒ Evaluation ☐ Update	

EXTERIOR TANK CONDITIONS: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS
Roof	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The roof is equipped with (16) 6"Ø cathodic access ports each effectively secured with cover plates and all adjacent insulator bolts are in place and tight, with no unsealed openings to the water chamber. There is a series of (21) 2"Ø rigging couplings distributed throughout the mid-roof surfaces. Each coupling is effectively secured with a threaded steel plug. REPAIRS: The roof plates, cathodic ports and rigging couplings are in good condition. Necessary repairs to the vent and overflow are outlined later in this report.
	Adhesion Test? ☒ Poor ☐ Fair ☐ Good	YES	
	Steel?: ☒Welded ☐Riveted ☐Bolted	YES	
	Actionable corrosion / deterioration?	YES	
	Rigging holes sealed?	YES	
	Other unsealed penetrations present?	NO	
	Is roof perimeter watertight?	YES	
	Paint Type: Multiple Alkyd Systems	Lead : 160000 mg/Kg	Chromium: 2000 mg/Kg DFT: 4.0-17.5 mils
	Coatings: The coatings along the exterior of the roof and upper knuckle area consist of at least two separate coatings systems with the finish coats of the original coating apparently applied in an FAA checkerboard pattern which has since been over coated with a solid grey finish coat. The collective coatings are in generally very poor condition with extensive degradation in the form of checking, cracking and delamination resulting in the exposure of previously applied coats of paint as well as the underlying steel substrate which is experiencing medium to heavy rusting. The overall degradation is affecting at least 85% of the roof and knuckle surfaces with rusting affecting at least 25% of the referenced surfaces. The greatest concentrations of rust was found along the roof plate lap seams, cathodic access ports as well as the roof center plate as shown in attached photographs and enclosed video. Adhesion testing performed along the roof surfaces revealed very poor adhesion at the original base coat of primer to mid coat interface however extensive delamination suggests poor adhesion existing at several different interfaces as well. Structural: The structural integrity of the roof as viewed from the exterior appears to be generally good with all lap seams sealed and no open penetrations in the plates observed. There is evidence of slight metal loss along areas of corrosion however the majority of this metal loss appears to represent nothing more than an aggressive surfaces profile.		
Roof Vent(s)	Design meets state standards?	NO	The existing center roof finial assembly is in extremely poor condition. There is extensive metal loss, a large unsealed penetration in the top cap as well as complete loss of the screen. The cap was easily removed from the stub pipe due to metal fatigue along the support brackets and is currently held in place by one of the cathodic protection wires suspended from the underside of the cap. REPAIRS: The entire finial vent, inclusive of the center stub should be completely replaced as soon as possible.
	Screen intact? Mesh:	NO	
	Actionable corrosion / deterioration?	YES	
	Freeze resistant? Material:	NO	
	Vacuum pallet functional?	NA	
	Is finial stub flanged? Stub OD: 15"	NO	
	Resists: ☐ Birds ☐ Insects ☐ Dust	NO	
Roof Access	At least two hatches to WC present?	NO	The coating along the interior and exterior surfaces of the roof hatch are in poor condition with extensive top coat delamination as well as complete failure to the substrate observed resulting in light to heavy rusting along as least 15% of the surfaces as well as slight to moderate metal loss along the inside face of the raised neck. REPAIRS: The hatch assembly appears intact and functional at this time however there is evidence of past as well as active metal loss taking place therefore cleaning and painting is required to prevent aggressive metal loss of the interior of the raised neck and the hasp.
	Primary meets state standards?	YES	
	Additional meet state standards? No.:	NA	
	All roof access points secured?	NO	
	Confirmed padlocks functional?	NA	
	Cell equipment affects roof access?	NO	

Utility Service Co., Inc. – Merithew Service Center
128 Elm St, Bridgewater, MA 02324 508-279-9965

Shell	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The exterior shell surfaces appear to be in very good to excellent structural condition with no evidence of any significant metal loss or structural fatigue evident. REPAIRS: There are several dish antennas mounted to the side of the shell be means threaded studs welded to the shell. This leaves a significant gap between the shell and the mounting plate which is not wide enough to properly clean and paint. These brackets should be removed during the next schedule maintenance.		
	Adhesion Test? ☒ Poor ☐ Fair ☐ Good	YES			
	Steel?: ☒Welded ☐Riveted ☐Bolted	YES			
	Actionable corrosion / deterioration?	YES			
	Unsealed penetrations present?	NO			
	Logo present?	NO			
	Any leakage observed?	NO			
	Paint Type: Multiple coats of Alkyd	Lead : 160000 mg/Kg		Chromium: 2000 mg/Kg	DFT: 8.8-14.9 mils
	Coatings: As reported for the roof surfaces the coatings along the shell consists of at least (2) separate coating systems as well as additional coats of paint applied along the lower shell surfaces in order to cover up graffiti. The coatings were noted to be heavily weathered with substantial degradation in the form of checking, cracking and delamination back to previously applied coats of paint as well as the steel substrate. This deterioration is affecting at least 30% of the shell surfaces however failure to the substrate and subsequent light to medium rust as well as a few isolated areas of heavy rusting appears to be affecting less than 15% of the shell surfaces and the attached sections of leg columns. There is evidence of slight metal loss along areas of corrosion representative of nothing more than an aggressive surface profile at least along the areas observed. The majority of the failure to the substrate is along weld seams, the peripheral areas of past spot maintenance, as well as localized areas of the bottom ring. Structural: The overall structural integrity of the exterior shell surfaces and attached sections of leg columns appears to be very good with no evidence of any severe metal loss, metal fatigue or leaks taking place.				
Balcony	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The coatings along the top face of the balcony as well as localized areas along the underside of the walkway, kick plate and handrail are in poor condition with extensive degradation and coating failure to the substrate observed. Low lying areas along the outer perimeter of the walkway and lower portions of the kick plate are exhibiting heavy rusting and slight metal loss due to long term water retention. REPAIRS: Additional drainage holes should be cut along the low lying areas of the walkway in order to alleviate water retention. The height of the handrail does not comply with current standards therefore consideration should be given to increasing the overall height to 42" at such time as the subject tank is rehabilitated.		
	Actionable corrosion / deterioration?	YES			
	Handrail meets state standards? Hgt: 36"	NO			
	Structural damage / failure visible?	NO			
	Water retention occurring on walkway?	YES			
Bowl	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The bowl surfaces do not appear to be exhibiting any significant metal loss from either past or present corrosive activity nor was there any evidence of leaks REPAIRS: No structural repairs appear to be required		
	Actionable corrosion / deterioration?	YES			
	Coatings: The coatings along the underside of the bowl are also in an advance stage of degradation with extensive top coat delamination along at least 35% of the referenced surfaces. This delamination has resulted in the exposure of the base coat of primer which for the most part still appears to be intact with only minimal rusting evident. The lower bowl surfaces are also heavily soiled with significant mildew present. Structural: The overall structural integrity of the exterior bowl surfaces appears to be very good with no significant metal loss from either past or current corrosive activity evident, at least as viewed from the access ladder and ground level. Furthermore, there was no evidence of any leaks.				
Riser	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The riser has (3) compression rings present, with the lower (2) serving as connection point for (2) levels of radial rods. There is also a valve stem located within the bottom 1' of the riser which serves as control for a drainage line. All appear intact and functional. REPAIRS: No structural repairs appear to be required.		
	Adhesion Test? ☒ Poor ☐ Fair ☐ Good	YES			
	Actionable corrosion / deterioration?	YES			
	Is it a dry riser? Riser OD: 5'	NO			
	Riser base plate present?	YES			
	Riser anchor bolts? No.: (4) 1"Ø	YES			
	Coatings: The coating along the exterior surfaces of the riser are also in poor condition as reported for the remaining water bearing surfaces of the tank. There is extensive checking, cracked and delaminated coating as well as complete coating failure to the steel substrate which is currently exhibiting medium to heavy rusting. This rusting appears to be affecting less than 10% of the riser surfaces. The coating along the base plate of the riser and the (4) 1" diameter anchor bolts is also in poor condition with extensive delamination down to the primer and localized areas of medium to				

	heavy rusting along the top face and outer edge of the base plate as well as all of the anchor bolts. Adhesion testing performed indicated poor adhesion primarily at the base coat of primer to mid-coat interface. Structural: The structural integrity of the exterior surfaces of the riser as well as the attached compression rings appear to be good with no deficiencies observed. There is evidence of slight metal loss from both past and active corrosion primarily along the lower riser rings however no remedial work is required at this time. The anchor bolt assemblies however are exhibiting severe metal loss of the retention nuts as well as some of the bolt threads. This metal loss has result in a significant reduction in the size of (3) of the (4) anchor bolt nuts which should be replaced at such time as the tank is rehabilitated. Nut replace may involve welding blank retention nuts in place due to severely deteriorated threads along some of the bolts.		
Shell / Riser Access	At least two manholes present?	NO	The coatings along the 20"Ø riser manhole assembly are in poor condition with nearly 70% of the top coats completely gone and localized areas of complete failure to the steel substrate noted along the center bracing of the cover, the retention bolt and clamp assembly as well as the lower portion and outer edge of the neck insert. There is no manhole assembly present in the tank shell. REPAIRS: No structural reports noted
	Primary meets state standards?	YES	
	Additional meet state standards? No.:	NA	
	Structural damage / leakage visible?	NO	
	Secondary manhole security present?	NO	
	Cell equipment affects shell access?	NO	
Foundation	Concrete in good condition?	YES	The concrete surfaces around the base of the riser and vault area were noted to be in generally good condition with no significant degradation and only minor top surface weathering and isolated areas of minor damage along the corners and edges noted. REPAIRS: At such time as the subject tank is rehabilitated consideration should be given to sealing these surfaces with a high solids epoxy material to help preserve the structural integrity.
	Undermining of foundation noted?	NO	
	Asphalt or stone apron present?	NO	
	Does grade promote good site drainage?	YES	
	Encroachment of vegetation?	YES	
Overflow	Type: Full Meets state standard?	YES	The coatings along the interior and exterior surfaces of the weir box are in very poor condition as are the coatings along the exterior of the overflow pipe. Completed failure of the coatings has resulted in exposure of the steel substrate and medium to heavy rusting along at least 75-85% of the referenced surfaces. REPAIRS: The cover has completely broken free from the top of the weir box at the hinges and is only held in place by the weight of the cover. The broken hinges should be replaced as soon as possible to do so. The locking hasp on the weir box cover is missing and needs to be replaced. The bottom (2) overflow pipe support brackets have broken from the pipe while (1) has also broken free from its attachment point to the leg column. These brackets should be fit back into place and re-welded as necessary. All remaining brackets should then be closely inspected for structural integrity and repaired as required.
	Weir box sealed/secured? External	NO	
	Actionable corrosion / deterioration?	YES	
	Unsealed penetrations? Pipe OD: 8"	NO	
	Outlet at 12"-24" above grade?	NO	
	☐ Screen ☐ Flapper meet standards?	NO	
	Screen intact? Mesh:	NO	
	Is screen/flapper accessible for repair?	YES	
	☐Drain/Basin ☒Riprap ☐Splash pad	YES	

INTERIOR TANK CONDITIONS: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS		
Int. Roof & Knuckle	Raised? Type: Dome w/ Rafters	YES	The roof and knuckle plates appear to be in sound structural condition with no evidence of any significant metal loss however there is localized areas of aggressive corrosion along open areas within the roof to knuckle lap seam. REPAIRS: At such time as the interior surfaces are rehabilitated consideration should be given to sealing this area with a 100% solids epoxy material or an elastomeric urethane caulking.		
	Coatings? ☐ Poor ☒ Fair ☐ Good	YES			
	Actionable corrosion / deterioration?	YES			
	Light leaks visible from interior?	NO			
	Roof to shell junction sealed?	YES			
	Rafters: Type: L-angle No:12		Compression: Type: L-angle No:1		
	Paint Type: Error in sampling	Lead : NA mg/Kg	Chromium: NA mg/Kg	DFT: 4.2-25.9 mils	
	Coatings: The coatings along the underside of the roof and knuckle surfaces were found to be in generally good condition with at least 95% of the coatings still intact and providing sound protection to the underlying steel surfaces. The remaining surfaces were exhibiting localized areas of failure to the substrate and subsequent medium to heavy rusting along unsealed roof lap joints, the unsealed horizontal lap joint with the top of the knuckle, junctions with the roof rafters as well as the roof center dollar plate. The was also evidence of light to medium rusting along junctions with rigging plugs and areas surrounding attachment points for the cathodic protection wire insulators attached to the				

	underside of the roof. The coatings along the surfaces of the roof support structure were exhibiting a greater percentage of failure with at least 10% of the referenced surfaces exhibiting medium to heavy rusting along the top edges which connect to the roof plates, localized areas of the vertical leg of the rafters, the top faces of the bottom flanges as well as the bolted connections which secure them to the center compression ring as well as the short sections of vertical stiffeners located within the knuckle. NOTE: There was an error in the paint sampling protocol in the field which rendered the testing invalid therefore the interior test results indicated in the attached laboratory report should not be considered accurate. Structural: The overall structural integrity of the roof plates, roof support structure and the knuckle appears to be good with no evidence of any significant metal loss taking place at least as observed from the roof hatch and the ROV. There does however appear to be the potential for localized areas of slight to moderate metal loss along bolted connections which secure the rafters to the center compression ring as well as the top face of the rafter bottom flanges.			
Int. Shell	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The shell appears to be in sound structural condition however there is evidence of scattered moderate size rust tubercle formations which would indicate the possibility that at least slight to moderate metal loss in the form of pitting may be taking place. REPAIRS: At such time as the subject tank is scheduled for rehabilitation consideration should be given to spot welding all areas of pitting representing a 35% or greater reduction in corresponding plate thickness.	
	Actionable corrosion / deterioration?	YES		
	Cathodics? Type: Suspended Anode	YES		
	Mixing System? Type:	NO		
	Water Quality Good? Turbidity Light	YES		
	Staining present? Degree Moderate	YES		
	Paint Type: Not tested	Lead : NR mg/Kg	Chromium: NR mg/Kg	DFT: NR mils
	Coatings: The coatings along the shell surfaces and portions of the leg column inserts located within the shell area are exhibiting dense blistering throughout 85-90% of the referenced surfaces as shown in the enclosed video. At least 30% of the referenced blistering appears to have fractured resulting in the exposure of the underlying steel substrate which is currently experiencing light to medium rusting as well as scattered small to moderate size rust tubercle formations. The shell surfaces were also noted to be heavily stained from mineral deposits within the water supply. Structural: The overall structural integrity of the shell plates and the leg column inserts appears to be very good with no significant deficiencies observed. There is however evidence of scattered rust tubercles present throughout the shell. The majority of the rust tubercles appear to be small in size and therefore should not represent any significant metal loss. There are however moderate size rust tubercles which could indicate slight to moderate metal loss in the form of pitting. There is also evidence of erection burrs still present along the shell surfaces which should be ground flush at such time as the interior surfaces are rehabilitated in order to help maintain the continuity of the newly applied coating. The upper surfaces of the shell is also equipped with what appears to be a stiffener and/or a painters angle. The angle appears to be intact and structurally sound with no significant metal loss observed at least as viewed from the ROV. There is however evidence of scattered medium to heavy rusting along the underside of the angle primarily adjacent to its connection to the shell and what appears to be drainage holes as well as a few scattered areas near the top of the vertical leg.			
Int. Bowl	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	There is evidence of moderate to large rust tubercle formations which would indicate the possibility of at least slight to moderate metal loss in the form of pitting. REPAIRS: At such time as the subject tank is scheduled for rehabilitation consideration should be given to spot welding all areas of pitting representing a 35% or greater reduction in corresponding plate thickness.	
	Actionable corrosion / deterioration?	YES		
	Torospherical bowl?	NO		
	Floor sediment visible? ½-1½ inches	YES		
	Coatings: Visual inspection along the majority of the lower bowl surfaces was obscured by a layer of silt, old cathodic protection anodes and wiring as well as wood and other miscellaneous debris, therefore limiting complete assessment to less than 10% of these surfaces which were clear enough to allow for assessment. The coatings along the visible surfaces were exhibiting dense blistering ranging from approximately 1/8th to 1/2" in size and affecting at least 80% of the visible surface area. The majority of the blistering appeared to still be intact however scattered blisters appeared to be fractured resulting in medium to heavy rust as well as scattered small to medium sized rust tubercle formations. Scattered areas of rust tubercles were also noted to be protruding though the silt layer along the remaining bowl surfaces suggesting that at least 3-5% of the coating has failed to the steel substrate. The upper bowl surfaces continued to exhibiting scattered areas of dense blistering however it was estimated that less than 60% of these surfaces were affected. The extent of visible corrosion along the upper bowl has increased with as much as 10% of the referenced surfaces exhibiting medium to heavy rusting and moderate to large size rust tubercle formations. This extent of deterioration was also evident along the portions of leg column inserts located within the upper bowl. There was also evidence of scattered erection burrs still present within the bowl surfaces, many of which appear to be			

	contributing to the failure of the existing coatings. Structural: The presence of rust tubercle formations would suggest the possibility of metal loss in the form of pitting scattered along as much as the 3-5% of the lower bowl surfaces and up to 10% of the upper bowl surfaces, particularly along the areas of large rust tubercle formations. There was however no evidence of any severe or concentrated areas of metal loss at least along observed surfaces.		
Int. Riser	Coatings? ☐ Poor ☐ Fair ☐ Good	NR	The ROV was unable to access the interior surfaces of the wet riser due the opening being complete obstructed by old cathodic protection anodes and wires, pieces of wood and what appears to be a safety grating located across the top the opening. REPAIRS: It could not be determined if repairs are warranted.
	Actionable corrosion / deterioration?	NR	
	Are safety bars present on the wet riser?	YES	
	Is the riser equipped with a floor drain?	YES	
	Coatings: The condition of the coatings within the riser could not be assessed due to lack of access as stated above. Regardless, complete rehabilitation would be recommended due to the age of the existing coatings and the overall condition of the coatings along the remaining interior surfaces which would necessitate complete rehabilitation of the tank's interior surfaces. Structural: The structural condition of the interior surfaces of the riser are unknown at this time.		

SUPPORT STRUCTURE CONDITIONS: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

Tower Panels: 3	Column Design: Tubular No.: 6			Strut Design: Split Channel	Column anti-climb protection: NO
Support Structure	Coatings? ☒ Poor ☐ Fair ☐ Good	YES	The overall structural integrity of the supporting structure appears to be very good with no noticeable deficiencies observed from either ground level or the access ladder. There is evidence of potential areas of slight to moderate metal loss however nothing to suggest any significant compromise in the structural integrity of the areas in question. REPAIRS: No structural repairs evident at this time however surfaces should be re-inspected after abrasive blast cleaning operations are performed.		
	Adhesion Test? ☒ Poor ☐ Fair ☐ Good	YES			
	Actionable corrosion / deterioration?	YES			
	Painter's manholes secure/locked?	NA			
	Are sway/radial rods taught? Direct	YES			
	Sway rod connections secure? Nuts	YES			
	Any leaks along support structure?	NO			
	Paint Type: Multiple Coats of Alkyd	Lead : NR mg/Kg		Chromium: NR mg/Kg	DFT: 3.3-29.1 mils
	Coatings: The coatings along the tank support structure inclusive but not limited to the leg columns, horizontal struts, sway rods and radial rods are in an advance stage of degradation and complete failure with extensive checking, crazed cracking and delamination taking place along as much as 60% of the referenced surfaces. A significant amount of the crazed cracking appears to extend back to the steel substrate as evidence by the presence of light to medium corrosion along these surfaces. The delamination extends back to both the base coat of primer as well as the steel substrate which is currently exhibiting medium to heavy rusting. Overall, at least 35% of the supporting structure surfaces are exhibiting some form of corrosion. The remaining coatings appear to be dead and brittle, with poor interfacial adhesion and therefore would no longer serve as a suitable substrate for further over coating. Structural: The overall structural integrity of the supporting structure appears to be very good with all connection plates, retention pins, bolted connections, horizontal struts, sway rods and radial rods in generally good condition and adequately secured. The sway rods also appear to be properly tension with no excessive slack observed. There is evidence of potential metal loss along various elements of the support structure such as radial rods, bolted connections and retention pin lock washers which should be re-inspected after abrasive blast cleaning however at this time the majority of the areas observed appear to represent only slight metal loss or reduction in dimensional size. There is also evidence of possible metal loss along the top face of several horizontal struts as well as localized areas of the leg columns however these areas also appear to represent minimal metal loss with no evidence to suggest any compromise in structural integrity of the referenced surfaces at this time. The (6) leg columns also appear to be in proper alignment as determined visually.				
Column Footings	Concrete sound? Design: Base plate	NO	The concrete footings at the base of each leg column are in generally sound structural condition with no evidence of any settling, or cracking taking place. There is however minor surface degradation and slight spalling of the surfaces and corners. The grouting between the base plates of the columns and the concrete footing appears to be in good condition with minimal degradation observed. One footing along the base of the access ladder leg column also has significant vegetation encroachment surrounding the footing.		
	Anchor bolts? Number/column: 2	YES			
	Actionable corrosion / deterioration?	YES			
	Undermining of footings noted?	NO			
	Does grade promote good drainage?	YES			
	Encroachment of vegetation?	YES			

			REPAIRS: At such time as the subject tank is scheduled for rehabilitation consideration should be given removing all damaged surface concrete back to sound material, preparing the concrete surfaces above ground as necessary to remove any dirt, old paint or other interference material then applying a high solids epoxy sealer in order to help preserved the integrity of the footings. The vegetation surrounding the access ladder column footing should also be completed cleaned back to prevent damage to the footing from roots or vegetation growth.

TANK SAFETY CONDITIONS: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS
Roof	Is there a roof ladder / stair present?	YES	The coating along the roof revolving ladder assembly is exhibiting significant cracking and top coat delamination resulting in the exposure of previously applied coats of paint as well as scattered areas of complete failure and medium to heavy rusting along the ladder rungs. REPAIRS: The ladder appears intact with no significant metal loss observed.
	Is there a guardrail system present?	NO	
	Safety climb system? Notched Rail	YES	
	Are the roof FAA lights operational?	NA	
Exterior Access	Shell access ladder >20ft?	YES	The shell ladder is an extension of the roof revolving ladder and is in similar condition as reported for the roof section. The coatings along the supporting structure access ladder and ladder cage are also exhibiting extensive degradation resulting in the exposure of the base coat of primer as well as the underlying steel surfaces which are experiencing light to medium rusting along with scattered areas of heavy rusting affecting less than 10% of the referenced surfaces. REPAIRS: The combination roof/shell ladder assembly appears intact and structurally sound however can no longer move due to attached electrical conduits and an attached whip antenna with coax cable. The ladder assembly is attached to the center stub of the finial vent which was noted to be exhibiting substantial corrosive activity along the interior surfaces of the stub as well as slight to moderate metal loss making the structural integrity of the vent, as well as the ladder, questionable. As previously reported the finial vent assembly inclusive of the center stub should be completely replaced and the existing roof/shell ladder assembly permanently mounted to the roof and shell surfaces.
	Safety climb system? Notched Rail	YES	
	Support column access ladder >20ft?	YES	
	Safety climb systems? Notched Rail	YES	
	Ladder(s) equipped with a cage?	YES	
	Safety rails on crossover platform?	NA	
	Actionable corrosion / deterioration?	YES	
	Leg ladder equipped with security gate?	NO	
	Does ladder terminate ≥12' above grade?	YES	
Interior Access	Water chamber access ladder >20ft?	NA	The interior of the tank is not equipped with an access ladder assembly nor is the installation of one recommended. REPAIRS: No repairs are required.
	Safety climb system?	NA	
	Riser access ladder >20ft?	NA	
	Safety climb systems?	NA	
	Actionable corrosion / deterioration?	NA	
	Riser occluded by coax/mixer?	NO	

SITE CONDITIONS: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS
Tank	Any signs of vandalism / forced entry?	YES	There is evidence of graffiti at ground level and evidence of painted over graffiti along the balcony level suggesting that someone has accessed the upper portion of the tank in the past. There is however no evidence of any recent activity. REPAIRS: No repairs required at this time
	Is there any graffiti paint or etchings?	YES	
	Is there any stone damage present?	YES	
	Signs of unauthorized access to the roof?	NO	
	Can leg columns be climbed freely?	NO	
	Any damage to ground equipment?	NO	
Perimeter Security	Is site equipped with a security fence?	NO	There is fencing surrounding the base of the leg column equipped with the access ladder. The gate to this enclosure was found to be
	Any signs of damage to the fence?	NA	

	Gates secured with functional locks?	YES	locked at the time of this inspection and relocked upon completion of the inspection. REPAIRS: No repairs required at this time
	Are any intrusion alarms operational?	NO	
Valve Vault/ Pump House	Tank equipped with vault / pump house?	YES	The vault area located adjacent to the base of the riser is sealed with a steel 38-3/4" by 35-1/4" hatch insert. The two halves of the hinged doors were chained and locked together however the hinges along the doors have broken free allowing easy access to the underlying vault chamber. The coatings along the hatch assembly as well as the piping located within the vault are in poor condition and require complete cleaning and recoating. REPAIRS: The hatch cover hinges should be replaced and properly re-attached to the doors and metal frame after which the hatch assembly and piping should thoroughly cleaned and painted.
	Is the vault / pump house secured?	NO	
	Pipe coatings? ☒Poor ☒Fair ☐Good	YES	
	Is valve pit free of standing water?	NO	

OPERATOR SURVEY: ☒ Operator onsite? Patrick Crimmins *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS
Sample Tap	Sample tap functional?	NR	REPAIRS:
	Acceptable design?	NR	
	Chlorine injection system present?	NO	
	Sample tap upstream of injection system?	NR	
Tank History	Sanitary inspection in previous year?	NO	It was reported that a previous tank inspection was performed in 2007.
	AWWA inspection in past 5 years?	YES	
	Recent tank maintenance? Year:	NO	
	Recent permit required modifications?	NO	
Site	Within 50' of a sewer / storm drain?	NO	
	Tank valves regularly exercised?	NO	
	☒ SCADA ☐ Cathodic monitoring?	YES	

TANK DISINFECTION: *YES / NO / NOT REVIEWED (NR) / NOT APPLICABLE (NA)*

TANK AREA	ITEM OF CONCERN	STATUS	COMMENTS
Tank	Chlorine residual known? 1.0 ppm	YES	
	Chlorine added? Amount: gallons	NO	

NH-Portsmouth Hobbs Hill 400KG Elev 06.11.12 DFT

Readings - Interior Roof

Reading	Time & Date	Coat 1 (mil)
1	12:36:13 PM 6/11/2012	7.4
2	12:36:15 PM 6/11/2012	11.6
3	12:36:17 PM 6/11/2012	5.2
4	12:36:19 PM 6/11/2012	6.9
5	12:36:21 PM 6/11/2012	6.9
6	12:36:23 PM 6/11/2012	4.4
7	12:36:26 PM 6/11/2012	4.8
8	12:36:28 PM 6/11/2012	8.1
9	12:36:30 PM 6/11/2012	7.0
10	12:36:32 PM 6/11/2012	7.9
11	12:36:34 PM 6/11/2012	25.9
12	12:36:36 PM 6/11/2012	7.6
13	12:36:38 PM 6/11/2012	7.1
14	12:36:41 PM 6/11/2012	4.2
15	12:36:43 PM 6/11/2012	4.3

Summary - Interior Roof

Reading	Time & Date	Coat 1 (mil)
Max		25.90
Min		4.20
Mean		7.95
StdDev.		5.33

Annotations - Interior Roof

Gage Model: 6000FS3
Gage S/N: 65311
Probe Model: FS
Probe S/N: 43279
User:
Part:
Substrate:

NH-Portsmouth Hobbs Hill 400KG Elev 06.11.12 DFT

Readings - Exterior Roof

Reading	Time & Date	Coat 1 (mil)
1	12:50:45 PM 6/11/2012	10.7
2	12:50:47 PM 6/11/2012	12.2
3	12:50:49 PM 6/11/2012	13.1
4	12:50:51 PM 6/11/2012	14.6
5	12:50:55 PM 6/11/2012	11.6
6	12:50:57 PM 6/11/2012	4.2
7	12:51:00 PM 6/11/2012	16.6
8	12:51:03 PM 6/11/2012	4.0
9	12:51:05 PM 6/11/2012	6.2
10	12:51:08 PM 6/11/2012	8.8
11	12:51:11 PM 6/11/2012	13.6
12	12:51:13 PM 6/11/2012	14.4
13	12:51:15 PM 6/11/2012	10.6
14	12:51:18 PM 6/11/2012	17.5
15	12:51:20 PM 6/11/2012	11.6

Summary - Exterior Roof

Reading	Time & Date	Coat 1 (mil)
Max		17.50
Min		4.00
Mean		11.31
StdDev.		4.08

Annotations - Exterior Roof

Gage Model: 6000FS3
Gage S/N: 65311
Probe Model: FS
Probe S/N: 43279
User:
Part:
Substrate:

NH-Portsmouth Hobbs Hill 400KG Elev 06.11.12 DFT

Readings - Exterior Shell

Reading	Time & Date	Coat 1 (mil)
1	2:23:07 PM 6/11/2012	10.5
2	2:23:09 PM 6/11/2012	9.6
3	2:23:11 PM 6/11/2012	11.3
4	2:23:13 PM 6/11/2012	14.9
5	2:23:15 PM 6/11/2012	11.4
6	2:23:17 PM 6/11/2012	10.8
7	2:23:20 PM 6/11/2012	12.8
8	2:23:22 PM 6/11/2012	11.5
9	2:23:24 PM 6/11/2012	11.7
10	2:23:26 PM 6/11/2012	12.2
11	2:23:28 PM 6/11/2012	13.6
12	2:23:31 PM 6/11/2012	10.8
13	2:23:33 PM 6/11/2012	8.8
14	2:23:35 PM 6/11/2012	9.0
15	2:23:37 PM 6/11/2012	12.1

Summary - Exterior Shell

Reading	Time & Date	Coat 1 (mil)
Max		14.90
Min		8.80
Mean		11.40
StdDev.		1.64

Annotations - Exterior Shell

Gage Model: 6000FS3
Gage S/N: 65311
Probe Model: FS
Probe S/N: 43279
User:
Part:
Substrate:

NH-Portsmouth Hobbs Hill 400KG Elev 06.11.12 DFT

Readings - Leg Columns

Reading	Time & Date	Coat 1 (mil)
1	3:08:54 PM 6/11/2012	3.3
2	3:08:56 PM 6/11/2012	4.3
3	3:08:58 PM 6/11/2012	15.7
4	3:09:05 PM 6/11/2012	12.7
5	3:09:08 PM 6/11/2012	17.0
6	3:09:16 PM 6/11/2012	16.4
7	3:09:18 PM 6/11/2012	3.7
8	3:09:26 PM 6/11/2012	18.0
9	3:09:28 PM 6/11/2012	24.6
10	3:09:30 PM 6/11/2012	29.1
11	3:09:33 PM 6/11/2012	21.2
12	3:09:50 PM 6/11/2012	14.4
13	3:09:54 PM 6/11/2012	4.1
14	3:10:06 PM 6/11/2012	13.2
15	3:10:13 PM 6/11/2012	14.9

Summary - Leg Columns

Reading	Time & Date	Coat 1 (mil)
Max		29.10
Min		3.30
Mean		14.17
StdDev.		7.75

Annotations - Leg Columns

Gage Model: 6000FS3
Gage S/N: 65311
Probe Model: FS
Probe S/N: 43279
User:
Part:
Substrate:

Eastern Analytical, Inc.

professional laboratory & drilling services

Regina Arthur
Utility Service Co., Inc.
PO Box 1350
Perry , GA 31069-1330

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 111464
Client Identification: Hobbs Hill Tank
Date Received: 6/21/2012

Dear Ms. Arthur :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw — 6.25.12 — 3

Lorraine Olashaw, Lab Director | Date | # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **111464**

Client: **Utility Service Co., Inc.**

Client Designation: **Hobbs Hill Tank**

Temperature upon receipt (°C): 23.5 **Received on ice or cold packs (Yes/No): N**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
111464.01	SBK 27104 Interior	6/21/12	6/11/12	solid		Adheres to Sample Acceptance Policy
111464.02	SBK 27104 Exterior	6/21/12	6/11/12	solid		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

EAI ID#: **111464**

Client: **Utility Service Co., Inc.**

Client Designation: **Hobbs Hill Tank**

Sample ID:	SBK 27104 Interior	SBK 27104 Exterior					
Lab Sample ID:	111464.01	111464.02					
Matrix:	solid	solid					
Date Sampled:	6/11/12	6/11/12					
Date Received:	6/21/12	6/21/12					
			Analytical Matrix	**Units**	**Date of Analysis**	**Method**	**Analyst**
Chromium	**940**	**20000**	SolAsRec	mg/kg	6/21/12	6020	DS
Lead	**2700**	**160000**	SolAsRec	mg/kg	6/21/12	6020	DS

111464

UTILITY SERVICE
CHAIN - OF - CUSTODY RECORD

TYPE SAMPLE: PAINT CHIPS (PAINT CHIPS, SPENT ABRASIVE, SOIL) STATE: NH

1. TANK INFO:	Hobbs Hill Tank 400KG Elevated	2. CUSTOMER / LOCATION:	City of Portsmouth, NH
3. NAME OF SAMPLER:	Scott B Kelley EMPLOYEE DEPT #: 864	4. SIGNATURE: Scott B Kelley	5. DATE: 06/20/12
6. RETURN ADDRESS:	UTILITY SERVICE CO., INC. ATTN: REGINA ARTHUR / LARA ANDERSON P O BOX 1350 PERRY, GA 31069	**RETURN COPY OF THIS RECORD WITH RESULTS**	

7. SAMPLE NO.		8. SAMPLE REMOVAL DATA			9. ANALYSIS REQUESTED	
		DATE	TIME	SPECIFIC LOCATION	LEAD	OTHER (ARSENIC, CADMIUM, CHRONIUM)
SBK 27104	INTERIOR	06/11/12	11:30 AM	Roof, Hatch	X	Chromium
SBK 27104	EXTERIOR	06/11/12	10:45 AM	SIDEWALLS, ROOF	X	Chromium
~~SBK 27104~~	~~ADDT'L~~	~~06/11/12~~	~~N/A~~	SBK 6/20/12 N/A	X	Chromium

10. SAMPLES RELINQUISHED BY:			11. SAMPLES RECEIVED BY:		
NAME	Date	Time	NAME	DATE	TIME
Scott B Kelley Scott B Kelley Kathleen Hannan Kelley	06/20/12 06.21.12	5:37 PM 0815	Kathleen Hannan Kelley		

UTILITY SERVICE COMPANY INC.
WATER TANK MAINTENANCE

rarthur@utilityservice.com REGINA ARTHUR (478) 988-5234
laraanderson@utilityservice.com LARA ANDERSON (478) 988-5274
FAX: (478) 987-2991

23.5°C noise

Hobbs Hill 400KG Elevated, Portsmouth, NH
Inspection performed June 11, 2012

Overall view of the Hobbs Hill elevated tank.

Extensive coating failure to multiple interfaces was noted throughout the roof surfaces.

Failure of the roof coating has resulted in medium to heavy surface corrosion along the roof plates and weld seams.

Extensive coating failure and surface rusting along the center roof plate surfaces.

Cross hatch adhesion testing indicates poor adhesion at multiple interfaces.

Complete failure of the existing roof finial vent will require immediate replacement.

Extensive metal loss along the cap support brackets allows the cap to me removed easily with no screen present.

The interior of the finial stub is exhibiting extensive corrosion but should support installation of a new vent assembly.

A small penetration in the side of the finial stub is secured with a plug that is uncoated and severely rusted.

A series of cathodic port covers and insulator bolts are present throughout the roof that are intact but heavily rusted.

Showing and additional cathodic port and adjacent rigging plug that are in place.

Showing a roof rigging coupling with installed plug, but coating failure and heavy corrosion along the adjacent plate surfaces.

The roof is equipped with a single hatch that meets design requirements, but coatings are in poor condition.

Showing coating failure and heavy corrosion of the interior hatch neck with measureable metal loss noted.

The revolving roof ladder appears to be in sound structural condition, but coatings are failing.

The ladder is equipped with a notched rail safety climb system and conduits extend down to the shell along either side.

The top hatch of the overflow weir box is in poor condition, with complete failure of the cover hinges.

The interior coatings of the weir box are in poor condition, but the box appears to be structurally sound.

Showing coating failure along the interior of the weir box and the opening into the water chamber.

Showing widespread top coat failure and some surface corrosion along the exterior of the weir box and upper overflow pipe.

Extensive coating failure and surface corrosion along the overflow pipe surfaces adjacent to the shell.

Widespread coating failure and surface corrosion where the overflow pipe extends through the balcony deck.

Almost complete coating failure and uniform surface corrosion along the overflow pipe along the leg column.

A standoff bracket at the base of the overflow pipe has broken free from the leg column.

The horizontal segment of the overflow pipe is exhibiting complete coating failure and uniform surface corrosion.

The overflow pipe terminates at the site perimeter

The overflow pipe discharge is not secured with a screen or flapper valve assembly.

The shell segment of the access ladder is in fair condition, and is equipped with a notched rail safety climb system.

Showing scattered areas of coating failure and corrosion along the shell ladder rungs.

Extensive coating failure and surface corrosion extends down the knuckle plate surfaces.

Coating failure is evident along multiple different interfaces along the shell surfaces.

Showing widespread cracking and delamination of the shell coatings with associated rust formation.

Additional areas of coating breakdown and light rust bloom along the exterior shell surfaces.

Showing areas of cracked and peeling coating along weld seams and previous spot blast profile.

An area of heavy cracking of the top coats and light rust staining or bleedthrough along the surrounding coatings.

Widespread top coat failure extends to the leg column inserts at balcony level.

Coating failure and surface corrosion along the top face of a leg column insert.

Graffiti evidence that unauthorized personnel have gained access to the upper tank surfaces.

There are a number of antennas secured to stud welded mounts on the shell surfaces of the tank.

A stud welded bracket assembly secured to the shell surface is in fair to good condition.

The top deck of the balcony is in poor condition, with widespread coating failure and surface corrosion.

Areas of heavy corrosion along the balcony deck indicate water retention due to the lack of drainage holes.

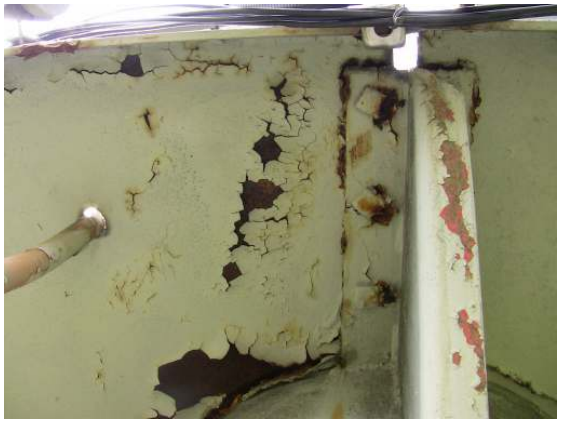
Showing coating failure and extensive corrosion resulting in some metal loss along the balcony deck and kick plate.

The balcony handrail measures only 32" in height and is exhibiting scattered coating failure and corrosion.

Scattered coating failure and corrosion along the balcony handrail and kick plate.

Additional areas of cracked and delaminated coatings along the outer face of the balcony kick plate.

The visible underside of the balcony walkway is in fair condition, but additional coating failure was noted along the back of the kick plate.



Showing a localized area of coating failure and corrosion along the underside of the balcony deck and a support bracket.

Showing widespread top coat failure along the upper bowl surfaces.

Extensive top coat failure and surface soiling throughout the bowl plate surfaces.

An overall view of the tank bowl surfaces indicating the widespread top coat failure and surface soiling.

Continuation of some top coat failure along the upper surfaces of the riser.

Widspread top coat delamination but only minor corrosion along the riser surfaces.

Coating failure and surface corrosion along the riser stiffener ring for the radial support rods.

Scattered coating breakdown and corrosion along the lower riser cylinder.

Extensive coating failure and corrosion along the bottom of the riser cylinder.

The single riser manhole is intact with no leakage, but widespread coating failure and some surface corrosion was visible.

Showing the valve stem and piping at the base of the riser. The riser base plate and anchor bolts are exhibiting heavy corrosion.

Coating delamination at multiple interfaces as well as localized medium to heavy corrosion along the support columns.

Widespread coating failure and surface corrosion along the tank support structure.

Extensive peeling and delamination at all interfaces as well as surface corrosion throughout the support columns, struts and rods.

Heavy corrosion along the support column and junction points of the sway rods, radial rods and horizontal struts.

Extensive coating failure along the outer face of one of the leg columns.

Extensive top coat failure along the base of a support column and heavy corrosion of an anchor bolt.

Coating failure and corrosion of the leg column anchor bolts. The concrete footings are generally sound, with only minor surface spalling.

Heavy corrosion and measureable metal loss along one of the leg column anchor bolts.

Metal fatigue has resulted in almost complete loss of an anchor bolt retention nut at the base of a support column.

A localized area of significant surface spalling along one of the support column concrete footings.

Antenna equipment mounted to bracket assemblies along the tank support structure.

The leg column access ladder is equipped with a cage, rest platforms and a notched rail safety climb system.

The leg column ladder is exhibiting widespread coating failure as observed on the surrounding column surfaces.

Showing extensive top coat failure and scattered corrosion along the leg column ladder cage.

Coating failure and surface corrosion along the top face of one of the leg column ladder rest platforms.

Widespread coating failure and surface corrosion along a horizontal strut of the support structure.

Coating failure and heavy surface corrosion along the interior channel surfaces of a horizontal strut.

Extensive coating failure and heavy corrosion at the junction of a leg column with a horizontal strut.

Coating failure and surface corrosion along an upper level sway rod turnbuckle.

Extensive coating failure and surface corrosion along a lower level sway rod turnbuckle.

Overall view of the lower support structure surfaces indicating the extent of surface corrosion.

The top hatch to the valve vault is in poor condition, but was secured with a chain and lock.

The coatings on the interior piping are in poor condition, and there is some standing water.

Tank controls on a free standing platform on the tank site.

An old cathodic control unit mounted to a leg column appears to be in poor condition and non-functional.

Conduits for various utility wiring along one of the support columns.

The interior roof is in fair condition, with corrosion along roof plate lap seams and the support structure.

Corrosion along lap seams, junctions with the roof rafters and along the cathodic and rigging penetrations.

Significant coating failure and corrosion was noted along the top faces of the angle lower leg of the rafter.

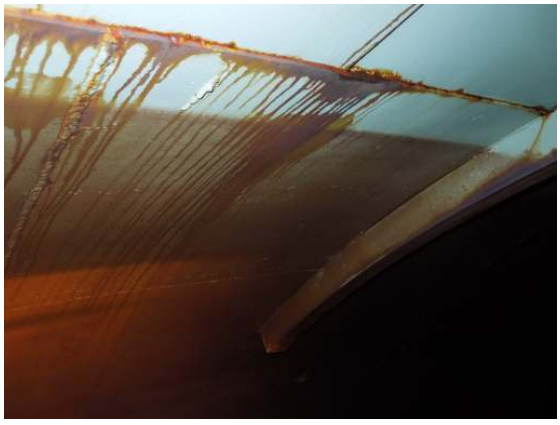
Additional areas of corrosion along the top face of the rafter lower leg and outer roof bolted connections.

The roof plates are in generally good condition with the exception of the weld seam at the roof plate to knuckle junction.

The interior roof is equipped with cabling and insulators for the cathodic protection system, but it does not appear to be functional.

Showing disconnected components of the suspended anode cathodic protection system.

Heavy staining of the knuckle plate surfaces was noted up to high water level.



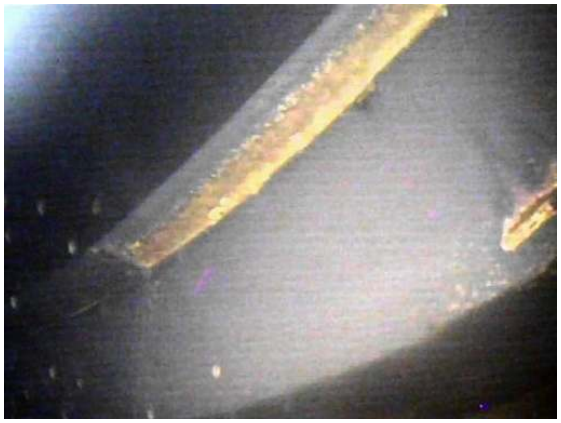
Crevice corrosion and associated rust staining emanating from the roof plate to knuckle junction seam.

The rough cut opening of the overflow weir box just below the roof to knuckle junction.

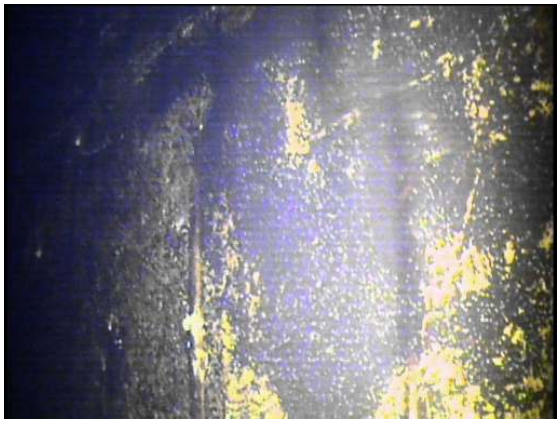
Additional areas of coating failure and surface corrosion along the roof to knuckle seam.

Evidence of corrosion and rust tubercle formation along the underside of the stiffener angle at the base of the knuckle.

Additional areas of corrosion visible along the underside of the upper shell stiffener.

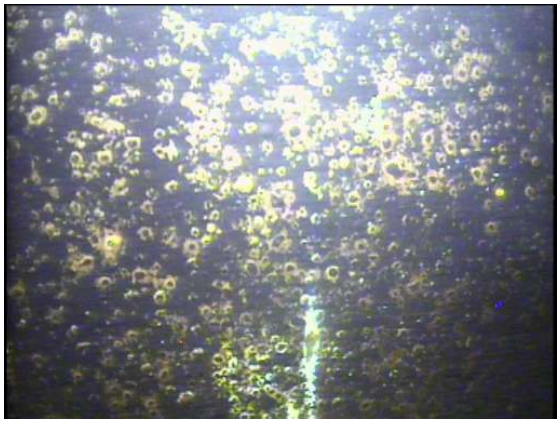


An area of more extensive coating failure and corrosion along the upper shell stiffener.

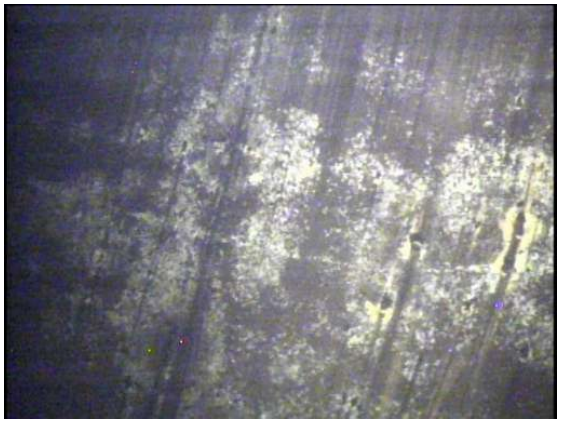


Showing widespread dense blistering throughout the shell with areas of ruptured blistering resulting in surface corrosion.

Additional area of heavy blistering and surface corrosion along the shell.



Closeup view of the dense blistering of the coating observed along the shell below water level.

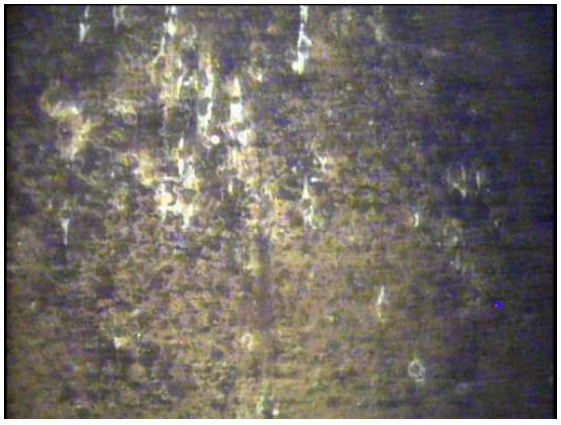


Overall view of the upper bowl plates indicating widespread blistering and areas of ruptured blistering resulting in corrosion.

Blistering and corrosion along the upper bowl below one of the vertical shell stiffeners.

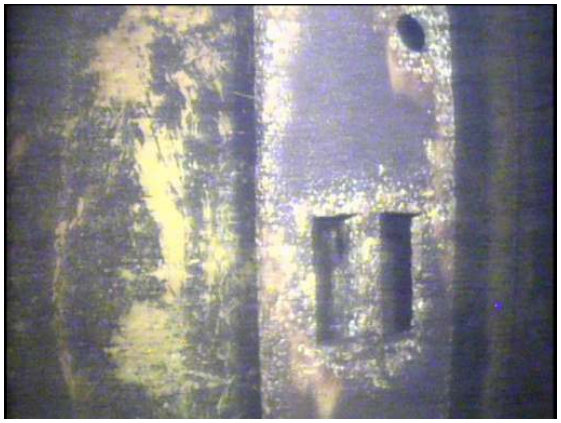
Scattered corrosion deposits along the shell and bowl surfaces where ruptured blisters are present.

Additional areas of corrosion where breakdown of the blistered coating has occurred.



An area where the rupture of a number of small blisters has resulted in corrosion of the underlying steel.

The upper portion of one of the vertical shell stiffeners showing the same coating breakdown noted throughout the shell.



Heavy blistering and scattered corrosion along the vertical shell stiffeners.

Additional blistering and coating breakdown along the lower portion of a vertical stiffener where it connects with the upper bowl.

Areas of corrosion evidence through the silt layer along the lower bowl surfaces.

An area of the bowl cleared of sediment showing reduced corrosion but blistering still evident.

A closeup of a cleaned area of the bowl illustrating dense blistering of the coating.

A dense network of discarded cathodic rods and cables in the base of the bowl prevented further inspection of these surfaces.

Showing a collection of the spent cathodic rods that have been discarded into the tank.

Osprey Landing Water Tank

Access Easement

EXHIBIT B
TO QUITCLAIM DEED
FROM G-FOUR, L.L.C.
TO CITY OF PORTSMOUTH

A certain tract of land located off Market Street, in Portsmouth, Rockingham County, New Hampshire, shown as "Proposed Access Easement to City of Portsmouth" on a certain plan entitled, "Subdivision Plan of Mariners Village & Spinnaker Point Condominium, Market Street, Portsmouth, New Hampshire," by Associated Engineering Services, dated October 23, 1993, and recorded herewith in the Rockingham County Registry of Deeds, being bounded and described as follows:

Beginning at a point on the northerly side of a private road shown on the said plan as Parcel R-1, and formerly known as Circuit Road, at the westernmost corner of the tract;

thence running N 13° 51' 14" E a distance of 122.86 feet to a point;

thence running N 32° 03' 09" E a distance of 96.78 feet to a point;

thence running S 77° 37' 00" E a distance of 127.35 feet to a point;

thence running S 12° 23' 00" W a distance of 114.00 feet to a point;

thence running N 77° 37' 00" W a distance of 100.58 feet to a point;

thence running N 13° 51' 14" E a distance of 17.87 feet to a point;

thence running N 77° 37' 00" W a distance of 34.92 feet to a point;

thence running S 13° 51' 14" W a distance of 118.50 feet to a point, all of the preceding courses running through Lot 2-0900;

thence running westerly along a curve to the left having a radius of 789.00 feet, a distance of 25.00 feet along Parcel R-1 to the point of beginning.

Excepting and reserving that certain tract of land lying within the above-described tract, shown on the said plan as "Proposed Fee Simple to City of Portsmouth," and being further bounded and described in Exhibit A above.

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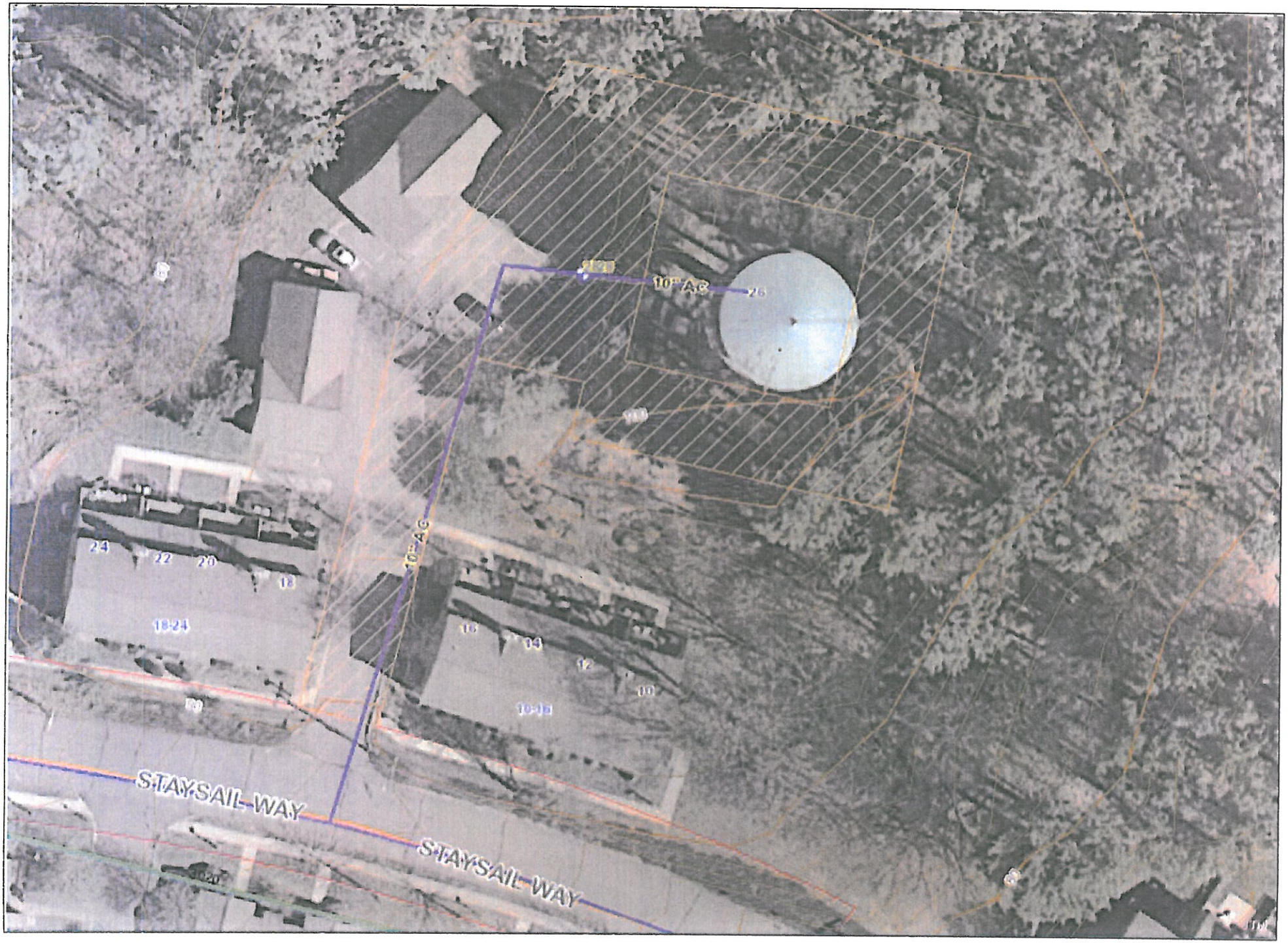

10" AC
10" AC
STAYSAIL WAY
STAYSAIL WAY

Hobbs Hill Water Tank & Osprey Landing Water Tank

Soil Testing Results

Table 1
Hobbs Hill Water Tank Soil Analytical Results
Portsmouth, New Hampshire

Sample Designation	S-2 0-3"	S-2 6-9"	S-3 0-3"	S-3 6-9"	S-4 0-3"	S-4 6-9"	S-6 0-3"	S-6 6-9"	S-8 0-3"	S-8 3-6"	S-1 0-3"	S-11 3-6"	S-11 6-9"	S-12 0-3"	S-12 16"	S-13 6-9"	S-13 9-12"	S-14 0-3"	S-14 6-9"	S-15 6-9"	NH Soil
Sample Date	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	Remediation
Sample Depth	0-3"	6-9"	0-3"	6-9"	0-3"	6-9"	0-3"	6-9"	0-3"	3-6"	0-3"	3-6"	6-9"	0-3"	16"	6-9"	9-12"	0-3"	6-9"	6-9"	Standards*
Total Metals																					
Arsenic	10.4	**15.1**	**13.1**	11.0	**11.8**	8.94	9.69	**14.5**	8.99	9.66	10.2	10.6	**11.2**	5.41	**11.1**	**16.7**	**13.6**	10.7	10.2	**11.3**	11
Barium	62.8	18.8	39.3	34.0	42.5	58.1	22.1	17.0	41.6	39.5	32.9	32.1	27.4	29.3	36.7	22.3	17.4	29.2	44.3	51.2	1,000
Cadmium	0.74	0.47	0.51	< 0.52	< 0.49	< 0.5	< 0.46	< 0.41	< 0.44	< 0.5	< 0.47	< 0.51	< 0.55	< 0.44	< 0.47	< 0.5	< 0.5	< 0.51	< 0.49	< 0.56	33
Chromium	28.9	16.6	52.9	35.3	29.9	36.9	23.2	15.9	32.9	32.2	26.0	82.0	19300	35.1	35.9	23.6	20.1	40.4	41.9	31.0	NE
Lead	276	12.0	**694**	123	111	51.5	**617**	31.7	126	83.8	81.4	**619**	**42400**	32.9	117	122	118	**495**	34.5	92.2	400
Mercury	< 0.035	< 0.033	0.106	0.088	0.034	0.036	0.057	< 0.032	0.038	0.032	0.057	0.047	0.041	0.040	< 0.035	< 0.033	< 0.036	0.062	0.050	0.053	6
Selenium	< 0.48	< 0.47	< 0.47	< 0.52	< 0.49	< 0.5	< 0.46	< 0.41	< 0.44	< 0.5	< 0.47	< 0.51	0.58	< 0.44	< 0.47	< 0.5	< 0.5	< 0.51	< 0.49	< 0.56	180
Silver	< 0.48	< 0.47	< 0.47	< 0.52	< 0.49	< 0.5	< 0.46	< 0.41	< 0.44	< 0.5	< 0.47	< 0.51	< 0.55	< 0.44	< 0.47	< 0.5	< 0.5	< 0.51	< 0.49	< 0.56	89

Results reported in milligrams-per-kilogram (mg/kg) or parts-per-million (ppm)

< Indicates that the analyte was not detected at the noted limit

*Soil Remediation Standards from Env-Or 600 of the NH Code of Administrative Rules

Bold text denotes results that exceed soil NH Soil Remediation Standards

Table 2
Osprey Landing Water Tank Soil Analytical Results
Portsmouth, New Hampshire

Sample Designation	S-1 0-3"	S-1 24"	S-2 0-3"	S-3 9-12"	S-4 3-6"	S-9 0-3"	S-9 9-12"	S-10 3-6"	S-10 9-12"	S-12 0-3"	S-12 16"	S-13 6-9"	S-13 20"	NH Soil
Sample Date	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	5/12/2016	Remediation
Sample Depth	0-3"	24"	0-3"	9-12"	3-6"	0-3"	9-12"	3-6"	9-12"	0-3"	16"	6-9"	20"	Standards*
Total Metals														
Arsenic	**25.9**	**24.7**	**11.4**	**20.8**	8.70	9.44	**11.6**	**11.5**	**32.0**	5.12	**13.1**	**11.1**	**14.0**	11
Barium	38.2	44.1	30.0	29.8	26.2	55.3	17.6	32.2	91.7	24.1	16.4	53.1	13.2	1,000
Cadmium	< 0.47	< 0.46	< 0.5	< 0.48	< 0.43	0.90	< 0.46	0.51	7.81	< 0.46	< 0.48	< 0.46	< 0.48	33
Chromium	51.1	41.6	60.7	35.6	102	214	30.8	123	37.6	301	14.0	102	14.4	NE
Lead	334	104	**912**	166	**1,370**	**3,670**	**593**	**2,860**	**552**	**5,730**	99.9	**7,630**	39.9	400
Mercury	< 0.034	< 0.032	0.038	< 0.029	< 0.03	0.032	< 0.031	0.051	< 0.029	< 0.028	< 0.029	< 0.033	< 0.033	6
Selenium	< 0.47	< 0.46	< 0.5	< 0.48	< 0.43	< 0.43	< 0.46	< 0.46	< 0.46	< 0.46	< 0.48	< 0.46	< 0.48	180
Silver	0.48	0.51	< 0.5	< 0.48	< 0.43	0.47	< 0.46	0.55	0.57	< 0.46	< 0.48	0.51	< 0.48	89

Results reported in milligrams-per-kilogram (mg/kg) or parts-per-million (ppm)

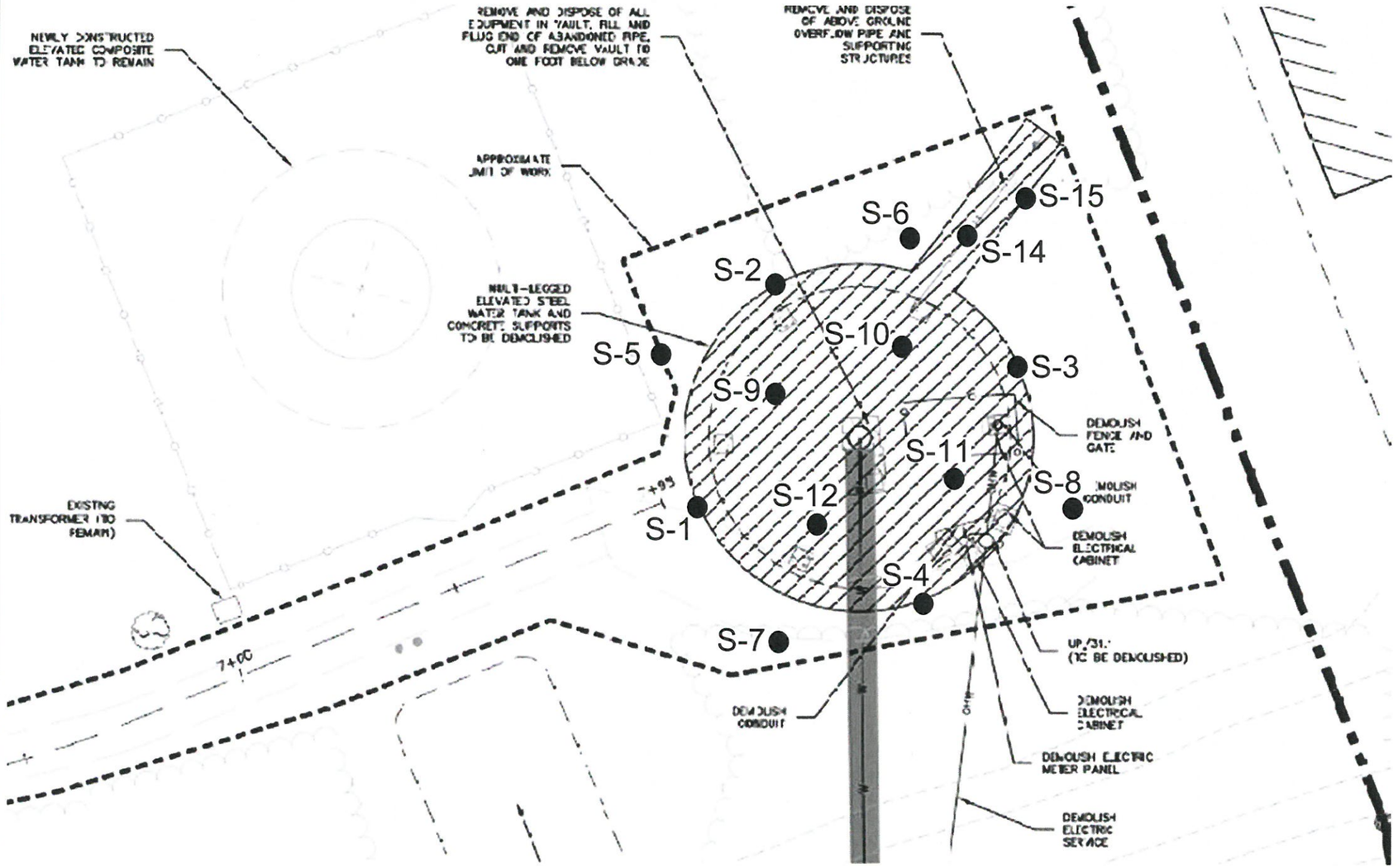
< Indicates that the analyte was not detected at the noted limit

*Soil Remediation Standards from Env-Or 600 of the NH Code of Administrative Rules

Bold text denotes results that exceed soil NH Soil Remediation Standards

NOTE: THE APPROXIMATE SAMPLE LOCATIONS ARE SHOWN ON THE SOIL SAMPLE LOCATION PLANS ON THE FOLLOWING PAGES

Tighe&Bond
Engineers | Environmental Specialists



LEGEND

- APPROXIMATE LIMIT OF WORK
- CHAINLINK FENCE TO REMAIN
- CHAINLINK FENCE TO BE DEMOLISHED
- OVERHEAD WIRE (OHW)
- EXISTING WATER LINE (W)
- WATER LINE TO BE ABANDONED (W)
- PROPERTY LINE
- LIMIT OF DEMOLITION
- CONCRETE
- APPROXIMATE SOIL SAMPLE LOCATION S-1

SOIL SAMPLE LOCATION PLAN
HOBBS HILL WATER TANK
PORTSMOUTH, NH

SAMPLES WERE COLLECTED
ON MAY 12, 2016 BY
TIGHE & BOND
177 CORPORATE DRIVE
PORTSMOUTH, NH 03301
(603)433-8818

SEE TABLE 1 FOR SUMMARY OF RESULTS

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- APPROXIMATE LIMIT OF ACCESS EASEMENT
- CHAINLINK FENCE
- EXISTING WATER LINE — W —
- CONCRETE FOOTINGS
- APPROXIMATE CITY OF PORTSMOUTH PROPERTY LIMITS
- APPROXIMATE AREA THAT MAY BE DISTURBED DURING TANK REMOVAL
- APPROXIMATE SOIL SAMPLE LOCATION — S-1

SOIL SAMPLE LOCATION PLAN
OSPREY LANDING WATER TANK
PORTSMOUTH, NH

SAMPLES WERE COLLECTED
ON MAY 12, 2016 BY
TIGHE & BOND
177 CORPORATE DRIVE
PORTSMOUTH, NH 03801
(603)433-8818

SEE TABLE 2 FOR SUMMARY OF RESULTS

Tighe&Bond
Engineers | Environmental Specialists